



Syntricity Surges Semiconductor
Yields with Fusion-io

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Business Intelligence provider for the semiconductor industry eliminates SAN (Storage Area Network) from its Oracle data warehouse, increasing average performance five to ten fold.

The Challenge

Syntricity's dataConductor.com is a hosted data analysis solution for some of the largest companies in the semiconductor industry. Its dataConductor application runs against an optimized Oracle data warehouse that processes 250,000 datalogs each month. Tens of thousands of datalogs, containing billions of test measurements, consume up to 150GB of warehouse storage per day, and growing.

Syntricity is always innovating to provide best-in-class service. Consequently, when Tim Lewis, Syntricity's Vice President of Operations, began to hear complaints about analysis and report generation taking too long, his team immediately began looking for a solution that would exceed the needs of Syntricity's customers without breaking the bank.

FUSION-IO HARDWARE PARTNER



SUMMARY OF BENEFITS

- **5-10x average performance**
- **10-30x performance under heavy load**
- **Dependably high performance under all loads**
- **Eliminated complexity of maintaining a SAN**
- **Expert implementation support for the optimal solution**

"The ioDrives improved application performance by five to ten times nominally, and ten to thirty times on the extreme end. This performance raises the bar on the size of the data sets that our customers can effectively work with and allows us to give them a competitive advantage."

*Tim Lewis
VP of Operations*

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The Solution

Tim's team learned that poor disk I/O was the primary cause of their application's slowness. Having heard about solid-state memory's effectiveness in addressing I/O problems, they contacted several vendors to determine the best solution.

SUPERIOR SOLUTION SUPPORT FROM SOLID-STATE EXPERTS

While Tim's team understood the benefits of NAND flash, they also had reservations about replacing proven disk technology with newer solid-state. They could not sacrifice reliability for performance or for cost. They also needed to know that its benefits extended to their specific environment. A meeting and demonstration with a group of Fusion-io staff addressed all of their concerns.

Tim told us, "We weren't talking about using solid-state for backup or limited caching purposes. We were talking about completely replacing our production storage area network. Fusion-io was extremely knowledgeable in our space—significantly more-so than the other two competitors we evaluated. Fusion-io understood the challenges we faced in our application, and understood Oracle deeply. We felt confident that Fusion-io would help us implement a full solution and not just sell us some hardware."

A NEW ARCHITECTURE FOR NEW TECHNOLOGY

Syntricity's data warehouse—approaching 20TB—is divided between a proprietary database and an Oracle database. Historically, the Oracle side of the warehouse was stored on a Fibre Channel SAN. Instead of continuing to use SAN storage, Syntricity deployed several 640GB ioDrive Duo cards to handle the Oracle storage requirements. This new architecture provided three benefits:

1. **Dramatically reduced latency.** Over and above the low-latency performance of the ioDrive Duos' NAND flash, Syntricity also eliminated its network latency performance impact, moving the entire database into the server.
2. **Greater reliability.** Syntricity replaced 30 disks (and failure points) with four NAND flash ioDrive Duos that do not rely on fallible mechanical parts.
3. **Reduced maintenance.** By eliminating the SAN from its database layer, Syntricity also reduced disk maintenance, monitoring, and replacement.



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BUILDING BETTER BUSINESS INTELLIGENCE

Customers use the dataConductor application in so many different ways that Syntricity's tests comprised a wide variety of challenging dimensions. Syntricity found that the Fusion Powered system excelled across the board.

"The ioDrives improved application performance by five to ten times nominally, and ten to thirty times on the extreme end," Tim told us. "This performance raises the bar on the size of the data sets that our customers can effectively work with and allows us to give them a competitive advantage. The new system also removes spinning disks as a source of performance problems."

Average Application Performance Improvement



Extreme Application Performance Improvement



As a provider of systems intelligence, Syntricity is keenly aware of the negative impact of variability on queuing systems. It was extremely important they implement a solution that not only delivered the performance its customers needed, but did so consistently.

Tim said, "Performance used to vary widely from action to action. This resulted in both CPU exhaustion and unacceptably high I/O rates that caused everything to lock up and slow down. Performance is now reliable, stable, and consistent."



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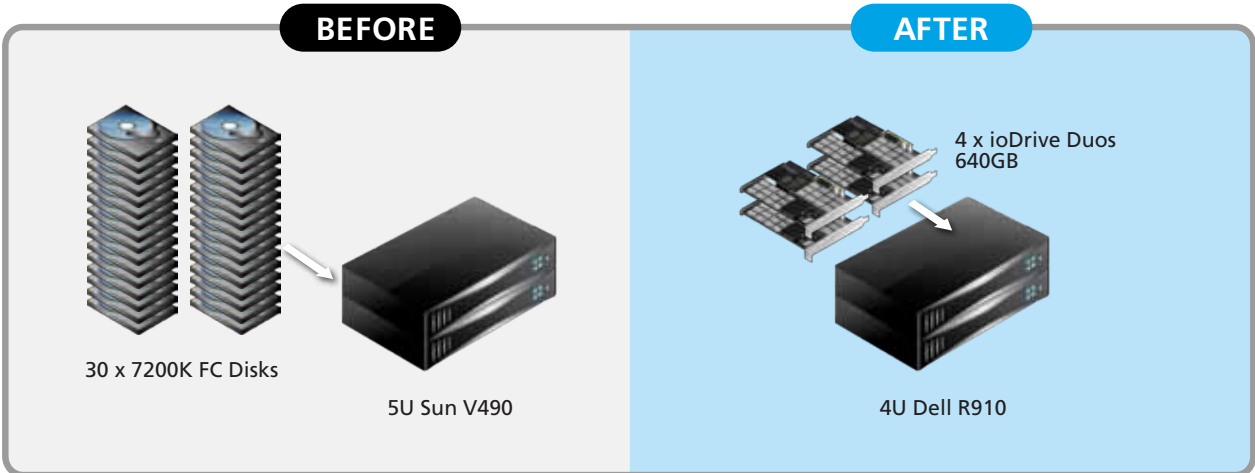
Changes to the System

SYSTEM BEFORE

- One 5U Sun V490, 4 x UltraSPARC IV+, 16GB RAM
- OS: Sun Solaris 10
- Application: Oracle 10.2
- Disks: 30 Fibre Channel 7200 RPM hard disks

SYSTEM AFTER

- One 4U Dell R910, 2 x Nehalem-EX, 128GB RAM
- OS: Oracle Enterprise Linux
- Application: Oracle 11.2
- RAM: 128GB
- Disks: Four 640GB ioDrive Duos



Performance per rack unit (density)



Consolidated servers from 5U to 4U = 1.25 times. Improved average application performance 10 times. Performance density improved 1.25*10 = 12.5x.



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Summary

Implementing Fusion-io gave Synticity the following benefits:

- **5-10x average performance**
- **10-30x performance** under heavy loads
- **Dependably high performance under all loads**
- **Eliminated complexity** of maintaining a SAN
- **Expert implementation** support for the optimal solution

Joe McCaughey, Synticity Technical Product Manager said, "I'm not one of the database guys, but I overhear support calls and I can tell we've raised the bar. I simply don't hear any more calls about performance."

About the Customer

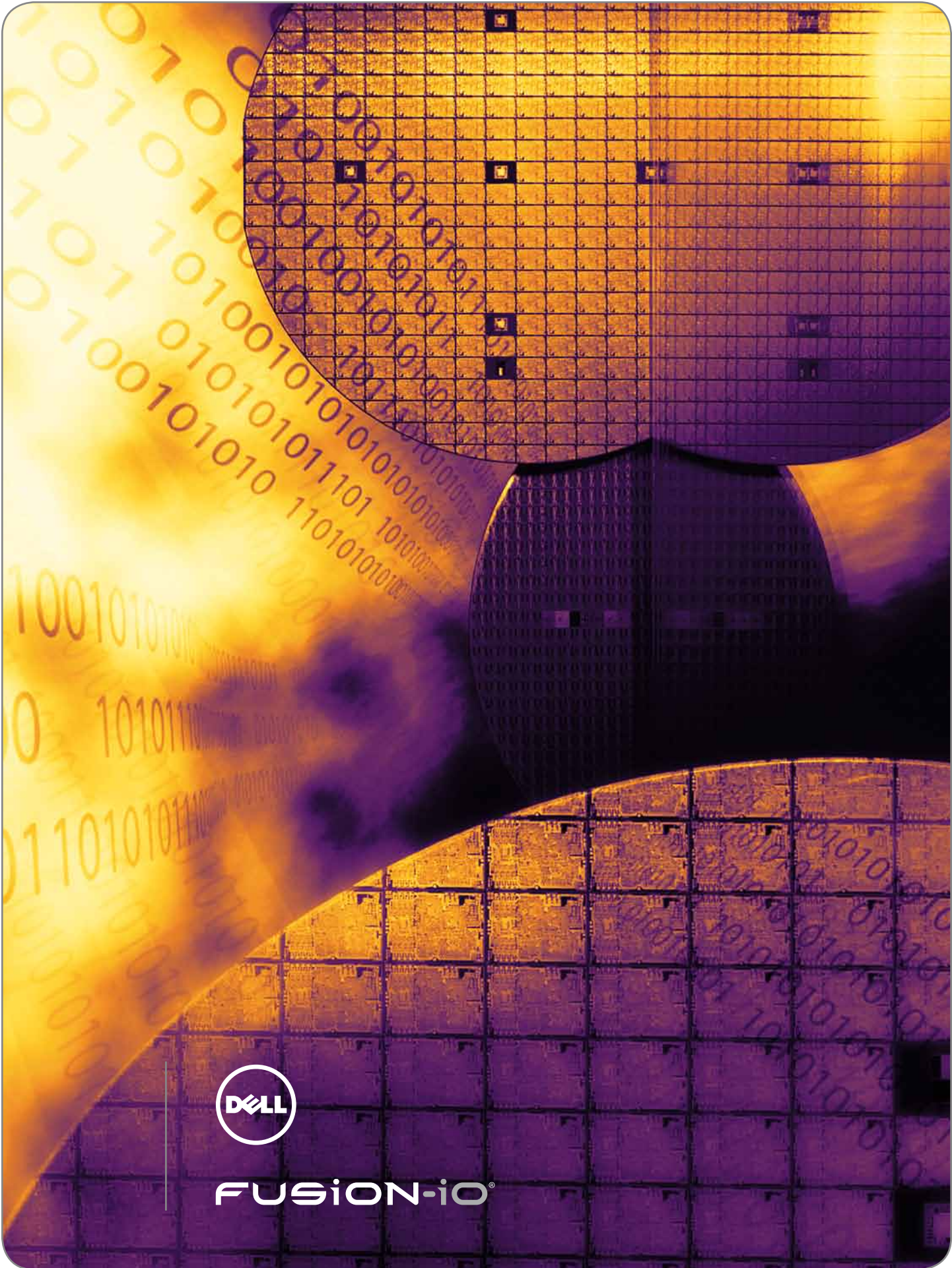
Synticity is the pioneer in web-native analysis and reporting for the semiconductor industry. The company was the first to recognize the need for new yield management tools to analyze data, shorten product development time and monitor production deliveries. Synticity addressed this need by introducing dataConductor, providing the benefits of a Web-native architecture to deliver the most technologically advanced solution available. dataConductor is used by leading semiconductor companies, test vendors and wafer foundries to gather, manage and analyze data from facilities around the world to improve yields, reduce product development cycles, and increase profits. The same power is available through dataConductor.com, a SaaS offering that enables companies of all sizes to realize the benefits of lower costs, greater efficiency and improved yields in a highly secure, scalable and flexible Internet-hosted environment.

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