Quick Scan Report – Cost Threshold For Parallelism

One of the critical aspects of managing SQL Server performance is the efficient use of parallelism. Parallelism can help improve the speed and efficiency of your queries, but it can also lead to performance issues if not properly managed. In this blog post, we will discuss the SQL Server Cost Threshold for Parallelism setting, its suggested values, and how to use it effectively.

What is Cost Threshold for Parallelism?

Cost Threshold for Parallelism (CTFP) is a setting in SQL Server that determines the minimum cost at which a query plan can be executed in parallel. It is an essential configuration parameter that helps balance the trade-off between the benefits of parallelism and the overhead it introduces.

When a query is submitted to SQL Server, the Query Optimizer estimates its cost based on factors like the number of rows, pages, and the complexity of operations. If the cost of the query is above the CTFP value, the optimizer considers executing the query using parallelism to improve its performance. If the cost is below the threshold, the query will be executed serially.

Suggested Values for Cost Threshold for Parallelism

The default value of CTFP in SQL Server is 5. However, this value is considered too low for modern systems and can lead to unnecessary parallelism, causing performance issues such as high CPU usage or increased latency.

There is no one-size-fits-all value for CTFP, as the ideal value will vary depending on your system's resources and workload. As a starting point, many SQL Server experts recommend setting the CTFP value between 25 and 75. I usually start at 50 and adjust. This range is considered a good balance between leveraging parallelism benefits and avoiding the overhead of parallel execution.

It's essential to monitor the performance of your SQL Server instance and adjust the CTFP value based on your observations. Conducting thorough performance tests and analyzing the impact of different CTFP values on your workload can help you find the optimal setting for your environment.

How to Configure Cost Threshold for Parallelism

To configure the CTFP setting, you can use SQL Server Management Studio (SSMS) or Transact-SQL (T-SQL).

Here's how:

1. Using SQL Server Management Studio (SSMS):

   ○ Connect to your SQL Server instance using SSMS.

   ○ Right-click on the instance and select "Properties."

   ○ Navigate to the "Advanced" tab.

   ○ Scroll down to the "Parallelism" section and locate the "Cost Threshold for Parallelism" setting. e. Enter the desired value and click "OK" to save the changes.

2. Using Transact-SQL (T-SQL):

   ○ I usually set it to 50, then evaluate system performance and adjust it from there. Here is a SQL Script to set the cost threshold for parallelism to 50.

```
sp_configure 'show advanced options', 1;
GO
reconfigure;
GO
sp_configure 'cost threshold for parallelism', 50;
GO
reconfigure;
GO
```

You may need to set this to something much higher than 50, this really depends on your overall SQL Server performance.

The Cost Threshold for Parallelism setting plays a crucial role in managing the performance of your SQL Server instance. It helps you find the balance between

leveraging the benefits of parallelism and avoiding the overhead associated with it. Remember to monitor your system's performance and adjust the CTFP value accordingly.

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