(September 28th, 2015)

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 somewhere near Cebu in the Philippines where Kimberly and I are finishing up our last diving of 2015 with some good friends of ours. Photos to come!

Here are some macro videos from the early part of the trip (click the HD icon to watch in higher quality). All taken with a GoPro Hero3+ with a BackScatter MacroMate Mini wet macro diopter:

- Blue ring octopus
- Cuttlefish
- Juvenile thorny seahorse
- Flamboyant cuttlefish (the ripple pattern has nothing to do with the lighting)

We've just announced our 2016 classes in Chicago (April/May), London (June), and Bellevue (September), including **two brand new classes on SSIS**, written and presented by our new and exciting training partner *Linchpin People*. We have extremely high standards for our Immersion Event instructors and we're really excited about these new classes that we're adding to our incredible Immersion Event lineup. **You can save up to $200 off these classes by registering before the end of the year and as an alumnus, you can always get the lowest (frequent-flyer) discount!** Schedule details are here and you can read more on the new SSIS classes here.

Finally, Fall's here and it's going to be fun! We're heading to Dublin in a few days for our IEPTO2 delivery with our partner ProData. Then, we have SQLintersection and PASS at the end of October, plus our final Immersion Events in Chicago in November. Check out more information online at www.SQLintersection.com and don't forget to register with the discount code of SQLskills to save $50 off your registration.

The latest book I've read is Dian Gabaldon's *Outlander*. Several people have recommended this to me over the last year, given my Scottish roots, and I finally took the plunge and bought the first four books in the series. I'm glad I did! It's a really good story about a woman who is transported back 200 years to just before the 1745 rebellion under Bonnie Prince Charlie and has to suddenly find her way in that time. It has plenty of colorful characters and action and I'm really looking forward to continuing with the next books. And of course there's the T.V. series (which I haven't watched yet but I've heard is really good). Highly recommended!

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

Paul's Ponderings

A short editorial today, but a problem I've seen a few times recently so I really want to make sure you've looked into this recently.

One of the issues our clients sometimes have is that tempdb runs out of log space and they can't figure out the root cause.

The scenario is that they get the 9002 message that the log is full, and then put in some monitoring to look for transactions generating a lot of transaction log records. This can easily be done using a script such as in this blog post which uses the *sys.dm_tran_database_transactions* DMV. The script should be run every, say, 15 seconds from a SQL Agent job and the results filtered on the sum of the script output columns *database_transaction_log_bytes_used* + *database_transaction_log_bytes_reserved* being more than the desired threshold.

Sometimes this works and the culprit is easy to identify. But every so often that script doesn't find any glaring offender, and the tempdb log grows until it runs out of space again.

So what's going on?

What I've found is that the problem is a long-running transaction, not a transaction creating a lot of log records. The long-running transaction starts up and then does little work, but while it's running, lots of *other* transactions generate some log records each and all commit, and the sum of their log records fills up the tempdb log. The log cannot clear automatically (SQL Server attempts log clearing for tempdb via a checkpoint whenever the log reaches 70% full) because the long-running transaction prevents that, and so the log fills up.

So instead of looking for just transactions generating lots of log records, the monitoring should be using the same script and also looking for transactions where the *database_transaction_begin_time* is more than a certain amount of time in the past.

Call to Action

Sometimes the answer to a performance problem, especially involving resource exhaustion, isn't obvious and you have to think outside the box a little bit for other possibilities. In this case, the tempdb log wasn't filling from a big transaction, so the question became why couldn't the tempdb log clear. There's always an explanation!

Video Demo

In this video, Jonathan shows the performance impacts of scalar user-defined functions that execute row-by-row and how to improve performance, while still having the ability to reuse code by changing the functions to be inline table-valued functions in SQL Server.

The video is just under 9 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 the majority of our 2016 classes for registration, listed below. It's possible that we might add one or two classes in Chicago in the Fall too, but that will depend on the Fall conference schedule as well as demand. **Note that you can save up to $200 by registering for these classes before the end of 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

Dublin, Ireland, 2015

- **IEPTO2**: Immersion Event on Performance Tuning and Optimization – Part 2
  - October 12-16 **(SOLD OUT!)**

Chicago, IL, 2015

- **IE0**: Immersion Event for the Accidental/Junior DBA
  - November 16-18 **(6 seats remaining!)**
- **IEPDS**: Immersion Event on Practical Data Science
  - November 16-19 **(5 seats remaining!)**
- **IEPTO1**: Immersion Event on Performance Tuning and Optimization – Part 1
  - November 16-20 **(SOLD OUT!)**

Chicago, IL, 2016

- **IE0**: Immersion Event for Junior/Accidental DBAs
  - April 18-20 **(US$120 discount for registering in 2015)**
- **IEPTO1**: Immersion Event on Performance Tuning and Optimization – Part 1

- o April 18-22 **(US$200 discount for registering in 2015)**
- **IEPTO2**: Immersion Event on Performance Tuning and Optimization – Part 2
  - o April 25-29 **(US$200 discount for registering in 2015)**
- **IEBI**: Immersion Event on Business Intelligence
  - o April 25-29 **(US$200 discount for registering in 2015)**
- **IEHADR**: Immersion Event on High Availability and Disaster Recovery
  - o May 2-6 **(US$200 discount for registering in 2015)**
- ****NEW** IESSIS1**: Immersion Event on Learning SQL Server Integration Services
  - o May 2-6 **(US$200 discount for registering in 2015)**

London, UK, 2016

- **IEPTO1:** Immersion Event on Performance Tuning and Optimization – Part 1
  - o June 13-17 **(US$200 discount for registering in 2015)**
- **IEPTO2:** Immersion Event on Performance Tuning and Optimization – Part 2
  - o June 20-24 **(US$200 discount for registering in 2015)**

Bellevue, WA, 2016

- **IEPTO1:** Immersion Event on Performance Tuning and Optimization – Part 1
  - o September 12-16 **(US$200 discount for registering in 2015)**
- **IEPTO2:** Immersion Event on Performance Tuning and Optimization – Part 2
  - o September 19-23 **(US$200 discount for registering in 2015)**
- ****NEW** IESSIS2:** Immersion Event on Advanced SQL Server Integration Services
  - o September 19-22 **(US$160 discount for registering in 2015)**

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

SQLintersection

Our final schedule and line-up has been posted and we're looking forward to another fantastic event! Our Fall SQLintersection is running the week of October 26, 2015 and we're back in Las Vegas. Yes, it's the same week as PASS. No, that's not really a problem! We don't have a lot of folks that attend both PASS and SQLintersection so the overlapping week isn't really a problem. And, it's a great way to get different perspectives on the tech and have everyone come back and do knowledge-transfer.

Check it out online at www.SQLintersection.com. When you register, don't forget to use the discount code "SQLskills" (without the quotes and it isn't case-sensitive) and you can save $50 off registration. We hope to see you there!

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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