(April 1st, 2013)

SQLskills
immerse yourself in sql server

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 New York where we're on-site with a private client this week before heading off to Las Vegas next week for the brand new SQLintersection Conference – you've still got time to register!

Last week we very proudly took our new website live! And to celebrate, we're offering all new customers in April a full SQL Server health check for only $2500 – see here for details. We also published a new Pluralsight course – Joe's SQL Server: Query Plan Analysis – and we expect two more courses to go live this week. Busy, busy!

The most recent book I've read is Caroline Mytinger's *Headhunting in the Solomon Islands*. The book is a really entertaining travelogue about two women who travel alone to the Solomon Islands (a little east of Papua New Guinea) in the 1920s, relying on the generosity of the white plantation owners there for accommodation and protection. Their reason for doing this was to paint and sketch pictures of the native Melanesians, which they managed to do on a shoestring budget over the course of two years.

Please let us know if you liked what you read/saw here and/or have any suggestions for future Quick Tips.

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

Paul's Ponderings

(I was sorely tempted to do an April Fool's joke, but I resisted.)

One of the questions I was asked in email this week concerned taking measurements of I/O latency using the *sys.dm_io_virtual_file_stats* DMV and the *Avg. Disk sec/Read* and *Avg. Disk sec/Write* counters in the Physical Disk PerfMon object, and the potential for differences in their values.

It is very possible that you might see different results, either higher or lower, between the two mechanisms, depending on how you measure and interpret the results.

The DMV measures the cumulative read and write stall time (i.e. latency) for each file in each database since that database was brought online (usually since the SQL Server instance last restarted). You then divide those totals by the number of reads and writes to get average read and write I/O latency times (I wrote a blog post with example code here). These averages are over the entire period of time from when you queried the DMV back to then that database in question was brought online.

The Performance Monitor counters are a rolling average over a small period of time (these two great blog posts by the Windows CSS team explain in more detail: here and here) so you're getting what really amounts to an instantaneous view of the disk read and write latencies.

As you can now see, these two methods of measuring latency are quite different and I'll explain a few ways that different results can occur.

Firstly, the DMV is only measuring the latency of SQL Server database files, whereas the Performance Monitor is measuring all I/Os on that volume. In a shared-storage environment, this could mean that there are lots of other non-SQL Server files contributing to the I/O load on the volume. This could make the average low as far as Performance Monitor is concerned (measuring lots of I/Os across lots of files) but the average high from the DMV because it's measuring fewer I/Os across fewer files.

Secondly, for the same reasons, there could be poor performance for some time on the volume but no SQL Server I/Os were being done. The Performance Monitor counters would reflect the poor performance, but as the DMV is only measuring SQL Server I/Os, the DMV results are not affected by the period of poor performance.

Thirdly, remember that the DMV collects aggregate data, so if there is a period of poor performance with only SQL Server I/Os occurring, the DMV results will be affected by the poorly performing I/Os, even after the performance improves again. The Performance Monitor counters, however, will reflect high latencies during the period of poor performance and then low latencies when performance improves again.

Unfortunately there is no way to reset the DMV counters without momentarily setting the desired database offline.

Call to action: Whenever you're measuring the performance of some aspect of SQL Server using a DMV, PerfMon, or some other mechanism, you need to be very careful that you understand exactly what the metric you're using is measuring, and how it is calculated. A prime example of a metric that is widely misunderstood is *Page Life Expectancy*; especially on NUMA systems that are common today (I explain what it is here). Make sure that you're taking action (such as complaining to your SAN admin) based on correctly understanding and interpreting the metric value you're using.

I'm curious to hear your thoughts about I/O latency monitoring, so please feel free to drop me a line, treated confidentially of course.

Video Demo

From Paul:

This is a demo video I've pulled from my Pluralsight course on Logging and Recovery. It deals with the two methods for recreating a database's transaction log if you've detached the database and it was cleanly shut down (i.e. no crash recovery is necessary). The syntax to do this differs based on whether you had one or multiple log files before the database was detached, and in both cases the log file created for you only has two VLFs, each 256KB, which means you'll need to manually grow it up to your desired size to prevent log growth during regular operations. This is really useful to know if you ever have to attach a log-less database.

The video is about 4 minutes long and you can get it:

- In WMV format here
- In MOV format here

You can get a zip of the demo code here.

Enjoy!

SQLskills Offerings

All of our 2013 public classes are selling out fast! Based on requests from people, attendee ratings of the hotels we used last year, and the ease of using hotels we know, we're using the same locations again. This means we cover both sides of the US, central US, and Europe.

Please know that these classes are final as the hotel contracts are signed, and the classes will not be cancelled or moved for any reason, nor will the dates change. We are not planning any other locations for 2013 at this time.

- April 29-May 3, 2013: Internals and Performance (**IE1**) in Chicago, IL ***SOLD OUT!***
- April 29-May 3, 2013: Immersion Event for BI (**IEBI**) in Chicago, IL ***SOLD OUT!***
- May 6-10, 2013: Performance Tuning (**IE2**) in Chicago, IL – USA ***2 SEATS LEFT!***
- ***NEW*** May 6-10, 2013: Immersion Event for BI (**IEBI**) in Chicago, IL ***5 SEATS LEFT!***
- May 13-17, 2013: High Availability/Disaster Recovery (**IE3**), Chicago, IL ***SOLD OUT!***
- May 13-17, 2013: Immersion Event for Developers (**IEDev**) in Chicago, IL ***SOLD OUT!***
- ***NEW*** May 20-24, 2013: Internals and Performance (**IE1**), Chicago, IL ***4 SEATS LEFT!***
- May 20-24, 2013: Development Support (**IE4**) in Chicago, IL ***SOLD OUT!***
- June 3-7, 2013: Internals and Performance (**IE1**) in London – UK
- June 10-14, 2013: Performance Tuning (**IE2**) in London – UK
- June 17-21, 2013: High Availability & Disaster Recovery (**IE3**) in London – UK
- September 16-20, 2013: Internals and Performance (**IE1**) in Bellevue, WA – USA
- September 23-27, 2013: Performance Tuning (**IE2**) in Bellevue, WA – USA

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

So, that's it for now. We hope to see you soon!

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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