RamSan Solutions

The World's Fastest Storage®

Client: TradeMe

Trade Me Powers Commerce on New Zealand's Most Popular Website with RamSan Solid State Disks from Texas Memory Systems

Trade Me is New Zealand's largest online marketplace. It is the place "Where Kiwis Buy and Sell" anything from muffin tins to mansions online. Since it was first set up in 1999, Trade Me has grown to become the online auction business what the All Blacks team is to rugby in New Zealand. In March 2006, Trade Me was acquired by Fairfax Media Limited, in a deal valued at over NZ$700million. At any time, you can find in excess of 1.1 million auctions underway on Trade Me. Beyond the auctions, Trade Me acts as a de facto national bulletin board that helps connect friends, find flat mates, provide driving directions, and list job vacancies.

The popularity of Trade Me places incredible demands for performance and response time on the website infrastructure. With membership and transaction volumes continuing to rise, those demands are poised to continue.

The Challenge: Provide rapid response for users of NZ's largest website

Traffic on Trade Me is always brisk, and it is not unusual to have over 70,000 visitors online simultaneously at peak times. The continued growth and success of the web site depends on its ability to ensure that visitors can always access the information they need, list items for sale, and make auction bids quickly, securely, and without interruption. The IT team at Trade Me monitors their systems very closely to ensure that the infrastructure keeps pace with the site's popularity amongst users.

"We were experiencing I/O (input/output) constraints and bottlenecks on our existing storage platform," said Dave Wasley, Head of Infrastructure at Trade Me. "This could start to negatively impact the responsiveness of the website, so we set out to improve the storage performance and user response experience. We went looking for a scalable solution that would eliminate the bottlenecks without compromising uptime."

Trade Me's website is based on a multi-tiered web application that utilizes Microsoft SQL Server and IIS running on Windows. To ensure business continuity and a consistently high level of customer response, the company has dual sites. The infrastructure is duplicated and the data is replicated at both sites, so that in the event of an interruption in one location, the entire operation can run at full load from the other site.

Quick Facts

- **Customer:**
  TradeMe
  www.TradeMe.co.nz

- **Industry:**
  Online Auction Website

- **Application:**
  Multi-tiered web application for proprietary online auction engine

- **Operating System**
  Microsoft SQL Server and IIS

- **Environment:**
  Clustered HP Servers running Microsoft Windows

- **Challenge**
  Improve inventory database by eliminating backlog of updates

- **Solution:**
  1-32 GB RamSan-300
  1-32 GB RamSan-400

Texas Memory Systems, Inc   www.SuperSSD.com   (713) 266-3200

Trade Me has deployed Hewlett Packard blade and rack mounted servers in a clustered configuration using PolyServe Matrix Server. HP EVA 8000 storage arrays are Storage Area Network (SAN)-attached using Brocade switches and Host Bus Adapters from QLogic and Emulex. The network utilizes Foundry network equipment and PacketShaper WAN optimization appliances.

As is typical with heavy transactional database applications, Trade Me was able to identify "hot" parts of its database that were giving rise to delays in I/O performance. Their application was demanding data faster than the storage was able to deliver it, causing excessive CPU cycle demands on the storage controllers and diminishing user responsiveness by the application. In order to improve responsiveness, storage performance needed to be boosted and the IO bottlenecks between the servers and storage eliminated.

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Because of the "always on" commercial nature of Trade Me, it was important to find a robust and reliable solution to ensure uninterrupted operations. Because of its commitment to the highest levels of customer service and business continuity, Trade Me wanted a solution that could accommodate the full transactional load of the website in the event that operations needed to be run from just one of the IT locations. Additionally, the solution would need to be highly scalable to ensure continued responsiveness for users as website popularity grows. Trade Me continues to add new items, additional functionality, and new users to the site.

The Solution: Texas Memory Systems RamSan Solid State Disk

Trade Me worked with Melbourne-based XSI Data Solutions to find the best possible solution to their storage performance challenge. XSI is a premier independent supplier of data storage solutions, and had a good understanding of Trade Me's business requirements and drivers, as well as deep storage product expertise. Based on their experience and understanding of the challenge faced by Trade Me, XSI recommended RamSan Solid State Disks from Texas Memory Systems. Texas Memory Systems, providers of the "World's Fastest Storage®," is recognized globally as the leader in enterprise-class SSD.

The latency between the SQL Server database and the existing hard disk-based storage array was causing performance bottlenecks. Access time is the time it takes for a request for data to be sent and completed. The fastest hard disk drives have peak performance access times of only 5 milliseconds. Unlike hard disk drives that rely on a rotating disk to read and write data, a solid state disk avoids the problem of physical constraints by replacing hard disk drives with the high speed circuitry of memory chips. The RamSan has an access time of less than 15 microseconds.

Trade Me was familiar with solid state disk technology and had experienced its benefits in read/write intensive processing elsewhere in its organization. However, for the core website application, extreme performance, enterprise-class reliability, and scalability requirements meant Texas Memory Systems was the logical vendor of choice. For 30 years, Texas Memory Systems has focused on meeting the high performance, quality, and service requirements that are unique to demanding enterprise environments.

Trade Me installed a RamSan-300 in one location and a RamSan-400 in its other location, configured with 16 and 32 gigabytes of storage capacity respectively. As the business grows, and the web site expands, the IT group can add additional capacity as needed. Each RamSan is connected via dual port host bus adapters to the SAN fabric.

RamSans are ideally equipped to handle high transactional loads for online databases with their low data access times. As high performance storage systems based on non-volatile solid state disk, RamSans ensures both speed and reliability in accessing data. The RamSan-400 delivers 400,000 IOPS (I/Os per second) and has 3 gigabytes per second of internal bandwidth. The RamSan-400 holds the Storage Performance Council's SPC-1 IOPS™ record for storage performance and price-performance. The RamSan-300 delivers 200,000

IOPS and has 1.5 gigabytes per second of internal bandwidth. The latency of both models is less than 15 microseconds. RamSan reliability is ensured with high availability architecture and standard features such as Chipkill - protected RAM, and hot swappable and redundant backup disks and power supplies.

The Result: Trade Me manages over a million auctions while reducing Storage Controller CPU usage by 20% using The World's Fastest Storage®

Before deploying the Texas Memory Systems RamSan into production at both of its locations, Trade Me IT staff conducted rigorous testing. Even when IT staff removed power, fibre channel cables and drives, the RamSan never failed nor lost data. Texas Memory Systems support proved excellent, with prompt response from knowledgeable engineers.

From a management perspective, RamSan behaves like a conventional disk and provides a clear and simple management interface. In the production environment, Trade Me moved the "hot" parts of its database that receive most I/O activity onto the RamSan, while the remainder of the database still resides on the EVA8000 arrays. The RamSan has easily risen to the challenge of supporting in excess of a million simultaneous auctions. Trade Me has seen a 20% increase in IOPS and a reduction of 20% in its Storage Controller CPU usage ensuring better return on the existing storage platform.

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"We have some very I/O intensive processes managed by our databases." Said Matt van Deventer, Trade Me's Head of Database. "Reducing processing times resulted in immediate business gains and allowed us to focus on new and advanced features that we can add to the business". By eliminating storage latency and I/O bottlenecks with its RamSans, Trade Me is delivering rapid response time to users and is well-poised to continue its business expansion.

"We needed the performance of SSD with enterprise features such as high availability and a scalable architecture," concluded Mr. Wasley. "The RamSan ticked all the boxes for us, with the capacity to grow with our needs."

About Trade Me
Trade Me is the #1 New Zealand website with over 2 million members. It is owned by Fairfax Media Limited. Fairfax Media Limited [ASX:FXJ] is Australasia's leading media company. In May, 2007, Fairfax Media and Rural Press Limited completed their merger, creating the largest integrated metropolitan, rural and regional, print and online digital media company in Australasia, with publications and websites in every state and the ACT in Australia and throughout New Zealand. For more information about Trade Me, visit www.trademe.co.nz

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, we achieve this performance without resorting to overly complex circuitry or unwieldy protocols. This emphasis on simplicity allows Texas Memory Sytems to deliver outstanding performance using mature technologies and readily available off-the-shelf components. 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 we will continue to provide outstanding customer support.

Texas Memory Systems products were originally designed to meet the needs of the US defense industry, a primary customer throughout our history. This market has always demanded the ultimate in performance and the company has always delivered it. Texas Memory Systems now brings its expertise to the commercial SAN market. The RamSan, our thirteenth generation SSD product, delivers a level of performance previously unavailable in a commercial storage product.

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