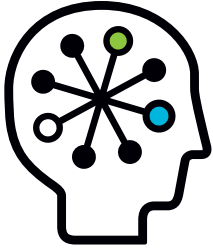


HP StorageWorks X9000 Network Storage Systems for today's life sciences

Mastering petabyte-scale data challenges

HP Solution Block solution brief



New research technologies, new storage demands

Advanced technology makes all the difference

The HP Digital Life Sciences solution comprises a broad portfolio of products and services that reflects the breadth and depth of HP industry-specific capabilities. This portfolio helps life sciences organizations speed the discovery and development of innovative therapies, and the introduction of new products into the marketplace.

As part of the HP Digital Life Sciences solution portfolio, the HP StorageWorks X9000 Network Storage Systems offer advanced technology, enabling you to focus on what's important: accelerating your research and development.

- Performance and capacity
 - Start small, grow over time by independently scaling out storage performance and capacity as your needs grow
 - Scale out performance to thousands of network-attached storage nodes
- Flexibility
 - Adaptability to various life science workloads
 - Reprovision/redeploy resources on the fly
- Efficiency
 - Manage the complete system via a single, easy-to-use, consolidated resource management interface; focus more on research and less on system administration
 - Support for multiple drive types and storage tiers to maximize storage efficiency and reduce costs; de-stage processed information to cost-effective storage
 - Consolidate the IT environment on energy-efficient servers; use fewer servers, consume less energy, require less floor space, reduce licensing

Medical breakthroughs occur every day in laboratories, research centers and hospitals around the world. Today's generation of DNA sequencers, high-content screening systems and digital pathology fuels these advancements toward a new breed of designer drugs and personalized healthcare.

To support IT scalability and growth, large clusters and grids employing thousands of compute nodes optimize the computing resources. The ability to quickly read large databases, and then handle a very large number of files being written—often to the same directory structure—means results are delivered faster, researchers are more productive, and time-to-discovery is greatly improved. But the very complex, highly granular data produced by today's genetic sequencers and screening systems often prove overwhelming to legacy storage systems, leading to significant access and performance problems.

As research technology becomes increasingly sophisticated, healthcare and life science (HLS) data management is becoming more complicated, requiring a robust IT infrastructure capable of processing data efficiently and effectively. In addition, HLS organizations depend more heavily on their IT infrastructure to help boost competitive advantage by improving collaboration among research sites, as well as shorten time-to-market with new drugs and therapies.

During the research process, the results from one analysis are often used in many ways—as input for follow-on experiments, to re-run samples for digital pathology, or to revisit results with improved algorithms or software. Data is also archived to satisfy regulatory requirements for preserving research findings. To meet the storage capacity demands of running recurring experiments, performing successive analyses and modeling, and housing clinical trial

data, HLS organizations must be able to scale their storage volume. Considering the large number of very complex files, the overall load for the storage environment can quickly reach petabyte levels.

Today's high-performance storage solution

As part of the HP Digital Life Sciences solution portfolio, HP designed the HP StorageWorks X9000 Network Storage Systems to address the challenges of accessing, analyzing and managing wide-ranging data. These flexible, scale-out storage solutions provide fast, seamless access to data, enabling research organizations to reduce the cost of the overall discovery process, and successfully deliver innovative clinical care and research.

Available in three configurations—HP X9320 high-performance systems, HP X9720 high-capacity systems and HP X9300 gateway—these enterprise-class storage solutions are designed to accommodate the unique requirements of today's HLS organizations. Offering just-in-time performance and capacity scalability at a low upfront investment, HP X9000 systems:

- Control the costs associated with explosive data growth
- Improve the performance of file-based applications
- Manage multiple storage elements and file systems as a single entity
- Grow capacity within a single namespace
- Provide safe, cost-effective archival of digital assets

HP – your trusted partner

As one of the world's largest technology companies, HP offers the HP Digital Life Sciences solution portfolio, which includes the products, services and support you need to achieve better business outcomes today and tomorrow. When you choose HP as your trusted business partner, you can take full advantage of the HP vision, experience, single-vendor solutions and volume economics.

Vision – HP offers a change-ready approach that helps bridge the gap between the ongoing data explosion and your increasing storage infrastructure requirements. We've been closely involved with setting the standards that are driving the digital content industry forward. Standards-based HP storage solutions offer a future-proof path to network evolution.

Experience – HP has designed, delivered, implemented and supported an extensive array of large and complex storage solutions for life sciences companies worldwide. HP experts are on the ground in 170 countries worldwide, combining deep industry experience with detailed knowledge of the local environment. This experience mitigates risks and helps drive a smooth implementation from conception through integration.

Comprehensive, single vendor solutions – No other technology vendor can offer a complete, end-to-end storage system, including storage, servers, software and support. This breadth of expertise helps control costs. And HP Financial Services can help you improve the impact of your IT investments.

Volume economics – HP ships more disk drives and servers than any other company, which helps keep solution costs low. As a major IT manufacturer with long and strong partnerships with today's leading technology innovators, HP can deliver a storage system comprised of the modular components your company needs to compete and win in today's competitive marketplace.

HP X9320 – performance storage system for modeling, imaging, analysis

Sequence analysis, searching and manipulation form the backbone of bioinformatics computational workloads. Typically, very large numbers of batch jobs are spread across many compute nodes to perform calculations. With so many file requests occurring at the same time, hotspots arise in the network and performance quickly degrades.

In addition, these batch runs—often tens of thousands of jobs per run—write potentially millions of results files, placing an enormous load on a storage system from a latency and metadata perspective.

To help overcome these research IT challenges, the HP X9320 system efficiently manages the random access workloads characterized by genomics sequencing, as well as parallelizes the data flow. Instead of processing all requests through one central server, the data flows through multiple servers to optimize analysis. Using a scale-out storage architecture, the high-performance HP X9320 system virtually eliminates storage limitations, and keeps the research process flowing quickly and efficiently.

In addition, the HP X9320 system unifies all storage elements under a single namespace. Unlike traditional storage systems that contain storage silos that require extensive management, the HP X9320 system manages all elements as a single entity—resulting in streamlined management processes that require less time and resources.

HP X9720 – high-density, tiered storage for archive

Coupled with the performance demands for faster modeling, imaging and analysis, newer research technologies also place greater demands on storage capacity. In addition to managing growing amounts of new data, researchers must also consider storing and protecting all existing data. Whether limited by quantities of samples, time in the schedule or money in the budget, resequencing is not always an option. As such, each results file becomes very valuable, and must be protected from alteration and deletion. In addition, compliance regulations mandate that all results files must be stored for longer periods.

The HP X9720 system can help resolve these problems while lowering costs by providing just-in-time scalability in a consolidated storage environment:

- Archive processed data, creating space on the primary tier for newer sequence runs
- Create a cost-optimized data repository that serves as a reference library for archived projects, helping researchers quickly search and retrieve the content they need
- Scale capacity as needed
- Reduce costs by consuming less energy for power and cooling, using less data center floor space and reducing licensing fees
- Share and collaborate on research
- Get site-level disaster recovery protection with continuous parallel data replication from primary to multiple remote sites

X9300 gateway configuration

This configuration is best suited for leveraging existing Fibre Channel or iSCSI storage area network infrastructure. The gateway configuration supports bonded 1GbE, 10GbE or InfiniBand network connectivity.

Better research with better storage

Call your HP sales representative today for an assessment of your storage environment. Discover how implementing a next-generation storage infrastructure built on HP StorageWorks X9000 Network Storage Systems can satisfy your organization's requirements for faster sequencing and analysis times, reduced operating costs, and secure data archiving to meet your evolving needs.

There's no better time to consider alternatives to your legacy storage environment. And there's no better time to benefit from the advanced capabilities of HP StorageWorks X9000 Network Storage Systems.

For more information, visit www.hp.com/go/x9000.

Technology for better business outcomes

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