LexisNexis + Micron SSDs = Faster, More Reliable Big Data Analytics

About LexisNexis Risk Solutions
For several decades, LexisNexis Risk Solutions has provided real-time risk assessment and management services via their easy-to-use, big data analytics solutions—building a reputation for precision, speed, and breadth over the years. Now a global organization headquartered in Alpharetta, Georgia, LexisNexis provides services and solutions such as identity management, risk scoring, fraud detection/analytics, as well as data aggregation and management, to some of the world’s largest banking institutions, retail establishments, and insurance companies. LexisNexis Risk Solutions is an established industry leader with more than $1.5 billion in annual revenues, with an ever-expanding global presence.

The Challenges
How to Improve Performance and Reliability
As data sets continue to grow more massive, LexisNexis must deliver results to their customers at best-in-class speeds to stay at the top of their game; and to make their technology viable, they have to ensure that the data is right every time. “Our identity management and validation services have been embraced by security-conscious businesses who must ensure that a customer is exactly who they claim to be during all business interactions. Making a single mistake is not an option,” said Villanustre.

Real-Time Big Data Technology Offerings
“Our technology lets our customers get things like insurance policy quotes and interest rates for loans based on specific criteria. It also allows third-party companies to perform identity checks without any personal information being disclosed to that third party,” said Flavio Villanustre, vice president, technology, at LexisNexis Risk Solutions. “It even helps researchers and academics work more efficiently by speeding the process of finding relevant content for their research. We do all this and more by linking together thousands of data sources with hundreds of billions of unique attributes to build a complete picture of each entity (person or business) and their relationships across a social graph. In turn, we’re able to deliver precise results, like identity match scoring, through a simple web interface.”

Revolution, Not Evolution
Villanustre explained, “We developed our technology to analyze petabytes upon petabytes of data quickly and precisely. Even 15 years ago, we knew we needed to think and work differently because conventional technologies could not handle this workload efficiently—so we built our own big data platform before “big data” was a coined term.” This strategy has worked well for LexisNexis, but with the exponential increase in the amount of data being generated today and the worldwide expansion of their business—along with the steady uptick of fraudulent activities in the industry—

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VP, Technology, LexisNexis Risk Solutions

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they needed a way to boost the performance of their systems without losing any reliability or compromising the security of the sensitive data that they deal with. And the solution had to be scalable and sustainable.

Weighing the Options

“We knew early on that the analytics portion of our platform would benefit significantly from SSDs based on their reputation for offering better performance while consuming less power than HDDs. We began looking at SSDs from several manufacturers,” said Villanustre.

“We got a real surprise when we tested Micron’s SSDs, however,” explained Villanustre. “Our most technical person on staff, who was always the biggest doubter of SSDs for our application, became convinced and is now the biggest proponent of SSDs.”

Villanustre went on to say that with their massive scale and massive random read system, Micron’s SSDs are a perfect match.

Performance is compelling, but with LexisNexis, the SSD must also offer the highest level of reliability. Villanustre went on to note that “with Micron’s SSDs, we have not seen a single failure.” This is particularly important to LexisNexis because of the scale of their platform. A typical deployment will have thousands of servers; if only 20% have SSDs, a failure rate of only a few SSDs per day is unmanageable and unacceptable. “Micron’s SSDs worked very well,” Villanustre continued. “We were unable to produce a single failure on the Micron products.”

The Solution

Micron M500 Reliability and Performance Stands Out From the Crowd

The LexisNexis team has a long track record testing SSDs, but due to reliability concerns, SSDs hadn’t been part of their production plans. While the performance of the vast majority of SSDs tested was good enough, the reliability was not. The Micron M500 changed all that. Jon Burger, director of information technology at LexisNexis, said, “We’d been looking at SSDs for nearly four years, trying to find the right SSD for our platforms and our system workload. Our workload may not seem terribly demanding—we typically write seldom and read often—but we were easily able to
“With Micron’s SSDs, we have not seen a single failure—not one. Other brands we tested would fail, sometimes in days, sometimes in hours...but the Micron SSD worked very well.”

FLAVIO VILLANUSTRE

push some major-brand SSDs to their breaking point. The performance on the vast majority of SSDs we tested was acceptable, but we were able to induce a 70% failure rate in just six weeks on one competitor’s SSD. This was not the case with Micron’s M500 SSD.”

The LexisNexis platform is extremely compute-dense and relies on storage performance for optimal throughput. Offering 84 discrete nodes per rack with six SSDs per node, LexisNexis offers double the compute density of conventional designs. Using 504 of Micron’s M500 960GB SSDs per rack, LexisNexis is able to reach 32,256,000 IOPS per 42U rack.

Burger went on to say how pleased they were with the reliability of Micron’s SSDs. “Our initial dead on arrival (DOA) rate has been zero, and we’ve bought a lot of these drives. With Micron’s M500, we are seeing 32 million IOPS per rack consistently and reliably. That’s stellar.”

“We found new, much higher ceilings of performance when we moved to Micron’s SSDs. We found 10X the system-level performance once we switched over (from HDDs),” said Villanustre. After installing Micron’s SSDs, LexisNexis found that storage was no longer the bottleneck.

Villanustre went on to explain that because LexisNexis was pleased with Micron’s SSD performance, when they started to offer their analytics software as open source code, they documented Micron’s SSDs as the suggested storage method. “We’ve made our expert analytics software freely available and the platform highly extensible. Those who take advantage of this software will boost their data analytics performance to new heights.”

Scaling Out With a Positive Global Impact

The impact of using Micron’s M500 SSDs in the LexisNexis platform goes beyond a tenfold increase in performance with enterprise-class platform reliability. There is a significant environmental improvement as well. “Using Micron’s SSDs, users can reduce their overall system footprint while increasing platform responsiveness,” said Villanustre. “You can potentially have one SSD node where you previously had to have five or ten HDD-based nodes. This has worldwide importance because we are seeing adoption across multiple geographies, especially in areas where power consumption is a primary concern. Our SSD-based systems offer much higher performance and huge power savings—with far less of an impact on the environment. This benefits all of us.”

The Results

By adding Micron’s SSDs to their platform, LexisNexis Risk Solutions enables their customers to reduce the total platform count in their data centers and achieve far higher performance per watt (compared to conventional HDD-based systems)—while reducing the power consumed per system and ensuring security and reliability of the data. Fewer systems, less power to run each of them, and better performance without losing any data integrity results in an efficient, reliable, low-impact solution that is friendly to both the bottom line and the world we live in.

“We have an extremely low failure rate with Micron’s M500. Our initial DOA rate has been zero, and we’ve bought a lot of these drives.”

JON BURGER
Director, IT, LexisNexis Risk Solutions
Fast Facts

- **Customer:** LexisNexis Risk Solutions
- **Industry:** Risk management and identity authentication
- **Primary Contacts:**
  - Flavio Villanustre, Vice President, Technology;
  - Jon Burger, Director, Information Technology
- **Challenges:** Quickly deliver authentication information of individuals and businesses; enable risk assessment and asset protection based on real-time analysis of massive data sets
- **Solution:** State-of-the-art social graph construction and parsing algorithms—combined with expert analysis—running on Micron’s M500 SSDs in standards-based hardware
- **What Made the Difference:** Reliability and performance. "With Micron’s M500 SSDs, our most ardent SSD skeptic is now our strongest promoter," said Flavio Villanustre.
- **Result:** 10X overall performance improvement; up to 10X reduction in hardware requirements

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