Quantum

CASE STUDY

Ivy League University Saves Up To 75% With Private-Cloud Archive

Many research and teaching universities face a daunting combination of conflicting storage problems. Data is increasing across departments at a rapid rate, and files—even those with older data—are critical to keep for future use. But budgets are under constant pressure. One Ivy League institution is solving the problem by creating a petabyte-scale archive that uses Quantum's Artico solution to build a cost-effective private cloud. The files will be kept secure for years; users will have direct access to all the content; and the university's costs will be up to 75% lower than with public cloud storage.

FEATURED PRODUCTS

Artico NAS Appliance & Scalar i6000 Tape Library

With Artico, users see a NAS presentation of all the files in the share, and when they retrieve files, they are brought back directly for use no matter which tier of the archive they reside on—all invisible to the business users.

The total cost of the Artico solution, which provides 73TB of disk and 4.8PB of tape storage, was much lower than the public cloud that the university investigated—less than 0.25 cents per gigabyte per month—a savings of up to 75%.

SOLUTION OVERVIEW

- Artico™ NAS appliance with 73TB of disk storage
- Scalar® i6000 LTO tape archive with combined 4.8PB capacity

KEY BENEFITS

- Provides petabyte-scale private cloud archive with up to 75% savings over public cloud implementations
- Automatic movement of data between tiers maximizes performance access to active data and minimizes cost of storage for less active data
- All data on all tiers is accessible through a single file system, offering simplicity for end users as well as for IT
- Designed to support individual billing for different departments, allowing a central resource to be funded across multiple budgets
- Automated multiple copies of files in different locations for backup and DR protection
- Redundancy and automated data integrity checking keeps data safe and available to provide continuous data access

RUNNING OUT OF SPACE FOR CRITICAL ASSETS

The first place that the data problem became obvious for the university was in the life sciences departments where genomic sequencing and other big data operations were creating rapidly increasing data sets. The IT team had installed high-speed NAS storage for active processing but was unwilling to pay for high-performance primary storage for storing the files after their initial analysis. The files need to be retained—they hold crucial information that can be mined in the future as researchers create newer, more advanced analytic applications—but they might not be accessed for months or even years.

In the meantime, similar storage problems were arising in other arts and sciences departments where digital assets were also accumulating rapidly. Departments had been given their own local storage resources, most of which were still adequate for active work—but saving older materials in a way that could keep them safe, accessible, and economical was a problem. And funding was complex because each department had its own budget.

MORE PRIMARY DISK? THE CLOUD?

Adding more primary disk was too expensive to consider for long-term retention of data, and keeping data on active primary disk also meant higher levels of administrative overhead for maintaining the storage nodes, backing them up, and moving files to secure off-site long-term protection.

The next solution that the team explored was utilizing major cloud storage providers for departments to retain data. That moved the problem out of the direct management of the IT team, but the costs were significant—a typical rule-of-thumb cost figure is 1 cent per gigabyte per month—and they would keep accumulating over time. In addition, the data would be out of the university's direct control.

TIERED ARCHIVE SOLVES STORAGE PROBLEM ACROSS DEPARTMENTS

The university's IT team found a better solution, building a private cloud using Quantum's Artico intelligent NAS solution. Artico is a NAS storage appliance that can be shared—like any other NAS device—between multiple departments and users. But it also includes storage management software, StorNext® 5, that is designed to move data from the internal performance disk resource to secondary tiers of archive storage. With Artico, users see a NAS presentation of all the files in the share, and when they retrieve files, they are brought back directly for use no matter which tier of the archive they reside on—all invisible to the business users. Artico provides flexibility by offering support for both public cloud and object storage tiers, as well as LTO-based archive libraries, which serve as the second tier at the university.

The solution is deployed so that each department is provided access to its own NAS share on the Artico appliance. Users drag files to the appropriate share when they want to move them to the archive. As soon as the files are moved to Artico, they are stored on internal performance disk. User policies immediately copy the data to each of two Scalar i6000 LTO tape libraries, which are placed in different physical locations, to provide DR protection. As files on Artico performance disk age, and as more space on that disk is needed, file data on disk can be removed, leaving only the tape copies. Users continue to see the files in the directory structure where they were originally placed, and users can launch them from that location. If the files exist only on tape, they will automatically be brought back from tape to disk, where they can become active again.

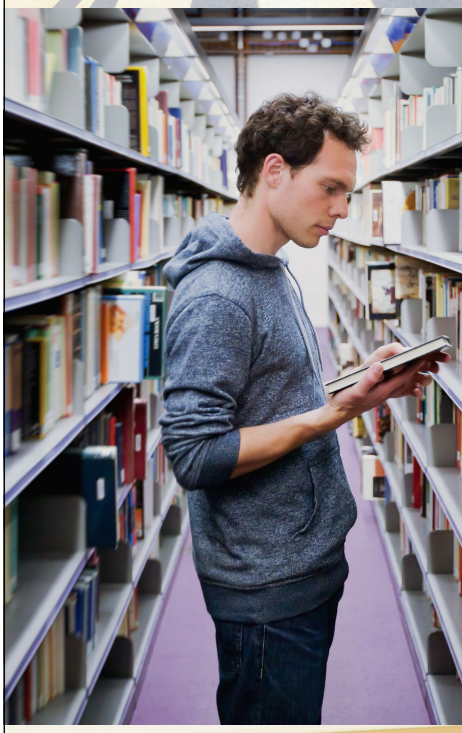
COSTS UP TO 75% LOWER THAN CLOUD

The total cost of the Artico solution, which provides 73TB of disk and 4.8PB of tape storage, was much lower than the public cloud that the university investigated—less than 0.25 cents per gigabyte per month—a savings of up to 75%. Users still have direct access to the data, and all the data is stored in two separate locations, all under the direct control of the university IT team. The university conducted extensive proof-of-concept testing to make sure that the system—and the service team behind it—could deliver. During the tests, Quantum provided access to new software features that will let the university IT team track the storage utilization of different departments to allow distributed charging for the central resource.

BUILT FOR HIGH AVAILABILITY AND SECURE LONG-TERM RETENTION

Artico tiered archives are designed to provide the levels of availability required of a storage solution holding critical—and extremely valuable—assets for years. The disk arrays and controllers feature full redundancy with active-active failover, and the data management software at the core of the system is among the most widely used solution of its kind, providing management for some of the most valuable data sets on the planet—everything from satellite downloads to genomic sequencing to geospatial applications to major studio feature films.

The Scalar i6000 tape libraries offer unique features to ensure long-term integrity of data. This includes automated testing of media to assess integrity of files over very long periods of time and automated migration of data to new media if error rates begin to increase. A single point of management for the entire archive gives administrators a direct view of all the storage elements to streamline control and minimize overhead.



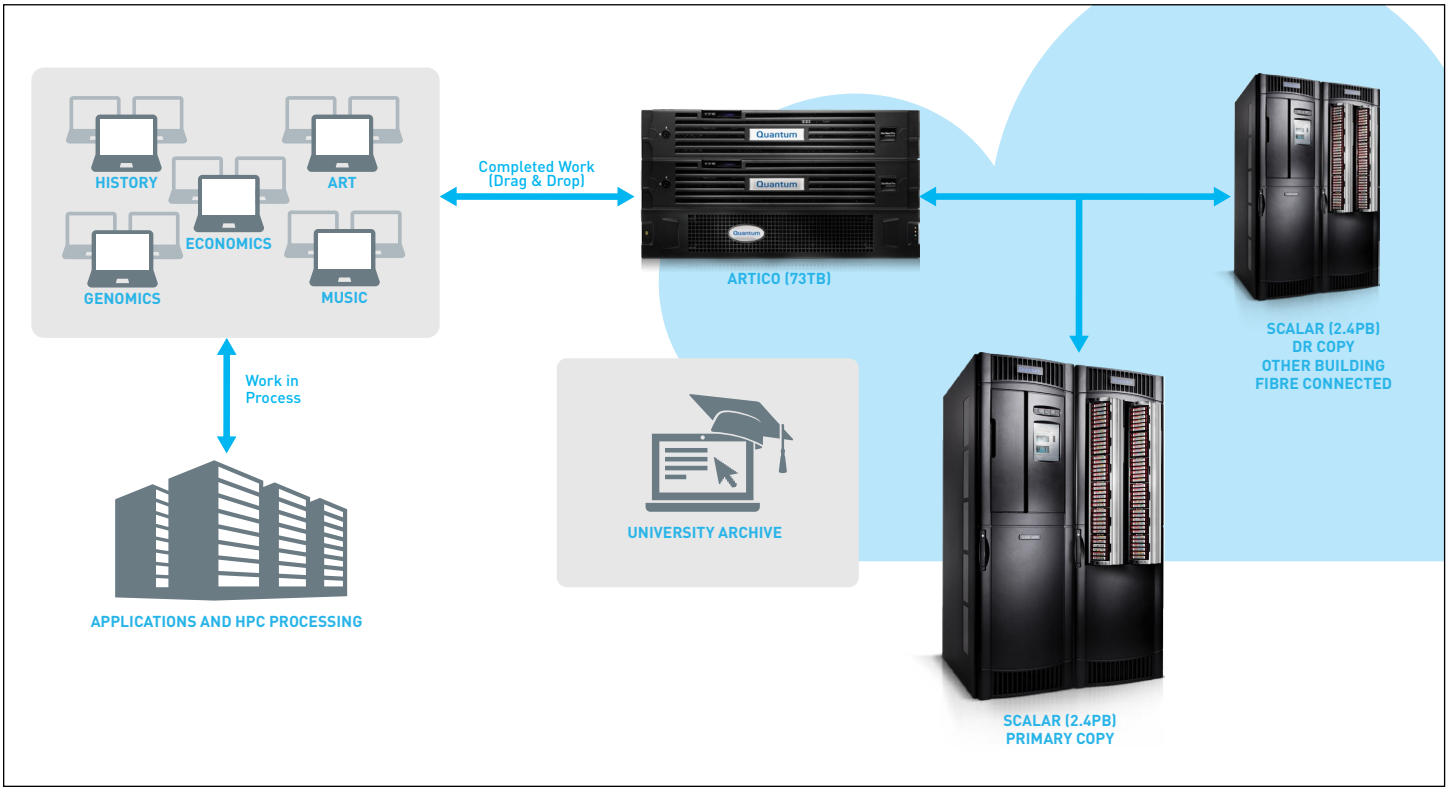


Figure 1. Artico includes high-performance local disk for active file storage and automatically copies and moves files to tape storage (or other storage types like cloud and object storage) based on user-defined policies to create a private-cloud archive solution.

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