If you know someone who would benefit from being an Insider, feel free to forward this PDF to them so they can sign up here.

Note: As an Insider, you can read all prior Insider newsletters here.

Quick Tips for our Insider friends!

Hey Insiders,

This newsletter is coming to you from Redmond, where the temperatures are now in the 80s and my vegetable garden is thriving – see this short video.

Yes, I'm going to do another round of community mentoring this year. I'll post a call for participation on my blog before the next newsletter comes out in two weeks.

Tim and I are still helping people out using our seven 3D printers to make mask straps that take pressure off of ears (see here) we've printed and shipped/donated almost 30,000 between us so far. We figure we'll be printing these through the end of the year. If you know anyone who could use some free straps, hit me or Tim up in email – don't be shy – I ship in units of 10s and 100s and I'm taking requests for shipments next week.

Stay safe and healthy!

SQLskills News

Live, <u>ONLINE</u> classes – filling up FAST: our classes this year will all be live-streamed online in September and October, as it's not feasible to run in-person classes for the foreseeable future. We're running them as a series of half-day sessions so it's less onerous then the usual 9-hour days in our in-person classes. Attendees will also get a recording of the entire class – something we've never done before!

- **IE0**: Immersion Event for the Junior/Accidental DBA
  - Half days on 9/14-17 and 9/21-24
- **IEAzure**: Immersion Event on Azure SQL Database, Azure VMs, and Azure Managed Instance
  - Half days on 9/15-17 and 9/22-24
- **IECAG**: Immersion Event on Clustering and Availability Groups
  - Half days on 10/6-8
- **IEPTO1**: Immersion Event on Performance Tuning and Optimization – Part 1
  - Half days on 10/5-9 and 10/12-16
- **IEPTO2**: Immersion Event on Performance Tuning and Optimization – Part 2

       o   Half days on 10/19-23 and 10/26-30

You can get all the details and registration information through the class schedule page here.

Kandio job candidate assessments: we've teamed up with Kandio to produce technical assessments to help companies screen candidates for job recruitment. If you want to make sure someone really knows what they say they know, check out the assessments here.

Online 2019 class recordings: you can buy recordings of all our three-day online classes from 2019, for as little as US$299 each. See here for all the details.

SQLBits: Kimberly, Erin, and I will all hopefully be presenting at SQLBits in September. Our precons are:

- Paul: Performance Troubleshooting using Waits and Latches SOLD OUT!!
- Erin: Performance Tuning with Query Store in SQL Server and Azure
- Kimberly: Statistics4Performance: Internals, Analysis, Problem Solving

SQLintersection: The Spring show has been canceled and everything has moved to the Fall show in Las Vegas in December. More details here nearer the time.

Book Review

From the archives: Back in 2017 I read David Sax's *The Revenge of Analog: Real Things and Why They Matter*. What a great book! As a confirmed Luddite, I was really looking forward to the various parts of the book. It covers the resurgence of vinyl records, paper and magazines (check out Stack and Delayed Gratification, both of which I subscribed too), photo film, board games, books, bricks-and-mortar retail, and analog ideas around work, education, and online companies. It's quite clear that going all digital isn't what people want. Very interesting, not written in a preachy or manifesto way, and highly recommended!

The Curious Case of…

This section of the newsletter explains recent problems we've helped with on client systems; they might be something you're experiencing too.

I didn't know what Erin was going to write about for this newsletter, but coincidentally, someone asked me last week why my popular wait stats script filters out a bunch of wait types. You can read through my explanation here…

Ponderings…

(From Erin this time – enjoy!)

One of the tenets of performance tuning that I follow with SQL Server is: Start with Wait Statistics.

It doesn't matter whether it's overall performance that is slow, a particular query that's slow, or any process/task/activity that's not performing as expected: Start with Wait Statistics.

When SQL Server 2005 was released, and the waits and queues methodology was introduced by Tom Davidson in his [SQL Server 2005 Waits and Queues](#) whitepaper, we could look at waits at the server level via *sys.dm_os_wait_stats*. To understand what a particular *session_id* was waiting on, we had to use *sys.dm_os_waiting_tasks* during query execution.

SQL Server 2016 introduced *sys.dm_exec_session_wait_stats*, so we can capture wait statistics for a particular *session_id* over time, but sometimes, the information in this DMV isn't granular enough, and I turn to Extended Events.

Extended Events has three wait-related events in the current release:

- wait_info
- wait_info_external
- wait_completed

With earlier versions of SQL Server, you may not see *wait_completed*, which is what I almost always use at this point when looking at session-specific wait statistics. If you use *wait_info*, typically you want to filter on *opcode = 1*, which means the wait completed. But if the *wait_completed* event is available, then I recommend using it.

Probably once a week I set up an event session that's looking at *wait_completed* waits for a specific session – and the frequent challenge is identifying the *session_id* use in my filter. If you don't have *session_id*, you can filter on the login or the hostname, assuming those are fairly unique. The benefit of using Extended Events over *sys. dm_exec_session_wait_stats* here is that you get more granular information for the waits, notably the *wait_resource*.

For example, I was recently trouble-shooting an ETL process with a customer where the load had slowed down significantly. We started with a snapshot of wait statistics from *sys.dm_exec_session_wait_stats*, and I could quickly see that *LATCH_EX* was the highest wait. But that DMV doesn't provide any information specific to resource, so I then I switched to using the *wait_completed* event.

Understand that an Event Session with *wait_completed* can capture a significant amount of information – so configure accordingly. Very often with *LATCH_EX* waits I see a resource of *ACCESS_METHODS_DATASET_PARENT*, which would send me down a path of looking at reads and parallelism. But in this scenario, we saw a resource of *NESTING_TRANSCTION_FULL*, which meant I went down a slightly different path (writes and parallelism) for troubleshooting.

And that is exactly why I start with wait statistics: it helps determine the next direction to go when troubleshooting. Very often there are still multiple scenarios to investigate and rule out, and sometimes, the waits that manifest are not a bottleneck (which means I have to step back and look at different information to understand what's happening inside SQL Server). Whatever information I do find shapes the next action I take.

#TBT

(Turn Back Time…) Blog posts we've published since the previous newsletter plus some older resources we've referred to recently that you may find useful.

Extended Events are the theme for #TBT this time. Here are some Extended Events resources for you:

- Jon's two Pluralsight courses: *SQL Server: Introduction to Extended Events* and *SQL Server: Advanced Extended Events*
- Erin's Pluralsight course: *SQL Server: Replacing Profiler with Extended Events*
- Jon's An-XEvent-a-Day blog post series
- Jon's Extended Events blog category
- Jon's article on sqlperformance.com comparing the overhead of trace vs. XEvents
- Erin's Extended Events blog category
- Erin's Stairway Series on SQL Server Central
- My Extended Events blog category which shows how to capture SQL Server call stacks

I hope you find these useful and interesting!

Video Demo

Troubleshooting issues in Azure SQL Database can sometimes require using Extended Events – but there are some differences when using XE in Azure SQL compared to a local instance of SQL Server. In this week's video Erin will compare the two experiences side by side, so you know what to expect the next time you need to use Extended Events to look at an issue with n Azure SQL Database.

The video is around 9 minutes long and you can get it in WMV format here.

And the demo code is here.

Enjoy!

Upcoming SQLskills Events

Our 2020 classes have moved to be entirely online in September and October and are all open for registration!

You have multiple learning opportunities as every event has a different focus as well as different benefits – from deep-technical training in our Immersion Events to a more broad set of topics at SQLBits / SQLintersection! And, of course, one benefit you'll always get from in-person events is networking; we hope to meet/see you at an event soon!

To help your boss understand the importance of focused, technical training, we've also added a few items to help you justify spending your training dollars with us:

- Letter to your boss explaining why SQLskills training is worthwhile
- So why do you want to come to our training? And the winners are…
- Community blog posts about our classes
- Immersion Event FAQ

LIVE, Online Immersion Events:

Fall 2020

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Click here for the main Immersion Event Calendar page that allows you to drill through to each class for more details and registration links.

Summary

We hope you've enjoyed this issue - we really enjoy putting these together.

If there is anything else you're interested in, we'd love to hear from you - drop us a line.

Thanks,
Paul and Kimberly

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