InstallFree

InstallFree Application Compatibility Solution for Windows 7 Migrations

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Windows 7 and Application Compatibility

Window 7 is the latest version of the Microsoft Windows operating system and is widely regarded as an important upgrade for customers still using Windows XP or Windows Vista. The OS was released for general availability in October 2009 and has sold over 90 million copies during its first 4 months on the market, quickly becoming Microsoft's fastest selling OS to date. As of May 2010, according to a Forrester study, Windows 7 is already powering 7.4% percent of corporate PCs -- a level Windows Vista did not reach until almost a year after its release.

Many organizations that held back on migrating to Windows Vista and stayed with Windows XP are either considering migration to Windows 7 in the next 12-18 months, or already have migration projects in place. However, due to the significant market footprint and longevity of Windows XP, these organizations are finding out that many of their applications are not compatible with the new OS. In fact, recent studies have shown that most customers will experience compatibility problems with as much as 50% of their applications. These problems range from minor errors in functionality to complete inability to either install or run the applications on Windows 7.
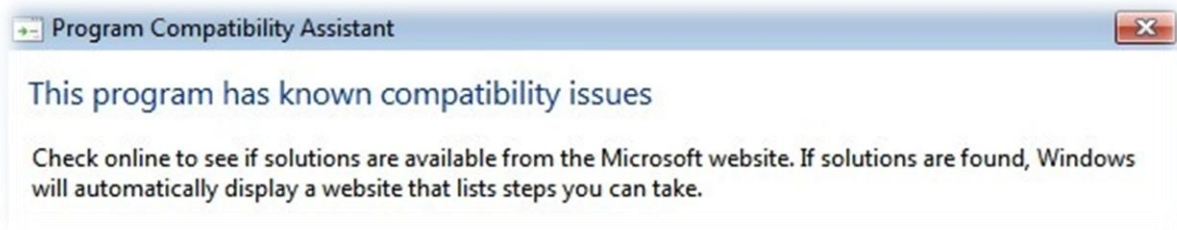
The standard Windows 7 application compatibility warning. This is a common sight for any IT organization undergoing a migration to Windows 7.

InstallFree provides an application compatibility solution that can help IT organizations solve the root causes of their compatibility problems: **system and component dependencies**, **operating system security** and **Internet Explorer conflicts**. These issues along with the solutions provided by InstallFree are described below.

System and Component Dependencies

Windows 7 is a modern operating system and, as such, includes many changes to system-level components compared with Windows XP. These changes provide many stability and performance benefits. But, at the same time, may create issues with applications that were written for older versions of Windows, such as Windows XP. While Microsoft goes to great lengths to ensure backward compatibility, they cannot possibly account for all the different applications that exist, and applications compatibility issues are inevitable.

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The most common examples of application compatibility issues resulting from OS system-level changes have to do with applications that depend on built-in components of the operating system. Good examples of such components include Windows Media Player, ODBC drivers and the Microsoft Management Console (MMC), which are used by many 3rd party applications. When these components are replaced with newer versions as part of an OS migration, applications that depend on them may stop working. Worse still, because these dependencies are part of the OS and tightly integrated with the OS, there is no simple solution. Customers cannot simply deploy the old version of the component on the new operating system.

This issue is summarized in the illustration below:
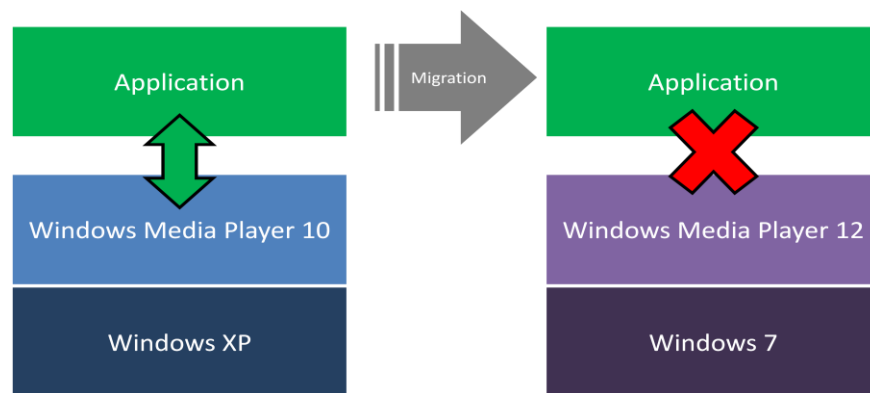
This illustration shows a Windows XP application with dependencies on WMP 10. When this application is migrated to Windows 7 it might stop working because Windows 7 has a different version of WMP. The same scenario is true for any application with system-level dependencies.

InstallFree solves this problem by providing applications with virtual execution environments that include all the system-level components they depend on. Applications are then executed with complete isolation from the underlying OS and other natively installed applications, ensuring their successful operation. This is done without the need to create a full virtual machine and while keeping application components separate for easier deployment, and ongoing update and management. The applications run locally on the Windows 7 machine with full performance and seamless integration with the operating system.

The InstallFree approach is summarized in the illustration below:

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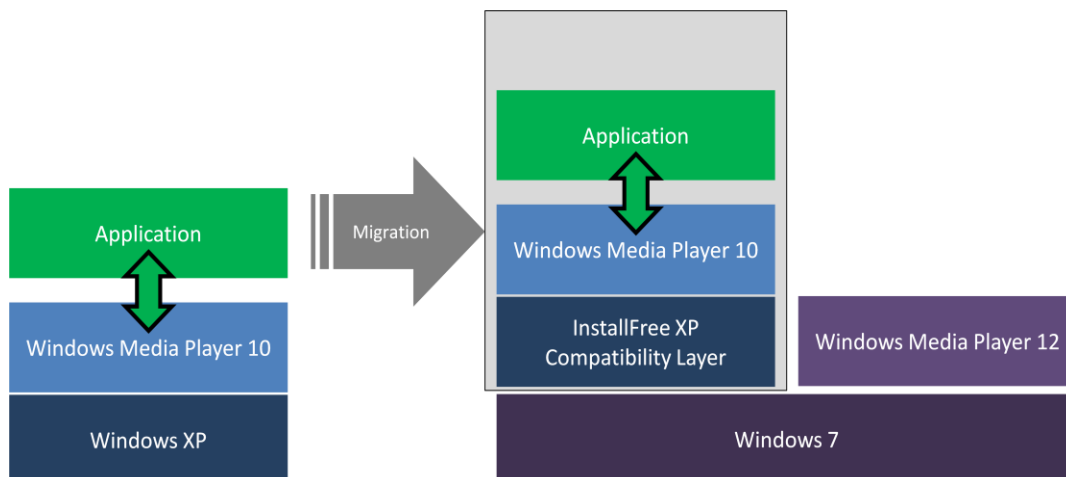
Operating System Security

In the ongoing effort to improve the security of the Windows OS, a new security model for Windows was introduced in Windows Vista and then enhanced and refined in Windows 7. This new security model includes the User Account Control (UAC) feature, designed to make the operating system more secure and minimize the chances of malware or poorly-written programs modifying or damaging the OS or other applications. By default, applications that run on Windows 7 do not have write access to protected operating system directories such as the Windows folder and the Program Files folder, and cannot modify certain areas in the Registry. In addition, the standard and recommended way to use Windows 7 is by logging in as a "standard" user, rather than a user with full administrative privileges.

The standard Windows 7 User Account Control warning message

The problem is that many applications that were written for Windows XP were not designed to operate in a secure OS environment. Some applications save information and settings in the Program Files or even the Windows folder and attempt to modify restricted Registry keys. Such applications may not run on Windows 7, or may require full administrative privileges in order to function correctly, consequently compromising the overall security of the OS.

InstallFree solves this problem by completely isolating applications from the underlying OS and preventing them from modifying the OS's file system and registry, while at the same time granting them full "admin like" access to their virtual execution environments. As a result, if applications attempt to make changes to the Program Files folder, those changes are performed within their virtual "bubbles", and the applications continue to work correctly while the OS stays locked down.

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The InstallFree approach is summarized in the illustration below:

User Data separate stateful file (User specific customizations + virtual file system and registry)
Policy Configurations (User-rights, policies, etc.)
Expansions: Plug-ins separate file (+ virtual file system and registry)
Updates: Update patch stateless file (+ virtual file system and registry)
Application: Base application stateless file (+ virtual file system and registry)
Dependencies: Dependency stateless file (+ virtual file system and registry)
IFV Engine (Virtual execution environment resources, virtual file system and registry)
Language Base (language resources and Virtual IE)
PowerGuest Sandbox – read only access to host OS (provides admin privileges from within virtual app)
Shell Shadow (File associations, desktop/start menu shortcuts, icons, right-click menus)
InstallFree Bridge Virtual Client (Overlays virtual shell shadow over host's shell)
Host Shell (read only access)
Locked-down Host OS (user logged-in with **limited/guest account**)

As illustrated above, InstallFree operates in user mode and can run on a completely locked-down operating system. Each application is provided with a secure virtual "bubble" into which all the application resources are loaded. The application is completely isolated from the underlying OS and cannot modify the underlying OS. Any changes made to the application (e.g. user customizations, add-ons, etc) are redirected into the UserData file, which can be stored in the user profile or on a network share. At the same time, the "Shell Shadow" layer provides integration between the application and the underlying OS, so end-users enjoy a seamless user experience.

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Internet Explorer Conflicts

Last, but certainly not least, are issues with Internet Explorer.

Internet Explorer (IE) is different from other web browsers in the market in that it is tightly coupled with the Windows OS. It is currently the most widely used web browser for Windows and a top choice for running web-based applications in most organizations. Due to the popularity and longevity of older versions of Windows such as Windows 2000 and Windows XP, many organizations now find themselves using applications that rely heavily on older versions of Internet Explorer, especially Internet Explorer 6 and 7 used along with plug-ins that are incompatible with more recent versions of the OS or the browser.

The problem is that Windows 7 includes Internet Explorer 8, and does not support Internet Explorer 6 or 7. There are many documented cases of Windows 7 migrations being greatly delayed or even coming to a complete halt due to compatibility issues with web-based applications. A recent example of this includes an article describing the challenges faced by Intel in their ongoing Windows 7 migration project:

> *"Intel has also delayed deployment of Internet Explorer 7 and IE 8, as they are not compatible with specific add-ons and applications written for Internet Explorer 6. Many applications like some Office add-ons and versions of Java are written to run with IE 6, and "mitigation of these issues must be addressed."*

PCWorld Article: Intel Faces Challenges in Windows 7 Migration, Agam Shah, 2/25/2010.
http://www.pcworld.com/businesscenter/article/190240/intel_faces_challenges_in_windows_7_migration.html

Application compatibility issues resulting from Internet Explorer conflicts are summarized in the illustration below:

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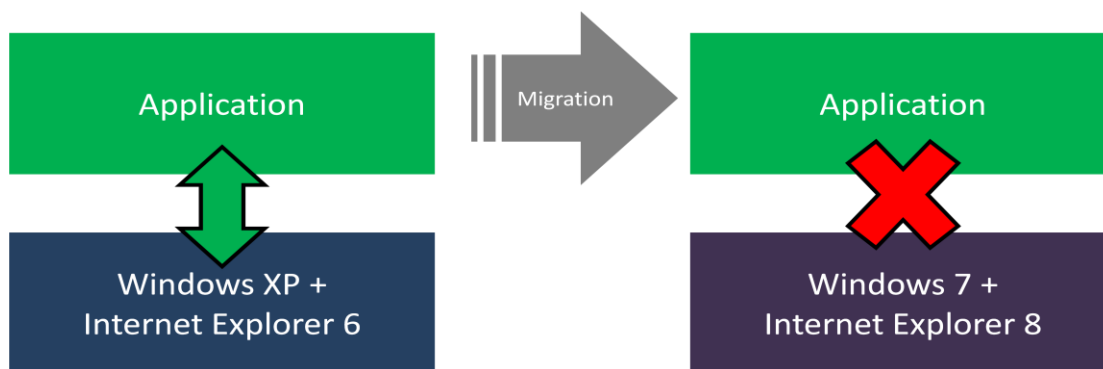
InstallFree solves this problem by providing applications with private isolated instances of Internet Explorer, ensuring that they will be able to function properly irrespective of the underlying Windows OS or the natively installed version of IE.

The InstallFree approach is summarized in the illustration below:
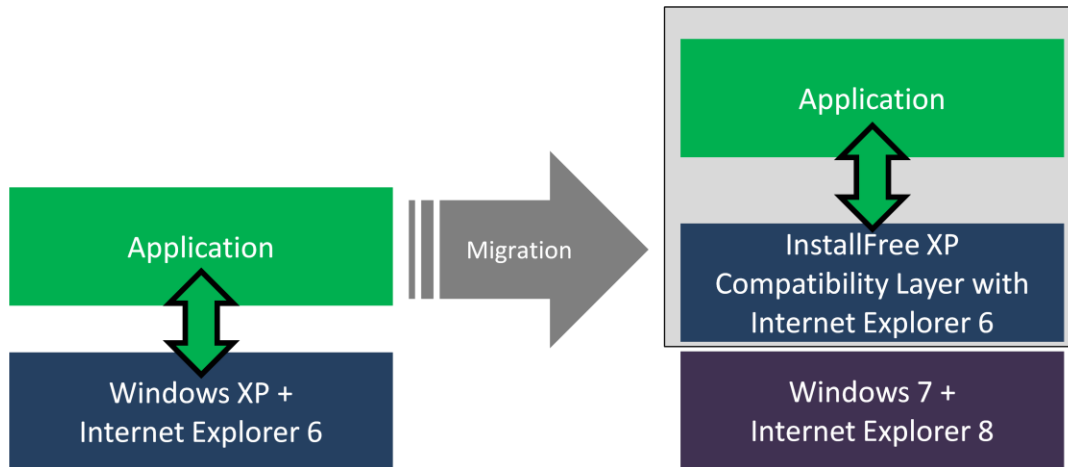
Comparison with Alternative Solutions

InstallFree is the only application compatibility solution in the market today that can seamlessly run incompatible XP applications on Windows 7 without requiring costly infrastructure changes or VM management.

The table below summarizes how InstallFree solves the application compatibility problem compared with alternative solutions:

	InstallFree	*XP Mode*	*Terminal Services / Server-Based Computing*	*VDI*
No infrastructure changes required	✔	✔	✘	✘
No VMs to create or manage	✔	✘	✔	✘
Full integration between XP and Win7 applications	✔	✘	✘	✘
Applications run on the local machine and can work offline	✔	✔	✘	✘
Same level of performance as natively installed apps	✔	✘	✘	✘
No system agents to install	✔	✘	✘	✘

Summary

By solving the key root causes of application compatibility issues: **system and component dependencies**, **operating system security** and **Internet Explorer conflicts**, InstallFree can help you get back on track with your Windows 7 migration project.

For more information about our solutions, visit our web site at www.installfree.com.