

2008



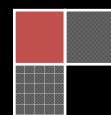
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Application Virtualization Comparison Chart September 2008

Authors:

Sven Huisman
Technical Consultant
QNH Infrastructure B.V.
E: sven.huisman@qnh.nl

Matthijs Haverink
Technical Consultant
QNH Infrastructure B.V.
E: matthijs.haverink@qnh.nl



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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.

Version information

Title:	<i>Application Virtualization Comparison Chart</i>
Published on:	Virtualfuture.info
Version:	<i>2.0</i>
Document date:	<i>September 9th 2008</i>
Authors:	<i>Sven Huisman & Matthijs Haverink</i>

Introduction

You might know the previously released VirtualFuture.info Application Virtualization Comparison Chart of June 2008. This comparison chart is an updated version of the Chart released June this 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:

- Citrix XenApp 4.5 is replaced by XenApp 5.0 application virtualization
- Microsoft Softgrid 4.2 is replaced by App-V 4.5
- Symantec Appstream is replaced by the combination of Appstream and SVS Pro (a more commonly used combination)
- Xenocode is updated with SP1 features

New in this chart is that we also provide future features and we explain certain features that cannot be caught into a simple yes/no into side notes.

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










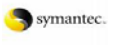





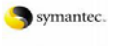


This comparison chart compares the features of the, in our eyes, most competitive application virtualization products. This might help you select a product that fits your needs. We advice to test the products yourself in a proof of concept before making a definitive choice.

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

- Ceedo
- Edeavors Technologies Application JukeBox
- LanDesk Application Virtualization
- RingCube MojoPac
- Trigence AE
- Trustware BufferZone

Product	XenApp Appl. Virt.	Installfree Bridge	App-V	Appstream & SVS Pro	ThinApp	Virtual Application Studio
Company						
Latest version	5.0	1.0	4.5	5.2.2 SP3 / 2.1 SP2	4.0	2008 SP1
Release date	September 10th 2008	April 7th 2008	September 4th 2008	December 4th 2007	June 27th 2008	July 9th 2008
Technology						
Stand-alone <i>Virtualized applications can run on clients without agent locally installed.</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. Outlook needs connectivity to Acrobat Reader to open pdf-attachements.</i>	Yes	Yes	Yes	Yes	Yes	No*
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	Yes	No	No	Yes	Yes
Windows Vista 32-bit	Yes	Yes	Yes	Yes	Yes	Yes
Windows Vista 64-bit	Yes	Yes	No	No	Yes	Yes
Windows Server 2008 (TS) 32-bit	Yes	No	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 - MSI: The MSI installation file is analysed and compiled into a package.	Streaming Profiler	Install in JeOS	Streaming Profiler	Snapshot or MSI	Snapshot	Snapshot
NO clean PC required	No	Yes	No	No	No	No
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.						
Save as EXE	No	Yes	No	No	Yes	Yes
The virtualized application can be saved as an executable.						
Save as MSI	No	No	Yes	Yes	Yes	Yes
The virtualized application can be saved as a MSI. This MSI can be distributed with various software deployment solutions.						
Application Add-ons as modules	Yes	Yes	Yes	Yes	Yes	Yes
Add-ons like plugins for internet explorer can be packaged separately and then attached to other packages.						
Compression	Yes	Yes	Yes	Yes	Yes	Yes
The virtualized application can be compressed to decrease the bandwidth usage.						
Patching with additional/incremental files	Yes	Yes	Yes	No	Yes	No
Patches can be build in to separate (patch) files so that you don't need to repack the original virtual application.						
Reboot supported	Yes	Yes	Yes	Yes	Yes	Yes
Are reboots supported when creating the virtualized application?						
Scripts supported	Yes	Yes	Yes	Yes	Yes	Yes
Is it supported to run scripts before or after launching the application?						
Embedded security on AD User Level (for standalone use)	N/A	Yes	N/A	Yes	No	No
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.						
Embedded security on AD Group Level (for standalone use)	N/A	Yes	N/A	Yes	Yes	No
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.						
Embedded security on AD OU Level (for standalone use)	N/A	Yes	N/A	Yes	No	No
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.						
Virtual COM and DCOM	Yes	Yes	Yes	Yes	Yes	Yes
Virtual applications access virtual COM and DCOM objects in order to keep the local OS clean.						
Virtual filesystem	Yes	Yes	Yes	Yes	Yes	Yes
Virtual applications access a virtual filesystem in order to keep the local OS clean.						
Virtual registry	Yes	Yes	Yes	Yes	Yes	Yes
Virtual applications access a virtual registry in order to keep the local OS clean.						
Virtual services	No	Yes	Yes	Yes	Yes	Yes
Virtual services can be created for the virtualized application in order to keep the local OS clean.						

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 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	N/A	N/A
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>	Yes	Yes	No	Yes	Yes	Yes
Shell Integration out-of-the-box <i>Shell integration is available without the need for any additional handling during the install/package process.</i>	Yes	Yes	Yes	Yes	Yes	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>						
Minimal XenApp Enterprise 5-pack is required Citrix Application Streaming for Desktops add-on license (concurrent user license)	\$2.250 \$60					
InstallFree Bridge perpetual user license 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) Xenocode Virtual OS End User License Additional Annual Maintenance						\$499 \$40 \$10
* = Please check the side notes for details						

Side Notes & Future features



Citrix has just released their 1.2 Client (for XenApp 5.0 for Windows Server 2008) so future features are not available yet. Some of the new features are:

- ✓ Application Interconnectivity/Binding: Citrix calls it Inter-Isolation Communication and it enables isolated applications to communicate with each other.
- ✓ W2K8 Server support (32/64-bit). This means that applications “packaged” with the Citrix solution will run on Windows Server 2008.
- ✓ HTTP(s) support for streamed applications.
- ✓ Non-Administrator client installation: Eliminates the need to give users “Administrator” privileges in order to install the XenApp client, making it easier for users to access virtualized applications from any device, such as kiosks and business centers.
- ✓ Runs from USB. 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.



InstallFree

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:

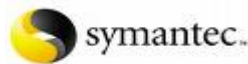
- ✓ Out-of-the-box Shell Integration
- ✓ Easy Application Binding
- ✓ Easy AD based Management and Deployment interface
- ✓ And last but not least the fact that no clean PC is required for snapshotting/packaging!

We 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 does not require any changes to your existing infrastructure.



Microsoft has just released App-V 4.5 (formerly known as Softgrid) and with that introduced a whole bunch of new features. What needs to be said about the former Microsoft Softgrid solution is that it currently is 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 new features 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 a 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 a bit confusing right now. That's because Symantec is really focusing on the so called "End Point Virtualization". First they acquired the Altiris SVS solution , after that AppStream and just recently they acquired NSuite. These are all products that do their own thing in the Application Virtualization space. The old AppStream product (which streams) and the SVS products (that isolates) together give you a full-blown Application Virtualization solution. Symantec now sells it under the name "Software Virtualization Solution Professional Streaming System". Symantec will release their new version of their Streaming product around December 2008 and the new version of SVS Pro will appear around January 2009. Features that are announced are:

- ✓ Windows Server 2008 support
- ✓ 64-bit OS support
- ✓ Streaming product be using the same mini filter driver.
- ✓ A web console for management (can be linked to from other management servers)
- ✓ A single client for both products

They are planning to integrate NSuite (which does cool stuff like Single Sign-on, Connection broker etc.) with SVS *Pro Streaming System* within 6 to 9 months from now.

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 been updated last in June 2008. Even though we've been persistent, VMWare does not allow us to reveal potential future features. 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.

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 recently released their latest Service Pack but we already have some info about future features. Features Xenocode announced for Application Virtualization Studio 2009 (which should be released December 2008) are:

- ✓ 64-bit support
- ✓ MSI import
- ✓ Incremental patching
- ✓ AD-based embedded security

What needs to be said is that Xenocode says it does Application Interconnectivity but nevertheless we marked it as a No. This is because the only way you can accomplish this is by packaging an application as a component and linking it to a virtualized application. This means that you have to package every application twice (once as a component and once as an application). This therefore is no interconnectivity as defined in our chart (one virtualized application communicating to the other virtualized applications).