

## Nexsan 10 Minute Case Study



# CalTech Relies on Nexsan Reliability and Power Efficiency to Store Two Petabytes of Critical NASA Data

A Nexsan 10 Min. Case Study on CalTech

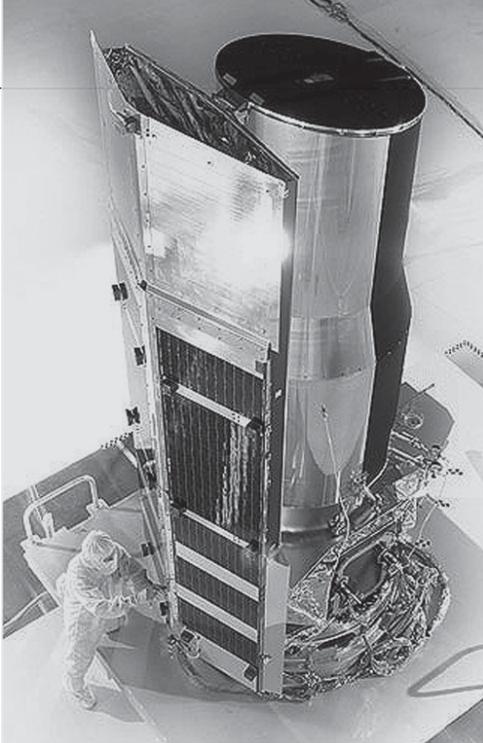
## Quick Summary

With exploding amounts of data, CalTech needed to store critical digital information for NASA on a storage system that could deliver enterprise class reliability with power efficient technology to drive down cost. With over 2 petabytes of data on Nexsan Storage, CalTech has experienced 99.9% hardware reliability over the last 7 years.

CALTECH



California Institute of Technology  
Pasadena, Calif.



“In choosing a system, we wanted to reduce storage costs, but we also required very reliable technology to reduce IT resource drain. We currently store over two petabytes of data on Nexsan storage and have estimated Nexsan’s hardware reliability to be more than 99.9% over the past seven years.”

*Eugean Hacopians, senior systems engineer, CalTech*

#### **ENVIRONMENT:**

- 2 Petabytes of infrared images
- An additional 100 Terabytes are added with each research activity
- Storage infrastructure comprised of SATABeast and SATABoy systems with 2,000 drives, 130 controllers and 65 chassis
- IBM Informix database
- Sun ZFS file system

#### **SATABEAST AND SATABOY BENEFITS:**

- Reduced energy consumption and costs through AutoMAID™ technology
- A proven 99.9% hardware component reliability rate for high availability and operational cost reduction associated with datacenter maintenance
- Low operational costs and environmentally friendly technology
- Exemplary customer support

#### **CUSTOMER OVERVIEW**

The California Institute of Technology, “CalTech,” is the operational home for the Spitzer Science Center which performs research and data collection for the NASA Spitzer Space Telescope mission. The Spitzer Space Telescope (formerly SIRTf, the Space Infrared Telescope Facility) was launched into space by a Delta rocket from Cape Canaveral, Fla. on August 25, 2003. NASA’s Spitzer Space Telescope has resulted in improved measurements of temperature and wind on remote planets and other important scientific discoveries.

With every new Spitzer research activity, CalTech collects 100 TB of new infrared image data. Researchers rely on these retained images to evaluate new information. Reliably storing this data is absolutely business critical for CalTech.

#### **BUSINESS SITUATION**

To reliably store the Spitzer images and associated research, CalTech turned to Nexsan in 2002. Over the past seven years, CalTech has deployed a combination of Nexsan SATABeast and SATABoy disk-based storage systems to retain, what is today, over 2 PB of Spitzer Space Telescope images on 2,000 drives, 130 controllers and 65 chassis. The storage infrastructure supports the IBM Informix database and Sun ZFS file system to manage extensive infrared image catalogs.



“Nexsan offers three levels of disk drive spin-down modes, and we use two of the three to keep the drives available for quick access. This has worked very well for us as we have seen significant energy savings combined with outstanding performance and reliability.”

*Eugean Hacopians, senior systems engineer, CalTech*

#### **SATABEAST AND SATABOY DELIVER:**

- **High reliability** – SATABeast and SATABoy systems are built for optimum reliability which has resulted in 99.9% hardware component reliability rating over the past seven years for CalTech. With storage system anti-vibration and cooling advances to enhance drive life and fully redundant hot swappable components, this has assured high availability for critical research programs.
- **Reduced energy consumption for a more efficient datacenter** – CalTech uses Nexsan AutoMAID technology to lower energy consumption on 50 percent of its storage systems by up to 70%. And because CalTech can select the level of access speed and energy savings they desire, energy savings can be set without the limitations of slow access times.
- **Superior customer service and support** – Nexsan’s commitment to world-class service and support delivers the expertise and responsiveness that assures CalTech that their storage infrastructure will always remain available and secure.

As Spitzer mission data continues to grow, CalTech is increasingly focused on the cost efficiency, reliability and simplified operation of its storage environment. And to drive down the operating expense that comes with over 2 PB of storage, power efficiency is a must. It is for these reasons that CalTech continues to work with its IT solution provider, ESS Direct, to utilize Nexsan SATABeast and SATABoy storage systems.

“In choosing a system, we wanted to reduce storage costs, but we also required very reliable technology to reduce IT resource drain,” said Eugean Hacopians, senior systems engineer, CalTech. “We have estimated Nexsan’s hardware reliability to be more than 99.9% over the past seven years.”

#### **NEXSAN DISK-BASED STORAGE SYSTEMS WITH AUTOMAID™**

The high-capacity SATABeast systems have been designed from the ground up to set a new standard in reliability. They provide CalTech with the industry’s best performance and cost-effectiveness in a scalable disk solution. SATABoy systems offer CalTech the exceptional performance and faster response times required for mission critical research applications.

One of the keys to lowering overall operational costs for CalTech is Nexsan’s revolutionary AutoMAID™ (Automatic Massive Array of Independent Disks) energy saving technology. AutoMAID enables CalTech to determine the level of access speed and



## **AUTOMAID™ ENERGY SAVING TECHNOLOGY**

Nexsan's revolutionary AutoMAID (Automatic Massive Array of Idle Disks) energy saving technology transparently places disk drives into an idle state to vastly reduce power and cooling costs. AutoMAID delivers the cost-effective benefits of MAID 2.0 without the limitations of slow access times and special host software.

- AutoMAID reduces power and cooling costs
- Nexsan's AutoMAID delivers the benefits of MAID without the performance limitations
- Available on all Nexsan products

## **AUTOMAID SAFETY FEATURES**

- In maximum power saving mode, drive spin up is sequenced to reduce power surges
- Drives automatically wake up for periodic surface scan to ensure data integrity (user configurable)
- AutoMAID can be used with data-intensive server applications by delivering energy savings without performance compromise

energy savings they desire to meet computing objectives while maintaining a more efficient datacenter environment. Today, CalTech uses AutoMAID on 50% of its Nexsan systems and saves up to 70% in power requirements without impacting performance.

"At Caltech we use Nexsan's AutoMAID spin-down capabilities in our archive to manage energy use and reduce storage system wear and tear," noted Hacopians. "Nexsan offers three levels of disk drive spin-down modes, and we use two of the three to keep the drives available for quick access. This has worked very well for us as we have seen significant energy savings combined with outstanding performance and reliability."

## **RESULTS**

CalTech continues to see Nexsan as its preferred storage vendor because they receive the performance, reliability and operational efficiency the Spitzer mission requires with an overall lower total cost of ownership. This has equated to significant long term investment protection as compared to other leading vendors. □

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## **ABOUT THE SPITZER SPACE TELESCOPE**

JPL manages the Spitzer mission for NASA's Science Mission Directorate, Washington. Science operations are conducted at the Spitzer Science Center at the California Institute of Technology in Pasadena. Caltech manages JPL for NASA. For more information see [www.spitzer.caltech.edu](http://www.spitzer.caltech.edu).

Presented by Nexsan Technologies

## About Nexsan

**Nexsan Corporation** is a leading provider of energy-efficient, long-term storage systems. Nexsan delivers secure storage appliances and modular, capacity-optimized disk-storage systems for a broad range of applications including fixed content storage and archiving, email, medical imaging, compliance and litigation support, disk-based backup, digital video security, and rich media.

Nexsan's solutions are the choice of small and medium-sized companies as well as large global enterprises and major governmental agencies around the world who are seeking cost-correct, high density storage solutions. Founded in 1999 and based in Thousand, Oaks, Calif., Nexsan sells its products exclusively through a select global network of VARs, OEMs and system integrators. For more information, please see the company's website at [www.nexsan.com](http://www.nexsan.com)



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