CORAID

The Linux Storage People

NASA: Launching Affordable, Hot Swappable, Backup Storage

Coraid SR1520 Provides Low Cost Solution for Mission Critical Application

Introduction

With a rich history of innovation and expertise, NASA is the world's renowned leader in flight technology, space research and exploration. Founded in 1958, partially in response to the Soviet Union's launch of the first artificial satellite, NASA was the first to put men on the moon just a decade later. NASA launched its first space shuttle in 1981. Throughout its history, NASA has conducted and funded research that has led to numerous improvements to life here on Earth.

The Challenge

Affordable Data Backup For Mission Critical Operations

NASA's 'Living With A Star' program has a new mission critical operation call the Solar Dynamics Observatory which includes both space flight and ground station data analysis. The project aims to gain an understanding of the nature and source of the solar variability that affects life and society. The NASA's SDO Mission Operations Center needed a way to backup this critical spacecraft and intrument data onto disks that could be easily removed and stored off site if necessary. The solution not only needed to be flexible, but also had to be low cost and work seamlessly with Linux.

The Solution

Coraid EtherDrive SR1520 Storage

NASA's SDO Ground System Development Team selected Coraid's SR1520 as the disk storage component to host their Mission Operation data. The SR1520 is coupled with a Linux server, running RHEL4 and Arkeia's Network Backup software. The SR1520 is configured as a combination of RAID volumes and JBOD disks. Data backup first goes to a RAID volume. The most critical data is then backed up again to a single disk and removed

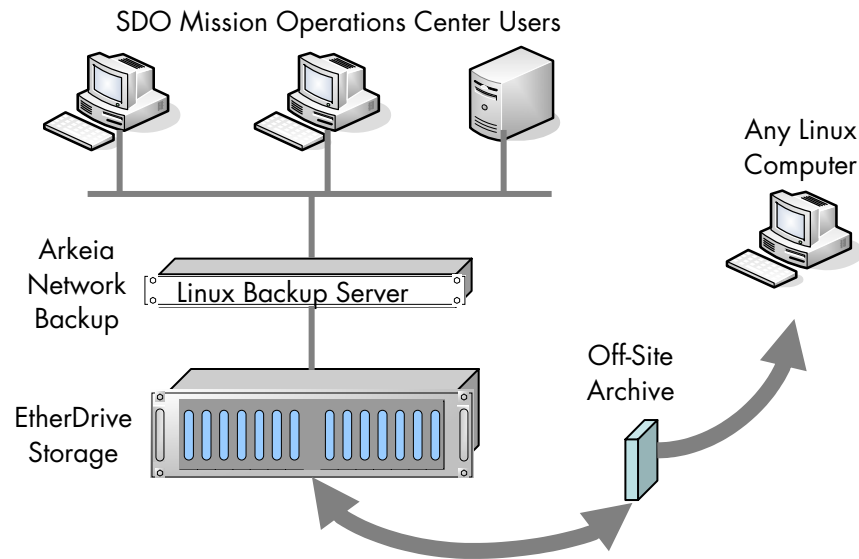**National Aeronautics and Space Administration**

Challenge

Affordable Linux based Data Backup for Mission Critical Operations

Solution

Coraid EtherDrive SR1520 used as Disk Backup

Results

Simple, Scalable Network Storage Solution at greater than **50%** cost savings over iSCSI or Fibre Channel

SDO Mission Operations Center Users

Any Linux Computer

Arkeia Network Backup

Linux Backup Server

EtherDrive Storage

Off-Site Archive

from the SR1520 for off site storage.   This is a very simple operation due to the SR1520s hot swap disk carriers that can be ejected by hand in seconds without additional tools.

"We really appreciate the Coraid AoE storage solution for its simplicity and flexibility," said Jim Wiedman, SDO IT Security Officer at NASA's Goddard Space Flight Center. Data stored on the disks taken off site can be accessed by any Linux host simply by installing the SATA disk onto any Linux computer as a direct attached disk. This gives NASA's SDO Ground System Team great comfort that their data will always be accessible from any location. "Prior to our 2008 launch, our storage needs will increase tremendously, so selecting a back up solution that is low cost and easily expands was important," said Wiedman.

Alternatives Considered

During the initial planning NASA explored various NAS and iSCSI storage solutions, but these did not provide the advantages of EtherDrive storage.   Coraid's storage strategy provided the best value with all the functionality required for NASA's Mission Operations data. Because Coraid utilized native Linux, the standards-based approach was also critical in the decision to ensure future system compatibility. "We needed low cost, removable disk storage that worked seamlessly with Linux machines, and could scale to meet our data storage needs", said Weidman. "With EtherDrive storage we saved over 50% versus alternative solutions, resulting in thousand of dollars of savings over other systems."

Summary	
Storage Type	Network backup to disk, with off-site archive
Operating System	Linux, *Red Hat Enterprise Linux 4*
Application Software	Arkeia Network Backup
Storage Size	> 4TB
Coraid Products Used	SR1520 and SR420
RAID Configuration	RAID5 and JBOD
Disk Size/Mfg	400GB Seagate
Cost Savings	Less than half the cost of iSCSI or NAS solutions
Key Decision Factors	Cost, Scalability, Reliability, Flexibility

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