

**First Rate** delivers investment performance reporting at the start of each business day to its clients. When unexplained delays started occurring in the preparation of reports for one of its clients, First Rate needed a solution. It found it in all-flash arrays from Pure Storage, which has allowed First Rate to consistently meet the standards needed to provide timely strategic reporting while also slashing operating costs.



#### BUSINESS TRANSFORMATION

Thanks to greater consistency in the on-time availability of critical investment performance reports, client satisfaction has increased. In addition, SLAs have been strengthened, and are now offered to more clients thanks to vastly improved and predictable storage performance.

#### GEO

North America

#### INDUSTRY

Financial Services, IT Services

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Brian Moffitt,  
Information Security Manager

#### FIRST RATE REALIZES AN ATTRACTIVE RETURN ON ITS INVESTMENT IN PURE STORAGE

For the millions of people who hold stocks, bonds and other investments, the performance of their portfolio is a subject of intense interest. So the professionals who advise investors have to be ready to provide accurate and up-to-date information on the status of their portfolios. As simple as that request may sound, it requires a lot of data and calculations to turn the daily market gyrations into reports which are clear and insightful.

This is the work that First Rate performs for thousands of portfolio managers, including banks, wealth-management firms, trust holding companies, RIAs, and broker/dealers. Every night, First Rate receives market data and clients' investment transactions, processes the data using the proprietary First Rate Performance application, and then provides reporting back to clients for use the next business day. These reports show critical measurements such as rate of return, asset mix and performance compared to standard benchmarks such as the S&P500.

First Rate's clients run the gamut from banks and investment firms, who manage hundreds of thousands of portfolios, to small investment advisors.

This volume of data can be staggering. Each of the company's clients can send as much as 1GB a day for overnight processing, and the total footprint for all client data is over 100TB, all of it supported by Microsoft SQL Server.

#### MAJOR DELAYS IN PROCESSING LEAD TO A CHOICE OF PURE STORAGE

In August 2015, First Rate faced a significant challenge. The time required for nightly processing for one of its clients suddenly ballooned, making it very difficult to meet the stringent contractual service-level agreements (SLAs) the client has.

“We were seeing run times which were frequently approaching or exceeding our SLA,” recalled Brian Moffitt, Information Security Manager and a nine-year veteran with First Rate. “We take our SLA commitments very seriously. SLAs are performance obligations to our clients and in some instances, include financial penalties if they are not met as agreed to in our contracts,” said Bo McWilliams, Managing Director of Managed Hosting Services.

The IT team worked for some time to optimize performance of the entire service delivery path. After all components had been analyzed, focus shifted to the storage system then in use.

**COMPANY:**

First Rate  
[www.firstrate.com](http://www.firstrate.com)

**USE CASE:**

VSI – VMware® vSphere®  
 Database – Microsoft® SQL Server®

**CHALLENGES:**

- Delays in processing a client's workloads were causing an impact to service-level agreements (SLAs).
- After a long, complex analysis, processing delays were found to be caused by a flaw in a hybrid storage system.
- Small changes in the amount of data processing would often lead to lengthy job completion cycles, threatening SLAs and client satisfaction.

**IT TRANSFORMATION:**

- High level of IOPS and consistently sub-millisecond latency mean overnight processing jobs are finished reliably and consistently, within SLA limits.
- Overall data-reduction rate of 5:1 results in lower data-center co-location costs.

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Coincidentally, First Rate was contacted by a sales representative of Pure Storage, who, while unaware of the problems the company was having, thought a company which processes huge amounts of data might be a good fit for all-flash storage. “He requested a meeting with us, and we agreed,” Moffitt said. “We ended up agreeing to do a proof-of-concept (POC) trial with a Pure array, to see if that might have a positive impact on our optimization issue for this client.”

**WITH PURE STORAGE INSTALLED, PROBLEMS DISAPPEAR OVERNIGHT**

For the POC, an all-flash array was installed under the Love Your Storage™ program from Pure Storage, in which a prospective customer can use a Pure array for 30 days, under no obligation, and return it at no cost if it isn't satisfied with its performance.

To test the Pure Storage array, the First Rate IT team loaded a full dataset from the client experiencing the processing problems into a secure test environment. “By implementing Pure, we immediately met our SLA,” Moffitt recalled. “And we weren't just meeting our SLA for the client; we were meeting it with significant time to spare.”

Implementing Pure Storage not only solved the immediate issues for the client, but improved processing speeds to a point surpassing where they had been originally. “Before the data processing issues, we would finish within 20 minutes of the SLA. With Pure, we completed processing for the client an hour or more before the SLA deadline.”

First Rate shared the results of the POC with the client and they were so surprised at the positive outcome that they doubted all data had in fact been processed. And of course it had.

Based on the results of the POC for the specific client and other due diligence testing, First Rate made the decision to purchase two FA-420 arrays, one each for the primary data center and for a secondary data center used for disaster recovery and development testing. The production array was later upgraded to a FlashArray//M50, a non-disruptive change which was accomplished during weekday business hours. “The next-generation controller was upgraded in-place with absolutely no interruption in service to our clients,” Moffitt reported. First Rate is very pleased with its Pure Storage investment and has also upgraded its secondary site array to a FlashArray//M20R2.

**INTENSIVE FORENSICS FINDS THE SOURCE OF THE PROBLEM**

The installation of the Pure Storage array solved First Rate's immediate processing issue in the POC environment. This indicated to the First Rate team that the storage system then in use in the production and test environments was the primary issue. “We had analyzed/optimized everything on the delivery path for this client — from the servers, to the networking and applications to potential data conditions and storage units,” Moffitt recounted. “All the standard storage device metrics, such as IOPS and latency, looked normal.”

An intensive analysis by the supplier of First Rate's existing storage finally pinpointed the problem to the hybrid storage array which was designed to put the most active blocks of data on solid-state drives (SSDs). But on First Rate's array, 95 percent of the data blocks on the SSDs were found to be “cold”; that is, they hadn't been used in at least 24 hours. The supplier “could not explain why the hot blocks were being forced onto physical spindles,” Moffitt reported. “This was when we confirmed it was the storage device itself. By this time, we already had started our POC with Pure Storage, so fortunately we had the solution in place.”

Moffitt said that in retrospect, he was surprised the management console on his hybrid array did not report such basic information as the location of data blocks. “The algorithm

for it was masked from the customer. Even their support engineers cannot see how data blocks are allocated.”

In sharp contrast, Moffitt noted, is the management interface for the Pure Storage array. “I love the management console of Pure. I even love showing the management console of Pure. It is just so incredibly clean that it is simple for even uninitiated users to understand what’s happening.”

With the Pure Storage arrays, he added, “I pop into the console once in a while to see how it’s going. Actually, I do it a lot from the Pure1® application on my phone. But I don’t spend a lot of time thinking about it. It just works; we leave it alone.”

### **MULTIPLE CLIENTS NOW BENEFIT FROM PURE STORAGE ARRAYS**

By late 2016, more than half of First Rate’s clients were being serviced completely on Pure Storage, and plans call for 100% of clients to be migrated onto Pure by the end of 2017. The improved processing speeds continue to yield benefits in overnight data processing and in daily performance reporting.

“We have seen a lift with every client we’ve put on Pure Storage,” Moffitt said. “In many cases, the biggest benefit from Pure is consistency. In the past, we would see increases in processing times due to market conditions that resulted in larger data volumes. We see much less variance in processing times due to storage latency using the Pure units. Even when we see a big spike in data volumes, processing using the Pure devices results in a marginal increase in execution/processing times relative to the significant increases we experienced with our previous storage solution.”

This consistency, he noted, “is very valuable to us from the perspective of meeting our SLA obligations. It also gives us the confidence to offer SLAs to clients which do not currently have one, because we are confident of our ability to provide a consistent and repeatable experience – something which was challenging previously.”

Moffitt said installation of the Pure Storage array “yielded results which truly were beyond our expectations,” in some cases slashing the run time for clients’ processing by 50 percent. He has a simple explanation. “With the sub-millisecond latency and the processing power of the Pure array, the SQL databases are able to serve up the data with incredible speed.” Moffitt reported that performance as great as 40,000 IOPS is routine using the Pure devices. “I can’t say enough about how beneficial Pure storage devices are to database-intensive applications like ours where bandwidth and latency are so critical to performance.”

### **PURE STORAGE DELIVERS EXTRAORDINARY SUPPORT, LOWERS EXPENSES**

Moffitt said while he has rarely had to call upon Pure Storage for support, the interactions he has had have been “phenomenal.” He recalled an instance “where an NVRAM module in our production array failed, and the Pure support team reached out to us at 3 a.m. to let us know they were aware of the issue and that parts were being dispatched, to arrive same day. It was as simple as that.”

He also praised the Pure Evergreen™ Storage business model, which enables storage that is deployed once and upgraded as needed, for a decade or more. Components can be mixed and matched — all online and without performance disruption — to keep storage dense, efficient, and modern.

“Our clients have noticed the consistency, especially our large clients.”

Brian Moffitt,  
Information Security Manager

“I’ve been in IT since 2001, and I’ve been through the forklift upgrade multiple times,” Moffitt said. “I think all of us were conditioned not to ask the question ‘why are we buying more storage when we already own storage’? The approach offered by Pure Storage is just so revolutionary and beneficial.”

Moffitt also noted the far-reaching impact from the de-duplication and compression features of the Pure Storage arrays. “One client’s database was 15.5TB; on the Pure array, it collapsed to 2.4TB. That’s a data-reduction ratio of 5.9:1,” he reported. Across all data and applications, the ratio has been 5:1, “which has held very consistently the more data we put on it. This means we are getting a phenomenal amount of data in a very small space, and it runs incredibly fast. You simply cannot argue with the performance.”

Moffitt noted that the company now devotes six rack units to Pure Storage which replaced 17U of its previous storage. “We are in co-lo data centers, so rack space is money,” he added.

While Pure Storage delivers cost savings in data center space and significantly reduced management time, “the money is not as important as the satisfaction we give our clients,” Moffitt observed. “Our clients have grown accustomed to the consistency we now deliver, especially our large clients. They know what to expect every single day, which is essential in an industry that deals with uncertainty.”



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