

# Virtualization for Disaster Recovery

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# MHA Consulting, Inc.

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  - PETSMAART
  - Regal Entertainment
  - University of Phoenix
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# Outline

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- Drivers for Change
- What Challenges Do We Face?
- What is Server Virtualization?
- VMware Capabilities
- Summary
- Q & A

# What Challenges Do We Face?

## Potential for Outages

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- Disaster Recovery Journal estimates that 1 out of 500 data centers will have a major outage each year
- Gartner estimates that 80% of all data centers will have one major event every 5 years
- 20 year survey of Fortune 500 crisis readiness by University of Southern California's Center for Crisis Management (July 2003) -2 conclusions:
- Incidents of intentional damage to corporate assets has risen markedly over the past 10 years

# What Challenges Do We Face?

## Business Drivers

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- Business Impact Analysis (BIA)
- Sarbanes-Oxley (Sox)
- No Disaster Recovery Program
- High availability
- Highly automated
- Recoverability without regular support staff
- Support 100% of Production Load
- Cost effective

# What Challenges Do We Face Disaster Recovery

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## Minimize downtime

- Many manual processes for recovery
- Multiple steps to overcome hardware differences
- Incomplete or out-of-date runbooks

## Reduce risk

- Testing requires additional hardware and infrastructure
- Usually only data is regularly and cleanly updated
- Frequent failures during recovery

## Control cost

- Simplest recovery requires identical hardware
- Idle recovery hardware is impossible to repurpose
- Multiple third-party products necessary for recovery

# What Challenges Do We Face?

## Production Environment

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- Many Intel-based servers
  - Multiple generations
- Enterprise Approach to Imaging, Patching, Backups
  - Standardized management of heterogeneous servers
- Hosting Application and Citrix Environments
  - Web Applications
  - Citrix Servers
  - Lotus Notes/Domino, WebSphere, SharePoint, Project, SQL Server, Exchange and others

# What Challenges Do We Face?

## Production Environment

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- Decommission Legacy Hardware
- Consolidation of Existing Infrastructure
- Need to Rapidly Provision New Environments
- Integration of IT Environments
- Data Center Moves and Relocations

# What Challenges Do We Face?

## The Current State of (Physical) DR

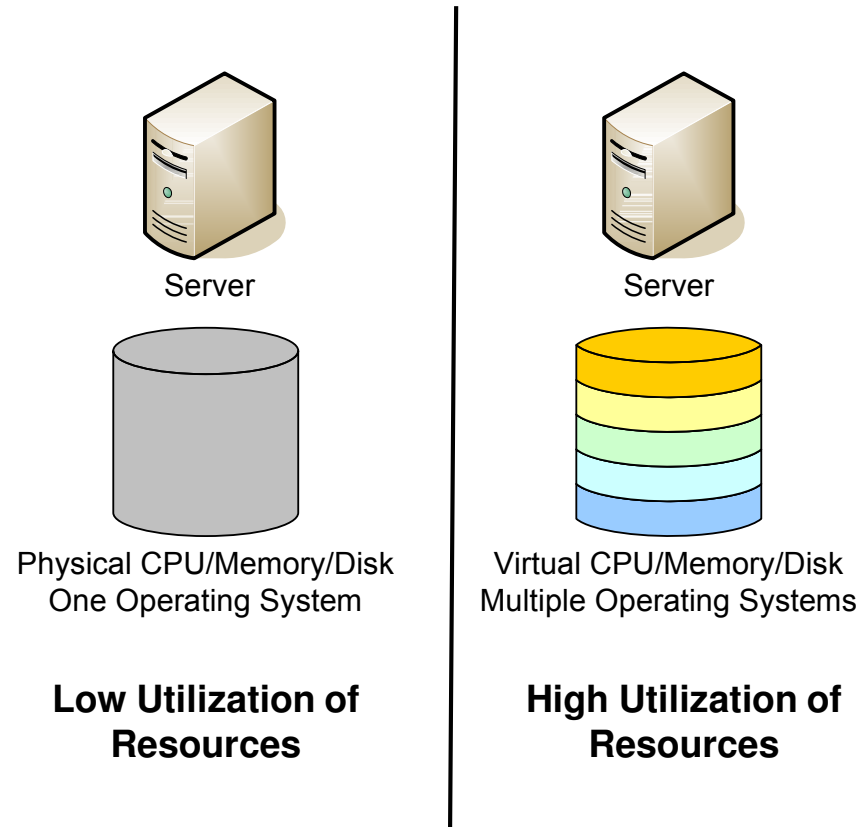
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Tier	RPO	RTO	Cost
<b>I</b>	<b>Immediate</b>	<b>Immediate</b>	<b>\$\$\$</b>
<b>II</b>	<b>24+ hrs.</b>	<b>48+ hrs.</b>	<b>\$\$</b>
<b>III</b>	<b>7+ days</b>	<b>5+ days</b>	<b>\$</b>

- DR services tiered according to business needs
  - Physical DR is challenging
    - Maintain identical hardware at both locations
    - Apply upgrades and patches in parallel
    - Little automation
    - Error-prone and difficult to test
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# What is Server Virtualization?

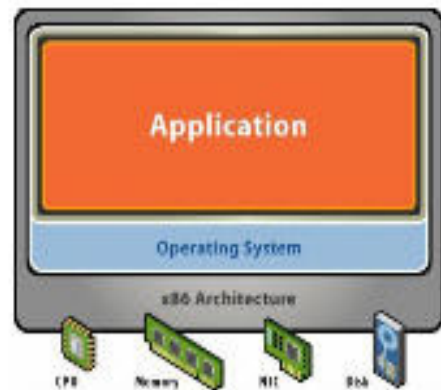
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# What is Server Virtualization?

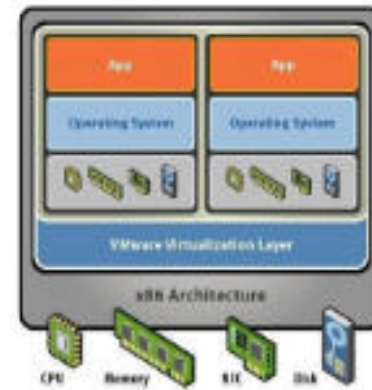
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Without virtualization:



- Single OS image per machine
- Software and hardware tightly coupled
- Running multiple applications on same machine often creates conflict
- Underutilized, inflexible, costly infrastructure

With VMware virtualization:



- **Break dependencies** between OS and hardware
- Manage OS and application as single unit by **encapsulating** them into VMs
- Strong fault and security **isolation**
- VMs are **hardware-independent**: they can be provisioned anywhere

# What Challenges Do We Face?

## Business Case for Virtualization

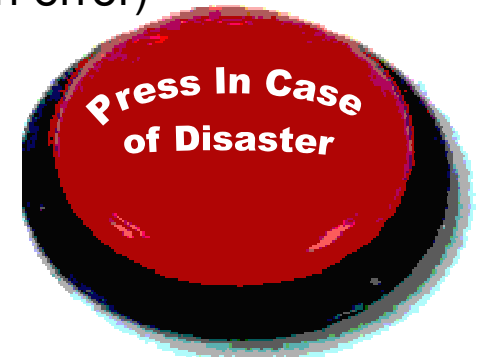
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Gap	Alignment
Servers distributed in multiple data centers	Reduction in number of servers will enable consolidation into fewer data center facilities
Limited data center floor space, power, and cooling resources	Reduction in number of servers will reduce data center requirements
Need to retire unsupported platforms	Unsupported platforms can be replaced by virtual servers
Slow server provisioning cycle-time	New environments provisioned without purchasing and installing additional physical servers
Limited hardware for disaster recovery	Environments can be restored onto different hardware. Hardware replaced by new virtual servers and servers retired during future refresh cycles can be utilized for DR site.

# What Challenges Did We Face? Opportunities with a Virtual Solution

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- Consolidation / Integration of Infrastructure
- Rapid Deployment of New Technologies
- Disaster Recovery Capability
  - Server images inherently portable and not reliant upon underlying hardware
  - Ability to move freed-up hardware to off-site location for subsequent DR hosting
  - P2V servers that need to remain physical for use in a DR scenario
  - Virtual hardware can be automatically configured
  - Test and failover can be automated (minimizes human error)
  - Costs are lowered, and the quality of service is raised
- Diverse Platform Support
  - Microsoft Windows Family
  - Linux and Solaris (x86 based)



# VMware Capabilities

## VMware Virtual Infrastructure

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- VMotion
  - Move live virtual servers dynamically between ESX hosts
- Distributed Resource Scheduler
  - Manages ESX server workload based on system resources by automatically moving virtual servers
- High Availability
  - Automatic restart of virtual machines on other ESX servers in case of ESX host failure
- Resource Pools
  - Ability to aggregate, deploy and manage server resources based on preconfigured criteria (category, environment, customer, etc)

# VMware Capabilities

## VMware Virtual Infrastructure

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- VMware Update Manager
  - Push software updates to ESX hosts, VM's and templates
- VMware Site Recovery Manager
  - Automates the failover and recovery process to meet RTO and RPO requirements
  - Create recovery plans for different failover scenarios
  - Perform non-disruptive test of failover and recovery
  - Requires Array-Based Replication

# VMware Architecture

## Consolidation onto Virtual Platform

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- Monitoring / Consolidation Planning
  - PlateSpin PowerRecon
    - Ability to gather Windows/Linux physical server utilization metrics
    - Metrics used to identify physical candidates for consolidation
- Physical to Virtual (P2V) Technology
  - PlateSpin PowerConvert
    - Ability to rapidly migrate physical machines into a virtual environment
    - Migrate physical machines running on disparate hardware to standard hardware
    - Create images of physical servers into inactive VM's for DR
- Backup Technology
  - Vizioncore ESX Ranger with VMware Consolidated Backup
    - Ability to backup entire VM for DR purposes

# Summary

## DR Advantages of Virtualization

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### Rapid

- > Automate recovery process
- > Eliminate failures due to hardware dependencies
- > Integrate different components of recovery

### Reliable

- > Enable easier, more frequent testing
- > Turn manual, inconsistent processes into pre-programmed, repeatable processes

### Manageable

- > Centralize and simplify management of recovery plans
- > Make disaster recovery protection a property of virtual infrastructure

### Affordable

- > Eliminate idle recovery hardware
- > Eliminate dependencies on physical infrastructure

# Thank You

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