



Who's your Super Hero when Disaster Strikes?

VMware Infrastructure for Reliable,
Rapid and Cost Effective DR

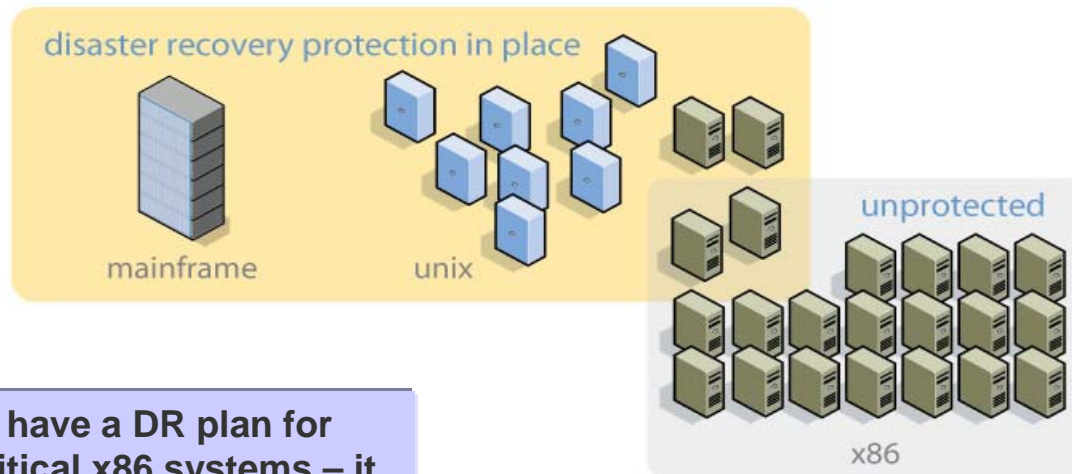
Disaster Recovery



Agenda

- Define DR Challenges
- VMware Virtualization Properties to benefit DR
- The VMware Difference
- Roadmap to DR

What we hear...is this familiar?



“ We don’t have a DR plan for mission critical x86 systems – it would be too expensive and complex”

“ It is very difficult to test our DR plan because of all the extra hardware, configuration and special processes”

“ In our last disaster recovery test we missed our recovery objectives by days”

Only 31% of CIO’s surveyed rate their plans as extremely or very effective

(IDG)

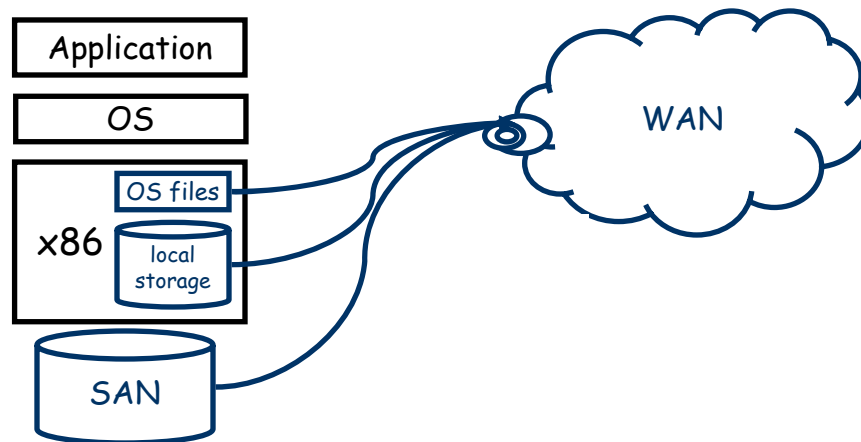
40% of all companies that experience a major disaster will go out of business if they cannot gain access to their data within **24 hours**

(Gartner)

Challenges without Virtual Infrastructure

Prod

- Bound to HW
- 5-10% utilized



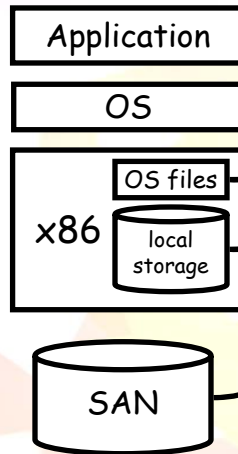
Process Complexity and Additional IT Resources

- > Complexity - copies of data need to be transferred to a DR site including OS, application installation, configuration, and all data files stored on disks or SAN
- > Requires significant network bandwidth for backup & replication

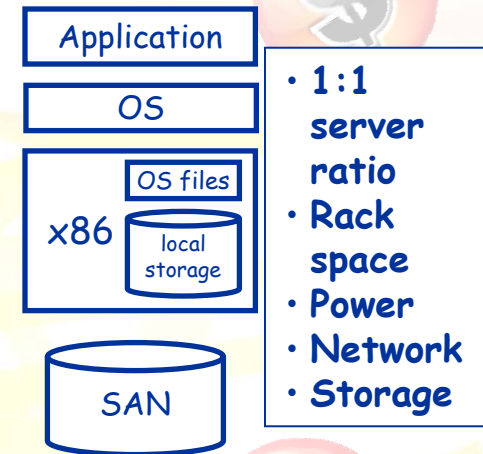
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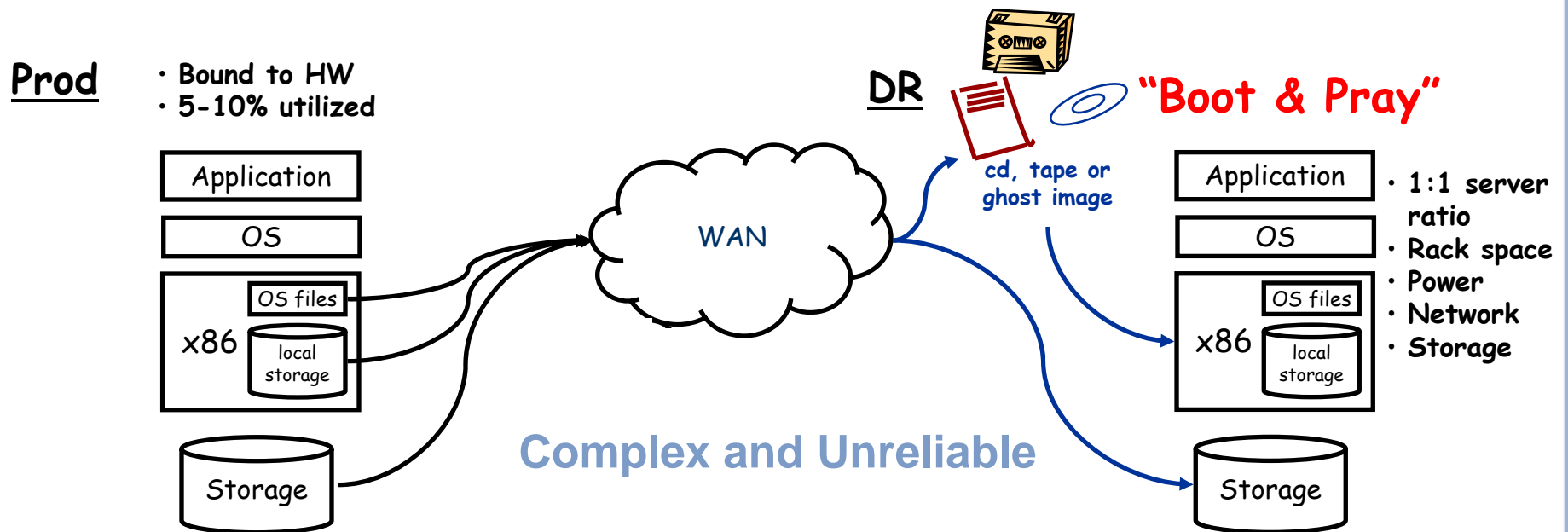
DR



Expensive

- Requires identical site with 1:1 server ratio as in your production environment
- Makes x86 physical DR strategies complex and expensive

Challenges without Virtual Infrastructure

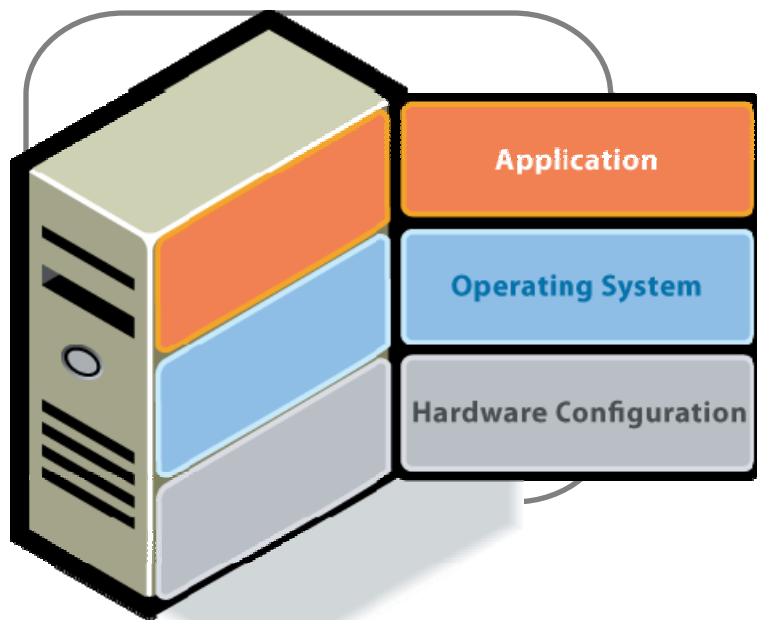


- Complex process to physically instantiate the OS, apps & data on the DR hardware
- Multiple processes for system and application – lengthy & complex
- Unique machines and configurations. Boot all machines...Pray.
- Key Tier2, Tier3 applications left unprotected adding to Tier 1 RTO risk

What is Server Virtualization

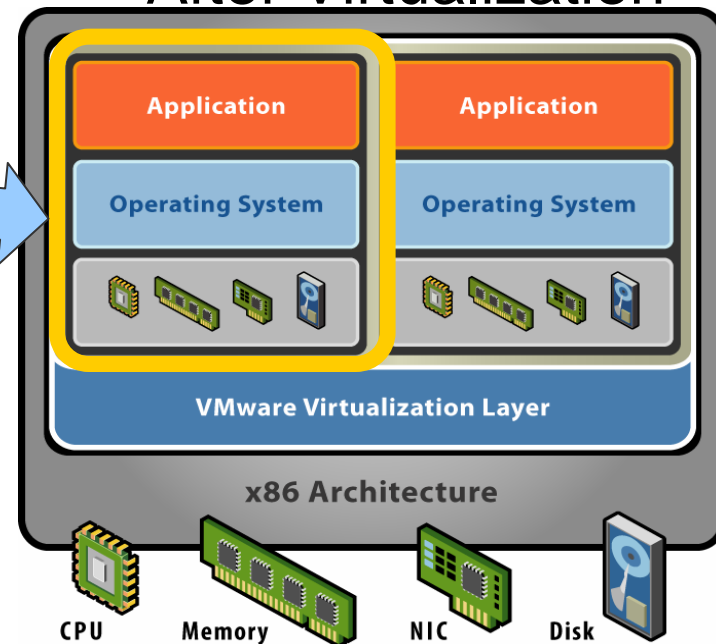
VMware server virtualization packages hardware, OS, and applications into a portable virtual machine package

Before Virtualization



- Software tied to hardware
- Single OS image per machine
- One application workload per OS

After Virtualization

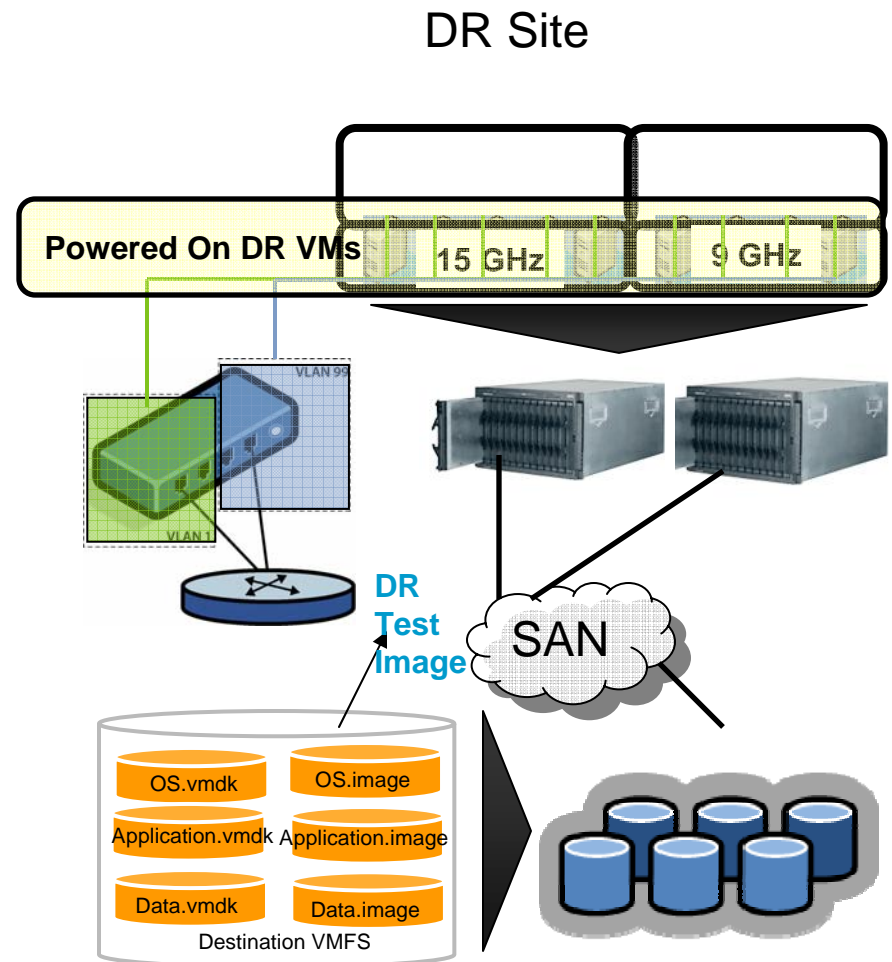


- Multiple workloads per machine
- Software independent of hardware
- System, data, applications are encapsulated files

Testing DR Simple: Simple, Non-Disruptive, Affordable

1. Snapshot replicated data
2. No additional hardware required
3. Isolate “DR Test” and “Live DR” ports using virtual partitions
4. Promote and change all DR VM’s to “test DR Port”
5. Change DR VM’s to “live DR” port group after test
6. Discard snapshot after test

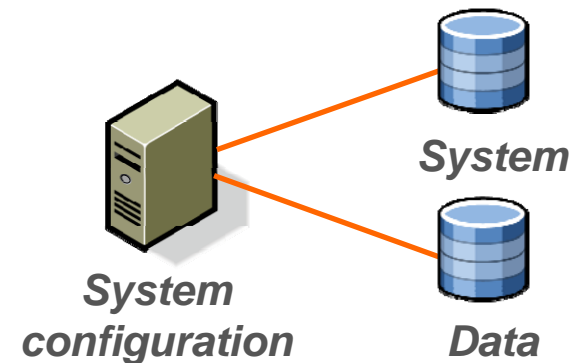
- Rapid DR setup and removal
- Dual-use of DR site for batch, test and other workloads



Data and system protection – Physical vs. Virtual

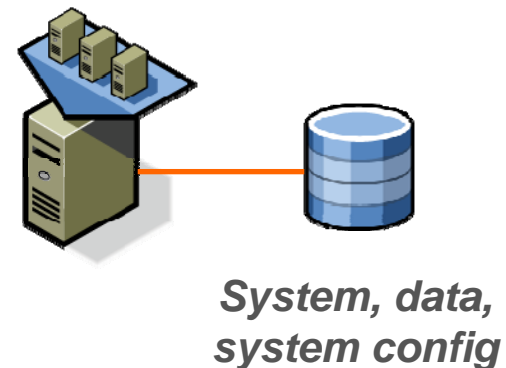
Data and System Protection with Physical Infrastructure

- Separate processes for protecting data and system disks
- Require identical hardware for guaranteed restore
- Complex processes to ensure protection



Data and System Protection with VMware Infrastructure

- Same process for data and system disks
- Entire system stored as data
- Hardware-independent virtual machines are easy to restore to any hardware



Recovery Process in a Virtualized Environment

Excellent RTO (minutes to few hours; not days to weeks)

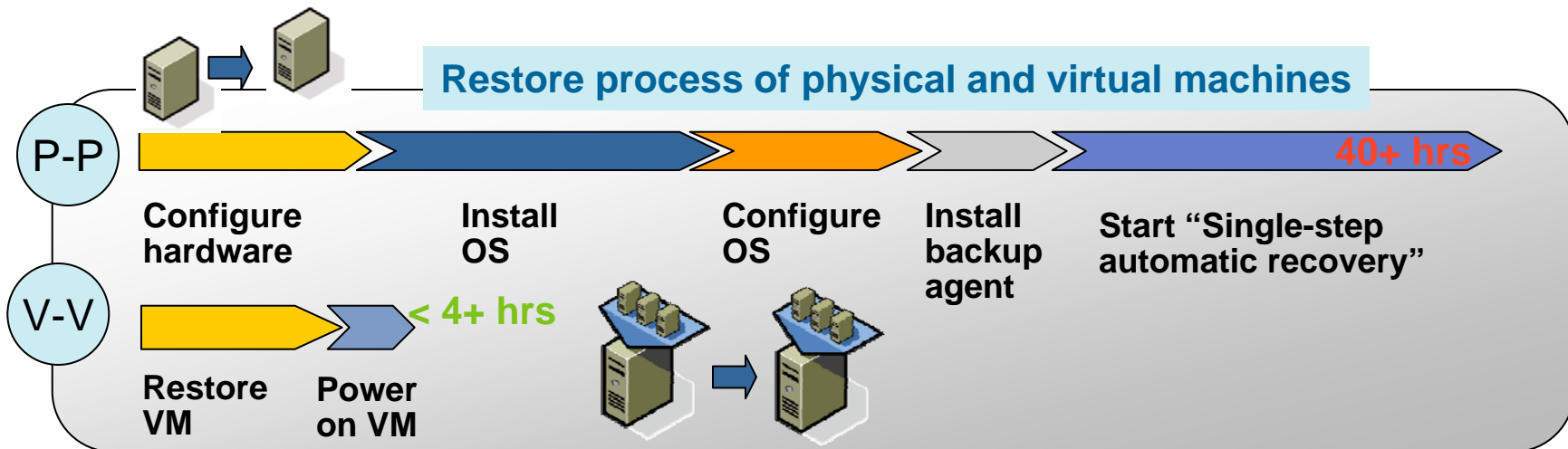
- > Replicated data and system boot images

Affordable

- > Capital Cost – Use hardware of choice at primary and secondary sites
- > Operational Cost – Simplicity of not worrying about the OS images

Most reliable recovery

- > HW dependencies as a source of failure is eliminated
- > Testing easier to perform and is non-disruptive



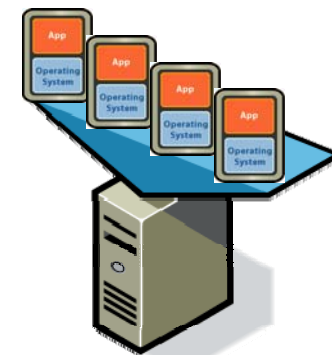
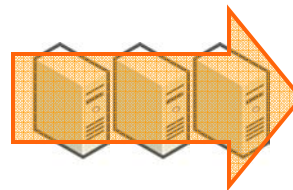
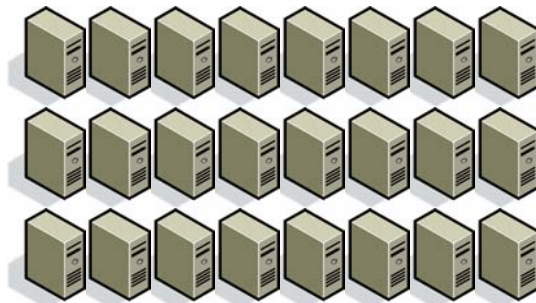
Consolidation – Funding your DR Plan

Before

- > 1,000 servers with DASD
- > 200 racks
- > 3000 network cables
- > 400 power whips

After

- > 50 servers with SAN and NAS
- > 10 racks
- > 300 network cables
- > 20 power whips



Real VMware customer Results

Business Metric	Results From
Server Utilization	4X- 5X Increase
Consolidation Ratio	From 2:1 up to 30:1
Server Provisioning Time	> 60% reduction
Planned Downtime	> 95% reduction
Unplanned Downtime	> 30% reduction
Time to Recovery	Down to Minutes
Payback (Break-Even)	< 6 months
TCO	30-70% reduction

Source: VMware customers surveyed post-use of VMware products.

DR : The VMware Difference

Rapid Recovery Process

- Hardware independent
- Simpler backup, replication
- Fastest recovery using V-V

Affordable

- Consolidation savings
- Reduce hardware needs
- Leverage existing hardware
- Funds your DR plan

Reliable

- Rapid provision with encapsulated VM files
- non-disruptive DR test with virtual network isolation
- Frequent DR testing with ease of setup and removal
- Dual use of DR site for test-dev or batch processes

Key Points to Viable Disaster Recovery: Assess



1. Assess disaster recovery requirements

- *Which services need to be recoverable*
- *Impact of downtime for key services*
- *What are the RTO and RPO requirements of key services*

2. Assess application requirements

- *What applications are required to provide key services*
- *What are the dependencies between applications*

Key Points to Viable Disaster Recovery: Plan



3. Determine what to virtualize

- < 4 physical CPU utilization
- < 16 GB of RAM used
- < 5 adapters (NIC's, SCSI interfaces, etc.)

4. Determine disaster recovery architecture

- Backup and recovery
- Replication
- Own site vs. co-location site

5. Select hardware and software components

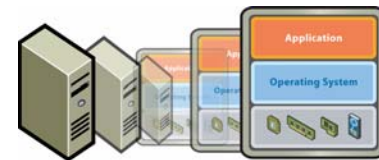
- e.g. servers, storage, third-party software
- Check VMware HCL's where appropriate

Key Points to Viable Disaster Recovery: Build



6. Convert and consolidate

- Use VMware Converter or third-party tools to convert physical systems to virtual machines



VMware Converter:

- Live or cold conversions
- Remote or local conversion
- Schedule multiple simultaneous conversions

7. Set up backup and/or replication

• Backup

- Separate system disk and application data
- Perform file-level and image-level backups

• Replication

- Choose type of replication
- Select disks and LUN's to replicate

Key Points to Viable Disaster Recovery: Build



8. Test

- *Test frequently, at least twice per year*
- *Think about having surprise tests*
- *Clone production virtual machines for realistic testing*
- *Use resource pools and VLAN's to isolate test environment*

9. Optimize

- *Enable DRS to optimize utilization and performance*
- *Use idle recovery hardware for other tasks*
- *Enable VMware HA for protection from local server failures*

10. Document

- *What people are expected to be involved*
- *What is recovery process for each protection tier*
- *What needs to be tested and validated during recovery*



VMware® Infrastructure for Disaster Recovery

VMware® Virtual SMP

Enables single VM to use up to 4 physical processors simultaneously

VMware® Consolidated Backup

Centralized agent less backup for VM's

Virtual Machine File System (VMFS)

High performance cluster file system. Allows multiple ESX Servers to access same VM storage concurrently

VMware® High Availability

Cost effective automatic restart of virtual machines in case of server failure

VMware® Virtual Center

Centralize management of VM infrastructure

VMware® Distributed Resource Scheduler

Dynamic and intelligent balancing of computing resources across resource pools based on pre-defined rules.

VMware® Converter

Automates conversion of physical to virtual machines (physical-virtual)

VMware® VMotion™

Moves "live", running VM's from one host to another while maintaining continuous service availability.

VMware® ESX Server 3.0

Production-proven virtualization layer that resources into multiple virtual machines (VM's) – Bare Metal

Basic VMware Infrastructure for DR

Optional Components VMware Infrastructure for DR

Disaster Recovery



Questions?

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