



» » » CASE STUDY

Managing Data in Complex SAN Environments

“We’re essentially taking the twinkle out of stars, using adaptive optical technology that may be the most important advance in astronomy since the invention of the telescope,” explains Terry Duncan, Engineering Director of the Starfire Optical Range (SOR), the world’s preeminent adaptive optics research facility.

At the Air Force Research Laboratory, Directed Energy Directorate’s Starfire Optical Range, where researchers are working on the world’s fastest and most accurate adaptive optics, the team had to solve the problem of storing, protecting, and accessing their research data. Due to recent advances in sensors and processing hardware, the scale of the task grew significantly. The SOR system samples data from more than 20 different sensors at more than a gigabyte per second, and makes adjustments to a 577-actuator mirror 8,000 times per second. The team collects up to 500 gigabytes per day and expects to collect between 200 and 250 terabytes of data during 2001 and 2002. Data analysis is expected to continue for several more years.

DEMANDING DATA MANAGEMENT CHALLENGES

“We had to solve two major problems simultaneously,” Mr. Duncan explains. “First, up to 50 workstations needed to have shared access to analytical data mounted on our primary, 40 terabytes disk array—with multiple users having access to the same files at the same time. And then, we had to have a way of moving data between the disk and a high capacity tape storage system to give us dynamic access to the entire 250 terabytes data set. On top of these demands, we needed to have ironclad data protection.

We solved the problem using **ADIC’s StorNext® Management Suite software and Scalar® 10K tape library**, both designed for handling data in a Fibre Channel SAN.”

SHARED DATA ACCESS AND AUTOMATED DATA PLACEMENT

For data sharing, the StorNext File System allows many users to simultaneously access the same data down to the block level at Fibre Channel speeds. To effectively manage

“It was the only system we found that integrated the hardware and software elements of our storage task—file sharing...data migration...end-to-end data management—into a single unified solution.”

Terry Duncan, Air Force Research Lab
Engineering Director,
Starfire Optical Range

SOLUTION HIGHLIGHTS

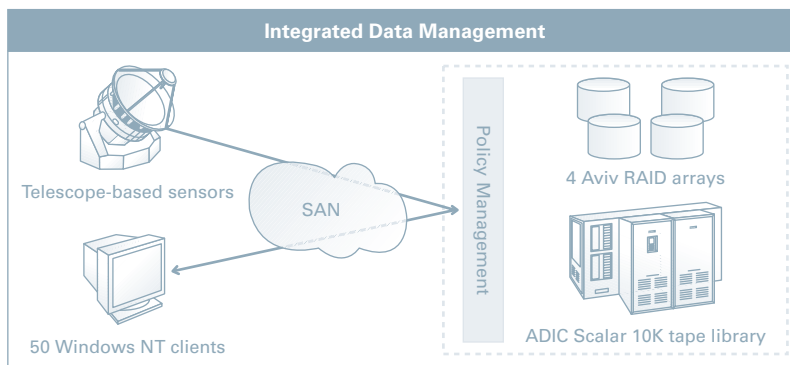
- ▶ **Application:**
Data access, management, and protection in a SAN environment
- ▶ **Data Management Software:**
ADIC StorNext Management Suite
- ▶ **Tape Storage:**
ADIC Scalar 10K storage networking library with mixed AIT and LTO
- ▶ **Reasons for Selecting:**
Integrated, scalable SAN solution;
Concurrent file sharing;
Automated data protection
- ▶ **Server and Storage Environment:**
Platforms: Sun Solaris, Windows NT
SAN Fabric: 4 Gadzoox Slingshot
4218 switches
Disk Arrays: 4 10TB AVIV RAID-5
Server: Sun Fire V880
Workstations: Dell, Compaq
- ▶ **Integration Services:**
Boeing LEOS Technical Services
with sub-contracts to InfraStor
Technologies Corp and ADIC



StorNext Management Suite

hundreds of terabytes of data, the policy-based StorNext Storage Manager transparently and automatically moves and replicates data between the different available storage systems. “StorNext Management Suite gives us fast shared access for highly parallel processing, and its integrated data management software automatically moves data between our Scalar 10K library and our disk. Any time researchers need data to analyze, the system writes it from the library to the disk, and it’s available almost immediately.”

“StorNext Management Suite also provides data protection,” said Mr. Duncan. “We set the system to replicate data as soon as it is written to tape—for us that happens as soon as data is initially staged, so we never have more than an hour of single data set exposure. We then move the replicated data to a vault for offsite protection, while the primary data remains available in the library.”



With StorNext Management Suite, AFRL can benefit from both SAN file sharing and automated data protection.

END-TO-END DATA MANAGEMENT AND STORAGE SOLUTION

The Starfire Optical Range’s ADIC Scalar 10K library provides the highly scalable resource for high capacity storage, mixing AIT and LTO tape technology in the same chassis, holding 16 drives and 2,100 pieces of media in one, high-performance library. The library’s storage networking technology provides direct FC connections, redundant path capability, and integrated management utilities, for high availability operation.

“The value of our StorNext Management Suite/Scalar 10K system is not just in the parts, as strong as they are. It was the only system we found that integrated the hardware and software elements of our storage task—file sharing, FC data access speeds, data migration, data backup and archival, and end-to-end data management—into a single unified solution. And it works beautifully.”

ADIC GLOBAL HEADQUARTERS

11431 Willows Road NE
P.O. Box 97057
Redmond, WA 98073-9757 USA

Toll-Free: **800.336.1233**
Phone: **425.881.8004**
Fax: **425.881.2296**

 www.adic.com

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“On top of access demands, we needed to have ironclad data protection. We set the system to replicate data as soon as it is written to tape. We then move the replicated data to a vault for offsite protection while the primary data remains available on the library.”

ABOUT AFRL'S STARFIRE OPTICAL RANGE

The Starfire Optical Range (SOR) develops and demonstrates optical wavefront control technologies, and is one the world’s leading adaptive optics research centers. The Starfire Optical Range houses a 3.5 meter telescope, a 1.5 meter telescope, and a 1.5 meter celeostat. In addition to its primary USAF research charter, the SOR also supports field experiments by others within the astronomical and scientific research community.

In adaptive optics, the blurring created when light passes through Earth’s atmosphere is corrected by changing the shape of a telescope’s mirror. Getting accurate results is extremely complex, requiring a system that can make corrections thousands of times a second for hundreds of actuators.

ABOUT ADIC

Advanced Digital Information Corporation (ADIC) is a leading provider of Intelligent Storage™ solutions to the open systems marketplace. ADIC is the world’s largest supplier of automated tape systems using the drive technologies most often employed for backing up open system, client-server networks.* The company’s storage management software and storage networking appliances provide IT managers innovative tools for storing, managing, and protecting their valuable digital assets. ADIC storage products are available through a worldwide sales force and a global network of resellers and OEMs, including Dell, Fujitsu-Siemens, HP, and IBM.

*IDC 2001 revenue and unit market share data for all automated systems using DLT, SDLT, LTO, 8mm, or AIT drives.