

Build a Robust Backup Strategy with the Power of Automation

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Agenda

Automate & standardize backups

Powershell modules & scripted SQL solutions - Case Study

Automate backup verification & restore testing

Generate & maintain DR materials

Automate & Standardize Backups

1. Take consistent backups
2. Check backups regularly
3. Confirm RPO/RTO and retention
4. Be flexible, but predictable
5. Centralize your monitoring



a free PowerShell module with
over 500 SQL Server best
practice, administration,
development and migration
commands included.



a framework created by
and for SQL Server pros
who need to validate their
environments.

dbatools can be used to monitor, manage, or automate (almost) everything.

Categories

Availability Groups	DBCC	Max Memory	Snapshots
Backup and Restore – Database	Diagnostics and Performance	Migration	sp_configure
Backup and Restore – Certificates	Detach and Attach	Mirroring	SQL Agent
Certificates and Encryption	Endpoints	Network and Firewall	SQL Client Configuration
Community Tools	Export	Policy-Based Management	SQL Management Objects
Connections	File System and Storage	Registered Servers	System startup
Connection Strings	FileStream	Replication	tempdb
Databases	Lookup (Find)	Resource Governor	Traces, Profiler and Extended Events
Data Masking	General	Security and Encryption	Utilities
dbatools Computer Management	Linked Servers	Server Management	Windows Server Failover Cluster
dbatools Configuration	Log Shipping	Service Principal Names (SPNs)	Table Data
dbatools Support tools	Login and User Management	Services	
dbatools update watcher	Mail and Logging	Data Generation	

Group	Type	UniqueTag	AllTags	Config	Description
Agent	Sqlinstance	DatabaseMailEnabled	DatabaseMailEnabl...	app.sqlinstance policy.se...	Tests that the Database M
Agent	Sqlinstance	AgentServiceAccount	AgentServiceAccou...	app.sqlinstance	Tests that the SQL Agent
Agent	Sqlinstance	DbOperator	DbOperator, Oper...	app.sqlinstance agent.db...	Tests that the specified (
Agent	Sqlinstance	FailsafeOperator	FailsafeOperator, O...	app.sqlinstance agent.fai...	Tests that the specified (
Agent	Sqlinstance	DatabaseMailProfile	DatabaseMailProfil...	app.sqlinstance agent.d...	Tests that the specified (
Agent	Sqlinstance	AgentMailProfile	AgentMailProfile, A...	app.sqlinstance agent.d...	Tests to see if the SQL Se
Agent	Sqlinstance	FailedJob	FailedJob, Agent	app.sqlinstance agent.fai...	Tests that enabled Agent
Agent	Sqlinstance	ValidJobOwner	ValidJobOwner, Ag...	app.sqlinstance agent.val...	Tests that all Agent Jobs
Agent	Sqlinstance	AgentAlert	AgentAlert, Agent	app.sqlinstance agent.ale...	Tests that there are Agen
Agent	Sqlinstance	JobHistory	JobHistory, Agent	app.sqlinstance agent.his...	Tests that the job history
Agent	Sqlinstance	LongRunningJob	LongRunningJob, A...	app.sqlinstance skip.age...	Tests that any currently r
Agent	Sqlinstance	LastJobRunTime	LastJobRunTime, A...	app.sqlinstance skip.age...	Tests that the last duratio
Database	Sqlinstance	DatabaseCollation	DatabaseCollation,...	app.sqlinstance policy.da...	Tests that the Database C
Database	Sqlinstance	SuspectPage	SuspectPage, High,...	app.sqlinstance	Tests that there are 0 Sus
Database	Sqlinstance	TestLastBackup	TestLastBackup, Ba...	app.sqlinstance skip.back...	Restores the last backup
Database	Sqlinstance	TestLastBackupVerifyOnly	TestLastBackupVeri...	app.sqlinstance policy.ba...	Does a verify only restor
Database	Sqlinstance	ValidDatabaseOwner	ValidDatabaseOwn...	app.sqlinstance policy.va...	Tests that the database o
Database	Sqlinstance	InvalidDatabaseOwner	InvalidDatabaseOw	app.sqlinstance policy.in	Tests that the Database



dbatools.io/secure/



dbatools

↓ download



commands



docs



team



subscribe

talking to your security team about powershell and dbatools

POSTED ON SEPTEMBER 26, 2018 BY CHRISSY LEMAIRE



Last year, during our [PASS Summit](#) and [SQL Bits](#) precons, we highlighted the reasons that PowerShell is even more secure than GUI administration.

Reference: Install & Import PowerShell Modules

#Download the dbatools module from powershell gallery

#Download the dbachecks module from powershell gallery

#Run as Administrator

Install-Module -Name dbatools

Import-Module -Name dbatools

Install-Module -Name dbachecks

Import-Module -Name dbachecks

#Set currentuser execution policy to RemoteSigned:

Set-ExecutionPolicy -ExecutionPolicy RemoteSigned -Scope CurrentUser

#Trust certificate

Set-DbatoolsInsecureConnection

#If issues with Pester module

Install-Module Pester -SkipPublisherCheck -Force -RequiredVersion 4.10.0

Import-Module Pester -Force -RequiredVersion 4.10.0

Demo

Case Study

Requirements:

- Client prefers to be able to see backup jobs in SQL Server

Ola Hallengren


<https://ola.hallengren.com>

*/

USE [master] -- Specify the database in which the object


SET NOCOUNT ON

```
DECLARE @CreateJobs nvarchar(max) = 'Y'
DECLARE @BackupDirectory nvarchar(max) = NULL
DECLARE @BackupURL nvarchar(max) = NULL
DECLARE @CleanupTime int = NULL
DECLARE @OutputFileDirectory nvarchar(max) = NULL
DECLARE @LogToTable nvarchar(max) = 'Y'
```


 SQL Server Agent

 Jobs


 CommandLog Cleanup


 DatabaseBackup - SYSTEM_DATABASES - FULL


 DatabaseBackup - USER_DATABASES - DIFF


 DatabaseBackup - USER_DATABASES - FULL


 DatabaseBackup - USER_DATABASES - LOG


 DatabaseIntegrityCheck - SYSTEM_DATABASES


 DatabaseIntegrityCheck - USER_DATABASES


 IndexOptimize - USER_DATABASES

 Output File Cleanup

 sp_delete_backuphistory

 sp_purge_jobhistory

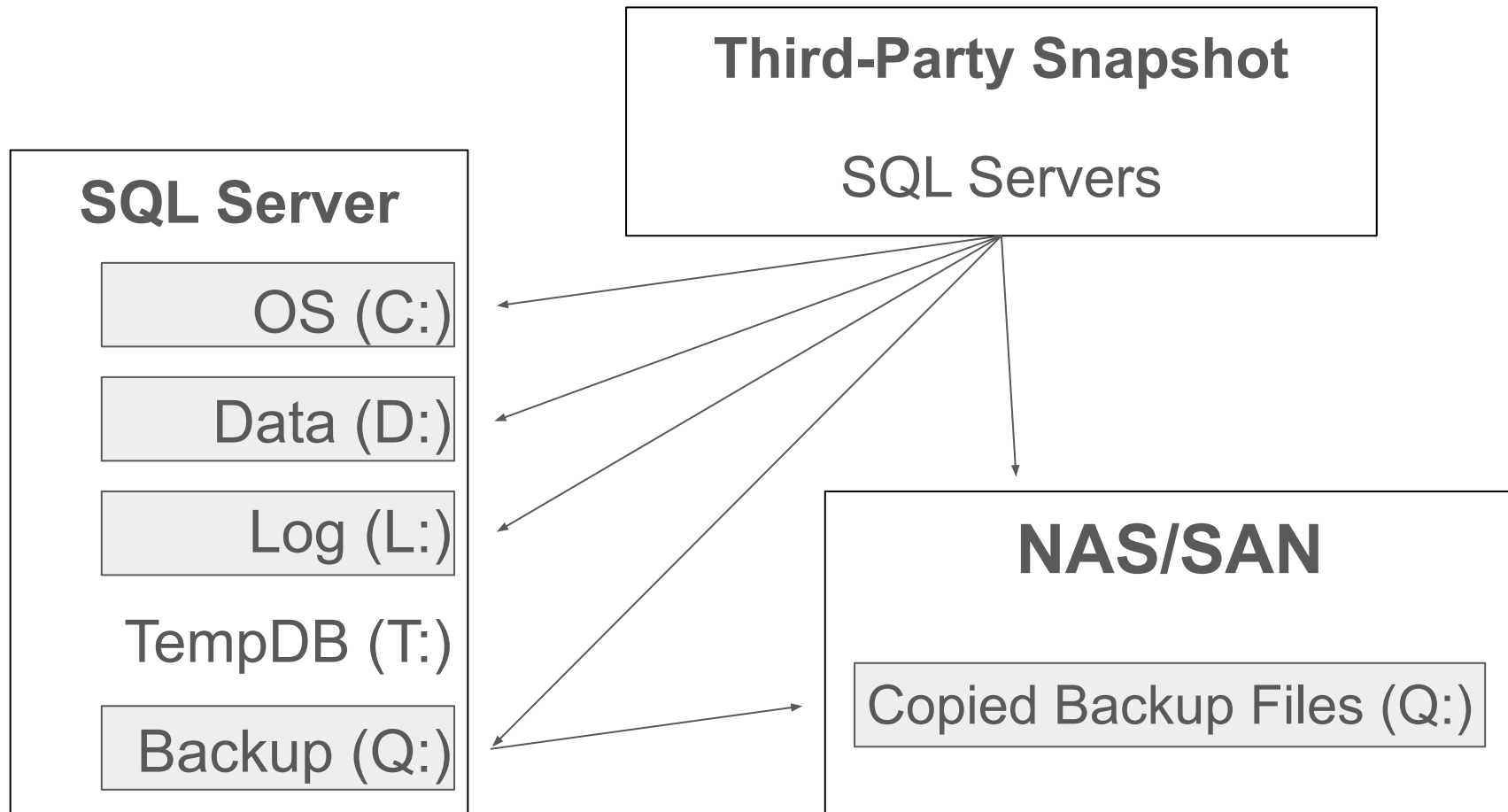
 syspolicy_purge_history

 Job Activity Monitor

Case Study

Requirements:

- Client prefers to be able to see backup jobs in SQL Server
- Retention: local + offsite



Case Study

Requirements:

- Client prefers to be able to see backup jobs in SQL Server
- Retention: local + offsite
- Some small, some large databases

Solution:

- Install & schedule Ola Hallengren's maintenance scripts
- Check backup & integrity check job success with dbatools
- Done...?

Automate backup verification & restore testing

Run DBCC checks

Check success of backup jobs

Restore databases with VERIFYONLY

Demo

Case Study

Requirements:

- Client prefers to be able to see backup jobs in SQL Server
- Retention: local + offsite
- Some small, some large databases

Solution:

- Install & schedule Ola Hallengren's maintenance scripts
- Check backup & integrity check job success with dbccchecks
- Verify backups with dbccchecks
- Done...?

Generate & maintain DR materials

Create restore scripts for SMOs

Create restore scripts for configuration

Preserve restore scripts & version history

Demo

Case Study

Requirements:

- Client prefers to be able to see backup jobs in SQL Server
- Retention: local + offsite
- Some small, some large databases

Solution:

- Install & schedule Ola Hallengren's maintenance scripts
- Check backup job success with dbccchecks
- Verify backups with dbccchecks
- Generate & preserve restore scripts

Summary

Automated & standardized our backups

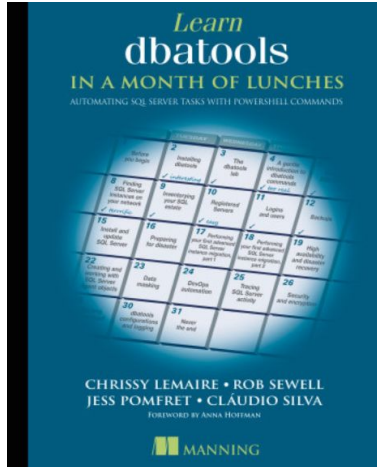
Planned our backup solution to meet goals

Checking & verifying backup success and viability

Monitor backups

Script additional configuration & objects

Recommended Additional Resources



Learn dbatools in a Month of Lunches:

<https://www.manning.com/books/learn-dbatools-in-a-month-of-lunches>

Learn PowerShell in a Month of Lunches:

<https://www.manning.com/books/learn-powershell-in-a-month-of-lunches>

Ola Hallengren's Maintenance Solution:

<https://ola.hallengren.com/>

DBATools:

dbatools.io

DBAChecks:

dbachecks.readthedocs.io/en/latest/

Thank you!

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