(November 30th, 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 Redmond where Kimberly and I had a very quiet Thanksgiving all on our own – five days with nobody else, which is the longest time this year! Now, and for most of December, we'll be working through new content, Pluralsight courses, and beating up new features in SQL Server 2016.

Our 2016 classes are filling up in Chicago (April/May), London (June), and Bellevue (September), including two brand new classes on SSIS, and we're running an expanded (to five days) **IEPDS class on Practical Data Science**. **You can save up to $200 off all our 2016 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.

Also, if you're a user group leader (or know one), check out my blog post about 2016 remote presentations – we want to present to your user group!

The latest book I've read is Stieg Larsson's *The Girl Who Kicked the Hornet's Nest*, the third in his excellent *Millennium series*. This book continues straight on from the mayhem at the end of the second book, and is full of the same high-tension writing and unexpected plot twists that kept me riveted to the other books. Hard to say much else without giving away some of the plot, but it's a first-rate thriller. And, it's a shame that Larsson passed away shortly after finishing the manuscripts; I would have read more of his work for sure. Highly recommended!

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

Paul's Ponderings

In this newsletter I want to continue with my mirroring/AG theme from the last newsletter and discuss a somewhat hidden cause of widespread blocking.

When people see lots of blocking issues, it's common to assume that something around locking is the root cause, maybe lock escalation for instance. But it always pays to investigate to find out exactly what the root cause is before jumping to conclusions.

If you know you have a synchronous mirror or AG replica of the database where blocking is occurring, check to see if there's a delay writing the log block to the mirror/replica as this could be causing the blocking.

How?

When a transaction holds locks (e.g. IX table + IX page + X row to protect a record insert), any locks that it is holding cannot be released until the transaction has committed and is durable. The transaction commit involves force flushing the log block containing the transaction's *LOP_COMMIT_XACT* log record to the local log file, so at the very least, the lock release delay includes the time necessary to write that log block to disk.

Usually this delay is very small, and so there's no knock-on effect on the blocking in the system.

Now consider the case where there is a synchronous mirror/replica. The flush of the log block to disk also triggers sending the log block across the wire to the mirror/replica. Even though the local log write will likely complete quickly, the transaction cannot finish committing until the remote log block write has also occurred and been acknowledged back to the local server. At that point, the transaction can then release its locks.

As long as the remote log write is very fast and there are no network delays, the fact that there's a synchronous mirror/replica shouldn't affect the local transaction's commit time. But if there's any delay, the transaction has to wait, and so will take longer to commit. The longer the transaction takes to commit, the longer it has to hold its locks, and so the more possibility there is of those locks blocking some other transaction.

You can see if this is the problem using the various performance counters and monitoring mechanisms for mirroring/AGs. If you can't do anything about the extra delay, you might consider switching to asynchronous mode, or even making use of versioning to reduce the problems the blocking causes (somewhat of a Band-Aid solution though).

Note: everything I say above does not apply to delayed-durability transactions in SQL Server 2014 onward, where a transaction commit does not force the log block to flush to disk, hence there is no synchronous mirror/replica delay either. You can read more about this feature here.

Call to action: Same as last time – monitoring and troubleshooting performance problems with HA/DR technologies is very important. I wrote about this for mirroring back in 2011, but the same thing applies to availability groups (Jon wrote about this back in August), replication (Joe wrote about this back in 2012), and even log shipping (see Books Online).

Video Demo

We were all on vacation last week so for the video this time, I present you a recording of Erin's top-10 session from the PASS Summit 2014, titled *Five Execution Plan Patterns to Watch For*.

The video is just under 70 minutes long and you can watch it on YouTube 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, 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

Chicago, IL, 2016

- **IE0**: Immersion Event for Junior/Accidental DBAs
  - April 25-27 **(US$120 discount for registering in 2015)**
- **IEPTO1**: Immersion Event on Performance Tuning and Optimization – Part 1
  - April 25-29 **(US$200 discount for registering in 2015)**
  - **NOTE: This course is currently 70% full.**
- **IEBI**: Immersion Event on Business Intelligence
  - April 25-29 **(US$200 discount for registering in 2015)**
- **IEPTO2**: Immersion Event on Performance Tuning and Optimization – Part 2
  - May 2-6 **(US$200 discount for registering in 2015)**
- ****NEW** IESSIS1**: Immersion Event on Learning SQL Server Integration Services
  - May 2-6 **(US$200 discount for registering in 2015)**
- **IEPDS**: Immersion Event on Practical Data Science
  - May 9-13 **(US$200 discount for registering in 2015)**
  - **NOTE: This is now five days in length.**
- **IEHADR**: Immersion Event on High Availability and Disaster Recovery
  - May 9-13 **(US$200 discount for registering in 2015)**

London, UK, 2016

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

Dublin, Ireland, 2016

- **IEPTO1:** Immersion Event on Performance Tuning and Optimization – Part 1
  - Dates and details coming soon; we're targeting October 2016.

Bellevue, WA, 2016

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

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

Paul@SQLskills.com and Kimberly@SQLskills.com