



High-speed global movement of seismic data sets

AT A GLANCE

Industry

Oil & Gas

Products

Aspera Enterprise Server
Aspera Point-to-Point Client

Challenges

High-speed transfer of multi-gigabyte seismic data files between multiple data centers around the globe.

Results

- Full bandwidth utilization on the 100 Mbps WAN
- Up to 30X transfer speed improvement over FTP
- Elimination of shipping operations (and the associated costs) to send physical media between sites
- Up to 20 terabytes of data transferred every month over the WAN

A long-time Aspera customer helps major oil and gas companies with acquisition and processing of seismic data. Its sophisticated, computationally intensive processing of the data sets (reaching up to 10TB in size) produces images of the subsurface of the earth, allowing geophysicists to identify oil and gas deposits. The data comes from exploration sites into the regional data centers on tapes which are copied onto the storage drives. The data is then transferred to the main processing facility, analyzed by thousands of compute nodes, and the resulting seismic images are sent back to the data centers. To help transfer massive amounts of data between the main processing facility and the regional data centers, the IT team has deployed Aspera Enterprise Server and Point-to-Point Clients in a hub-and-spoke configuration.

CHALLENGE

With four data centers spread around the world, the team faced a logistical challenge of moving terabytes of data between the facilities. For a long time, the only viable option was to ship thousands of tapes between data centers. "Normal" shipping time was 5 days, regardless of the size of the data

set. Occasional unpredictable shipping delays or damages forced postponement of key business decision and customer deliverables. Along with the delays, the company also faced the expense of maintaining shipping operations, with each facility incurring \$60-70K a year in shipping costs.

The IT team tried to provide a solution with 100 Mbps WAN between the data centers, but the use of FTP for data set transfers quickly proved disappointing, with slow transfer speeds and low rate of bandwidth utilization.

Digitization of oil & gas exploration produces vast amounts of data that must be moved from remote sites into and between geographically dispersed data centers.

Physical media shipments and traditional WAN transfer technologies are inefficient, slow, expensive, do not scale and create artificial bottlenecks within business processes.

BENEFITS

Maximum speed: Enables large seismic data set transfers over any network at maximum speed.

Robust and reliable: Reliable data transfers from remote sites, even over unreliable wireless networks with automatic resumes of partial transfers and retries of failed transfers.

Extraordinary bandwidth control: Precise bandwidth allocation and control for prioritization of high-value data transfers.

Complete security: Includes built-in security for user authentication, data encryption in transit and at rest, and data integrity verification.

Comprehensive developer tools: Industry-leading open API for custom integrations of Aspera's high-speed transfers into proprietary applications.

Software only solution: Uses standard, unmodified IP networking. Requires no changes to the operating system or driver installation on the file transfer endpoints, no dedicated hardware appliances, and no network changes.

SOLUTION

The team implemented a hub-and-spoke deployment model, with Aspera Enterprise Server at the global processing facility and Point-to-Point Clients at the regional data centers. Data from the field comes into the regional centers for initial processing and then get transferred into the central facility, using Aspera transport over the 100 Mbps WAN, to be migrated and translated into seismic images. To ensure that other business-critical network traffic (e.g. emails, video conferencing, IP telephony, etc.) is not negatively affected, the IT team used Enterprise Server's configuration to assign 80% of the bandwidth to Aspera transfers. Aspera's FASP™ automatic adaptive rate control fully utilizes the available bandwidth, while still enabling the team to adjust per-transfer priorities in real-time based on business priorities. After the computational processing completes, a sample set of images is reviewed by the Quality Control team. Upon approval, the final images are transferred back to the regional centers, again using Aspera.

RESULTS

The immediate result was the elimination of the need to ship tapes between sites. The Aspera-powered workflows runs 24/7, transferring up to 20 TB per month. The biggest data sets, measuring upwards of 600 GB now transfer in under 2 days, down from 5 days when done via physical media shipping and processing. A single site has achieved cost savings of \$6,000/month as a result of eliminating its media shipping operations.

Aspera transfers also greatly exceed FTP transfer speeds and reliability, fully utilizing the available bandwidth, transferring at speeds that are up to 30x faster than FTP, and automatically retrying and resuming failed or incomplete transfers.

As a result of the time savings introduced by the Aspera-powered transfers, the team was able to introduce process optimizations that further reduced the turnaround times for data set processing and distribution. To minimize shipping costs with tapes- and hard drives-based data movement, data sets had to be grouped together to minimize shipping costs, resulting in delays for individual sets. With Aspera, data sets, or even individual files, can be transferred when needed, on demand, based on business needs instead of on non-core operational efficiencies.

Aspera's customers in the Oil & Gas industry leverage our software to move seismic data sets of any size at maximum speeds over any distance and any network conditions, eliminating bottlenecks in data collection and exchange, and enabling new, value-generating workflows.

About Aspera

Aspera 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 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