How to rebuild and reorganize indexes

[Version 1.0]

Jason Lee

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REV. No	Nature of Change	Prepared By	Prepared Date	Reviewed & Approved by
1.0	Creation	Jason Lee	28/06/2021	

Amendment Record

SCENARIO

Searching and reading data is getting slower even after performed increased Disk Free Space and Disk Defragmentation but SSD is not an option then you can continue reading on how to detect database fragmentation and how to perform database defragmentation

Why need to perform rebuild and reorganize indexes?

>> To allow you to get the requested information quicker

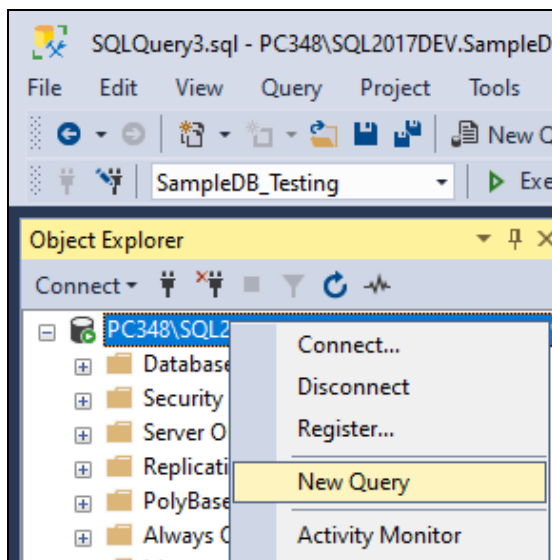When should perform rebuild and reorganize indexes?

>> When fragmentation is 30% or higher

SOLUTION

1. Connect your database with SSMS (SQL Server Management Studio)

   https://support.qne.com.my/a/solutions/articles/81000385373

2. Right-click your server instance in Object Explorer, and then select New Query

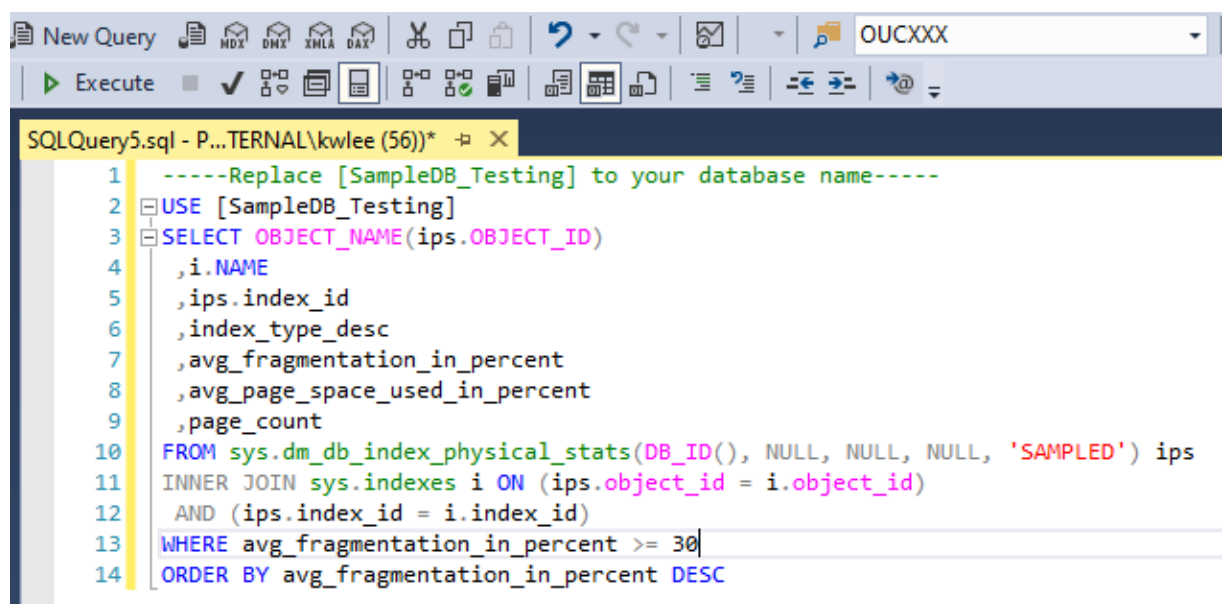3. To find out which are those indexes fragmentation percentage is 30% and higher

   Paste the following T-SQL code snippet into the query window and *Replace [SampleDB_Testing] to your database name*:

```sql
-----Replace [SampleDB_Testing] to your database name-----
USE [SampleDB_Testing]
SELECT OBJECT_NAME(ips.OBJECT_ID)
 ,i.NAME
 ,ips.index_id
 ,index_type_desc
 ,avg_fragmentation_in_percent
 ,avg_page_space_used_in_percent
 ,page_count
FROM sys.dm_db_index_physical_stats(DB_ID(), NULL, NULL, NULL, 'SAMPLED') ips
INNER JOIN sys.indexes i ON (ips.object_id = i.object_id)
 AND (ips.index_id = i.index_id)
WHERE avg_fragmentation_in_percent >= 30

ORDER BY avg_fragmentation_in_percent DESC
```

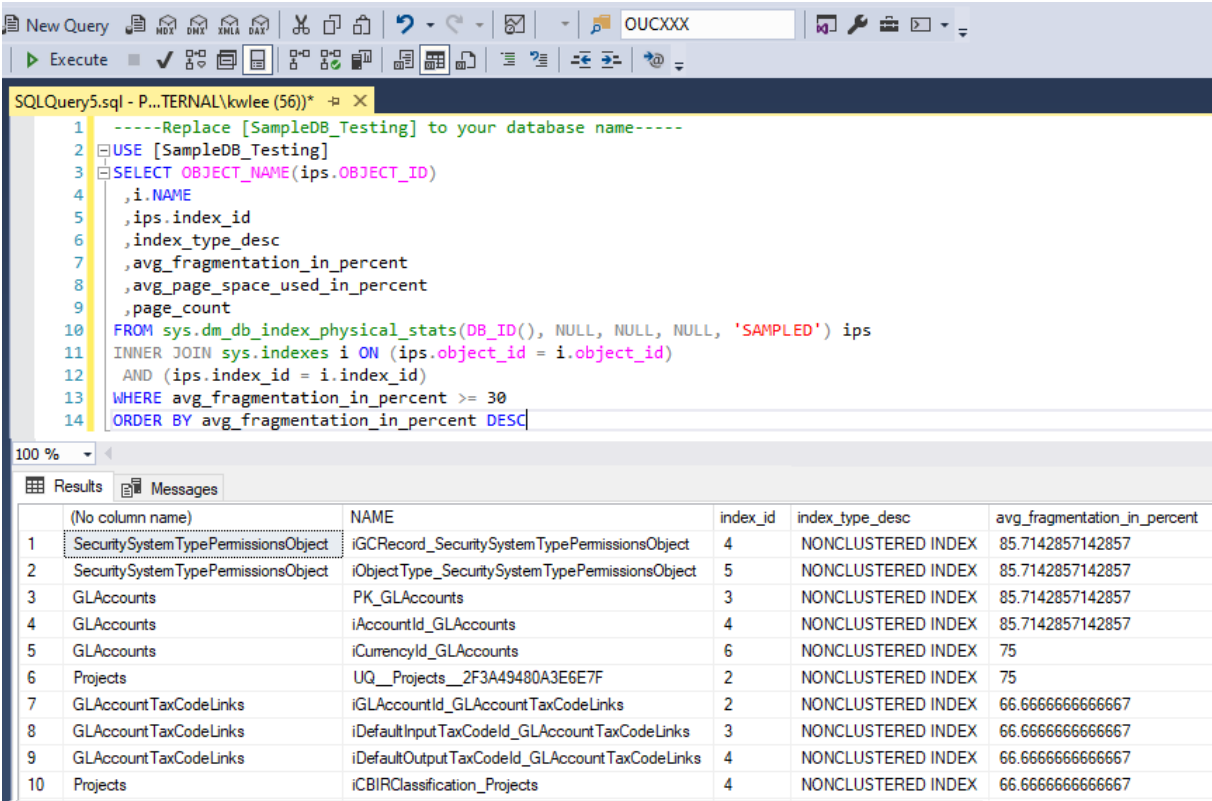4. Execute the query by selecting Execute or selecting F5 on your keyboard

5. The results of the indexes fragmentation is 30% and higher are displayed under the area where the text was entered.

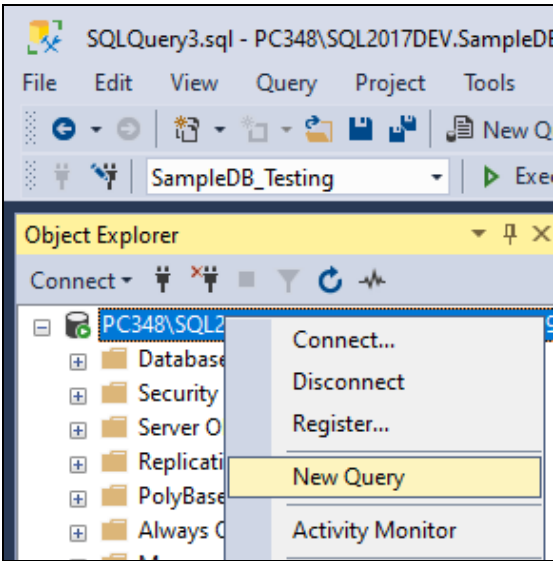6. To Rebuild and reorganize indexes fragmentation percentage is 30% and higher

   Right-click your server instance in Object Explorer, and then select New Query

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7. Paste the following T-SQL code snippet into the query window and *Replace [SampleDB_Testing] to your database name*:

```sql
-----Replace [SampleDB_Testing] to your database name-----
USE [SampleDB_Testing]
declare @tableName nvarchar(500)
declare @indexName nvarchar(500)
declare @indexType nvarchar(55)
declare @percentFragment decimal(11,2)

declare FragmentedTableList cursor for
 SELECT OBJECT_NAME(ind.OBJECT_ID) AS TableName,
   ind.name AS IndexName, indexstats.index_type_desc AS IndexType,
   indexstats.avg_fragmentation_in_percent
 FROM sys.dm_db_index_physical_stats(DB_ID(), NULL, NULL, NULL, NULL) indexstats
   INNER JOIN sys.indexes ind ON ind.object_id = indexstats.object_id
        AND ind.index_id = indexstats.index_id
  WHERE
-- indexstats.avg_fragmentation_in_percent , e.g. >30, you can specify any
number in percent
  indexstats.avg_fragmentation_in_percent > 5
 AND ind.Name is not null
  ORDER BY indexstats.avg_fragmentation_in_percent DESC

   OPEN FragmentedTableList
   FETCH NEXT FROM FragmentedTableList
   INTO @tableName, @indexName, @indexType, @percentFragment

   WHILE @@FETCH_STATUS = 0
   BEGIN
     print 'Processing ' + @indexName + 'on table ' + @tableName + ' which is '
+ cast(@percentFragment as nvarchar(50)) + ' fragmented'

     if(@percentFragment<= 30)
     BEGIN
          EXEC( 'ALTER INDEX ' +  @indexName + ' ON ' + @tableName + ' REBUILD;
')
      print 'Finished reorganizing ' + @indexName + 'on table ' + @tableName
     END
     ELSE
     BEGIN
        EXEC( 'ALTER INDEX ' +  @indexName + ' ON ' + @tableName + '
REORGANIZE;')
        print 'Finished rebuilding ' + @indexName + 'on table ' + @tableName
     END
     FETCH NEXT FROM FragmentedTableList
        INTO @tableName, @indexName, @indexType, @percentFragment
   END
   CLOSE FragmentedTableList

   DEALLOCATE FragmentedTableList
```
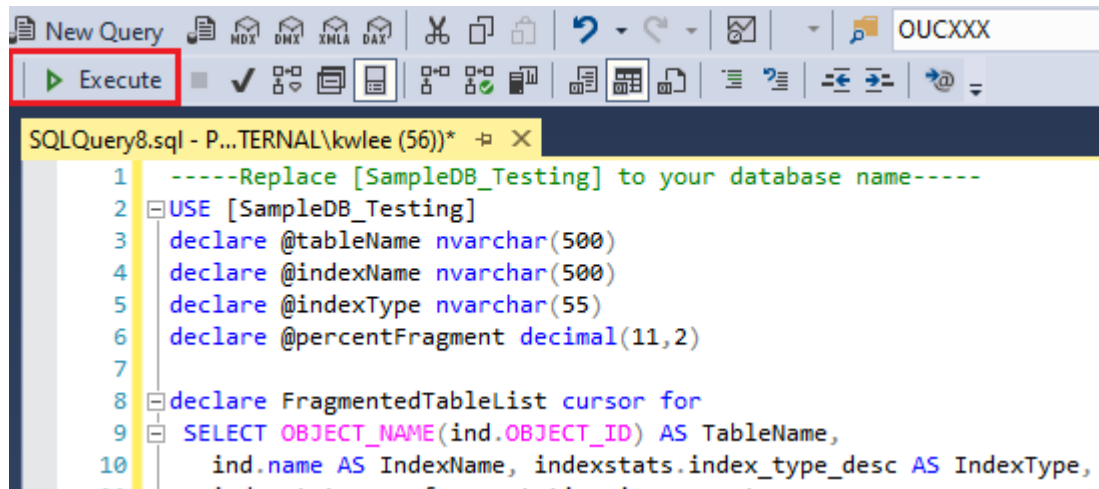
8. Execute the query by selecting Execute or selecting F5 on your keyboard.

9. After the query is complete, all indexes with fragmentation more than 29.99% is defragmented

Know more about [Optimize index maintenance to improve query performance and reduce resource consumption](#)