

Commvault and Vormetric SQL Server Protection

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Contents

Version History	. 3
Process Overview (List)	.4
Backup Phase (SQL IntelliSnap)	.4
Backup Copy Phase (Movement to Media)	.4
Recovery Phase (Restore)	. 5
Process Overview (Graphical)	. 8
Configure an Array	. 8
Create a Snapshot Copy For The Storage Policy	. 9
Enable IntelliSnap on Client Computers1	10
Perform IntelliSnap Backup and Backup Copy	11
Restoring Data	12
Bring Restored Database Files Online In SQL	15

Version History

Version number	Revision date	Contributor's name	Revision description
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Process Overview (List)

Backup Phase (SQL IntelliSnap)

- Either ADHOC or via a Commvault Schedule Policy a SNAP Backup occurs on the SQL Server.
- The SNAP will VSS Quiesce the SQL Database on the target server(s).
- Once the Databases are quiesced a hardware snap occurs on the targeted array
- Upon completion of the hardware snap the VSS software snap is released.
- At this time the SQL IntelliSnap is complete.



Key Points

Aside from Quiescing the SQL Application, the Hardware Snap is a frozen picture of data exactly as it lives on the source server, and storage LUN, at time of snap. Any in place encryption remains as the hardware LUN is a direct one to one copy. Depending on the array, most likely the LUN will be "frozen" and writes redirected to a designated snapshot volume pool on the array. Growth of the snapshot depends entirely on LUN change rate of hosted data.

Backup Copy Phase (Movement to Media)

- The Backup Copy can either be scheduled to run at completion of the Snap or scheduled independently.
- The Backup Copy mounts the Snapped LUN from the Array to the MediaAgent Proxy. Snaps can also be manually mounted to the MediaAgent Proxy or Source Server if the snapshot is still available on the array.
- Data is then streamed directly from the mounted LUN on the MediaAgent Proxy to the Commvault Disk Library as designated in the Storage Policy Primary Copy.
- The backup copy portion is now complete. Based on the Snapshot Copy retention snapshots will either be held for the designated period of time or will be removed from the array. With the backup copy now complete the source has met part 1 of 2 required to age data. (Part 2 is the configured retention (spool copy (no retention) or # of snaps or # of days)).

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Key Points

The data that is streamed from the array mounted LUN does not invoke SQL to transfer data. The backup copy is a file based protection method. Data Files/Folders are block transferred to storage.

Recovery Phase (Restore)

- Perform a browse and recovery from either the individual SQL Server or via the Storage Policy > View Jobs Section. You can also view jobs from the individual SQL Server and choose browse and restore on individual jobs.
- In the browse options leave default or set appropriate times and click "View Content" at the bottom.
- In the restore tab choose the database(s) and click "Recover All Selected..." at the bottom.
- The SQL Restore Options window will open. Here you must choose the following:
 - Destination Server in the dropdown will be the Server with MSSQL Installed that will be the landing zone for restored files. (This is currently MA01)
 - After selecting the proper destination server click Advanced Options and select the "Restore to Disk" but do not select the "Attach to SQL Server" checkbox.

eneral 3xb Initiation	2 Advanced Restore Options
Several Destination Server: NO14ASP/BACK/PT[57 Biover Server: NO14ASP/BACK/PT[57 Debbee Reme: Internet/3_mm/ption Debbee Rule: Normal	Athenced General Startup Pre/Post Citoy Precedence Data Path
Restore Time and Time zone	Teasterney Party and Street Street
Pontin-bre	Restore Types
Restore Time: Phday, May 26, 2017 12:03:04 PM PULL	Catabase Restore 🔾 this Restore 💭 Recover Only
Time Zone: (J/TC-05100) Eastern Time (J/B & Canada)	Transformag Reta Petal Remon Clanet Solur Inte
Recovery Types and Undo Path	Charler Log Sealage with C Skip Full Backup Consections To Database
G Recovery E Nonecovery O Stand by	Distriction
(Indu Vie Pathy	
Restore Codera	Codana
Decorditionally overvice existing database or files	Continue After Error
Thesame Replication Sections	Leave Database in Restricted Liter mode
Freep Change Data Capture	
Stephy Polition Stance Clerk	OK General Help
Database File Name Physical Path	Sor a
prieste/2_enzyorieste/2_enzyD/Restore(orieste/2_enzy	pton.mdf 2168
contraction in the second	pas/oper ine
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	Find & Replace
	1
	Change and Change and Change

• Choose a path or browse to select a path where the MDF and LDF will be restored to.

i Important

ENSURE that Vormetrics does not have DataGuard configured for the path where you are restoring the MDF and LDF to. This should always be the case if restoring to the landing zone server (MA01).

- Next on the Source SQL Server you must detach the Production Database. Additionally, the services for SQL Server, SQL Browser, and McAfee A/V were stopped to assist Vormetrics in removing protection from the DataGuard defined path. This can be done before or after changing the DataGuard configured paths in the Vormetrics Dashboard.
 - The VMD service may need to be restarted on the SQL Server to cause a sync between the client and the Vormetrics policy server. The DataGuard client will update status on the SQL Server and the protected path should no longer be listed as protected.
- Once the current location of the Production MDF and LDF files are no longer encrypted by DataGuard and the database is detached in SQL it's a good idea to now rename the current MDF and LDF files to something else. Appending "_original" as an example. This will allow the restored files residing on MA01 to be copied to the proper location on the Source SQL Server and not overwrite the existing files.
- With the restore files now in place. In the Vormetrics Dashboard turn DataGuard protection back on for the folder where the MDF and LDF files reside.
 - Additionally you may need to restart VMD services on the SQL Server once more to force a policy change sync.
- With the restored files now under DataGuard protection you can attach the SQL Database.
 - Keep in mind you may need to start any SQL Services previously stopped in order to change the Vormetrics policy.

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Key Points

SQL Server must be installed in order for the landing zone server to show up in Commvault as an available destination server to restore to. This requirement is being addressed in a future service pack by Commvault to not require the need for SQL Server. Since this is currently a requirement Commvault also performs a version check for what version of SQL Server is installed. In order to ignore this version check and allow universal restores of any version the following registry key must be applied as an additional setting on the CommServe entity in the Commvault GUI.

- Registry key = "bDoNotCheckSqlVersion"
- Category = CVD
- Type = Integer (this is a DWORD)
- Value set to "1" (Disables the SQL Server Version check)

CommCell Properties						
Activity Control Advanced Features Firewall Configuration Network Throttle General Version Security Additional Settings						
Note: These settings are limited to the CommCell machine itself						
Note: These se	ttings are	limited to th	e CommCell	machine itse	elf	
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Key Points 2

SQL is not invoked during restore. Thus, the SQL Version of Source or the SQL Version of Destination does not matter. The need for MSSQL to be installed was only to populate the landing zone server in the destination list. The requirement for MSSQL to be installed is to be removed in a future service pack by Commvault. The restore is a flat file restore when Restore to Disk is selected.

Process Overview (Graphical)

Configure an Array

First, ensure the IntelliSnap Array is setup in Commvault. This is the array where the source SQL Server Data resides which we will be protecting.



With the array configured, we will be able to leverage IntelliSnap on Configured Clients and Storage Policies.

Create a Snapshot Copy For The Storage Policy

On Storage Policies with Clients that will perform IntelliSnap backups, we must enable the Storage Policy for IntelliSnap. This is done by creating a Snapshot Copy Policy.



Job Con	ntroller × 🗾 V	ternes Religios	tx	• ~	
Content	- Policies >	torage Policies >			
Сору	Сору Туре	Status	Default Library	MediaAgent	Default
Primary	Primary	✓	DiskLib	r state in the second se	N/A
Primary Snap	Snap Primary	✓	DiskLib	r and a second	N/A

© Snap Co	py properties (Storage Polic	y : F rance ()
Auxiliary Copy Fallen Behind General Retention	Selective Copy Associations Copy Policy Data Path	Advanced Deduplication Provisioning s Data Path Configuration
Imable Data Aging		
Spool Copy (No Retention)		
Retain Snaps by Number of Basic Retention Rule for All Bac	Jobs 24	
	NGP3	
O Retain for	30 × Days	4 🛓 Cycles
Extended Retention Rules for F	Full Backups	
For Infinite/	90 🕺 Days Keep Please Select	✓ Grace ✓ Day(s)
For Infinite/	365 🛓 Days Keep Please Select	V Grace V Day(s)
For Infinite/	1825 📩 Days Keep Please Select	✓ Grace ✓ Day(s)

Set your retentions accordingly.

Storage Policy Properties: \
General Copy Precedence Associated Subclients Snapshot Security Advanced
Backup Copy Deferred Catalog General Associations Image: Copy Enable Backup Copy
Snapshots Created On or After Fri 05/26/2017
Defer Backup Copy for 0 4 day(s)
Job Selection Rules
All Backups All Ba
Choose the Backup Selection Rule: Advanced
Source Snap Copy
Specify the Source Copy:
Appry selection rule for snap jobs (IVAS Agents & Virtual Server Agents only)

Also ensure that "Enable Backup Copy" is check on the Primary Snap Copy.

Enable IntelliSnap on Client Computers

On SQL Servers that require backups where Vormetrics is configured, you need to enable the client for IntelliSnap. Find the client in the GUI > Right Click > Properties > Advanced > General Tab > Click Enable IntelliSnap.

8	Client Computer Properties for
General	version Security Groups Activity Control Audit
Client	Advanced Client Properties for
н	General Bilicies Job Configuration Encryption Content Indexing Additional Settings Dedupli
	CVD Port : 8400
Clier	
PI	Retry Count 40
: Time	CDR.Log.File.Location

Perform IntelliSnap Backup and Backup Copy

With IntelliSnap enabled on the client we can now perform an IntelliSnap backup.



In the "Advanced" section you can check the box to create backup copy immediately. This means when the Snap Backup completes it will automatically start the job to mount the LUN to the Proxy MA and perform the backup of data from LUN to Commvault Designated Storage. This setting can also be set in the advance properties of a schedule policy. If you do not check this option you must run or schedule a backup copy job individually.

All Tasks	Run Auxiliary Copy Run Backup Copy 2 Run Content Indexing Run Analytics Run Data Verification Create New Copy Create New Snapshot Copy Clone Delete
Backup Copy For Backup Copy Options Job Initiation Select a Storage Policy No of Jobs to Run : No of Simultaneous Jobs to run O Allow Maximum Media Start New Media	×
Mark Media Full On Success	Save As Script Help

Restoring Data

After completion of the Backup Copy the backup process is complete. Let's look at the restore process. To initiate a restore you can perform a Browse & Recovery from multiple areas of the product. To name a few:

- Client
- BackupSet
- Instance
- Subclient
- History from all the above

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- Storage Policy View Jobs
- Etc.

Regardless of avenue taken the operation is the same as well as the options to be selected.

۲	Browse and Restore Options
Time Ran	Advanced Options
Show Ob	s to Restore using following criteria
C	me Range
	Absolute Time
	Time Zone: (UTC-05:00) Eastern Time (US & Canada)
1	Start Time
	Friday, May 26, 2017 💌
	12:03PM
	O Relative Time
	Last 60 🔆 Days 🗸
	2
	View Content Cancel List Media Help

Select the proper date range (if required) or leave default and click "View Content"



Select the servers, or expand them, in the left pane if multiple servers or instances were protected and then select the necessary databases for recovery.

٢	SQL Restore Options	×	
General Job Initiation	8	Advanced Resto	re Options X
General Destination Server: Source Server: Database Name: cvtestdv2_enc Database State: Normal	yption Advanced Gen	eral Startup Pre/Post Copy Preceder e To Disk to SQL Server(Applies only for VSS and : Restore	nce Data Path Encryption Alert Options SNAP) Browse
Restore Time and Time zone	Restore Ty	nec	
Restore Time: Friday, May 26, 2 Time Zone: (UTC-05:00) East	017 12:05:04 PM FULL O Data em Time (US & Canada) Tran	Ibase Restore O Step Restore	Recover Only
Recovery Types and Undo Path	App	y Log backups only Skip Full Back	up Drop Connections To Database
Recovery Norecovery Undo File Path: Restore Options Unconditionally overwrite existing Preserve Replication Settings	Stand by ○ Stand by ○ Verify Or ○ Checksu ○ Continue ○ database or files ○ Leave Diagonal	Ny n After Error atabase in Restricted User mode	
Keep Change Data Capture Staging Path on Source Client			OK Cancel Help
Database File Name	Physical Path	Size × 2 MB ^ 1 MB	
	2	Find & Replace	

Select the proper destination server. Then click "Advanced" and check the box for "Restore to Disk". Ensure that "Attach to SQL Server" is not checked. You can manually type the path of click browse to select the path for restore. Ensure this location is not under a Vormetrics DataGuard Policy.

V Current Guard Points			×
The following 2 guard points a	are defined on r	Deline Name	
		Policy Name R	II
_		_	_

This process will restore the SQL Database as flat files (MDF and LDF) to your landing zone server or directly to the SQL Server if you desire.

📕 Restore							
G → J + Computer + Local Disk (D:) + Restore							
Organize 🔻 Include in Ibrary 💌 Share with 💌 New folder							
👉 Favorites	Name ^	Date modified	Туре	Size			
Tesktop	🖹 27910_Full_BCD	05/26/2017 1:03 PM	XML Document	23 KB			
🙀 Downloads	27910_Ful_WRT	05/26/2017 1:03 PM	XML Document	6 KB			
🔛 Recent Places	🖓 🗠 🖉	05/26/2017 11:24 AM	SQL Server Databa	2,048 KB			
🥞 Libraries	eol <mark>y</mark> log	05/26/2017 11:24 AM	SQL Server Databa	1,024 KB			
Documents							
🌙 Music							
Pictures							

Bring Restored Database Files Online In SQL

If not restoring to a new Database you need to bring the current database offline.



epic_log_v1								
G 🕞 - Local Disk (D:) -								
Organize 🔻 💽 Open with New folder								
📩 Favorites	Name *	Date modified	Туре	Size				
Tesktop	퉬 cvtest	05/05/2017 12:21 PM	File folder					
🙀 Downloads	CVTest	05/05/2017 11:56 AM	Text Document	1 KB				
🔛 Recent Places	🚰 •	05/05/2017 3:56 PM	SQL Server Database Primary Data File	2,048 KB				
Service and the service of the servi	🔯 and a state of the second s	05/05/2017 3:56 PM	SQL Server Database Transaction Log File	1,024 KB				
Decuments	🚰 d	05/26/2017 1:06 PM	SQL Server Database Primary Data File	2,048 KB				
Music	🚰 a 🔤 🔤 log	05/26/2017 1:06 PM	SQL Server Database Transaction Log File	1,024 KB				
Pictures	🗋 a 👘 🖈	05/05/2017 11:30 AM	File	1 KB				
Videos								
📜 Computer								

With the database detached you can rename the SQL files on disk so your copied files do not overwrite the current source files.

With the files renamed Vormetrics DataGuard must be disabled on the folder prior to copying the restored MDF and LDF files. This change to policy is made in the Vormetrics Dashboard. Monitor the agent on the client to ensure the policy change is updated. The VMD (Vormetrics Client Service) may need to be restarted to refresh the policy change.

Weritas Storage Foundation Messaging S	Veritas Sto	Started	Automatic	Local System
Weritas VxBridge Service	Veritas VxB		Manual	Local System
🖏 Virtual Disk	Provides m	Started	Manual	Local System
🧠 vmd	Vormetric S	Started	Automatic	Local System
Volume Shadow Copy	Manages a		Manual	Local System
California Audio	Manages a		Manual	Local Service



Note

Sometimes the policy may not update if files in the folders are still be accessed. Services like SQL Server or SQL Browser may have to be stopped. You may also have to stop Antivirus software as well. This is not required, but has be known to conflict with policy changes on certain servers.

With the restored files now in place you can turn Vormetrics DataGuard back on via the Vormetrics Dashboard for the client and folder location. Again, the VMD service may need to be restarted to sync policy changes. With the files in place bring the databases online in SQL Server.



🧃 Attach Databases					1		_ 🗆 🗵
Select a page	🕄 Script 👻 🚺 He	🦉 Locate Database Files - I	le la constante de la constante	_ 🗆 ×			
🚰 General	and the second s	Select the file:			<u> </u>		
	Databases to attac	🖽 🛅 C:					
	MDE File Loc	🖻 🦕 D:			H	Status	Message
	1101 110 200	E SRECYCLE.BIN			-	010000	moordyo
		⊡ _SMSTaskSequence					
		⊕- 0 904840251b04b4699	6866354/5				
		Backup					
		E Commvault					
		🗈 🦳 hotlix					
		E MP					
		B C SRECYCLE.8	IN				
	1	🕀 🛄 cvtest					
		🕀 🧰 System Volum	e Information			Add	Remove
	Database details:		a mar				
			pretSndf				
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Connection		🗎 🖳 🖳					
Server:							
Connection:		i i i i i i i i i i i i i i i i i i i					
		🕀 🧰 ms_temp					
View connection properties		D D NEW_MP_SNAP_TE	ST	-1			
		Selected path:	lu o				
Progress		Selected pair.	Jr:52x			Add Catalog	Remove
Ready		Files of type:	Database Files(".mdf)	*			
101		File name:					
			CK C	Cancel			
			UK C			OK	Cancel
					1		

With the files restored and database now attached in SQL Server the restore of the protected database is complete.

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