Success Story

John Deere

SGI at John Deere: Cutting Costs and Speeding Access

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– Dave Marshall
Infrastructure Analyst,
Product Technologies,
Deere & Company Technology Center

Few brands are as familiar as John Deere. Its logo and green and yellow implements are icons of the agriculture industry. The family of products from Deere & Company began as a self-polishing plowshare in the 1830s; today they do heavy lifting in construction and forestry, keep golf courses playable, tend and harvest crops, and manicure suburban lawns. The complete list of products is much too big and varied to reproduce here, but you will see them blowing leaves off sidewalks, running mountain trails, grading residential lots, or harvesting cotton. And although you may never see them, John Deere components like engines, transmissions, and axles are powering vehicles and equipment worldwide.

This diversity has helped make Deere & Company a $19 billion company with 46,000 employees. But it has required a formidable investment in research and development, a cornerstone of Deere management philosophy. At the John Deere Technology Center at the company's world headquarters in Moline, Illinois, designers and engineers are using SGI® storage, computing, and visualization technologies to help shape tomorrow's products.

Building A High-Efficiency Storage Infrastructure

Deere, a longtime user of SGI compute servers and workstations, moved its Moline Technology Center into a new facility in 2002 and followed up with a major upgrade of its computing infrastructure. The company hired SGI Professional Services to spec and install a SAN that would link 1.3 terabytes of storage across an eight-processor SGI® Origin® 2000 server, a SUN Enterprise 450 server, and an SGI® Onyx2® 3200 visualization system driving an immersive SGI® Reality Center® environment. The SAN installation included SGI® InfiniteStorage Shared Filesystem CXFS™, which gave engineers using the SGI systems instant concurrent access to files on both systems.

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"The biggest reason for tying the two SGI systems together with CXFS was storage utilization," says Infrastructure Analyst Dave Marshall. "We needed more disk space on the Onyx2 for application scratch space and other things. We could either add more storage to the Onyx2 or go with CXFS and the SAN to consolidate storage with the Origin and other servers. Our problem was solved with CXFS allowing data to be stored in one place and accessed from both SGI systems. We no longer needed to duplicate hardware on two systems."

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Cost-Saving with CXFS Access to the Sun Server

One of the Center's long-term goals in engineering its SAN was to enable users to access data files on the SGI systems through the Sun server using CXFS. After the SAN was installed, Center staff considered phasing out and replacing the remaining Sun applications server, but it was desirable to retain the Sun platform alongside the SGI platform, and replacement hardware would have been very costly. Instead, the Center installed CXFS Sun Solaris Client on the SAN.

Bringing the Sun applications server into the CXFS environment enabled the Center to consolidate storage capacity across the SAN and gave Sun users instant access to all storage on the SAN.

"We installed CXFS Sun Solaris Client late in 2004, and tested it over the holidays," says Marshall. "We had to take the whole system down and bring it up again twice, and Sun came up perfectly. In the future, we'll be looking at the possibility of connecting PCs, Macs, and Linux boxes to the SAN with CXFS client licenses." The Center also added an SGI® TP9100 RAID to the SAN, doubling the storage capacity to nearly 2.6 terabytes.

Fast Access and No Wait Times

The engineers who access the Sun applications server enjoyed immediate benefits from the installation of CXFS Sun Solaris Client.

"Before we implemented CXFS, engineers would have to think about what system they were logging into to look for the data they needed," says Marshall. "Many times, they would need to be on another platform to find what they were looking for. Then have to change to an auto mounted directory or transfer the data using FTP, or similar protocol, on a slower network connection. Now they can connect to one of our three systems, and the file systems are in the same place. They go to the directory, and everything is there. The access speed is great. It's just like using local file systems – you don't even notice it. There's no more waiting for transfers and downloads."

The CXFS environment on the Center's SAN is particularly useful for engineers who want to visualize models in the SGI Reality Center environment. The models,

which are predominantly in ProE, are stored on the SAN and translated for display on the Onyx2 3200 system. The four-CPU Onyx2 uses two split graphics pipes to drive an immersive four-projector display in a four-wall CAVE-style environment. They can use data gloves to navigate through the 3D model, standing beside it to check operating characteristics, fit and finish, and other aspects of engineering design. Although most of the models are of vehicles and equipment, the system is also used to provide virtual tours of manufacturing plant designs.

The Bottom Line: Efficiency and Cost Savings

Overall, the installation of the SAN and the implementation of CXFS has helped John Deere engineers at locations worldwide to use the Center's computing and visualization resources more efficiently.

"The access speed is great," says Marshall. "It's like using local file systems. There's no more waiting for transfers and downloads." Faster data access and reduced costs of storage make SGI storage a good investment.

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