(September 4th, 2011)

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 bi-weekly Quick Tips is coming to you from somewhere in the San Juan Islands, WA where we're cruising around for the last week of summer with the kids – catching fish, sunning ourselves and generally chilling out after our four-week summer SQL camp and before hitting the road again in a week's time. We've got a lot of travel planned between now and Christmas, with 5 weeks of on-site engagements and two public Immersion Events around the country.

You'll notice a new look to the newsletters this time – I've moved from publishing the newsletters myself using Database Mail to using Mail Chimp – a commercial service that is registered with spam filters so you don't miss from over-zealous mail servers eating the newsletter.

The most recent book I've read is David Benioff's ***City of Thieves***. It is set during the siege of Leningrad in WWII and concerns two young men who are forced to go out into the German-held hinterland to find some eggs for a colonel's daughter's wedding. Encounters with Germans, partisans, and others ensure. Very well written and a great twist at the end – strongly recommended.

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

Paul's Ponderings

First off I want to draw your attention to a new article of mine that's just been published in SQL Server Magazine titled *Using Repair for Disaster Recovery*. You don't have to be a magazine subscriber to read it here.

Now to this newsletter's topic: I'd like to talk about index fillfactors.

Over the last few months I've seen some clients with horribly mis-configured "default fillfactors" (set using sp_configure). These settings are due to major misconceptions of how fillfactor works and when it should be used.

The fillfactor of an index specifies how much free space to leave on each leaf-level page when the index is built or rebuilt. For instance, a fillfactor of 70 means leave 30% free space. Fillfactors of 0 and 100 both mean leave zero free space (just to be confusing!). The fillfactor is not considered during regular insert/update/delete operations—only during index build and rebuild.

Setting a fillfactor is a good way to prevent page splits which cause fragmentation and lead to excessive transaction log generation, wasted disk space, wasted I/Os, wasted buffer pool memory and poor range scan performance. Page splits, in their turn, can be caused by random inserts (into ordered structures – meaning any/all index structures) or by rows becoming larger (usually from modifications to variable-width columns).

We usually advise monitoring fragmentation to see which indexes could benefit from having a non-100 fillfactor, and then setting it judiciously per index. However, you can also set the default fillfactor for the *entire instance*, which means that all index builds and rebuilds will use the instance default if no other fillfactor is explicitly specified. We always recommend NOT setting the instance default to anything except 100 on production instances.

Why?

Well, consider your big clustered indexes. Best practice states that a clustered index key should ideally be narrow, static, unique, and ever-increasing. If you have this, it's likely that your clustered indexes will not get fragmented and so will have *no benefit* from a fillfactor being set for them—in fact it will be detrimental, as their leaf-level pages will have wasted space that is unlikely to ever be used!!

This means you'll be wasting resources for no gain whatsoever. In production, leave that default setting alone! Unless of course you know that all your indexes have fragmentation problems, in which case it would be acceptable to set the instance fillfactor… there are always exceptions to generalizations. ☺

Call to action: check your instance default fillfactor – it should be set to 100%. If not, you could be wasting a large amount of disk space (and I/O and buffer pool memory) for indexes that don't get fragmented.

I'm really interested to know what you find when you check your fillfactors—feel free to drop me a line, confidentially as always.

Video Demo

This week we're on vacation so I'm not recording a new demo video. Instead I want to point you at a bunch of corruption recovery demos I recorded for Microsoft in December 2010 for the MCM online training. The video is about 50 minutes long and you can download it in a variety of formats here. Enjoy! Normal service will be resumed next time. ☺

SQLskills Offerings

We've enhanced our server audits with the ability to analyze your failover clusters and virtualization configurations. As an Insider and a new client we'll give you the first 6 hours of a server audit for $1300, which is a 33% discount over regular rates. You'll be amazed at the problems we can find in such a short time using our SQLDiag-based audit mechanism instead of signing you up for a multi-day investigative consulting engagement as others try to do.

Let me know if you're interested. You won't find better ROI for your consulting budget.

We've opened up registrations for ***FOUR*** new Immersion Events this year – Performance Tuning (IE2) plus a *new* Developer Immersion in Chicago, October 24-28, and Internals and Performance (IE1) plus a *new* BI Immersion in Atlanta, December 5-9. **If you're planning to attend our IE2 offering in Chicago in October – there are only 3 seats left.**

See here for all the details.

Summary

I hope you've enjoyed this issue - I 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