China is half a world away from the United States, and traveling there can take 12 hours or more. For many business leaders, those facts alone are enough to make entering one of the world’s largest markets too imposing to consider.

Imagine, though, that a transportation breakthrough suddenly made it possible to reach Beijing in 30 minutes, suggests Robin Bloor, chief analyst at The Bloor Group, an IT analyst firm headquartered in Austin, Texas. “It would change your life,” he says. Indeed, a U.S.-based CEO could not only meet face-to-face with Chinese customers as often as they like but actually move their entire company to China and still commute to the office daily from home.

Now apply that same logic to business analytics and imagine that a new database technology suddenly allowed managers to get answers to even the most complex questions in the blink of an eye. The impact on the quality of their decision making, Bloor observes, would be equally life-altering.

As it happens, such a technology already exists. It’s called in-memory data processing, and it’s neither new nor imaginary. As the name implies, in-memory data processing solutions are optimized to work with data in RAM rather than on disk drives. The result is an exponential improvement in responsiveness. “It changes the game completely,” Bloor says.

INSIGHTS ON DEMAND:
In-Memory Data Processing is Ready for the Mainstream at Last

The turbocharged performance of in-memory data processing is finally within every company’s reach, thanks to new technology from Oracle.
Or at least it would, if in-memory data processing systems were a little easier to implement and maintain. “Most of this in-memory technology requires changes to applications,” Bloor notes.

At long last, however, a new offering from Oracle Corp., of Redwood City, Calif., stands poised to make leveraging the extraordinary power of in-memory data processing technology dramatically easier. With the introduction of Oracle Database In-Memory option, decision makers can finally get the split-second answers they crave without modifying existing applications, via a solution that’s not only easy to deploy but eliminates administrative overhead to boot. The implications for speed-sensitive applications are nothing short of revolutionary.

Not surprisingly, the first way most companies think to apply that power is helping executives make decisions faster. Those that stop there, though, miss out on even more profound and previously unimaginable opportunities. Colgan urges IT leaders to think bigger. “How would it change your business if you could do things 100 times faster?” she asks.

For starters, Monash replies, you’d have a significant competitive edge anywhere servers compete for first-mover advantage. “If two machines are racing with each other, for example in financial trading or bidding for [online] ad space, speed is extremely important,” he notes.

In-memory data processing also enables businesses to dramatically improve the effectiveness of core applications by feeding them real-time analytics. For example, operators of advertising-supported websites use sophisticated tools to decide which ads to show a given user based on predictions about what they’re most likely to click. The better their targeting, the more money they make. Currently, however, analyzing a user’s click history generally takes too long to influence the average guest’s first few page views. The extreme speed of in-memory data processing allows websites to display higher-quality ads from the moment visitors arrive. “That produces increased click-throughs and increased revenue,” Colgan says.

Likewise, most online merchants promote related products—like a matching blouse or similar book—every time consumers make a purchase. “They can’t do that analysis until you’ve put that first item in your cart, though, and then they have only a couple of seconds to make a recommendation,” Colgan notes. At present, most sites must base their suggestions on batch-processed collaboratively filtered data. In-memory data processing, however, gives them the performance lift they need to assess each consumer’s unique tastes and shopping history in real time. “They’d do more business because they’d be providing more personalized advice,” Colgan observes.
Bloor points to yet another opportunity, this time in the mobile communications industry. Nothing is more costly or frustrating for wireless carriers than when customers switch to one of their rivals, he notes. Experience has shown that a well-timed discount or offer can keep subscribers from defecting, but knowing who to target those offers to takes processing technology powerful enough to sift through enormous amounts of data at tremendous speed. “You can’t do it except with extremely fast processing. It’s really that simple,” Bloor says, and only in-memory technology is up to the job.

In-memory data processing isn’t just for making money either. It can also prevent cybercriminals from stealing it, by enhancing fraud detection. “Credit card issuers have a very short window after a transaction comes in to run analytics on it and determine whether it’s legitimate or not,” Colgan says. With the help of in-memory data processing, such firms can scrutinize purchases more carefully and swiftly, protecting consumers from identity theft without adding delays at checkout time.

All of these examples still only scratch the surface of what in-memory data processing enables. Stock traders could use it to analyze securities, manage risk, and fine-tune portfolios faster and more thoroughly. Retail chains could utilize it to evaluate new pricing schemes or store locations with greater precision at blazing speeds. “People get dollar signs in their eyes once they start thinking about the possibilities,” Colgan says.

**PIONEERING FEATURES**

Until recently, however, in-memory data processing solutions made realizing any of those possibilities difficult. Now Oracle Database In-Memory option is taking in-memory technology to the next level, finally positioning it for mainstream adoption.

For example, implementing earlier in-memory data processing technologies involved large amounts of setup, recoding, and data migration. “People underestimate how painful that is,” Colgan says. “It’s a huge investment of time and effort.”

Oracle Database In-Memory option, on the other hand, is just a built-in option of Oracle Database 12c, so any company using Oracle Database can now leverage in-memory data processing with zero configuration or migration required. “You can run your applications just as they run today and see instant performance improvements without changing a line of code,” Colgan says. The upshot, she adds, is a “dream come true” for IT organizations. “They get the faster performance of in-memory processing on a platform they’re familiar with and already know how to manage.” Moreover, they don’t forgo any of the scalability, availability, and security features in Oracle Database 12c that keep their applications agile, reliable, and safe.

Furthermore, unlike other in-memory data processing solutions that force businesses to load all of their data into memory at once, Oracle Database In-Memory option gives businesses the freedom to load performance-critical data into memory and keep inactive data on cost-effective disk drives. “That’s monumental,” Warren says. “They can move to in-memory at their own pace instead of jumping off the cliff and going completely from one to the other.”

Oracle Database In-Memory option also makes life easier for database administrators. To get optimal performance from...
in-memory solutions in the past, DBAs had to anticipate which queries would get the most use and construct specialized indexes to support them. “That’s a lot of work and limits a decision maker’s flexibility to ask other questions easily,” Colgan says.

Oracle Database In-Memory option, however, features an innovative “dual format” design that stores data simultaneously in both the traditional Oracle row format for online transaction processing and a new in-memory column format for analytical processing. “The solution maintains transactional consistency across both formats automatically, and the column store accesses memory so efficiently and quickly that you no longer have to create indexes,” Colgan says. That frees administrators from hours of tedious maintenance overhead while enabling decision makers to get questions answered immediately, instead of as soon as a DBA can spare time to build and deploy a new index. Plus, removing some of the indexes on your row store means that inserts and updates require less work and therefore run faster.

What’s more, the Oracle solution’s dual data format ensures that analytics applications always have access to the most recent information available. Older in-memory solutions must import production data from business applications, and delays in that process can leave decision makers relying on reports that contain outdated information. Oracle Database In-Memory option, by contrast, stores production and analytics data in two parts of the same repository simultaneously, so analytics solutions are always completely and automatically in sync with front-line business systems.

TRANSFORMING THE BUSINESS

Better yet, all of these technical advances translate into serious business benefits too. First and most obviously, Oracle Database In-Memory option makes implementing in-memory data processing a snap. “As a result, businesses can collect the speed and profitability rewards of processing data in memory in less time and with less effort,” Colgan says.

Oracle’s technology also saves companies money by enabling them to get high-speed analytics from production databases rather than maintain separate data marts. “You get excellent OLTP speeds and excellent analytics speeds in the same solution, which reduces capital expenses and also lowers management costs,” Colgan notes.

Above all, though, Oracle Database In-Memory option empowers leaders to make better, more effective decisions. First, its automatically synchronized row and column format ensures that analytics systems have immediate access to the very latest production data. “That means managers are always basing their decisions on reports containing the freshest information available,” Colgan observes. They can also ask far more questions than before because they’re getting the answers back almost instantaneously in some cases, she adds, noting that a manager who could formerly execute 20 queries a day might suddenly be able to perform 20 an hour instead. “The opportunity for the analyst to improve the business is huge because they can run so many more what-if scenarios,” Colgan says.

And that’s ultimately what’s most compelling about Oracle Database In-Memory option—not just the technical advantages it provides but its potential impact on growth, efficiency, and profitability too. “You can learn and do radically more in the same amount of time,” Colgan says. That can’t help but have comparably radical, and welcome, effects on the bottom line.

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