

# NASA LANGLEY CUSTOMER PROFILE

**SPECTRA® T950 TAPE LIBRARY  
WITH PYTHON ARCHITECTURE**

**IBM LTO-2 TAPE DRIVES**

**ORIGIN 2000/3000 SERVERS**

**IRIX 6.5.22F OPERATING SYSTEM**

**DIRECT ATTACHED CONFIGURATION**

**FIBRE CHANNEL CONNECTIVITY**

**BROCADE 2800 SWITCH**

**CLARIION AND TP9400 DISK  
ARRAYS**

**BAKBONE SOFTWARE**

## ABOUT NASA LANGLEY-VEHICLE ANALYSIS BRANCH

NASA's Rover Opportunity scored a near perfect Mars landing on January 24, 2004, thanks in part to Langley's analysis of Rover Spirit's trajectory and descent data, sent to Earth from Mars a few weeks earlier and stored on a Spectra T950 tape library.

## THE ORGANIZATION: NASA LANGLEY

NASA's Langley Research Center has participated in aviation and space research since its inception in 1917. It leads NASA initiatives in multiple research areas, including aerospace vehicles system technology. NASA Langley's support of Mars Exploration Rover (MER) has substantially expanded the research center's traditional planetary exploration roles of capsule flight dynamics, aerodynamics and aero-heating.

## THE CHALLENGE: STORING DATA SENT FROM MARS

In 2003, NASA Langley focused on the upcoming MER Spirit landing, scheduled for January 3, 2004. Langley was responsible for multiple aspects of the MER project, including analysis of Spirit's entry, descent and landing data. Researchers at NASA Langley would have only weeks to assess the data, then determine and test potential changes before providing their recommendation to the flight software coders. The results of the analysis could then be used to adjust Opportunity's entry, increasing its chances of success.

Prasun Desai, Langley's MER project lead, saw that the analysis would require facilities to store and protect a large volume of data. He assessed the research group's backup system, and realized that its current hardware was not up to the task of protecting the valuable data that would be traveling from Mars to Langley in early January. NASA Langley needed a centralized tape library that offered high-speed backups, large expansion capacity, and small footprint.



## ANATOMY OF A SOLUTION

**COMPANY:** NASA Langley Research Center

**PROBLEM:** NASA needed a fast, high-density tape library to store data from its January 2004 Spirit mission to reference and help guide the Opportunity mission occurring just weeks later.

**SOLUTION:** NASA chose a Spectra T950 tape library with LTO-2 tape drives to backup space, aircraft and other scientific data, including trajectory data from the January 2004 MER mission.

**RESULTS:** Analysis of Spirit's descent and landing on Mars contributed to a decision by flight controllers to program Opportunity to open its parachute higher than had been planned earlier. The analysis depended on data stored securely on the Spectra T950.

## THE SOLUTION: THE SPECTRA T950 TAPE LIBRARY

NASA Langley evaluated multiple backup solutions, and chose a Spectra T950 tape library as the best product to manage data shipped from interplanetary space. NASA's storage environment today consists of SGI Origin 2000/3000 servers; an IRIX 6.5.22F operating system; a Brocade 2800 switch; Clariion and TP9400 disk arrays; and of course, a Spectra T950 enterprise-class tape library.

"We chose the Spectra T950 after researching competing libraries because of its high performance, density and reasonable cost," said Prasun Desai, Langley's MER project lead. "We've been able to significantly improve backup speed with the highly recommended enterprise tape library."

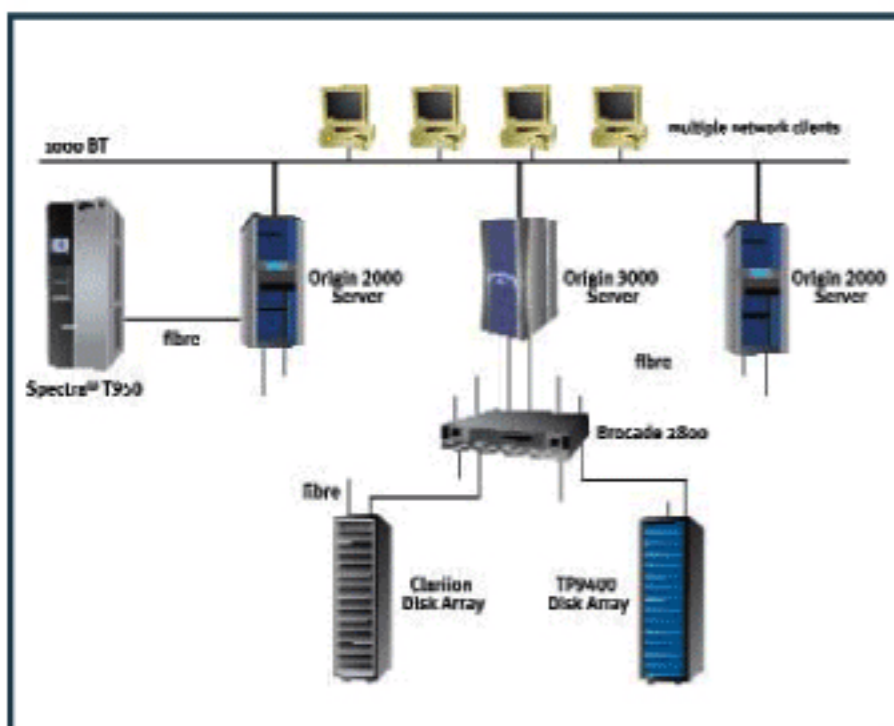
## WHY SPECTRA LOGIC?

With the Spectra Logic library, NASA Langley has been able to complete backups within a fraction of the previous backup window. Spectra Logic's tape library saves the organization valuable time and space in the data center. Aircraft, space and other scientific data is sent to NASA Langley's data center from other government sites and spacecrafts. This information is then sent to the tape library where NASA's critical data is today protected and stored by the Spectra T950 library.

The Spectra T950 library represents a revolutionary and dramatically superior approach to convenient backup, archival and HSM operations. Spectra Logic's media management system known as TeraPack™ delivers the industry's highest storage density, which is 200 percent greater than competing half-inch libraries. TeraPack also delivers significant improvements in media handling costs, operator and administrator efficiency, reliability, media management, platform longevity and performance. These features greatly lower the total cost of ownership.



Mars Exploration Rover



is a leading manufacturer of tape libraries for mission-critical data protection, backup and archival for companies worldwide. Spectra Logic was the first in the industry to automate AIT and to offer native Fibre Channel connectivity and iSCSI in a library. Currently, Spectra Logic has more than 12,000 libraries installed worldwide.

