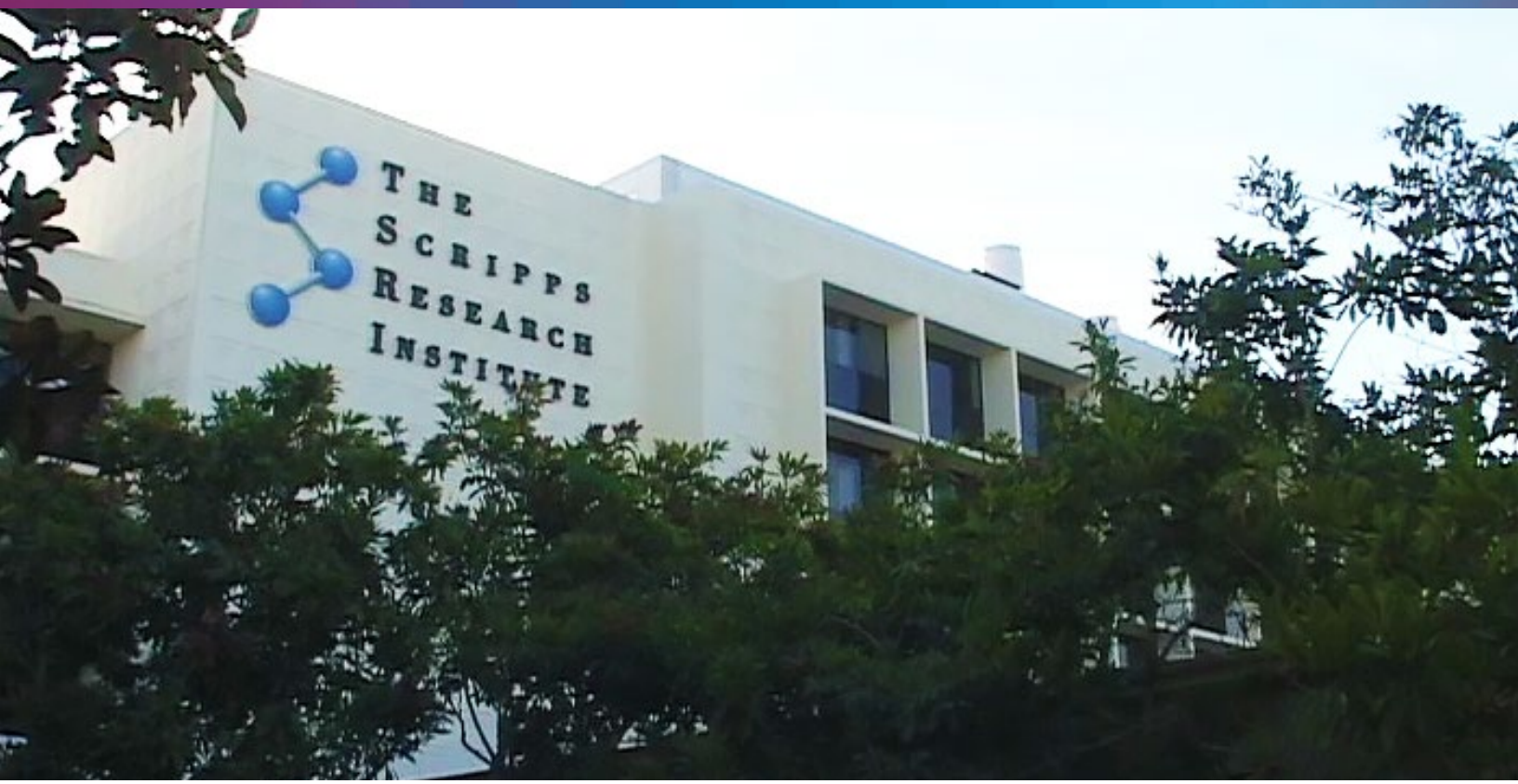
Quantum



CASE STUDY

Advancing Biosciences at The Scripps Research Institute—with Quantum Storage

Researchers at The Scripps Research Institute rely on tiered storage technology to help them advance knowledge in biosciences. The institute's IT group deployed a StorNext multi-tier storage solution and DXi deduplication appliances to protect and provide access to their invaluable data archives.

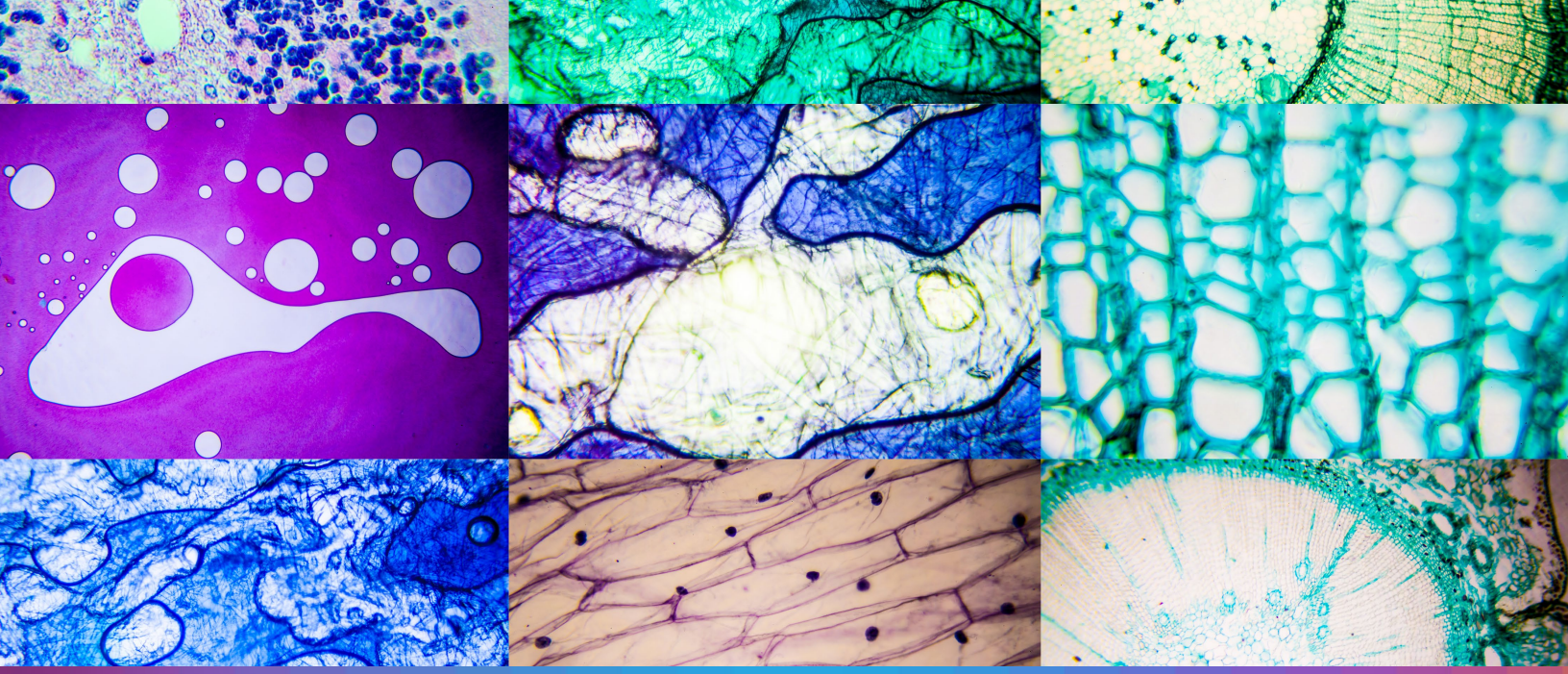
The Scripps Research Institute

FEATURED PRODUCTS

StorNext®

> "StorNext provides a single, transparent namespace for the entire scientific archive. Researchers can access data easily, no matter where that data physically resides—on disk or tape."

Brant Kelley
Director of IT Services, Scripps Research



> With StorNext, we can support Windows and Mac systems in addition to UNIX and Linux. Researchers can make the most of our resources without changing how they work.

Brant Kelley - Director of IT Services, Scripps Research

The Scripps Research Institute

SOLUTION OVERVIEW

- StorNext® Scale-out Storage, including
  - StorNext M445Q Metadata Appliance
  - StorNext G302 Gateways
  - StorNext QXS™-1200 Storage
- Scalar® i6000 Tape Libraries
- DXi® Deduplication Appliances

KEY BENEFITS

- **Provides flexible access to all research data** through a file system with a single namespace
- **Offers a large yet cost-effective archive** with the ability to scale easily in the future
- **Protects data for the short and long term** with deduplication and tape for backup
- **Provides heterogeneous access to data,** supporting a full range of operating systems
- **Meets needs of different research workflows** via policy-based, per-group data tiering

The Scripps Research Institute is one of the largest non-profit research institutes in the world. Funded primarily by the National Institutes of Health, the organization's 3,000 faculty members, staff, students, and post-doctoral researchers contribute to fundamental research in a broad array of biomedical fields, ranging from electron microscopy and x-ray crystallography to genomics and proteomics.

The institute's IT group is tasked with providing technology resources to support that research. In addition to offering high performance computing (HPC) resources, the IT group must store, protect, archive, and enable access to large amounts of scientific data.

NEEDING TO REPLACE A SLOW HSM WITH HIGHER-SPEED STORAGE THAT SCALES

The institute's IT group needed to replace the hierarchical storage management (HSM) environment previously used to store and archive scientific data. The group had been using a storage virtualization solution.

"Our previous HSM solution was robust and stable, but it was very slow," says Brant Kelley, director of IT services, Scripps Research. "We needed a new, modern storage platform that could deliver the performance users demand."

The new solution also had to accommodate a large volume of data. "A single genome sequence can be 200 TB," says Kelley. "We wanted a storage platform that could support more than 1 PB of unique data and present that data in a single, transparent namespace to enable sharing and easy access."

NEEDING A NEW BACKUP SOLUTION FOR ADMINISTRATIVE AND LAB SERVERS

In addition to needing a new scientific archive, the institute's IT group needed to refresh its Veritas NetBackup solution. "We back up data used in the institute's general operations as well as some lab-based servers and a large number of desktop computers," says Kelley. "We do a full 400 TB backup once per month, and we protect approximately 250 TB through the daily incremental backups."

The refresh would involve new software and hardware. "We planned to replace our old tape libraries as well as the standard disk pool that was available to NetBackup," says Kelley. "We needed robust, reliable solutions that could support that large amount of backup data."

CONTROLLING ENERGY COSTS BY USING TAPE FOR THE SCIENTIFIC ARCHIVE

The institute's IT group decided to continue using tape as an archive tier, in large part to control costs. "Tape is much more economical than disk," says Kelley. "Not only are the tape cartridges cost-effective, but the tape libraries also consume less energy than disk. Here in the San Diego area, energy is extremely expensive, so reducing energy costs is critical."

The institute's IT group also found that the data access speeds of tape were sufficient for typical scientific workflows. "Our researchers don't retrieve archived data very frequently," says Kelley, "so they have no problem keeping data on cost-effective media such as tape."

ADOPTING STORNEXT MULTI-TIER STORAGE FOR A PETASCALE ARCHIVE

After evaluating a full range of solutions, the institute's IT group selected a multi-tier StorNext solution from Quantum for its HSM environment. Powered by StorNext data management software, the solution includes a StorNext metadata appliance, StorNext gateway appliances, and StorNext QXS high-speed primary disk, as well as Quantum Scalar i6000 tape libraries. The StorNext multi-tier environment now holds more than 3 PB of scientific data. A secondary data center, with additional Scalar i6000 tape libraries, keeps tiered copies of the data.

"StorNext provides a single, transparent namespace for the entire scientific archive," says Kelley. "Researchers can access data easily, no matter where that data physically resides—on disk or tape."

DEFINING PER-GROUP POLICIES TO ENABLE DIFFERENT RESEARCH WORKFLOWS

The institute's IT group uses StorNext's policy-driven tiering feature to define per-group data migration policies to meet the different workflow needs of different groups. "One group might want to archive data to tape immediately while another might want to keep data on primary disk for a longer period," says Kelley. "With StorNext, we can define policies to best suit the specific workflow needs of each group."

IMPROVING DISASTER RECOVERY WITH POLICY-DRIVEN TIERING

The IT group also uses StorNext policy-driven tiering to move data between the primary data center and the local DR site, ensuring that data remains available and accessible even in the case of a disaster. "We use StorNext to automatically copy every file in the disk tier to the tape library at the secondary site," says Kelley. "If there's a flood or a building fire, researchers will not lose their data."

SUPPORTING HETEROGENEOUS ACCESS ACROSS MAJOR OPERATING SYSTEMS

With thousands of users, the IT group must accommodate a broad range of operating systems. "Our previous platform made it difficult to support operating systems other than UNIX and Linux," says Kelley. "With StorNext, we can support Windows and Mac systems in addition to UNIX and Linux. Researchers can make the most of our resources without changing how they work."

MAINTAINING DATA INTEGRITY OVER THE LONG TERM WITH EDLM

The institute's IT group takes advantage of StorNext's Extended Data Life Management (EDLM) feature to help maintain the integrity of data stored on tape. "The EDLM feature is valuable to us," says Kelley. "We currently have our environment configured so that our staff receives an alert if a tape begins to develop problems. In the future, we plan to have the

"We wanted to kill two birds with one stone. We've been able to address our data protection challenges and build a better scientific data archive, all within the same Quantum ecosystem."

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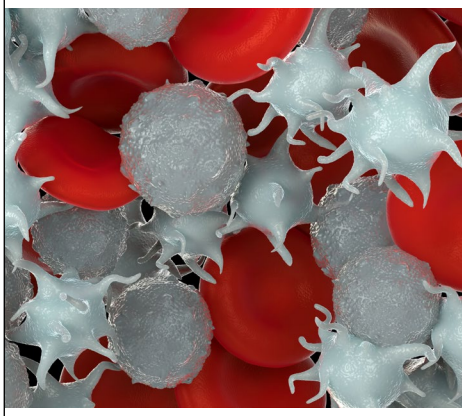

ABOUT THE SCRIPPS RESEARCH INSTITUTE

The Scripps Research Institute is one of the largest, private, non-profit research organizations in the world. With campuses in La Jolla, California, and Jupiter, Florida, the institute is at the forefront of basic biomedical science—a segment of medical research that seeks to comprehend the most fundamental processes of life. The institute's IT group is responsible for delivering the technology resources to archive and protect irreplaceable scientific research data.

Images courtesy of The Scripps Research Institute

StorNext EDLM feature automatically migrate data from a suspect tape to new media. We can make sure research data remains protected and usable for years to come."

PROVIDING FAST ACCESS TO DATA

The institute's IT group uses StorNext gateway appliances with 10 GbE to give users rapid access to data in the StorNext multi-tier environment. "Researchers always want things to run faster," says Kelley. "The best we can do is remove the bottlenecks between the creator of data and the point of ingest into the StorNext environment. By using 10 GbE and a StorNext gateway, we can provide rapid access to data at a reasonable cost."

The IT group uses the StorNext distributed LAN client (DLC) to maximize performance for users. "Several of our labs continually generate really large data sets, and we wanted to improve data transfer rates," says Kelley. "We were able to do that with the StorNext DLC. It's definitely faster than NFS or Windows file sharing."

BOLSTERING BACKUP WITH QUANTUM DXi DEDUPLICATION APPLIANCES

The institute's IT group selected Quantum DXi deduplication appliances along with Quantum Scalar i6000 tape libraries to help refresh their Veritas NetBackup solution. One DXi is deployed in La Jolla, California; another is deployed at the institute's Jupiter, Florida site, where it serves as a replication target. "With Quantum, we can store three full months of backups—one month on the DXi systems and the other two months on the Scalar tape libraries," says Kelley.

The Quantum solutions integrated easily with the NetBackup media servers. "The support for OpenStorage Technology (OST) enables us to write directly to the DXi systems," says Kelley.

With DXi deduplication, the IT group can maximize the value of storage and control costs. "Deduplication works well to help consolidate space," says Kelley.

GAINING THE AGILITY FOR GROWING DATA AND CHANGING REQUIREMENTS

With Quantum storage, the Scripps Research team now has a flexible platform that can accommodate emerging technologies. For example, the IT group now plans to migrate from LTO-5 to LTO-7 tape drives to capitalize on the speed and density of LTO-7. "We can make changes to our environment without having to rip and replace our Quantum investments," says Kelley.

QUANTUM STORAGE IS THE RIGHT CHOICE

The Quantum solutions have enabled the institute's IT group to refresh its infrastructure and overcome specific obstacles cost-effectively, without having to deal with numerous disparate platforms and vendors. "We wanted to kill two birds with one stone," says Kelley. "We've been able to address our data protection challenges and build a better scientific data archive, all within the same Quantum ecosystem."

Quantum

Quantum technology and services help customers capture, create, and share digital content—and preserve and protect it for decades at the lowest cost. Quantum's platforms provide the fastest performance for high-resolution video, images, and industrial IoT, with solutions built for every stage of the data lifecycle, from high-performance ingest to real-time collaboration and analysis and low-cost archiving. Every day the world's leading entertainment companies, sports franchises, research scientists, government agencies, enterprises, and cloud providers are making the world happier, safer, and smarter on Quantum. See how at **www.quantum.com**.

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