



September 2005

Document **F55**

## **ROI EVALUATION REPORT MICROSOFT SQL SERVER 2005**

### **THE BOTTOM LINE**

**Microsoft SQL Server 2005 is a significant product release that delivers new categories of benefits over previous versions of the product. With a centralized management console to streamline database administration, new business intelligence capabilities that extend data delivery to a wider set of users, new tools that enhance developer productivity, and new data integration capabilities that can lower the cost and reduce the complexity of incorporating data sources into business applications, the product delivers significant benefits to both IT organizations and business users.**

Microsoft SQL Server 2005 is a data management and analysis software solution that provides the following core capabilities:

- **Relational Database.** A relational database management system (RDBMS) with online transaction processing (OLTP) capabilities supports business applications, business intelligence functionality including online analytical processing (OLAP) and data warehousing, mobile (PDA) support, integration through Web services, and escalation/notification services.
- **Integration Services.** An extract, transformation, and load (ETL) data integration platform with tools for building applications enables integration of business data from multiple sources.
- **Analysis Services.** A server for online analytical processing (OLAP) and data mining includes a graphical toolset for organizing and presenting aggregated data to business users.
- **Reporting Services.** Users can create, manage, and deliver reports and publish them in multiple formats via the Web, email, and portals.
- **Notification Services.** Applications built with notification services alert users when events occur, such as the change in a stock price, and deliver the updated data to the subscriber's email, cell phone, or desktop.
- **Replication Services.** Data can be distributed across multiple databases for greater end user access.

This report explores the costs and benefits associated with a Microsoft SQL Server 2005. The accompanying Nucleus Research financial modeling tool can be used to calculate the ROI, TCO, payback period, and risk of a SQL Server 2005 deployment in a specific user environment.

**Corporate Headquarters**  
Nucleus Research Inc.  
36 Washington Street  
Wellesley MA 02481  
Phone: +1 781.416.2900  
Fax: +1 781.416.5252

**Europe, Middle East, Africa**  
Nucleus Research EMEA  
17a rue Pavée  
75004 Paris FRANCE  
Phone: +33 1 42 77 75 38

**Nucleus Research Inc.**  
[www.NucleusResearch.com](http://www.NucleusResearch.com)

**RELATED RESEARCH**

- E93 Market Scorecard - Business Intelligence
- E53 Vendor ROI Score: Microsoft Business Intelligence
- E16 Microsoft Business Intelligence Case Study: Gulf DTH Showtime
- D19 Microsoft Business Intelligence Case Study: Superior Propane
- D14 Microsoft Business Intelligence: ROI Evaluation Report

Microsoft SQL Server 2005 provides enhancements in four key categories, further extending the benefits of the product to deliver greater business value to a wider set of business users. Key enhancements in Microsoft SQL Server 2005 include:

- **Enterprise data management.** The addition of new features for database mirroring and failover clustering provide additional safeguards to minimize downtime and increase the reliability and availability of business applications to users. An enhanced security model provides developers with greater controls to manage access and protect the integrity of the data. New features such as data encryption, secure default settings, and fine-grained permissions control provide developers with additional tools for protecting business data against security breaches. Database administrators now have a unified integrated suite of tools, called SQL Server Management Studio, for executing administration management and programming tasks. New functionality for enhanced self-tuning, and enhancements to the SQL Profiler, expand the monitoring capabilities beyond database events to include analysis and integration services.
- **Interoperability.** Web services support has been extended to allow interfaces to be built between SQL Server and non-Windows applications. This makes it possible for the data within a SQL Server database to be connected to a wider set of corporate systems, and accessible to a greater number of business users. Improvements in both homogenous and heterogeneous data replication include synchronizing offline data with mobile user databases over the Internet and an Oracle publishing feature that enables Oracle databases to be replicated into SQL Server.
- **Development enhancements.** SQL Server 2005 extends the number of data types the database can store and manage, and has enhanced its development tools to streamline the creation of database and business intelligence applications and data warehouses. The most significant enhancement for developers is the integration with the Microsoft .NET framework. Developers can use the Microsoft Visual Basic 2005 programming tools to build database applications, and take advantage of the Common Language Runtime (CLR), which widens the number of programming languages developers can use to build applications. SQL Server 2005 supports XML data natively and allows developers to integrate XML data with other data types within the database. Support for the XML Query Language, XQuery, enables the ability to search and retrieve XML data stored in the database.
- **Business Intelligence.** Expanded capabilities, including a new reporting server, provide a full-featured business intelligence platform that addresses online analytical processing (OLAP), data mining, ETL, data warehousing, and end user report creation. Integration with the Microsoft Office system enables reports to be opened with Microsoft Word and Microsoft Excel, and also enable reports to be published on a Windows SharePoint Services portal.

**KEY BENEFIT AREAS**

Nucleus Research has identified two key areas where Microsoft SQL Server 2005 can deliver returns: improved technology management and increased business performance.

### **Improved technology management**

Microsoft SQL Server 2005 can help companies achieve a positive ROI by speeding the delivery of business applications, and reducing the cost and complexity of maintaining those applications on an ongoing basis. The combination of delivering a reliable, high-performance database platform at a lower cost than competitive solutions, can result in reducing technology costs and driving an aggressive payback period for an investment in SQL Server.

Microsoft SQL Server 2005 includes new functionality that can further reduce the ongoing IT requirements for building database applications and managing database activities by increasing developer productivity, increasing system reliability and availability, and providing extended capabilities that can reduce an organization's ongoing license and maintenance costs. Returns from improved technology management impact IT costs first, and then extend out to the business users as IT can better respond to business change. Business users ultimately benefit from improved access to business data through new applications and business intelligence tools, and reduced system downtime that minimizes productivity disruptions.

Increased reliability and availability features in the SQL Server 2005, including database snapshot and database mirroring, enhance backup and recovery operations and provide database administrators with additional options for maintaining system uptime. Database mirroring enables a synchronized copy of the database to be kept on another server, with the facility to switch over to enable automated fail over services should a problem arise. By employing these technologies, companies can alleviate unplanned downtime that negatively impacts employee productivity, and revenue, when mission-critical applications cannot be accessed.

Koehler Paper, a German specialty paper manufacturer, runs its SAP business applications on the 64-bit version of Microsoft SQL Server. With the enhanced features in SQL Server 2005, the company will have an improved failover system that will be easier to manage than its previous DB2 shadowing system, and provide enhanced availability for its critical SAP applications.

### **Reduced infrastructure costs**

SQL Server 2005 contains built-in business intelligence features, including ETL, OLAP, data mining, and reporting, that can help businesses realize real value from their data almost immediately. The inclusion of enterprise reporting capabilities that allow end users to build reports themselves extends the number and category of users who can take advantage of SQL Server's analysis capabilities. Wizards guide the user through the report creation process, and integration with the Microsoft Office system enables users to move data to and from the most familiar reporting tool, Microsoft Excel, and expand their expertise into additional reporting formats. Many companies that have developed pockets of reporting tools in different departments are moving to consolidate on a single tool to provide consistency in reporting, easier report roll-up for an enterprise view of operations, and the desire to lower report software license and maintenance costs. Reducing the number of corporate applications lessens the technology management burden by simplifying the infrastructure that IT needs to support on an ongoing basis.

Summit Partners, a private equity and venture capital firm, standardized on Microsoft SQL Server 2005 Reporting Services and realized cost savings of thousands of dollars in annual licensing and maintenance costs by retiring disparate reporting tools. In addition, Summit can now create reports 50 percent faster than it could with its previous tools.

Savings can also be achieved by SQL Server's inclusion of key capabilities—relational database, OLAP, ETL, reporting—within an integrated platform. This approach eliminates the time and expense of piecing together separate products to build a comparable solution.

Another key potential hard cost savings is reduced hardware costs through server consolidation. Because SQL Server is part of the Windows Server System, companies can usually reduce the number of servers needed to run line of business (LOB) applications, helping to save hardware, server software, and ongoing maintenance costs.

#### Developer productivity

Development enhancements in SQL Server 2005 provide developers with new tools to increase productivity and reduce development costs. Faster development, and support for a wider set of data types, results in richer applications that can be put to use more quickly to drive business operations. Beta customers of SQL Server 2005 reported significant decreases in development time and costs by taking advantage of the integration with the Microsoft .NET framework toolset. With support for XML data types and the common table expression feature, SQL Server 2005 has reduced development time for the IT staff by lowering the amount of custom code that has to be written, tested and maintained. For some projects, the programming time has been reduced from weeks to days.

#### Improved data integration

SQL Server 2005 Integration Services provides tools for locating, mining, cleaning, and processing data for delivery to data warehouses, mobile devices and business intelligence applications. Using the graphical design tools in the Business Intelligence Development Studio, developers have full ETL capabilities to build, debug, and deploy data integration services. Business users benefit as they have access to a wider set of business data that can be delivered quickly through ad hoc queries or reports and used for improved business decision making.

Key returns from improved technology management include:

- Decreased development time
- Decreased development costs
- Reduced/redeployed development staff
- Reduced database administration costs
- Reduced integration costs
- Reduced hardware costs
- Reduced license costs
- Reduced maintenance costs

### **Increased business performance**

As companies deploy CRM, ERP, and other enterprise applications to improve business efficiency, the volume of transactional and operational data contained in these systems has also increased. The potential benefits from exploiting this data can be significant, and many organizations deploy business intelligence applications and construct data warehouses to improve the accessibility and analysis of business data throughout the organization.

SQL Server 2005 helps users analyze data through a number of different methods. The OLAP engine allows users with minimal database experience to build reports analyzing large amounts of customer or other types of data. Such analysis can lead to unpredicted insights into such areas as customer profitability, supply chain metrics, and hidden business opportunities. With faster access to key business data, companies have a greater ability to anticipate and meet spikes in product demand and business growth.

Improved information organization and access for business intelligence can impact the bottom line by improving business activities, which can lead to higher revenue and increasing profit margins. Microsoft SQL Server technology can simplify the process of data mining and analysis, providing a cost effective solution that widens access to information. Improved information access can enable employees to make informed business decisions that can reduce operational costs and improve profitability.

New reporting capabilities in SQL Server can lower the costs of report generation and enable company data to be organized and presented in a meaningful context to a wider audience, by allowing users to generate queries and reports on their own. This reduces the time IT staff spend on building reports for end users, and also increases the speed in which business users can put that data to use. A new report generator, called Report Builder, allows end users to build reports by selecting data categories, timeframe parameters, and choosing a report template to display the data. The drag and drop environment enables users to easily create reports without having to understand the underlying database structure, and security measures can be enacted by the administrator to ensure that users only have access to data they are authorized to see.

One method to quantify the benefit of BI and data warehousing is to evaluate the length of time it would take personnel to create reports by manually collecting the data. This can provide an accurate assessment of the costs avoided by utilizing an automated data analysis and reporting system. The ROI tool included with this report will assist with these calculations.

As companies have increased their reliance on software to run their business operations, system crashes and glitches have become one of the major impediments to employee productivity. When the system is down, business can grind to a halt. The reliability and availability features of SQL Server 2005, and the product's ability to support heavy transaction processing volumes on business critical operations, are other key components of the product's ability to deliver business performance benefits. For example, Microsoft runs its core SAP business applications on SQL Server 2005. The applications handle mission critical

operations such as finance, sales and distribution, payroll, and supply chain management, with a transaction level of 20 million a month and 300,000 per day. Microsoft's IT group migrated its 1.7 terabyte database to the beta release of SQL Server 2005 and experienced 33 days of uptime before a planned maintenance shutdown. Database mirroring and online indexing are the key features driving high availability as the database can be re-indexed and refragmented without having to take the system down. Database mirroring provides a standby system that can automatically take over the transaction load should something happen to the primary system.

Key returns from increased business performance include:

- Increased profits from incremental revenue
- Increased staff productivity
- Reduced or managed time to market
- Reduced customer care costs
- Increased customer retention

### **KEY COST AREAS**

Deploying SQL Server 2005 entails a number of one-time and ongoing costs that organizations need to consider when evaluating the potential impact of an investment. Specific calculations for the expenses associated with each cost area should be entered into the financial modeling tool tied to this report.

#### **Software**

Companies deploying SQL Server 2005 will need to consider the combined cost of SQL Server licenses, and licenses for supporting server software.

Microsoft offers two different types of licensing schemes for SQL Server 2005: processor licenses and server licenses. There are four editions of the product: SQL Server 2005 Enterprise Edition, SQL Server 2005 Standard Edition, SQL Server 2005 Workgroup Edition, and SQL Server 2005 Express Edition.

SQL Server must be run on a Windows Server platform, so the cost of that software must be taken into account as well. In cases where a company's investment in Windows Server 2003 is driven in part by other projects, only an appropriate fraction of the additional software should be figured into the ROI calculations. If Windows Server has already been purchased for other purposes, the cost should be omitted altogether, though most companies typically run SQL Server on a standalone Windows server.

#### **Hardware**

The number of CPUs and physical servers needed to support a SQL Server 2005 deployment will depend on the number of users, performance and uptime goals, and the type of hardware chosen to support the database.

At the very least, it will be necessary to purchase a basic Windows server to run SQL Server. All organizations, no matter how small, should also strongly consider a hardware backup system, such as a tape drive, to ensure the preservation of critical data. As databases grow larger and more complex, hardware requirements

can quickly escalate from there. Companies with large, mission-critical databases that are accessed by many users must consider investments in multiple-CPU servers, failover clustering systems, backup and replication systems, and sophisticated storage area network (SAN) devices.

When evaluating which hardware investments to enter into the ROI workbook, it is important to consider all of the hardware that will support SQL Server as well as any additional hardware necessary to run applications built to access the database. Organizations that are able to use hardware already on hand or those that will reduce their total number of servers through a SQL Server deployment should not enter any costs into the hardware section of the accompanying ROI tool.

### **Consulting**

An organization's spending on consulting will depend on the deployment scenario, the level of internal expertise, and regional variations in consultants' hourly rates. In most cases, consulting engagements should be less extensive than for competing products because Microsoft-skilled IT workers are available at lower costs and because SQL Server 2005 can be installed with relative ease. However, because consulting has the potential to become a substantial portion of the total budget, decision makers should not make a purchase decision until gathering firm estimates from at least two potential contractors.

### **Personnel**

In addition to the IT staff time devoted to deployment, SQL Server 2005 will require an ongoing administrative commitment. The exact commitment will depend most on the size and complexity of the databases as well as the number of users accessing the information contained therein.

### **Training**

How much training IT personnel and DBAs will potentially need will depend largely on two factors: how much general database programming and administration experience and how much Microsoft-specific database experience they have. Though SQL is the semi-standard language of all databases and though users of one database system can often transfer their skills to another, each vendor's system has its own customized features. Thus, IT personnel with database experience on systems other than Microsoft SQL Server will require less training than those with no database experience whatsoever, but more than those with Microsoft-centric knowledge.

Companies that plan to develop applications in-house need to also consider the training costs associated with a database system's development environment. Managers should consider the cost of hiring developers with database-specific development experience.

## **DEPLOYMENT STRATEGIES**

The method for deploying SQL Server 2005 will vary from company to company, depending on their current environment and future requirements. When considering a SQL Server deployment, companies need to carefully plan out a deployment strategy specific to their needs and then evaluate costs associated with that strategy.

**New Installation**

Without a need to migrate existing data, companies may plan a SQL Server project thinking that a fresh install can be undertaken fairly quickly. However, beginning a database project from scratch can greatly benefit from careful planning and strategizing before installation. If the organization does not employ experienced DBAs, it should consider hiring some or engaging consulting services to map out business processes, create underlying data structures, and program the database. Before moving forward with a SQL Server project, companies need to evaluate the potential cost of hiring DBAs or at the very least, programmers to get the database up and running. The included ROI tool includes features to facilitate these calculations.

**Upgrading from SQL Server 2000**

Microsoft SQL Server 2005 includes tools to provide guidance on migrating data from SQL Server 2000. The Upgrade Advisor analyzes the installed SQL Server 2000 databases and services, generates a report that identifies potential risks issues that should be addressed during the SQL Server 2005 upgrade process, and provides suggested solutions and fixes. When moving to SQL Server 2005, options are provided for an automated upgrade, or a manual migration process. The upgrade converts the old database to the new format. In the migration process, a DBA can oversee and verify the data and metadata being moved, and use migration wizards that guide them through the process. This option keeps the original database intact until the DBA manually removes it.

**Switching from IBM DB2 or Oracle**

Companies migrating from a RDBMS such as IBM DB2 or Oracle will also need to consider how to migrate objects such as stored procedures, indexes, and optimized queries. Microsoft provides a migration tool, call the Microsoft SQL Server Assessment Assistant that helps to automate the process of an Oracle to SQL Server migration. Again, the potential cost of the internal and external resources needed to conduct a migration need to be calculated when evaluating ROI.

**Upgrading from a flat file database**

Companies that are upgrading from a flat file database will need to put varying levels of effort into deployment depending on the nature of their current systems and their current investment in a Microsoft-centric infrastructure. SQL Server 2005 can facilitate the process of transferring data from a host of flat file databases to SQL Server. Nevertheless, this is not a process to be taken lightly. IT administrators need to carefully plan out a migration strategy before moving mission-critical data, being particularly careful to evaluate how data types will translate from their original system to SQL Server.

The time and effort required to migrate to SQL Server 2005 can have a significant impact on a project's ROI, so it is important to carefully estimate the internal personnel commitment as well as any consulting services that will be needed. The accompanying ROI tool allows these estimations to be entered into the ROI equation.

**Deploying Business Intelligence capabilities**

The business intelligence components of SQL Server, which include Integration Services, Analysis Services, and Reporting Services, can be used to mine, analyze, and report on data drawn from multiple systems, including databases such as Oracle and DB/2. While most customers will use the BI tools in SQL Server to build analytical applications drawing on data contained in Microsoft applications and databases, it also has the capability to extract and transform data from applications that store data in mainframe, UNIX, and Linux systems. With the inclusion of end user report building tools in this release, SQL Server has added a key component that completes its ability to serve as a full purpose BI platform, which could be deployed as a replacement for competitive products from vendors such as Cognos and Business Objects.

**CONCLUSION**

Microsoft SQL Server 2005 is a significant product release that delivers new categories of benefits over previous versions of the product. With a centralized management console to streamline database administration, new business intelligence capabilities that extend data delivery to a wider set of users, and new data integration capabilities that can lower the cost and reduce the complexity of incorporating data sources into business applications, the product delivers significant benefits to both IT organizations and business users.

Organizations of all kinds considering an investment in SQL Server 2005 should use the associated financial modeling tool to quantify the potential costs and returns from a deployment in their environment.