(November 3rd, 2020)

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!

This newsletter is coming to you from Redmond, where we've just finished our line-up of online classes for 2020 and now we're working on our schedule for early 2021.

Stay safe out there!

SQLskills News

Live, ONLINE classes in 2021: our classes next year will all be live-streamed online, as it's not feasible to run in-person classes for the foreseeable future. Just like that last two months, we'll be 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 streaming access to a recording of the entire class – something we'd never done before this year!

We're putting together the schedule at the moment and we'll publicize it in November.

Practical Machine Learning classes in November: our good friend Rafal Lukawiecki, who taught our in-person IEPML classes, is presenting two Practical Machine Learning classes online in November through his own company:

- Azure Machine Learning in Practice: From Fundamentals to Development
- Machine Learning and Data Science in R on Microsoft ML and SQL Servers

Rafal is an excellent instructor and I strongly recommend these classes to anyone who's serious about machine learning in the Microsoft stack. You can get all the details of the courses on Rafal's website 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.

Book Review

The latest book I've read (first one finished since March!) is Gertsman & Rosenwein's *The Middle Ages in 50 Objects*. From Amazon: "The extraordinary array of images included in this volume reveals the full and rich history of the Middle Ages. Exploring material objects from the European, Byzantine and Islamic worlds, the book casts a new light on the cultures that formed them, each culture illuminated by its treasures. The objects are divided among four topics: The Holy and the Faithful; The Sinful and the Spectral; Daily Life and Its Fictions, and Death and Its Aftermath. Each section is organized chronologically, and every object is accompanied by a penetrating essay that focuses on its visual and cultural significance within the wider context in which the object was made and used. Spot maps add yet another way to visualize and consider the significance of the objects and the history that they reveal. Lavishly illustrated, this is an appealing and original guide to the cultural history of the Middle Ages." 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.

Last week I received an email question about 'aborted xdes map' messages in the SQL Server error log… You can read through my explanation here…

Ponderings…

(From me this time. This is a re-run of an op-ed from 2017 that is very apt because we just finished teaching our online IEPTO2 last week – enjoy!)

Although OS/BIOS power savings modes are outside of SQL Server, there's one thing *inside* SQL Server that can have a dramatic effect on the workload performance and is impossible to see using performance troubleshooting techniques: Extended Events sessions.

We just finished teaching our IEPTO2 class last week, and we explain and demonstrate how Extended Events can sometimes be what we call a 'silent killer', because there are no symptoms – no wait statistics, no perfmon counter, no DMV metrics – that indicate an Extended Event session is what's dragging down performance.

For instance, I created a simple test with 200 concurrent clients inserting into a table with a GUID cluster key and another 100 bytes of random columns. On my laptop, the workload averaged 22,000 transactions per second.

Next I created an Extended Event session that captured a SQL Server code call stack every time a wait occurred. Note that this absolutely isn't an event session I'd ever recommend as it's guaranteed to cause a performance problem – I'm just using it as an example.

As soon as the event session started, transactions per second dropped to 16,000 – roughly 25% reduction in throughput.

I collected wait statistics before and after enabling the event session and the only difference was a slight increase in resource wait time for the *PAGELATCH_EX* waits when the session was enabled. Now, the first thing someone's going to think of with a slightly elevated resource wait time is that there's increased contention, not that there's extra CPU being used for each latch wait.

The reason Extended Events can cause this kind of performance issue is that the event processing is performed by the executing thread synchronously, so there's more code executed every time the event fires.

Now don't get me wrong – Extended Events are wonderful and they are the way forward for deep performance monitoring instead of Trace/Profiler. Just like with any performance monitoring tool, however, you need to be very careful that the monitoring itself is not causing a performance problem (called 'observer overhead').

Call to action: There are no metrics that you can reliably use to see Extended Events pulling down performance, so if you have an unexplained performance drop, check the active sessions using the DMV *sys.dm_xe_sessions*, and note that depending on your version of SQL Server, you're going to see one of more of these normal, system-defined sessions: *system_health*, *sp_server_diagnostics session*, *hkenginexesession*.

#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.

I've created a brand-new TBT this time – around Query Store, all from Erin

- Pluralsight course: *SQL Server: Introduction to Query Store*
- Post: *Why You Need Query Store, Part I: Historical Performance Data*
- Post: *Why You Need Query Store, Part II: Plan forcing*
- Post: *Why You Need Query Store, Part III: Proactively analyze your workload*
- Query Store blog category
- SQLPerformance post: *Wait Statistics and Query Store*
- SQLPerformance post: *Using DBCC CLONEDATABASE and Query Store for Testing*

I hope you find these useful and interesting!

Video Demo

In this Insider video, Tim continues the series of Azure-related videos by demonstrating how you can use Elastic Job Agent to schedule index and statistics maintenance on a group of Azure SQL Databases. Since Azure SQL Database does not include SQL Server Agent, scheduling jobs against Azure SQL Databases can be done a few different ways. Some DBAs continue to use SQL Server Agent on an Azure VM or on-premises while others use Azure Automation or Elastic Job Agent. Elastic Job Agent is as close as we can get to SQL Server Agent. It requires an Agent database to hold the jobs, schedules, history, and more. Configuring jobs, schedules, target groups, and other items can all be done via T-SQL or PowerShell. In this demo, Tim walks through creating the Elastic Job Agent and SQL Database in the Azure Portal and shows the various T-SQL steps to create the needed credentials, users, groups, and how to create and schedule a job. After watching this demo, you will have the tools needed to start creating jobs using Elastic Job Agent.

The video is about 20 minutes long and you can get it in WMV format here.

The demo code is here.

Enjoy!

Upcoming SQLskills Events

Our 2021 classes will be entirely online in the Spring and we'll announce them in November!

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 conferences! 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:

Spring 2021

- We'll be announcing our Spring 2021 online class schedule in November.

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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