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## Highlights

- Optimize resource utilization and reduce costs
  - Increase throughput for faster time-to-results
  - Improve productivity and clinical development efficiency
  - Transform siloed environments into shared IT environment
  - Enable more sophisticated simulations and analyses
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# IBM Platform Computing Solutions: Life Sciences

*Create an easy-to-use, high-performance technical computing environment*

Whether engaged in genome sequencing, drug design, product analysis or risk management, life sciences research teams need high-performance technical environments with the ability to process massive amounts of data and support increasingly sophisticated simulations and analyses. Organizations helping to find causes and cures for diseases need speed, agility and control across the clinical development lifecycle to increase productivity, foster innovation and compete more effectively.

IBM solutions such as IBM® Platform Computing™ high-performance cluster, grid and high-performance computing (HPC) cloud management software can help life sciences organizations transform and integrate their compute environments to develop products better, faster and at less expense.

## Solving complex computing and IT management challenges

Life sciences organizations face huge pipeline and productivity challenges, shifting regulatory burdens and timeline erosion from discovery to approval. Pressures to “do more with less” drive requirements for greater infrastructure capacity, utilization and performance. By implementing an infrastructure that enables efficient sharing of in-demand compute resources, organizations can work more collaboratively, improve IT utilization and shorten time-to-market for new products. Unfortunately, most companies have limited IT resources to devote to creating and administering such an infrastructure. As a result, they require a heterogeneous infrastructure solution that is fast, affordable and easy to use.



IBM Platform Computing solutions allow life sciences companies to speed products to market by simplifying the creation and management of high-performance cluster, grid and HPC cloud infrastructures. These solutions enable research and development teams to access a larger pool of shared resources to dramatically scale up and accelerate time-to-results for a wide range of analytics, including big data analytics (see Figure 1).

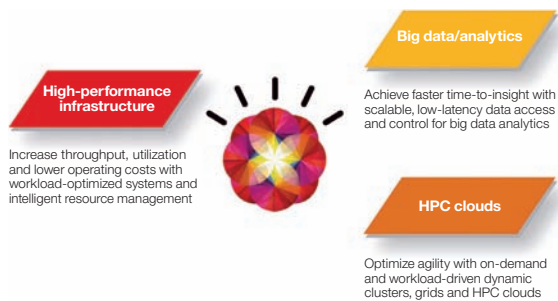


Figure 1. IBM Platform Computing offers capabilities for meeting clients' high-performance technical computing needs.

## Improving agility and efficiency with optimized HPC environments

Research and development goals are difficult to meet in traditional IT environments where computing resources are deployed in support of a single workload or project. This approach causes multiple data silos, with dedicated resources unable to support other workloads. The outcome is uneven processing, development cycle leaks and delayed results.

IBM Platform Computing high-performance infrastructure and HPC cloud management software solutions are designed to transform these isolated resources into a shared, optimized

environment that supports the demands of technical workloads. The solutions are easy to use, featuring intuitive user and system administrator portals, robust application programming interfaces (APIs), and integration with Accelrys and other major independent software vendor (ISV) software.

## Accelerating results for a variety of technical workloads

Technical software solutions such as Accelrys, CLC bio and Gaussian offer an array of applications to help researchers tackle bioinformatics and other analytics tasks. Such high-performance analytics often come with IT complexities, which can distract engineering personnel from their focus by requiring them to cope with IT administration issues, such as optimizing IT systems for specific technical workloads. Performance and productivity can lag due to these distractions, slowing time-to-market of new products.

IBM Platform Computing software solutions designed to address these IT challenges are:

- **IBM Platform™ HPC**, a single high-performance management solution, allowing engineers to focus on their work rather than on the intricacies of managing the workloads of applications such as Accelrys
- **IBM Platform LSF®**, which includes a comprehensive set of tools for intelligently scheduling workloads and dynamically allocating resources
- **IBM Platform Cluster Manager – Advanced Edition**, which is designed to automate assembly of multiple HPC environments on a shared compute infrastructure for use by multiple teams, including support for multi-tenant HPC clouds and multiple workload managers
- **IBM General Purpose File System (GPFS™)**, a high-performance enterprise file management platform to optimize data management

Organizations can increase output while simplifying management by using these solutions together with high-performance servers and storage, including robust IBM Power® servers, IBM System x® eX5 servers and IBM Intelligent Cluster™ systems.

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### Wellcome Trust Sanger Institute speeds data-intensive genome research

HPC is critical to the Wellcome Trust Sanger Institute, which plays a key role in sequencing and interpretation of the human genome to underpin research on human biology and disease. With demand for its services growing, the Institute purchased 30 new genome sequencing machines, each producing two orders of magnitude more data than the previous generation of sequencers. As a result, the Institute needed to process 120 TB of raw data a week, making it much more vital to ensure that its IT environment was fully utilized for maximum speed and productivity.

#### Solution

IBM Platform LSF workload management solution

#### Benefits

The Institute can now:

- Run up to half a million sequence matching jobs a day
- Make rapid advances in science by quickly comparing genomic structures
- Perform massive, regular updates to the genome browser
- Easily manage workloads for the heterogeneous IT infrastructure

### Getting a fast start with reference architecture-based platforms

For organizations that want to get started quickly, IBM has created workload-optimized platforms designed to speed time-to-implementation and take the risk out of putting together a new HPC solution. These IBM Application Ready Solutions are based on proven reference architectures. Life sciences solutions are available for key ISV applications on IBM Platform Computing software, and a range of high-performance systems including IBM Power Systems™, IBM Flex System™, IBM System x servers or IBM Intelligent Cluster, an integrated, optimized high-performance system pre-integrated with system components of your choice and a single point of contact. IBM Application Ready Solutions for Life Sciences include:

- **IBM Application Ready Solution for Accelrys**, an easy-to-use, scalable, performance-optimized platform architected for the Accelrys Enterprise Platform (AEP) NGS Collection
- **IBM Application Ready Solution for CLC bio**, an integrated solution for clients involved in genomics research in areas such as personalized medicine, research, or plant and food research
- **IBM Application Ready Solution for Gaussian**, an integrated platform for clients performing Molecular Electronic Structure calculations in life sciences, pharmaceutical R&D, government and higher education research institutions
- **IBM Application Ready Solutions for InfoSphere BigInsights**, streamlines deployment, simplifies management of an agile big data environment optimized for performance and reliability
- **IBM Application Ready Solutions for mpiBLAST**, offers a low cost, easy to manage open source parallel BLAST simulation environment

With a complete, integrated IBM Application Ready Solution, organizations benefit from ease of procurement, deployment, use and support. Because the platform is optimized for industry-specific workloads, life sciences companies can achieve fast time-to-results at low total cost of ownership (TCO). The scalability of the platform also makes it easy to adapt as a company grows.

## Advancing the frontiers of science

As data volumes grow and scientific advances require more compute power, life sciences organizations of all sizes need more powerful, lower-cost solutions to meet demand. IBM enables companies to accelerate time-to-value with intuitive and powerful IBM Application Ready Solutions designed for faster deployment and optimized for industry-specific workloads.

## Why IBM?

IBM Platform Computing solutions for life sciences are designed to help companies increase their competitive advantage by enabling an agile, high-performance, shared heterogeneous infrastructure resulting in faster time-to-results for analytics and collaboration across the research and development ecosystem.

## For more information

To learn more about IBM solutions for life sciences, please contact your IBM representative or IBM Business Partner, or visit: [ibm.com/technicalcomputing](http://ibm.com/technicalcomputing) or [ibm.com/platformcomputing](http://ibm.com/platformcomputing)



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IBM Corporation  
Systems & Technology Group  
Route 100  
Somers, NY 10589

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Actual available storage capacity may be reported for both uncompressed and compressed data and will vary and may be less than stated.



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