



Enabling Cancer and Tissue Image Analytics with High-Speed Data Transfers

AT A GLANCE

Industry

Life Sciences

Products

Aspera Faspex
Aspera Faspex OnDemand

Challenge

Fast and secure data transfer globally of massive amounts of digital medical images and data sets that can be in the 10s of terabytes range.

Solution

Aspera Faspex Server for fast, secure and reliable file transfers between central storage in Munich, cloud storage and global customers.

Results

Improved data transfers by 14x and complete reliability, to accelerate crucial customer data transfers and support projects with ever-increasing data volumes.

German-based Definiens, a wholly-owned subsidiary of AstraZeneca, is the developer of a groundbreaking analytics platform capable of providing deeper insights and discoveries in oncology (cancer biology) and immuno-oncology. Its technique, called Tissue Phenomics[®], significantly improves the information extracted and analyzed by histology (the study of tissue images). Intelligence gathered from the analysis of tissue slides, often in conjunction with genomic data and patient demographics, helps practitioners correlate and better understand individual patient profiles in recommending personalized treatments, or in some cases non-treatment.

Its Tissue Phenomics-based analytics services and software are used for R&D, clinical trials and diagnostic applications. Through tissue image analysis and big data mining, Definiens enable customers to uncover biomarker signatures that have led to innovations such as accelerated drug development, more effective cancer treatments and improved patient outcomes.

CHALLENGE

As Tissue Phenomics continues to gain acceptance and recognition, more customers in the clinical space are adopting the technology. With patients' lives on the line, speed of delivery is critical. In one case, Definiens' automated image analysis algorithms were used to analyze upwards of 2,000 cancer tissue slides per day to help pathologists

more accurately treat patients. However, legacy file transfer solutions like FTP struggle to move the data reliably and within tight patient timelines. With existing file transfer tools failing to meet its needs, Definiens sought a fast, secure and reliable solution capable of handling high-volume data transfers from anywhere in the world.

“Aspera has enabled us to handle larger data sets with ease. This makes a very positive first impression especially amongst our new customers”

Kai Hartmann
Vice President of Product Development,
Definiens

To process and analyze tissue slides, Definiens needs customers to upload large digital image sets from all around the world to the company's central on-premises data center in Munich. A single patient's record could contain as many as 20 slides, each slide having a size of about one gigabyte. An entire image set for a large research project could contain hundreds of patients and thousands of slides. Each year, Definiens easily processes over 10s of thousands of slide images, easily exceeding 10 terabytes of data.

BENEFITS

Speed & Delivery

Significantly improve data transfer times, independent of network round-trip delay and packet loss, regardless of size or distance, even under non-ideal network conditions.

Scalability

With the ability to handle any size data set and cloud-based workflows, Definiens can easily scale their business to meet the ever-increasing demands of its customers.

Productivity

Employees can now spend time more efficiently instead of waiting for transfers to complete and the dedicated IT resource can spend more time on important business and revenue-generating activities.

Exceptional Security

All data transfers are encrypted in transit and security authenticated using standard public/private key authentication, protecting customer data, patient data, intellectual property and meeting compliance requirements.

DEFINIENS®

the tissue phenomics company

About Definiens

Definiens is a member of the AstraZeneca group providing products and services to companies across the life sciences sector. Definiens improves patient lives by unlocking the tissue phenome. In oncology, therapeutic strategies have shifted from a direct assault on cancer cells to recruiting the immune system for that purpose. Its mission is to accelerate breakthroughs for this approach by helping scientists leverage Tissue Phenomics to deepen understanding of disease biology and immune system mechanisms, to bring multi-omics data into a cancer-relevant context, and to facilitate the translation of new insights into novel therapies and treatment strategies. The company's vision is to create unique patient profiles for an individualized standard of care, where patients experience fewer side effects and live longer. For more information, please visit: <http://www.definiens.com>

"With FTP, some data transfers took several weeks to complete. Other larger data sets could not be transferred at all. This made it very difficult to meet customer requirements where time is of the essence," said Kai Hartmann, vice president of product development, Definiens.

Compounding this issue is the need to share processed data results back out with customers. While these datasets are not as large as raw image sets, Definiens still struggled to get them to customers in a timely fashion.

Additionally, the high failure rate required Definiens to dedicate half of a full-time employee's time to monitoring data transfers and responding to failures or disruptions. Not only was this costly, but it was time consuming and a distraction from more important business activities.

SOLUTION

After a successful trial, Aspera was selected among competing technologies for its ability to securely deliver slide images at high speed regardless of file size, transfer distance or network conditions. Definiens deployed the Aspera Faspex server software in its data center in Munich. After downloading a simple Aspera browser plug-in, customers can now initiate a high-speed transfer from anywhere in the world through the Definiens web portal. Aspera generated email notifications alerts the Definiens team when new packages of files are ready for download. The Definiens team sends processed data back out to customers using the same simple process. Thanks to Aspera, transfers are now delivered with 100% reliability and at high speed, fully utilizing all available bandwidth.

Built-in user authentication and robust data encryption in-flight and at-rest ensures sensitive patient data, slide images and intellectual property are protected, and regulatory compliance requirements are met. User access is easy to administer and manage helping to streamline operations for Definiens' data security team.

More recently, Definiens began using Amazon Web Services to host its new SaaS offering. Their cloud-based solution is crucial to meeting the needs of large-scale studies managed by pharma and clinical research organizations (CRO) customers. For these projects, Definiens deploys Aspera Faspex on Demand. With native support for all major clouds, Aspera Faspex On-Demand, provides all the benefits of Aspera with maximum throughput to cloud storage located in any region in the world.

RESULTS

With Aspera deployed, Definiens is now able to complete all data transfers with complete security and 100% reliability even over the most challenged networks. No more manual intervention or monitoring of the traffic environment is required to ensure transfers are complete. Employees can now spend time more efficiently instead of waiting for transfers to complete and the dedicated IT resource can spend more time on important business and revenue-generating activities.

More importantly, data transfers that previously took up to two weeks to complete are completed more than 14x faster, in under a day. Definiens' customers are much happier with the simple, streamlined process and significantly reduced turnaround times. "Slow speeds have a very negative perception and can impact important medical research. Aspera has enabled us to handle larger data sets with ease. This makes a very positive first impression especially amongst our new customers," added Hartmann.

Finally, Aspera's suite of cloud solutions supports Definiens' future growth. Customers' are increasingly adopting Definiens' SaaS solutions to support ever-increasing studies. With Aspera high-speed transfers to the cloud, Definiens can easily migrate customer workflows to the cloud allowing them to scale their business.

About Aspera

Aspera, an IBM Company, is the creator of next-generation transport technologies that move the world's data at maximum speed regardless of file size, transfer distance and network conditions. Based on its patented, Emmy® award-winning FASP® protocol, Aspera software fully utilizes existing infrastructures to deliver the fastest, most predictable file-transfer experience. Aspera's core technology delivers unprecedented control over bandwidth, complete security and uncompromising reliability. Organizations across a variety of industries on six continents rely on Aspera software for the business-critical transport of their digital assets.

Learn more at www.asperasoft.com and follow us on Twitter @asperasoft for more information.