(December 4th, 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,

As the evenings start to draw in for winter, we're hunkering down and continuing to work on new content, with 4-6 new Pluralsight courses coming towards the end of the year!

If you've got end-of-year budget to use up, check out our Immersion Event line-up for 2018 as well as our discount health checks…

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

SQLskills News

My latest Pluralsight course has been published! It's called *SQL Server: Understanding and Performing Backups*. Check out the details here.

We're coming back to Europe in 2018! We're bringing four of our Immersion Events to London next September: IEPTO1 and IEPTO2, plus our new classes: **IEAzure** (on Azure and Azure VMs) and **IECAG** (on clustering and availability groups). See here for details.

Also for our European friends, Erin will be presenting a pre-con workshop at SQLBits in the UK in March – see here for details.

The first batch of 2018 US classes are open for registration! We have all our usual classes, including PowerShell, Azure, Availability Groups, BI strategy, BI security, and more. See here for the 2018 Immersion Event class schedule.

Note: Class prices are going up a bit in 2018 so register in 2017 for 2017 prices/discounts!

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, I've put out a call for 2018 remote user group sessions. In 2017, we did more than 100 of these around the world and we have set up more than 30 for 2018 already! 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 William Gibson's *The Peripheral*. I love all of William Gibson's work, and this didn't disappoint. Clever story about two groups of people living 70-years apart and able to communicate in real time. Nanotech, mayhem, and dystopia. Don't read this as your first Gibson novel though; start with something like *Neuromancer* or *Mona Lisa Overdrive*. Recommended!

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.

Tim was working with a new client last week who was running on a hosted virtual server. The server was provisioned by the hosting company with 8 sockets and 2 logical processors per socket, for a total of 16 vCPUs. The client had noticed that SQL Server wasn't using all the processors and wondered why not.

The answer was that they were running SQL Server 2014 Standard Edition, so SQL Server would only utilize 8 of their vCPUs. This discovery was very annoying for the client, as the hosting company's mis-configuration meant that they'd been paying for licenses for all 16 of the vCPUs, even though SQL Server would only use 8 of them.

Tim will be moving them to an Azure VM using 8 vCPUs, and they'll use their other 8 licenses for another server, saving money overall compared to the current environment, and allowing them to use another SQL Server instance in the bargain.

Bottom line: Make sure that you're only paying for the appropriate number of SQL Server licenses, and that your environment is configured correctly for the SQL Server edition being used – you could end up saving a *lot* of money!

Paul's Ponderings

It's not unusual for a company to encounter isolated data corruption. That's a situation that occurs very frequently around the world and usually doesn't lead to a company going out of business.

Something that doesn't happen very often is an entire data center being destroyed through fire, flood, earthquake, or even a terrorist act. But it does happen.

What if it happened to you?

Many companies I've discussed this with (who only have a single data center) do not have a business continuity plan if the data center is destroyed or completely knocked out of action (i.e. unusable for many days or weeks). Most often this is because such an occurrence is deemed to be so improbable that it's not considered as a possible problem in the DR handbook/plan/run-book.

I think that's highly irresponsible though – to the company, its clients, its employees, and its investors. Complete loss of the only available data center can very quickly lead to the company going out of business when clients switch to other service providers if service is not restored very quickly (i.e. within days, or possibly just hours).

This means you've got no more than a few days to:

- Find another data center with the capacity you need
- Rent or buy new servers and storage
- Provision network connectivity
- Possibly bare-metal install Windows and SQL Server, plus whatever else is required for your applications
- Install your application infrastructure
- Restore all your data
- Test everything works
- Get your clients connected to the new servers

That's a lot to do in a very short space of time. Are your technical people capable of bare-metal installs from scratch to clients running in less than a couple of days? Does the company have enough ready-cash/credit to buy/rent new servers and storage? Do you have installation media available? Do your backups work?

Now consider doing all of that in the face of a major natural or human-caused disaster where some of your staff are not available, or the cell-phone network is down, or there's no power nearby. What if none of the executives with budget-authorization powers are available? That hugely magnifies the complexity of recovering successfully.

Call to action: consider just how much of a disaster you think your company would be able to cope with. If there isn't a contingency plan that deals with data center loss, now is the time to do something about it, before it costs your company its business, and costs you your job.

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 Initial Test Build of Windows Server 1803

Microsoft has released the first test build of Windows Server 1803, which is the next release in the "semi-annual channel" for Windows Server that is scheduled to be released in March of 2018.

The semi-annual channel is where the latest improvements in Windows Server (such as support for new hardware and storage features) will show up first. That sounds great, but the issue I see for SQL Server usage is that this channel is only available on Server Core, and it is only supported for 18 months after the initial date of release.

This model may work fine in smaller, more agile organizations that are comfortable with a rapid release and upgrade cycle, but many organizations that use SQL Server may have problems keeping up.

More details about this build and the semi-annual channel are available here:

- Announcing Windows Server Insider Preview Build 17035
- Windows Server Semi-Annual Channel overview

Intel Optane DIMMs Coming in 2H of 2018

At the USB Global Technology Conference, Intel announced that Intel Optane DIMMs (Intel Persistent Memory based on 3D XPoint) will be available during the second half of 2018. This will be another type of memory that has higher density than conventional DRAM and is also persistent (unlike conventional DRAM), and is also less expensive (per GB) than conventional DRAM. They will also function as a memory mapped storage device, so that applications can access them without going through storage device drivers.

The Cascade Lake refresh of the current Intel Xeon Scalable Processor Family will be required to get this functionality, along with operating system support.

Important SQL Server Updates

Microsoft has backported a number of useful improvements from SQL Server 2016 back to both SQL Server 2012 and SQL Server 2014, as long as you are on a new enough build of either of these older products.

First is the use of Dirty Page Manager (DPM) in conjunction with enabling indirect checkpoints for your user databases in SQL Server 2012 and SQL Server 2014. If you enable global TF 3449 (and you are on SQL Server 2012 SP3 CU3 or later or SQL Server 2014 SP1 CU7 or later), you will get much better performance by avoiding a FlushCache call in a number of different common scenarios, such as backup database, backup transaction log, create database, add a file to a database, restore a transaction log, recover a database, shrink a database file, and a SQL Server "graceful" shutdown. You can read about this in more detail in this blog post: SQL Server: large RAM and DB Checkpointing.

Next, if you are on SQL Server 2012 SP4 or SQL Server 2014 SP2 (or later), you will get a number of performance enhancements, such as automatic Soft NUMA partitioning and dynamic

memory object scaling. You will also get a number of useful manageability improvements in both releases. You can read about this in more detail in these blog posts:

- [SQL Server 2012 Service Pack 4 (SP4) Released!](#)
- [SQL Server 2014 Service Pack 2 is now Available !!!](#)

#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.

The theme for the TBT this time is backups:

- My Pluralsight course: *[SQL Server: Understanding and Performing Backups](#)*
- My TechNet Magazine article from 2009: *[Understanding SQL Server Backups](#)*
- My SQL Server Magazine article from 2011: *[Advanced Backup and Restore Options](#)*
- My TechNet Magazine article from 2009: *[Recovering from Disasters Using Backups](#)*
- [Backup blog posts](#) from our accidental DBA series
- Blog post: *[New script: How much of the database has changed since the last full backup?](#)*
- Blog post: *[Importance of having the right backups](#)*
- Blog post: *[Importance of validating backups](#)*
- My blog post category on *[Backup/Restore](#)*

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

- Paul: *[Disaster recovery 101: Object ID 0, index ID -1, partition ID 0](#)*
- Paul: *[Disaster recovery 101: fixing a broken system table page](#)*
- Erin: *[Query Store Settings](#)*
- Glenn: *[SQL Server Diagnostic Information Queries for December 201](#)7*
- Glenn: *[Performance and Stability Fixes in SQL Server 2017 CU Builds](#)*
- Glenn: *[SQL Server 2017 CU2 Is Available](#)*
- Glenn: *[Recent TPC-E Results on SQL Server 2017](#)*

I hope you find these useful and interesting!

Video Demo

In this demo video, Jon shows how certain events in Extended Events can have a severe performance impact on production workloads, and how to identify what event sessions are running and the events they contain. For further information on the events to avoid in production

workloads to minimize performance overhead from data collection see Jon's article: https://sqlperformance.com/2013/03/sql-plan/showplan-impact.

The video is 4.5 minutes long and you can get it:
- In WMV format here
- In MOV format here

The demo code is here.

Enjoy!

Upcoming Immersion Events

We've released our Immersion Event schedule in the U.S. and London through September 2018 and our classes are open for registration. And, we've just added some new ones on security and data due diligence/BI. Over the coming weeks we'll add one more class to the Spring line-up in Chicago, on data mining and AI.

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, April/May 2018 **(all classes have discounts for 2017 registrations!)**

- **IEPTO1**: Immersion Event on Performance Tuning and Optimization – Part 1
  - April 23-27
- **IE0**: Immersion Event for the Junior/Accidental DBA
  - April 23-25
- **IEUpgrade**: Immersion Event on Upgrading SQL Server
  - April 23-25
- **IECAG**: Immersion Event on Clustering and Availability Groups
  - April 26-27
- **IEAzure**: Immersion Event on Azure SQL Database and Azure VMs
  - April 26-27
- **IEPTO2**: Immersion Event on Performance Tuning and Optimization – Part 2
  - April 30-May 4
- **IEBIStrat**: Immersion Event on Developing a BI and Analytics Strategy **(** ** NEW **)**
  - April 30-May 2

- **IEBISec**: Immersion Event on Securing Your BI Platform **(** NEW **)**
  - May 3-4
- **IEPS**: Immersion Event on PowerShell for SQL Server DBAs
  - April 30-May 2
- **IESSIS1**: Immersion Event on Learning SQL Server Integration Services
  - May 7-11

Bellevue, WA, June 2018 **(all classes have discounts for 2017 registrations!)**

- **IEPTO1**: Immersion Event on Performance Tuning and Optimization – Part 1
  - June 18-22

London, UK, September 2018 **(all classes have discounts for 2017 registrations!)**

- **IEPTO1**: Immersion Event on Performance Tuning and Optimization – Part 1
  - September 10-14
- **IEAzure**: Immersion Event on Azure SQL Database and Azure VMs
  - September 10-11
- **IECAG**: Immersion Event on Clustering and Availability Groups
  - September 12-13
- **IEPTO2**: Immersion Event on Performance Tuning and Optimization – Part 2
  - September 17-21

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

<u>Summary</u>

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