Home
Tags
Articles
Editorials
Stairways
Forums
Scripts
Videos
Blogs
QotD
Books
Ask SSC
SQL Jobs
Authors
About us
Contact us
Newsletters
Write for us

Keep up to date - daily newsletter:

your@email.com

Sign up

Write For Us
Find out more

redgate | Hub
Insights
Learning
Forums
Ideas
Discover the new Redgate Hub

SQL Server 2012 and later offer a very different type of index from the traditional b-tree, the in-memory columnstore index. These indexes use a column-based storage model, as well as a new 'batch mode' of query execution and can offer huge performance increases for certain workloads. But how are they built, how do they work, and why do they manage to have such a dramatic impact on performance? In this stairway, Hugo Kornelis explains all, with his usual mix of concise description and detailed demonstration.

Stairway to Columnstore Indexes Level 1: A First Look At Columnstore Indexes

This level introduces of you to the fundamentals of columnstore indexes, introdused in SQL Server 2012 to manage the indexing of very large tables. Read more...

By Hugo Kornelis 2016/05/30 (first published: 2015/02/25) | Source: SQLServerCentral.com | Category: stairway series

Rating: | Discuss | Briefcase | 13,804 reads

Stairway to Columnstore Indexes Level 2: Columnstore Storage

To fully appreciate just how different columnstore indexes are, and why work so well in reporting and online analytical processing (OLAP) workloads, but not for online transaction processing (OLTP), we must first look at the traditional “rowstore” indexes. Read more...

By Hugo Kornelis 2017/04/21 (first published: 2015/04/29) | Source: SQLServerCentral.com | Category: stairway series

Rating: | Discuss | Briefcase | 7,265 reads

Stairway to Columnstore Indexes Level 3: Building The Columnstore

The performance increase columnstore indexes grant when reading data from the index is offset by the expensive process required to build the index. In this Stairway level, Hugo Kornelis walks you through the steps SQL Server takes when building (or rebuilding) a columnstore index. Read more...

By Hugo Kornelis 2018/02/28 (first published: 2015/06/10) | Source: SQLServerCentral.com | Category: stairway series

Rating: | Discuss | Briefcase | 5,107 reads

Stairway to Columnstore Indexes Level 4: Catalog Views

In this level, we will first take a look at how to recognize columnstore indexes in some of the generic catalog views. After that we will investigate the new catalog views that have been added just for columnstore indexes. Read more...

By Hugo Kornelis 2015/08/05 | Source: SQLServerCentral.com | Category: stairway series

Rating: | Discuss | Briefcase | 3,313 reads

Stairway to Columnstore Indexes Level 5: Adding New Data To Columnstore Indexes

Earlier levels have shown how Columnstore Indexes work effectively with static data. In most tables however, data is hardly ever static. We are constantly inserting new rows, and updating or deleting existing rows. If you think about what this means for a columnstore index, you will realize that this comes with some unique challenges. Read more...

By Hugo Kornelis 2015/11/04 | Source: SQLServerCentral.com | Category: stairway series

Rating: | Discuss | Briefcase | 3,256 reads

Tags

columnstore index
stairway series

Stairway to Columnstore Indexes Level 6: Updating and Deleting Data in a Columnstore Index

This level looks in detail at what happens when we update or delete data from a clustered columnstore index, the impact it has on concurrent data access, and how without careful maintenance the efficiency of columnstore indexes can degrade over time. Read more...

By Hugo Kornelis 2016/01/20 | Source: SQLServerCentral.com | Category: stairway series
Rating: | Discuss | Briefcase | 2,906 reads

Stairway to ColumnStore Indexes Level 7: Optimizing Nonclustered Columnstore Indexes

In this level, we will focus on optimization techniques to apply while building the nonclustered columnstore index, which is available in all versions of SQL Server from 2012 up. Read more...

By Hugo Kornelis 2016/03/16 | Source: SQLServerCentral.com | Category: stairway series
Rating: | Discuss | Briefcase | 2,087 reads

Stairway to ColumnStore Indexes Level 8: Optimizing Clustered Columnstore Indexes

Read more...

By Hugo Kornelis 2016/03/16 | Source: SQLServerCentral.com | Category: clustered index
Rating: | Discuss | Briefcase | 499 reads

Stairway to Columnstore Indexes Level 9: Batch Mode Execution

In this level, Hugo explains what batch mode execution is, how it differs from row mode execution, and what its limitations are. Read more...

By Hugo Kornelis 2016/08/31 | Source: SQLServerCentral.com | Category: stairway series
Rating: | Discuss | Briefcase | 1,230 reads

Stairway to Columnstore Indexes Level 10: Optimizing Queries For Batch Mode (Part 1)

In this level, Hugo Kornelis looks at how to rewrite your queries to best take advantage of batch mode. Read more...

By Hugo Kornelis 2016/11/23 | Source: SQLServerCentral.com | Category: stairway series
Rating: | Discuss | Briefcase | 1,311 reads

Stairway to Columnstore Indexes Level 11: Optimizing Queries For Batch Mode (Part 2)

Hugo Kornelis continues his exploration of the types of queries that can end up running in row mode when accessing columnstore indexes. He demonstrates how careful rewriting can often yield a logically equivalent query that runs in batch mode instead, and therefore gains the best possible performance benefit. Read more...

By Hugo Kornelis 2017/01/04 | Source: SQLServerCentral.com | Category: stairway series
Rating: | Discuss | Briefcase | 833 reads

Stairway to Columnstore Indexes Level 12: Clustered or Nonclustered?

The previous levels of this stairway describe details, features, and limitations of columnstore indexes in SQL Server. But they do not answer what should be the first question for every database professional: should columnstore indexes be used in my databases; on what tables should they be used; and should they be clustered or nonclustered columnstore indexes? Read more...

By Hugo Kornelis 2017/05/24 | Source: SQLServerCentral.com | Category: stairway series
Rating: | Discuss | Briefcase | 958 reads

Stairway to Columnstore Indexes Level 13: Improvements in SQL Server 2016

This stairway series was started in 2015. As such, the focus was on SQL Server 2012 and SQL Server 2014 only. When SQL Server 2016 was released, with lots of improvements in the columnstore technology, I decided to finish the planned levels with the original focus on SQL Server 2012 and 2014, and add one extra level with a brief overview of the improvements available in SQL Server 2016. Read more...

By Hugo Kornelis 2017/06/07 | Source: SQLServerCentral.com | Category: stairway series
Rating: | Discuss | Briefcase | 1,231 reads

Sign up to our RSS feed and get notified as soon as we publish a new level in the Stairway!

Copyright © 2002-2018 Redgate. All Rights Reserved. Privacy Policy. Terms of Use. Report Abuse.