Technical White Paper

Microsoft® IT Showcase

Deploying the 2007 Office System at Microsoft

Technical White Paper

Published: February 2007

Microsoft®

CONTENTS

Executive Summary **3**

Introduction **4**

Background **5**

Office Deployment Tools Used by Microsoft **7**

Microsoft Office Migration Planning Manager 7

Microsoft Office Customization Tool 8

File Format Awareness Update and Compatibility Pack 11

Office System Deployment **12**

Deployment Goals 12

Deployment Phases 12

Client System Requirements 14

Systems Management Server 15

SMS Reports 16

Multiple Language Versions 16

LOB Application Compatibility Testing 17

End-User Training and Support 19

Best Practices and Lessons Learned **21**

LOB Application Compatibility Best Practices and Lessons Learned 22

Conclusion **23**

For More Information **24**

Situation

Microsoft wanted to internally deploy enterprise Microsoft Office products and applications as its external enterprise customers would deploy them. Microsoft wanted to test Microsoft Office deployment tools to ensure that scenarios were fully tested for enterprise-wide rollout before the release of the 2007 Microsoft Office system.

Solution

Microsoft developed a testing and deployment strategy that delivered the 2007 Microsoft office system to more than 97,000 desktop computers around the world. Microsoft used new deployment tools and management technologies, including SMS, to reduce the time, cost and complexity of planning, building, and deploying the 2007 Office system. The testing strategy resulted in a robust product that has been rigorously tested in a production environment.

Benefits

The new deployment tools in the 2007 Office system saved Microsoft time, resources, and money. Information workers took advantage of a range of key productivity features to effectively communicate and collaborate within Microsoft. These features also helped information workers prioritize and better manage large volumes of business information by using enhanced product capabilities.

Products and Technologies

- Microsoft Windows Server 2003
- Microsoft Office SharePoint Server 2007
- Microsoft Systems Management Server 2003
- Microsoft Office Enterprise 2007
- Microsoft Office Project Professional 2007
- Microsoft Office SharePoint Designer 2007
- Microsoft Office Visio® Professional 2007

EXECUTIVE SUMMARY

The prerelease version of the 2007 Microsoft® Office system provided Microsoft Information Technology (Microsoft IT) with the opportunity to test improved deployment tools designed to simplify the enterprise-wide rollout of applications. By using Microsoft employees as software testers, Microsoft IT could provide a real-world testing environment to improve the 2007 Office system before the product was released to customers. The team discovered that the ability to deploy multiple languages of Microsoft Office by using a single build folder resulted in a more efficient deployment solution and validated the new deployment functionality before the release of the 2007 Office system.

The team also wanted to extend the productivity-increasing benefits of the enhanced 2007 Office system applications to users throughout the company. In addition, the early adoption of the 2007 Office system enabled Microsoft IT to capture product and deployment feedback and to collaborate with the Office development team to facilitate future product and process improvements.

Before deploying the 2007 Office system to a large group of early adopters within the company, Microsoft IT provided preliminary code to line-of-business (LOB) application developers. This plan ensured that the existing LOB applications would be compatible with the 2007 Office system. Providing preliminary code also allowed the application developers to develop LOB application enhancements based on new features and functionality offered in the 2007 Office system.

This white paper describes Microsoft IT's experience with delivery process, installation, and use of new deployment tools in the 2007 Office system. This white paper is written specifically for enterprise technical decision makers, technical architects, and deployment managers who are considering a deployment of the 2007 Office system on their networks.

This white paper is based on Microsoft IT’s experience and recommendations as an early adopter. It is not intended to serve as a procedural guide. Each enterprise environment has unique circumstances; therefore, each organization should adapt the plans and activities described in this white paper to meet its specific needs.

INTRODUCTION

Today, many organizations want to help users manage their growing workloads more effectively and provide improved access to their LOB applications. The 2007 Microsoft Office system helps organizations achieve these goals, and more.

The 2007 Office system has evolved from a suite of personal productivity products to a more comprehensive and integrated system. The 2007 Office system can help businesses address needs ranging from personal productivity management to complex project management.

At the core of the 2007 Office system are the 2007 Microsoft Office suites, which deliver the core desktop productivity tools. New features in these programs enhance how employees can work with one another, partners, and customers, and how organizations capture and use information. In addition to the core desktop editions, the 2007 release includes new programs, servers, services, solutions, and other technologies that build on the productivity software skills that employees already possess and that help address a broad array of business problems.

The 2007 Office system offers workflow and collaboration features for organizations. The 2007 Office system includes eight different suites, with each suite specifically designed for a different set of users.

This white paper focuses on the Microsoft Office Enterprise 2007 deployment at Microsoft. However, the methods that Microsoft used to deploy Office Enterprise 2007 may also apply to other versions that medium to large enterprises are likely to deploy, namely Microsoft Office Standard 2007, Microsoft Office Small Business 2007, Microsoft Office Professional 2007, and Microsoft Office Professional Plus 2007. Office Enterprise 2007 is a new addition to the 2007 Office system and includes all the Office Professional applications plus Microsoft Office OneNote® 2007 and Microsoft Office Groove® 2007.

As recently as five or six years ago, software migrations were often a monumental undertaking—complex, time-consuming, and costly. From the first 2007 Office system release planning sessions, Microsoft committed to making easier upgrades a core value of the new Microsoft Office system. Even before developers wrote new code, 2007 Office system developers were determined to make 2007 Office system deployments easier to plan for, less risky, less time-consuming, more predictable, more controllable, and more transparent.

For example, 2007 Office system automates some of the upgrade processes. This automation saves organizations time, resources, and money. Setup procedures that once required multiple tools and processes can now be performed with a single setup controller. As a result, desktop administrators can now easily customize and manage the overall 2007 Office system installation experience—by using one tool.

BACKGROUND

The Microsoft network is one of the world's largest experimental TCP/IP-based networks. The high-speed Asynchronous Transfer Mode (ATM) backbone over Synchronous Optical Network (SONET) uses fiber optics, Time Division Multiplexing, and laser light to move a large quantity of digital data and voice messages. The Microsoft global network consists of:

- Three enterprise data centers and nineteen regional data centers (RDCs) worldwide
- More than 8,800 servers worldwide
- More than 200 wide area network (WAN) circuits
- More than 900 local area network (LAN) switches—100 megabits per second (Mbps) to servers, 10 Mbps to desktop computers
- More than 1,800 routers
- More than 275 ATM switches
- More than 2,600 network layer 2 switches
- More than 3,300 IP subnets
- More than 350,000 LAN ports
- The largest wireless LAN in the world, including more than 24,000 wireless devices and more than 3,000 wireless access points

Microsoft IT supports server and desktop hardware and also manages the internal LOB applications that facilitate day-to-day business operations at Microsoft. In addition, Microsoft IT uses the large enterprise and user base at Microsoft as a first-rate laboratory for testing LOB applications and prerelease software before the products are delivered to the customers around the world. Because the primary focus of Microsoft is developing software, early adoption and testing of prerelease software is a part of the culture and mission of Microsoft as an organization. Early adoption and testing validates compatibility with LOB applications, and it enables Microsoft IT to provide real-world feedback to the product development groups to help ensure that the released product is of the highest quality and to improve the customer experience.

The Messaging and Collaboration Services (MACS) team within Microsoft IT operates and manages the Microsoft global IT infrastructure, including network, telephone, and server infrastructure. The team primarily supports all messaging and collaboration tools within Microsoft. The MACS team is also responsible for running several different services inside Microsoft related to Microsoft Office clients, Office servers, and Microsoft Office SharePoint® Server 2007. Microsoft IT hosts and maintains these services on SharePoint portals within the company.

For the 2007 Office system client deployment project, communication on a regular basis was a high priority to ensure that the various groups involved were working together in a cohesive manner. The MACS team used the following communication techniques:

- The MACS team held biweekly meetings with the Office product development team during the planning and deployment process. In these meetings, the teams made the most important decisions related to the deployment and established shared goals.
- For communication, the MACS team used Office SharePoint sites. The team had a timeline for the deployment project, outlining all the major milestone dates and deployment goals at each milestone.

- A project plan incorporated all the deliverables. In addition, an executive checkpoint occurred each month with executives, such as general managers and vice presidents, so that Microsoft senior managers were kept up to date on the status of the project and had a chance to give their input.

OFFICE DEPLOYMENT TOOLS USED BY MICROSOFT

The 2007 Microsoft Office system offers several tools and technologies to assist customers and solution partners with planning and deploying the 2007 Office system release. The tools and technologies are also designed to reduce the costs associated with large deployments. These tools also enhance security, simplify management, and provide better integration with LOB applications.

Some of the tools are grouped under the Microsoft Office Migration Management Technologies umbrella and are offered as part of the 2007 Office system. Customers and partners can download other components from the Microsoft Office Online Web site at no charge. Microsoft IT used the following tools in Microsoft Office Migration Management Technologies:

- Microsoft Office Migration Planning Manager
- Microsoft Office Customization Tool

When Microsoft IT started deploying the 2007 Office system to corporate computers, not all of the tools were available. As the tools became available, the team was able to test and use them.

Microsoft Office Migration Planning Manager

Microsoft Office Migration Planning Manager is a group of tools designed to assist administrators who want to plan and test the deployment of the 2007 Office system. Office Migration Planning Manager includes the following features:

- Office File Scanner, which is a command-line tool for finding Office files and detecting conversion issues.
- A set of tools used to manage a central Office Migration Planning Manager database that stores the results from Office File Scanner.
- A Microsoft Office Access™ 2007–based reporting solution for analyzing and managing conversion issues.
- Office File Converter, which is a tool for facilitating bulk conversion of older Microsoft Office Word, Microsoft Office Excel®, and Microsoft Office PowerPoint® files to the new Microsoft Office Open XML formats.
- The Version Extraction Tool, which enables administrators to extract saved versions of a file in Microsoft Office Word 2003 or earlier versions to different files.

To plan effectively for a smooth deployment of the 2007 Office system, Microsoft IT needed to discover the number and types of Microsoft Office files that employees were using on the Microsoft network. Microsoft IT used Office Migration Planning Manager to scan client computers and file servers to inventory all Microsoft Office system document types and determine their properties. Microsoft IT deployed this tool by using Microsoft Systems Management Server (SMS) 2003. The scanner generated XML log files on each computer and then stored the log files into cabinet (.cab) files for simpler transport. An SMS collection retrieved the .cab files and imported them into an Office Migration Planning Manager database for further analysis. This process enabled the team members to identify and address any known issues before they opened or converted the files to the new Microsoft Office XML format.

For the most part, files created in Microsoft Office 2003 behave the same as in the 2007 Office system release. However, some situations required manual intervention to ensure consistent behavior. For example, some features in Office 2003 are not supported in the 2007 Office system. Therefore, files that relied on the previous version of Microsoft Office required manual intervention or analysis.

Microsoft Office Customization Tool

Microsoft IT used the Microsoft Office Customization Tool to customize how the 2007 Office system products were installed, as well as to customize the resulting user experience. Microsoft IT also used this tool to include additional files and install additional programs alongside the 2007 Office system. The ability to customize the Office installation with prescripts and postscripts significantly minimized the amount of custom coding and scripting and enabled the Office deployment team to reduce the deployment risk that is often associated with custom scripting.

Microsoft IT also wanted to ensure that as part of the 2007 Office system installation, the client received the internal Windows® Rights Management templates. By using the Microsoft Office Customization Tool, the team easily added the required XML template files to the installation.

Microsoft IT customized the default behavior of the Setup program to run the installation with minimal user interaction by prepopulating as much configuration information as possible, such as the product key, the license agreement, and the organization name. To manage such customization, the team used the Microsoft Office Customization Tool to create a Setup customization file (MSP file) that the Setup program calls during the installation process.

The MSP file was added to the Updates folder. The Updates folder is located within the Office source folder that contains the Office source files. The Office setup engine then processed the MSP file during setup without requiring any additional changes. If an administrator places the MSP file in a folder other than the Office source folder, the administrator needs to run the setup by either using the **/adminfile** command-line option with the Setup program, or by specifying where the MSP file can be found within Config.xml. The 2007 Office Resource Kit contains additional information on using MSP files. For a link to the 2007 Office Resource Kit on the Microsoft TechNet, see the "For More Information" section at the end of this paper.

If none of the customizations deal with language-specific settings, the customizations in the 2007 Office system apply to any language version of the specified product that is available on the network installation point. Customizations to language-specific features are applied automatically when a user installs that language. Otherwise, they are ignored.

Figure 1 shows the type of customization options available in the Microsoft Office Customization Tool.

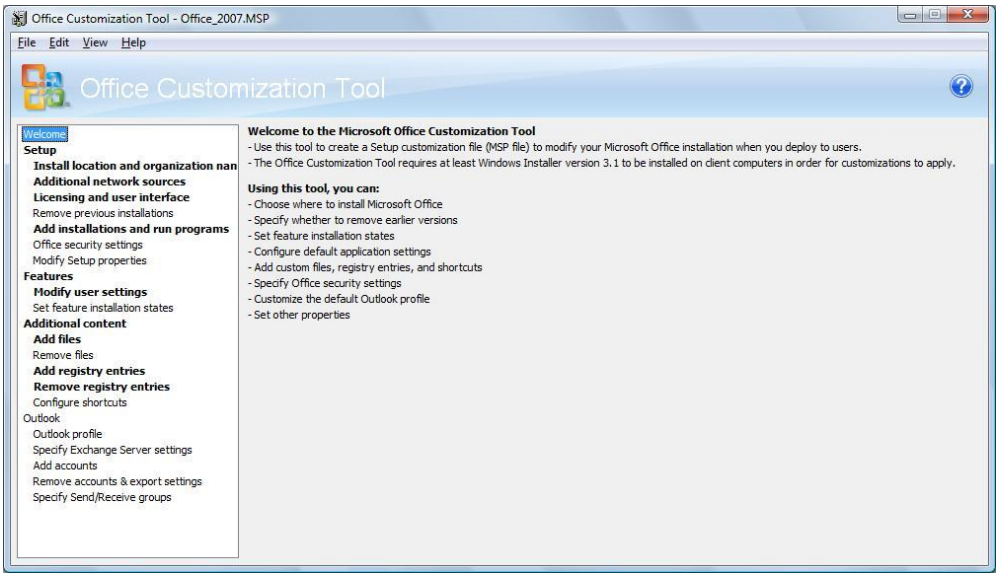

Figure 1. Office Customization Tool

Figure 1 also shows the option to add installations and run programs under the Setup category, which enables administrators to execute additional programs before or after the installation. Microsoft IT deployed the 2007 Microsoft Office add-in called Microsoft Save as PDF or XPS to the clients after the installation was complete. Deploying the add-in after the installation ensured that if the computer restarted or the add-in did not terminate normally, the Office installation was not affected. By running the installation of the add-in using the **/quiet** switch, Microsoft IT ensured that end users would experience a seamless installation flow, without interruption. This also reduced any impact that the additional installation actions might have to the main Microsoft Office installation.

Installing the 2007 Microsoft Office add-in called Microsoft Save as PDF or XPS enabled employees to save or export files from Microsoft Office programs into Portable Document Format (PDF) or XML Paper Specification (XPS) formats. PDF and XPS are common fixed-layout electronic file formats that preserve the document formatting and enable file sharing.

Config.xml

In previous versions of Microsoft Office, the Setup program used the Setup.ini file at the start of the installation process. To customize the installation, the administrator either edited the default Setup.ini file or created a custom initialization file. In the 2007 Office system release, the new Config.xml file has replaced the role of the initialization file. The Office deployment team at Microsoft used the Config.xml file to customize the pre-installation and post-installation tasks. For example, the team launched a Web page at the end of the 2007 Office system installation process that thanked the user for taking part in the early adoption of the 2007 Office system and provided key information, such as how to report a bug. Figure 2 shows useful links and instructions provided to the employees in a customized Web page after a successful completion of installation of the 2007 Office system.

Figure 2. Custom thank-you Web page

The following is an example of how to reference a custom Web page in the Config.xml file that opens at the end of the 2007 Office system installation.

```
<Configuration>

<Command Path="%programfiles%\Internet Explorer\IEXPLORE.exe"
    Args="http://intranetsite/office2007/thank_you" />

</Configuration>
```

Tasks that can be performed in either the Config.xml file or the Office Customization Tool include:

- Specifying the product key.
- Accepting the license key.
- Specifying the video display level.
- Displaying a completion notice.

If a Setup customization file is created through the Office Customization Tool, the customizations defined in Config.xml will take precedence over the customizations in the customization file.

When making changes to the file as elements and attributes specified in the Config.xml file, an organization should note that these specifications are case-sensitive. For more information about using the Config.xml file to perform installation tasks, see the "For More Information" section at the end of this paper.

File Format Awareness Update and Compatibility Pack

The 2007 Office system uses new default file formats for its programs, such as Microsoft Office Word 2007, Microsoft Office Excel 2007, and Microsoft Office PowerPoint 2007. The previous versions of Office do not recognize these new Open XML file formats unless certain product updates exist. To ensure that Microsoft employees running the 2007 Office system could collaborate and share files seamlessly with employees running Office 2003, Microsoft IT deployed the File Format Awareness Update to all Office 2003 clients within the company prior to the deployment of the 2007 Office system.

Office 2003 requires the installation of two separate components for users to open and save files in the 2007 Open XML file formats.

The Office 2007 File Format Awareness Update for Office 2003 enables Office 2003 clients to recognize the new 2007 file formats as Office files. Following the installation of the File Format Awareness Update, when a file from 2007 Office system is opened for the first time, Office 2003 checks for the presence of the Compatibility Pack for 2007 File Formats. If the Compatibility Pack is installed, the file opens successfully. If it is not present, Office prompts the employee to download it from Microsoft.com. The File Format Awareness Update is included in the latest set of critical updates for Office 2003. If computers running Office 2003 clients have the latest critical updates installed, they already have the File Format Awareness Update. Microsoft IT ensured that its Office clients were up to date by using the SMS Software Update Service so that the normal client update process at Microsoft installed the File Format Awareness Update on Office 2003 clients.

The Compatibility Pack for 2007 File Formats enables Office 2003 to open and save files in the new 2007 file formats. The installation of the Compatibility Pack requires the presence of the File Format Awareness Update on the computer. The Compatibility Pack is language-specific and ships in every language that the previous Office versions were shipped in. It is a free download from Microsoft.com. Microsoft IT deployed the Compatibility Pack via SMS as a mandatory package. Because the Compatibility Pack is language-specific, Microsoft IT elected to deploy only the English Compatibility Pack on clients running the English version of Office 2003. Clients running non-English Office 2003 downloaded the appropriate language Compatibility Pack when Microsoft Office prompted them.

Ensuring that the majority of Microsoft Office clients from all previous versions have the File Format Awareness Update installed was critical to the 2007 Office system deployment at Microsoft because it ensured that Office 2003 and 2007 Office system clients could collaborate seamlessly by using the new 2007 file format. Deployment of the Compatibility Pack was less critical because the File Format Awareness Update took users to the Compatibility Pack download page on Microsoft.com. However, deploying the Compatibility Pack in advance provided an improved user experience because it pre-installed the Compatibility Pack rather than making employees download and install it themselves. For links to the File Format Awareness Update and the Compatibility Pack on the Microsoft Web site, see the "For More Information" section at the end of this paper.

OFFICE SYSTEM DEPLOYMENT

Microsoft IT had several shared goals with the Office deployment team for the deployment of the 2007 Microsoft Office system. Careful planning and execution of various phases coincided with the availability of the milestone releases, such as Beta 2 or Beta 2 Technical Refresh. Heavy emphasis on the testing of both standard LOB applications and third-party applications ensured a smooth transition to the new 2007 Office system release.

Deployment Goals

Microsoft IT typically follows an internal model similar to the Microsoft Operations Framework (MOF) Team Model for Operations, which offers guidelines for various processes, such as software development, deployment, and other functions related to IT operations. The members of the teams organized under the MOF team model share responsibilities and work in tandem to focus tightly on the project at hand. Although the size and depth of the teams may vary with the extent of the operation, the best practices and lessons learned from each phase are carried over to the next phase. This method ensures that the total cost of repeated deployments stays manageable.

Microsoft IT goals for deploying the 2007 Office system were to:

- Validate the functionality, business features, and deployment tools.
- Provide feedback to the Microsoft Office product groups and marketing department.
- Educate the LOB application developers about the new development features of the 2007 Office system so that the developers can create LOB applications that can take advantage of the features.
- Implement new Microsoft IT services that take advantage of key features, such as using the 2007 Office system with a hosted Office SharePoint Server site to enhance workflow and collaboration.
- Deliver deployment experience to external customers to aid with their own deployment planning and execution.

In addition to the preceding deployment goals, Microsoft IT and the Microsoft Office development team shared the following goals:

- Compatibility testing of key Microsoft Office–dependent LOB applications
- Zero critical Office product issues outstanding by the time the 2007 Office system was released to manufacturing

Successfully meeting these shared goals was critical to developing a reliable, well-tested, and properly validated software product that could withstand enterprise-level scrutiny before it was released to customers.

Deployment Phases

To help achieve its goals, Microsoft IT broke up the client deployment project by identifying the major phases in the software-release cycle. The team had specific deployment goals that it targeted at each phase.

Table 1 depicts the software release phases that Microsoft IT used for early deployment of the 2007 Office system.

Table 1. Software Release Phases

Phase	Release summary	Microsoft IT goals
Test 4	Deployed in August 2005. The first, English-only deployment was limited to a small set of employees (about 1,900) and was based on an early build.	Deployment experience validation, proof of concepts, and feature breadth validation.
Beta 1	Deployed in November 2005 to 10,209 computers. Microsoft employees deployed Beta 1 only on their secondary test computers rather than on their production desktop computers.	Helpdesk training, upgrade validation, and replacement of enterprise search.
Beta 1 Technical Refresh	Deployed in March 2006 to 12,042 computers and suitable for installation on employees' primary production computers. Microsoft was then ready to install Beta 1 Technical Refresh on computers worldwide.	Existing environment upgrade. LOB application compatibility testing; bug detection and regression.
Beta 2	Deployed in early May 2006 to a large set of early adopters. The goal was to deploy Beta 2 on 20,000 computers. However, Microsoft exceeded this goal and by August 2006, 30,442 company computers were running Beta 2.	Broad corporate campus and global deployments and measurement of performance and stability. Continuation of LOB application compatibility testing; bug detection and regression.
Beta 2 Technical Refresh	Deployed in August 2006 to 60,329 computers worldwide. Beta 2 was available in five different languages for global deployment. Installation source files were replicated to more than 100 regional servers.	Continuation of broad campus and global deployments. Final LOB application compatibility testing and signoff.
Release to Manufacturing (RTM)	RTM was deployed to 97,242 computers worldwide in November 2006.	Production release; global deployment.

The initial testing of the 2007 Office system functionality during the early product development cycle was limited to a small set of about 100 employees and was an English-only deployment. Microsoft IT performed a pilot test of the SMS-based 2007 Office system deployment on this group. Microsoft IT repeated the tests on about 200 computers with the most popular configurations of client computers that were running a mixture of operating systems.

After the 2007 Office system deployment was tested on a small test group, the scope was broadened to deploy the 2007 Office system to a North American control group. After the deployment team felt that the majority of installations had stabilized across the North American control group, the team deployed the product to the general population of the company.

By the time Beta 2 and Beta 2 Technical Refresh were released, the 2007 Microsoft Office system was being rolled out to the global user base across the enterprise. In addition, at these phases, the 2007 Office system was available from the installation servers in five different languages, giving the team more flexibility to test the 2007 Office system in additional countries.

Microsoft employees were familiar with the download procedures to install software from installation servers because historically this method has been the primary software installation method. Microsoft IT submitted each build to the product replication team, which replicated the installation source files to more than 100 regional servers. Employees were notified of the availability of each new version via e-mail at Beta 2, Beta 2 Technical Refresh, and RTM. The e-mail included a link to an intranet Web site, which in turn contained a link to the network installation point where the Office setup files were available. It also contained key information regarding the upgrade, such as possible application compatibility issues and hardware requirements. Most employees were also familiar with a similar process for the deployment of Microsoft Office Professional Edition 2003, so this method saved time and resulted in rapid installation turnaround time.

In addition to the method described previously, Microsoft IT sent an SMS advertisement to all employees to give them the option to upgrade their build of Microsoft Office. For example, at the release of Beta 2 Technical Refresh, all computers running Beta 2 had a chance to upgrade to Beta 2 Technical Refresh via SMS. For employees already running an earlier build of the 2007 Office system, the SMS upgrade was mandatory, whereas other employees, such as those running Office 2003, had the choice to participate or not. This approach ensured that the 2007 Office system client base always ran the most recent milestone build.

Client System Requirements

Before the deployment, the standard supported version of Microsoft Office at Microsoft was Office Professional Edition 2003 running on the Microsoft Windows XP Professional operating system. In addition to the standard supported version, various combinations of operating system and Microsoft Office software exist on computers throughout the company, mostly on test, research, and support computers.

The prerelease version of the Windows Vista™ operating system was also a part of the Microsoft client base. Initially, the number of computers running Windows Vista and the 2007 Office system was small. However, these numbers increased at each milestone. Shortly after RTM, there were more 2007 Office installations on computers running Windows Vista computers than on computers running Windows XP.

There was no need to inventory existing hardware and software because the minimum hardware requirements did not change between Office Professional Edition 2003 and Office Professional 2007. Not having to create an inventory eased deployment of the 2007 Office system release because the IT expenditures for hardware remained unchanged during the deployment.

The 2007 Office system client is a 32-bit application, but it also runs on 64-bit versions of Windows XP, Windows Vista, and Microsoft Windows Server® 2003 via Windows-on-Windows 64-bit (WOW64). WOW64 is a subsystem that runs on all 64-bit Windows operating systems and creates a 32-bit environment so that 32-bit Windows-based applications can run unmodified on a 64-bit system.

The Microsoft Office Online Web site contains detailed information about 2007 Office system requirements. The link is available in the "For More Information" section at the end of this white paper.

Systems Management Server

Depending on the circumstances, administrators may deploy 2007 Office system by using various approaches, such as:

- CD-based installation.
- Script-based installation.
- Active Directory® directory service group policy software deployment.
- Systems Management Server 2003.
- Microsoft Solution Accelerator for Business Desktop Deployment 2007.

Microsoft IT decided to use SMS 2003 R2 as the primary method to deploy the 2007 Office system to employees and computers across the Microsoft global network. SMS is an efficient method to deploy software in large enterprises. SMS offers flexibility to control when and on which computers the installation should occur. SMS also enables administrators to manage user interaction level, control restarts, and security. In addition, the detailed reporting in SMS enables administrators to view the success of their deployment.

Installing software on a Windows-based computer requires administrative rights. A standard user has limited rights and cannot create folders and files in the %ProgramFiles% location or write to the HKEY_LOCAL_MACHINE (HKLM) section of the registry. Adding users to the local Administrators group grants them more rights than are necessary for day-to-day operations and allows them to install unauthorized software, which could be a security risk. SMS 2003 R2 minimizes the security risks and eases the burden on support by enabling software installation with a special account that has administrative rights and to which the user has no access. This account allows the SMS client to perform administrative tasks, such as installing software, without elevating the user's rights.

Microsoft IT distributes the SMS client to the computers by using the logon script associated with the users' domain account. Employees were given a two-week grace period during which they could postpone an upgrade from an older version of Microsoft Office to the newest version. After this grace period, clients were forced to upgrade. Microsoft IT made certain exceptions for select groups that needed to run older versions of Office for development or support purposes. These groups were excluded from the forced upgrade to the 2007 Office system.

One advantage of the SMS deployment was that the removal of previous beta versions of the products could be scripted into the upgrade experience. Microsoft does not develop products for scenarios such as constant upgrades over previous beta builds. Because of this, previous beta versions must be removed. Otherwise, the computer could be left in an unstable state.

Another advantage of the SMS deployment was to patch previous versions of clients so they could open and save files to the 2007 file formats. Patching enabled collaboration with 2007 Office system users, both fellow employees and external business partners. This was especially helpful during a gradual deployment.

SMS Reports

To ensure that the employees' work was not disrupted during deployment and that the end-user experience was measured objectively, Microsoft IT was interested in capturing installation data such as the total number of installations and the success and failure rates of installations. Microsoft IT used SMS to obtain such data.

SMS tracked the software deployment progress and highlighted installation problems that clients encountered. SMS 2003 R2 reports are Web-based so that non-administrative users, such as department managers or directors, can stay informed of the project progress and issues.

Microsoft IT used SMS 2003 R2 to produce reports that identified whether software was deployed successfully to the targeted group of desktop computers. Microsoft also used SMS 2003 R2 to identify all computers with common features, such as the same hardware or software. This knowledge was important in determining which computers were running the 2007 Office system and ensured test coverage on both Windows XP and Windows Vista–based computers. It helped Microsoft IT understand who in the company, by division and geographical location, was running the 2007 Office system.

The Resource Explorer feature in SMS 2003 R2 displays hardware and software inventory for an SMS client. This information helped the deployment team verify which components of the 2007 Office system were present on client computers.

During the deployment period, it was critical to know how many clients were running various versions of the 2007 Office system. The larger the installed base, the more feedback SMS could provide to the deployment team and product developers. The deployment reports provided details that were compared to the shared goals to ensure that the project was on track. They also helped the deployment team gather data on the success and failure of Microsoft Office deployments via SMS. In case of failures, specific error codes collected from the clients helped the developers understand the most common installation errors so that they could find fixes for them.

Multiple Language Versions

The language-neutral design of the 2007 Office system helped Microsoft IT simplify the deployment of Microsoft Office products in multiple languages. Instead of creating a series of installations, Microsoft IT used the new Setup program to coordinate a single installation with multiple languages. The ability to create a single build folder containing one copy of the language-neutral 2007 Office system together with multiple language packs not only saved space on the server hard disk, but it also simplified the process of staging, testing, and propagating the source files.

As noted earlier, Microsoft IT initially deployed only the English version of the 2007 Office system. However, as additional language versions became available for deployment, the team copied the additional language folders containing the language-specific packages, or building blocks, to the same location on the network. For example, Beta 2 was offered in five different languages, including English, French, German, Japanese, and Spanish. The Setup program combined the language-specific folders with the core product to create a complete product for these languages.

When Setup runs for a particular Microsoft Office product, the program detects that there is more than one language available, and it automatically combines the core package with the

language that matches the locale setting for the client's operating system. When the Microsoft Office developers produced additional language versions, Microsoft IT simply copied the language folders to the network installation point so that the employees could get the appropriate version of the 2007 Office system. For example, employees in France automatically received the French version, whereas the employees in Tokyo received the Japanese version. There was no need for employees to choose a language appropriate to their location unless they wanted to override this default logic.

Similarly, multilanguage installations were also streamlined. The deployment team was able to create one customization file per product, regardless of the number of languages that were deployed. Depending on the situation, the deployment team was able to specify that the Setup program install more than one language per computer or that the Setup program install a particular language regardless of the employee locale setting.

Figure 3 shows nine different languages available to Microsoft employees.

Figure 3. Language selection options

LOB Application Compatibility Testing

The purpose of LOB application compatibility testing at Microsoft is to ensure compatibility with new Microsoft desktop software by identifying and resolving issues early in the product development cycle. This minimizes the impact to internal end users, Helpdesk, and ultimately, Microsoft customers. Compatibility testing enables Microsoft IT to identify the applications and user groups that are affected by changes in the new product. Compatibility

testing also enables Microsoft IT to take steps to correct LOB applications, and to use standard bug reporting processes to report issues to product groups.

The Center of Excellence (CoE) groups at Microsoft support business applications. These applications include large-scale, strategic business management software, as well as internally built applications that employees use on a daily basis. The CoE groups began LOB application testing in August 2005. The groups finished the final phase of testing in November 2006.

Microsoft IT used a database called MSApps to track all LOB applications used by company employees. These applications included all internally developed tools and third-party applications that were dependent on Microsoft Office. For example, Microsoft uses an expense tool called MS Expense and a form for conducting employee performance evaluations called HR Review. Microsoft IT tested all critical applications, or roughly 350 individual applications out of a portfolio of approximately 2,200 applications, to ensure compatibility with the new 2007 Office system.

Microsoft IT coordinated the LOB application testing efforts at Microsoft by assigning each CoE group the responsibility for carrying out the testing of a set of applications developed by the CoE group itself. The knowledge of application owners to test the functionality was crucial to successful testing of LOB applications. Each CoE group was also responsible for testing the standard LOB applications used by users and third-party applications. The result of using this strategy of testing the LOB applications was that all Microsoft Office–dependent applications were tested throughout the development cycle.

Categorizing and Prioritizing Applications

To manage the scope of LOB application testing, Microsoft IT prioritized the LOB applications based on, first and foremost, having a Microsoft Office dependency. Then, Microsoft IT prioritized the list by the numbers of users and business priority and whether or not executives used the applications. The team also clearly identified applications that were out of scope.

Microsoft IT broke down the LOB applications into three different categories based on their importance. The team categorized the applications with the highest business priority as Tier 1, followed by Tier 2 and Tier 3. The applications were allowed to move up in tier (but not down) by request of the CoE group in order to test them more frequently.

Tier 1: External Critical or Mission Critical

Tier 1 applications are executive-used applications of any number of users and business priority, plus applications with from 1,000 through 4,999 users and a business priority of external or mission critical.

Microsoft IT tested Tier 1 applications first because they were marked as external critical and mission critical. External critical applications generate revenue and are critical to support Microsoft products. These applications are business-to-business and order-entry applications that can have a severe impact on the Microsoft business if they fail. Applications that have critical dependencies on external critical applications themselves are also considered external critical. Failure of external critical applications can cause an inability to support Microsoft customers or business partners and to generate revenues.

Mission critical applications are critical to build or ship Microsoft products and to report revenues. Some examples of mission critical applications include product creation and

pricing applications, financial applications, and infrastructure applications that are necessary to run day-to-day internal operations. Applications that have critical dependencies on mission critical applications themselves are also mission critical. An application is mission critical if it is not an external critical application, but its failure can cause significant increase in expense or decrease in revenue, significant employee turnover, or significant legal exposure for Microsoft.

Tier 2: Business Critical, Other, or Required with 1,000–4,999 Users

Tier 2 applications are business critical, other, or required LOB applications with from 1,000 through 4,999 users, plus applications of from 50 through 999 users of any business priority. Failure of Tier 2 applications can have a moderate impact on business. Some examples of such applications include payroll applications, invoice applications, and expense and time reporting applications. Applications that have critical dependencies on business critical applications themselves are also business critical.

A Tier 2 application is not an external critical or mission critical, and its failure can cause moderate increase in expense or decrease in revenue, or a moderate employee turnover. In addition, it can also cause moderate legal exposure for Microsoft and can cause moderate customer dissatisfaction.

Other applications do not fit into one of the preceding categories. If these applications are unavailable for more than 25 business days, the amount of risk is acceptable.

A required application is not an external critical or mission critical, has fewer than 5,000 users, and its failure can cause some increase in expense or decrease in revenue, or some employee turnover. In addition, the failure may cause some legal exposure for Microsoft or some customer dissatisfaction.

Tier 3: Business Applications with 1–49 Users

Tier 3 applications are LOB applications with from 1 through 49 users of any business priority. Failure of Tier 3 applications will have a low impact on business.

End-User Training and Support

As a part of the overall Microsoft IT effort to support end users throughout the product cycle, the IT Productivity Education (ITPE) team creates content—user guides, demos, and presentations—for Microsoft employees and contingent staff. In preparation for the deployment of the 2007 Office system, the ITPE team collaborated with Microsoft IT service management, product development, and various content publishing teams to plan the 2007 Office system content for Microsoft employees.

Microsoft IT created the Everyday Productivity Education (EPE) program for its information workers. The EPE program includes job aids, instructional content, demonstrations, best practices, and more. Customers can download the EPE intranet site demonstration in a .zip file and customize the contents to fit their own environment and technologies. For a link to the EPE home page on the Microsoft Web site, see the "For More Information" section at the end of this paper.

To ensure smooth upgrades to the 2007 Office system, Microsoft IT provided live training sessions. The live sessions, known as *Ready IT*, targeted the Regional IT field community and IT Productivity Virtual team. The goal of the sessions was to enable IT staff in the field to

effectively support deployment milestones with little to no delay, and to coordinate training and readiness activities across the regions.

Microsoft IT also offered self-help sessions to employees. Each lesson in a self-help session focused on a feature in a specific scenario. These sessions walked employees through various scenarios and demonstrated the product's new functionality designed to enhance productivity.

The live training sessions and the self-help sessions were in addition to the materials available on the Microsoft Office Online Web site. To further support end users, and to ensure that everyone in the company can make the best use of new features and products contained in the 2007 Office system, Microsoft IT provided the following information on an intranet Web site:

- 2007 Office system overview
- Information about installing the 2007 Microsoft Office system
- Videos demonstrating the new user interface in action
- Live sessions to coordinate training across the regions
- A link where users can verify the availability of LOB applications that they typically use
- New scenarios and features
- Known issues
- Frequently asked questions (FAQ) about the 2007 Office system
- Bug reporting
- Where to get support
- Deployment metrics

BEST PRACTICES AND LESSONS LEARNED

Microsoft IT learned that the following best practices lead to a more successful deployment of the 2007 Office system:

- Microsoft SMS was a useful deployment tool for upgrading all early adopters to the latest version of the 2007 Office system at Microsoft. After Microsoft released a new major milestone, the employees upgraded their computers to the newest prerelease version, which resulted in improved user experience. The Microsoft Office team received feedback that was more relevant because employees upgraded their computers as soon as possible. Microsoft IT found SMS to be an excellent tool for deploying the 2007 Office system because SMS offers flexibility to manage deployment on specific computers at specific times. SMS also enables administrators to manage user interaction level. With the reporting ability of SMS, Microsoft IT was able to track the deployment success in real time.
- Configuring the Microsoft Office Setup program to launch a Web page immediately following installation was useful to inform users about the Microsoft Office–related resources that were available to them. By using the Office Customization Tool, Microsoft customized the Setup program to start Windows Internet Explorer® with a specific URL page. The intranet page thanked the user for installing the product and provided links to enable users to get support, access training resources, provide product feedback, and install additional Microsoft Office products.
- Before beginning the 2007 Office system deployment, conducting an advance deployment of the File Format Awareness Update and Compatibility Pack for previous-version clients (Office 2003 or Microsoft Office XP) ensured that employees would be able to seamlessly share files and work collaboratively. Without the File Format Awareness Update and Compatibility Pack installed, previous versions of Office clients could not open the new 2007 file formats.
- To enable collaboration with 2007 Office system users both inside the company and outside the company, Microsoft IT patched previous versions of Office clients, enabling Microsoft users to open and save files to the 2007 file formats. Microsoft discovered that patching previous versions provided an enhanced experience when compared to customizing the 2007 Office system to default to the Office 97-2003 file format. The reason is that the 2007 file format enables users to take full advantage of the new functionality in the 2007 Office system. In many cases, this functionality is limited or not available when a user is using the Office 97-2003 file format. For example, the larger Office Excel 2007 worksheet (1,048,576 rows by 16,384 columns) is only available with 2007 Office format files.
- When deploying 2007 Office products in multiple languages, Microsoft found great value in the ability to create a single build folder containing one copy of the language-neutral 2007 Office system together with multiple language packs. Although the client could select a specific language, by default Office matches the language to the locale of the operating system. If a match did not exist, the installation defaulted to the English language. This eliminated the need for employees to choose a language appropriate to their location, unless they wanted to override the default logic.
- Communicating and getting important decision makers involved before beginning the deployment project proved beneficial to the success of the deployment project. Before the deployment begins, any organization should ensure that all possible customizations

have been reviewed with the key stakeholders so that only the relevant settings are modified. Reviewing customizations with appropriate stakeholders ahead of time helped Microsoft IT to ensure a successful deployment and avoided confusion.

- Microsoft IT recognized the importance of editing the Config.xml file due to its context-sensitive nature. Introducing errors while editing the Config.xml file causes the file to ignore customization settings.
- Microsoft IT considered the effect of customizing a deployment by using both the Office Customization Tool and Config.xml so that the customization was applied as intended. The customization settings defined in Config.xml will take precedence over the customizations in the Setup file created by the Office Customization Tool.
- Microsoft employees make extensive use of Office OneNote 2007 and Office Groove 2007 in their daily work. As part of the standard Office offering, Microsoft IT wanted to deploy these components, in addition to the Office Professional applications, such as Microsoft Office Outlook® 2007, Office Word 2007, Office Excel 2007, and Office PowerPoint 2007. Office Enterprise 2007 represented a significant advantage for both Microsoft IT and the employees. From an IT perspective, Microsoft IT was able to deploy all these applications in a single installation package without resorting to any chaining or scripting that could have been fragile and expensive to support. From an end-user perspective, employees were able to install all of these applications in one seamless installation experience rather than launching three separate installations.

LOB Application Compatibility Best Practices and Lessons Learned

In addition to the preceding best practices and lessons learned, Microsoft IT learned that the following best practices contributed to the success of LOB application compatibility testing:

- Plan and budget sufficient resources for the project to perform the testing tasks and participate in the program.
- To streamline the entire application compatibility testing, create an application compatibility program managed by a central program manager.
- To monitor issues discovered during LOB application testing, use an issue-tracking system.
- Maintain an application portfolio database that tracks application technology dependencies, contacts, purpose, and test results for each application. This tracking will ensure a smoother transition to the updated products.
- Develop templates and checklists for the application compatibility testing program so that the templates and checklists can be reused in future projects.
- Enable the application owners to do the actual testing because they are most familiar with the applications. Their knowledge of application's functionality is essential for obtaining the best results.
- Create an overall schedule of testable software builds to be released to the CoE groups and develop a testing schedule based on this release schedule.
- Create an internal Web site to communicate the deployment and application compatibility testing schedules. Use the site to provide details for individual application compatibility testing projects.

CONCLUSION

The early deployment of the 2007 Microsoft Office system involved not only Microsoft IT, several product groups, and the Microsoft Office developers, but it also involved Microsoft employees across the global enterprise. By RTM, more than 97,000 computers had installed the 2007 Microsoft Office system. Constructive feedback from Microsoft employees helped the product team make numerous enhancements and ultimately produce a high-quality software product.

Due to the careful planning and cross-product team effort, early adoption of the 2007 Office system was a success. Early adoption provided the requisite validation of the functionality and business features of the product and the deployment tools. It also provided the compatibility testing of all Microsoft Office–dependent LOB applications. The successful testing of the new deployment tools in a real-world environment proved that IT customers and solution partners will have the potential to simplify the process and reduce the costs associated with planning, building, and deploying the 2007 Office release.

Today, LOB developers have started creating new tools for internal use at Microsoft, based on the new features in the 2007 Office system. In addition, the productivity features in the 2007 Office system are helping employees to effectively communicate with customers and enhance workflow and collaboration within the company.

For More Information

For more information about the 2007 Microsoft Office system suites, see the Microsoft Office Suites page on the 2007 Microsoft Office system Web site at http://www.microsoft.com/office/preview/suites/default.mspx.

For more information about Microsoft Office Migration Management Technologies, visit Microsoft Office Online at http://office.microsoft.com/en-us/default.aspx.

For more information about downloading Microsoft Office Migration Planning Manager, see 2007 Microsoft Office System Migration Guidance: Microsoft Office Migration Planning Manager (Preview) at http://www.microsoft.com/downloads/details.aspx?familyid=13580cd7-a8bc-40ef-8281-dd2c325a5a81&displaylang=en.

For more information about downloading 2007 Microsoft Office add-ins, see the Microsoft Office Online Web site at http://office.microsoft.com/en-us/downloads/CD101950461033.aspx.

For more information about 2007 Office system requirements, see the 2007 Microsoft Office release system requirements on the Microsoft Office Online Web site at http://office.microsoft.com/en-us/products/HA101668651033.aspx.

For more information about Config.xml file reference, see "Config.xml File in the 2007 Office System" on Microsoft TechNet at http://technet2.microsoft.com/Office/en-us/library/e16af71c-fed4-40da-a886-95e596c3999e1033.mspx?mfr=true.

For more information about deploying the 2007 Microsoft Office system by using SMS, see “Using Systems Management Server 2003 to Deploy the 2007 Microsoft Office System” at http://technet2.microsoft.com/Office/en-us/library/e3d7be86-d739-413f-8196-817899eceb771033.mspx?mfr=true.

For more information about Everyday Productivity Education program at Microsoft, see Everyday Productivity Education (EPE) at http://www.microsoft.com/technet/itshowcase/epe.mspx.

For more information about Office 2007 File Format, see the File Format Reference at http://technet2.microsoft.com/Office/en-us/library/cce79538-711f-4686-9a31-2bdc7dd999d51033.mspx .

For more information about Microsoft Office Compatibility Pack, see Microsoft Office Compatibility Pack for Word, Excel, and PowerPoint 2007 File Formats at http://www.microsoft.com/downloads/details.aspx?FamilyId=941B3470-3AE9-4AEE-8F43-C6BB74CD1466&displaylang=en.

For the Office Resource Kit, see the information on Microsoft TechNet at http://technet2.microsoft.com/Office/en-us/library/9df1c7d2-30a9-47bb-a3b2-5166b394fbf51033.mspx?mfr=true.

For more information about Microsoft products or services, call the Microsoft Sales Information Center at (800) 426-9400. In Canada, call the Microsoft Canada information Centre at (800) 563-9048. Outside the 50 United States and Canada, please contact your local Microsoft subsidiary. To access information through the World Wide Web, go to: http://www.microsoft.com

http://www.microsoft.com/technet/itshowcase