FedCentric Technologies Memory Centric DataBase (MCDB) Accelerator Solution Frequently Asked Questions

Overview:

The FedCentric Memory Centric DataBase (MCDB) Accelerator is a database acceleration solution that can provide up to 3 orders of magnitude increase in DB performance through use of Memory Centric Architectures and In-Memory Database techniques.

Why Is MCDB So Exciting?

The MCDB Accelerator has the potential to provide from 1 to 3 orders of magnitude (10-1000x) increase in application performance.

The MCDB solution uses system level memory versus cluster techniques and disks to accelerate database performance. Using a new class of SGI servers (Intel x-86 and Linux, either RHEL or SLES Based) that can deliver up to 16TB of RAM, FedCentric has resolved database performance problems delivering real time results thousands of times faster in production environments. In one case, fraud that often took weeks to discover is now caught 100% of the time in seconds providing actionable information.

Does MCDB Acceleration replace Traditional Disk-based RDBMS?

There will always be a place for disk-based RDBMS, but a broad class of RDBMS applications will benefit from the performance advantages of MCDB acceleration. MCDB is an ACID Compliant enabling technology that can introduce orders of magnitude performance increases to the existing system, while maintaining complete compatibility. MCDB provides ODBC, JDBC, and PL/SQL interfaces as well as cache connection to the existing database minimizing rewrites of existing “standards compliant” application code.

How Do You Speed Up an RDBMS application using MCDB Acceleration?

All operations and all data structures are in ultrafast system memory. All data structures have a permanent memory address requiring fewer instructions to get data and indexes from memory. Taking slower disks out of the equation equals zero I/O wait states.

When does MCDB become a compelling technology?

High Throughput Applications-where disk based systems cannot provide enough bandwidth and throughput due to slowest component issues.

Lengthy Query Times – caused by spinning disk latency issues and / or code path bottlenecks.

Data Center Constraints – many data centers are running out of floor space, power and cooling capacity. MCDB helps by providing orders of magnitude performance without adding significantly more disk. When viewed in this light, MCDB provides a very "Green" environmental approach.

Applications that Require Real Time and Actionable Business Results – Using MCDB, FedCentric has reduced operations that took hours to perform and produced results in seconds.

When should you Proceed with an MCDB Solution?

You have optimized all aspects of your traditional system and still cannot achieve application performance requirements and results.

You have tried to build a home-grown, in-memory solution; including, Java hash tables, graph query languages and/or object oriented databases.

You are considering RAM disk technology to accelerate performance.

Typical Questions that FedCentric Would Like to Discuss with You.

1. What database(s) do you currently use?
2. What application would you most like to accelerate?
3. If we could offer you a 1 to 3 orders of magnitude increase (10-1000x) in performance, which applications would you accelerate?
4. Have you tried to improve performance with certain applications? Which applications? How well did this turn out?
5. Do you have any concerns about running new applications on your existing system? How might the new applications impact your current system?
6. Is your data center or facility experiencing shortages of space, power and cooling capacity?
7. Have you tried to write your own codes to alleviate a performance problem, i.e. Java Hash Tables, Graphs, Object Databases?
8. What would you do with an order of magnitude increase in database performance?
9. Is your current system written using "standards compliant" SQL? Do you use or need Label Security, PL/SQL, Stored Procedures, Triggers, Text, Oracle Spatial or user defined objects in your application?

Other MCDB FAQs

Is MCDB like a RAM disk? No. All data is in memory and the MCDB database engine is optimized for in-memory data management. Traditional RDBMS in a RAM disk still traverse the software stack associated with storage like making memory copies, record locking, and caching data. MCDB eliminates the code path associated with storage and the performance hit associated with its operation.

What is the level of effort required to implement an MCDB into your current environment? It depends on the existing application and database. Assuming the application is written to open standards (JDBC ODBC), rewiring the application to run against the MCDB is relatively straight forward. FedCentric can investigate your requirements and provide you with a detailed analysis.

What kinds of speed-ups can I expect using the MCDB? It very much depends on the existing application logic but speed-ups from 10 to 775,000 times have been observed during Proofs of Concept demonstrations.

Is MCDB a diskless solution? No, but, MCDB uses disks for integrity, not performance. Disks on the MCDB solution are used for database check point and restart which has no performance impact on the database operations. From an administration point of view, an MCDB solution operates like any large Linux server.

Debunking MCDB Myths

MCDB is volatile and I can easily lose my database information: MCDB is check-pointed to disk and its persistence is configurable from durable to buffered commits. You can configure the MCDB for a range of price / performance tradeoffs. In addition, you can add the MCDB High Availability option which provides redundancy between two or more systems.

MCDB technology is expensive: RAM is more expensive than disk, but when you use disks for performance and not capacity, you may require 100's to 1000's of disks to optimize striping performance. There are applications where MCDB is less expensive than disk-based systems, and others where MCDB is more expensive. In addition, there are hidden costs with disk-based systems including floor space, power consumption and cooling.

One other aspect to keep in mind: Regardless of the money spent on a disk-based RDBMS system, it may not be able to adequately perform against requirements. There is a class of application that exceeds the performance capability of disk-based systems.

Summary

There is a class of problem that exceeds the performance capabilities of traditional disk-based RDBMS systems. Business success will increasingly demand in-memory performance and throughput to meet business processing requirements, while operating within power and space constraints.

FedCentric Technologies looks forward to working with you to determine if MCDB is the right approach for your application requirements.

"What would you do with an order of magnitude increase in database performance?

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