

## Challenge

- Replace tape backup system for scientific work in progress
- Serve over 140 CPUs with expandable configuration

## Solution

- CORAIID EtherDrive for backups and user storage

## Benefits

- Low cost
- Long-lasting solution
- Based on open standards

## Complex Carbohydrate Research Center University of Georgia



## Introduction

When scientists at the University of Georgia probe the structures of complex organic compounds, they back up their results with CORAIID disk appliances.

Founded in 1985 and supported by federal funds, the University's Complex Carbohydrate Research Center (CCRC) investigates far more than just sugars and starches. Complex carbohydrates (polysaccharides) are found in everything from cell walls to hormones. Discovering their molecular structures is vital for understanding how living things function.

Much of CCRC's work is computational chemistry – molecular dynamics, some quantum chemistry, and analysis of NMR spectrometry data. The CCRC's five dozen scientists use Linux workstations and computation servers. Intermediate results are stored so that if a computer crashes, days or weeks of computation won't have to be repeated. Unlike business records, these backups don't have to be preserved off-site because they're not irreplaceable.

The CCRC's five dozen scientists use Linux workstations and run calculations on two server arrays comprising over 140 CPU cores. As is common in scientific computing, they rely on the long-term stability of Linux (RHEL 4 and 5).

## Challenges

Until recently, the CCRC's files were backed up on tape, but when a tape drive failed and was going to be expensive to repair, CCRC looked for another solution.

CORAIID's Ethernet-based system stood out for several reasons. "We considered SCSI devices," explains Dr. Lachele Foley, "but they require specific interface cards, and every computer already has Ethernet. Five years down the road I don't expect trouble finding a card that will connect to the CORAIID device."

CORAIID also delivered more for the price. "The cost of repairing the tape drive would have been comparable to buying the whole CORAIID system, including disks," Dr. Foley continues. "Even if repaired, the tape drive wouldn't have been as reliable. Everything else would have been more expensive."



A third reason for choosing CORAIID is its open standards. “The disks are just SATA disks – if we replace them with bigger or newer ones, we can use the old disks in ordinary workstations,” Dr. Foley explains. “We could even repurpose all the CORAIID hardware as storage for some other computer.”

*“We considered SCSI and iSCSI devices, but they require specific interface cards, and every computer already has Ethernet.”*

*Dr. Lachele Foley*

“This disk array doesn’t require proprietary software,” she adds. “In an emergency, individual disks could be put into Linux workstations and read, even without any CORAIID hardware. One of the things we like about CORAIID is that they are very open about drivers and support. It’s not scary, and they’re not trying to trap you in a service contract.”

### Solution

CCRC installed CORAIID SR1520 and SR1521 EtherDrive Networked Storage Appliance, both populated with 1-terabyte disks, and a CORAIID EM22 Mirror Appliance, allowing the disk space to be virtualized and presented to the computers in any convenient arrangement.

This is not just a backup system. “Once we got it, we also started using it for user space,” says Dr. Foley. Accordingly, the EM22 mirrors three 1-terabyte disks as JBOD to the file server, for user space, and four 1-terabyte disks as RAID 5 to the backup machine. In addition, eight 1-terabyte disks are served directly to the backup machine without mirroring.

Storage type	Network backup of work in progress, and user file space
Operating system	Linux, Red Hat Enterprise Linux (RHEL) 4 and 5
Application software	Computational chemistry research tools
Storage size	> 15 TB
CORAIID products used	SR1520, SR1521, EM22
RAID configuration	JBOD and RAID 5
Disk size	1 TB
Cost savings	Cheaper to buy this whole system than to repair the unreliable tape drive that it replaced
Key decision factors	Cost, open standards, versatility