



CREATING JOBS THAT CHANGE LIVES



## CASE STUDY

# Skills Inc. Provides Services and Skills to the Aerospace Industry with the Help of Dell and SanDisk® DAS Cache

### Solution Focus

- Microsoft® SQL Server 2012
- Information on Demand
- Server virtualization

### Summary of Benefits

- **75% improvement** in report processing time
- **Reduced** points of failure

### Products

- Fusion ioMemory™ drive
- SanDisk® DAS Cache
- Dell™ PowerEdge™ R730xd server

### Background

Skills Inc., one of Washington State's largest aerospace suppliers, is a self-supporting, nonprofit social enterprise that employs people of all abilities in aerospace manufacturing, aerospace finishing, technical services, and business solutions. The organization's mission is to create and maintain a stable and rewarding place of work, with an integrated and inclusive workforce, where persons with and without disabilities can contribute their skills. Skills Inc. generated revenue of \$46 million in 2014, 99 percent of which was derived from their four lines of business, by competing in the open market.

Skills Inc. trains, employs, and serves people with disabilities by providing them with jobs, vocational programs, and services that offer opportunities to thrive at work and provide a much-needed service to customers and society. Through their four locations across Washington State, employees of Skills Inc. can participate in customized employment and vocational programs and aerospace internships.

Currently, Skills Inc. employs 650 persons, 60 percent of whom self-identify as having a medical, physical, learning, hearing, visual and/or mental disability. On-site interpreters assist those with hearing loss, while other staff assist with job and life skills coaching. "Success for us is training an individual well enough to be employed—at Skills Inc. or at another organization, such as Boeing," said Ed Hammond, Senior Systems Administrator at Skills Inc. "We have translators on staff to work with our deaf employees and counselors to help employees understand what is expected of them. Some of them have never had a job before."

### The Challenge

The employment mission that the staff at Skills Inc. is striving for on a daily basis is critical to the well-being of their employees and customers. However, some of their key reporting and analysis functions were being compromised due to the slow performance of their Infor VISUAL manufacturing ERP system that was running on a Microsoft SQL Server database. "We were running huge complicated reports that would take a long time to run," Hammond told us. "Sometimes these reports query massive tables that list more than 660,000 work orders that we have produced in the last decade, which are parts for Boeing or other aerospace suppliers. Other reports assist us in analyzing our profitability. They are critical to running the business. We needed to do something to improve performance."

Running a report that needs to pore through every work order from the past five years or access each part number could take as long as 15 minutes before the system came back with data. “When these reports are run, it can be a problem for everybody else that is using the database,” explained Hammond. “We end up having to run those reports at night. For example, we have a Costing Utility that runs at night to calculate ERP costs and prepare account journals. This Costing Utility takes an hour to run every night. Although it doesn’t lock everyone out of the database, it certainly slows things down.”

The team considered a number of solutions to the performance issue. “We tried to run our workload on a SAN from another vendor that had an SSD cache on it. The company had touted the massive IOPS that the system would support. However, with only a one gigabyte network connection to the SAN, our other workloads were sucking up the cache on the SAN. We still weren’t getting the performance because we were sharing with other workloads,” said Hammond. “In addition, we run 24 hours per day and there were too many points of failure when storing our database on a SAN. Reducing the points of failure was critical for these processes that are crucial for our business. What I learned was that I would much rather have everything running on the box.”

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*“With SanDisk DAS Cache, I don’t have to think about it. I just turn it on and it works. It provides the performance I need and that’s worth a lot to me.”*

**Ed Hammond**  
Senior Systems Administrator

## The Solution

When visiting the TechEd 2014 conference in Houston, Hammond took a break from the technical training sessions to visit the SanDisk booth. “I saw a quote on the wall of the booth that said, ‘Our payroll batch went from two hours to 10 minutes and we thought something was wrong.’ And I thought, ‘That’s what I want.’” Hammond decided to buy a Fusion ioMemory PCIe card and test it. “I had been thinking about Fusion ioMemory PCIe cards for our SQL Server loads already, but was sold on the idea after I visited the booth.”

Hammond deployed the Fusion ioMemory PCIe card in the Hyper-V server that supported the SQL logs and database that he wanted to accelerate. While conducting some basic benchmarking, he immediately saw a performance increase. When Dell launched their 13G servers—which include SanDisk DAS Cache as an exclusive feature—Hammond recognized the opportunity to further improve utilization of the Fusion ioMemory PCIe card. “The reports that execute database queries hit pretty large tables and can negatively affect performance,” explained Hammond. “When we heard about SanDisk DAS Cache, we thought that might solve our issue. I was pretty excited about the possibility of using that one Fusion ioMemory PCIe card to accelerate the entire Hyper-V server instead of just a single database.” The organization was pleased with the reasonable price of the SanDisk DAS Cache software for their Dell PowerEdge server, in light of its ability to get more utilization from the internal Fusion ioMemory PCIe card.

SanDisk DAS Cache is an application acceleration solution using direct attached storage—for deployment in select thirteenth generation, FX2, and R920 Dell PowerEdge servers—which is sold, serviced, and supported by Dell. Designed to improve server utilization and workload performance, SanDisk DAS Cache is ideal for workloads, such as ERP and analytics, to reduce latency and improve I/O performance within existing database environments.

The IT team procured a flexible and scalable Dell PowerEdge R730xd server with SanDisk DAS Cache software and installed the Fusion ioMemory PCIe card. “I was surprised by how easy it was to set up,” said Hammond. “Even when I make changes to the server, disabling and re-enabling SanDisk DAS Cache is a snap. And there is no risk of data loss.”

The team has licensed all eight cores on the Dell PowerEdge R730xd server for SQL Server and they run SharePoint Enterprise, as well as the main database that hosts the ERP system. Two virtual SQL servers are clustered with SQL Server 2012 AlwaysOn so that the ERP reports can be run against a secondary read-only database.

Skills Inc. leveraged their relationship with Dell to deploy the new server and software. "We received stellar assistance from the Dell sales engineers. We ran some utilities from Dell on the server for a couple of days to determine our performance, I/O usage, and the best solution going forward. I had already purchased the Fusion ioMemory card, but I was blown away from what I learned from the Dell tools."

## The Result

Since implementing the new Dell PowerEdge R730xd server equipped with SanDisk DAS Cache and Fusion ioMemory PCIe cards, the standard reporting run by the Skills Inc. team has improved significantly. "What is great is that I don't have to manage it," said Hammond. "I used to have to make sure that the logs and databases didn't grow beyond the allocated space. I knew what I was paying per gigabyte and was continuously monitoring how much I could fit on a device. Now, the system just handles it. Maintenance has been easy." The database has reached more than 38GB, a ten-fold increase over the past decade. "With SanDisk DAS Cache, I don't have to think about it. I just turn it on and it works. It provides the performance I need and that's worth a lot to me."

In addition, the 4TB of back-end storage within the architecture has improved performance as well. Skills Inc. has seen acceleration in 94 percent of the writes and 43 percent of the reads to and from the database storage.

"Once we started using SanDisk DAS Cache, everything started running much faster," said Hammond. For example, database log reports indicate that the Costing Utility report typically took close to an hour to run every night prior to the implementation of the new architecture. Once the Dell servers, SanDisk Das Cache, and Fusion ioMemory card were deployed, the process averaged just 15 minutes to run—a 75 percent improvement.

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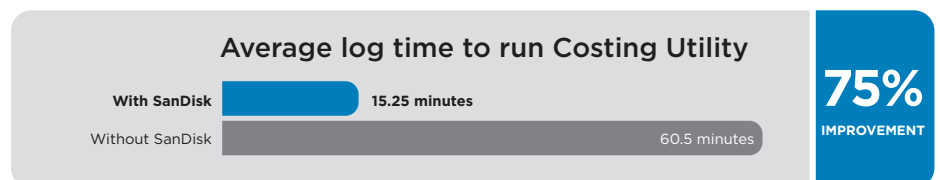
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"This was a great solution for us," Hammond concluded. "Having all of those systems running on this one piece of hardware with SanDisk DAS Cache provides me with the acceleration for the ERP and for the SharePoint, unlike for just the one database."

The performance results and cost savings discussed herein are based on internal testing and use of Fusion ioMemory products. Results and performance may vary according to configurations and systems, including drive capacity, system architecture and applications.

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