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Vista Migration

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Chapter 4: Building the Migration Toolkit

Now that the test bed is ready and some members of your team are in the process of beginning the unit tests they need to complete to get the engineering aspects of the migration project going, you can begin the selection or verification process for the different tools your project will require. The toolkits you will need to rely on cover three procedural and technical different requirements for this project:

- General project guidance as well as technical guidance for the engineering aspects of the project.
- Tools to provide support for the administrative and other processes the migration project itself will require.
- Tools to support the actual migration.

The first two help provide structure for the project and all of the technical processes the project requires. In addition, the technical guidance obtained for the project will support the third requirement: tools to sustain the actual migration. For this, you should rely on the seven-step PC Migration Cycle (PMC) introduced in Chapter 2. Ideally, the tools you select for this project will be tools you can carry forward into production once the project is complete. As such, this toolkit must also aim to support ongoing management and administration of Vista PCs once they are deployed into your network.

Technical and Administrative Migration Guidance

To properly run a migration project, especially a PC migration project, you need to follow some form of guidance, ideally, best practices guidance. Up until now, there has been very little such guidance available and each and every organization had one of two choices:

- Build their own guidance through actual project realizations, or,
- Hire high-powered consultants or consulting firms to provide guidance they have developed over years of practice in this field.

Both had their own risks. The first led you to build your own expertise through trial and error, most often errors. While this is an effective way to build internal expertise, it can be costly, especially in terms of potential loss of data or a potentially disgruntled user base. The second can also be costly, although the project's end result should be of better quality.

Fortunately, things have changed. Microsoft and other vendors have realized that it is important if not essential, to provide guidance to client organizations on how migration projects should be run. The result has been the publication of white papers and other documentation on PC migrations along with tools that are designed specifically to assist in the migration process.



Of course, we like to think that this particular guide is an excellent source of information on PC and other migrations as it stems from our own experience as high-powered consultants providing this type of guidance to our clients. But it is important for us to point you to any other materials you can rely on to supplement what we provide here. This way, you won't forget anything in this most important project and make it the resounding success it should be.

Microsoft has been trying to alleviate the lack of guidance through the release of its own Business Desktop Deployment Solution Accelerator (BDD). BDD has been mentioned before, but it is important to note that BDD, especially the new 2007 version, is not just a set of tools, but that it also includes guidance for the migration. What's different with BDD 2007 is that Microsoft has now generalized the guidance, removing any mention of its own particular tools in support of migrations. This means that Microsoft partners that specialize in migrations and system deployments can adapt the BDD guidance to their own toolkits, while relying on the generic guidance it includes.



The BDD guidance can be found at <http://www.microsoft.com/technet/desktopdeployment/bddoverview.mspx>.

Partners Altiris Corporation and LANDesk Corporation have done so and supplement BDD with their own recommendations, based of course, on the tools they provide to support OS migrations. As you may have noticed as you read through the BDD guidance, it provides a ton of information on the migration process. This is why both partner organizations have kept their own guidance shorter and more to the point, using sort of a 'notes from the field' or hands on from extensive consulting experience with actual customers approach. Though both Altiris and LANDesk provide supplementary guidance, they are not the only ones to do so. Several Web sites provide additional guidance on OS migration. This is one reason why you should also research the terms 'OS Migration' on the Web using your favorite search engine if you feel that you're still missing information after using all of these different sources, including this eBook.



Altiris migration guidance can be found at <http://www.easyvistamigration.com>.



LANDesk migration guidance can be found at <http://www.landesk.com/vista>.



Realtime Publishers also has a Vista community Web site that is chock full of information. Find it at <http://www.realtime-vista.com>.



Other Web sites are also useful:

AppDeploy talks a lot about application packaging: www.appdeploy.com.

MyITForum also includes a lot of information about deployments: www.myitforum.com.

Desktop Engineer is also a site that offers good migration advice: <http://desktopengineer.com/>.

Of course, Resolutions Enterprises Ltd. has a ton of articles on migration and other management practices at <http://www.reso-net.com/articles.asp?m=8>.

Along with this structural guidance, you'll need technical guidance—information on how the technical tools you need to work with work and how you should use them. Because this guidance will be required for each of the different steps in the migration process and because it is also required in support of other, related technical process, it will be addressed as we discuss each tool you need in the remainder of this chapter.



Note that this chapter has two goals. The first is to provide you with sources of information in support of building your migration toolkit. The second is to help you build the list of requirements for each tool you will need so that you know how to proceed during the selection of the tool itself.

Project Support Tools

As mentioned in previous chapters, you need a series of different tools to support the administrative processes tied to this project. These tools range from simple spreadsheet management tools to sophisticated collaboration systems you can use to share information with the entire project team.

A project such as this requires a lot of coordination. Several actors are involved, each with their own tasks to perform at different levels of the process. More detailed information about each task will be covered in coming chapters, but if you rely on the QUOTE System as outlined in Chapter 2, you'll at least have a good starting point on who needs to do what. Also, Chapter 2 provided a sample project plan to help you get started with your own. This project plan was prepared in Microsoft Project Professional 2003 and can also be used in Microsoft Project 2007. You'll need this tool if you want to begin the process. In fact, Microsoft Office or some other office-like suite is an important part of the project management and administrative process:

- Microsoft Word is used to prepare the Business Case (also provided as a template download for Chapter 1), as well as for supporting documentation for each of the technical or engineering aspects of the project. It is also a must-have tool for the communications and training groups.
- Microsoft Excel is required to manage several lists the project will produce: inventory validations, financial analyses, issue tracking and so on.
- Microsoft PowerPoint is used for the preparation of presentations to both officials and to introduce the project to new team members. It is also of high value for training and communications.
- Microsoft Visio is essential to prepare network diagrams or logical constructs of the technical solution as it is devised.


It is often a good idea for project team members to use the latest and greatest technology, or at least the technology they plan to deploy among themselves. Using the latest technology acts as a proof of concept and helps program members learn how the new technology will benefit their organization. If you plan to include Microsoft Office 2007 in your deployment, then you should aim to deploy this tool as early as possible to all team members so that they can begin to use its added functionality in support of the project.

There are several options for the deployment of these new tools to the team. One of the best and easiest options is to deploy these tools inside virtual machines and make the virtual machines available to team members. But most often, project teams will elect to deploy PC operating systems (OS) and productivity suites directly onto team members' physical systems, while deploying and server-based technologies onto virtual instances of the servers. This is often the easiest way to introduce these technologies in a manner which allows the project team to profit from advanced feature sets immediate without disrupting the production network.

Creating virtual instances of servers would then be ideal for two key products:

- Microsoft Office Project Server 2007 (<http://office.microsoft.com/en-us/projectserver>) which helps regroup project information into a central location, distributing workloads and task assignments to each team member and updating the central repository as tasks are completed.
- Microsoft Office SharePoint Server 2007 (<http://office.microsoft.com/en-us/sharepointserver>) which regroups the functionality of both SharePoint Server 2003 and Content Management Server 2002 providing a single repository for collaborative efforts including change control and content management.

As mentioned in Chapter 3, creating a collaborative environment is an excellent way to share information with the different members of the project team. It lets you store all project information and project updates in one single location, it lets non-technical teams such as training and communications, even upper management keep up with project progress and it serves as a mechanism to store and protect all project information—information that can be carried over to the production environment once the project is complete.

 To build the project collaboration environment, you can use either Windows SharePoint Services (free with a license of WS03 or incorporated into WS03 R2) or SharePoint Portal Server. SharePoint Services are easier to implement, but both require a back end database. In this case, you should rely on Microsoft SQL Server 2005 rather than a runtime version of Microsoft's database because it is more robust, more secure and will make it easier to carry over information once the project is complete.

The collaboration environment will let you store critical components of the project in one location. These include:

- Project membership lists
- Project plans and task list
- Project schedules
- Laboratory coordination information such as lab welcome kit, lab schedule and calendar, lab request sheets, lab testing sheets
- Deviance registry or the registry of all of the issues that come up during project realization
- Project presentations and other documentation
- Project member My Sites which can be used to list team member expertise in support of a skills cross reference system where team members know who to turn to when they need help

Much more can be added to the SharePoint site. Of course, you will have different features based on whether you are working with SharePoint Services or Office SharePoint Server. The version you choose will of course depend on the size of your project and the scale of your project team, but if you can, you should opt for Office SharePoint Server since it will provide much more functionality including search, change control, blogs—which can be used to provide in-depth information about issues or approaches, wikis and more (see Figure 4.1).

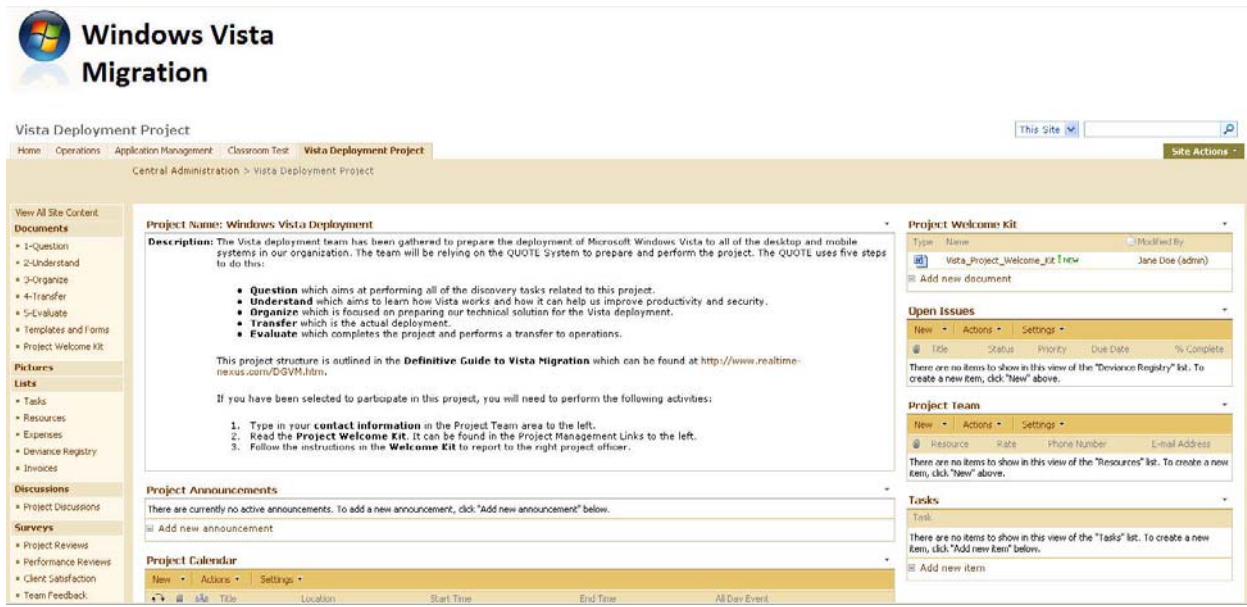


Figure 4.1. Using Office SharePoint Server to build the collaboration environment


Using a Deviance Registry

Perhaps the most important document of the entire project, the deviance registry is used to record deviances between the technological solution and the logical design prepared at the very beginning of the project. This issue-tracking tool, often called a bug tracking or change log tool, will list the different elements of the logical architecture for the deployment and be used to record any technical element that deviates from expected behavior. Issues are classified into different categories and are assigned priorities. To keep it simple, use three different categories:

1. **High:** these issues are show-stoppers and must be resolved before the project can move forward.
2. **Medium:** these issues are important, but can be resolved in parallel as the project continues to progress.
3. **Low:** these issues are ‘nice to haves’ and would be nice to include in the solution, but if budget controls do not provide allowances for fixes to these issues, they will not be resolved before the solution is finalized.

In addition, you will want to prioritize the issues within each category so that you can determine in which order the issues need to be dealt with. Perhaps the best person to manage the deviance is the lab coordinator as this role is the closest to both the lab schedule and the technicians working on the engineering aspects of the solution.


Make sure that you don’t only include technical issues in your deviance registry. Administrative issues such as those related to communications and training are also important to track as they will have a direct impact with the way your customers—end users—view the project as a success or failure.


 To assist with the creation of your new collaboration environment, a Microsoft Office SharePoint Server 2007 template for a team site including a deviance registry list is available on the companion Web site at <http://www.reso-net.com/livre.asp?p=main&b=Vista>. This template includes a sample deviance registry which helps you identify how to categorize issues.

Lab Management Tools

Another required technical tool is a tool to manage the virtual machines running in the laboratory. Several types of tools can do this, but only a couple are specifically oriented at laboratory management. Of course, the type of tool you use will also depend on the virtualization provider you select.

If you're working with Microsoft Virtual Server, then you can use Microsoft's upcoming System Center Virtual Machine Manager or VMM (see Figure 4.2). VMM is not really designed to manage testing laboratories, but with its ability to provision virtual machines (VM) from source images and to monitor as well as manage virtual machines on multiple hosts at the same time, it offers powerful management and administration capabilities.

 At the time of this writing, VMM is still in beta and the only way to get a hold of it is to join the beta program at <http://connect.microsoft.com>. You'll have to request to join the beta and be qualified to do so.

 More information on VMM can be found at: <http://www.microsoft.com/systemcenter/scvmm/default.aspx>.

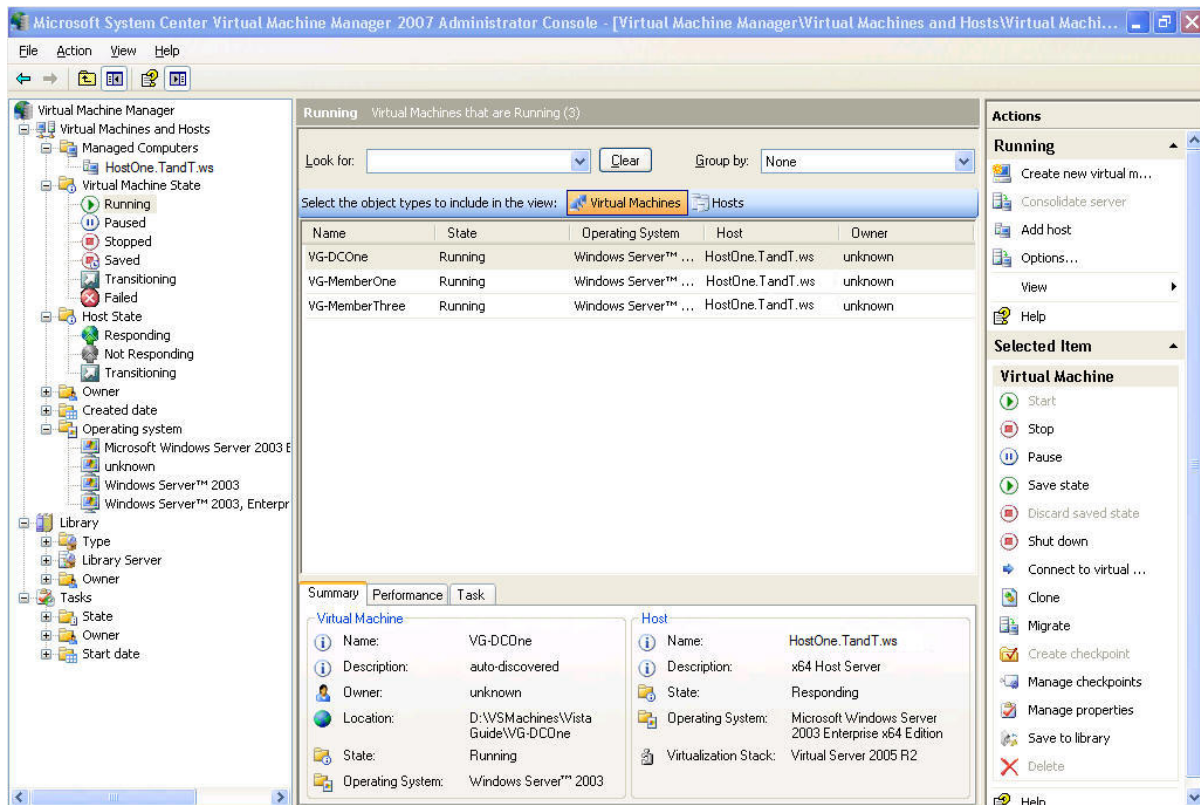



Figure 4.2. Virtual Machine Manager can be used to control multiple testing VMs

If you're running VMware ESX Server version 3.0.1 or later as a virtualization engine, then you might consider using VMware Lab Manager. Lab Manager is a very powerful tool that is designed to capture and manage entire series of virtual machines in support of both product testing and product development. For example, Lab Manager could capture the entire state of the Integration testing environment, store, it save it, and restore it as needed. Most small to medium organizations will not have access to ESX Server as it requires shared storage solutions and powerful hardware to run.

 Information on VMware Lab Manager is available at <http://www.vmware.com/products/labmanager/>. Information on VMware ESX Server is available at <http://www.vmware.com/products/vi/esx/>.


If you're using other VMware products such as VMware Server or VMware Workstation or if you're using Microsoft Virtual Server and you don't have access to Virtual Machine Manager, you will have to turn to other solutions to manage the multiple machines and multiple hosts that your lab will require.

Fortunately, several manufacturers of OS deployment tools also provide support for the management of both virtual machines and the hosts that run them. After all, provisioning a virtual machine is very much like provisioning a physical machine. The only real difference is that when you provision a virtual machine, you are going from a set of files on a disk to another set of files on a disk. When you provision a physical machine, you go from a set of files on a disk to an actual disk drive.

If you decide to use the same tool for OS deployment as for lab management as you should, then make sure it includes the following features:

- Support for the virtualization technology you use, either Microsoft Virtual Server or VMware Server.
- Support for host management and host resource monitoring.
- Support for host event gathering to quickly identify potential issues on host servers.
- Support for virtual machine image creation (using the Windows SysPrep command).
- Support for the starting, stopping, pausing, and saving state of virtual machines.
- Support for the management of virtual machine components such as hard disk drives, network configurations, virtual local area networks (VLAN) and so on.

These are just some of the requirements you'll need to be able to manage your virtual laboratory. Of course, you can always just rely on the default management interfaces your virtualization technology provides, but if you're going to acquire a set of deployment tools, why not kill two birds with one stone? This will save you considerable time and effort throughout the entire project. **Our recommendation:** Choose the right tool and manage both the lab and the deployment with one single interface.

 Microsoft is offering free virtual labs for you to begin testing early at <http://msdn.microsoft.com/virtuallabs/vista/default.aspx>. Since they are hosted over the Web, don't expect the performance levels you would normally get in your own lab.

The Windows Vista Migration Toolkit

Now you're ready to start building your Vista migration toolkit, or the toolkit that is specifically aimed at the PC Migration Cycle (see Figure 4.3). As is illustrated in this cycle, you'll need tools that will support six specific steps in this cycle: readiness assessment, personality management, OS image creation, application packaging, software deployment, and status reporting.

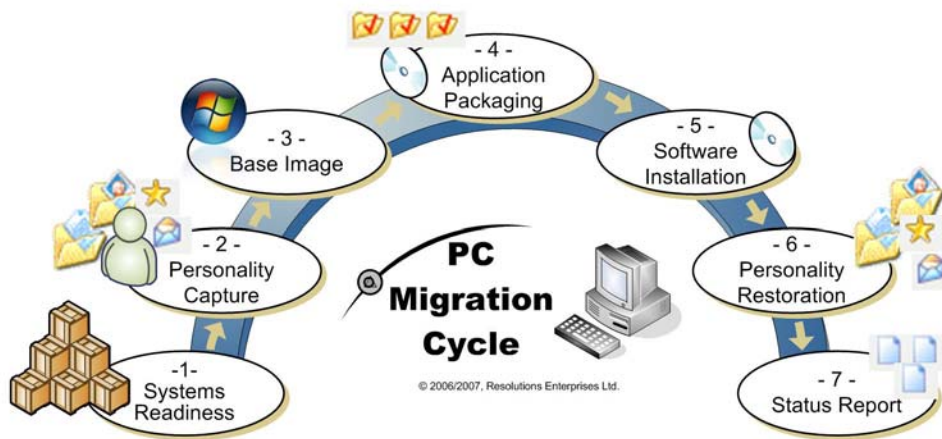



Figure 4.3. The PC Migration Cycle

 There are a lot of commercial and non-commercial tools on the market to support migrations. We include here the ones that seem the most popular and to us, seem to offer the best features, particularly in regard to Windows Vista. Don't take this as meaning that if you are using a tool or if you prefer a tool that is not listed here, it is not a valid tool to use. On the contrary, use the guidelines and requirements listed here to make sure your tool does meet the needs of a Vista deployment. And, if you find that it is a valid tool, email us at vistaguide@reso-net.com and we'll try to include information on it in upcoming chapters.

Inventory and Asset Management Tools

A lot has been said in terms of readiness assessment to date, but if you need to evaluate if your readiness assessment tool is ready to support your migration to Vista, or if you need to select a readiness assessment tool to support your migration, then make sure it meets the following requirements:

- First, it must evaluate both hardware and software readiness.
- In terms of hardware readiness, it must be able to scan for:
 - RAM
 - Disk size and configuration
 - Network devices
 - Attached devices

Most hardware inventory tools can do this by default. But, because Vista's requirements, especially the requirements for Vista Premium PCs, need to know about graphics cards and especially, the amount of dedicated RAM available to the graphics card, you need to be able to scan for this. Also, if you intend to use Vista features such as ReadyBoost—the ability to add dynamic memory to systems through flash or USB memory devices—you'll need to know if your systems include either extra USB ports or flash card readers. So, you'll need to make sure the inventory tool you select includes the ability to scan for the following:

- Graphics device
- Amount of dedicated RAM on the graphics device
- USB ports, busy and free
- Flash card readers

This means that the inventory tool must either include this capability right out of the box or have the ability to add this particular through custom edits and modifications to the default collection set.

- In terms of software readiness, it must be able to scan for:
 - Commercial single applications
 - Commercial application suites
 - Utilities such as antivirus, disk defragmentation, anti-spyware and so on
 - Application runtimes such as Microsoft Access, Visual Basic, Visual C++
 - Custom, in-house applications
 - End user-developed applications such as Word macros and templates, Excel macros, Access databases and so on
 - Custom scripts or command files

One of the most important thing to look for is to ensure that the inventory tool will not list a series of dynamic link libraries (DLL), executables, command files or any other component that make up an application. It needs to be able to roll up individual components into a legible and recognizable application name as well as roll up individual applications into application suites if they are installed. For example, Microsoft Office should read as a suite and not individual components even if they are not all installed. Similarly, Microsoft Word should not be represented as WINWORD.EXE or a series of dynamic link library (DLL) files.

Ideally, the software readiness assessment tool would also be able to identify usage information. If an application is installed on a system and it has not been used for over six months, then you might be able to consider it for the process of rationalization—reducing and removing obsolete or unused applications from the network prior to the deployment of this new operating system. If usage information is not available, you'll have to verify with individual users if they actually need each and every application found on their system.

Finally, the software readiness assessment tool should be able to identify custom corporate applications, or at least be extensible to the point where you can add definitions of applications it should scan for.

- In terms of readiness reporting, the inventory tool should be able to produce:
 - Hardware assessment reports categorizing computers according to whether they are ready, require upgrades or are simply unsuitable for any business edition of Vista.
 - Software assessment reports categorizing software based on compatibility with Vista and possibly including integration with Microsoft's Application Compatibility Toolkit to provide comprehensive reports on how applications will interact with Vista.
 - Computer group reports by region, by IT role, by principal owner, by suitability to migrate.
 - Cost analysis reports comparing cost of upgrade versus cost of replacement, including labor costs for the upgrade.
 - Ideally, reports that integrate information from your inventories to information from the purchasing contracts you rely on to acquire both hardware and software as well as links to support or warranty contracts for each product.

In addition, the inventory tool should include the ability to easily create custom reports to suit the requirements of your own situation.

Potential Inventory Tools

There are several types of inventory tools: interactive tools for very small organizations, automated tools for larger organizations, free tools, and commercial tools. Several have been mentioned in previous chapters, but they are included again here as a recap.

Microsoft offers several free tools: The **Vista Upgrade Advisor**:

<http://www.microsoft.com/windowsvista/getready/upgradeadvisor/default.aspx>;

The **Vista Hardware Assessment** (still in beta at the time of this writing):

<http://www.microsoft.com/technet/windowsvista/deploy/readassess.aspx>;

The **Microsoft Application Compatibility Toolkit** which offers very rudimentary inventory features:

<http://www.microsoft.com/technet/prodtechnol/windows/appcompatibility/default.aspx>.

Commercial inventory and assessment tools include:

Altiris Inventory Solution: <http://www.altiris.com/Products/InventorySolution.aspx>;

LANDesk Inventory Manager: <http://www.landesk.com/Products/Inventory/>;

Microsoft Desktop Optimization Pack for Software Assurance, especially the **Microsoft Asset**

Inventory Service: <http://www.microsoft.com/windowsvista/getready/optimizeddesktop.aspx>;

Microsoft Systems Management Server 2003: <http://www.microsoft.com/smsserver/default.aspx>;

Specops Inventory: <http://www.specopssoft.com/products/specopsinventory/>;

Symantec Ghost Solutions Suite:

http://www.symantec.com/enterprise/products/overview.jsp?pcid=1025&pvid=865_1.

Personality Migration Tools

The second part of any PC migration involves capturing and protecting personality information— personal user settings, applications settings, personal data files and folders. In Windows 2000 and XP, most of these settings will be stored in the Documents and Settings folder where each user that logs on to the computer system will have a folder of their own to store this information. This is called the user profile. Profiles are created each time a user logs on to a computer for the first time. They are generated from the Default User profile so if your Default User profile has been properly created, then there is some consistency between each user profile and each user experience; if not, then profiles will be widely different.

In organizations using Active Directory domains, two types of profiles are stored on each computer: local and domain profiles. In many cases, local profiles do not need to be captured if domains are present because only technicians and support staff log on locally. This means you only need to save and migrate the domain profiles. If you are not in a domain or if the machines you are migrating are not domain members, then you'll need to save local profiles. If, for some reason, you're using both local and domain profiles then you'll need to save both.

Profiles have changed in Windows Vista. Vista no longer includes a Documents and Settings folder. This folder has been replaced by a number of folders. The Users folder now stores user preferences and user data. The Program Data folder now stores application settings.

For these reasons, the tool you will select should include the following capabilities:

- Inventory profiles without capturing them to support profile analysis.
- Capture local profiles.
- Capture domain profiles.
- Capture single or multiple profiles.
- Restore single or multiple profiles.
- Analyze profile usage to help determine obsolete profiles.
- Filter out unwanted profiles from the capture.
- Filter out unwanted profiles from the restore, letting you capture profiles for backup and restore only selected profiles to target machines.
- Store profiles in a variety of locations: local hard disk, network drive, burn it to CD or DVD as required.
- Restore profile settings to appropriate locations for Windows Vista.
- Support either x86 or x64 systems in both captures and restores.
- Capture custom folders, for example, a C:\LocalData folder for information not stored into the default My Documents folder.
- Capture legacy application settings that may be stored in the program's directory instead of proper locations.
- Capture settings from one version of an application and restore to a newer version, supporting the concept of application rationalization or the reduction of multiple versions of one product.
- Scour the local hard disk for data and documents that have not been stored in appropriate locations.
- Support execution from a remote location (network drive) or interactively from a local source.
- Support full automation for the capture and restore processes.
- Support the generation of automated executables or scripts for execution in disconnected environments.
- Include encrypted administrative credentials or support the ability to run in protected user mode.
- Integrate with an automated OS deployment tool to provide an end to end deployment process.
- Provide reports on profiles to capture in support of workload estimates.

Ideally, this tool will also include a graphical interface to facilitate the profile capture and restore process and perhaps wizards to illustrate the required step by step process. Ideally, the selected tool will support extensibility to provide full functionality.

📖 Potential Personality Migration Tools

If you're migrating single profiles or profiles from one single computer to another, you should use the **Windows Easy Transfer** (WET) tool that is integrated into Windows Vista (see Figure 4.4). WET is useful for single PC to PC migrations but is not appropriate for multi-system deployments.

There are several personality migration tools on the market. Free tools include:

Microsoft User State Migration Tool (USMT, a command line tool):

<http://www.microsoft.com/downloads/details.aspx?FamilyID=799ab28c-691b-4b36-b7ad-6c604be4c595&DisplayLang=en>.

Commercial personality migration tools include:

Altiris PC Transplant Solution: <http://www.altiris.com/Products/PCTransplantSolution.aspx>;

CA Unicenter Desktop DNA: <http://www3.ca.com/solutions/Product.aspx?ID=4920>;

LANDesk Management Suite (full migration suite, not only personality protection):

<http://www.landesk.com/Products/LDMS/>.

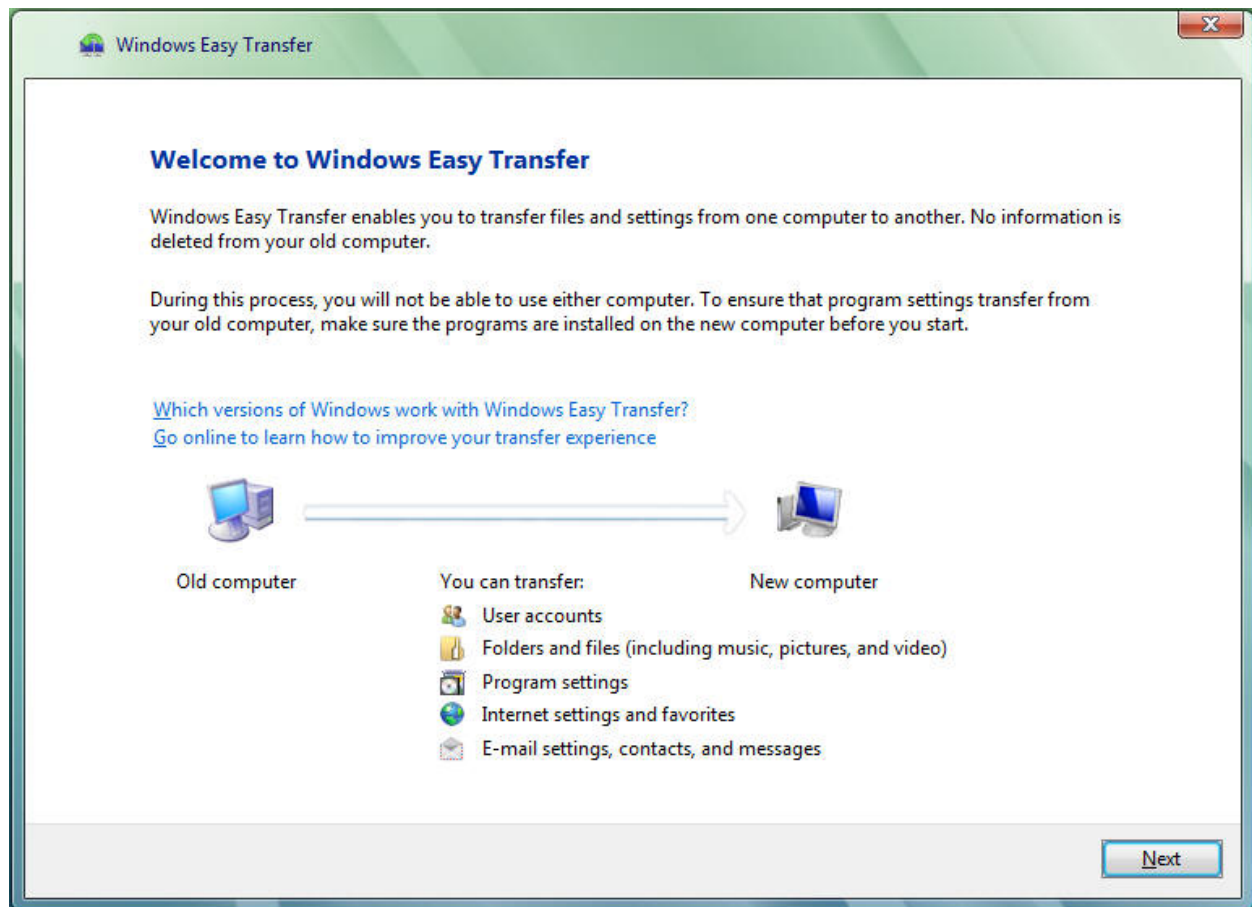


Figure 4.4. The Windows Easy Transfer tool

Operating System Imaging Tools

Organizations have been using disk imaging in support of OS migrations for several years. The ability to prepare a reference computer interactively, depersonalize it and then capture its image for reproduction to multiple systems is truly a godsend when it comes to migration projects. This is one reason why Microsoft has introduced Image-Based Setup (IBS) with Windows Vista. Because of the new IBS, Vista now supports the WIM file-based imaging format which, unlike disk images, does not take an exact copy of the sectors of a hard disk, but captures the files that make up the Windows installation on that hard disk. Microsoft is not the only organization to do this as manufacturers such as Altiris Corporation have been supporting file-based imaging for years. But the advantage of a file-based image is clear: it is much easier to service since it is a mountable image that can be manipulated without having to recreate the reference computer.

Managing images is an ongoing process; that's because they have to be updated whenever patches or updates are released for the components they include. And, because of the way Windows relies on hardware abstraction layers (HAL) that are different from computer configuration to computer configuration, organizations traditionally needed several images, one for each HAL they managed. With IBS, Vista does away with the need for HAL-dependent images. Also, because Vista provides a core OS with a separate language layer, it does away with language-dependent images as well. The combination of these two features means that you should be able to reduce the total number of images you manage to one single image per processor architecture—that is, one image for 32-bit and one for 64-bit processors.

Image deployment is also important. Most manufacturers of disk imaging technologies have ensured that they also provide a tool in support of the deployment of those images. These tools deploy images through multicasting as opposed to unicasting. Images can be as large as several gigabytes and when they are sent through unicasting, they must create a data stream for each endpoint to which the image is sent. When sent through multicasting, only a single data stream is delivered to multiple endpoints. This could make or break many deployments. The default WIM image for Windows Vista—without any customizations—is 2.24 GB in size. Send that to 100 desktops overnight using unicast and you're delivering 224GB of data. Send the same stream over multicast and you're delivering 2.24 GB. Is multicast worth it? You do the math.

For these reasons, the imaging tool you select should include the following features:

- Capture an image from a reference computer.
- Support HAL-independence in the image.
- Support multicast deployment (this may come from a secondary tool or utility from the vendor).
- Support the ability to mount the image for examination or update.
- Provide a graphical interface for image capture.
- Support the generation of x86 and x64 images.
- Support the NTFS file format for the images.
- Support the capture of an image from a remote computer.
- Support the automation of the image depersonalization through Microsoft's SysPrep tool.
- Support the capture and deployment of images using BitLocker—requiring two partitions, one of which is encrypted. This feature may require a script to deploy the partitions in unencrypted format then encrypt the BitLocker partition once the image is deployed.
- Support language independence for Vista OSes.
- Support the application of multiple language packs once the image is deployed.
- Support automation to script the image installation.
- Support the integration of the image capture and deployment to the overall OS deployment process.

In addition, you may want to make sure your OS image capture tool can integrate with the Microsoft WIM image format.

Potential OS Imaging Tools

Microsoft offers two tools in support of its WIM image format:

ImageX, a command line tool for capturing and installing images and the **Windows System Image Manager**, a graphical tool for editing image contents and generating the corresponding Unattend.XML file. Both are included in the Windows Automated Installation Kit (Windows AIK): <http://www.microsoft.com/downloads/details.aspx?FamilyID=c7d4bc6d-15f3-4284-9123-679830d629f2&DisplayLang=en>. The WAIK also includes Windows Pre-Execution or PE which is used to deploy the image.

Microsoft also offers **Windows Deployment Services** (WDS) as an update to Remote Installation Services. WDS is designed to work with WIM images for OS deployments including bare metal installations (<http://www.microsoft.com/windowsserver/longhorn/deployment/services.mspx>). Anyone with a license for WS03 will have access to WDS. The WDS update for WS03 is included in the WAIK download.

Commercial OS imaging tools will both capture the image and deploy it. They include:

Acronis True Image and **Snap Deploy**: <http://www.acronis.com/>;

Altiris Deployment Solution (migration suite, not only image capture and deployment): <http://www.altiris.com/Products/DeploymentSolution.aspx>;

LANDesk Management Suite (full migration suite, not only personality protection): <http://www.landesk.com/Products/LDMS/>;

Microsoft SMS 2003 with the **Operating System Deployment Feature Pack**:

<http://www.microsoft.com/technet/downloads/sms/2003/featurepacks/osdfp.mspx>;


Symantec Ghost Solution Suite:

http://www.symantec.com/enterprise/products/overview.jsp?pcid=1025&pvid=865_1.

Application Preparation Tools

Application management and preparation is often the biggest challenge and the most demanding effort in an OS migration project. This is why it is so important to apply a rationalization process to applications—or a removal of any applications that offer duplicate features or multiple versions of the same application in your network—before any other activity. Rationalization helps control the effort required to prepare and deploy applications. But, before you can rationalize them, you have to first inventory, then analyze applications for compatibility. If an application proves to be completely incompatible, it might be a prime candidate for rationalization.

Inventory tools will offer some information on application compatibility, but the only tool that will tell you if the application will run on Vista is Microsoft's Application Compatibility Toolkit (ACT). That is because ACT is designed to collect information on the different applications organizations run and allow them to share information about an application's compatibility anonymously through the Application Compatibility Exchange. Then, when you run ACT in your own network, you can collect information about the applications you run from the Exchange and learn from information that has been shared by others. Because of this, ACT should definitely be part of your application readiness toolkit.

 **Application Compatibility Resources at Microsoft**

Microsoft offers several tools and lots of information on application compatibility. For a full list of these resources by IT role, go to <http://technet.microsoft.com/en-us/windowsvista/aa905066.aspx>.

For information on application development issues in Windows Vista, see Application Compatibility in Vista: Working as a Standard User at <http://www.reso-net.com/presentation.asp?m=7>.

But, compatibility is not the only tool required for application preparation. You also need:

- Tools to package applications for automated installation.
- Tools to virtualize applications if you choose to integrate this process into your migration project.
- Tools to deploy applications once they have been packaged.

This will round out your application preparation toolkit.

Application Packaging Tools

Software packaging is a very important part of any OS deployment or migration. That's because if you want to automate the process from A to Z, you'll need to have applications in a format that will automatically install them without user intervention. Even worse, if you choose to lock down all computers as you should, you'll need to make sure applications install silently in the background even and especially when users do not have administrative credentials. Fortunately, Microsoft has done a lot of work in providing a service which can help standardize all application installations: the Windows Installer Service (WIS). WIS has been updated for Windows Vista and is now in its fourth iteration. WIS 4.0 includes support for the new Restart Manager, a tool that will automatically shut down and restart open applications when installations occur, as well as for User Account Control.

Organizations have been working with WIS for several years and many will already have WIS packages for each and every application, but because of the changes in Windows Installer 4.0, you'll need to make sure your existing packages will run with this service. This compatibility check is one of the most important features you'll need in the application packaging tool you select. In addition, this tool should include the following features:

- Full support for all WIS features.
- Support for .NET Framework installations.
- Support for Terminal Services installations.
- Repackaging of legacy installations to the Windows Installer Service.
- Editing of Windows Installer of MSI files.
- Creation of transform (MST) and patch (MSP) files.
- Support for editable exclusion lists—lists of items to omit in a capture—with explanatory text for the exclusion.
- Support for the inclusion of scripts to the MSI file to include activities such as security modifications for repackaged legacy software.
- Support for the Windows Logo Guidelines in regards to Windows Installer integration.
- The ability to inventory all of the packaged components.
- The ability to store package inventories in a database containing all of a system's components in order to detect and resolve conflicts.
- Support for the inclusion of variable installation sources within packages.
- Validation of existing MSI packages for WIS 4.0.
- Support for Vista Standard User installations.

If you have a large organization, you might also be interested in workflow support for packaging teams as well as change control and tracking for each package, especially if roll-back is supported.

Potential Application Packaging Tools

Microsoft does not offer an application packaging tool, though several others do. The most popular are from two vendors, though they are not the only manufacturers to offer these tools by far:

Altiris Wise Package Studio (WPS): <http://www.altiris.com/Products/WisePackageStudio.aspx>;

Macrovision AdminStudio:

<http://www.macrovision.com/products/adminstudio/adminstudio/index.shtml>.

Macrovision also offers a workflow management tool for organizations wanting to control these types of processes. Macrovision Workflow Manager

(<http://www.macrovision.com/products/adminstudio/workflow/index.shtml>) even includes a custom workflow in support of migrations based on Microsoft's BDD. More information on this workflow can be found at <http://www.macrovision.com/products/adminstudio/workflow/resources/index.shtml>.

For a more complete deployment tool set, Altiris offers the **Migration Suite** which includes all of the components of the Deployment Solution plus WPS, providing complete support for the PC Migration Cycle (<http://www.altiris.com/Products/MigrationSuite.aspx>).

Software Virtualization Tools

As mentioned in previous chapters, new processes have emerged for the delivery and management of software on desktops and servers. These processes virtualize the software layer, protecting the operating system from any changes performed by a software installation. They do this by abstracting software layers from operating system layers. In addition, these tools provide support for the centralization of software sources, letting you update all applications in a single location and automatically updating all systems which have access to the application. This is done through software streaming. Using application or software virtualization means that you can create an OS image, deploy it to your systems, maintain and patch it as needed, but never have to worry about it being damaged or modified in any way by any application you deploy to it. This makes for a very powerful distributed system management model, one you should most definitely examine closely before you migrate to Vista.


Potential Software Virtualization Tools

There are only three manufacturers of software virtualization tools today. Each offers much the same feature set, but each uses a completely different approach. Our best recommendation is to evaluate the capabilities of each tool and determine for yourself which offers the best features. For a presentation examining two of these tools, download **Software Virtualization — Ending DLL Hell Forever** from <http://www.reso-net.com/download.asp?Fichier=P82>. Citrix' **Application Delivery** tool (http://www.citrix.com/lang/English/ps2/technology/index.asp?ntref=hp_nav_US) was in beta at the time of the delivery of this presentation.

Some changes have occurred since this presentation was delivered. Microsoft has acquired SoftGrid and has included it in the **Desktop Optimization Pack for Software Assurance** (<http://www.microsoft.com/windowsvista/getready/optimizeddesktop.msp>). Altiris has included software streaming to its virtualization technology through its integration with **AppStream** (<http://www.appstream.com/>). Information on **Software Virtualization Solution** can be found at <http://www.altiris.com/Products/SoftwareVirtualizationSolution.aspx>.

Software Deployment Tools

The final stage of application preparation is delivery. These tools are more complex than others since they require an identification of the target systems prior to being able to deliver software to them. That's why software delivery tools are usually tied to inventory tools of some form. One exception is Active Directory Software Installation (ADSI). That's because Active Directory (AD) already knows of each target system since they need to be joined to the AD structure before they can be managed by the directory. This is sort of an inventory in reverse.

 For an overview of software delivery management practices and a view into a powerful software delivery tool integrated to Active Directory, download **Software Deployment Done Right** at <http://mcpmag.com/techlibrary/resources.asp?id=140>.

Organizations using ADSI would normally be small in size since ADSI lacks many of the features a true software delivery system requires. These features include:

- Support for Windows Installer package deployments.
- Support for the execution of scripts and legacy deployments.
- Support for deployments to various targets—computers, servers, users, groups, sites, or custom collections.
- Support for dynamic collections—collections that are based on membership rules and that are updated dynamically.
- Integration or links to the Active Directory to reuse its contents for collection definition.
- Support for automatic uninstalls when targets fall out of the deployment scope.
- Support for conditional installations, letting you install multiple packages in a row or letting you make sure that dependencies are met before the installation of a key package.
- Support for bandwidth control, ensuring that installations do not hog the wide area network connection when downloading installations to clients.
- Support for delta-based replications, ensuring that if an installation package changes, only those changes are replicated to distribution points.
- Support for copying the installation file locally, then performing the installation from the local copy and persisting the local copy in support of Windows Installer self-healing, especially for mobile systems.
- Ideally, support for integration of each of the steps in the PC Migration Cycle.
- Graphical interface and wizards to simplify complex tasks.

It should also include extensibility to allow you to customize it to your own needs if required as well as providing support for software patching and system administration once they are deployed.

Potential Software Deployment Tools

For the purpose of operating system deployment, Microsoft offers the **BDD Workbench**, a tool that integrates OS image preparation, image deployment, as well as software and update deployment into one interface. BDD Workbench is free as part of BDD 2007:

<http://www.microsoft.com/technet/desktopdeployment/bddoverview.mspx>.

Commercial software deployment tools include:

Altiris Deployment Solution: <http://www.altiris.com/Products/DeploymentSolution.aspx>;

LANdesk Management Suite: <http://www.landesk.com/Products/LDMS/>;

Microsoft Systems Management Server 2003: <http://www.microsoft.com/smsserver/default.mspx>;

Specops Deploy: <http://www.specopsoft.com/products/specopsdeploy/>.

Making the Case for Extended, Lifecycle Management Systems

As you can see, there are quite a series of different tools you will need to work with as you're preparing your migration and there are quite a few tools to choose from for each step of the migration process. This list is not exclusive by far. In addition, you'll see that as we move through the detailed steps of the PC Migration Cycle in future chapters, other tools will be required—often custom tools that perform specific activities in your network depending on your circumstances.

You have several choices. You can, if you want to, use free tools most of which are command line driven, and script all of your installation steps manually. In our opinion, only the smallest of organizations will choose to do this and even then, we would argue against it. Consider this. Each and every step you will perform for a migration to Windows Vista will be a step you will need to perform again and again in your network as you manage and maintain the systems you deployed. Most organizations use a three to four year hardware refresh cycle. This means that each year, these organizations need to perform many of the steps in the PC Migration Cycle each year for a third or a fourth of the PCs in their network. In addition, each time a computer system fails, you'll need to use some of the steps in the PMC to either replace or repair it.

This makes a very strong argument for the selection of a tool set that will provide full support for the PMC as well as full support for long term management and administration of the systems in your network. PCs have a lifecycle in your network (see Figure 4.5). This lifecycle goes beyond the PMC:

- Inventories must link to asset management systems as well as contract management.
- OS and software deployment must include patching and update management.
- Production systems must be monitored for proactive problem management as well as performance.
- Support technicians need remote control or remote assistance tools to help users as well as access to service desks that help them manage and track problems as they occur.
- All data must be linked to a central configuration management database (CMDB) to facilitate information sharing and system support.
- Tools must be fully integrated into one seamless interface.
- Tools must provide both graphical and command line support as well as wizards for the most common tasks.
- Tools must provide support for delegation of administration to help technicians focus on the key tasks they are responsible for.
- And, ideally, tools must manage any system—PCs, servers, handhelds, laptops and any other device your network will include.

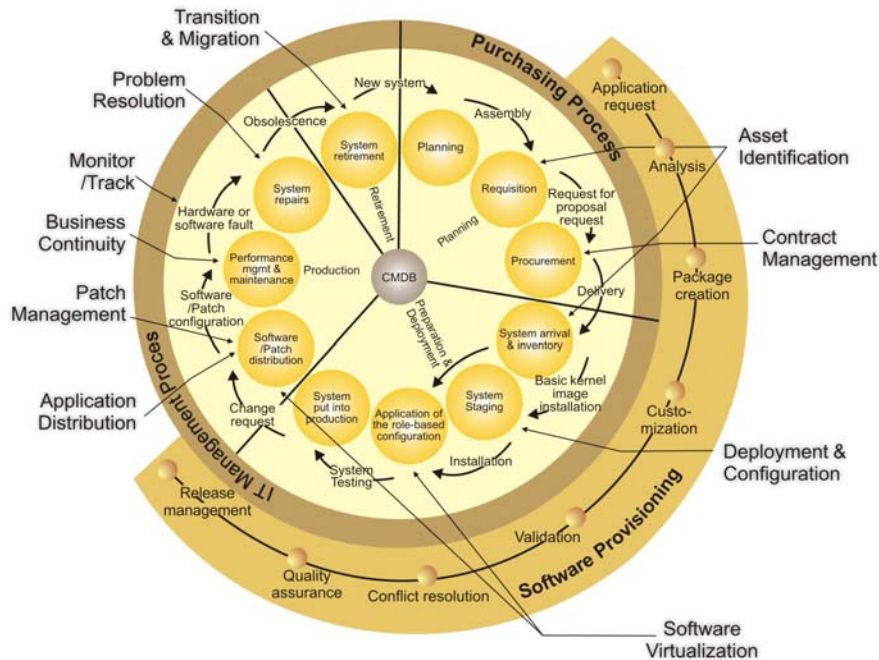


Figure 4.5. Managing the Entire PC Lifecycle with an Integrated Tool Set

One thing is sure: you'll need to use and reuse the various steps of the PMC in production once the deployment is complete. This means you need to make sure all of the processes and all of the tools you use for the migration are transitioned into production once the project is complete. There is no better opportunity than an OS migration project to implement a full systems management suite of tools. If you don't have such a tool set in place, or, if your current tool set does not provide support for each and every task listed here, then take the time to review a full management suite as part of your migration project. You won't regret it and you'll make up your return on investment in no time since every step of the processes you use for the PMC and for ongoing management will be automated, standardized, and repeatable as well as always provide expected results.

As we have stated before, don't miss this opportunity to gain full and complete control of your network!

Potential Lifecycle Management Tools

Because of their very nature, lifecycle management suites are all commercial products. As high-powered systems management consultants, we have had many opportunities to work with and fully review several management suites in the past. Not all are listed here. Those we recommend you include in your review are:

Altiris Client Management Suite <http://www.altiris.com/Products/ClientMobile.aspx>;

LANdesk Management Suite: <http://www.landesk.com/Products/LDMS/>;

Microsoft Systems Management Server 2003: <http://www.microsoft.com/smsserver/default.mspx>;

Specops family of products: <http://www.specopssoft.com/>;

Symantec Ghost Solution Suite:

http://www.symantec.com/enterprise/products/overview.jsp?pcid=1025&pvid=865_1.

Microsoft is retiring the SMS name and will release an updated version of its management tool as **System Center Configuration Management** sometime in 2007.

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