



CASE STUDY

Protecting Fast-Growing Research Data for Max Planck Society Institutions with Quantum StorNext

The Joint Network Center (GNZ) at the Fritz Haber Institute (FHI) provides an array of technology services for Max Planck Society institutes and facilities in Berlin and Brandenburg, Germany. To better protect large volumes of scientific data, the GNZ needed to accelerate its storage backup process and improve archiving. By implementing a Quantum StorNext solution, the organization has been able to shrink its backup window, reduce costs, help ensure the long-term integrity of data, and gain the scalability to support fast-growing scientific data volumes.

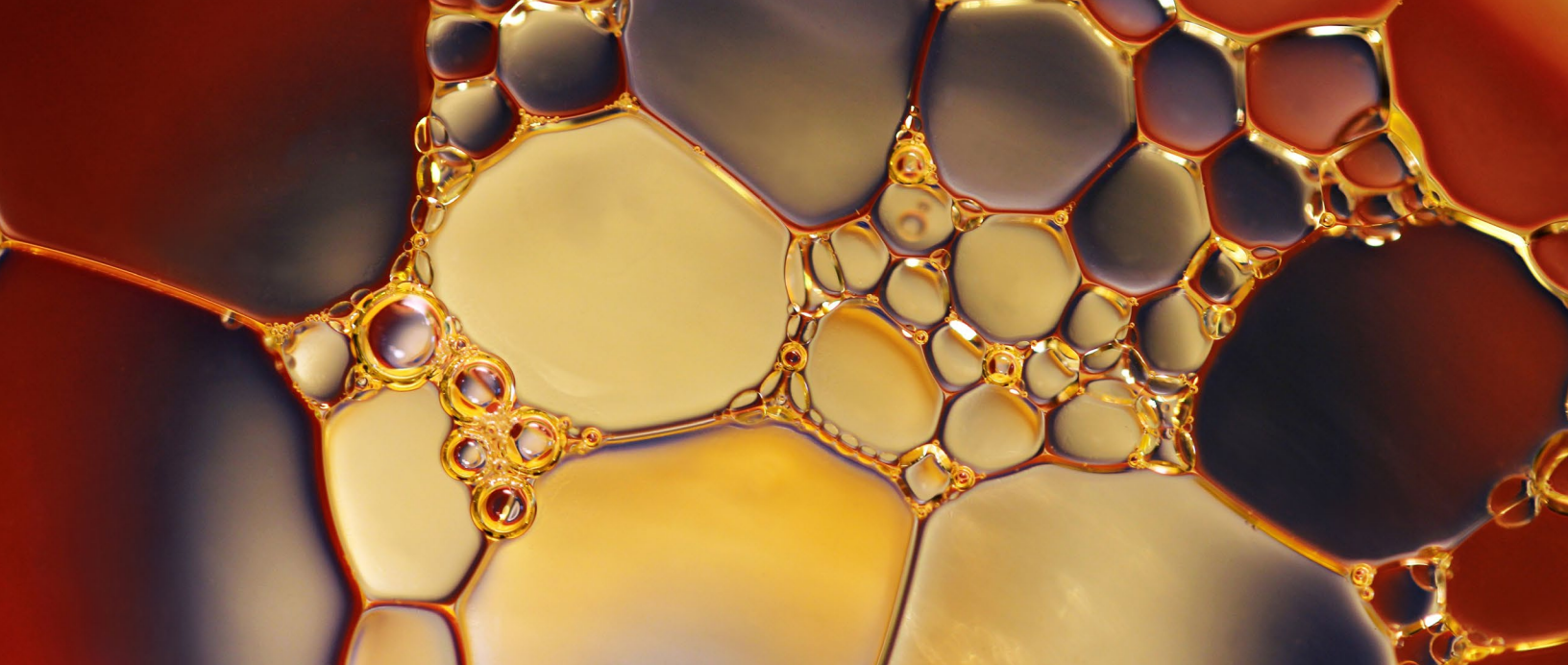


FEATURED PRODUCTS



Scientific research data continues to show explosive growth. With our StorNext environment, we know we're ready.

Gerd Schnapka
Head, Joint Network Center (GNZ)



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Stefan Schülke - Storage and Virtualization, Joint Network Center (GNZ)



FRITZ-HABER-INSTITUT
MAX-PLANCK-GESELLSCHAFT

SOLUTION OVERVIEW

- Quantum StorNext® File System
- Quantum Xcellis® Workflow Director
- Quantum Xcellis Workflow Extender
- Quantum Scalar® i6 Tape Library
- FUJITSU ETERNUS DX200 SAN Storage
- Veeam Backup and Replication Software

KEY BENEFITS

- **Dramatically accelerated the backup process**, adhering to strict nightly backup windows.
- **Streamlined storage administration**, simplifying tasks for a small, 10-person team.
- **Lowered costs by avoiding expensive licensing** employed by conventional NAS systems.
- **Gained scalability for fast-growing volumes** of scientific research data.
- **Enabled expansion to new institutions** with seamless integration of storage systems.

The GNZ manages massive volumes of critical data for Max Planck Society researchers at the FHI and additional institutes in Berlin and Brandenburg. Scientists from across the globe work and research at the Max Planck Institutes in various scientific fields such as molecular plant physiology and gravitational physics.

To help protect that data and ensure it remains readily accessible by researchers, GNZ administrators conduct regular backups from two data center locations. The GNZ uses a Veeam data management solution to back up data from VMware-virtualized servers. That data is later archived to tape to preserve it for the long term.

As data volumes have grown over the years, administrators have needed to back up approximately 120 TB of data each night. But the existing storage infrastructure could not deliver sufficient performance to conform to the nightly backup window.

With the total amount of stored data quickly pushing past 1 PB, the GNZ also needed a more scalable platform that could continue to expand

without requiring major upgrades. "Scientific data can grow rapidly," says Stefan Schülke, who manages Storage and Virtualization at the GNZ. In molecular plant physiology research, for example, enormous databases are created for the analysis of plants and their gene activities.

DISCOVERING THE QUANTUM STORNEXT PLATFORM

The GNZ team explored a range of potential approaches and storage file systems that could help speed backup windows and enable scalability. For example, the team considered parallelization with the BeeGFS parallel cluster file system and tested the Ceph File System, but both platforms had limitations that forced the team to keep looking.

Fortunately, the GNZ team discovered Quantum StorNext. "We were introduced to the Quantum StorNext platform at a StorNext workshop in Mainz," says Thies Garling, who manages Storage and Services at the GNZ. "The event was organized by the Max Planck Institute for Chemistry, which has been using StorNext successfully for a long time."

After learning about the potential of StorNext for achieving fast transfer rates, integrating a hierarchical storage management (HSM) system, and using a favorable licensing model, the GNZ team moved forward with a proof of concept. A StorNext demo environment was installed and configured by the Quantum Professional Services team, which supported the GNZ team during PoC. Successful tests led GNZ to select StorNext as a key part of a multi-faceted solution.

DEPLOYING THE NEW STORNEXT ENVIRONMENT RAPIDLY

Quantum worked with the GNZ team to design the multi-user solution built on StorNext to fulfill current and foreseeable needs, and to allow further scalability in performance and capacity. A Quantum StorNext Xcellis Workflow Director serves as the central StorNext instance. A Quantum StorNext gateway provides a high-performance connection between Berlin and Golm locations, 50 km apart, via the StorNext distributed LAN clients (DLC) protocol. The GNZ uses a Quantum Scalar i6 tape library with six LTO-7 and two LTO-8 drives plus one Extended Data Life Management (EDLM) drive to archive data and help ensure its long-term integrity.

The solution incorporates a Fujitsu SAN storage as StorNext file system user data storage. Backups are then transferred to the Quantum tape library for archiving.

The solution could be deployed in a few days based on hand-in-hand work of all involved parties, such as the partner for SAN storage, the Quantum Services Team for hardware installation and configuration, and of course the GNZ team for integration into the existing infrastructure. "The Quantum support team helped address all potential problems expertly," says Stefan Schülke. "In particular, our Quantum software support technician went beyond standard working hours to help resolve even complicated issues."

ACCELERATING BACKUPS OF VITAL DATA BY 2X

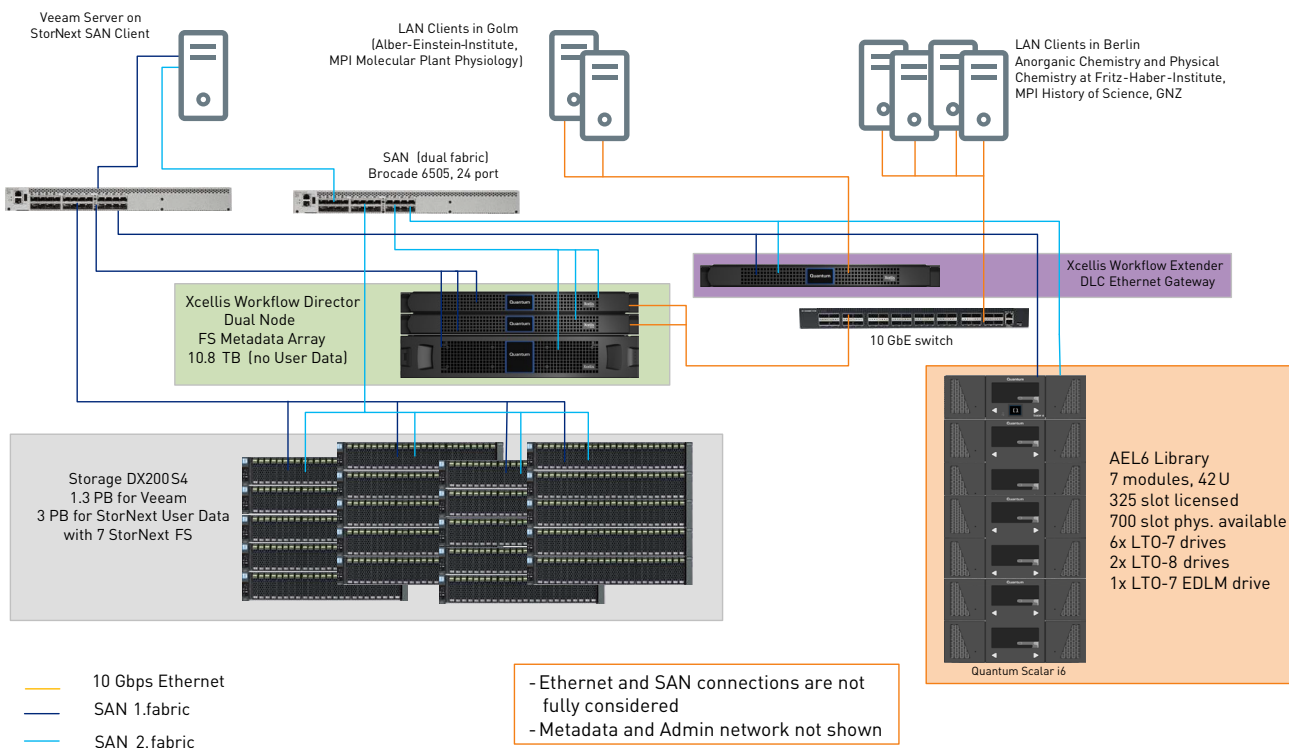
With the StorNext platform in place, GNZ is now able to back up large and growing volumes of scientific data quickly and reliably. Veeam Backup and Replication is used to back up the large VMware environment. Today, the backups run in a time window of 24 hours; in the past, the VM environment could only be backed up every 2 days. "The previous performance problems with

"Demand is growing. And because of the system's easy administration and scalability, we can operate and expand it without problems."

Thies Garling,
Storage and Services,
Joint Network Center (GNZ)

ABOUT GNZ

The Joint Network Center (Gemeinsames Netzwerkzentrum [GNZ]) at the Fritz Haber Institute (FHI) provides a full array of network infrastructure, IT security, and data storage services for the institutes and facilities of the Max Planck Society in Berlin and Brandenburg. Researchers from across the globe work through the FHI to advance basic science by investigating the principles underlying the chemical conversions of matter and energy.



StorNext Use Cases:
 -Veeam Backup
 -Expand StorNext to MPI in Potsdam Golm
 -HSM

GNZ implemented a multi-faceted solution based on the Quantum StorNext platform.



the backup process have been solved,” says Stefan Schülke. The organization can now adhere to nightly backup windows, helping ensure that research data is protected and readily available to scientists.

GAINING SCALABILITY FOR FUTURE DATA GROWTH—AND DOUBLING THE NUMBER OF SUPPORTED INSTITUTES

The new storage environment gives the GNZ the scalability to handle fast-growing scientific data volumes. “Demand is growing,” says Thies Garling. “And because of the system’s easy administration and scalability, we can operate and expand it without problems.”

The GNZ is also well prepared for supporting additional research institutes. “Since the Quantum StorNext installation, we have doubled the number of participating institutes from three to six,” says Stefan Schülke. Another

future addition—a group that focuses on inorganic chemistry—will need to store large volumes of high-resolution camera data. But GNZ team anticipates no problems seamlessly integrating this and other institutes with its highly scalable StorNext environment.

STREAMLINING MANAGEMENT AND REDUCING COSTS

Though the GNZ must manage a large, seemingly complicated storage environment, the GNZ team itself is relatively small, with just 10 people. Through centralized administration, the StorNext solution helps streamline ongoing management, enabling this small team to handle operations.

The StorNext-based solution is also helping control costs. Unlike some conventional NAS systems, the Quantum StorNext file system and Fujitsu storage

systems do not require a capacity license. As a result, the GNZ can focus more of its budget on other projects and services.

ENHANCING THE VALUE OF THE GNZ

By delivering higher storage performance and greater scalability without adding administrative complexity, the new StorNext environment is helping the GNZ to expand from its previously narrow role as a pure infrastructure provider to more of a comprehensive IT service provider for the Max Planck Society institutes. “Scientific research data continues to show explosive growth,” says Gerd Schnapka, Head of the GNZ. “With our StorNext environment, we know we’re ready.”

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