INSIGHT

Messages from Oracle OpenWorld 2010: Exadata Exceeds Expectation and MySQL Thrives

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IDC OPINION

Oracle Corp. made several important announcements and offered customer experiences regarding its database technology in general, and the Oracle Exadata Database Machine in particular, at Oracle OpenWorld 2010. Key takeaways from this information include the following:

☑ High expectations for the performance, manageability, and scalability of the Exadata technology are well founded.

☑ The key delivery platform for Oracle Database Enterprise Edition with Real Application Clusters (RAC) will be Exadata.

☑ Oracle maintains a strong commitment to the open source RDBMS MySQL, which it owns as part of the Sun Microsystems acquisition.

IN THIS INSIGHT

This IDC Insight reviews key database technology announcements and presentations offered at Oracle OpenWorld 2010. It examines what they are, what they mean, and how to interpret their implications in terms of Oracle's strategy and direction as well as their implications for the database management systems (DBMSs) markets going forward.

SITUATION OVERVIEW

Highlights

Oracle staged its annual user conference, Oracle OpenWorld 2010, in San Francisco during September 19–23, 2010. The event was centered at the Moscone Convention Center but included sessions that were held at most of the larger hotels within walking distance of the Moscone. The conference covered the vast range of products that Oracle now offers, including systems, storage, and software, and, within software, systems software, applications, middleware, and database management systems (DBMSs).

In the DBMS space, the highlights mainly involved Exadata, Oracle's hardware systems preconfigured to run Oracle Database Enterprise Edition with the Real Application Clusters option. There was also news regarding MySQL, the open source relational DBMS that Oracle acquired along with Sun Microsystems.

Exadata Exceeds Expectation

What became clear from the start, and was reinforced by numerous customer panels as well as one-on-one interviews with users, was that Oracle's claims regarding Exadata's speed, efficiency, and scalability were not hype; if anything, they proved modest when compared with actual experience. Over a dozen customers testified, in panel discussions and interviews, with similar stories, mostly involving data warehouse implementations of Exadata V2 and migrations from Oracle Database deployed on separately purchased hardware.

Some highlights:

- Most said that deployment was fast and simple (some had experienced problems with Exadata V1 and said that V2 was much easier to set up).

- Batch windows for such things as data loads and backups were dramatically reduced. A typical case: a large bank reported its backup time dropped from 12 hours with its old Oracle deployment to just 1.5 hours with Exadata V2.

- Query performance was boosted dramatically over prior installations of Oracle Database. Claims of 20–30x improvement were typical.

- There were a few OLTP users in the mix. They commonly reported 8–10x performance improvement over their former Oracle Database installations and a reduction in the number of tables they deployed because in the older system they had denormalized data into composite tables to boost throughput for some select transactions.

- Data warehouse compression was north of 10x (Exadata V2 uses something called "Hybrid Columnar Compression" for data warehousing workloads). OLTP compression was typically 2–4x.

- Floor space and power requirements were also reduced. Resulting systems commonly required less than a quarter of the floor space demanded of the systems they replaced and an eighth the power.

- Exadata's columnar approach delivered a substantial performance boost over prior systems, enabling many data warehouse users to eliminate indexes. These users considered this to be a big benefit, in terms of both database space and administration effort.

Oracle also cited cases of performance and cost improvements for customers that migrated from other DBMS products to Oracle's Exadata Database Machine, though these claims are hard to substantiate without knowing the underlying details regarding the former systems and the databases they served.

Exadata Scales Up with X2-8

For some data warehouses involving very tightly interrelated tables and complex queries, users have not embraced the "scale out" strategy of large clusters of small servers but have instead embraced the "scale up" strategy of bigger symmetrical multiprocessor (SMP) systems. To address this segment of the market and better serve high-end OLTP as well as enable consolidation, Oracle announced a new configuration of the Oracle Exadata Database Machine called X2-8. It has renamed the other "scale out" configuration from V2 to X2-2. The differences between the two configurations are as follows:

- ☑ Exadata X2-2 is an array of database servers, each equipped with two six-core Intel Xeon processors and 96GB of RAM and connected via a private InfiniBand network to an array of storage servers, each with 12 600GB high-performance SAS drives or 12 2TB high-capacity SAS drives. Exadata X2-2 is available in three configurations: quarter rack (two database servers with three storage servers), half rack (four database servers with seven storage servers), and full rack (eight database servers with 14 storage servers).

- ☑ Exadata X2-8 is a pair of database servers, each equipped with eight eight-core Intel Xeon XE processors and 1TB of RAM and connected to 14 storage servers configured in the same manner as those for the X2-2.

Both configurations include the ability to add capacity by linking nodes together; Exadata X2-2 systems may be linked to other X2-2 systems, and Exadata X2-8 systems may be linked to other X2-8 systems using the private InfiniBand network.

MySQL 5.5

Last but not least, Oracle announced the MySQL 5.5 release candidate, which solidifies the commitment the company has made to continuing the development and the independence of MySQL as an open source relational DBMS. This announcement came along with continued assurances that MySQL is and will remain autonomous. Nonetheless, useful MySQL intellectual property may find its way into other Oracle products, and Oracle's database development engineers will almost certainly lend their expertise to helping make MySQL better.

Developments that are part of the 5.5 release include the following:

- ☑ Improvements in handling multiprocessing hardware environments

- ☑ Establishment of InnoDB (an open source database storage manager that Oracle also owns) as the default storage engine

- ☑ Replication improvements including a "heart beat" monitoring capability and semisynchronous replication (replication where at least one replica, but not necessarily all, confirm a data transmission)

- ☑ SQL and stored procedure enhancements designed to improve usability

A n a l y s i s

Oracle OpenWorld 2010 provided a fairly clear view of how Oracle sees its way forward in the DBMS market. While Oracle will continue to offer software licenses for the deployment of Oracle Database on any of the leading hardware platforms, Oracle will increasingly emphasize the benefits of using its preconfigured Exadata Database Machine, either in the X2-2 or in the X2-8 format, for Oracle Database.

In reference to cloud computing, Larry Ellison, in his keynote, made a point of saying that the best way to deploy Oracle Database in a cloud is to use Exadata as its physical framework. He also indicated that, for those wishing to deploy a private cloud, Exadata, in combination with the middleware and general-purpose Exalogic (a preconfigured virtualized grid environment for Java applications), comprised a packaged cloud environment offering, something like the Amazon-based elastic compute cloud (EC2) reference architecture. While some observers sniffed that Ellison was offering an oxymoronic concept — "cloud in a box" — in fact, he may be onto something. Deploying a cloud, public or private, is a difficult, complex, and error-prone activity. Starting with a preconfigured platform of hardware and software will be very attractive to those facing this daunting challenge.

As for the benefits of Exadata that were so impressively described by users at the conference, these should not come as a surprise. When Oracle first rolled out this idea of preconfigured, highly tuned, select hardware, specialized storage management, and private InfiniBand networking, a little back-of-the-envelope math revealed that if Oracle could work the kinks out and make Exadata affordable and easy to deploy, the performance gains for users would be quite remarkable, and so they appear to be.

Preconfiguration of hardware and software, appliance and quasi-appliance offerings, cloud-supporting deployments, and reference configurations seems to be the rule of the day, and a number of leading vendors are going down that path. Only Oracle has been so bold as to present this approach as the future of database technology. Can competitors do other than to follow suit in some manner, at least for some subset of the market?

Finally, the MySQL announcement reaffirms statements made by Oracle from the outset that it will continue to develop and promote MySQL as an autonomous entity, contributing improvements where it can without compromising the essential openness of the product and process. Oracle is wise to do so. MySQL provides access to database users that Oracle might not reach any other way. Its community represents a worldwide laboratory of development, support, and QA engineers who contribute the fruits of their labors freely in return for the free use of the software. MySQL enables Oracle to build upon its database user community from the grassroots, and to discover variant technology and usage models, at a fraction of the cost of conventional research and development. To interfere with that model would be to kill the goose that lays golden eggs, and Oracle apparently knows this.

FUTURE OUTLOOK

Oracle has been the market-leading database software vendor for well over a decade but must continue to reinvent database technology to keep that position. The company has shown a willingness to do that in the past and continues to do so going forward. There are many new database directions appearing on the landscape today, including nonschematic DBMS (such as so-called "NoSQL"), cloud databases, highly distributed databases, small footprint DBMS, and in-memory database (IMDB). No one vendor can cover all that ground, but Oracle, with conventional Oracle Database, TimesTen, MySQL, Berkeley DB, and Exadata Database Machine, covers most of it and especially covers the ground most important to Oracle: that database functionality that is strategic to large enterprises.

Oracle's competitors have made substantial strides in recent years as well and are competing with Oracle on multiple fronts. Attractive as the Exadata message is, there are strings attached that users should be aware of. Anyone considering how to respond to the database developments at Oracle OpenWorld 2010 should consider the following:

☑ Exadata Database Machine relieves the user of responsibility for physical configuration and deployment of database servers and associated storage, offering pretty impressive performance and scalability benefits to boot. Based on the experiences mentioned, it merits careful consideration as a data warehouse or an OLTP database consolidation platform.

☑ That having been said, Exadata is an all-Oracle offering. Users should consider just how dependent they are likely to become upon Oracle for both hardware and software if they go down that path. Competitors should respond by emphasizing deployment flexibility and absence of "lock-in."

☑ MySQL users should take heart from the 5.5 release candidate and the ongoing support that Oracle has shown to this important open source RDBMS. It is unlikely that Oracle will try to cannibalize or otherwise compromise its open source nature or the community, and it can feel comfortable with its continued involvement in MySQL.