

(November 19th, 2018)

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](#).



Note: As an Insider, you can read all prior Insider newsletters [here](#).

Quick Tips for our Insider friends!

Hey Insiders,

This newsletter is coming to you from Redmond, where we're getting ready for a big family dinner on Thursday. Happy Thanksgiving to all our U.S. readers (and to U.S. citizens living abroad)!

SQLskills News

Live, ONLINE classes: we've announced six online classes in January-March 2019! The format is receiving rave reviews: each class is held over three, *slightly-longer-than-half* days with a combination of lecture/demo and open Q&A. It's where you can really get your questions answered! Our online course line-up is as follows and now includes a **new class on columnstore indexes** taught by Jonathan:

- **IEQS:** Solving Common Performance Problems with Query Store
 - January 15-17
- **IEPUM2017:** Planning and Implementing an Upgrade/Migration to SQL Server 2017
 - January 29-31
- **IEQUERY:** Fixing Slow Queries, Inefficient Code, and Caching/Statistics Problems
 - February 12-14
- **IETLB:** Transactions, Locking, Blocking, Isolation, and Versioning
 - February 26-28
- **IEVLT:** Very Large Tables: Optimizing Performance and Availability through Partitioning
 - March 12-14
- **IECS:** Columnstore Indexes
 - March 26-28 **** NEW ****

These classes will be delivered live from 10am-3pm PST, Tuesday-Thursday for three consecutive days. In total you'll receive roughly 12-13 hours of content including open Q&As, which is similar to two, full, workshop days without leaving the comfort of your home/office! And by dedicating only 3 half-days of your time you still have time to be productive to your

company by getting regular work done. Finally, you'll also receive **lifetime** access to the recordings – for reviews and refreshers, you get amazing ROI!

The classes are priced at US\$699 each (US\$599 for past attendees) and we're offering a combo package of any three for US\$1,749 or all six for US\$3,249. You can find all the logistical, registration, and curriculum details by drilling down from the class schedule page [here](#).

SQLintersection: You still have time to join us in sunny Las Vegas for our bi-annual conference in the first week of December with 18 top-notch speakers delivering 40 sessions and 9 full-day workshops! We're really looking forward to it; our show is smaller than many others so we really have a chance to chat with folks and get your questions answered. And one of our favorite evening events – **SQLafterDark** – is always a huge hit (*and great fun too*)! Check out all the details [here](#).

Last, but not least – we've just announced our LIVE, IN-PERSON classes: we're back in Chicago in April/May 2019 and our classes are open for registration, including:

- IEPTO1: Performance Tuning and Optimization – Part 1
- IEPTO2: Performance Tuning and Optimization – Part 2
- IECAG: Clustering and Availability Groups
- IE0: Junior/Accidental DBA
- IEUpgrade: Upgrading and New Features
- IEPML: Practical Machine Learning
- IEAzure: Azure SQL Database, Azure VMs, and Azure Managed Instance

We're also adding a new IEPowerBI class – details on that coming soon.

All the in-person classes have discounts (ranging from \$100-200) for registering in 2018, and you can find all the logistical, registration, and curriculum details by drilling down from the class schedule page [here](#).

Finally, even if you can't join us in person, I've put out a call for **2019 remote user group sessions** and we've done more than 75 this year already! If you'd like one of us to present for your user group, check out my blog post [here](#).

Book Review

The latest book I've read is Peter Geye's [Wintering](#) and it's an excellent novel. It's kind of a follow-on from Geye's [The Lighthouse Road](#) that was one of my top-10 books from last year (see [here](#)), as it concerns some of the same people in the same fictional town in northern Minnesota. The Amazon synopsis is just about what I'd say, so here it is:

"One day, elderly, demented Harry Eide steps out of his sickbed and disappears into the brutal, unforgiving Minnesota wilderness that surrounds his hometown of Gunflint. It's not the first time

Harry has vanished. Thirty-odd years earlier, in 1963, he'd fled his marriage with his eighteen-year-old-son Gustav in tow. He'd promised Gustav a rambunctious adventure, two men taking on the woods in winter.

With Harry gone for the second (and last) time, unable to survive the woods he'd once braved, his son Gus, now grown, sets out to relate the story of their first disappearance--bears and ice floes and all--to Berit Lovig, an old woman who shares a special, if turbulent, bond with Harry. Wintering is a thrilling adventure story wrapped in the deep, dark history of a rural town."

Highly recommended, with or without reading *The Lighthouse Road* first.

The Curious Case of...

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

A simple one this time...

I had an email from a very frustrated DBA last week who was trying to reduce the incidence of a particular wait type that he'd determined was around I/O. He'd added a bunch of memory to the server and even experimented with using a local SSD on the server and yet still the I/O waits persisted, and he wanted some more advice.

It turns out that he was trying to get rid of PAGELATCH waits and had mistaken them for PAGEIOLATCH waits. The latter are I/O waits that can be affected by more memory and faster disks (although those aren't usually the best places to start) but the former are threads waiting for access to in-memory copies of pages.

It's a common mistake that people make and I worked with him to figure it out (he had a classic insert hotspot in a clustered index).

You can read more about those waits at their main pages in my waits library: [PAGELATCH_EX](#) and [PAGEIOLATCH_SH](#).

Bottom line: With any wait type that you're investigating, make sure you understand what the wait actually means before you try to take remedial steps, as you may end up wasting a lot of time and effort.

Paul's Ponderings

Nothing technical this time, same as for Thanksgiving last year.

It's been a year since our beloved old dog Coco (a female chocolate Labrador) passed away, and we were devastated at the time, as I wrote in the 2017 Thanksgiving newsletter. We decided not

to get another dog for a while, as we travel so much, and then further decided not to get any more pets.

Roll forward to Christmas 2017 and we were both missing having an animal around the house, so we decided to rescue a cat. We looked online and saw a pair of cats in the [Seattle Area Feline Rescue](#) website, called them up, but they couldn't hold them, were busy, and it was Friday afternoon at rush hour so it would have taken us forever to get over the bridge from Redmond and they'd likely be gone by the time we got there, so we decided it was not meant to be.

We then picked a shelter in Redmond, filled in all the forms, and waited. And waited... And waited... Finally, just before New Year, we called and they said they had a large backlog and it would be at least another two weeks, so we decided to go to Seattle the next morning to the original shelter we'd called two weeks before.

After looking at the various cats, we picked two: one 3-year old male (André) and a 5-month old female with no litter-mates (Valentina). There was another cat, a very sad looking 1-year old male (Holtzinger), who was a stray that had been caught at the Holtzinger Fruit warehouse in Yakima, WA before being cleaned up, neutered, and shuttled to Seattle (no wonder he was sad and confused!). Kimberly started the adoption paperwork for the first two and told me to go see if Holtzinger would interact. He seemed in a daze and very wary, but did start to purr eventually. So, we took him too. The shelter helpers were amazed – as it's very rare for someone to come in and adopt three rescue cats...

Holtzinger took two weeks to finally emerge from hiding and growling at the back of an open shelving unit in one of the bathrooms; we'd spend a couple of hours a day just sitting in there (on our phones, etc.) just to get him used to people. He's basically adopted me and André has adopted Kimberly as their go-to people. Little Valentina still doesn't like to be picked up but she's constantly cuddling her brothers and she's definitely warming up to us.

We decided to keep the names the cats already had – why not? I think the cats are thankful that we rescued them (indeed, Holtzinger must be thinking – it's warm, there's food, I'm safe... I don't have to cruise around a cold, fruit factory anymore – wow, did I win the cat life lottery or what?) and we're thankful that the cats have filled a hole we suddenly had in our lives.

Why am I telling you all this? Well, at Thanksgiving it's traditional to give thanks for what you have in your lives, but this year we're also especially thankful for something we were able to *do* – that we were able to adopt three cats and give them a new life, plus donate to the shelter to help improve the lives of other cats.

Oh, and if you want to see the adventures of our cat crew, check out [@RandalsRescues](#) on Instagram. Yes, Kimberly created an account just for the cats, mostly because she didn't want to fill all of her other accounts ([@KimberlyLTripp](#) and [@BlueWaterImages](#)) with cat pictures.

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.

Microsoft Releases SQL Server 2016 SP2 CU4

On November 13, 2018, Microsoft released [SQL Server 2016 SP2 CU4](#) (Build 13.0.5233), which has 36 public hot fixes. This is a relatively high number of fixes for a cumulative update, which is a good reason to test and deploy this update as soon as possible. I have updated my blog post: [Performance and Stability Related Fixes in Post-SQL Server 2016 SP2 Builds](#) to include this update.

Microsoft also released [SQL Server 2016 SP1 CU12](#) (Build 13.0.4541), which only has 16 public hotfixes. If you are running SQL Server 2016, you should be on the SP2 branch by now, or as soon as you can plan and test your deployment. I also updated my blog post: [Performance and Stability Related Fixes in Post-SQL Server 2016 SP1 Builds](#) to include this update.

Lenovo Leaks Information about Upcoming Intel Cascade Lake-SP Processors

Multiple [hardware sites](#) have reported that Lenovo had inadvertently published some previously unknown details about Intel's upcoming Cascade Lake-SP processors, including model numbers, core counts, base clock speeds, and TDP ratings.

This most interesting (but disappointing) bit of information for me was the base clock speeds for these new processors. Intel had previously indicated some base clock increases were coming, so my guess was at least 10-15% increase was coming. If the Lenovo disclosure is accurate, then most of the equivalent SKUs will see only a 6-8% base clock speed increase from Intel Skylake-SP to Intel Cascade Lake-SP.

For example, the existing Intel Xeon Gold 6144 has a base clock speed of 3.5 GHz, while the upcoming Intel Xeon Gold 6244 has a base clock speed of 3.7 GHz. That is only a 5.71% increase.

To be clear, there are supposed to be some small, undisclosed architectural enhancements in Cascade Lake-SP. More importantly, there is hardware-level mitigation for many of the Spectre and Meltdown CPU vulnerabilities, which will perform better than existing software-level fixes. There will also be support for Intel Optane DC Persistent Memory, which could be very useful for SQL Server.

Still, these 14nm Cascade Lake-SP processors will be Intel's only defense against the resurgence of AMD in the server space for probably the next 12-18 months. I really think the upcoming 7nm AMD EPYC "Rome" processors are [going to really shake up the server market](#), with up to 64

cores, higher memory density, and more PCIe lanes (which will be PCIe 4.0 rather than PCIe 3.0), and very possibly higher single-threaded performance than Intel Cascade Lake-SP.

AMD EPYC 7371 Processor in Q1 2019

At the [Supercomputing 2018 Conference](#), AMD announced a special high-frequency SKU in their first-generation 14nm AMD EPYC “Naples” line of server processors that will be the AMD EPYC 7371 processor. This upcoming processor will have 16 cores and 32 threads, with a base clock speed of 3.1 GHz, boosting up to 3.6 GHz on all 16 cores and up to 3.8 GHz on eight cores. It also has a 64MB L3 cache. It is due to be released in Q1 of 2019.

This is a significant clock speed increase over the existing AMD EPYC 7351, which has a base clock speed of 2.4 GHz, with a max boost speed of 2.9 GHz. This is especially relevant for SQL Server usage, where licensing is based on core counts, not clock speeds or actual performance. A base clock speed increase of 29.2% is going to be quite noticeable on a heavily utilized SQL Server instance.

I hope that this SKU is offered in mainstream vendor systems like the Dell PowerEdge R7415 and R7425.

Anandtech has some [more details here](#).

#TBT

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

In this TBT I want to point you at a 30-part blog post series that the team did a few years ago that covers a lot of introductory topics, aimed at accidental/involuntary DBAs. Rather than listing all 30 posts, [here](#) is a link to the main page for the series. The series covers these main areas:

- Setup and configuration
- Backups
- Implementing maintenance and security
- Troubleshooting performance
- High availability
- General troubleshooting

Although the series was aimed at accidental DBAs, these posts are all worth reading to make sure your basic understanding of topics is current and complete.

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

- Glenn: [CPU Upgrade to AMD Ryzen Threadripper 2950X](#)
- Glenn: [AMD EPYC 7371 Processor in Q1 2019](#)
- Glenn: [IEPUM2017: Immersion Event on Planning and Implementing an Upgrade/Migration to SQL Server 2017](#)
- Glenn: [Building a Modern AMD Desktop Development Workstation](#)
- Tim: [Azure SQL Managed Instance – Business Critical Tier](#)
- Erin: [Query Store Performance Overhead: What you need to know](#)
- Paul: [Six new 2019 Q1 live online classes open for registration!](#)
- Paul: [New live online training class in March: Columnstore Indexes](#)

I hope you find these useful and interesting!

Video Demo

In this Insider video, Tim shows you a new preview tool for your Azure SQL Databases called Vulnerability Assessment. Security is a big concern when customers start looking to lift and optimize their SQL Server workloads to Azure. Vulnerability Assessment helps to detect and mitigate vulnerabilities and risk with your Azure SQL Databases. This tool can be found as part of Advanced Threat Protection under Security for each database. There is also an option for your Azure VMs that leverages Qualys or Rapid7. The message is clear from Microsoft: they are taking security very seriously.

The video is about 5.5 minutes long and you can get it in WMV format [here](#).

Enjoy!

Upcoming SQLskills Events

The last event we have coming up in 2018 is our own SQLintersection conference in Las Vegas during the first week in December – see [here](#) for details – we hope you can join us!

Our first set of 2019 live, in-person events has been announced for Chicago in April/May and we've also just added our full 2019 Q1 lineup of live, online classes.

Each and every event has a different focus as well as different benefits – from deep-technical training in our Immersion Events to wide-ranging topics at SQLintersection where you can learn more effectively how to keep moving forward in both your environment and your career! And, of course, one benefit you'll always get from in-person events is networking; we hope to meet/see you at an event 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](#)

LIVE, ONLINE Immersion Events:

- **IEQS:** Immersion Event on Solving Common Performance Problems with Query Store
 - January 15-17
- **IEPUM2017:** Immersion Event on Planning and Implementing an Upgrade/Migration to SQL Server 2017
 - January 29-31
- **IEQUERY:** Immersion Event on Fixing Slow Queries, Inefficient Code, and Caching/Statistics Problems
 - February 12-14
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 - February 26-28
- **IEVLT:** Immersion Event on Very Large Tables: Optimizing Performance and Availability through Partitioning
 - March 12-14
- **IECS:** Immersion Event on Columnstore Indexes
 - March 26-28 **** NEW ****

LIVE, IN-PERSON Immersion Events:

Chicago, IL, April/May 2019

- **IEPTO1:** Immersion Event on Performance Tuning and Optimization – Part 1
 - April 29-May 3
- **IECAG:** Immersion Event on Clustering and Availability Groups
 - April 29-30
- **IEPowerBI** – details coming soon!
 - April 29-30
- **IE0:** Immersion Event for the Junior/Accidental DBA
 - May 1-3
- **IEUpgrade:** Immersion Event on Upgrading SQL Server
 - May 1-3
- **IEPTO2:** Immersion Event on Performance Tuning and Optimization – Part 2
 - May 6-10
- **IEPML:** Immersion Event on Practical Machine Learning
 - May 6-10

- **IEAzure:** Immersion Event on Azure SQL Database, Azure VMs, and Azure Managed Instance
 - May 6-9

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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