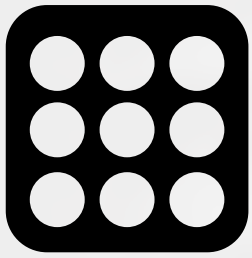
Microsoft®
Desktop Optimization Pack
for Software Assurance



Microsoft®
Application Virtualization
Cost Reduction Study

Executive Summary

PCs can run applications without installation, through a revolution in application management called Microsoft Application Virtualization (App-V) which is part of the Microsoft Desktop Optimization Pack (MDOP). When a user initiates an App-V virtual application, App-V streams the first 20-40% of the application required in order for it to be launched. Using App-V, we revolutionize software delivery and breakdown the "software push" paradigm by enabling users to "pull" or "stream" applications as they need them vs. pushing applications to targeted machines at a specified time. Users no longer have to wait for installation to complete as installation is no longer required. App-V eliminates the challenges associated with application conflicts by isolating each application into its own virtual environment while enabling these applications to communicate with the local operating system and other applications. App-V reduces the costs of packaging, deploying, testing, updating, and servicing installed software. With App-V, software and user access are managed centrally; yet user settings and profiles are saved in the local cache, providing instant access for subsequent use, even off-line.

Application Management Savings

- **IT Labor 50-98%**
- **User support 75-100%**
- **Licensing 0-10%**
- **Indirect User Cost 20-25%**

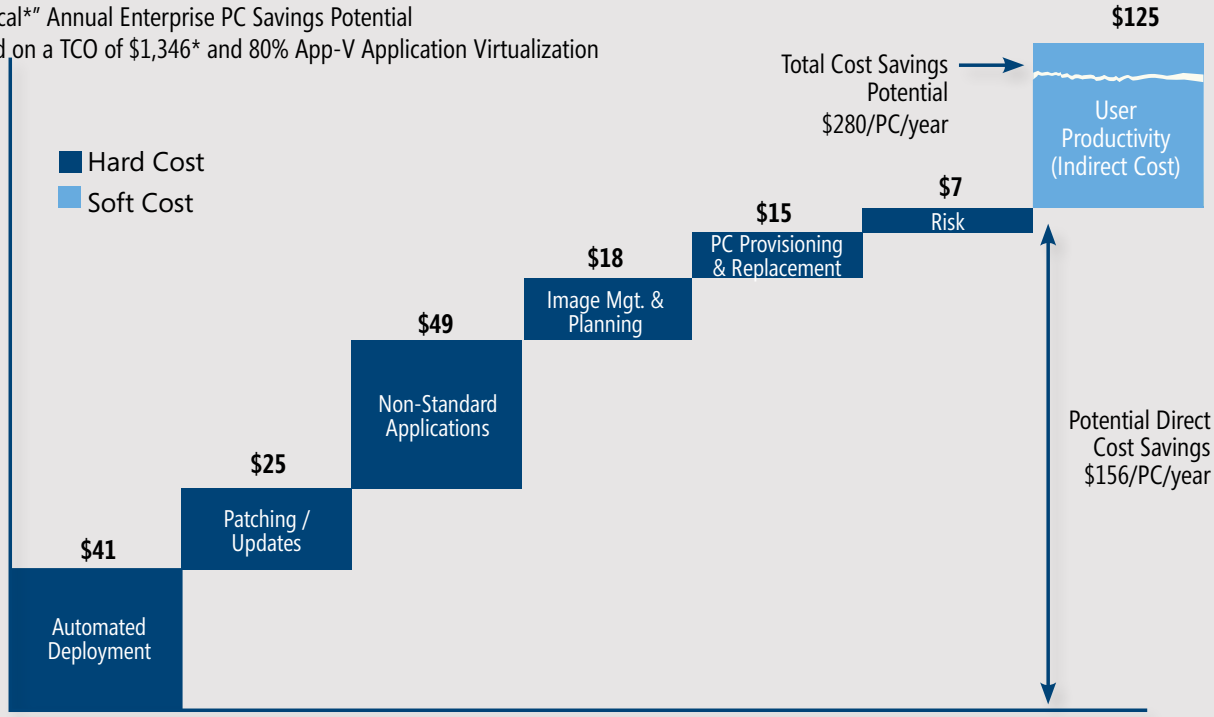
This study documents the cost savings on a per PC basis annually, for a typical company, based on 6 depth cost studies, 45 case studies, TCO analysis, and analyst research. Based on the depth cost studies, the reported cost reduction potential for key application management activities is: 50-98% for IT Labor (5-10% of all IT Labor), 75-100% for application-related helpdesk and user support (15-20% of all support), 0-10% for application licensing, and 20-25% for indirect user costs (downtime, fix, and installation). The chart below illustrates how for our typical company, these savings add up to $280 per PC annually across process areas, with $156 per PC annually in hard cost savings. This savings is in addition to the benefits of the Optimized Desktop Core IO maturity gains and Microsoft System Center savings[1].

Evidence

- **6 Depth Cost Studies**
- **45 Case Studies**
- **Analyst Research**
- **Lifecycle Cost Study**

Adding Up the Cost Savings From App-V

"Typical*" Annual Enterprise PC Savings Potential
Based on a TCO of $1,346* and 80% App-V Application Virtualization



*Direct cost TCO excluding LOB apps – Source "The Enterprise PC Lifecycle," Microsoft (2008)

In addition to the hard cost benefits quantified in this study, App-V provides qualitative strategic and risk reduction benefits, including flexibility for faster response, and disaster recovery, enhanced compliance support, and improvements in software license management.

What does this mean for you?

Consider this exploration as a first step towards a business case, to begin leveraging the power of App-V as part of MDOP with the support of your Microsoft or Microsoft Partner account representative.

Introduction

With Application Virtualization, we dramatically reduced packaging time, optimized application delivery and management processes, and cut the total cost of ownership for our client environment.
- Axel Junghans, Global Client Manager, Heidelberg

Why Read This Paper?

So,

You've heard that Microsoft® Application Virtualization or App-V delivers savings and flexibility by decoupling application provisioning and hardware. You may know of enterprises where App-V has transformed their management of their desktop applications or of several that are engaging it now.

But?

- **How much are they really saving?**
- **Where should this be prioritized vs. other pressing needs?**
- **Is it right for my organization?**
- **What's the business case?**

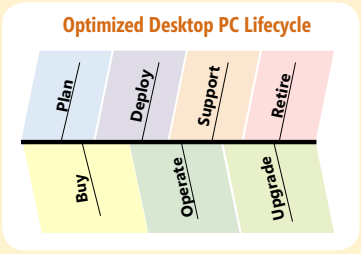
This white paper provides answers to these important questions.

Our Approach – Benchmarking a "Typical" Organization

No two organizations are the same. Each has different requirements, costs, and objectives, with wide cost variation due to a number of factors such as infrastructure maturity, centralization, labor rates, scale, and regulatory requirements. This paper applies actual cost savings results achieved with App-V to a TCO baseline based on a "typical" enterprise described in Microsoft's white paper, "The Enterprise PC Lifecycle" (2008)[2], with the assumptions outlined in the methodology chart below.

Methodology

PC Lifecycle Cost Model
- TCO $1,346/yr
- Cost by phase/element



Assumptions:
- 5000 PC Organization
- Four-year PC lifecycle
- 60% desktops/40% laptops
- IT Labor $53/hr
- Standardized Core IO Maturity
- Excludes LOB applications
- Excludes user costs

Adjusted to reflect App-V impact and parsed to savings activities/categories

TCO Baseline

X

45 App-V Case Studies

6 Depth Cost Studies

Subset of 6 Case Study companies after 2-3 yrs

Analyst Reports

and third party research

% Savings Achieved

=

App-V Cost Savings Model Components

1. Automated Deployment
2. Patching / Updates
3. Non-Standard Applications
4. Image Management & Planning
5. PC Provisioning and Replacement
6. Installation Risk
7. User Productivity and Indirect Benefits

Savings reduced to reflect 80% portfolio virtualization*

App-V TCO Savings*

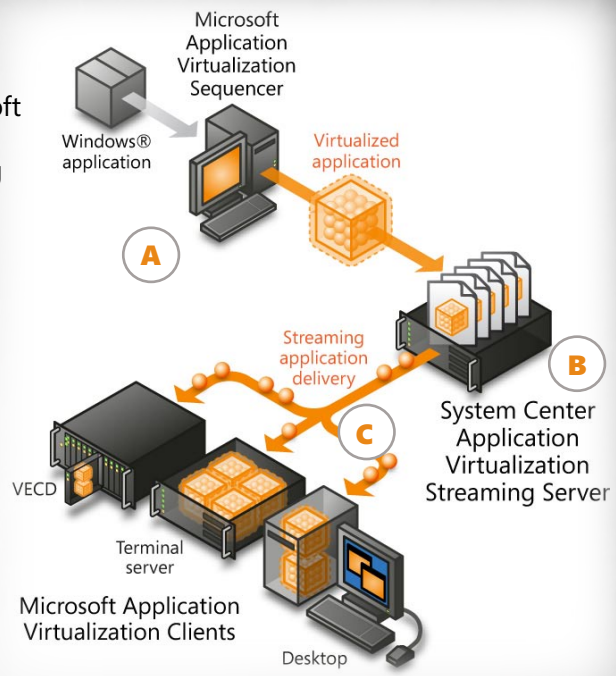
*We've scaled down savings estimates to 80% to match App-V rollout targets identified in depth analysis (since some applications cannot be virtualized).

Our percentage estimates of cost savings achieved are based on 6 depth cost studies organizations that deployed App-V and 45 App-V case studies[3]. The case studies (available at http://www.microsoft.com/casestudies) span a broad range of industries and geographies, with size ranging from 90 to 90,000 PCs. Savings were based on *before* and *after* cost estimates provided by those implementing the technology. These estimates were compared with industry analyst studies[4] and other TCO studies[5] to validate the overall alignment of the findings.

For more App-V with MDOP information (e.g. how to get started, what type of applications to virtualize, and alternative approaches to virtualization) view the App-V website[6].

So What is App-V?

Microsoft Application Virtualization, a solution within the Microsoft Desktop Optimization Pack for Software Assurance (MDOP), streams applications to PCs so that they can be run without being installed locally. The result is dynamic delivery of software that is never installed, never conflicts, and reduces the time associated with application compatibility testing. Users and their application environments are no longer machine-specific, and the machines themselves are no longer user-specific.



App-V Virtualized applications are:

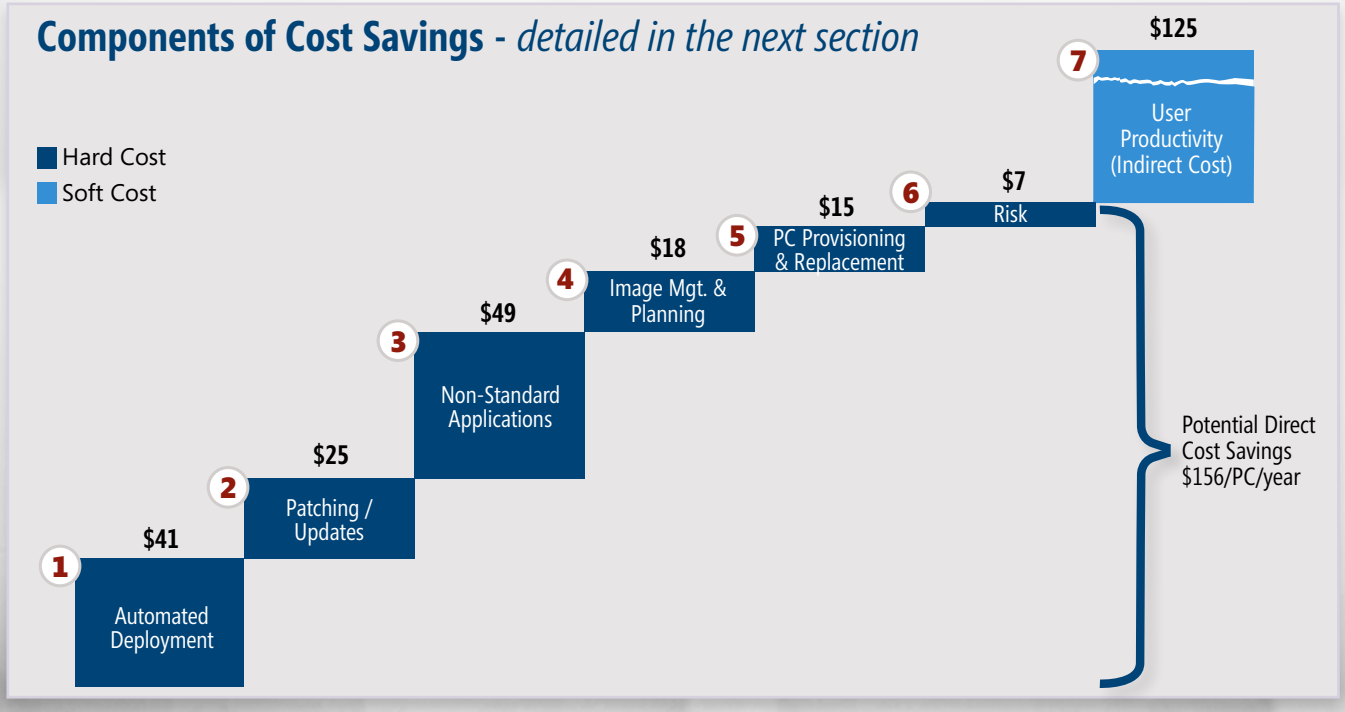
- Streamed on demand
- Never installed
- Never conflicting
- Test minimizing
- Image reducing
- Centrally managed
- Available by user ID vs. by PC
- Lockdown enabled

How it Works:

- **A** Packaged by Virtualization Sequencer (once)
- **B** Stored on server (centrally)
- **C** Streamed to App-V client as accessed
  - Starts in seconds
  - Available in local PC cache

Applications are virtualized with the Application Virtualization Sequencer, a wizard-based tool that packages applications for real-time streaming. The Sequencer uses a once-per-application process to protect the application's integrity and does not modify its source code. Rather than "pushing" down and installing entire applications, the first time an application is requested by end users, the Microsoft Application Virtualization client "pulls" only the code needed to start the program, typically 20-40%; the remainder of the application is streamed in the background without any impact to the users, enabling them to start working immediately. When the application closes, application settings and profiles are saved in a per-use, per-application cache, providing instant access for subsequent use. For mobile users who need access without reconnecting to the network, App-V allows offline usage once the application is streamed into cache or System Center Configuration Manager can push entire applications, using download and execute approach, to the PC to reside in cache, fully available at first launch. Users have the flexibility to run the applications they need, without administrative installation privileges, and without the risk of conflicts.

In the next section, we will review each of the following cost savings elements.



Savings by Activity Area

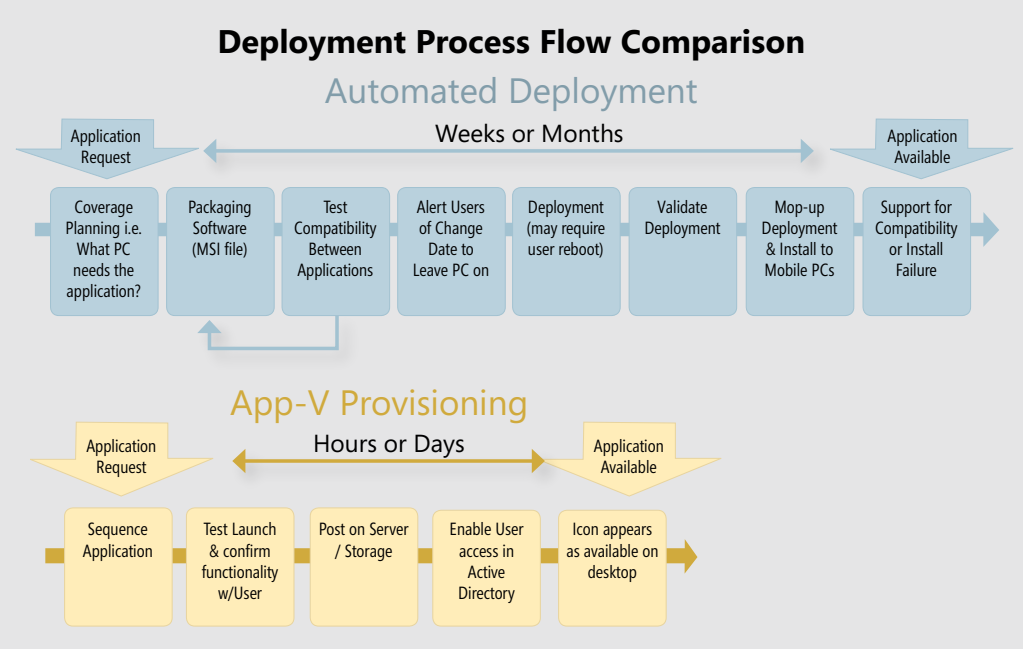
"With Application Virtualization we can go from request to deployment in just a few days, instead of the month it could take with locally installed applications."
- Joerg Umland, IT Administrator, TUV NORD

1. Automated Deployment - Savings $41

For large scale deployment, some companies still use a "sneakers and screwdrivers" approach, but this study benchmarks App-V's savings against modern automated application deployment. On an average, the depth cost studies and case studies found App-V provisioning to be 81% more efficient than automated deployment. Case studies vary widely in how long application deployment takes due to level of testing, scope of deployment, automation tools etc. For example:

- Clarian Health Partners from 3-4 weeks to 3 days
- Swedish Medical Center from 2-3 months to 3 days
- Heidelberg from 5 days to 2 days
- CSU Chancellor's Office several days to a few hours
- Fontys University from 3-4 weeks to hours
- Fairfax County Public Schools 4 weeks to one day

So how is this achievable? Let's compare process flows and review the steps.



Planning *before* traditional automated deployment requires a determination of who needs the app, user notification, and coordination with training. Apps are deployed repeatedly, as their use grows. By contrast, virtual provisioning allows authorized users to decide if and when they need access, *after* the application is available (on the user's schedule); and authorization can be changed in minutes, so planning is less critical.

Packaging for traditional mass deployment requires skilled tailoring of software component needs, registry entries etc. for each operating system. IT managers cited average packaging times of between four and forty hours per application, based on environment complexity, and indicated that complex applications could take as much as 400 hours to package. With App-V virtualized applications, the software is installed on a clean PC, then a wizard driven application sequencer guides identification, capture, and sequencing of the necessary software components, as they are used by the application. Sequencing takes 30 minutes to two hours, based on software complexity.

"40 hours of packaging time on average, was replaced by 4 hours of sequencing; in extreme situations we can even package and deliver an application overnight."
- Jack Fetter, Senior Systems Engineer, Baptist Health South Florida

Testing is necessary with traditional applications to ensure that the new application does not conflict with any other installed applications, in each OS environment. If a conflict is found, it must be resolved, then the revised package must be rebuilt and retested. The depth cost studies and case studies indicated testing durations of days or months depending on complexity, testing rigor, and risk (hospitals for example test vs. every critical application, others may test less but accept more conflicts in production). App-V virtualized applications avoid this issue by isolating the

applications into their own virtual environments. By virtually eliminating co-existence testing and most troubleshooting, Baptist Health can now deliver applications in two or three weeks instead of the six weeks it previously took from request to delivery. IT managers noted that new applications should be launched and reviewed by users to ensure that virtualization does not impinge upon any important functionality (e.g. working with other applications or device drivers).

"Microsoft Application Virtualization clearly represents the future. By isolating applications, we created a stable base that... makes packaging and deployment easier, faster, and risk-free "

- Jack Fetter Senior Systems Engineer, Baptist Health South Florida

Software deployment tools enable automation, but the cases indicated this can still take hours or days. Failure reporting helps identify problems (e.g. PCs turned off, connection failures) for follow-up, which stretches the full deployment by weeks. Mobile PCs with transient connectivity require users to initiate and wait for installation, reducing productivity. For IT to turn-on App-V access, the application is added to the profile of the user or the security group in Active Directory. The application shortcuts available to launch appear with locally installed program files on the start menu. With a click launch begins, just like a locally installed application.

"There are really no reliability issues with App-V-enabled applications. We don't get any of those helpdesk calls anymore."

- Rens Van der Vorst, CTO, Fontys University of Professional Education

"Now [deployment] takes just seconds because we literally just have to check a box on Active Directory. It's seamless."

- Irene Blaston, Head of Desktop & Web Infrastructure, Voca

"With App-V, instead of troubleshooting, we use the 4 Rs: Refresh, Reboot, Reimage, Replace the PC."

– Ed Simcox, Director IT Planning, Clarian Health Partners

Automated Deployment	Without App-V	With App-V
Plan	• Pre-determine users & timing • Identify PCs to target	• Authorized users access applications as needed
Package	• Identify necessary components • Develop deployment packaging – a complex, skilled effort taking days	• Sequence using wizard in minutes • Create dependencies for middleware or plugins
Test	• Test compatibility vs. some or all existing apps - weeks • Repackage and retest if conflict found • Test OS Image	• Validate functionality with end-user • Application compatibility testing virtually eliminated
Deployment	• Plan transmission to manage bandwidth • Run overnight • Wake PCs • Reboot if needed • Check transmission/connectivity success • Resend where needed • Download and execute entire application • Wait for full install to complete	• Update central server • Define access in Active Directory • Streamed to users as needed – real-time • Applications available immediately, no install required
Support	• Failure in download/install • Conflict between applications • Re-download and install • Complex troubleshooting • Reimage and reload machine if unable to resolve	• Conflict calls reduced 90-99% • Enable or remove access in Active Directory – in seconds • Refresh cache remotely for reload of application from server - in seconds • No uninstall

Automated Deployment Cost Savings/PC/Yr.

	Baseline	App-V	Savings[6]
Deployment IT Labor & Admin	$25	81%	$16
User Support	$35	89%	$25
Total			**$41**

[6]Applying App-V to 80% of all applications

Further, some applications cannot be installed at all with automated tools. For these applications, the time savings with App-V can be 100 to 1. Warwickshire County Council estimated that manual deployments on 5,000 PCs across 240 schools took 1000 hours vs. 10 hours with App-V.

User support gets called frequently when a packaged deployment installation fails, or for conflicts between applications that were not detected in testing. Fontys University of Professional Education estimates that prior to App-V, the helpdesk received about 250 calls per month related to post-deployment conflicts. With App-V, they now receive only 1-2% of those calls.

Application conflicts in traditionally deployed software may require PC reinstallation, reimaging, reload and/or a specialist to resolve persistent issues. With App-V, if an application error does occur, the helpdesk can remotely flush and reload the application from cache memory in minutes. Clarian Health Partners estimated App-V has halved the time to fix PC problems reducing resolution time from 3 hours to 90 minutes.

Based on the depth cost studies and case studies, depth analysis, and analyst research, the process changes we've described allow App-V to dramatically reduce IT labor by 81%, and helpdesk support by 89% for automated deployment planning, packaging, testing, deployment and support. When applied against our TCO baseline of $25 for automated deployment IT Labor and $28 for support, we estimate hard savings at $36 per PC per year for automated deployment.

2. Patching/Updates - Savings $25

Application packaging for patches/updates requires software element identification, and testing, just like deployment. Pushing out the patch over the network to every PC, validating, and mopping up transmission failures is also time consuming, and may require users to restart and/or leave PCs on and connected to the network. Because of this effort, many case study organizations previously put off non-essential patches to a quarterly (or even less frequent) cycle, adding risk and delaying functionality gains. App-V virtual application patching/updates by contrast are easier and as a result occur more frequently in many of the companies interviewed. Simply open the package in the application sequencer for update, then place it on server for distribution. Then test-launch on one PC. This provides a 79% reduction in IT labor and 89% reduction in user support based on depth cost analysis and case study reported savings.

"Dual application versions can be particularly critical for developers who want to test old and new versions side by side, or for training centers instructing employees for PCs/OSs of different vintages."

- Laura Guillory, Director of User Services, California State University Chancellor's office

Ardentec had semiconductor testing applications compatible with Microsoft® Excel® 2000, but since Office 2007 uses the same Registry resources during start-up, the programs cannot run on the same PC. So the company was providing two PCs per person as a stop-gap solution. With App-V, a separate virtual environment for the application is created on the desktop, allowing non-compatible versions to operate without conflict.

Patching / Updates

Without App-V	With App-V

• Package, Test, Deploy, & Re-deploy – mirrors full install (big effort limits frequency)
• Support install errors and conflicts with users
• Cut-over on specific date
  • Coordinate users, training, etc.)
  • Prior versions no-longer available
	• Resequence then replace or augment package on server
	• Advertise as available in user's program list – no user impact or support
	• Update ease encourages frequent patching
	• Transition of users is self paced - prior version available for compatibility
	• No install
	• No reboot

Patching/Updates Cost Savings/PC/Yr.

	Baseline	App-V	Savings[7]
Upgrade IT Labor	$24	79%	$15
User Support	$14	89%	$10
Total			**$25**

[7]Applying App-V to 80% of all applications

The process is invisible to users, even if they are using the application at the time it is updated. The next time the users launch the application, they automatically receive and load the new version.

Traditional deployment is designed around a specific cut-over date, and may require notification, scheduling, perhaps user training, timed to the upgrade date. In contrast, App-V enables upgrades without downtime or disruption. There is no installation and no reboots are required.

For a major update with functionality/compatibility changes, the new version may be added before the old version is deleted, enabling both versions to run side by side simultaneously on the same PC, a capability that is often not possible with traditional physical applications. This allows users to determine when they are ready to upgrade, smoothing out the training demand, and supporting backward compatibility needs.

3. Non-Standard Applications - Savings $49

While mass deployment and update of the applications that most or many PCs use are big efforts, our detailed cost studies and case studies also found impact on the "long tail" of applications used by only a tiny percent of the organization. Applications with a handful or few dozen users are just not worth the effort required to automate traditional deployment, particularly when the need is ad-hoc, for intermittent use, or for users trying out a new application. Often an application enters the enterprise in this tenuous way then later becomes mainstream, adding to the complexity. Our research uncovered a range of manual processes employed from sending out disks, sending users to download sites, having users drop off their PCs for IT to install the application, or a complete lack of IT support, leaving users on-their-own. The cost in helpdesk time (requesting the app), IT install time, loss of user productivity (installing the application or waiting to get their PC returned can be 1-4 hours per application).

Post installation, these manually deployed applications generally go unmanaged - a bane to a well-managed IT infrastructure; they are rarely updated, create untested conflicts with other apps (eroding image consistency), become difficult to track, uninstall, or transfer to other PCs, are often lost with PC re-imaging or replacement (e.g. lost disks), and often require giving users administrator rights to self-install. To avoid these issues, it seems many applications are licensed and installed for a larger group, "just in-case", at significant licensing and application management expense.

The situation is very different at Swedish Medical Center where App-V reports on every version of software that's deployed on its clients and exactly how many people are using each one. As a result, Swedish Medical ended up eliminating a few applications because nobody was using them. With other applications, they adjusted the licensing to reflect actual use. For instance, Swedish Medical had 150 licenses for a clinical application but found out that only 25 people used it concurrently. Not only did they save money on the license reduction, they saved on ongoing maintenance fees as well.

For applications with a small number of users, the reduced overhead and reduced complexity from compatibility independence scales down well for intermittent small deployment applications. A single App-V server can stream the full library of App-V virtualized applications (possibly from network storage) to thousands of users - few case study companies required more than a handful of App-V servers across a large user base. A quick change in Application Directory is all that is necessary to enable access for an additional user, and restricting access is just as easy. This eliminates the need to track down and uninstall applications to transfer usage and the need to locate physical media to install on another PC. With only one server to maintain, the application updates are easy, application conflicts are a non-issue.

Care New England had several applications which required different versions of Java and would not run on the same workstation. The result was numerous workstations dedicated to a single

"App-V allowed us to limit the number of users accessing an application, enabling non-concurrent use between classrooms, the library, or accessed from home., saving 10% on licensing."

- Chris Page, Technical Development Manager, Warwickshire County Council

application and users moving from computer to computer. Application virtualization resolved those issues.

Non-Standard Applications Cost Savings/PC/Yr.

	Baseline	App-V	Savings[8]
IT Labor	$11	83%	$7
User Support	$21	89%	$15
SW Licensing	$750	4%	$27
Total			**$49**

[8]Applying App-V to 80% of all applications

Non-Standard Applications	
Without App-V	**With App-V**
• Install manually on each PC • Allow unmanaged applications e.g. updates, uninstall, transfer, lost media • Over license "just-in-case" users • Administrator rights to install	• Sequence once then available on any PC* • Manage centrally allowing update or transfer • Track utilization • License for peak concurrent use

4. Image Management and Planning - Savings $18

Application virtualization not only simplifies deployment of the App-V virtualized applications, it also simplifies testing and image management for traditionally deployed applications, (since there are fewer applications to test against) for both the standard image(s) and user group overlays. Adoption of application virtualization for most of the variation in applications between user groups also enables a reduction in the number of images to maintain. For example, Swedish Medical Center reduced its number of images from 20 to 3 using application virtualization. Managing PCs in a "locked down" non-user administrator mode becomes more productive for users and supportable for IT with application virtualization, than with traditional application deployment.

"Now after using Application Virtualization, our desktops have on a very basic image instead of the huge number which we had to support and manage."
- Ravi Shankar, Sr. Systems Engineer, Sutherland

Image Management	
Without App-V	**With App-V**
• Manage many images based on application combinations required • Increased image complexity with every application • Test against all applications or risk conflicts • Large image footprint • Longer installation time	• Standardize image to hardware • Provision non-imaged apps virtually • Test non-virtualized applications against only a small set of applications on image • Deliver applications as needed separate from the OS Image. • Reduce image footprint

Image Management & Planning Cost Savings/PC/Yr.

	Baseline	App-V	Savings[9]
Image Mgt. IT Labor	$37	52%	$16
Planning IT Labor	$11	30%	$3
Total			**$18**

[9]Applying App-V to 80% of all applications

5. PC Provisioning and Replacement - Savings $15

With traditional application deployment, new PCs which have been imaged to a standard image must be tailored to an individual user. This is necessary for PC issuance for long-term use, for short-term use (e.g. a loaner for PC failure), or in a disaster recovery scenario. In each case, traditional

"App-V reduced our time to re-image a PC. Earlier it took 4 people 2 days to re-image 100 desktops (64 hours of effort), now it takes one person 2 hours. That's a 96 percent reduction in effort."
– Karthik R, Manager Global Technology Infrastructure, Sutherland

*The original application must be compatible with the version of the Operating System it will be deployed to. App-V is not an application to Operating System compatibility solution. For application to operating system compatibility issues please review MED-V which is another component of the Microsoft Optimized Desktop.

deployment requires that each PC install each non-imaged application before making it available to users.

With App-V virtualized applications, a "vanilla PC" with standard image can be given to the user immediately. Since App-V virtualized applications follow the user, all applications authorized in Active Directory appear on the desktop when the user logs in and are available right away regardless of the PC they log in to. This saves hours of IT and user time for PC provisioning or temporary replacement.

"When somebody new comes along, you just hand him a PC. He need only log into the system to see all the applications he can use. No IT employee is needed to perform an installation first."

- Chou Keheng, Assistant Director of Information Management, Ardentec

Provisioning & PC Replacement	
Without App-V	**With App-V**
• Install image based on user type • Customize image based on user needs • Turnaround of 1-4 hours before the user is up, running and productive.	• Give user "vanilla PC" • Applications available upon log-in • Applications and OS are separate entities

Provisioning and PC Replacement Cost Savings/PC/Yr.

	Baseline	App-V	Savings[10]
User Support	$32	58%	$15
Total			**$15**

[10]Applying App-V to 80% of all applications

6. Installation Risk Reduction - Savings $7

Installing non-standard applications in remote locations makes IT choose between sending out a tech and enabling user installation by providing administrative privileges to install, putting both the network and desktops at risk of unintentional or malicious damage. App-V minimizes the need for local administrator access by eliminating local installation of applications. ActiveX® controls, for example, can be supported without admin privileges.

"Improving desktop security is very important. Microsoft offers an important advantage by enabling us to deliver application without admin rights."

- Laura Guillory, Director of User Services, California State University Chancellor's Office

Installation Risk Reduction	
Without App-V	**With App-V**
• Grant administrator privileges to install or run some applications • Loss of control over what users install • Send out tech or drop off PC to control access	• Lockdown can be enabled as virtualized apps do not need administrator privileges to install or run

Installation Risk Reduction Cost Savings/PC/Yr.

	Baseline	App-V	Savings[11]
IT Labor	$41	10%	$3
User Support	$6	89%	$4
Total			**$7**

[11]Applying App-V to 80% of all applications

7. User Productivity and Indirect Benefits - Indirect Savings $125

We've estimated indirect costs of lost user productivity, because even though these are not counted in our direct cost TCO, there are user time savings from instant access, reduced disruption/support, and increased access through any network PC that add value to the organization – possibly in excess of the IT savings identified.

Update and Installation

Every user will recognize the value of time saved not having to download new software, updates, and patches. While overnight updates and automated reboots mitigate much of this, it

Community Medical Centers estimate that quicker access to applications and fewer application conflicts have helped increase user productivity by 20 percent.

remains a time sink for mobile PCs and for any user-installed non-standard applications.

User Troubleshooting
In troubleshooting issues with the helpdesk on the phone, downtime waiting for repair, or for PC replacement, the user's lost time may be as expensive as the support desk and was estimated as such. In addition, there is the loss of unsaved work when an application fails and efforts to recover before calling the help desk (if the user calls at all).

Cross-PC Application Mobility
Traditionally installed non-standard applications are only available to the user on their own PC. They must carry the PC to wherever they need access. App-V virtual applications are available to a user at any PC on the network upon log-in, eliminating the need to bring their own PC to access their desktop. This offers savings in user productivity, savings on desktops vs. laptop costs, and increases the value of kiosk stations for desktop access.

Productivity	
Without App-V	**With App-V**
• Users wait for installation, update restarts, and downloads (particularly mobile) • Users work through mis-install /conflict troubleshooting with helpdesk • Users must reconfigure/ personalize new or reimaged PC • Application access tied to specific hardware – non-roaming	• Immediate app availability • Troubleshooting virtually eliminated • Access applications and user preferences from any PC on network

Productivity (Indirect Cost) Cost Savings/PC/Yr.

	Savings
Deployment Support	$26
Patching/Updates	$16
Non-Standard Apps	$36
PC Replacement	$22
Security Support	$4
Mobility / Any PC access	$21
Total	**$125**

Conclusion

Based on depth cost analysis and case study reported savings, we have outlined annual direct IT savings potential for our typical company from MDOP's App-V of $156 per PC, from IT labor, help desk, and licensing – 11.6% of TCO. Indirect annual user productivity savings are estimated at $125 per PC. Together $280 per PC is a benefit that cannot be ignored. In every depth cost study, the question was not if App-V will be broadly rolled out across the application library, but how quickly it will be accomplished. While virtualization is not right for every application, simplification and ease of use deliver quick benefits and ROI. Respondents are impressed with both ease of implementation and robustness of the solution. The research showed fairly consistent benefits for all customers - regardless of size, industry, or geography. There was great variation in the types of applications virtualized, large and small packages, high and low frequency of use – consistently saving costs but with different emphasis.

Your next step is to engage with your Microsoft Account Representative or Microsoft Partner Representative to develop the business case for Microsoft Desktop Optimization Pack tailored to your organization.

Key References

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[3]Microsoft Application Virtualization Case Studies available here http://www.microsoft.com/casestudies (Click more Search Options "Microsoft Application Virtualization" or organization name)
[4]"TCO of Traditional Software Distribution vs. Application Virtualization" – Gartner Inc. April 16, 2008 ID Number G00155897
[5]"Sample TCO Study for Application Virtualization" - Mert's Enterprise Desktop Blog. Technet Microsoft http://blogs.technet.com/microsoftsetup/archive/2009/04/11/application-virtualization-tco-savings.aspx
[6]**For more Information visit the Microsoft Application Virtualization Website http://www.microsoft.com/appv**

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