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Oracle®'s Presence in the Embedded Systems Software Market: An Overview

By Darrick Addison

Editor's Note: Regular ORAtips contributor Darrick Addison explores embedded systems built to meet real-time constraints with a combination of special purpose hardware and software tailored to the system's requirements. As Darrick notes "Oracle has been growing its embedded systems business in Asia Pacific (APAC) over the last five years, and already counts some of Asia's leading companies as customers."

Introduction

Oracle has entered the embedded systems market in Asia Pacific and Japan by launching an embedded business unit (EBU) for this region, including India. The Oracle EBU plans to establish licensing agreements with independent software vendors (ISVs) and original equipment manufacturers (OEMs), allowing them to integrate Oracle software directly into end-user devices such as handsets, home appliances, and automobiles. The company sees India as a potential market for embedded systems. The embedded systems industry is worth approximately $25 billion worldwide with high demand expected from North Asia and India. Oracle's embedded strategy for APAC includes setting up a dedicated task force across the APAC region and in key markets.

The target markets for Oracle EBU include 3G, in-the-home, in-the-vehicle, and telecom. Oracle plans to embed its entire range of products including database, application service, business applications, etc. In a bid to extend its embedded database product line, the company

had recently acquired Sleepycat, the company behind the open source Berkeley DB, which is an embedded database system. Oracle Corporation Asia Pacific embedded technologies VP Mark Barton said, "With this, we plan to move beyond the enterprise systems where we've traditionally been, and make a serious move into data management for consumer devices."

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"For FY2005, Oracle's embedded systems revenues grew 60 percent worldwide, and more than 200 percent in APAC. Barton also announced the setting up of innovation labs in China, Japan, Korea, India, and Singapore to drive development and testing of its embedded systems. The labs will help us work with partners

to provide benchmark, best practices, etc. They will enjoy close development links with Oracle R&D centers in the US and will reside in existing Oracle development centers in those countries."

Sleepycat Berkeley DB

Oracle has announced the addition of Berkeley DB to its embedded database product line, which includes Oracle Lite for mobile devices and Oracle TimesTen for high performance in-memory database applications.

"Sleepycat's products enhance Oracle's market-leading database product family by offering enterprise-class support to customers who need to embed a fast, reliable database at a lower cost," said Andrew Mendelsohn, senior vice president, Oracle Database Server Technologies.

"We're very excited to join the world's largest enterprise software company and the industry's leading database company," said Mike Olson, CEO of Sleepycat Software. "Sleepycat's products, customer base, and proven business model, combined with Oracle's tremendous expertise, complementary technology, and resources, will allow us to better serve the needs of our customers and the open source community."

According to Carl Olofson of IDC's research, "The embedded database market was projected last year to be just over $2 billion in 2005 and forecasted to grow to over $3.2 billion by the year 2009. This market is very diverse, and the technologies tend to be quite specialized. Sleepycat's

Berkeley DB complements Oracle TimesTen and Oracle Lite, allowing Oracle to address a broad range of segments within the embedded DBMS market."

Sleepycat Software's Berkeley DB is the most widely used open source database in the world with deployments estimated at more than 200 million. Berkeley DB is distributed under a dual license model, i.e., available under a public license and also available under a commercial license. Well-known open source projects such as the Linux and BSD UNIX operating systems, Apache Web server, OpenLDAP directory, OpenOffice productivity software, and many others embed Berkeley DB technology.

Berkeley DB vs. MySQL: Market Trends

The Redwood Shores, California-based database and enterprise software giant, has denied that its purchase of Sleepycat was designed to impact open source database rival MySQL AB and maintained that it is focused on the bigger picture.

"Oracle has long been in the embedded software business but we've had a gap where the Sleepycat Berkeley DB product fits perfectly," the company's VP of technology marketing, Robert Shimp told Computer Business Review.

Oracle's chief executive, Larry Ellison, stated earlier this week that "the company does not make acquisitions in areas where it does not think it can be the number one player", and Shimp said the "Sleepycat acquisition is designed to enhance Oracle's position beyond embedded databases. Berkeley DB is number one in its [embedded database] market. We intend to be number one or two in the embedded software space in general."

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While Oracle Lite serves the mobile database space and the TimesTen technology (the company picked up in June 2005) serves real-time database requirements; Berkeley DB fulfills the need for edge applications with embedded database functionality, Shimp explained. "Every application has unique requirements, so you need a range of options."

Oracle also acquired the InnoDB storage engine along with Innobase Oy in October 2005, leading to a potential problem for MySQL given that InnoDB was its database storage engine of choice.

Recent rumors had indicated that MySQL was working on a development deal with Sleepycat to come up with a replacement, raising questions about Oracle's intentions. Shimp denied that anything untoward was going on, however.

"Sleepycat never had an arrangement with them," he said, adding that "there is no change in the relationship with MySQL, and that the two companies continue to negotiate an extension to the existing MySQL/InnoDB relationship."

Uppsala, Sweden-based MySQL confirmed that negotiations with Oracle are ongoing and repeated its previous belief that the fact that InnoDB is licensed under the GNU GPL protects its users' investment in the technology long-term.

In a statement MySQL also revealed that it is working "internally and with partners on a number of alternative transactional engines" and that it plans "to provide more details about our storage engine strategy and roadmap at the MySQL users' conference in April."

Upsetting the MySQL user base would certainly be a strange way for Oracle to build its reputation in the open source software market, and Shimp maintained "its something the company intends to do via Sleepycat."

"Berkeley DB is one of the preeminent brand names in the open source industry," he said, noting "the code is embedded in a wide variety of open source projects, including Linux, FreeBSD, the Apache Directory Server, and OpenOffice.org."

"That provides us with additional access in the open source industry and we can of course tap into that user community and the open source community and learn how to build an open source business," he said. "We are involved not only with Linux but also Apache, but each project is unique," he added. "We want to move into that market and learn more."

Shimp added, "the entire Sleepy-cat engineering team would remain intact and that Oracle would look to make use of its embedded software and open source expertise to grow its position in both markets."

Last week Ellison outlined the company's intention to position itself for growth in the open source software market. "We are moving aggressively into open source," he told the 2006 Credit Suisse Global Software Conference. "We're embracing it; we're not going to fight this trend. We think if we're clever we can make it work to our advantage."

The company has also been linked with the potential acquisitions of open source Java middleware vendor JBoss Inc, and Zend Technologies Inc, the company behind the open source PHP programming language. Shimp declined to comment on the rumors or how the company intends to move into open source beyond the Sleepycat acquisition, however.

Asia-Pacific Market

According to India's National Association of Software and Service Companies (NASSCOM), the embedded systems market last year generated US$25 billion worldwide. Although there were no estimates on how much the Asia-Pacific region's embedded market is worth, China and India are already racking up impressive numbers.

According to a joint NASSCOM-McKinsey report, in India alone, exports of embedded systems totaled US$1.6 billion between 2003 and 2004, a 44 percent over 2002 to 2003.

CCID Consulting stated that, in China, the embedded software industry racked up US$900 million in 2004, accounting for 31 percent of the total sales revenue in China's software industry that year.

According to Oracle Corporation Asia Pacific embedded technologies VP Mark Barton, "Oracle's worldwide embedded systems revenues grew 60 percent in fiscal year 2005, ended May 31, while its Asia-Pacific embedded systems revenues grew more than 200 percent in the same period."

Other vendors vying for a piece of the embedded systems pie include players such as Microsoft, Sybase, as well as several Linux start-ups.

Oracle has been gearing up to join the bandwagon. Earlier this month, the database giant acquired open-source software company Sleepycat Software for an undisclosed sum. The latter's Berkeley DB open-source database is touted to complement Oracle's existing line of closed-source databases for embedding within applications.

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Over the next 12 months, Barton said "the Oracle EBU will focus on embedding its infrastructure software, including products such as Database 10g, Oracle Lite, Sensor Edge Server (RFID), Oracle TimesTen, and Oracle Application Server 10g."

"As the embedded systems markets mature, he added, Oracle plans to embed more of its product portfolio including its flagship application suite, Oracle E-Business Suite."

Conclusion

Mark Barton, VP, Oracle's Embedded Business Unit, Asia Pacific & Japan said, "Real-life applications of embedded systems are infinite, and range from the practical today to the more futuristic. What they all have in common now is their advanced intelligence. Embedded systems are becoming much more data-rich capturing, storing, analyzing, and sending information to enable innovative device functions. Oracle has been the undisputed leader in data management technologies, so this is the most natural next step for us - to move beyond the enterprise systems where we've traditionally been, and make a serious move into data management for consumer devices."

Krishan Dhawan, MD, Oracle India said, "Embedded systems will ultimately enhance the end-user experience and allow Indian enterprises to build true innovation and competitive edge into their wares. With the phenomenal growth in both the production and consumption of technology products in the country, India has only scratched the surface in our applications of embedded systems."

"With Oracle inside, embedded systems will be equipped with the world's most scalable, high-performance database technology that will enable the ultimate end-user experience," Barton added.

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