(May 9th, 2016)

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

Quick Tips for our Insider friends!

Hey Insiders,

This newsletter is coming to you from Chicago where we're starting our third week of back-to-back classes (IEHADR and IEPDS this week), with a final sold-out IEPTO1 next week. We've had a great time so far, including a team weekend where we flew in everyone's families and gallivanted around Chicago following an itinerary Kimberly worked out.

Make sure to book your Immersion Event well in advance to avoid the class you want selling out – all the schedule details are here.

We have a special offer running through May and June, where any client – new and existing – can get a **single-instance health check for only US$2,500**, which is more than 1/3 off the normal price! Details about why our health checks are so cost-effective are here.

And some **exciting news** – I've finally released my comprehensive wait stats and latch classes library! See Paul's Ponderings below for details, and pointers to some cool scripts and posts I did last week.

The latest book I've read is Mary Beard's *SPQR: A History of Ancient Rome*. This is an excellent book for history buffs and anyone interested in ancient Rome. She adroitly covers how Rome developed over time, clashes between prominent Romans, the rise of the Emperors, the development of political democracy and on into a dictatorial empire, how they treated slaves and women, and much more. I found it hugely readable and not dry in the least, and it's inspired me to read a bunch of books around Rome that I've had for a while. Highly recommended!

Note: you can get all the prior Insider newsletters here.

The Curious Case of…

This is a new section we're adding to the newsletter that each time will explain a different problem that we've found on client systems recently.

Tim took on a new client recently that was complaining of erratic timeouts on a very highly utilized OLTP database. A health check found that the database files had the auto-growth values set to the default of 1MB and the database was experiencing more than four thousand auto-growths per hour! Fixing the auto-growth value solved the timeouts.

Small, frequent auto-growths can produce a storm of *LATCH_EX* waits for the *FGCB_ADD_REMOVE* latch, where only one thread out of many that wait each time actually does the growth, and the rest are essentially wasting time waiting.

Always make sure that your data and log files are set to have appropriate auto-growth values.

Paul's Ponderings

No single theme this week as I've been teaching but lots of interesting stuff to point out.

The big news is that I've released my SQL Server Wait Types and Latch Classes Library for public use. It has every wait type and latch class that has existed since SQL Server 2005, and the aim is that eventually there will be complete information about every one of them, including what they mean and don't mean, how to troubleshoot them, and examples of where they occur in SQL Server, including actual code call stacks. Right now it has coverage of more than 150 of the most common waits and 24 of the most common latches. I think it'll be an invaluable resource for the community and you can read more about it in my blog post, or just dive in at https://www.sqlskills.com/help/waits/.

Secondly, I wrote some code last week to help with exploring transaction log internals. There was a discussion on the MVP email list about how to track what's going on in the log for online index operations. It's very hard because the outer transaction doesn't really do anything, and there's no roll-up of the work done by the inner transactions. The code I wrote will show the transaction hierarchy for everything in the log, allowing you to see what's going on for operations you're interested in. Check it out here.

Thirdly, during class last week someone asked how to tell what degree of parallelism a parallel query is using when you see *CXPACKET* waits. There's an easy way to tell as the *sys.dm_exec_query_memory_grants* DMV has a *dop* column, so I added that into my waiting tasks script and now it's easy to tell.

Lastly, there was a discussion in class about why SQL Server uses the term *set-based processing*, when its operators are internally implemented as row-by-row iterators. The answer is that it's all down to the efficiency of the implementation – read about it here.

Call to action: No call to action this time, just lots of cool stuff around SQL Server!

Video Demo

One of the big advantages of Azure SQL Database is the ability to quickly and seamlessly scale up to a higher DTU tier when the workload demands it. This also gives you the ability to take advantage of a higher DTU environment when you need additional storage space. In this demo, Tim shows how easy it is to migrate to a higher tier database when you use all of your allocated

storage. Additionally, he shows a challenge you may face when trying to migrate back after you've grown your database beyond the threshold of the original DTU tier.

The video is just over 5 minutes long and you can get it:

- In WMV format here.
- In MOV format here.

The demo code is available here.

Enjoy!

SQLskills Offerings

We've released all of our 2016 classes for registration, listed below, including two new classes in Chicago in November that we just added. We hope to see you at a class or a conference this year!

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
- Community blog posts about our classes
- Immersion Event FAQ

Upcoming Immersion Events

Chicago, IL

- **IEPDS**: Immersion Event on Practical Data Science
  - May 9-13 **Hot course!!**
- **IEHADR**: Immersion Event on High Availability and Disaster Recovery
  - May 9-13
- **IEPTO1**: Immersion Event on Performance Tuning and Optimization – Part 1
  - May 16-20 **SOLD OUT!**

London, UK

- **IEPTO1:** Immersion Event on Performance Tuning and Optimization – Part 1
  - June 13-17
- **IEPTO2:** Immersion Event on Performance Tuning and Optimization – Part 2
  - June 20-24

Bellevue, WA

- **IEPTO1:** Immersion Event on Performance Tuning and Optimization – Part 1

- o September 12-16
- **IEBI:** Immersion Event on Business Intelligence
  - o September 19-22 **Just added!!**
- **IEPTO2:** Immersion Event on Performance Tuning and Optimization – Part 2
  - o September 19-23
- **IESSIS2:** Immersion Event on Advanced SQL Server Integration Services
  - o September 19-22 **New course!!**

Dublin, Ireland

- **IEPTO1:** Immersion Event on Performance Tuning and Optimization – Part 1
  - o October 3-7

Chicago, IL

- **IE0**: Immersion Event for Junior/Accidental DBAs
  - o November 7-9 **Just added!!**
- **IEPTO1**: Immersion Event on Performance Tuning and Optimization – Part 1
  - o November 7-11 **Just added!!**

See 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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