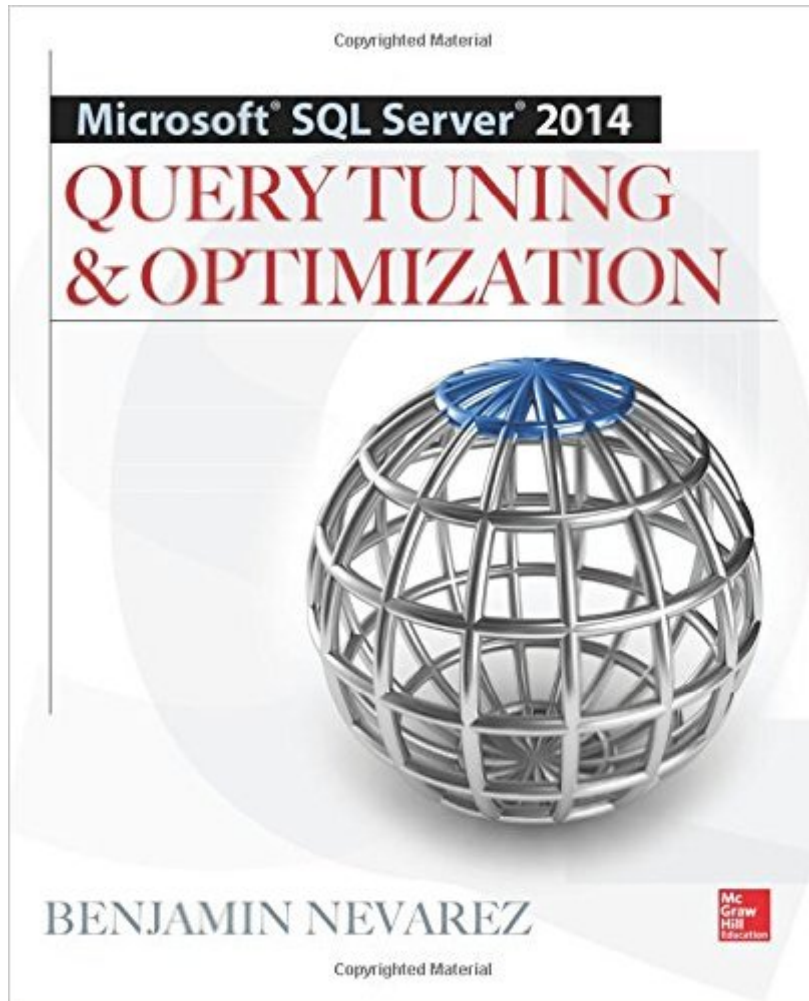


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# Microsoft SQL Server 2014 Query Tuning & Optimization



## Synopsis

Optimize Microsoft SQL Server 2014 queries and applications Microsoft SQL Server 2014 Query Tuning & Optimization is filled with ready-to-use techniques for creating high-performance queries and applications. The book describes the inner workings of the query processor so you can write better queries and provide the query processor with the quality information it needs to produce efficient execution plans. Youâ™™ll also get tips for troubleshooting underperforming queries. In-Memory OLTP (Hekaton), a key new feature of SQL Server 2014, is fully covered in this practical guide. Understand how the query optimizer works Troubleshoot queries using extended events, SQL trace, dynamic management views (DMVs), the data collector, and other tools Work with query operators for data access, joins, aggregations, parallelism, and updates Speed up queries and dramatically improve application performance by creating the right indexes Understand statistics and how to detect and fix cardinality estimation errors Maximize OLTP query performance using In-Memory OLTP (Hekaton) features, including memory-optimized tables and natively compiled stored procedures Monitor and promote plan caching and reuse to improve application performance Improve the performance of data warehouse queries using columnstore indexes Handle query processor limitations with hints and other methods

## Book Information

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## Customer Reviews

Benjamin presents a thorough explanation of the entire query optimization process, and a lot of the background you'll need to make sense of it all. He treats indexes, statistics and plan caching, as

well as how to deal with common issues such as parameter sniffing. He explains popular options like Optimize for Ad Hoc Workloads and Forced Parameterization, and how they change the way plans are cached and reused. He also discusses many undocumented features and trace flags that can help you better understand (or coerce) SQL Server's approach to your query, and how to use Trace, Extended Events and DBCC commands to review the decisions the optimizer had made and the impact they've had. There is also a good portion of content dedicated to many new SQL Server 2014 features, including In-Memory OLTP ("Hekaton"), clustered columnstore indexes, incremental statistics, and the new cardinality estimator. The book ends with a complex but informative chapter on query optimizer limitations that lead to sub-optimal plans, and how to use hints and plan guides to work around them. There are a couple of omissions, like issues with auto-update of stats for filtered indexes, and the new DMV sys.dm\_exec\_query\_profiles. But otherwise, this has quickly become a convenient reference for me; the dog-ears are already replacing several of my bookmarks to blog posts that happen to mention some obscure detail or trace flag, and in many cases Benjamin has described it in more detail and/or framed it with better context. I think anyone familiar with T-SQL could use this book to help them get up to speed pretty quickly, even having zero knowledge of the optimizer before diving in. I posted a more thorough review here: <http://sqlperformance.com/2014/10/sql-performance/review-query-tuning-optimization>

Benjamin is a great author with significant SQL Server experience and this new book further solidifies his place in the community. Query processing and its inner workings are extremely dense technical concepts that Benjamin is able to present to the reader in a very approachable readable manner. The book elegantly walks you through the major components of the query processor and dives deep where need. The code examples in the book are concise and accurately reinforce the key points the author is trying to convey in the text. The book excels at connecting very complicated query processing topics together for the reader in a simple and approachable manner. It covers the many new features of SQL 2014, including In-Memory OLTP, incremental statistics, the new cardinality estimator and the new features added to columnstore indexes. There are few shortcomings with this book, I would have preferred citations throughout the book. Key concepts are introduced without citation and I would like to jump into some topics, specifically into the materials the author used when writing. The book does have an exceptional reference section, but there is no connection back to the text. This book is now a permanent fixture in my library of SQL Server references that I will likely need to replace when I wear it out. I have more details on my blog at: <http://www.centinosystems.com/blog/sql/book-review-query-tuning-optimization/>

Besides occasionally checking the execution plan in MS Query Analyzer, I never gave much thought to how MS SQL optimized queries. It was a black box and I felt I didn't need to know what happened in there. After running into some issues at work with long-running queries, I began to earnestly seek more information. Mr. Nevarez's book is a one-stop shopping ultimate resource on all things I have been learning in the past year. There is valuable information for both the novice and the expert, both the developer and administrator. The language used does not talk down to the uninitiated nor does it bore the professional. The text encompasses three types of samples for all three types of learners: graphs and photos, hands-on drills and written descriptions. The chapters do not need to be read in sequence making it easy to research a specific topic without reading the entire book. My absolute favorite part was the documentation of the Microsoft "undocumented" flags, options and parameters for use when investigating slow queries. This book is the newest tool in my toolbox and it should be in your toolbox too!

In my opinion this is the best book on performance since Ken England's Microsoft SQL Server 2000 Performance Optimization and Tuning Handbook which was published in 2001. Benjamin Nevarez is clear and comprehensive. Chapter 6 on Statistics is very detailed and covers the new cardinality estimator of SQL 2014. Perhaps the best indicator of a book is how applicable the book is to our immediate work, and here the book came just in time to help me solve a problem. There was a discrepancy between the estimated and actual number of rows and I had just read that sometimes it is necessary to do an update statistics with FULLSCAN, which I did and a new recommended index popped up in green. The breaking down complex queries section and the reference to Steve Howard's paper "When to Break Down Complex Queries" resolved the problem. I have little doubt that Query Tuning & Optimization will become indispensable.

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