Spectra Logic solutions help Brooks Lab at the University of Michigan archive research data

> " For nearly a decade our Spectra storage library and disk solutions have met or exceeded our research group's storage needs at an affordable price point. "
>
> *David Braun, lab manager, Brooks Lab at University of Michigan ***

Spectra T680 Tape Library and NAS disk solution

About Brooks Lab at the University of Michigan

Brooks Lab is a theoretical chemistry lab led by primary investigator Charles L. Brooks III in the Department of Chemistry and Biophysics Program at the University of Michigan. The university, a renowned Big 10 school based in Ann Arbor, Michigan, is considered one of the foremost research universities in the United States. Research in the Brooks Lab is focused on the application of statistical mechanics, quantum chemistry, and computational methods to chemically and physically oriented problems in biology.
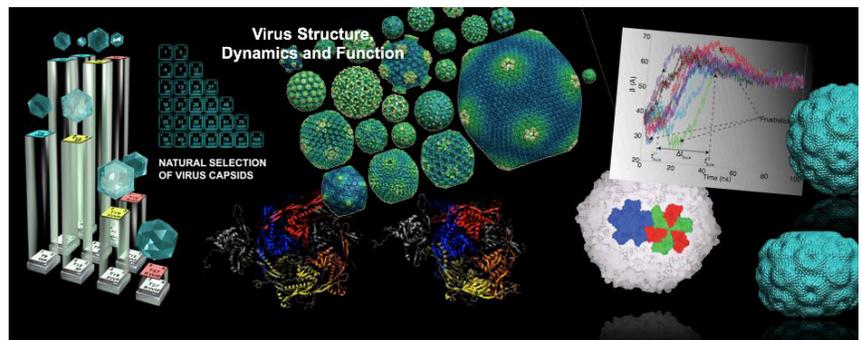
The Brooks Lab group offers undergraduate, graduate and pre- and post-doctoral positions addressing topics from molecular dynamics and free-energy calculations to programming and software development projects for modeling and simulation.

The Challenge

The University of Michigan is one of the top public research institutions in the United States and houses nearly 20 individual colleges ranging from dentistry to public policy. Researchers at the Brooks Lab alone have produced almost 400 publications since the group's inception in 1980 in the form of journal publications, manuscripts in press, conference proceedings, books and chapters. Their research documentation and simulation data needs to be preserved for long periods of time, in case any of it is ever academically challenged.

The Brooks group also oversees the development and support of six different research software programs that facilitate their theoretical experimentation. For example, a molecular mechanics and modeling software called CHARMM focuses on high-performance computing on large parallel and distributed supercomputers, including accelerated molecular dynamics using GPUs.

The Solution

Over the past two decades, the Brooks Lab at University of Michigan has rotated through many data storage options, including: an ATL library, a magneto

Virus research imagery from the Brooks Lab website.

optical library, a StorageTek® Powderhorn library, a DLT library, as well as Spectra Logic tape libraries and disk products.

For over seven years, the lab has relied solely on Spectra Logic enterprise tape and disk solutions to record and archive critical research data. Their first Spectra purchase was in 2011, when they installed a T380 Tape Library with LTO-5 drives and media. In 2013, the University deployed a Spectra NAS solution and TranScaled to a Spectra T680 Tape Library from a T380 Tape Library. Spectra Logic's unique tape library architecture with interchangeable parts enables users to TranScale (or upgrade) seamlessly from one Spectra library to another as their organizations grow.
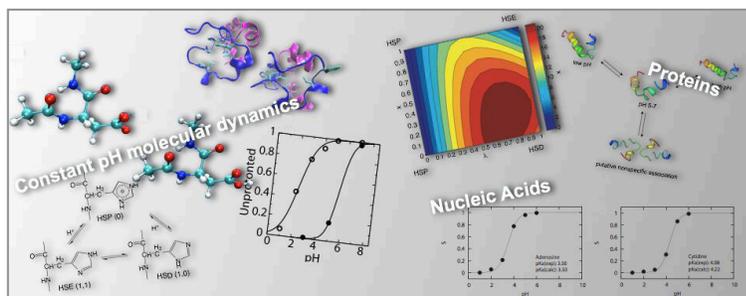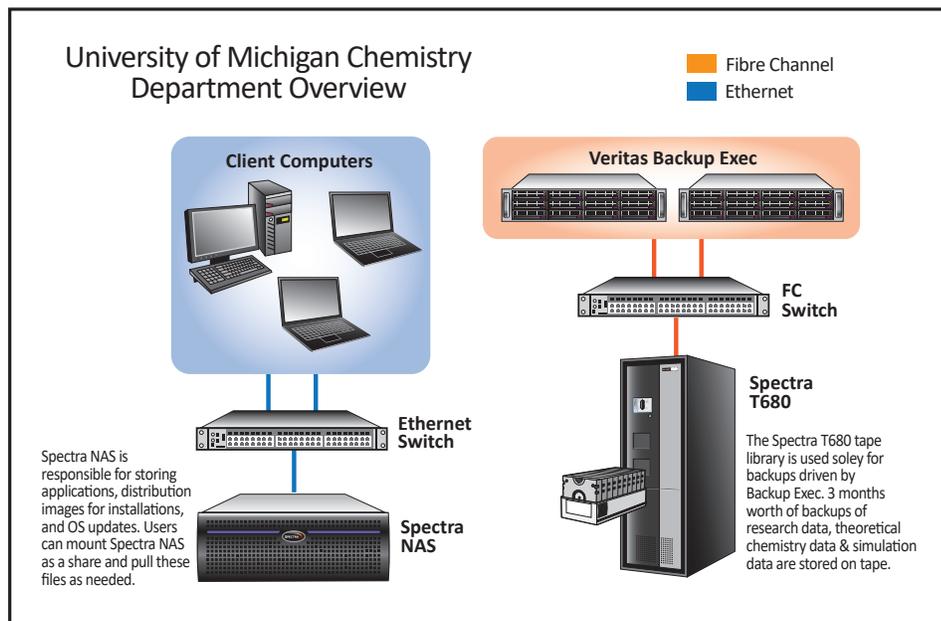
The lab keeps their disks roughly 60 to 80 percent full at any given time, and the tape library is used strictly for backup purposes, with the lab running incremental and full backups directly to tape on a weekly basis. They store various shared applications across a 7,000-core cluster and keep nearly a petabyte on spinning disk. The Spectra T680 tape library provides a number of features and tools to ensure an effortless management experience. The Spectra NAS Solution enables expandable raw storage capacity, which is important for the Brooks Lab since their binary data doesn't compress well.

Timeline

- **2011 -** Installed Spectra T380 tape library with LTO-5 drives and media
- **2013 –** TranScaled T380 tape library to a Spectra T680 tape library and added a Spectra NAS solution into the network environment

Environment Snapshot

- Spectra T680 Tape Library
- Eleven LTO-5 Tape Drives
- Spectra NAS Disk Solution, 4U
- Ten 4TB Disk Drives
- Dell, HP and Supermicro Servers
- Veritas Backup Exec

University of Michigan Chemistry Department Overview

Fibre Channel
Ethernet

Client Computers

Veritas Backup Exec

FC Switch

Ethernet Switch

Spectra NAS

Spectra NAS is responsible for storing applications, distribution images for installations, and OS updates. Users can mount Spectra NAS as a share and pull these files as needed.

Spectra T680

The Spectra T680 tape library is used solely for backups driven by Backup Exec. 3 months worth of backups of research data, theoretical chemistry data & simulation data are stored on tape.

Brooks Lab imagery of molecular research.

Why Spectra?

- Ease of use
- Disk and tape offerings
- Reliability
- Affordability
- Multi-year bundled support
- Trusted long-time relationship

Solution Recap

Spectra Enterprise Tape Libraries – Spectra enterprise tape libraries are designed for incremental growth, as they accommodate the storage requirements of organizations in every state of their growth lifecycle. When data growth requires more slots than the library's current capacity, Spectra transfers the components of the existing library and puts them in a larger chassis. As data needs expand, all that changes is the outgrown frame.

Spectra NAS Solution – The Spectra NAS Solution is the optimal disk platform for the storage of mid-tier data, including primary storage offload, data staging, backup and archiving. Flexible, simple and affordable, the Spectra NAS delivers file storage for as low as 7.5 cents per gigabyte. The expandable NAS disk solution provides raw storage capacities from 48TB to 10.7PB. Designed for a variety of workloads, a single NAS solution supports three different disk drive types, including 4TB, 8TB and 12TB enterprise drives; 8TB archive drives; and high-performance SSD drives. Reliable, economical and archive-ready, Spectra NAS simplifies the data storage process.