

(September 30th, 2013)

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 Bellevue, WA where we've just finished our deliveries of our well-known IE1 and IE2 classes, and today we're kicking off the first deliveries of two new classes: IE0 for the Accidental/Junior DBA taught by Jonathan and Erin, and IETS on Advanced Transact-SQL taught by Bob Beauchemin. We're all hard at work preparing for the PASS Summit in two weeks and our [SQLIntersection conference](#) at the end of October. Lots of great events coming up and we hope to see you there!

Our two-for-one offer is starting to really take off. As an example, for two people to attend IEDev or IEBI in 2014 would normally be \$6,590 plus expenses. Now you can have two people attend for \$3,295, and the savings should cover all travel expenses from virtually anywhere in the US. The two-for-one offer is available for the first 5 people to register for any 2014 delivery of IE0, IEBI, IEDEV, IE4, IETS (**NOTE:** about **half** the free seats have gone already).

We've also released a few more Pluralsight courses:

- [SQL Server: Detecting and Correcting Database Corruption](#) by Paul
- [SQL Server: Why Physical Database Design Matters](#) by Kimberly

The most recent book I've read is Marcus Luttrell's [Lone Survivor](#). This book tells the story of Operation Redwing in the mountains of Afghanistan, and is written by the sole survivor of the SEAL team involved. It's an incredible story that shows what Navy SEAL team members go through in training, and the determination and heroism they show in the field. One of our good friends was a Special Forces HALO, scuba, and quick-reaction team leader in Asia for many years and I've always wanted to find out more about that kind of life. Strongly recommended.

Please [let us know](#) if you liked what you read/saw here and/or have any suggestions for future Quick Tips.

Note: you can get all the prior Insider newsletters [here](#).

Paul's Ponderings

In this newsletter I'd like to highlight a problem that many people with very large databases and high core-count servers have: very long run times for consistency checks.

I was helping out a prior client of ours ([Plex Systems](#), who graciously agreed to let me share these details) as one of their DBAs (Joseph Fleming, [@muad_dba](#)) had sent me an email question asking for some advice about breaking up consistency checks using *DBCC CHECKTABLE*. I offered to go back-and-forth over email to figure out what was causing multi-day run times for *DBCC CHECKTABLE* on their system.

They have a server with 64 physical cores in use for SQL Server, and I suggested reducing the degree of parallelism (DOP) for DBCC down to 4. The results were fantastic:

- Data point 1
 - Table size: 900GB
 - Row count: 2 billion
 - Old time to check this table: 21 hours
 - New time: 7 hours
- Data point 2
 - Table size: 1.4TB
 - Row count: 3 billion
 - Old Time: 52 hours (!!!!)
 - New time: 10 hours

Why was the improvement so high? Why doesn't *DBCC CHECKDB* (and derivative commands) scale to high numbers of physical cores?

The answer is that the core *DBCC CHECKDB* code was written and rewritten between 1998 and 2003, when core counts were low, I/O subsystems weren't blazingly fast, server memory was low, and NUMA didn't exist (in the x86 architecture). We simply couldn't and didn't do detailed scalability testing with anything like the commodity servers that are available today, and so often it doesn't run that well on large databases on servers with lots of physical cores.

What can you do to increase consistency checking speed?

- Experiment with **reduced** DOP. I [published test results](#) using our 32-way (using hyper-threading) Dell R720 and Fusion-io SSDs that showed that when using *WITH PHYSICAL_ONLY*, DOP should be reduced to 4. Your results with and without *WITH PHYSICAL_ONLY* will vary, but you should definitely experiment.
- Check for indexes on computed columns. Recently I identified a scalability bottleneck in the Query Processor involving the code used to validate computed column values. I [published test results](#) showing a huge decrease in run time when nonclustered indexes on computed columns are disabled. This issue will **not** be addressed in a future release I've been told.
- Constrain the amount of memory available to *DBCC CHECKDB*. Jonathan was working with one of our Remote DBA clients and noticed that every time *DBCC CHECKDB* ran, it forced a large drop in buffer pool memory, reducing performance of the workload. It's

an issue with cardinality estimation for the internal query that *DBCC CHECKDB* uses. Jonathan [published test results](#) that shows constraining *DBCC CHECKDB* to 1GB of memory prevents the buffer pool flush and increases overall system performance.

These three suggestions also apply to *DBCC CHECKTABLE* and *DBCC CHECKFILEGROUP*.

Call to action: If you're struggling with very long run times for consistency checks, experiment with the options I've presented above. Usually reducing degree of parallelism will have a profound effect on the length of time consistency checks take, making them more palatable to run.

I'm curious to hear your thoughts speeding up consistency checks, so please feel free to [drop me a line](#), always treated confidentially, of course.

Video Demo

We're all heads-down teaching or preparing for Immersion Events this week so I'd like to give you a demo video from my newly released Pluralsight course on database corruption. This demo shows you how to deal with data purity errors that may occur in the output from *DBCC CHECKDB* after performing an upgrade from SQL Server 2000, or if a column value gets corrupted.

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

- In WMV format [here](#)

The demo code is available [here](#).

Enjoy!

SQLskills Offerings

As I mentioned above, we've just opened up our first-half of 2014 classes for registration. All classes have alumnus discounts equivalent to 25%-off the full price, and many have a special offer for the first 5 people who register for each class in 2013 – buy-1-get-1-free!

Please know that these classes are final as the hotel contracts are signed, and the classes will not be cancelled or moved for any reason, nor will the dates change. However, a few dates below have changed from our initial announcement and past two Insider letters; this is our FINAL schedule. These dates will not change. We did not have any attendees yet registered so this didn't impact anyone directly; we apologize if this affects your planning.

Also, we've added a few new items to help you justify your training dollars:

- [Letter to your boss explaining why SQLskills training is worthwhile](#)

- [Community blog posts about our classes](#)
- [Immersion Event FAQ](#)

Remaining 2013 class:

- November 11-15, 2013: Internals and Performance (**IE1**) in Chicago (**SOLD OUT!**)

New 2014 classes:

Tampa, FL

- February 3-7, 2014: **IE1**: Immersion Event on Internals and Performance
- February 3-5, 2014: **IE0**: Immersion Event for the Accidental/Junior DBA
- February 6-7, 2014: **IEHW**: Immersion Event on SQL Server Hardware
- February 10-14, 2014: **IE2**: Immersion Event on Performance Tuning
- February 10-14, 2014: **IEBI**: Immersion Event on Business Intelligence
- February 17-21, 2014: **IE3**: Immersion Event on High Availability and Disaster Recovery
- February 17-21, 2014: **IEDEV**: Immersion Event for Developers

Coming soon: Sydney, NSW, Australia – March 10-14, 2014

Coming soon: Melbourne, VIC, Australia – March 17-21, 2014

Chicago, IL

- April 28 – May 2, 2014: **IE1**: Immersion Event on Internals and Performance
- April 28 – May 2, 2014: **IEBI**: Immersion Event on Business Intelligence
- May 5-6, 2014: **IEHW**: Immersion Event on SQL Server Hardware
- May 5-9, 2014: **IE2**: Immersion Event on Performance Tuning
- May 12-16, 2014: **IE3**: Immersion Event on High Availability and Disaster Recovery
- May 13-16, 2014: **IETS**: Immersion Event on Advanced Transact-SQL
- May 19-23, 2014: **IE4**: Immersion Event on Security, PowerShell, and Developer Support
- May 19-21, 2014: **IE0**: Immersion Event for the Accidental/Junior DBA

Bellevue, WA

- June 9-13, 2014: **IE1**: Immersion Event on Internals and Performance
- June 16-20, 2014: **IE2**: Immersion Event on Performance Tuning

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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