BlueBee
Fast Transfer of Genomics Data
for Clinical Applications

At a glance

Industry
- Life Sciences

Products
- IBM Aspera Application Platform on Demand
- IBM Aspera High-Speed Transfer Server
- IBM Aspera Embedded Client

Challenge
- BlueBee customers needed a platform running on cloud infrastructure that could rapidly transfer NGS data and scale up as data volumes increased, avoiding sequence waiting lists and delayed diagnosis and research, while also enabling BlueBee to comply with the genomics industry's strict security standards.

Solution
- BlueBee deployed Aspera On Demand, Aspera High-Speed Transfer Server and the Embedded Client and tightly integrated the Aspera FASP transfer technology into the BlueBee platform. Customers can easily access the platform and upload huge NGS data through the BlueBee Service Connector to seamlessly manage the secure data transfers from the sequencing lab to the BlueBee Compute Center.

BlueBee's unique cloud-based accelerated genomics analysis platform combines best-in-class tools with a highperformance computational engine to enable efficient processing and fast, affordable diagnostics for hospitals, research centers and other clients. It's platform is designed to allow customers to easily migrate their bioinformatics applications and pipelines, set-up projects, view results and start collaborating in a highly secured environment.

With the integration of Aspera's fast, flexible and highly scalable Aspera On Demand (AOD) software, BlueBee's users can transfer large genomic data sets directly into BlueBee's cloud-based platform using Aspera's patented FASP® transfer technology.

Aspera's high-speed, reliable and resilient transfers reduce the end-to-end turnaround time of computational data analysis, enabling BlueBee to deliver results to clients significantly faster and more efficiently than was previously possible.

Challenge

As the volume of Next Generation Sequencing (NGS) data being generated has exploded in recent years, BlueBee has continued to expand their services to meet growing demand. BlueBee now offers high performance NGS data analysis solutions in 22 datacenters across the globe.

BlueBee's clients submit samples of all sizes, the largest coming from cancer centers, which typically submit 2-3 tumor cell samples along with a control sample for each patient, bringing the total volume of NGS data to upwards of 360 GB per patient that must be uploaded to the platform.

BlueBee's customers faced problems caused by the on-site infrastructure's inability to rapidly scale up as data volumes increased, inevitably forming sequence waiting lists, hampering the speed of diagnosis and delaying research.

Additionally, it was essential for the transfer solution to allow BlueBee to comply with the strict security standards within the genomics industry.

Results

- Transfer speed increases of up to 35% on even the slowest networks.
- Bulletproof security provides necessary credibility to acquire and distribute high-value content.
- Software-only solution on commodity hardware eliminates costs.
- Web-based content deliveries replace costly physical media shipments.

Benefits

- **Fast transfers:** With high-speed FASP transfers, Aspera maximizes bandwidth and enables BlueBee customers to upload NGS data at the fastest speeds possible, regardless of file size, transfer distance, or network conditions.
- **On demand model:** Aspera On Demand complements BlueBee's on demand business model with its usage based service model and ability to scale fluidly on demand.
- **Strong security:** Aspera's enterprise-grade security plan features built-in SSH authentication, encryption in transit and at rest, and data integrity verification for each transmitted block, protecting customers' business-critical media files throughout the transfer process.services for new clients in minutes.

"Together the solutions significantly accelerate the turnaround time for data processing while at the same time solving the data throughput issue."

– Kurt Florus,
   CTO, BlueBee

Solution

After investigation of several file transfer tools, BlueBee found that most of the solutions were either too slow or too complicated to setup and maintain. This discovery stage revealed several positive remarks about Aspera's high-speed file transfer offerings, BlueBee began an evaluation of the technology. Initial tests comparing FTPS and Aspera found that transfer speeds for a 10GB file sent over the same network have increased by a factor of 6 with Aspera.

BlueBee deployed Aspera's Application Platform On Demand, Aspera Enterprise Server and the Embedded Client and tightly integrated the transfer technology into the BlueBee platform. Customers simply access the platform to upload data through the BlueBee Service Connector, which seamlessly manages the secure data transfer from the sequencing lab to the BlueBee Compute Center.

Using this integrated solution, tumor and other samples are collected, are prepped and sequenced in a Wet Lab, and the resulting data is then transferred to BlueBee's Silicon Lab for secondary analysis. Whole genomes, cancer sequencing data, agricultural data and other large files are transferred while sequencing is ongoing to save time, while smaller samples are uploaded in batches once sequencing is complete.

Results

The fusion of technologies pairing BlueBee's advanced genome analytics application and Aspera's unrivaled FASP high-speed transfer technology supports fast, efficient and affordable diagnosis, providing significant implications for clinical settings. By enabling hospitals, diagnostic test providers, research centers and other clients to securely transfer large volumes of genomics data with significantly greater speed and reliability, BlueBee can shorten data analysis turnaround times so data can be interpreted and patients can be diagnosed and treated as soon as possible.

Aspera On Demand's pay-as-you-go model offering aligns nicely with BlueBee's usage-based billing to eliminate the burdens of managing and maintaining in-house infrastructure that would require much more time and capital expenditure.

"Our partnership with Aspera brings value to our customers and competitive advantage to the market" said Michelle Garred, VP of Global Marketing at BlueBee.

"When on-site infrastructure is not able to scale up with increasing mass data volumes, sequence waiting lists are inevitably formed. This seriously hampers the speed of diagnosis and delays research. BlueBee addresses this genome analysis challenge by providing a highly scalable private cloud platform for accelerated processing of mass volumes of NGS data, and the speed and resiliency of the Aspera solution allows our clients to transfer huge data sets directly to the platform," said Kurt Florus, CTO at BlueBee. "Together the solutions significantly accelerate the turnaround time for data processing while at the same time solving the data throughput issue."

2

About BlueBee

Headquartered in Rijswijk, the Netherlands, Bluebee provides cloud-based genomics solutions designed to help organizations accelerate data analysis, reduce costs and deliver results more quickly. Experts from Delft University of Technology and Imperial College London formed the company in 2011 to create a unique genome analytics offering for research and clinical labs.

For more information

On IBM Aspera solutions, please visit us at https://www.ibm.com/cloud/high-speed-data-transfer or contact aspera-sales@ibm.com.

03026903USEN-00