

VMware View 4.5 Product Review

Today we will have a look at VMware View 4.5. View is the latest release from VMware of their Virtual Desktop Infrastructure (VDI) Platform. VMware's foray into VDI sprang from interest in the concept driven by their end user community. In the beginning, VMware started developing a Web Based connection broker that was released as part of a consulting package offered through partners. This activity was shelved when the company acquired Propero in 2007. Propero started out as a competitive product to Citrix Server based computing, however when they recognized the opportunity in virtual desktops and the difficulty in competing directly, they were one of the first to retool for desktop virtualization. Propero was then redeveloped and released as Virtual Desktop Manager (VDM) from VMware. The product received mixed reviews as many of the features that were native to Propero's software were removed in VMware's initial release. Since that time the product has gone through several reiterations, including the complete overhaul that became VMware View 3 in 2008 and most recently View 4.5. View 4.5 now offers many features that are required to provide an environment that scales and deals with a mixture of end user requirements. For example, View can blend Pools of Virtual Desktops, Physical Desktops and Terminal Servers behind a single user portal, allowing the IT team to intelligently associate the user to the most appropriate technology.

VMware View 4.5 is essentially sold in two options; Enterprise and Premier. If you have an existing VMware View product you can move to and from each option using Add-on bundles. For our testing we opted to go with View Premier

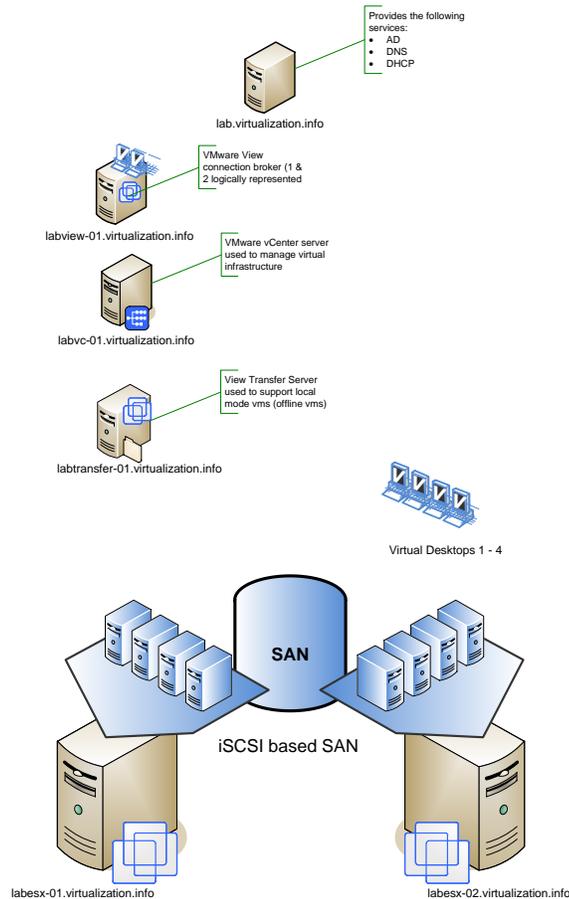
Premier	Details	Notes	Tested
vSphere for Desktops 4.X	VMware's Hypervisor	We used VMware vSphere 4	Yes
vCenter Server 4.X Standard for Desktops	VMware's Management and Operations Console for the vSphere Infrastructure		Yes
View Manager 4.5	VMware's Connection Broker	When installing View for external access you have the option of installing a Secure Server. This is appropriate if you need to proxy client connections through a DMZ. Secure Server still requires an associated VMware View server. We installed two VMware View servers; one primary and the other a replica and a Transfer server.	Yes*
View Composer	View Composer is an additional service that enables linked clone technology. It is a service addition to vCenter but requires a separate database.		Yes
Local Mode	Local Mode describes the ability to check out VMs from the View environment.	Checking out a virtual machine can have a huge impact on the environment due to the size of the vmdk. In order to mitigate the impact of the file transfer a designated Windows Transfer server is used	Yes

vShield Endpoint	Anti-virus scanning and patching can have a negative impact in a VDI environment. VMware provides vShield Endpoint to help offload the overhead of this process.	In our test environment we did not test vShield Endpoint	No
ThinApp 4.6	ThinApp is VMware's Application virtualization solution. It was an acquisition of a company called ThinStall.	We tested ThinApp 4.6. ThinApp is an agentless application virtualization solution so it does not require additional infrastructure other than the packaging environment.	Yes

Architecture

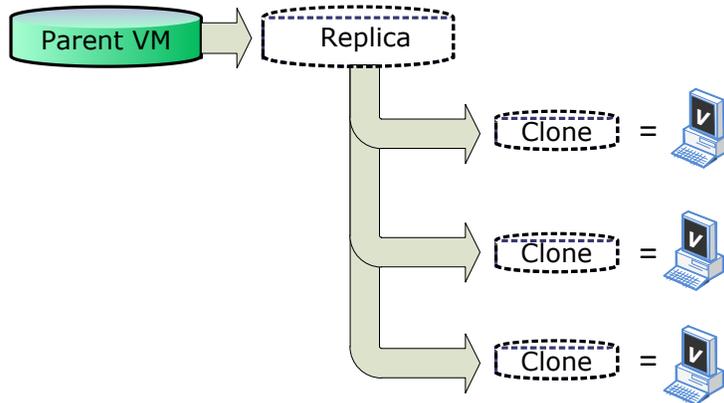
In order to deliver VMware View with all the bells and whistles we needed to plan for the View and Transfer servers as well as the standard components in VI4 (vSphere & vCenter).

Logical Breakdown



The required components of the VMware View environment are as follows:

View Composer Database Instance: View Composer, formerly referred to as vComposer is the linked clone technology that is available for rapid deployment of desktops. This technology was introduced with VMware View 3 and reduces the storage requirement for deploying virtual desktop instances.



View Composer allows you to take a full clone of a Parent VM called a Replica and then from the Replica create linked clones. The linked clones are stub files or pointers to the replica and are much smaller in size than the parent. Each linked clone acts and appears as an independent desktop instance. The reduction in storage can be dramatic but the technology is not without caveats which we will discuss later.

Events Database: All Events in VMware View are stored in a database. As VMware View supports Role Based Authentication, you can selectively control who has access to what events.

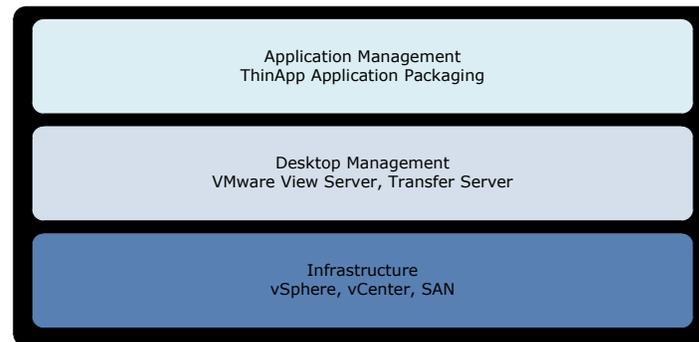
Transfer Server: In order to support offline mode, VMware has segregated the overhead of the checkout process to a designated server in the environment. This server needs to be a windows server. There is a known problem with using a Windows 2008 VM for the Transfer server as the default disk controllers are not supported. This can be resolved by updating the controller, however in our case we opted to go with a Windows 2003 SP2 server to keep things simple.

VMware View Server:

For the VMware View Servers we decided to go with two Windows 2008 R2 x64 bit server. VMware recommends that the server be configured with Dual Processors and over 3 GB of memory if you are supporting more than 50 VMs. As we intended to use virtual servers for all the View management requirements, this kicked-off an interesting debate on the merits of using VMware FT vs. load balancing two VMware View servers. We decided to try both and so configured our View servers with a single vCPU.

Service Tiers

VMware View takes a straightforward approach to delivering VDI. There are essentially three tiers that need to be considered and planned for. The infrastructure includes traditional virtualization components such as the vSphere and vCenter servers and the hardware, networking and storage requirements. The desktop management tier includes the VMware View and Transfer server. The application management tier provides application virtualization through the deployment of ThinApp.



In a real world environment I often talk to my customers about where a VMware View VDI environment fits into an existing VMware Virtual server environment. From a storage and hypervisor perspective the hardware requirements can vary quite a bit between server and desktop virtual clusters. For example the host nodes may require additional NICs and Memory when hosting desktops, and IO needs special consideration when assigning storage. At a minimum the VDI environment should be a separate cluster; in cases where a separate desktop team will be managing the environment it may make sense to separate it all together. Complete Separation is less of an issue now that multiple vCenters servers can be linked together using the Linked Mode feature.

As there is no concept of streaming either from an application or OS perspective in VMware View, the environment is not all that complex. One of the criticisms of VMware View is that it includes no solution to manage user data. VMware acquired RTO Software which provides profile management solutions but the integration was not ready for the release of VMware View 4.5. While this is an unfortunate setback for the launch, it is something that is likely to be resolved soon.

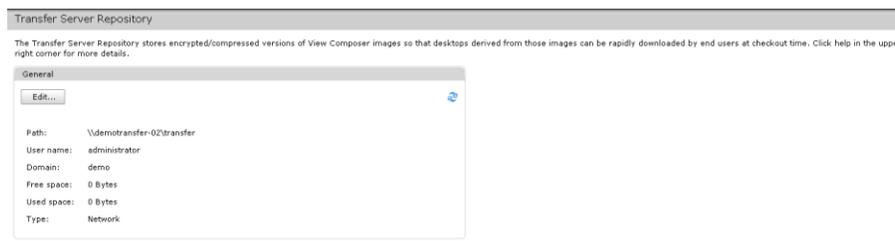
Profile management is important if you are going to consider using View Composer. What View Composer does is create a tree of linked clones that tends to consolidate I/O's across a small number of spindles within a SAN environment. VMware recommends that when user performance is impacted you should "Refresh" the virtual desktop pool. This essentially means recreating the VMs from the Parent (Replica) VM. If you have not planned to redirect user data through roaming profiles or a 3rd party profile management solution you will lose all user configurations. VMware does have a native solution to this problem; a "user data disk". A user data disk is essentially a 2nd drive provisioned to the VM that is thinly provisioned (The size is equal to the data that has been written to in the vmdk). In practice this is equivalent to redirecting the user profile to a 2nd drive which is better than losing the data but not as good as centralized profile management.

Installation

Installing VMware View does not require a database instance unless you want to track events. VMware View stores the configuration in ADAM or AD LDS as it is more recently termed. Active Directory Lightweight Directory Services allows data to be stored and retrieved by AD aware applications without requiring major Schema changes. When installing the first VMware View server it is installed as a Standard View server. Subsequent servers are referred to as View Replica Servers. The VMware View server provides a web based administrator console. You will need to login to license and configure VMware View after the installation.

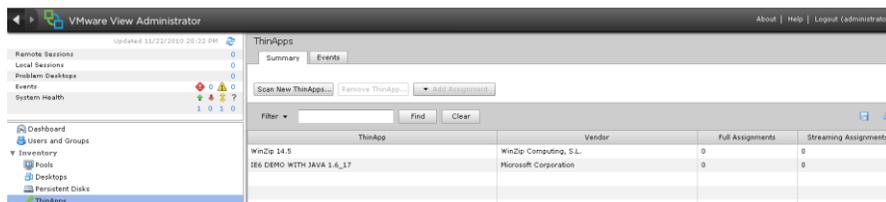
View Composer is installed on the vCenter server and as mentioned requires a separate database. When you configure VMware View to communicate with a vCenter server you simply enable Composer (assuming it is properly installed).

Installing the View Transfer server for local mode support is done from the same View installer. You simply select the Transfer server option during the installation. After installing you will need to login to the VMware View server and add the Transfer server to the configuration. After adding the Transfer server, you need to add a Transfer server Repository for storing virtual machines.



Once setup you simply publish an image or vmdk that is accessible from View so that it is available for local mode. Publishing an image means that the vmdks are copied to the Repository offloading the file copy to the Transfer Server.

Integrating ThinApp applications into the VMware View console requires adding a ThinApp Repository which is a file share that is accessible from the View server.

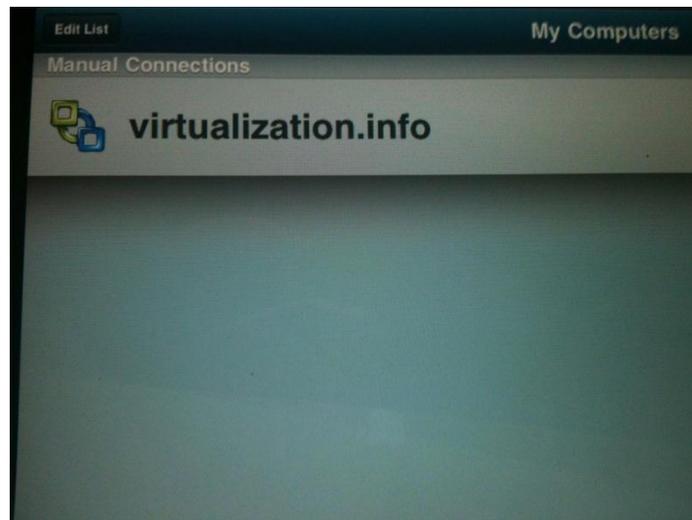


Once you have setup the share you simply copy your ThinApp'd packages to the share. You can deploy the virtual applications to Desktop Pools by dragging and dropping them or 'entitling' (assigning) the applications to a desktop pool.

Features & Functionality

Integration into the iPad

At the time of our testing the VMware View iPad Client was still in Beta. Rumor has it that the initial release will not support PCoIP which we will talk about a little later. In order to test the iPad platform we used the WYSE Pocket Cloud which supports connecting to a VMware View environment using RDP. We downloaded the WYSE Pocket Cloud client through the Apple AppStore for a fee. VMware View is a supported connection type so you simply add a connection to the WYSE Pocket Cloud application and click the Icon to connect to a desktop.



Once launched, you had immediate access to a View virtual desktop. The WYSE Pocket Cloud menu provided many options which took some getting used to. Once we adjusted to the mouse and menu items navigation was pretty easy. We did have the same sort of trouble as we did when we tested the Citrix Receiver and the iPad with applications that were not really designed to work through a touch interface.

Multi-Monitor

Multi-Monitor required us to select this option from the drop down menu at the time of connection. Once we selected the option Multi-Monitor worked as expected.



Multi-Media

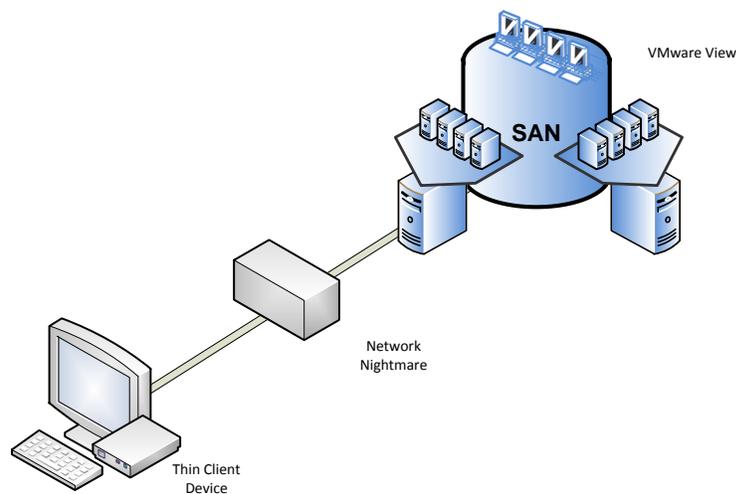
VMware has developed a new protocol for delivering multi-media applications called PC over IP or more generally referred to as PCoIP. The technology was developed in conjunction with Teradici. Teradici has made chip based solutions for delivering high quality video for years in digital television sets. The partnership with VMware essentially turned this hardware based solution into a software based solution incorporated to deliver virtual desktop display. It is similar to digital television technology in that only the pixels that change are compressed and sent to the client device to update the screen. The technology is designed to run over an IP network and is based on UDP. Because only the updated pixels are sent, it is different from traditional remote display technologies as it does not cache bitmaps. When VMware first introduced View they used RDP with Multi-media redirection technology that was OEM'd from WYSE (WYSE TCX-MMR). VMware View includes RDP, RDP with TCX-MMR, HP's Remote Graphics Software and PCoIP. You can select what protocol you use when connecting or enforce the protocol by policy from the View Server. For Multi-Media you will typically use the PCoIP protocol. The technology performed well when we tested it with no latency on our network. Please have a look at the latency section for details on how it did when we simulated distance.

Printing & USB Redirection

We found that the VMware View client software recognized many USB devices. In addition it recognized our embedded video camera where other VDI agent software did not. We found that client connected printers were also not an issue. One thing we noted however was that the management of printing was almost nonexistent from within the VMware View management console.

Networking & Latency

We wanted to test the display protocol under some “real world” networking scenarios so we setup the following configurations within our lab environment: <http://www.youtube.com/watch?v=n5Y5EwOdwH8>



We setup a Network Nightmare appliance which is WAN emulator between our VMware View environment and our end user client device. After setting up our environment we configured the latency to 100 ms to see how PCoIP would perform with Multi-Media. Unlike Multi-Media Redirection which runs the video stream on the client device; with PCoIP the Multi-Media is run on the virtual desktop.

There has been quite a bit of debate over how PCoIP performs and how it can be optimized. As part of our testing we ran our tests at the default settings and then we imported the administrator PCoIP template (Policy) to our virtual desktop, optimized the number of frames (as per VMware's recommendations) and reran our testing. The video of our results can be found here:

Conclusion

In an attempt to be fair to the products we compare we wanted to stipulate a few categories for comparison. We have divided these between core and nice to have features.

Core features; with today's desktop challenges you need a base set of features available in your Virtual Desktop Infrastructure (VDI) product. While the solutions have evolved to provide many features I would argue that a core feature set should be available in a mature VDI solution. I would define these as:

- Hypervisor; as VDI is not necessarily the most cost effective way to deliver applications, bundling the hypervisor as part of the solution definitely adds compelling value.

VMware includes the vSphere Hypervisor as part of the bundle. vSphere is extremely stable and delivered good performance in our testing. In addition we were able to use VMware FT (Fault Tolerance) to provide additional levels of High Availability for our View connection server.

- Application Virtualization; Do I have an option to virtualize applications to reduce the overhead in deploying, updating and patching applications? How flexible is the solution and does it come with any limitations?

It is pretty straightforward to virtualize applications with ThinApp. With a ThinApp Repository in View, it is now possible to drag and drop ThinApp'd applications on a desktop pool to quickly deploy applications. One key advantage is the portability of applications packaged with ThinApp. As a best practice most application virtualization solutions require you to package on the same environment you deploy to. With ThinApp it is recommended that you deploy on the oldest operating system you are deploying to. ThinApp supports Windows Side by Side (SxS) DLL migration. Side-by-side technology is a standard for executable files in Microsoft Windows XP and later versions that attempts to reduce DLL conflicts. If you capture an application that uses SxS DLLs on a Windows operating system, the DLL is installed in different paths. ThinApp will dynamically move SxS files on startup if the version of Windows has changed allowing you to create one package that is portable between windows versions.

At this point in time Applications can only be deployed to desktops vs. assigned to users which means you limit the ability to support free seating when using the View Console to deploy.

- Advanced Image Management; containing storage costs is a big concern when deploying VDI. Does the vendor provide a solution within the bundle to mitigate the cost of storage?

VMware View provides Composer or linked clones. Unfortunately without the required profile management piece it is difficult to make use of this technology. In addition you need to carefully consider your design to avoid performance or lost user data issues down the road.

- User Data Management; Can I manage user personalities or profiles with the solution?

At the time of testing this piece was not included.

In addition to these core capabilities the following were considered:

- Flexibility; does the solution restrict my options or tie me to a single vendor solution?

VMware View only supports VMware Virtual Infrastructure so it does restrict your choices from a virtualization perspective. It does allow you to incorporate TS services and PC blades so limited flexibility is available.

- Deployment & Management; How straight forward is the product to deploy and manage. How much technology do I need to understand and implement to get all the features I have purchased in the bundle?

VMware View was designed as a single product with multiple options and features. As such it is very easy to deploy and manage. In addition all management features related to the View desktops can be done from the View administrator console.

- Offline Mode; Does the suite include this capability?

VMware refers to this as local mode. The ability to check out is supported by a local-mode client and controlled by policies on the VMware View server. As we want to do an extensive review of this capability across a few products we will leave a thorough examination of local mode for a later post.

- Multi-tenancy; Does VMware provide anything to enable isolation of one VM from another

VMware use to have a single product called vShield but now vShield incorporates several different solutions. vShield Endpoint is designed to reduce the overhead of antivirus scanning and patching in a virtual desktop environment. The product that enables multi-tenancy is vShield Edge which is not bundled with VMware View. So although you have an option of implementing multi-tenancy by integrating vShield Edge it is not currently bundled with VMware View.

Overall we rated VMware View well in our lab evaluation. As a product View provides a fairly straightforward architecture and a single point of management.

