(February 1st, 2016)

If you know someone who you think 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 somewhere high over Indonesia as we're starting our journey home to Redmond after a fantastic few weeks of diving in the Lembeh Strait and around many remote islands in the Raja Ampat area – the most bio-diverse ocean region on the planet.

Jonathan has a workshop on Extended Events coming up at the Cleveland SQL Saturday on February 5th – see here for details.

Our classes are filling up in Chicago (April/May), London (June), and Bellevue (September), including two brand new classes on SSIS, and we're running an expanded (to five days) IEPDS class on Practical Data Science. Schedule details are here and you can read more on the new SSIS classes here.

We've actually **added another Chicago IEPTO1 during the week of May 16th** as the one in April has sold out. We've also added an **IEPTO1 course in Dublin** in October – see here for details.

We've also just published our full Spring SQLintersection conference line-up and it's looking to be a phenomenal show – one of our best for sure! We have keynotes from Buck Woody and Bob Ward from Microsoft, and another on tools and productivity from SQL Sentry. And with 9 workshops over 4 pre-conference and post-conference days, deeper dives are possible. Best practices, troubleshooting, tips and tricks are our mainstay yet this show also adds a lot of new features for SQL Server 2014 and 2016. The show is in Orlando, FL over April 16-22, 2016; we hope to see you there! Be sure to use the discount code 'SQLskills' when registering to receive $50 off. See here for more details.

The latest book I've read is Edward Rutherford's huge *Sarum*. This huge novel covers the development of the English city of Salisbury from prehistoric times through to the late 1900s. It's cleverly done using a series of nineteen 50-100 page novellas spaced over time and each covering an important period in the city's history (for example, the building of Stonehenge, the building of the cathedral, the second World War). The book also follows the fortunes of five families throughout this history, so there's continuity through the narrative.

This is the first of Rutherford's books I've read, and I'm looking forward to reading his similar works on London, Paris, Dublin, Ireland, New York, Russia, and the New Forest (in England). Highly recommended for fans of historical fiction!

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

Paul's Ponderings

Last week I got a question over email that I thought would make a great discussion topic for the newsletter. It boiled down to this (paraphrasing):

I've set up database mirroring with the principal on a failover cluster, and I'm using a witness server. I've set the mirroring partner timeout to 90 seconds so the cluster failover doesn't cause a mirroring failover, but when I test a cluster failover, mirroring still fails over. Why?

And the questioner had read a post of mine from my old SQL Server Storage Engine blog on MSDN.

A bit of background first. When database mirroring is configured in high-availability mode (using a witness server), if the mirror decides that the principal in unavailable and the witness agrees, the mirror initiates a failover. Many people think that it's the witness that initiates the failover – it isn't – it's the mirror. The witness's sole job is to agree or disagree with the mirror on whether the principal is available.

What does it mean for the principal to appear 'available' to the mirror and witness?

Well, the principal SQL Server has to respond to the once-per-second ping from the mirror within a certain period of time (called the *mirroring partner timeout*, which defaults to ten seconds) otherwise an automatic failover may occur.

Now let's look at the scenario in the question. When combining mirroring with a failover cluster, you need to make sure that a local cluster failover doesn't inadvertently cause a mirroring failover. You do this by increasing the partner timeout to be more than the time it takes for the cluster failover to occur.

So why did the testing fail? Well, there's more to the ping mechanism.

The ping goes to a certain port on the Windows server, which SQL Server is listening to. If Windows has crashed, there's nothing to reply to the ping, and eventually the timeout will occur (or a cluster failover will complete and the ping will be acknowledged before the partner timeout expires).

If only SQL Server has crashed (or been shut down), then Windows is still there, and will reply to the ping saying that there's nothing listening on that port. That's an immediate mirroring failure, and will cause a mirroring failover (if configured).

In the scenario in the question, when the manual cluster failover occurs, that simply shuts down SQL Server and starts it on another node in the cluster. Meanwhile a mirroring ping comes in and Windows says that SQL Server isn't there, so a mirroring failover occurs.

With this scenario, if you want to test a cluster failover, you need to temporarily remove the witness from the mirroring configuration so that the mirror cannot initiate a failover while the cluster failover occurs. This may sound like a bug, but it's definitely not and is correct behavior.

Call to action: No real call to action this time, except to make sure that you do test a variety of failure scenarios when configuring any HA/DR solution with SQL Server. There may be seemingly weird behaviors that you didn't expect and it pays to understand them before an actual disaster occurs.

Video Demo

In this week's insider video, Jonathan demonstrates a memory leak in SQL Server 2014 that was recently fixed in Cumulative Update 4 for Service Pack 1, and explains how to diagnose unexpected changes in memory usage by SQL Server.

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

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

The demo code is available here.

Enjoy!

SQLskills Offerings

We've released all of our 2016 classes for registration, listed below. It's possible that we might add one or two classes in Chicago in November, but that will depend on the Fall conference schedule as well as demand.

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

- **IE0**: Immersion Event for Junior/Accidental DBAs
  - April 25-27
- **IEPTO1**: Immersion Event on Performance Tuning and Optimization – Part 1
  - April 25-29 **SOLD OUT!**
- **IEBI**: Immersion Event on Business Intelligence
  - April 25-29
- **IEPTO2**: Immersion Event on Performance Tuning and Optimization – Part 2
  - May 2-6
- ****NEW** IESSIS1**: Immersion Event on Learning SQL Server Integration Services
  - May 2-6
- **IEPDS**: Immersion Event on Practical Data Science
  - May 9-13
  - **NOTE: This is now five days in length.**
- **IEHADR**: Immersion Event on High Availability and Disaster Recovery
  - May 9-13
- **IEPTO1**: Immersion Event on Performance Tuning and Optimization – Part 1
  - April 25-29 **NEW!!**

London, UK

- **IEPTO1:** Immersion Event on Performance Tuning and Optimization – Part 1
  - June 13-17
- **IEPTO2:** Immersion Event on Performance Tuning and Optimization – Part 2
  - June 20-24

Bellevue, WA

- **IEPTO1:** Immersion Event on Performance Tuning and Optimization – Part 1
  - September 12-16
- **IEPTO2:** Immersion Event on Performance Tuning and Optimization – Part 2
  - September 19-23
- ****NEW** IESSIS2:** Immersion Event on Advanced SQL Server Integration Services
  - September 19-22

Dublin, Ireland

- **IEPTO1:** Immersion Event on Performance Tuning and Optimization – Part 1
  - October 3-7 **NEW!!**

See 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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