



# Accelerating Microsoft Windows 7 migrations with Citrix XenApp

XenApp will accelerate your Windows 7 migration, save money and resources, minimize disruption and lead to greater user satisfaction.



# Introduction

Whether organizations have migrated to Microsoft® Windows Vista® or are still on Microsoft Windows® XP, it's not a question of if they will migrate to Microsoft Windows 7®, but when. Companies are starting to ask difficult questions, such as: When will their mission-critical applications be supported? How much will it cost to migrate custom applications? Will their current hardware meet system requirements? When can they complete regression testing and workarounds for any uncovered compatibility issues? When can they get the budget and IT cycles to make all of this happen?

This white paper describes how Citrix® XenApp™ 5 can be used to help companies simplify and accelerate their migration to the latest version of Windows by delivering both legacy applications that are not Windows 7 compatible and newer applications such as the 2010 Microsoft Office system. The paper will explain how XenApp can benefit both sets of applications, helping to ensure that your Windows 7 deployment is as fast, cost-effective and painless to the company and users as possible.

In addition, this paper explores the new features of XenApp 5 that enable applications to be delivered to users for both online and offline use. Furthermore, we will explore how applications published with XenApp integrate with the Windows desktop to allow users to work seamlessly between locally installed applications and virtual applications, whether they are streamed for offline use or accessed on remote servers for online use.

## Separating the applications from the operating system

Citrix XenApp 5 is an end-to-end application delivery system that offers both online and offline application virtualization to enable the best access experience for any user, with any device, working over any network from any location.

XenApp application virtualization enables IT to:

- Eliminate application conflicts and operating system (OS) instability that would otherwise be present with traditional application installation.
- Reduce the costs associated with regression testing, deployment, maintenance, updates and de-provisioning of applications being run locally on users' machines.
- Offer applications as an on-demand service.
- Lower application support costs by automatically updating and repairing applications every time the user connects to the network.
- Speed regulatory compliance by eliminating the need for extensive testing to certify applications.
- Enhance security by giving IT administrators complete control over applications delivered to desktops, even those of unmanaged partners and users.

## Online application virtualization

With online application virtualization, Windows applications run on a server in the datacenter and the user interface is remotely displayed to the user by passing only screen pixels, keystrokes and mouse movements between the client and server over the network. XenApp enhances Microsoft Remote Desktop Services with features, benefits and value in the following key areas: dynamic application delivery; single instance management; any device, anywhere; secure by design; enterprise-class infrastructure; and high definition experience. XenApp application virtualization technology, combined with both client and server components running together in the datacenter, results in lower bandwidth use and faster application performance. Since the application is not installed or executed on the endpoint device, you gain broad compatibility with client devices, networks and OSs, as well as eliminate the headaches of application compatibility and lockdown on the endpoint. Consequently, there is no dependence on the local operating system or device drivers and hardware requirements are minimal.

## Offline application virtualization

There are times when users need access to their applications while disconnected from the network. In addition, system managers may wish to leverage the computing power available on user devices to optimize the use of server capacity available for online application virtualization. Offline application virtualization, a feature of XenApp 5, extends the benefits of virtualization to applications running on desktops and laptops. Rather than being installed, applications are streamed into an isolated environment on the users device. This eliminates application conflicts and the need for extensive regression testing. Furthermore, users get all the flexibility they need to work from anywhere and IT administrators get all the benefits of centralized application management that they have come to expect from Citrix.

## Dual-mode application delivery

XenApp 5 combines online and offline application virtualization, giving IT the flexibility to dynamically define how to deliver applications under various scenarios. Because user needs change depending on the application, the device or the network, XenApp offers intelligent delivery of applications. The technology enables applications to be streamed to user workstations for offline application virtualization by default. However, XenApp will automatically fall back to online application virtualization if the user's device is not capable of offline delivery. With this dual-mode delivery mechanism, users enjoy the best application experience, no matter the circumstances.



# Migration strategies

Organizations are already considering their strategy for upgrading their desktop PCs to Windows 7. Upgrading to a new operating system is a complex project that entails many steps, from evaluating computer hardware to re-certifying applications for the new platform.

Instead of waiting for software vendors to certify their applications on Windows 7, companies can leverage the online and offline application delivery of XenApp to move to Windows 7 today. This approach dramatically simplifies the process and speeds up the migration of applications to the new platform while improving the user experience. XenApp can also help with incompatible applications and newly deployed applications that need to be available to all users during the migration.

Organizations typically migrate to a new OS all at once or in stages coinciding with hardware refresh cycles.

## Migrating all at once

Migrating all at once can require a substantial up-front investment of personnel and budget and can increase strain on IT staff as users abruptly change to new applications. The upside of this approach is that the overall transition is shorter. For these all-at-once migrations, application virtualization can deliver applications that do not yet support Windows 7, allowing the migration to happen sooner. To help smooth users transition, old and new applications can be offered concurrently, whether they are virtualized online or offline. It should be noted that with Windows 7, Microsoft has introduced Windows XP Compatibility Mode in the Professional, Enterprise and Ultimate editions. This new feature enables compatibility for applications known to work in a Windows XP environment by leveraging Microsoft Virtual PC technology to host a complete Windows XP virtual machine within the Windows 7 environment. For some client platforms however—such as those with lower amounts of RAM or with processors that do not support the Intel VT extensions—this new feature will not be applicable. In this case, online application virtualization is the best solution.

## Migrating in stages

Organizations that migrate groups of users or devices in planned phases face different opportunities and challenges. For example, gradual migration can maximize the value of older client systems before retirement. For these phased migrations, application virtualization with XenApp enables the delivery of new applications to old clients and old applications to new clients. This flexibility enables organizations to migrate applications at their own pace, independently of the OS on the client. In this way, online and offline application virtualization helps maximize business continuity.

# Incompatible applications

Application incompatibility is one of the most important challenges faced by organizations when deploying a new operating system. While Microsoft has made significant effort to ensure application compatibility, there are still many applications that will need to be updated to run natively on Windows 7. In addition, Windows 7 support may not be offered by application ISVs which may limit an organization's ability to migrate to this new OS. In general, applications that are compatible with Windows Vista should also be compatible with Windows 7. However, Microsoft has identified a number of features in Windows Vista and Windows 7 that may cause application compatibility issues:

- User account control – Applications will need to support new standard user permissions.
- Windows resource protection of system files and protected registry locations – Applications that persist in protected areas will need to be modified.
- Internet Explorer executes with lower rights, typically not allowing access to the machine's files.
- 64-bit environment – 16-bit applications and 32-bit drivers may not work natively in the Windows 7 64-bit environment. These may need to be run in compatibility mode using a Windows XP or Windows Vista virtual environment.
- New system application programming interfaces (APIs) expose the layers of the Windows 7 operating system to antivirus software and firewall manipulation. Applications that perform these functions may need appropriate modifications using the new or updated system APIs.<sup>1</sup>

XenApp 5 allows applications that are not compatible with Windows 7 to work in the environment. 16-bit and 32-bit applications can run in a 64-bit Windows 7 environment without the need to run a virtual machine on the local user devices. Organizations can continue to run their critical line-of-business applications and limit the disruption caused by the migration. This keeps their new PCs free of misbehaving applications and enables them to save time and resources by avoiding the need to create workarounds for problem applications.

<sup>1</sup> "Getting Started with Application Compatibility in a Windows Deployment," Microsoft TechNet [http://technet.microsoft.com/en-us/library/dd835539\(W.S.10\).aspx](http://technet.microsoft.com/en-us/library/dd835539(W.S.10).aspx)

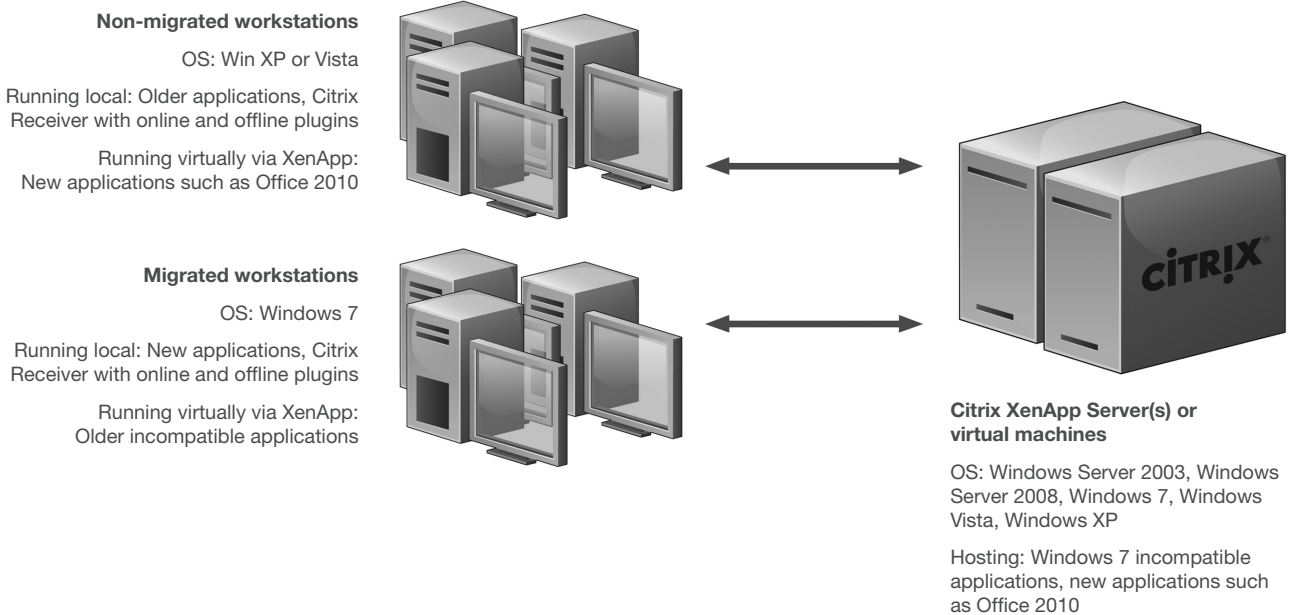
# New and upgraded applications

Most companies take the opportunity during a Windows upgrade to evaluate and upgrade many of their applications, including Microsoft Office. By leveraging XenApp to make the 2010 Microsoft Office system instantly and unilaterally available to the organization, users experience less disruption than locally updating machines to the new versions of Windows and Office. As with Microsoft Office, any application a company is planning to upgrade during the migration can be made available to non-migrated users via online or offline application virtualization to enable everyone to benefit from new applications immediately.

Delivering new applications via XenApp 5 can also be beneficial for applications that require all users to be on the same version, such as applications that connect to a backend database. Instead of installing the old version onto Windows 7 and waiting for all users to be migrated prior to upgrading the application, the application can be upgraded immediately and made available to all users via XenApp, either online or offline. As an added benefit, with online application virtualization, remote users will most likely find that applications run faster, because the XenApp servers hosting them are located in the same high-speed datacenter network as the backend databases and no data has to traverse the LAN, WAN or Internet.

The figure below illustrates a typical deployment scenario utilizing XenApp.

## Migration from XP or Vista to Windows 7 using Citrix XenApp



# XenApp features and benefits

XenApp provides many benefits when migrating to a new operating system, including:

- Seamless integration with the Windows desktop – Provide a consistent, intuitive user experience.
- Technical assistance with applications – Maintain, manage and support users from a central location.
- Mitigation of compatibility issues – Even applications that are incompatible with Terminal Services can often be delivered via XenApp. In addition, XenApp supports access from a broad diversity of clients (32-bit and 64-bit Windows, Macintosh PCs, laptops, thin clients and mobile devices including Windows Mobile and Apple® iPhone®).
- Application usage monitoring – Prioritize application revisions based on actual application usage.

## Seamless integration with the Windows desktop

XenApp incorporates many features to ensure that users of Citrix-delivered applications have experiences similar to working with applications installed on their local workstations. These features include:

- Seamless Windows
- Desktop integration
- Local drive mapping
- Printer mapping
- Seamless copy and paste

### Seamless Windows

Citrix Seamless Windows enables virtual applications running on a XenApp server to appear as if they are running locally on the user workstation. After a user launches an application, it is displayed on the user's task bar and the minimize, maximize and alt-tab commands work in the same way that locally running applications do.

### Desktop integration

With the use of the Citrix Receiver™, users are able to launch their Citrix applications in the same way that they launch locally installed applications via their Start menu or from a shortcut on their Windows desktop. The only difference users will notice is a message during application launch that displays the connection or streaming status.



## **Local drive mapping**

When running an online virtual application, the devices on the local user workstations are mapped so that the users can access their local hard drive(s), DVD\CD drive and floppy drive from within their server-hosted applications. Even network drives are mapped and users may map additional network shares to which they have access.

Offline virtualized applications are run locally on the workstation and all local and mapped network drives are available to the user, just as if the user were running a locally installed application.

## **Printer mapping**

All locally configured printers are made available to online and offline virtual applications. For online applications, administrators can map all locally configured printers (both locally attached and network printers) or just the locally defined default printer. With the use of the Citrix Universal Print driver, all local print options are made available to users.

## **Seamless copy and paste**

Through the Clipboard Redirection feature of XenApp, users can copy, cut and paste information via the Windows clipboard between online virtual applications running remotely on the XenApp server and locally installed or offline virtual applications on their desktops.

## **Technical assistance with applications**

### **Shadowing**

The XenApp Shadowing feature enables IT support personnel to view and interact with a user's XenApp virtual application session. When a user calls for support, personnel can ask for the user's permission to shadow the user. With the user's permission, the support personnel can see the user's application window and interact with the application to either resolve the issue or provide training to the user.

## **Mitigate compatibility issues**

### **Established operating system**

XenApp runs on Windows Server 2003, Windows Server 2003 x64 Edition and Windows Server 2008 32-bit and 64-bit editions. Windows Server 2003 is well-established and runs most applications currently deployed on Windows XP and Windows 2000 Professional. As Microsoft Office is the number one application deployed on XenApp, many organizations will likely take advantage of the benefits of XenApp to deliver 2007 Microsoft Office to their users now that it is released. This latest version of Microsoft Office has not only been successfully tested on XenApp, but Microsoft is using XenApp virtual application capabilities to enable their customers to try the 2007 Microsoft Office system prior to purchase.

## Online application virtualization with VM hosted applications

With the latest release of XenApp 5 Feature Pack 2, Citrix has introduced the ability to deliver online applications from centrally hosted client operating systems such as Windows XP, Windows Vista and Windows 7. This new functionality within XenApp broadens the scope of applications that can be delivered to any device, in order to leverage the most compatible execution environment for each application while, at the same time, placing no additional hardware or software requirements on the end device. The result of this new delivery option is that 100 percent of Windows applications can now be delivered to all users on any device: not only the latest platforms, but also to thin-clients, mobile devices such as the iPhone or Blackberry®, Apple MacBooks® and even legacy PCs barely capable of running even a modest Windows XP environment. The primary advantage to this approach for Windows 7 migrations is that as applications enter the market that require Windows 7 as the base OS, organizations can host those applications on a centrally managed pool of virtualized Windows 7 systems, for those teams that require the application but that do not yet have the resources to upgrade the team endpoints. As the team endpoints are replaced with newer devices capable of running Windows 7, the same applications that were delivered via the VM hosted approach can either continue to be centrally hosted or streamed to the Windows 7 endpoints for offline use.

## 64-Bit support

XenApp supports Windows Server 2003 x64 Edition and Windows Server 2008 x64 Editions as well as Windows Vista x64 and Windows 7 x64 clients, for both online and offline applications. This provides the broadest application support by enabling both 32-bit and 64-bit applications to run successfully on either 32-bit or 64-bit clients. For example, you may have 64-bit applications but only 32-bit clients. By deploying those applications on XenApp, administrators are able to deliver those applications to all users. This provides benefits from the scalability and performance gains of x64, while enabling users to continue to work on 32-bit workstations.

## Isolation 2.0

XenApp 5 provides an application isolation environment—leveraging the Isolation 2.0 application compatibility technology—which isolates applications from the operating system on both XenApp and client machines. This feature greatly expands compatibility with applications that were not written for multi-user Terminal Server environments. This solution also allows the installation of different versions of the same application on a single XenApp server without conflicts, reducing server silos and underutilized resources. By using the application isolation environment, 2007 Microsoft Office and Microsoft Office 2003 can be deployed on the same XenApp, or client workstation or laptop. By sharing server resources across multiple applications and leveraging isolation, a company can leverage the full computing power of its environment.

## Application usage monitoring

One of the challenges companies face during a migration is determining the actual usage of their applications. This knowledge can be valuable in prioritizing which incompatible applications they should focus on first to upgrade or replace. By leveraging XenApp for these incompatible applications and activating the service monitoring feature, a company can create reports that detail how often an application is launched and by which users. You will then be able to determine which applications are most important to the user community and should take priority when working with vendors on updates. Conversely, applications that are not being used can be identified and the license subscriptions reduced or eliminated.



Service monitoring in XenApp 5 enhances IT visibility into the performance of online virtualized applications delivered through XenApp. Service monitoring offers visibility into application usage as well as application performance, which enables a company to understand how well its applications are running for the user. By providing real-time data and visibility that is both broad and deep, XenApp transcends traditional device and network management tools, capturing the entire spectrum of IT resource performance from the user perspective. This comprehensive understanding empowers IT professionals to quickly identify, source, resolve and intercept application problems and helps maximize performance and availability throughout the enterprise. Additionally, Citrix® EdgeSight® for Endpoints is available to extend application monitoring to streamed and locally installed applications on the Windows desktop.

For more information about service monitoring, please visit <http://www.citrix.com/xenapp> or <http://www.citrix.com/edgesight>.

## Citrix Receiver and client software

When possible, it is recommended to install the latest versions of Citrix Receiver, including the online and offline plugins, onto desktops as they are deployed. This will ensure that all desktops have the client software installed and are ready to run both online and offline virtual applications as soon as they become available. For Windows 7, the online plug-in version 11.2 and the offline plug-in version 5.2 or higher should be deployed.

For more information about delivering applications with XenApp, please visit <http://www.citrix.com/applicationvirtualization>.

## Conclusion

When planning your migration to Windows 7, adding XenApp to your plan will help accelerate your migration, save money and resources, minimize disruption and lead to greater user satisfaction. XenApp can be used to deliver any Windows application to your new Windows 7 clients, enabling all users to benefit from old and new applications, even before they are locally migrated. Through the many features in Citrix XenApp, such as Seamless Windows and local drive and printer mapping, users can work seamlessly between installed, online and offline virtual applications.

If you are interested in learning more about XenApp 5.0, please contact your Citrix partner or sales representative here: <http://www.citrix.com/partners>.



**Worldwide Headquarters**

Citrix Systems, Inc.  
851 West Cypress Creek Road  
Fort Lauderdale, FL 33309, USA  
T +1 800 393 1888  
T +1 954 267 3000

**Americas**

Citrix Silicon Valley  
4988 Great America Parkway  
Santa Clara, CA 95054, USA  
T +1 408 790 8000

**Europe**

Citrix Systems International GmbH  
Rheinweg 9  
8200 Schaffhausen, Switzerland  
T +41 52 635 7700

**Asia Pacific**

Citrix Systems Hong Kong Ltd.  
Suite 3201, 32nd Floor  
One International Finance Centre  
1 Harbour View Street  
Central, Hong Kong  
T +852 2100 5000

**Citrix Online Division**

6500 Hollister Avenue  
Goleta, CA 93117, USA  
T +1 805 690 6400

[www.citrix.com](http://www.citrix.com)

**About Citrix**

Citrix Systems, Inc. (NASDAQ:CTXS) is the leading provider of virtualization, networking and software as a service technologies for more than 230,000 organizations worldwide. Its Citrix Delivery Center, Citrix Cloud Center (C3) and Citrix Online Services product families radically simplify computing for millions of users, delivering applications as an on-demand service to any user, in any location on any device. Citrix customers include the world's largest Internet companies, 99 percent of *Fortune* Global 500 enterprises and hundreds of thousands of small businesses and prosumers worldwide. Citrix partners with over 10,000 companies worldwide in more than 100 countries. Founded in 1989, annual revenue in 2008 was \$1.6 billion.

©2009 Citrix Systems, Inc. All rights reserved. Citrix®, XenApp™, Citrix Receiver™ and EdgeSight® are trademarks of Citrix Systems, Inc. and/or one or more of its subsidiaries and may be registered in the United States Patent and Trademark Office and in other countries. All other trademarks and registered trademarks are property of their respective owners.