Coriell Life Sciences | Customer Story

Personalized medicine startup Coriell Life Sciences (CLS) needed an infrastructure solution robust enough to support big data storage needs, agile enough to scale with company growth, and secure enough to protect sensitive data. Equally as important, CLS also wanted to offload its infrastructure's day-to-day administration responsibilities to a third party.

A Step Toward Personalized Medicine

Massive advances have taken place in genomic science. When the Human Genome Project was completed in 2003 after 13 years of sequencing, it introduced a new way for physicians to diagnose and treat diseases, from making strides toward curing cancer to uncovering medical insights in utero. Today, a person's genome can be deciphered in less than 72 hours—a drastic change that will personalize medicine and medical treatment for years to come.

Coriell Life Sciences (CLS) was founded in 2013 to provide physicians with access to and advance the science of genetic analysis. The company bridges the gap between generating genomic information and patient care by bringing genetic interpretations into physicians' hands in a way that's clinically relevant and humanly readable.

The GeneVault, one of CLS's core products, securely stores and manages billions of genetic data points per patient that are interpreted prior to sharing with physicians, healthcare providers, and medical experts who leverage it when making medication management decisions. Access and use of the data is closely controlled so that patients and providers have access to the information they need when they need it.

CLS's ecosystem allows healthcare providers, patients, and payers to take advantage of available sequencing technologies, while carving out and interpreting only the data needed for immediate use and securely storing the data for future interpretation. Based on a patient's genetic makeup, the company's technology can determine whether a prescribed drug will be beneficial to a patient or if the patient will have an adverse reaction, and how a typical dose might be adjusted for the patient, all before the drug is prescribed.

For example, a cardiologist may consider prescribing a popular blood-thinning drug to an elderly man; they will likely be concerned about the potential for an adverse reaction. The doctor then decides to conduct a test to assess how the participant will respond to the medication being considered. The test is run by swabbing the inside of the patient's cheek to collect a tiny amount of genetic material. A clinical laboratory analyzes the material and CLS then interprets the results for the genetic impact on the drug in question. The resulting report, which details the individual patient's genetically determined response to the drug, is then transmitted to the doctor. The data can be used at any time it is needed in the future for pharmacotherapy prescribing decisions and the report can be updated with additional drugs without retesting the patient.

Coriell Life SCIENCES

Industry
Personalized medicine

Challenge
Creating a cost-effective, robust, and agile infrastructure to support and secure massive amounts of sensitive genetic data.

Why SoftLayer, an IBM Company
SoftLayer provides the company with the flexibility, provisioning, and on-demand billing advantages of cloud computing.

"This approach of treating conditions one at a time even if the treatments might conflict with one another has been common in medicine, in part because little information exists to guide practitioners in how to consider this problem, weigh alternatives, and identify different options. Better understanding of an individual's genome can lead to a more effective dosage regimen," Scott Megill, CEO of Coriell Life Sciences, said.

The company has been part of SoftLayer's Catalyst Startup Program and received IBM's prestigious Global Entrepreneur of the Year award for 2014.

Automation and Control in the Cloud

Building IT infrastructure to support its genomic research presented a unique set of challenges for CLS. The process requires serious (and often expensive) investment in robust compute and storage architectures for the massive amount of data it processes and stores. For example, a whole human genome for one individual produces more than 3 billion points of data.

Additionally, the data collected by the company is sensitive and requires privacy protection measures. CLS needed to be able to completely control its machines down to the smallest details of server and network configuration. As a startup with limited resources, it also wanted to offload cumbersome systems administration to a third party in order to focus internal resources on core competencies.

"Cloud is playing an important role in making a healthcare ecosystem possible where the patient is center stage and health services are delivered more efficiently," Megill said.

CLS sought a cloud computing solution with systems management that offered the power to create customized, secure, and flexible infrastructure solutions unique to the company's needs, even if those needs change as the company grows.

"Because working with genetic data has the potential to create considerable challenges with security, data storage, and privacy, we not only needed a reliable and secure platform, but one that could offer the flexibility we need to grow as a company," said Jim Doherty, director of enterprise architecture of Coriell Life Sciences.

Genomic Analysis in the SoftLayer Cloud

To simplify its infrastructure setup and management while growing its business, CLS turned to SoftLayer and IBM.

SoftLayer provides a cloud infrastructure solution that safely and cost-effectively stores GeneVault data. The SoftLayer platform has the security CLS needs for its data and allows the company full access and control of its infrastructure.

CLS uses a combination of SoftLayer bare metal and virtual servers to manage and store billions of data points. With SoftLayer, the company is able to experience the flexibility, provisioning, and on-demand billing advantages of cloud computing.

"With SoftLayer, we're not locked in to a specific architecture. We're able to pick and choose to create a secure infrastructure unique to our company's needs," Doherty said.

IBM's Business Process Manager on Cloud (BPM SaaS) takes care of the company's infrastructure management and growth.

Since using SoftLayer infrastructure and BPM SaaS, CLS has more than doubled in size. The company credits SoftLayer and IBM for helping it easily grow and for letting it focus on what it does best: genetic analysis.

"From the beginning, we didn't want to have to deal with the overhead of hiring staff to perform systems-admin tasks," Doherty stated. "SoftLayer infrastructure paired with BPM SaaS allows us to stay focused on our application and development. Our relationship is effortless, and they truly feel as an extension of our team."