

(March 13th, 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,

Our 150th newsletter! In this newsletter you'll notice I've added a new section after the demo video called #TBT (Turn Back Time) – highlighting older resources we've referred to recently that you may find interesting as well as select blog posts we've published since the previous newsletter.

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

SQLskills News

We've started a new initiative where we're all blogging about introductory topics, to help the burgeoning numbers of non-DBAs or junior DBAs who are responsible for SQL Server instances. We're calling it SQL101, and hopefully it'll even help refresh or reinforce topics for the more seasoned DBAs in the community. The blog posts will be automatically collected [here](#).

We're looking forward to seeing a bunch of you this year in our classes in Chicago in April/May and Bellevue in July/August. Note that IEPTO1 and IE0 in April are already sold out, IESSIS1 has one seat remaining, and all other classes are 2/3 full. **Also, please note that our May delivery of IEHADR will be the last.** Despite the importance of having a solid disaster recovery plan, many don't plan at all and very few put the resources behind having a strategy. As a result, we've decided to convert this content into online training instead of in-person training. But, we're still looking at areas where there is more interest; we're particularly pleased to have a brand new [three-day class on using PowerShell](#) to administer SQL Server, taught by industry-expert, MCM, and MVP, Ben Miller. See [here](#) for the complete 2017 class schedule.

Our Spring SQLIntersection conference is also fast approaching at the end of May, and we have a phenomenal line up of workshops, sessions, and speakers (including Brent Ozar, Buck Woody, and Bob Ward!). Check out [this blog post](#) for all the details, and use the discount code 'sqlskills' when you register to save \$50.

Even though we're not teaching any Immersion Events in Europe this year, Kimberly and I will both be [presenting at SQLSaturday #620 in Dublin in June](#).

And even if you can't join us in person, we're still taking requests for remote sessions for this year. We have 57 scheduled so far; 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 Sylvain Margaine's *Forbidden Places: Exploring our Abandoned Heritage*. This is the first in a series of three books by acclaimed photographer Sylvain Margaine that explores abandoned structures. This volume is mostly set in Europe and has some really interesting and creepy photos. I'm a big fan of photographic exploration of these kinds of places - highly recommended! (And also check out a similar book I read and reviewed here last year [Soviet Ghosts: The Soviet Union Abandoned: A Communist Empire in Decay](#).)

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.

Here's something that's cropped up in my email and on Twitter over the last two weeks: single-page restore failing with a message similar to the following:

```
Msg 3111, Level 16, State 1, Line 2
Page (1:9) is a control page which cannot be restored in isolation. To
repair this page, the entire file must be restored.
Msg 3013, Level 16, State 1, Line 2
RESTORE DATABASE is terminating abnormally.
```

The page ID in the message above is for the database boot page. This page is known as a control page, and the list of control pages includes:

- The database boot page
- File header pages (page 0 of every database file)
- Global allocation bitmaps (all GAM, SGAM, and PFS pages)

Control pages can't be:

- Single-page restored
- Fixed by the automatic page repair facility of database mirroring or an availability group
- Repaired by *DBCC CHECKDB* (with the exception of GAM and SGAM pages)

So you're looking at a restore of at least a single data file, plus transaction log backups too. For the boot page, you can also try [this hack method](#) of replacing it.

Some people asked why PFS pages can't be repaired by *DBCC CHECKDB* so I wrote a [blog post](#) last week explaining why not – you might find it interesting reading.

Bottom line: You can't rely on HA technologies or *DBCC CHECKDB* to be able to recover from corruptions in all cases, so you must have backups that you can use to restore a portion of the database from. Don't get caught out!

Paul's Ponderings

I've had some discussions over the past few weeks about why it's necessary to run consistency checks regularly (for instance, I recommend a full *DBCC CHECKDB* every week if possible). The problem is the complete unpredictability of corruptions and the fact that as soon as you've examined a page for corruption and moved on, it could immediately become corrupt.

Here's a story. Imagine the Redmond Police Department has a Traffic Control Center and employs Officer Paul. Paul's job is to sit in the control room looking at video images of traffic junctions in the city, waiting for a traffic accident to occur and immediately notifying dispatch that help is required at whatever junction.

It's obviously a really boring job, so it's not uncommon to find Officer Paul staring slack-mouthed at his screen with drool starting to slowly puddle on his desk...

Anyway, imagine that today Officer Paul looks at the image for junction #1 for ten seconds. Nothing happens. He presses the button to watch junction #2 for ten seconds. Nothing happens. He presses the button to watch junction #3. As soon as he starts looking at junction #3, there's an accident at junction #2. He won't know until he cycles through all the junctions and arrives back at #2 again.

There's no way for Officer Paul to get any guarantee that an accident won't happen at a junction he's just looked at, once he stops looking.

This is an analogy of how *DBCC CHECKDB* examines the pages in a database. Each page is read from disk once by *DBCC CHECKDB*, and as soon as the page has been read from disk, it could become corrupt on disk, and you won't know until the next time *DBCC CHECKDB* runs. The only thing *DBCC CHECKDB* can tell you is that at the time it read all the pages in the database, there were no corruptions. It doesn't provide a guarantee that at the time it finishes, there are no corruptions in the database, as it can't possibly know that.

Another variant of this is thinking that if a backup completes, it will restore perfectly.

No.

The I/O subsystem is what I call an 'equal-opportunity corruptor' :-). If it has problems, it will happily corrupt anything stored on it.

You need to have multiple copies of backups and you need to test a full restore sequence regularly. We recommend is to have the database option *PAGE_VERIFY CHECKSUM* turned on and then when you perform a backup, you should always use the *WITH CHECKSUM* option. Finally, run a *RESTORE VERIFYONLY ... WITH CHECKSUM* to make sure the backups you are taking are valid.

Call to action: You will all see corruption at some point in your careers, so expect it and prepare for it. You need to run regular consistency checks and you need to regularly test your backups are valid. There are no guarantees around corruption, only increased peace of mind.

Video Demo

In this video, Glenn demonstrates how to use the assessment functionality of the new Microsoft Data Migration Assistant 3.0 tool. This tool can be used to check for breaking changes, behavior changes, and deprecated features in an existing on-premises SQL Server 2005 through SQL Server 2016 database that you are planning on upgrading to a newer version of SQL Server (or to Azure SQL Database). It can also be used to suggest performance, security, and storage improvements that you may be able to take advantage of when you upgrade to the newer version of SQL Server. The URL for this tool is: <http://bit.ly/2c5QOHh>.

The video is about 5.5 minutes long and you can get it:

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

No demo code this time.

Enjoy!

#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.

It seems that there's been a surge in interest in speaking and blogging over the last few months, so here are some resources to help you communicate with the world more effectively:

- My Pluralsight course on [Communications: How to Talk, Write, Present, and Get Ahead!](#) that has 2.5 hours covering skills for communicating, running and attending meetings, all forms of writing from emails to articles, and how to write and deliver presentations
- And a bunch of blog posts:
 - [Public Speaking: A Primer](#)

- [Ignorance is not stupidity](#)
- [It depends. It really, really does.](#)
- [RTFM. No seriously, R.T.F.M. Then ask your question.](#)
- [Learning to listen](#)
- [How to ask questions politely and correctly](#)
- [How to answer questions politely and correctly](#)

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

- Erin: [SQLskills SQL101: The SQL Server ERRORLOG](#)
- Kimberly: [Work-Life-Balance and Alternative-Obsessions](#)
- Jonathan: [Exception calling "InitializeAsReader" in PowerShell Reading Trace Files](#)
- Glenn: [SQLskills SQL101: SQL Server Maintenance](#)
- Tim: [SQLskills SQL101: Azure SQL Database Pricing Models](#)
- Paul: [SQLskills SQL101: Dealing with SQL Server corruption](#)

I hope you find these useful and interesting!

Upcoming Immersion Events

The classes for both Spring and Summer 2017 are available for registration!

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](#)

Chicago, IL, April/May 2017

- **IE0:** Immersion Event for Junior/Accidental DBAs
 - April 24-26 ****SOLD OUT****
- **IEPTO1:** Immersion Event on Performance Tuning and Optimization – Part 1
 - April 24-28 ****SOLD OUT****
- **IESSIS1:** Immersion Event on Learning SQL Server Integration Services
 - April 24-28 **** 1 seat remaining ****
- **IEBI:** Immersion Event on Business Intelligence
 - May 1-5
- **IEPTO2:** Immersion Event on Performance Tuning and Optimization – Part 2
 - May 1-5
- **IEPS:** Immersion Event on Powershell

- May 8-10 ****NEW** class**
- **IEPDS:** Immersion Event on Practical Data Science
 - May 8-12
- **IEHADR:** Immersion Event on High Availability and Disaster Recovery
 - May 8-12

Bellevue, WA, July/August 2017

- **IEPTO1:** Immersion Event on Performance Tuning and Optimization – Part 1
 - July 31-August 4
- **IEPTO2:** Immersion Event on Performance Tuning and Optimization – Part 2
 - August 7-11

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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