Virtual Recovery for Real Disasters: Virtualization’s Impact on DR Planning

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Double-Take Software
I’m Not Prepared - So What?

Business-Critical Applications and Data

- ERP, CRM, Accounting, Sales Force Automation
- “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)

E-mail has become the “lifeblood” of business

- Integration with business-critical systems
- “79% of companies accept email as confirmation of orders, approval, etc.” (Osterman Research)

Your systems are your business – it’s not just software; it’s how you run things on a day-to-day basis!
Meeting Compliance

SOX
COOP
SEC (NYSE & NASD)
SEC (Federal Reserve / Treasury)
HIPAA

Most regulations do not mandate how data should be protected, but do have disaster planning requirements and require provisions for data backup.

Compliance is only the catalyst, not the driver – DR/BC solutions should have their own value and should allow IT to better support the business.
recoverability, ri-'kər-əl-ti, noun: the power or capacity to get back or regain something lost or taken away
The Keys to Recoverability

**Recovery Options**
- Remote Recovery Snapshot
- Recovery System State Recovery
- Monitoring and Failover for Servers and Applications
- Enterprise-Level, Centralized Management for Data Protection

**Data Replication**
- Real-Time, Asynchronous, Byte-Level Replication
- Data Integrity Ensured by Write-Order, Transactional Replication

**Application Availability**
A Platform for Recoverability

Double-Take
Small Business Server Edition

Double-Take Virtual Systems

Double-Take Server Recovery Option

GeoCluster

Double-Take VMware Infrastructure

Double-Take for Windows

Enterprise Management

DoubleTake Solutions Partner Program
DR Challenges

Cost
- Additional hardware
- Additional tools and training

• Complexity
  - Management and provisioning
  - Lock-step hardware and software upgrades

• Reliability
  - Complex solutions are hard to test
  - Requires specialized training for personnel
Double-Take

Core Technologies
> Real-Time, Asynchronous, Byte-Level Replication
> IP Monitoring for Server and Application Failover
> Centralized Management and Reporting

Features
> WAN Optimization – Compression, Scheduled Bandwidth Limiting, Transmission Scheduling
> Snapshot Integration – Point in Time Recovery
> 1-1, N-1, 1-N, and Chained Configurations, Centralized Backup, Multi.Server Failover and More
> Online Restore, In-Band Controls, and More
Disaster Recovery and High Availability

EX1 ("Source")

Double-Take Replication

HA1 ("Target")

Double-Take Monitoring/Failover

Client Redirection Upon Failover

WAN

DR1 ("Target")
Virtualization Benefits

**Cost**

- Hardware Independence
- Hardware pooling / oversubscription

**Complexity**

- Single Step Recovery
- Faster Recovery

**Reliability**

- Hardware Availability
- Simplified Process
The Technology - Replication

Application Layer
Exchange services, Database engines, File sharing, Web applications, etc.

Windows Operating System

File System or “Cache”
An area of memory for disk transactions to be stored before written to disk

Disk/Hardware Layer
Including disk drivers, disk controller and the actual hard drives
The Technology - Replication

Any IP Network

Applications
Operating System
File System
Hardware Layer

Double-Take® Replication

Applications
Operating System
File System
Hardware Layer
The Technology - Replication

Applications
Operating System
File System
Hardware Layer

Any IP Network

Applications
Operating System
File System
Hardware Layer
The Technology - Replication

Any IP Network

Applications
Operating System
File System
Hardware Layer

Applications
Operating System
File System
Hardware Layer
Bandwidth Management

Replication can be...

- Scheduled
- Throttled
- Compressed

Bandwidth can be predicted
Configuration and Monitoring

Centralized management

Alerting

At-a-Glance Monitoring

Server Groups
The Technology - Failover

Failover of IP Address and Server Name
AD Hostname Failover
DNS Failover
Custom Failover Scripting

Client Redirection Upon Failover

IP ICMP or Heartbeat Monitoring
LAN, WAN, and NAT Failover
Failover one or more IP Addresses and Names
The Technology - System State

Source Server
OS Volume (C:\) containing “system state”
Data Volumes (D:\, E:\, etc.) containing application data

Recovery Server
OS Volume (C:\) containing “system state”
Data Volumes (D:\, E:\, etc.) containing application data
Double-Take Benefits

Cost

➢ Hardware/Application Independence
➢ Commodity, Host-Based Software

• Complexity
  ➢ Easy to Use Management Interface
  ➢ Automated Failover/Failback/Restore

• Reliability
  ➢ Replication that Guarantees Data Integrity
  ➢ Widely-used, Proven Technology
Virtualization Benefits

Cost

> Hardware Independence
> Hardware pooling / oversubscription

• Complexity
  – Single Step Recovery
  – Faster Recovery

• Reliability
  – Hardware Availability
  – Simplified Process
Virtualization – Solutions

VMware VMotion

- VMware VMotion HA
- Microsoft Clustering

- That’s why we’re all here, right?
Virtualization Strategy - Technology

Provide the broadest range of software solutions for recoverability in virtualized environments.

• Double-Take for Virtual Systems™
  – Windows guest OS based replication for real-time data protection and application availability and the highest levels of recoverability

• Double-Take for VMware® Infrastructure
  – Replication of entire virtual machines (including non-Windows OS based guests) running on VMware ESX Server for disaster recovery

• Hypervisor-based ESX Replication
  – Real-time, continuous replication of ESX virtual disk files stored on VMware file system (VMFS) volumes for disaster recovery or high availability
Double-Take for Virtual Systems

Supported in and tested for virtual machine environments

Flexible configuration options:
> Virtualized source or target – or both

Full Compliment of Double-Take features:
> High Availability and Disaster Recovery
> LAN and WAN Support

One license of Double-Take for Virtual Systems supports running on up to 5 virtual machines

> $7,995 includes 1 year of maintenance
Double-Take Server Recovery Option

Protect the Entire Server
> Operating System
> Applications
> Data

Recover to Same or Dissimilar Hardware
Near Bare-Metal Recovery
> Only the Windows OS Required for the Recovery Server

Protect Multiple Servers with a Single Backup Server
Simple Management Interface Recovers an Entire Server in a Single Operation
> No more multi-stage recoveries from tape
Double-Take Server Recovery Option

Whole Server Recovery using SRO Recovery Manager

Recovery VMs
Virtualization Strategy - Technology

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DT for VI - Product Features

Powered by VMware Infrastructure

- Virtual Infrastructure Browsing

Enterprise Management and Ease of Use

- Whole VM Protection (OS, Apps, Data)
- Agent-less Installation (no software on ESX)
- Streamlined Wizard for VM Protection Configuration

Guest OS Agnostic

- Can protect any guest OS supported by ESX Server

Data Replication Options

- Compression Settings, Replication Frequency
How It Works

Must be running ESX Server 3.0.0 and VMware VirtualCenter 2.0.0

Leverages VMware APIs for virtual machine snapshot functionality

Snapshots include the entire VM (OS, Apps, Data) and can be used with a non-Windows Guest OS

Snapshots are time-coherent across all virtual disks configured for a protected virtual machine

Extends staging of virtual machines across geographical boundaries (WAN replication)
Overview – How It Works

Administrative Client

Source ESX Server

Source VM Files

*.vmdk
*-flat.vmdk
*.vmx

*-delta.vmdk
*.vmsd

Datastore (Source)

Web Services

SSH

Synchronizing (SCP)

Monitoring (Time/Size)

Commuting (remove_snapshot)

Replicating (SCP)

Target ESX Server

Replica VM Files

*-delta.vmdk
*.vmsd

Datastore (Target)
Customer Scenario A

- Credit Union Customer
- Centralized Data Center, Cold Site for Disaster Recovery
- 100 Servers (physical & virtual)
- Recently migrated from hp to IBM System x & VMware

Key Business Drivers:
- Failover key applications in under 60 minutes
- Recover all other applications in 24-48 hours
Customer Scenario A

Business Continuity
- BCP in place, non-IT sponsor
- Tier 1 Unix workloads are continuously replicated (critical business component on IBM System p)
- Remaining 100 server workloads considered Tier 2 & 3

Next Steps
- Define RTO & RPO for each workload, group into Tiers 2 & 3
- Completed as a part of several brainstorming sessions with customer
- Educated customer on product possibilities
- Double-Take & SRO was chosen as the best fit product to support Tier 2 & 3 workloads
- Licensing spanned DT for Windows & DT for Virtual Systems
Customer Scenario A

Overcoming Objections

- We’ve used Double-Take before, but what about SRO? Double-Take SRO Trials were installed as part of a POC and worked flawlessly the first time. The customer was impressed.

- How do we know how much bandwidth we’re going to need? We generated a report from Tivoli Storage Manager to determine how much incremental data was changing on a daily basis. After analyzing the current WAN utilization, we were able to determine the quantity of data that could potentially move through a DS3. The daily incremental changes were far below the daily transfer limit.

- What else?
Customer Scenario A

Applications Online in 5 minutes!

SRO-TARGET-1

SRO-TARGET-2

Recovered in 12 hours

Start Virtual Machines & Recovery Manager

Tier 2 - Physical Servers

Tier 3 - Physical & Virtual Servers

VMWARE中国虚拟化用户大会2007
VMWARE CHINA VIRTUALIZATION FORUM 2007
Customer Scenario A

Solution Advantages

- Turnkey Disaster Recovery for both Tier 2 & 3
- Tier 2 uptime in under 5 minutes (business requirement was 60)
- Tier 3 uptime in under 12 hours (business requirement was 24-48)
- One replication & failover technology for over 75 servers
- MOM Reporting built-in
- Target-side VSS snapshots for versioning replicated data
- SRO performs System State ‘merges’, so recovered systems can be physical (any hardware) or virtual
Customer Scenario B

Customer Data Center

- Windows File Server
- IIS Web Server
- Exchange Server
- SQL Server
- Application Server

Virtual Infrastructure

High Availability Server

Berbee Data Center

Virtual Infrastructure

Disaster Recovery Server

Double-Take

VMWARE CHINA VIRTUALIZATION FORUM 2007
Questions?

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For more information …

http://www.doubletake.com