

RamSan Solutions

The World's Fastest Storage™

Client: Fox River Financial Resources

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Fox River Financial Resources electronically trades equities, options, and futures. Its clients are among the top tier of very large institutional investors. Fox River promises clients trade executions at a set price that is better than they can obtain themselves in the market. By executing at a price that beats the promise price, Fox River increases profit from the trade. As such, trading volume is high at Fox River, with thousands of trades occurring every day.

Fox River's ability to trade competitively depends on the company's ability to gather and analyze market data very quickly, then rapidly execute financial trades. To achieve this, Fox River has a highly skilled 50-person staff that depends on its proprietary software tools and its technology to understand the market and predict and execute on optimal trade positions.

The Challenge: Process and analyze data faster, rapidly execute trades to improve financial performance

As the market moves, investors race to analyze the situation and execute trades. Performance and speed are critical. Data is gathered and analyzed to determine patterns and predict future market activity and pricing. The value of the analysis is only realized when trade transactions are executed, so Fox River has developed proprietary software tools to rapidly gather and analyze market data and execute trades.

The computing environment at Fox River is similar to those found in high-performance scientific environments. Their software uses an Oracle database running on a Linux platform powered by the fastest CPUs and servers available. The volume of data and intensity of analysis at Fox River is such that servers outnumber people many times over. The company maintains in excess of 20 terabytes of data and uses both network-attached and SAN-attached storage.

“Technology is used as a weapon,” said James Moskalik, Director of Technology Services at Fox River Financial Resources. “We are pitting our brain and our technology against our competitors. In this business, you really do live and die by how good your technology is. Milliseconds make a difference here. For example, one of our batch processes went from over 3 hours to under 20 minutes when we moved to the RamSan.” Because technology and speed are at the core of its competitive advantage, Fox River is constantly looking to improve its ability to rapidly analyze data and execute trades. Even with their meticulously-tuned databases and the fastest CPUs available deployed, Fox River was still anxious to improve performance.

“Our systems weren't doing as well as they could, so we thought about what that was costing us and decided to see how we could improve,” said Mr. Moskalik.



Quick facts:

- **Industry:** Financial Services
- **Application:** Oracle database, proprietary financial data acquisition and analysis applications
- **Operating System** Linux
- **Environment** Linux, EMC Clariion, Brocade/McData switches in Fibre Channel SAN
- **Challenge:** Process and analyze data faster, and rapidly execute trades to improve financial performance.
- **Solution** RamSan-400 (288 GB Total)
- **Result** Batch process reduction from 3 hours to under 20 minutes.



The Solution: A Texas Memory Systems RamSan Solid State Disk

Fox River already had a SAN and high-end Fibre Channel arrays in place, so they were familiar with the capabilities and limitations of the monolithic RAID systems. Even the fastest hard disk drives have peak performance access times of 5 milliseconds, so the company decided to look at Solid State Disk to reduce latency and improve overall performance.

Upon investigating Solid State Disk options, Texas Memory Systems, maker of The World's Fastest Storage™, quickly emerged as the preferred solution. Texas Memory Systems' RamSan-400 delivers 400,000 I/Os per second, has 3,000 Megabytes per second of bandwidth with latency of less than 15 microseconds.

Fox River judged that the RamSan was very well engineered and did not cut any corners on manageability, reliability and availability. Beyond the performance of the product itself, Fox River felt that Texas Memory Systems went the extra mile to ensure that the RamSan would deliver the expected performance improvements and fit well into their infrastructure.

"Manageability is really important to us," said Mr. Moskalik. "The RamSan is a much simpler, streamlined, easy-to-deal-with system, as compared to large traditional Fibre Channel arrays."

Fox River installed a RamSan-400 solid state disk to accelerate its option tick data acquisition application. They also used it with the Oracle database to store hot tables and transaction logs. It fit seamlessly into the existing SAN environment and augmented the company's existing storage infrastructure investment. Data that needs to be accessed rapidly is stored on the RamSan, and the existing storage arrays are used to store static data that is not required for rapid access.

The Result: "The World's Fastest Storage" delivers unparalleled, cost-effective performance that is reliable and easy to manage

"The RamSan has greatly improved our transactional ability, so we can deal with more customers and a lot more transactions," says Mr. Moskalik. The performance improvements have enabled Fox River to improve their CPU utilization and dramatically reduce their Oracle tuning efforts. Without the RamSan, it wouldn't be possible to capture rapidly incoming option tick data. Overall, Fox River has gained significant competitive advantage thanks to its investment in a Texas Memory Systems' Solid State Disk.

"The RamSan certainly lived up to its performance claims," said Mr. Moskalik. "It is very cost effective in terms of performance to dollars spent. We are getting what we hoped for out of it and we'd definitely consider expanding in the future. It is a good investment."

About Fox River Financial Resources

Fox River Financial Resources (www.foxriver.com), is a privately held trading company. Fox River Financial Resources provides multiple trading services which include equities, options and futures. The company also offers algorithmic execution for a diverse client base of Institutions, Hedge Funds and Broker Dealers. Fox River Financial Resources philosophy revolves around the combination of the best mathematical minds, trader talent and technology.

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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, we achieve this performance without resorting to overly complex circuitry or unwieldy protocols. This emphasis on simplicity allows TMS 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.

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

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