

June 2007

MANAGEMENT BRIEF

**VALUE PROPOSITION FOR IBM SYSTEM i
Cost/Benefit Case for JD Edwards EnterpriseOne
Deployment in Small Businesses**



International Technology Group

4546 El Camino Real, Suite 230
Los Altos, California 94022-1069

Telephone: (650) 949-8410

Facsimile: (650) 949-8415

Email: info-itg@pacbell.net

Copyright © 2007 by the International Technology Group. All rights reserved. Material, in whole or part, contained in this document may not be reproduced or distributed by any means or in any form, including original, without the prior written permission of the International Technology Group (ITG). Information has been obtained from sources assumed to be reliable and reflects conclusions at the time. This document was developed with International Business Machines Corporation (IBM) funding. Although the document may utilize publicly available material from various sources, including IBM, it does not necessarily reflect the positions of such sources on the issues addressed in this document. Material contained and conclusions presented in this document are subject to change without notice. All warranties as to the accuracy, completeness or adequacy of such material are disclaimed. There shall be no liability for errors, omissions or inadequacies in the material contained in this document or for interpretations thereof. Trademarks included in this document are the property of their respective owners.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
IBM SYSTEM I PLATFORM	2
Core Strengths	2
<i>Overview</i>	2
<i>Platform Differentiators</i>	3
High Availability	5
<i>Costs and Benefits</i>	5
<i>Business Drivers</i>	5
<i>Platform Differentiators</i>	6
<i>User Experiences</i>	7
Conclusions	7
ENTERPRISEONE	8
Business Gains	8
Key Technologies	10
DETAILED DATA	11
Company Profiles	11
Cost Calculations	12
Cost Breakdowns	13

List of Figures

1. Startup Costs for IBM System i and Windows Server Platforms Supporting EnterpriseOne Systems: Profile Companies	2
2. Overall Three-year Costs for IBM System i and Windows Server Platforms Supporting EnterpriseOne Systems: Profile Companies	4
3. Online Order Activity: Distributor Example	5
4. Representative Causes of Planned Outages: Windows Servers	6
5. Increased Operational Efficiencies Realized by EnterpriseOne Users	8
6. Business Gains Realized by EnterpriseOne Users Through Improved Use of Information	9
7. Business Gains Realized by EnterpriseOne Users in Specific Functional Areas	9
8. Detailed Data: Company Profiles	11
9. Detailed Data: Cost Breakdowns	13

EXECUTIVE SUMMARY

Why should a small business deploy an enterprise resource planning (ERP) system? Among those that have done so, simple answers emerge. To improve efficiency and reduce costs. To respond faster and more effectively to customer needs and market conditions. To grow. Capabilities that have benefited larger companies can provide new and powerful forms of competitive differentiation to small businesses.

This report deals with a new way of realizing such gains – Oracle’s JD Edwards EnterpriseOne ERP system, deployed on the IBM System i platform. Until recently, both of these were employed primarily in midsize and large companies.

Two recent developments, however, have changed this picture. First, Oracle’s Accelerate program enables smaller companies to implement preconfigured industry-specific EnterpriseOne solutions in a fraction of the time, at a fraction of the cost of conventional ERP deployments.

Second, IBM introduced new, aggressively priced entry-level models of the System i platform, the 515 and 525, in April 2007. This report focuses on the 515, which is aimed at organizations with fewer than 40 users. Lower long-term operating costs are combined with acquisition and startup costs that are competitive with those of Intel-based Windows servers equipped with Microsoft SQL Server.

This is illustrated by comparisons of configurations, staffing levels and costs for EnterpriseOne systems in three profile companies – a homebuilder, a manufacturer and a distributor – which are presented in this report. These companies employ from 50 to 150 people, and have between 15 and 35 system users.

Cost comparisons show the following results:

- **Startup costs**, including hardware and software acquisition, installation and setup, average \$22,039 for Windows server and \$22,661 for System i 515 platforms. For practical purposes, startup costs are the same.
- **Operating costs**, including hardware maintenance, software support, and personnel for system and database administration, show wider variances over a three-year period. Windows server costs average \$98,160, while System i 515 costs average \$51,822; i.e. 47 percent less.

Maintenance costs for Windows and System i 515 platforms are generally similar, while software support costs for the latter are marginally less. Full time equivalent (FTE) staffing for System i environments is, however, less than half that for Windows server equivalents. This is reflected in significantly lower personnel costs.

- **Overall costs**, including startup and three-year operating costs, average \$120,199 for Windows server and \$74,483 for System i platforms; i.e. System i 515 costs are 38 percent less.

These costs are for underlying server and database platforms and do not include costs of acquiring, implementing and supporting EnterpriseOne applications software. They highlight, however, the fact that the System i offers EnterpriseOne users the potential for significant cost savings over time.

Cost savings, however, is only part of the picture. Companies that have deployed EnterpriseOne on the System i report that it also offers superior levels of availability – meaning the ability to maintain high levels of uptime, often on a 24x7 basis – and of stability, security, and backup and recovery capability.

The combination of EnterpriseOne and the System i platform represents an opportunity for small business not only to acquire the functionality of an enterprise-class ERP system, but also to deliver the same quality of service to customers and partners as their larger competitors.

IBM SYSTEM I PLATFORM

Core Strengths

Overview

For more than 20 years, the IBM System i and its predecessors have been among the most popular systems employed by midsize companies to run their core business applications. More than 250,000 are installed worldwide. More than 2,000 EnterpriseOne users run their systems on this platform.

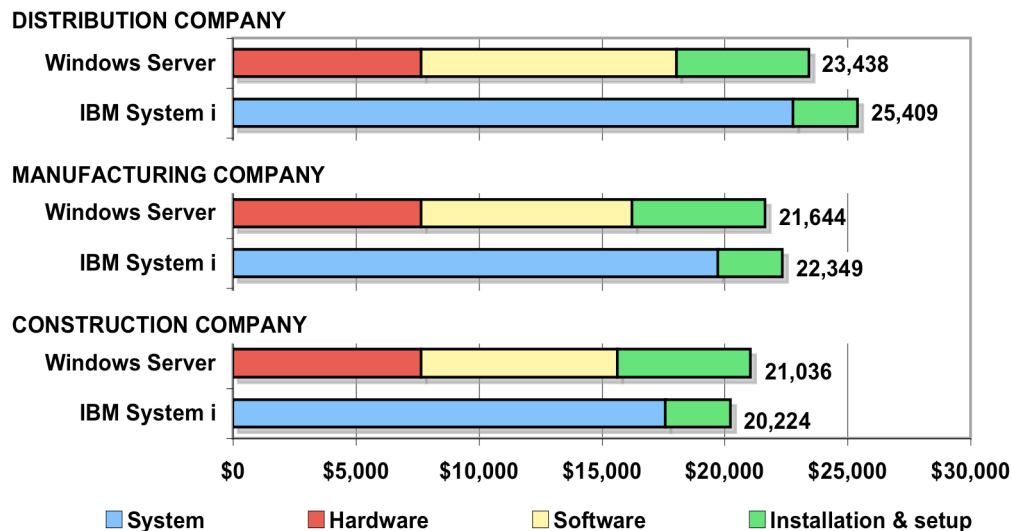
The continued appeal of the System i reflects multiple factors. One is that it has evolved to implement new technologies. It employs industry-leading reduced instruction set computing (RISC) processors, and supports the industry's principal open systems standards, including SQL, Java, Web Services, PHP and the full Internet protocol stack. There have been no lags in technological currency.

A second factor has been that the characteristics of the System i make it particularly attractive to small and midsize users with small IT staffs and limited resources.

A highly integrated operating environment, simplified administrator interfaces, extensive automation, and distinctive strengths in availability, security, virus protection and other areas shield users from many of the complexities of Windows server environments. As a result, many of the problems associated with these do not arise, and many of the costs characteristic of Windows server operations are not incurred.

With the model 515, initial startup costs for EnterpriseOne deployment are also, as figure 1 illustrates, competitive with those of Windows servers.

Figure 1
Startup Costs for IBM System i and Windows Server Platforms Supporting EnterpriseOne Systems: Profile Companies



Because IBM System i hardware and i5/OS operating system software are priced as a package, only a single System cost for these is shown. The basis of these calculations is described in the Detailed Data section of this report.

Platform Differentiators

From a technical perspective, the System i platform incorporates multiple elements. The core system architecture is derived from earlier IBM iSeries systems. Its implementation leverages the performance capabilities of IBM POWER RISC technology. Other components include virtualization, system and workload management, and availability optimization features drawn from mainframe systems.

The System i platform is significantly differentiated from Windows server environments. This is particularly the case in the following areas:

- **Integration.** The System i operating system, i5/OS, includes not only core operating system, functions, but also WebSphere Application Server, the DB2 database, and tools for system, storage, backup and recovery, communications, security, operations and other management tasks. These are closely integrated and share common administrator interfaces.

Equivalent functionality in Windows server environments typically requires that users acquire, install, configure and administer multiple software products, often sourced from different vendors. This increases deployment complexity, and tends to create administrative and support challenges that are greater than those faced by System i users.

- **Automation.** The core System i design is built around an object-based kernel in which all system resources are defined and managed as objects. The kernel also incorporates single-level storage capability, which allows the system treats all storage resources, including main memory and disks, as a single logical entity.

One key benefit of these features is that tasks, which in other environments would require manual intervention, are handled automatically by the system. Further gains in administrator productivity are realized by i5/OS management tools, and by advanced autonomic capabilities – meaning the application of artificial intelligence technologies to IT administration and optimization tasks.

- **Availability.** Organizations that have deployed key business applications on the System i platform typically enjoy significantly higher levels of uptime than Windows server users. This is because distinctive availability features are built into hardware and i5/OS, and because the simplicity and integration of the overall System i environment reduce the potential for errors.

Risks of server crashes are thus significantly lower. In addition, the amount of planned downtime for such tasks as hardware and software upgrades and scheduled maintenance is typically only a fraction of that required for Windows server environments. This not only minimizes interruptions of service, but also results in further savings in staff time.

- **Security and virus protection.** Windows is the operating system most frequently targeted – and penetrated – by hackers worldwide. i5/OS users are generally less vulnerable.

During 2006, for example, the U.S. National Vulnerability Database, operated by the National Institute of Standards and Technology (NIST), recorded 39 new vulnerabilities for Microsoft Windows Server 2003. Of these, 21 were rated as “high vulnerability,” the NIST category for the most severe exposures.

In comparison, the Database has recorded no vulnerabilities for i5/OS or its predecessor, OS/400, since collection of statistics began in 1992. Although there are variations in definition of vulnerabilities between different databases, other security sources confirm wide disparities between Windows and i5/OS in this area.

Similarly, there are more than 100,000 known Windows viruses, and the number is increasing rapidly over time. In comparison, there are no known native i5/OS viruses. This is, to some extent, because i5/OS is less well-known. Distinctive System i characteristics also, however, result in a level of vulnerability that is significantly lower than for Windows server environments.

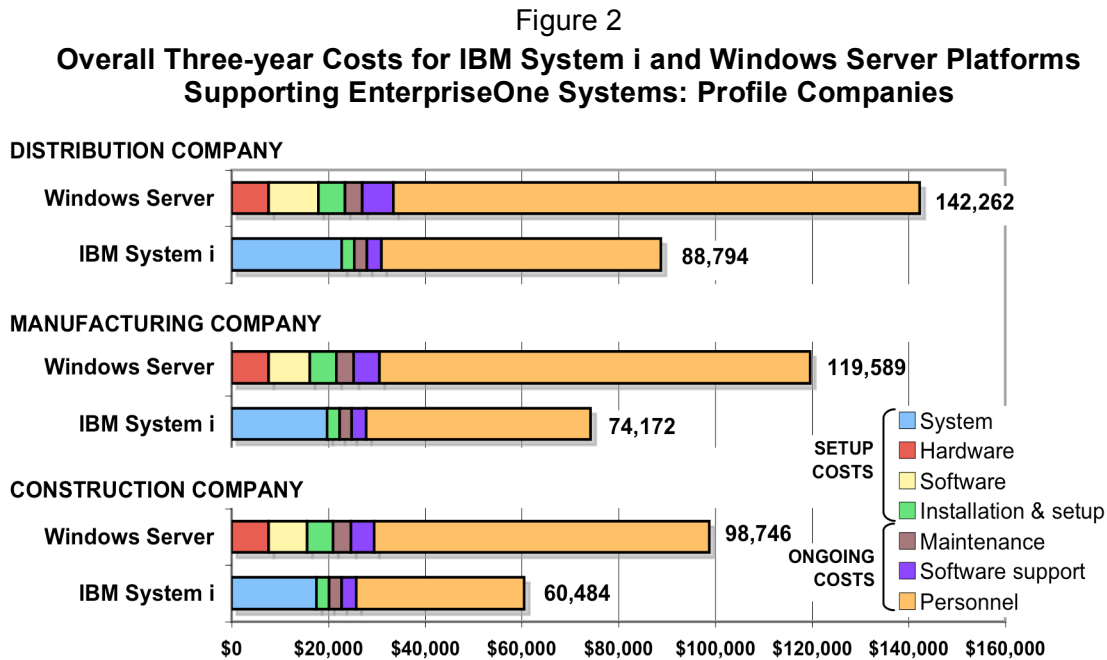
There are, again, dual benefits. System i users are less exposed to the disruptions that may be caused by security violations or virus damage, and to the business and legal consequences that may occur if sensitive customer, partner or employee data is compromised. Major savings in staff time and costs can also be expected.

A great deal of time, however, is spent by Windows system administrators in applying software patches to protect against newly discovered security and virus vulnerabilities. During 2006, for example, Microsoft issued more than 40 such patches (they are released in monthly batches) for Windows Server 2003, the operating system used in comparisons in this report.

The industry “rule of thumb” is that it takes at least two hours to apply a patch to a single server. A company that deployed EnterpriseOne on Windows servers would typically employ at least three of these; i.e. administrators could expect to spend at least 240 person-hours a year on this task. The amount of time required could be higher.

The overall effect of these differences is that use of the System i offers not only quality of service benefits, but also levels of FTE system administrator staffing that are – by wide margins – lower than for Windows servers supporting comparable applications. This translates into significantly lower personnel costs.

Figure 2 shows the implications of this over a three-year period for the three profile companies.



The basis of these calculations is again described in the Detailed Data section of this report.

The System platform i also benefits from levels of batch performance that are significantly higher than for comparable Windows servers. For EnterpriseOne users, this enables faster execution of batch jobs for document generation and other applications using the EnterpriseOne Universal Batch Engine (UBE).

High Availability

Costs and Benefits

The System i maintains high levels of availability. Why should this matter to a small business?

High availability is an increasingly critical requirement in the ERP world. Customers dealing with large or midsize companies expect that they should be able to interact with a supplier’s systems at any time, on a round-the-clock basis. For a small business, the ability to offer the same level of capability may greatly boost its competitiveness.

For most small businesses, the principal obstacle to doing so has been cost. Achieving high levels of availability has required investments in more expensive servers, clustering software, specialized staff skills, multiple IT shifts, or combinations of these.

If, however, it is possible to realize round-the-clock availability without a cost penalty, then the cost/benefit equation changes. There would be no obvious reason not to take advantage of the opportunity. This is the second part of the business case for the System i platform.

Business Drivers

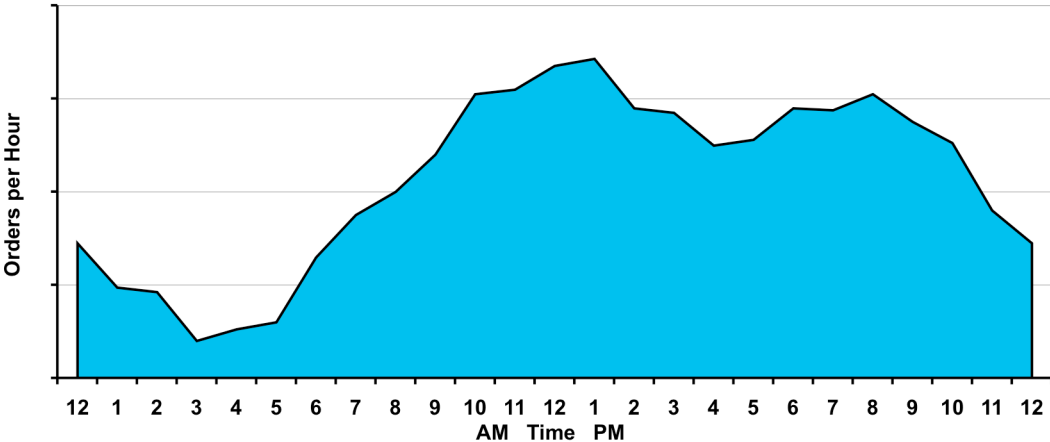
The growing importance of ERP system availability has been driven by a number of factors. One is globalization. A growing number of companies of all sizes are dealing with international customers, offshore suppliers, or both. Normal business hours increasingly extend around the clock.

Equally, if not more important is the effect of the Internet. The ability to provide information on product and services, inventory availability, delivery schedules, pricing, order status and other topics through the Internet is becoming a baseline competitive requirement. Online order processing and customer service are also becoming common. If the business is not functioning, self-service systems handle these tasks.

The Internet is, almost by definition, a 24x7 medium, and the normal expectation is that online systems should be accessible at any time. Internet systems often experience some level of activity at all hours of the day and night, and on weekends and public holidays. Any outage at any time may affect customers.

One distributor employing EnterpriseOne experienced, for example, the pattern of online orders shown in figure 3 over a 24-hour period.

Figure 3
Online Order Activity: Distributor Example



Many of the company's customers were small retailers whose principals often did not have time to check inventories and place orders until the evening or early morning. Inability to access the distributor's online system at this time, at best, would be inconvenient, and could easily result in lost sales. If the experience was repeated, customers might go elsewhere.

Another EnterpriseOne user, a manufacturer, faced similar challenges. The company made a firm commitment to customers that orders placed by a certain time would be shipped the same day. Much of its daily volume was packed and labeled in the few hours immediately before its carrier's pickup deadline. A system outage at this time would mean disappointing (and potentially losing) customers.

In these and other industries, a customer who experiences an outage because a company's core business systems are down, or because a self-service system is not functioning, will inevitably be dissatisfied. Customer dissatisfaction translates into customer loss.

Even if defections cannot be tied to any specific negative experience, service shortfalls contribute to overall levels of satisfaction or dissatisfaction, which in turn affect attrition rates. Even if customers continue to do business with the company, they may hedge in the future by placing orders with other suppliers, or might be reluctant to trust the company for future rush orders.

In highly competitive business environments, even small differences between suppliers may become decisive. The ability to offer superior service may be a vital differentiator. Inability to do so may have equally significant, but more unpleasant consequences.

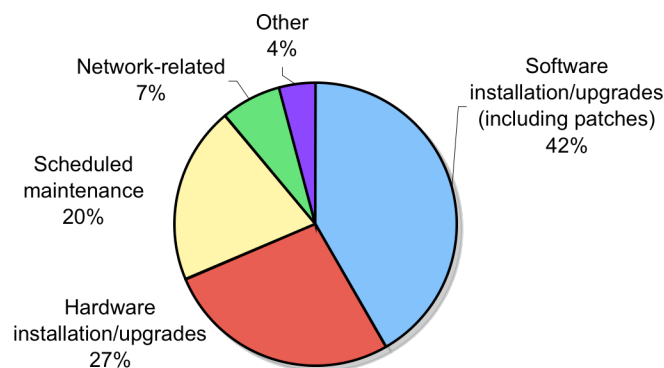
Platform Differentiators

Maintenance of high availability can be a challenging process. Companies must deal with risks of unplanned outages caused by hardware and software failures, administrator and operator errors, hacker attacks, virus damage and other factors. Vulnerability to these may vary widely between platforms.

Unplanned outages can be highly disruptive, particularly if they occur during periods of peak business activity. The majority of downtime in most organizations is, however, due to planned outages.

Like unplanned outages, planned downtime tends to be platform-dependent. In a Windows server environment, for example, frequent planned outages will typically be required for hardware and software upgrades, including patching, along with preventative maintenance and other functions. Figure 4 shows representative causes of such outages.

Figure 4
Representative Causes of Planned Outages: Windows Servers



Base: 214 incidents

Source: International Technology Group

In comparison, avoidance of both types of outage is one of the core strengths of the System i platform. Distinctive capabilities are implemented at multiple levels. These include industry-leading hardware reliability features. High levels of redundancy, along with monitoring, diagnostic, and fault isolation and resolution facilities are built into all major components and subsystems.

Complementing and reinforcing these features are software-based capabilities for fault avoidance and correction built into the i5/OS environment and the DB2 database.

i5/OS integration also facilitates uptime. Risks of software failure are typically less than for more complex environments. Simplified, high-productivity management interfaces mean that the potential for administrator and operator errors causing outages, data loss, or both is reduced.

In addition, normally the System i platform requires fewer planned outages. Configuration changes, software updates and maintenance actions are less frequent occurrences, and a Save While Active feature built into the i5/OS enables backups to be performed without taking systems offline. A further capability, logical partitions (LPARs), enables users to modify and install new versions of software without disrupting operations.

User Experiences

Among organizations that have deployed EnterpriseOne on the System i platform, its ability to maintain high levels of availability is highly valued. A survey of 52 users conducted by the authors of this report found, for example, that 50 (96 percent) cited this as a principal reason for employing this platform.

The System i was variously described as “very reliable...very stable...extremely reliable...completely reliable...highly available...highly dependable” and cited “high reliability...extremely high availability...rock-solid reliability.” There was general agreement that availability levels were significantly higher than for Windows servers.

The second most commonly reported benefit of employing the System i was the ease with which this platform could be managed, which was reflected in the comparatively small number of personnel required to handle system administration and related tasks. This was cited by 29 users (56 percent).

There was general agreement that staffing levels for Windows server environments were significantly higher. The norm was reported to be in the two to three times range.

Other System i strengths valued by users included backup and recovery, including disaster recovery capability (40 percent); simplicity, stability, integration and equivalents (27 percent); and the ease with which the system could be upgraded as workloads expanded (23 percent).

Conclusions

The authors of this report have conducted many surveys of System i users. When these are asked to describe the benefits of this platform, terms such as “simple,” “stable” and “dependable” recur.

The core strength of the System i platform is that it minimizes both the technical complexities to which end users as well as IT staff are exposed, and the disruptions and distractions that these can cause. Large organizations can perhaps afford to deal with these. For small businesses, unnecessary technical complexity merely diverts funds, staff time and management that would be better employed elsewhere, to meet real business challenges.

The last word goes to a user who described the System i platform as “no more trouble to run than a water cooler.” It is a fair description of what IT resources in a small business should be like.

ENTERPRISEONE

Business Gains

Most small businesses employ some computer systems. Accounting and payroll packages. Business management applications for manufacturing, construction, distribution, sales and other functions. Why replace these with a new ERP system? There are a number of reasons.

First, a modern ERP system such as EnterpriseOne typically incorporates more sophisticated features designed to meet industry-specific needs. Second, the system is functionally broader and more integrated than conventional application solutions. Companies may realize efficiency and productivity gains across the organization as a whole, rather than in a compartmentalized, function-by-function manner.

Third, an ERP system does not simply process transactions. It also collects information from all business operations, and makes it available in timely and easily useable form to managers, sales and customer service personnel, finance and human resources specialists, and others.

Finally, an ERP system incorporates Internet and intranet capabilities. This marks a step beyond simple use of Web sites and e-commerce tools. These capabilities are central to the system structure and are integrated with, rather than interfaced to business applications.

The best way of illustrating the potential value of EnterpriseOne is to look at the business gains realized by companies that have deployed it. Figures 5 through 7 show examples of these gains.

Figure 5
Increased Operational Efficiencies Realized by EnterpriseOne Users

OPERATIONAL EFFICIENCY EXAMPLES
<ul style="list-style-type: none">▪ Eliminated manual inventory counts▪ Improved asset & capacity utilization▪ Improved order-to-cash cycle▪ Improved warehouse space utilization▪ Increased inventory turns from two to six times▪ Increased make-to-order accuracy▪ Increased on-time delivery from 80% to more than 96%▪ Reduced costs through improved equipment management & preventive maintenance procedures▪ Reduced equipment downtime by ensuring spare parts could be easily located▪ Reduced inventory by 40%▪ Reduced inventory by 28%▪ Reduced inventory buffer from two weeks to four days▪ Reduced inventory carrying costs by 50%▪ Reduced order cycle times by two-thirds▪ Reduced order processing time from 30 minutes to an hour to less than 5 minutes▪ Reduced project cycles & costs▪ Reduced time for product returns from 90-120 to 30 days▪ Reduced warehouse labor costs by 30%▪ Reduced warehouse throughput from 11 to 4 days

Figure 6

Business Gains Realized by EnterpriseOne Users Through Improved Use of Information

BUSINESS GAINS FROM IMPROVED USE OF INFORMATION
<ul style="list-style-type: none"> ▪ Accelerated the process of deciding whether to accept customer orders ▪ Delivered real-time pricing & inventory availability information to managers, customers & salespeople ▪ Improved customer satisfaction by providing realistic & timely shipment dates ▪ Improved production planning by providing real-time order & inventory availability information to managers ▪ Improved traceability to meet regulatory mandates ▪ Improved tracking of fixed assets ▪ Increased forecasting accuracy ▪ Improved information on product sales helped make better pricing & product development decisions ▪ Increased odds to win by delivering higher-quality, more timely information to salespeople ▪ Maximized inventory control & reduced costs by identifying & disposing of slow-moving items ▪ New cost efficiencies driven by improved forecasting ▪ Reduced forecasting cycles ▪ Reduced quote lead times by 70% ▪ Shortened budgeting cycles & reduced time spent by managers preparing budgets

Figure 7

Business Gains Realized by EnterpriseOne Users in Specific Functional Areas

BUSINESS GAINS IN SPECIFIC FUNCTIONAL AREAS	
FINANCE & ACCOUNTING	CUSTOMER SERVICE
<ul style="list-style-type: none"> ▪ Credit card orders processed faster ▪ Cut revenue booking from days to hours ▪ Improved cash flow by streamlining accounts receivable ▪ Reduced monthly close from 21 days to 1 or 2 days ▪ Reduced month-end close from two weeks to three days ▪ Reduced month-end close from 20 to 12 days ▪ Reduced quarterly close from four days to four hours. ▪ Reduced average receivables by 20% 	<ul style="list-style-type: none"> ▪ Help desk calls not interrupted while customer service representatives search for hard copy invoices ▪ Increased customer satisfaction by providing more detailed & timely invoices ▪ Provided 24x7 self-service access for customers ▪ Streamlined work order & approvals processes ▪ Strengthened customer relationships by providing online shipment & delivery tracking
HUMAN RESOURCES & PAYROLL	ADMINISTRATIVE
<ul style="list-style-type: none"> ▪ Absorbed a significant number of new employees without increasing payroll processing costs ▪ Completed weekly payroll 40% faster ▪ Reduced costs by running HR & payroll systems in house ▪ Reduced payroll processing costs 30% ▪ Streamlined employee time reporting 	<ul style="list-style-type: none"> ▪ Automated purchase order placements ▪ Reduced administrative costs & errors through automated invoice processing ▪ Reduced administrative costs & improved information accuracy by eliminating paper-based processes ▪ Reduced errors through employee self-service data entry

For some companies, effective use of EnterpriseOne may result in immediate and significant bottom-line benefits, such as lower inventories or faster production throughput. For most, the EnterpriseOne system offers the potential for improvements in speed, clarity and cost across a wide range of business activities. The impact of each of these individually may be small. Their combined impact may be transformative.

These gains are not necessarily representative of what may be achieved in any individual company. But they illustrate what can be achieved, and they suggest that EnterpriseOne should be examined more closely by small businesses considering deployment of an ERP system.

Key Technologies

A further strength of the EnterpriseOne system is that it incorporates industry-leading middleware tools and technologies. The core EnterpriseOne Technology Foundation, for example, contains IBM WebSphere Application Server, along with EnterpriseOne Collaborative Portal and EnterpriseOne Tools.

Other IBM WebSphere solutions supported for use with EnterpriseOne systems include WebSphere Commerce (e-commerce), WebSphere Process Server (business process management), WebSphere Business Integration Server (enterprise application integration) and WebSphere Enterprise Service Bus (Web services and Java messaging integration).

DETAILED DATA

Company Profiles

The cost calculations presented in this report are based on the three profiles shown in figure 8.

Figure 8
Detailed Data: Company Profiles

Construction Company	Manufacturing Company	Distribution Company
Business Profile		
\$20 million homebuilder 50 full-time employees Builds 80+ homes per year	\$25 million vendor of sports apparel & accessories 125 employees Single production & distribution center	\$30 million regional distributor of pharmaceutical & home care products 150 employees Three distribution centers
EnterpriseOne Applications		
Project Management Homebuilder Management Job Costing Procurement & Subcontract Management Financial Management Accounts Payable Accounts Receivable General Ledger Human Capital Management Human Resources Management Payroll Logistics Inventory Management Payroll	Customer Relationship Management Customer Self Service Sales Order Management Financial Management Accounts Payable Accounts Receivable General Ledger Human Capital Management Human Resources Management Payroll, Time & Labor Logistics Inventory Management Transportation Management Warehouse Management Manufacturing Quality Management Supply Management Procurement Management Supplier Self Service	Customer Relationship Management Customer Self Service Mobile Sales Sales Force Automation Sales Order Management Financial Management Accounts Payable Accounts Receivable Fixed Asset Accounting General Ledger Human Capital Management Employee Self Service Human Resources Management Manager Self Service Payroll, Time & Labor Logistics Inventory Management Transportation Management Warehouse Management Supply Management Procurement Management Supplier Self Service
Number of Users		
15	25	35
SCENARIOS		
Windows Server		
2/8 x Xeon 1.6 GHz 4GB RAM Windows Server 2003 SQL Server 2005 2 x (2/4 x Xeon 3.0 GHz) 4GB RAM each Windows Server 2003 Personnel: 0.35 FTE	2/8 x Xeon 1.6 GHz 4GB RAM Windows Server 2003 SQL Server 2005 2 x (2/4 x Xeon 3.0 GHz) 4GB RAM each Windows Server 2003 Personnel: 0.45 FTE	2/8 x Xeon 1.6 GHz 4GB RAM Windows Server 2003 SQL Server 2005 2 x (2/4 x Xeon 3.0 GHz) 4GB RAM each Windows Server 2003 Personnel: 0.55 FTE
IBM System i		
515 1 x 1.9 GHz 6GB RAM i5/OS Personnel: 0.15 FTE	515 1 x 1.9 GHz 6GB RAM i5/OS Personnel: 0.2 FTE	515 1 x 1.9 GHz 8GB RAM i5/OS Personnel: 0.25 FTE

Profiles were prepared using data on applications, server configurations and staffing levels supplied by 14 small construction, manufacturing and wholesale distribution businesses that have deployed EnterpriseOne systems on Windows servers or System i platforms. A comparatively large sample was employed to ensure that results would be representative of these types and sizes of company.

For each profile, scenarios were then developed for Windows server as well as System i installations. These included the following:

- **Server configurations.** For Windows server scenarios, separate database, application and Web servers are employed. The use of multiple Windows servers for these functions is a standard practice in EnterpriseOne deployments.

For all three profiles, the Windows database server is a dual processor model equipped with Intel Xeon 1.6 Gigahertz (GHz) quad-core processors, 4 gigabytes (GB) of main memory (Random Access Memory or RAM), the Microsoft Windows Server 2005 operating system, and the Microsoft SQL Server database.

The application and Web servers are dual processor models equipped with Intel Xeon 3.0 GHz dual core processors, 4 GB of main memory, and Windows Server 2005. Windows server configurations include third-party backup and virus protection packages.

Numbers of processors and cores for these servers are shown in figure 8. “2/8” refers to two processors with a combined total of eight cores. “2/4” refers to two processors with a combined total of four cores.

For System i scenarios, a model 515 with a 1.9 GHz POWER5+ RISC processor and 6 GB or (for the distribution company) 8 GB of memory is employed. This model acts as a combined database, application and Web server. It is equipped with the i5/OS operating system, which includes the DB2 database and a backup software package.

EnterpriseOne installations also require use of a separate Windows-based Deployment Server. This would be the same for all Windows server as well as System i scenarios, and is not included in calculations.

- **Staffing.** FTE staffing levels were determined based on user-reported data. For both sets of scenarios, a single part-time individual handles system and database administration tasks. This individual would, in practice, also handle EnterpriseOne application support or other IT tasks.

All configurations are for EnterpriseOne 8.12 suites.

Cost Calculations

Costs for Windows servers include hardware and software acquisition, along with three-year 24x7 hardware maintenance contracts and Microsoft Software Assurance coverage. System i configurations include acquisition of hardware and i5/OS licenses, along with three-year 24x7 hardware and software maintenance coverage for these. Costs for all items were calculated using discounted published vendor U.S. list prices as of April 2007. All server configurations are rack-mounted.

Personnel costs were calculated for the FTE values shown in figure 8. Calculations were based on annual salaries of \$61,520 and \$52,616 per year for i5/OS, and Windows and SQL Server administrators respectively. Annual salaries for both were increased by 25.3 percent to allow for bonuses, benefits and compensation, along with training and other personnel-related items.

Installation and setup costs were calculated assuming 36 person-hours for Windows servers and SQL Server at \$150 per person-hour, and 16 person-hours for the System i model 515 at \$165 per person-hour.

These values are for initial server installation, setup and functional test, and do not include costs that may be incurred for configuration changes and tuning after EnterpriseOne systems are deployed.

Calculations do not include costs for applications software, external storage, peripherals, networks, PCs and other client devices, personnel other than for system and database administration, and other resources not identified above.

Cost Breakdowns

Detailed breakdowns are shown in figure 9.

Figure 9
Detailed Data: Cost Breakdowns

Company	Construction	Manufacturing	Distribution
WINDOWS SERVER SCENARIOS (\$)			
Hardware	7,667	7,667	7,667
Software	7,969	8,576	10,370
Installation & setup	5,400	5,400	5,400
Startup Costs	21,036	21,644	23,438
Hardware maintenance	3,598	3,598	3,598
Software maintenance	4,889	5,345	6,446
Personnel	69,224	89,003	108,781
Operating Costs	77,710	97,945	118,824
TOTAL COSTS	98,746	119,589	142,262
IBM SYSTEM I SCENARIOS (\$)			
System	17,584	19,709	22,769
Installation & setup	2,640	2,640	2,640
Startup Costs	20,224	22,349	25,409
Hardware maintenance	2,530	2,530	2,530
Software maintenance	3,042	3,042	3,042
Personnel	34,688	46,251	57,813
Operating Costs	40,260	51,823	63,385
TOTAL COSTS	60,484	74,172	88,794

ABOUT THE INTERNATIONAL TECHNOLOGY GROUP

*ITG sharpens your awareness of what's happening and your competitive edge
... this could affect your future growth and profit prospects*

The International Technology Group (ITG), established in 1983, is an independent research and management consulting firm specializing in information technology (IT) investment strategy, cost/ benefit metrics, infrastructure studies, deployment tactics, business alignment and financial analysis.

ITG was an early innovator and pioneer in developing total cost of ownership (TCO) and return on investment (ROI) processes and methodologies. In 2004, the firm received a Decade of Education Award from the Information Technology Financial Management Association (ITFMA), the leading professional association dedicated to education and advancement of financial management practices in end-user IT organizations.

The firm has undertaken more than 100 major consulting projects, released approximately 160 management reports and white papers, and delivered nearly 1,800 briefs and presentations to individual clients, user groups, industry conferences and seminars throughout the world.

Client services are designed to provide factual data and reliable documentation to assist in the decision-making process. Information provided establishes the basis for developing tactical and strategic plans. Important developments are analyzed and practical guidance is offered on the most effective ways to respond to changes that may impact or shape complex IT deployment agendas.

A broad range of services is offered, furnishing clients with the information necessary to complement their internal capabilities and resources. Customized client programs involve various combinations of the following deliverables:

Status Reports	In-depth studies of important issues
Management Briefs	Detailed analysis of significant developments
Management Briefings	Periodic interactive meetings with management
Executive Presentations	Scheduled strategic presentations for decision-makers
Email Communications	Timely replies to informational requests
Telephone Consultation	Immediate response to informational needs

Clients include a cross section of IT end users in the private and public sectors representing multinational corporations, industrial companies, financial institutions, service organizations, educational institutions, federal and state government agencies as well as IT system suppliers, software vendors and service firms. Federal government clients have included agencies within the Department of Defense (e.g. DISA), Department of Transportation (e.g. FAA) and Department of Treasury (e.g. US Mint).



International Technology Group

4546 El Camino Real, Suite 230
Los Altos, California 94022-1069
Telephone: (650) 949-8410
Facsimile: (650) 949-8415
Email: info-itg@pacbell.net