

WHITE PAPER

Windows 7: Tips and Best Practices for Simplified Migration

By Nelson Ruest and Danielle Ruest



www.Reso-Net.com

Abstract

Migration to Windows 7 is a future reality for most. With XP approaching its end of life, and many organizations choosing to skip Vista as an interim step, the new Windows 7 release holds the promise of new features and benefits that include added security, improved manageability and enhanced ease of use. Regardless of the starting point, a migration to Windows 7 is a path that holds as many questions and challenges as it does potential rewards. Planning now can ensure a smooth transition in 2010.

About the Authors

Danielle Ruest and Nelson Ruest are technology futurists focused on datacenter optimization and continuous service availability. They are authors of multiple books, notably "[Training Kit 70-652: Configuring Windows Server Virtualization with Hyper-V](#)" published by Microsoft Press and "[Virtualization, A Beginner's Guide](#)" published by McGraw-Hill Osborne.

Les Entreprises 
Resolutions Ltd.
Enterprises
www.Reso-Net.com

TABLE OF CONTENTS

Windows 7: Tips and Best Practices for Simplified Migration

Windows 7 Deployment and Operating Improvements.....	1
Potential Deployment Pitfalls.....	3
Upgrades versus Clean Installs	3
User Data Protection	4
Relying on XP Mode.....	4
Physical or Virtual OS Targets.....	4
Installing or Virtualizing Applications	5
Preparing for Windows 7 Deployment	6
Best Practices.....	6
Get the Right Tools	7

Windows 7 Deployment and Operating Improvements

A Lagging Vista Adoption Rate

“The adoption rate of Vista has been markedly less than that of Windows 2000 and XP. By 2009, Vista’s adoption rate was 6%. At the same point of the product lifecycle (18-24 months after release), Windows 2000 had an adoption rate of 12%, while Windows XP had an adoption rate of 14%.”

—Gartner Research, 2009

When it comes to Windows desktops, many organizations are still relying on Windows XP. That’s because the XP release of Windows has proven stable and reliable, a primary reason many organizations decided to skip the migration to Windows Vista. In addition, organizations running XP know that their applications will continue to run, something they can’t guarantee on Vista, or can’t guarantee until they’ve updated and tested them—a process that takes considerable time. Vista also didn’t seem to deliver on Microsoft’s promises. While it was a new operating system (OS) built on new core code, it broke too many applications to make it a worthwhile investment for most organizations. Today a very small number of corporate computers run Vista, mainly those that require specific drivers or the applications running on them have proven stable and offer more functionality. However, with the release of Windows 7 and the upcoming end of life for XP, many will need to migrate to the newest version of Windows.

Microsoft has added a considerable number of new features to Windows 7, making this version the richest version of Windows ever. Many of these features are focused on the user—as they should be—but several are specifically related to the operation and deployment of this operating system. Some of the key features of Windows 7 in this regard include:

More Info

To verify if your computer includes hardware assisted virtualization, download this utility from [AMD](#) or this one from [Intel](#) and run it on your PC.

- **Windows XP Mode:** This downloadable add-on to Windows 7 is really nothing more than a virtual machine (VM) that runs under Microsoft Virtual PC. The add-on is available for the Professional, Ultimate and Enterprise editions of Windows 7. If you have applications that must run on Windows XP to work, you can install them into the Windows XP virtual machine, and then publish them to the Windows 7 desktop. The process is completely transparent to end users. The virtual machine runs in the background and the applications appear as if they are running on Windows 7 while actually running on the XP virtual machine. Note that the target computer must include a processor supporting hardware assisted virtualization such as AMD-V or Intel VT, and that this feature must be enabled in the system’s BIOS for XP Mode to work.
- **Windows 7 Imaging:** Microsoft has improved the imaging process in Windows 7. It is now possible to image a computer to install a new operating system without damaging existing user data. This means that you could use an external device such as a USB key to install a new operating system over an existing one without losing the data that resides on the target computer. While this is not an in-place upgrade, it does provide some level of protection for existing data. Note that this feature is most useful when you do not have the ability to store user data elsewhere during the replacement of the OS. As such, it is not really targeted to corporate users.

- **Windows 7 and VHDs:** Microsoft has integrated the virtual hard disk (VHD) format to Windows 7's disk subsystem. This means that you can mount and operate virtual hard disks directly from within the Windows 7 disk management interface. In addition, you can boot to a VHD, letting you install the operating system within a VHD instead of directly on the disk. This makes the OS much more transportable since you only have to copy the VHD to protect the system's contents. Virtualization is in your future since it is now built right into the OS. Since VHDs allow the use of a single image across both physical and virtual machines, organizations considering virtual desktop infrastructures, or better yet a mix of physical and virtual desktops, would do well to give this feature a closer look.

More Info

To learn more on Windows 7 features for deployment and operations, go to the [Windows 7 IT Pro Web site](#).

There are several more features that will assist IT administrators and technicians when they work with Windows 7—the Problem Steps Recorder will let you record the steps end users go through when they encounter a problem, DirectAccess will let remote users connect to your Intranet without requiring a virtual private network connection, BitLocker now works for remote drives, and much more—but the three features mentioned above: XP Mode, Imaging and VHD support will have an immediate positive impact on how you manage your move to Windows 7.

Potential Deployment Pitfalls

While Microsoft has endeavored to make the migration from Windows XP or Windows Vista to Windows 7 as painless as possible, there are still potential pitfalls you must beware of when you decide to move forward with the change.

Migrations focus on three key factors:

- User profiles or the data, application configurations and settings that make up a user's desktop environment.
- Applications or the core purpose of using a PC: running tools that support your organization's business operations.
- User skills or the ability of your users to work with and operate a desktop to fulfill their daily tasks.

All of the considerations in your deployment should be built around these three factors since they are the only factors that will actually be migrated. You don't migrate the operating system, since you deploy a new OS. You must, however, protect user data and you must make sure user applications will operate properly once they are located on the new OS. Finally, you must ensure your user's skill sets are upgraded to the new OS to continue with the productivity levels you've come to expect. Fortunately, many users are already familiar with the Vista interface since they have home computers running this OS, and additional changes will not be overwhelming.

Even with a focus on these three core factors, there are additional questions that should be answered prior to the migration endeavor. Specifically, you should consider the following:

- Will you be performing an upgrade of the OS?
- How will you protect user data?
- Will you convert your applications or run them in XP Mode?
- Will you be deploying the OS to a physical or a virtual disk?
- How will you run your applications in Windows 7?

The answer to these questions will help you determine just how you will address the migration and where you will invest your deployment efforts.

Upgrades versus Clean Installs

First, you must be aware of the potential upgrade paths to Windows 7, as they are limited. You cannot perform an in-place upgrade from a legacy version of Windows to the new version. You cannot upgrade from a server OS to the new desktop OS. You cannot upgrade from a different core language and you cannot upgrade from a 32-bit version to a 64-bit version. In fact, the only

More Info

See the [Windows 7 Upgrade Paths](#) document on the Microsoft Web site for more information.

supported upgrade is from Windows Vista with either service pack 1 or service pack 2 to a corresponding version of Windows 7.

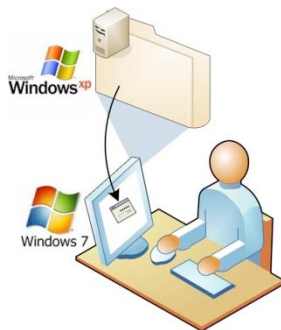
Most organizations won't perform an upgrade anyway since there is too much negative stigma associated with the concept. In addition, by the time you upgrade, you'll be past the first decade of the 21st Century and may have decided to proceed with a move to 64-bit computing across the board. If you deploy a 64-bit version of Windows 7, this means you'll be doing clean installs only. Remember that a clean install also means a reinstallation of all of the applications. In the long run, clean installs always offer the best results during a migration.

User Data Protection

Since you cannot upgrade from Windows XP to Windows 7, you must take precautions to provide protection for end user data. While the new Windows 7 imaging mode supports the protection of existing data on the target drive, it is always best to be proactive and capture end user data first, then restore the data should there be a problem affecting user data during the imaging process. In addition, the imaging mode will not integrate the user data with the new OS. In fact, the only way to ensure that user data is properly integrated with the OS is to rely on a tool such as Microsoft's [User State Migration Tool](#) (USMT), which will properly convert data structures from XP or Vista to Windows 7.

Relying on XP Mode

If you decide to use XP Mode in Windows 7, you will need to build and then deploy a Windows XP virtual machine onto target computers. You will also need to install applications that are incompatible with Windows 7 into the XP VM. This means that you will need to update and maintain two operating systems on each target computer: the physical one on the PC and the virtual XP Mode OS. In addition, you will need to manage applications within two environments on each computer running XP Mode. While XP Mode provides unparalleled application compatibility within Windows 7, it will definitely add to your administrative overhead.



XP Mode relies on a virtual machine to publish incompatible applications to the Windows 7 desktop.

Physical or Virtual OS Targets

Because Windows 7 supports booting from a VHD, you might consider deploying the operating system directly within a VHD on your reference computer, then capturing this VHD as the original image for deployment. This means that you can create a VHD image and simply copy it to all of your PCs. To back up a PC, simply copy its VHD somewhere. To replace a PC, just move the VHD from one to another. This avoids profile migrations—once you're on Windows 7—and can really simplify long-term machine management. Because the VHD support in Windows 7 is a new feature, you might prefer instead to work with a traditional installation on the reference computer and use

traditional imaging tools to perform your deployment. This is a decision you will need to make during your preparation for the deployment.

Installing or Virtualizing Applications



Application virtualization lets you run many applications—often conflicting applications—with little impact on the end user desktop or on administrative operations.

While Microsoft has done a lot of work to add application compatibility support within Windows 7, you will still need to test and possibly convert some of your applications before moving them to the new OS. This means revisiting each and every one of your applications, unless you decide to run the application in XP Mode; note that you won't run all of your applications in this mode, because it does not represent a long-term solution. If you need to revisit each application, then consider moving to application virtualization instead of relying on the traditional application installation process.

Application virtualization creates a protection layer around the OS. This means that the OS is not modified by an application installation. Instead, application virtualization captures the running state of an application. Virtual applications can then be copied or streamed to the target desktop instead of installed. In addition, virtualizing an application will avoid having to perform regression testing or the creation of complex scripts for installation customizations, two activities which form a large part of the application deployment process.

Virtual applications also support the injection of better management capabilities into the application administration process. For example, you gain immediate application metering capabilities when you deploy a virtual application. Knowing who actually uses an application and how they use it in real time lets you know exactly who needs the application.

Finally, virtual applications are sandboxed and isolated from the operating system. This means that you can run multiple versions of the same application on the same machine at the same time when needed. This provides an unparalleled ability to provide your users with exactly what they need when they need it.

In many ways, virtual applications are much easier to manage in the long run than virtual desktops such as the one in XP Mode.

Preparing for Windows 7 Deployment

Moving to a new operating system is a time-consuming task which can be extremely challenging. There are two key considerations that will help make the transition as smooth as possible:

- Understanding industry best practices to ease the transition.
- Having the right tools to support your migration.

Armed with both, your transition to Windows 7 will be as easy and as simple as possible.

Best Practices

When planning for a move to Windows 7, consider the following best practices to help simplify your migration:

The Windows 7 Migration Focus:

- *Inventory*
- *Rationalize*
- *Categorize*
- *Image*
- *Support*

1. **Perform proper inventories.** The only way you will be able to migrate successfully is if you know your starting point. Your inventories will need to capture the hardware characteristics of your existing PCs, including support for hardware assisted virtualization if you want to use XP Mode; the applications you run on your network and who uses them; and the amount of valid data your users store on their desktops.

Inventory data must be obtained in real-time so that it is not obsolete when used for any decision making that may have a direct impact on the success or failure of your project. The data must also must be sufficiently detailed to provide the hardware and software information you need to plan migration.

2. **Rationalize content as much as possible.** Rationalization means reduction of the content of your desktop network, getting rid of obsolete and unused applications, removing unused content and unused hardware components. It is common to have obsolete and outdated tools, applications and data in your desktop network. One forgotten application removal is an oversight that can become costly at the time of a migration, and there is little reason to migrate something that is no longer needed.

Reducing content through rationalization simplifies the migration because you have fewer elements to migrate. This is why this part of the process is so important. What's better is that the rationalization can be performed at any time, even before you begin performing the migration.

3. **Categorize your applications.** Once you have your final application inventory, you can proceed to the application preparation process. You will need to categorize applications according to target deployment methods and environments. Your categories should include:

- Applications for Windows 7 Conversion
- Applications for XP Mode
- Applications for Virtualization

Once your applications are categorized, you can consider your application packaging strategies. Ideally, you will opt for application virtualization primarily because by virtualizing applications, you will greatly reduce your long-term application management efforts.

4. **Select the proper imaging target.** Will you be using traditional imaging strategies or will you take advantage of the new Windows features? Will you be performing upgrades or clean installations? Whichever mode you choose, you should ensure that proper and extensive imaging testing is performed before you proceed with OS distribution. Be aware that very few organizations use in-place upgrades, and since many will be starting from Windows XP, the option does not exist. Clean installations will give you the opportunity to get rid of any lingering 'garbage' on your desktops and provide you with a pristine OS to work with, once the migration is complete.
5. **Reduce long-term support costs.** Each and every strategy you consider during this deployment should target cost reductions in regards to long-term support. For example, if you move to application virtualization, then you should be able to reduce application support costs. When you choose your imaging mode, you should test extensively to make sure every step—and especially the end user data and profile protection mechanism—will work as expected. This is what you can expect when you employ Microsoft's USMT to migrate profile information. USMT has been designed to support imaging tools during a migration. However, this might be the right time to consider using a central profile management policy, relying on Windows' built-in features to centralize all end user data. This will reduce long-term user data protection costs because centralized data can be backed up more easily and is always available, regardless of the PC with which the end user connects.

Following these best practices will greatly simplify your move to Windows 7. But best practices alone won't make your migration a success. You also need the right tools to make it work.

Get the Right Tools

Migrations simply can't occur if you don't have the right systems management tools in place to support them. You need a systems management tool to perform your inventories, to help rationalize content by telling you who uses what in your network, to help categorize applications by creating groupings of users relying on them, to support the imaging process and to help reduce long-term support costs.

Make sure you take the time to verify that your systems management tool will provide support for each of these critical aspects of your migration. This might mean that having the right tool requires acquiring a new one. It's true that you can obtain and work with several free tools for the deployment—from Microsoft and others—but you may also discover that obtaining the right commercial tool will ultimately save you more because it streamlines the entire deployment operation, and provides ongoing post-migration administrative support.

For example, if you use free tools such as Microsoft's Deployment Toolkit, you'll find that you will need time to learn how they work. Many rely on the command line only and because of this, may require extensive preparation for you to generate the right command structures to obtain the desired results. In addition, the Microsoft Deployment Toolkit only supports the deployment operation.

Commercial tools, on the other hand, will not only streamline the process by providing graphical interfaces for each task, but they will also support long-term management and administration of the workstations once your deployment is complete. For this reason, they are worth evaluating. While they are not free, commercial tools are integrated and can often be much more cost effective when you factor in time saved and the on-going support and management they provide.

Migrations hold many questions and challenges. By beginning your planning now, understanding industry best practices, as well as having the right tools in place, your transition to Windows 7 will go as smoothly as possible when you're ready to make the move.

About KACE™

KACE™ is the leading systems management appliance company. The award-winning KBOX™ family of appliances delivers easy-to-use, comprehensive systems management capabilities. KACE customers usually install in one day and enjoy the lowest total cost compared to software alternatives. KACE Systems Management Appliances, in addition to providing inventory, asset management, software distribution, patch management, help desk and systems deployment, also provide organizations with a tool vital to supporting a well planned and efficient Windows 7 migration in 2010.

KACE is headquartered in Mountain View, California. To learn more about KACE and its product offerings, please visit <http://www.kace.com> or call **1-877-MGMT-DONE**.

Helpful Links:

- KBOX Systems Management Appliances
<<http://www.kace.com/products/systems-management-appliance/index.php> >
- KBOX Systems Deployment Appliances
<<http://www.kace.com/products/systems-deployment-appliance/index.php> >
- Windows User State Migration
<<http://www.kace.com/products/systems-deployment-appliance/features/windows-user-state-migration.php> >

Contact KACE

1616 North Shoreline Boulevard
Mountain View, California 94043
(877) MGMT-DONE for all inquiries
or
(+1) (650) 316-1050 for International inquiries
(650) 649-1806 fax

Sales and partnering: sales@kace.com

Other Information: info@kace.com

On the Web: <http://www.kace.com>

KACE and KBOX are trademarks of KACE Networks, Inc. All other trademarks are owned by their respective companies.