



Quasardb and Mellanox Deliver Ultra-High Performance Database to FSI Customers



Market Data History

In an ideal world, customers want to be able to store everything that happens on the market, and store that data for as long as possible. Doing this enables them to back test their model, revisit their assumptions, and be better prepared for the future.

The best of the best companies try to achieve an exhaustive storage of market data at the lowest possible time resolution, but even for them, it's a real technical challenge.

There are a lot of technologies available to help you achieve these goals, but most of them fail in one of the following areas:

- The technology is inefficient and requires a lot of servers to reach the desired performance level.
- The technology is not transactional or consistent, requiring workarounds.
- The technology provides limited analytics or interfaces poorly with the customer's analytics technology.
- The technology is extremely costly to deploy and maintain, either in terms of time or money.

To solve the problem today, companies that want to store everything that happens on the market often need to stack several technologies, for example:

- One database technology that can handle the workload and store everything
- One technology that takes the data from the first database and organizes it in ways that make querying possible
- A third technology that runs as much as several hours to find new opportunities and potential regression in the models

Clearly, this is a clumsy, less-than-ideal solution, and a more streamlined option is necessary.

Solution

Quasardb is a distributed, transactional database that delivers both speed and reliability. It stores data on disk and cache access optimally in memory thanks to very advanced statistical paging mechanisms.

Because it is consistent and transactional, when the database says your content is updated, it is always updated. No workaround required.

Its close-to-the-metal native C++ 14 implementation delivers first class performance with less hardware.

Quasardb offers transparent scale-out capabilities for when companies reach the limits of their setup, ensuring that their business will never be limited by their infrastructure.

Developers and administrators can become familiar with Quasardb in a matter of days, as it is both easy to program and easy to deploy.

Quasardb is analytics-agnostic, meaning it will effortlessly interface with in-house analytics or off-the-shelf in-memory technologies such as Apache Spark or ActiveViam ActivePivot. It can even be used from applications such as Microsoft Excel thanks to its open-source APIs.

Moreover, when pairing Quasardb with an industry leading network adapter, such as Mellanox ConnectX®-4 Lx, the performance improvement is even more significant. The ConnectX-4 Lx EN Network Controller offers Ethernet connectivity at 1/10/25/40/50Gb/s and delivers best-in-class performance to demanding markets and applications such as the financial services industry. Providing true hardware-based I/O isolation with unmatched scalability and efficiency, ConnectX-4 Lx achieves the most cost-effective and flexible solution data analytics, database, and storage platforms.

ConnectX-4 Lx EN provides an unmatched combination of high bandwidth, sub-microsecond

latency, and a 75 million packets-per-second message rate. It includes native hardware support for RDMA over Converged Ethernet, Ethernet stateless offload engines, Overlay Networks, and GPUDirect® technology.

Mellanox’s Messaging Accelerator (VMA), which is used by Quasardb, boosts performance even further for message-based and streaming applications such as those found in financial services data environments. The result is a reduction in latency by as much as 300% and an increase in application throughput by as much as 200% per server as compared to applications running on standard Ethernet or InfiniBand interconnect networks.

Performance

How fast can Quasardb store and provide access to a company’s data? When combined with Mellanox ConnectX-4 and VMA, Quasardb is a 100Gb/s-grade technology that can deliver nearly one million requests per second per node.

In recent benchmark tests, Quasardb showed a 2X improvement in requests per second when coupling with ConnectX-4, from 150,000 to 300,000, and an incredible 5X improvement when using VMA, increasing from 150,000 to 830,000.

Conclusion

Most technology solutions that address the storage of market data today are less-than-optimal, whether because they are expensive, inefficient, or incompatible with existing analytics technologies. The workarounds that are generally in use tend to require multiple technologies and can waste several hours in runtime to achieve the required storage and accessibility.

Quasardb offers an efficient, reliable solution that meets today’s demanding speed requirements. When combined with Mellanox adapters and accelerator software, Quasardb provides an even greater performance boost in accessing data from the cluster and updating that data, providing a key competitive advantage in today’s marketplace.

For more information about Quasardb distributed database solutions, see <http://www.quasardb.net>.

The complete portfolio of Mellanox Ethernet products is available at http://www.mellanox.com/page/products_overview.

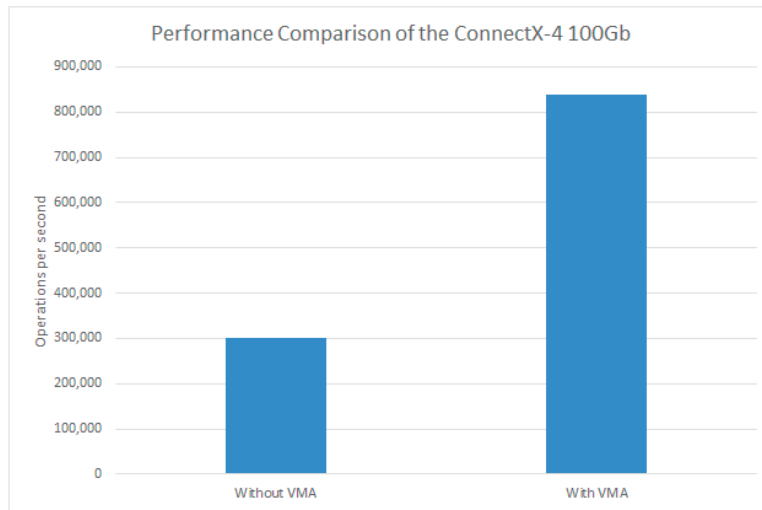


Figure 1. Stateful Flow Table (SFT)



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