

# VMware View<sup>™</sup> 4

EVALUATOR'S GUIDE

**vm**ware<sup>®</sup>

# **Table of Contents**

Welcome	. 3
Introducing VMware View 4	. 3
What's New in VMWare View 4	. 4
VMware PCoIP Delivers a Rich Desktop Experience	6
Better Value and Reduced Cost	7
VMware View 4 Components	. 8
NFR Licensing for Evaluation Use	. 9
Deployment Process	. 9
Preparing for the Installation	10
IP Addressing	11
Installing and Configuring VMware View	13
Before You Begin	13
VMware View Manager Administration	14
Task 1: Installing the Connection Server	15
Task 4: Associating and Adding VMware vCenter Server	17
Task 5: Configuring Active Directory Users and Computers	17
Task 6: Creating and Preparing Virtual Machines	18
Task 7: Preparing Virtual Machine Snapshots and Templates	19
Task 8: Installing VMware View Composer for Linked Clones.	22
VMware View Client Installation and Configuration	23
Task 9: Installing the VMware View Client in the host desktop or thin client (local system)	23
Task 10: Adding Desktop Source in VMware View Manager	25
Task 11: Desktop Entitlement	27
Task 12: Accessing Virtual Desktop via RDP or PCoIP	28
Task 13: Additional Virtual Desktop Optimization	29
Task 14: WAN Optimization	29
Scenario Overview	31
Scenario 1: Provision and Use PCoIP Desktops and Pools	32
Step 1: Creating the Replica Connection Server	33
Step 2: Creating Linked Clone Pools	34
Step 3: Connecting to Pool by Tags	34
Step 4: Deleting the Clone Using Deletion Script	42
Scenario 2: Configure PCoIP Full and Linked Clone in VMware vSphere	43
Create Full Clone with Thin Provisioning	43
Anti-Virus Protection	46
Scenario 3:Set up Triple Single Sign-On (SSO) in View 4	47
Support Information	48
About the Author	48

# Welcome

Welcome to the VMware<sup>®</sup> View<sup>™</sup> 4 Evaluator's Guide. The purpose of this document is to support a self-guided, hands-on evaluation of VMware View 4. The content includes a product overview, including the new features of PCoIP, installation instructions, and scenarios to demonstrate how VMware View can help you deliver the desktop as a managed service. The guide is divided into four sections:

- 1. Introducing VMware View 4
- 2. What's New in VMware View 4
- 3. VMware View 4 Components Overview
- 4. Installing and Configuring VMware View 4

This guide is not intended to be a substitute for product documentation. For detailed information regarding installation, configuration, administration, and usage of VMware products, please refer to the online documentation. You may also consult the online Knowledge Base if you have any additional questions.

# **Introducing VMware View 4**

Built on the industry-leading virtualization platform, VMware View 4 is a solution that enables IT organizations to "decouple" a desktop from physical devices or locations and deliver the desktop as a managed service from a centralized location. VMware View makes desktops easily accessible to any end user on multiple devices (thick or thin) over any network connection, complete with all applications and data for an optimized and familiar desktop experience. Purpose-built for delivering desktops as a managed service, VMware View provides the best end user experience and simplifies and automates desktop management.

Unlike other desktop virtualization products, VMware View is a tightly integrated end to end solution allowing customers to extend business continuity and disaster recover features to their desktops and standardize on a common platform from the desktop through the datacenter to the cloud.

Prior to building and planning the VMware View 4 release, the VMware View team reviewed feedback from customers to gauge their challenges and requirements:

- IT Professionals indicated that they generally refresh their laptops and desktops every three to four years, but with the tough economy, they are now striving to do more with less. Time, money, and resources are in short supply so they need more efficient ways to deploy and manage their endpoint complexity and boost end-user productivity. They are looking for ways to reduce the complexity of their systems and get more performance from their infrastructure and, are considering desktop virtualization as a solution.
- Designers and Knowledge Workers indicated that their work habits are changing. They now need to have the ability to access the work environment from many endpoints, without compromising the rich user experience of their PCs for graphic- or video-intense offline or online content – regardless of the device type or the network to which it is attached.
- IT Decision Makers indicated that they are skeptical when it comes to desktop virtualization. Some IT Decision Markers are unsure of the bandwidth necessary for a virtual desktop experience in LAN or WAN settings that could serve virtual desktops with the same quality as locally run OS images.

# What's New in VMWare View 4

VMware View 4 is purpose built for desktop delivery and designed for the LAN or WAN configuration. The goal is to continue provide a smooth end-to-end desktop experience via software implementation.

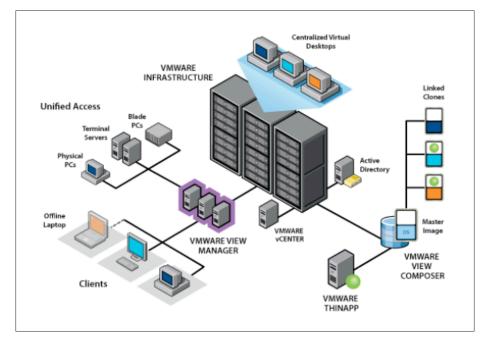
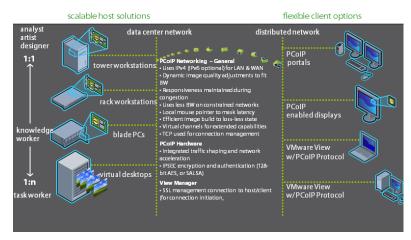


Figure 1.

FEATURE	NEW/ IMPROVED	DESCRIPTION
Quad monitor support	New	Support 32-bit color with 1920 x 1200 display resolution and up to 4 monitors simultaneously. Benefit: True multiple displays allow you to "see more and do more" from a full desktop. This provides the ability to reproduce true color images with support for up to 4.2 billion distinct colors per pixel.
True multi-monitor support on L-shape configuration	New	Support 1 landscape display and 1 portrait display (with pivot monitors), variable resolution support, and auto fit to client. Benefit: Each monitor can be of a different size and be set to a different resolution. Auto Display Scaling/Dynamic Resizing helps desktop publishing, financial application, and high-end graphic design needs.
Guest desktop support Windows Vista and XP OS	New	Support for connecting to virtual desktops from Windows XP and Vista. The VMware View 4 PCoIP is a software-to-software implementation. However, it also supports hardware PCoIP hosts such as the Samsung SyncMaster 930ND 19" monitor and Teradici Tera Portal. http://www.teradici.com/pcoip/pcoip-products/oem-solutions.php Benefit: Provides scalable support to both software and hardware on the local hosts.
Network characteristics and security	New	SSL protection on TCP for session management and AES 128-bit key encryption on UDP for media transfer between host and client system. Benefit: Provides comparable security and encryption found in other protocols.
Protocol intelligence	New	PCoIP protocol provides the intelligence to handle prioritization and quality of services (QOS) for video/mouse/keyboard/sound, etc. Benefit: This greatly helps the user experience by managing bandwidth and content variables.
WAN performance and optimization	New	Operate with up to 250ms of round-trip latency with tolerance on packet loss up to 5%.
VPN tunneling	New	Support Cisco VPN soft client.
RDP virtual channel compatibility for USB redirection	New	Support the comparable list of USB peripherals including biometrics, card readers, webcams, mass storage, flash devices, scanners, etc. The authorization can be done on a per-user/per-group basis to only accept specific devices.
Flash control support for PCoIP	New	PCoIP uses breakthrough graphics compression that is custom built for delivering a user desktop over IP networks. It works in such a way as to support all graphics (full-frame rate 3D for design engineering, video gaming, etc.), and media (HD video, Microsoft video formats, YouTube, Microsoft Silverlight, Google, QuickTime, or Adobe Flash). Benefit: By compressing the display image at the host PC/Server, you avoid application interoperability issues that have plagued thin clients for years and can quickly adapt to physical networks.
Audio redirection	New	New to PCoIP protocol. Redirect audio with dynamic audio quality adjustment on the WAN.
ClearType font	New	Subpixel rendering technology which may help to improve the apperance of text on some computer displays. Newly added to PCoIP protocol.



#### VMware PCoIP Delivers a Rich Desktop Experience

Figure 2.

### **Operational Efficiency**

Enterprises that are struggling with the problem of endpoint security should explore desktop virtualization to lessen the frequency of malware, network breaches, and data loss headaches.

VMware View centralizes the control of desktop PC images, applications, and data. Deploying desktop virtualization with VMware View 4 running VMware vSphere<sup>™</sup> can significantly improve security functionality and storage optimization.

For business entities that are subject to stringent regulatory policies such as the Sarbanes-Oxley Act (SOX), the Health Insurance Portability and Accountability Act (HIPAA), and the Payment Card Industry Data Security Standard (PCI DSS), VMware View creates a trusted enterprise-computing environment. Security vendors like McAfee and Trend Micro take a proactive role with VMware in raising the bar of security, control, and management available to secure the cloud-based infrastructure.

FEATURE	NEW/ IMPROVED	DESCRIPTION
Full clone pool with thin disk/thin provisioning	New	VMware View 4 provides seamless native support for thin provisioning with the vSphere server. Benefit: Helps reduce storage usage and allows more guest desktops per core while still providing high performance.
Mixed cluster support for backward – forward compatibility	New	This new option in View Administrator allows different versions of clusters to be managed via the same UI.
VWware VMsafe API for better anti- virus optimization and execution	New	VMware vSphere supports VMware VMsafe™ API Security virtual machine deployment, sold separately by security vendors, is consistent with desktop deployment. Protects the virtual machine by inspecting virtual components (CPU, Memory, Network and Storage).

### Better Value and Reduced Cost

With VMware View 4, customers will get seamless access to the desktop, and can get access to services and desktop sessions with a single-sign-on (SSO) environment through any supported device.

Enterprises need to make their network and security technology and management structures into one seamless, streamlined operation to ease transition. The security enhancements found in VMware View 4 helps streamline and simplify the prevention of:

- Loss or theft of sensitive data
- Unauthorized access to internal systems
- Uncontrolled consumer application usage at work
- Loss of control of end-user access methods

These all contribute to delivering a better ROI and a lower TCO.

FEATURE	NEW/ IMPROVED	DESCRIPTION
Triple single sign — on (3SSO) for sessions/connections keep-alive	Improved	This setting enables "log in as current user" using Active Directory credentials or smart cards over Remote Desktop Protocol. Benefit: Helps eliminate redundant authentication steps or double PIN entry when using smart cards.
Tag-based pool access	New	Administrators can now assign "tags" to connect server and desktop pools. Tag matching rules can be applied to restrict or grant users access to certain desktops.
Smart card removal policy	Improved	This policy setting forces desktops to disconnect when users remove their smart card.
Delete script	Improved	This scripting capability cleanly deletes VMware View desktops and allows extensibility using visual basic scripting.

# VMware View 4 Components

VMware View 4 extends the same infrastructure and components as in previous versions. The key software components you need to install VMware View 4 are:

- VMware View Connection Server, installed in a Windows Server 2003 system that is separate from VMware vCenter™
- VMware View Agent, installed in a virtual desktop (XP, Windows 2003, or Vista desktops)
- VMware View Client, installed at the end point device (thin client, local laptop or desktops)
- VMware View Composer, installed in VMware vCenter for Linked Clone provisioning use

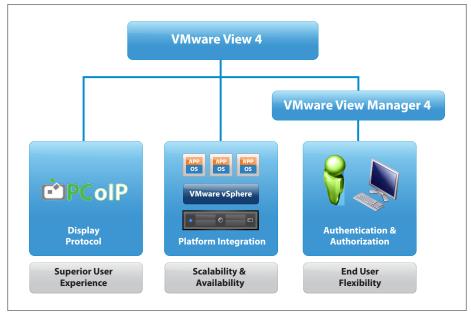


Figure 3.

On the infrastructure side you need to ensure that the following components are provisioned in VMware ESX™ 3.5 or VMware vSphere.

- VMware vCenter and VMware View Composer are installed on the same virtual machine where VMware vCenter is installed.
- SQL Server is required for large virtual desktop deployments. For this evaluation, the SQL Server Express Edition configured during the VMware vCenter installation is used.
- Configure Windows 2003 with Active Directory, DHCP, and DNS service.
- Certificate Authority (if certificate or smart card authentication is required). This is not discussed in this document.

For a detailed, supported version, please reference the VMware View Manager Administration Guide at <a href="http://www.vmware.com/support/pubs/view\_pubs.html">http://www.vmware.com/support/pubs/view\_pubs.html</a>

# NFR Licensing for Evaluation Use

To request Not For Resale evaluation licenses, please email desktop-tm@vmware.com.

# **Deployment Process**

In this evaluation, you will experience the VMware View setup and configuration all in a single ESX/ VMware vSphere box. You will also install the needed infrastructure components and virtual machines from scratch. An online connection is required only if you plan to use the Internet.

Before starting the deployment process:

- Set up the networking and IP address in ESX/VMware vSphere with NAT router and VMware vSwitch
- Configure the required infrastructure components, including VMware vCenter, Active Directory, SQL server, and VMware View Connection Server
- Prepare the desktops, snapshots, and templates

The following deployment process is not intended to provide a deep technical explanation of the technologies found in VMware View 4. Nor is it intended to be used as a deployment guide. The tasks include:

- Task 1: Installing the Connection Server
- Task 2: Configuring and Administrating VMware View Manager
- Task 3: Installing the License
- Task 4: Associating and Adding VMware vCenter Server
- Task 5: Configuring Active Directory Users and Computers
- Task 6: Creating and Preparing Virtual Machines
- Task 7: Preparing Virtual Machine Snapshots and Templates
- Task 8: Installing VMware View Composer for Linked Clones
- Task 9: Installing VMware View Client in the Host Desktop or Thin Client (local system)
- Task 10: Adding Desktop Source In VMware View Manager
- Task 11: Desktop Entitlement
- Task 12: Accessing Virtual Desktop via RDP or PCoIP
- Task 13: Additional Virtual Desktop Optimization
- Task 14: WAN Optimization

#### Preparing for the Installation

#### Assumptions

To successfully use this guide it is assumed that VMware vSphere ESX Server has been installed and is functioning properly. Please refer to the online documentation <a href="http://www.vmware.com/resources/techresources/10020">http://www.vmware.com/resources/techresources/10020</a> for further installation assistance.

#### Before You Begin

Please reference Getting Started with VMware View at http://www.vmware.com/support/pubs/view\_pubs. html. For more information on administrating VMware View, you can review the following documentation:

- VMware View Manager Administration Guide
- VMware View Upgrade Guide
- VMware View Architecture and Planning Guide
- Knowledge Base

#### System Requirements

The following is a description of the hardware and software required (for the major components of VMware View.) You can get more information from the VMware View 4 Architecture Planning Guide.

#### VMware View Connection Server

VMware View Connection Server is not supported on servers that have the Windows Terminal Server role installed. Remove the Windows Terminal Server role from any server where you will be installing the VMware View Connection Server.

VMware View Connection Server runs on a 32-bit or 64-bit dedicated physical or virtual server with the following specifications:

- Pentium IV 2.0Ghz processor or higher dual processors are recommended
- 2GB RAM or higher 3GB RAM is recommended for deployments of 50 or more View Manager desktops. VMware View connection server can handle 2,000 connections in clear mode and 750 in tunneled mode. The following VMware vSphere document lists the limits for the server side: http://www.vmware.com/support/pubs/vs\_pages/vsp\_pubs\_esx40\_vc40.html.
- One or more 10/100Mbps network interface controllers (NIC) 1Gbps NIC is recommended

#### Supported Operating Systems

The VMware View Connection Server can be installed on the following 32-bit operating systems:

- Windows Server 2003 R2 Standard Edition with SP2
- Windows Server 2003 Standard Edition with SP2
- Windows Server 2003 R2 Enterprise Edition with SP2
- Windows Server 2003 Enterprise Edition with SP2

#### Prerequisites

VMware View Connection Server has the following prerequisites:

You will need a valid license key for VMware View Manager. The following types of licenses are available:

- VMware View Manager
- VMware View Manager with View Composer
- VMware View Manager with View Composer, and Offline Desktop

For the VMware virtualization environment, you will need one of the following:

- VMware vSphere 4 Update 1 (U1 is required)
- VMware Infrastructure 3.5 (U3 or U4 recommended, U5 not supported)
- VMware Infrastructure 3.0.2 (supported)
- Both ESX and ESXi hosts are supported, VMware vCenter is required

Required Host operating systems for standard or replica VMware View Connection Server instances are joined to an Active Directory domain. The following versions of Active Directory are supported. You will need one of the following:

- Windows 2000 Active Directory
- Windows 2003 Active Directory
- Windows 2008 Active Directory

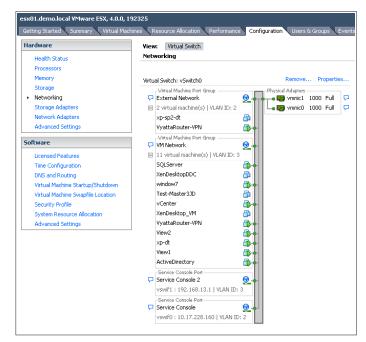
#### **IP Addressing**

For easy configuration, this evaluation scenario specifies a standalone LAN environment with IP addressing based on the following assumptions:

• One VMware vSwitch is configured as the External Network for static, manually assigned IP addressing.

VIEW COMPONENTS	IP ADDRESSING
Virtual Center (vCenter)	Static 192.168.13.247
View Connection Server 1 (View1)	Static 192.168.13.246
View Connection Server 2 (View2)	Static 192.168.13.245
Active Directory (ActiveDirectory)	Static 192.168.13.252

- VMware vCenter installation provides SQL Server Express Edition. You do not need a separate SQL Server instance for this evaluation.
- This evaluation asks you to set up two VMware View Connection Servers. This will be used in the evaluation of the new "tag entitlement" feature later. It's an optional task if you just need to review the basic functionalities.
- If you already have networking setup, you can assign a static IP to infrastructure components needed for this evaluation.
- You can also access the Internet if it's available by separate 2 vLANs, and configure the open source Yvetta NAT appliance. You can find additional instructions at http://www.vyatta.com/downloads/swdl.php.
- You will prepare three virtual machines, including XP and/or Vista, for the scenario. These desktop virtual machines have IP addresses assigned using DHCP.



#### Figure 4.

The network configuration can be customized based on your network availability. Figure 4 is a sample configuration. Make sure the infrastructure components have a static, routable, and pointable IP address and complete a ping test from the servers to the desktops and from the desktops to the servers. The IP configuration is critical to a successful evaluation.

# Installing and Configuring VMware View

### **Before You Begin**

VMware View is tightly integrated with VMware vCenter. You can install VMware vCenter as a standalone server or as a hosted server under the same ESX box for the testing purposes. Please assign a static IP for your VMware vCenter IP configuration.

Edit View Igventory Administra	tion Blug-ins Help						
🔯 🤮 Hone 🕨 🛃 Dree	entory 🕨 🕲 Hosts and	Ousters			Search Inventory		
u 🕨 🔕 🚳	18 😅 🔛 🧇						
vc.DEMO.LOCAL	vCente-beta						
infrastructure	Galting Started Surge	and Demand Marshine Defenses	Tasks & Events Alarms Console Permissions Me	Ter and Manuel			
IO.17.238.36 ActiveDirectory	R Services		the second se				J X
Server 2003 Template							12
3 XP Templates	Ble Action Yew						
🗿 vCenter	← → 📧 🖆 [	3 B (2 0) > • • • •					
Wew-01	Services (Local)	Services (Local)					
i Wistan Kapan		Whiware VirtualCenter Server	Name A	Description Status		g On As	
			System Event Notification	Monitors s Started		cal System	
		Stop the service Restart the service	Scheduler	Enables a Started		cal System	
		Contract one particular	TCP/IP NetBOOS Helper	Provides s Started		cal Service	
		Description	Se Telephony	Provides T Started Enables a r		cal System cal Service	
		Provides centralized management of	References	Alovs user Started		cal Service cal System	
		VMware virtual machines.	Terminal Services Session Directory	Alovis user Started Enables a		cal System cal System	
		1	Therman Services Session Directory	Provides u		cal System	
		1	Subinterruptible Power Supply	Nanagei a		cal System cal Service	
		1	So Virtual Disk Service	Provides s		cal System	
		1	Where Mount Service for VirbuelCenter	Provide B		cal System	
		1	Where Universal File Access	Www.un. Started		cal System	
		1	When vCenter Orchestrator Configuration	Where vC		cal System	
		1	Where Ver Corposer	Provides V Started	Autometic Lo	cal System	
		1	Whyare VirtualCenter Management Webservices	Allows conf Started	Autometic Lo	cal System	
		1	Arthvare VirtualCenter Server	Provides c Started	Autometic Lo	cal System	
		1	Where VCMSDS	Provides V Started	Autometic Ne	itwork 5	
		1	Solume Shadow Copy	Nanagas a	Manual Lo	cal System	
		1	NebClient	Enables Wi		cal Service	
		1	🗞 Windows Audio	Nanagas a		cal System	
		1	B Windows CardSpace	Securely e		cal System	
		1	Swindows Pirewal/Unternet Connection Sharing (ICS)	Provides n Started		cal System	
		1	Windows Image Acquisition (WIA)	Provides im		cal Service	
		1	Se Windows Installer	Adds, mod		cal System	
		1	Windows Management Instrumentation	Provides a Started Nontors al		cal System	
		1	Windows Management Instrumentation Driver Exten Windows Presentation Foundation Font Cache 3.0.0.0			cal System cal Service	
		1	Sundows Presentation Foundation Font Cache 3.0.0.0	Naintains d Started		cal Service cal Service	
		1	Service Process Proces	Enables Wi		cal Service cal Service	
		1	WinHTTP Web Proxy Auto-Discovery Service	indepent		cal Service	
		1	Wreless Configuration	Enables au Started		cal System	
		1	WHI Performance Adapter	Provides p		cal System	
		1	Workstation	Creates an Started		cal System	
		·	•				
Tasks Target	Retus	Initiated by Center Server	Requested Start Ti Start Time	Completed Time			
				9/28/2009 10:49:06			
	enter-191628 🔮 Compl enter-191628 🔮 Compl			9/28/2009 10:49:06 9/28/2009 10:40:32			
aks 🞯 Alema					License Period 1191		inidae



<ul> <li>In your physical ESX host, create a Windows Server 2003 virtual machine for the VMware vCenter installation.</li> <li>Make sure to assign it with a routable static IP. In this setting, VMware vCenter can be pinged through vc.demo.local.</li> <li>Select Create a stand-alone VMware vCenter and click Next.</li> </ul>	Where vCenter Server  Where vCenter Server Install Wizard  Where vCenter Server Install Wizard  The installation wizard will complete the installation of VMware vCenter Server on your computer. To continue, dick Mext.
	vCenter Server 4.0
	Whware VLenker Server     Kenker Server     Kindel Gold Options     Install His VHware vLenker Server instance in Inked mode or standalone mode.     To configure Inked mode, install the first vLenker Server instance in standalone mode. Install     subsequent vLenker Server relations: In Inked mode.
	Create a standalone Whware vCenter Server instance     Use this option for standalone mode or for the first vCenter Server installation when you     are forming a new linked mode group.     Join a Whware vCenter Server group using linked mode to share     information     Use this option for the second and subsequent vCenter Server installations when you     are forming a hield mode group.
	InstalSyreid

<ul> <li>In this evaluation, the default Microsoft SQL Server Express instance for the storage is used.</li> <li>Uncheck the System Account.</li> <li>Enter the default Administrator credentials: <ul> <li>Username: Administrator</li> <li>Password: blgd3m0</li> </ul> </li> <li>Click Next.</li> </ul>	Where vCenter Server  Configure the vCenter Server service account information.  Configure the vCenter Server service to run in the SYSTEM account or in a user-specified account in the domain.  ()  ()  ()  ()  ()  ()  ()  ()  ()  (
<ul> <li>Based on your network setting, you can adjust the ports used by vCenter. If it is an isolated network environment, leave the default port as they are and click Next.</li> </ul>	WHware VCenter Server     X       Configure Ports     Image: Configure Ports       Enter the connection information for vCenter Server.     Image: Configure Ports       HITPS port:     Image: Configure Ports       HiTP port:     Image: Configure Ports       HitP port:     Image: Configure Ports       Web Services HITP port:     Image: Configure Ports       UPAP Port:     Image: Configure Ports       SR, Pgrt:     Image: Configure Ports       (modelShidd)        < Back
Click <b>Next</b> until the installation is finished. Now you have completed the vCenter configuration process.	Installing Where Venter Server  Instrume Venter Server  The program features you selected are being installed.  W Please were whele the installation wized installs Where venter Server.  Satue: Installing the Morosoft .NET Framework

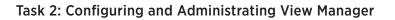
#### **VMware View Manager Administration**

VMware View Connection Server acts as a connection broker for client connections by authenticating and then directing incoming remote desktop user requests to the appropriate virtual desktop, physical desktop, or terminal server. You can run VMware View Connection Server on a 32-bit or 64-bit virtual server. For detailed information about the hardware, operating system, and Active Directory requirements for VMware View Connection Server, see the System Requirements section of the VMware View Manager Administration Guide.

A standard server deployment creates a single, standalone VMware View Connection Server. You can have multiple connection server instances in the same domain and point them all to the same VMware vCenter if desired. For a different Connection Server deployment, such as Replica or Security Server (DMZ), please refer to the View Administration Guide.

When the VMware Installation wizard appears, click <b>Next</b> .	Wilcome to the Installation Wizerd for Witware View Connection Server           Wilcome to the Installation Wizerd for Witware View Connection Server           Wilcome to the Installation Wizerd for Witware View Connection Server           Wilcome to the Installation Wizerd Will not all Witware View Connection Server on your computer. To continue, did: Next.           WMWare View Connection Server 4           WARMING: This program is protected by copyright law and memoional treaties.           Product version: 4.0.0.1535
Accept the VMware license terms and click <b>Next</b> .	WMMare View Connection Server       ▼         License Agreement       Descended         Base read the folowing lacese agreement carefuly.       Descended         VMWARE MASTER END USER LICENSE AGREEMENT       The Server
Select the <b>Standard</b> deployment option and click <b>Next</b> .	Memore View Connection Server     Installation Options     Sect the type of New Connection Server instance you want to notal.     Ore Connection Server instance you want to notal.     Perform a dandset ful instal. This is used to install a standardone instance of New     Connection Server or the first instance of a group of servers.     Perform     Reform a replan instance instal joining an existing server instance. This is used to     installation options     Perform a negative server in a group of servers that all automatically share     the same directory configuration.     Perform an stall joining an existing server instance. This is used to     installation options server in a group of servers that all automatically share     the same directory configuration.     Perform an stall joining an existing server components. This is typically used on     servers in a DME to run an appropriate ababet of the full Vee Connection Server     Installation A. Socurty Server instance babet allo to one to be standard or     repla instance server.  Installation     (gadi gent > Cancel
<ul> <li>Click Install.</li> <li>Click Finish.</li> </ul>	

# Task 1: Installing the Connection Server



<ul> <li>After you install the VMware View Connection Server, validate your View Manager Administration in a Web browser by entering http://<your-connection-server-ip>/admin.</your-connection-server-ip></li> <li>Enter the Administrator username and password and click Login.</li> </ul>	VMware View Manager 4.0           You have been logged out.           User name:           administrator           Password:           Domain:           VMware           View Manager 4.0
<ul> <li>You will notice a certificate error next to the URL field. VMware View Administrator is accessed using a secure (SSL) connection. The first time you connect, your Web browser might present you with an intermediary page that warns you that the security certificate associated with the address is not issued by a trusted certificate authority. This response is expected because the default root certificate supplied with View Connection Server is self-signed.</li> <li>Click <b>Ignore</b> to continue using the current SSL certificate.</li> </ul>	Where View Manager 4.0       And       Hote       Capot         Destange and Pools       Users and Groups       Configuration       Events         Where for       State of existing and pool       Events       Events         Where for       Destange and Pools       Events       Events         Where for       Destange and Pools       Destange and Pools       Events         Where for       Destange and Pools       Destange and Pools       Destange and Pools         VP-Revew       Destange and Pools       Destange and Pools       Destange and Pools         VP-Revew       Destange and Pools       Destange and Pools       Destange and Pools         VP-Revew       Destange and Pools       Destange and Pools       Destange and Pools         VP-Revew       Destange and Pools       Destange and Pools       Destange and Pools         VP-Revew       Destange and Pools       Destange and Pools       Destange and Pools         VP-Revew       Destange and Pools       Destange and Pools       Destange and Pools         VP-Revew       Destange and Pools       Destange and Pools       Destange and Pools         VP-Revew       Destange and Pools       Destange and Pools       Destange and Pools         VP-Revew       Destange and Pools       Destange ang

### Task 3: Installing the Product License

<ul> <li>From the Configuration tab, click Product Licensing and Usage.</li> </ul>	VMware View Hanaget 4.0      Destops and Pods     Users and Groups     Comparation     Events
<ul> <li>Enter the license key provided with the evaluation.</li> </ul>	Product Licensing         Product Licensing           Servers         Edit License           Registered Desktop Sources         License expiration:           Administrators         None           Gibbal Settrips         Composer License           Childer Desktop Isources         Administration:           Administration         None           Administration:         None           Administration:         Readed           Administration:         Readed           Administration:         Readed           Administration:         Readed           Administration:         Readed           Administration:         Readed           Administration:         Readed
	Product Learning Enter the license versit number *Regular Larnis ential number *

<ul> <li>From the Configuration tab, select Servers on the left menu panel.</li> <li>Select Add under the VirtualCenter Servers pane.</li> </ul>	VMware View Manager 4.0  VMware View Manager 4.0  Second S
• Click <b>Add.</b>	Product Licensing and Usage Servers Registered Desktop Sources Administrators Global Settings UirtualCenter Servers Mame 192.168 13 247(administrator)
<ul> <li>Enter the fully qualified domain name (FQDN) or the IP address of the VMware vCenter Server you want VMware View Manager to communicate with in the Server address text box.</li> <li>Enter Administrator username and password for the vCenter login.</li> </ul>	VMware View Manager 4.0      Veware settings

#### Task 4: Associating and Adding VMware vCenter Server

Note: For evaluation purposes, advanced or optional tasks will not be covered. If you have DNS services installed, you can configure an external URL for the Connection Server. Those tasks are covered in the Getting Started Guide or Administration Guide.

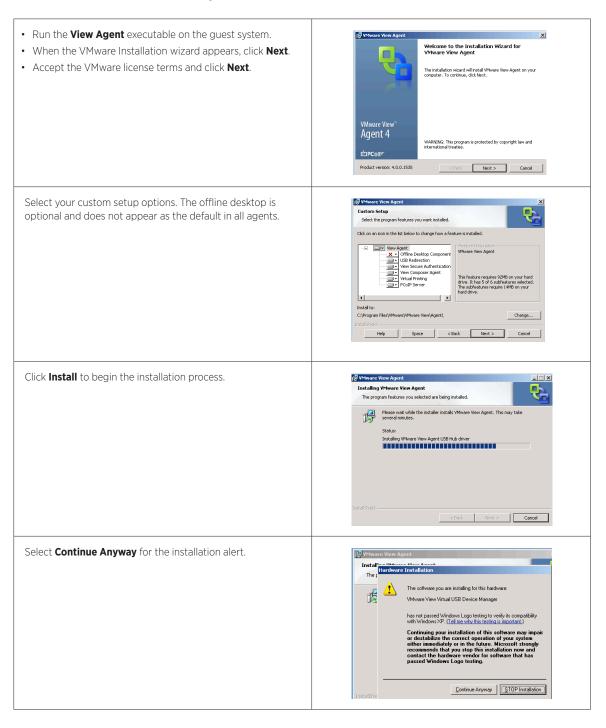
#### Task 5: Configuring Active Directory Users and Computers

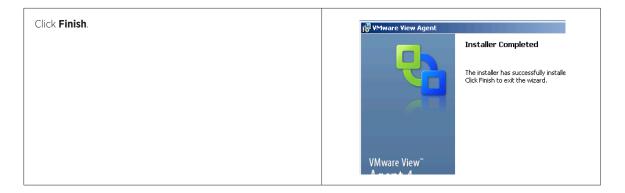
In this evaluation, the virtual machine (ActiveDirectory) is promoted as Domain Controller, hosted in Windows Server 2003 with a single local domain name called demo.local.

<ul> <li>Before you can entitle a user access to the desktop, you need to create three users in the Active Directory named reviewer_1, reviewer_2, and reviewer_3.</li> </ul>	ID 17.23.816 - vSphere Elient         File Edt View Lynektory Administration Busins (Eds)         Image: State Stat
	Coccert is should sur.  Account gription:  User must change password of met logon  User must change password of met logon  User must change password of met logon  Definition  Definition

### **Task 6: Creating and Preparing Virtual Machines**

The following steps assume that the user has already created a virtual machine and has installed the guest OS (XP/VISTA), joined AD domain, turned on the RDP remote connection, added user groups to the remote users list, and turned off the firewall in the guest OS.

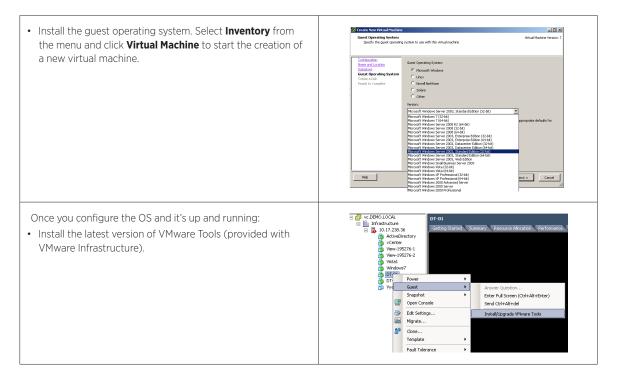




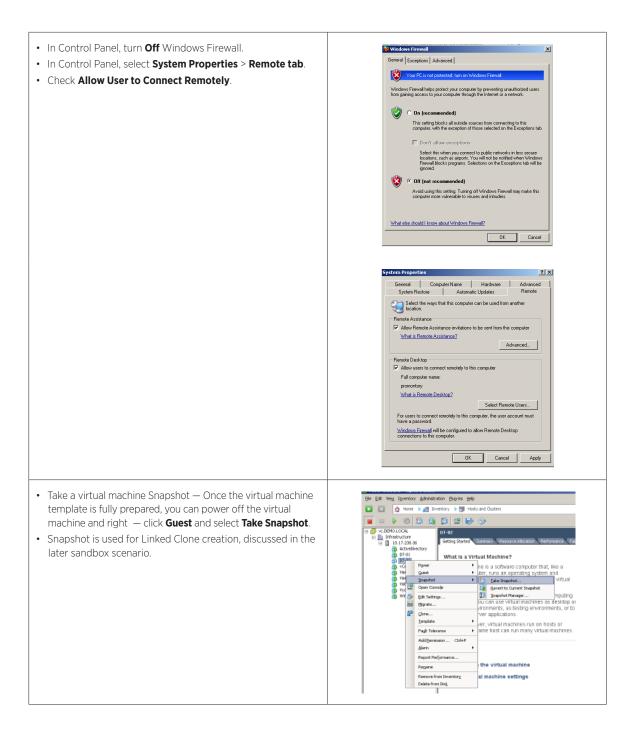
At this point, you have the main VMware View components installed and configured. Before you proceed further, you can do a quick ping test from the View Connection Server virtual machine to the Guest Desktop virtual machine and vice versa. The components should be pingable and routable between each.

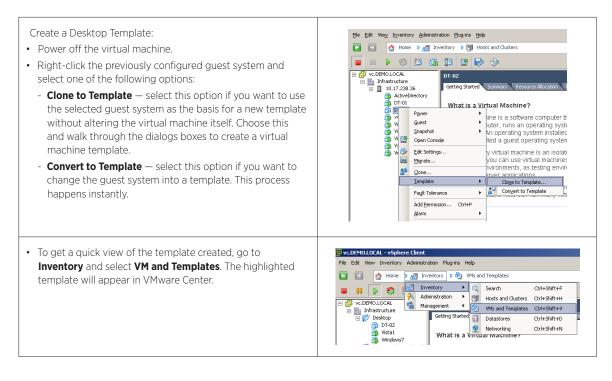
#### Task 7: Preparing Virtual Machine Snapshots and Templates

The guest system of the virtual machine, which you create in vCenter, provides the basis for virtual desktop deployment. To prepare a guest system for deployment, perform the following tasks:



<ul> <li>Configure Active Directory settings: Configure the preferred and alternate DNS servers to use your Active Directory server addresses. For example, on Windows XP, configure the DNS server settings from the properties menu: Start &gt; Control Panel &gt; Network Connections &gt; LAN &gt; Properties Internet Protocol (TCP/IP) &gt; Properties &gt; Use (VM:ActiveDirectory) IP Address 192.168.13.252</li> </ul>	Internet Protocol (TEP/IP) Properties       ? ×         General Alternate Configuration       You can get IP settings assigned automatically if your network supports this capability. Otherwase, you need to ask your network administrator for the appropriate IP settings.         © Obtain an IP address automatically       © Use the following IP address:         Use the following IP address:
<ul> <li>Make sure that you have administrative rights to the guest system.</li> <li>Join the desktop to the AD domain. Add guest system to the domain (demo.local).</li> </ul>	Computer Name Changes       ? ×         You can change the name and the membership of this computer. Changes may affect access to network resources.         Computer name:         DT-01         Full computer name:         DT-01.         More         Member of         © Domain:         WORKGROUP         ØK

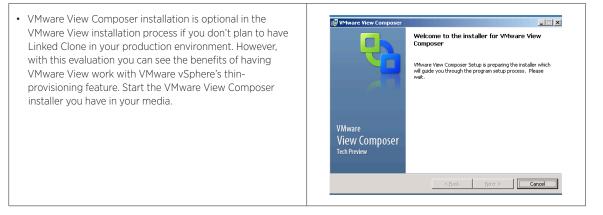




You can repeat the same procedures for Windows 7 and Vista desktops with the same configuration if you wish. At the end of the task, you will have three prepared guest systems ready for VMware View Manager to use.

#### Task 8: Installing VMware View Composer for Linked Clones

VMware View Composer provides a highly efficient storage alternative to creating and managing many standalone virtual machines. With VMware View Composer Linked Clone technology, you can rapidly clone and deploy multiple desktops from a single centralized base image. Subsequent changes to this image can be automatically proliferated among all desktops in a Linked Clone pool. After the desktops are created, they remain indirectly linked to a snapshot residing on the parent virtual machine. View Composer needs to be installed on the system where VMware vCenter is installed.

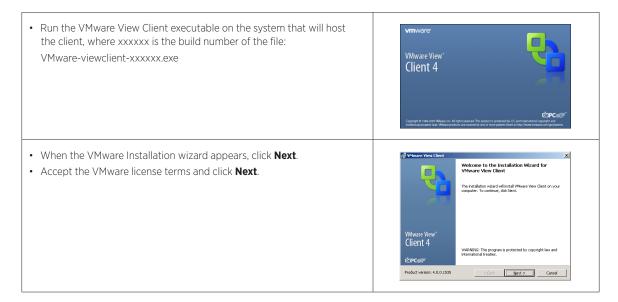


- During installation of VMware vCenter, the Microsoft SQL Servers 2005 Express instance is provided with VMware vCenter default. Select System DSN Setup and type exactly the same SQL Server instance as VMware vCenter.
- Type VMware VirtualCenter in the System DSN field.
- Use the system login your created in vCenter where used earlier:
  - Login: Administrator
  - Password: b1gd3m0
- Next, go through the installation and click **Finish** to complete the View Composer installation.

Name	Driver			Add	DSN Setup
VMware Virtu	alCenter SQL Nativ	e Client		<u>R</u> emove	Dow Decap
			<u>(</u>	Configure	or.
	ODBC Sustem data	source stores informa	tion about how to	connect to	

# VMware View Client Installation and Configuration

### Task 9: Installing the VMware View Client in the host desktop or thin client (local system)



<ul> <li>Choose your custom setup options:</li> <li>Deselect the USB Redirection component if you do not want users to access locally connected USB devices through their desktops.</li> <li>Deselect the Log in as current user component if you want to require all users to provide identity and credential information to log in to a View Connection Server and again to access a VMware View desktop.</li> <li>For this evaluation, simply leave them as the selected default. This is a new improved feature, which allows single sign-on to the guest desktop.</li> </ul>	Image: Second
Enter the IP address of the VMware View Connection Server that this client will connect to. For this evaluation, enter 192.168.1.247.	Vertrans Server  Configures the server Wer Calent connection by default  Speed y a default server for this Were Calent. This setting is optional.  Default Were Connection Server:  Enter[SerVer]  Context Server:  Context Server
Leave the login as current user unchecked.	Where View Cleant       X         Figle SS0       Span as currently logged on user         Set default behavior for the "Logn as currently logged on user" dheidbox:       Y         Y Show in connection device       Set default option to logn as current user         Set default option to logn as current user       Notal Shed5
Select <b>Continue Anyway</b> for the Virtual USB software installation.	Hardware Installation         Image: State of the software you are installing for this hardware:         VMware View Virtual USB Clerk Device Manager         has not passed Windows Logo testing to verify its compatibility with Windows XP. [Tell me why this testing is moothark.]         Continuing your installation of this software may impair or destabilities the correct operation of your system either immediately or in the [Atture. Microsoft strongly contact the hardware verify in software that has passed Windows Logo testing.         Image: Device Anywey       STOP Installation
<ul> <li>Select Finish and Exit installation. If VMware View Client does not start automatically after installation, double-click the desktop shortcut or click</li> <li>Start &gt; Programs &gt; VMware &gt; VMware View Client.</li> </ul>	Installer Completed       Where View Clerk       Where View"       Client 4       Concer

### Task 10: Adding Desktop Source in VMware View Manager

The infrastructure components are now configured in VMware vCenter. Now, go back to VMware View Manager and configure the desktop resource for an individual desktop provisioning use.

<ul> <li>Enter the VMware View Connection Server IP address/ admin as the URL in a Web browser.</li> <li>Login as Administrator.</li> <li>From within View Administrator, click Desktops and Pools, and click the Inventory tab.</li> <li>In the Global desktop and pool view pane, make sure that the Desktops and Pools tab is selected and click Add.</li> <li>When the Add Desktop wizard appears, select Individual Desktop and click Next.</li> </ul>	<complex-block></complex-block>
Select <b>Desktop Source</b> from VMware vCenter.	<complex-block></complex-block>
<ul> <li>From the list provided, select the VMware vCenter Server to be used by this desktop and click Next.</li> </ul>	Verward View Manager 4.0  Verward with a second sec

<ul> <li>Enter the Unique ID, Display name (optional), and Description (optional), and click Next.</li> </ul>	Image: Second
<ul> <li>Configure the desktop properties and click Next. Since the new PCoIP features are being evaluated, set the default protocol as PCoIP and allow users to change the setting at connection. When set to Do Not Control for Adobe Flash quality, bandwidth is not a concern with the LAN deployment.</li> </ul>	Processor       Processor
<ul> <li>Configure the desktop provisioning properties and click Next.</li> <li>Select the desktop to use as the base image for the deployment and click Next.</li> </ul>	Motional         Desking Source Stateting           State 2         State 2           Version 2         State 2           Version 2         Version 2
Click <b>Finish</b> to complete one guest desktop provisioning.	<section-header>          Section         Section         Section           Image: Section         Section</section-header>
Once the desktop provisioning is complete, you can see a desktop under <b>Desktops and Pools</b> tab.	VMware View Manager 4.0         Desitops and Pools       Users and Groups         Inventory       Search         Global desidop and pool view       Desidops and Pools         Desidops and Pools       Desidops and Pools         W       Desidops and Pools         Desidops and Pools       Desidops and Pools         W       Desidops and Pools         Desidops and Pools       Desidops and Pools         W       Desidops and Pools         Desidops and Pools       Desidops and Pools         W       Desidops and Pools         Desidops and Pools       Desidops and Pools         W       Desidops and Pools         Desidops and Pools       Desidops and Pools         W       Desidops and Pools         Desidops and Pools       Desidops and Pools         Display Name       Type         Desidops Name       Type         Desidops Name       Type         Desidops Name       Desidops Name         Desidops Name       Type         Desidops Name       Desidops Name         Desidops Name       Desidops Name         Desidops Name       Desidops Name         Desidops Name       Desidops Name         Desidops Name

\_

This shows the basic steps on how to provision one desktop. For more advanced features, you can refer to the VMware View Administration Guide. In a later scenario, a PCoIP pool is created through similar provisioning.

\_\_\_\_\_

### Task 11: Desktop Entitlement

Г

<ul> <li>From within View Administrator, click <b>Desktops and Pools</b>, and click the <b>Inventory</b> tab.</li> <li>In the Global desktop and pool view pane, select the desktop or pool you want to entitle and click <b>Entitlements</b>.</li> </ul>	Within Control of Section         Section           Desktops and Pools         Users and Groups         Configuration         Events           Interview         Search         Events         Events           Interview         Search         Events         Events           Desktops song pool view         Events         Events         Events           Events         Events         Events         Events         Events           Events         Events         Events         Events         Events         Events           Events
<ul> <li>Click Add. The user and group entitlement dialog box appears. From here you can view, search on, and filter all Active Directory users within the domain forest.</li> <li>Select the Demo.Local domain created and enter wildcard user match review, VMware View Manager should display all users that contain the phrase.</li> </ul>	Intervention       Intervention         Interventin       Intervention
Entitle the user <b>reviewer_1</b> to use the Vista desktop.	Entitlements         Entitlements         Name       Domain         DebD LOCALive/ower_1

Global desktop and p	ool view										
Desktops and	Pools	Desktop Sour	ces A	ctive Sessions	Offline Ses	sions	Global Polici	es			
Add Edit Entitlements Delete Enable or disable ID or Type contains: • Find Clear											
ID	Display Na	ame	Туре	Source	Persistence	VirtualCe	nter server	Entitled	Enabled	Sessions	
Eval-Vista	Vista Revie	wer Desktop	Individual	VirtualCenter	Non-persistent	10.17.238.	40	×	×	0 Active, 0 Offline	

Figure 6.

Once this is set and done, you will see a green checkmark under **Global Desktop and View** showing Entitled and Enabled for the guest desktop.

### Task 12: Accessing Virtual Desktop via RDP or PCoIP

<ul> <li>In the <b>Connection Server</b> drop-down menu, enter the host name or IP address of a VMware View Connection Server.</li> <li>Select <b>Options</b>.</li> </ul>	Wtware View Client         Wmware         Correct         Interview         Connection Server:         10.17.238.42         Connect         Exit         Help         Options >>         Need New Image
Select Log in as current user to be authorized to log in to the VMware View Connection Server. You will not be prompted to enter login credentials in the guest desktop login. This is an enhancement for single sign-on.	WMware View Client         WMware View Client         WMware View         Enter the host name or IP address of the View Connection Server.         Connection Server:         10.17.238.43         Port:         (Leave blank for defaulk)         SSR:         View blank for defaulk)         SSR:         View secure connection (SSL)         Auto connect:         Always connect to this server at startup         Connect       Exit         Help       Options <
<ul> <li>Enter the credentials with desktop entitlement:</li> <li>Username: Administrator</li> <li>Password: b1gd3m0</li> </ul>	VMware View Client     VMWare View     Cancel     Login   Cancel
<ul> <li>In VMware View 4, you have the option to use the preferred protocols of either Teradici PCoIP or Microsoft RDP. Select Teradici.</li> <li>Select the XP desktop you want to access.</li> </ul>	Where View Client     Withware View     Withware     VMware View     Schools     VMware View     VMware V

### Task 13: Additional Virtual Desktop Optimization

- Adjust ClearType Settings in Control Panel > Display > Advanced Tab > Fonts and choose ClearType.
- Turn off Windows Firewall Settings in Control Panel > Windows Firewall and select the Off radio button.
- Multiple Display Configuration.

<ul> <li>In VMware View Manager Administration, you can centrally configure the desktop monitors that are supported in the local systems.</li> </ul>	Cath teaktop       Beaktop-Stool Settings         Specify the desktop settings       Beaktop-Stool Settings         Desktop-Prod Settings       Disclassing Production         Allow users to setting tasktop protocol       Increased RDP =         If Allow users to setting tasktop protocol       Microsoft RDP =         If Allow users to setting to only applicable for PColP       "Beaktop-Stool Tool" only applicable for PColP         "Setting virtual machines need to be powered of and then on for the settings       Adobe Flash quality:         Adobe Flash throttling:       More quality results in more bandwidth savings         Adobe Flash throttling:       More aggressive throttling results in more bandwidth savings
<ul> <li>In the guest desktop, check the Display settings that have been changed to multiple displays.</li> </ul>	< <li>Cancel</li> <li>Cancel</li> <li>Display Properties</li> <li>X</li> <li>Themes Desktop Screen Saver Appearance Settings</li> <li>Drag the monitor icons to match the physical arrangement of your monitors.</li> <li>Display.</li> <li>1. (Default Monitor) on VMware SVGA II</li> <li>Color quality</li> <li>Less - More North More North Color quality</li> <li>Less + More North More North I + Highest (32 bit)</li> <li>Use this device as the primary monitor.</li> <li>I dentity Troubleshoct Advanced</li>

Note: PCoIP also supports pivot mode for one landscape and one horizontal configuration.

#### Task 14: WAN Optimization

PCoIP technology uses low-latency image compression algorithms to optimize the user experience for wide area network (WAN) applications. The WAN enhancements dramatically improve the user experience to provide support for multi-media and 3D graphics, audio, and I/O responsiveness over long-distance/high-latency and low-bandwidth networks.

#### Key PCoIP WAN Capabilities:

• **Reduced Minimum Bandwidth:** To support the lower bandwidth typically available over a WAN, the minimum peak bandwidth required for a PCoIP connection is 1 Mbps. Because PCoIP only transmits changes to the desktop image, the actual bandwidth used may be much lower if the screen is not changing significantly or rapidly.

- Local Keyboard and Mouse: To provide instant response over high-latency networks, the mouse pointer can be displayed locally on the desktop (within VMware View Agent) in addition to being sent to the host. Local keyboard capability is also provided to prevent lost keystrokes due to network delay.
- **Packet Reordering:** To accommodate the out-of-order packets often produced by network links on a WAN, the PCoIP portal in VMware View Agent can create multiple packet chains as out-of-order packets received and connect chains to restore the correct sequence. Without this, out-of-order packets can result in data retransmission and delays.
- **Bandwidth-Sensitive Audio Compression:** PCoIP transmits compressed or uncompressed audio-switching dynamically based on the available bandwidth to provide the best possible user experience.

Since PCoIP is integrated seamlessly into the VMware View Agent and fully optimized into VMware View infrastructure, as the administrator, you simply need to configure the desktop protocol and its bandwidth throttling from the administration UI.

Configure Flash contents bandwidth allowance.	State       State         State       Constant         Constant       Constant
	< Back Next > Finish Cancel

For an optional task to test WAN performance with PCoIP, try to access your corporate desktop from home by connecting through IPSec VPN.

# Scenario Overview

This document provides several different test scenarios to review the tasks you performed earlier and experience the combined advantages of using VMware View. To compare a variety of WAN connectivity scenarios, you can consider using either WANEM http://wanem.sourceforge.net/ or Shunra VE SMB Edition Free Trial http://www.shunra.com/ve-smb-trial.php for WAN emulation.

- Scenario 1: Provision and use PCoIP 25 persistent desktops, and one non-persistent PCoIP pool that contains 25 desktops using a Linked Clone. You can adjust the actual number of desktops based on your local storage allowance.
- Create a snapshot on both Windows XP SP3 and Windows 7
- Add desktops and pools using automatic pools and Linked Clone
- Administrate users and entitlements
- Create fully Linked Clones
- Configure pools in mixed cluster environment
- Configure for WAN tag and LAN tag use
- Delete desktops and pools
- Scenario 2: Configure 50 PCoIP fully Linked Clones in VMware vSphere
- Create desktops and pools
- Leverage ThinDisk/Provisioning in VMware vSphere
- Check storage saving comparison
- Review VMware VMsafe Security virtual machine functionalities
- Scenario 3: Set-up Triple SSO in VMware View 4 (PCoIP)
- Use archive directory credentials to login with "Login as current user" checked
- Access from the Replica View Connection Server and login to see the same session running

# Scenario 1: Provision and Use PCoIP Desktops and Pools

#### Get Started with PCoIP

PCoIP is a software-to-software display protocol fully integrated with the VMware View infrastructure. The PCoIP portal (server) is installed with the agent. The proprietary SVGA driver is included as part of the PCoIP portal.

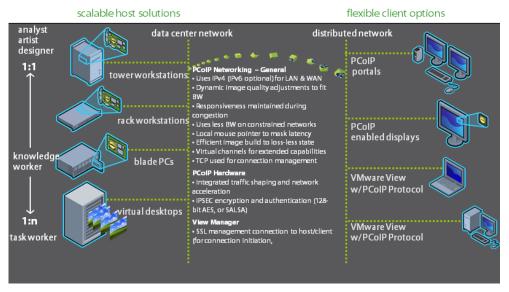


Figure 7.

The PCoIP client is included in the standard VMware View client installation on your end point device, so there are no additional installation procedures required for PCoIP. From the end user perspective, there are no configurations needed for using PCoIP. As an administrator, you can configure the PCoIP protocol through VMware View Administrative Settings/Policies. Default RDP setup is to be tunneled, but the default PCoIP setting is directly connected. Some other configurations on bandwidth throttling for Flash video or on USB redirection policy are consistent as the previous View administration.

#### Lossy and Lossless Compression

Image compression in PCoIP includes both lossless and lossy compression schemes. Lossy compression allows for higher levels of compression on initial screen change, and subsequent image quality improvement for static screen regions. Lossless motion compensation is also supported. Image compression bandwidth management is supported using packet loss as an indicator of congestion or lower bandwidth limits.

#### **Network Bandwidth and Characteristics**

The host to client network connection operates with up to 250ms of round-trip latency. The host to client network connection operates with <0.1 percent packet loss, but will tolerate periods of up to 5 percent packet loss, and will survive short durations of loss of connectivity.

A single TCP connection (SSL) is used between the host and client for session management. A single UDP connection using UDP encapsulated IPSec-ESP [rfc 3948] with AES 128-bit key encryption is used between the host and client for media traffic supporting unreliable and reliable transport. Port numbers, keys, and other connection parameters are exchanged via the SSL connection. You can reference the VMware View Deployment Guide for further end-to-end performance measurements.

# Step 1: Creating the Replica Connection Server

The installation package for the Connection Server also contains the installation source for the VMware View Replica Server. Launch the VMware View Connection Server installer and select <b>Replica server</b> for the second Connection Server. Select <b>Agree</b> to the VMware View product licensing terms.	Where View Connection Server  Installation Options  Select the type of View Connection Server instance you want to install.   C Scharder  Perform a standard full install. This is used to install a standalone instance of View Connection Server or the first instance of a group of servers.  C Experime Perform a replica instance install joining an existing server instance. This is used to install a second or subsequent server in a group of servers that all automatically share the same directory configuration.  Perform an install of just the security server components. This is typically used on servers in a DM2 to run an appropriate subset of the full View Connection Server functionally. A Security Server instance must be able to connect to a standard or replica instance server.  InstallSheld  A Back Next > Cancel
A VMware View Replica Server is a Connection Server with its own replica of the ADAM database stored locally. All configuration data and changes are instantaneously replicated to all replica servers, resulting in entirely independent Connection Servers, which can act independently in case of failure of other replica servers. Enter the first VMware View Connection Server instance IP address (View1: 192.168.13.246). Click <b>Next</b> .	Image: Server       Image: Server         Select an existing View Connection Server instance from which to replicate.       Image: Server server instances from which to replicate.         A group of View Connection Server instances that share the same configuration data is called a View Connection Server group. Setup will replicate configuration data from an existing server instance.         Enter the server name of an existing View Connection Server instance to make this server part of that group.         Example Server: view.internal.vmware.com.         Server:       192.168.13.246         InstallShield             Example              Server:       192.168.13.246
Complete the Replica Connection Server instance installation. Select <b>Finish</b> .	Installing VMware View Connection Server         Installing VMware View Connection Server         The program features you selected are being installed.         Image: Please wait while the installer installs VMware View Connection Server. This may take several minutes.         Status:         Copying new files

### Step 2: Creating Linked Clone Pools

DESKTOP TYPE	OS TYPE	PERSISTENT?	DESKTOP COUNTS
PCoIP	Windows XP SP3	Persistent	25
RDP/PCoIP	Windows XP SP3	Non-Persistent	25

The Linked Clone creation process is the same as conducted in the previous section. You can configure the task based on your storage availability and virtual machine sizing.

#### Step 3: Connecting to Pool by Tags

#### **Tag-based Entitlements**

VMware View 4 provides the advanced entitlement to Desktop Pools not only based on current entitlement settings, but also on the Connection Server through which a user logs in. For customers who need perimeter identity (for example: Internal Connection Server or External Security Server access) at logon, VMware View 4 enables users configuring certain clients to go through a particular Connection Server. In this case, a tag is introduced to identify and route the client to the Connection Server. In a broker cluster at a large VMware View deployment. The tag or tags of a Connection Server are then compared to the tag specified in time of the desktop pool creation/edit.

If the tag required by the desktop pool does not match the tag of the broker in question, even if a user is entitled or assigned to a desktop pool, the desktop will not show up in the available desktop list. The Connection Server tags take precedence over the desktop or pool tags.

In this evaluation, you will set up two instances of Connection Servers where brokers have been classified to serve different networks (internal/external for example).

VMWARE VIEW CONNECTION SERVER IP	NAME	TAG	DESKTOPS	os
192.168.13.246	View 1	External	10	XP Pro SP3
192.168.13.245	View 2	Internal	10	XP Pro SP3

#### Use Case

The internal broker might not be visible to users connecting over a VPN. In a case like this, the two brokers could still be formed into a cluster. The external broker might be tagged "External" and the internal broker tagged "Internal" and then pools could be tagged so that some desktops are not visible when a user logs in externally but are visible internally.

For example, imagine a deployment of four Connection Servers where two of the Connection Servers have connected Security Servers. The two Connection Servers without Security Servers are used to support internal users and the two Connection Servers with Security Servers are used to support Internet (external) users. The first two could have a configured entitlements tag of "Internal" and the second two could have a configured entitlements tag of "External".

<ul> <li>The UI allows an administrator to specify one or more tag strings of up to 64 characters for each Connection Broker. You can then specify the tag string required for a specific Connection Broker to access the Pool. At runtime, when a user authenticates him or herself via a Connection Server, an extra step of tag matching is performed. The result will be a filter of the resulting entitled Desktop list.</li> </ul>	View Server Settings            Enders             Enders             Carl De usadi to restrict the pools that this connection server provides access to             Carl De usadi to restrict the pools that this connection server provides access to             Carl De usadi to restrict the pools that this connection server provides access to             Carl De usadi to restrict the pools that this connection server provides access to             Carl De usadi to restrict the pools that this connection server provides access to             Charl De usadi to restrict the pools that this connection server provides access to             Charl De usadi to restrict the pools that this connection server provides access to             Charl De usadi to restrict the pools that this connection server provides access to             Charl De usadi to restrict the notion of the consult the documentation.             Charl De de server             Charl De de server             Charl De de server             De doctup tequency:             Charl De de doctup tequency:             Charl De doctup tequency:             De doctup tervency:             Bachup time:             De doctup tervency:              C
Set the replica server tag as External.	View Server Settings         Edemal URL:       E.g., https://msgener.myPort         Tag can be used to restrict the pools that this connection server provides access to         Direct connection to desidap         This change will take effed on next login for each user.         Separate tags will a connection to meet login for each user.         Direct connection to desidap         Disconnect user sessions on smart card removal         May require a server restart for this change to take effed, consult the documentation.         Charoce Securit Dark Windows user name matching         Clear node secret         Upload RSA authentication Backup         Automatic backup frequency:         Endows         Max number of backups:         Tog:         Polder Location:       C:Documents and Settings\All Users\Application Data\VMwarei\VDMbel
Once the tags are set in the connection broker, you can see the tag column in the VMware View Manager console is filled with the Tag attributes.	Jorr 4.0     Add     Econd       Configuration     Events     Logged in as: administrator       VirtualCenter Servers     Add Edit Remove     Add Edit Remove       Name     Add Edit Remove     Create Configuration       VirtualCenter Servers     Add Edit Remove     Create Configuration       VirtualCenter Servers     Add Edit Remove     Create Configuration       VirtualCenter Servers     Enable     Disable

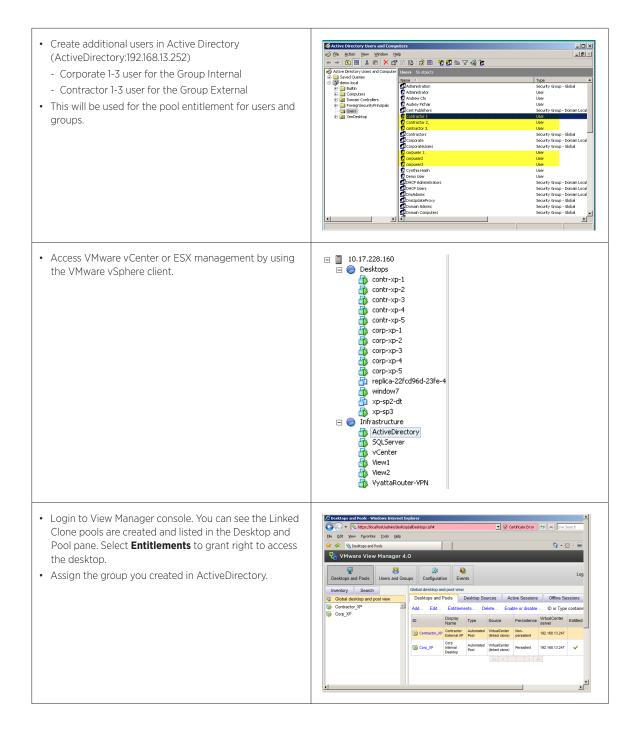
<ul> <li>In the VMware View 1 Connection Server (192.168.13.246/admin), login to the View Manager console, click <b>Desktops and Pools</b> tab and select <b>Add</b>. You are creating 25 full clone and 25 Linked Clone desktops. Select <b>Automated Desktop Pool</b>.</li> </ul>	Ele Edit Yew Favorites Locis Help         Image: Complete Structure         Image: Complete Structure </th	
<ul> <li>Select <b>Persistent</b> for the desktop type.</li> <li>Click <b>Next</b>.</li> </ul>	Add value       Developed in a discrete of the persistence addings for the desktops in this pool         Person	
<ul> <li>Create the 10 Linked Clone desktop pools first and go through the same process again to create the full clone         – only without checking the highlighted checkbox.</li> </ul>	Version       Cancel         Participant Comparison       Cancel	

<ul> <li>Fill in the name attribute for the Unique ID and Display Name.</li> </ul>	Type Desksportanters Desksportal Settings       Automated Provisioning Settings         Provisioning Settings       Specify the provisioning settings for this desktop pool         Provisioning Settings       Manaled Trovisioning Settings         Provisioning Settings       Specify the provisioning settings or this desktop pool         Provisioning Settings       Manaled Trovisioning settings or the desktop pool         Provisioning Settings       Manaled Trovisioning settings or errot         Advanced Settings*       Advanced Settings*
This is same user interface as you used to create the individual desktop earlier. Leave the default setup as it is.	Version       DeskspPool Settings         Setting       DeskspPool Settings         Setting       DeskspPool Settings         Setting       DeskspPool Settings         DeskspPool Settings       DeskspPool Setings         DeskspPool Settin
<ul> <li>Enter the number of the desktops that your storage allows you to create. The naming pattern for the desktop is the name vCenter will use to name the virtual machine, so create a unique and easily recognized name.</li> </ul>	Add Desktop         Type Wange B Beschoftot darbare Wange B Beschoftot darbare Beschoftot darbare Wand Beschoftot darbare Wand Beschoftot darbare Beschoftot darbare

<ul> <li>Desktop cloning relies on the virtual machine template as the base. Previously, you created a template by selecting a clean base template and cloning it to template. Select that template and click Next.</li> </ul>	Set Description         Pastop Restrict And Cetter Serving On
	< Back Next> Cancel
Linked Clone requires the template and snapshot as the golden image.	Act brankers         Press         Press </td
Select the folder location where the desktops should be organized.	Add Desktop  Type  Provide the former  Provide the former  Provide on generating the provide on

<ul> <li>Select the host or ESX server where the desktop is created. Note the vSphere mode for VMware View Composer option is dimmed and not selectable. It is because the host being used is running vSphere already. If you are using a previous version of ESX, this option will be available for upgrade use.</li> </ul>	Add Besktop Type Destant American Destant American Destant American Provide and Sector Provide Sector Provide American Destant Hage Watak Andres Folder Marken Folder Destant Provide Destant Provide	Hosts and Clusters         Belied A host or a cluster on which to run the witual machines created for this desidop pool.         Unsupport host and clusters have been filtered from the lat. See the Valware View product documentation for supported ESX and Vinau/Center configurations.         *       Work blackster         *       Work blackster         *       Work blackster         *       Work blackster         *       *         * </th
		Use v0phere mode for View Composer This mode can only be used if all hosts in the selected cluster are running ESX-0.0 or later.     (Eack Next > Cancel
Add desktops to the resource pool.	Add Desktop Type Destp Persisting Virtual Call Providence Stating Personal Stating Personal Stating Personal Stating Personal Stating Personal Stating Personal Stating Resolver Stating Resolver Compile	Resource Pool Select a resource pool in which to run the virtual machines created for this dealdop pool . U 17 723 HO Transmone T
Allocate user data disk for the persistent data. Keep the default value and select <b>Next</b> .	Add Detaktop Type Desktop Franktop Unital Cell Sherer Unital Cell Sherer Desktop Frankton Gettings Provokaning Settings Provem State Challer Heat ar Challer Beauty Market Politike Desktop Frankton Challer Desktop Frankton	User data         Specify how user data will be stored for desktops in this pool            • Redirect user data to a sparate disk         User data is preserved when Yew Composer operations are performed.         Data data kis user 2045

<ul> <li>In this setup, the storage LUN for the better demo effects is attached. You can simply use the local storage host:storage1 for your test.</li> </ul>	Add destrop         Prestop Furthersberg Visal Carbon Statuse Nova D Reversor B Visal Rules For Prestop Furthersberg Visal Rules For Reversor For Reversor
<ul> <li>You can see that the default domain is filled in automatically by quickprep. This is set at the Configuration Tab &gt; Servers &gt; Select View Connection &gt; Edit.</li> </ul>	Carbonal Constraints of the C
Do a final review of the Linked Clone setup and click <b>Finish</b> to complete. It will take several minutes to create the clones.	Activation           Provide Signame Report Si



Repeat these steps for creating additional XP desktops with non-persistent and persistent use.

### Step 4: Deleting the Clone Using Deletion Script

Provide the cleanup rule and scripting capabilities to enable administrators to perform further integration functions. In some environments, this can be achieved by removing entries from ActiveDirectory. In others, you may need to trigger other applications for a tighter integration.

A new key needs to be created manually. Please refer to VMware View Administration Guide for further details.	Registry taker     Registry     Registry
The visual basic script can be used to clean up or trigger further application activities. This new feature offers the extensibility framework.	Description         Image: Control of the second secon
Run <i>services.msc</i> to access the Services console. Enable the script services manually. It is not started by default.	Constant of the service of the



## Scenario 2: Configure PCoIP Full and Linked Clone in VMware vSphere

### **Create Full Clone with Thin Provisioning**

Thin Provisioning in its simplest form means only using the disk space you need. Traditionally, with virtual machines, if you create a 500GB virtual disk it will use 500GB of your VMFS data store. With Thin Provisioning you can create a 500GB virtual disk, but if only 100GB is in use, only 100GB of your VMFS data store will be utilized.

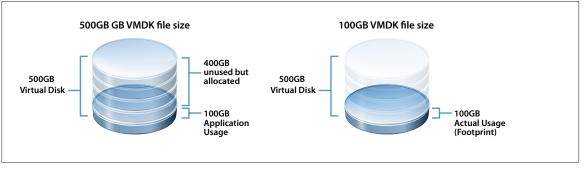


Figure 8.

You can create a five desktop XP pool using Full Clone from VMware View 4 and compare them with the Thin Provisioning option check. The features include increased storage utilization, reduced application downtime, and streamlined capacity management.

<ul> <li>When you create a virtual machine in VMware vSphere, the option to create Thin Provisioning settings is under Settings &gt; Add Hardware.</li> </ul>	Add Hardware.     Create a Disk     Specify the virtual disk size and provisioning policy
	Deside Tixed Salect a Disk       Copacity         Created a Disk Advanced Options Resky to Complete       Disk. Frevisioning         Image: Support Closering Testures such as Fault Tolerance       Disk. Provisioning         Image: Support Closering Testures such as Fault Tolerance       Location         Image: Support Closering Testures such as Fault Tolerance       Specify a glasstore:         Image: Support Closering Testures such as Fault Tolerance       Specify a glasstore:
<ul> <li>In VMware View 4, you can configure the Thin Provisioning while preparing the Linked Clone base template</li> </ul>	

Now, in order to compare the storage usage difference with Thin Provisioning enabled in the virtual desktop deployment, the best approach is to provision them and perform storage comparison with the virtual machines without thin provisioning enabled. Considerations for storage provisioning fall in throughput needs to scale with an increase in capacity, i.e., multiple virtual machines per I/O path.

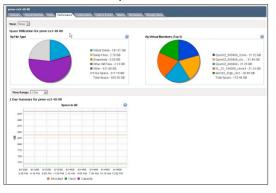
🛃 10.17.228.160 - vSphere Client			
Elle Edit View Inventory Administra	ition <u>P</u> lug-ins <u>H</u> elp		
💽 💽 🏡 Home 🕨 🔊 Inv	entory 🕨 🎁 Inventory		
☐ 10.17.228.160     ☐	contr-np-xp-1 Getting Started Summary Resource Allocation Performance	Events Console Dermissions	
contr-np-xp-1	General	Resources	
👘 contr-np-xp-3		Resources	
contr-np-xp-4  contr-np-xp-5  corp-p-xp-1  corp-p-xp-2	Guest OS: Microsoft Windows XP Professional (32-bit) VM Version: 4 CPU: 1 vCPU Memory: 1024 MB	Consumed Host CPU: Consumed Host Memory: Active Guest Memory:	88 MHz 308.00 MB 61.00 MB Refresh Storage Usage
👘 corp-p-xp-3	Memory Overhead: 189.66 MB	Provisioned Storage:	21.01 GB
corp-p-xp-4	VMware Tools: Not installed	Not-shared Storage:	11.37 GB
f corp-p-xp-5	IP Addresses:	Used Storage:	11.37 GB
replica-1517a975-885d-	DNS Name:	Datastore Capacity	Free Last Update
🚡 window7	State: Powered On	🔋 LUN 12 499.75 GB	260.06 GB 10/15/2009
∰ ×p-sp2-dt	Host: esx01.demo.local	•	•
xp-sp3	Active Tasks:	Network Type	
Infrastructure ActiveDirectory	Commands	VM Network Standard swit	ch network
CA OneSign Virtual Applianc VCenter	Shut Down Guest Suspend		
Tiew1	Restart Guest		
View2			
VyattaRouter-VPN	Edit Settings		
E V Ianc	Popen Console		
	Annotations		
	Notes:		
	×		

Figure 9.

In the meantime, *transient storage* on the swap space is used only when the virtual machine is powered on and delta disks are used by snapshots and linked to virtual machines.

General			Resources			
Guest OS:         Microsoft Windows XP Professional (32-bit)           VM Version:         4           CPU:         1 vCPU           Memory:         1024 MB           Memory Overhead:         183.89 MB           VMware Tools:         Not installed           IP Addresses:         20 Datastore Browser - [LUN 12]			Active Guest Memory: Refresh Stora Provisioned Storage: 2 Not-shared Storage: 2		73 MHz 221.00 MB 61.00 MB Storage Usage 21.01 GB 11.37 GB 11.37 GB	
	<ul> <li>(LUN)</li> </ul>	) 12] contr-np-xp-2	2			
<b>⊡</b> [//.	Nam	ie		Size	Туре	Path
- 🕖 XP-view1		vmware-11.log		33.35 KB	Virtual Machine	[LUN 12] contr
		contr-np-xp-2.nvra		8.48 KB	Non-volatile me	[LUN 12] contr
View-PCoIP OneSign Virtual Appliance xp-view-2		contr-np-xp-2-inter	nal.vmdk	10,240.00 KB		[LUN 12] contr
					Virtual Machine	[LUN 12] contr
					Virtual Machine	[LUN 12] contr
xp-view4-template		vmware-14.log			Virtual Machine	[LUN 12] contr
- 💆 window7		vmware-15.log			Virtual Machine	[LUN 12] contr
		vmware-10.log			Virtual Machine	[LUN 12] contr
xp-sp3	0	contr-np-xp-2.vmx			Virtual Machine	[LUN 12] contr
replica-1517a975-885d-4c30		contr-np-xp-2.vmd	ĸ	492,544.00 KB		[LUN 12] contr
contr-np-xp-2		vmware.log			Virtual Machine	[LUN 12] contr
contr-np-xp-1		contr-np-xp-2.vmxf		0.26 KB 0.13 KB		[LUN 12] contr- [LUN 12] contr-

Figure 10.



#### Datastore View in vSphere

Figure 11.

### VM Storage Performance View



Figure 12.

### **Anti-Virus Protection**

The VMsafe API comes with VMware vSphere. VMware offers a number of VMsafe partner solutions that provide secure virtual machines with virus-scanning capability.

- Trend Micro Core Protection 1.0. This is an anti-virus product that performs offline and online scheduled virtual machine scans without an agent. It uses a smaller agent for on-access scanning or to clean up infections. The product is available at: http://us.trendmicro.com/us/solutions/enterprise/security-solutions/virtualization/ virtual-machines/index.html
- McAfee Virus Scan for Offline Virtual Images 2.0. This is an anti-virus product that performs offline schedule virtual machine scans without an agent. It complements a regular virus scan agents' online scanning.

C Trend Micro Core Protection	for Virtual Machines - Windows Internet Ex	plorer		<u>. IOI 2</u>	
	UI/home.aspx		💌 🐓 🗶 Live Search	P -	
Ele Edit View Favorites I	ools Help				
🙀 🍻 🌈 Trend Micro Core Pr	otection for Virtual Machines		💁 • 🗔 • e	🖶 + 🚯 Bage + 🎯 Tgols +	
	Core Protection for Virtu	al Machines			
Summary	Security Management			🗘 Refresh 🔞 Help	
Security Management	Select groups or members from the tree,	and then select one of the options.			
▶ Updates	Search for computers:				
⊁ Logs	Search				
Notifications     Administration					
<ul> <li>Administration</li> </ul>	_				
	B-Security Groups	Default Group			
	Default Group	📃 Member Nanagement 🔻 🛃 Tas	ks 👻 🧻 Settings 👻 📩 Inst	tall 🔻 🖸 Loga 🔻	
		F Members	Categor	ry Power Status Manual Sc	
		C ActiveDirectory	N/A	Online None	
		T 🖬 AV1	N/A	Online None	
		AV2	N/A	Online None	
		🗖 🖬 CA	N/A	Online None	
		🔲 🌆 contr-np-xp-1	N/A	Online None	
		🗖 🚂 contr-np-xp-2	N/A	Online None	
		🗖 🛄 contr-np-xp-3	N/A	Online None	
		🗖 🌆 contr-np-xp-4	N/A	Online None	
		Contr-np-xp-5	N/A	Online None	
		🔽 🔚 corp-p-xp-1	N/A	Online None	
		🗖 🌆 corp-p-xp-2	N/A	Online None 💌	
	<	<u> </u>		•	

Figure 16.

VMsafe reduces high storage I/O and memory usage during scheduled and pandemic malware scan activities.

→ → Altp://av2/We Edit View Favorites				💌 🔸 🗙 Live Search		
	Loois Help Protection for Wrtual Machines	1 1				n x 🕜 Icole
					_	
TREND MICR	O <sup>m</sup> Core Protection	for Virtu	al Machines	Logged 😧He	Np 2	- <b>0</b> 175
Summary	Security Managemen	ıt			🗘 Refr	ssh 🔞 Help
Security Management	Select croups or members	from the tree	and then select one of the options.			
Updates			and then believe and of the options.			
Logs	Search for computers	Search				
Notifications	1	- Secondin				
Administration						
	B-Security Groups		Member Management		all Real-Tim all Scanning	e Agent al S
			and the second sec		stall Agent	
			T	N/A	Online	None
			E 🖬 CA	N/A	Online	None
			contr-np-xp-1	N/A	Online	None
			Contr-np-xp-2	N/A	Online	None
			C acontr-np-xp-3	N/A	Online	None
			Contrinpixpi4	N/A	Online	None
			🖂 🚾 contr-np-xp-5	N/A	Online	None
			C corp-p-xp-1	N/A	Online	None
			Corp+p+xp+2	N/A	Online	None
			F Com-n-xn-3	N/A	Online	None

Figure 17.

The above figure shows the anti-virus server committing a real-time agent to an individual virtual machine. It also has the functionality of offline snapshot image scanning.

This is a VMware vSphere feature and is now available for VMware View 4. Please refer to the VMware View 4 Deployment Guide for further product demonstration.

## Scenario 3: Set up Triple Single Sign-On (SSO) in VMware View 4

### Log in as Currently Logged-on User

This is a new option in VMware View Client that allows you to log onto the broker using currently logged on credentials. The standard sign up flow using AD credentials is:

- User connects to View Connection Server
- VMware View Connection Server compares a list of trusted AD domains to the client
- User authenticates with username and password
- VMware View Connection Server delegates authentication to Windows/AD

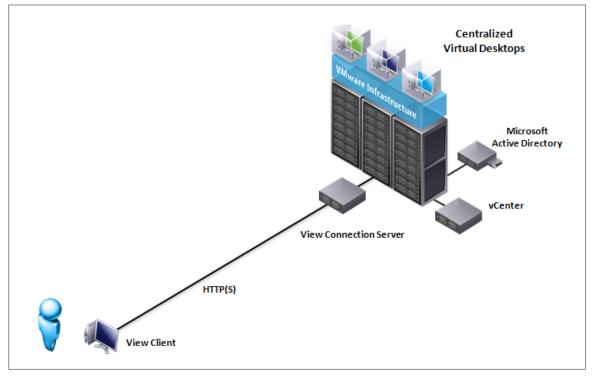


Figure 13.

VMware View 4 continues to support the AD credential (username and password) login, smart card, and RSA securID token in RDP.

- During the View Agent installation, select the Connect as Current Logon User checkbox option to enable SSO.
- Launch View Client at local desktop or thin client.
- View Client has new Log in as Current User: Domain User checkbox. When a user's AD credential is authenticated on the client device using either password (RDP/PCoIP) or smart card authentication in RDP, the Connection Broker will use the same user identity.
- This value can also be set using GPO policy or registry key setting. Please refer to the View Administration Guide.
- You should be able to login to the guest desktop environment without being prompted to enter the credentials again.



## **Support Information**

For additional evaluation questions and installation support, please address your questions to desktop-tm@vmware.com.

# About the Author

Cynthia Hsieh is a senior technical marketing manager in VMware Enterprise Marketing team. She focuses on application integration, proof of concepts, and security subjects.

Hsieh's previous background includes product management positions at Wyse, Trend Micro, Oracle, and Yahoo.



VMware, Inc. 3401 Hillview Avenue Palo Alto CA 94304 USA Tel 877-486-9273 Fax 650-427-5001 www.vmware.com

Copyright © 2009 VMware, Inc. All rights reserved. This product is protected by U.S. and international copyright and intellectual property laws. VMware products are covered by one or more patents listed at http://www.mware.com/go/patents. VMware is a registered trademark or trademark of VMware, Inc. in the United States and/or other jurisdictions. All other marks and names mentioned herein may be trademarks of their respective companies. Item No: VMW\_09Q3\_EG\_VMwareView4\_P48\_R1