



Oracle Builds Out Its Line of Engineered Systems

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Oracle accelerated the pace of rollouts for its engineered systems at the [Oracle OpenWorld 2011 conference](#) in San Francisco — adding more models to the product line, including the SPARC SuperCluster, Oracle Exalytics and Oracle Database Appliance platforms, and the Oracle Big Data Appliance, which addresses Hadoop processing of unstructured data. There is now a six-model family of what Oracle is calling "engineered systems" combining hardware and software.

For Oracle OpenWorld 2011, an Oracle conference that was held October 2–6, 2011, in San Francisco, Oracle announced the following engineered systems:

- **Oracle's SPARC SuperCluster.** Based on [SPARC T4 processors](#), the SPARC SuperCluster rack includes up to 128 cores by clustering together four SPARC T4-based servers, each of which has two to four processors, where each SPARC processor has eight cores. The [SPARC SuperCluster](#) combines the functionality found in Oracle Exadata and Oracle Exalogic — and hosts all of it on SPARC and Oracle Solaris.
- **Oracle Exalytics In-Memory Machine.** The [Oracle Exalytics](#) system is an x86-based server focused on business intelligence (BI) workloads. Its x86 server design, with four Intel Xeon E7-4800 processors and 1TB of data, allows customers to import key data — and to enable business analysts and business managers to analyze it, in near real time, using Oracle TimesTen in-memory database technology. It also hosts the Essbase planning software, and support for graphical data output for executive information systems (EIS) planning purposes.
- **Oracle Database Appliance.** IDC notes that Oracle also announced [Oracle Database Appliance](#), just before the Oracle OpenWorld conference began. It has two six-core Intel Xeon X5675 processors, 96GB of memory, and 12TB of storage. It runs Oracle Database 11g and Oracle Real Application Clusters (RAC) or Oracle RAC One Node for high availability. Oracle Database Appliance is a high-availability cluster that is targeted at SMBs and enterprise departments.
- **Oracle Big Data Appliance.** Oracle also introduced the [Oracle Big Data Appliance](#) as a way to manage Hadoop-generated unstructured data, and to load it into Oracle Database 11g relational databases.

Engineered Systems and Workload Consolidation

Clearly, Oracle's engineered systems were one of the lead topics at the Oracle OpenWorld conference, with several keynotes devoted to the Oracle Exadata, Oracle Exalogic, Oracle's SPARC SuperCluster, and Oracle Exalytics systems. The theme of these systems is clear: Oracle is optimizing the hardware and software for specific workloads through hardware/software engineering, which is resulting in improved performance and throughput from a technical perspective — and improved business results.

Oracle Exadata customers, some of whom spoke in technical sessions, said that Oracle Exadata is providing much-improved performance, compared with earlier Sun models, and faster time to results for business workloads. But it is also providing something else: a rapid way to consolidate dozens or more of

transactional workloads or Oracle Databases (10g or 11g) onto the same logical system, where they could be run more efficiently than on dozens of standalone physical servers.

Combining Oracle Exadata and Oracle Exalogic

One deployment pattern confirmed by Oracle Exadata customers who spoke at Oracle OpenWorld is the combination of Oracle Exadata and Oracle Exalogic systems, linked via multiple InfiniBand connections. In this way, these two types of Oracle-engineered systems link the application-serving tier and the database-serving tier closer together, which benefits end-to-end, multitier workloads.

IDC expects Oracle to leverage this approach even more in future product releases, as it seeks to expand its footprint in the enterprise datacenter. After all, the engineered systems are high-margin products that will be sold "direct" to Oracle's top customers worldwide, while smaller Oracle servers will tend to be sold via Oracle's channel partners to small, medium-sized, and large sites — often paired with industry-specific applications.

A La Carte, or Standalone, Server Systems

At the same time, Oracle executives spent time underscoring the fact that it will continue to ship a la carte x86 servers and SPARC systems, with many of those systems shipping into the departmental, SMB, and midmarket segments of the server market.

John Fowler, executive vice president of Systems at Oracle, talked about the continuance of the a la carte offerings in his keynote on October 4. All of this means that Oracle will need to fine-tune its marketing messages to make clear that both options — engineered and standalone systems — are available to its wide base of customers — and that channel-based selling will be a key go-to market for SMBs and a wide range of customers worldwide.

Installed Base Technology Refresh

Some of the Oracle Exadata customers saw their Oracle Exadata deployments as part of a technology refresh for older, or aging, SMP systems. This included aging Unix SMP servers from the three top Unix server vendors — HP, IBM, and Oracle/Sun. These long life cycles were, in part, due to the economic downturn that began in fall 2008. In that context, the expense of new Oracle Exadata-engineered systems (priced from \$250,000 to \$1 million or more) was considered as part of a technology refresh cycle, customers said. This may help to accelerate Oracle Exadata sales; with 1,000+ implementations since 2009, Oracle has said it plans to have a total of 3,000 implementations worldwide by 2013.

In other cases, customers were trying to migrate some workloads from traditional mainframe systems that were hosting OLTP workloads or data warehouses. IDC believes that Oracle has minimized this aspect of the Oracle Exadata competitive positioning, choosing instead to position Oracle Exadata against IBM Power Systems, but not mentioning IBM System z mainframes. This is likely due to the marketing campaigns that Oracle has in place — which clearly identify IBM Power Systems and HP Integrity Superdome systems as competing high-end Unix systems.

Oracle's SPARC SuperCluster

Oracle's SPARC SuperCluster uses the Oracle Exadata Storage architecture, but leverages SPARC T4 server building blocks in place of the x86 servers that are the basis for Exadata's clustered server nodes. It is squarely aimed at the large SPARC installed base — both for consolidating existing SPARC-based workloads and for applying a technology refresh for many of the aging SPARC systems within the large installed base (e.g., Sun Fire 6800s, UE 25Ks, and the V-Series 4XX and 8XX systems).

Given its design, Oracle's SPARC SuperCluster is positioned as a general-purpose consolidation system for Oracle, third-party ISV applications, and customer applications. It leverages the combination of Oracle Exadata and Oracle Exalogic, in that it can host all of the workloads of Oracle Exadata and Oracle Exalogic, combined, within a single frame. Oracle's SPARC SuperCluster can host a wider array of workloads by

supporting OLTP, data warehouse, and large databases, along with app-serving capabilities for Java-enabled workloads and those based on C and C++.

One way to look at this is that SPARC SuperCluster is a platform that runs all SPARC/Solaris applications and databases, bringing older workloads to a binary-compatible platform. Oracle has provided the first two Oracle Optimized Solutions on SPARC SuperCluster for PeopleSoft HCM and Oracle WebCenter Content to deliver co-engineered hardware and software up to the application layer.

Competition in the Hardware Marketplace

Although it will be possible to run Oracle Database, Oracle Fusion Middleware, and Oracle Applications and Java-based middleware on IBM and HP systems, Oracle is saying that these Oracle software products will now run better on its engineered systems. This approach is designed to cause longtime Oracle software customers to consider moving to Oracle's engineered systems, even if they ultimately decide to remain on other vendors' installed platforms.

Oracle's marketing campaigns clearly target the IBM Power systems, especially the high-end IBM Power 795, as a head-to-head competitor to Oracle Exadata and Oracle's SPARC SuperCluster. The last year has also seen an intensive head-to-head competitive program, including a high-profile advertising campaign targeting the HP Integrity Superdome, which is based on Intel Itanium processors.

Sales of standalone software products will remain an important source of Oracle's revenue for years to come, with more than 70% of Oracle's current revenue generated by software licenses. This includes the Oracle Database products, Oracle Fusion Middleware, and Oracle Applications. Because the Oracle portfolio runs across many types of server platforms, the theme of open systems and interoperability, long a mainstay of Oracle marketing, will continue — but the engineered systems will be positioned as providing operational advantages over the other vendors' server platforms.

Server Processor Technology Road Map

Oracle's technology road map for SPARC shows a T-Series replacement, or upgrade, every fall (2012, 2013, and 2014) — culminating in a unified T-based SPARC road map in the 2014–2015 time frame. With SPARC T4, Oracle has improved single-threaded performance, which will evolve in each generation. For each of the fall announcements, another update to Oracle Solaris will also be scheduled, likely to "sync" the hardware updates to specific optimizations made in the Oracle Solaris operating system.

At the same time, IDC expects that Oracle will continue to view x86 servers as essential building blocks for its engineered systems. This means that Oracle will build on each major update to Intel's x86 Xeon product road map as well. Although there will be two types of processors in Oracle's product lines — SPARC and x86 — there will be unifying elements as well, including Oracle Solaris, Oracle Virtual Machine (OVM), and Oracle Enterprise Manager (OEM), that will run on all Oracle systems.

Storage Systems

Important clarifications of the overall Oracle strategy for storage systems were provided during the Oracle OpenWorld 2011 event. After the acquisition of Sun Microsystems in early 2010, Oracle had lost a measure of its momentum in the storage systems space, due to uncertainty about the product road map. However, with the introduction of the Pillar Axiom 600 in late September, Oracle has completed its latest update of the storage system portfolio, which now consists of the following major families:

- Sun ZFS Storage Appliances
- Oracle Pillar Axiom (from Oracle's acquisition of Pillar Data Systems in June 2011)
- Sun Flash Storage

Across engineered systems and standalone storage systems, Oracle is delivering a common message regarding the optimization of hardware platforms that work most efficiently with Oracle software. However, the full portfolio of Oracle's storage systems is designed to support a broader range of workloads than

Oracle's engineered systems — which are optimized for specific workloads (e.g., OLTP, data warehouse, and app-serving capabilities). For this full portfolio of standalone products, Oracle faces strong competition from a number of vendors, including EMC, HP, IBM, and NetApp. That is why IDC believes that leveraging the optimization messaging as a new entry point for its storage systems is a clever and logical move for Oracle.

Future Outlook

In summary, Oracle reached an 18-month watershed at Oracle OpenWorld 2011, showing a family of engineered systems brought to market since it acquired Sun Microsystems in January 2010. The "Exa" products — Exadata, Exalogic, Exalytics — along with Oracle's SPARC SuperCluster, the Oracle Database Appliance, and Oracle Big Data Appliance, demonstrate Oracle's approach to optimized systems, combining servers, Oracle RAC clustering software, and storage — and leveraging high-speed InfiniBand links and flash to speed overall throughput. This is a strategy and approach to the business that will likely lead to a number of new reference architectures, and to an expanded series of engineered systems by 2012, IDC believes.

Overall, drivers for moving to integrated system functionality include reducing IT time associated with onsite system integration and maintenance, faster response to changing business conditions, ability to add capacity as needed, IT flexibility in deployment, and lower IT costs. IDC has long believed that a strategic fit exists between server platforms and the workloads that run on them. As such, the workload represents a critical consideration in the design of converged infrastructure, including workload-optimized systems.

Oracle is orienting the marketing of its engineered systems around business outcomes, rather than focusing on the technology innovation alone. In short, Oracle is working to change the conversation in high-end systems of all types, including Unix servers and mainframes, offering alternative designs to traditional SMP systems. Oracle is early in addressing the emerging market opportunity for integrated functionality in engineered systems, but IDC expects that, given the capabilities of competing vendors, the competition in this "system of systems" space will evolve, and intensify, in coming years.

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