



ENSURING DATA PROTECTION FOR GROWING BUSINESSES

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Anil Miglani, Senior Vice President

AMI-Partners

Introduction

Small and midsize businesses (SMBs) have become increasingly reliant on IT in recent years. They have provided computers to an increasing number of their employees who use them for applications involving critical business data. With the rapid growth of the Internet and LANs, employees are now able to share their data with each other and also with their customers, suppliers and other business partners. However, the individual PC* – desktop or laptop – has remained the IT cornerstone for many SMBs, as their employees rely on PC-based applications and then email the data files or save them on network drives in order to share them with others. This continued reliance on PC-based applications has resulted in the proliferation of critical data across a multitude of PCs making it difficult and costly to update or backup and leaving SMBs vulnerable to data loss due to data corruption, disk failure, or laptop theft. It also makes it difficult for them to comply with regulatory requirements or non-disclosure agreements that require data access to be secured.

One of the reasons SMBs end up in this state is their cost-consciousness, since most of them work with rather limited budgets and IT staff and are reluctant to make large investments in new applications. It is often easier and seemingly less expensive, at least on an incremental basis, to adopt individual PC-based applications than to develop new network- or Internet-based applications which rely on centralized databases that can be shared by all users. Ironically, while their objective is to reduce costs, SMBs actually end up spending much more on individual applications than if they had implemented centralized database-oriented applications to begin with.

In this paper, we look at how SMBs often progress through the IT adoption cycle, and some of the operational and security challenges they face in aligning their IT strategy as their businesses grow. Next, we describe how products such as Oracle Database Standard Edition One enable SMBs to enhance productivity, strengthen database security, reliability, and availability, and reduce overall costs.

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546 Fifth Avenue
Suite 22
New York, NY 10036
1-212-944-5100
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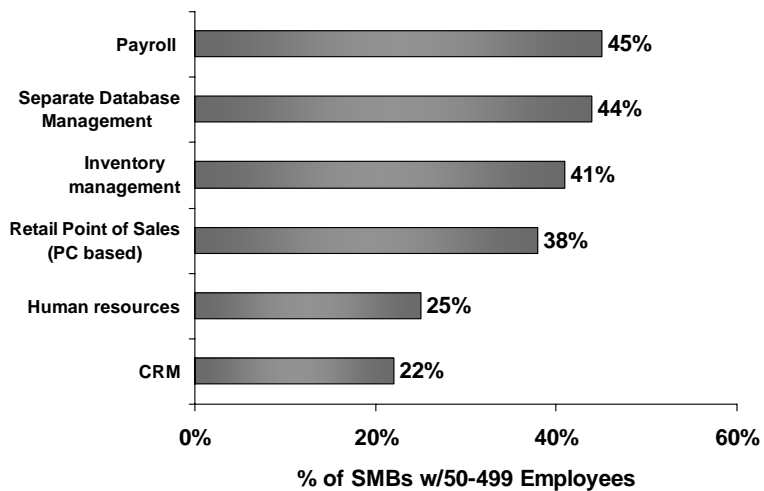
*PC including Mac

As Small Businesses Grow, So Does Their Use of IT Applications

SMBs have become increasingly reliant on IT in recent years. While most SMBs started using PCs several years back, the major change in the last few years has been in the nature and complexity of their usage. AMI's research on SMBs shows that as of 2004, more than 93% of all U.S. SMBs use PCs of which more than 42% (almost 2.4 million businesses) use LANs. Almost all these LANs also utilize broadband Internet. Having adopted these basic technologies, they're now steadily adopting new applications which are key to enhanced productivity.

While SMBs initially focused on using basic applications like word processing, Internet access and basic email, the emphasis has shifted towards using IT for automating various business processes. Thus, we've seen a significant increase in the use of applications like payroll, accounting, retail POS, inventory management, human resources- related applications, CRM and ERP in recent years among SMBs (Figure 1). Given their comparatively smaller scale of operations and limited IT staff and budgets, SMBs often use standard off-the-shelf software packages on individual PCs, which are used by a few employees, with limited sharing of data among them. For example, one or two employees may use accounting software packages like Quickbooks or PeachTree for basic accounting while another one or two employees may use a different package for payroll, and so on. Many SMBs even avoid the cost of these standard software packages by using simple spreadsheets for various applications (Figures 1 and 2).

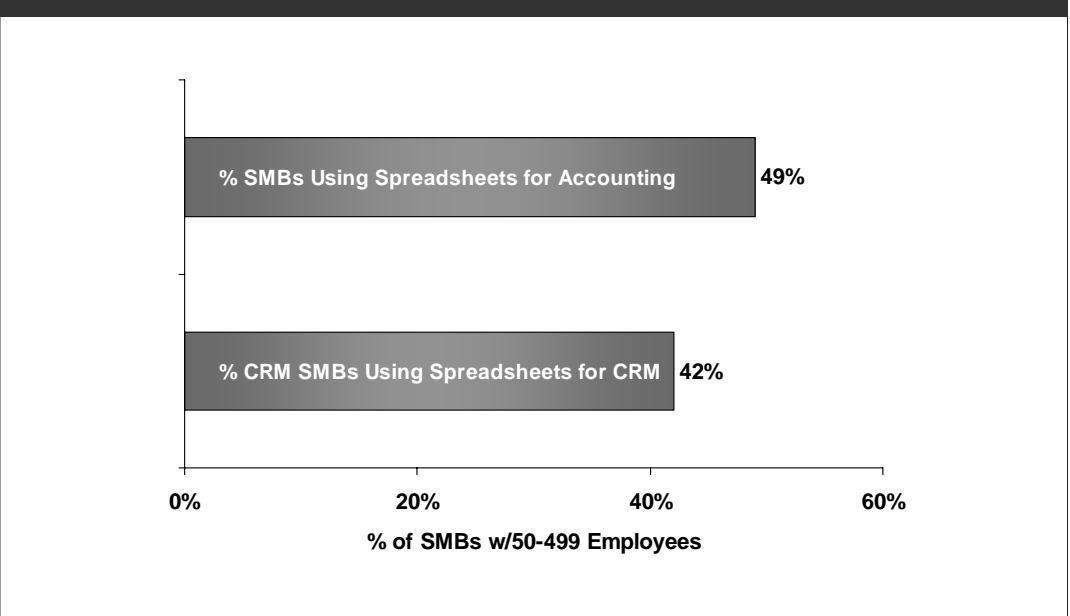
Figure 1: Illustrative Business Applications Used by SMBs



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Figure 2: Use of Spreadsheets for Business Applications by SMBs



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In the short term, these PC-based packages are often economical, providing sufficient functionality for small businesses. However, as these businesses expand, their requirements also grow, leading to an increase in the number of users, proliferation of applications and fragmentation of databases. Consider the issues facing a growing SMB:

1. **Increasing Number of Users**. One of the first consequences of increasing size is that more employees need to use the same applications. While two employees, for example, may be enough to do accounting for a 20 employee company, they can't handle the work for a 100 employee company. SMBs often respond to this by purchasing additional software copies to be used by their employees.
2. **Data Sharing**. Employees soon recognize the need to share data among themselves. Since by default they save their data files on their individual PCs, they achieve data sharing by saving copies of their data files on network drives or emailing them to their colleagues.
3. **New Software Functionality**. SMBs need additional software functionality over time. While they may start by using simple accounting packages to track expenses and revenues, soon they may decide to also automate functions like taxes, payables & receivables, and business forecasting. At each stage, SMBs respond to their increasing requirements by purchasing more sophisticated versions of basic applications (e.g. QuickBooks Pro) or purchasing new software that provides additional functionality.
4. **Automating New Business Functions**. Next, SMBs automate new business functions like payroll, inventory management, CRM and point of sale. Automating each function often requires new software which adds to the total cost while also creating its own data files that may or may not be compatible with other applications.

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5. **Industry-Specific Applications**. Some of the new functions automated by SMBs require industry specific functionality. SMBs in manufacturing, for example, have very different needs compared to those in professional business services or retail. SMBs respond to this by purchasing applications that are specific to their own industries or by developing customized applications.
6. **Linking Different Applications**. The next level of automation requires SMBs to link various applications such as payroll, CRM, and ERP that need to share the underlying data. This helps them avoid duplicate data entry and also ensure consistency of information across various applications. SMBs may realize at this point that some of the applications they purchased are incompatible and the data files they generate are in different formats, making it difficult to link them. Employees have to spend time converting data files from one format to another in order to achieve the required linkages.

Consequences of Incremental Application Adoption

SMBs that adopt PC-based applications in an incremental manner face several significant problems, including:

1. **Proliferation of Applications**. Many SMBs find themselves saddled with numerous applications, each dedicated to individual, specialized business functions. These applications are often incompatible with each other and may be used differently by various employees based on different rules and procedures, leading to inconsistent results.
2. **Proliferation and Fragmentation of Databases**. Most PC-based applications generate their own data files that are stored on individual PCs, leading to several problems:
 - a. Fragmented databases are difficult to update simultaneously. As a result, it increases the likelihood that different employees may use different versions of the data, leading to inconsistent results.
 - b. Access to fragmented databases can't be controlled. Most PC-based applications do not allow users to control access to the data. So anyone who has access to the PC or the network on which data files are stored can access the data. This can severely compromise critical data (e.g. employee or customer records) and can make it impossible for SMBs to comply with various regulatory requirements or non-disclosure agreements with customers, suppliers, and other business partners.
 - c. Data sharing is inefficient. Saving databases on individual PCs requires employees to save their data files on network drives or email them in order to share data.
 - d. Poor data backup and disaster recovery. Saving databases on individual PCs makes it difficult to ensure backup and disaster recovery, leaving the business vulnerable in the event of accidental loss of data (e.g. disk failure, data corruption due to viruses, loss of laptop, etc.).
3. **Increasing Cost of Using Various Applications**. While purchasing each application individually may seem like a sound economical and convenient decision in the short term, the net result is that the combined cost of using these applications turns out to be much higher than using integrated applications based on a centralized database that can be shared by all users with controlled access.

As small businesses grow, the consequential effects of incremental adoption are magnified, as are costs and complexity. It's important for SMBs to think strategically about how they use IT solutions, and develop a comprehensive and integrated plan that will scale with employee and operational growth and business goals.

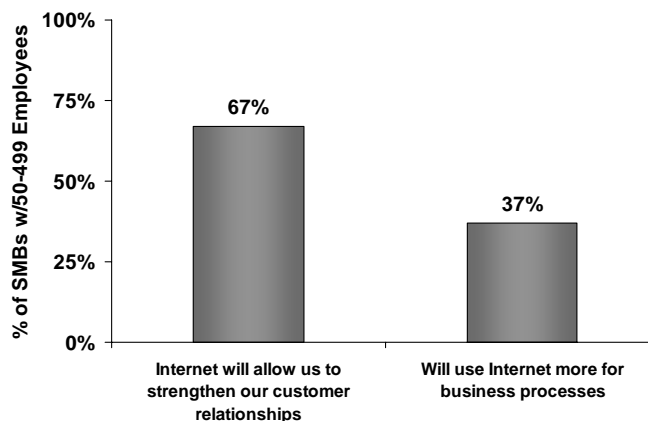
SMBs Embrace the Internet and Connect With Their Business Partners

More recently, SMBs are also becoming Internet-savvy. Many realize that they can use the Internet to build closer ties with their customers, suppliers and other business partners. (Figure 3). Internet connectivity is increasingly becoming a necessity as customers, suppliers, and other business partners require that business be conducted online. Most SMBs now have broadband access, allowing them to share their data and applications with remote employees, as well as customers and suppliers. Some illustrative applications shared over the Internet include:

1. Order entry from remote locations as employees input sales information while traveling.
2. Tracking shipments, order, and inventory status by customers, suppliers, and employees.
3. Tracking sales leads and updating customer records by traveling employees.
4. Filing travel expenses and other employee-related information from remote locations.
5. Electronic storefronts that enable merchants to market their goods and services to a bigger potential audience.

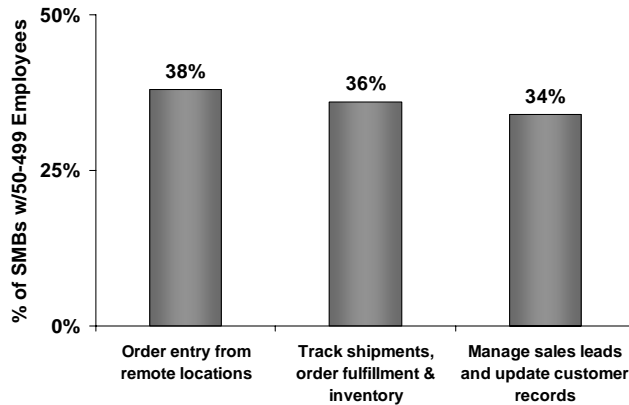
These applications often require sharing of critical data among multiple users. Given their reliance on PC-based applications, SMB employees often resort to a patchwork of home-brewed methods to share this data with others (e.g. emailing data and/or files, uploading files to ftp sites from where others can download them, etc.). As a result, they end up using disjointed methods to get data into and out of their Internet-based solutions. While these methods give SMBs a temporary fix, they become unwieldy and inefficient as transaction and collaboration requirements grow. Using the Internet for sharing data and applications also adds to the need for adequate data protection, especially in light of various Internet-based threats (e.g. viruses, etc.).

Figure 3: Internet is Becoming Ever More Important for SMBs



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Figure 4: SMBs Are Automating Business Functions Over the Internet That Require Multiple Users to Use Same Databases



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Data Protection Takes Center Stage

As SMBs have become more reliant on technology, they are also more vulnerable to IT security threats. Consequently, SMBs increasingly consider security a top IT issue and concern (Figure 5). Some of the key drivers sparking security concerns include the following:

1. Rising awareness of security threats such as viruses, worms, Trojans and other forms of malicious software that can corrupt the data.
2. Increasing network and Internet use exposing SMBs to various electronic threats.
3. Expanding use of business applications like payroll, accounting, CRM, and ERP, which increases the amount of sensitive employee and customer data that needs to be protected.
4. New regulations like HIPAA, Sarbanes-Oxley and Gramm-Leach-Bliley Act, etc. that require data availability as well as privacy and security of data. While some laws like HIPAA affect SMBs directly, others like Sarbanes-Oxley have a ripple-through effect as they deal with larger customers and business partners who come under the purview of these laws.

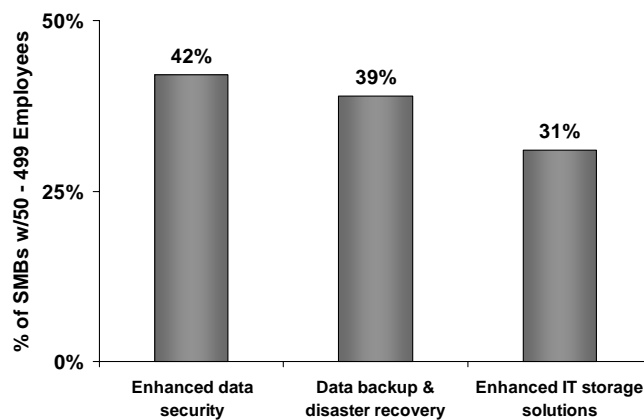
In terms of data security, SMBs are particularly vulnerable due to several factors:

1. Since most of their critical data resides in local spreadsheets and desktop databases, SMBs have little access control.
2. These fragmented databases are also difficult to update, and different employees could potentially be using different and inconsistent data.
3. Storing databases on local desktops also makes it difficult, if not impossible to ensure data backup and disaster recovery in the event of a system failure.

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4. Most applications are also vulnerable to human errors such as deletion of data, and unintended modifications. Use of desktop applications makes it more difficult to recover from such errors.

Figure 5: Data Security and Backup are Becoming More Important for SMBs



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Consequences of Not Addressing Data Protection Issues

SMBs are increasingly realizing that not adequately addressing data protection issues could have serious consequences including:

1. **Loss of data.** Data is perhaps the most valuable resource in the information economy and its loss could have serious economic consequences.
2. **Loss of productivity.** While SMBs recover from failures such as corruption of data and system failures, business resources lie unutilized.
3. **Loss of business.** SMBs could lose business when customers and suppliers are unable to conduct business when the data and/or applications become unavailable. Sometimes loss of business can be permanent as customers move to competitors.
4. **Diminished reputation.** Loss of data and unauthorized access to privileged customer & employee data can lead to a loss of credibility while shaking stakeholder confidence.
5. **Legal liability.** Loss of data could also potentially result in legal liability, an issue that will become even more important in the future as new legislation will undoubtedly address data privacy and security issues.

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When Small Businesses Aren't Small Anymore

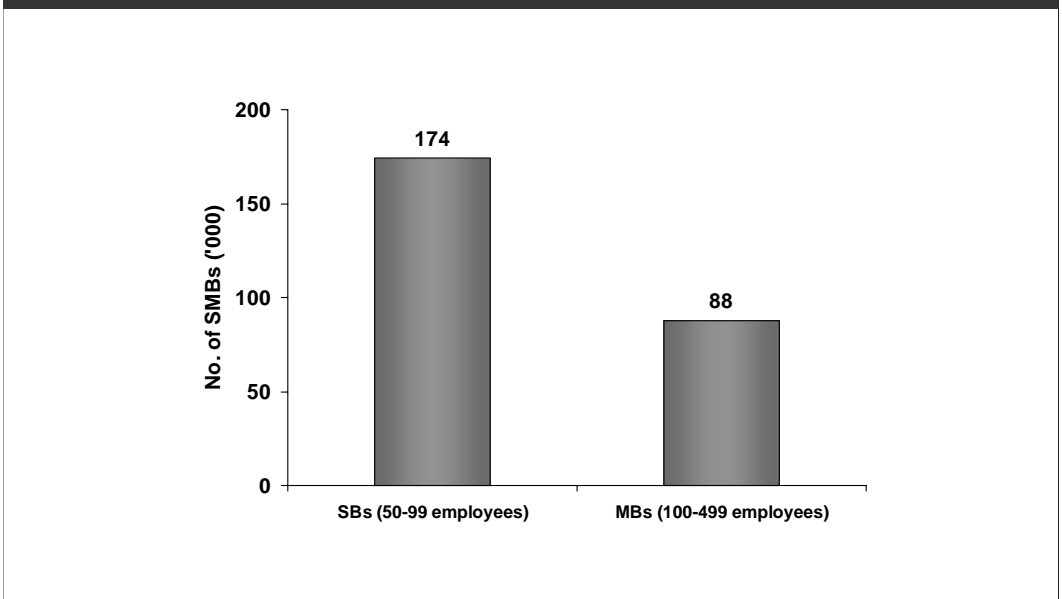
Deciding whether to use PC-based applications or centralized database applications that can be shared by multiple users has traditionally been a question of cost. While very small businesses might initially think they're better off using PC-based applications, they need to review their decision as they grow. AMI's research indicates a clear trend in the relationship between the size of SMBs and the size and complexity of their IT infrastructure. Larger SMBs, predictably, tend to have more PCs, more employees connected to LANs and the Internet, and more applications deployed over their network.

A key transition occurs when the number of employees in a business reaches about 50. AMI estimates there are more than 174,000 small businesses with 50-99 employees and another 88,000 medium businesses that have 100-499 employees. AMI's research shows that:

1. SMBs with 50 or more employees deploy significantly more applications than smaller SMBs.
2. They are significantly more likely to use LANs and the Internet.
3. They have a greater number of employees sharing applications and data.
4. They are significantly more likely to have electronic connectivity with their customers, suppliers and other business partners, sharing applications and data over the Internet.

However, these 50+employee SMBs are also less likely than their larger counterparts to have developed database-oriented applications. As a result, many are dealing with the IT problems described in this paper. It is important for SMBs with more than 50 employees that have adopted a number of different applications to review their application usage and assess the benefits of developing applications based on a centralized database.

Figure 6: Number of U.S. SMBs With 50-499 Employees



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Ensuring Data Protection by Using Shared Databases

If prolific applications and fragmented databases are key causes of inadequate data security and reliability, an obvious solution would be to build and share applications using a centralized database. One such solution is Oracle Database Standard Edition One. Oracle, best known for its enterprise-quality databases used by the largest businesses, governments, and research organizations in the world, has made Oracle Database Standard Edition One easy to install, use, and manage--all key requirements of SMBs.

Oracle Database Standard Edition One includes features that can help SMBs address many of their concerns described in this paper (Table 1). These features were developed to address the requirements of large customers, and have already proven themselves in very complex IT and business environments. Oracle Database Standard Edition One delivers enterprise-quality features at a small business price.

The pricing for Oracle Database Standard Edition One is within the reach of most SMBs (see Appendix 1). More importantly, using a centralized database may be more economical for SMBs as they avoid the less obvious costs of using multiple applications with their own local databases. Besides being easy to use and manage, Oracle Database Standard Edition One can easily scale according to business requirements.

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TABLE 1: COMMON SMB PROBLEMS AND SOLUTIONS MAPPING TO ORACLE OFFERINGS

PROBLEM	SOLUTION	ORACLE OFFERING
Fragmented data in spreadsheets and desktop applications on local drives	Consolidate data into a centralized database shared by all authorized users on the network and/or Internet. Consolidated databases are easier to update and backup, ensuring easy disaster recovery in the event of a failure	Oracle HTML DB, a feature included with Oracle Database Standard Edition One, allows you to directly import data from desktop applications and spreadsheets into Oracle Database and make data securely available to users over the Web.
Sharing applications over the Internet	Build Web-based applications that access centralized databases using a Web browser	Oracle HTML DB features quick, easy template-based application development, enhancing developer efficiency and speeding availability of Web applications
Customer & employee privacy	User authentication and authorization provide field-level access control, preventing unauthorized access to privileged data	Oracle HTML DB enables role-based user provisioning to ensure the right people get the right information from a centralized database
Human errors (e.g. accidental deletion of data, deleting the wrong data, changing rules, etc.)	Automated roll back and data recovery technology	Oracle Flashback Query technology allows the database to roll back transactions to a previous state, prior to any errors.
Ensure suitable data backup & disaster recovery strategies	Automated data backup and recovery	Oracle Recovery Manager simplifies and automates backup and recovery as part of Oracle Database Standard Edition One—no need to purchase additional software
Data security	Choosing an established, demonstrably secure infrastructure	Oracle has a proven record of security in the technology industry, and supports advanced data encryption that prevents unauthorized access to critical data.
Growing business needs (Data volumes of many SMBs are growing at 40-50% annually and scalability of their solutions is critical)	Low-cost scalability for long-range growth planning	Oracle Database Standard Edition One is built from the same foundation as Oracle Database Standard Edition and Enterprise Edition, making it easy to upgrade with no change to existing applications. With Oracle Database Standard and Enterprise Editions, Oracle Real Application Clusters can scale out to an unlimited number of users on low-cost servers.
Limited IT staff and skills	Fast, easy installation, set-up and maintenance	Oracle Database Standard Edition One is designed for SMBs and is easy to install and maintain. A free 2-Day DBA course demonstrates how easy Oracle is to deploy and manage.
Limited IT budget	Strategically choosing a low-cost database solution that can grow with the business at a low cost over time	Oracle Database Standard Edition One pricing is within the reach of most SMBs. It can also help SMBs avoid the less obvious costs of using multiple, often incompatible, applications.

Concluding Remarks

SMBs have benefited significantly from their adoption of various IT applications. These benefits include higher productivity and better customer responsiveness. However, their incremental adoption of new software has resulted in a proliferation of applications as well as fragmented databases that are difficult to share, update, or secure. The hidden costs of maintaining, integrating and securing data in multiple databases and PCs can be much higher than many SMBs realize. As a result, they have yet to realize the full benefits that network- and Internet-based applications offer.

One solution is for SMBs to adopt applications using a centralized database. Adopting shared database-oriented applications often requires some change in user behavior. It also involves a shift in the mindset of SMBs that think databases are difficult to set up and maintain, requiring sophisticated IT skills. Once they overcome this misconception, SMBs could benefit significantly by adopting database-oriented applications. With a well thought-out strategy in place, SMBs can realize significant benefits, including lower total cost of ownership, streamlined management, improved collaboration and better data.

Appendix 1: Oracle Database Standard Edition One

Pricing and Licensing

\$149 per user, 5-user minimum
\$4995 per processor (up to a maximum of two processors)

Key Product Benefits

Low cost entry price
Low maintenance costs
Available on Windows, Mac OS, Linux and Unix platforms
Proven performance, reliability and security

Key Product Features

Fast installation and configuration
Built-in automated management
Suitable for all types of data, and applications
Fully upgradeable to Oracle Database Standard and Enterprise Edition

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