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UNLIMITED®

Lab 4: Indexing to Avoid Blocking

2.5 p1

Setting up for lab 4 (20 minutes)

1. Restart your SQL Server service (clear all stats)
2. Restore your StackOverflow database (Agent job)
3. Copy & run the setup script for Lab 4
4. Start SQLQueryStress with the lab #4 workload:
 1. File Explorer, \Labs, SQLQueryStress.exe
 2. Click File, Open, \Labs\IndexLab4.json, Go

In this one, lots of deadlock exceptions are expected.



2.5 p2

You'll get more errors in this one.

SQLQueryStress

File Help

1 EXEC usp_IndexLab4

Clean Buffers Free Cache GO Cancel

Database

Parameter Substitution

Number of Iterations 100

Number of Threads 5

Delay between queries (ms) 100

CPU Seconds/Iteration (Avg) 4.6357

Actual Seconds/Iteration (Avg) 24.7681

Progress

Elapsed Time 00:00:33.5980

Iterations Completed 17

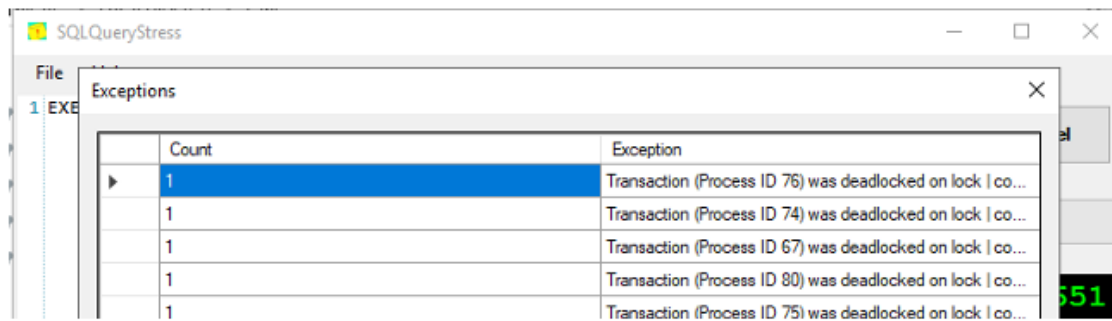
Client Seconds/Iteration (Avg) 12.8265

Total Exceptions 8

Logical Reads/Iteration (Avg) 165572.1111

2.5 p3

They're gonna be deadlocks.



The screenshot shows the SQLQueryStress application window. An 'Exceptions' dialog box is open, displaying a table with deadlock error details. The table has two columns: 'Count' and 'Exception'. There are five rows, each showing a count of 1 and a specific deadlock message involving different process IDs (76, 74, 67, 80, 75) and a common lock resource.

Count	Exception
1	Transaction (Process ID 76) was deadlocked on lock co...
1	Transaction (Process ID 74) was deadlocked on lock co...
1	Transaction (Process ID 67) was deadlocked on lock co...
1	Transaction (Process ID 80) was deadlocked on lock co...
1	Transaction (Process ID 75) was deadlocked on lock co...



2.5 p4

You can use any tool in this lab.

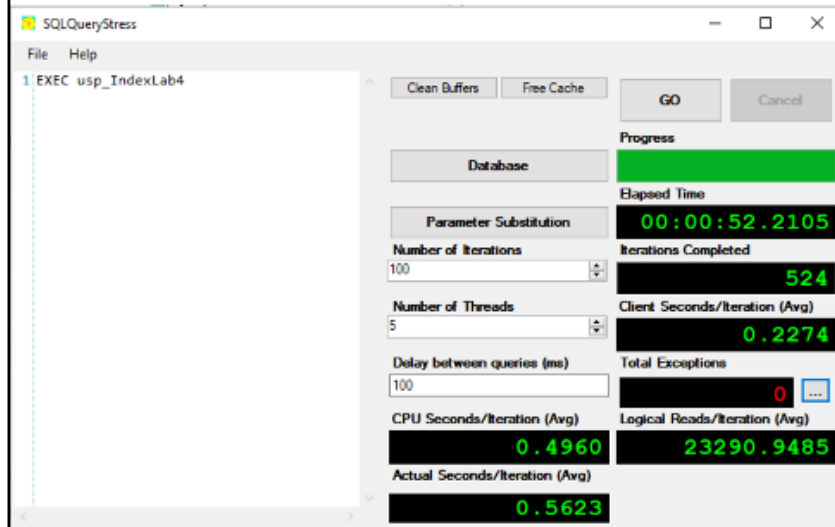
I'll just flat out tell you: you have blocking problems.

1. Use `sp_BlitzIndex`, `sp_BlitzCache`, `sp_BlitzLock`, `sp_BlitzWho`, `sp_WhoIsActive`, or all five.
2. Script out changes you want to make, aiming for:
 - 5 or less indexes per table
 - 5 or less fields per index
3. In Slack, tell me what index changes you made, and why.



2.5 p5

**With just index changes, you can
get the load test to run in 1 minute.**



2.5 p6

How I'd budget this hour

5 minutes to pick a query or table: run `sp_BlitzCache`, `sp_BlitzIndex`, or `sp_BlitzLock`. Focus on one query or index.

10-15 minutes: design an index to make it go faster, then run the query again to measure the impact.

Repeat that process 3x-4x to improve a few queries, asking permissions in Slack before making changes.



2.5 p7

Want to do the lab in the morning?

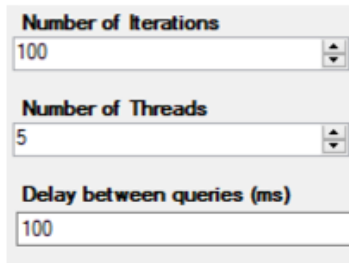
Number of Iterations	100
Number of Threads	5
Delay between queries (ms)	100

Instead of 100 iterations, change that to 1000000 so it runs overnight and piles up lots of data in the DMVs.



2.5 p8

**If you think you've fixed it,
you can push even more load.**

A screenshot of the SQLQueryStress application's configuration window. It features three settings: 'Number of Iterations' set to 100, 'Number of Threads' set to 5, and 'Delay between queries (ms)' set to 100. Each setting is in a separate section with a label and a text input field with a small up/down arrow on the right.

Number of Iterations	100
Number of Threads	5
Delay between queries (ms)	100

SQLQueryStress is doing 5 threads,
100ms delay between queries.

After tuning, if you want to hit even
more batch requests per second, try
more threads and/or less delay.



2.5 p9