

VMware vSphere™ 4

The Best Platform for Building
Cloud Infrastructures



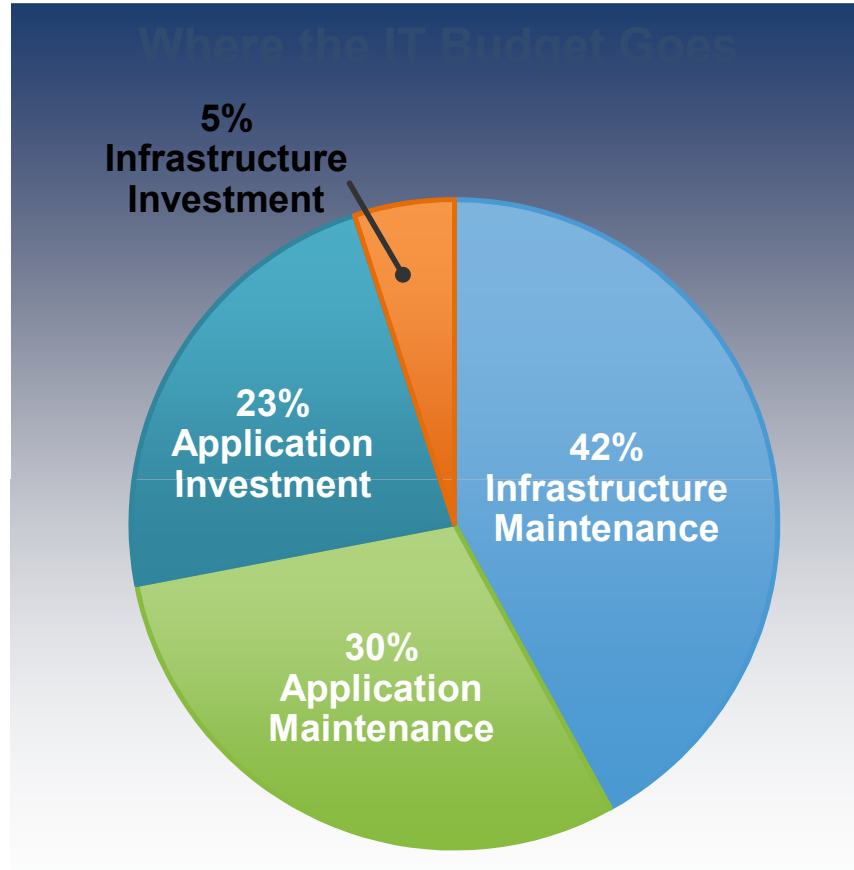
Popolna virtualizacija od strežnika do namizja

Saša Hederić

Senior Systems Engineer

VMware

The Problem

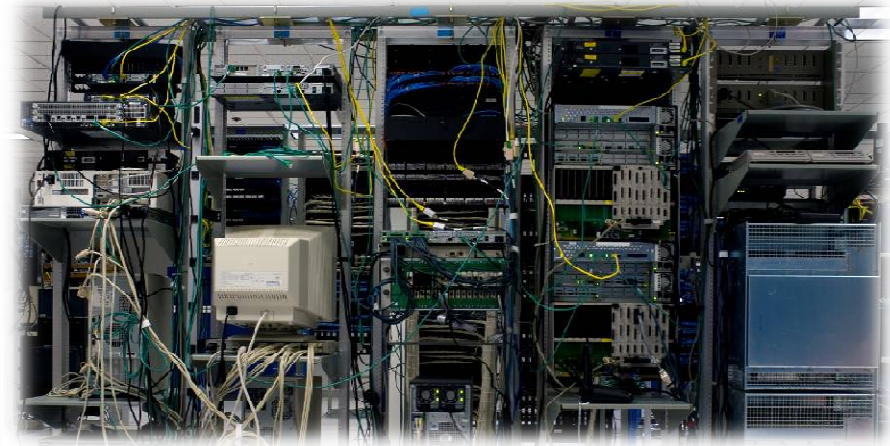


*Your Business Can Change
Only as Fast as Your IT Can*

Overwhelming complexity

**>70% of IT budgets just to
keep the lights on**

**<30% of IT budgets goes to
innovation and
competitive advantage**



The Goal

IT as a Service

(Internally or
Externally
Provisioned)



Efficiency



Control



Choice

VMware vSphere™ 4.0 Delivers

Efficiency

*Cut capital
and operational
costs by over 50%.
for all applications..*

Control

*...while automating
quality of service...*

Choice

*...and remaining
independent
of hardware,
operating system,
application stack,
and service
providers*

VMware ESX: Even More Reliable than a Mainframe!

Redmondmag.com

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Feature

The 2008 Editors' Choice Awards

Here are our selections for the products we believe you just can't live without.

by Lafe Low
January 2008



Cra
The
refl
do
ou
pro
that's delivered on time
streamline operations,
opportunities.

For this Editors' Choice
feature or function. The
management tool. Inste
mean to our expert edit

Let us know how our ex
you use in your everyda

Most Reliable

This is the "accidentally built a wall around it and forgot it was there" kind of reliable:

1. VMware ESX: The least stable part of ESX is usually the administrator. The code is virtually bomb-proof.

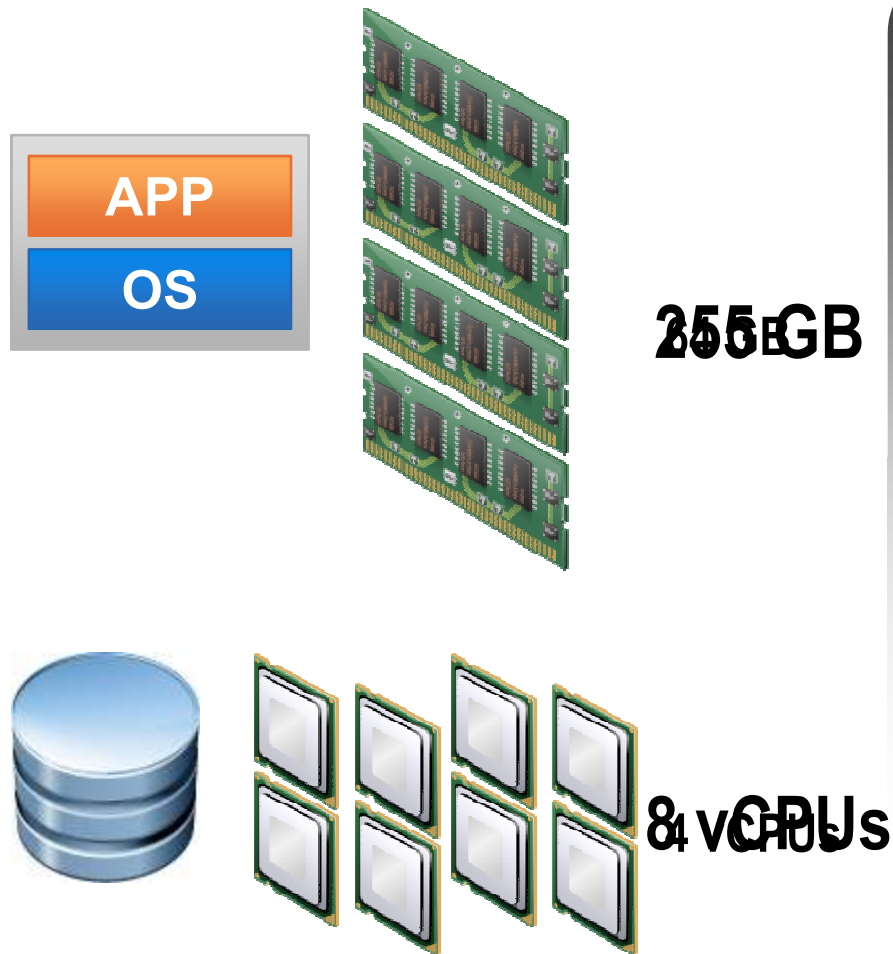
2. IBM mainframes: They've been running for more than 50 years, and probably will for another 50.

3. DOS 6.2: One company had a DOS machine with a terminal emulator connected to a remote customer. It downloaded thousands of invoices per month and delivered them to a file share. The box was never rebooted and was found behind a filing cabinet when the company moved.



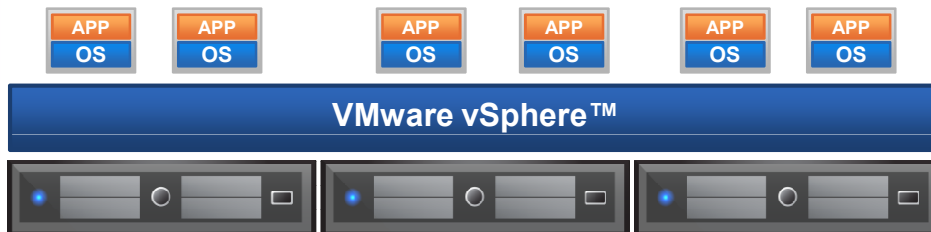
Scalability Improvements in VMware vSphere 4

VMware vSphere 4 Dramatically Improves VM Scalability



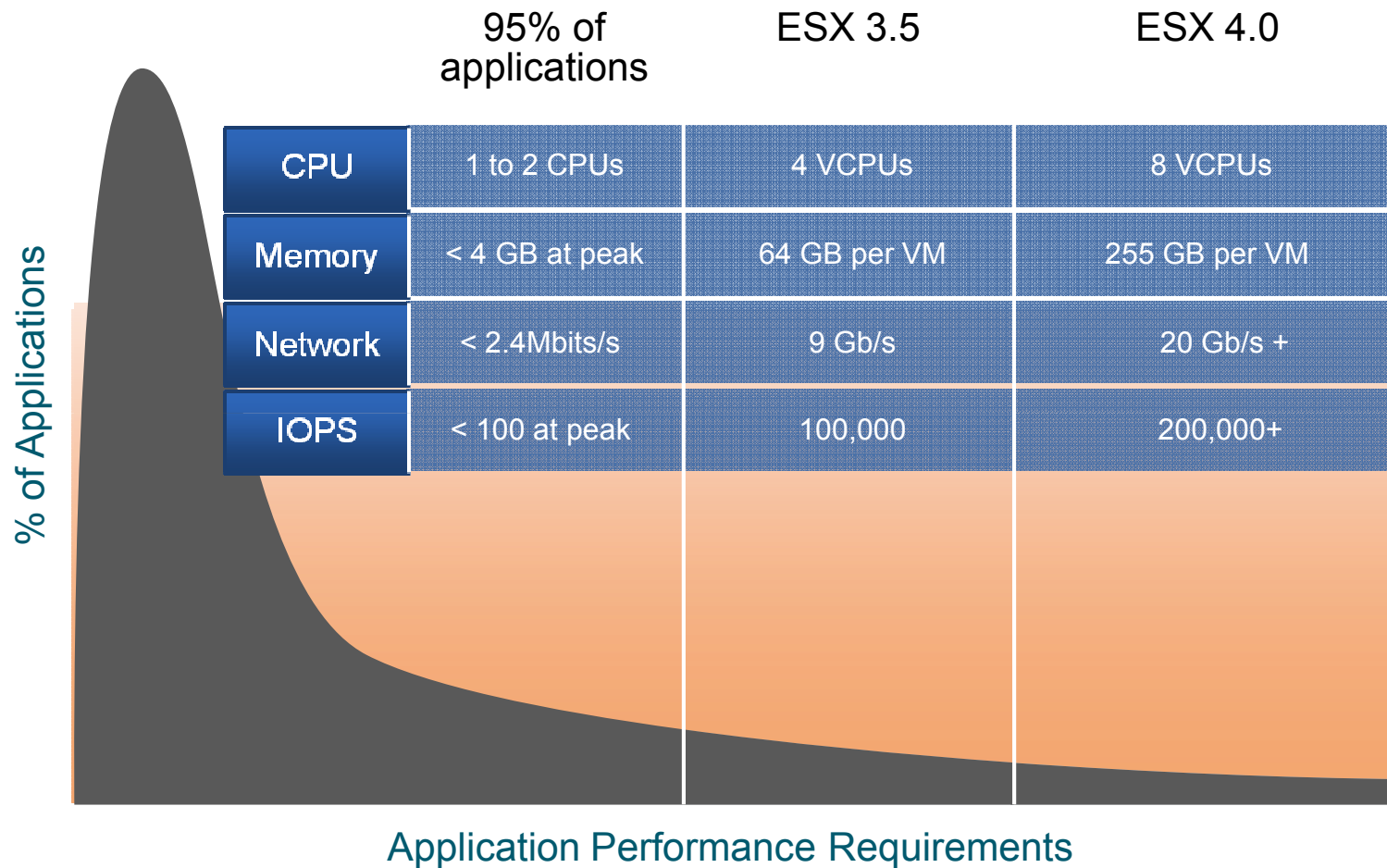
- ❑ Scalable virtual machines
- ❑ Hot add of
 - ❑ CPU
 - ❑ Memory
- ❑ Hot add and remove
 - ❑ Storage devices
 - ❑ Network devices
- ❑ Hot Extend virtual disks
- ❑ Zero downtime scale out of virtual machines

DRS Ensures Capacity on Demand



- ❑ Shrink and grow of applications based on demand and priority
- ❑ Dynamic and responsive load balancing

vSphere 4 Delivers Performance for Demanding Applications



1. Source: VMware Capacity Planner assessments

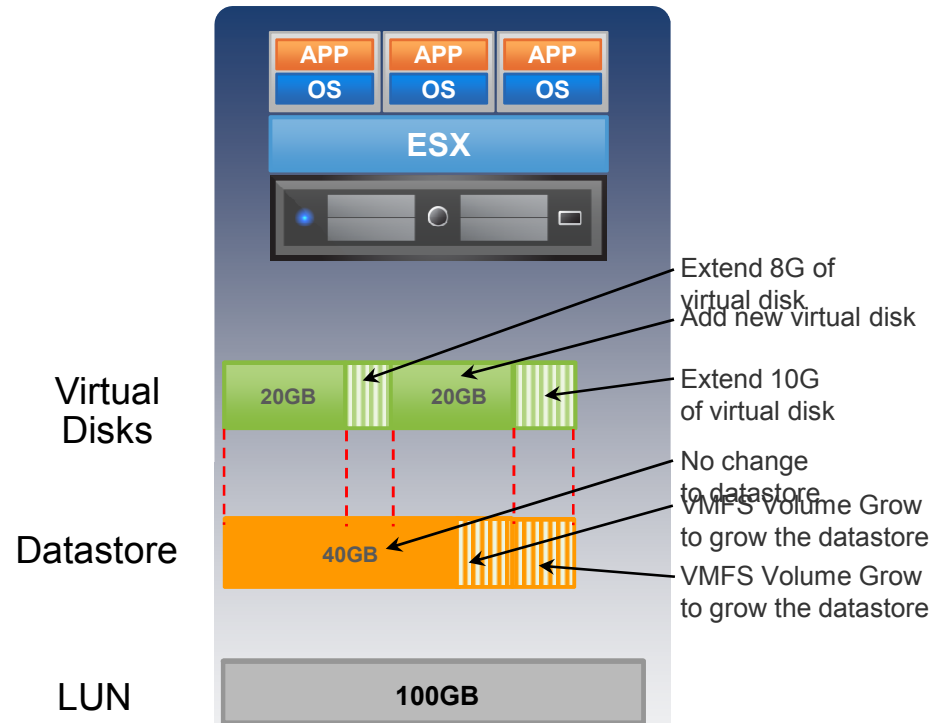
Comparison to VISA





Enhanced Storage Capabilities

Efficient Storage Abstraction with VMFS



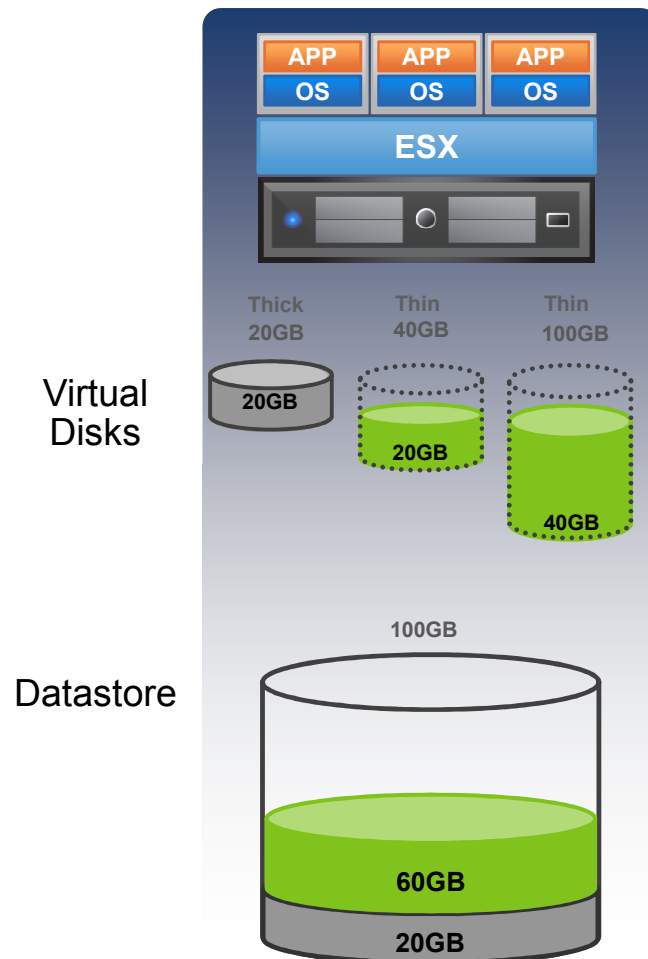
Hot Virtual Disk Extend

- Expand virtual disks online
- Respond quickly to growing requirements without downtime

VMFS Volume Grow

- Expand VMFS Volume on the same LUN it was created
- Facilitate adding more virtual machines to an existing volume
- Facilitate data growth for the virtual machines
- Increase flexibility to simplify capacity planning

vStorage Thin Provisioning



- Virtual machine disks consume only the amount of physical space in use
 - Virtual machine sees full logical disk size at all times
 - Full reporting and alerting on allocation and consumption
- Significantly improve storage utilization
- Eliminate need to over-provision virtual disks
- Reduce storage costs by up to 50%

Thin Disk Provisioning Operations

A thin-disk option is available when you:

- Create a virtual machine
- Clone to a template
- Clone a virtual machine
- Migrate virtual machine storage (Storage VMotion)

Create New Virtual Machine Wizard

Datastore: SharedStorage

Available space (GB): 15.7

Virtual disk size: 8 GB

Allocate and commit space on demand (Thin Provisioning)
The virtual disk file starts small and grows as more virtual disk space is used.

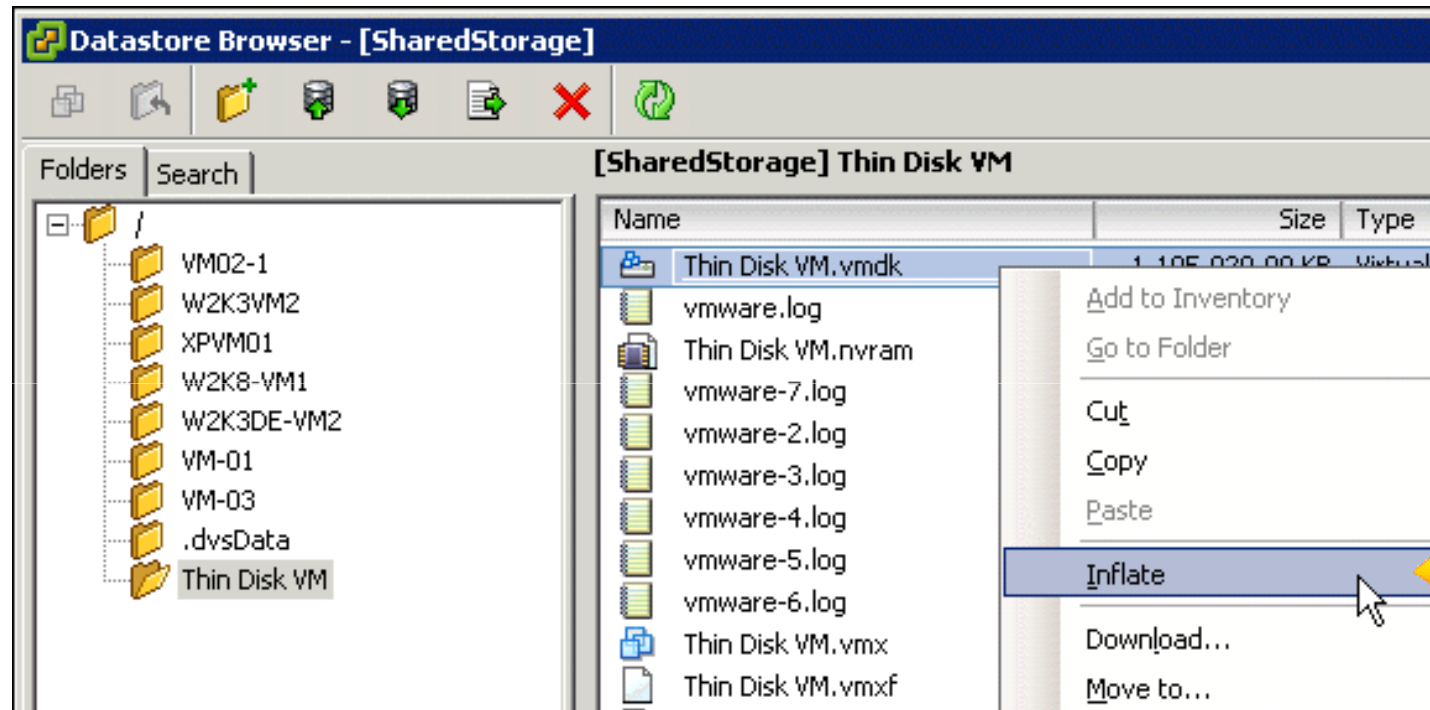
Support clustering features such as Fault Tolerance
Selecting this option will increase the time it takes to create the virtual machine.

Select a format in which to store the virtual machine's virtual disks

- Same format as source
Use the same format as the original disks.
- Thin provisioned format
Allocate full size now and commit on demand. This is only supported on VMFS-3 and newer datastores. Other types of datastores may create thick disks.
- Thick format
Allocate and commit the full size now.

Clone and Migrate Virtual Machine Wizards

Converting Disks from Thin to Thick



vStorage API Categories

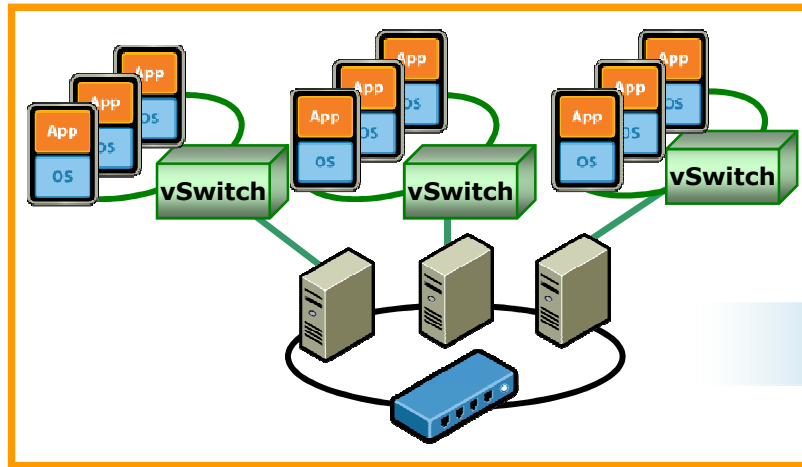
vStorage API	Toolkit name	Details
Management	vSphere SDK	<ul style="list-style-type: none"> • For storage management vendors • Provide end-to-end mapping from VM to disk drive for troubleshooting, trending, utilization, monitoring
Data Protection	Virtual Disk Dev Kit (VDDK), vSphere SDK	<ul style="list-style-type: none"> • Targeted at backup software vendors • Enable scalable LAN-free backups
Site Recovery Manager	SRM Adapter	<ul style="list-style-type: none"> • Leverage array-based replication in automated DR solution • Detect which VMs are getting replicated, automated LUN promotion
Multipathing	PSA Kernel Module Dev Kit (PSA KMDK)	<ul style="list-style-type: none"> • For array vendors • Enable array compatibility, multipath i/o optimization
Array Integration	vStorage APIs for Array Integration (VAAI)	<ul style="list-style-type: none"> • Speed up common vStorage operations by leveraging array-based copy & clone operations • Improve storage management experience for thin-provisioned LUNs



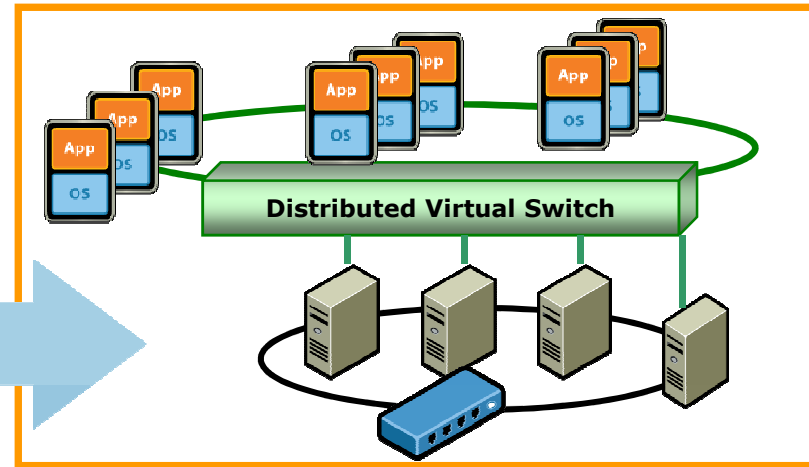
VMware vSphere 4 Networking Improvements

vNetwork Distributed Switch Benefits

VI3 Networking



vSphere 4 Networking



- Dramatically simplifies datacenter administration
- Enables networking statistics and policies to migrate with virtual machines (Network VMotion)
- Provides for customization and third-party development

Third-Party Distributed Switches

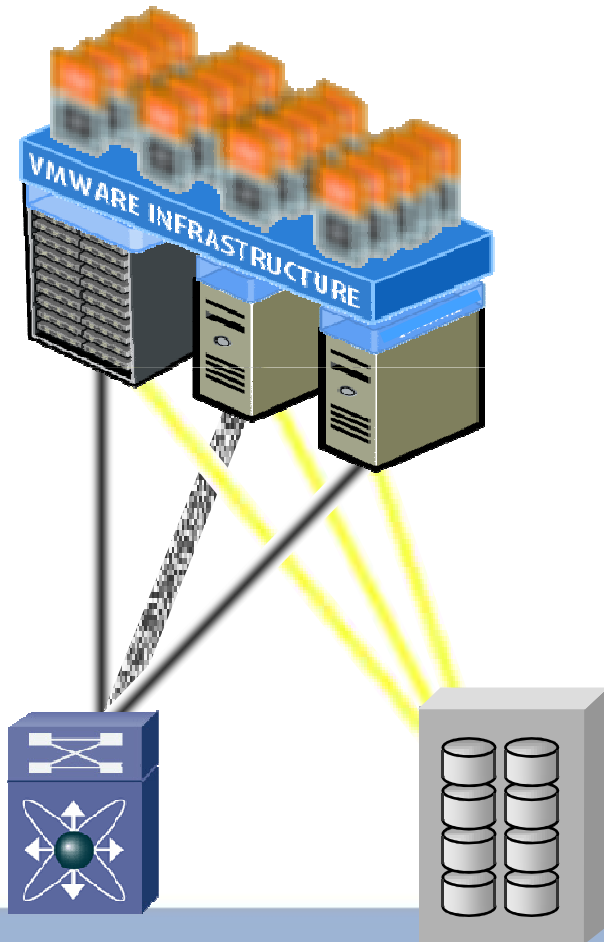


- Aggregated datacenter level virtual networking
- Simplified setup and change
- Easy troubleshooting, monitoring and debugging
- Enables transparent third party management of virtual environments



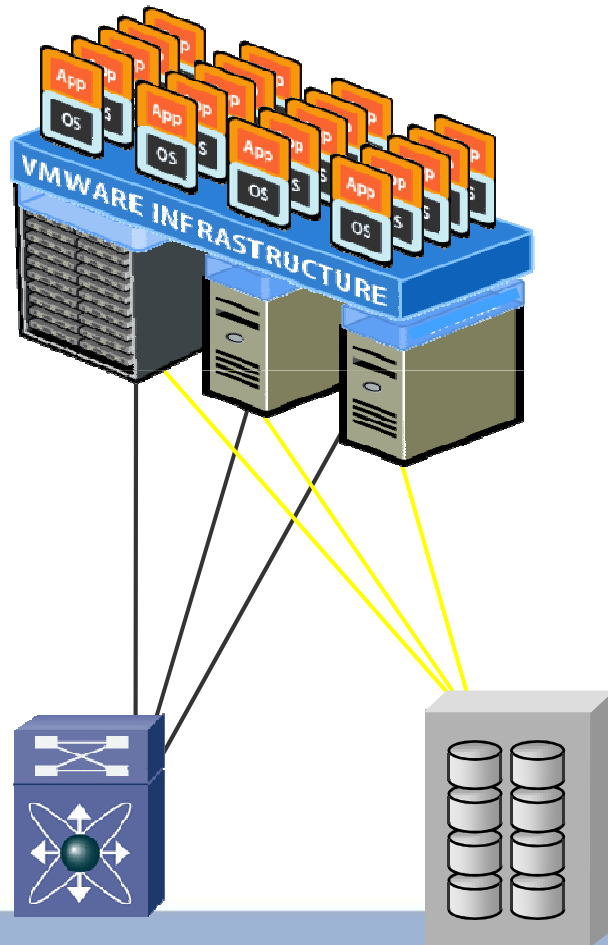
vNetwork Appliance APIs allow third-party developers to create distributed switch solutions.

Transparency in the Eye of the Beholder



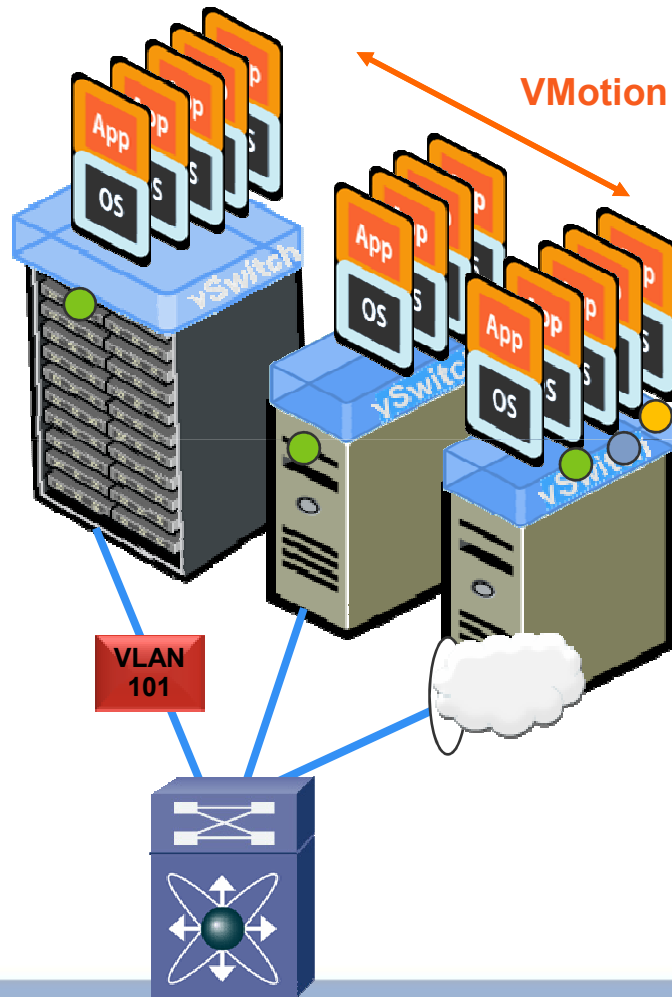
...but its difficult to
monitor & apply
network and storage
policy back to virtual
machines

Transparency in the Eye of the Beholder



Scaling globally depends on maintaining transparency while also providing operational consistency

VN-Link Brings VM Level Granularity



Problems:

- VMotion may move VMs across physical ports—policy must follow
- Impossible to view or apply policy to locally switched traffic
- Cannot correlate traffic on physical links—from multiple VMs

VN-Link:

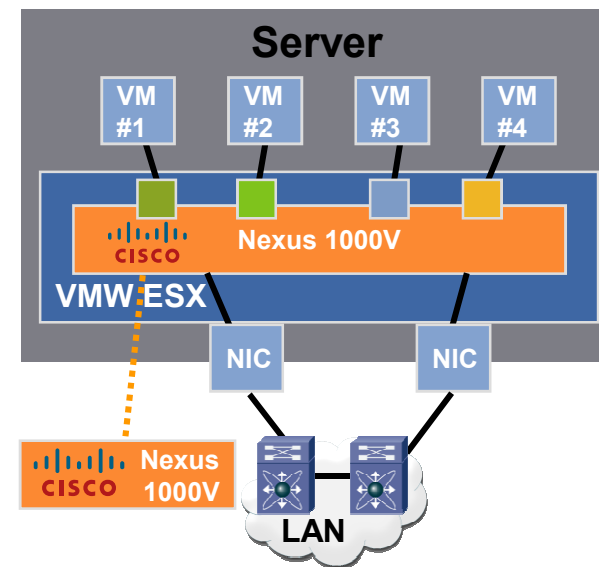
- Extends network to the VM
- Consistent services
- Coordinated, coherent management

VN-Link With the Cisco Nexus 1000V

Cisco Nexus 1000V Software Based

- Industry's first third-party ESX switch
- Built on Cisco NX-OS
- Compatible with switching platforms
- Maintain VirtualCenter provisioning model unmodified for server administration but also allow network administration of Nexus 1000V via familiar Cisco NX-OS CLI

Announced
VMWorld 2008
Shipping 2Q09



BEST OF
vmworld 2008

**Policy-Based
VM Connectivity**

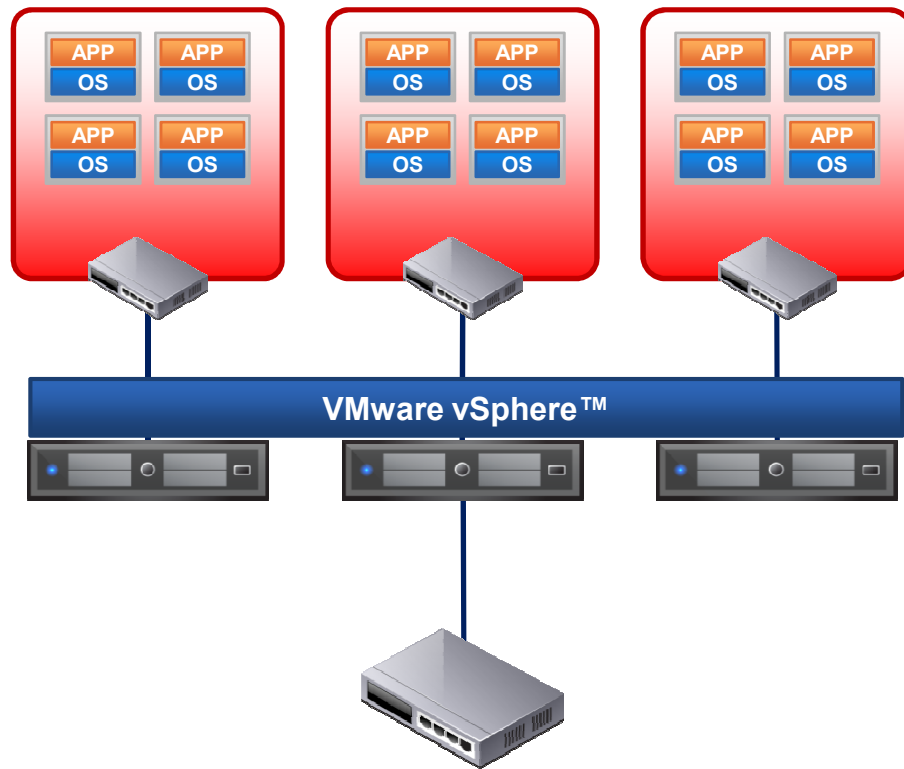
**Mobility of Network
and Security Properties**

**Non-Disruptive
Operational Model**



Security with vSphere 4

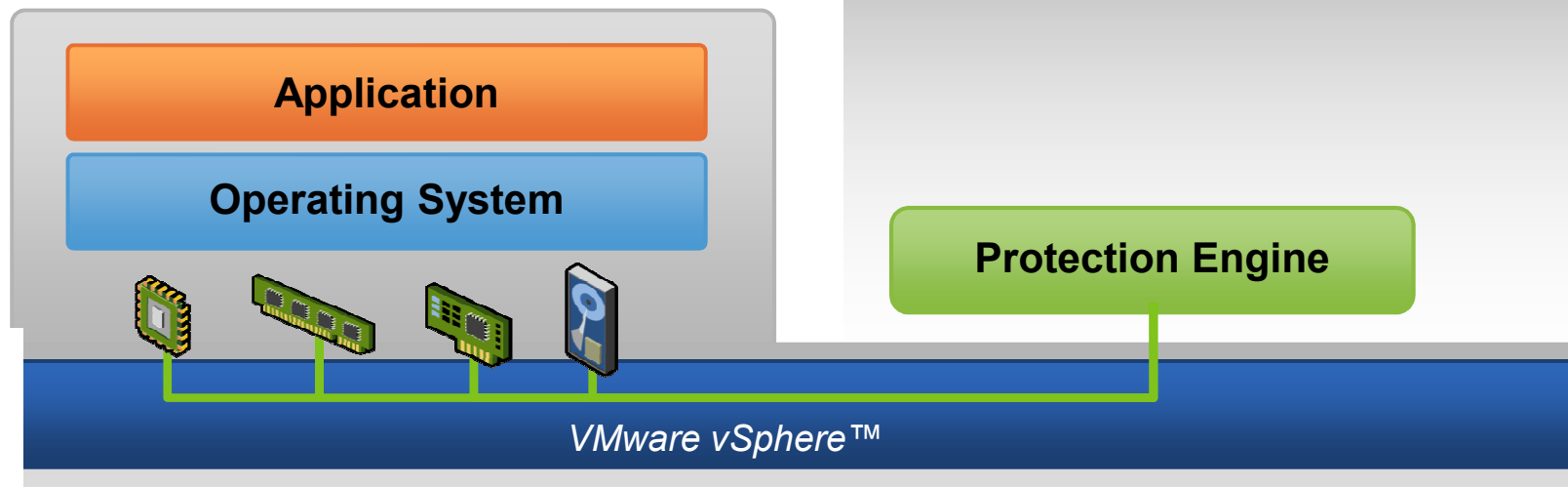
VMware vShield Zones



- Self-learning, self-configuring firewall Service
- VMotion and network-configuration aware trust zones
- Dynamic firewall policy using application protocol awareness
- Dynamic security capacity using infrastructure vServices
- Security policies auto-adapt to network reconfiguration or upgrades

VMware VMsafe API

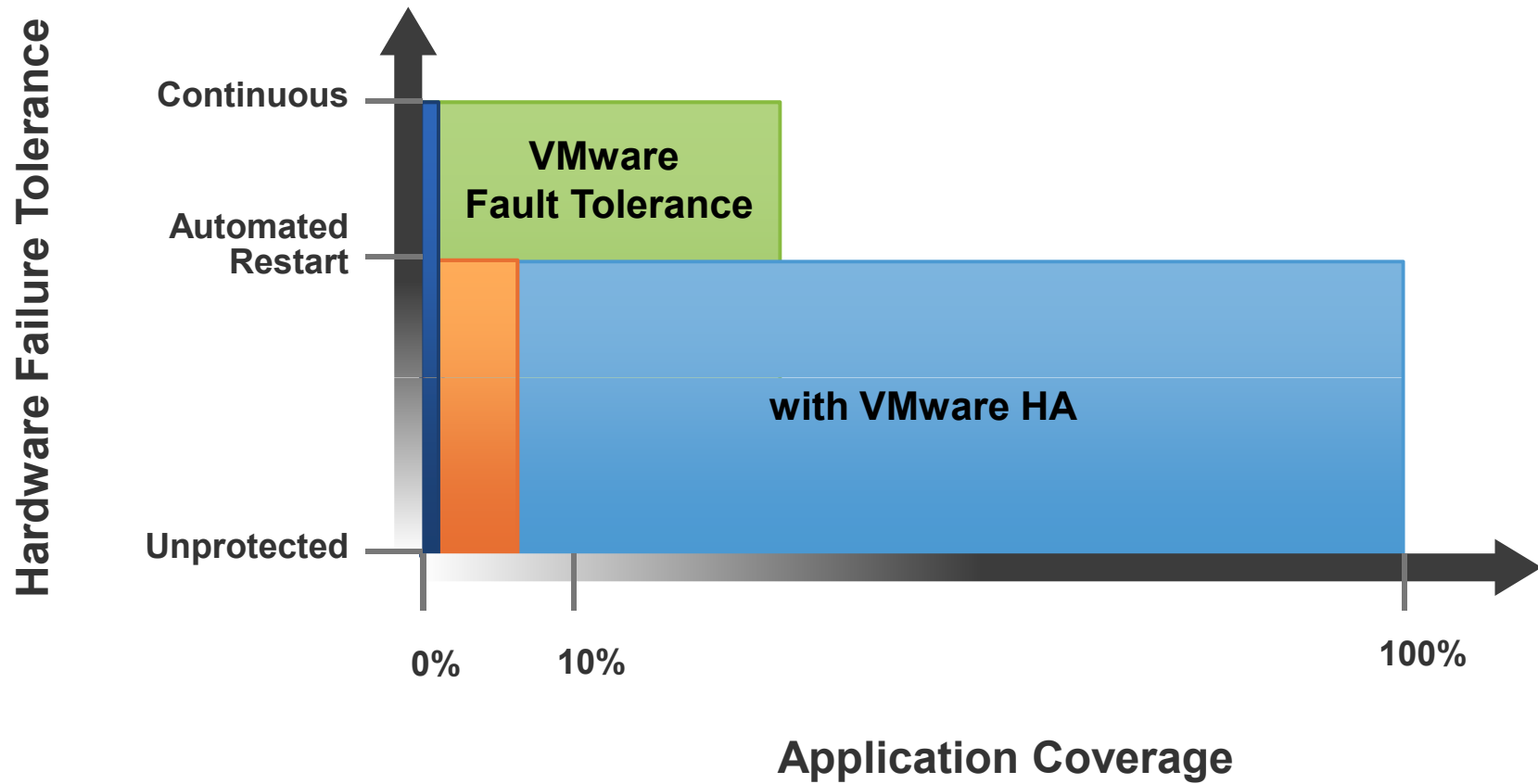
- > API that enables protection of VMs by inspection of virtual components in conjunction with hypervisor
- > Isolation of protection engine from malware
- > Broad ranging coverage of virtual machine CPU, memory, storage and network



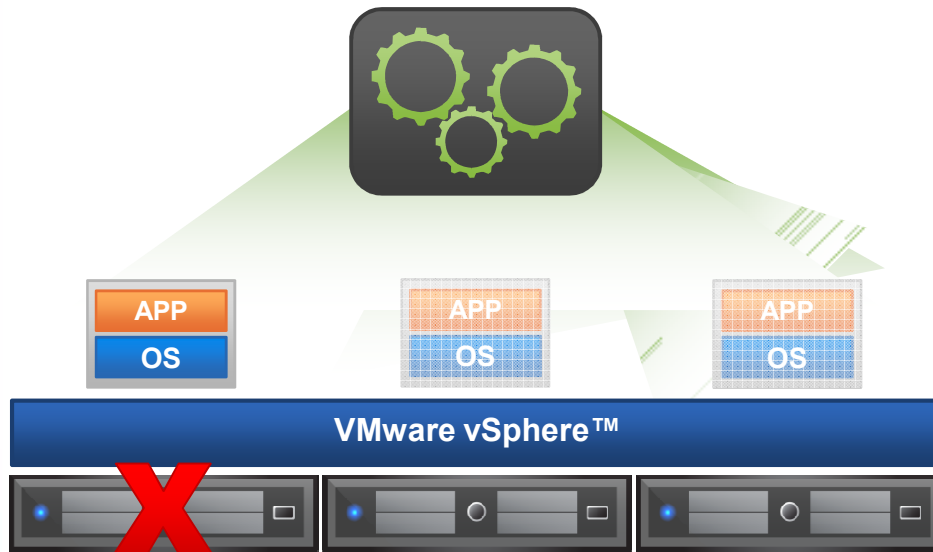


VMware vSphere 4 High Availability

Next Generation High Availability Service Levels



VMware Fault Tolerance

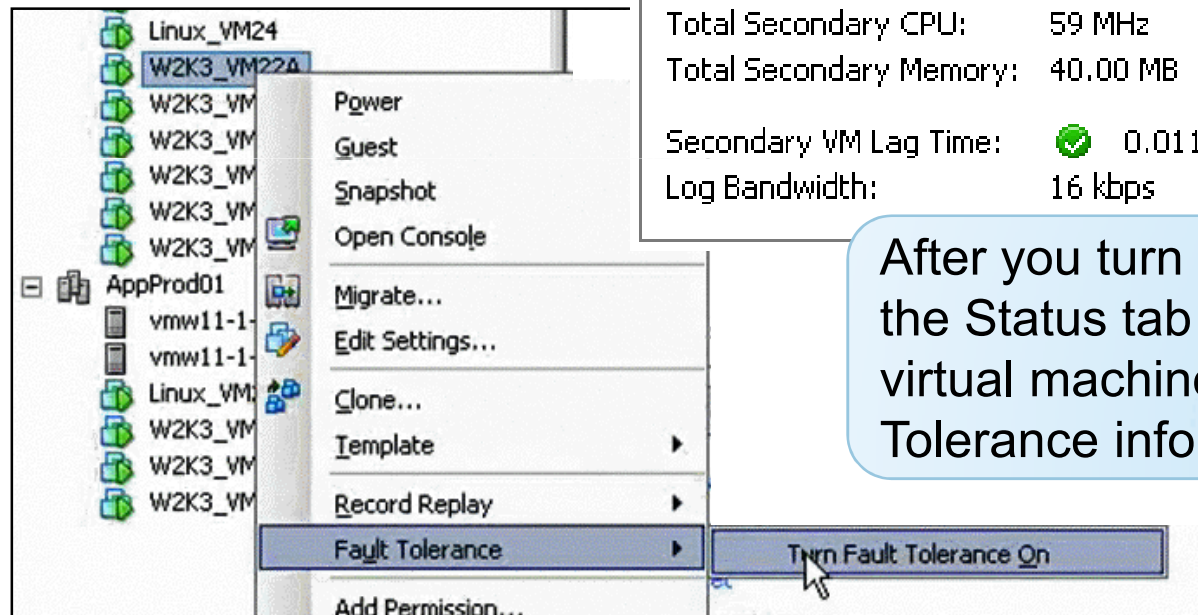


- ❑ Single identical VMs running in lockstep on separate hosts
- ❑ Zero downtime, zero data loss failover for all virtual machines in case of hardware failures
- ❑ Zero downtime, zero data loss
- ❑ No complex clustering or specialized hardware required
- ❑ Single common mechanism for all applications and OS-es

VMware FT provides zero downtime, zero data loss protection to designated virtual machines in an HA cluster.

Turning On Fault Tolerance

Primary Virtual Machine >
Summary Tab



The screenshot shows the VMware vSphere interface. On the left, a tree view lists several virtual machines, including 'Linux_VM24', 'W2K3_VM22A', and 'AppProd01'. A context menu is open over the 'W2K3_VM22A' VM, with the 'Fault Tolerance' option highlighted. A sub-menu is visible, showing the 'Turn Fault Tolerance On' option selected by the mouse cursor.


Fault Tolerance

Fault Tolerance Status: **Protected**

Secondary Location: vcuiqa-ft09.eng.vmware.com

Total Secondary CPU: 59 MHz

Total Secondary Memory: 40.00 MB

Secondary VM Lag Time:  0.011 seconds

Log Bandwidth: 16 kbps

After you turn on Fault Tolerance, the Status tab on the primary virtual machine shows Fault Tolerance information.

Managing FT-Enabled Virtual Machines

Use the commands from the shortcut menu to test and manage the fault-tolerance enabled virtual machine.

VM Name	Power	Guest	Snapshot	Open Console	Edit Settings...	Migrate...	Clone...	Template	Fault Tolerance	Add Permission...	Alarm	Report Performance...	Rename
Win2k3-Ent-32	19	yes							▶				
Win2k8-32													
Win2k8-64		Disabled											



VMware View 3

Take Control of Your Desktops and Applications

Desktop Dilemma

User Requirements

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

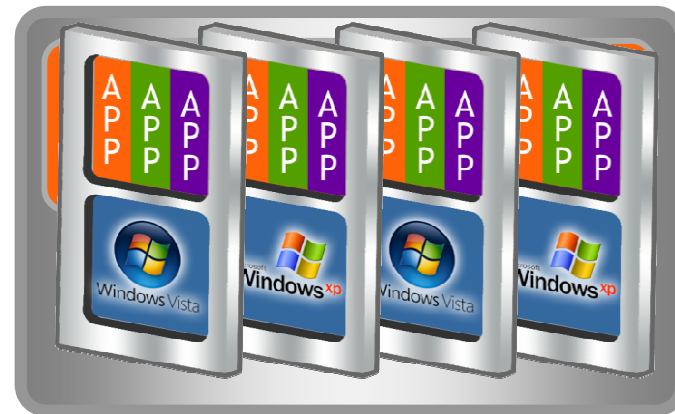
IT Requirements

- > 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

Virtualization is the Solution

Virtualization enables Isolation, Encapsulation & Mobility

- Run different operating systems side-by-side
- Run legacy Win32 apps next to web 2.0 applications
- Move OS, apps, desktop to different devices
- Separate user data and settings into a universally accessible VM



Simplify by Centralizing Management

VMware decouples Desktop image from the PC

Desktops run in secure datacenter

Present Desktop into clients over Network



Meeting 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

Security





Hvala!