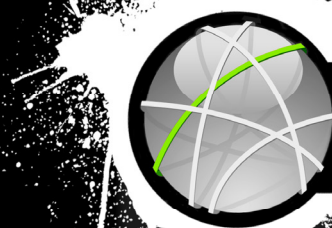


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Application Virtualization Comparison Chart September 2009

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Notes

The information in this document has been compiled through intelligence gathering by members of Virtualfuture.info. Intelligence gathering consists of reviewing available product documentation and interviews with product specialists working at the specific vendors.

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Introduction

You might know the previously released VirtualFuture.info Application Virtualization Comparison Charts from 2008. This comparison chart is an updated version of the Chart released September last year and provides an objective overview of features of the major Application Virtualization solutions. Some of the major advantages of Application Virtualization are:

- Migrate to new operating systems without upgrading or replacing legacy applications.
- Lock down corporate endpoints by running applications in user mode without locking out users.
- Minimize application conflicts and regression testing.
- Replicate your virtualized applications like any other enterprise data to maintain an instant-on fail-over plan for your applications.

The following is updated in this chart:

- InstallFree Bridge is now version 1.9.2.6
- Microsoft App-V4.5 added Cumulative Update 1
- Symantec AppStream & SVS Pro are now called EndPoint Virtualization Suite
- ThinApp had a minor update from version 4.0 to version 4.03
- XenoCode Virtual Application Studio had a major upgrade from v2008 to v2009 SP1.

Also new is that we have tested the following products on start-up performance:

- Microsoft Office 2007 Suite (Word)
- Adobe Acrobat Reader
- Mozilla Firefox
- Microsoft Visio
- WinRAR

What is Application virtualization

All Application virtualization software vendors have their own definition of Application virtualization. Basically it comes down to this:

Application virtualization enables the deployment of software without modifying the local operating system or file system. It allows software to be delivered and updated in an isolated environment ensuring the integrity of the operating system and all applications. Application conflicts – and the need for regression testing - are significantly reduced. A single application can be bundled and deployed to multiple operating system versions. Applications are easier to provision, deploy, upgrade, and rollback. (VMware's definition).

Methods

In our opinion there are 2 methods to application virtualization:

Standalone:

Applications are encapsulated in a single executable. These executables can run instantly from USB, CDROM or local disk. The applications can also be deployed using a management tool like Microsoft SMS. No agent is required to run the virtualized application.

Centrally controlled access:

Virtualized applications are “distributed” through a central deployment tool. A locally installed agent is required. The applications can be deployed (executables are copied locally) or shortcuts to the applications (located on a network-share) can be presented.

Some products have the capability to create standalone executables, some are only capable to provide application virtualization through an agent installed on the client. There are also products which can do both, but not always simultaneously. For example: with Installfree you can create standalone executables, but if you want to centrally control the distribution of the applications, you have to create a different type of Installfree package.

With both methods streaming is possible. Some products have the streaming feature and others have not. Streaming is when you start a virtualized application located on the network or webserver, only the blocks needed to run the application are copied to a local drive (cache). When more features of the application are used, more blocks are copied to the local cache. Streaming can be available for standalone virtualized applications accessed from the network or when the virtualized applications are presented with a locally installed agent.

Comparison

This comparison chart compares the features of the, in our eyes, most competitive application virtualization products. This might help you select a product that fits your needs. We advice to test the products yourself in a proof of concept before making a definitive choice.

Products that were considered, but did not make it into the chart:

- Ceedo
- Edeavors Technologies Application JukeBox
- LanDesk Application Virtualization
- RingCube MojoPac
- Trigen AE
- Trustware BufferZone
- Novell Zenworks Application Virtualization (OEM-ed from Xenocode)

Versions of products used :




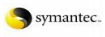





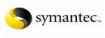


Symantec :	Software Virtualization Solution 6.1 Workspace Streaming 6.1
Microsoft:	Application Virtualization 4.5 CU1
Citrix :	XenApp 5.0 & Streaming Profiler 1.3.1
InstallFree:	Bridge 1.9.2.6
VMware:	ThinApp 4.0.3 (Build 3313)
XenoCode:	Virtual Application Studio 2009 SP1




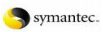


Thank you










Thank you for reading this comparison and please let us know by e-mail or as a comment on our blog what you think about this chart. We're eager to learn more about the apps so please correct us if you find any errors or when you have suggestions on what's missing in the chart.

The next update of the chart will probably be done when the majority of these vendors have updated their products to support Windows 7.

Kind regards,
Sven Huisman & Matthijs Haverink

VirtualFuture.Info - Application Virtualization Comparison Chart August 2009						
Product	XenApp Appl. Virt. Incl. Feature Pack	InstallFree Bridge	Microsoft App-V	Endpoint Virtualization Suite	VMware ThinApp	Virtual Application Studio
Company						
Latest version	5.0	1.9.2.6	4.5 CU1	SVS 6.1 / WS 6.1	4.0.3	2009 SP1
Released	2009-02	2009-07	2009-02	2009-03	2009-07	2009-08
Technology						
Stand-alone <i>Virtualized applications can run on clients without agent locally installed (this is not the same as off-line).</i>	No	Yes	No	No	Yes	Yes
Streaming <i>Launch the application instantly from a remote location. The first blocks needed to start the application are locally cached on the client. When more features are used, more blocks are cached.</i>	Yes	Yes	Yes	Yes	Yes	No
Centrally controlled access <i>Management software is included that can manage authorization on application delivery. Agent locally installed on the client is required.</i>	Yes	Yes	Yes	Yes	No	No
Off-Line Usage <i>Applications can be launched even when a user is off-line (for example on a laptop). The streamed application is completely cached locally.</i>	Yes	Yes	Yes	Yes	Yes	Yes
Application Interconnectivity / Binding <i>Virtualized applications, which are isolated, can be connected to each other. For example, Acrobat reader is packaged once. Internet Explorer needs connectivity to Acrobat Reader to view pdf-attachments in webbrowser.</i>	Yes	Yes	Yes	Yes*	Yes	Yes
Executes in user-mode only <i>There is no interaction with the kernel of the OS. Therefore, applications or agent cannot crash the OS.</i>	No	Yes	No	No	Yes	Yes
License Management <i>Can the usage of the applications be controlled? How many licenses do you have of an application and how many times is the application (concurrently) in use?</i>	Yes	No	Yes	Yes	No	No
Tracking and reporting <i>The usage of applications can be tracked and monitored. Reports can be created.</i>	Yes	No	Yes	Yes	No	No
Memory consumed by runtime <i>What is the impact of the virtualization layer on memory usage?</i>	Unknown	approx. 15% extra	Unknown	Unknown	< 2MB	400 kB
Size of runtime <i>What is the size of the runtime of the virtualization layer?</i>	Unknown	1060 KB	Unknown	Unknown	400 KB	400 KB
Supported platforms to run virtualized applications						
Company						
Win 16-bit application supported (only run on 32-bit OS)	No	No	Yes	No	Yes	No
64-bit application supported	No	No	No	No	No	No
Windows 2000	Yes	No	No	Yes	Yes	Yes
Windows XP	Yes	Yes	Yes	Yes	Yes	Yes
Windows Server 2003 (TS) 32-bit	Yes	Yes	Yes	Yes	Yes	Yes
Windows Server 2003 (TS) 64-bit	Yes	No	No	No	Yes	Yes
Windows Vista 32-bit	Yes	Yes	Yes	Yes	Yes	Yes
Windows Vista 64-bit	Yes	No	No	No	Yes	Yes
Windows Server 2008 (TS) 32-bit	Yes	Yes	Yes	No	Yes	Yes
Windows Server 2008 (TS) 64-bit	Yes	No	No	No	Yes	Yes
Terminal Server	Yes	Yes	Yes	Yes	Yes	Yes
Citrix	Yes	Yes	Yes	Yes	Yes	Yes

Packaging						
Company						
Packaging method How is the software packaged as virtual application? - Streaming profiler: an installation is recorded in a stream - JeOS: the application is installed in a mini-OS - Snapshot: a before and after snapshot is taken. All changes made during installation are in the package - Virtual Software Layer: capture an application into a layer activate and deactivate the virtual software layers	Streaming Profiler	Install in JeOS	Streaming Profiler	Virtual Software Layers	Snapshot	Snapshot
NO clean PC required If this is set to Yes then a clean PC is NOT needed for snapshotting a new application because the technique used does not use the OS on which the software is being captured.	No	Yes	No	No	No	No
Save as EXE The virtualized application can be saved as an executable.	No	Yes	No	No	Yes	Yes
Save as MSI The virtualized application can be saved as a MSI. This MSI can be distributed with various software deployment solutions.	No	No	Yes	Yes*	Yes	Yes
Application Add-ons as modules Add-ons like plugins for internet explorer can be packaged separately and then attached to other packages.	Yes	Yes	Yes	Yes	Yes	Yes
Compression The virtualized application can be compressed to decrease the bandwidth usage.	Yes	Yes	Yes	Yes	Yes	Yes
Patching with additional/incremental files Patches can be build in to separeate (patch) files so that you don't need to repack the original virtual application.	Yes	Yes	Yes	No	Yes	No
Reboot supported Are reboots supported when creating the virtualized application?	Yes	Yes	Yes	Yes	Yes	Yes
Scripts supported Is it supported to run scripts before or after launching the application?	Yes	No	Yes	Yes	Yes	Yes
Security on AD User Level (standalone use) When a package is created AD authorization based on Active Directory User rights can be implemented so that only users that are authorized can start the application.	N/A	Yes	N/A	N/A	No	No
Security on AD Group Level (standalone use) When a package is created AD authorization based on Active Directory Group membership can be implemented so that only users that are authorized can start the application.	N/A	Yes	N/A	N/A	Yes	No
Security on AD OU Level (standalone use) When a package is created AD authorization based on Active Directory OU's can be implemented so that only users that are authorized can start the application.	N/A	Yes	N/A	N/A	No	No
Virtual COM and DCOM Virtual applications access virtual COM and DCOM objects in order to keep the local OS clean.	Yes	Yes	Yes	Yes	Yes	Yes
Virtual filesystem Virtual applications access a virtual filesystem in order to keep the local OS clean.	Yes	Yes	Yes	Yes	Yes	Yes
Virtual registry Virtual applications access a virtual registry in order to keep the local OS clean.	Yes	Yes	Yes	Yes	Yes	Yes
Virtual services Virtual services can be created for the virtualized application in order to keep the local OS clean.	No	Yes	Yes	Yes	Yes	Yes

Deployment						
Company						
Deploy to AD groups <i>Assign the application to groups in Active Directory.</i>	Yes	Yes	Yes	Yes	N/A	N/A
Deploy to AD Domain / OU's <i>Assign the application to an OU or Domain in Active Directory.</i>	No	Yes	No	No	N/A	N/A
Deploy to Computers <i>Assign the application to computer object in Active Directory.</i>	No	Yes	No	No	N/A	N/A
Deploy to AD users <i>Assign the application to a user object in Active Directory.</i>	Yes	Yes	No	Yes	N/A	N/A
Pre-stream/cache to clients <i>Ability to prepopulate a desktop or server with an application so it loads faster on start-up.</i>	Yes	Yes	Yes	Yes	No	No
Self Service Provisioning <i>Ability for users to decide what is provisioned to them by means of some sort of Self Service Portal.</i>	No	Yes	No	Yes	No	No
Runs from CD-ROM <i>Launch a Virtual Application from CD-ROM.</i>	Yes*	Yes	No	Yes*	Yes	Yes
Runs from HTTP <i>Launch a Virtual Application from a webserver using HTTP.</i>	Yes	Yes	Yes	Yes	No*	Yes
Runs from network share <i>Launch a Virtual Application from a fileshare (no agent needed).</i>	No	Yes	No	Yes	Yes	Yes
Runs from USB <i>Launch a Virtual Application from a USB stick.</i>	Yes*	Yes	No	Yes*	Yes	Yes
User Experience						
Company						
Run without additional privileges <i>Logged on as a default Windows User.</i>	Yes	Yes	Yes	Yes	Yes	Yes
Runs on locked down PC <i>For example on a kiosk-PC where there is no agent available.</i>	No	Yes	No	No	Yes	Yes
File Type Association <i>Sometimes managed centrally, sometimes locally</i>	Yes	Yes	Yes	Yes	Yes	Yes
Shell Integration out-of-the-box <i>Shell integration (context menu's) is available without the need for any additional handling during the install/package process.</i>	No	Yes	No	Yes	No	No
License models						
Company						
Per named user	No	Yes	Yes	No	No	Yes
Per concurrent user	Yes	No	No	Yes	No	No
Per device	No	Yes	Yes	Yes	Yes	No
Bulk / unlimited	No	Yes	Yes	Yes	No	No
List prices						
Company						
<i>These prices are list prices we received from the vendor or distributor and no rights can be extracted from this information.</i>						
XenApp Advanced Edition per user (5 users minimum) Subscription Advantage included	\$380					
InstallFree Bridge perpetual user license (min. 50 users) Maintenance / Support = 18% (per year)		\$100 \$18				
Microsoft Desktop Optimization Pack (per desktop) Software Assurance on the operating system is mandatory			\$10			
SVS Professional for Clients				\$55		
ThinApp Suite (Including Workstation + 50 client licenses) ThinApp client license Support ThinApp Suite (required) Support ThinApp client (required)					\$5,000 \$39 \$1,000 \$10	
Xenocode Virtualization Starter Kit (incl. 5 user license)						\$585
Xenocode Virtual OS End User License (based on 25 users) Additional Annual Maintenance (based on 25 users)						\$36 \$10
* = Please check the side notes for details						

Application virtualization performance

One of the most important things when it comes to migrating to virtualized applications is user-acceptance. And when users are used to applications that have a startup time of less than 2 seconds, they will not accept the fact that applications startup slower. We decided to measure the launch-time of 5 commonly used applications when virtualized with 6 application virtualization products. We tested the first launch-time of the applications and the second launch-time. The second time the application virtualization product already cached the application (or some of the blocks) on disk or in memory. This is to see the difference in launch-time of cached and non-cached applications. If there is a big difference in launch-time, you can always decide to pre-cache or pre-load the application (if possible) or not virtualize the application at all.

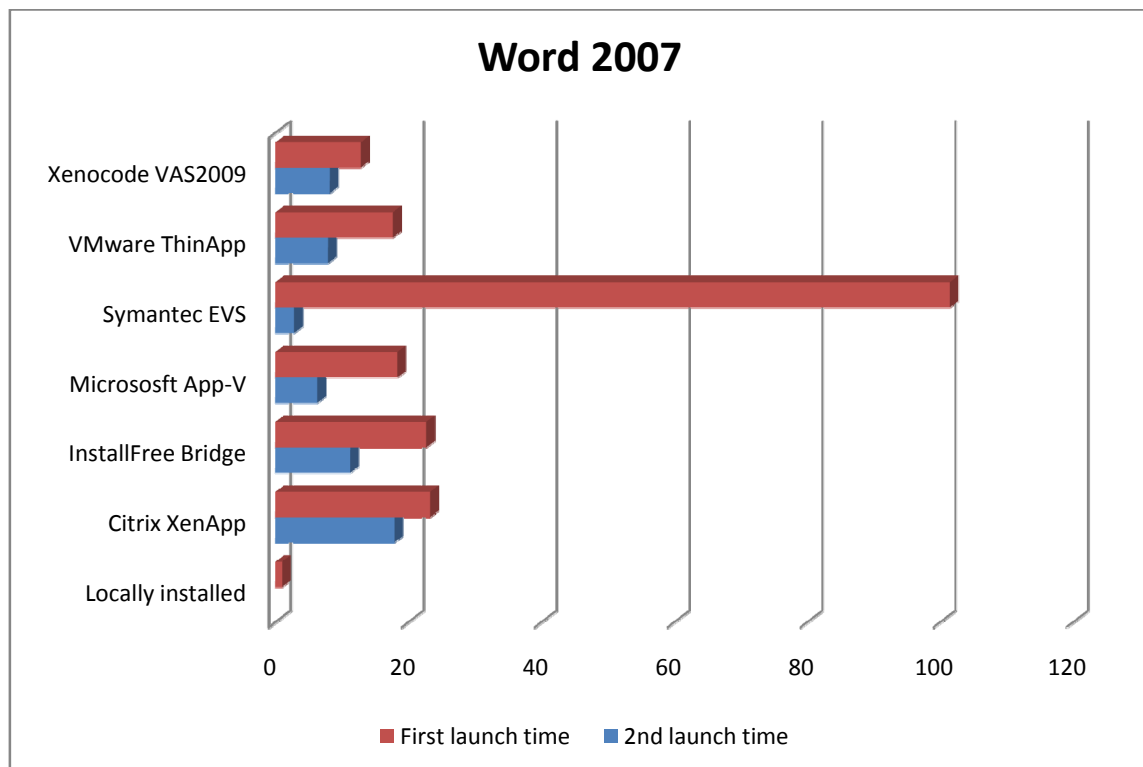
As a result of these tests we can say that no virtualized application has a faster launch-time than when locally installed. This is one of the disadvantages of application virtualization.

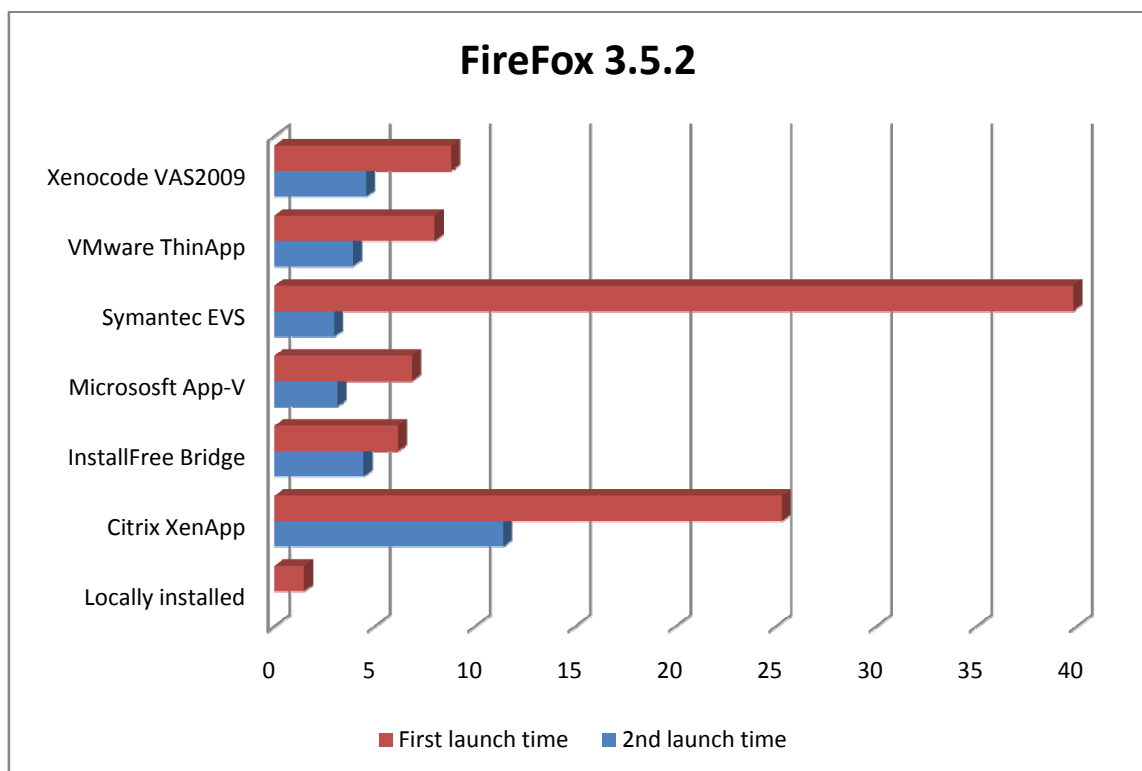
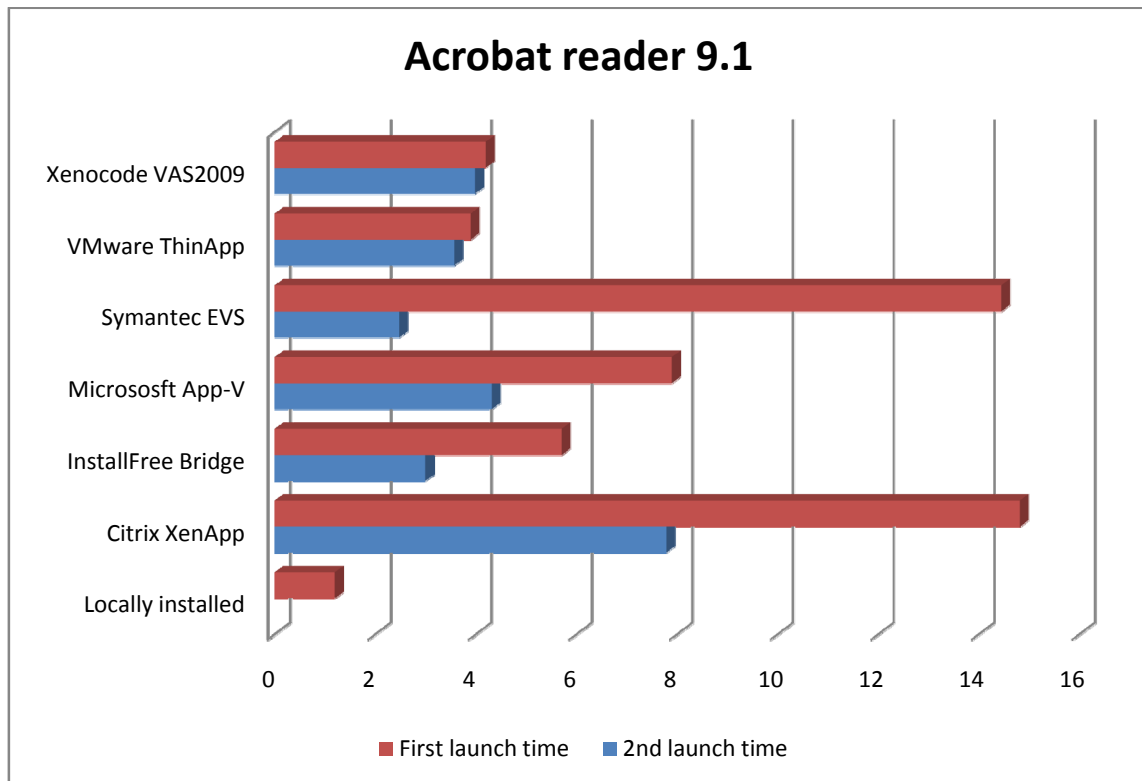
The tests we performed were all under the same circumstances. We don't say that you get the same results in your environment but the results are to compare the application virtualization products with each other.

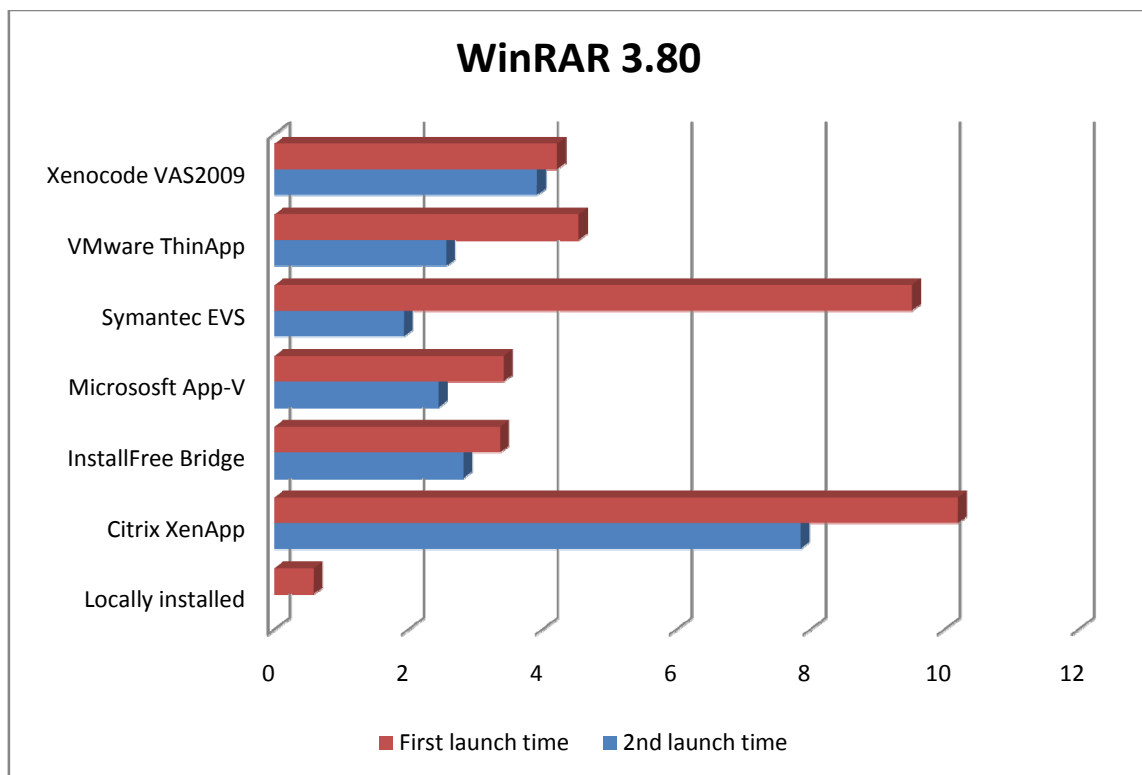
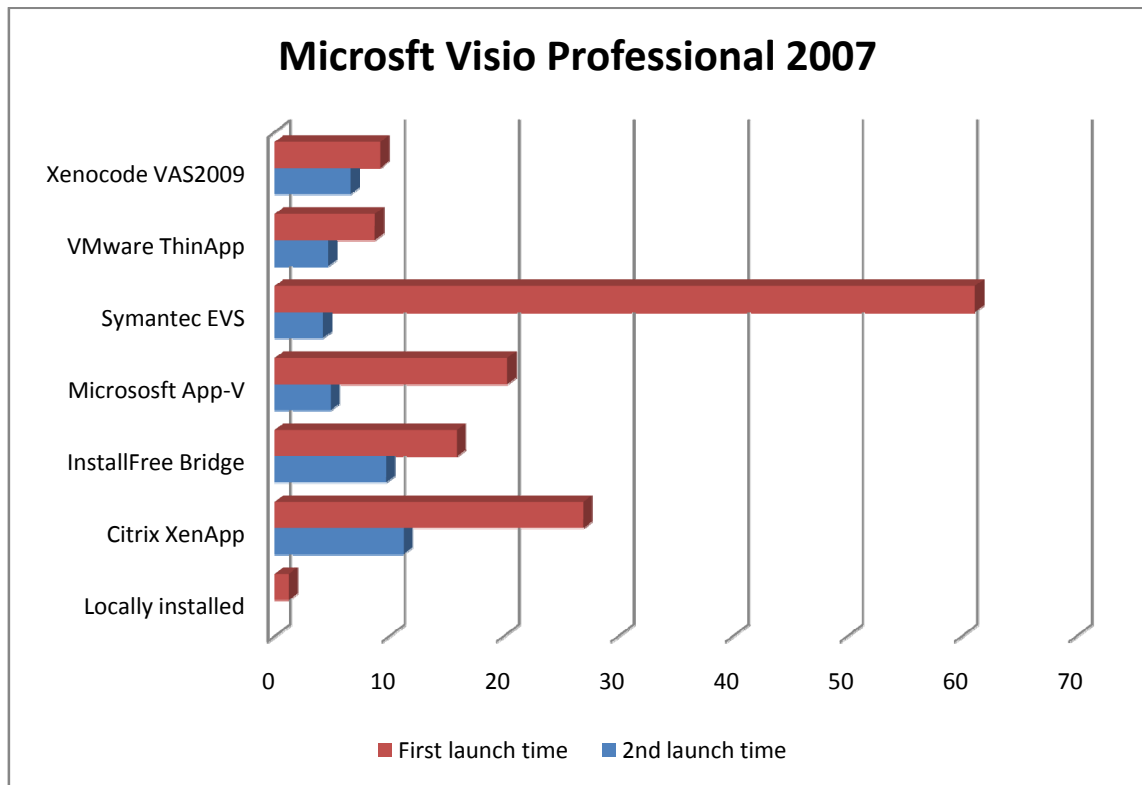
The 5 applications that were tested:

- Microsoft Office Word 2007 (as part of a full featured Office Enterprise suite package)
- Acrobat Reader 9.1
- Firefox 3.5.2
- Microsoft Visio Professional 2007
- Winrar 3.80

Here are the results for the 5 applications. The launch times are in seconds.







Side Notes & Future features



Citrix hasn't released much new stuff the last months, but in February this year they released the XenApp 5 Feature Pack which has:

- ✓ Application Streaming available for all (now also XenApp Advanced Edition) customers
- ✓ Off-line access to virtualized apps, no matter which XenApp version you have.
- ✓ Off-line support added for Single Sign-on.
- ✓ Runs from USB functionality. It needs to be said that this works only if NFTS-formatted. This is because the RADECache needs to be stored on it and run from it. Not commonly used so we marked it as Yes* in the chart.

When you are really using Citrix XenApp as an application virtualization solution you have to take the XenApp Feature Pack. As an application virtualization solution itself Citrix doesn't have to most revolutionary product but when you already have a Citrix XenApp farm running you have to seriously consider using their solution.



InstallFree is one of the newest players on the market with their Bridge and Mini-Bridge products. InstallFree is already ahead of current competition with features like:

- ✓ A self-provisioning portal for users
- ✓ Out-of-the-box Shell Integration
- ✓ Easy AD based Management and Deployment interface
- ✓ Downloading complete virtualized applications from vendor, from within management interface.
- ✓ And last but not least the fact that no clean PC is required for snapshotting/packaging!
- ✓ Host Interconnectivity policies : use ADM files to control how virtual app connects to host OS
- ✓ Application policies : use original ADM files to control virtualized apps.

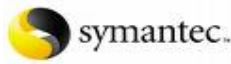
InstallFree had a focus on more and more new features which made their product the most innovative of the bunch. However they had some stability issues. In their last release hardly any new feature has been added and a lot of effort has gone into stabilizing the product. In the upcoming release InstallFree adds Windows 7 and 64-bit environments support.

We also know that InstallFree at this moment is working on their Desktop product which is a completely virtualized desktop environment without using any VM/VDI technology and therefore does not require any changes to your existing infrastructure.



Microsoft has released App-V 4.5 (formerly known as Softgrid) already a year ago. Since then only a service pack was released. The upcoming version 4.6 is currently in beta and will be one of the first to be able to virtualize 64-bits applications. What needs to be said about App-V is that the desktop client is currently only available when you have bought SA (Software Assurance). Only then it then can be obtained by purchasing the MDOP (Microsoft Desktop Optimization Pack). A couple of the features in 4.5 are:

- ✓ HTTP streaming.
App-V 4.5 will support streaming virtual applications from an IIS server (version 6 or 7).
- ✓ Dynamic Suite Composition (DSC).
DSC allows the flexibility to control virtual application interaction.
- ✓ Create MSI packages
The ability to create MSI packages directly from the Sequencer.
- ✓ Improved integration with SCCM 2007 R2.
- ✓ The ability to deploy virtual applications via SCCM will be seamless for SCCM administrators.
- ✓ HTTP streaming
Virtual applications can be streamed via HTTP.
- ✓ Reporting.
Application usage information is now recorded locally on each client and then sent to an App-V Management Server during Publishing Refresh. This means that offline usage of applications or usage of applications when streaming from different sources is now all accounted for properly in the App-V database.
- ✓ New MSI package capability.
The ability to publish and stream MSI packages.
- ✓ Standalone mode.
The virtualized applications are packaged in an .MSI file and can be distributed via the same mechanism as the installed applications.



The Symantec product line concerning the application delivery space is still a bit unclear. In the past, Symantec acquired the Altiris SVS solution and the AppStream solution. The latest release of both products is now version 6.1. You can still use these 2 applications separately, but combined together you are able to stream virtualized applications. The downside is that you first have to create a SVS-package, export it and then convert it to a stream. Besides that, you lose some functionality when you decide to stream the virtualized application and when the applications are not pre-loaded, streaming the virtualized packages can be very slow. You can still use the included Notification Server-based Software or the Altiris Deployment Solution to distribute (not stream) you virtualized applications. In the chart the base is to stream virtualized applications.

Side note for the chart:

Application Interconnectivity / Binding: Yes, but this is questionable. When creating virtual layers as Symantec call them, you have the option of isolating a layer. When selected, there is no interconnectivity and when not selected there is. But then again, when the applications are not isolated, conflict can still occur.

Safe as MSI: Yes, but not when using streaming capabilities.

Running virtualized applications from CD-ROM and USB: Yes, but only with a client locally installed. How it works is that the cache is placed in a self extracting executable on the device so that it can be launched from there using the locally installed client.



VMware's ThinApp has had a "major" update in June 2008. The biggest update was more the name-change (VMware acquired Thinstall in 2008) than a real product update. Ever since, VMware only released minor updates. The latest is 4.0.3.

VMware does not release roadmap info or future feature insights for publish or print. It is only available directly to partners, customers and sales prospects by trained VMware representatives and under non-disclosure agreement. However, during VMworld 2009 there is a session about ThinApp regarding upcoming features:

- ✓ The management SDK
- ✓ Batch MSI conversion using WIX and Workstation
- ✓ VMware View integrations
- ✓ Application compatibility detection engine

One note on the chart: ThinApp is not capable of streaming applications from HTTP(s) but it is capable of getting updates from a HTTP(s) source.



Xenocode has just recently (and secretly) released their Service Pack1 for Virtual Application Studio 2009, this is 6 months after the release of VAS 2009, in February. The major improvements since the 2008 version are:

- ✓ AD Deployment and embedded security
- ✓ Windows Shell integration
- ✓ Enhanced sandbox management (more control over app-linking and communication)
- ✓ One-click MSI import
- ✓ Improved dynamic application linking (interconnectivity)
- ✓ New application templates

In the previous chart we had the interconnectivity part set to no because Xenocode wasn't really connecting bubbles (you had to repackage every package). Now they've changed that and that does make Xenocode VAS 2009 SP1 a more mature product. We do have to say that Xenocode doesn't seem to be keen on spreading information about their products. SP1 for VAS2009 had been released without any announcement and release notes are hard/not to find.