BCT9708 Innovative Approaches for High Availability / Disaster Recovery in the VMware Server Environment

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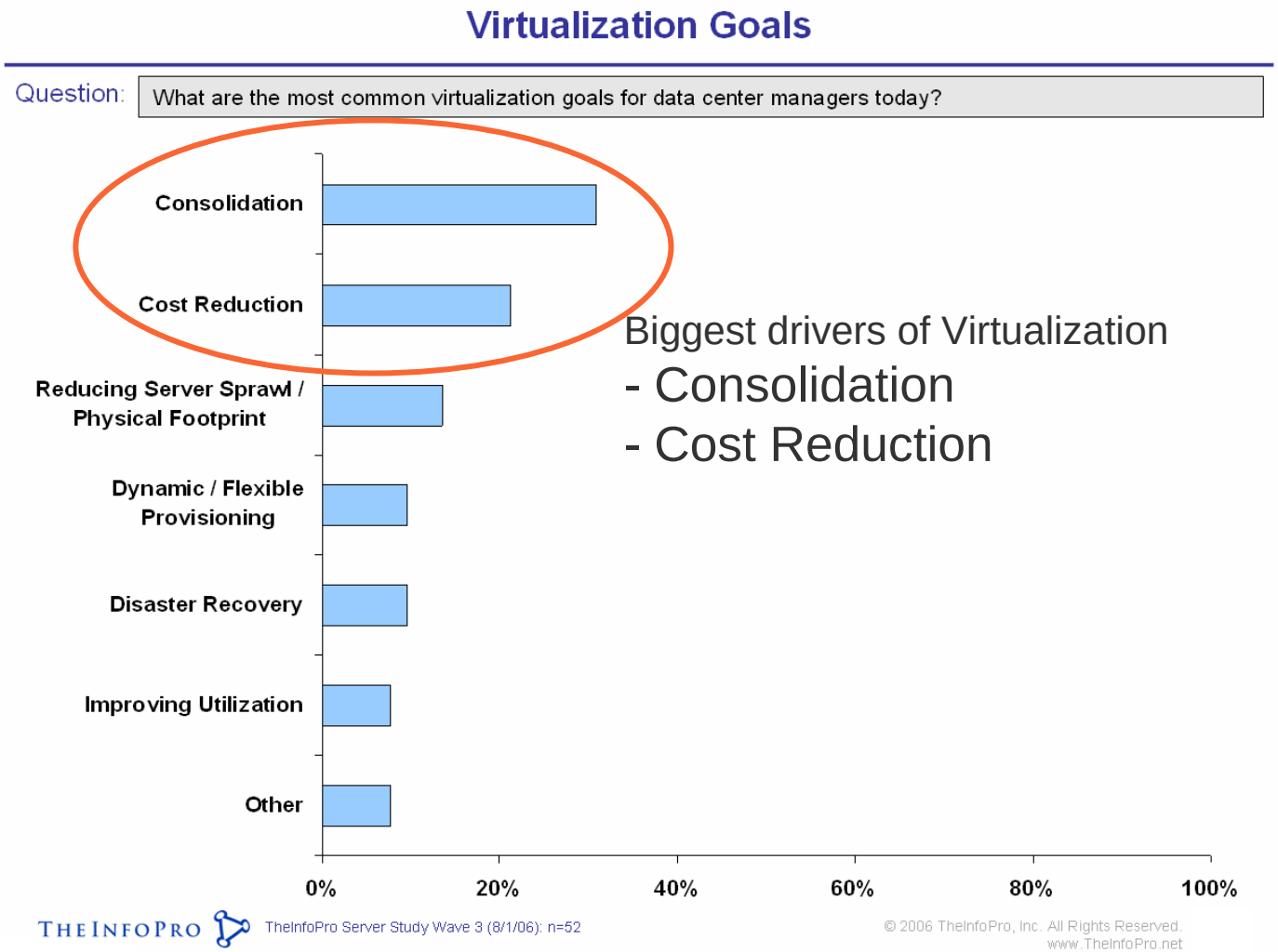
VMWORLD 2006

Agenda

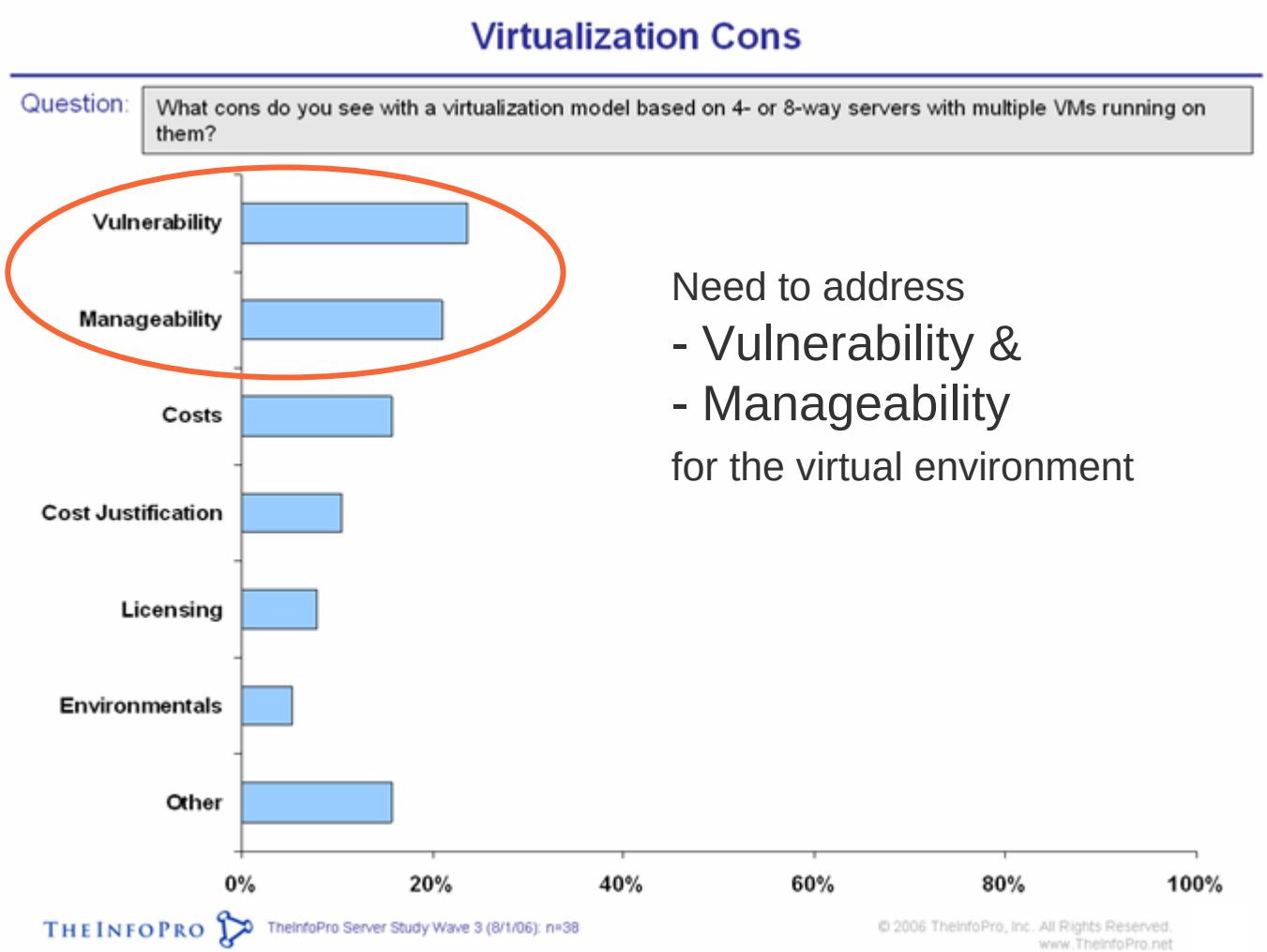
- HA / DR Challenges in a virtual server environment
- Existing availability solutions for the virtual environment
- Veritas Cluster Server for VMware ESX
- Demo

Virtualization Goals



Biggest drivers of Virtualization
- Consolidation
- Cost Reduction

Virtualization Consideration Points



Need to address
- Vulnerability &
- Manageability

for the virtual environment

Vulnerability Issues

Virtualization can increase the risk of downtime

Server consolidation
10~20 servers in one box

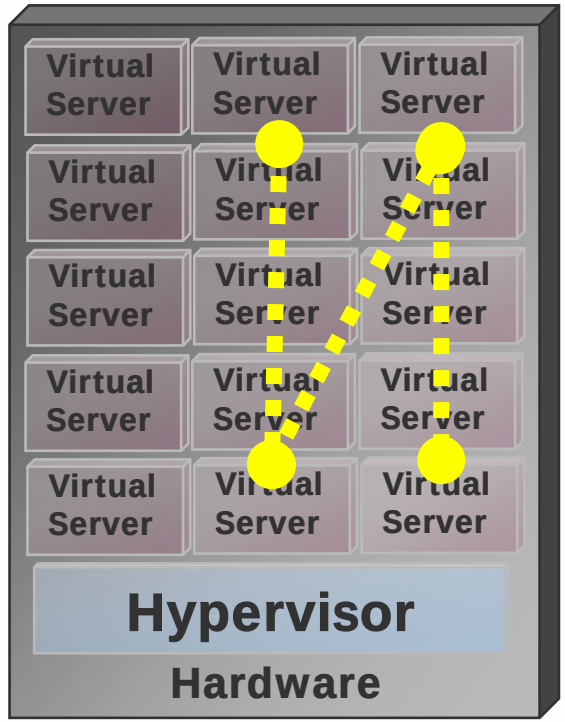
“it’s like having too many eggs in one basket”

Adding more layers creates complexity.

- Physical servers
- **Virtual servers**
- Applications
- Network components
- Storage components
- **Virtual links**

Manageability Issues

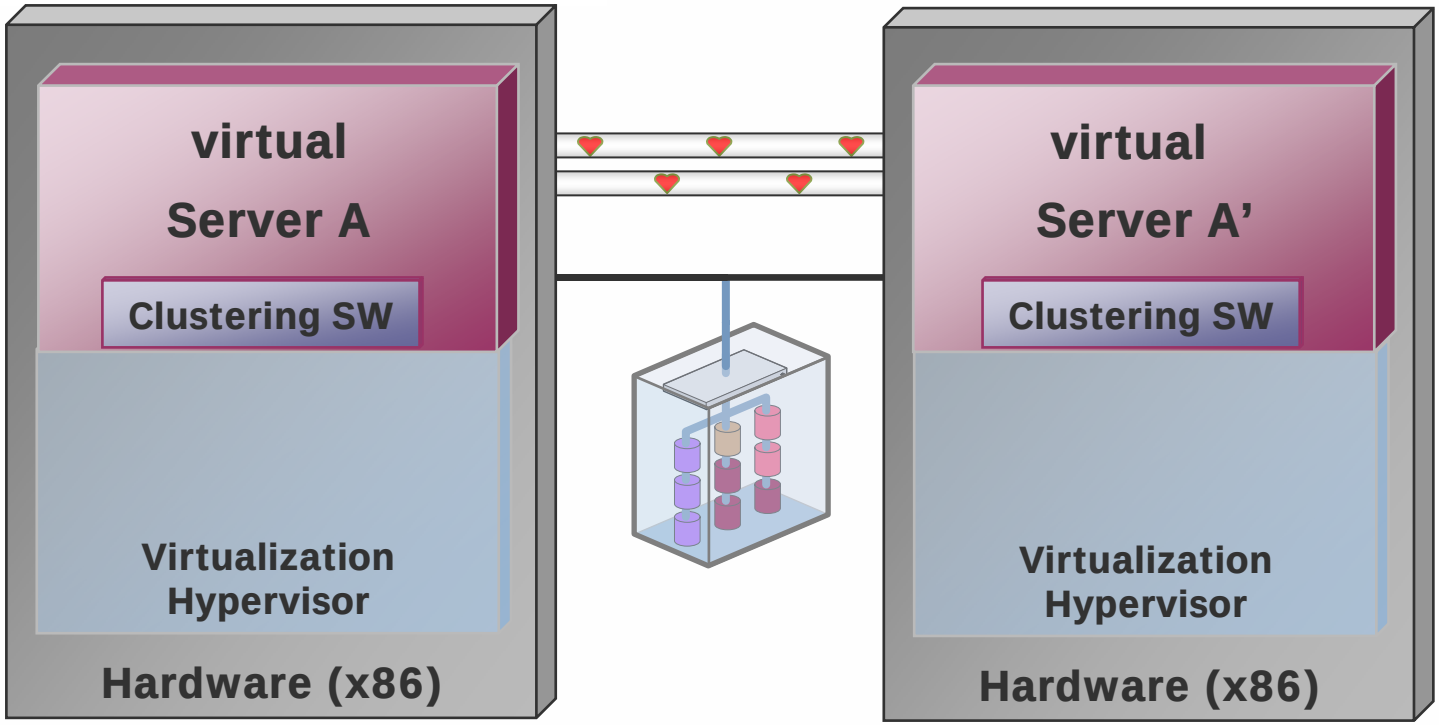
- Another “platform” has been added
- Many existing data center tools built on physical server model and don’t adapt well to virtual server architectures
- Servers, Apps now mobile, need to be tracked
- Virtual interface/links need to be maintained



“I want the visibility and manageability of a physical environment”

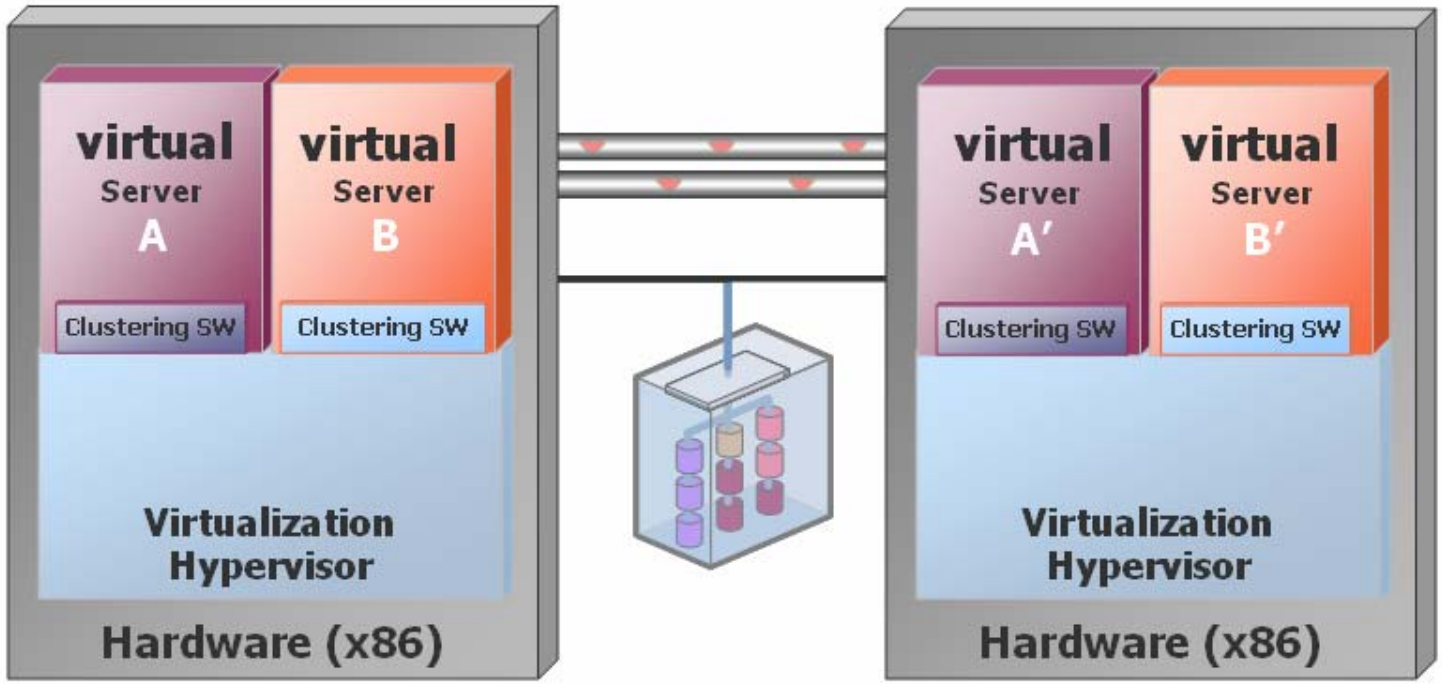
Solution?

Traditional “Guest OS” Clustering



- Traditional clustering running within the guest OS
- Is this as good as it gets?

Limitations to the Existing Solution



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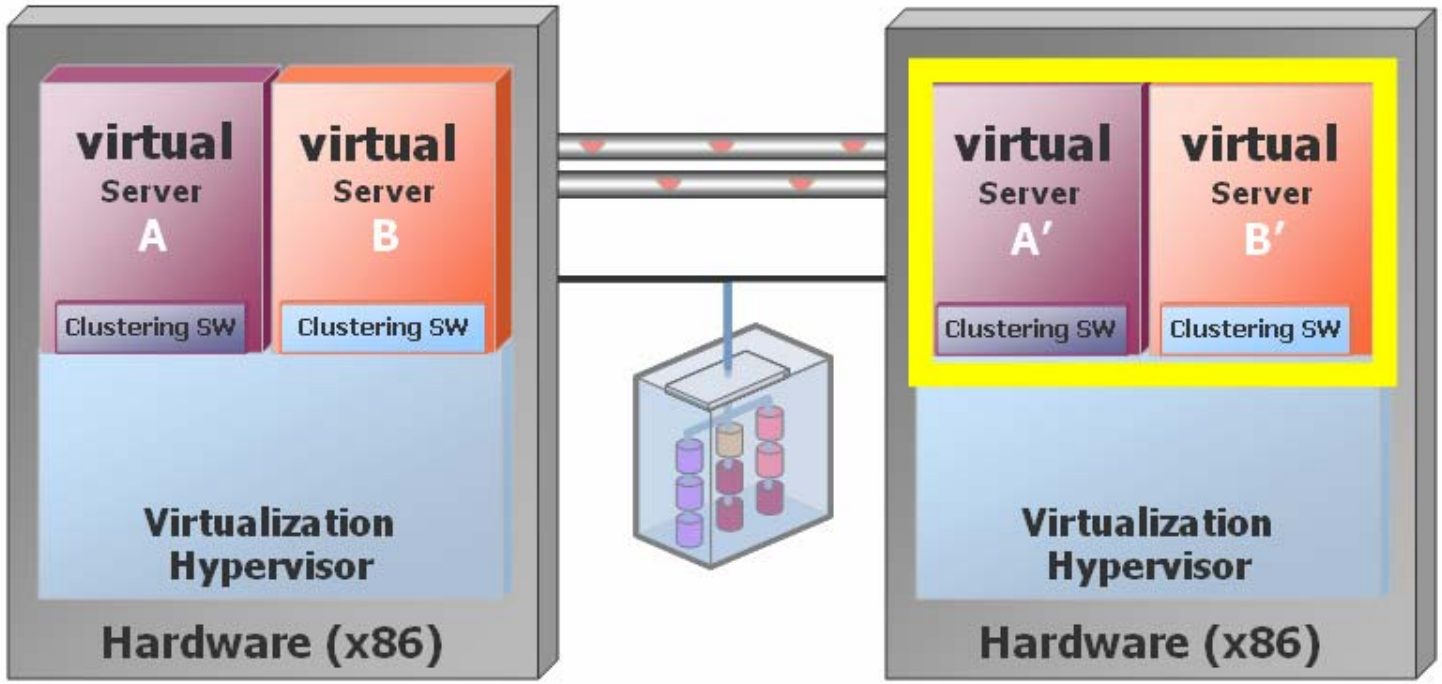
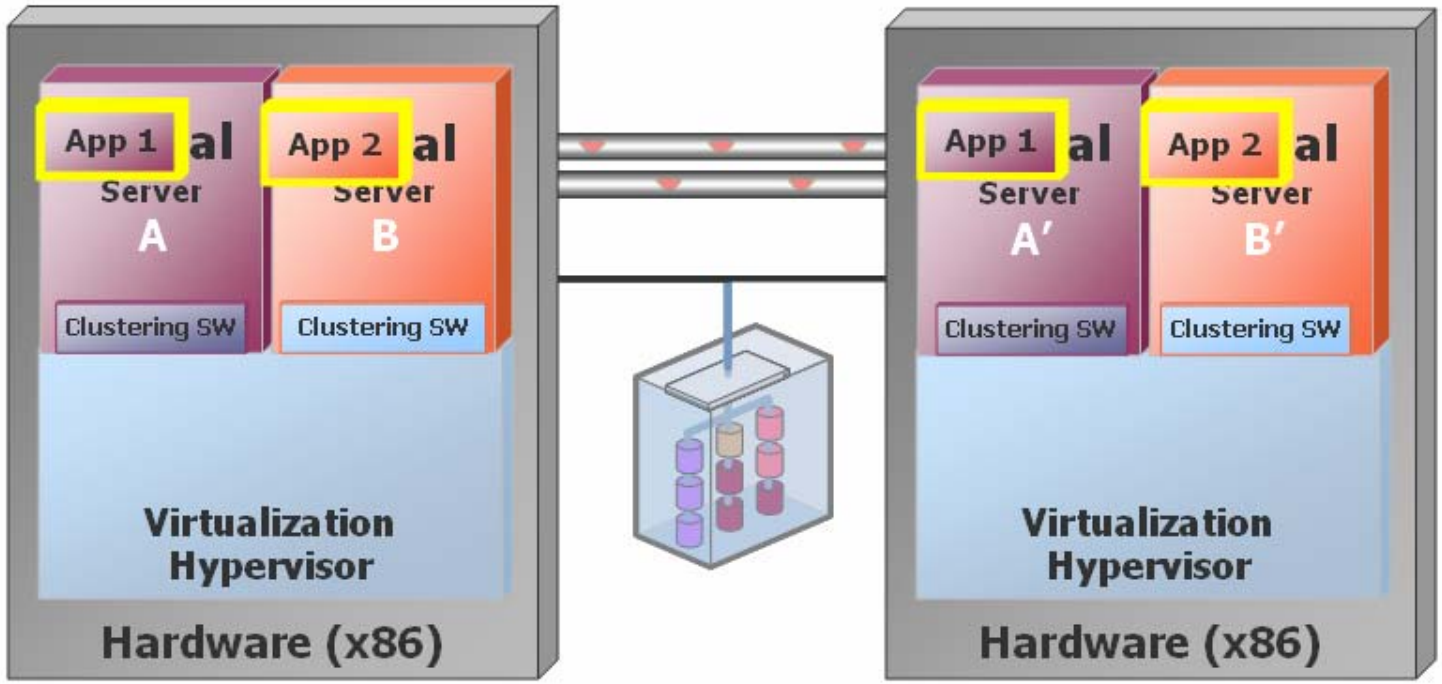


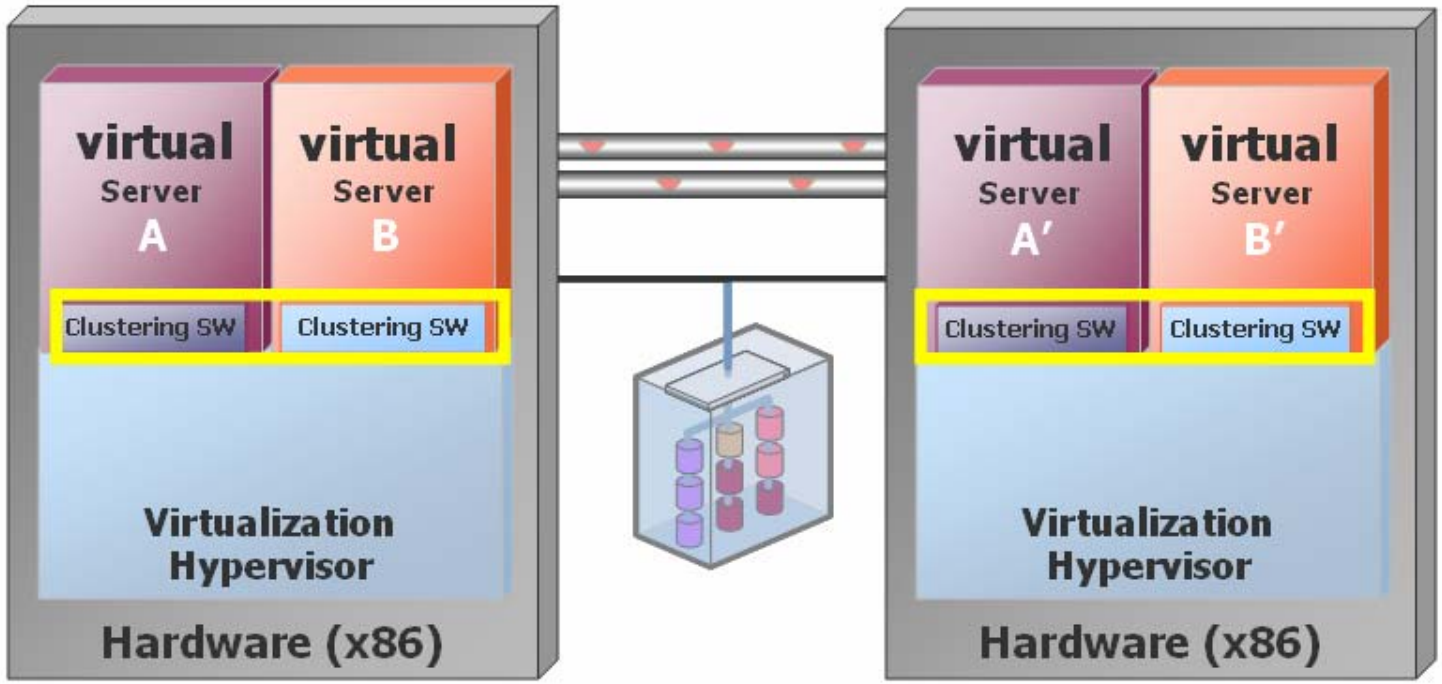
- Passive Virtual Machines are standing by, using resources

Limitations to the Existing Solution



- Passive Virtual Machines are standing by, using resources
- Additional VM's cost more $ in application licensing

Limitations to the Existing Solution



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- Individual cluster software overhead → performance issue

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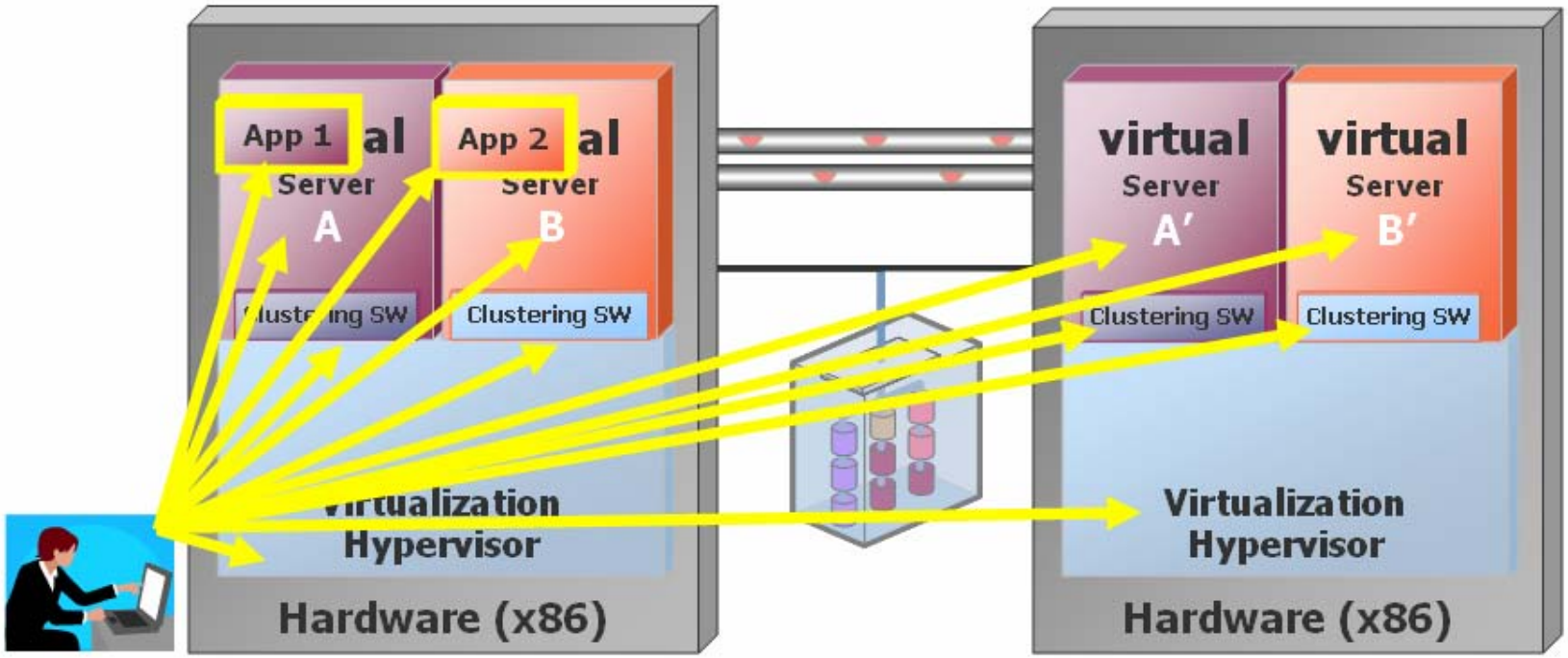

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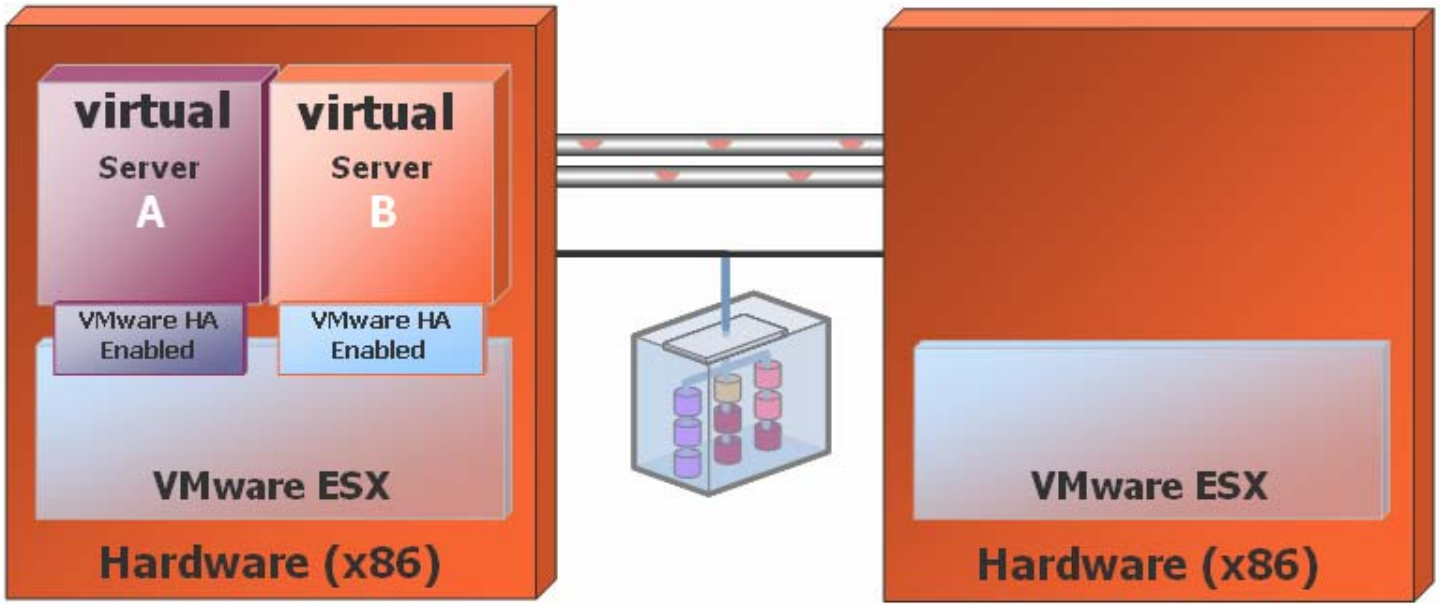
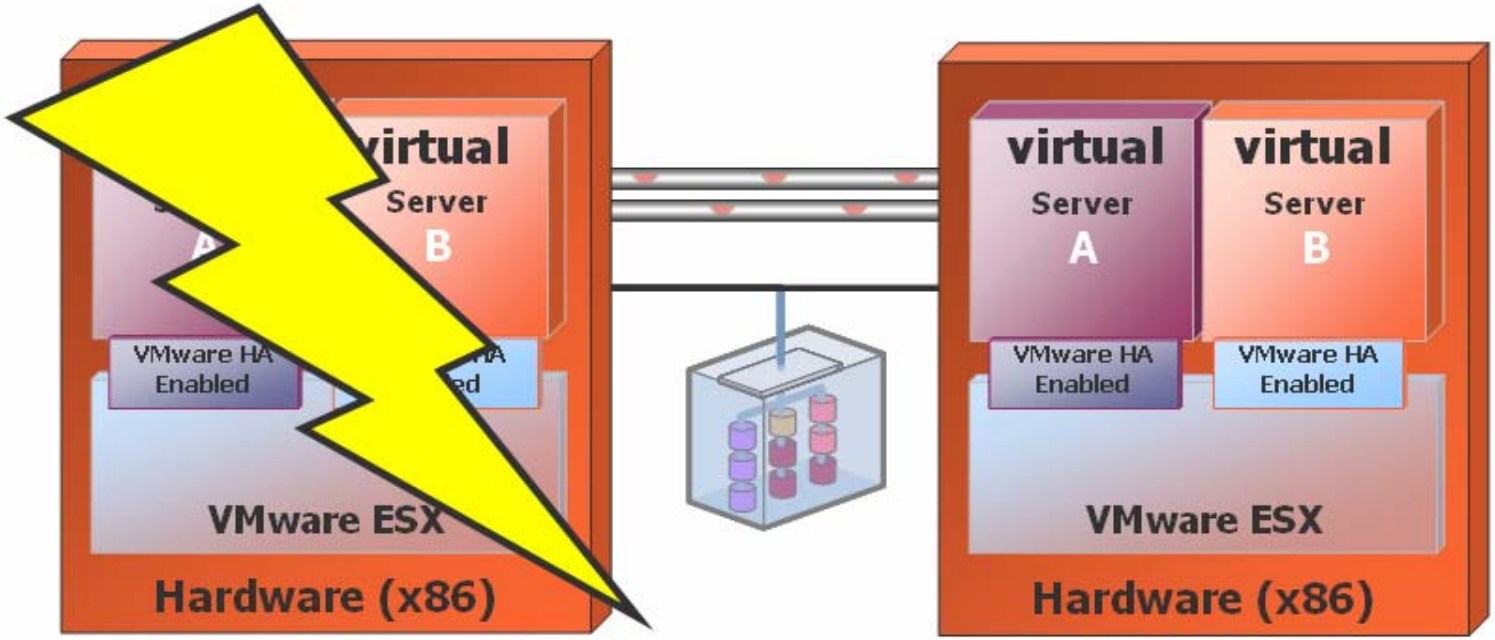
- Additional VM's cost more $ in application licensing
- Individual cluster software overhead → performance issue
- Management complexity (hypervisor, servers, OS, apps, scripts)

VMware HA

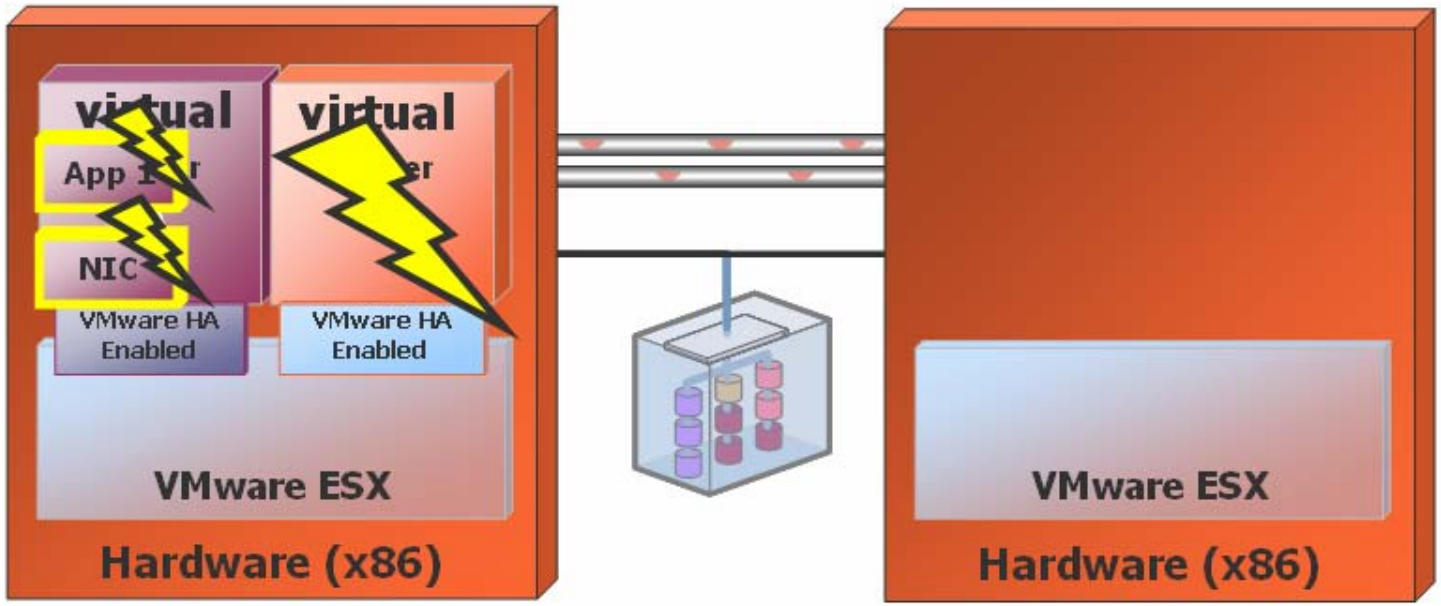

virtual
Server
A
virtual
Server
B
VMware HA
Enabled
VMware HA
Enabled
VMware ESX
Hardware (x86)
VMware ESX
Hardware (x86)

VMware HA



VMware HA - Great protection against physical server failure. But…

VMware HA



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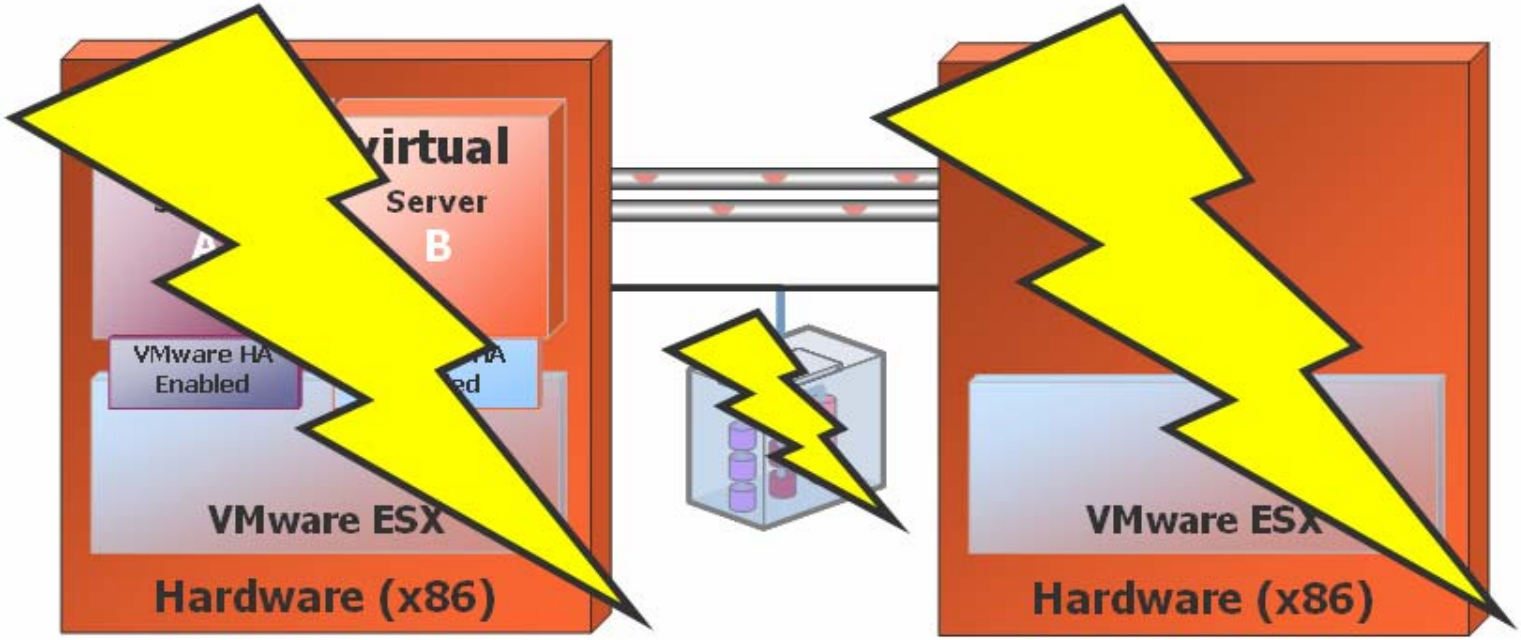
- Does not protect against VM / App / Resource failures

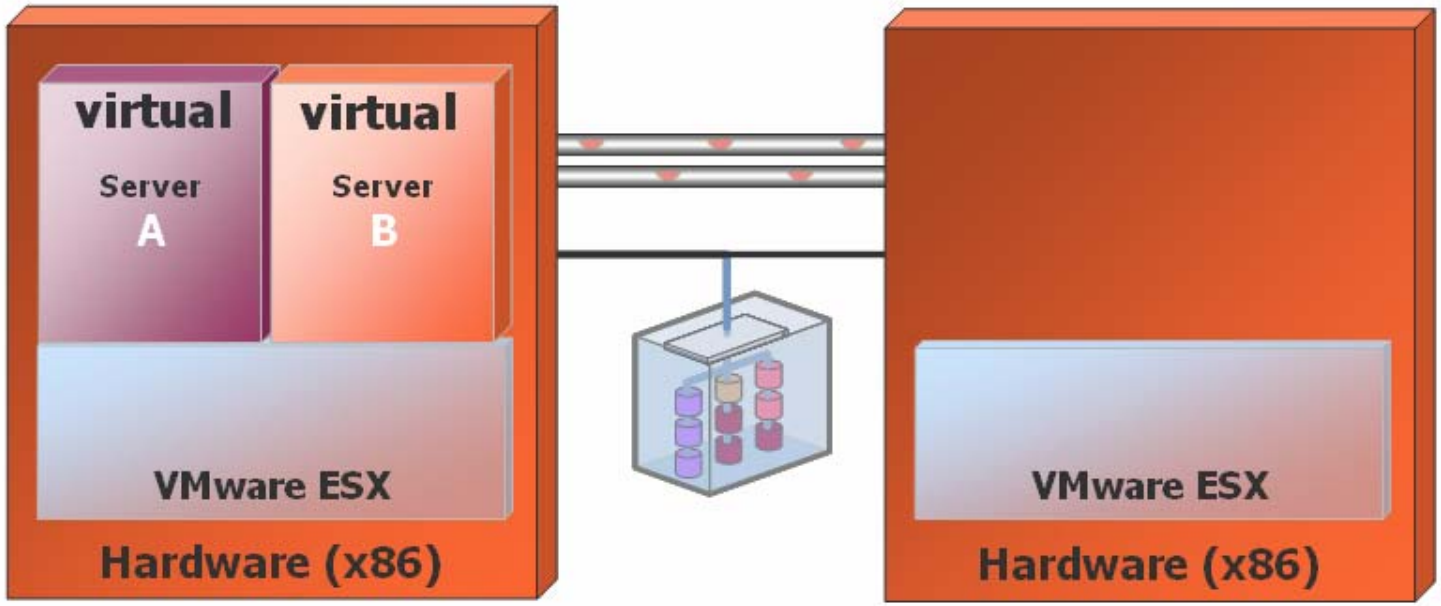
VMware HA



VMware HA - Great protection against physical server failure. But…

- Does not protect against VM / App / Resource failures
- Does not protect from wide area disasters
- Does not provide automated response / notification

VMotion, DRS: for “known” activities only



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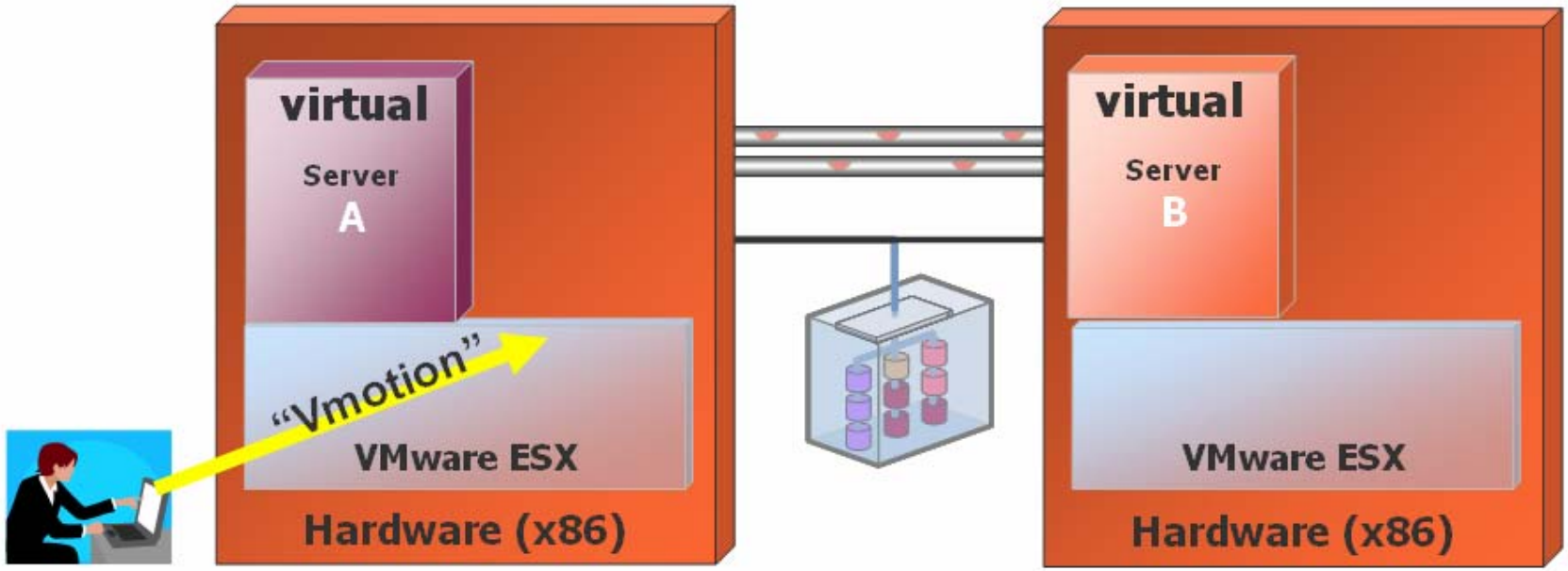

VMotion, DRS - Great for planned maintenance & load balancing.
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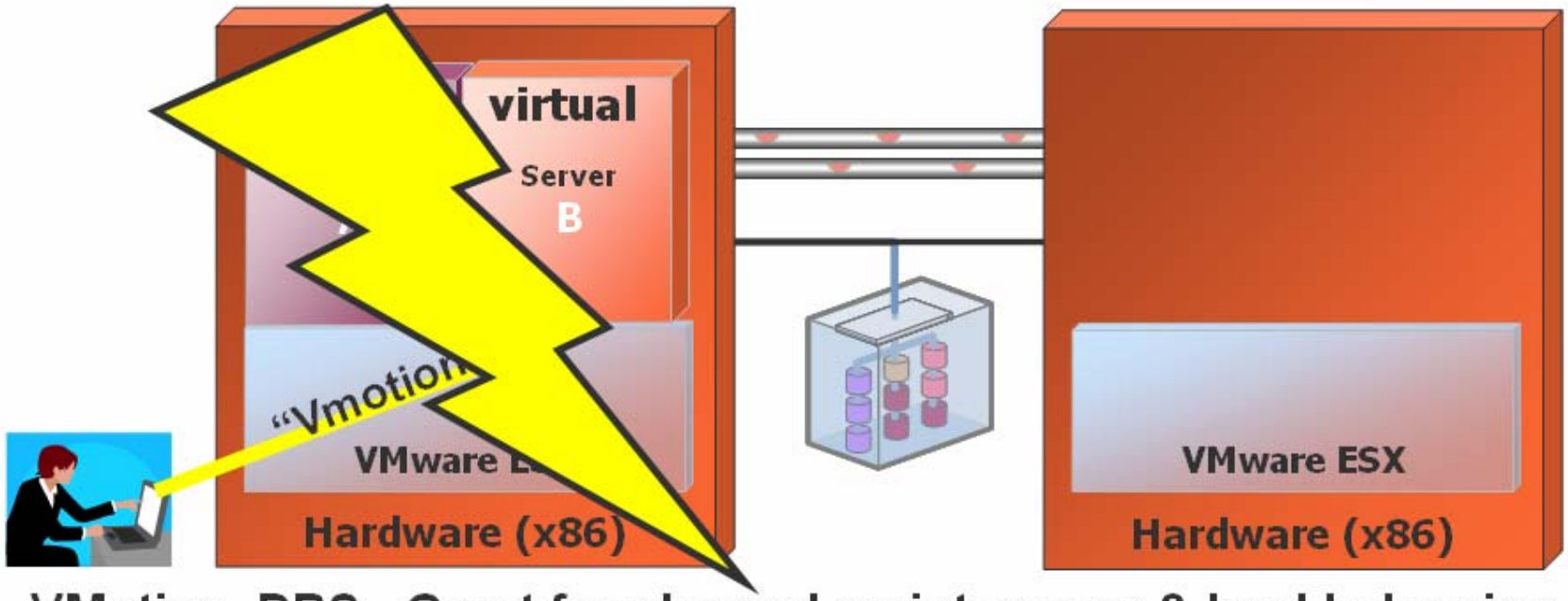
VMotion, DRS: for "known" activities only



VMotion, DRS - Great for planned maintenance & load balancing. But…

- Requires virtual machines to be in a running state
- Does not protect from unplanned downtime and sudden outages

Veritas Cluster Server (VCS)

- **#1 Market Share** in cross-platform server clustering
  - **Source: IDC 2006 IDC Clustering and Availability Software Survey**

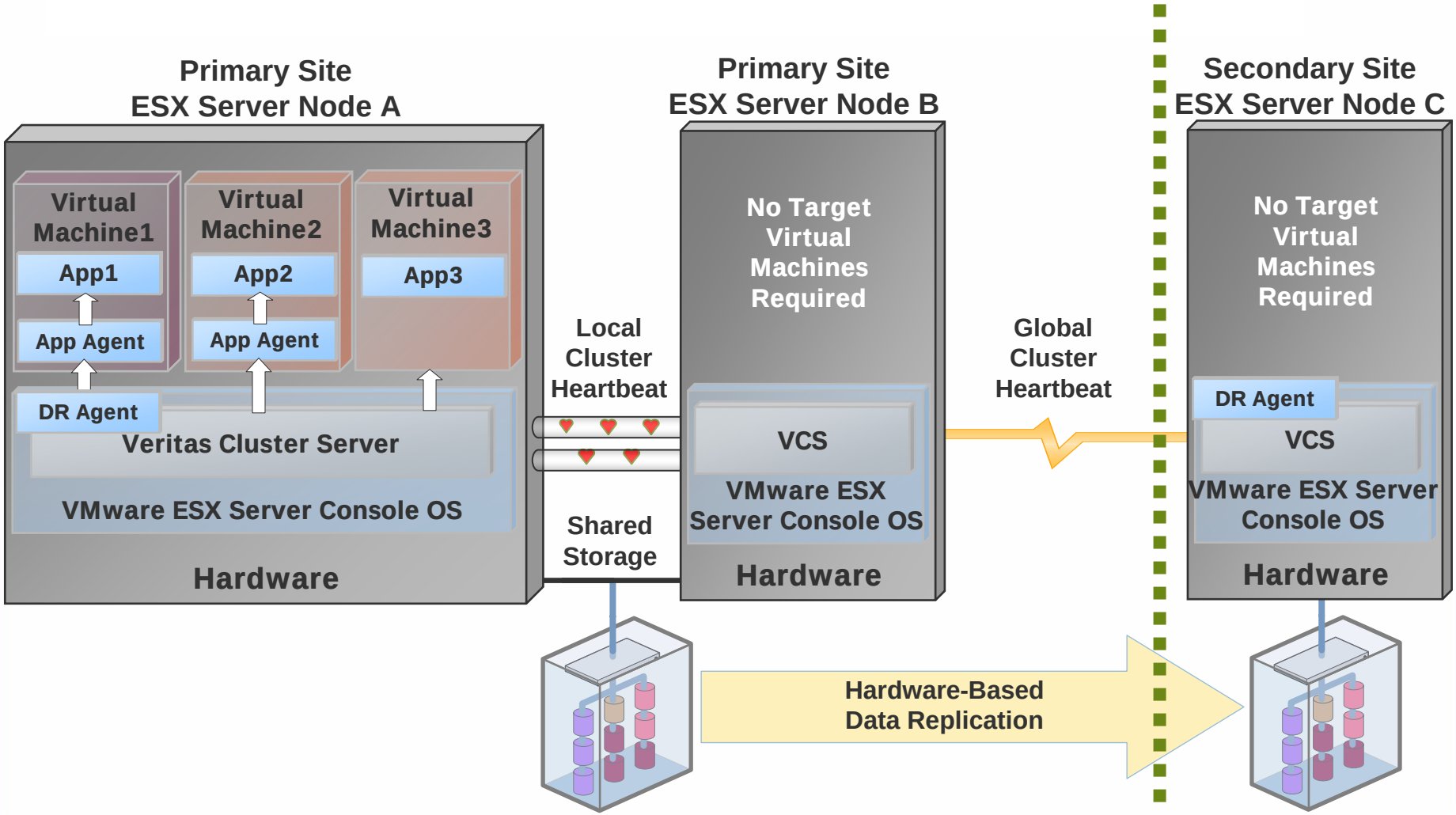
- Provides **High Availability** and **Disaster Recovery** all in one package

- **Supported Platforms:**
  - Windows NT, 2000, 2003
  - Linux (RedHat, SUSE)
  - Solaris, HP/UX, AIX
  - **VMware ESX Server**

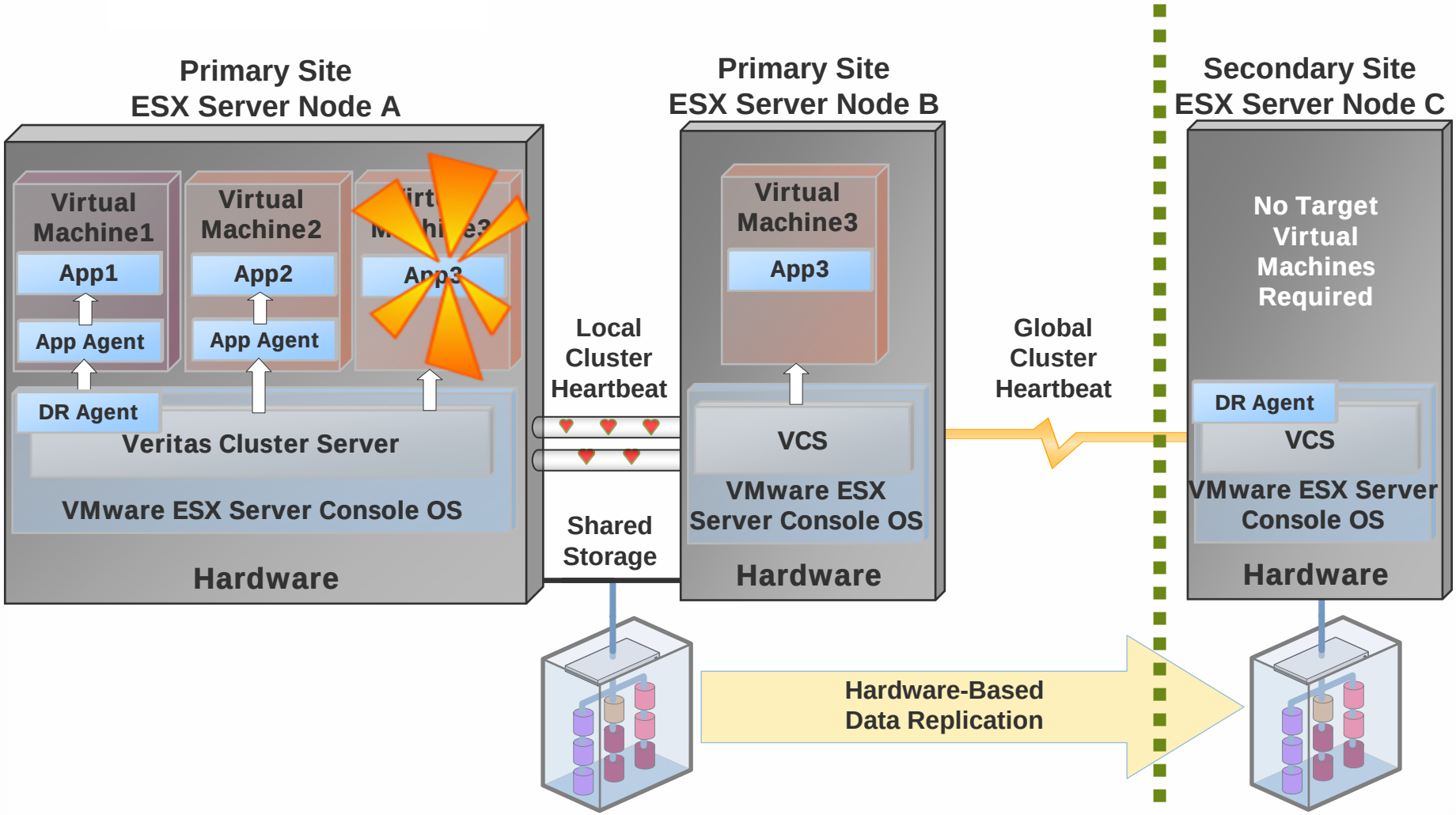
Veritas Cluster Server for VMware ESX Server Highlights

- **Virtual machine and application monitoring**
  - Provides higher level of availability by monitoring application and resources as well as the server
- **Multi-cluster management and reporting**
  - Manages multiple local and remote clusters in physical and virtual environments from a single console, regardless of OS
- **Leverage VMware ESX Server advanced features**
  - Recognizes and works seamlessly with VMotion and DRS
- **Automated Disaster Recovery**
  - Configure / Test / Provide Disaster Recovery using VCS

Veritas Cluster Server 5 for VMware ESX Server



VCS in Action



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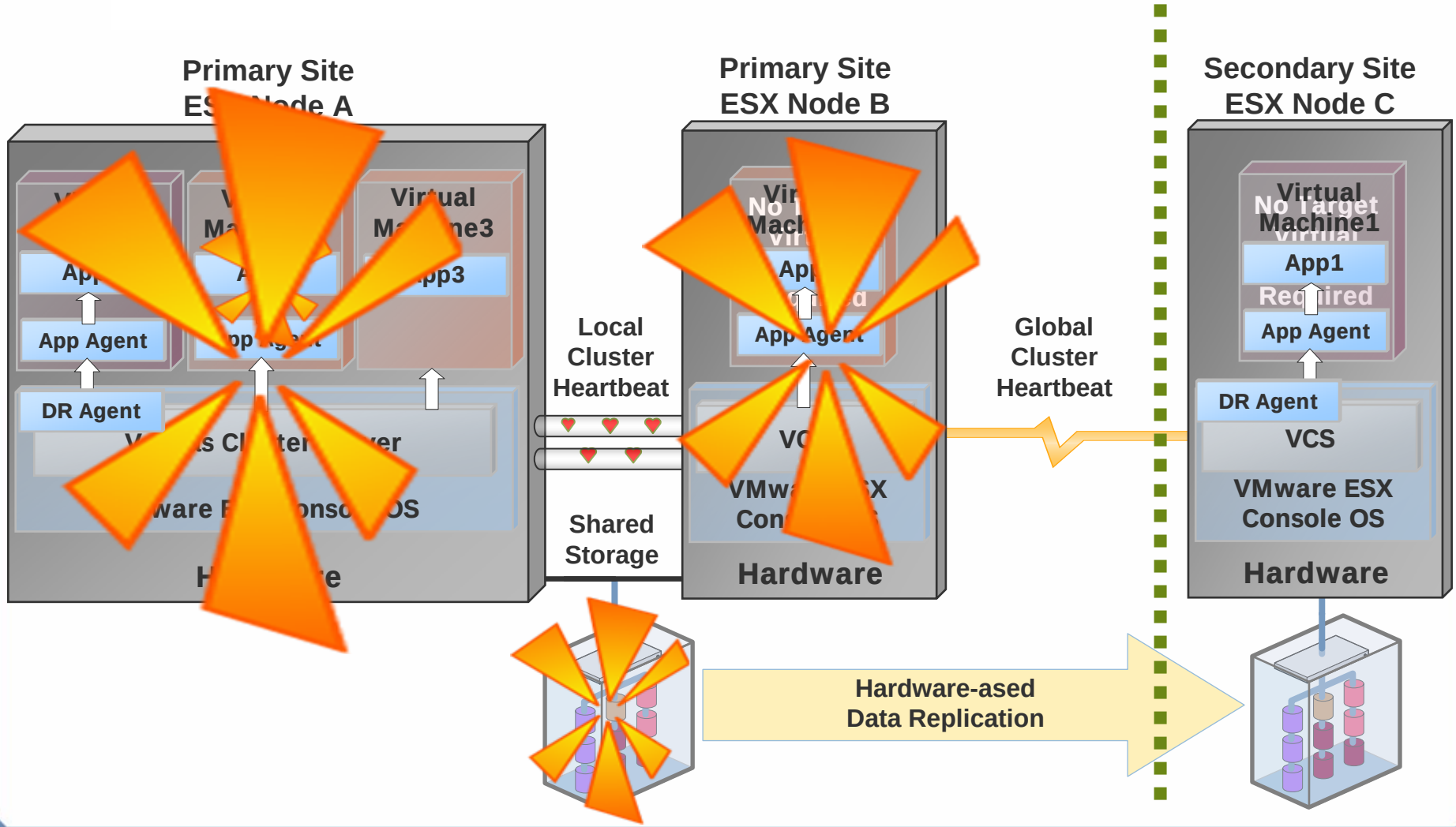
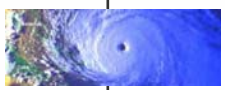


Benefits of using VCS 5 for VMware ESX

Added Protection

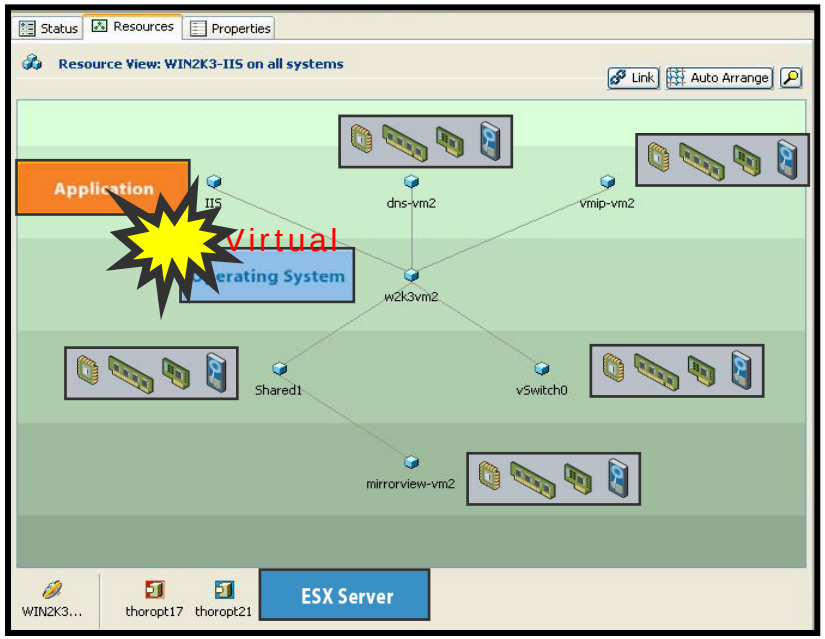
- **Comprehensive availability for the production applications**

With VMware monitors and provides failover for…		With VCS Provide added protection for…
Physical server failures	ESX Server	Physical server failures
	Operating System	Individual virtual server failures
	Application	Application failures within the guest OS
		Automated disaster recovery

Benefits of using VCS 5 for VMware ESX

Granular Management

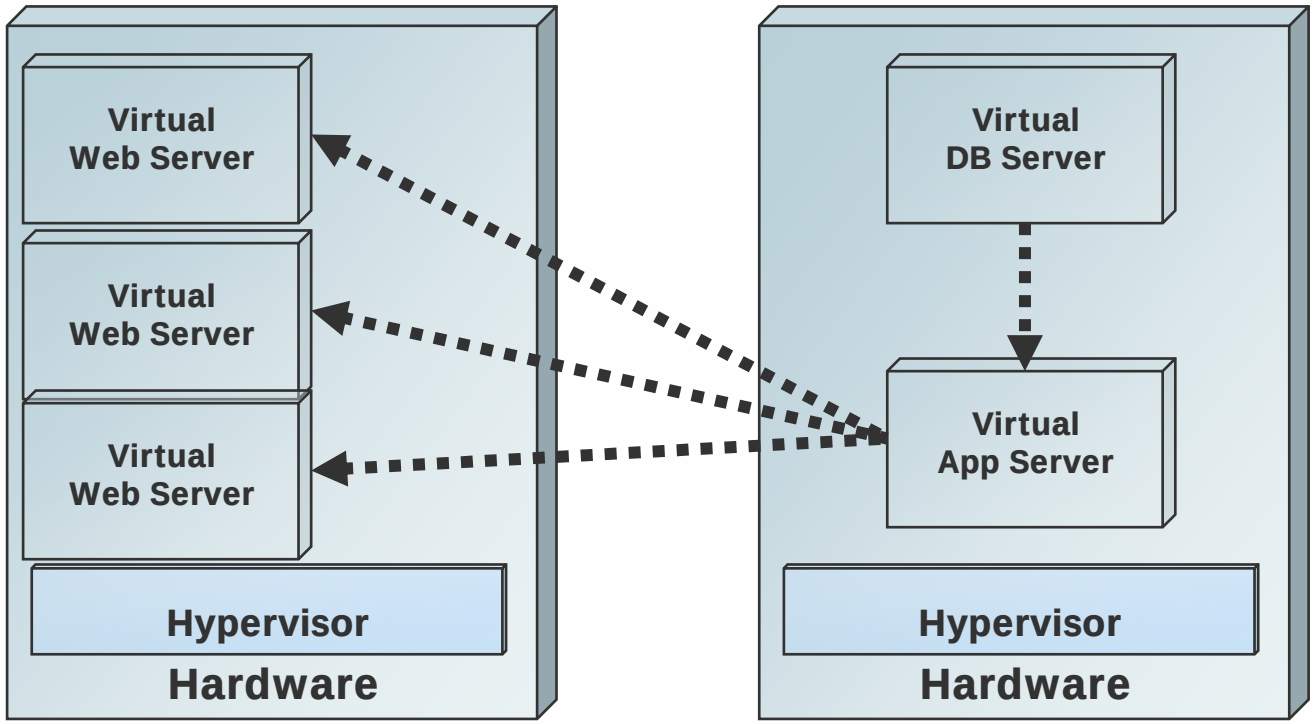
- Granular management, just like a physical environment
- Simple to manage (mouse clicks) both Windows and Linux
- Automated response and notification to various situations
- Maintain resource dependencies



Benefits of using VCS 5 for VMware ESX

Virtual Machine Dependencies

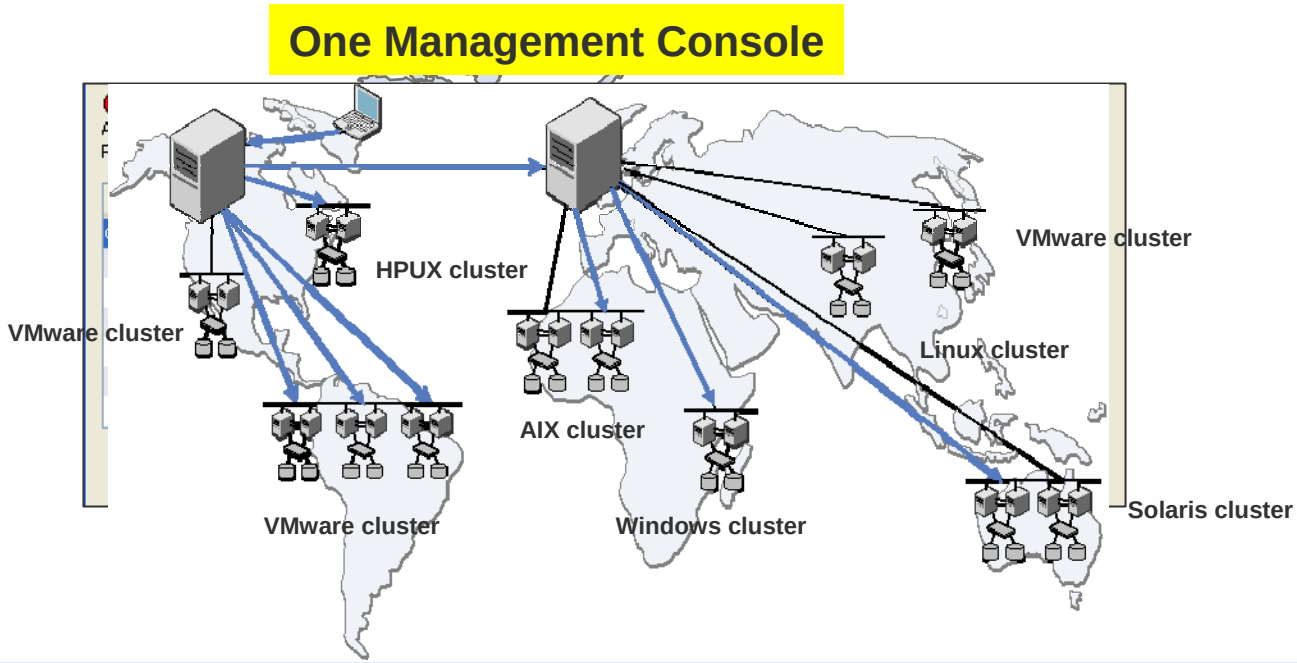
- Enforce virtual machine dependencies
- Support services that span multiple virtual servers



Benefits of using VCS 5 for VMware ESX

Across Data Centers

- Maintain availability during a site-wide disaster
- Simplified automated disaster recovery process
- Have one view of all VCS clusters across the globe
- Use one framework to manage multiple data centers

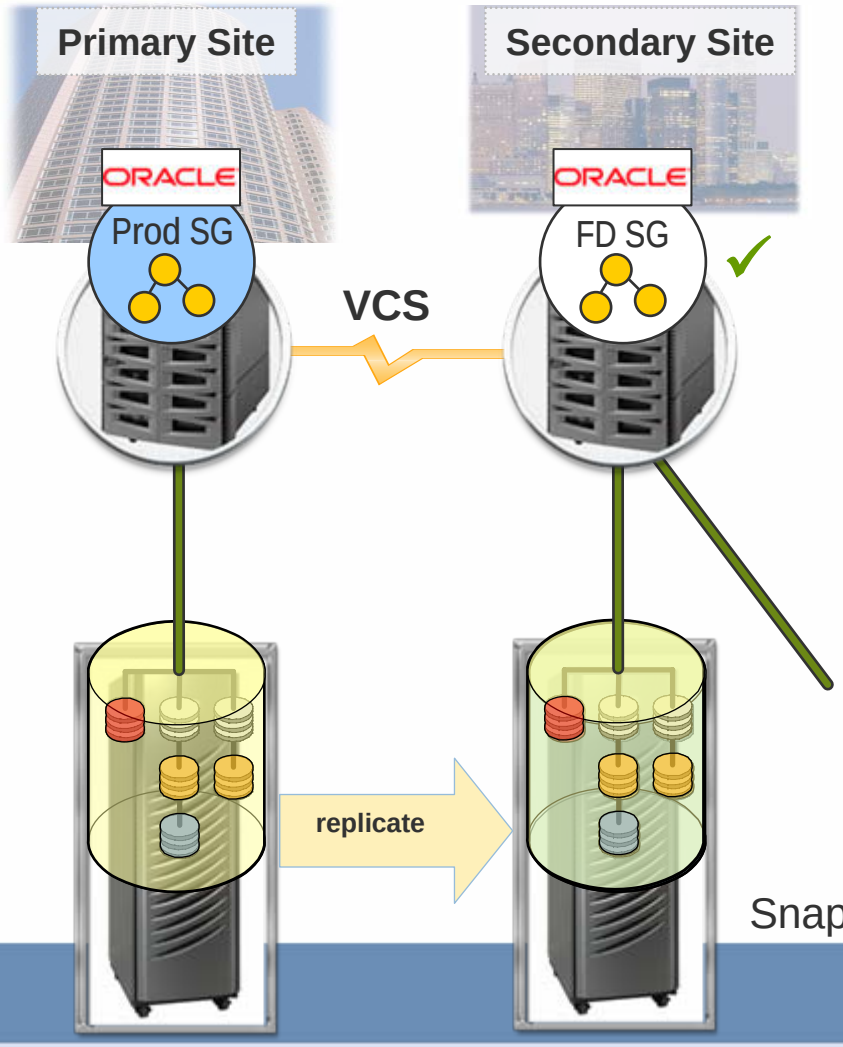


Benefits of using VCS 5 for VMware ESX

Virtual Environment Specific

- VCS allows for ***N+M clusters***
  - No need to have 2x the hardware
  - Cluster according to performance, cost requirements
- ***VMotion, DRS compatible***
  - Utilize VMware features without complications
- ***No*** need to install ***duplicate stand-by failover instances***
  - Only one application to license
  - Install VCS only once
- Fire Drill tool ***verifies the virtual disaster recovery plan***
  - No impact to the production environment
  - DR plans should be tested whether it is physical or virtual

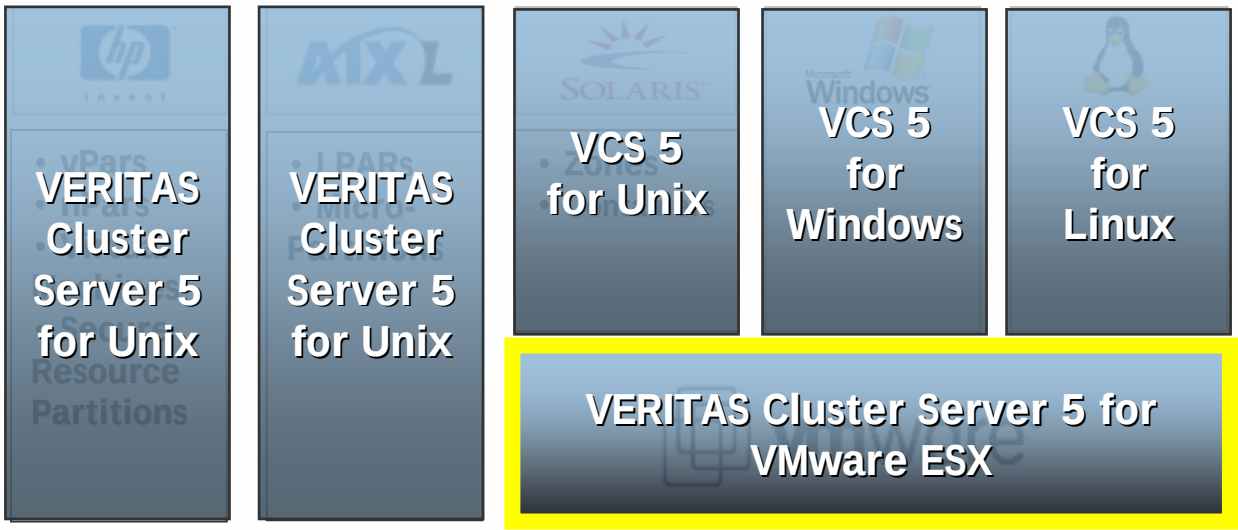
What is VCS Fire Drill?



- Fire Drill is a cloned VCS Service Group modified to use snapshot storage
- **Fire Drill:**
  - **Creates snapshot**
  - **Configures snapshot**
  - **Imports snapshot**
  - **Mounts snapshot**
  - **Starts SG on the mount**
  - **Requires SF 5.0**
- **Any errors are logged by VCS**
- **Fire Drill SGs are isolated from production SGs**

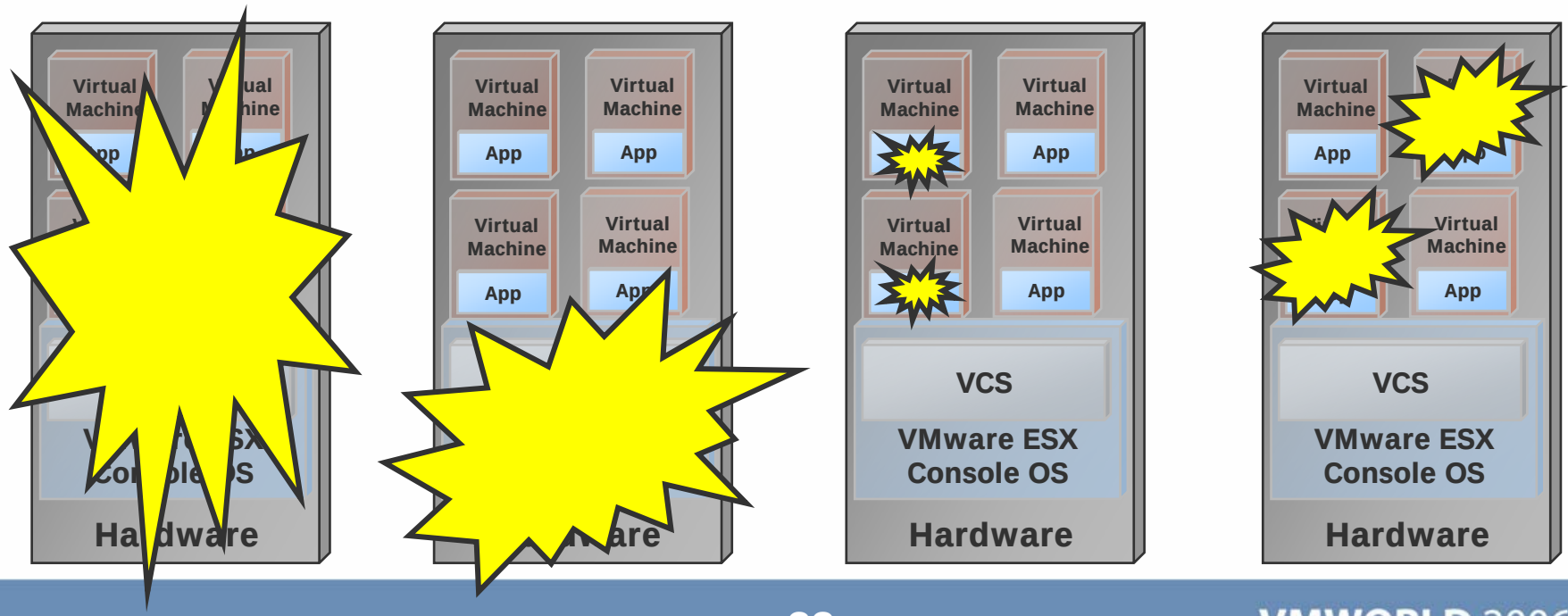
VCS for VMware ESX Use Cases

- **Standardization – Use the same tools for physical and virtual environments**
  - Pain: Different tools for different platforms is expensive and complex
  - Value: Reduce training costs, more flexible IT staff



VCS for VMware ESX Use Cases

- **Overall protection of the production environment**
  - Pain: Users don't know the health of the applications and VMs
  - Value: IT can monitor everything regarding the VM and can have a proven Enterprise Class HA solution for their production applications



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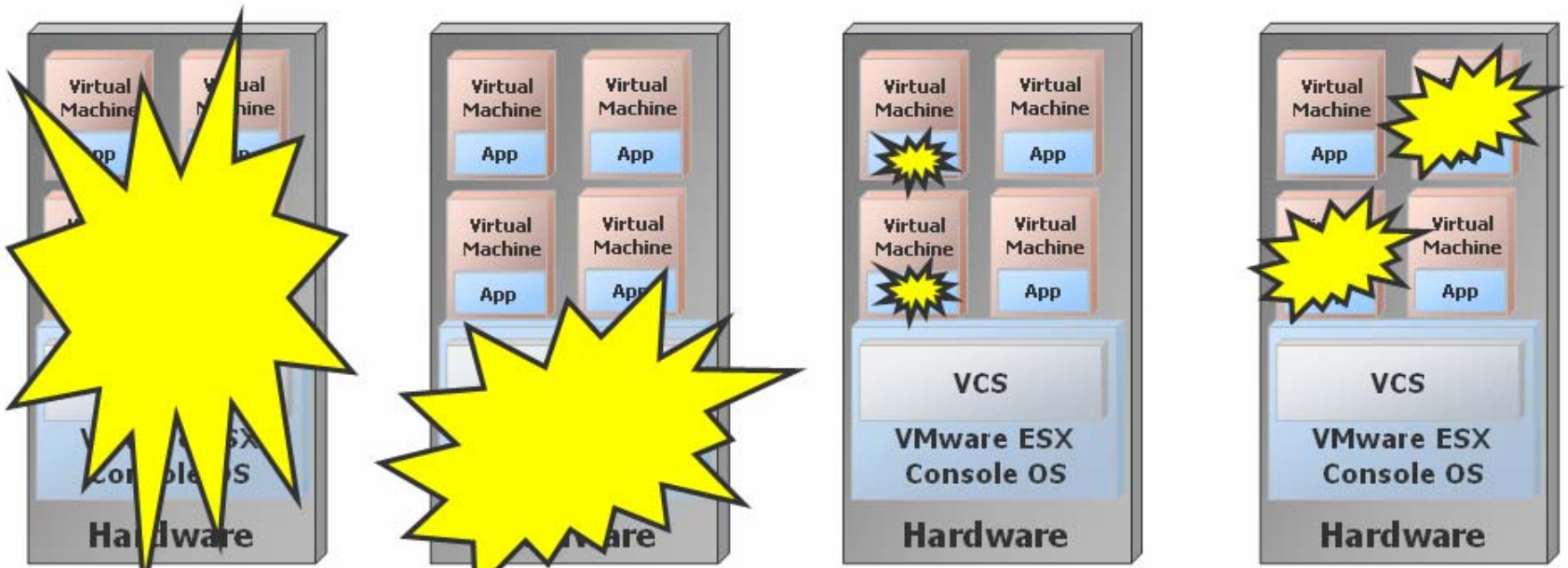
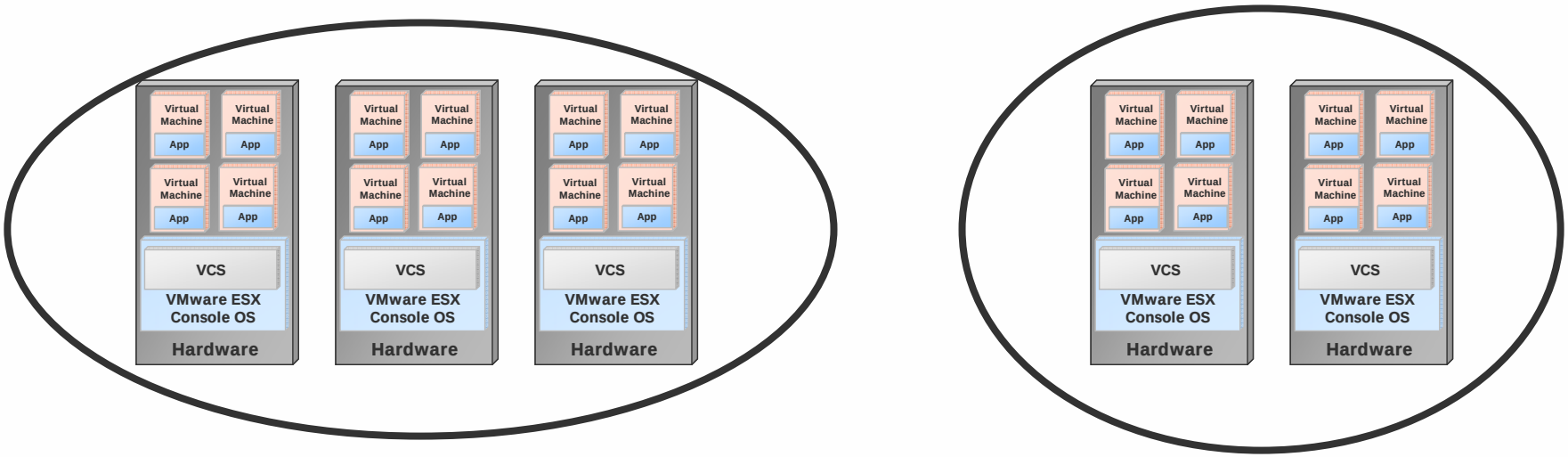


VCS for VMware ESX Use Cases

- **M+N clusters, P-to-V*, V-to-P*, and V-to-V configurations**
  - Pain: Duplicate hardware for HA/DR is expensive
  - Value: Arrange servers into cluster configurations that fit your needs



* Requires VCS for Windows/Linux/Unix

VCS for VMware ESX Use Cases

- **Availability over any distance**
  - **Pain**: Need disaster recovery solution for VMware environments
  - **Value**: Companies can failover virtual machines to remote data centers regardless of distance

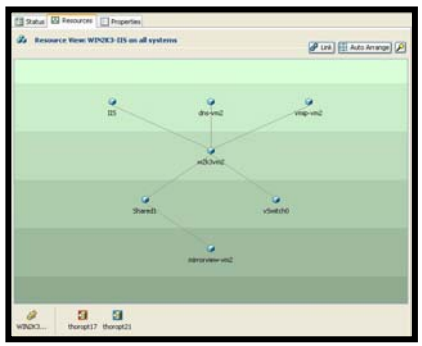
Demo

Value to the Data Center

With VCS for VMware ESX,

Have a virtual environment…

- Protected top-to-bottom to run mission critical applications
- Using simple-to-use virtual-aware cluster management tools
- **Integrated Availability Management All-In-One Package**



Q&A

For further information:

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