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The Essentials Series: Automation
Tools for Windows 7 Migration

Best Practices in Planning & Executing a Windows 7 Migration

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by Greg Shields

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Best Practices in Planning & Executing a Windows 7 Migration

Windows 7 is here and it's ready for deployment to enterprises everywhere. If you're one of the many who avoided the XP to Vista upgrade, then be prepared for some dramatic changes in how Microsoft's new operating systems (OSs) are deployed. Installing Windows 7 can be accomplished through remarkably automated means, if you're aware of the right technologies to do so.

Sometimes the most obvious paths for migration might not be the smartest nor those that will ensure the greatest success. Wrapped around the actual installation of every Windows deployment is a much-larger set of planning and automation activities that you must leverage if you're to ensure success.

This Essentials Series will assist you in understanding those activities as well as today's enabling technologies for planning and executing a Windows 7 migration. Starting with this first article, you'll learn the seven key activities that are required for every successful migration. The second article continues with a discussion of the free tools that are natively available from Microsoft. Although these tools are low in cost, you'll quickly find that their non-integrated approach might not make the best solution for your business' needs. Concluding the conversation is a final article that proposes an alternative and integrated approach. That approach directly maps the seven activities into automated processes to ensure migration success.

XP's Time Is Running Out

If you've downloaded this Essentials Series, it's likely that you're aware of Windows XP's impending sunset. Released in October of 2001, Windows XP has seen a long and prosperous life in homes and businesses all around the world. Yet although Windows XP remains a popular OS due in part to its widespread application compatibility, the core of this OS remains atop code that was developed nearly a decade ago. In almost 10 years, the world has seen a dramatic growth in malware, the introduction of regulatory compliance, and a greater demand for cohesive centralized management. These new requirements mandate a new OS that's been specifically designed with today's needs in mind.

Although many elected not to upgrade from Windows XP to Windows Vista, those same businesses find themselves perhaps unknowingly suffering under a web of band-aids, code updates, and third-party add-on products. These required but costly components are fundamentally necessary to keep Windows XP operating in a safe and secured manner while meeting today's new computing requirements.

Microsoft's release of Windows 7 in October of 2009 changed the landscape for the business desktop OS. Incorporating Windows Vista's much-needed kernel security re-architecture with a series of performance optimizations, user interface (UI) changes, and useful new capabilities, Windows 7 is the OS that's ready to take XP's place in your business.

XP's Sunset Is Happening Now

Microsoft officially ended mainstream support for Windows XP on April 4th of 2009. Although this action doesn't cease Microsoft's monthly security updates for this OS, it does end non-security related hotfixes, design changes, and some types of technical support. The end date for extended support, ceasing all efforts with this OS, is currently set for April 8th of 2014.

The Seven Key Migration Activities

What you may not know is that your central hurdle in migrating to Windows 7 *lies not in actually installing its bits to your hardware*. Windows Vista and Windows 7 both leverage the new Windows Preinstallation Environment (WinPE) as their mechanism for completing the actual OS installation. As the OS doesn't require a limited-fidelity DOS-based installation environment, actually getting Windows 7's bits onto your hard drives is in many ways the easiest part.

Much more challenging in any Windows 7 migration project are *the activities that surround the install*. These activities you'll find are absolutely required to plan, automate, and manage the deployment, to verify hardware and application compatibility, and to ensure that your users' personal data is assuredly transferred from old OS instance to new.

Lacking the right tools, each of these "other" activities can be fantastically difficult. Attempting to complete them through non-automated means creates multiple sets of stovepiped data, which complicates your project planning and execution. However, environments that leverage integrated migration solutions will find that each activity is well defined and easy to accomplish within that toolsets' management interface. In short, *the best practice in planning and executing any Windows 7 migration is to leverage solutions that can accomplish these activities in an integrated manner*.

To help you understand why, let's take a quick spin through each of the seven key migration activities. Understanding their scope, you'll be better prepared to incorporate their actions into your migration planning.

Analyzing Inventory

The first step in any Windows migration involves a look at your environment's existing inventory. This process gathers and analyzes the existing hardware and software in your environment with an eye towards answering two central pre-deployment questions:

- *What hardware will work with the new OS, and what hardware first requires upgrade or replacement?* Microsoft documents Windows 7's minimum requirements at <http://www.microsoft.com/windows/windows-7/get/system-requirements.aspx>. Comparing your existing equipment with these requirements is fundamentally important because installing a Windows OS to substandard hardware generally results in a poor user experience. The most effective way to obtain this comparison is by leveraging a network-based inventory solution that interrogates machines on your network and consolidates inventory into a single database. Its resulting reports will assist you with recognizing which pieces of hardware must be upgraded or replaced prior to upgrading.
- *What software exists on hardware today and must be re-installed after the upgrade?* Another critical part of inventory is the software installed to network computers. There currently exists no direct upgrade path between Windows XP and Windows 7. Further, upgrading OSs rather than completely reinstalling them has traditionally led to problems down the road. These two facts mean that your Windows 7 upgrade is likely to involve a full reinstallation of both the OS and its installed applications. You should also plan to leverage your automated inventory tool for discovering installed applications. Its reports give you the necessary data to ensure the right applications get installed to the right machines after the upgrade.

Verifying Application Compatibility

Unfortunately, not every application functions correctly atop Windows 7. Some fail to work at all with this new OS. This hurdle places a priority on pre-migration testing to determine which of your applications won't function after the upgrade.

Automated tools exist that assist with this testing and validation process. These tools work with centralized clearinghouse databases of already-tested applications. Their data about applications that have already been tested will greatly speed your own activities, especially in environments with large numbers of applications under management.

Another question is begged through this activity: What do you do with applications that won't work in the new OS? This application-compatibility problem has been a major hurdle for migration activities in the past. You've heard the stories where a few or even a single unsupported mission-critical application prevents a business from upgrading. Windows 7 eliminates this hurdle in its entirety through a new feature called XP Mode. This feature leverages virtualization at the desktop to maintain a compatible Windows XP environment within the Windows 7 environment for these problem applications.

XP Mode is available with the Professional and Ultimate editions of Windows 7, and relies on an updated version of Windows Virtual PC as its core virtualization engine. Actually using Windows Virtual PC requires special capabilities that are built directly into your desktop hardware. Thus, a critical step in this second activity is inventorying hardware to ensure its compatibility with XP Mode's virtualization engine.

Creating and Managing OS Instances

In concert with the first two previously mentioned activities is the extended process of building and configuring the OS instances that you will eventually distribute to users. Traditionally, this process has been done through one of two very different mechanisms. The first, generically called "imaging," involves the creation of one or more disk "images" that are distributed to similarly-configured hardware. One of the primary benefits of imaging is in its ease of capturing and deploying images. After creating a "gold master" reference machine that includes the OS, installed software, and special configurations, administrators can capture an image of the gold master and store it. That image is then deployed through an automated mechanism to selected hardware.

Imaging becomes more complicated as the variety of hardware in an organization grows. Image deployments tend to be successful when the hardware configuration of the target machine matches the hardware configuration on which the image was created. Thus, multiple hardware types means that multiple images must be created.

The second technique is generically referred to as "scripting." Different here is the mechanism in which the OS instance is created. Instead of creating a reference image from a reference machine, scripting uses built-in instrumentation in the Windows installer itself to customize installation parameters at the point the OS is installed.

The primary benefit of using this technique is that a single script can be used to install to every class of hardware. Scripts can dynamically ensure that the appropriate drivers are installed based on the OS chosen for deployment and the target machine's hardware configuration. Early attempts at using scripting were challenging; however, today's integrated deployment solutions now incorporate smart configuration engines that greatly enhance the creation process.

Migrating User Personality

Installing a fresh copy of an OS wipes a hard drive clean, taking with it every user customization (that is, user-specific files and settings). Users need their personal workspaces, and rely on them as a function of their jobs. Thus, your migration project will be a failure unless it can assuredly return user customizations back to upgraded computers after an installation.

The problem with user personality is that the Windows OS and its applications spread user personality storage in numerous and unobvious places. Attempting to manually locate and offload user personality has notably and historically resulted in missed data and unhappy users. So much so that it is a common complaint by users in almost any migration project.

Although this data is spread all around an OS instance, smart user migration solutions know where to find it. These solutions are also configured with the necessary logic to seamlessly convert user personality between the different structures used by different OSs. Your migration project must incorporate such a solution to ensure that this data is assuredly restored after the migration.

Automating OS Distribution

This article began by talking about the ease of distributing the Windows OS. Running atop WinPE, that installation process now enjoys all the networking, scripting, and automation benefits of Windows (as compared with its earlier DOS-based roots). Yet while installing a single instance of Windows is fantastically easy, distributing it to tens, or hundreds, or thousands of computers in an automated fashion still requires automation solutions.

Depending on the configuration of your network, the scope of your migration project, and the ways in which you plan to actually invoke the upgrade, you may choose a network-based upgrade path or one where machines must be physically relocated to special IT areas first. In either case, look carefully at the options available in your migration solution. You may discover that full automation or even self-service automation capabilities are entirely possible.

Distributing Applications and Updates

One approach that goes far into creating an environment of full migration automation is in integrating your *migration* solution with a *desktop management* solution. Doing so extends the value of your investment because the same solution that migrated your environment can later be used to manage it.

Nowhere is this more apparent than with the need for application and update distribution. The process of automatically distributing applications and updates to computers has been around for a very long time; yet many IT organizations even today find themselves still installing applications the manual way.

Your migration project will not be complete until after you've installed each of your users' necessary applications back to their upgraded computer. Attempting to do this the manual way will dramatically increase the time and cost of your migration project, potentially to the point where it isn't cost effective at all. In contrast, automated application installation solutions exist today that eliminate all the manual work. Consider it another best practice to seek integrated migration solutions that can also serve as long-term desktop management solutions to provide just this level of service both during and after the upgrade.

Project and Status Reporting

Finally are the all-important needs of project management itself. If your migration project only upgrades a dozen computers, keeping track of those computers isn't all that hard. Managing a project of hundreds or thousands, however, is another thing entirely.

The central problem with non-integrated solutions is in how they create silos of data between each point solution. For example, if your application compatibility tool can't share data with your automated application installation tool, you have no seamless way to ensure that the right applications get reinstalled. To ensure the highest levels of success, consider the use of integrated solutions that enable sharing of data between each of these activities. The result will be the creation of project and status reports that track your progress and ensure mistakes are not made.

Migrations Require Tools

These seven key activities are fundamentally important to a successful migration project. And yet many of them are often forgotten or neglected by IT organizations that don't effectively plan their migrations. Windows 7 is ready for today's business, as are the tools to get you there.

Microsoft itself provides a set of free tools that assist in this process. A review of those tools is the subject of this series' next article. Although free, these tools can be challenging and costly to successfully implement, and even keeping their long list of acronyms straight is a demanding activity in and of itself. The next article will discuss these tools and assist you with understanding how they align with these seven activities.