

AMD64 TECHNOLOGY ENHANCES MICROSOFT'S CUSTOMER SERVICE AND COMPETITIVE EDGE

The AMD Opteron™ processor enables Microsoft's Volume Licensing Business Tools and Analytics group to analyze information 99 percent faster and gain unprecedented visibility into sales data.

THE CHALLENGE

- Drive \$15 billion (U.S.) of business with more accurate quotes to customers, faster
- Make pricing information available quickly in an easily accessible format to any user regardless of location
- Enable licensing team to determine market trends proactively and price products more competitively
- Deploy an automated solution for accessing product pricing information seamlessly worldwide

THE SOLUTION

- Microsoft created a smart client application called Easy Pricing and Estimation Tool (EZPET 2.0)
- Deployed application using AMD Opteron™ processor-based database, Web and analysis servers
- Utilize 64-bit AMD technology with Direct Connect Architecture for greater bandwidth
- Memory headroom to store data sets completely in RAM

THE IMPACT

- Estimated savings of \$27 million over a six-month period
- 99 percent improvement in the time it takes to analyze sales against prices
- Increasing customer satisfaction with price quotes generated in minutes rather than hours—online or offline
- More accurate and timely information for licensing executives and specialists and enterprise customers

For a customer-facing organization, success is measured by the last customer interaction. Constant improvement in customer service and care is vital to long-term success, particularly in highly competitive markets. The Volume Licensing Business Tools and Analytics group at Microsoft is a case in point. The group provides the support that licensing specialists need to prepare product price quotes for Microsoft enterprise customers. "The ultimate vision of constantly improving customer satisfaction demands we give Microsoft, its partners and customers a higher caliber of analytics and tools, the kind only possible through the power of 64-bit hardware," says Brent Callinicos, Corporate Vice President, Worldwide Licensing and Pricing.

The group is responsible for creating the tools and analytics that support Microsoft sales representatives

in the field and the executives who make decisions about the company's pricing and licensing strategies. The group, which handles Microsoft's largest customer relationships, was responsible for driving \$15 billion (U.S.) of business for Microsoft in 2004—about half the company's total revenue.

"Technology leadership is about driving business intelligence solutions that can scale," remarks Callinicos, "With over \$15 billion in revenue annually, our business relies on the power and performance only x64 can deliver."

The Volume Licensing Business Tools and Analytics group wanted to enable licensing specialists to get more accurate quotes into the hands of customers faster, and be able to analyze customer data to price products more competitively. Its solution was to build and deploy the



THE END-USER EXPERIENCE

The EZPET application has been a boon to Microsoft licensing specialists, who meet with customers to learn about their unique requirements from a licensing perspective, then determine which of Microsoft's licensing vehicles is the best solution. This is no easy task.

"Microsoft's licensing programs are very flexible and require customization," says Steve Malone, Senior Licensing Specialist within the North Central District of Microsoft.

"They become complex when we work to meet the unique requirements of all our customers. We have such a broad range of products and our customers have such a broad range of adoption of our technology. We need to develop solutions around licensing that best meet the needs of our customers."

To generate quotes using EZPET, specialists access pricing information from a 64-bit Microsoft SQL Server 2005 database that stores millions of price points. "The database is growing all the time as more products come and customers ask for different types of licenses," Malone says.

EZPET has made it much easier for Malone and other specialists to generate timely quotes for customers. Prior to using the application, specialists used a manual process involving spreadsheets of pricing data that they presented to customers.

"The spreadsheets were great from a standpoint of putting all

the information in, but they didn't tie back to this huge database of products," Malone says. To maintain and update the data was a challenge because of constant price changes. "There was no easy way to go back and update that information," he says. "And generating a proposal was a very manual process that took several hours. To do a proposal today takes just minutes."

Malone and other specialists had asked for a tool that would automate the process of generating quotes, and he helped the development team that created EZPET.

The speed and functionality of the 64-bit AMD Opteron processor-based platform helped get EZPET out to users quickly and will help with future upgrades. "We needed to find a way to update this tool and send information out to the field very efficiently," Malone says. "The only way we could really accomplish that is through the new 64-bit technology."

Malone estimates he saves an average of three hours per month using EZPET compared with the spreadsheet-based process. "I've done some very complex quotes in a matter of minutes, where before it would take me hours," he says. "This has given me time to reinvest in our customers, to build a better relationship with customers."

And on a personal level, the technology has given Malone something even more valuable: additional time to spend with his family.

Easy Pricing and Estimation Tool (EZPET 2.0) on the 64-bit AMD Opteron processor-based server platform.

The EZPET ecosystem today includes AMD Opteron processor-based database server, data analysis server and Web server. Among the key benefits of the application:

- It now takes minutes rather than hours to generate a quote
- Licensing specialists around the world can generate their own quotes in minutes—online or offline
- The group saved \$27 million in the first six months of use
- The time that has been freed up can be used to generate more sales

The AMD Opteron processor's enormous memory bandwidth and speed play key roles in the success of EZPET.

The Challenge: Need for Automation

Microsoft Licensing Executives and Specialists were generating enterprise agreement quotes through a cumbersome process that was based on spreadsheets and pulling data in manually from multiple price lists. To make matters worse, pricing spreadsheets were only available to Microsoft operations in the United States. Licensing specialists outside the U.S. had to request

price lists from a Web site then wait for the list to arrive via email.

The process was extremely time consuming. Today, there are more than four million active price points for Microsoft products, so generating was a painstaking endeavor that ate up many hours that could have been spent more productively.

The Volume Licensing Business Tools and Analytics group needed to automate the enterprise price-quoting process so it could be more efficient. Specialists would have access to the most up-to-date information possible on Microsoft products and pricing. The automation solution would have to be deployed seamlessly across the organization worldwide so as not to interrupt day-to-day business.

Initially, the group developed a Microsoft ASP.NET-based application modeled after the business rules of the existing pricing spreadsheet, with streamlined information delivery and access. But licensing executives and specialists—who frequently work outside the office and offline—wanted the new application to be accessible offline as well as online. That would give them access to information regardless of their location.

"Our sales people all work out of their homes and travel to customers more than half of their time," says Director of Volume Licensing for the U.S. field, Gavriella Schuster. "In order to enable them to continue working



even when they are not connected to the corporate network, they needed to be able to generate customer quotes offline. We needed to maximize their offline capabilities to maximize their productivity."

The Solution: A 64-Bit Ecosystem

The group's development team created a Microsoft Office smart client application called Easy Pricing and Estimation Tool (EZPET 2.0) in only three months, using .NET Framework 2.0 with the C# programming language and the Beta 1 version of Microsoft Visual Studio 2005.

The application, now running on the AMD Opteron platform, provides about 1,000 Microsoft licensing

The ability to store data sets offline is vital to the success of EZPET, because when data is stored locally the application can be used offline, says Quentin Hurd, product manager responsible for Quantitative Analytics and Tools with Microsoft's Worldwide Licensing and Pricing organization.

After initial development work on EZPET was completed, the Volume Licensing Business Tools and Analytics group deployed the application for testing by using ClickOnce, a Microsoft Smart Client Center deployment technology that allows self-updating Windows® applications to be installed and run with minimal user interaction.

Developers updated the application based on feedback from the pilot deployment, then EZPET was deployed at Microsoft facilities worldwide. The three-month development period included one month for up-front development, another for pilot testing, and a third for making changes and additional testing before the rollout. To install the application, users access a Web site on the local server and only need to click once to install all of the prerequisites that launch EZPET. The application launches through ClickOnce from an AMD Opteron processor-based server running Microsoft Windows® Server 2003 Enterprise

x64 Edition with Microsoft Internet Information Services 6.0, the built-in Web server.

AMD 64-bit technology was critical to the success of EZPET, delivering the processing capabilities and memory bandwidth needed to run the application effectively today. The AMD Opteron processor delivers the memory bandwidth, addressability and speed required to power EZPET, Hurd says.

"It was the 64-bit technology that sped our analysis work up so much that we were able to leverage these incredible efficiencies in terms of reducing our data sets down to one that's manageable, and small enough that we can actually take the customer offline," Hurd says. "Being able to go offline is what delivers us the cost savings, and that was delivered by the 64-bit technology."

The Impact: Business Benefits

EZPET gives licensing executives and specialists at Microsoft a solution that automates enterprise price-quote generation and helps streamline the licensing process. Among the key business benefits for Microsoft are improved customer service, more timely

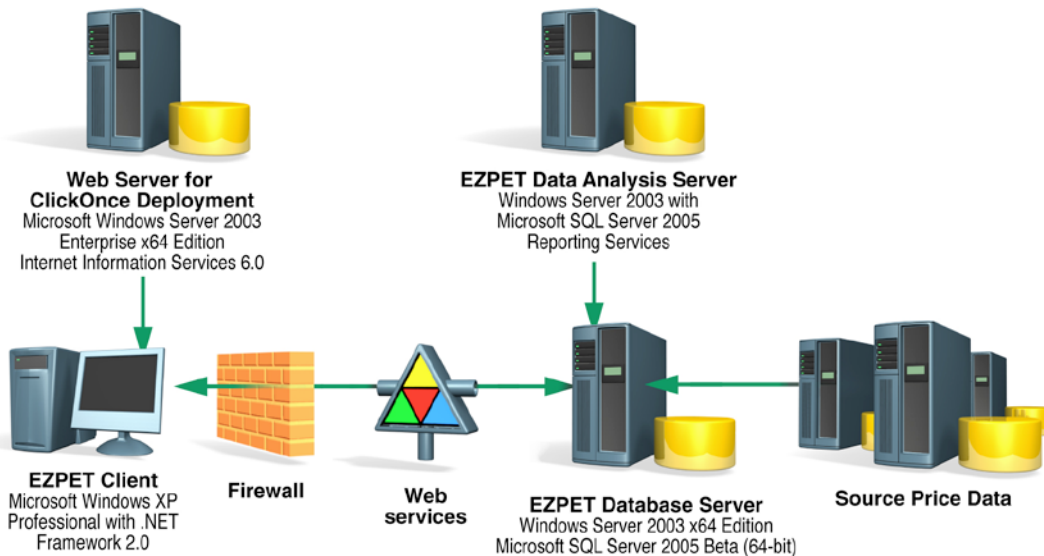


ILLUSTRATION BY JOHN KOCON

executives and specialists worldwide with the ability to select prices, find attributes that define the price of a product, and automatically prepare quotes for customers. Using EZPET, all employees—regardless of their location—can prepare quotes whether they are working online or offline.

EZPET accesses pricing information from a database of some 4.6 million active price points—about 21GB of data and growing—and stores it in a 64-bit Microsoft SQL Server 2005 database on an AMD Opteron processor-based server running the Microsoft Windows® Server 2003 Enterprise x64 Edition operating system. The database converts the information into smaller and more easily managed sets of data that can be delivered via Web services to the client tier, an application based on Visual Studio 2005 with Windows® Forms.

A separate analytics tier receives XML-formatted business components from the client tier. With SQL Server 2005 Reporting Services, users of the system can aggregate and analyze data to track customer buying patterns. This enables Microsoft to be more flexible in setting prices of products and meeting market demand.



and accurate information on product pricing, faster completion of sales, and an increased competitive edge through faster data analysis.

Price quotes are now generated in minutes rather than hours, increasing customer satisfaction and freeing up licensing specialists to conduct other revenue-generating activities. Microsoft estimates that specialists in the field can save about three hours per month using EZPET compared with the spreadsheet-based process. Based on the number of people using the application, Hurd estimates that EZPET helped the field save about \$27 million over a six-month period.

Because licensing specialists and executives around the world have easy access to EZPET, they can serve customers better, with more accurate and timely information. They can provide more consistent service regardless of their location, and close sales much more quickly. "Users at the desktop level are always accessing the most current data," says Hurd.

Specialists and executives can gain access to data analysis in minutes rather than hours, and use this information to make more informed decisions about pricing and quotes to enterprise customers. This gives Microsoft a significant competitive advantage.

"With the advent of the AMD Opteron 64-bit processor, Windows® 64 bit and SQL 2005 64-bit edition, we're able to see an actual 99 percent improvement in the time it takes to run our most valuable queries to analyze sales against prices," says Hurd. "In other words, it takes only 1 percent of the time to get that answer, and it's a very complex answer that gives us visibility clear to the actual price-point level. That's something that never has been attempted at Microsoft in the past, and it really is attributed to the 64-bit improvement."

AMD 64-bit technology has also helped Hurd to be more responsive to internal stakeholders. "We're able to be agile," he explains, "in terms of responding to executive demands for answers around what's going on with the data. The ability to work on on-demand projects, and the ability to just pull data in and start working on it—without worrying about the 4 gigabyte [memory] limit on 32-bit servers—really speeds us up. ... It actually improves performance across the board on a lot of different tools."

The technology upgrade has had a huge impact on Microsoft's licensing specialists as well. "We work with such a large amount of data, and now we're able to split that data up into manageable segments and decipher that information very quickly," says Steve Malone, senior licensing specialist within the North Central district of Microsoft. "In the 32-bit world, we couldn't have done this. With the use of 64-bit technology we're able to achieve the results we're seeing today."

The total cost of ownership of the EZPET ecosystem,

DIRECT CONNECT ARCHITECTURE

Direct Connect Architecture is the cornerstone of AMD64. It helps eliminate the bottlenecks inherent in yesterday's front-side bus designs by directly connecting the processors, the memory controller, and the I/O to the CPU. The result—overall system performance and efficiency get a significant boost.

Across the AMD64 platform, Direct Connect Architecture:

- Addresses and helps reduce the real challenges and bottlenecks of system architectures
- Directly connects memory to the CPU, optimizing memory performance
- Directly connects I/O to the CPU for more balanced I/O
- Directly connects CPUs to CPUs, facilitating more linear symmetrical processing

including the database server, Web server and data analysis server, is low compared with the business gains. The processing and availability of 4.6 million product price points to field sales employees—enabling them to efficiently conduct sales—is done with a small amount of affordable hardware.

The Future

In the future, Microsoft could adapt the EZPET tool for a variety of mobile technologies and devices—such as SmartPhones, laptops and tablet PCs—making it even more available to mobile workers.

Microsoft also plans to take advantage of the performance improvements offered by the Dual-Core AMD Opteron processor. This processor extends the AMD Direct Connect Architecture by connecting two CPUs on one die, giving a significant boost to total system performance and efficiency—particularly while running multiple or multi-threaded applications. The Dual-Core AMD Opteron processor also offers higher performance per watt, which helps to eliminate thermal and environmental issues.

But Microsoft doesn't have to wait to see the benefits of EZPET and the latest AMD processor technology that supports the application. Many other businesses could benefit too, Hurd says.

"Companies all over the world can invest in hardware that is going to enable them to make database-driven decisions, and not just guess," he says. "And with the costs of these servers having come down so much in the last 10 years, not doing so is fiscally irresponsible."

