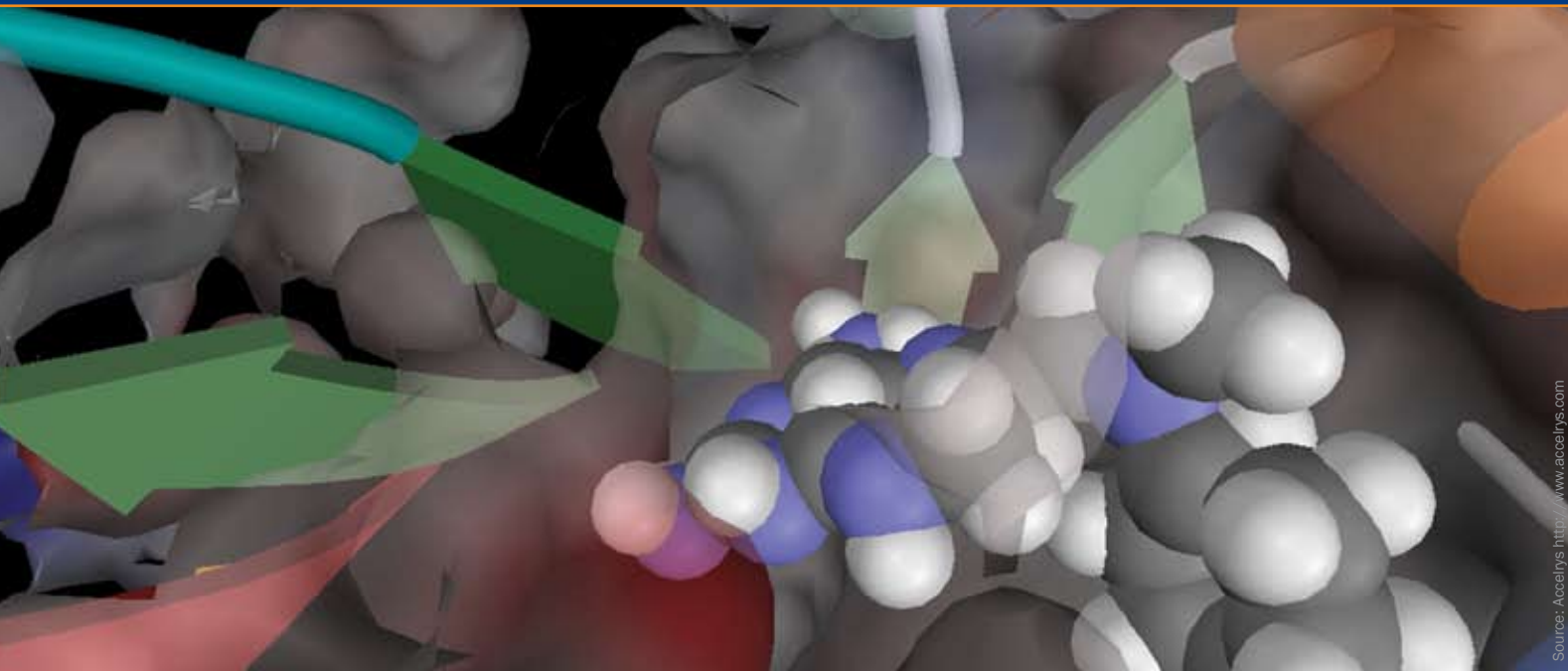




BLUEARC SPEEDS DRUG DISCOVERY

Brilliance and persistence drive drug discovery. Lightning fast storage is the catalyst. Speeding drug discovery is vital. BlueArc makes research efforts more efficient across the fields of bioinformatics and cheminformatics.



Dihydrofolate Reductase complex with Brodimoprim-4,6-Dicarboxylate

- **SPEED nucleotide comparisons**
- **EXPEDITE molecular structure analysis**
- **MAXIMIZE use of high-throughput screening results**
- **INCREASE the number of development candidates**
- **MINE larger data sets and increase computing cluster performance**
- **EASE collaboration and avoid expensive duplication of efforts**
- **REDUCE management and infrastructure costs by consolidating storage**

“BlueArc’s approach was a completely different way of handling storage and the systems scaled without having to be replaced.”

- Carol Busch, IT Manager, Accelrys

With BlueArc, Life Sciences companies and Institutions experience industry-leading application performance and sustained responsiveness in both high concurrent user and cluster computing environments. BlueArc’s network storage engine fuels your efforts to explore more investigational paths, speed nucleotide comparisons for genomic and proteomic research, perform sophisticated analysis of molecular structures, and maximize your use of high-throughput screening results. BlueArc is a proven accelerator that drives results, increases development candidates, and can inevitably speed time to market.

As the nucleus of a research network, BlueArc network storage systems offer industry-leading performance for both compute-intensive and data-intensive environments. BlueArc removes the data-flow constraints that bottleneck even the most powerful computing clusters. And BlueArc provides fast data access that allows researchers to focus their attention on meeting the next research milestones rather than waiting for data. When projects require collaboration, BlueArc helps avoid costly duplicate efforts by promoting information sharing among researchers via fast, secure access to files and databases that can scale up to 4 PB under a single namespace.

In addition to speeding discovery, BlueArc reduces costs. BlueArc pioneered a modular approach that means virtually any part can be upgraded, banishing the expensive and disruptive ‘fork-lift’ upgrade. And with innovative features like Intelligent Tiered Storage that allow you to mix high-performance ‘active’ disk drives with lower-cost ‘archival’ disk drives behind a single or multiple storage servers, BlueArc combines the highest performance offering with the lowest total cost of ownership.

From top universities to leading pharmaceutical and biotech firms, researchers enjoy faster time to results, increased collaboration, and lower costs by deploying BlueArc.

SELECT CUSTOMERS: Accelrys • American College of Radiology • BioBase • Columbia University • Neogenesis Pharmaceuticals • Penn State University • Princeton University • Samaritan Health • SFBR

CASE STUDY

Harvard Life Sciences

Introduction

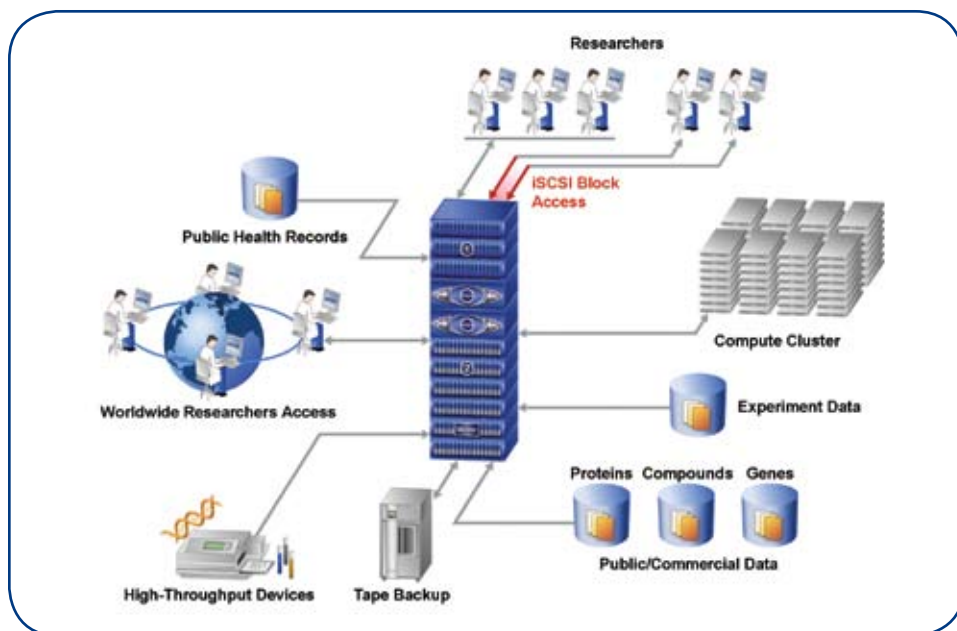
The Life Sciences division at Harvard University is comprised of nearly 2,000 researchers and scientists across many interdisciplinary research areas. While each research community has its own unique focus and projects, they frequently collaborate on a variety of shared initiatives. In the midst of exploding data storage requirements, fast and efficient access to research databases remains vital to the success of their work.

Problem

Facing a steady increase in research data requirements, including the manipulation of large databases – sometimes exceeding 100 terabytes in size, Harvard's Life Sciences division needed a high performance solution capable of retrieving data at extremely high speeds while using a single file system to manage the data load. Without knowing where technology would take them or how many users would require access to the system, a high capacity ceiling would be an absolute must.

Solution

For Harvard, Titan provides a four-fold performance increase over the department's previous infrastructure – and this lead is expected to increase as the customer investigates upgrading their Ethernet networks to 10 Gigabit. In one case, a code compare took four days with the company's existing NAS system, and only four hours with Titan 2 – and a researcher may perform 20,000 compares before completing a project.



Architecture Overview: With BlueArc

BlueArc storage solutions: optimized to enable research and discovery. BlueArc's Titan is the ideal solution for high-performance computing (HPC) environments, including gene and protein sequencing or structural analysis. Using Titan, these environments have been able to remove storage I/O constraints and eliminate the need for either specialized infrastructures or data distributed across compute nodes. Thanks to Titan, some of the world's top research teams no longer experience failed jobs due to I/O timeouts. Researchers are also benefiting from greatly improved simultaneous access to shared datasets, such as gene and protein databases or compound libraries – whether in the same location or distributed worldwide. In these cases, Titan removes the need for duplicate datasets, database migration and replication, while greatly sim-

plifying data management.

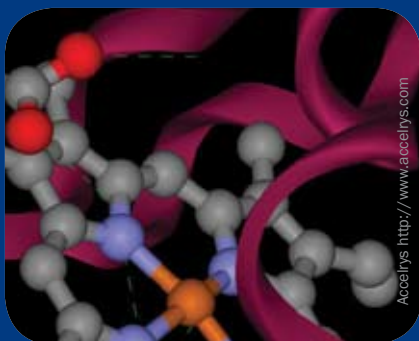
Solutions that streamline research and help contain the cost of discovery.

BlueArc's Titan network storage system, built upon a patented hardware-accelerated architecture, delivers the most flexible, high performance, highly scalable, network storage solution available today. By maximizing data access and user loads with extremely low latency, BlueArc's Titan dramatically accelerates research and enables collaboration in a variety of fields of inquiry. In addition, Titan's enterprise-class management tools provide the assurance of ongoing, secure access to critical research data. The end result is compacted development cycles and a significant reduction in the cost of research infrastructures.

“At Columbia University, our storage needs grow from day to day, and the expandability offered in the BlueArc solution really allows us to access and store data effortlessly, which is critical for protein structure research.”

- Megan Restuccia, program manager for the Center for Computational Biology and Biochemistry at Columbia University

CUSTOMER HIGHLIGHT

**Princeton's Center for the Study of Brain, Mind, and Behavior (CSBMB)**

embraces a multi-disciplinary, multi-methodological, and multi-institutional approach that draws on expertise and advances in mathematics, physics, chemistry, molecular biology, neuroscience, and psychology. The specific scientific focus of CSBMB research is on the neural bases of higher mental functions; that is, the brain mechanisms by which memory, thought and action are integrated and controlled by higher level goals, and modulated by states of arousal, motivation, and emotion.

- Significantly improved speed of image analysis software processing
- Scaled to store exponential increase of image data from MRI scanner
- Centralized data to a single high performance network storage system



Titan

BlueArc Titan Networked Storage

- Hardware accelerated File System
- Up to 20 Gbps throughput and 200,000 IOPs
- Bladed modular architecture
- Supports NFS, CIFS, iSCSI and NDMP
- Scalable up to 4 PB under a single namespace
- Multi-tiered Fibre Channel and SATA storage
- Virtual Volumes with Parallel RAID Striping

Research data and requirements are constantly growing, BlueArc's innovative modular storage solution scales with you.

In today's scientific environments, as new server and networking technologies are deployed, storage systems must be upgraded to meet the growing data research needs of the infrastructure. To scale capacity and performance, most storage systems require an entirely new product installation – an expensive, 'forklift' upgrade. BlueArc's Titan eliminates these painful hardware replacement costs, by delivering a more scalable, modular solution with maximum flexibility that allows administrators to upgrade server modules and capacity without replacing the entire system. With Titan's ability to scale up to 4 PB of storage under a single namespace, it allows improved analysis on larger datasets, while providing the scalable performance to continue to meet the needs of the researchers.

All research data is not created equal; Intelligent Tiered Storage enables a more cost effective research workflow.

Titan is built to address a variety of storage needs and budgets. Some scientific applications call for maximum performance, others require lower performance at lower cost, and lastly, some data requires long term WORM (Write Once Read Many) archive. Unlike traditional solutions that require a separate server or storage device to address each need, BlueArc's unique Intelligent Tiered Storage storage design supports any combination of high performance Solid State and Fibre Channel or high density, lower cost SATA disk drives behind a single Titan server. This helps research organizations drive down the cost of discovery as well as the need to deploy and maintain separate storage. BlueArc's Intelligent Tiered Storage reduces the cost and complexity associated with matching different disk technology, capacity and performance to each unique research application requirement without deploying additional storage systems.

Remarkable strides in understanding genomic and proteomic roots of disease result from the innovative use of ever more powerful technology. For the most cutting-edge research demands – from advanced computing cluster work in nucleotide comparison and structural analysis to worldwide collaboration among colleagues – the speed of information drives the speed of drug discovery. In a world of advanced computing clusters and high-speed networking, storage systems can become the new bottleneck to the discovery process. BlueArc eliminates storage bottlenecks by delivering fast, tiered, and scalable storage that cuts costs and accelerates breakthrough results.

BlueArc Corporation
 Corporate Headquarters
 50 Rio Robles Drive
 San Jose, CA 95134
 t 408 576 6600
 f 408 576 6601
 www.bluearc.com

BlueArc UK Ltd.
 European Headquarters
 Queensgate House
 Cookham Road
 Bracknell RG12 1RB, United Kingdom
 t +44 (0) 1344 408 200
 f +44 (0) 1344 408 202

BLUEARC®