(November 21st, 2016)

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,

This newsletter is coming to you from our house in Redmond, WA where we're prepping for Thanksgiving and cranking through some Pluralsight work. We've got a busy few months between classes and are looking forward to some time away from events! **Our 2017 class lineup**: nine classes in three weeks, including a **brand new, 3-day course on PowerShell** has been posted; we hope to see you there! All courses have a discount (US$120 for 3-day courses; US$200 for 5-day courses) for registrations and payments received before January 1st, 2017. Check out all the dates and details on our class schedule page. (*Reminder / FYI: Don't forget that we're retiring IEHADR in 2017 and we do NOT plan to replace it with another class.*)

Our Fall SQLintersection show went spectacularly well with our SQLafterDark evening event (drinks / trivia / networking) one of the best yet; it was an absolute blast. We also hope you'll join us next May in Orlando, FL for our Spring SQLintersection; check out www.SQLintersection.com for more details!

And even if you can't join us in person, I've put out our annual call to user groups to get remote sessions scheduled for 2017. This year we'll end up having done 94 user groups and PASS Virtual Chapter presentations across the team, up from 86 in 2015, which I think is a tremendous achievement. If you'd like one of us to present for your user group, check out my blog post here.

The latest book I've (re)read is Irvine Welsh's infamous *Trainspotting*. This is one of my all-time favorite movies and Kimberly bought me a leather-bound, signed edition of the book for my birthday in July, so I decided to read it again. It jumps straight in to the lives of a handful of degenerate heroin addicts living in Edinburgh (see the prequel book *Skagboys* for the back-story). It's a fantastic book, but not for the faint-hearted at all – it's written in colloquial Scots, littered with four-letter words, and will likely be hard going for most people reading it. However, if you can stomach it, it's well worth reading for insight into the Edinburgh drug culture of the 1980s and 1990s.

Happy Thanksgiving to all our readers in the U.S. (or U.S. citizens living abroad)!

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

<u>The Curious Case of…</u>

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 was having problems initializing a log shipping secondary database. It was a large database with a lot of churn, so they were using a differential backup to bring the secondary database forward in time before beginning the log shipping process, but the differential restore was consistently failing with this error:

```
Msg 3136, Level 16, State 1, Line 75
This differential backup cannot be restored because the database
has not been restored to the correct earlier state.
Msg 3013, Level 16, State 1, Line 75
RESTORE DATABASE is terminating abnormally.
```

After some investigation, it turned out that they'd used the *COPY_ONLY* option on the full backup they performed to initialize the secondary, as they mistakenly thought that this would stop the full backup interrupting the log backup chain of their regular log backups (full backups don't affect the log backup chain at all).

When used with a full backup, the *COPY_ONLY* option means that the full backup process does not zero out the differential bitmaps in the data files, and it cannot be used as the basis for any restore sequence involving a differential backup.

If you perform the following sequence of operations:

- Normal full backup
- Copy-only full backup
- Differential backup

And then do a *RESTORE HEADERONLY* on all three backups, you'll notice that the *BackupSetGUID* values for the two full backups are different, and that the *DifferentialBaseGUID* for the differential backup matches the *BackupSetGUID* for the first full backup.

Bottom line: if you're going to use *COPY_ONLY* for any backup operation, make sure you understand the ramifications of doing so.

Paul's Ponderings

The obvious topic for the newsletter this time is the quite-stunning announcement from the SQL Server team that a large number of Enterprise-only features are now available in all Editions (where possible) starting with SQL Server 2016 SP1. For me, some of the most exciting examples are:

- Data compression
- Partitioning
- In-Memory OLTP
- Change Data Capture

(You can read the full list of changes in the SQL Server Release Services blog post [here](#).)

The changes were made to create a 'consistent programmability surface area' for anyone developing code for SQL Server, which considerably simplifies life for ISVs as now they can write a single set of code, without complex conditional logic. It also allows code to run on Standard Edition, and then easily move up to Enterprise Edition when the workload demands the added scale and performance that Enterprise Edition provides.

Which brings me to a great point: most of the scale and performance enhancements in Enterprise Edition remain Enterprise-only, e.g. Resource Governor and merry-go-round scans (also known as advanced scans). All the various memory and CPU limits, plus anything to do with high-availability features, remain the same as before too. **This was a programmability enhancement, not a performance enhancement.**

However, with the features they did move to all Editions, moving to SQL Server 2016 faster is now a really good strategy for many companies. We're already seeing this happening, as since the announcement came out last week, we have several long-term clients accelerating their plans to move to SQL Server 2016 and asking us for assistance in the next few months.

Just having data compression available in Standard Edition means that many more companies will benefit from I/O subsystem cost savings, and partitioning will allow for more targeted disaster recovery, more efficient index maintenance, and easier data management/movement (the 'sliding window' scenario).

Overall I think this is a fantastic thing – a game changer even – for the SQL Server community and should drive much faster adoption of SQL Server 2016 than happened for SQL Server 2012 and 2014.

What's your current migration strategy? If you didn't have one, you do now – skip all versions and plan to backup/restore *directly* to SQL Server 2016 (with obvious testing first). Now there's just *no reason* to consider any other versions.

Call to action:

If you haven't thought of moving to SQL Server 2016 because you didn't want to pay for Enterprise Edition licenses to get access to some of these features, this change should make you rethink that – it's time to plan your migration strategy to SQL Server 2016!

Video Demo

In this video, Glenn shows how useful the new Geekbench 4 tool is for comparing processor and memory performance across different systems and between physical hosts and VMs.

The video is 2.5 minutes long and you can get it:

- In WMV format here.
- In MOV format here.

No demo code this time.

Enjoy!

SQLskills Offerings

We've just announced the first half of our 2017 class lineup, with discounts available on all classes for registrations/payments received before January 1st, 2017.

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, April/May 2017

- **IE0**: Immersion Event for Junior/Accidental DBAs
    - April 24-26 **US$120 discount for registering in 2016!!**
- **IEPTO1**: Immersion Event on Performance Tuning and Optimization – Part 1
    - April 24-28 **US$200 discount for registering in 2016!!**
- **IESSIS1**: Immersion Event on Learning SQL Server Integration Services
    - April 24-28 **US$200 discount for registering in 2016!!**
- **IEBI**: Immersion Event on Business Intelligence
    - May 1-5 **US$200 discount for registering in 2016!!**
- **IEPTO2**: Immersion Event on Performance Tuning and Optimization – Part 2
    - May 1-5 **US$200 discount for registering in 2016!!**
- **IESSIS2**: Immersion Event on Advanced SQL Server Integration Services
    - May 1-5 **US$200 discount for registering in 2016!!**
- **IEPS**: Immersion Event on Powershell
    - May 8-10 **New class, US$120 discount for registering in 2016!!**

- **IEPDS**: Immersion Event on Practical Data Science
  - May 8-12 **US$120 discount for registering in 2016!!**
- **IEHADR**: Immersion Event on High Availability and Disaster Recovery
  - May 8-12 **US$200 discount for registering in 2016!!**

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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