



"It's a game changer"

– Stanley Wu

Creating Business Intelligence in a Flash.

Consider DataQuick, a leading nationwide real estate, lending, and financial services information processing company based in California. Deploying Violin flash Memory Arrays demolishes I/O limitations, reduces database processing times, and allows the nation's number one real estate data processing company to consolidate their data center by 600%.

The Customer

For more than 30 years DataQuick has supplied real estate information solutions to thousands of commercial users. From the early days of microfiche to today's high-speed Internet, DataQuick has offered the most current and advanced real estate marketing, research, valuation, and analytics products on the market. Their business focuses on supplying a comprehensive selection of property, lending, and financial data products and services to help real estate, title, banking, and investment professionals make key business decisions, market more effectively, analyze opportunities, minimize risk, and estimate the value of virtually any home in the United States. Their products and services result from processing millions of individual records weekly. They furnish many of their data products and services through state-of-the-industry Cloud delivery models.

At the heart of DataQuick's business lies a series of SQL Server 2000/2005/2008 databases composed of aggregated, standardized, and normalized public real estate information from across every region of the United States. DataQuick uses these multiple SQL Server databases to create data mining, analytics, and reporting products and services based on a massive data warehouse and various individual data marts. These products include bulk information that also incorporates periodic updates requiring sophisticated database management techniques and tools provided by DataQuick. Another set of products involves massive search capabilities that customers can access via a subscription model. These are attractive to smaller businesses such as collection agencies, construction contractors, and others with an interest in property ownership information.

The Challenge

The DataQuick IT Department faced several challenges. One was how to improve data warehouse performance in an input/output (I/O) limited environment. Ingesting significant amounts of information on a daily basis, supporting a growing number of data marts and the large data warehouse, plus processing the data and completing searches in near real time generated an enormous I/O load against the SQL Server databases. The VP of Operations, Stanley Wu, notes; "Our database has 280 million records of real estate transactional histories. Multiply that much data by the number of updates, analyses, and searches and you get a lot of I/O." He adds, "Plus, we also had to replicate our database solutions, which include multiple servers and databases, to serve multiple products."



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To support the I/O traffic, DataQuick had been adding servers, not because they needed the processing power but because they were trying to improve the performance of their data warehouse by adding memory and by replicating the data marts. This led the team into an endless and expensive cycle of server sprawl and redundant databases. When the server farm grew to 13, Mr. Wu called a halt to this approach to improving performance. Instead, he and his team began to look at alternatives on the storage side. They considered options such as deploying a higher performance and certainly much more expensive storage area network (SAN), or even simply outsourcing the entire data center. They evaluated several new Direct Attached Storage options in parallel with the existing EMC SAN. Then their evaluation efforts turned to solid state storage (SSS).

The Solution

Stanley Wu describes how his relationship with Violin Memory began: “We were looking at upgrading the data center; we had so many SQL Server databases and a traditional EMC SAN storing this very large and constantly growing data set. The capability of the servers appeared inadequate, so we’d add another database and then server, and before you know it you’re dealing with the same data, but it’s multiplying. We had to try something different, buy a faster SAN, switch to Fibre Channel, something. Then we found Violin.”

A trial using a Violin flash Memory Array was added to the evaluation mix. Mr. Wu recalls, “We knew of solid state storage, but we didn’t know if it would work for us. Violin lent us a demo unit, so we did some benchmarking and it really blew us away.” Mr. Wu continues, “We had some big jobs, Los Angeles County, for example, with four million records and updates. Normally we prepared for them on Friday evening and sometimes that job would run into Sunday. Then we deployed the Violin array and everything changed. The LA job ran in two hours. That was staggering.”

The results of these tests were so impressive that the company decided to deploy multiple Violin 3200 Series flash Memory Arrays with the intent of improving the I/O performance of the data center. Doing so would reduce the time needed to ingest the massive amounts of data and greatly accelerate the report generation that is the foundation of the company’s products and services.

Violin flash Memory Arrays like those deployed by DataQuick are all-silicon systems with the reliability, performance, and economics to be deployed as mission critical primary storage. Violin flash Memory Arrays are tightly integrated systems built from the chip to the chassis to intelligently aggregate flash memory. This “Rack-in-a-Box” approach results in a system that can be deployed with confidence as a strategic network resource in the data center. A single system fits in 3U of rack space and can deliver one million inputs/outputs per second with 4 GB/sec of bandwidth – enough performance to replace multiple racks of traditional disk arrays for both capital expenditure savings and operational cost savings. Multiple arrays can be clustered together to achieve petabytes of capacity and high aggregate bandwidth.

Substantially increasing application performance was important to DataQuick, but maintaining mission-critical enterprise reliability was also a priority. With recent highly publicized storage outages at government facilities and other private sites, Violin flash Memory Arrays with their patented switched-memory technology, hot-swappable modules, and flash vRAID became an easy choice to ensure both performance and availability.

Because of the confidence instilled by the flash array’s performance results and high availability features, DataQuick’s IT team made the bold decision to go ahead and change the system architecture solution they employed. As Mr. Wu notes, “We redesigned our production systems to use a mixture of flash storage and the SAN hard disk storage so that we can take advantage of the flash’s memory-like performance while keeping the SAN for larger storage capacity jobs with less demanding performance requirements.” He continues, “We picked out the databases that we wanted to migrate to flash and implemented them after successful testing. Our systems administration staff did a great job putting the overall design on paper for review before the actual implementation and it was a smooth transition. The only application failures we encountered were due to poor coding practice revealed because the Violin Memory Array was too fast!”

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The Results

For DataQuick, the results of deploying Violin flash Memory Arrays have been dramatic. The company has now re-deployed 11 servers back into their organization and uses their existing SAN for non-I/O intensive applications. Mr. Wu explains, “We thought, if this thing can handle that kind of throughput, why not put all the databases on it from our 13 servers? Consolidate to two sets, one for the search products, and one for in-coming data and bulk files. The other servers were repurposed to new application development. When you consolidate from that many servers down to two servers you save a lot of maintenance and support costs.”

Deploying Violin Memory products has actually changed how the company performs daily data ingest jobs as well. Previously, these jobs were run at night when many employees were home, but now that limitation is gone. Even more exciting are the savings on capital costs. SQL Server licensing is assessed on a per core basis; consolidating databases that previously ran across 13 (quad-core) servers into two resulted in a tremendous reduction in licensing expense.

Mr. Wu notes additional benefits of deploying Violin flash Memory Arrays; “Some of our data processing jobs are very time consuming. To process a data extract – 2,800 bytes multiplied by ten million records – took us six hours before; now it’s down to one and a half hours on the shared production system with the Violin flash Memory Arrays. On the data mart side, the performance improvements for some applications are unbelievable. One particular eight million record processing job went from eight hours to ten minutes!” One of the company’s clients requests a refresh of a national database once a week. Previously, the job was intentionally scheduled for weekends because it maximized the data center’s capacity for 12 hours. But after Violin flash Memory Arrays were deployed, the job was reduced from 12 hours to two hours and 12 minutes.

Most often, companies expect higher costs with solid state storage but hope to offset these higher costs by increasing their revenue generation capacity. The opposite was true in this case; the Violin flash deployment actually led to reduced costs. Mr. Wu explains, “We didn’t focus on revenue payback because the systems were capable of meeting our production demands. Instead, the savings came from the cost side; by consolidating servers we were able to re-deploy and defer buying any new ones indefinitely. That, and the reduction of database license fees and, power and cooling brought significant cost benefits.”

Because they are no longer I/O limited, DataQuick and the IT team can now focus on how to improve their entire business model. Mr. Wu states; “Deploying the Violin flash Memory Arrays has changed our operational workflow. They’ve actually solved a logistics problem for us. Before we had to carefully prepare for large jobs. Now we don’t even think about them. When they come in, they simply are processed.”

In the end, the relationship between DataQuick and Violin Memory has been about more than hardware. Stanley Wu sums it up; “We never did go to another solid state storage vendor. There are others, but nobody with the reputation and products of Violin. We jumped in with faith, and it worked out. It’s a game changer.”



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