



Healthcare at High Speed

Violin Flash Memory Array doubles the performance of massive decision support databases

Some IT investments reap benefits well beyond their immediate user communities. Consider the case of a leading nationwide healthcare managed business services provider.

The Customer

Doing good by helping healthcare providers do well is the business model and the mission of this leading provider of healthcare revenue cycle management services and current Violin Memory customer. Their business purpose is to help USA healthcare providers such as multi-hospital systems, academic medical centers, and physician practice groups more efficiently manage patient registration, insurance and benefit verification, medical treatment documentation, bill preparation, and other revenue cycle activities. They assume responsibility for the management and cost of their customers' revenue cycle operations, supplementing existing staff with state-of-the-industry technology, expertise, and resources.

The Challenge

Providing managed business services to the healthcare industry requires an information technology (IT) infrastructure capable of processing massive amounts of data reliably and quickly. This Violin customer's legacy storage architecture led to problems caused by lengthy data load times for their decision support databases. It was taking months to load and calculate historical data from large healthcare facilities. To meet deadlines for demanding clients, they needed a much faster method for loading and preparing their databases. Their initial solution to this mission critical challenge had been to connect an increasing number of high performance 15,000 RPM hard disk drives (HDD) directly to each database server. Eventually, their standard environment incorporated 45-60 of the expensive, high performance HDD per server to support the data loading input/output (I/O) throughput requirements. Further testing convinced the IT team of this healthcare managed services provider that even when multiple high performance disk arrays were directly attached to each server, the HDD arrays still caused a significant throughput bottleneck. That's when they turned to Violin Memory.

The Solution

The customer initially deployed a Violin 3200 Flash Memory Array directly attached to one of their database servers. Doing so would reduce the time needed for the database to ingest the massive amounts of healthcare business data and greatly accelerate the processing and decision support that make up the company's products and services. Violin Flash Memory Arrays dramatically reduce latency to under 100 microseconds, eliminating the multi-millisecond spikes seen in today's SSD and PCIe card solutions. A single Violin Array supports 10TB of Flash capacity in a 3U appliance. It consumes 80% less space and power than high performance HDD storage. In addition to significantly increasing density, Violin integrates hot swappable VIMMs to aggregate the Flash and Violin vRAID (patent-pending) to protect the data and double the usable capacity compared with enterprise SSD solutions, lowering the total cost of enterprise-grade Flash storage by more than 50%. Violin's Flash technology enables over 240,000 sustained random write inputs/outputs per second (IOPS), more than 20 times greater than Fiber Channel or PCIe based SSDs. Violin products with Single Level Cell (SLC) Flash enable wear leveling across the entire array and are guaranteed to sustain continuous writes over a projected 10 year life, double the industry standard. Unlike SSDs, all workloads are supported without wear being a concern to the end-user.

Substantially increasing application performance was important to this customer, but maintaining mission-critical enterprise reliability was a priority. With recent highly publicized storage outages at government facilities and other private sites, Violin's Flash Memory Array with its patent-pending switched-memory technology, hot swappable (fail in place) modules and Violin vRAID it became an easy choice to ensure both performance and availability.

The Results

The Violin Flash Memory Array provided the results the customer's IT team had hoped for, and more. "At first the Violin system was pushing approximately 375-380 MB/sec on both random reads and writes," noted the IT Team Lead. "For comparison, one of the high performance Dell MD1000 disk arrays we've been using gave us random write throughput of 100-110 MB/sec and random reads of 250-260 MB/sec. Our largest system, consisting of four of these disk arrays and a total of 60 drives, does 330-340 MB/sec on random writes and 850-860 MB/sec on random reads."

But the Violin array could perform much better. When the IT team upgraded the server host bus adapter card from 4GB to 8GB, the Flash array produced 700 MB/sec random read and write throughput. As the IT Team Lead observed; "Adding a Violin array doubled our data loading speed compared to those large disk arrays." And later, the Violin Flash Memory Array's performance increased even further, to an astonishing 1,050 MB/sec – one 3U appliance supplying equivalent throughput to nearly 100 high performance hard drives.

The customer's Director of IT Infrastructure stated; "Cutting database loads that previously required two months with high performance HDD storage down to one month with the Violin array, or two weeks down to one week, has had a significant impact in getting our clients' sites into operation faster."

Now this Violin Memory customer can help healthcare providers lower operating costs, increase revenue flows, and do a lot more good, all across the USA.



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