



By Coby Gurr

# FACILITATING MICROSOFT WINDOWS VISTA MIGRATION THROUGH APPLICATION VIRTUALIZATION

Many enterprises are considering migrating to the Microsoft® Windows Vista® OS, but have postponed doing so because of concerns about application compatibility. By enabling the creation of self-contained virtualized applications, LANDesk® Application Virtualization can help minimize risk, save time, increase user satisfaction, and reduce costs for support and regression testing during this type of migration.

As enterprises plan their next hardware refresh of Dell™ desktops and notebooks, they may be strongly considering whether to deploy the Microsoft Windows Vista OS or continue using a previous version such as the Microsoft Windows® XP OS. Although some have already migrated to Windows Vista, a significant percentage of IT professionals are currently still only considering or planning this migration, primarily to take advantage of the latest security enhancements.

The slow adoption rate results from multiple factors, but one of the most critical is uncertainty regarding application compatibility: enterprises cannot seriously consider a migration to Windows Vista if their critical applications cannot run in that OS. To help address this problem, they might try to convince their software vendors to port their legacy applications to Windows Vista. This approach might meet with some success, but it typically requires a significant waiting period.

Enterprises might consider implementing OS virtualization to help solve the problem—running two different operating systems on each computer, with Windows Vista in one virtual machine and the legacy OS with its legacy applications in another. However, by splitting resources between two operating systems, this approach can double both the

required hardware resources and administrative tasks, forcing administrators to maintain and patch two different operating systems on every computer instead of just one.

For many organizations, neither of these approaches provides an acceptable resolution to the application incompatibilities that can plague OS migrations such as a move to Windows Vista. However, application virtualization through software such as LANDesk Application Virtualization can help solve this problem without requiring application porting or OS virtualization. This approach can help eliminate application incompatibility concerns, greatly simplify application deployment time and effort, and enhance enterprise security.

## UNDERSTANDING APPLICATION VIRTUALIZATION

The term *virtualization* can mean different things to different people. Many administrators think of virtualization in terms of *OS virtualization*, such as a VMware® virtualization platform running on Dell PowerEdge™ servers that allows each server to host multiple operating systems. Others may think of virtualization in terms of *hardware virtualization*, such as Intel® Virtualization Technology or AMD Virtualization™ technology in processors designed to

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increase the efficiencies and performance of OS virtualization environments.

OS virtualization and hardware virtualization focus primarily on enabling physical servers and computers to effectively host multiple virtual OS environments. *Application virtualization* has a very different focus: helping eliminate application incompatibilities. It can accomplish this goal by freeing an application from dependencies on physical hardware or the host OS, enabling it to execute in its own isolated virtual environment (see Figure 1). While initial application virtualization efforts focused primarily on eliminating application conflicts, current solutions such as LANDesk Application Virtualization can do much more than that.

### MINIMIZING OS MIGRATION RISKS AND CHALLENGES

A key advantage of application virtualization is its ability to minimize OS migration risks and challenges. For enterprises that have been seriously considering a move

to Windows Vista, but have been hesitating because of concerns about application compatibility, application virtualization can provide a solution.

Application virtualization can help solve the problem of application incompatibility in Windows Vista—and other operating systems—by adding a layer of isolation between the OS and the application. Different application virtualization solutions achieve this layer of isolation in different ways. The most effective and easiest to manage are typically those that package an application into a virtualized version of itself without requiring the installation of special drivers or extra infrastructure on the client or on a back-end server.

Application virtualization solutions such as LANDesk Application Virtualization can create self-contained executables that include their own small user-mode OS kernel, similar to a runtime environment. The executable for this virtualized application typically includes a small

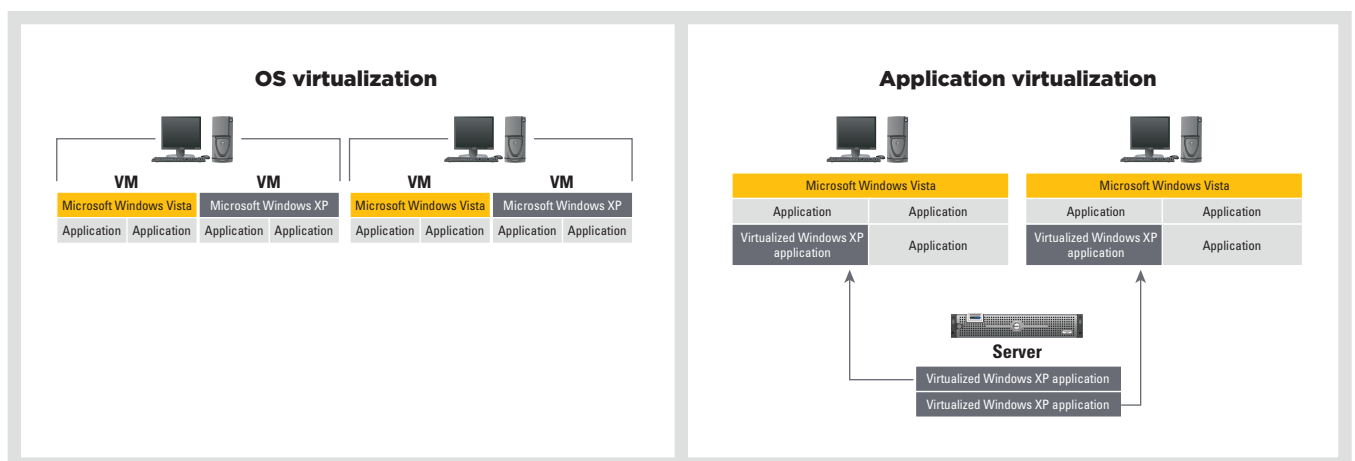
virtual registry, a small virtual file system, and other components the application needs to run, allowing it to function independently in isolation from the host OS.

This level of OS independence and isolation also enables the virtualized application to dynamically remap its virtual file system and registry locations for simple, rapid migration from one OS to another. For example, this functionality would allow a single virtualized version of 2007 Microsoft Office to run on Windows 2000, Windows XP, or Windows Vista without requiring changes to the executable file or the host.

To help achieve the level of application isolation necessary to resolve application incompatibilities between operating systems, the goal should be to take advantage of an application virtualization solution that allows enterprises to seamlessly run a self-contained version of their virtualized application across multiple OS versions without requiring any drivers, reboots, administrator access, additional infrastructure, or special modifications to the OS environment.

### SIMPLIFYING APPLICATION DEPLOYMENT

In addition to facilitating OS migration, application virtualization solutions such as LANDesk Application Virtualization can provide significant advantages for application deployment—a task that can require



**Figure 1.** Retaining legacy applications using OS virtualization compared with application virtualization

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an enormous investment in time and administrative resources. Traditional application deployment carries the risk of interfering with other applications or with the overall environment, potentially reducing user productivity and satisfaction and requiring administrators to field numerous complaints and, if necessary, work to roll back the environment to its pre-deployment state and then perform regression tests to fix problems created by the new applications.

Application virtualization gives administrators a way to create virtualized applications that help minimize risk, save time, increase user satisfaction, and reduce costs for support and regression testing. For example, many application virtualization solutions allow administrators to make applications available or unavailable on demand, helping eliminate the need to carry out a long installation process. If an application experiences a problem, administrators can also easily reset it to its original state without having to completely reinstall it.

Different application virtualization solutions employ different methods to help simplify application deployment, but one method is typically the simplest to execute and manage while also requiring the least amount of infrastructure overhead: packaging everything that an application needs into a single self-contained executable. Instead of installing the application, administrators can simply copy this executable to a hard disk, USB drive, CD, or network share and run it from there. This approach allows them to take a large application like 2007 Microsoft Office—which can contain thousands of registry keys and other files—and compress

it into a single, manageable executable that does not require installation.

When the virtualized application executable runs, it transparently streams the compressed blocks of data required to run the application to the end user’s desktop. It can automatically start the necessary virtual services, such as loading dynamic-link library (DLL) and data files and accessing registry entries. This streaming process enables applications such as Microsoft Word to load and run extremely quickly—often even faster than if they ran as a traditional local installation.

This type of virtualized application, running as a self-contained unit in isolation from the OS and other applications, helps minimize the risk of application conflicts or other problems that may negatively affect the environment. Solutions such as LANDesk Application Virtualization can package the application so that it does not modify registry keys in the host OS or proliferate DLL files throughout the file system, which can create havoc with the system or other applications. They can also enable two versions of the same application to run on the same computer without conflicts, even where both virtualized and non-virtualized versions exist.

Virtualized applications that run in this way often employ a *sandboxing* technique.

When using sandboxing, in addition to running in its own self-contained and isolated virtual environment, the solution’s virtual file system helps further protect the host from potential conflicts by redirecting changes made by or to the application to an isolated per-user, per-application sandbox directory. For example, a sandbox directory for a virtualized version of a Web browser might contain bookmarks and user preferences, as well as automated updates to the browser application itself. Sandboxing these application components helps prevent them from affecting or conflicting with other applications or aspects of the host OS. As a result, this approach helps greatly reduce the regression testing that administrators must perform following the release of a patch or a new version of an application.

Another advantage of sandboxing is that it can enable administrators to avoid repackaging and redeploying a virtualized application every time an update arrives. Instead, a simple update to the application sandbox updates the application itself. In addition, administrators can easily roll back a virtualized application to its original state on a per-user basis by deleting the user’s sandbox for that application.

## **ENHANCING ENTERPRISE SECURITY**

Solutions such as LANDesk Application Virtualization, which can run applications exclusively in user mode without kernel-mode code or device drivers, help make it virtually impossible for a virtualized application to crash a system, while also helping prevent kernel-mode calls from violating local security policies. This

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approach also means that virtualized applications can run without requiring administrative privileges. As a result, these types of virtualized applications can run in user mode on locked-down computers without requiring the installation of device drivers.

In addition, administrators can further increase overall system stability by using sandboxing to limit and contain user-specific and application-specific changes. Combining these features allows administrators to easily maintain secure, clean, stable user desktop environments.

### **AVOIDING PROPRIETARY INFRASTRUCTURE REQUIREMENTS**

While application virtualization can offer multiple advantages for application isolation, deployment, stability, and management, not all solutions are equal. Some may fail to provide complete application isolation, allowing potential application conflicts. Others may have limited OS support that does not include support for Windows Vista. Many can add significant complexity to an environment by requiring preinstalled proprietary software infrastructures on the client and server. To add a layer of isolation between the OS and application, some may require a proprietary client on the host computer, device drivers, or a back-end server, which adds to the required infrastructure and can significantly increase cost and complexity.

In these examples, administrators end up managing and maintaining multiple clients and servers for each of their desktop environments. In addition, when their application virtualization vendor updates its virtualization client, if any one of their applications need that updated client, they typically must repackage and re-deploy all of their applications to use that updated client, because many solutions do not support using more than one client on a computer at a time.


On the other hand, self-contained virtualized applications such as those created with LANDesk Application

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Virtualization do not require a proprietary client, special drivers, or back-end servers. These self-contained executables also have a zero-execution footprint, allowing the virtualized applications to run from a network share, USB drive, or CD without requiring preinstalled software on the client computer or additional infrastructure. Administrators can even deploy virtualized applications to reliable high-speed network subnets located at branch offices, allowing users at those offices to stream the compressed applications on demand over the network directly into their computer's memory, without requiring local installation or caching. Avoiding the need for front-end clients, drivers, or back-end server components helps significantly reduce infrastructure costs and simplify deployment and management.

### **SETTING THE STANDARD FOR APPLICATION VIRTUALIZATION**

As the demand for seamless interoperation of multiple applications continues to grow, so does the need for robust application virtualization solutions. The advantages of seamless integration and application isolation provided by application virtualization can help administrators minimize OS migration risks, simplify application deployment and change management, enhance management of and control over software access, enable rapid deployment of software framework technologies, reduce multi-application regression testing costs, and boost IT responsiveness when changing and updating applications.

LANDesk Application Virtualization sets the standard for application virtualization by delivering application isolation without the costs and complexities of additional front-end and back-end proprietary infrastructures. It can package both simple and complex applications into virtual environments within a single self-contained executable, then transparently merge a virtual system environment with a real system environment to provide true application isolation, providing enterprises with the tools they need to seamlessly run multiple applications without the hassles of application deployment or the worries of application incompatibilities. LANDesk Application Virtualization provides a clientless application virtualization solution that can enable organizations to easily create, maintain, and control secure, clean, stable user desktop environments throughout their enterprise. 

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