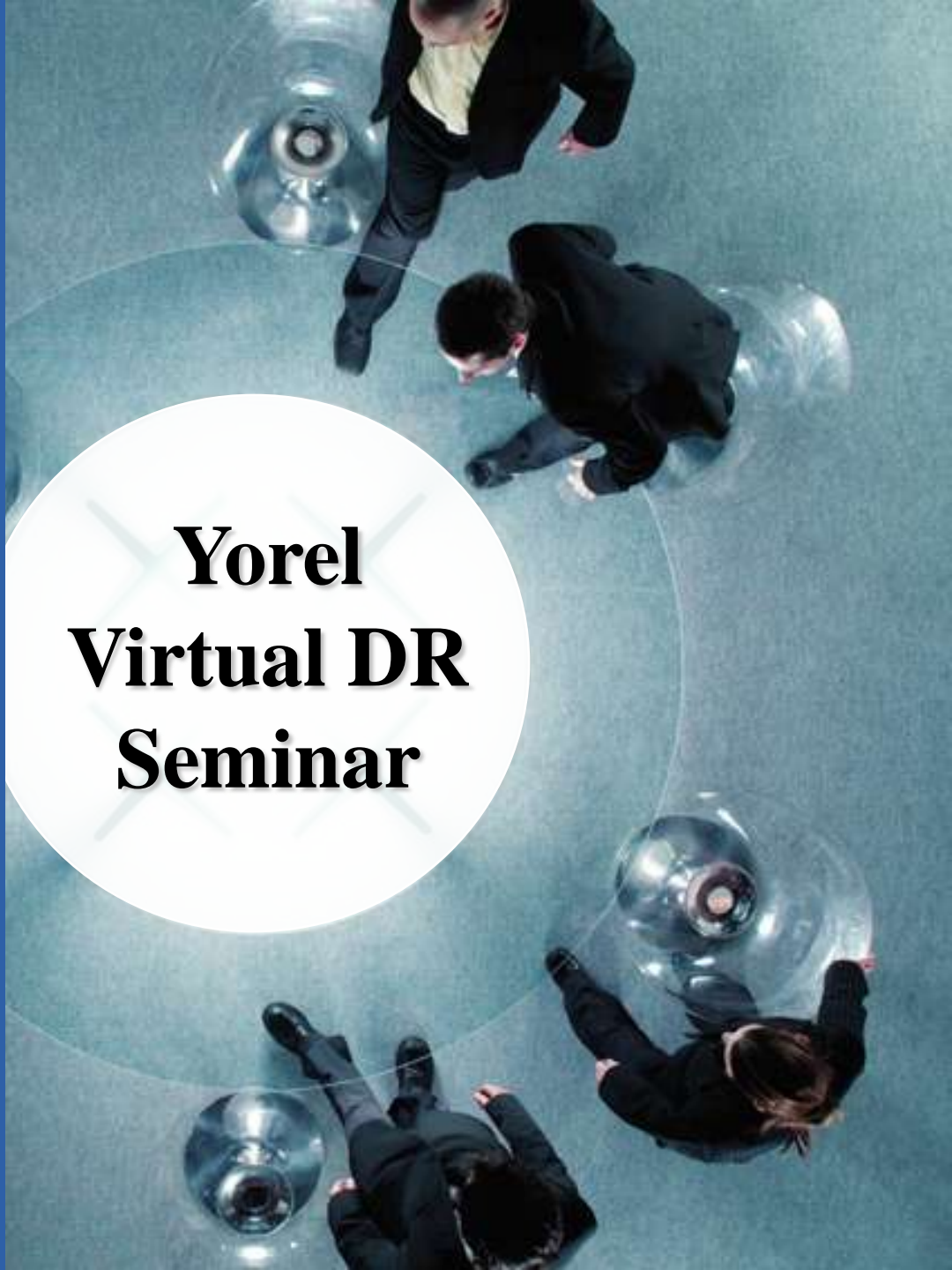




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Yorel Virtual DR Seminar

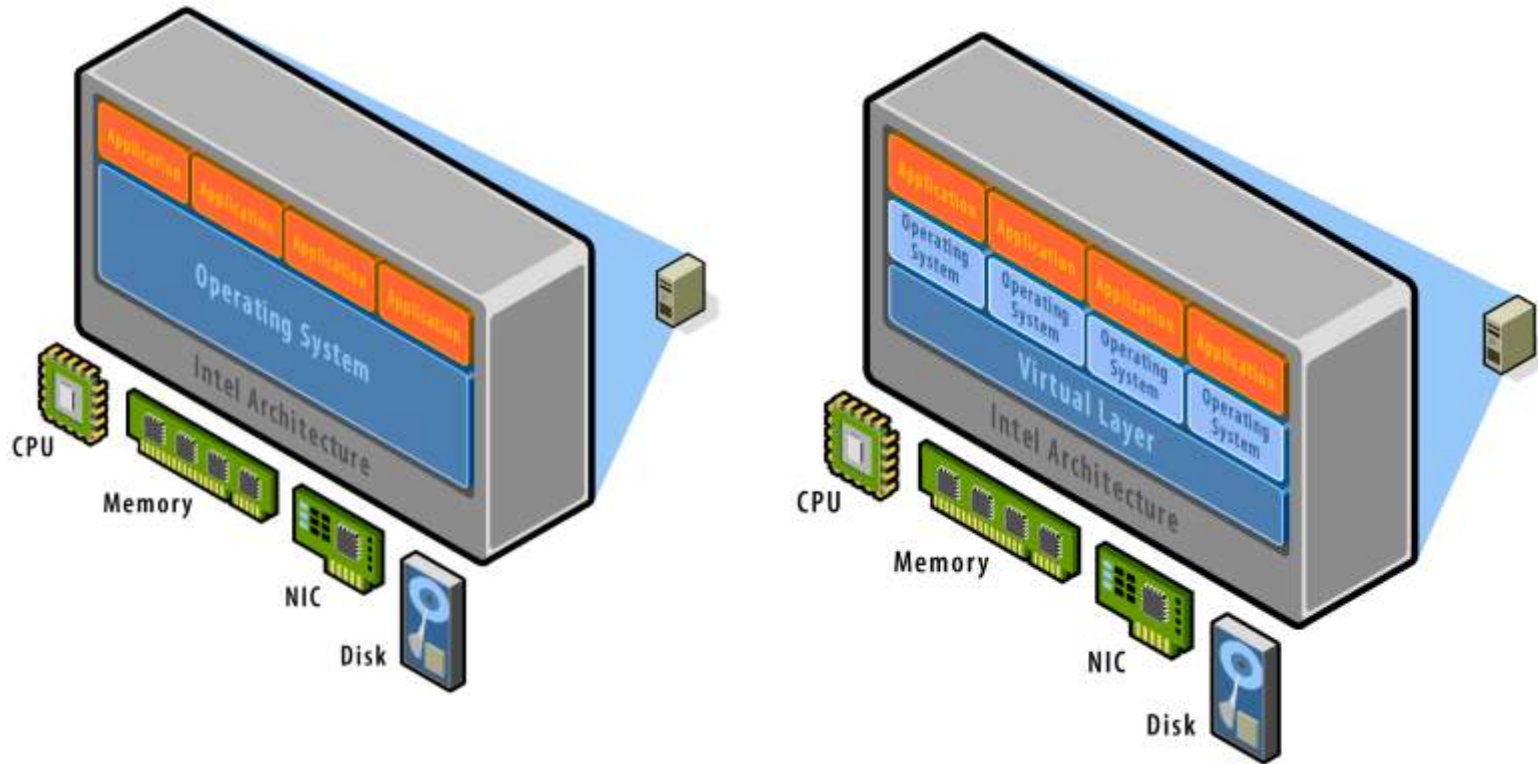


Virtualization Overview



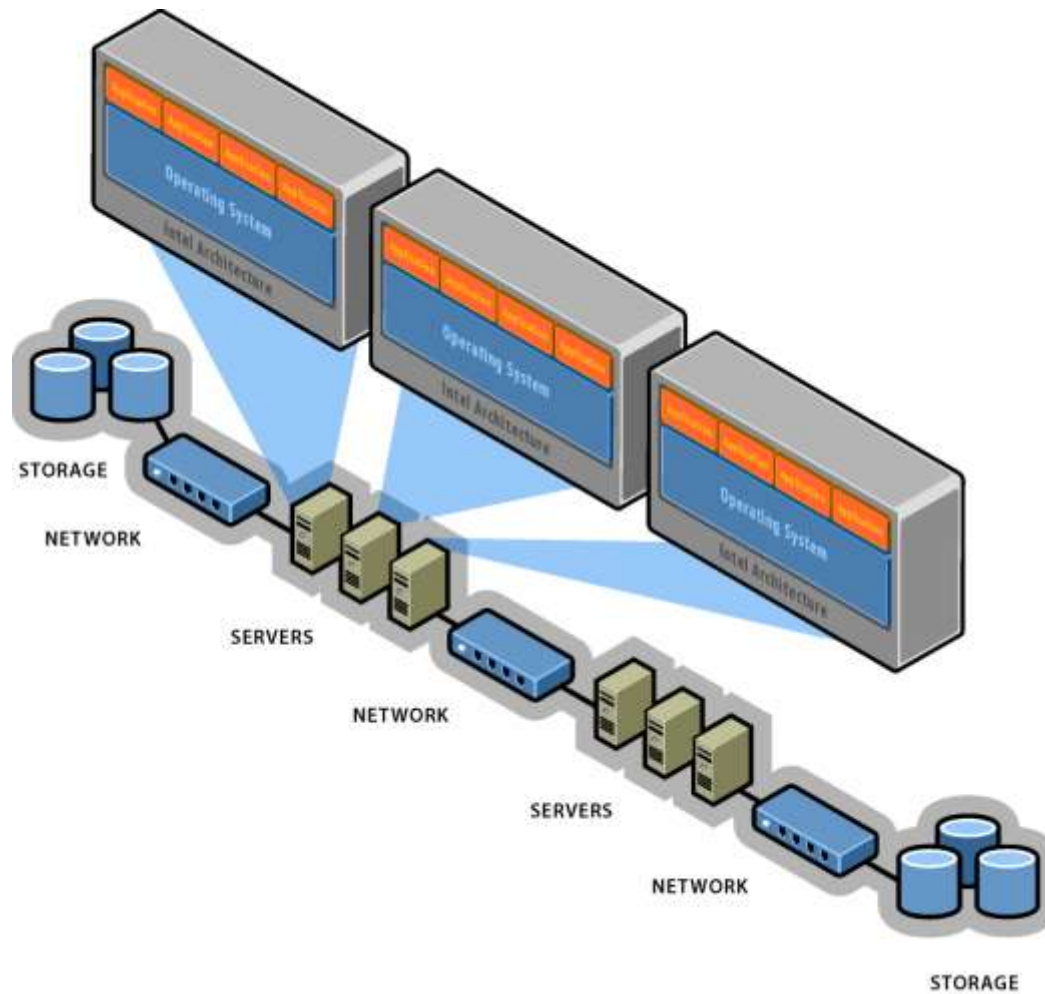


Traditional Architecture vs Virtualized Architecture





Traditional Infrastructure



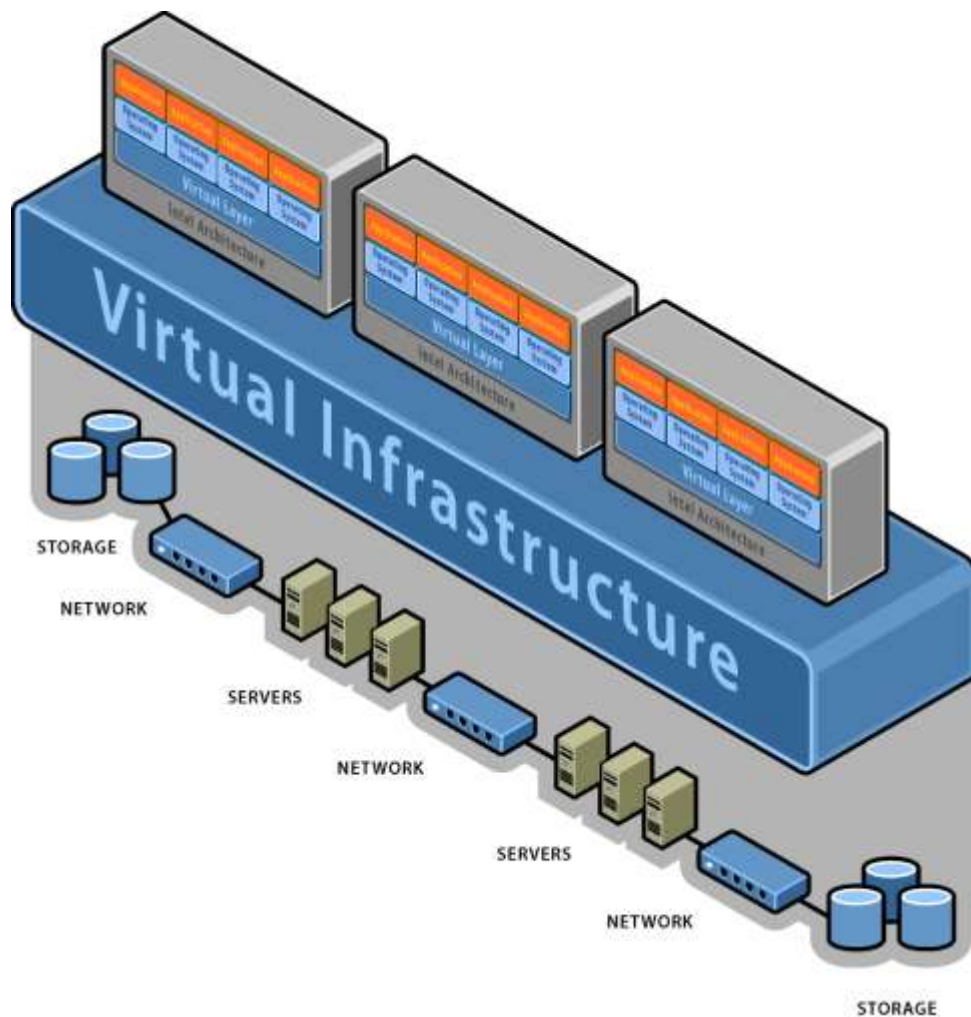


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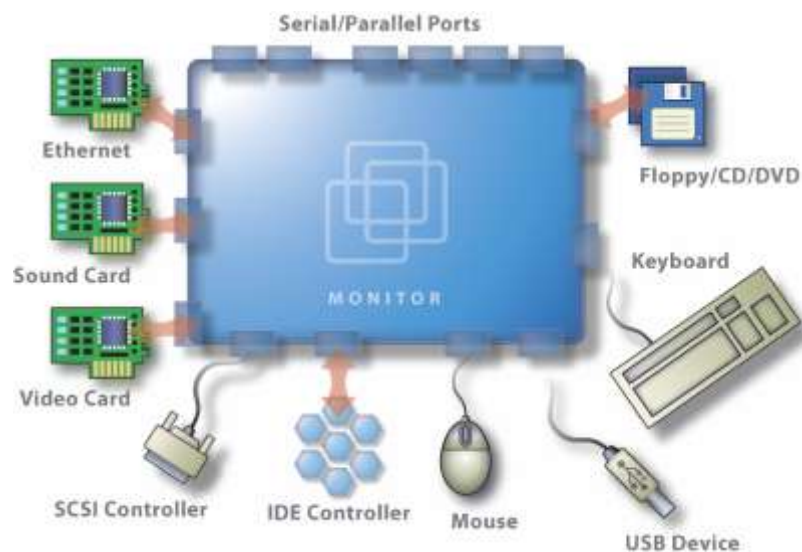
Virtual Infrastructure





Key properties of Virtual Machines

- **Isolation** – Each virtual machine is isolated from the host and other virtual machines.
- **Compatibility** – Virtualization eliminates hardware incompatibilities.
- **Reusability** – Complete environments can be kept on a file server for quick access.
- **Efficiency** – No need to dual-boot or repartition.
- **Robust Networking** – Create complex networks in a box.



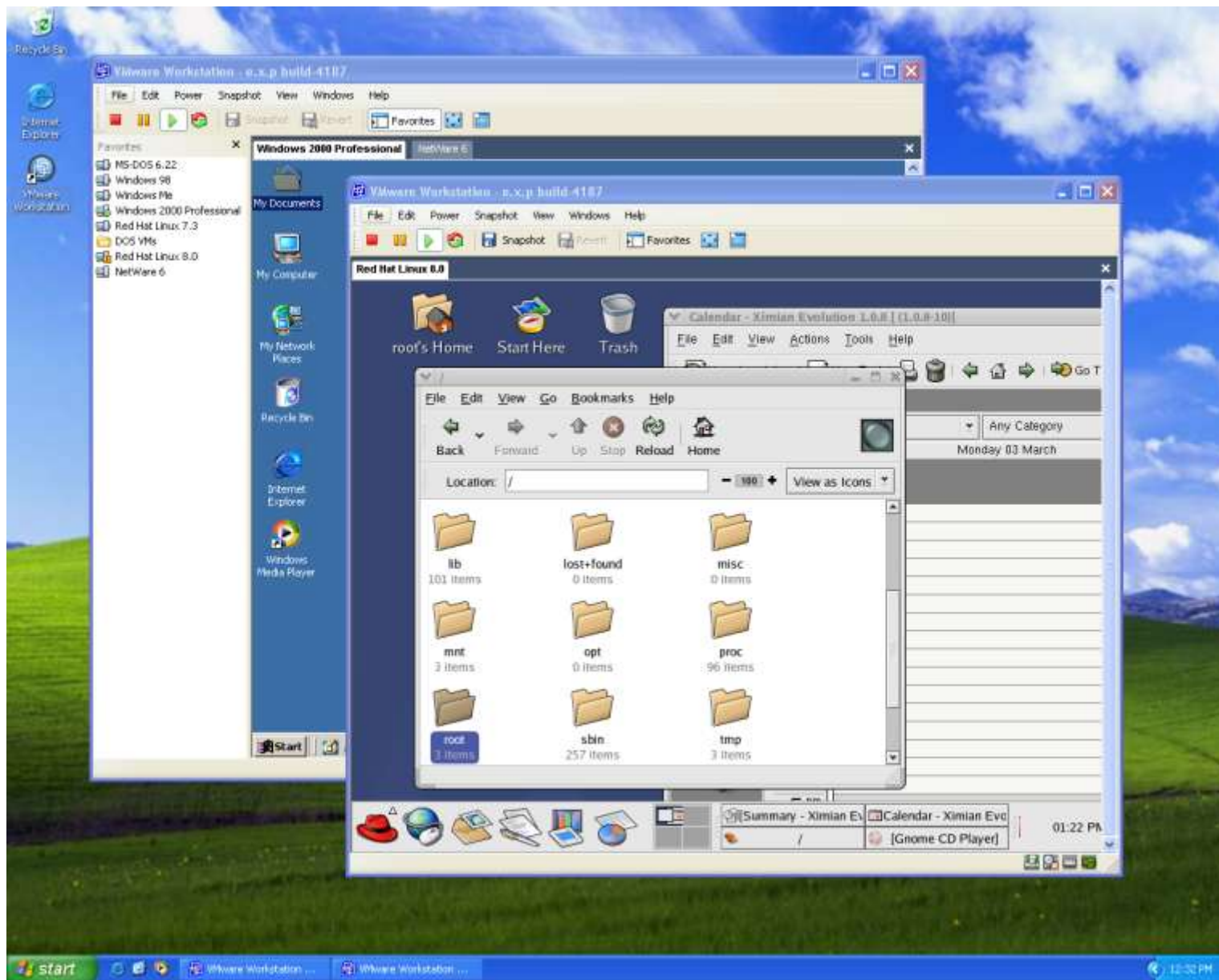


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Virtual Machines



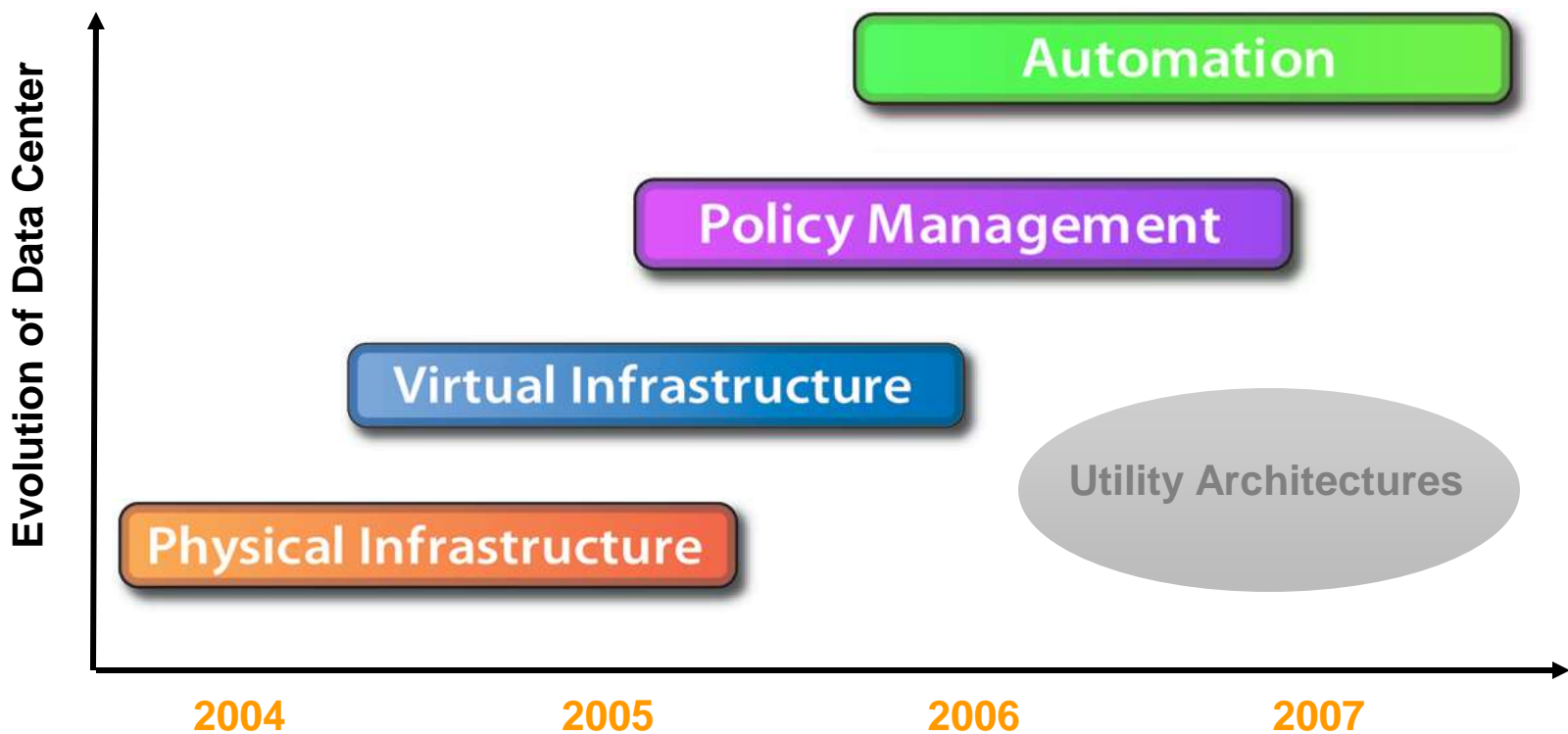


Virtualization Products

- Desktop Virtualization Applications
 - VMware Workstation
 - Microsoft Virtual PC
- Hosted Virtualization Services
 - VMware Server (Formerly GSX)
 - Microsoft Virtual Server
- Datacenter Virtualization Infrastructure
 - Xen, Virtual Iron, and other emerging products
 - VMware ESX Server & VirtualCenter (VI3)



Building the Next Generation Data Center





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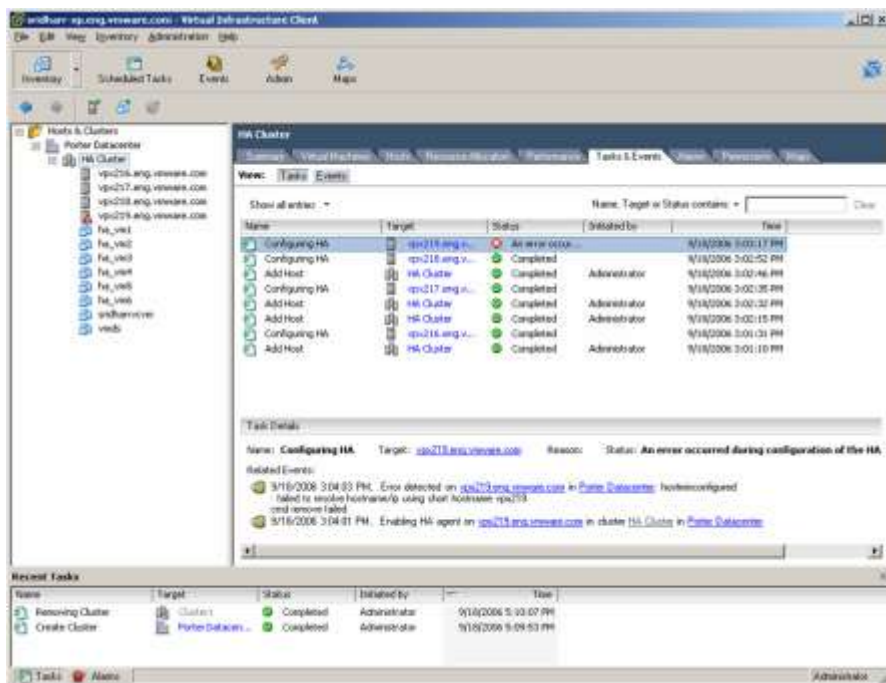
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VMware VirtualCenter

Virtualization Services:

- **Manage** hundreds of servers from one location
- **Instantly provision** new servers with standardized templates
- **Reduce scheduled downtime** with zero-downtime maintenance
- **Dynamically move workloads** across servers without service interruption
- **Secure** the environment with robust access control

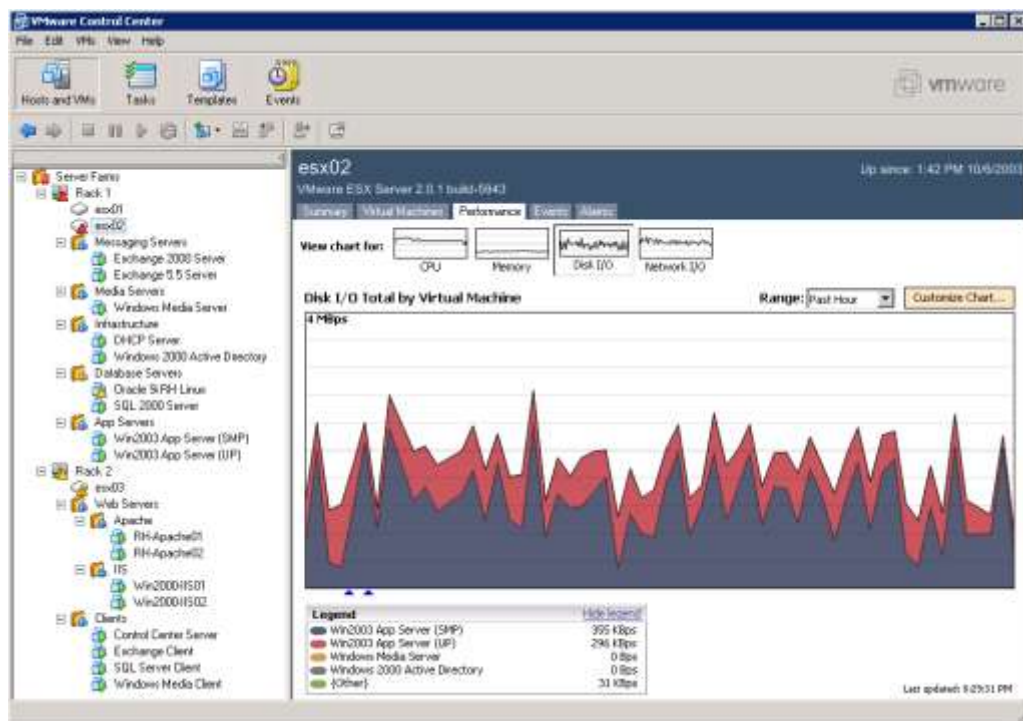


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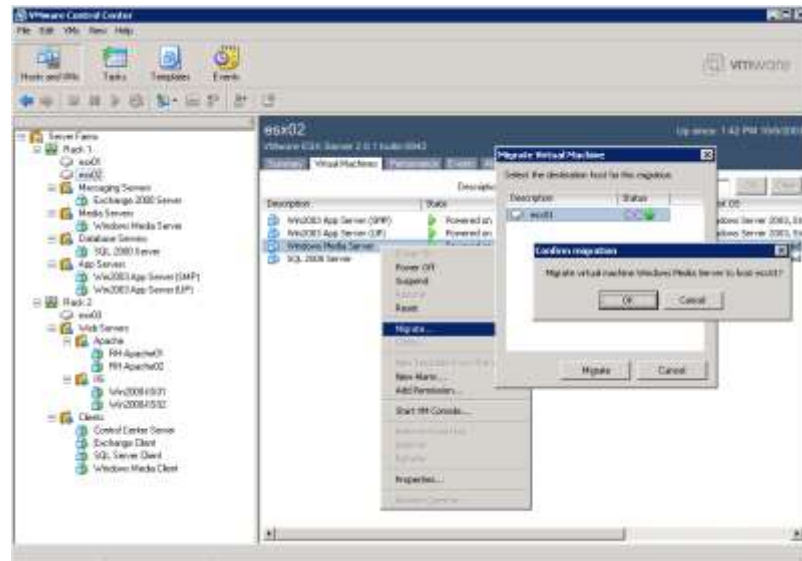
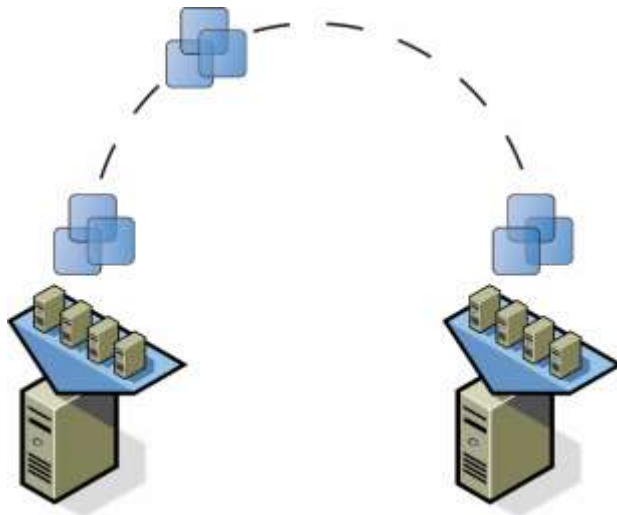
Centralized Management

- **Monitor** system availability and performance
- **Automated** notifications, alerting, load balancing
- SDK to **integrate** with existing management tools
- **Secure** the environment with robust access control





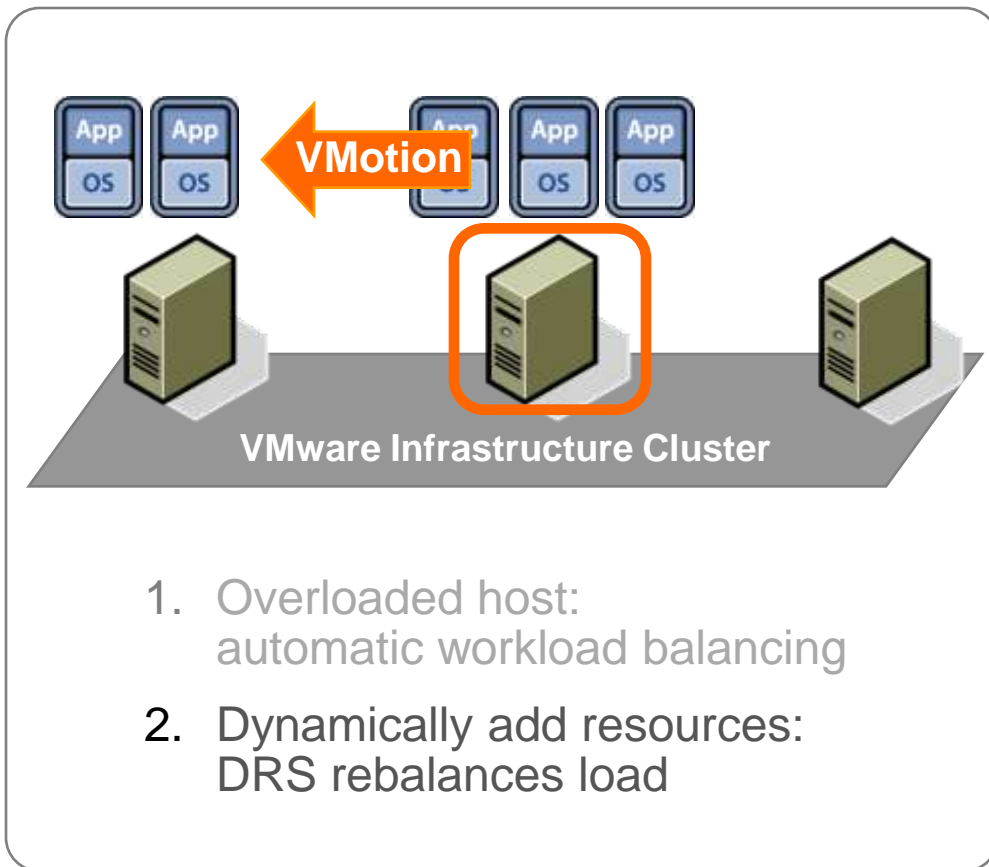
Instant Provisioning



- Takes under 10 minutes
- Speed of a file copy
- Hardware-independent
- Template based
- Fully leverages the SAN
- Automatic and Standardized



VMotion Technology Changes The Game

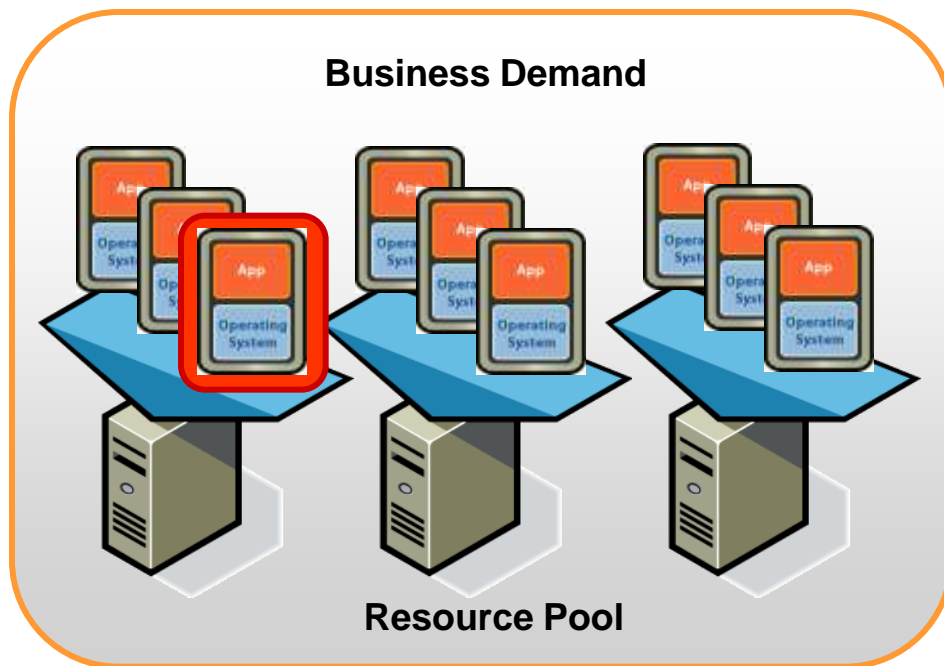


- Optimal Utilization
- Zero-downtime maintenance
- Fast Reconfiguration
- Continuous Workload Consolidation

VMotion technology lets you move live, running virtual machines from one host to another while maintaining **continuous service availability.**



Dynamic Resource Scheduling (DRS)



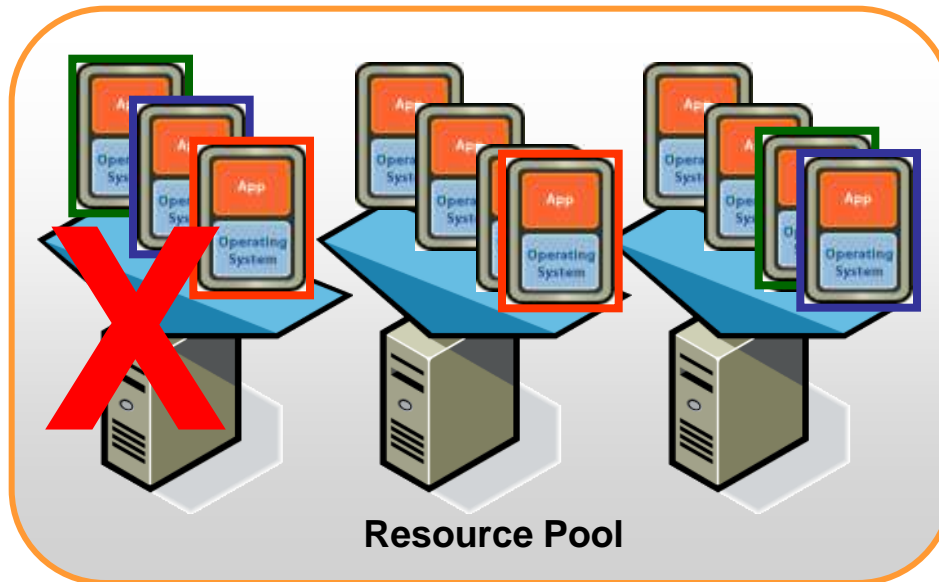
- Dynamic balancing of computing resources across resource pools

- Intelligent resource allocation based on pre-defined rules

- Align IT resources with business priorities
- Operational simplicity; increase system administrator productivity
- Add hardware dynamically to avoid over-provisioning to peak load
- Automate hardware maintenance



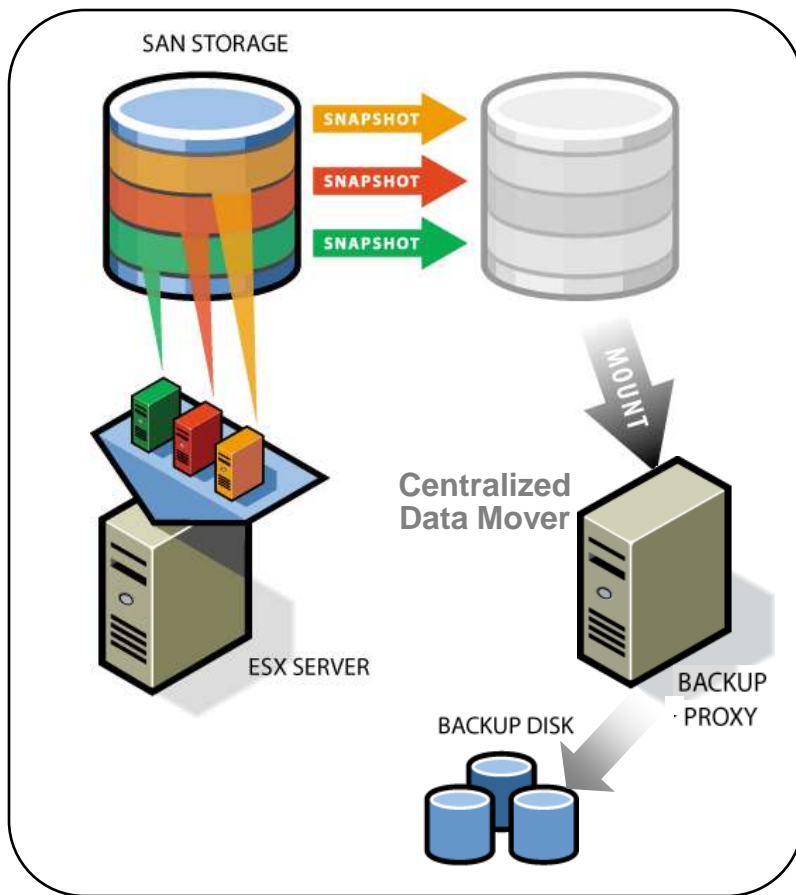
High Availability (HA)



- Automatic restart of virtual machines in case of server failure
- Cost effective high availability for all applications
- No need for dedicated stand-by hardware
- None of the cost and complexity of clustering



VMware Consolidated Backup (VCB)



- Centralized agentless backup for virtual machines

- Move backup out of the virtual machine

- Eliminate backup traffic on the local area network

- Pre-integrated with major 3rd-party backup products

- Perform backup in the middle of the day



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Why Virtualize?

What the Analysts say:

IDC –

“A decade ago 80% of IT spend was on new equipment and 20% was on support....

Today 80% of IT spend is on support and 20% is on new equipment.”

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Business Benefits of Virtualization

- Saves money (capital and operational)
- Reduces administration
- Increases overall reliability
- Enables responsive provisioning
- Enhances disaster recovery

**Virtualization dynamically maps
your IT resources to your business objectives**



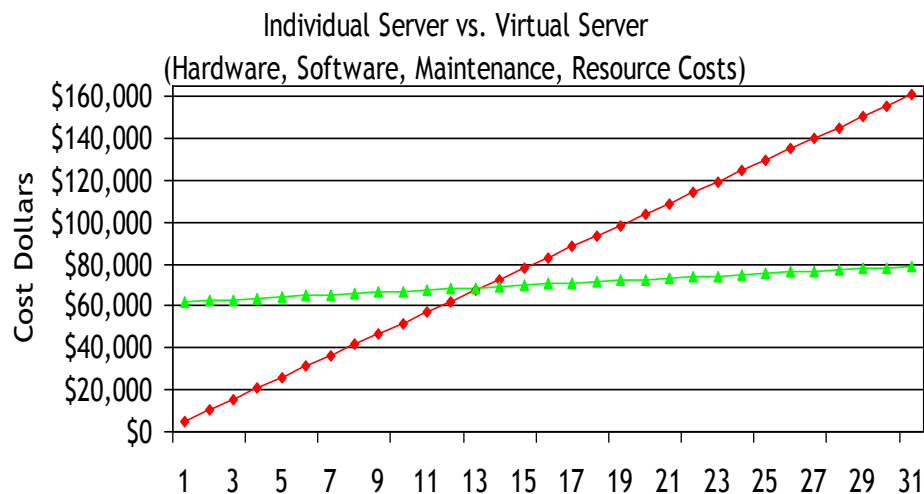


STRATAPULT



See how far it takes you

- Business Requirements:
 - Minimal notice given
 - Reduce support costs of Dev & QA
 - Support for dynamic environment
 - Ease of implementation





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STRATAPULT



See how far it takes you

Task	Elapsed Time		Hands-on Time	
	Physical	Virtual	Physical	Virtual
Specifications	1 day	1 day	4 hrs	4 hrs
Asset Request	.5 day	0 days	1 hr	0 hrs
Pricing	2 days	0 days	2 hrs	0 hrs
Ordering	1 day	0 days	1 hr	0 hrs
Receiving	.5 day	0 days	1 hr	0 hrs
Assembly	.5 day	0 days	2 hrs	0 hrs
Racking	.25 day	0 days	1 hr	0 hrs
Wiring	.25 day	0 days	1 hr	0 hrs
O/S Load	.5 day	.1 day	2.5 hrs	.5 hrs
Deploy	1 day	1 day	3 hrs	3 hrs
Lead time	14 days	1 day	3 hrs	3 hrs
Total	21.5 days	3.1 days	21.5 hrs	10.5 hrs





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- Business Requirements
 - Lack of space in current data center
 - Difficult to manage the growing number of Intel servers
 - Concerned about adaptability and availability
 - Too many vendors to call for support
 - Reduce expenses

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- The Results
 - 94:4 consolidation ratio
 - 96% hardware reduction
 - >6 racks:<1/2 rack
 - 94% space reduction
 - \$1.5M:\$0.5M Total Cost of Ownership
 - Gartner model customized by PNG & Yorel
 - 11 month ROI

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Yorel's VMware Experience

- VMware Enterprise Partner
- VMware Authorized Consultants
- VMware's most experienced partner in the Carolina's
- 5 VMware Certified Professionals on staff
 - Implementations since ESX 1.0 beta product
- 5+ years of customer references



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Strategic Partnerships

- **IBM Premier Business Partner Systems & Software**
- IBM Global Financing
- IBM Global Services
- **IBM EXAct & BladeCenter Business Partner**
- **Microsoft Certified Solution Provider**
- Citrix Solution Advisor
- **VMware Enterprise Partner**
- **VMware Authorized Consultant**
- **PlateSpin Gold Partner**
- **Vizioncore ESX Ranger Reseller**
- NetIQ Reseller
- Cisco Certified Partner
- APC Reliability Provider Partner
- iTera (High Availability)
- Vision Solutions (High Availability)
- **STORServer (Backup/Disaster Recovery)**





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Virtualization Solutions

Server Consolidation & Containment (SCON)

Business Continuity (HA & DR)

Application Lifecycle Management

Virtual Desktop Infrastructure (VDI)

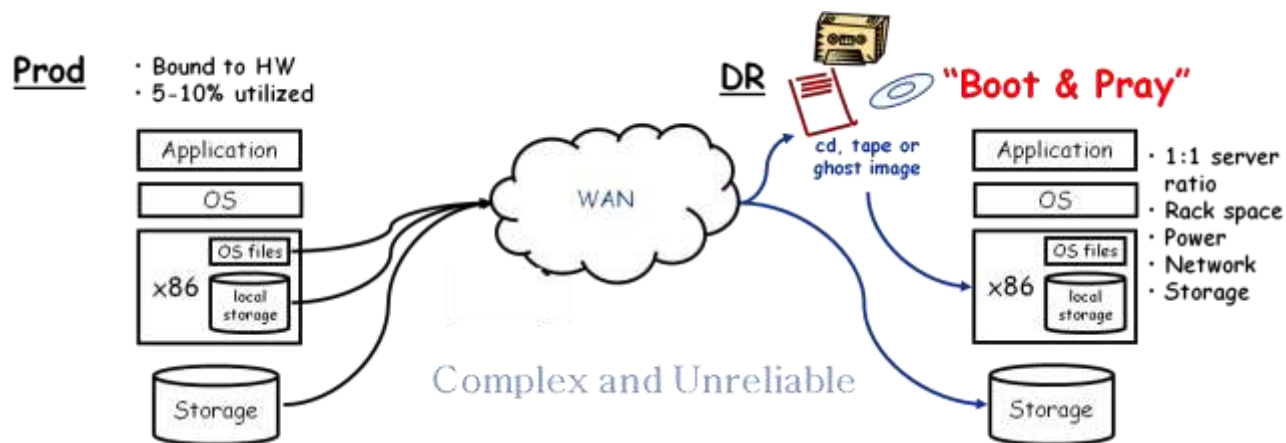
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Typical DR Challenges

- Creating and maintaining a DR plan for x86 servers
- Cost of procuring and maintaining identical HW
- Restoring successfully on dissimilar hardware
- Quickly restoring a highly distributed environment
- Testing restores with confidence





Define RTO & RPO

- **Recovery Time Objective: (time to recover)**
is the boundary of time and service level within which a business process must be accomplished to avoid unacceptable consequences associated with a break in Continuity.
- **Recovery Point Objective: (data loss)**
describes a point in time to which data must be restored in order to be acceptable to the owner(s) of the processes supported by that data.



Business Continuity Tools

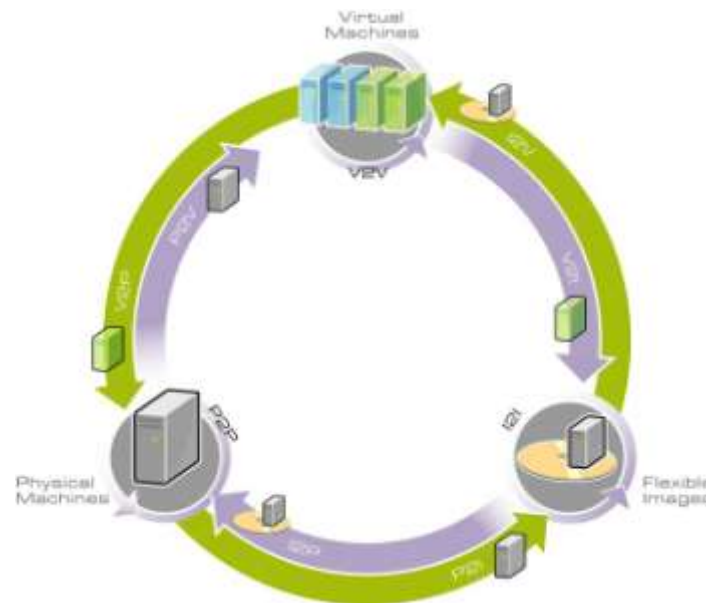
- High Availability
 - VMware HA
 - Windows Clustering
 - Windows Network Load Balancing
- Disaster Recovery
 - Offsite backup to tape with StorServer
 - PlateSpin PowerConvert for DR
 - VMware VCB w/ Vizioncore esxRanger Pro



PlateSpin PowerConvert



- **Recovery**
 - Ensure business continuity with automated server replication and flexible recovery
- **Hardware Migration**
 - Reduce switching costs with cost effective hardware migration
- **Server Consolidation**
 - Fast server consolidation with virtual machines or blade Infrastructure





Vizioncore esxRanger

- Hot backup for VMware Infrastructure
- Backup, archival and disaster recovery
- Integrates with VCB for fast SAN-based backups





Disaster Recovery Methods

- Legacy: Physical to Physical (>RTO)

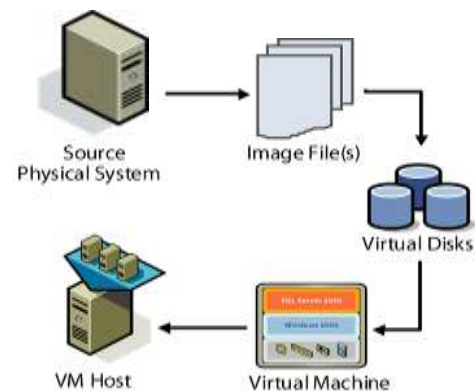
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- Hybrid: Physical to Virtual

★★★ \$\$\$

- Advanced: Virtual to Virtual (<RTO, <RPO)

★★★★★ \$





Physical to Physical DR

- Costly investment in hardware or contracts
- Difficult to restore on dissimilar hardware
- May be necessary for some applications
 - Need highest performance in DR scenario
 - Special hardware requirements (i.e. fax cards)

Solution

- Leverage PowerConvert to maintain DR backups of physical machines



Physical to Virtual DR

-
- For servers that can't be virtualized in normal production operation
 - Virtualization is a viable option for DR
 - Cost effective and more reliable DR

Solution:

- Prepare a Virtual Infrastructure for DR
- Leverage PowerConvert to maintain DR backups for physical to virtual conversions



Virtual to Virtual DR

- Portable VM's can be easily backed up
- Virtualization presents multiple alternatives
- Most cost effective and flexible scenario

Solutions:

- VCB w/ StorServer and/or esxRanger
- Leverage PowerConvert to maintain DR backups of virtual machines
- SAN replication between sites



Benefits of Virtual DR

- **Rapid recovery process**
 - Hardware independent, simpler backup, replication
 - Fastest recovery using V2V
- **Affordable**
 - Consolidation savings, funds your DR plan
 - Reduces hardware needs, use existing HW
- **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



Steps to Virtualize DR

1. Assess disaster recovery requirements
2. Assess application requirements
3. Determine what to virtualize
4. Determine DR architecture
5. Select HW & SW components
6. Convert & consolidate
7. Setup backup and/or replication
8. Test, optimize & document



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Disaster Recovery and Virtualization Solutions

- **The Total Solution**
 - Disaster Recovery Workshop / Assessment
 - Infrastructure Design and Procurement
 - Project Management
 - Best Practice Implementation
 - Knowledge Transfer
 - Ongoing Support



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Next Steps

Yorel's Virtualization Services:

- Disaster Recovery Workshop
- Virtualization Proof of Concept
- Server Consolidation Study

- Yorel Executive Briefing Center & Lab
- Raleigh VMware Users Group
<http://www.vmware.com/vmtn/usergroups>

