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Ultimate Guide to Ola Hallengren's Maintenance Solution



SQL Server® 2008

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Agenda

- Maintenance Solution
- Backup
- Database Integrity Check
- Index Optimize



Maintenance Solution

- Older versions
 - Uses sqlcmd –b in an Operating System job step
- Newer versions
 - Uses TSQL job step
- Contains
 - DatabaseBackup
 - DatabaseIntegrityCheck
 - IndexOptimize



Database Backup

Key Parameters

- Databases
- Directory / URL (https://, s3://)
- BackupType (FULL, DIFF, LOG)
- Verify (Y,N (default))
- CleanupTime (hours) not for URL
- CleanupMode (BEFORE_BACKUP, AFTER_BACKUP (default))
- Compress (not in default setup, which means it will use the sys.configurations value)
- Checksum (Y,N (default)

Other Parameters of Note

- ChangeBackupType
- BackupSoftware



Database Backup - Databases

Parameter to define the Databases you want

- USER_DATABASES (Only user databases, excludes Distribution and System)
- SYSTEM_DATABASES (Only system databases includes Distribution)
- ALL_DATABASES (Every database on the system including System)
- AVAILABILITY_GROUP_DATABASES (those in an Availability Group)
- Comma Separated list of databases or excludes, can include wildcards %

What else can I do? Can I Exclude?

- Minus sign will remove a database from consideration
- -DBA will exclude DBA
- -%DBA% will exclude any database with DBA in the name

Can be a variable

- DECLARE @dbs nvarchar(max) = N'USER_DATABASES, DBA'
- @Databases = @dbs



Database Backup - Directory

- If @Directory is omitted then it goes to the default defined in Database Settings
- @URL = If using URL (https://s3://)
- Contains a Path or multiple paths separated by a comma
 - If you specify multiple then Ola will divide them up
 - Can be a UNC or a physical drive
 - Can be a URL https:// or s3:// and Ola will change the command to do BACKUP TO URL
- This is the root path for the Backup
 - All the other folders are governed by a different parameter or by defaults



Backup Database - Cleanup

- @CleanupTime is in Hours and is NOT applicable when you backup to URL or S3
- @CleanupMode
 - BEFORE_BACKUP
 - AFTER_BACKUP (default)

Backup Database – Backup Software

Various Backup Software supported (default is NULL)

BackupSoftware

Specify third-party backup software; otherwise, SQL Server native backup is performed.

Value	Description
NULL	SQL Server native backup (the default)
DATA_DOMAIN_BOOST	Dell EMC Data Domain Boost
LITESPEED	Quest LiteSpeed for SQL Server
SQLBACKUP	Red Gate SQL Backup Pro
SQLSAFE	<u>Idera SQL Safe Backup</u>



Database Backup – Availability Groups

If you have an AG or more, you can specify which ones to backup

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Database Backup - Files

@NumberOfFiles

- Alone it determines how many files to backup to
- If Multiple Directories are specified then this becomes the number of files without this parameter

@MinBackupSizeForMultipleFiles

Specify a minimum size in MB to consider multiple files, then use the files above

@MaxFileSize

- This is a max size in MB of a backup file. The proc will automatically calculate how many files it should split things into
- @MaxFileSize and @NumberOfFiles cannot be used together

Database Backup - Encryption

@Encrypt (Y/N)

 Do I Encrypt this backup. Must have EncryptionAlgorithm and either ServerCertificate or ServerAsymmetricKey specified

@EncryptionAlgorithm

Next slide – pay attention to which Backup Software it applies to

@ServerCertificate

Certificate in Master database that you are going to use in Encryption

@ServerAsymmetricKey

Asymmetric Key in SQL Server that you are going to use for encrypting the backup

@EncryptionKey

Used with LiteSpeed, RedGate, Idera



Encryption Algorithm

EncryptionAlgorithm

Specify the type of encryption.

Value 🔓	Description
	No encryption (the default)
RC2_40	RC2 40-bit encryption (LiteSpeed)
RC2_56	RC2 56-bit encryption (LiteSpeed)
RC2_112	RC2 112-bit encryption (LiteSpeed)
RC2_128	RC2 128-bit encryption (LiteSpeed)
TRIPLE_DES_3KEY Triple DES encryption (SQL Server native encryption or LiteSpeed)	
RC4_128	RC4 128-bit encryption (LiteSpeed)
AES_128	AES 128-bit encryption (SQL Server native encryption, LiteSpeed, Red Gate SQL Backup Pro, or Idera SQL Safe Backup)
AES_192	AES 192-bit encryption (SQL Server native encryption or LiteSpeed)
AES_256	AES 256-bit encryption (SQL Server native encryption, LiteSpeed, Red Gate SQL Backup Pro, or Idera SQL Safe Backup)

Database Backup – Backups

@MinDatabaseSizeForDifferentialBackups

- Minimum database size in MB before a DIFF backup will be taken for this database
- If @ChangeBackupType = 'Y' then if a DIFF cannot be taken because of size, backup type will change to FULL for this database

@LogSizeSinceLastLogBackup

Min size in MB for amount of log generated since last log backup. If met then a log backup will be taken

@TimeSinceLastLogBackup

- Min time in Seconds since last log backup before this database will have a log backup taken
- Can only be used with @LogSizeSinceLastLogBackup. Cannot be used standalone
- If database is in an AG and you are backing up on a secondary, the log will be backed up regardless of this parameter



Database Integrity Check

https://ola.hallengren.com



Index Optimize

Key Parameters - Indexes

- Databases
- FragmentationLow
- FragmentationMedium
- FragmentationHigh
- FragmentationLevel1
- FragmentationLevel2
- SortInTempDb
- MaxDOP
- MinNumberOfPages
- MaxNumberOfPages



Index Optimize

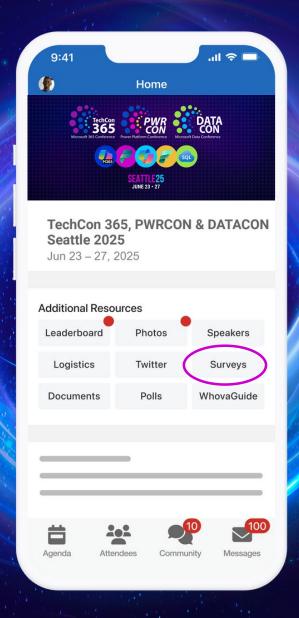
Statistics

- UpdateStatistics (ALL, INDEX, COLUMNS, NULL (default))
- OnlyModifiedStatistics / StatististicsModificationLevel



What to Know?

Ola Hallengren: https://ola.hallengren.com



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