

RamSan Solutions

The World's Fastest Storage®

Client: Wiland Direct

"Our experience to date has been exceptional. Our analysis and experience indicates the TMS RanSan is superior to other products in both reliability and performance."



Wiland Direct is a cooperative database enterprise whose customers use direct mailing as part of their marketing and sales strategy. Wiland Direct partners with catalogers, publishers, and list professionals to create the most innovative models in the industry. They offer statistical analysis and modeling to help mailers find new customers, reactivate former customers, and optimize profits from current customers.

Wiland Direct and its predecessor firms have been innovators in direct marketing technology since 1971. Their technology teams employ artificial intelligence systems that process multi-billion piece mail streams annually for hundreds of clients. Wiland's next generation software incorporates industry-leading techniques into their modeling environment, such as Unique Data Mapping to find successful universes that others miss, Model Tuning to improve model stability and longevity, and functionality called Time Zero that allows their database to remember itself at all past points in time.

The Challenge: Process Huge Transaction Volumes

Member companies send Wiland Direct their transactional data which Wiland uses to build custom data marts. The transaction volumes are enormous, on the order of 10-15 million transactions processed daily. "We're in a very high performance environment," notes Eric Puening, Systems Administrator at Wiland Direct. Nine Sun 4600 servers power their data warehouse in a Solaris10 OS environment with MySQL databases under various internally developed applications. The main challenge facing Wiland engineers was how to address the bottleneck caused by processing and consolidating such huge volumes of transactions into the production data marts they provide for their customers.

More than a year earlier, Wiland Direct had come to the conclusion that solid state drives (SSD) offered the best solution to their input/output bottlenecks. They researched the SSD options available and chose a 146GB Single-Level Cell (SLC) NAND Flash product sold in a hard disk drive (HDD) form factor that they could deploy in one of the database servers. This solution worked reasonably well for a few months, but then the Flash SSD experienced data loss through a chip failure. Wiland alerted the manufacturer, but the problem was not addressed expeditiously. They were forced to devise and implement an interim solution that proved expensive and ultimately unsatisfactory. To provide the same level of data throughput that they had seen from the failed NAND Flash SSD solution, they purchased 60 15k Fibre Channel HDD spindles and deployed them in a RAID 10 configuration which offered performance benefits but much lower storage efficiency. In the meantime, the Wiland team continued to look for an appropriate SSD solution.

The Solution: Texas Memory Systems RamSan-500

During their SSD research process, Wiland Direct contacted Texas Memory Systems (TMS). Based on the high read ratio of the Wiland data warehousing applications, TMS support engineers recommended the RamSan-500. The model Wiland Direct ultimately deployed consists of a fusion of Random Access Memory (RAM) and NAND Flash storage. (cont. on back)



Quick Facts

- **Customer:**
Wiland Direct
www.WilandDirect.com
- **Industry:**
Database Enterprise
Co-op
- **Application:**
Data warehousing,
Data processing
- **Operating System:**
Solaris 10
- **Environment:**
9 Sun 4600s
- **Challenge:**
Process huge
transaction volumes
- **Solution:**
1-TB RamSan-500
- **Result:**
3x performance
improvement

The combination provides the extremely low response times of a 32GB RAM cache complemented by a full terabyte of very cost effective NAND Flash storage.

"The RamSan solution was chosen because it's the best performing and most reliable solution available," states Phil Tobias, Wiland Direct Chief Technical Officer. "The RamSan outperforms the competitor's product, outperforms traditional disk storage, and was more cost-effective than our interim traditional disk solution." Eric Puening and Database Administrator John Dzilvelis direct attached the RamSan-500 to one of the Sun database servers. It immediately decreased a routine database maintenance task from over six hours down to around two. "The combination of technologies seems to work very well within the RamSan," Puening observes. "Better than what we saw with the mostly straight Flash SSD product we deployed previously." The Systems Administrator and the DBA also noted that even though the 60 spindle HDD array in their interim solution contained significant RAM cache, it didn't lead to noticeable application performance gains. But they do see dramatic performance increases from the RamSan-500 cache.

"In fact, the RamSan works so well, it has moved our I/O bottlenecks from the storage back to the CPUs," Puening adds. Puening and Dzilvelis also discovered a benefit they weren't expecting from the RamSan-500. It accelerated their single-threaded applications as if they were multi-threaded. "With the previous solid state product we deployed, we couldn't get very good performance with our single-threaded applications," Puening notes. "We would have been forced into a costly rewrite of our applications to get the 15-20 threads needed to match the performance the RamSan-500 gives us with a single thread and absolutely no application rewrites."

Reliability turned out to be another benefit offered by the RamSan-500 that Wiland Direct didn't find with the previous SSD solution. Puening describes how they saw errors from the other solid state drive. "But with the RamSan-500, everything is redundant. It takes care of the bit errors internally."

The Result: Wiland Direct's batch processing runs nearly 3x faster with the RamSan-500

Deploying the RamSan-500 resulted in impressive performance gains. Puening sums up the RamSan-500; "On average, the TMS RamSan is 55% faster than the competitor's SSD product and 175% faster than the 60 spindle RAID 10 configuration for our core application. Some other jobs run five times faster on the RamSan than on a traditional RAID disk implementation. And with our current workload, we are not approaching the RamSan's maximum throughput. The current application utilizes multiple servers and not all of the database tables are on the RamSan, so while we've achieved dramatic throughput gains, the RamSan has simply eliminated a disk bottleneck on one database and exposed new CPU, network, and I/O bottlenecks." Phil Tobias adds, "Our experience to date has been exceptional. Our analysis and experience indicates the TMS RamSan is superior to other products in both reliability and performance."

Wiland Direct had a much more positive experience with support of solid state storage the second time around as well. Even a major hurricane at TMS headquarters in Houston, Texas, didn't prevent delivery and installation from moving forward as scheduled. "Based on our experiences with TMS engineers and the fact that Hurricane Ike did not affect our delivery schedule, we have no concerns about TMS support," states Tobias. He notes that Wiland Direct continues to look for ways to gain more value from their RamSan deployment. "We purchased excess capacity to allow for growth and continued evaluation of other applications on the RamSan."

Cost is another topic where Wiland Direct managers have gained valuable insight. "Sometimes performance significantly alters the cost equation," Tobias says. "In our case, the RamSan-500 was actually a better deal than the 60 spindle hard drive solution, both in initial purchase price and certainly in total cost of ownership."

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About Texas Memory Systems

Since 1978, Texas Memory Systems (TMS) has specialized in high bandwidth, low latency, I/O-intensive storage systems. While the primary feature of our products has always been high performance, our record of success, however, is as much a function of close customer relationships as it is a function of our technology. As we continue to grow, we will strive to maintain these close customer relationships and continue to provide outstanding customer support.

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