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Running Successful Disaster Recovery Tests

Understanding the DR Process

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Running Successful Disaster Recovery Tests

Understanding the DR Process

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By The End Of Session

- How to plan for DR
  - Technologies to move data
- How to run successful DR tests
  - What to look out for
- How to maintain DR readiness

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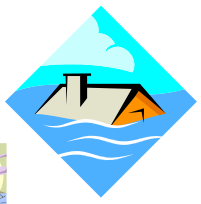
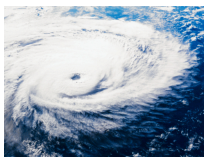
Why DR?





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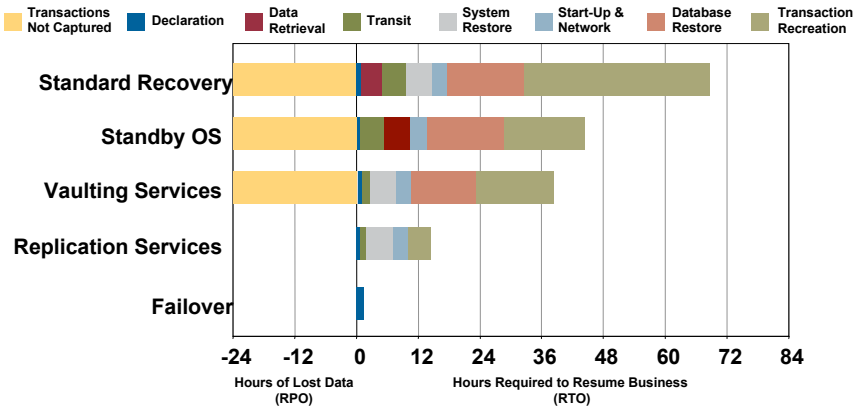
RTO & RPO*



* Source: SunGard Availability Services

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Advanced DR Planning

Identify/prioritize "mission critical applications" & RTO/RPO

- Tier I - RTO = 0 hours
- Tier II - RTO = 24 hours
- Tier III - RTO = 72 hours
- Tier IV - RTO between 3 to 7 days
- Tier V - RTO > 7 days

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Advanced DR Planning (cont.)

For each application identify

- Data used by applications
- Storage data resides on
- S/W, server & networking requirements
- How data transported
- How servers, storage, & networking brought up
- Business end users

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Moving Data -- Tape Based

- Remote vault
  - CTAM to move backup tapes
- Tape remote replication
  - Backup to remote tape libraries
- Tape transports & library H/W
- Tape encryption

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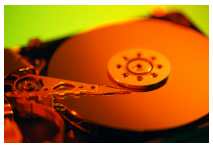
Moving Data -- Disk Based

- Disk mirroring -- requires disk products deployed in pairs
  - Synchronous
  - Semi-synchronous
  - Asynchronous
- Virtual tape libraries
- Disk-to-disk backup
- Storage virtualization



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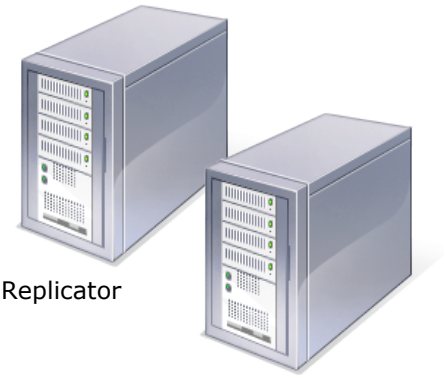
Moving Data -- Host Based

- Mainframe
  - Hitachi HXRC
  - IBM XRC
- Unix & Windows
  - Softek Replicator
  - CA Xosoft
- Windows
  - Symantec Veritas Volume Replicator
  - EMC RepliStor
  - Double Take replication



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Moving Data -- Host Based (cont.)

- Database replication
  - Oracle, DB2/UDB, MS SQL Server, PostgreSQL
- O/S replication
  - DFS-R & FRS for Windows Server
  - PeerFS for Linux

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Rolling Disasters

- Corruption propagated to DR site
- Deleted files lost before backed up
- Roll-back solutions
  - CDP
  - File/database journals

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Disaster Site Considerations Hardware

- Tape and disk storage
  - Storage config., capacity & performance
- Servers
  - Server config. & performance
  - S/W licensing
  - Provisioning options
- LAN config. & performance
- WAN bandwidth & latency

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Disaster Site Location

Primary and DR site on different

- Fault lines
- Tornado, hurricane paths
- Flood plains
- Power grids
- Communication grids

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DR Site Types

Cold site -- Space, network ports, power & cooling only

Warm site -- Cold site + H/W to restore data

Hot site -- Warm site + staffed 7x24

Mobile site -- Self-contained, transportable shell

Mirror site -- Fully redundant disk mirroring

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Outsourcing DR

- **Pluses**
  - Hardware & software available
  - Secured
  - Multiple locations
  - Contract includes limited testing
  - IBM Global Services, HP Service, SunGard, etc.
- **Minuses**
  - First come -- first serve
  - Offsite backup

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In-sourced DR

- **Pluses**
  - Control destiny
  - Tailor hardware, software & networking
  - Disk mirroring option
  - Geographically disbursed data centers do best
- **Minuses**
  - Limited sites
  - Costs for additional equipment
  - Personnel training

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DR Test Objectives

- Choose applications to validate DR plan
  - RTO & RPO met
  - Roles followed
  - Scripts worked
  - Sustainable solutions
- Verify compatibility of DR site H/W&S/W
- Train staff
- Demonstrate DR readiness

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DR Test Frequency

- Weekly to monthly
- Every 3 to 9 months
- Yearly
- Random

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DR Test Costs

- Outsourced site
  - SunGard, IBM, HP contracts include yearly tests
  - Add costs to transport data and personnel
- In-sourced site
  - Costs are ongoing
  - Add costs to transmit data and personnel

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DR Test Politics

- Motivation to test
  - Testing integral part of DR planning
  - Untested DR plans don't succeed and can be dangerous
- Test prioritization
- Multi-year budget for DR tests

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DR Test Types

- Desk check
- Walk thru/audit
- Simulation
- Functional
- Full-scale

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DR Test Plot Lines*

Scenarios to drive DR tests

- Fire - CAPST
- Flood - CAPST
- Terrorist - CAPST

*Source: ***Some thoughts on exercise scenarios and plot lines,*** J. Burtles, FBCI

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Desk Check

- Un-timed, informal, stress-free
- Q&A on team familiarity with DR plan
- May or may not be facilitated

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Walk Through/Audit

DR audit/assessment

- Internal/external auditors assess DR preparedness
- Structured walk through
  - Walk through application recovery
  - Follow procedure mentally
  - Estimate time & success likelihood
- Report discrepancies

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Simulation

Selected scenario test

- DR plan is used
- Test time simulated
- Test results estimated
- DR readiness and awareness test

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Functional Test

- Selected scenario, well scripted, and planned
- Actors, evaluators, players (DR team)
- Practice responses just shy of actual DR site activities
- Messages reflect ongoing events
- DR team acting in real time
- Lengthy

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Full Scale Test

- Call primary site disaster/activate DR site
- Transport data/personnel
  - Optionally activate equipment drop ship
- Configure and restore servers
- Restore applications
- Restore & validate data
- Configure and restore network
- Enable users
- Verify applications

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Application Failover

- Application failover to DR site
- Planned outage or on a periodic basis
- Application fail-back to primary site
- Hardware/software support

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Offsite Backup Verification

- Retrieve media periodically
  - Time retrieval
- Attempt restores
  - Verify backups

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DR Test Hints

- Tier I first
  - Next add more
- Test with 25% personnel
  - Randomly select DR test personnel

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After Action Review

DR rarely works first time

- Expected vs. actual and why
- Issue management
  - Record problem detail
  - Figure out what went wrong
  - Fix it
  - Find and fix similar problems
  - Sustainable solutions -- avoid heroics

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Typical Test Failures

- Data dependencies
- Cross application dependencies
- Personnel dependencies
- Software licensing
- Fail-back failure

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Typical Test Failures (cont.)

Out of synch

- Active directory permissions
- DB registry settings
- Domain controller settings
- Service pack/patch level

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Real DR Failures

- DR contract lapsed
- DR site availability -- FCFS
- DR plan out of date
  - Equipment configurations
  - Restore/bring-up scripts
  - Documentation
  - Contact lists

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Real DR Failures (cont.)

- Data and personnel transport obstacles
- Personnel not available, backups not trained
- Hardware performance
- Backup media bad/mislabeled
- Finger checks

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Real DR Failures (cont.)

- Complete telecom/voice failure
- No robust evacuation plans
- No robust chain of command

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Hosted Applications DR Considerations

- Contract for periodic DR tests
  - Ask for after action review issue lists
- Contract for periodic DR audits/assessments

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Ongoing Change Control

From DR perspective need to consider changes to

- Applications/databases
- Storage
- Servers
- Networking

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Change Control Applications/Databases

- DR application tier & RTO-RPO
- Data transport
- Personnel, networking, storage, servers, and S/W needed
- Retired applications/databases removed from DR
- Application bring-up scripts

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Change Control Storage

- Storage configuration, performance, & capacity sufficiency at DR site
  - Retired storage optionally moved to DR site
- New data transport options
- Vendor contact list
- Opportunity to test DR

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Change Control Servers

- Server configuration & performance sufficiency at DR site
  - Retired servers optionally moved to DR site
- O/S and S/W licensing
- Server restore & bring-up scripts
- Primary and DR site naming
- Vendor contact list
- Opportunity to test DR

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Change Control Networking

Voice, PBX and data

- Telecom, LAN and WAN configuration, connectivity & bandwidth provisioning at DR site
  - Retired networking H/W optionally moved to DR site
- Primary and DR site addressing
- Networking switchover
- Vendor contact list
- Opportunity to test DR

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For More Information

- ***NIST IT Contingency Planning Guide***, http://csrc.nist.gov/publications/nistpubs/800-34/sp800-34.pdf
- ***Disaster Recovery Journal***, http://www.drj.com
- ***Business Continuity Journal***, http://www.businesscontinuityjournal.com
- Continuity Central, http://www.continuitycentral.com
- Disaster Recovery Institute International, http://www.drii.org
- The Business Continuity Institute, http://www.thebci.org
- IT Disaster Recovery, http://www.itdr.info
- Natural hazards center, http://www.colorado.edu/hazards/

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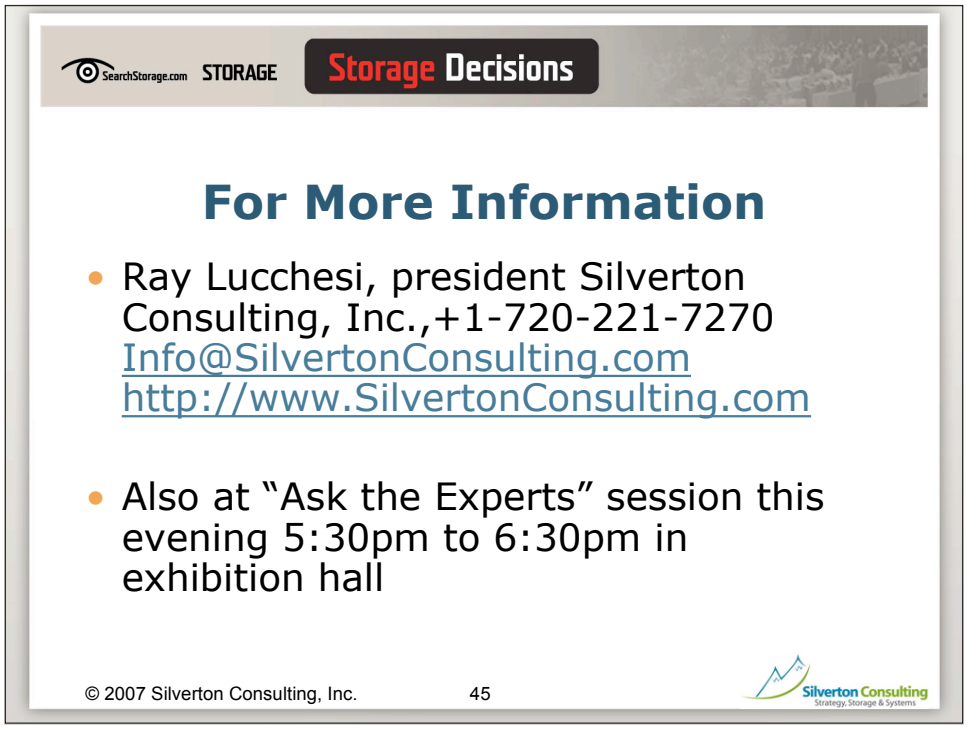
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Also at "Ask the Experts" session this evening 5:30pm to 6:30pm in exhibition hall
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