

SharePoint 2010 and Disaster Recovery New Capabilities, New Possibilities!



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Some information about me ...

Before starting in SharePoint, I was part of a team responsible for implementing an insurance and financial services company's first DR site.

I've been working with SharePoint since SharePoint Portal Server 2003 and WSSv2 (started writing web parts)

I've co-authored two books on SharePoint disaster recovery.

Agenda

1. Discuss new capabilities and features that alter the disaster recovery (DR) landscape in SharePoint 2010
2. Talk about improvements to existing SharePoint 2007 functionality that is related to DR
3. Cover a few "special attention" DR topics

Have you seen "Men
In Black 2?"



"Old and busted"
(SharePoint 2007)



(excerpt from "Men In Black 2")



(SharePoint 2010)
"The New Hotness"

"The New Hotness"

- PowerShell support
- Configuration-only backup/restore
- SQL Server snapshot integration
- Unattached database recovery
- SQL Server database mirroring

Disaster Recovery Implications

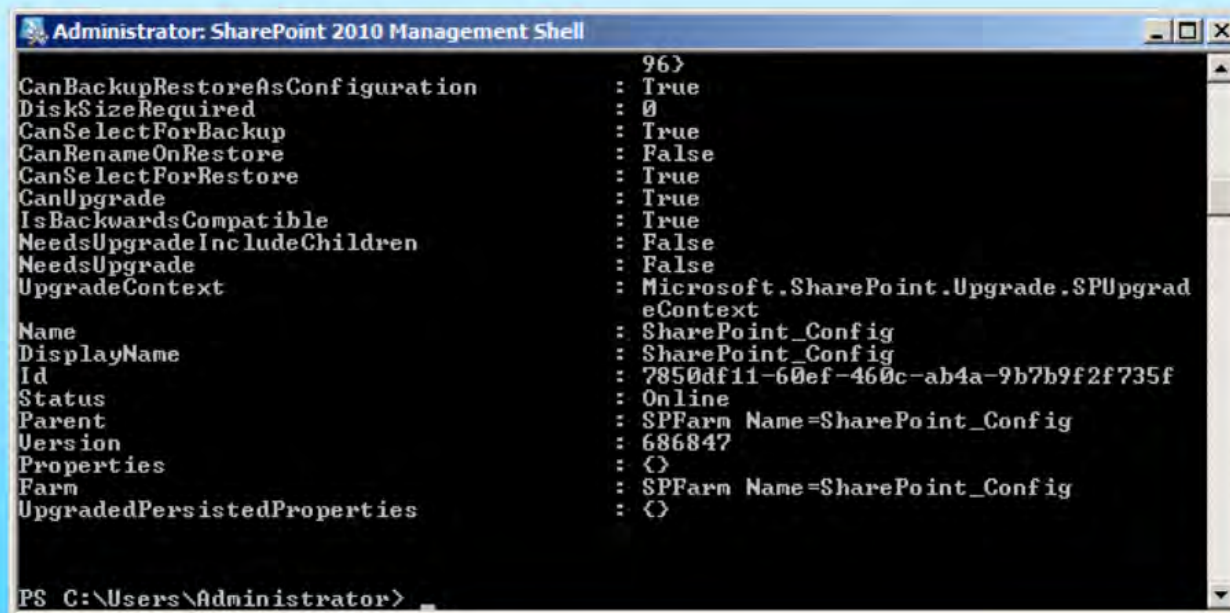
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PowerShell

Wait!

This is still a DR presentation ... right?

Absolutely



```
Administrator: SharePoint 2010 Management Shell
96>
CanBackupRestoreAsConfiguration : True
DiskSizeRequired                 : 0
CanSelectForBackup               : True
CanRenameOnRestore              : False
CanSelectForRestore              : True
CanUpgrade                       : True
IsBackwardsCompatible           : True
NeedsUpgradeIncludeChildren     : False
NeedsUpgrade                     : False
UpgradeContext                   : Microsoft.SharePoint.Upgrade.SPUpgradeContext
Name                             : SharePoint_Config
DisplayName                     : SharePoint_Config
Id                               : 7850df11-60ef-460c-ab4a-9b7b9f2f735f
Status                           : Online
Parent                           : SPSFarm Name=SharePoint_Config
Version                          : 686847
Properties                       : {}
Farm                             : SPSFarm Name=SharePoint_Config
UpgradedPersistedProperties      : {}

PS C:\Users\Administrator>
```

... but PowerShell pervades the SharePoint platform. As an admin, you need it to completely leverage SharePoint's capabilities.



So what is PowerShell?

super tiny subtitle:

"for those who have been living under a rock"



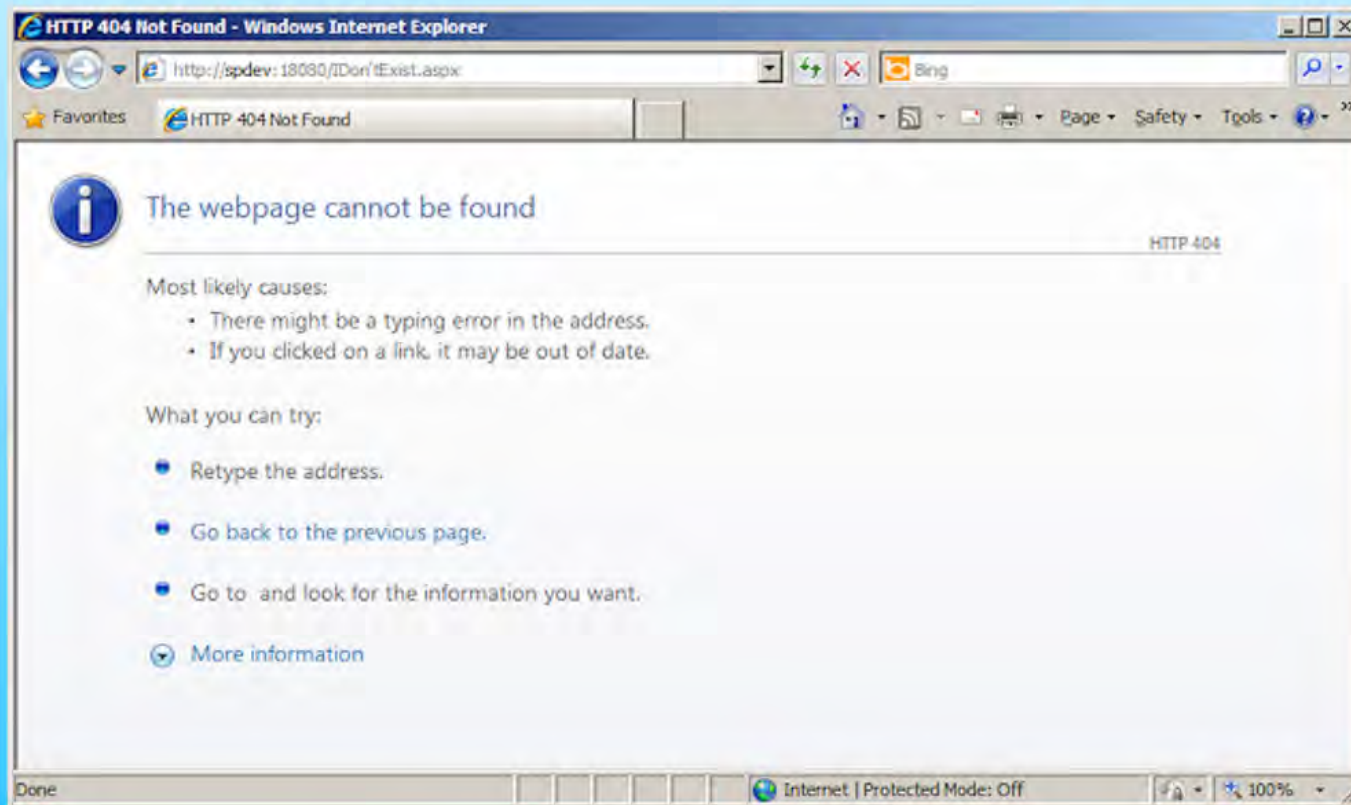
So ... what is PowerShell?

- Command line of the future
- >500 cmdlets supply SharePoint specific operations
- Object oriented, more efficient, and more capable

Why you should care

- All signs say that STSADM.exe is on its way out
- PowerShell empowers you to carry out admin tasks more quickly and effectively

An example



Assigning a custom 404 page for all Web applications that don't currently have one

Before PowerShell (aka, "the dark days")

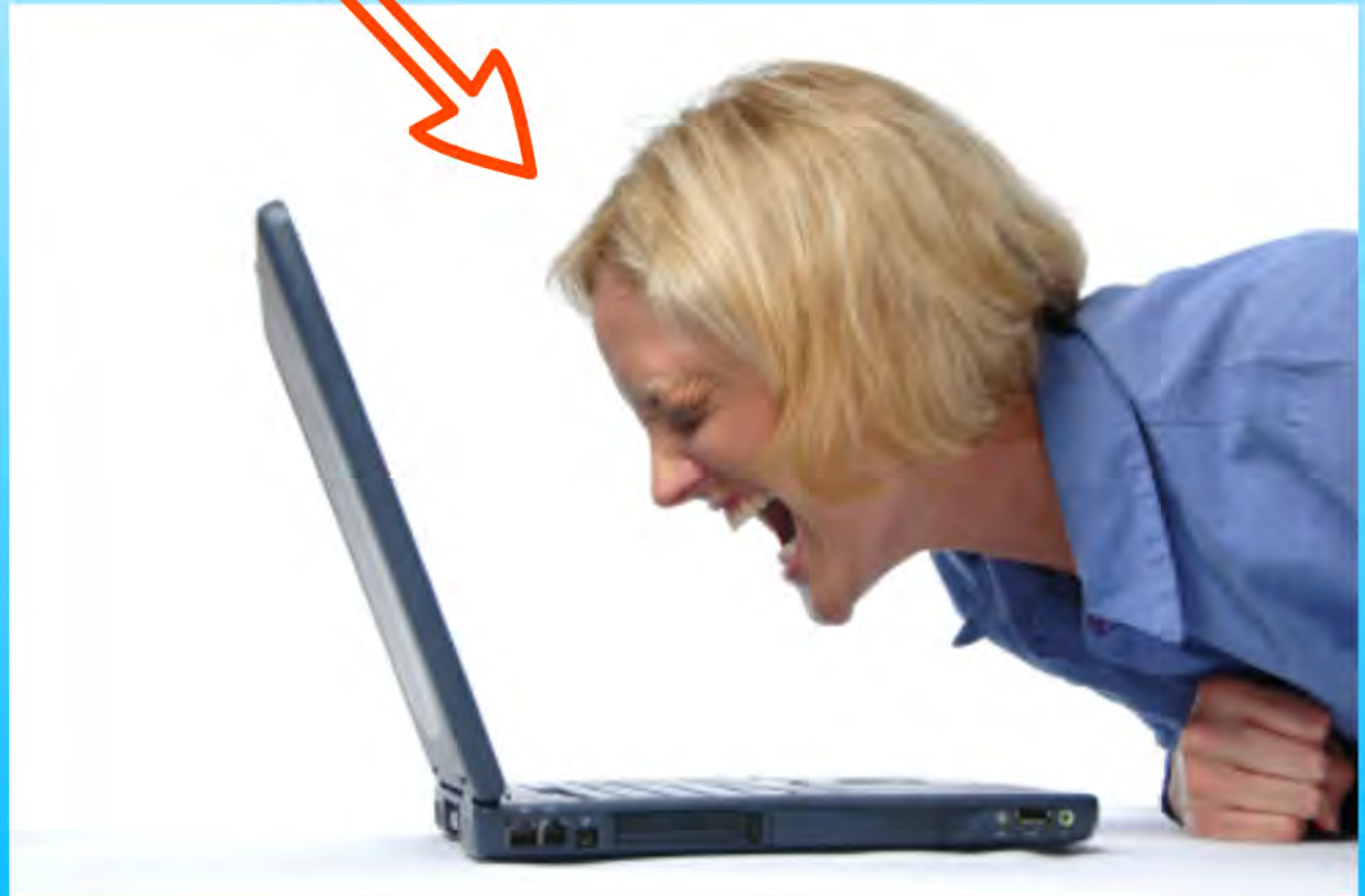
1. Place HTML page in the file system of each WFE
2. Fire-up Visual Studio on a workstation with SharePoint
3. Create a custom console application
 - 3a. Set appropriate SharePoint assembly references
 - 3b. Enter three lines of C# code

Yes -- just 3 lousy lines of code!

4. Compile the console application
5. Run the application on a SharePoint farm member

Detail: <http://support.microsoft.com/kb/941329>

Average SharePoint administrator
after performing these steps



Same task using PowerShell

1. Place HTML page in the file system of each WFE
2. Execute the following line of PowerShell

```
Get-SPWebApplication | Where-Object  
{$_ .FileNotFoundPage -eq $NULL} | ForEach-Object  
{$_ .FileNotFoundPage = "Custom404.htm"; $_.Update() }
```

That's it.

No, really -- that's literally all it takes!

This wasn't a DR example, but ...


... this should give you an idea of the DR landscape with PowerShell in SharePoint 2010

Some SP2010 Backup/Restore-related cmdlets

Operation	STSADM.exe (2007)	PowerShell (2010)
Farm backup and restore	<code>STSADM -o backup</code> <code>STSADM -o restore</code>	<code>Backup-SPFarm</code> <code>Restore-SPFarm</code>
Site collection backup and restore	<code>STSADM -o backup</code> <code>STSADM -o restore</code>	<code>Backup-SPSite</code> <code>Restore-SPSite</code>
Granular export and import	<code>STSADM -o export</code> <code>STSADM -o import</code>	<code>Export-SPWeb</code> <code>Import-SPWeb</code>
Configuration backup and restore	N/A	<code>Backup-SPFarm</code> <code>Restore-SPFarm</code> <code>Backup-SPConfigurationDatabase</code>

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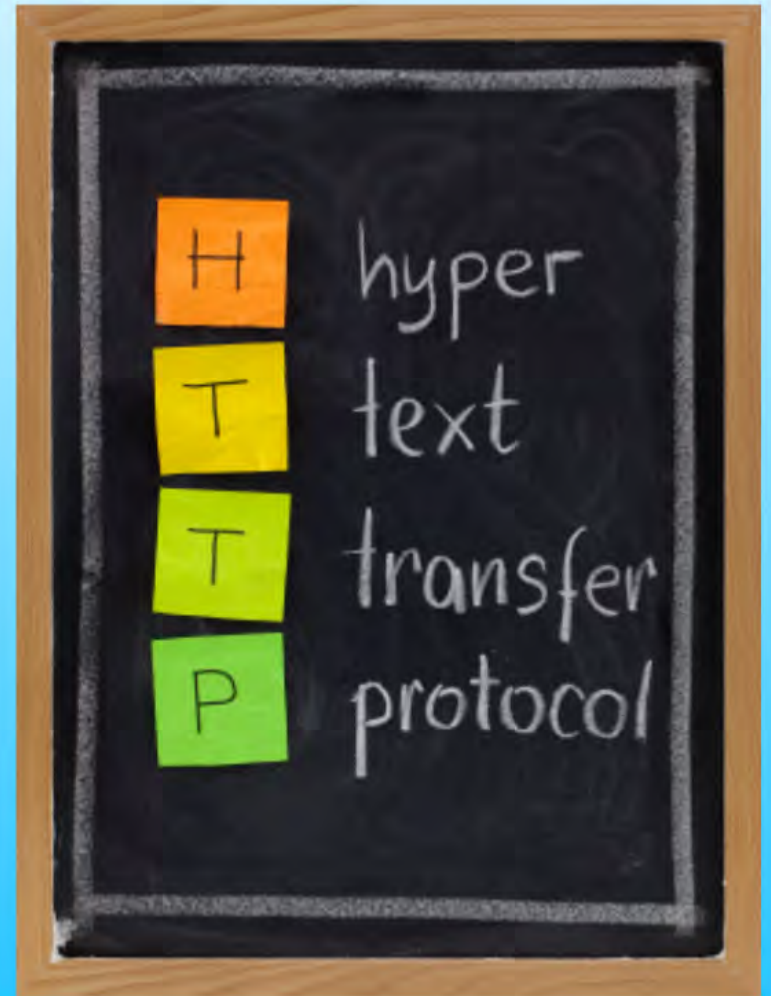
Upper Applications

- May lead to changes in script execution and scheduling
 - * PowerShell remoting!
- Efficiency and concurrency improvements may shorten RT0 windows

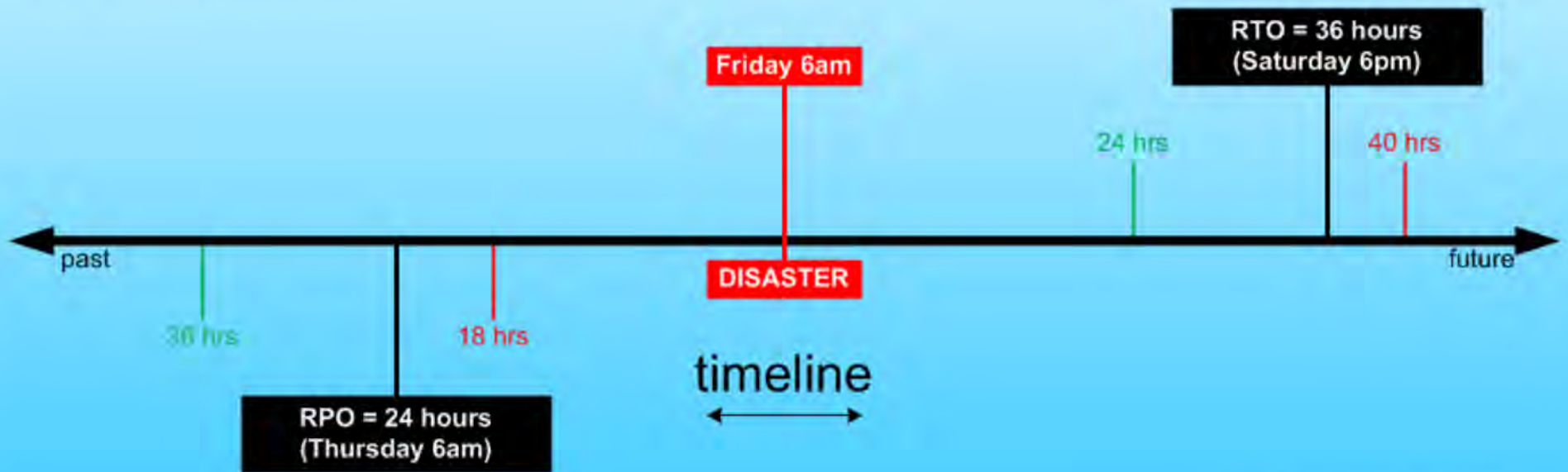
Um ... what's "RTO?"

And now for a couple
of minutes of ...

Define that
acronym!



RPO "looks backwards"



RTO "looks forward"

Powershell

Configuration

Backup/Restore

SQL Server

The pain we all felt in SharePoint 2007

- You need to set up additional farms
- How do you copy configuration data between farms?



Introducing ...

Configuration-only backup and restore

- Extension of the backup/restore API
- Components report their portable configuration data
- Captured in a standard native backup set
- Backup set can then be restored either in-place (restore a farm's previous settings) or out-of-place (to copy one farm's settings to another)

Alright, send in the clones!



not so fast ...

Selecting full-farm for configuration-only backup inside of SharePoint Central Admin

<input type="checkbox"/> Farm	Farm	Content and configuration data for the entire server farm.
<input type="checkbox"/> SharePoint_Config	Configuration Database	Configuration data for the entire server farm.
<input type="checkbox"/> InfoPath Forms Services	Server Settings and Content	Administrator-approved content and settings for the server farm.
<input type="checkbox"/> Settings	Settings	Settings
<input type="checkbox"/> Data Connections	Data Connections	Administrator-approved data connection files.
<input type="checkbox"/> Form Templates	Form Templates	Administrator-approved form templates.
<input type="checkbox"/> Exempt User Agents	Exempt User Agents	The collection of user agents that receive InfoPath forms instead of Web pages.
<input type="checkbox"/> SharePoint Server State Service	State Service	Service for storage of temporary state information used by various SharePoint Server features.
<input type="checkbox"/> State Service	State Service Application	
<input type="checkbox"/> Microsoft SharePoint Foundation Web Application	Microsoft SharePoint Foundation Web Application	Collection of Web Applications
<input type="checkbox"/> BackupTestDestinationWeb - 18680	Web Application	Content and configuration data for this Web application.
<input type="checkbox"/> BackupTestSourceWeb - 18580	Web Application	Content and configuration data for this Web application.
<input type="checkbox"/> CollabTestingWeb - 18380	Web Application	Content and configuration data for this Web application.
<input type="checkbox"/> PublishingTestWeb - 18480	Web Application	Content and configuration data for this Web application.
<input type="checkbox"/> SharePoint - 80	Web Application	Content and configuration data for this Web application.
<input type="checkbox"/> WSS_Administration	Central Administration	Collection of Web Applications
<input type="checkbox"/> SharePoint Central Administration v4	Web Application	Content and configuration data for this Web application.
<input type="checkbox"/> SharePoint Server State Service Proxy	State Service Proxy	
<input type="checkbox"/> State Service	State Service Application Proxy	
<input type="checkbox"/> SPUserCodeV4	Microsoft SharePoint Foundation Sandboxed Code Service	Settings for the Sandboxed Code Service.
<input type="checkbox"/> [Solution Validators Group.]	Backup Group	Collection of components grouped together for backup and restore.
<input type="checkbox"/> Sandboxed Code Load Balancer Provider using Popularity	Sandboxed Code Load Balancer Provider using Popularity	
<input type="checkbox"/> [Resource Measures Group.]	Backup Group	Collection of components grouped together for backup and restore.
<input type="checkbox"/> [Execution Tiers Group.]	Backup Group	Collection of components grouped together for backup and restore.
<input type="checkbox"/> Microsoft SharePoint Server Diagnostics Service	Microsoft SharePoint Server Diagnostics Service	Settings for the diagnostics service.
<input type="checkbox"/> Global Search Settings	Search object in configuration database	Crawler impact rules for the farm
<input type="checkbox"/> Application Registry Service	Application Registry Service	Backwards compatible Business Data Connectivity API.
<input type="checkbox"/> Application Registry Service	Application Registry Service	Backwards compatible Business Data Connectivity API.
<input type="checkbox"/> Microsoft Office Web Apps Diagnostics Service	Microsoft Office Web Apps Diagnostics Service	Settings for the diagnostics service.
<input type="checkbox"/> Microsoft SQL Server Reporting Services Diagnostics Service	Microsoft SQL Server Reporting Services Diagnostics Service	Settings for the diagnostics service.
<input type="checkbox"/> Microsoft SharePoint Foundation Diagnostics Service	Microsoft SharePoint Foundation Diagnostics Service	Settings for the diagnostics service.
<input type="checkbox"/> Shared Services	Shared Services	Shared Services of the server farm.
<input type="checkbox"/> Shared Services Applications	Shared Services Applications	Shared Services Applications of the server farm.
<input type="checkbox"/> Shared Services Proxies	Shared Services Proxies	Shared Services Applications of the server farm.

Restoring the configuration-only backup

Select	Component	Type
<input type="checkbox"/>	Farm	Farm
<input type="checkbox"/>	InfoPath Forms Services	Server Settings and Content
<input type="checkbox"/>	Settings	Settings
<input type="checkbox"/>	Data Connections	Data Connections
<input type="checkbox"/>	Form Templates	Form Templates
<input type="checkbox"/>	Exempt User Agents	Exempt User Agents
<input type="checkbox"/>	Microsoft SharePoint Foundation Web Application	Microsoft SharePoint Foundation Web Application
<input type="checkbox"/>	WSS_Administration	Central Administration
<input type="checkbox"/>	SPUserCodeV4	Microsoft SharePoint Foundation Sandboxed Code Service
	[Solution Validators Group.]	Backup Group
	Sandboxed Code Load Balancer Provider using Popularity	Sandboxed Code Load Balancer Provider using Popularity
	[Resource Measures Group.]	Backup Group
	[Execution Tiers Group.]	Backup Group
	Microsoft SharePoint Server Diagnostics Service	Microsoft SharePoint Server Diagnostics Service
	Microsoft Office Web Apps Diagnostics Service	Microsoft Office Web Apps Diagnostics Service
	Microsoft SQL Server Reporting Services Diagnostics Service	Microsoft SQL Server Reporting Services Diagnostics Service
	Microsoft SharePoint Foundation Diagnostics Service	Microsoft SharePoint Foundation Diagnostics Service

Hmmmm ... does that look a little "light?"

The reality

Configuration-only backup/restore captures a limited subset of configuration data

- Antivirus settings
- Information rights management (IRM) settings
- Outbound e-mail settings
- Customizations and solution packages
- Diagnostic logging settings

Web application settings aren't captured. Ouch.

Service Application configuration data isn't captured, either. Double ouch.



Your farm clones are going to look less like this ...



... and more like this

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- Generally minimal
 - If recovery plan employs a full farm rebuild, configuration-only restores can help reduce RTO windows
- * *Easy solution store recovery*

KUPI / KESTORE

SQL Server

Snapshots

|||



What is a snapshot?

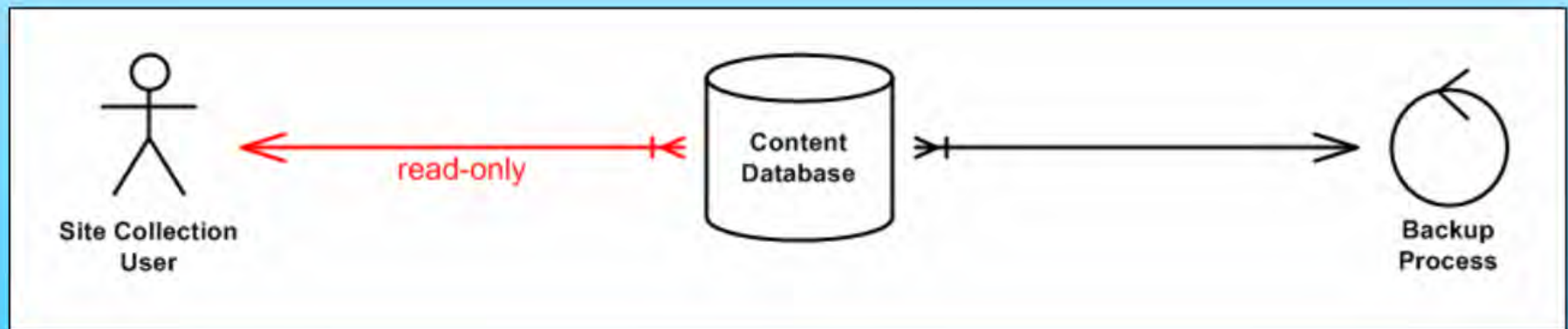
- For all practical purposes, it's a copy of a database with data that remains consistent to the point in time at which the snapshot was created
- Requires SQL Server Enterprise or Developer edition

How do snapshots integrate with SharePoint?

- Object model support (via SPDatabase)
- Snapshot clean-up through Microsoft SharePoint Foundation Snapshot Management timer job
- Admin tools extended to use snapshots where possible
 - * *Backup-SPSite and Export-SPWeb cmdlets*

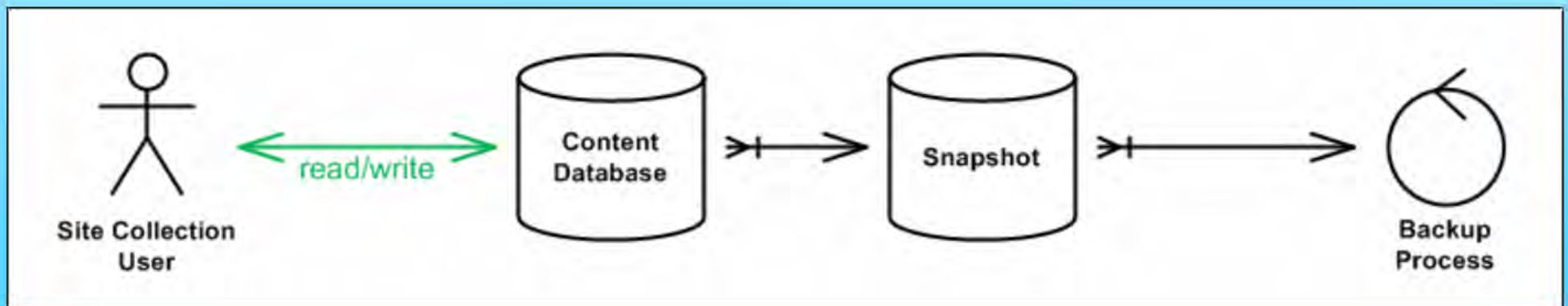


Site collection backups without the use of snapshots



Site collection is locked to prevent updates

Site collection backups using database snapshots



Site collection remains unlocked; no writes blocked

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Snapshots

Unattached

DB Recovery

SQL DB

Granular recovery using SharePoint 2007

1. Locate appropriate content database backup
2. Restore content DB to SQL Server in recovery farm
3. Attach content DB to Web application in recovery farm
4. Export target content using STSADM -o export
5. Copy resultant .cmp export file set to production farm
6. Execute STSADM -o import to bring in content

Feels a little like ...

Start somewhere around here



Get your files back here

So ... why is the process so convoluted?

The simple answer

Production
DB GUID



Restored
DB GUID



Identifiers are the same in each database, and this leads to GUID and path collision(s) if you attempt to attach a restored DB to the production farm

Result: restored databases must be attached to a separate farm for recovery operations.

So, you've got a production farm ...



... and you need a recovery farm



Of course, many companies have test environments, and data should be recovered to a different farm.



Maybe a separate staging environment?



Some also use distinct authoring environments



Obviously, the problems compound as environments grow, new ones are created, and recovery needs change

Obviously, the problems compound as environments grow, new ones are created, and recovery needs change

So, the big brains on the SharePoint product team toiled long and hard to give us a better mechanism with SharePoint 2010.



Unattached content database recovery

What is unattached content database recovery?

- Allows SharePoint to operate against a content database without actually joining it to the farm
- Sidesteps problems and restrictions associated with duplicate GUIDs
- Net effect: no more recovery farms!

Granular recovery in SharePoint 2010

1. Locate appropriate content database backup
2. Restore content DB to live SQL Server environment
3. Use Central Administration to browse unattached content database, select data, and export data
4. Import .cmp export package using Import-SPWeb



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SQL DB

Mirroring

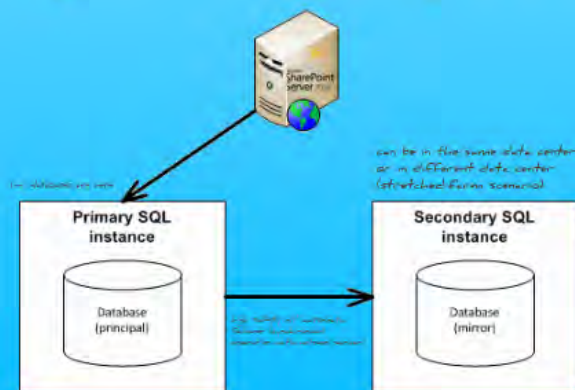
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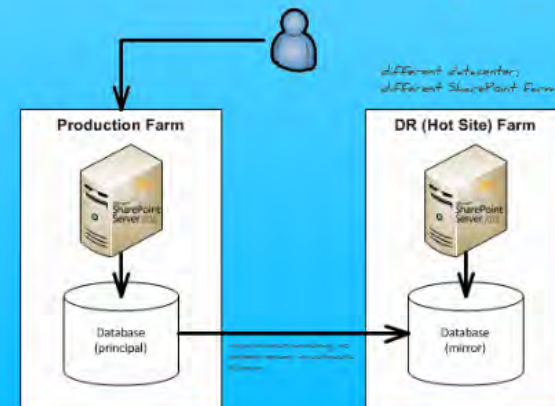
Committing database transactions in two instances of a database (in two different SQL Server instances) at once

Implementation details depend on how you're trying to use mirroring ...

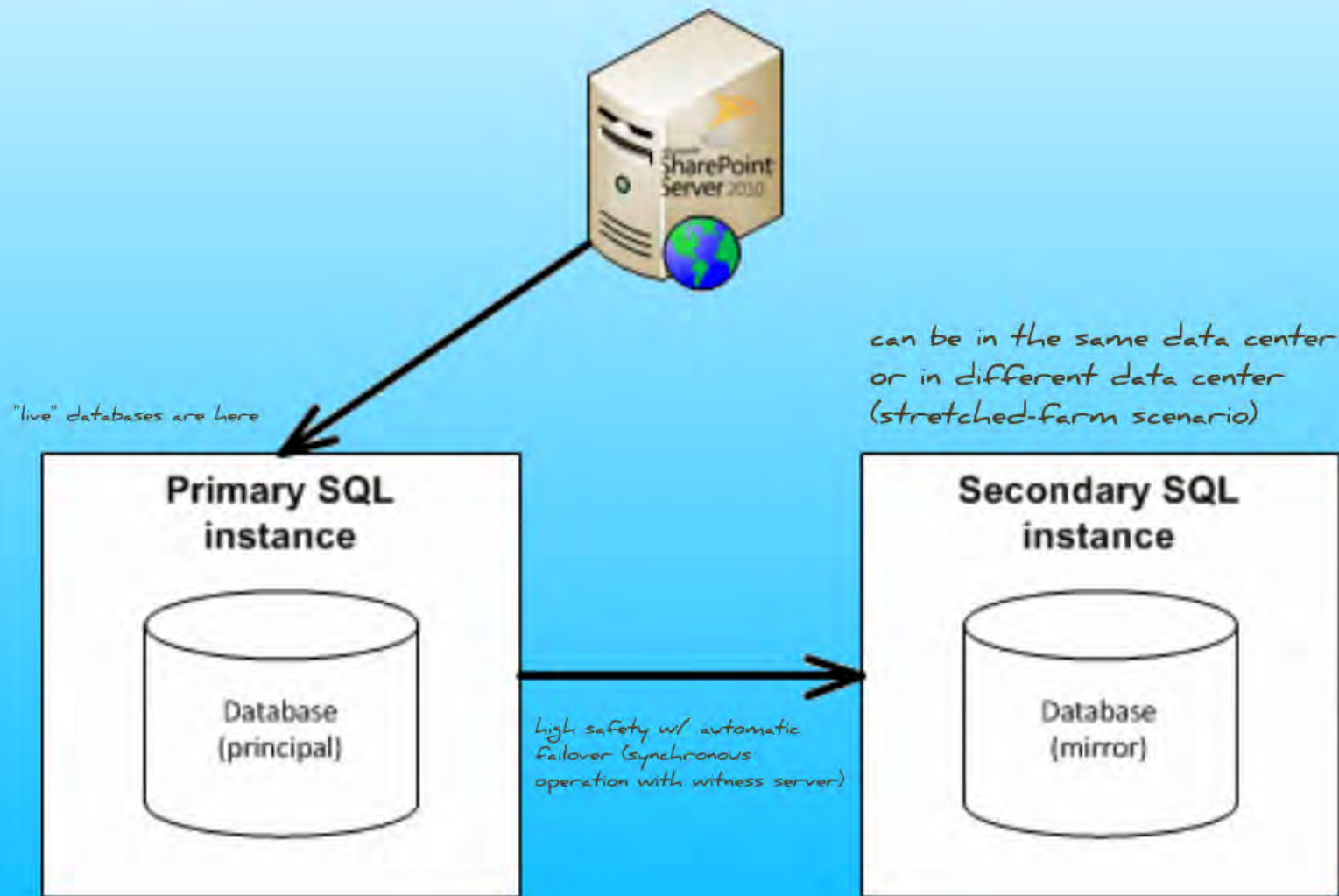
High Availability (HA)



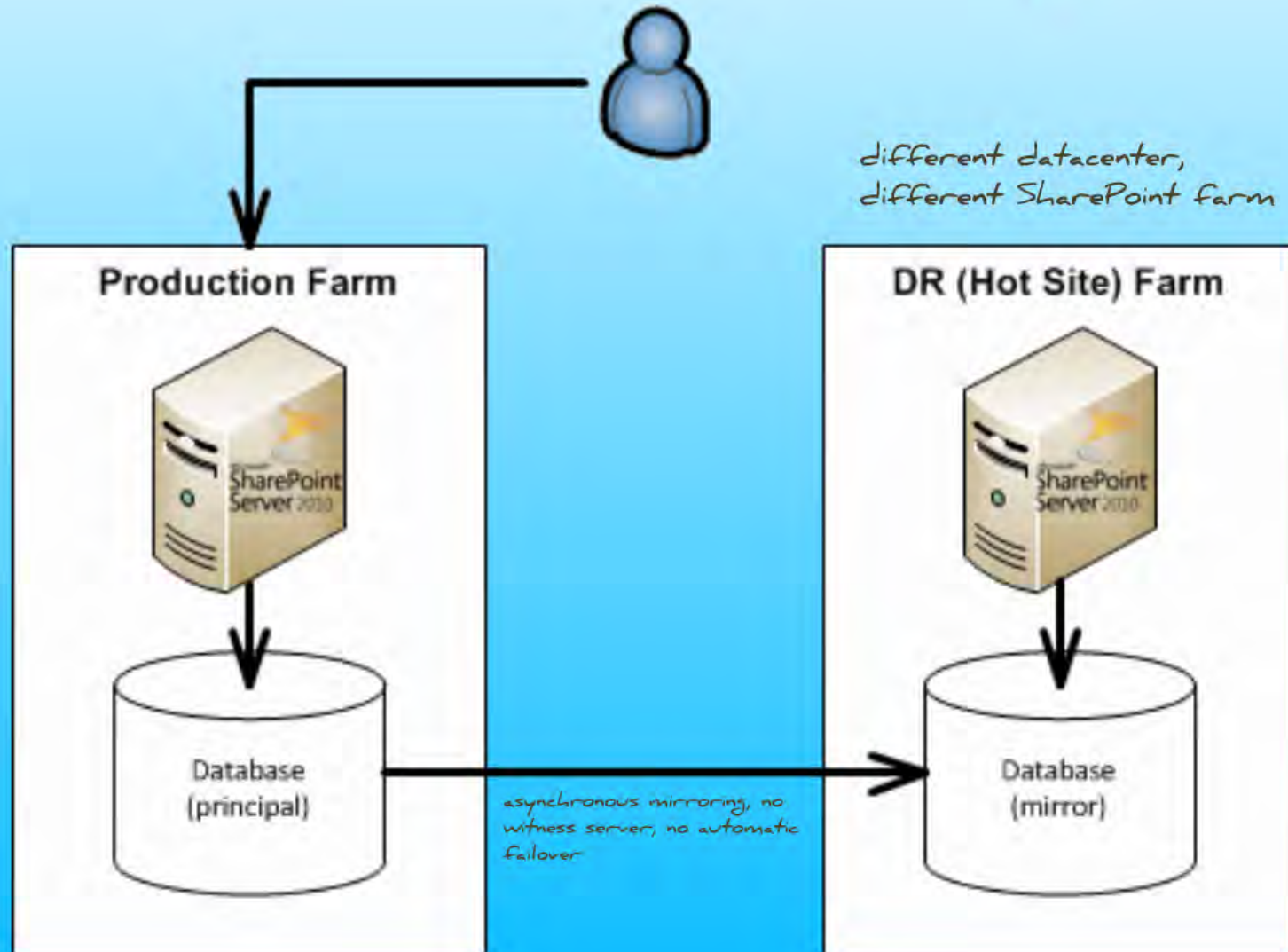
Disaster Recovery (DR)



High Availability (HA)



Disaster Recovery (DR)



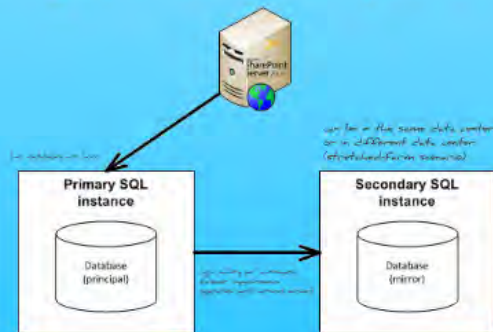
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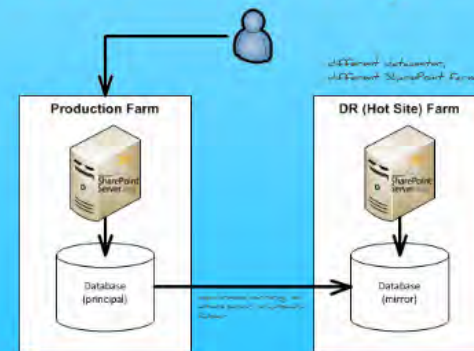
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High Availability (HA)



Disaster Recovery (DR)



The hoopla in 2010 is centered on mirroring for HA

Let's say that an "incident" occurs
in your production SQL environment ...

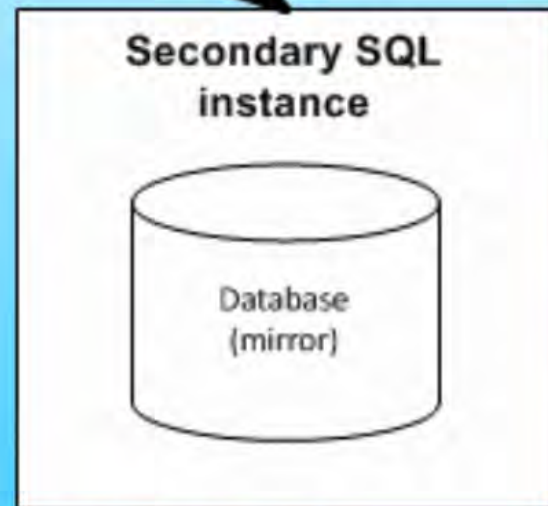
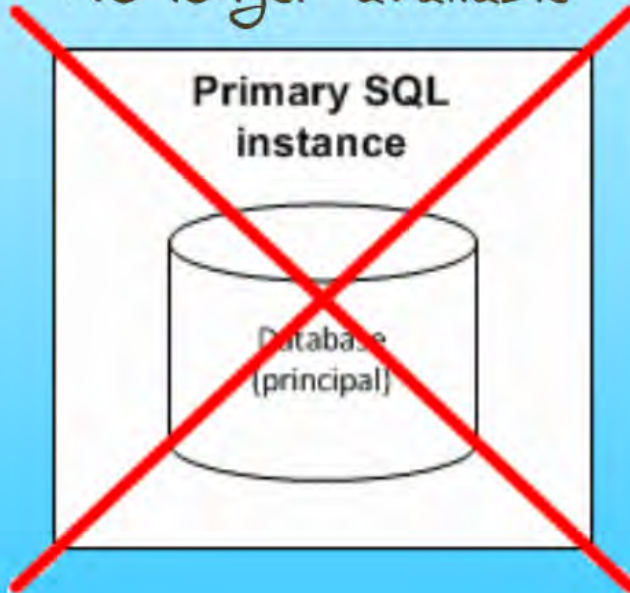
Hard to see,
but that's your
primary SQL
Server





SharePoint 2010
is mirroring-aware
& utilizes "Failover
Partner" keyword

No longer available



No more registry
hacks, alias
requirements, or splits

This works for most databases*, including the
configuration database

If you're going to try mirroring for high availability, there are some requirements you need to be aware of ...

- SQL Servers must use same version and edition
- 1Gbps bandwidth between SQL Server instances
- <1ms latency between SQL Server instances
- High-safety mode (synchronous mirroring)
- Witness server required for automatic failover
- Mirrored databases must use full-recovery model
- Planets must align (even Pluto*) during a leap year

n Pluto*) during a leap year



*technically only a "dwarf planet" these days. What has the world come to?

Things are a little different if you're doing mirroring for DR purposes

- Usually asynchronous without witness
- Less stringent latency guidelines
- No automatic failover
- Potential data loss when mirror server is forced into principal role

In DR scenarios, consider transaction log shipping over mirroring

Disaster Recovery Implications

	Planning	Operational
Powershell	<ul style="list-style-type: none"> • Will alter documented procedures that involve scripting • Provides new avenues for the collection of configuration data (for example, using the Export-Clixml cmdlet) 	<ul style="list-style-type: none"> • May lead to changes in script execution and scheduling <ul style="list-style-type: none"> * PowerShell remoting! • Efficiency and concurrency improvements may shorten RTO windows
Configuration Backup/Restore	<ul style="list-style-type: none"> • Can be helpful for point-in-time configuration captures • Useful when establishing/maintaining standby farms • Judicious use may remove the need to document some farm config settings 	<ul style="list-style-type: none"> • Generally minimal • If recovery plan employs a full farm rebuild, configuration-only restores can help reduce RTO windows <ul style="list-style-type: none"> * Easy solution store recovery
SQL Server Snapshots	<ul style="list-style-type: none"> • Snapshots place additional load on SQL Server, so size and plan SQL Server environments accordingly 	<ul style="list-style-type: none"> • Snapshots can increase SharePoint availability by avoiding locking • Can break out of traditional backup window constraints (i.e., avoid backup "overruns")
Unattached DB Recovery	<ul style="list-style-type: none"> • Reduces or removes the need for (dedicated) recovery farms • May affect SQL Server capacity planning and sizing 	<ul style="list-style-type: none"> • Reduces operating overhead since recovery farms are not needed • Can reduce RTO window for granular recovery activities <ul style="list-style-type: none"> * Avoid recovery farm patching!
SQL DB Mirroring	<ul style="list-style-type: none"> • Mirroring for DR carries significant data center design and location considerations • Profound impact to DR strategies and plans • SQL Server sizing and capacity planning implications <ul style="list-style-type: none"> * extra threads! 	<ul style="list-style-type: none"> • Effectively reduces RPO windows to zero and prevents data loss (in HA mode) • Can drastically reduce RTO windows versus conventional backups

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- Profound impact to DR strategies and plans
- SQL Server sizing and capacity planning implications

* *extra threads!*

- Effectively reduces RPO windows to zero and prevents data loss (in HA mode)
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Quick tour of what's
been updated with 2010



- Read-only databases
- Search indexing and related operations
- Native backup and restore
- Granular backup and restore

Read-only
databases

Read-only databases

- Possible with SharePoint 2007 SP2
- User experience less-than-optimal
- Some farm operations were adversely impacted

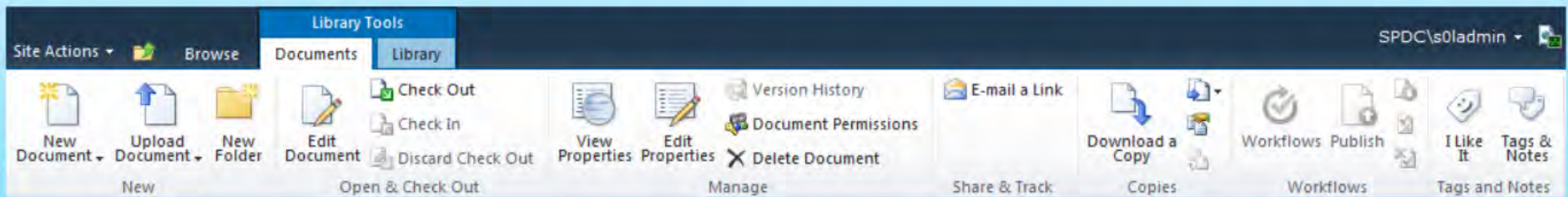
Writer's block
of a sort ...



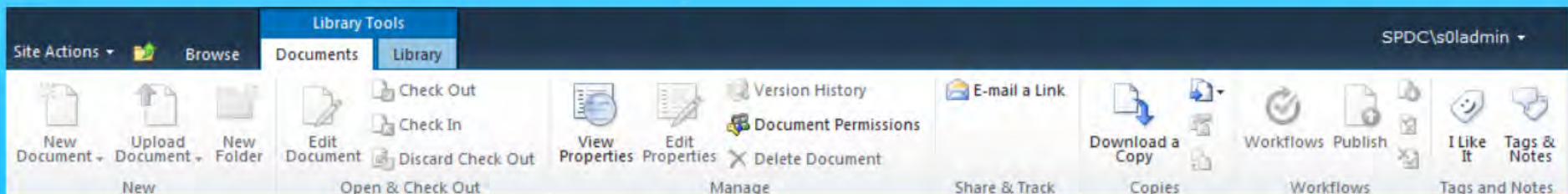
Behavior changes with 2010

- SharePoint fully aware of read-only DBs
 - Supported for both content DBs and service app DBs
- UI elements react properly when read-only DBs in-use
- Search crawling now possible against read-only DBs
 - Subtle but important change, particularly for log-shipped standby farms and other read-only environments ...

Ribbon for a normal (read/write) content database



Ribbon when a read-only content database is detected

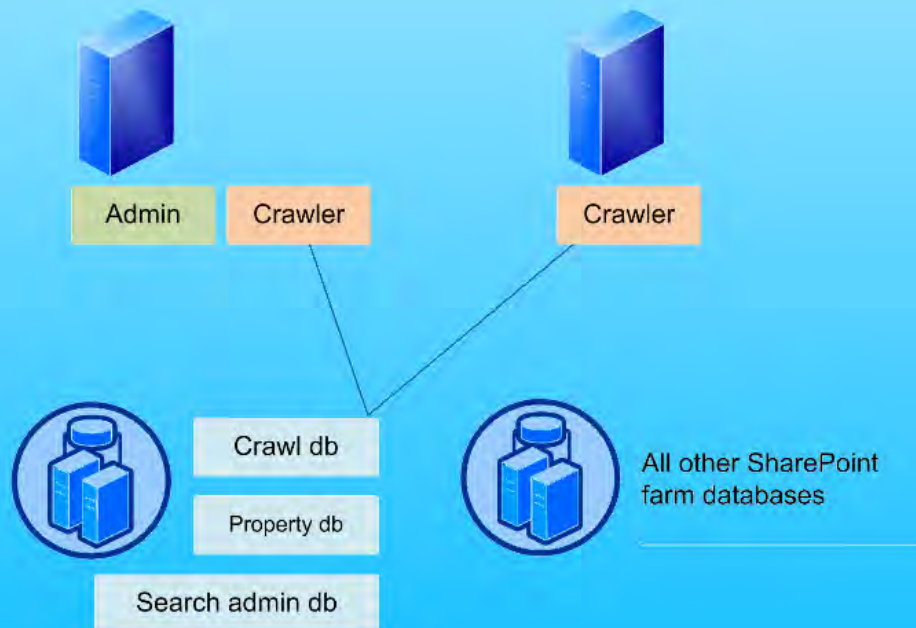
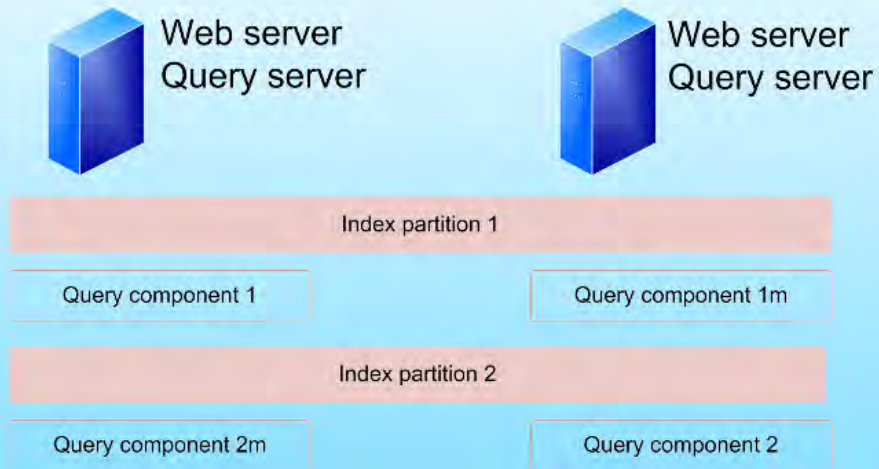


databases

Search indexing
and related
operations

Motivation backup

SharePoint 2010 Search Architecture



Important changes

1. Search is broken into two different roles
 - Query: serves results, holds index segments
 - Crawl: indexes content, stateless in its operation
2. Indexing is no longer a single point of failure
 - Both roles can be scaled-up and scaled-out
 - Fault-tolerance and load balancing achievable
3. Search backup is now a two-stage process
 - Crawling continues during 1st stage, paused for 2nd
 - 90% faster than search backup in 2007

Important changes

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operations

Native backup
and restore

Granular backu

Native backup and restore

- Core functionality largely unchanged
- Backup/restore is now multi-threaded
 - Defaults to 3 threads; adjustable from 1 to 10
 - Additional threads is not necessarily better
- Configuration-only backup now possible versus data + configuration
- Native capabilities integrate service application backup/restore

and restore

Granular backup
and restore

Granular backup and restore

- Central Administration support
 - Now permits site collection backups and exports
- Command line largely unchanged
 - Introduction of PowerShell cmdlets

A couple of new tricks



- SQL Server snapshot capability
 - already discussed
- Gradual deletion of site collection when restoring
 - Especially helpful when restore involves an overwrite
 - Defers deletion of overwritten site collection
 - Gradual Site Delete timer job cleans up later

*New functionality that mandates
some caution from a DR perspective*



Achtung, baby!

- Service application framework
- Remote BLOB storage (RBS)
- Business Connectivity Services (BCS)

Special attention and consideration

	The good	The not-so-good
Service application framework	<ul style="list-style-type: none">• Use only the service applications you need; turn off the ones you don't• Ability to scale-up and scale-out in most cases• Multi-tenancy and cross-farm consumption (security and scalability options)	<ul style="list-style-type: none">• Doesn't participate in configuration-only backup/restore• Tough to backup/restore -- even with native tools
Remote BLOB storage (RBS)	<ul style="list-style-type: none">• Offloading storage of binary large objects (BLOBs) from SQL Server to another storage system• Reduces content database size (often dramatically)• SQL Server has the FILESTREAM RBS provider, but most enterprise systems use a 3rd party RBS provider	<ul style="list-style-type: none">• When using native backup and restore, BLOBs are typically pulled through without issue• If you use SQL Server backups or a 3rd party product, understand the implications during backup/restore!<ul style="list-style-type: none">• <i>only pointers to BLOBs reside in the content databases - not the BLOBs themselves!</i>
Business connectivity services (BCS)	<ul style="list-style-type: none">• Evolution of the MOSS Business Data Catalog (BDC) that now supports both reading from and writing to external data sources• Surfaces data from line-of-business (LOB) systems as external lists that appear to belong to SharePoint	<ul style="list-style-type: none">• Though data is surfaced through SharePoint, it doesn't actually exist in SharePoint• BCS-connected LOB systems must be identified and protected separately of SharePoint

Service
application
framework

The good

- Use only the service applications you need; turn off the ones you don't
- Ability to scale-up and scale-out in most cases
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The Not-So-Good

- Doesn't participate in configuration-only backup/restore
- Tough to backup/restore -- even with native tools

• When using native backup and restore

Document
your farm
configuration!



- <http://tinyurl.com/SPDRFarmDoc2010>

Documentation alternative:

SharePoint Farm Documentation, 7/27/2011 9:40:53 PM

Web Application	Path	Authentication	Application Pool	SSL	Claims Auth	CEP
Internal Home Web (80) Zone: Default Bindings: :80:home.sculptedsystem.com	/	NTLM	ContentWebsAppPool Identity: SCULPTEDSYSTEM\svcscontentwebs	✗	✗	✗
Internal Home Web (80) Zone: Internet Bindings: :80:home.sculptedsystem.com	/	NTLM	ContentWebsAppPool Identity: SCULPTEDSYSTEM\svcscontentwebs	✗	✗	✗
My Site Host Web (80) Zone: Default Bindings: :80:mysite.sculptedsystem.com	/	NTLM	ContentWebsAppPool Identity: SCULPTEDSYSTEM\svcscontentwebs	✗	✗	✗
My Site Host Web (80) Zone: Internet Bindings: :80:mysite.sculptedsystem.com	/	NTLM	ContentWebsAppPool Identity: SCULPTEDSYSTEM\svcscontentwebs	✗	✗	✗
Sculpted System Webs (80) Zone: Default Bindings: :80:www.sculptedsystem.com	/	NTLM	ContentWebsAppPool Identity: SCULPTEDSYSTEM\svcscontentwebs	✗	✗	✗
Sculpted System Webs (80) Zone: Internet Bindings: :80:www.sculptedsystem.com	/	NTLM	ContentWebsAppPool Identity: SCULPTEDSYSTEM\svcscontentwebs	✗	✗	✗
SPMcDonough Web (80) Zone: Default Bindings: :80:www.spmcdonough.com	/	NTLM	ContentWebsAppPool Identity: SCULPTEDSYSTEM\svcscontentwebs	✗	✓	✗
SharePoint Central Administration v4 Zone: Default Bindings: :18080	/	NTLM	SharePoint Central Administration v4 Identity: SCULPTEDSYSTEM\svcsPFarm	✗	✗	✓
SharePoint Central Administration v4 Zone: Intranet Bindings: :18080	/	NTLM	SharePoint Central Administration v4 Identity: SCULPTEDSYSTEM\svcsPFarm	✗	✗	✓
SharePoint Central Administration v4 Zone: Internet Bindings: :18080	/	NTLM	SharePoint Central Administration v4 Identity: SCULPTEDSYSTEM\svcsPFarm	✗	✗	✓

4.2. SITE COLLECTIONS

<http://www.spdockit.com>

Remote
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Closing thought



"Planning is bringing the future into the present so that you can do something about it now."

- Alan Lakein

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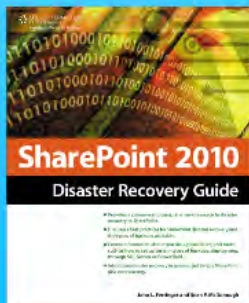
Twitter: @spmcdonough



SharePoint 2007

Disaster Recovery Guide

<http://tinyurl.com/SPDRGuide2007>



SharePoint 2010

Disaster Recovery Guide

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