SHAREPOINT SATURDAY
Cincinnati

SharePoint 2010 and Disaster Recovery
New Capabilities, New Possibilities!

Sean P. McDonough
Product Manager, SharePoint Products
Idera

Housekeeping

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Some information about me ...

Why am I talking about disaster recovery?

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

Agenda

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1. Discuss new capabilities and features that alter the disaster recovery (DR) landscape in SharePoint 2010

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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?"

(excerpt from "Men In Black 2")

(excerpt from "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

	Planning	Operational
Powershell	• Will alter documented procedures that involve scripting • Provides new avenues for the collection of configuration data (for example, using the Export-Clixml cmdlet).	• May lead to changes in script execution and scheduling * PowerShell remoting! • Efficiency and concurrency improvements may shorten RTO windows
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SQL Server Snapshots	• Snapshots place additional load on SQL Server, so size and plan SQL Server environments accordingly • Budget for a version of SQL Server that supports snapshots	• Snapshots can increase SharePoint availability by avoiding locking • Can break out of traditional backup window constraints (i.e., avoid backup "overruns")
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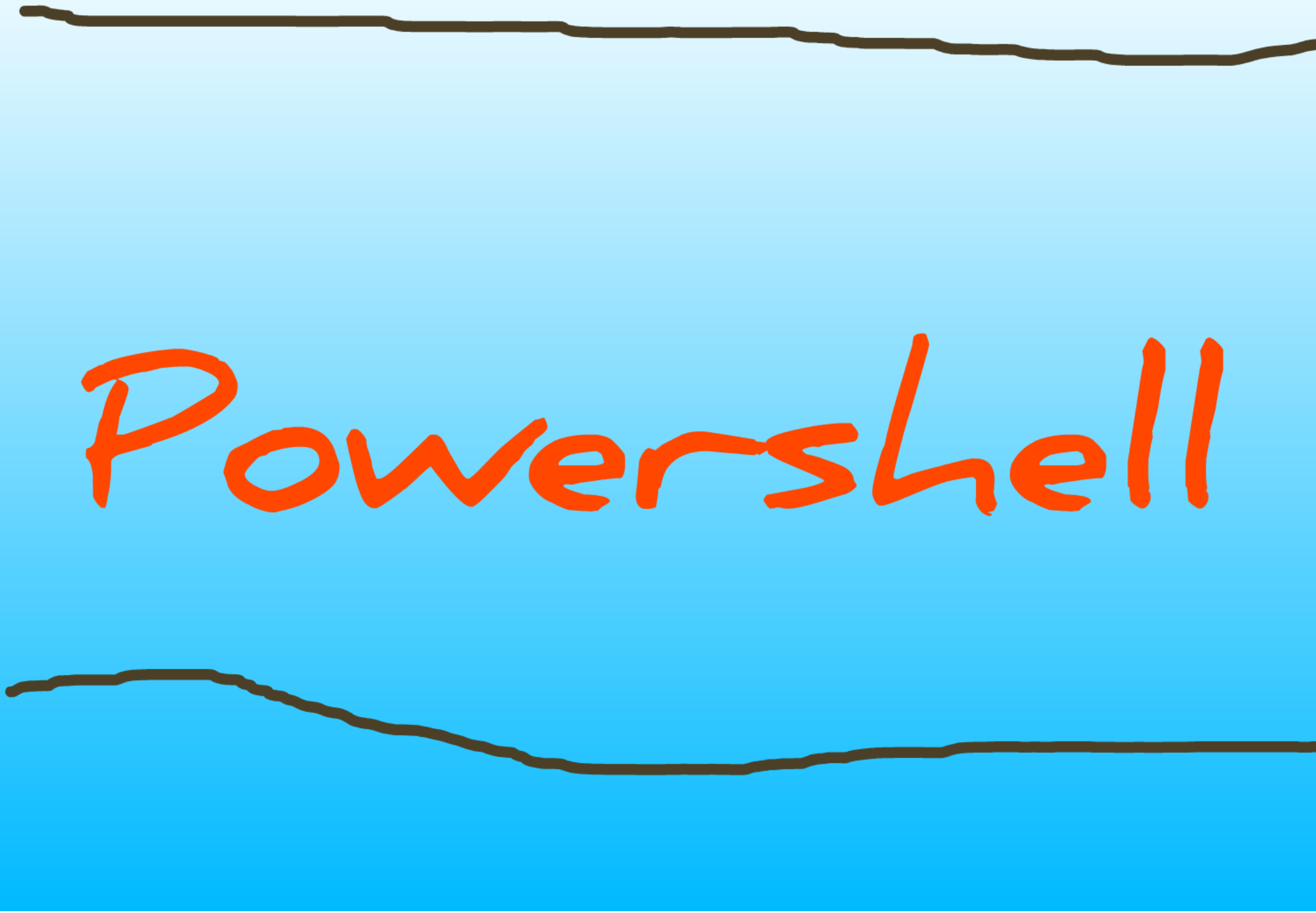
Powershell

Wait!

Wait!

This is still a DR presentation ... right?

Absolutely

... 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

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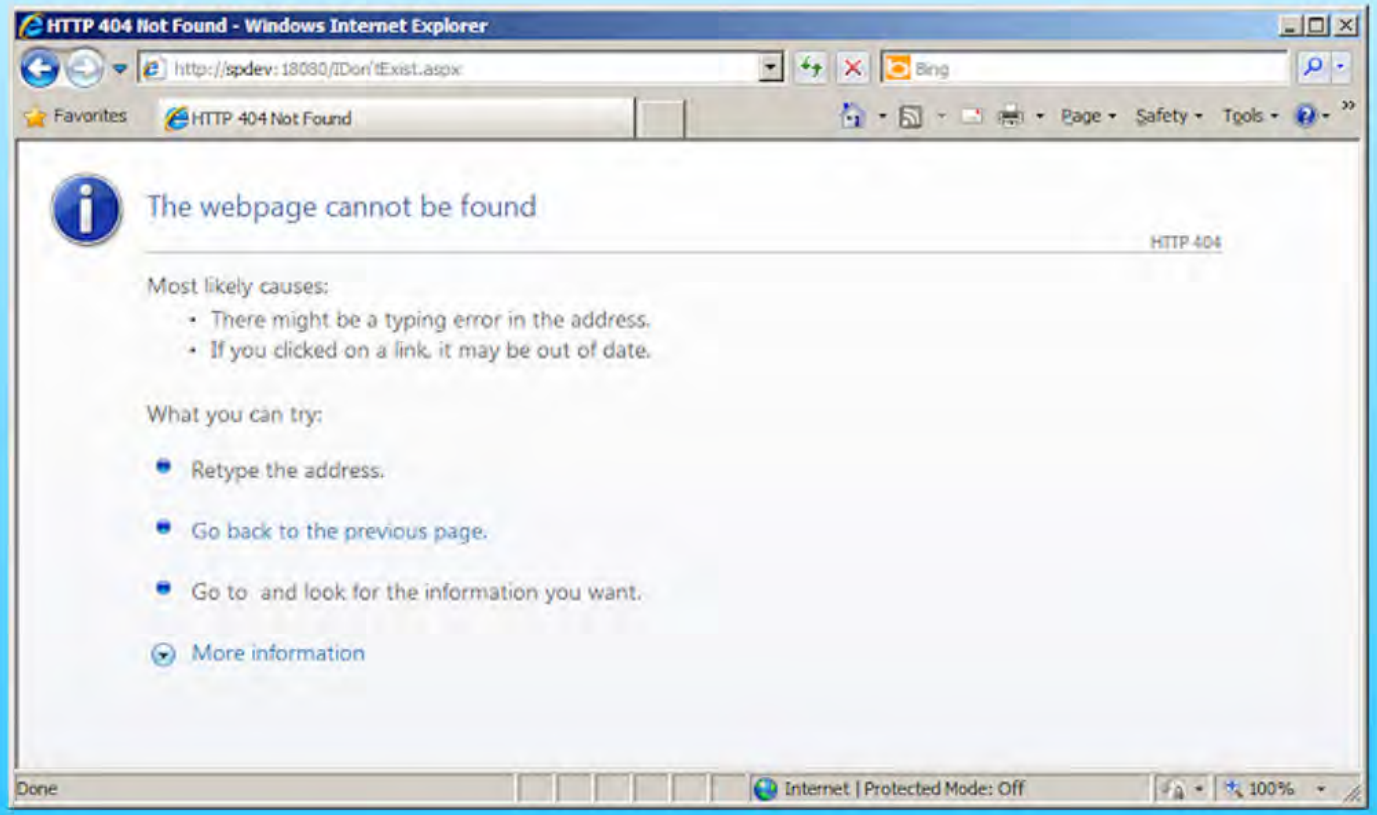
Why you should care

- 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")

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3b. Enter three lines of C# code

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Yes -- just 3 lousy lines of code!

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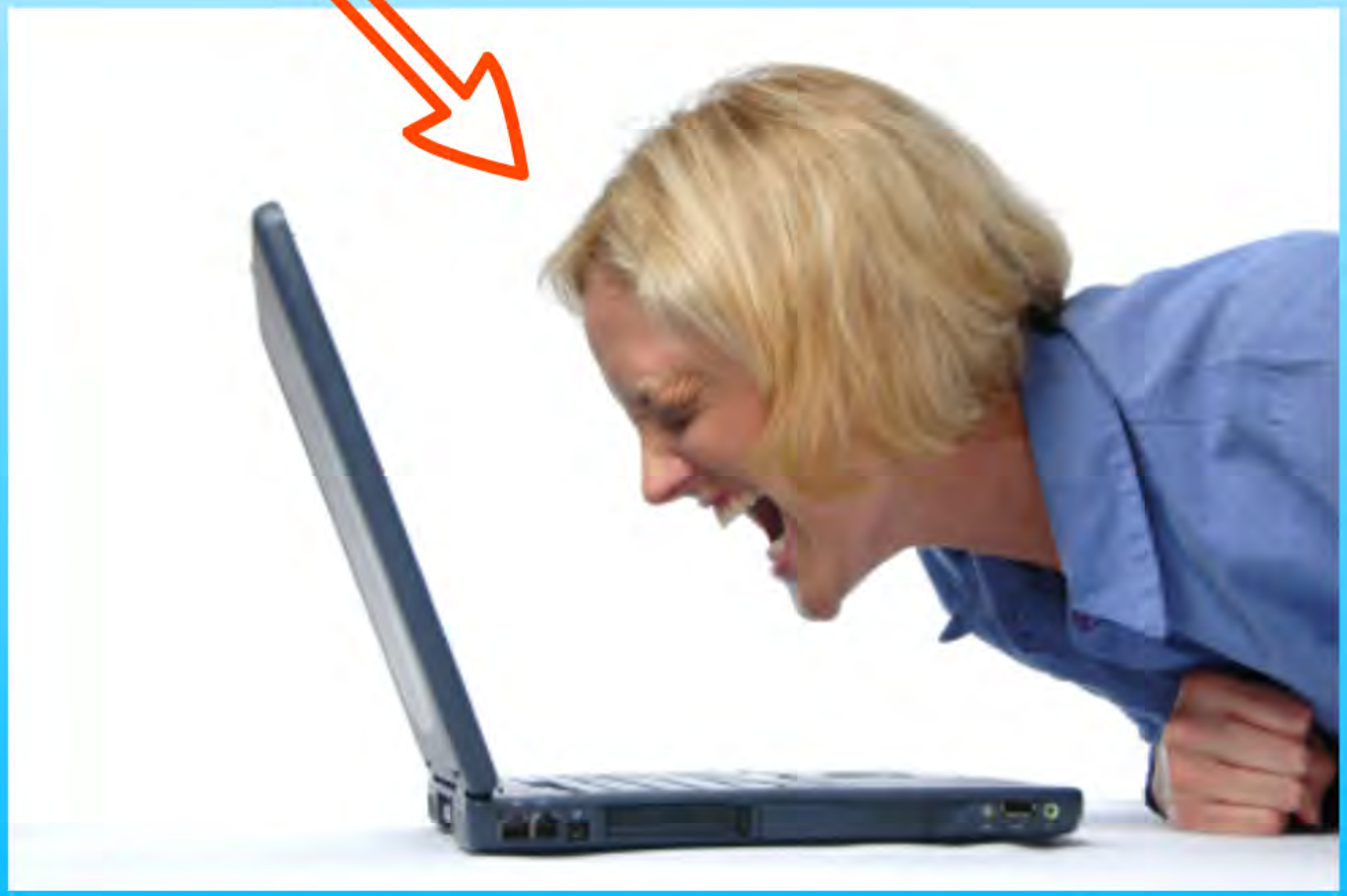
Detail: http://support.microsoft.com/kb/941329

Average SharePoint administrator after performing these steps



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Get-SPWebApplication | Where-Object
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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	`STSADM -o backup` `STSADM -o restore`	`Backup-SPFarm` `Restore-SPFarm`
Site collection backup and restore	`STSADM -o backup` `STSADM -o restore`	`Backup-SPSite` `Restore-SPSite`
Granular export and import	`STSADM -o export` `STSADM -o import`	`Export-SPWeb` `Import-SPWeb`

Configuration backup and restore	`N/A`	`Backup-SPFarm`
		`Restore-SPFarm`
		`Backup-SPConfigurationDatabase`

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Flexibility

- Will alter documented procedures that involve scripting
- Provides new avenues for the collection of configuration data (for example, using the Export-Clixml cmdlet).

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

Um ... what's "RTO?"

And now for a couple of minutes of ...

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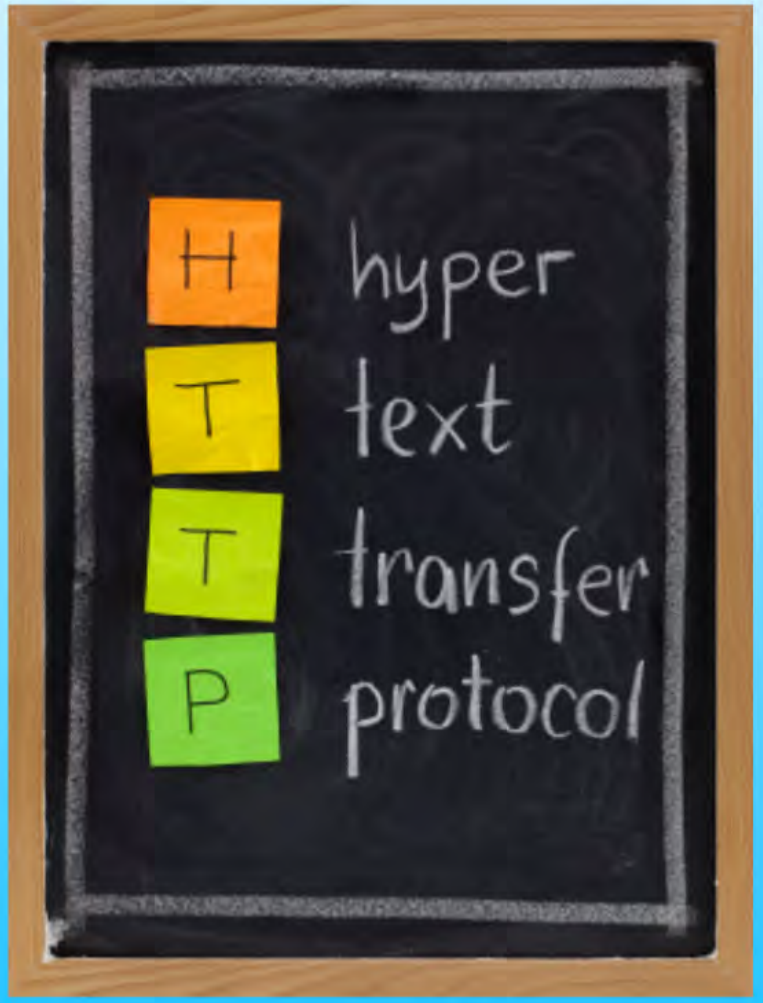
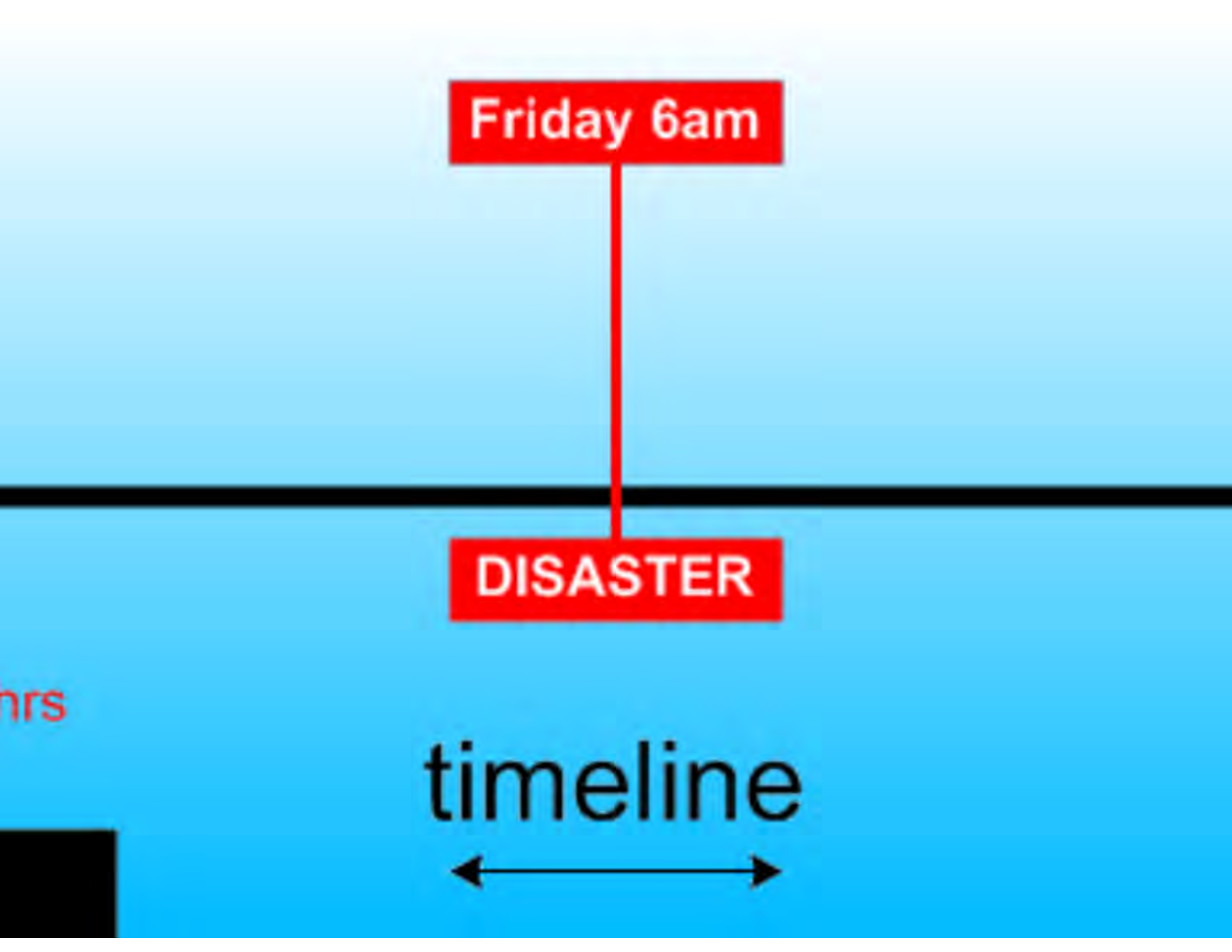
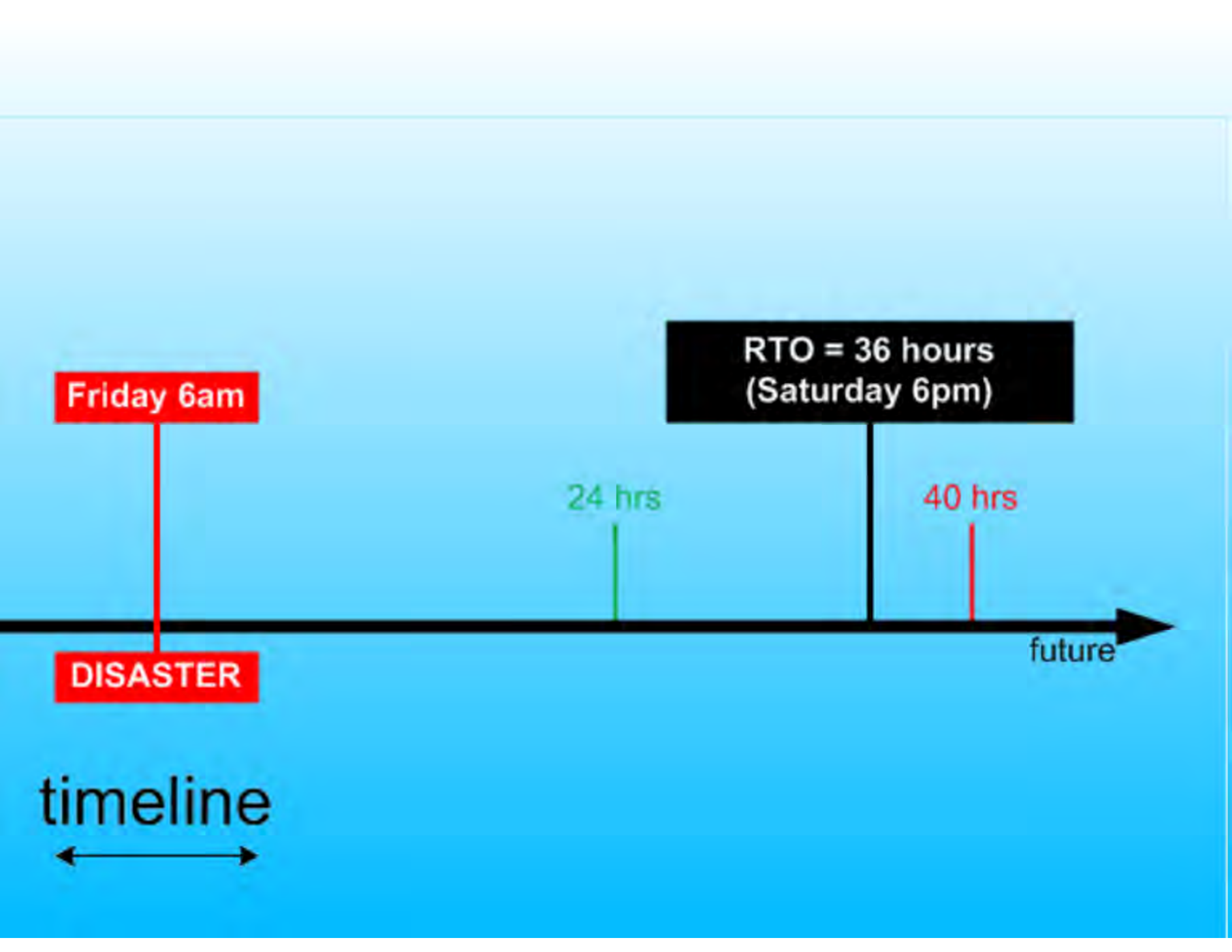
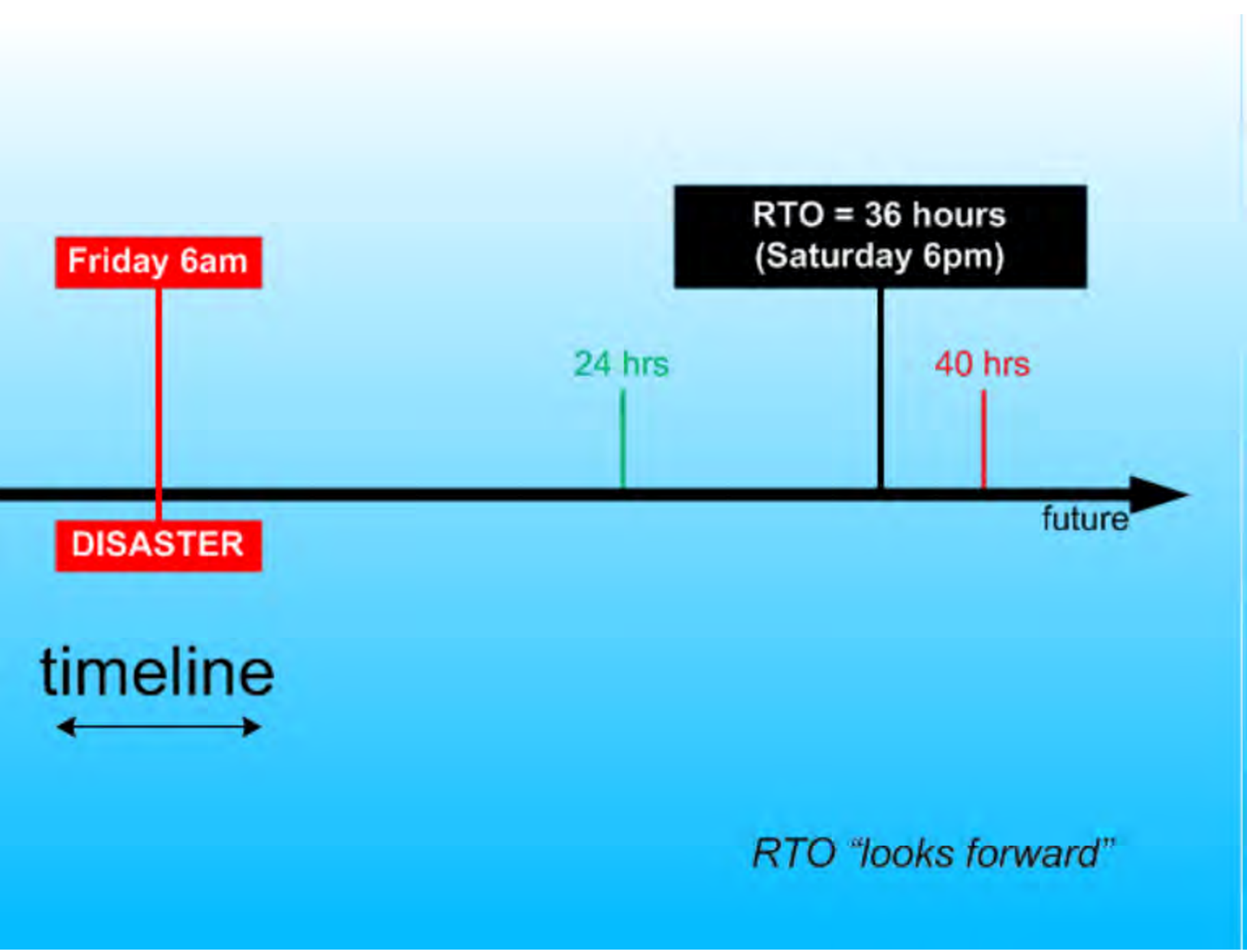
Define that acronym!



timeline


Friday 6am
DISASTER
hrs
timeline


RTO = 36 hours
(Saturday 6pm)
Friday 6am
24 hrs
40 hrs
future
DISASTER
timeline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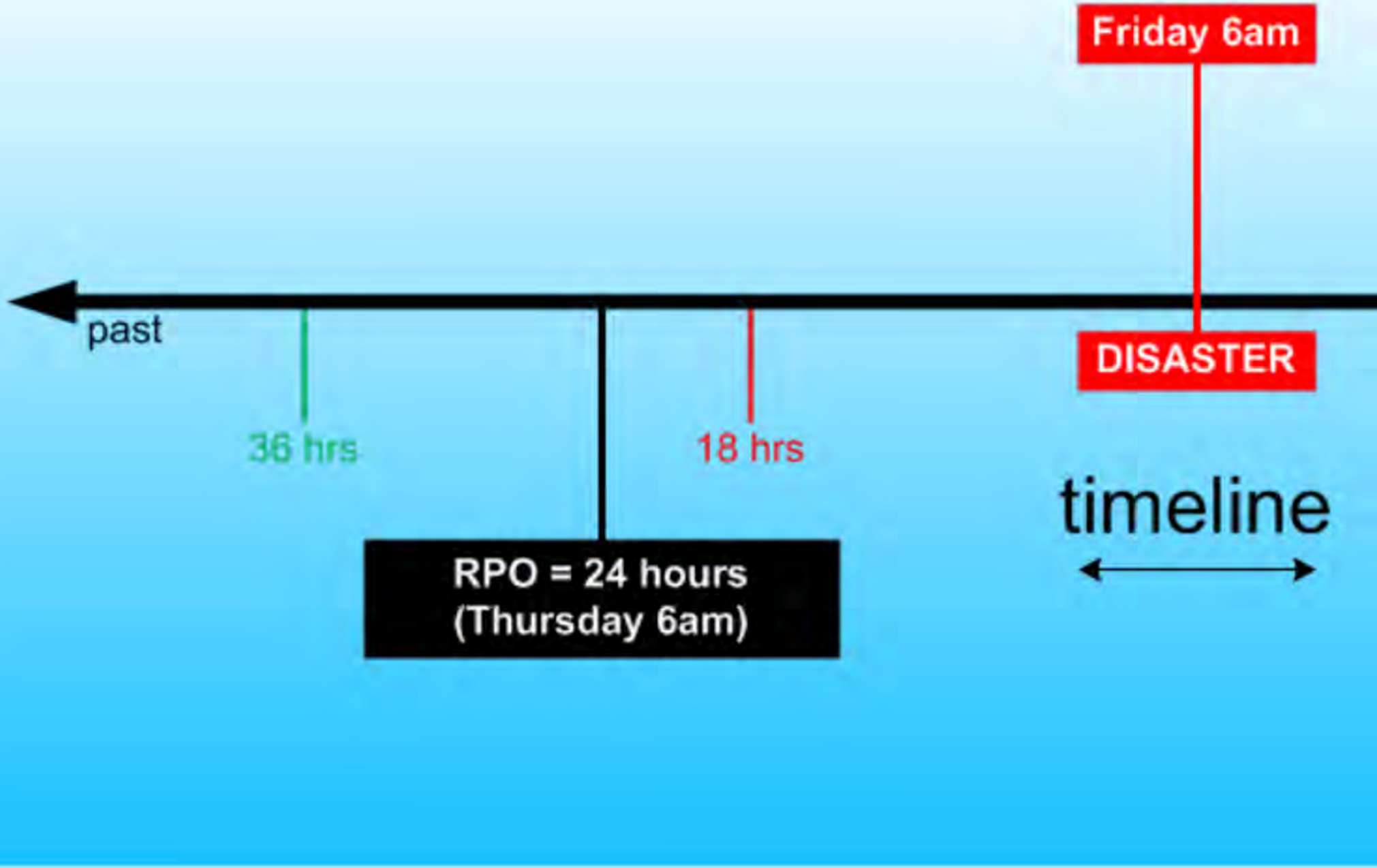
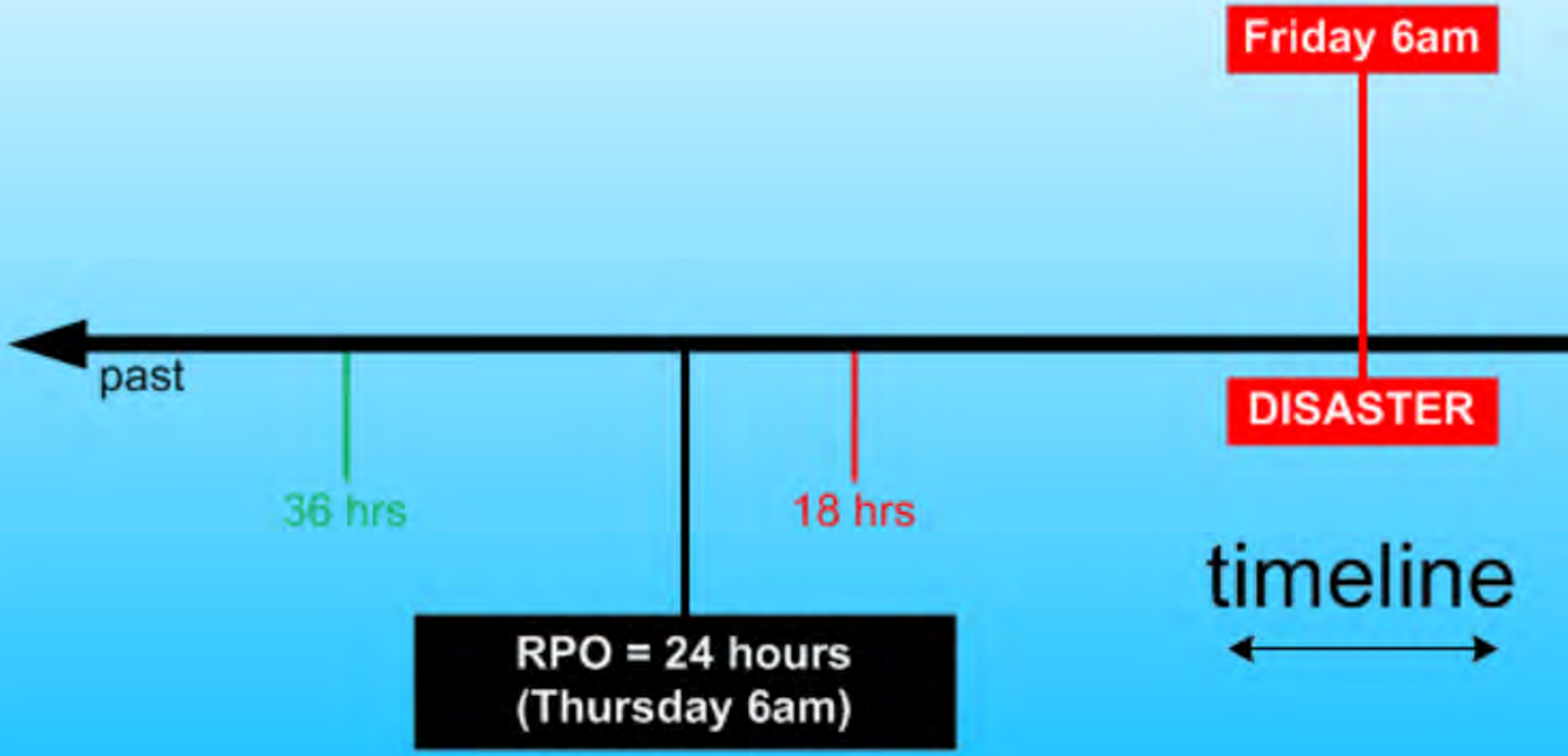
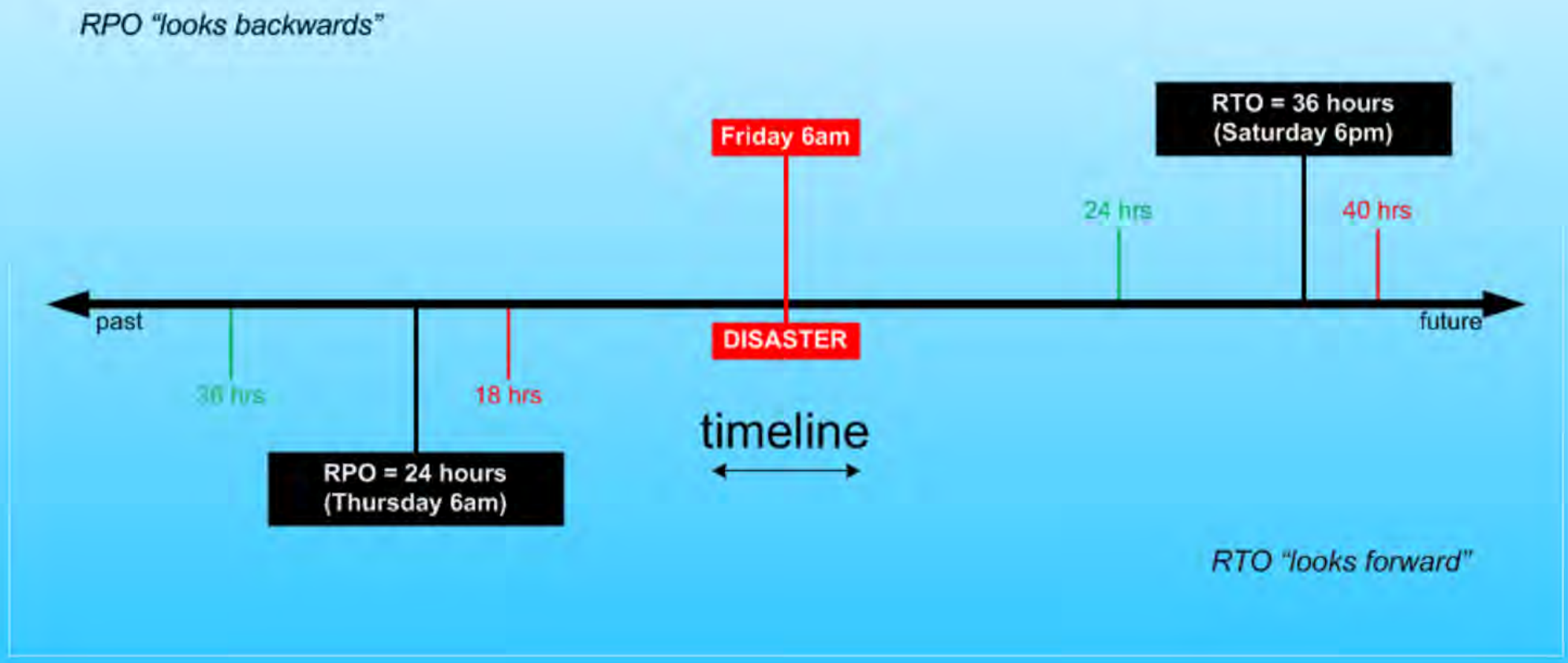
RTO "looks forward"


Friday 6am
DISASTER
past
36 hrs
18 hrs
RPO = 24 hours
(Thursday 6am)
timeline

RPO "looks backwards"

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Powershell

Configuration Backup/Restore

SQL Server

The pain we all felt in SharePoint 2007

The pain we all felt in SharePoint 2007

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

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- How do you copy configuration data between farms?

Introducing ...

Configuration-only backup and restore

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- Extension of the backup/restore API

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- Components report their portable configuration data

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- 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

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

Restoring the configuration-only backup

Restoring the configuration-only backup

Select	Component	Type
☐	⊟ Farm	Farm
☐	⊟ InfoPath Forms Services	Server Settings and Content
☐	Settings	Settings
☐	Data Connections	Data Connections
☐	Form Templates	Form Templates
☐	⊞ Exempt User Agents	Exempt User Agents
☐	Microsoft SharePoint Foundation Web Application	Microsoft SharePoint Foundation Web Application
	WSS_Administration	Central Administration
☐	⊟ 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

Hmmm … does that look a little "light?"

The reality

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

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

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Web application settings aren't captured. Ouch.

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- 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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  * Easy solution store recovery

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kup/Restore

SQL Server

Snapshots

What is a snapshot?

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- 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

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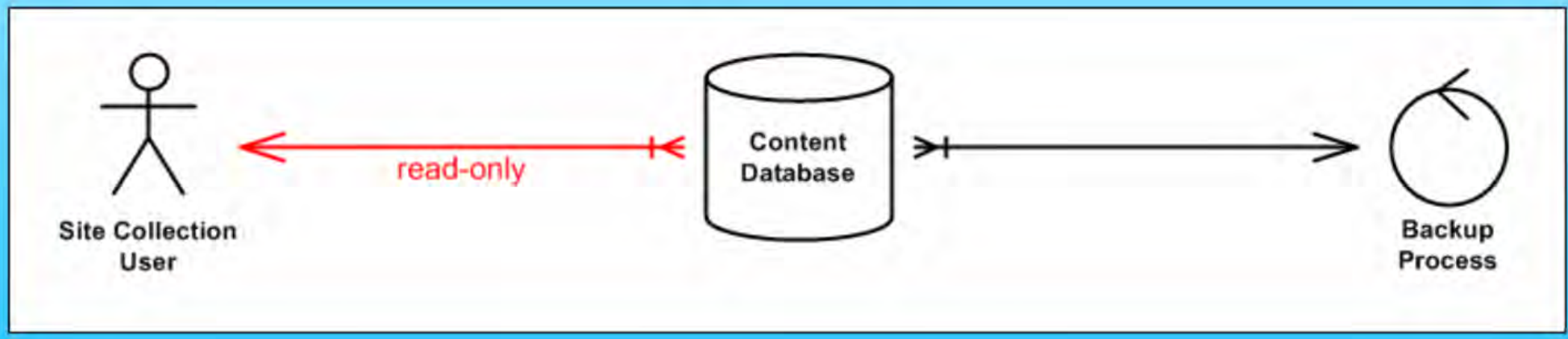
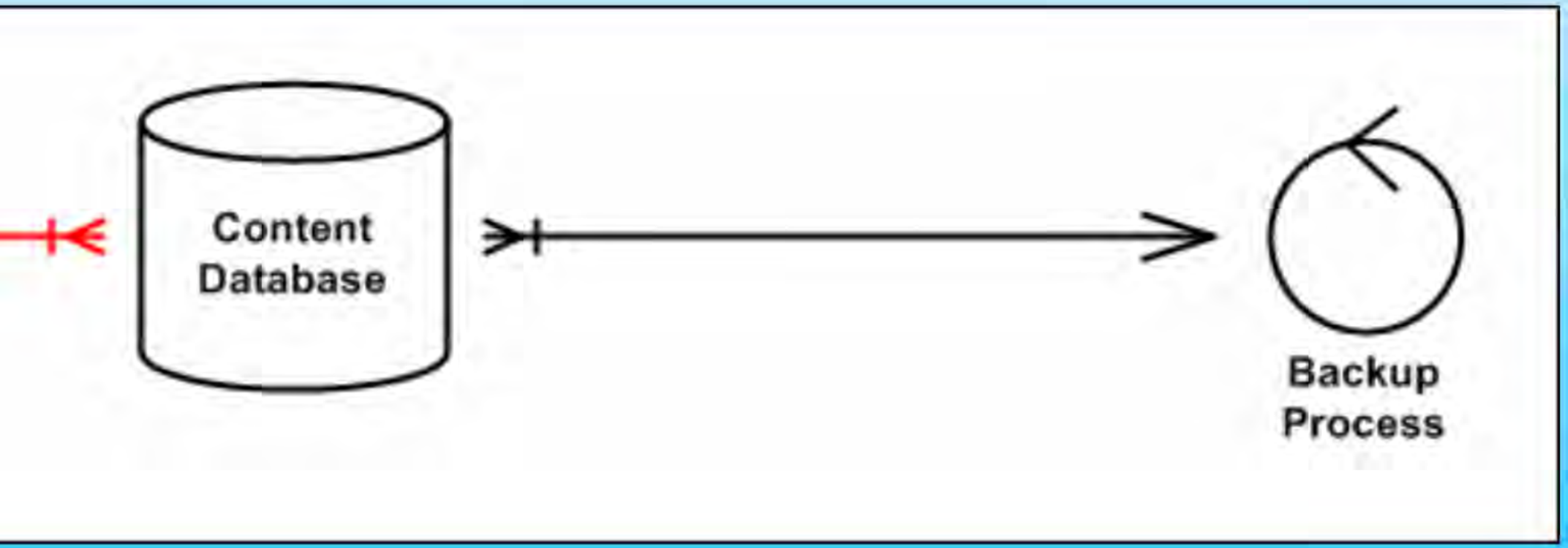
- For all practical purposes, it's a copy of a database with data that remains consistent to the point in time at which the snapshot was created
- Requires SQL Server Enterprise or Developer edition

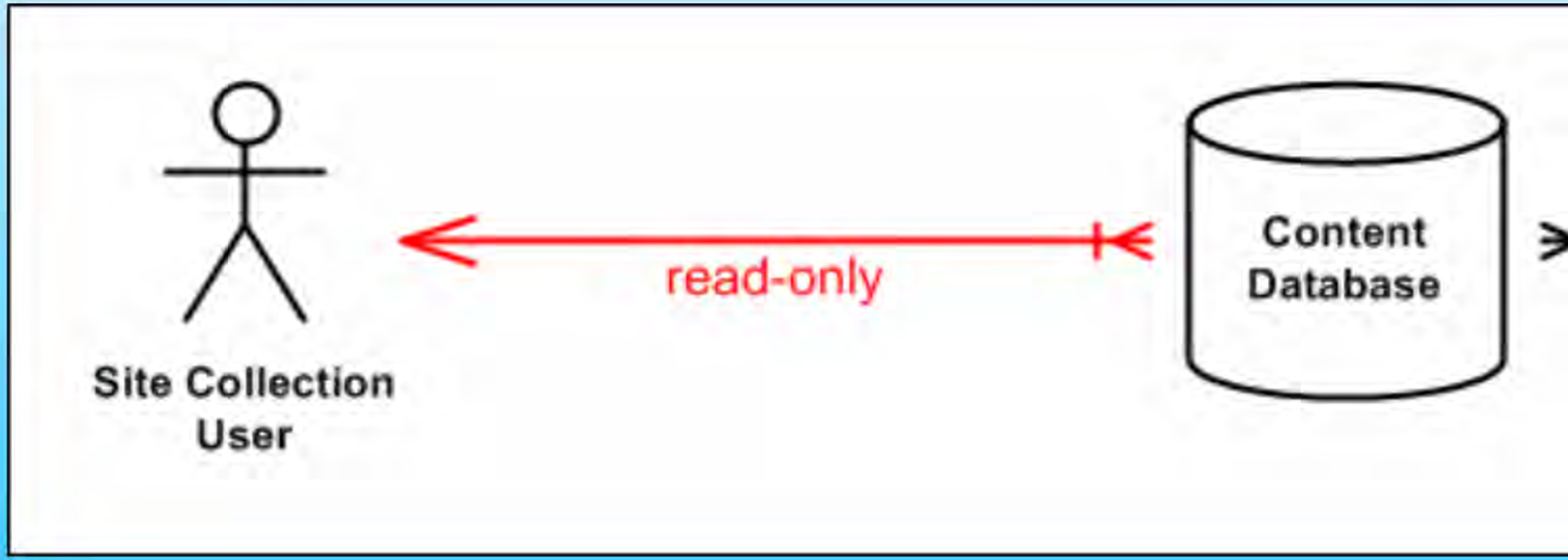
How do snapshots integrate with SharePoint?

- 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

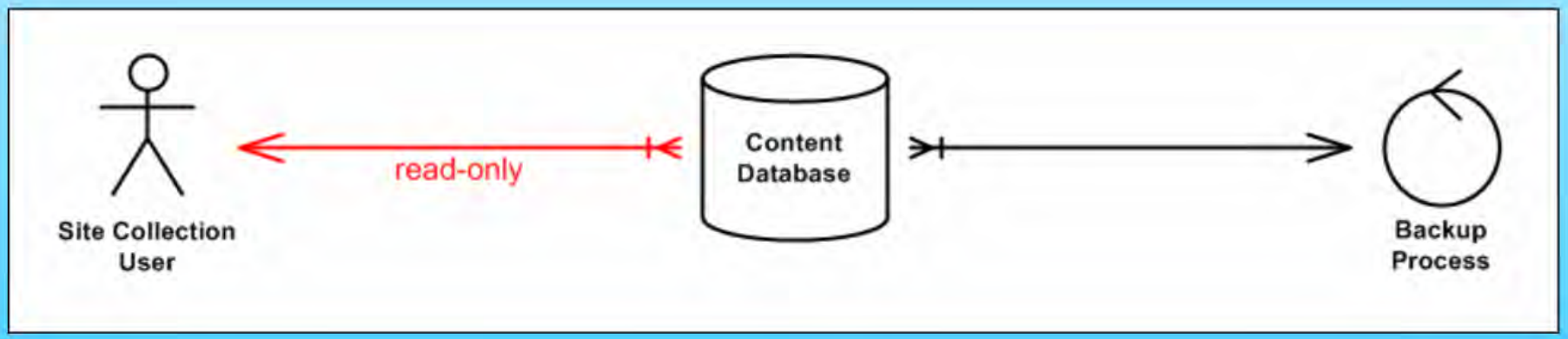
Site collection backups without the use of snapshots




Content
Database
Backup
Process

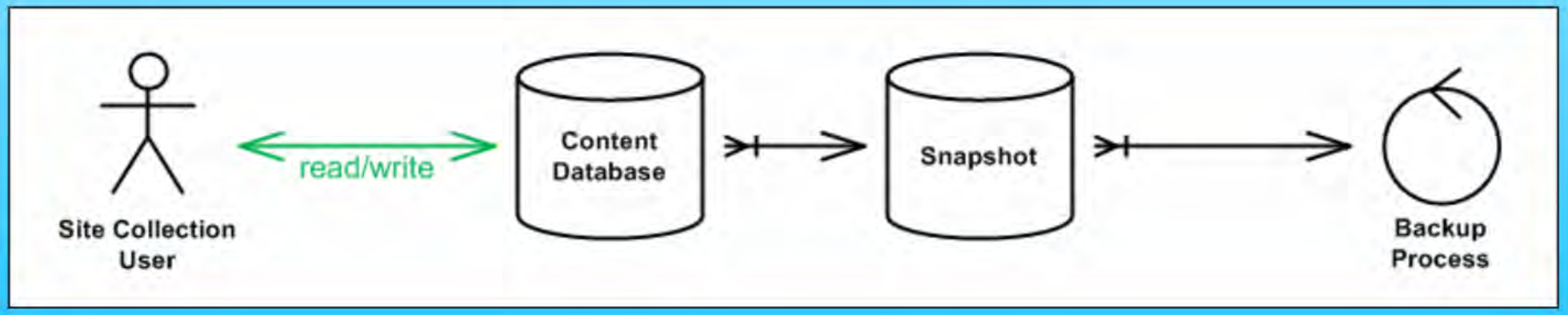

Site Collection
User
read-only
Content
Database

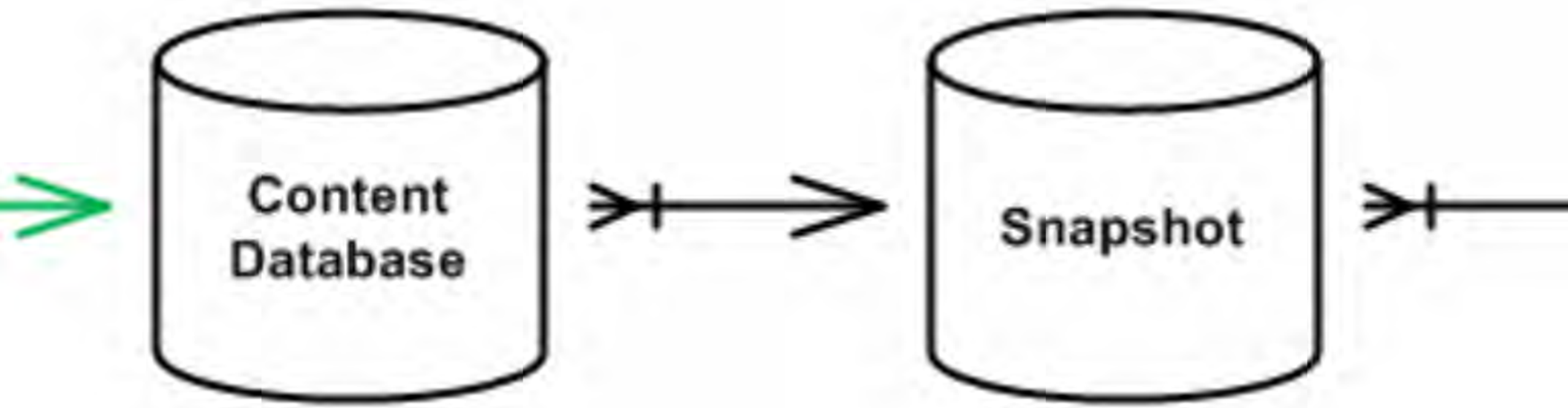
Site collection backups without the use of snapshots

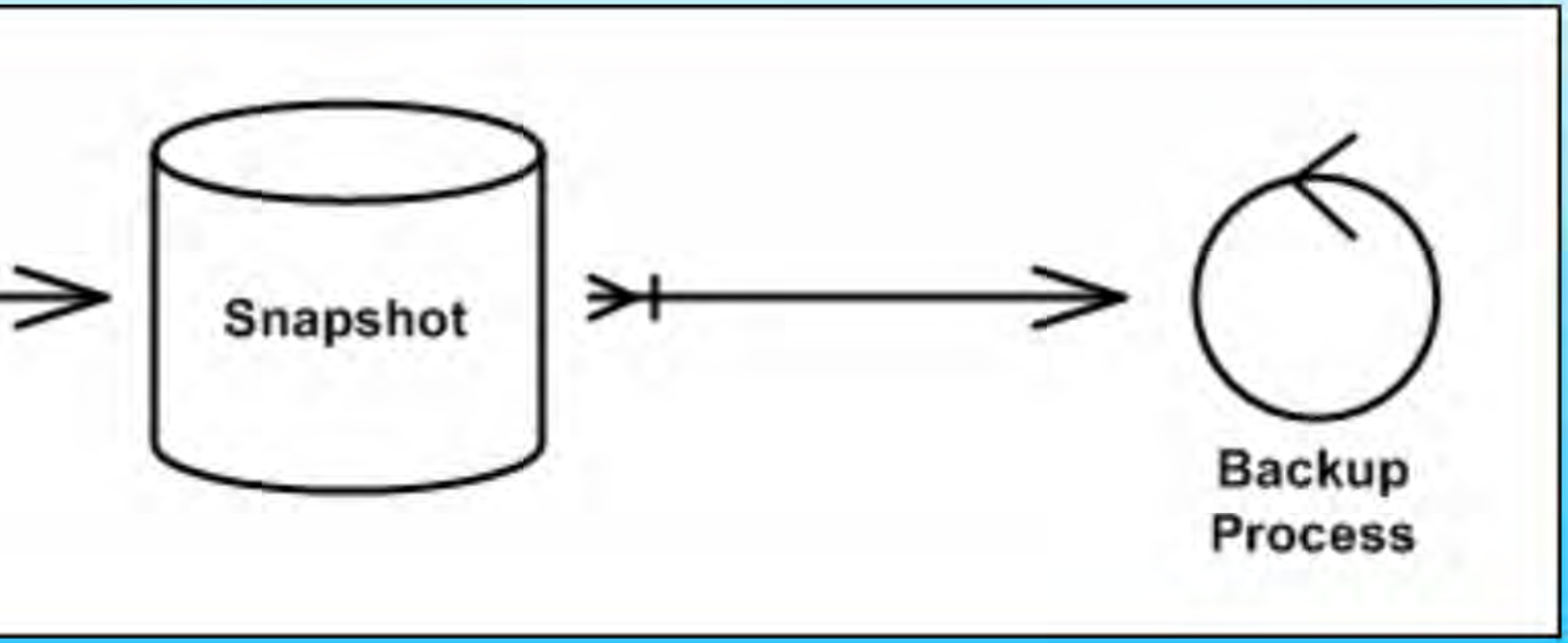


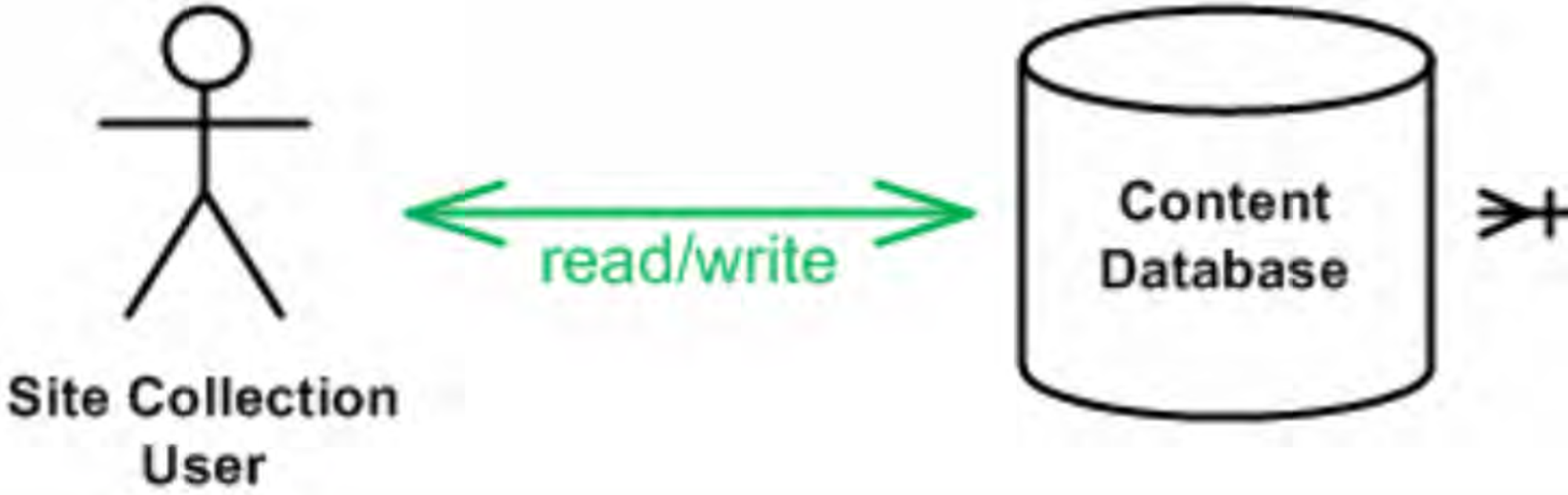
Site collection is locked to prevent updates

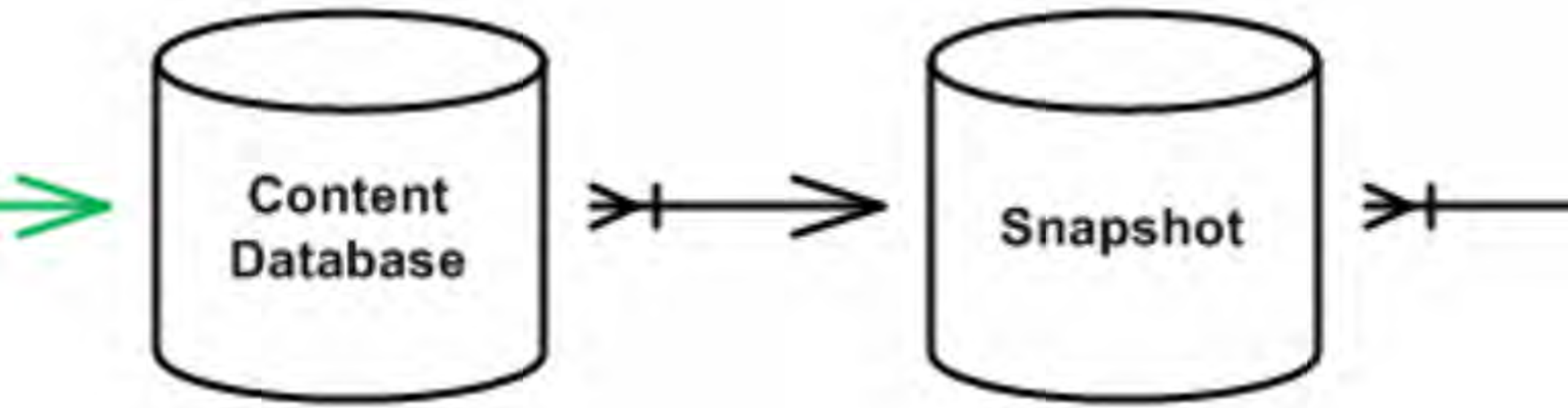
Site collection backups using database snapshots




Content
Database
Snapshot


Snapshot
Backup
Process


Site Collection
User
read/write
Content
Database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Database
Snapshot

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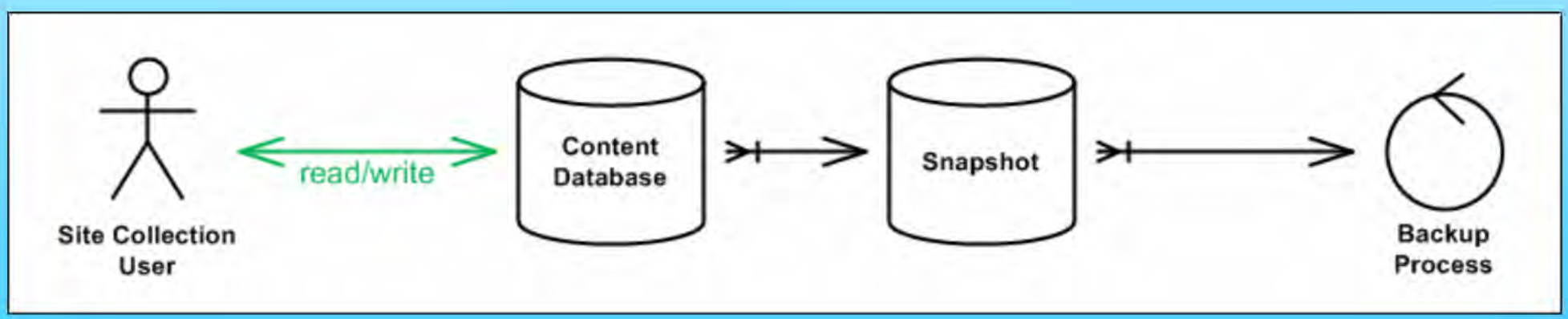

Site collection remains unlocked; no writes blocked

Disaster Recovery Implications

	Planning	Operational
Powershell	• Will alter documented procedures that involve scripting • Provides new avenues for the collection of configuration data (for example, using the Export-Clixml cmdlet).	• May lead to changes in script execution and scheduling * PowerShell remoting! • Efficiency and concurrency improvements may shorten RTO windows
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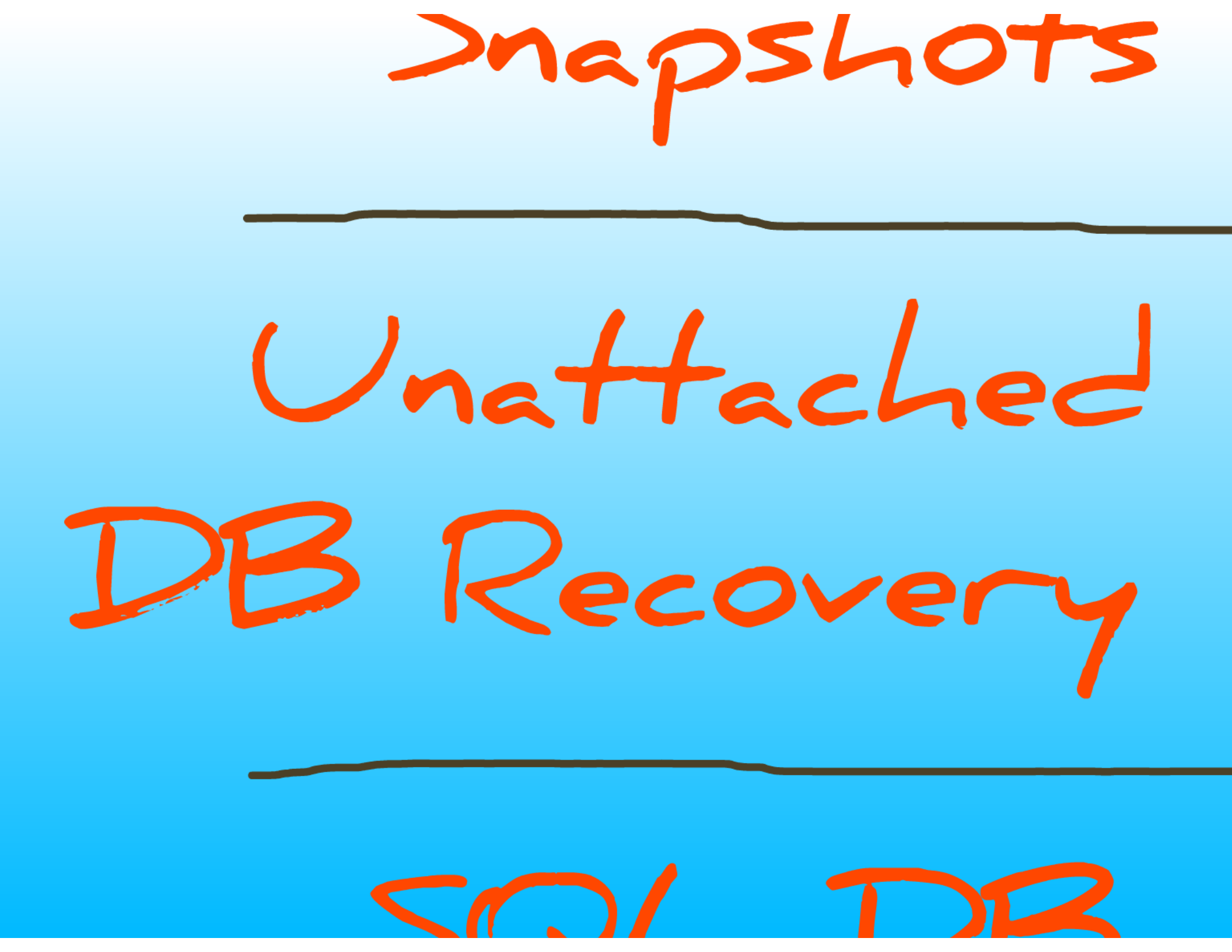
Snapshots
Unattached
DB Recovery

Granular recovery using SharePoint 2007

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1. Locate appropriate content database backup

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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

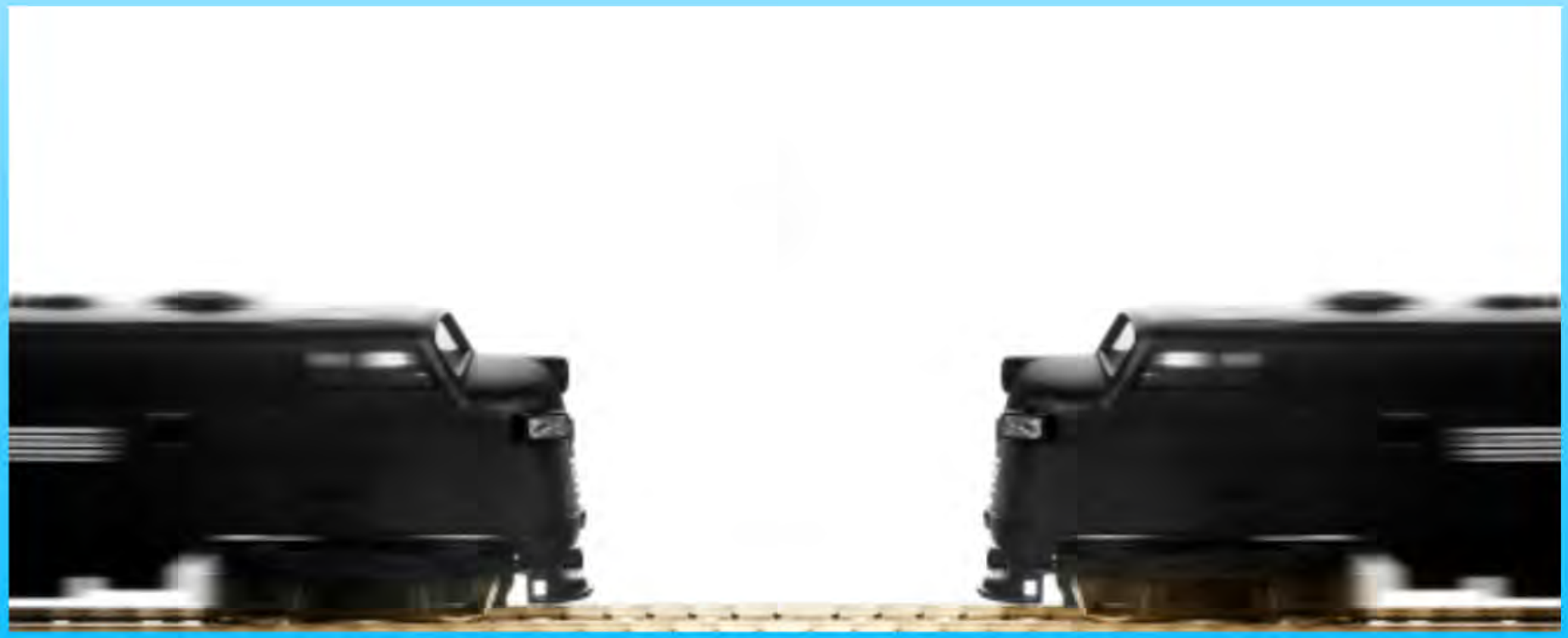
Get your files back here

Start somewhere around here

Get your files back here

So ... why is the process so convoluted?

The simple answer



The simple answer

Production
DB GUID

Restored
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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

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

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

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... and you need a recovery farm

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

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Some also use distinct authoring environments

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- Sidesteps problems and restrictions associated with duplicate GUIDs
- Net effect: no more recovery farms!

Granular recovery in SharePoint 2010

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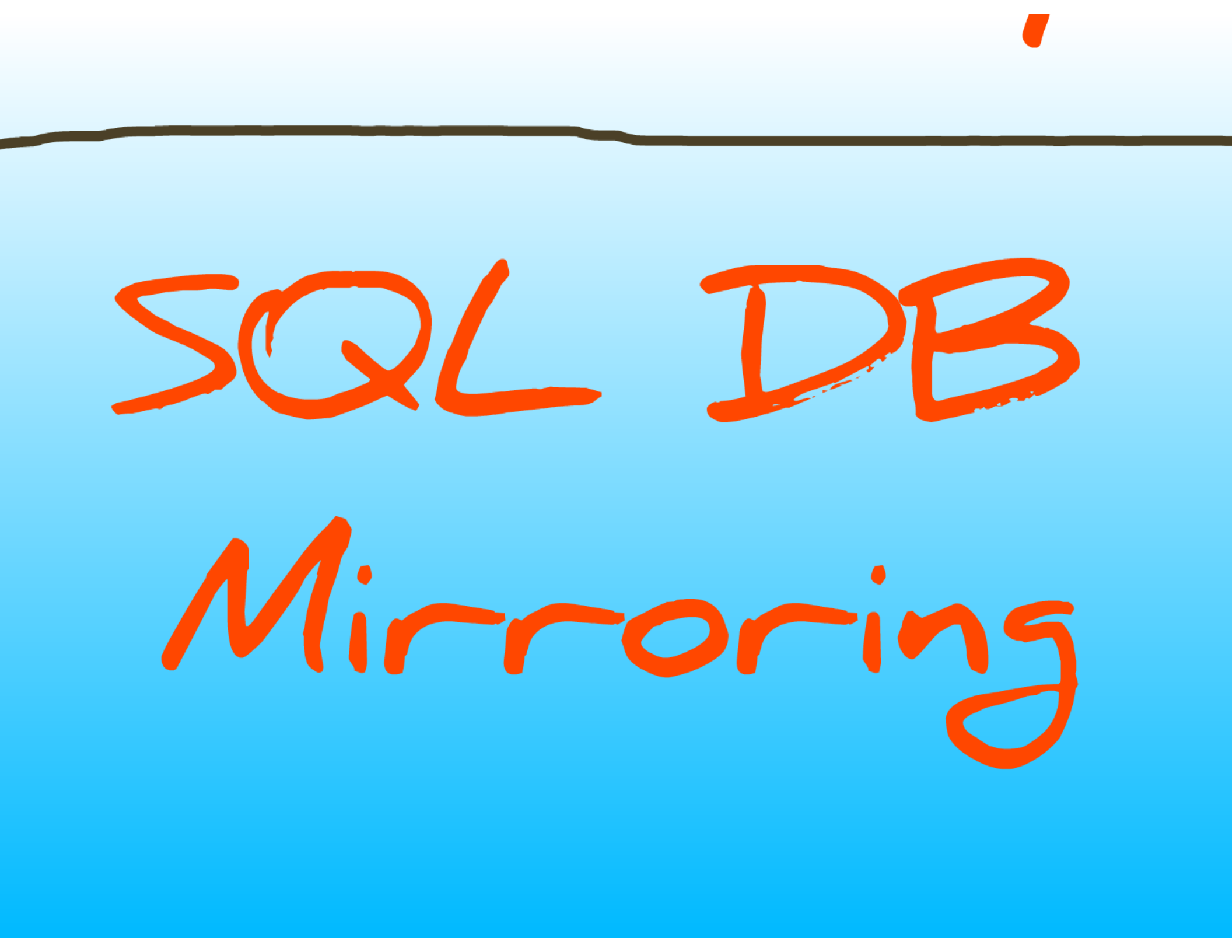
SQL DB
Mirroring

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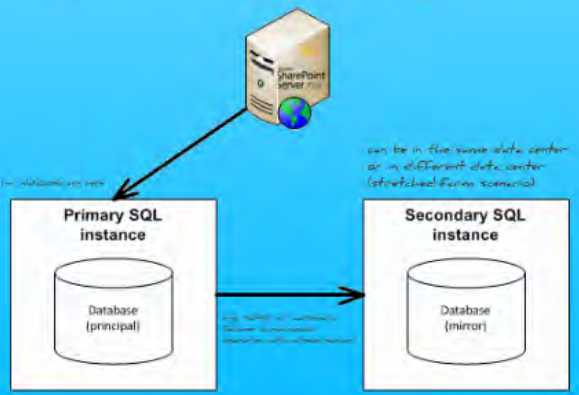
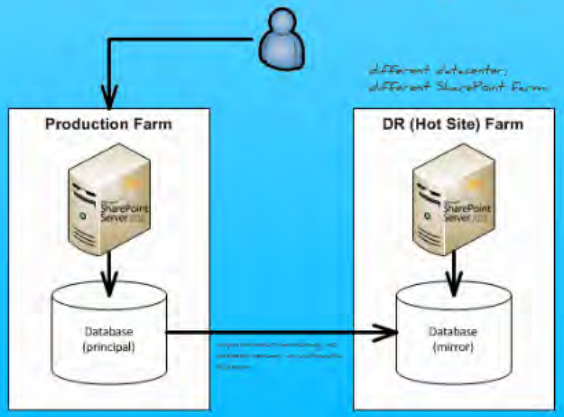


Disaster Recovery (DR)



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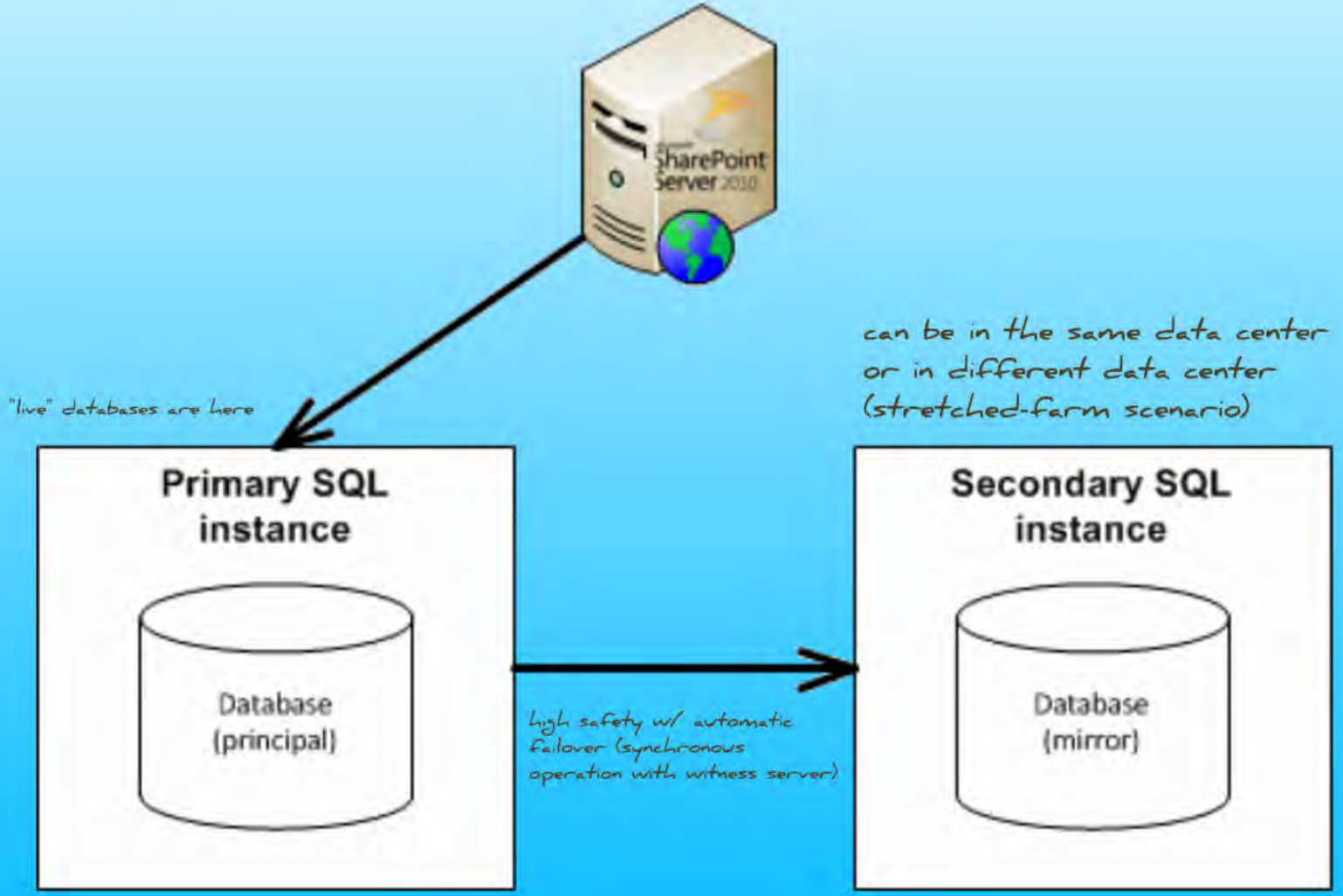
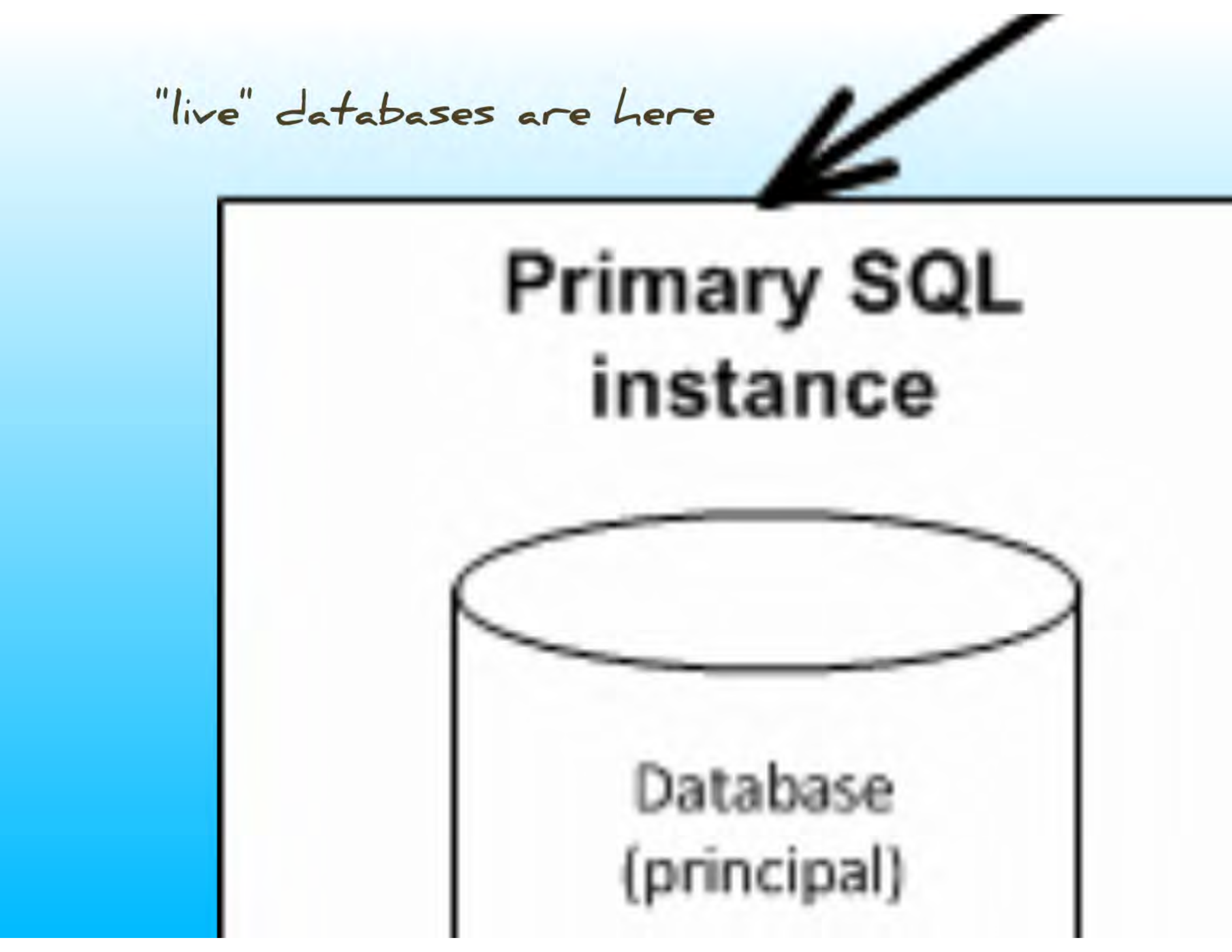
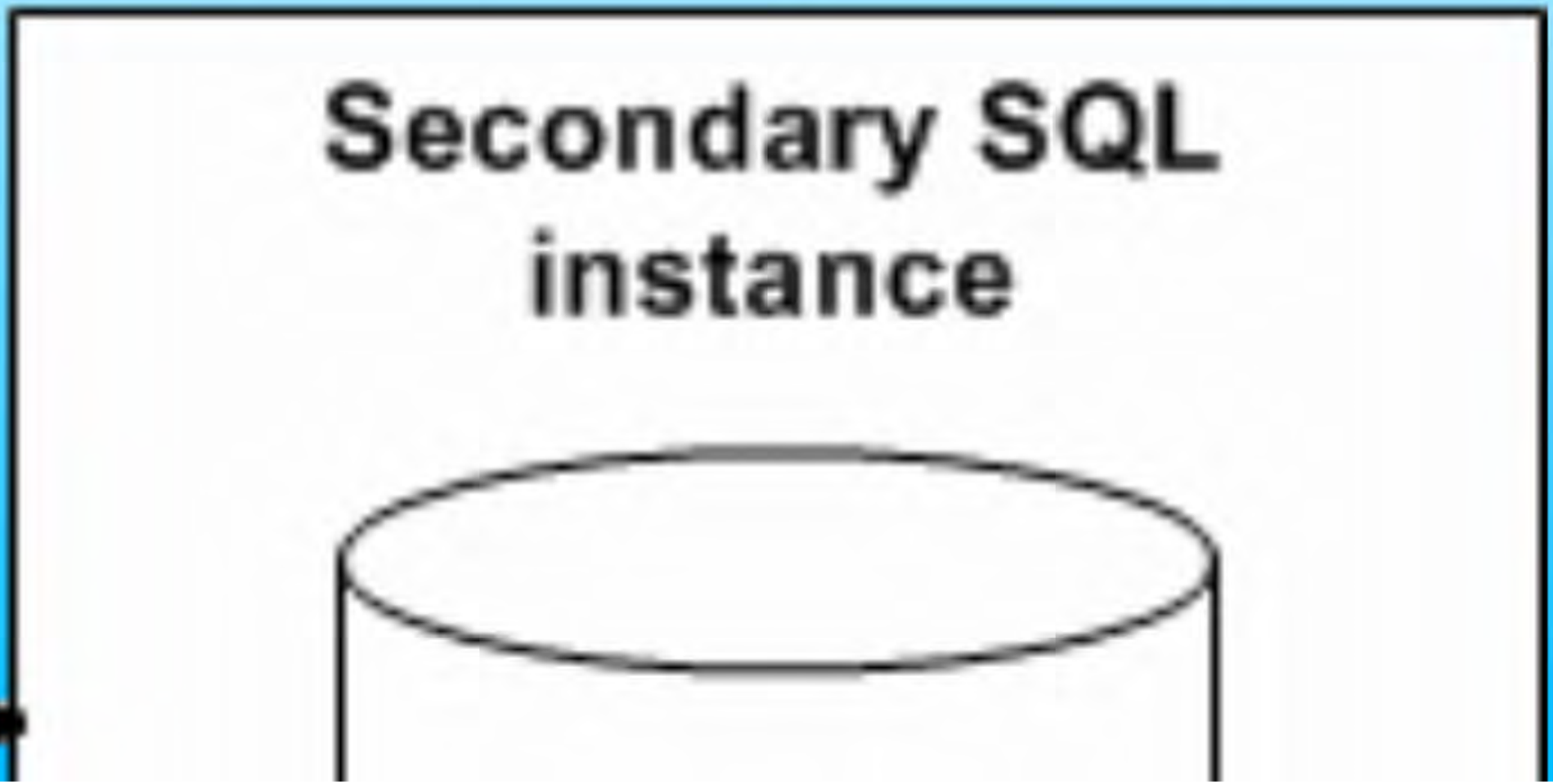
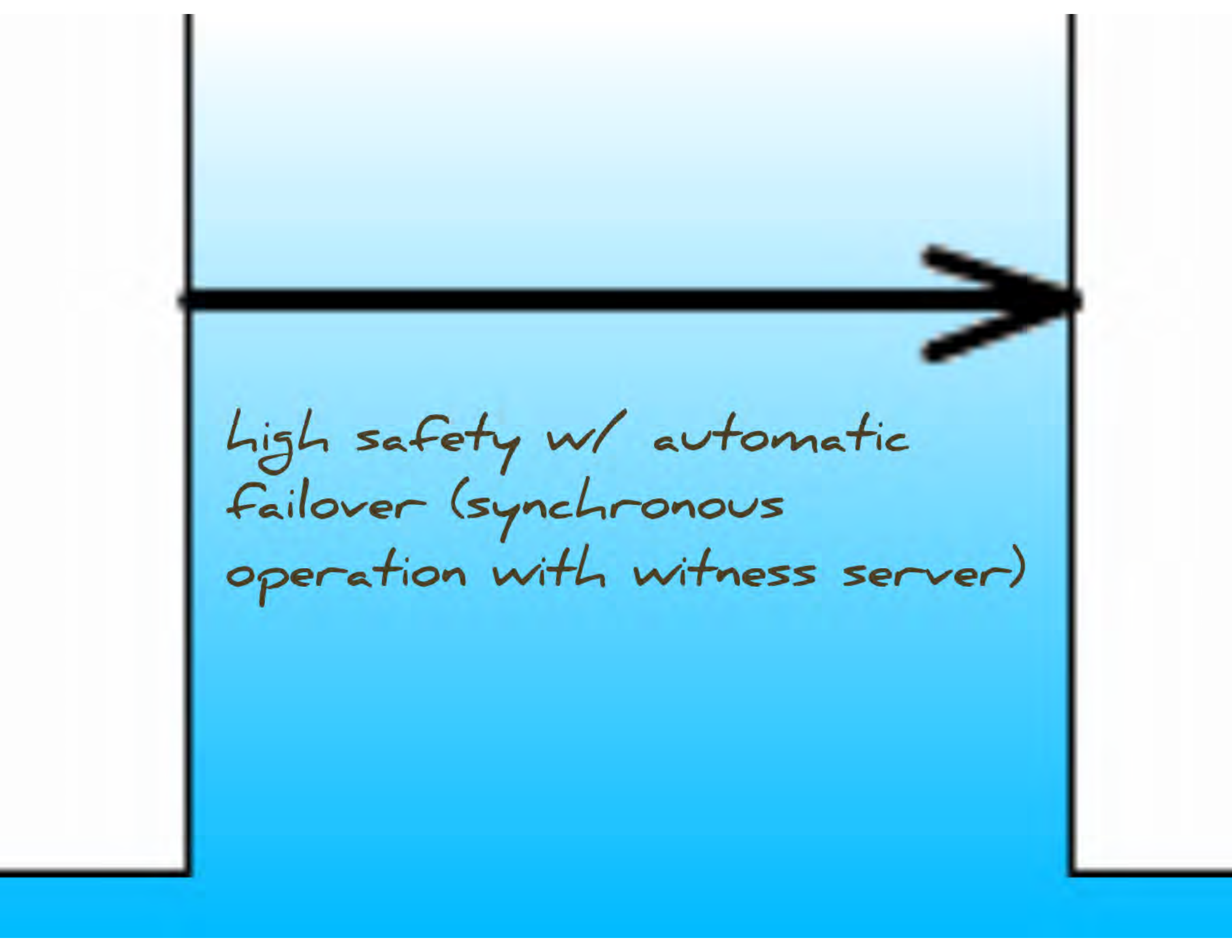



"live" databases are here
Primary SQL instance
Database (principal)

can be in the same data center
or in different data center
(stretched-farm scenario)




high safety w/ automatic
failover (synchronous
operation with witness server)

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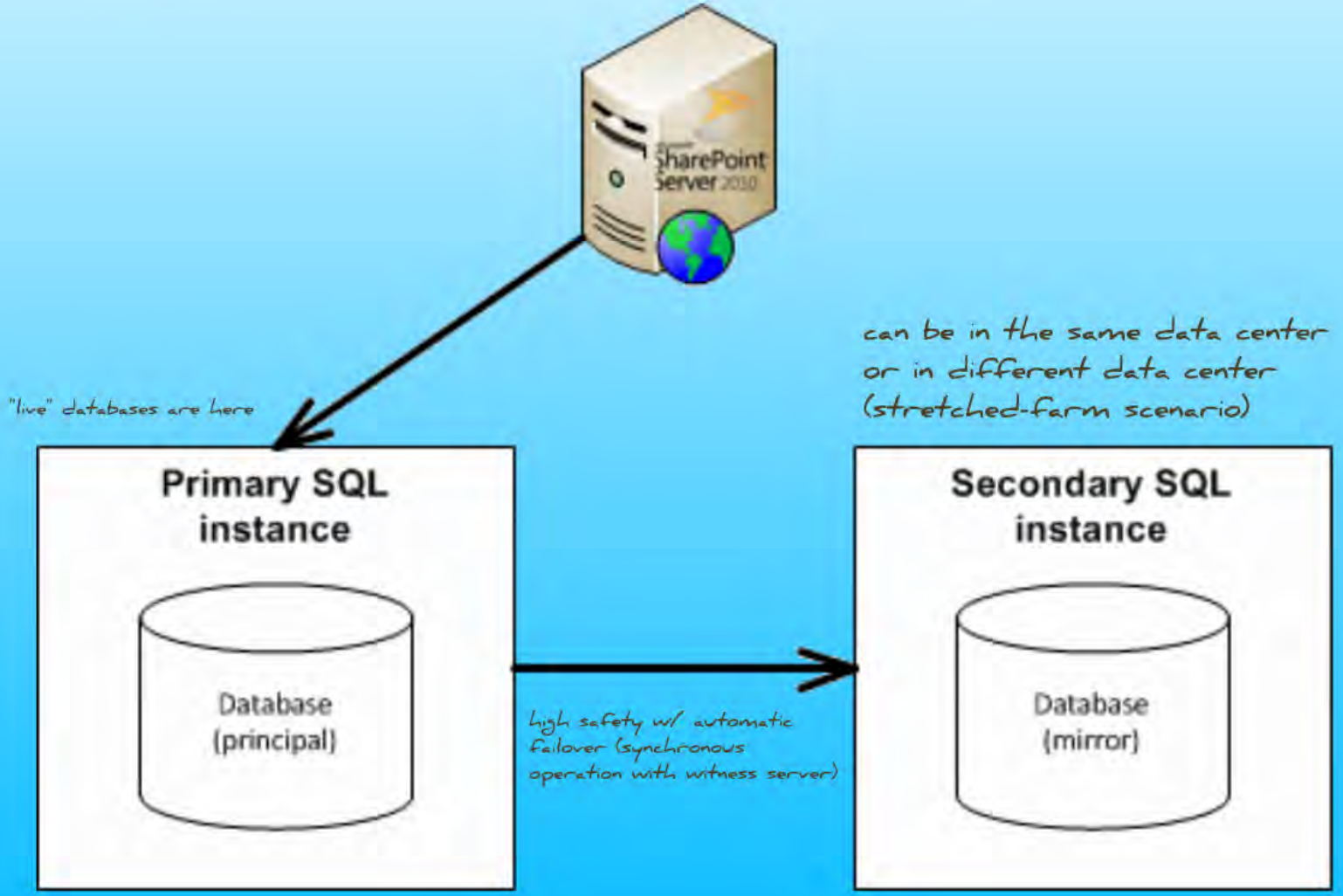

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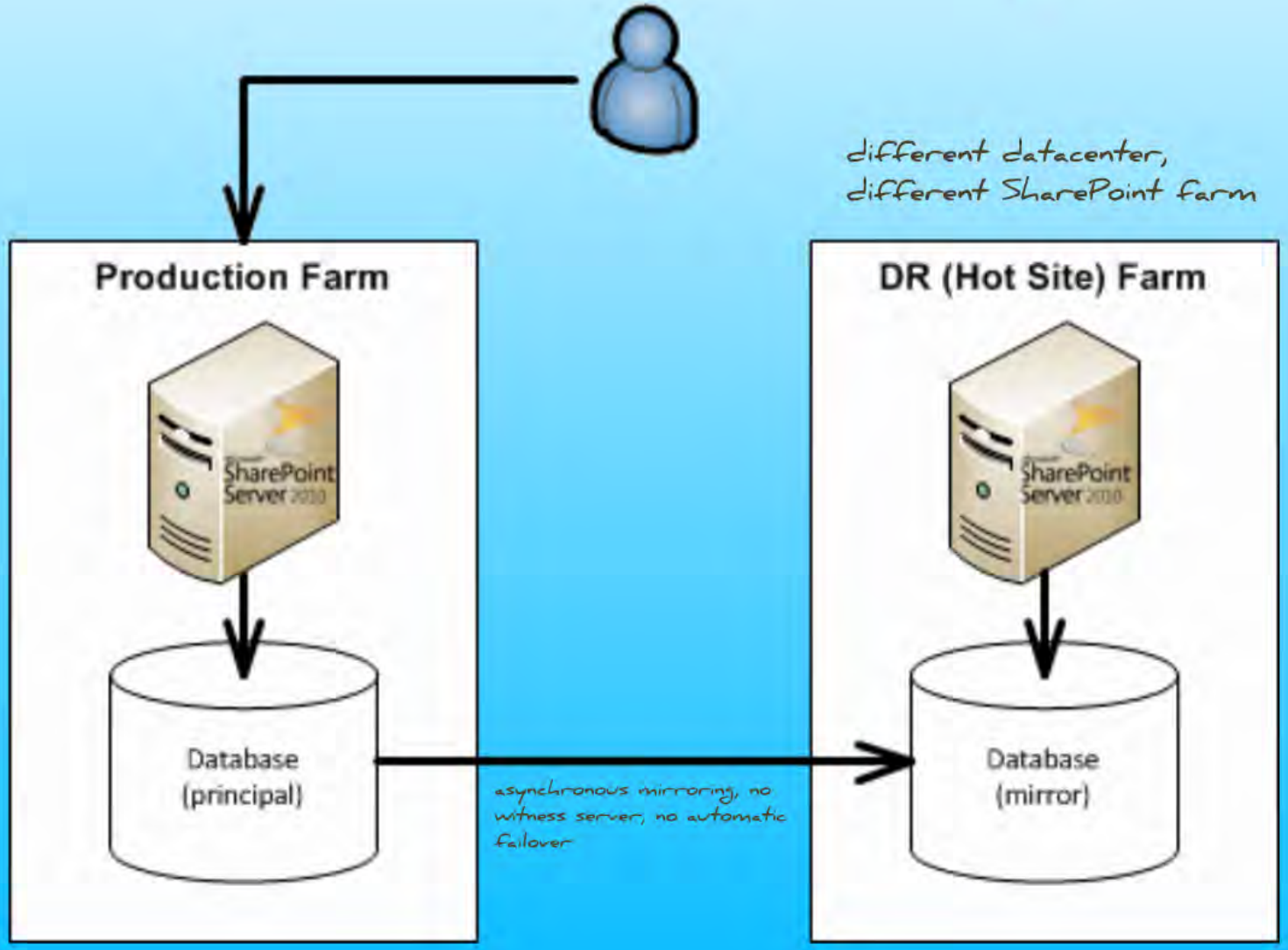
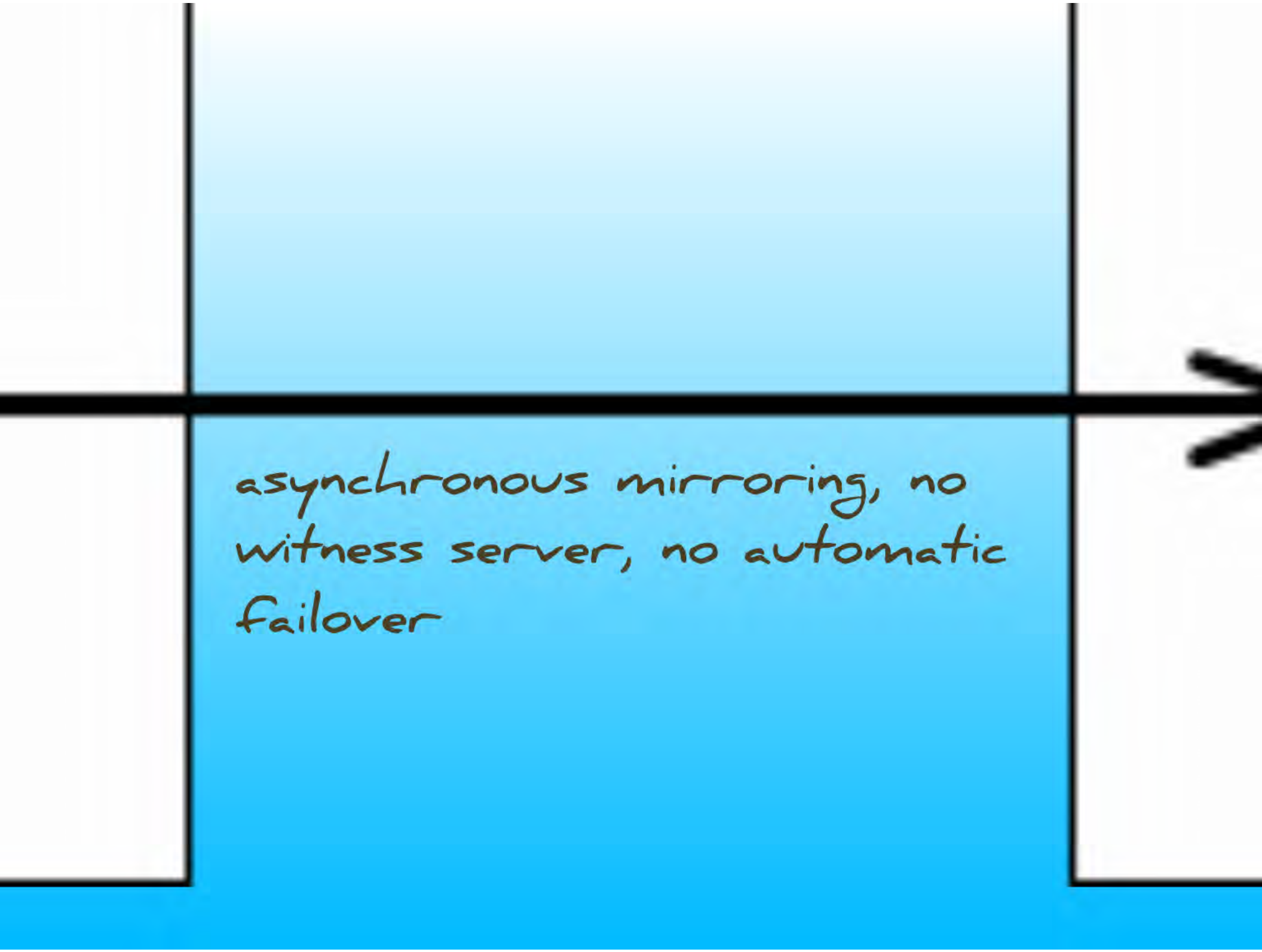
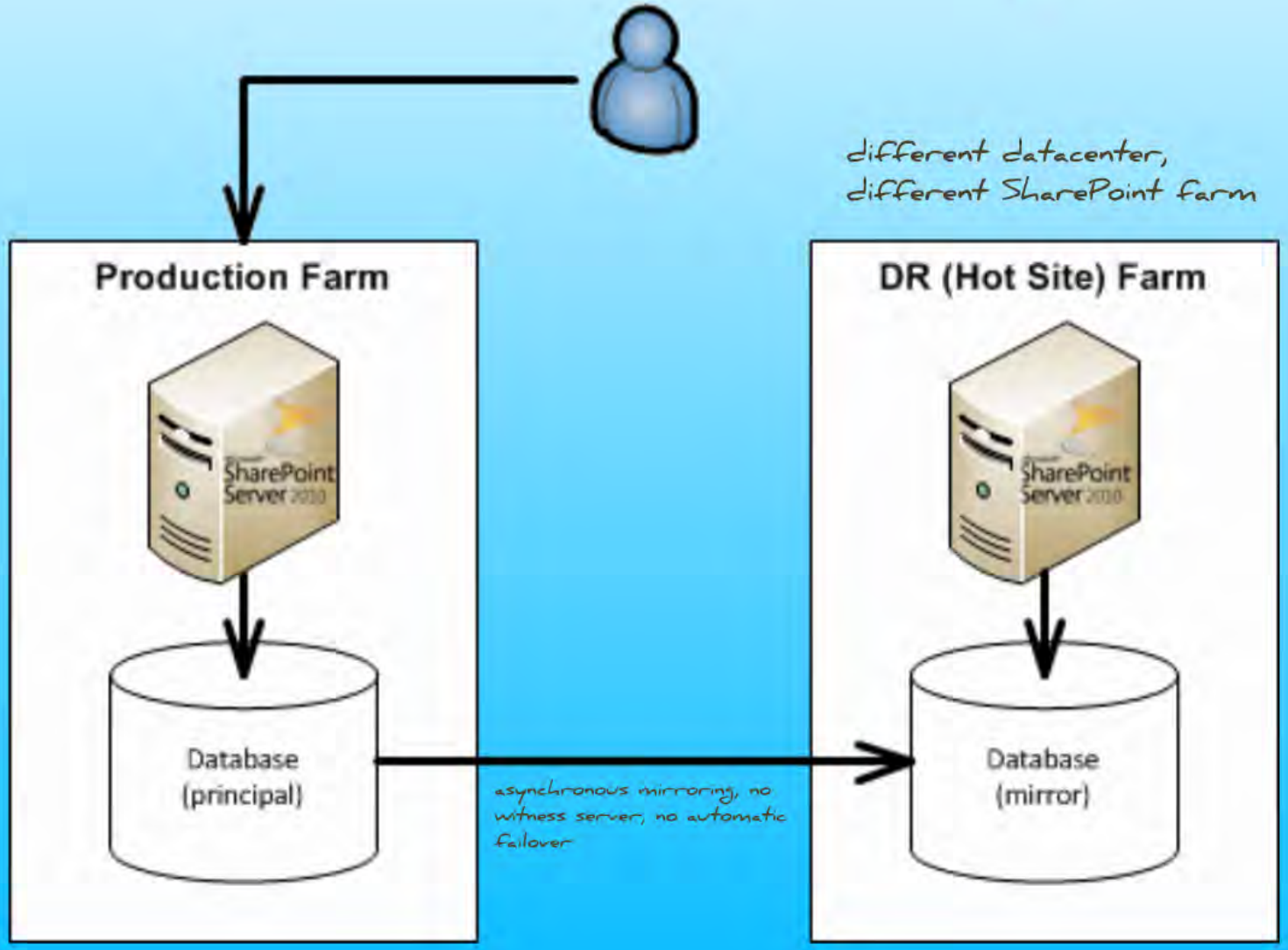


different datacenter,
different SharePoint farm


asynchronous mirroring, no witness server, no automatic failover

Disaster Recovery (DR)



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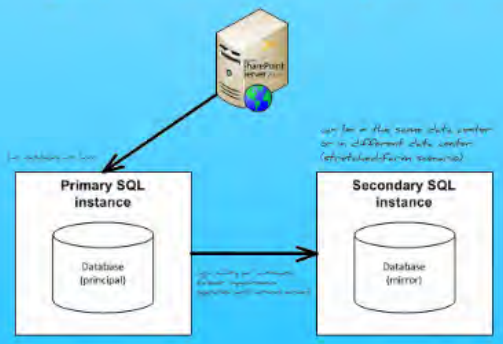

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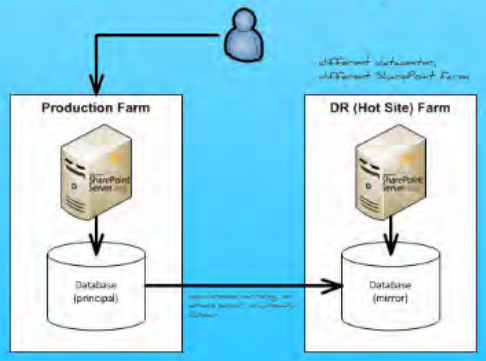

The hoopla in 2010 is centered on mirroring for HA

Let's say that an "incident" occurs
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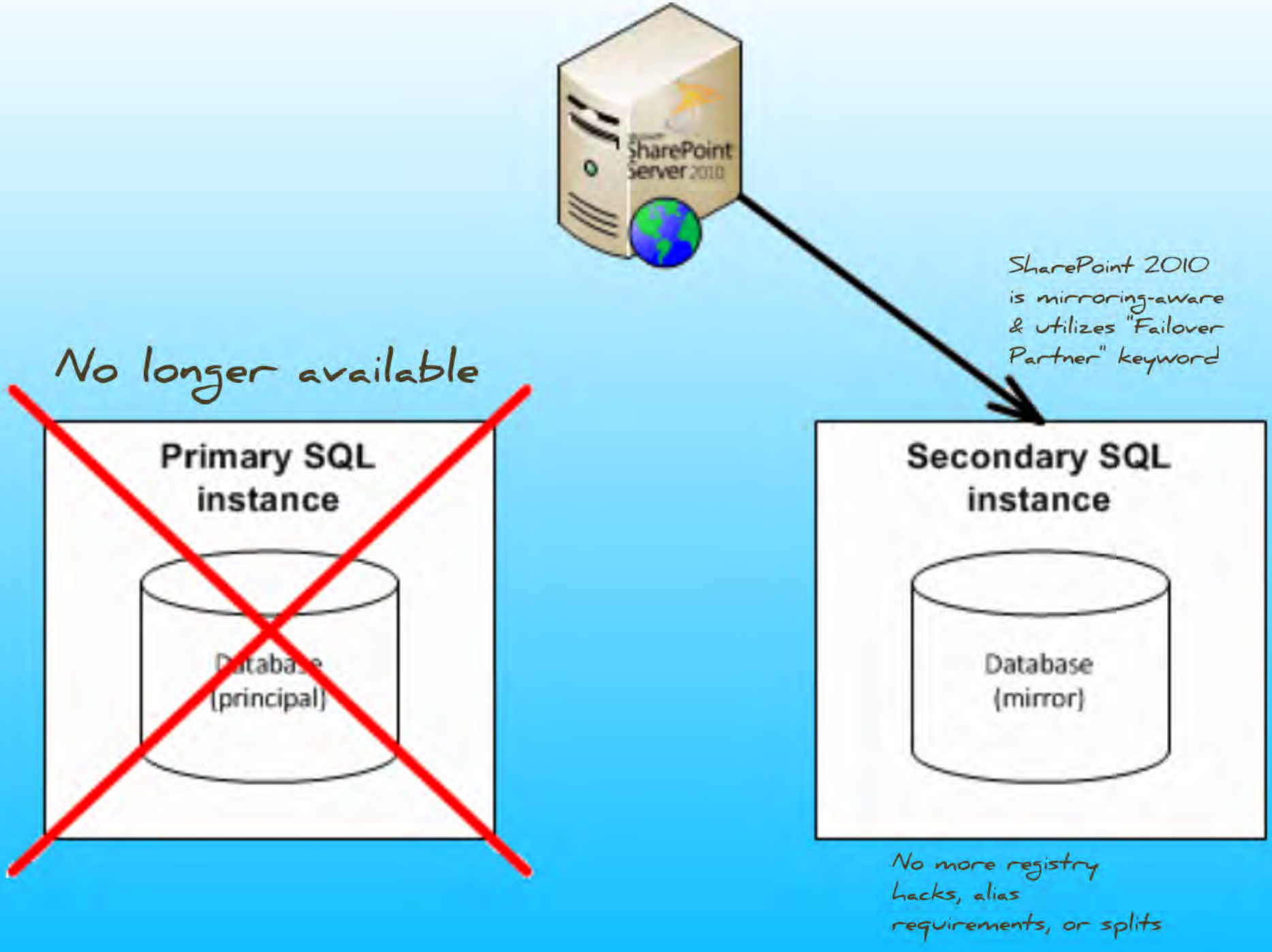
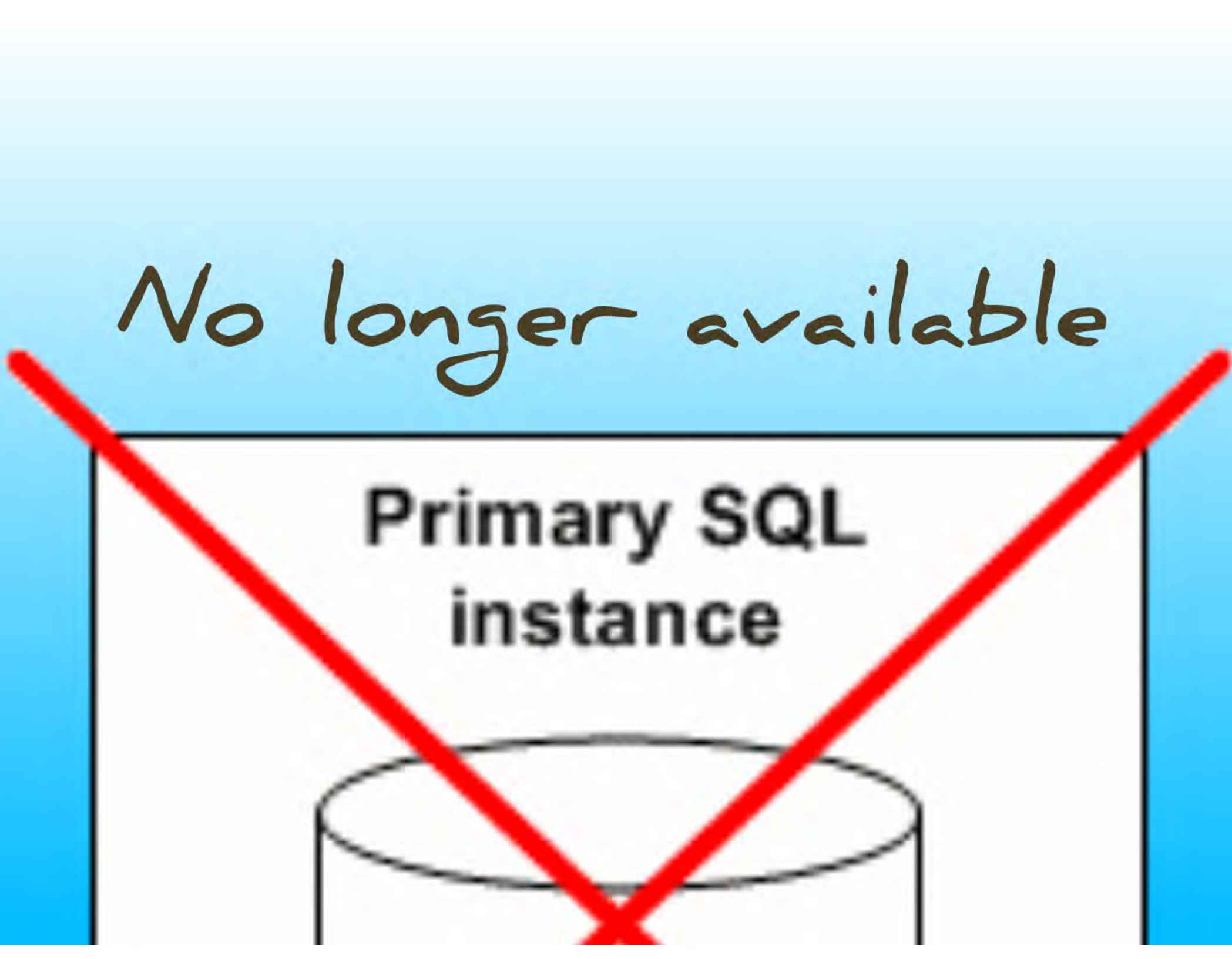
hard to see, but that's your primary SQL Server


SharePoint Server 2010
SharePoint 2010 is mirroring-aware & utilizes "Failover Partner" keyword
No longer available
Primary SQL instance
Database (principal)
Secondary SQL instance
Database (mirror)
No more registry hacks, alias requirements, or splits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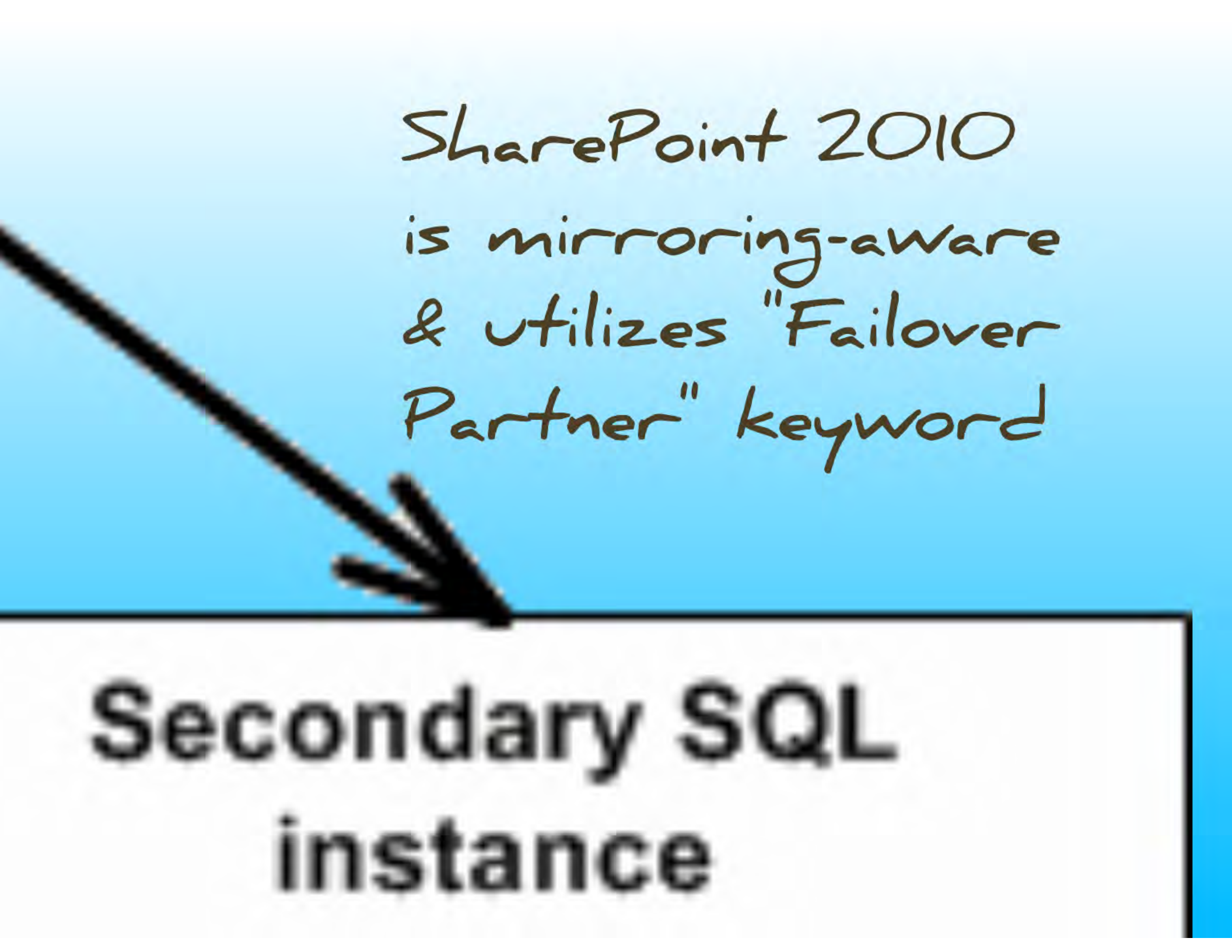
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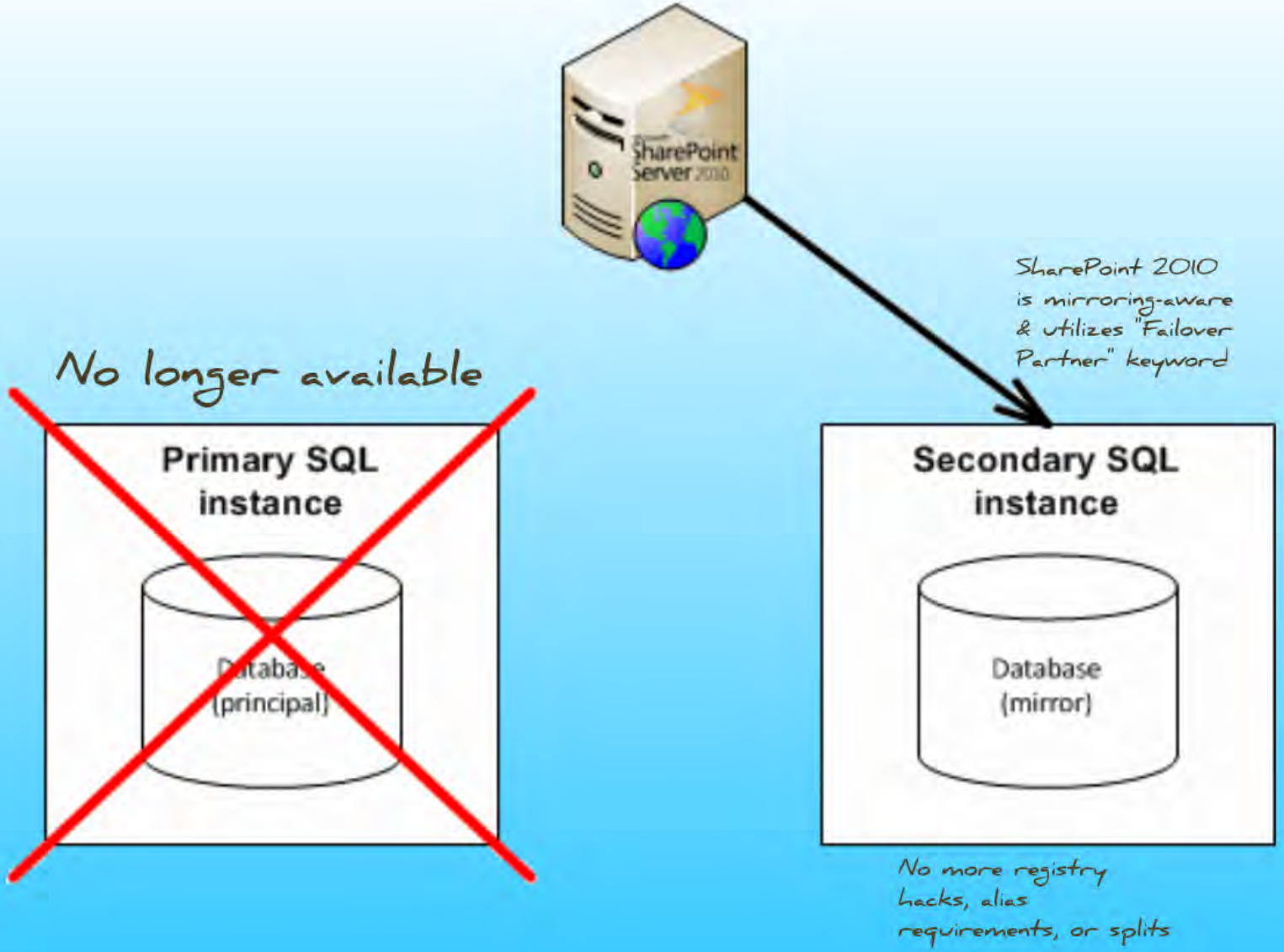

This works for most databases*, including the configuration database

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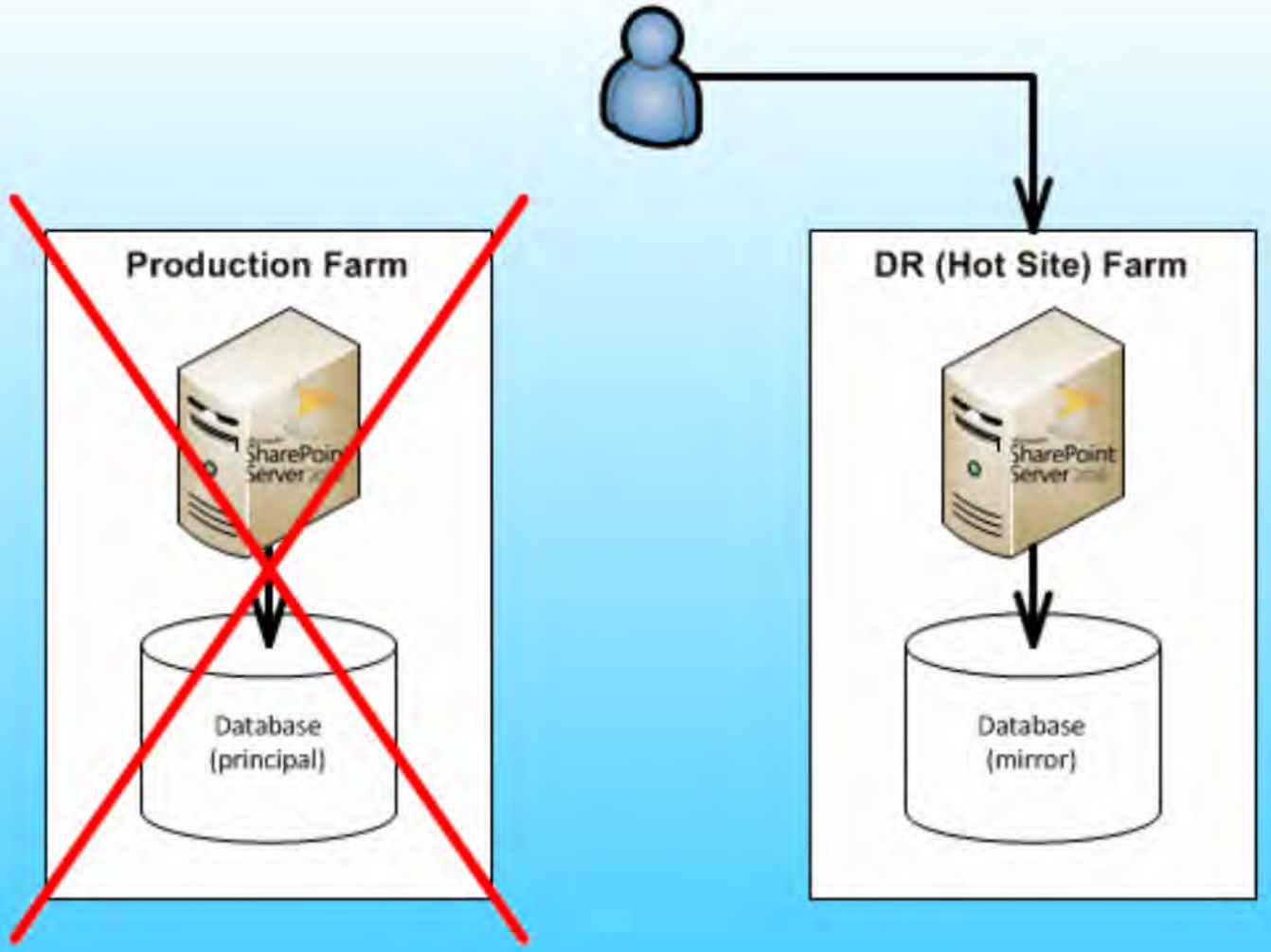
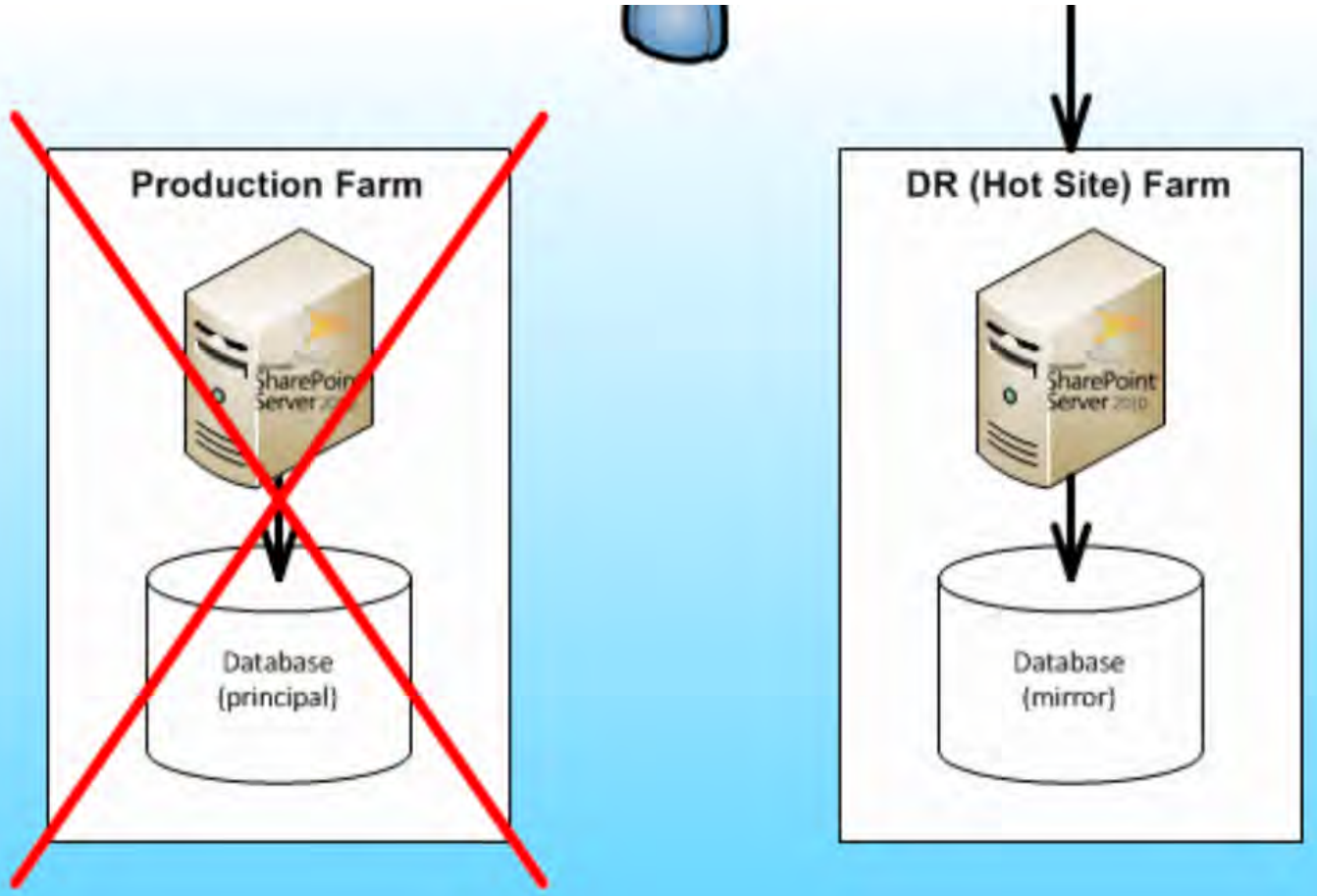
- Planets must align (even Pluto*) during a leap year

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



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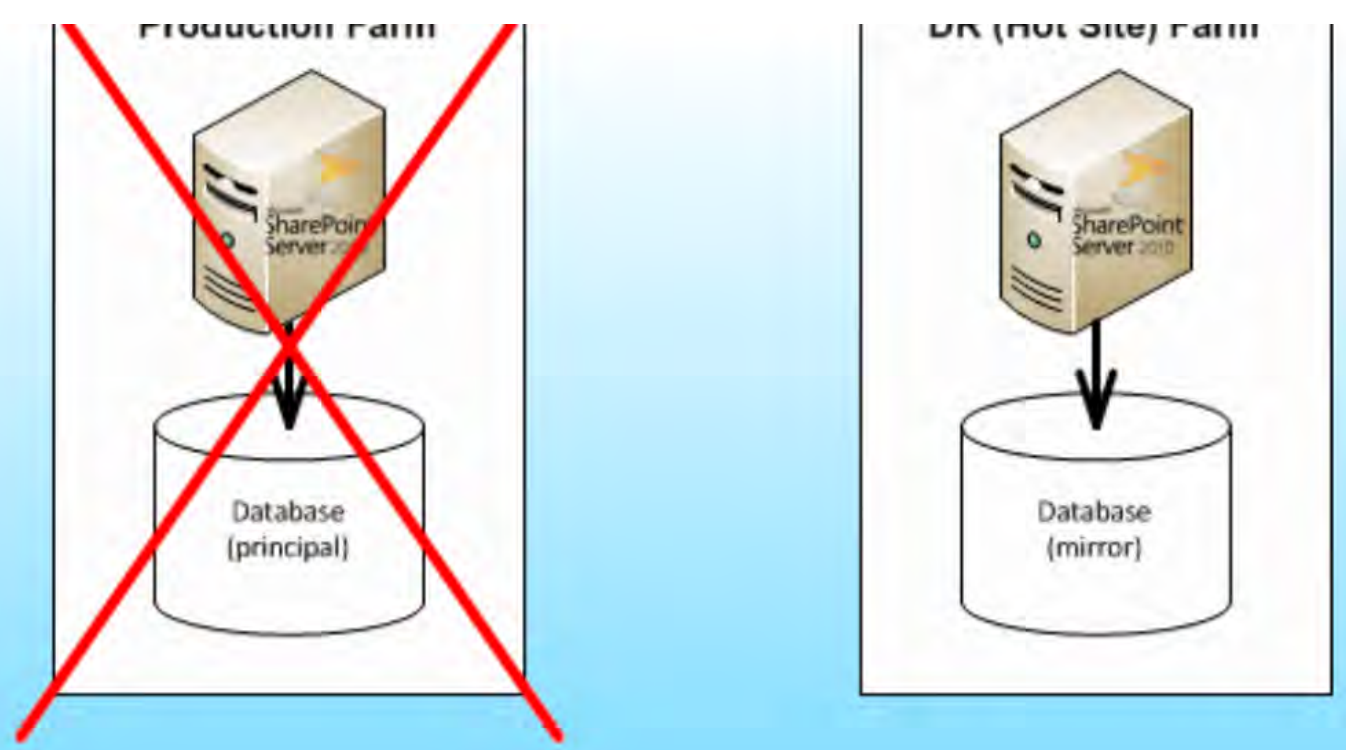

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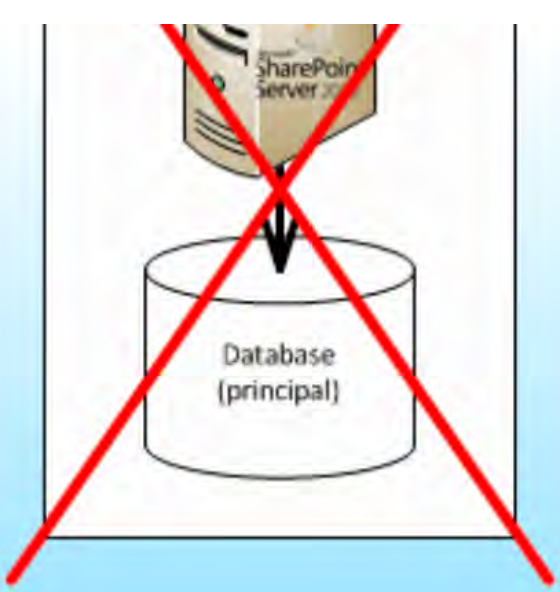

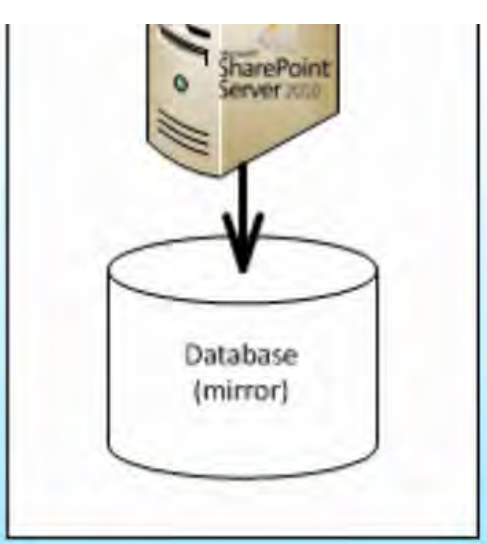

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In DR scenarios, consider transaction log shipping over mirroring

Disaster Recovery Implications

	Planning	Operational
Powershell	• Will alter documented procedures that involve scripting • Provides new avenues for the collection of configuration data (for example, using the Export-Clixml cmdlet).	• May lead to changes in script execution and scheduling * PowerShell remoting! • Efficiency and concurrency improvements may shorten RTO windows
Configuration Backup/Restore	• 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	• Generally minimal • If recovery plan employs a full farm rebuild, configuration-only restores can help reduce RTO windows * Easy solution store recovery
SQL Server Snapshots	• Snapshots place additional load on SQL Server, so size and plan SQL Server environments accordingly • Budget for a version of SQL Server that supports snapshots	• Snapshots can increase SharePoint availability by avoiding locking • Can break out of traditional backup window constraints (i.e., avoid backup "overruns")
Unattached DB Recovery	• Reduces or removes the need for (dedicated) recovery farms • May affect SQL Server capacity planning and sizing	• Reduces operating overhead since recovery farms are not needed • Can reduce RTO window for granular recovery activities * Avoid recovery farm patching!
SQL DB Mirroring	• Mirroring for DR carries significant data center design and location considerations • Profound impact to DR strategies and plans • SQL Server sizing and capacity planning ramifications * extra threads!	• 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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NEW
On
The
Fresh
IMPROVED
in
NOW
EXCLUSIVE

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

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Writer's block of a sort …

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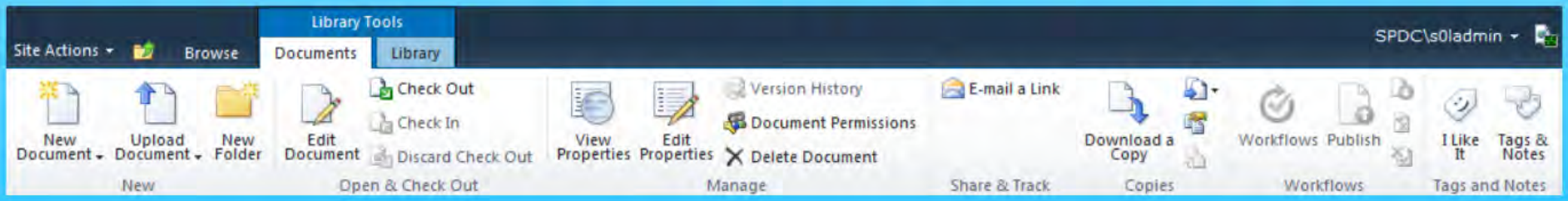

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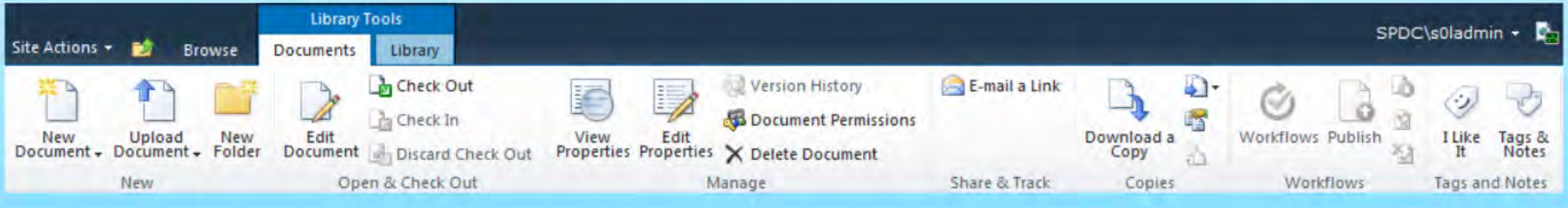
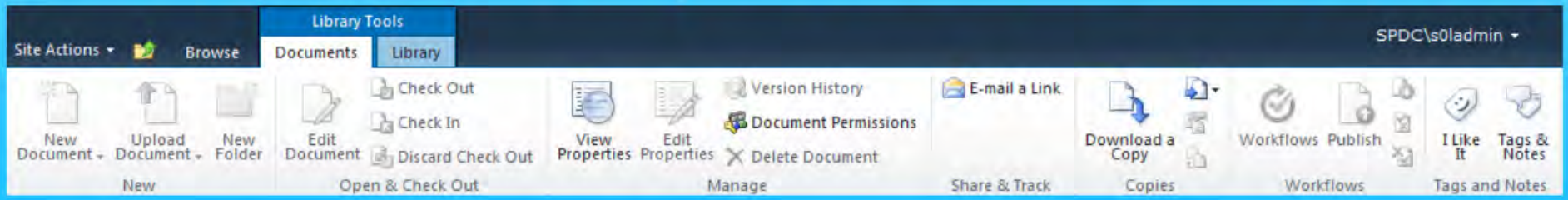


Ribbon when a read-only content database is detected



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- 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 …

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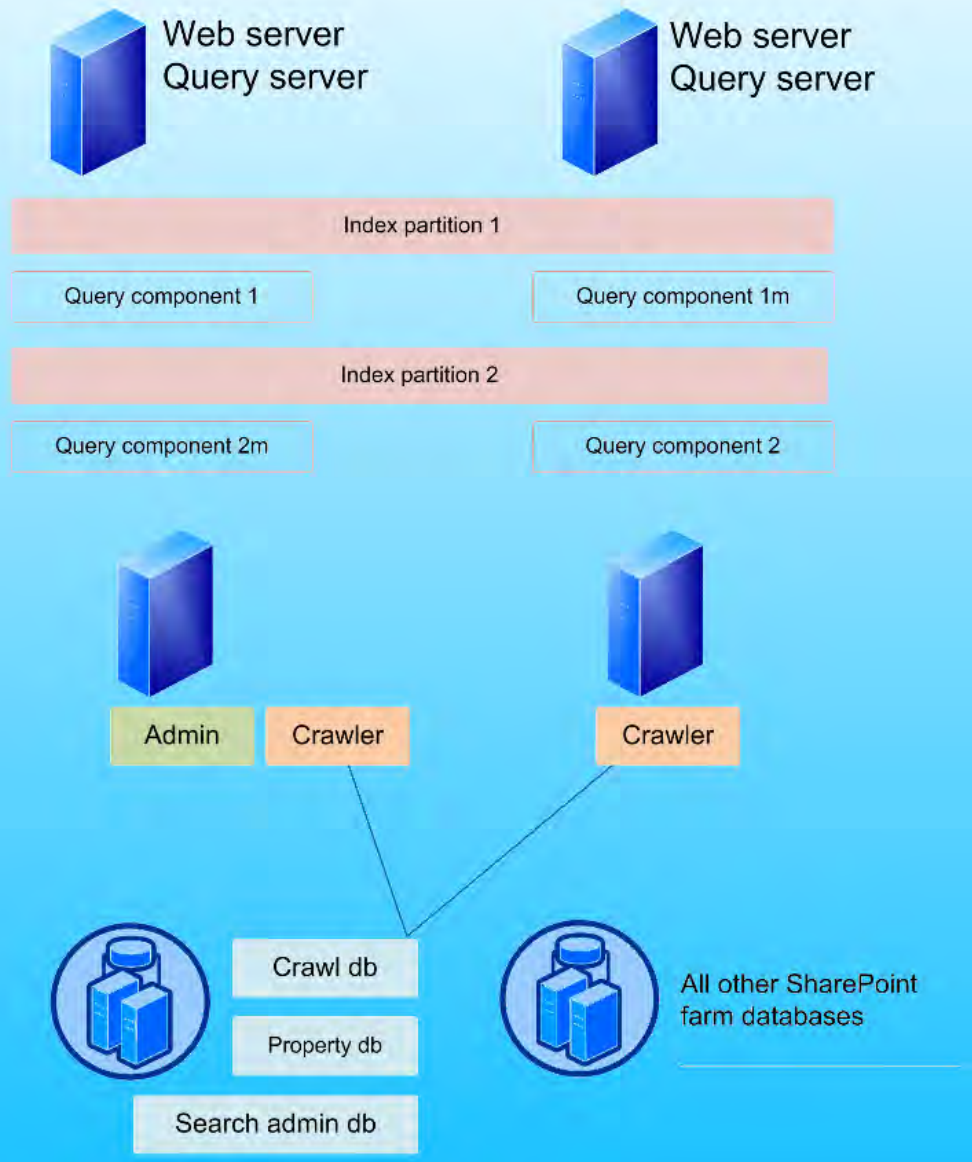
Search indexing and related operations

Native 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
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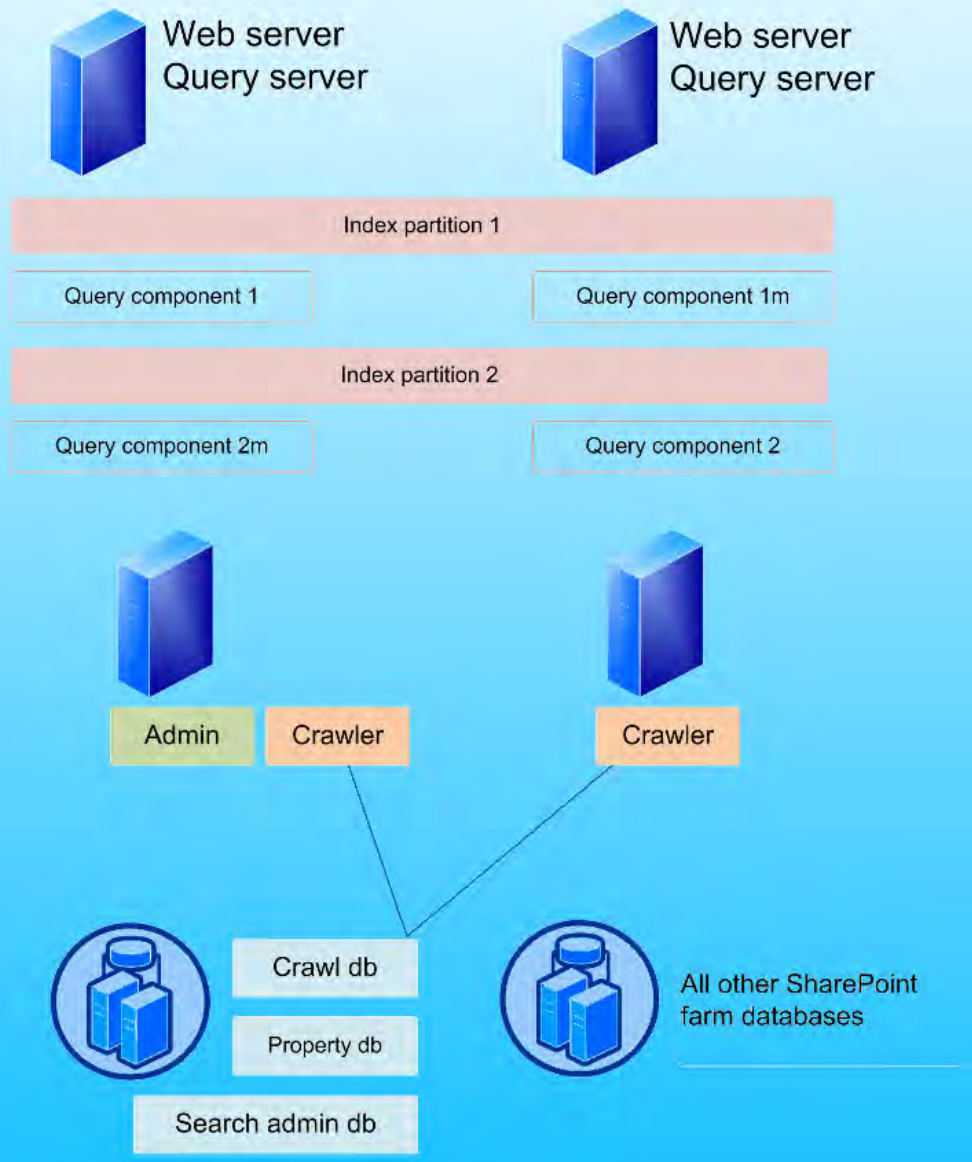

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Granular backup and restore

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

A couple of new tricks

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- SQL Server snapshot capability
  - already discussed

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- 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

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Achtung, baby!

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	• 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)	• Doesn't participate in configuration-only backup/restore • Tough to backup/restore -- even with native tools
Remote BLOB storage (RBS)	• Offloading storage of binary large objects (BLOBs) from SQL Server to another storage system • Reduces content database size (often dramatically) • RBS provider may support use of cheaper storage, deduplication, archiving, etc.	• When using native backup and restore, BLOBs are typically pulled through without issue • With SQL Server backups or a 3rd party backup product, understand the implications during backup/restore! - only pointers to BLOBs reside in the content databases - not the BLOBs themselves!
Business connectivity services (BCS)	• 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	• 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
- Multi-tenancy and cross-farm consumption (security and scalability options)

- Offloading storage of binary large

The not-so-good

- Doesn’t participate in configuration-only backup/restore
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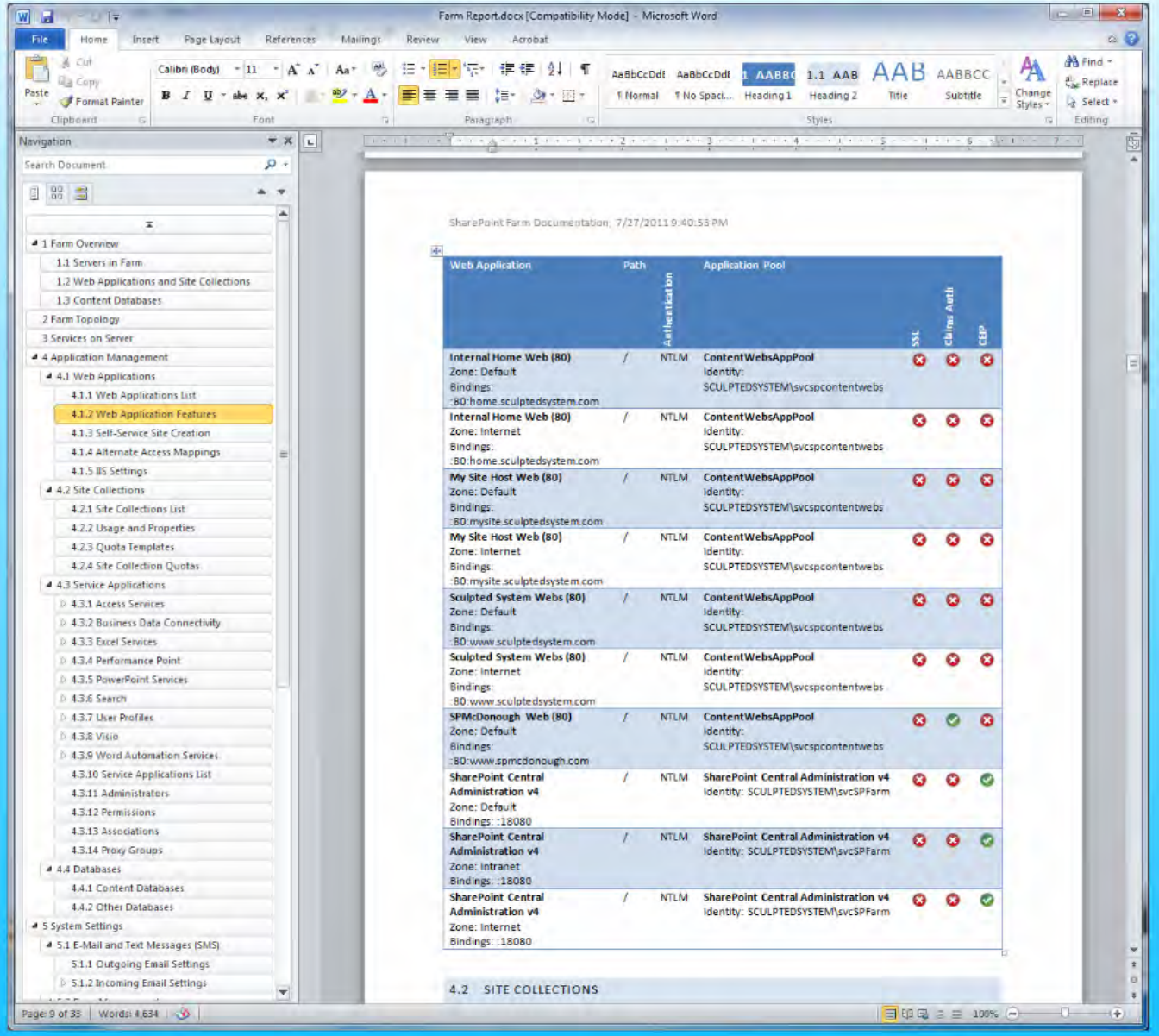
- When using native backup and restore

Document your farm configuration!

- http://tinyurl.com/SPDRFarmDoc2010

Documentation alternative:



http://www.spdockit.com

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TOUGH
TIMES
AHEAD

Closing thought

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

- Alan Lakein

Questions?

Sean P. McDonough

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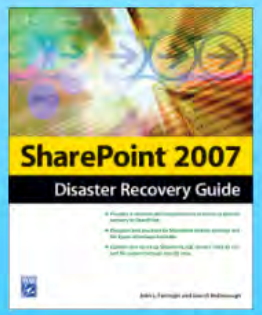
Email: sean@SharePointInterface.com
LinkedIn: http://www.linkedin.com/in/smcdonough
Twitter: @spmcdonough



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