

How to rebuild the database table indexes

Many tables in the file vault database contain indexes – to ensure data is found efficiently when lookups are done by various database operations. SQL server automatically maintains these indexes whenever insert, update, or delete operations are made to the underlying data. Over time as you perform a lot of file operations in the vault - for example after an upgrade where a lot of records may have been modified, or performed a migration where many new records were added - the various database table indexes becomes scattered (fragmented - similar to how a hard drive can become fragmented). You can update and refresh the indexes by running a maintenance plan to rebuild / reorganize the indexes. If the indexes are very fragmented, this operation may improve general performance with searching, browsing etc. in the vault.

To set up a maintenance plan

- 1. Open SQL Management studio and log in to the SQL server.
- 2. Right-click Maintenance plans > Maintenance plan wizard.



3. Step through the wizard. Configure the maintenance plan to run "on demand" (or define a schedule if you want to run the plan at an interval or set time).



🛐 Maintenance Plan W	/izard	_		×
Select Plan Pro How do you want to	perties schedule your maintenance tasks?			
Name:	Rebuild Table Indexes			
Description:			< >	
Run as: O Separate schedule Single schedule for	SQL Server Agent service account s for each task r the entire plan or no schedule		~	
Schedule: Not scheduled (On Dema	and)	(Change	
Help	< Back Next > F	ìnish	Cance	el

4. Select the "Rebuild Index" and "Update Statistics" option.



🛐 Maintenance Plan Wizard	-		\times			
Select Maintenance Tasks Which tasks should this plan perform?			-			
Select one or more maintenance tasks:						
 Check Database Integrity Shrink Database Beorgapize Index ✓ Rebuild Index ✓ Update Statistics Glean Up History Execute SQL Server Agent Job Back Up Database (Full) Back Up Database (Differential) Back Up Database (Transaction Log) Maintenance Cleanup Task 						
The Rebuild task reorganizes data on the data and index pages by rebuilding indexes. This improves performance of index scans and seeks. This task also optimizes the distribution of data and free space on the index pages, allowing faster future growth.						
Help < Back Next > Fini	sh	Cance	I			

5. Pick the vault database or databases to run the plan on.

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ask		-
<select more="" one="" or=""></select>	-	1 ^
 All databases 		
 System databases 		
 All user databases (excluding master, model, msdb, tempdb) 		
Inese databases:		
SWEPDM SWEPDM_2017SPEdefaultum	^	
	All databases All user databases All user databases All user databases System databases	All databases All user databases (excluding master, model, msdb, tempdb) These databases: SWEPDM_2017SPE5defaultyme



6. When the wizard completes, a new maintenance plan is created.

	🕀 📕 Replication	7	,[VerMaj]		
	🗉 💻 Always On High Availability	🛐 Maintenance Plan Wizard			- 🗆
	 Management Policy Management Data Collection Resource Governor Extended Events Managed Backup Maintenance Plans Rebuild Table Indexes 		tenance Plan Wizard Progress k Stop to interrupt the operation.		*
			Success	5 Total 5 Success	0 Error 0 Warning
	SQL Server Logs	Ac	ction	Status	Message
	Distributed Transaction Coordin	Ø 0	reating maintenance plan "Rebuild Table Ind	Success	
	Integration Services Catalogs	🥥 A	dding tasks to the maintenance plan	Success	
	 易 SOL Server Agent 	🥥 A	dding scheduling options	Success	
	XEvent Profiler	A	dding reporting options	Success	
		S	aving maintenance plan "Rebuild Table Inde	Success	

7. To run the maintenance on demand, right click and select "Execute".



8. Wait until the plan completes. If the plan fails to start, ensure that the SQL Server Agent service is running.

🖄 Execute Maintenance Plan		– 🗆 ×
Status:		
1 Remaining	1 Total 0 Success	0 Error 0 Warning
Action Execute maintenance plan. Rebuild Ta	Status In progress	Nessage
	Stop	Report 🔻
 ➡ Maintenance Plans ② Rebuild Table Indexes ➡ ➡ SQL Server Logs ➡ Database Mail ➡ Distributed Transaction Coordination 	n	
 Integration Services Catalogs B QL Server Agent 	100 % - <	Messages

Note that the time it takes to complete the index maintenance plan greatly depend on the size of the database and how fragmented the indexes currently are. It is possible to run the maintenance when the vault is in use, but the overall performance might be affected while the maintenance plan is running. It is recommended to schedule the operation to run in the afternoon or evening when there is less activity in the vault database.

Running an index maintenance plan on the vault database could improve overall performance for database operations in a vault if performance degradation has been observed - it all depends on how much activity is done in the various tables that are indexed.

Rebuilding the indexes is a bit more database intensive (compared to reorganize) and could take longer to complete so it should not run as frequently. How often you should reorganize or rebuild the indexes because it depends on the vault usage, if a lot of data is added frequently, then you should reorganize more often.

The general guideline from Microsoft is: "Index should be **rebuilt** when index fragmentation is greater than 30%. Index should be **reorganized** when index fragmentation is between 10% to 30%." To find out the fragmentation level - see SQL server help, chapter Detecting fragmentation:



Detecting Fragmentation				
The first step in deciding which defragmentation met detect fragmentation in a specific index, all indexes pages in an index) is displayed in the avg_fragmen The result set returned by this function includes the i	hod to use is to analyze the index to det on a table or indexed view, all indexes in tation_in_percent column. For partitie following columns.	ermine the degree of fragmentation. By using the system function <u>sys.dm db index physical stats</u> , you can a database, or all indexes in all databases. For example, the percentage of logical fragmentation (out-of-order oned indexes, sys.dm_db_index_physical_stats also provides fragmentation information for each partition.		
Column	Description			
avg_fragmentation_in_percent	The percent of logical fragmentation (out-of-order pages in the index).			
fragment_count	The number of fragments (physically consecutive leaf pages) in the index.			
avg_fragment_size_in_pages	Average number of pages in one fragment in an index.			
After the degree of fragmentation is known, use the	following table to determine the best me	thod to correct the fragmentation.		
avg_fragmentation_in_percent value		Corrective statement		
< = 30%		ALTER INDEX REORGANIZE		
> 30%		ALTER INDEX REBUILD WITH (ONLINE = ON)*		

As a best practice, running the index rebuild maintenance plan about once a week should suffice in most circumstances.

Read more about maintaining indexes in the SQL help, chapter "Reorganizing and rebuilding indexes". NOTE! You should never create your own indexes on existing vault tables as this may lead to data corruption.

If the vault database is hosted on Microsoft SQL Express you will not be able to create a maintenance plan for reindexing. Rebuild the indexes using a script instead as outlined in Knowledge Base solution S-074245.