

Caris Life Sciences rapidly deploys a high-performance computing solution to advance personalized care for patients



Caris Life Sciences is a leading biosciences company fulfilling the promise of precision medicine through quality and innovation. The company analyzes molecular data from a patient's tumor with biomarker/drug associations to provide clinically actionable information to help doctors personalize treatment for cancer patients. To date, 65,000 plus patients have been profiled, ordered by nearly 7,000 oncologists in 63 countries. Headquartered in Irving, Texas, Caris offers services throughout the US, Europe, Australia and other international locations.

A leader in medical science—and in using big data

As the molecular profiling Caris performs for patients has advanced, the company's needs for managing high-performance analytics and rapidly growing data storage have grown exponentially. To meet these challenges, Caris needed a scalable, massively parallel computing environment along with a petabyte-scale storage solution to manage both data complexity and overall size. "We are a company in the vanguard of molecular diagnostics," notes Dr. George Poste, Vice Chairman at Caris Life Sciences, "but that also requires us to be in the vanguard of medical information services, because our product is the information used to make a decision on how to treat a patient."

Overview

As it worked to transform personalized cancer treatment, Caris Life Sciences needed to more efficiently process, analyze, manage and store terabytes of laboratory-generated data each day. The company deployed a high-performance computing solution with NeXtScale System servers. The solution enabled Caris Life Sciences to speed up the quest for better treatment options for patients with an improved ability to make sense of vast, complex and ever-changing volumes of molecular data.

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—Dr. David Spetzler,
Vice President of Research and
Development,
Caris Life Sciences



Adds Dr. David Spetzler, Vice President of Research and Development, “We test so many different features of the cancer and integrate that information in a complex bioinformatic pipeline that we’re the heralds and the generators of what people call ‘big data.’ We’re generating terabytes of data per day on individual patient samples. So when people talk about big data, that’s small to us. We are generating huge data.”

To handle those data needs—which typically involve storing terabytes of data for patients—Caris needed computing and storage environments that could also accommodate different workloads from other business units. It needed to help ensure compliance with regulatory guidelines such as Clinical Laboratory Improvement Amendments (CLIA) and standards of the College of American Pathologists (CAP), International Organization for Standardization (ISO) and the US Food and Drug Administration (FDA). It needed a solution that would integrate with other computing and storage bioinformatics operations, enhance collaboration and support organizational growth with access from multiple locations.

Rapid implementation to meet urgent needs

Importantly, Caris also needed a solution that it could implement quickly. With its “technology-agnostic” approach using a wide variety of methodologies to generate optimal patient data, the company’s existing environment was rapidly becoming inadequate. Caris had already implemented new leading-edge sequencing appliances, and data from those appliances was being generated and stored. At that point, Caris met with Business Partner Re-Store.

Working together, the companies developed the scalable, data-aware, secure infrastructure necessary for molecular analysis and data storage. Installation of the solution was completed in less than two months after the first meeting. “The Re-Store team worked hand in hand with our IT department to very, very quickly bring the system up,” states Dr. Spetzler. “It was an incredibly useful relationship. Time is of the essence for us. We’re fighting a deadly disease and we don’t have time to waste.”

Supercomputing power for today and tomorrow

Caris next-generation sequencing (NGS) processes are fully supported by supercomputing technologies, including processing by NeXtScale System servers powered by two Intel® Xeon® E5 family of processors; IBM General Parallel File System (GPFS) software and management with IBM Platform HPC. Massive scalability provides 40 core processors per blade—which at initial implementation translated to 320 processors for quickly analyzing data.

The result is a computing and storage system that can be provisioned and reprovisioned nondisruptively. “One of the key features of the architecture that attracted us to the NeXtScale System was the fully integrated information storage system,” says Dr. Spetzler. “Couple that with the underlying core processing speed and you have a very robust system capable of doing a massive amount of multithreaded analysis on this incredible dataset that we generate every day.”

Solution components

Hardware

NeXtScale System nx360 M4 with
Intel® Xeon® E5 family of processors

Software

IBM General Parallel File System
(GPFS)
IBM Platform HPC

Business Partner

Re-Store



For Caris, powerful analytics enables faster insight as they study the genomic alterations that may be driving a cancer—and as they identify therapeutic strategies that enable oncologists to improve treatment. For patients, analytics means the ability to obtain more accurate testing results faster to help fight their disease more effectively. “The physician of the future will be dependent upon analytics and clinical decision support systems,” says Dr. Poste. “For certain diseases we’re already at a point where computers are more accurate in diagnosing the disease than most physicians. So as you fast-forward five, 10, 15 years, data is going to translate to more and more robust predictive datasets.”

Concludes Dr. Spetzler: “Caris Life Sciences invested in this computing system because we have a vision for the future of making personalized medicine not just accessible to those patients who are working with great oncologists but also something that is an integrated part of all of healthcare.”

For more information

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For more information about Caris Life Sciences, visit: www.carislifesciences.com, connect with them at www.facebook.com/CarisLifeSciences or follow them on Twitter @carisls

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