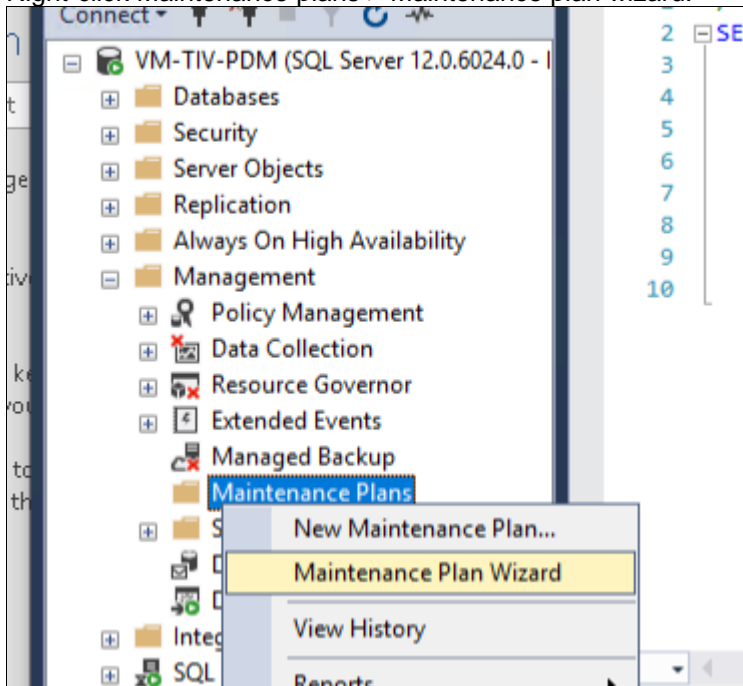


How to rebuild the database table indexes

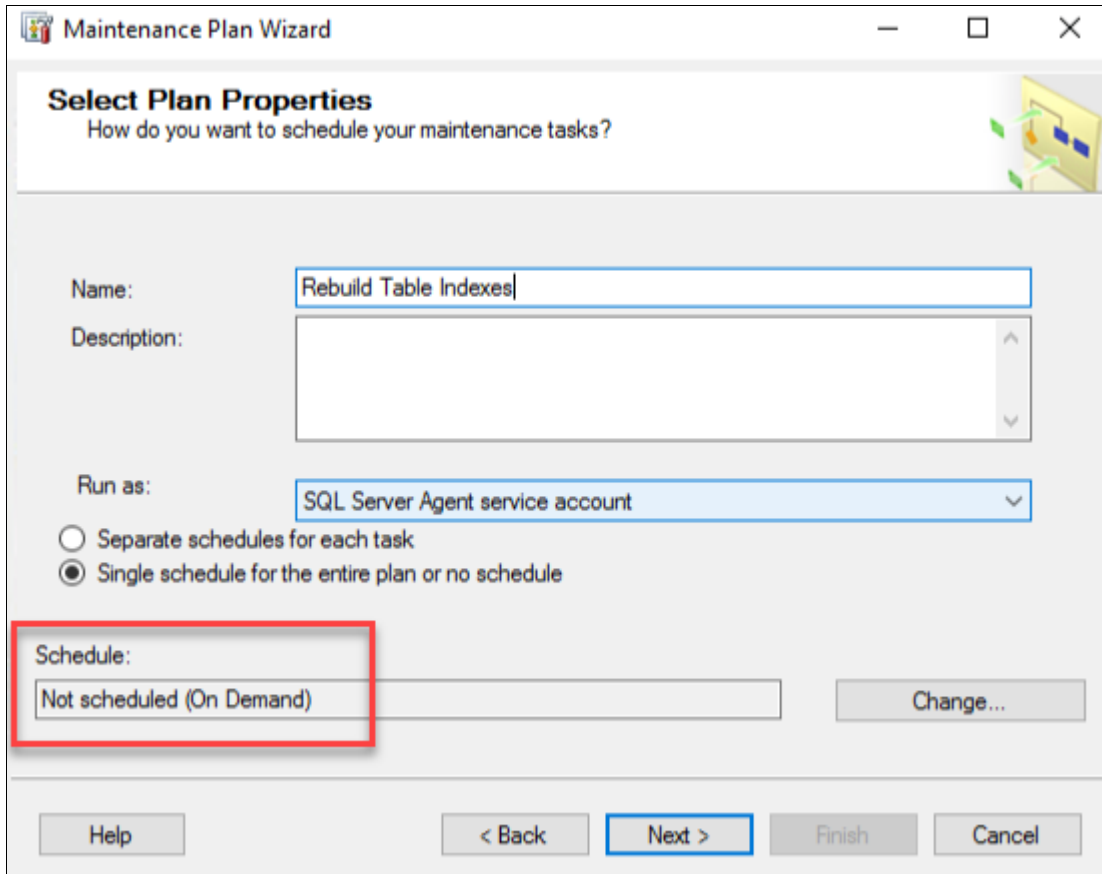
Many tables in the file vault database contain indexes – to ensure data is found efficiently when lookups are done by various database operations. SQL server automatically maintains these indexes whenever insert, update, or delete operations are made to the underlying data. Over time as you perform a 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

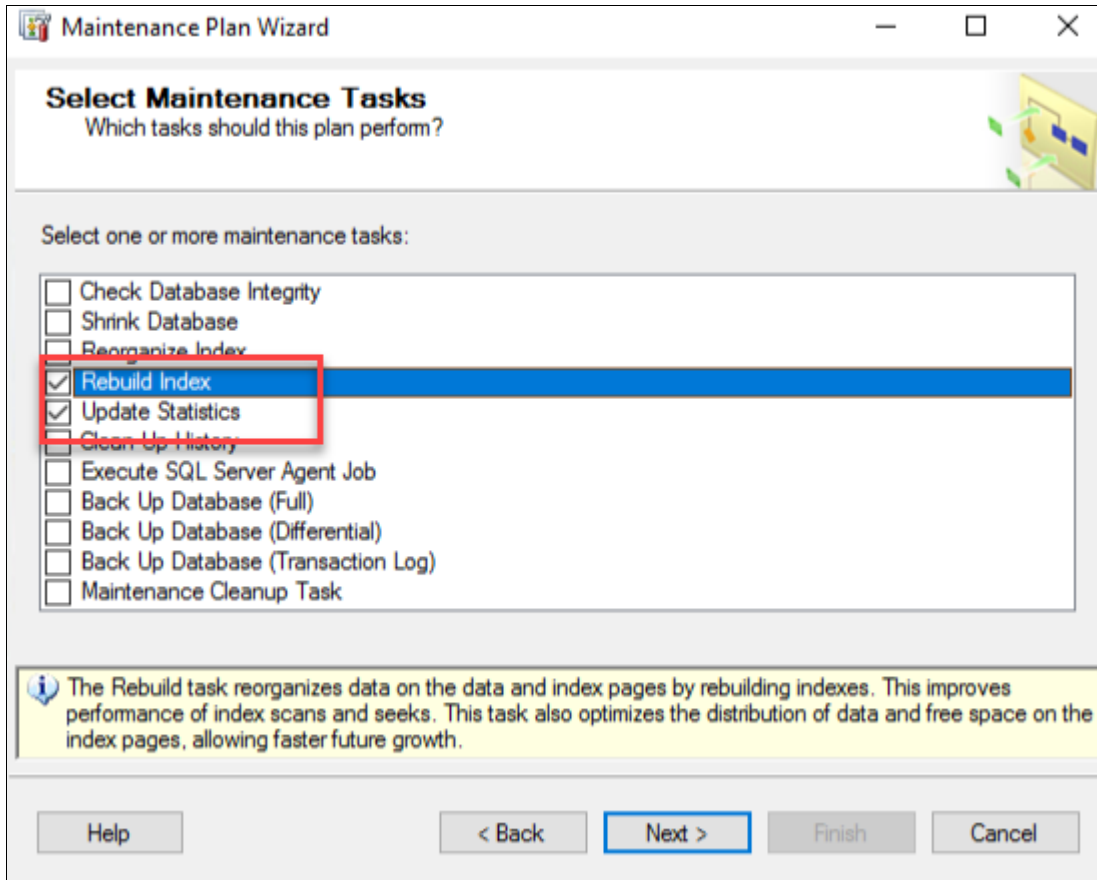
1. Open SQL Management studio and log in to the SQL server.
2. Right-click Maintenance plans > Maintenance plan wizard.



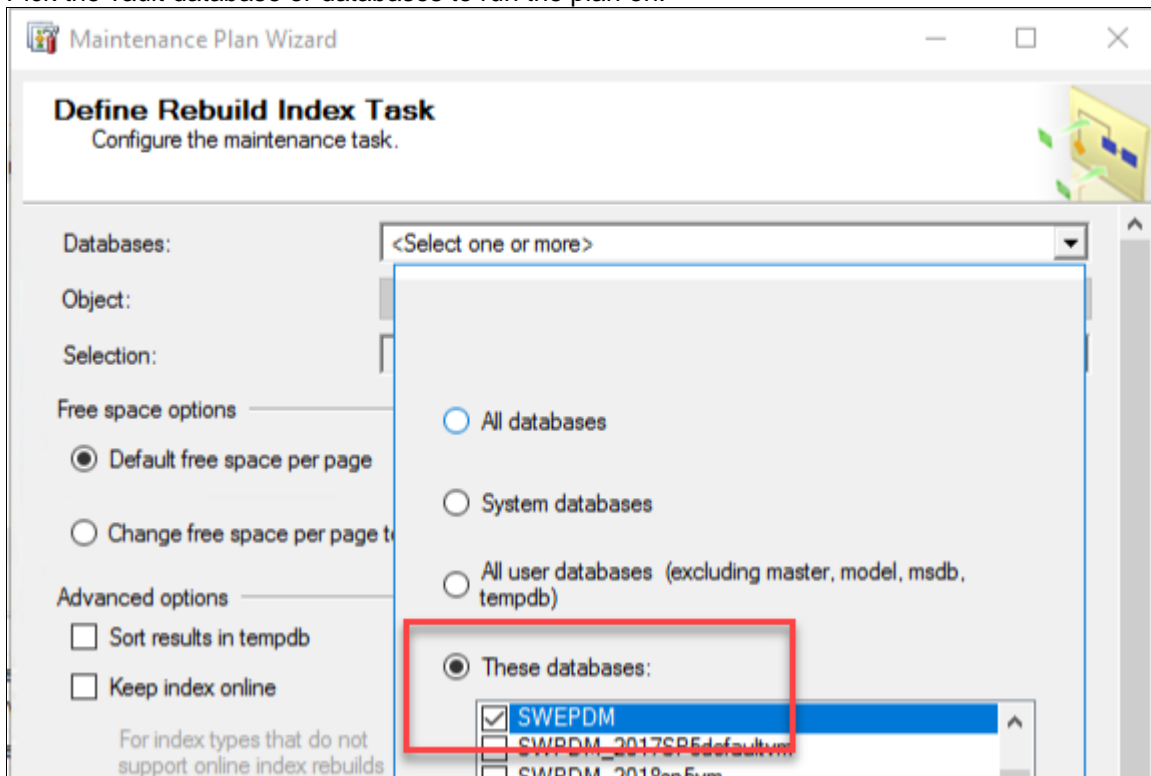
3. Step through the wizard. Configure the maintenance plan to run "on demand" (or define a schedule if you want to run the plan at an interval or set time).



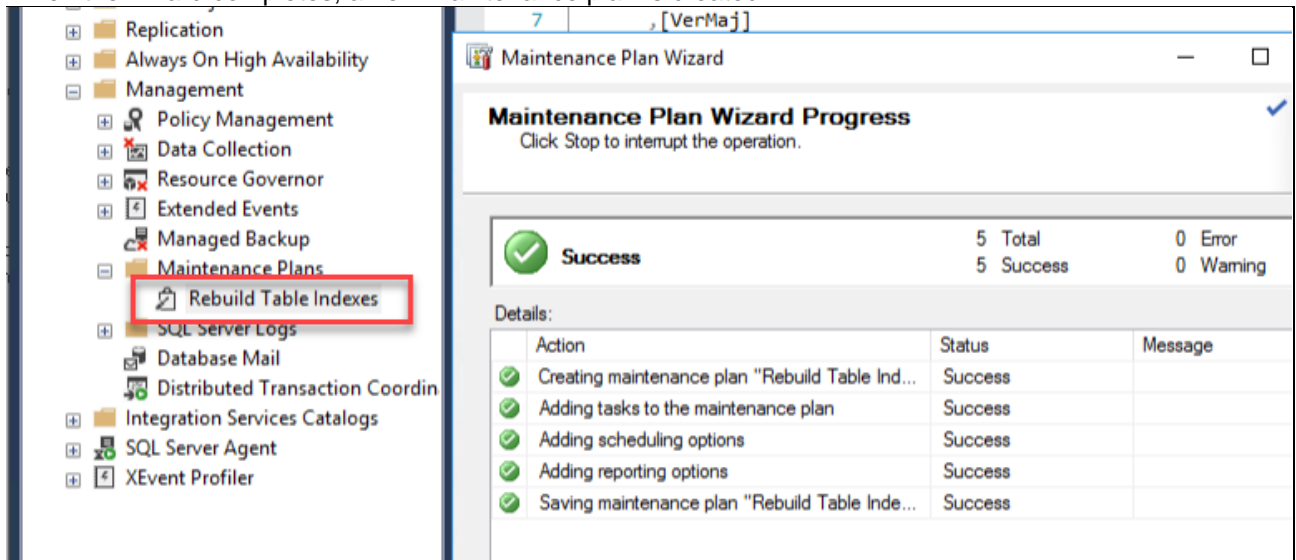
4. Select the "Rebuild Index" and "Update Statistics" option.



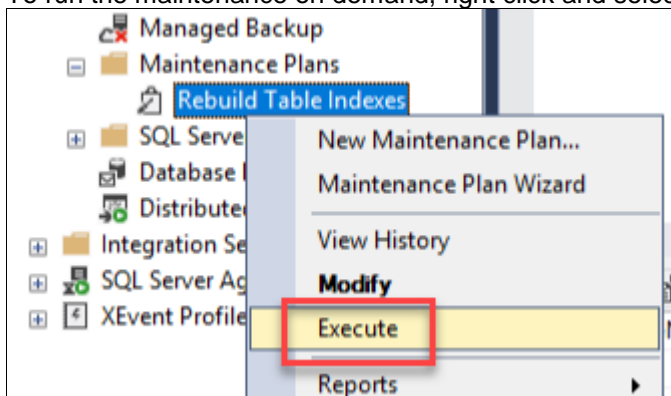
5. Pick the vault database or databases to run the plan on.



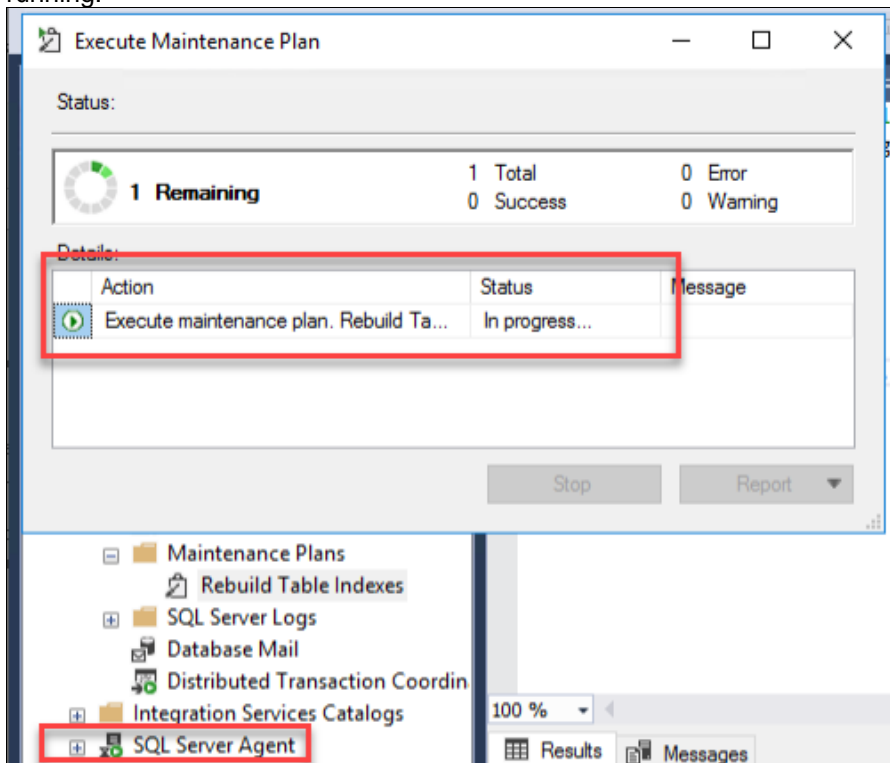
6. When the wizard completes, a new maintenance plan is created.



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



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



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 method to use is to analyze the index to determine the degree of fragmentation. By using the system function [sys.dm_db_index_physical_stats](#), you can detect fragmentation in a specific index, all indexes on a table or indexed view, all indexes in a database, or all indexes in all databases. For example, the percentage of logical fragmentation (out-of-order pages in an index) is displayed in the **avg_fragmentation_in_percent** column. For partitioned indexes, **sys.dm_db_index_physical_stats** also provides fragmentation information for each partition.

The result set returned by this function includes the following columns.

| 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 method 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.