BRENT OZAR
UNLIMITED®

Mastering Server Tuning with Wait Stats

1.0 p1

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Introduce yourself in Slack:

	Developer	Development DBA	Production DBA
Write C#, Java code	Daily		
Build queries, tables	Daily	Sometimes	
Tune queries	Sometimes	Daily	
Design indexes		Daily	
Monitor performance		Daily	Sometimes
Troubleshoot outages			Daily
Manage backups, jobs			Daily
Install, config SQL			Sometimes
Install, config OS			Sometimes

1.0 p2

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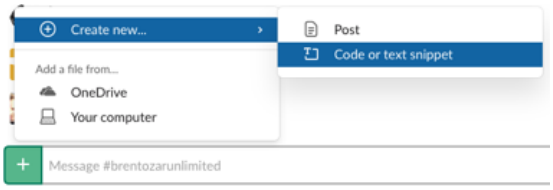
Slack pro tips

Accidentally close your browser? Want to share screenshots? Lots of pro tips: BrentOzar.com/slack

No direct messages please – use the public room.

To share code or T-SQL, click the + sign next to where you type text in, and choose “code or text snippet.”



1.0 p3

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Slack is a great cheat code.

Get stumped on a lab?

Wondering how other students solved it?

Wondering how *quickly* other students work?

Take a peek in the Slack room.

Otherwise, don't look (spoilers.)

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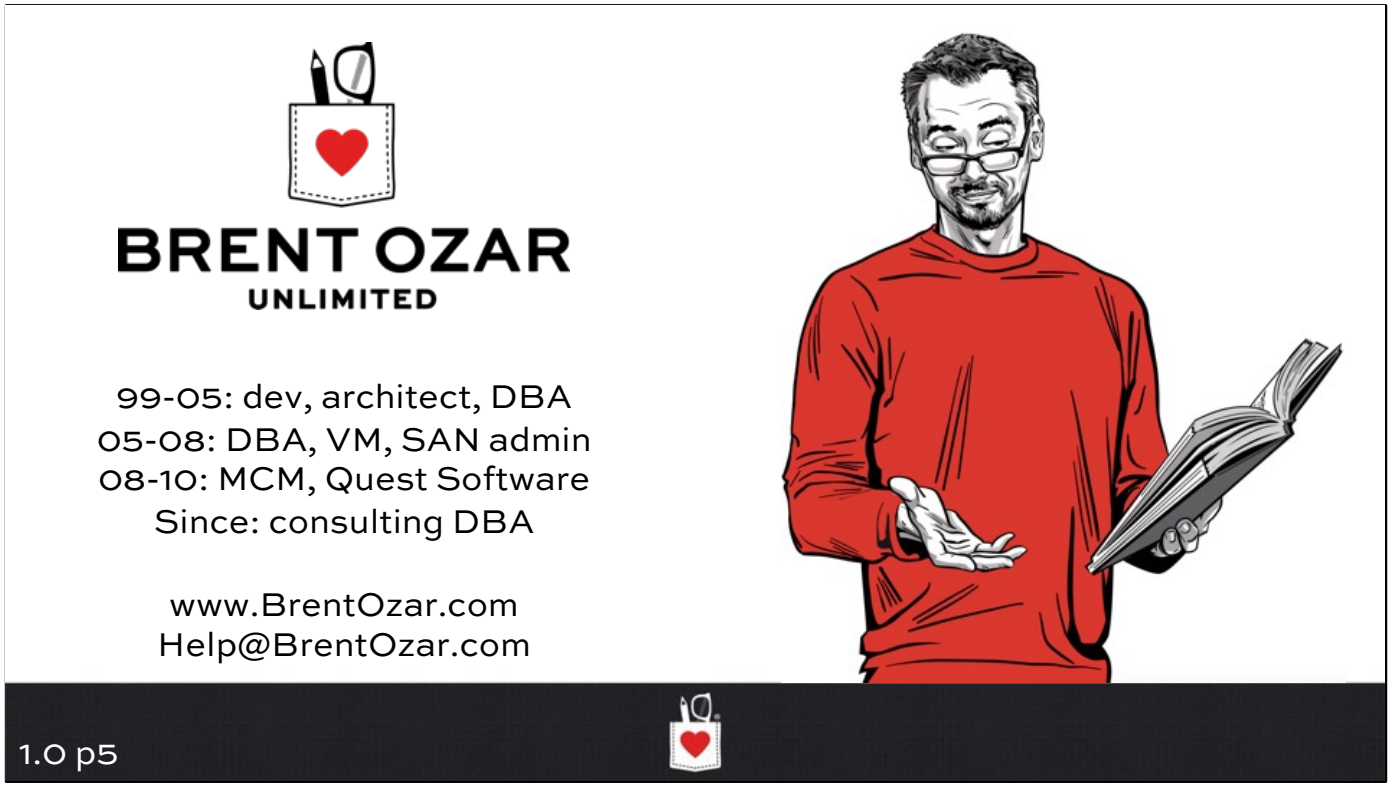

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My job: 2-day SQL Critical Care®

Day 1, morning: rapidly assess a single SQL Server, database indexes, queries running against it, team

Day 1 afternoon & day 2 morning: write findings

Day 2 afternoon: deliver findings & training to get the team out of the emergency, quickly

This class: sharing my techniques, experiences

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I'll show you with lectures + labs.

This isn't about theory: it's about practice.

We'll step through this cycle repeatedly:

1. Lecture: you watch me for 1-2 hours
2. Hands-on lab: you spend 1 hour working on a lab about the concepts you just saw
3. I do the lab: you watch me spend 30-45 minutes on that same lab so you can check your work

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This morning's cycle

1. Lectures & demos:
    1. How to measure your server
    2. Observing a server with slow storage and understanding how it shows up in measurements
2. Noon-2PM: lab & lunch:
   you make a storage-bottlenecked server go faster
3. 2PM-2:45PM: I do the same lab you just did

Then the cycle starts again.

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Continuing on this week

How to fix common wait types like CXPACKET, PAGEIOLATCH, LCK%, SOS_SCHEDULER_YIELD

How to identify and mitigate poison wait types like RESOURCE_SEMAPHORE and THREADPOOL

How to prove that your changes made things better

How to decide whether config changes, query/index tuning, or hardware/VM changes are best

1.0 p9

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Instant Replay & lab scripts

For a year from your date of purchase, you can:

- Watch the videos (I'm recording this class)
- Download the scripts and database
- Re-run the labs on your own home machines

Problems? Comment on the module.

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Live streaming tips & tricks

Everyone's stream is about 15 seconds behind

Your browser's video player may let you:

- Pause (but you'll get behind)
- Change your resolution
- Push to a TV

If your stream falls 20-30 seconds behind,
or you lose connection, refresh your browser

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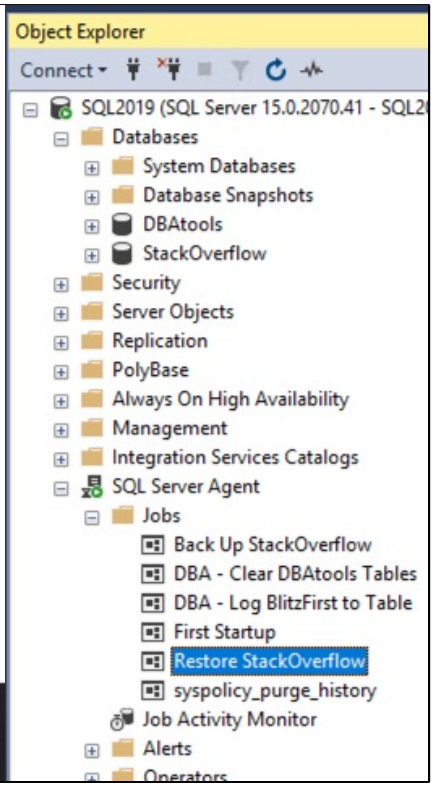
Serious lab problem?

1. Close SQLQueryStress (end-task it if you have to)
2. Use the Agent jobs to restore your database if you have to (15min.)
3. Restart your instance

That way you'll be ready for the next lab. Don't try to restart the lab work.



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Been in other Mastering classes?

In Mastering Index Tuning & Query Tuning, I said:

"I didn't leave any land mines in the server setup."

That's not true for this class: I may change stuff.

But I'll tell you about those gotchas each time.

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We need a running workload.

In your midday lab, you'll be analyzing DMVs.

To do that, we need real workloads doing selects, inserts, updates, and deletes.

(This is also why tools like sp_BlitzIndex don't work very well in development & offline environments: none of the indexes are really getting used.)

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Setting up the workload

1. If you've been playing around changing tables or indexes, restore your StackOverflow database.
2. Restart your SQL Server instance. (For sp_BlitzIndex)
3. Copy & run the setup script for Lab 1.
4. Start SQLQueryStress:
    1. File Explorer, \Labs, double-click SQLQueryStress.exe
    2. Click File, Open, \Labs\ServerLab1.json
    3. Set "Number of Threads" based on your CPUs
    4. Click Go

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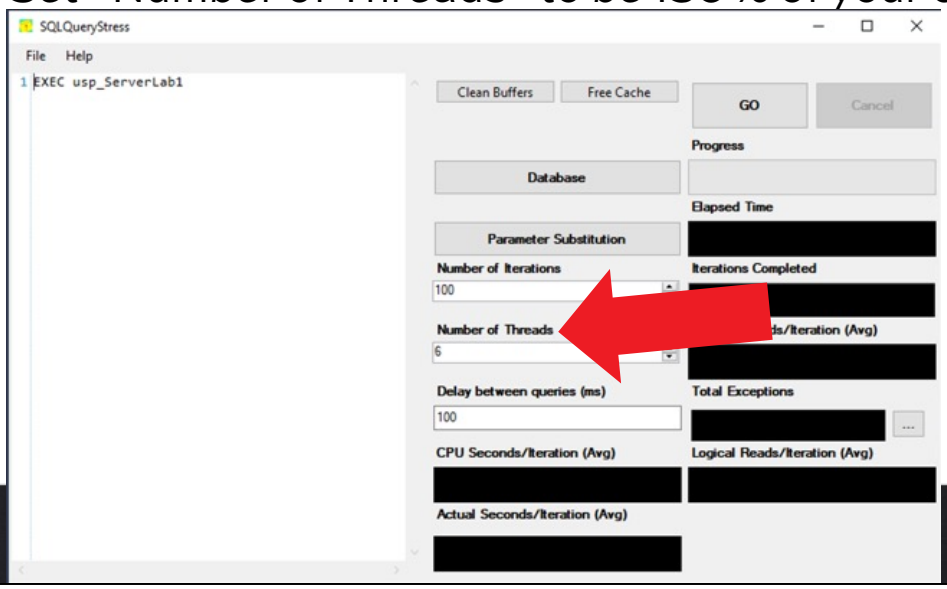
Bigger servers need bigger loads

Set “Number of Threads” to be 150% of your cores.



1.0 p17

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Don’t know how many cores you have? Right-click on the taskbar, click Task Manager, Performance tab:

# of cores you have	SQLQueryStress Number of Threads
4	6
6	9
8	12
10	15

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Set yours up and let it run.

I'll give you 5 minutes to set it up,
and then we'll start into our first lecture.

If you need to revisit the instructions,
look at the slide numbers that we're on.

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