

(September 25th, 2017)

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](#).



Quick Tips for our Insider friends!

Hey Insiders,

Welcome back from the summer – I hope you had a great time!

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

SQLskills News

Kimberly's latest Pluralsight course has been published! It's called *SQL Server: Indexing for Performance* and is a 7+ hour behemoth packed with her indexing wisdom. Check out the details [here](#).

Our October classes in Chicago start next week! We have the usual IE0, IEPTO1, IEPTO2, IEPS, and IESSIS1 classes running, plus THREE new classes: [Azure SQL Database and Azure VMs](#), [Upgrading SQL Server](#), and [Clustering and Availability Groups](#). See [here](#) for the complete October Immersion Event class schedule. We still have a few seats available, register before Wednesday to join us in Chicago!

If not in Chicago, our team is presenting a number of workshops at Fall conferences, we hope you'll join us:

- Paul is presenting a workshop at the Fall [SQLintersection](#) conference in Las Vegas on Sunday, October 29th, titled *Performance Troubleshooting using Waits and Latches*. Check out the details [here](#).
- Erin is presenting a workshop at the Fall [PASS Summit](#) in Seattle on Monday, October 30th, titled *Solving Common Performance Problems Using Query Store*. Check out the details [here](#).
- Jonathan is presenting a workshop at the Fall [SQLintersection](#) conference in Las Vegas on Monday, October 30th, titled *Extended Events: WTF or FTW!* Check out the details [here](#).
- Kimberly is presenting a workshop at the Fall [SQLintersection](#) conference in Las Vegas on Friday, November 3rd, titled *Very Large Tables: Optimizing Performance and Availability through Partitioning*. Check out the details [here](#).
- Tim is presenting a workshop at the Fall [SQLintersection](#) conference in Las Vegas on Friday, November 3rd, titled *Common SQL Server Mistakes and How to Correct Them*. Check out the details [here](#).

And all of us are presenting sessions at SQLIntersection or the PASS Summit (Erin and Glenn). You can read more about our SQLIntersection lineup in my blog post [here](#).

Don't forget to check out our SQL101 posts... hopefully they'll help refresh or reinforce topics for even the more seasoned DBAs in the community. The blog posts are automatically collected [here](#).

Finally, even if you can't join us in person, we've renewed our call for remote user group sessions for the second half of this year. We have almost 100 scheduled and completed so far; if you'd like one of us to present for your user group, check out my blog post [here](#).

Book Review

One of the recent books I've read is Eric Schlosser's [Fast Food Nation: The Dark Side of the All-American Meal](#). Schlosser's book is a searing expose of the business practices behind the American fast food industry, focusing on McDonald's and the giant beef processing companies that supply it. Although written in 2001, the industry is still much the same today (not including those chains that create and cook their food fresh every day). The most shocking thing is really how the industry has pressured the government into reducing and/or removing safety and health inspections from the beef supply chain. Once you read about the meat processing facilities, I'll be surprised if you ever eat a frozen beef patty again. This is definitely not a go-vegetarian rant, but a level-headed, fact-based examination of how fast food is sourced, processed, and prepared. Highly recommended! (And I also strongly recommend Schlosser's [Command and Control](#) that I read a few years ago.)

The Curious Case of...

This section of the newsletter explains problems we've found on client systems; they might be something you're experiencing too.

Erin was working with a client recently who'd called us for help because a process that typically takes a few minutes was now taking hours or not even completing. They discovered that one query that was a part of a stored procedure was no longer using the plan they had forced for it (with Query Store), and they didn't know why.

Erin checked the `sys.query_store_plan` system view and could see that for the forced plan for that query there was a `last_force_failure_reason` of `NO_PLAN`. (As an aside, Erin recommends setting up an Extended Events session that captures the event `qds.query_store_plan_forcing_failed`.)

They re-ran the process and confirmed the wrong plan was used. Erin then looked in the Query Store. She discovered that there were multiple entries for the problem query for the stored procedure and one query had some additional spaces in it.

It turns out that a developer had modified the stored procedure using *ALTER* to add some comments, and in doing so, somehow must have added some spaces to that query. As such, the next time the procedure executed, a new entry was added to *query_store_query_text* with a new *query_text_id*, which then had a new *query_id* and a new *plan_id*, and therefore the previously forced plan couldn't be used because that original query had a different *plan_id*. Basically, because of textual matching, the new query didn't exactly match the original, and so the Query Store wasn't able to force a plan for it.

Bottom line: Be careful when altering procedures, as an inadvertent keyboard slip can cause the query text to become different, which can cause textual matching to fail, and result in performance problems like the one above.

Paul's Ponderings

As I was sitting on Sunday afternoon with a cup of coffee and wondering what to write about for the newsletter, I happened to be looking at my blog, and specifically the Most Popular Posts section (which you may not be able to see – more on that coming...) and thought to myself that the numbers weren't updating. I experimented and found that they really weren't.

So I thought I'd do some investigation of the Wordpress plugin ([Wordpress Popular Posts](#)) and its settings, and look in its support forum to see whether there were any known issues. There was, so I thought I'd fix the problem myself and impress Jonathan (our web master).

As an aside, although I'm very smart, I'm not known for having the most common sense, and I've tried messing with Wordpress before and managed to cause varying degrees of problems, so you'd think I'd have remembered, backed away, and waited until Monday to talk to Jon about it, but no...

I figured I'd update the plugin – what could go wrong? Apparently, quite a bit. I pressed the button to update the plugin, the little spinney icon spun for a bit, and then it said it failed to remove the old plugin.

At this point I really should have backed away, but no...

I decided to deactivate the plugin, thinking that this would remove it properly. So I clicked the deactivate button. That seemed to work, and the number of plugins dropped by one. Success! Or so it seemed...

Next I went to the Add Plugins page, searched for Wordpress Popular Posts and clicked Install Now. The little spinney icon did its thing for a bit and then it changed to Install Failed!

Boo!

At this point I was smart enough to back away and send a groveling email to Jon asking for help on Monday morning. He is a Wordpress expert, speaks PHP and stuff, and he'll fix it easily, no doubt. And then he'll ask me to please not do that again (or maybe something less polite ☺).

However, the Most Popular Posts portion of my blog has disappeared until he does.

Call to action: It's really easy to do a little research, jump to a conclusion, and embark on a course of action that ends up breaking something badly. The SQL Server (I had to mention that somewhere!) example that springs to mind is someone removing a transaction log file to try to get crash recovery to go faster. In cases like these, it's usually better to ask for help from someone who knows what they're doing, rather than rashly proceeding and ultimately failing, or at least testing the chosen course of action before doing it in production.

PS I hope that story made you chuckle. And as I was finishing writing this, I got an email from Jon saying he'd fix it in a minute... Thanks Jon!

Glenn's Tech Insights

This section of the newsletter highlights recent news and views from the hardware and Windows worlds that we think will be interesting to SQL Server community members.

New Synology NAS Products

Synology has released a number of new NAS units, including the six-bay [DiskStation DS3018xs](#), which uses the [Intel Pentium D1508](#) processor. This model features a Gen 3 x8 PCIe slot for expansion including using two M.2 SATA/AHCI SSDs via an adapter or a 10GbE network card. Since there is only one PCIe expansion slot, you have to choose whether to use it for better network throughput or for SSD caching, for better disk performance.

You can also expand RAM of the unit up to 32GB. Having a relatively high performance NAS can be very useful in a home or home lab environment.

AMD Ryzen Threadripper Autopsy

A [hardware over-clocker "de-lidded"](#) a sixteen-core AMD Ryzen Threadripper 1950X HEDT processor to reveal the four, actual silicon dies underneath. He then unseated the dies and sanded external copper layer down to expose the silicon.

This effort (which destroyed the \$1000 processor) revealed four actual eight-core Ryzen dies inside of a Ryzen Threadripper processor, which means that AMD could conceivably release a 32-core Ryzen Threadripper part without too much effort. This makes sense, given how the rest of the modular Zen architecture is designed. This would give you an extremely powerful desktop workstation. It is also [interesting to note](#) that the Threadripper was originally an underground,

“skunkworks” type of project undertaken by a number of AMD engineers in their spare time, which was later fully embraced by upper management and turned into a shipping product.

SQL Server 2012 SP4 Due for Release in September

Microsoft [has announced](#) (and recently reconfirmed) that SQL Server 2012 SP4 will be released before the end of September 2017. If you are running SQL Server 2012, should plan on testing and deploying Service Pack 4 as soon as possible. Not only will it have all of the last set of hotfixes from SQL Server 2012 SP3 CU10, it will also have a number of useful performance and manageability improvements that are backported from SQL Server 2014 SP2 and SQL Server 2016 SP1.

PCI-Express (PCIe) 4.0 Coming in 2017

The [PCI-SIG](#) is due to release the final 1.0 specification for PCIe 4.0 before the end of the year, which means we should start to see some actual AMD and Intel products that support PCIe 4.0 in 2018/2019. PCIe 4.0 will support 64GB/sec of throughput, while PCIe 5.0 (which is due to be finalized in 2019) will double that to 128GB/sec.

PCIe 1.0 was introduced in 2002, PCIe 2.0 was introduced in 2006, and PCIe 3.0 was released in 2010, so it has been quite a while since a new version was released.

The new [Intel Xeon Scalable Processor family](#) processors do not support PCIe 4.0 nor do the new [AMD EPYC 7000 series](#) processors.

Intel Xeon – W Workstation Processors

On August 30, 2017, Intel released new [Intel Xeon Processor W Family](#) of one-socket workstation processors (hence the W) based on the Skylake-SP Xeon server processors. These processors are meant as a replacement for the older one-socket Intel Xeon E5-1600 v4 series that had up to eight physical cores. The Xeon-W processors will have between four and eighteen physical cores, support up to 512GB of RAM and have 48 PCIe 3.0 lanes.

These processors are essentially Xeon versions of the Skylake-X Core i9 HEDT processors with all of the professional features enabled such as extended memory support, vPro, Intel’s AMT, and the standard enterprise Reliability, Serviceability and Availability (RAS) features. They will require a new C422 chipset, and they will **not** work in existing X299 chipset motherboards.

These processors give you another possible choice for buying or building a powerful, professional level workstation. Value-wise, a system based on one of the AMD Ryzen Threadripper processors is going to be a much better option for most people. Anandtech is a [decent write-up here](#). Semiaccurate.com has a pretty scathing commentary on these new processors [here](#).

Windows 10 Fall Creators Update

Microsoft has [announced](#) that it will be releasing the Windows 10 Fall Creators Update on October 17, 2017. This is the fourth major update to Windows 10 since it was released. Microsoft is also due to release a major update to Windows Server 2016 around the same time frame. One of the big changes in the Windows Server 2016 Fall update is that SMB 1.0 will be disabled by default.

#TBT

(Turn Back Time...) This section of the newsletter highlights some older resources we've referred to recently that you may find useful, plus select blog posts we've published since the previous newsletter.

I've been dealing with a couple of corruption issues over the last week, so that's the theme for this TBT:

- My course: [SQL Server: Detecting and Correcting Database Corruption](#)
- My course: [SQL Server: Advanced Corruption Recovery Techniques](#)
- My blog post: [SQLskills SQL101: Why DBCC CHECKDB can miss memory corruption](#)
- My blog post: [SQLskills SQL101: Dealing with SQL Server corruption](#)
- My blog post: [Disaster recovery 101: fixing a broken boot page](#)
- My blog post: [Corruption recovery using DBCC WRITEPAGE](#)
- My [Corruption](#) blog post category

Here are a few of the blog posts we've published since the last newsletter:

- Paul: [10 years ago today...](#)
- Paul: [SQLskills SQL101: Readable secondary performance problems](#)
- Paul: [SQLskills SQL101: Log shipping performance problems](#)
- Glenn: [SQLskills SQL101: Azure SQL Database Monitoring](#)
- Glenn: [SQL Server Diagnostic Information Queries for September 2017](#)
- Glenn's one-a-day August [upgrade blog post series](#)
- Erin: [Query Store Pre-Con at the PASS Summit: Is it right for you?](#)
- Tim: [SQLskills SQL101: Recovery Models Matter](#)

I hope you find these useful and interesting!

Video Demo

In this demo video, Jonathan shows how to configure the new Distributed Availability Group feature introduced in SQL Server 2016 for multi-site, multi-cluster availability groups with higher resiliency or cross-platform migrations of availability groups.

The video is just under 8 minutes long and you can get it:

- In WMV format [here](#)
- In MOV format [here](#)

The demo code is [here](#).

Enjoy!

Upcoming Immersion Events

All 2017 classes are available for registration and we're putting the finishing touches on our 2018 "first-half" course line-up, you'll know 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](#)

Chicago, IL, October 2017

- **IEPTO1:** Immersion Event on Performance Tuning and Optimization – Part 1
 - October 2-6
- **IE0:** Immersion Event for the Junior/Accidental DBA
 - October 2-4
- **IECAG:** Immersion Event on Clustering and Availability Groups
 - October 5-6 **** New class! ****
- **IESSIS1:** Immersion Event on Learning SQL Server Integration Services
 - October 2-6
- **IEPTO2:** Immersion Event on Performance Tuning and Optimization – Part 2
 - October 9-13
- **IEPS:** Immersion Event on PowerShell for SQL Server DBAs
 - October 9-11
- **IEAzure:** Immersion Event on Azure SQL Database and Azure VMs
 - October 9-10 **** New class! ****
- **IEUpgrade:** Immersion Event on Upgrading SQL Server
 - October 11-13 **** New class! ****

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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