Achieving SQL Server Performance Goals
Hardware upgrade vs. In-memory Hot-Data Caching

The challenge

Every company, no matter what size, runs applications critical to its business. Yet many critical business applications do not respond as fast as they should. More than 70% of businesses report degradation of application and database performance after 18 months of production use. Growth of data and growth of usage load, combined with planned and unplanned load peaks, reduce the company's ability to deliver good service. In short, application performance IS business performance.

Today's application/database performance challenges are complicated, as the performance issues can reside in multiple areas, and solutions involve both known and hidden costs. This document outlines some SQL Server performance problems, potential causes and possible solutions.

Hardware causes and possible hardware/application upgrade options

Storage I/O bottlenecks – Benchmarks show that on average 65% database working time is spent in Waits due to different I/O related events. High performance Flash storage can provide a solution to solve I/O bottlenecks. However, Flash storage can be an expensive option. Besides the obvious high costs, hidden costs are involved, for example planning and execution of upgrades.

CPU and Memory bottlenecks – Better, bigger and newer servers help improve performance. However, in most cases new servers do not resolve performance problems. Analyses show that in many cases different companies with different needs and different database servers sizes and hardware specs report similar performance problems with similar load metrics. More memory allows you to potentially store more raw tables' data in RAM, but the results are still computed, and joins, locks and executions are still being made. The cost of hardware is not always high ($5-$20K per server, Flash storage can cost more), tempting you to buy bigger servers. However, there are however high hidden costs:

- SQL Server licenses upgrade ($25-$100K and up)
- Professional services with planning and execution of the upgrade process procedure.

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Application specific issues – Many applications, especially commercial off-the-shelf apps, send very large amounts of relatively small and fast queries to application pages. Some, even small, queries can cause database Locks, resulting in performance problems in other areas. These problems are hard to find and hard to address, driving companies to bring in high-level IT, database, networking and/or specific application consultants to identify a problem's roots, analyze impacts, suggest, plan and then execute a solution. Some of those solutions can involve time consuming coding or application version upgrades that can disrupt the business and introduce new testing and even user-acceptance issues.

Smart software: Ultralow latency with In-memory Hot Data Caching

Embedding smart result caching is a key industry solution for achieving high performance, scalability and responsiveness. Caching solutions like Memcached are widely accepted today by the developers around the world to build high performance applications. The key reasons for result caching effectiveness are:

1. storage of results in RAM allows reusing them in the fastest way
2. eliminating the different bottlenecks the application
3. reduction of database I/O and CPU Waits and Locks, Waits, etc

Top companies from different industries embed caching technologies: Facebook, Google, Linkedin, NYSE, Nasdaq, and CITI, for example.

However effective deployment of custom planned, embedded and coded caching is a big challenge that takes time for engineering teams to deliver. Furthermore embedding custom caching is impossible to do for commercial off-shelf applications.

SafePeak bridges these two challenges by delivering the benefits of In-memory Caching with ZERO coding, automated learning and adaptation to customer's application-database traffic. SafePeak learns automatically and dynamically the database schema, the application SQL queries and stored procedure calls. It then maps queries to SQL patterns, understanding the patterns' dependent objects (tables, views) and finally uses the patterns to automatically cache queries results in ultra-fast memory storage (100% RAM) while maintaining 100% data integrity. Write commands are understood in real-time, evicting the relevant effected items from cache memory and sent forward to the SQL Server.

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SafePeak is optimized for private and public clouds. In the cloud, disk I/O is often a shared resource, and your application's performance can be subject to the whim of other applications accessing I/O. SafePeak allows you to sidestep I/O bottlenecks by elevating your hot-data into memory.

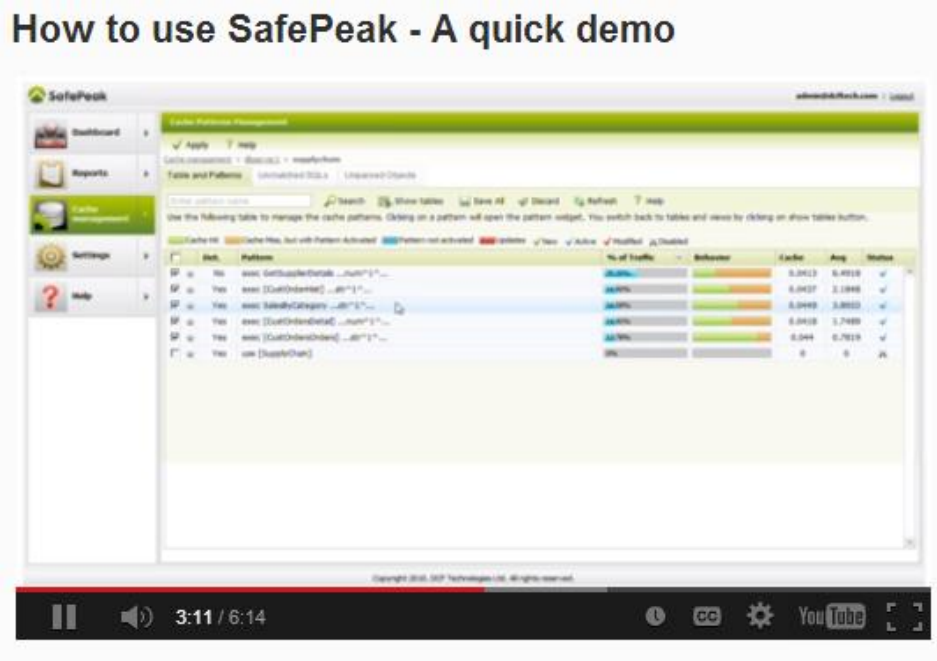
The SafePeak effect: application response time decreases, database transactions per second (TPS) increase while database workload reduces (due to caching and faster execution), latency drops. Guaranteeing ultralow latency for query completion, SafePeak ensures the application remains responsive even in the face of high traffic or high concurrent usage.

Simply put, keeping your existing infrastructure the same, SafePeak software allows your systems to handle more data, more users and more transactions.

Would you like to know more?

Find out more about SafePeak, please visit www.safepeak.com or email: info@safepeak.com.

- A free trial is available: www.safepeak.com/download
- View an online demo: www.safepeak.com/Product/Safepeak-Demo



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