

Query tuning

Last updated by | Vitor Tomaz | Jun 8, 2022 at 5:37 AM PDT

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
See [Query tuning](#) under SQL DB as well for more TSGs.

Self-help content presented in Azure Portal

(This content was shown to the customer during case submission. It's also visible on 'Diagnose and solve problems' blade.)

Identify query performance bottleneck


When trying to resolve a performance bottleneck, start by determining whether the bottleneck is occurring while the query is in a running state or a waiting state. Different resolutions apply depending upon this determination. Running-related problems are generally related to compilation problems, resulting in a suboptimal query plan or execution problems related to insufficient or overused resources. Waiting-related problems are generally related to Locks (blocking), I/O, Contention related to TempDB usage or Memory grant waits.

Problems and resolutions relating to each type of problem are discussed in [Detectable types of query performance bottlenecks in Azure SQL Database](#) .

Configure max degree of parallelism (MAXDOP)

In general, if the database engine chooses to execute a query using parallelism, execution time is faster. However, excess parallelism can consume additional processor resources without improving query performance. At scale, excess parallelism can negatively affect query performance for all queries executing on the same database engine instance.

[Configure the max degree of parallelism \(MAXDOP\) in Azure SQL Database](#)  outlines the considerations and recommendations when configuring MAXDOP.


In addition, [this blog post](#)  addresses some of the common questions around the impact of configuring the MAXDOP setting.

Database Maintenance

Azure SQL requires that you update statistics and defragment indexes with a certain frequency, depending on how much data modification occurs on the tables. The less logical reads the queries make, the less resources they will require from Azure SQL Database. Updating statistics, defragmenting indexes, finding missing indexes, will help decrease the number of logical reads, and improve general database performance.


SQL Server automatically updates statistics on tables with more than 500 records, and that have over 20% of the rows modified. When the amount of change does not cross this 20% threshold, the statistics are outdated, leading to bad cardinality estimation, bad query execution plans.

See [How to maintain Azure SQL Indexes and Statistics](#) .




You can use Azure Automation to run a scheduled runbook that can do the index and statistics maintenance. To configure, follow [Automating Azure SQL DB index and statistics maintenance using Azure Automation](#) .

Depending on the database workload and the number of Update, Delete and Insert operations it had, some environments need to run the job daily, most on weekly basis, and for other environments, every month is enough.


Automatic tuning

[Automatic tuning](#)  provides peak performance and stable workloads through continuous performance tuning based on AI and machine learning.







Automatic tuning is a fully managed intelligent performance service that uses built-in intelligence to continuously monitor queries executed on a database, and it automatically improves their performance.

You can enable automatic tuning for Azure SQL Managed Instance by using the [ALTER DATABASE](#)  T-SQL statement. Automatic tuning for SQL Managed Instance only supports **FORCE LAST GOOD PLAN**. For more information about configuring automatic tuning options through T-SQL, see [Automatic tuning introduces automatic plan correction](#)  and [Automatic plan correction](#) .

Query tuning

For a detailed documentation on performance configurations in Azure SQL database and various tuning options visit [Performance Center for SQL Server Database Engine and Azure SQL Database](#) .

Resources

- [Application and database tuning](#) 
- [SQL Server Statistics Overview](#) 
- [Turn ON Auto Update Statistics](#) 
- [Turn ON Auto Create Statistics](#) 
- [Monitor Performance using Dynamic Management Views \(DMVs\)](#) 
- [Monitor Performance using Query Store](#) 

How good have you found this content?

