Enterprise Desktop Virtualization: decrease cost while increasing security and control (VMware View 3)

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Russel Wilkinson
Staff Systems Engineer
Enterprise Desktop Solutions
rwilkinson@vmware.com
(248) 375-0225 – Office/Cell
Agenda

- VMware at a Glance – slides 3-6
- Virtualization 101
- The Need for Enterprise Desktop Solutions
- VMware View Technical Components
VMware: Who We Are

World’s leading provider of virtualization solutions

Founded 1998, IPO August 2007

100,000+ customers worldwide—All sizes and industries; 100% of Fortune 100

Vision: Transform computing through virtualization

Products: reliable, award-winning, most-deployed

Headquarters in Palo Alto, CA, with 40+ offices worldwide
Industry Leading Companies . . .

5 Largest Securities Companies
5 Largest Chemical Companies
5 Largest Entertainment Companies
10 Largest Aerospace/Defense Companies
12 Largest Pharmaceutical Companies
25 Largest Commercial Banks
Which software providers are gaining share of your IT spending dollars?

- VMware
- Microsoft
- Cisco Software
- Red Hat
- Oracle
- Informatica
- salesforce.com
- Microsoft
- EMC Software
- Symantec
- Citrix

#1 for 10 Quarters
VMware = Product Excellence

Most Reliable: VMware ESX
(#2: IBM Mainframe)

Best Breakout Technology: VMware

Easiest to Use/Manage: VMware Workstation

Biggest "Wow" in an IT Product: VMware Fusion
Agenda

- VMware at a Glance
- Virtualization 101 – slides 8-11
- Virtualizing Enterprise Desktops
- VMware View Technical Components
Old Model: Traditional x86 Architecture

> Single OS image per machine

> Software and hardware tightly coupled

> Multiple applications often conflict

> Underutilized resources introduce real cost into the infrastructure
New Model: VMware Technology

- Separate OS and hardware – break \textit{hardware dependencies}
- Manage OS and application as single unit by \textit{encapsulating} them into VMs
- Strong fault and security \textit{isolation}
- \textit{Standard, HW independent} environments can be provisioned anywhere
- \textit{Flexibility} to chose the right OS for the right application
Virtualization: Fundamentally Better

Run several operating systems on a single machine.

Create shared pools of resources to optimize your infrastructure.
Virtual Desktops

Manage Capacity, Not Servers

Development

Production

BI

CRM

Applications

Marketing

Virtual Desktops

Aggregate capacity: 
30 x (3GHz, 16GB) = 90GHz, 480GB
Agenda

- VMware at a Glance
- Virtualization 101
- Virtualizing Enterprise Desktops – slides 13-35
- VMware View Technical Components
User Requirements

- Personalized Desktops that follow them
- Flexible access anywhere using multiple devices
- Desktop Biz Continuity & Disaster Recovery
- Legacy, Win32, Web apps work well together
- Rich Application Interface

IT Requirements

- Manage disparate desktop images easily
- Manage explosion in multitude of devices
- Provide secure, continuous access to desktops, apps
- Manage Legacy, Win32 and Web apps
- Low management costs
A typical desktop has everything bundled into a single device with a complex intertwined collection of software and data.
Many individual devices must be patched, monitored, and secured – a difficult task, especially for remote users.
Patching at the Edge

Trying to deliver patches over WAN links or even slower office networks becomes more and more difficult.

- Windows Vista SP1: 1GB+
- Windows XP SP3: 300MB+
- Office 2007 SP1: 200MB+
User data is stored on network file shares, where it can be backed up and secured.
Using roaming profiles, a user’s settings are moved to a server for backup and to allow their personality to follow them.
Using Application Virtualization such as Thinstall, applications can be moved to a file share and launched without being installed locally.
The now minimized OS can be virtualized on servers in the data center, and viewed with a remote protocol.
The minimized OS can be converted to a template to create additional virtual machines.
Automatic Provisioning technology can spin up VM’s on demand. Since applications are separate, a single template can be used.
A connection broker allows selection of a VM on demand, breaking the link between a single user and a single desktop.
The need for full PC's at the endpoint is eliminated and easy-to-maintain thin clients can be deployed.
With Encrypted tunneling, users can work from home or contractors can work from off-site locations without a VPN.
With a fully virtualized desktop, backups are not only simplified, they’re actually possible.
Disaster Scenarios

With a fully virtualized desktop, users get the same experience from home, even when their desk isn’t accessible.
VDI = Complete Freedom

VDI Meets the Challenges of the Desktop

Benefits

- Streamlined and Simplified Desktop Management
- Reduced Desktop Maintenance and Support Costs
- Improved End User SLAs and Desktop Business Continuity
- Improved Security and Compliance
The complete VDI picture may initially look complex.
Virtual Desktops and Templates reside on VI3
File Servers are Easily Virtualized
Brokering components can also be virtualized.
Along with your other server workloads
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- VMware at a Glance
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- Virtualizing Enterprise Desktops
- VMware View Technical Components – slides 37-70
VMware View 3 Components

- VMware Infrastructure Enterprise
- View Manager
- View Composer
- ThinApp
- Offline Desktop (Experimental)

- Proven Virtualization Platform
- Enterprise Desktop Manager
- Storage Optimization
- Application Virtualization
- Anywhere Mobility
Summary Overview of VMware View 3

- Offline Desktop
- Clients
- Virtual Desktops
- VMware Infrastructure 3
- Unified Access
- View Manager
- ThinApp Applications
- View Composer
View Manager: Enterprise Desktop Manager

- Seamlessly integrated with VI3
- Automated desktop provisioning
- Centralized management of desktops
- Scalable for any size organization
- Flexible, secure access to end user desktops
View Manager: View Connection Server

- Directs incoming user requests to the appropriate virtual desktop

- Provides virtual desktop management and user authentication

- Runs as a Windows Service
  - VMware View Connection Server
  - VMware View Manager DS

  - Supports integration with multiple vCenter instances for larger deployments

  - Non-intrusive Active Directory Integration
View Manager: View Security Server

- Installed as part of the View Connection Server or individually, typically in the DMZ

- Provides SSL tunneling between the View Manager Client and the View Security Servers

- Optional integration with SecureID for two factor authentication

- Smart Card authentication

- Runs as a Windows Service
  - VMware View Security Server
View Manager: Enterprise Class Scalability

- No single point of failure
- Ability to cluster both View Manager servers and ESX servers
- Fault Tolerance and High Availability of virtual desktops
View Manager: Virtual Desktop View Agent

- Enables communication between the virtual machine and View Connection Server using the message bus.
- Agent is installed on the virtual machine
  - XP Pro SP2 – 32bit
  - XP Pro SP3 – 32bit
  - Vista Ultimate/Business – 32bit
- Installs additional components
  - View Composer components
  - Virtual Machine USB redirect drivers
  - Virtual Printer drivers
  - View Secure components
Windows application used to make connections with virtual desktops

- Provides USB device redirection:
  - XP, XPe, Vista

- Familiar Windows Style Logon
  - User Name
  - Password
  - Domain

- Client Connection Status
  - Connected
  - Disconnected
  - Configure always connect to default desktop

- Desktop Options
  - Full Screen - Single Monitor
  - Full Screen - Dual Monitors
  - Windowed
Provides access to virtual desktops using a web browser
Familiar look and feel
Use the desktop like an ‘ordinary’ PC
Pinned session bar to top of screen
Connect to additional desktops
Connect and disconnect USB devices
For Windows based devices only
Logoff or disconnect the session
View Manager: View Portal

VMware View Portal Session Status
➢ Connected
➢ Disconnected
➢ No Session
➢ Configure ‘Always Connect to Default Desktop’

Desktop Options
• Default Desktop
• Screen Size
  • Full Screen - Single Monitor
  • Full Screen - Dual Monitors
  • Window Mode
Active Directory

- Retain existing user accounts and policies
- Single sign on to virtual desktops
- Retain user-management processes and skills
- Do not need to modify existing Active Directory in any way
- No Schema Changes
- Integrated with multiple domain environments and trust relationships (out the box)

RSA SecurID

- Optional integration with SecurID for two-factor authentication

These features are representative of feature areas under development. Feature commitments must not be included in contracts, purchase orders, or sales agreements of any kind. Technical feasibility and market demand will affect final delivery.
Leverage View Manager’s secure connection brokering capability for other platforms accessible by RDP
- Terminal Servers
- Blade PCs
- Physical PCs

Load Balancing of multiple Terminal Servers

Monitoring and auditing within View Manager
Driver Free Printing: No Installation and Maintenance of printer drivers

All printers automatically available

Minimize network utilization with advanced print stream compression

High quality printing even over WAN connections

View Manager: Virtual Printing

Virtual Desktops

VMware Infrastructure 3

View Client

View Client
Multimedia Redirection:
- Multimedia stream decoded at client
  - Better user experience
  - Min impact on servers, bandwidth consumed
- Win XP, Win XPe clients supported

Support of critical codecs
- MPEG-1, MPEG-2, MPEG-4-part2
- WMV 7/8/9, WMA, AC3, MP3

USB Redirection
- Provides support for local storage, scanners, printers
Pooled Desktops

- Automated provisioning from template
- On-demand provisioning
- A Desktop is always available
- Identical desktops in a pool
View Composer: Storage Optimization

**Traditional VDI**

- Multiple virtual desktops with applications and operating systems
- Storage optimization requires separate storage for each desktop

**VMware View + Clones**

- Fewer virtual desktops with applications and operating systems
- Storage optimization through cloning technology

Replica is a full clone created from the parent (Master VM) image

The Master VM can be updated or replaced without affecting the replica

The replica is a protected entity within vCenter
View Composer: Image Management

- Provides three main techniques
  - Refresh – Clean desktop back to default
  - Recompose – Migrate existing desktops from one system version to the other
  - Re-Balance – Re-locate desktops to enable efficient usage of the storage available

Examples:
- Add more storage as you run out of the existing space
- Retire existing storage array
View Composer: Refresh

Parent Image

Replica

Bloated System Disk

Refresh

Data Disk

Refreshed System Disk

LUN – A
View Composer: Re-compose

Parent Image e.g. XP SP2

New Parent Image e.g. XP SP3

Replica 1

System Disk
Data Disk

Replica 2

New OS System Disk

Re-Compose

LUN – A
View Composer: Rebalance

System Disk LUN – B
Replica 1
Parent Image

Data Disk
System Disk
LUN – A
Replica 1

Free Space

System Disk
Data Disk
LUN – B
Replica 2

Bloated System Disk
Data Disk
View Composer: Rebalance

LUN – A

Replica 1
System Disk
Data Disk

Replica 2
System Disk
Data Disk

LUN – B
Bloated

Parent Image

Data Disk
Problem:
Tightly coupled relationships between OS, Applications and Data.

Symptoms:
- Application conflicts and issues with “badly behaving applications”
- Inability to deploy all required applications to specific desktop image
- Expensive application compatibility testing with large testing matrix

Solution: VMware application virtualization to decouple applications and data from the OS
ThinApp: Application Virtualization

Features
- Decouples applications & data from OS
- Agent-less architecture
- Wide platform and application support
- Plugins into existing Application Management tools

Benefits
- Reduces Storage Costs
- Minimizes desktop images to be managed
- Streamlines application patch updates
- Allows multiple versions of applications to be used
Many Applications Write to the “System”

Applications get installed because they need to write to the “system”.

Diagram:
- Applications
  - Files
  - Registry
- System
- User Space
  - Files
  - Registry
User Space changes can follow the user through profiles.
A ThinApp package contains all of the System content that it needs.
If it tries to make system changes, ThinApp captures them into the sandbox.
And we store the sandbox in the profile where it can follow the user.
Offline Desktop*: Anywhere Mobility

- Enables end-users to check out their hosted Virtual Machines to a local physical computer for a full user experience.

- Enables administrators to extend security and encryption policies of the centralized virtual desktops to the end-user’s local computer.

* Experimental
Offline Desktop*: Anywhere Mobility

- When checked out – the virtual machine has a “heartbeat” back to the datacenter allow administrators to deactivate if necessary

- When the user checks-in, only the delta is checked in

* Experimental
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