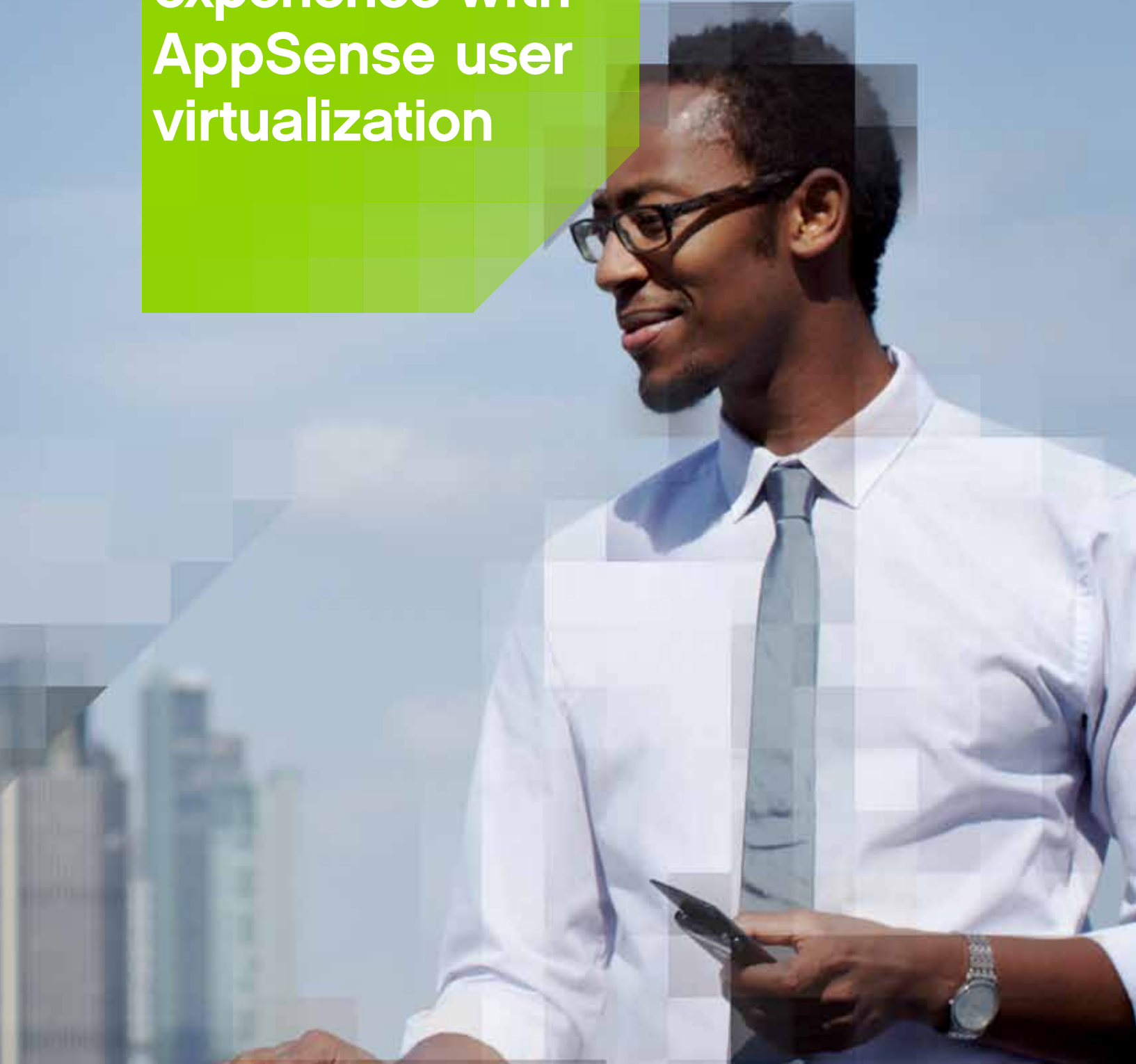


# Optimizing the Microsoft App-V experience with AppSense user virtualization

AppSense®

You are the technology



---

# Contents

<b>Introduction</b> .....	4
<b>About Microsoft Application Virtualization</b> .....	4
<b>About AppSense User Virtualization Platform</b> .....	4
<b>User Virtualization: An overview</b> .....	5
<b>Microsoft App-V and AppSense UVP: Better together</b> .....	5
Shifting to a componentized desktop.....	6
Decoupling user personality from App-V applications.....	8
User roaming between native and App-V application delivery.....	8
App-V package customization capabilities.....	9
Applying contextual policies to application usage.....	9
Simplifying application upgrades.....	10
Why is AppSense UVP the best choice for App-V settings?.....	10
Projected Total Cost of Ownership impact.....	11
<b>Getting started</b> .....	12
AppSense User Virtualization Platform components.....	12
AppSense Environment Manager.....	12
AppSense Application Manager.....	12
AppSense Performance Manager.....	13
AppSense Management Center.....	13
Evaluation versions.....	14
Integrating AppSense into your Microsoft environment.....	14
<b>Conclusion</b> .....	15

# Introduction

Corporate computing has entered a period of unprecedented transformation. While PCs remain the predominant computing platform in most organizations today, a new generation of virtual desktop and application delivery methods present new efficiency and security opportunities to enterprise IT teams.

In a desktop setting, the business value of virtualization is achieved by creating a standardized computing fabric that simplifies ongoing IT operations while providing a personalized computing experience that users will embrace. This document will describe how two virtualization technologies, Microsoft Application Virtualization (App-V) and AppSense User Virtualization Platform can be applied in concert to accomplish this objective.

## About Microsoft application virtualization

Microsoft App-V, a core component of Desktop Virtualization, enables enterprises to meet the needs of users and IT by empowering anywhere productivity and accelerated application deployment. App-V provides anywhere user access to applications that are dynamically available on any authorized PC without application installs. Virtual applications and user settings are preserved whether users are online or offline. App-V increases business agility through faster application deployment and updates with no user interruptions. It minimizes conflicts between applications, allowing enterprises to reduce application compatibility testing time.

## About the AppSense User Virtualization Platform

The AppSense User Virtualization Platform ushers in a new era for IT with the first complete solution to unlock the user layer from devices, operating systems, and applications. For the first time, IT needs to manage only a single instance of the user, eliminating the need to run unique configurations on every device. By managing the user independently, the AppSense User Virtualization Platform (UVP) gives IT teams greater flexibility to adopt new desktop and application delivery models while optimizing infrastructure costs and user experience.



## User virtualization: an overview

The core philosophy behind user virtualization is that by separating the user from the underlying desktop environment, IT organizations will be better equipped to:

- Reduce IT infrastructure and operations costs through increased standardization
- Provide a consistent and reliable user experience even as the desktop environment evolves to include a heterogeneous collection of native and virtual desktop and application delivery approaches
- Address the growing reality that many users access corporate computing resources through multiple devices

All user virtualization solutions, at a minimum, provide the following foundational capabilities:

- **Decouple** all aspects of the user personality from the underlying device, operating system, and applications
- **Manage** all aspects of the user through a central framework
- **Deploy** a personalized user experience on-demand to any device

Once a user virtualization solution is in place, a number of key desktop transformation activities, including virtual desktop deployment and operating system migration, can be greatly simplified and accelerated. However, the remainder of this document will focus on the specific benefits user virtualization can provide to organizations adopting application virtualization using Microsoft App-V.

## Microsoft App-V and AppSense UVP: Better together

**Regardless of whether an organization is utilizing physical PCs, virtual desktop infrastructure (VDI), session virtualization (via Microsoft Remote Desktop Session Host or Citrix XenApp) or even a combination of approaches; application virtualization and user virtualization can be applied to simplify the desktop management life cycle for the IT team while providing a familiar and personalized experience to users.**

In fact, for many organizations, deployment of application virtualization and user virtualization is an ideal starting point for a more extensive desktop virtualization strategy. Both techniques can deliver immediate benefits to an existing PC-centric computing environment; benefits that will only be magnified if and when additional virtual desktop deployment methods are introduced.

## Shifting to a componentized desktop

Combining application virtualization with Microsoft App-V and user virtualization with the AppSense UVP allows IT teams to achieve a “componentized desktop”. Traditionally, each user’s desktop is comprised of a mixture of operating system, application, and user personalization data. The lack of uniformity makes desktop support challenging.

Even if each desktop is derived from the same “golden image,” each instance becomes unique the moment a user begins using it. The longer users run their respective desktops, the broader the divergence is. The impact of this on IT support teams is significant as it complicates day-to-day troubleshooting as user issues arise. It also makes upgrading to a new operating system, as many organizations are doing now with Windows 7, much more challenging.

A componentized desktop isolates the core components of each user’s desktop:

- A company standard Windows operating system environment (physical or virtual)
- The unique collection of applications required by each individual user
- The collection of the operating system and application customizations performed by each user

By isolating each key element of the desktop, IT teams are able to manage each independently, simplifying support and migrations activities greatly. At the same time, with the right tools, they maintain the ability to present a fully personalized desktop experience to every user.

Combining Microsoft App-V with AppSense UVP achieves this model. App-V isolates the applications from the operating system and provides the mechanism to deliver applications to specific users and groups on-demand.

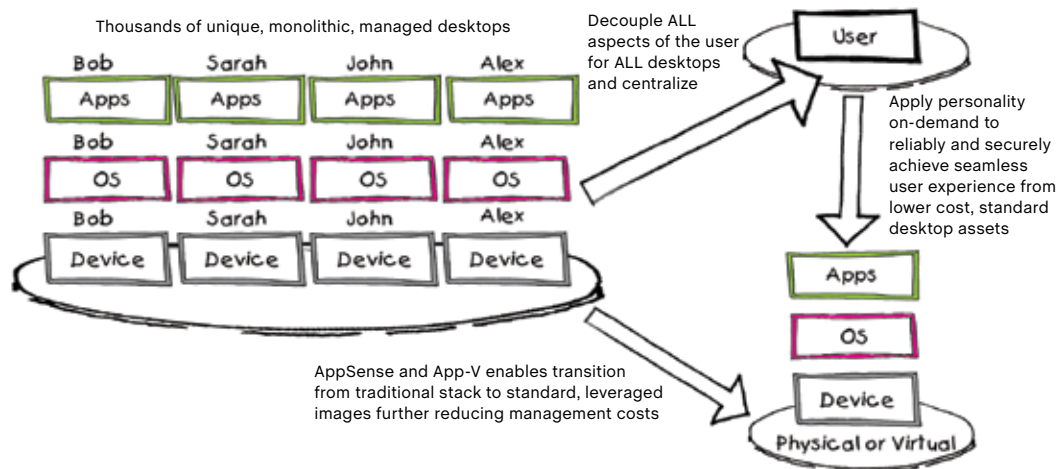


Figure 1: The Evolution to Componentized Desktops



The AppSense UVP takes the next step of bringing all operating system and application personalization performed by each user into a centralized management framework, from which it can be applied on-demand to any desktop.

Figure 1 opposite illustrates the shift from a traditional monolithic desktop model where operating system, applications, and user attributes are highly interdependent to a componentized approach where the combination of Microsoft Windows and App-V create a standardized image on which AppSense UVP can overlay a personalized user experience.

This layered approach of desktop deployment delivers value to existing physical desktop deployments though also significantly benefits Virtual Desktop Infrastructure (VDI) and Session Virtualization deployments.

VDI is a desktop deployment model that hosts Windows 7 desktops on a hypervisor such as Microsoft Hyper-V, providing users with remote desktop connectivity in similar fashion to Remote Desktop Services or Citrix XenApp. The primary difference is that with VDI each user receives a dedicated Windows instance rather than a session on a shared Windows instance. As the user logs on to a VDI session that has been optimized with user virtualization, the desktop is composed on-demand and feels to the user like a personalized desktop, with their settings and information. When the user logs off, the desktop is reset, discarding everything about it. The next time the user logs on to the system, a new desktop is dynamically composed from a common Windows image in the pool of desktops.

1. **The user layer** is virtualized and contains all the user-specific settings and data. It is in this layer that AppSense provides the most value as operating system and application settings are streamed into the image on-demand. AppSense speeds up logon and user response, providing the consistent experience that users demand and preserving all settings and preferences.

2. **The application layer** is also virtualized and streamed into the image. This is the layer that App-V adds significant value to. The value of application layering is the reduction of operating system image bloat and direct image servicing. In fact, application servicing can now occur out of band of the VDI delivery channel, meaning that patch management does not impact the performance of the VDI users. This is especially important in high density VDI deployments. The next time the user requests an application, the latest version is streamed into their desktop.

3. **The operating system layer** contains the operating system itself and other applications and services that have to be installed into the base image itself. It is delivered in such a way that it can be thrown away and instantiated at a moment's notice based on system demand. The goal is to minimize servicing at this layer, but when servicing is required the IT department does it once with a single image. Subsequent images are differenced or cloned from that one image, for hundreds or thousands of desktops.

# A solution for today, tomorrow, whatever, wherever, whenever

## Decoupling user personality from App-V applications

When applied on a stand-alone basis without user virtualization, Microsoft App-V will isolate everything contained within the IT-defined App-V “bubble”, including any subsequent personalization performed to the application by the user. This may be sufficient in many usage scenarios; however, AppSense UVP can provide even greater deployment flexibility.

AppSense UVP, at a high level, is virtualizing personalization-related aspects of the registry and file system at runtime. It is able to filter user personalization changes to a virtualized application before they are captured by App-V without in any way disrupting App-V's core role of executing the application.

By establishing a cleaner line of demarcation between the application and a particular user's personalization of the application, IT teams can provide a seamless experience even as users are accessing App-V applications across multiple devices or operating systems.

For example, App-V applications can be delivered to both a traditional Windows XP and Windows 7 desktop environment, as well through alternative delivery approaches such as session virtualization or VDI. When using App-V and AppSense UVP on both platforms, any changes the user makes when using an App-V application on their PC will be reflected the next time they use the same App-V application on a remote session. Conversely, any changes they make to an App-V application being accessed via session virtualization will be applied the next time they access the application on their PC.

## User roaming between native and App-V application delivery

AppSense UVP provides a transparent approach to a variety of application deployments, including App-V. Whether customers choose to deploy native MSI installed applications or App-V packages through System Center Configuration Manager 2007 R3 or Microsoft App-V 4.6 Management and Streaming Server, AppSense UVP can simplify the movement of settings without any reconfiguration of the App-V package required. A user can simply start using the App-V version of the application without having to reconfigure anything on their desktop – AppSense has already automatically discovered and separated the application settings which then move with the user irrespective of application deployment model, dynamically personalizing the App-V application in this instance.

A great example of settings transparency between App-V and natively installed applications is Microsoft Office 2010. Office 2010 was designed with Application Virtualization in mind. AppSense UVP can support a user that uses Office 2010 installed natively on their Windows 7 Enterprise desktop and Office 2010 deployed with App-V on session virtualization or VDI with Citrix XenDesktop. There is no reconfiguration of the App-V package required, and AppSense UVP manages the settings correctly between delivery platforms transparently.



## App-V package customization capabilities

AppSense UVP also provides an additional customization capability to ensure that customers have an increased level of granularity for managing a single App-V package. This allows IT professionals to take existing App-V package files and modify them to add any necessary custom scripting or registry entries to further improve personalization on a per application basis.

In many instances, IT professionals may sequence a single application but then want to target this to multiple audiences, each with slightly different settings applicable to each audience. In App-V, this could require individually sequenced or customized application packages, each targeted to different groups of users or custom scripting inside OSD files. This can lead to more laborious and costly application packaging, management and servicing.

With the AppSense App-V wizard, a customer can individually tailor an App-V package to customize settings for different audiences, dynamically adding changes to the single application package and streaming it to the user at runtime. This form of settings virtualization for App-V is unique to AppSense UVP and dramatically improves the customer experience, reduces the cost of ongoing management and deployment and improves the package servicing process.

## Applying contextual policies to application usage

AppSense UVP can also provide policy extension to applications as they execute. For instance, some applications expose functionality that is not always required, and in other instances an application may require certain information or settings before it can run. AppSense UVP is able to detect the application execution, even if it's an App-V package, and correctly set security policies or control the user's ability to interact with that application in a contextual manner based on the App-V package being launched.

For example, a finance application may require that a check printer is mapped into a user's context only when that application is run. Otherwise, this printer would not be mapped. This can prevent costly accidents with the wrong print job being sent to the check printer. Another example is where a business may not want certain application functionality exposed when the user leaves the corporate network and visits customers to prevent information disclosure. AppSense UVP is able to manage various different scenarios to provide control, maintain security or prevent costly errors.

## Simplifying application upgrades

**As businesses move from traditional monolithic methods of Standard Operating Environment (SOE) deployment to a layered approach, along with the operating system change, application version changes may also be required.**

Many applications store their information in the Windows registry in a version-agnostic manner that presents little issue to version upgrades. AppSense can manage this process transparently as users access these applications across multiple Windows platforms, irrespective of Windows version.

Other applications manage settings on a per version basis. This can cause issues with a transparent version-to-version settings movement. An example of this is the upgrade path from Office 2003 or 2007 to Office 2010. Certain settings, known as common settings, may be carried through to the new version. Items such as custom dictionaries, templates, plugins and macros will typically work across platform, and popular applications are designed to accommodate such elements. Some other settings in Microsoft Office are managed on a per version basis, meaning that as users are upgraded, their settings often have to be recreated. Once the version migration is completed, AppSense UVP can manage the new version specific settings transparently.

## Why is AppSense UVP the best choice for App-V settings?

Microsoft App-V works by virtualizing the registry and the file system on Windows with an additional layer that manages how the application and operating system interact and ensures that the application can execute and behave as though it is natively installed. This allows an application package to contain all of its relevant dependencies such as DLL files and ensures that registry settings exist in an isolated container while App-V makes the application believe they actually exist locally. This approach is an excellent way to deploy and isolate applications as it decouples the layers of the operating system and applications. As a part of this process user settings are also virtualized within the specific application package rather than being written to the actual file system or registry. App-V allows Windows administrators to use Folder Redirection or Roaming Profiles to allow these virtualized application settings to “follow” App-V applications; however, it is not possible to use these inbuilt Windows technologies to move application settings between App-V and natively installed applications.

The AppSense UVP technology works in a similar way to application virtualization software in that it virtualizes the registry and file system. A key difference however, is that AppSense is only virtualizing these elements at application runtime and therefore is not dealing with the actual software binaries. This provides a key benefit beyond the capabilities offered by App-V alone. With AppSense, settings move easily between natively installed and App-V packages in a transparent and bidirectional manner; for example, from your physical desktop where Office 2010 is natively installed to a remote office where Office 2010 is deployed as an App-V package through session virtualization.

This ability to seamlessly move application settings between traditional and virtual applications affirms AppSense as the industry leader in managing App-V application settings.

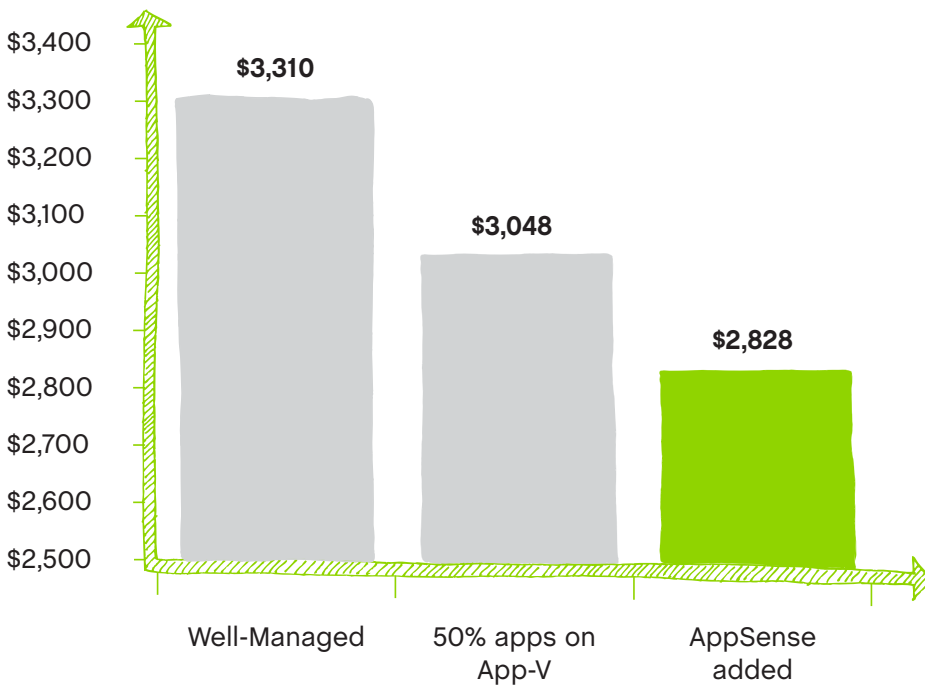


## Projected Total Cost of Ownership impact

Leading industry analyst firm Gartner, Inc. has estimated that utilizing Microsoft App-V on 50% of corporate applications can reduce the Total Cost of Ownership (TCO) for a well-managed corporate desktop. Through the addition of AppSense UVP, a typical customer can further reduce their TCO.

As depicted in Figure 2 below, combining Microsoft App-V and AppSense UVP can significantly reduce TCO, inclusive of hardware, software licensing and support costs on top of the savings delivered by “Well-Managed” desktop practices. The figure below represents Gartner analysis of a “Well-Managed” desktop utilizing App-V.

Side-by-side with this data, represented in green, is AppSense customer sourced information of a reduction of 15% in cost on top of the “Well-Managed” desktop model, attributed to the reduction in operational support costs of platform migration and ongoing costs of managing and supporting the user, and their desktop PC’s settings and data.



Source: Gartner Total Cost of Ownership of Traditional Software Distribution vs. Application Virtualization, 2011 Update ID # G0021177 and AppSense data

Figure 2: Projected TCO Benefits of Combining App-V and AppSense UVP

# Getting started

## AppSense User Virtualization Platform components

The AppSense UVP is a fully integrated solution comprising four components: Environment Manager, Application Manager, Performance Manager and the Management Center, providing complete policy and personalization management, application entitlement and system resource entitlement, complete with reporting, auditing, and failover capabilities. AppSense UVP works across all physical and virtual desktop and application delivery mechanisms, including **Windows® 7, Citrix® XenApp, Citrix® XenDesktop, Microsoft Windows® Remote Desktop Services**, VMware View and virtualized and natively installed applications.

### AppSense Environment Manager

AppSense Environment Manager enables the delivery of fully configured and personalized desktops to all employees. This ensures a reduction in the complexity and risk associated with maintaining a large desktop estate and an ease of migration to a new Windows platform.

Used by thousands of companies around the world, AppSense Environment Manager provides users with a 'follow me' personality – providing the same managed yet personal experience regardless of how the desktop is delivered. Combinations of virtual, local, published, streamed and provisioned desktop components are dynamically personalized as the employee uses them – enabling IT to use best of breed technologies without having to worry about consistency of user experience.

### AppSense Application Manager

Regardless of how a user's environment is delivered, it is essential that users receive only the applications they require and cannot introduce unknown executable code into the environment. The use of unauthorized software is a primary factor in destabilizing user environments, and the costs associated with rectifying a corrupt desktop can be significant.

The extent to which an employee has access to corporate applications can depend on the context of the accessing device. For example, a user in an Internet cafe will typically have a different level of application access from an employee within the secure confines of the corporate LAN.

AppSense Application Manager is able to utilize information about the user's context in order to determine the level of entitlement necessary. Parameters such as location, firewall settings and even time of day can be used to establish a necessary level of entitlement.

AppSense Application Manager is also endorsed by Microsoft to enforce software licenses by controlling application usage on a per device basis. Passive mode enables monitoring, auditing and reporting to detail application access across the user and device base.

Lastly, the desire by enterprise IT departments to lock down corporate desktop environments to maintain security and reduce support costs is frequently at odds with user demands for greater flexibility and convenience through desktop customization. User rights management solves this by enabling the elevation or reduction of user rights on a user, application or business rule basis. With user rights management, the privilege level of a user, group or role can be elevated or reduced for applications, control panel applets and tasks.



### **AppSense Performance Manager**

Any degradation in user experience reflects negatively on IT. No matter how a desktop or application is delivered to a user, ensuring that the environment reacts quickly to user actions is key to providing a high quality of service and meeting user expectations.

Ensuring a consistent quality of service is key to gaining user acceptance when trialing a new application delivery mechanism. Unresponsive environments are a major disruption and often lead to users rejecting a new system, making quality of service just as important as the overall hardware consolidation or desktop centralization project goals. For most organizations, there is a continuous trade-off between quality of service and server hardware cost reduction.

By allocating CPU, Memory and Disk resources to applications and users and optimizing how user actions are processed, AppSense Performance Manager provides a smoother, more responsive application experience and also maximizes the value of server hardware investments through improved user density.

Many IT departments are tasked with consolidating their existing server infrastructure to simplify system management and reduce power consumption and carbon footprint. Significant savings in power, cooling, hardware, software licensing and management can all be made by optimizing resource use and consolidating servers. Whether you plan to maximize user or application density, AppSense Performance Manager enables a substantial increase in server capacity by reducing the amount of resources required to run desktops on applications within a datacenter.

For example, consolidating 100 physical servers by 40% could save more than 120,000 kWh each year, cutting over 50 tons of CO<sub>2</sub> emissions. These financial savings alone often provide return on investment within the first year of implementing AppSense Performance Manager.

### **AppSense Management Center**

AppSense Management Center (AMC) is the framework that enables the AppSense UVP to be used across the entire enterprise. From physical PCs to server based computing, virtual desktops and streamed applications, AMC ensures applicability of AppSense capabilities, enabling you to scale your desktop technologies in response to business need. AMC also ensures the accessing device has the very latest agents and policy configurations, taking into account the context of the user. If a mistake were to occur in policy creation or change, AMC can manage the rollback of policy settings to a previous known good state.

For existing System Center customers, System Center Configuration Manager 2007 R3 and the upcoming System Center Configuration Manager 2012 can also be used to assist in the deployment of agents and policy configuration, rather than using the AppSense Management Center.

## Evaluation versions

IT professionals interested in setting up a proof-of-concept project featuring AppSense user virtualization solutions should visit [www.AppSense.com/evaluate](http://www.AppSense.com/evaluate) to request evaluation software.

Access credentials to [www.myAppSense.com](http://www.myAppSense.com) will be delivered as part of this evaluation. MyAppSense provides evaluators and customers with access to AppSense software, trouble ticket and knowledge base access, whitepapers, and other technical information.

## Integrating AppSense into your Microsoft environment

AppSense can integrate easily into your current Microsoft network, leveraging your existing platform investments in many cases. Many customers today already use Microsoft Windows Server, Internet Information Services, and SQL Server as part of their core infrastructure, providing an ideal foundation for the AppSense Management Suite.

AppSense Management Suite is a multi-tier architecture that utilizes a server and client agent model.

As server prerequisites, AppSense Management Suite 8.1 relies on:

- Windows Server 2003, Windows Server 2008 or Windows Server 2008 R2 (utilizing Active Directory, IIS 6.0 or higher and .NET 3.5)
- Microsoft SQL Server Express or higher (SQL Server 2005 Standard or higher preferred)
- Optional: Virtualization is supported. AppSense recommends Microsoft Hyper-V for the ultimate in hypervisor performance, redundancy and scale.

AppSense Management Suite 8.1 installed through a straightforward, wizard driven interface, and all documentation and guidance for deployment is provided as part of your evaluation account on [www.myAppSense.com](http://www.myAppSense.com).

Once the AppSense server components are installed, you can push the client agents to each client, or use System Center Configuration Manager 2007 R3 to install them for you. On the client side, AppSense supports interoperability with :

- Windows XP SP2 or higher
- Windows Vista
- Windows 7
- Windows Server 2003 or higher (Remote Desktop Services)

AppSense also supports both session virtualization and virtual desktop infrastructure (VDI) with Citrix XenDesktop 5 and XenApp 6, which can both be added to the Microsoft platform for additional enterprise scale and performance.



## Conclusion

With the compelling event around Windows XP end of support, many businesses are choosing to re-evaluate how they deliver the desktop to the various audiences in their business.

AppSense UVP and Microsoft App-V each provide the ability to change the dynamics of user management and application delivery in their respective areas, delivering business value and reductions in cost. This cost saving is delivered on top of existing well “managed desktop” practices.

When combined together on Windows 7, irrespective of the delivery mechanism, there is additional compelling value that can truly enable the promise of desktop virtualization and enable a dynamic desktop that is layered in a way that delivers user transparency and portability but allows for a more modular and flexible application delivery approach.

Previous iterations of Standard Operating Environments (SOE) were costly to build, test, deploy and manage. However, the combination of AppSense UVP and Microsoft App-V makes lengthy processes and complex scripts for moving and managing users and applications a thing of the past.

Companies can begin to realize the benefits of AppSense UVP and Microsoft App-V today on their current generation Windows XP deployment as a precursory step to the move to physical PCs running Windows 7 and/or alternative methods of deployment such as VDI and Session Virtualization. This technique of assessing and addressing the user and applications first can positively assist in reducing costs at a later stage and ensure that the user experience in transition to Windows 7 is a consistent and positive one.

**For more information on AppSense UVP please refer to:  
[www.AppSense.com](http://www.AppSense.com)**

For more information on Microsoft Desktop Virtualization:  
[www.microsoft.com/dv](http://www.microsoft.com/dv)

#### About AppSense

We are the leading provider of user virtualization technology to enterprise organizations. User virtualization is a way of managing user-specific information independent of the desktop, and applying this information into any desktop (local install, virtualized, published, streamed etc) on-demand. This enables IT to standardize the desktop build, automate desktop and application delivery, and migrate users to new desktops – all while ensuring the user experience is seamless, personal, predictable and easily manageable.