Integrating VMware View and VMware ThinApp with Citrix XenApp
Introduction

Would you like to enhance your Citrix XenApp implementation with virtual applications and virtual desktops? This discussion is about combining VMware ThinApp and VMware View with your current installation of XenApp. These products together provide you with the following three solutions:

- **Citrix XenApp** for remote application presentation
- **VMware View** for virtual desktops
- **VMware ThinApp** for virtual applications

We will discuss presenting ThinApp virtual applications through XenApp Servers to users on VMware View virtual desktops.

To simplify the discussion, we exclude the offline, non-networked use case of this product combination.
This Discussion Is for You

If you have a Citrix XenApp implementation and are making a decision about taking further steps with virtualization, this discussion is for you. You probably already use VMware vSphere to virtualize your servers, including your XenApp Servers. The next steps would be to virtualize applications and desktops.

If you like the concept and performance of XenApp application presentation, you can expand that functionality by adding View and ThinApp to the mix. This solution preserves the investment you have made in time and money in the XenApp implementation. Your staff expertise in successfully running XenApp will continue to be useful in this combined implementation. Furthermore, the expertise you have accumulated in running a vSphere environment will be leveraged with a View and ThinApp implementation.
What Is Citrix XenApp?

Citrix XenApp has a number of tools for different functions. For the purposes of this paper, we focus on the application remoting tool that displays Windows applications over a WAN, LAN, or the Internet to users on a variety of devices. XenApp is installed on a Microsoft Terminal Server and uses the Citrix HDX remoting protocol to present applications. The advantage of remotely displaying applications on endpoints is that you do not need to maintain the application on multiple endpoints; you instead install the application on centralized servers in the datacenter.

![Figure 1: The Citrix XenApp Components](image-url)
More Detail on XenApp Functionality

To prepare applications for remote presentation with XenApp, you install the applications on a centrally located XenApp Terminal Server in the datacenter. XenApp installed on Terminal Servers allows:

- Use of the Citrix HDX remoting protocol, an improvement over the native Microsoft RDP protocol
- Load balancing over redundant XenApp Servers

XenApp applications are installed on multi-user Microsoft Terminal Servers, and users launch the remotely run applications from their endpoints.

XenApp has another available function of presenting multi-user desktops to users. For this function, applications are installed on centralized virtual machines, and XenApp publishes the entire desktop to users. With published desktops, users sign into a desktop session and see a desktop interface. The users share one operating system instance. In this paper, we focus on the use case of XenApp application presentation, not desktop presentation.

High availability of applications with XenApp is maintained with redundant servers in a Citrix server farm. At a minimum, you need a second XenApp Server with the same applications as the first one. Client requests for applications are directed to the least busy server.

You assign XenApp applications to individual users and to groups through Active Directory. Then, users can subscribe to the applications from an application storefront.

Users access XenApp applications from a Windows physical or virtual machine. XenApp “publishes” the applications; that is, the applications are delivered without the need to install the application on the endpoint. The applications run on the centralized server. You must install an agent (Citrix Receiver) on the endpoint for XenApp to be able to publish the applications to the endpoint. Users access the XenApp applications via the XenApp web interface or over a LAN or WAN.

To present applications with Citrix XenApp, you need a dedicated server infrastructure with database components and web services. XenApp includes the following components:

- XenApp Application Servers to host the published applications
- Citrix Licensing Server
- Data Store: SQL database instance for storing configuration information on published applications, users, printers, and servers
- Data Collector
- Citrix Web Interface for users to access applications with a web browser
- XML Service and Broker, an intermediary between the web interface and the XenApp Servers
- Citrix Receiver agent on the endpoints
What Is VMware View?

VMware View is a virtual desktop solution based on virtual machines running on a VMware vSphere hypervisor. You manage these virtual machines with vCenter from the centralized datacenter. Users can access their virtual desktops over the Internet, a WAN, or a LAN, from a variety of devices. VMware View users can use either the RDP or PCoIP remote display protocol to view their desktops from their chosen devices.

The diagram below shows the various required and optional components for a View implementation.
More Detail on VMware View Functionality

From a remotely displayed View desktop, users operate a single-user copy of the operating system and applications. No one shares the operating system or applications. All types of applications function well within a View virtual desktop solution:

• **Native applications.** These applications are installed on the parent or template virtual machine in the datacenter. Each user runs the applications from a remote view of their desktop, which is a copy of a virtual machine in the datacenter.

• **ThinApp virtual applications, either local or streamed from a file share.** ThinApp virtual applications can be placed on the parent or template virtual machine and run from the virtual desktop, which is a copy of the centralized virtual machine. Or you can place a shortcut to the ThinApp package on the desktop, and the application streams from a ThinApp Repository to the virtual desktop.

• **Remote applications.** On View desktops, you can run Microsoft Terminal Services Remote Applications installed on Microsoft remote servers.

• **XenApp applications.** A View desktop can contain shortcuts to XenApp applications that run on a XenApp Server in the datacenter.

To evaluate VMware View, you can download a trial version of View and use the VMware View Evaluator’s Guide. For more information on VMware View, explore the VMware View product website.
VMware View Compared to Citrix XenDesktop

The Citrix desktop virtualization solution is XenDesktop. You may be considering moving to a Citrix XenDesktop virtual desktop solution, but the VMware View virtual desktop solution is better and more cost effective.

The main reasons to choose View over XenDesktop are:

• Directly leverages the power of vSphere
• Easier to deploy and manage
• One-half the cost

The virtues of VMware View relative to Citrix XenDesktop are not the topic of this paper. For more information comparing View to XenDesktop, see Desktop Virtualization with VMware View 5 Compared to Citrix XenDesktop 5.5, a Principled Technologies Report.

If you are ready for a desktop virtualization solution, and you want to keep your XenApp implementation, VMware View readily incorporates XenApp into its infrastructure.

In addition, if you are already familiar with VMware vSphere for server virtualization, managing vSphere as the infrastructure behind VMware View will be easy for you. This discussion focuses on combining the VMware View virtual desktop solution with XenApp application presentation.

For an overview of VMware View functionality, watch the 3-minute video, VMware View 5.0 and End-User Computing featuring Chris Young, former Vice-President and General Manager, End User Computing, VMware. This video focuses on how the new version of VMware View meets the needs of IT and end users.
What Is VMware ThinApp?

VMware ThinApp is a tool to virtualize Windows applications. ThinApp packages can run on physical desktops, virtual machines (such as VMware Fusion or Workstation virtual machines), VMware View virtual desktops, Microsoft Terminal Servers, and Citrix XenApp application presentation servers, as well as from USB devices or network file shares. You can use the network file shares to stream ThinApp applications to XenApp Servers, View virtual desktops, or VMware Horizon Application Manager.

**Figure 3:** ThinApp Deployment Modes
More Detail on VMware ThinApp Functionality

VMware ThinApp provides a highly functional application virtualization solution. Following is detail on how ThinApp works.

**Choice of Deployment Scenarios**
ThinApp packages can run either locally on a physical or virtual desktop, or from a shortcut pointing to a remote network file share. To run a ThinApp package locally, you place the virtual application on a Windows desktop or USB device and run it there. To run a ThinApp package from a file share, you place a shortcut on the desktop to point to the remote virtual application package on a file share.

See the [VMware ThinApp Deployment Guide](#) for more information about the two deployment modes.

**Streaming to Memory**
Whether you place the ThinApp package locally or on a file share, the package runs in streaming mode. ThinApp streams only the necessary blocks of the virtual application into memory so that each application function can run as you request it. There is no caching to local disk.

For more information, see [Streaming Execution Mode: Application Streaming with VMware ThinApp](#).

**No Infrastructure or Agent**
ThinApp packages are deployed without a server or client-side agent—simply place the package on a desktop, or a shortcut on a desktop, and launch the application. No separate management console or dedicated infrastructure is required, and there is no ongoing management of applications. For streaming from a file share, you need only a highly available read-only network file share. To distribute ThinApp packages, you use the tools and processes that are currently in use in your environment today, such as an existing electronic software distribution (ESD) system.

**User Access**
User access to ThinApp packaged applications may be determined by Active Directory security groups or with any other validation logic defined in your environment. When using Active Directory security groups, you embed the group permissions within each ThinApp package.

**Virtualization and Isolation**
A ThinApp application package is truly virtual; that is, it can run without installation on a Windows desktop. During packaging, the parts of the file system and registry that were changed by installation of the application are saved within the virtual application package. When the package runs on a native operating system, the virtual operating system in the package keeps the application isolated from the operating system and from other native and virtual applications. Therefore, you can run several different versions of the same application (such as Microsoft Office) side by side on one desktop.
**Independent Packaging of Linked Applications**
ThinApp has a feature called AppLink that lets you create independent virtualized application packages and link them together at runtime. This allows you to virtualize components such as the .NET Framework, the Java Runtime Environment, or a plug-in, and link the component to multiple applications that use the component. This simplifies updating of the components: you update once and affect all linked packages.

**Virtualization of Internet Explorer 6**
ThinApp allows you to virtualize Internet Explorer 6 (IE 6) from your copy of IE6 running on Windows XP. You combine virtual IE 6 with a virtualized version of a legacy web application that relies on IE6, and you can support the legacy application on Windows versions that come with later versions of IE. Virtual IE 6 can run alongside these more modern versions of IE.

**Fast, Automatic Updates to Applications**
ThinApp provides two automatic means of updating virtual applications: App Sync and side-by-side updating.

App Sync is for updating locally run ThinApp packages; the update occurs over a LAN or the Internet. While the user runs the application locally, ThinApp checks for a new version of the application that you have posted on a web server or file share. In the background, App Sync downloads pieces of the new version of the application to the user, and the next time they launch the application, the new version launches.

Side-by-side updating is the other automatic updating mechanism available for ThinApp packages. You use it with ThinApp packages run from a file share. You place a new version of the application in the same directory where the original package resides, but you give the new version an integer suffix. ThinApp always launches the application package with the highest integer suffix, and when the user launches the application anew from the shortcut, the newer version launches.

To evaluate ThinApp, you can download a trial version and use the ThinApp Reviewer’s Guide.

For more information on VMware ThinApp, explore the VMware ThinApp product website.
Comparison of Application Presentation, Application Streaming, and Application Virtualization

Citrix XenApp is an application presentation and delivery tool. Citrix also has an application virtualization tool, Citrix Profiler, for streaming of applications. This section compares Citrix application virtualization to VMware ThinApp application virtualization. Then we discuss the application presentation and execution capabilities of XenApp relative to VMware solutions.

Key Points

- **VMware ThinApp** virtual application packages are isolated from other applications and run without installation, an agent, or other infrastructure. You place the package on a desktop or USB device, or a shortcut points to the virtual application stored on a central file share.

- **Citrix XenApp** is a remote application presentation tool. Users share the centrally located application and the operating system and view the remotely running application from an endpoint device.

- **VMware View** is a virtual desktop solution. Users have exclusive access to a remotely running desktop, with applications and an operating system.
Application Packaging, Virtualization, and Isolation

ThinApp is a true isolation and virtualization tool, whereas Citrix Profiler provides isolation and virtualization. The next sections discuss the differences.

**ThinApp Packaging, Virtualization, and Isolation**

How does VMware ThinApp create isolated virtual applications? The ThinApp packaging process encapsulates parts of the file system and registry into the virtual application package. As the virtual application runs, the application’s changes to the file system and registry are stored within the user’s personal application sandbox, separate from the host desktop. User actions are isolated so that the virtual application does not conflict with other installed or running applications, either native or virtual.

Another way that ThinApp packages are isolated from other applications on the system is that you do not install the executable ThinApp package on the endpoint device. You place a ThinApp virtual application package on a Windows desktop or on a file share or USB device, and the isolated executable runs from the endpoint desktop without an agent. The application uses the customized virtual operating system within the virtual package in combination with the unchanged local operating system and is therefore isolated from other virtual and native applications. You can run multiple versions of the same application side by side on one Windows desktop.

You package a ThinApp application on the earliest version of the Windows operating system that your users will run it on. The ThinApp packaged application runs on the operating system version it was packaged on, as well as on later versions of the operating system if the application vendor supports that version of the application on those versions of the operating system. In this way, ThinApp packages are portable across Windows operating system versions.

**Citrix Profiler Packaging**

The Citrix packaging tool, Citrix Profiler, is for creating application packages to be streamed to endpoints. Profiler does not isolate application packages from the host operating system or from other applications because the packages do not contain a virtual operating system. You must profile an application for each Windows operating system version that you will stream the application to. Citrix applications are not portable across Windows platforms.

The Citrix application packages are dependent upon the entire native version of the operating system and therefore can conflict when they interact with the operating system. To isolate Citrix applications from each other, you must place them on different servers.

Citrix application packaging saves time: you package once, then deploy to many servers. Citrix Profiler is an automated install and software distribution tool, not an isolation or virtualization tool.

For more information on this topic, see [Application Virtualization Comparison: VMware ThinApp 4.0 versus Microsoft App-V 45 CU1 and Citrix XenApp 5.0 (Tolly Test Report)](##).

This paper discusses the View integration with XenApp applications that are remotely displayed to endpoints, not streamed applications created with Profiler.
Application Execution and Presentation

Does VMware have a tool for Windows application presentation? VMware View provides a virtual desktop solution that allows each user to run applications and the operating system on their assigned remote desktop and to view the display of that desktop on their endpoint device without the use of application presentation. XenApp displays to users multi-user applications running on a shared operating system instance on the XenApp Server.

**XenApp Application Remoting of Applications Executed on the XenApp Server**

XenApp application remoting is a Windows application delivery tool. XenApp applications are installed, run, and managed on a centrally located server in a hosted environment. These applications are presented over a WAN or LAN, or the Internet, to end users on various devices. Users access XenApp applications through a remote endpoint display. An agent on the endpoint device controls the user interaction with the remotely running application. Many users can access the same application at one time.

**VMware View Remote Display of Individual Desktops Running in the Datacenter**

VMware View remotely displays desktops running in the datacenter. The View virtual desktops run an operating system and applications, and users do not interfere with each other because each user has exclusive access to applications and the operating system on their assigned desktop. Unlike XenApp, View separates the user’s operating system from the server, which provides isolation and protection of the user environment.

**ThinApp Application Execution on the Endpoint**

ThinApp is a Windows application virtualization tool. Users can run the virtual application executable after you place the package somewhere for them. You can place ThinApp virtual applications locally on an individual desktop or attached USB device, or remotely on a central file share on the LAN. If the ThinApp package is accessed from a central file share, you place a shortcut on the desktop where you want the user to run the application from. With either local or remote placement of the virtual application, users run the virtual application executable on an endpoint device without installation of the package and without a client agent. ThinApp executable packages require no additional infrastructure to run.

ThinApp application execution is carried out on the desktop where the operating system is. Many users can access a single virtual application on the file share, but execution is independent for each user. With either local or remote file share deployment of a ThinApp package, the application is streamed to memory for execution, with only the necessary parts of the application streamed to the endpoint device as requested. The application is not cached to disk.

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**Key Point**

- **Citrix XenApp** is a remote application presentation tool. Users share the centrally located application and the operating system and view the remotely running application from an endpoint device.

- **VMware View** is a virtual desktop solution. Users have exclusive access to a remotely running desktop, with applications and an operating system.
VMware ThinApp packages applications. Once packaged, ThinApp virtual applications can be run:

- Directly on a physical or virtual desktop
- On a XenApp Server with a ThinApp shortcut pointing to a file share, and presented by XenApp on an endpoint
- On a View virtual desktop, either directly or from a ThinApp shortcut pointing to a file share
- Through Horizon Application Manager, with the ThinApp package residing on a file share

**Key Point**

- **VMware ThinApp** virtual application packages are isolated from other applications and run without installation, an agent, or other infrastructure. You place the package on a desktop or USB device, or a shortcut points to the virtual application stored on a central file share.
View, ThinApp, and XenApp Combined

More and more applications are being created for the cloud platform, and operating-system-based applications are becoming a previous-generation solution. The VMware vision for End User Computing on the cloud platform includes access to legacy Windows applications as well as to next-generation SaaS and web-based applications.

VMware ThinApp virtualizes Windows applications. VMware View virtualized desktops give users access to their own copies of the operating system and applications. XenApp application presentation gives users a shared operating system and shared applications. Each solution has its financial and operational efficiencies. If you are currently running a XenApp implementation, it meets some of your Windows application needs. You can combine these three products to optimize the handling of Windows applications.

Placing one copy of a ThinApp virtualized application on a file share (the ThinApp Repository) is much simpler than installing XenApp applications on multiple servers in multiple server farms. And, with ThinApp, you have the benefits of true virtualization, with lack of conflict with other applications, and easy updates.

If you stream packages from the ThinApp Repository to the XenApp Server via a LAN, then present applications from a XenApp Server over the WAN or Internet to end users, you can take advantage of the combined ThinApp-XenApp solution.

VMware View virtual desktops give your users isolated use of the operating system and applications, just as with a physical desktop. Placing shortcuts on View desktops to XenApp-supplied ThinApp virtual applications gives users the best of all three solutions.

Using View for desktop virtualization and ThinApp for application virtualization are the first steps toward next-generation application, desktop, and data delivery technologies for the cloud.

The following sections outline how View and ThinApp enhance XenApp, and how XenApp enhances View and ThinApp.

For an overview of how View and ThinApp are the first steps in the VMware End User Computing journey to the cloud, watch the 3-minute video Building the Platform for the Post-PC Era featuring Vittorio Viarengo, Vice-President of Desktop Product Marketing at VMware.
How Does ThinApp Enhance XenApp?

ThinApp packages make the XenApp deployment more efficient and solve many of the problems of XenApp implementations. XenApp becomes better with ThinApp virtualized applications through the following capabilities:

- Requires only a single application instance
- Application conflict is eliminated
- Recovery is simpler
- No requirement to transform applications to multi-user
- Updates are simpler and faster with ThinApp
- ThinApp can virtualize IE6, and the migration to Windows 7 is eased

Details on each of these capabilities follow.

**Requires Only a Single Application Instance**

With ThinApp, you need only one copy of the application for the whole installation. You maintain the one copy of the virtual application on the ThinApp Repository. With XenApp, you have the same application natively installed on each of the XenApp Servers in your server farm, for load balancing, and each of these native installations must be individually maintained.

**Application Conflict Is Eliminated**

Citrix isolates applications from each other via XenApp silos. For example, you might have one silo for Office 2010, and one for SAP. You set up different XenApp Server farms to separate applications from each other. If you have different versions of Office, you also would need to have different silos because the different Office versions would conflict with each other. This strategy requires additional hardware for proper load balancing and redundancy.

ThinApp isolates applications with software, not hardware. Applications that might conflict with each other and therefore need to be on different XenApp silos can be placed on the same XenApp Server if the applications are virtualized with ThinApp. ThinApp packages include a thin virtual operating system within them, and virtual applications are not competing for the same files. For example, you can have different versions of Office on the same XenApp Server if they are ThinApp packages.

You test ThinApp virtualized packages before they are placed on XenApp Servers, so application problems are no longer the reason you have to rebuild XenApp Servers. Most IT managers agree that reducing XenApp Server rebuilds is a welcome change.

“...virtualizing your applications with ThinApp will reduce application rollout time [and] the cost of maintaining your Citrix servers, and will likely reduce the number of Citrix servers you require. By eliminating the application ‘drag’ on the Citrix servers, the majority of system resources are free to service end user connections, thereby increasing the number of ICA [HDX] connections supported by each server.”

With ThinApp virtualization, you have complete isolation of the virtual application from other applications. Changes that the application makes to the file system and registry are contained within the virtual application package.

**Recovery Is Simpler**
If a XenApp Server fails, you have to reinstall the XenApp server. However, if you have virtualized and stored your applications separately on a ThinApp Repository, you do not have to reinstall the applications. In the event of a XenApp Server failure, you have only the baseline server configuration to reinstall; application installation and configuration are eliminated. You have much less work.

**No Requirement to Transform Applications to Multi-User**
Applications must be capable of being used by multiple users at once before you place them on XenApp Servers. You may need to add scripts, and so on, to make the applications multi-user. You do not need to make ThinApp virtual applications multi-user. ThinApp virtual applications are streamed to memory independently to each user. Each user’s access to a ThinApp package is isolated from other users’ access to the same application from a file share. ThinApp packages do not need further configuration to be multi-user.

**Updates Are Simpler and Faster with ThinApp**
With Citrix XenApp, you must update each natively installed application on each XenApp Server, and you need to take each server offline to update any applications.

ThinApp packages can be updated automatically while they are in use. For ThinApp packages stored on a file share and run from a shortcut on the XenApp Server, you need to update only the single application package stored on the central ThinApp Repository. To do this with ThinApp side-by-side updating, you place the updated version of the application package on the Repository, with an incremented integer suffix, and each user automatically connects to the new version when they relaunch the application through the XenApp Server.

If you later find out that the update is not what you want, you can roll back the update simply by placing the prior version on the file share and changing its file extension to a higher integer. The next time each user launches the application, they revert to the old version.

**ThinApp Can Virtualize IE6, and the Migration to Windows 7 Is Eased**
ThinApp allows you to virtualize Microsoft Internet Explorer 6 (IE6). Virtualizing IE6 along with a legacy application gives you great flexibility. This allows you to run legacy applications that are dependent upon the IE6 browser or on an older version of Java.

In addition, users can run virtual IE6 alongside other versions of IE on the same desktop. For example, the native version of IE can run alongside a number of virtualized versions of IE on Windows 7.

The migration to Windows 7 or to later Windows versions becomes easier if you have the option of carrying forward any IE6-dependent legacy applications. Legacy applications no longer hold up the migration.

“...ThinApp and XenApp are very complimentary [sic] products. ThinApp can simplify your application deployment and the management of those applications. Whether that be to traditional desktops, virtual desktops or application delivery platforms...Lots of reasons why a ThinApp deployment delivered via Citrix XenApp is a desirable solution.”

How Does XenApp Enhance ThinApp?

XenApp enhances ThinApp in a couple of ways:

**You Can Present ThinApp Packages over the WAN or Internet**

ThinApp packages are streamed over a LAN if they are run from a shortcut on the desktop. They cannot be run over a WAN or the Internet. With XenApp, you can deliver ThinApp virtual applications over the WAN or Internet. To do this, ThinApp streams the package from a ThinApp Repository to the XenApp Server over a LAN, and the XenApp Server then remotely presents the ThinApp virtual package to the user endpoint over a WAN or the Internet.

**You Can Entitle Individual Users to ThinApp Packages**

You can entitle groups of users to ThinApp packages through Active Directory permissions when ThinApp packages are distributed independently of VMware View. However, when you run ThinApp virtual applications on View desktops, assignment is to desktop pools, not to Active Directory users or groups. This makes delivery of applications such as Microsoft Project difficult because some applications require an individual license, not a volume license.

XenApp enhances the delivery of ThinApp packages because you can assign ThinApp virtual applications to individual users in a XenApp implementation. XenApp also uses Active Directory for entitlement, and it allows assignment not only to groups of users, but also to individual users.

VMware View desktops act as clients for XenApp presentation, and the XenApp entitlement protocol supersedes the View entitlement protocol. XenApp applications, including ThinApp applications, can be assigned to individual users or groups.
How Does View Enhance XenApp?

A VMware View virtual desktop infrastructure enhances Citrix XenApp in various ways:

**Users Have Their Own Desktops, with Their Own Operating System and Applications**
XenApp provides users with a shared operating system and shared applications. User actions can conflict with each other, and a crash in one application can incapacitate all users.

VMware View provides a virtual desktop environment. Users operate in their own desktop environments, just as they would on physical desktops. They have their own operating system instance and their own applications. Because each user has an entire desktop, their actions cannot conflict with other users. If you set up persistent (or stateful) desktops, user changes can be preserved from session to session.

**You Can Eliminate Physical Desktops and Cut Costs**
Eliminating the maintenance of physical desktops saves time and money. A virtual desktop infrastructure particularly saves in desktop administration time. See The Business Case for Desktop Virtualization.

**The Underlying Infrastructure Is Familiar**
You may already have virtualized your XenApp Servers with VMware vSphere. If you have used VMware vSphere to virtualize XenApp Servers, you can use your vSphere expertise to run View virtual desktops on the familiar infrastructure.
How Does XenApp Enhance View?

XenApp has an entitlement protocol that allows assignment of applications to Active Directory users and groups. VMware View desktops act as clients for XenApp presentation of applications, and the XenApp permissions protocol dominates. This allows you to assign XenApp applications to individual users and groups within the View environment.
How Do You Integrate View and ThinApp with XenApp?

Not only do View and ThinApp work well with XenApp, but the blended configuration is easy to accomplish. XenApp works just as well with a VMware View virtual desktop infrastructure as it does with a Citrix XenDesktop infrastructure. And you gain the benefits of a View virtual desktop infrastructure and ThinApp virtual applications.

XenApp can remotely display both applications and desktop sessions. For a simpler approach, we are focusing on the display of XenApp applications on a View desktop. This involves a combination of these elements:

- XenApp applications installed on a XenApp Terminal Server
- ThinApp virtual applications residing on a ThinApp Repository
- ThinApp virtual application shortcuts placed on the XenApp Server
- XenApp applications remotely presented on a View virtual desktop
With ThinApp virtual applications on a file share, or ThinApp Repository, and shortcuts to those applications on the XenApp Terminal Server, the ThinApp packages stream over the LAN to the XenApp Server.

The XenApp Server publishes the ThinApp applications to the View desktop via shortcuts on the View desktop. To create and enable those shortcuts to the XenApp-presented ThinApp applications, you need to set up the Citrix Receiver agent on the endpoints that will display the View desktops. XenApp published applications are displayed over the Internet or a WAN or LAN.

**Figure 6:** ThinApp Virtual Applications Streamed to the XenApp Server, Then Remotely Displayed to Endpoints
You may already be using VMware vSphere to virtualize your XenApp Servers to improve efficiency and cost and to reduce the endemic XenApp Server sprawl. For more information on virtualizing Citrix XenApp with VMware vSphere, see: Citrix XenApp on VMware Best Practices Guide.

Figure 7: The XenApp Components Deployed on vSphere
On View desktops, you can run:

- XenApp published applications, including any ThinApp packages published through XenApp
• ThinApp packages independent of XenApp

• Natively installed applications

Figure 9: ThinApp Packages, XenApp Applications, and Natively Installed Applications on a View Virtual Desktop

ThinApp comes with VMware View Premier, so you can create both virtual desktops and virtual applications from one bundle.
Preparing View virtual machines for XenApp application presentation is very simple. Deploy the Citrix Receiver client plug-in inside of View desktops with the following steps:

1. In the VMware View Administrator console, connect to the base virtual machine template or parent virtual machine snapshot to be used for the View desktop pool.

2. Obtain the Citrix Receiver client plug-in, along with any specified configuration guidelines for your organization.

3. Install the Citrix Receiver client plug-in into the template or parent virtual machine in View Administrator.

4. (Optional) You can instead use a traditional software deployment tool to install the Citrix Receiver client plug-in into the View desktop.

5. (Recommended) Use Pass-Through Authentication if possible, so that users are not prompted for additional credentials. This can be set in the Client Authentication parameters from the Citrix Web Interface Administrative Console.

6. Pre-populate the following registry key with the appropriate value to automatically point the Citrix Receiver to the XenApp Server URL:

   HKLM\Software\Citrix\PNAgent\ServerURL

   Restart the Citrix Receiver application, if required.

7. In View, deploy new virtual machines from the base virtual machine template or Recompose the linked-clone desktop pools from the new parent virtual machine snapshot to deploy the View desktops with the Citrix Receiver plug-in.

   Published XenApp applications will appear in the Start menu on View virtual desktops.
Summary

This paper describes the strengths and flexibility of VMware View virtual desktops and VMware ThinApp virtual applications, and how they can be used to enhance Citrix XenApp application presentation. If you already have a XenApp implementation, you can greatly enhance it by adding ThinApp and View to the environment.

Implementing View and ThinApp are the first steps toward embracing the next-generation technologies to access your data, your desktops, and your applications from the cloud. VMware’s vision for End User Computing in the cloud starts with virtualizing the applications and desktops that you use today and extends to include a secure catalog of data, desktops, and applications from many sources, with access from any mobile device.
Additional Resources

Application Virtualization

• VMware ThinApp Technical Resources

• Application Virtualization Comparison: VMware ThinApp 4.0 versus Microsoft App-V 45 CU1 and Citrix XenApp 5.0 (Tolly Test Report), August 2009

• Application Virtualization Smackdown, October 2011, Ruben Spruijt, PQR

Desktop Virtualization

• VMware View Technical Resources

• Desktop Virtualization with VMware View 5 Compared to Citrix XenDesktop 5.5, Principled Technologies Report, February 2012

• The Business Case for Desktop Virtualization

XenApp on VMware vSphere

• Citrix XenApp on VMware Best Practices Guide

Author and Contributors

Tina de Benedictis wrote this expanded version of an earlier VMware paper titled *Application Presentation to VMware View Desktops with Citrix XenApp*. Tina is a technical marketing manager in the End User Computing group at VMware. She writes about VMware View, VMware ThinApp, and other enterprise desktop products.

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