

Marine Services customer success

Ship-to-shore high speed transfer solution for offshore oil exploration marine services

At a glance

Industry

Oil & Gas

Products

- IBM Aspera High-speed Transfer Endpoint
- IBM Aspera High-speed Transfer Server
- IBM Aspera Connect
- IBM Aspera Shares

Challenge

Moving large seismic data sets for oil exploration from ship to shore to accelerate field research and analysis.

Solution

Aspera high-speed transfer servers deployed on-premises in the on-shore data center and Aspera transfer clients deployed on a host computer on each of the vessels.

Results

Transfers over the Satellite connections are consistently 6-8 Mbps with Aspera FASP (at full available bandwidth capacity) and ramp up to 40 Mbps+ when the vessels move into the WiMAX zone and bandwidth capacity increases.

Speeding ship to shore data transfers

A large marine services company has deployed a comprehensive solution of IBM Aspera transfer software on approximately 30 of its vessels to enable high speed, reliable transfer of bulk data from ship to shore and back. The Aspera solution replaces expensive helicopter and other physical data movement to and from the vessels with high speed and reliable network transfer.

The company is now able to transfer large data sets generated by its on-vessel HPC processing at full bandwidth capacity of the on-board satellite connections (6-8 Mbps) and WiMax IP connections, including automatically ramping up to use the full WiMax bandwidth (40 Mbps and up) as the vessels move into range.

In addition, operators on board can browse and download critical data, operational documents, rich media resources and other file-based resources that enable remote operations to continue for months at a time, eliminating the need to return to shore before the mission is done and to allow for reliable high-speed communication throughout.

Challenge

The start-up costs for setting up a new drilling platform offshore can be extremely high – typically starting at \$1 billion USD – and thus marine services to vet candidate drilling locations are critical to increasing the likelihood of discovering a productive drilling site, and maximizing the return on this investment. An effective marine services company uses a variety of high precision seismic measurement and analysis techniques to assess the quality of a potential drilling site. These techniques use data intensive high performance computing processes with preliminary result data that has in the past been physically transported to shore for early analysis, e.g. by expensive helicopter or other means. This process is costly and limited in scale and could be dramatically more effective if the resultant data could be transferred directly to shore for early analysis over IP networks.

This leading marine services company was familiar with IBM Aspera's high-speed transfer software, having used it for several years in terrestrial seismic file and data transfers. As higher bandwidth satellite IP connections and WiMAX bandwidth became available on its vessels, the company decided to capitalize on the opportunity and begin digital transfer of its data directly from ship to shore. Additionally the company

Benefits

- **Fast and automatic data ingest from ship to shore:** Enables automatic transfers of HPC generated data sets from ship to shore immediately as generated and at the full available bandwidth (6-8 Mbps), regardless of the satellite connection round-trip delay and packet loss.
- **Robust to network outages:** Supports automatic retry of transfers that are robust to connection outages and resume from the point of interruption instead of starting over.
- **100% guaranteed data integrity:** Guarantees data is transferred with 100% integrity even with low quality connectivity, including high packet loss and disconnects.
- **Automatic super fast ramp on WiMax:** Automatically ramps up to use the full bandwidth of WiMax near shore (40 Mbps+).
- **Secure in transit and at rest:** All IBM Aspera software uses strong in-transit and optionally at rest encryption.
- **Fast and easy downloads of any size or number of files from shore to ship:** Fast, ad hoc downloads of critical files and data sets from on shore to ship through an easy browser interface.
- **Enterprise Management:** User access control fully integrates with Active Directory, LDAP and SSO while all transfers are fully logged, reported.
- **Operational Efficiencies:** The distribution of documents, data sets, and instructional videos to crews allow them to remain on the water and operate more effectively for longer periods of time.

recognized that the same technology platform could solve the challenges of getting critical files such as documents, data sets and instructional videos out to crews to allow them to remain on the water and operate more effectively for longer periods of time. Finally, the company had familiarity with the Aspera APIs and recognized that the investment in the Aspera software platform could allow for future integration with the data pipeline for real-time transfer of growing files and data sets with Aspera’s byte stream APIs.

Solution

The solution consists of the IBM Aspera High-speed Transfer Server software deployed at the company’s data center on shore, and IBM Aspera High-speed Transfer Endpoint software on a host computer on each of the vessels. The endpoint computer mounts the same storage used by an HPC cluster used for data analytics such that newly generated files and directories are automatically sent via the built-in watchfolder capability in the Aspera endpoint. The watchfolder transfers automatically send files and directories as they are ready on the source system and provide automatic retry and resume of interrupted files and directories from the point where the transfer left off in the case of a network outage, which is common for these distant and highly mobile situations. Operators also take advantage of the built-in command line transfer binary for automated scripting of transfers in analytics pipelines.

The IBM Aspera Shares web application is deployed on a host at the company’s data center on shore, providing a secure authenticated and easy-to-use web interface for teams to publish files for crews on the vessels to browse and download. Each end user has access to only those directories to which he or she has permission and can browse and download documents, videos and data files directly to any host on the vessel via a web browser by using the IBM Aspera Connect browser extension.

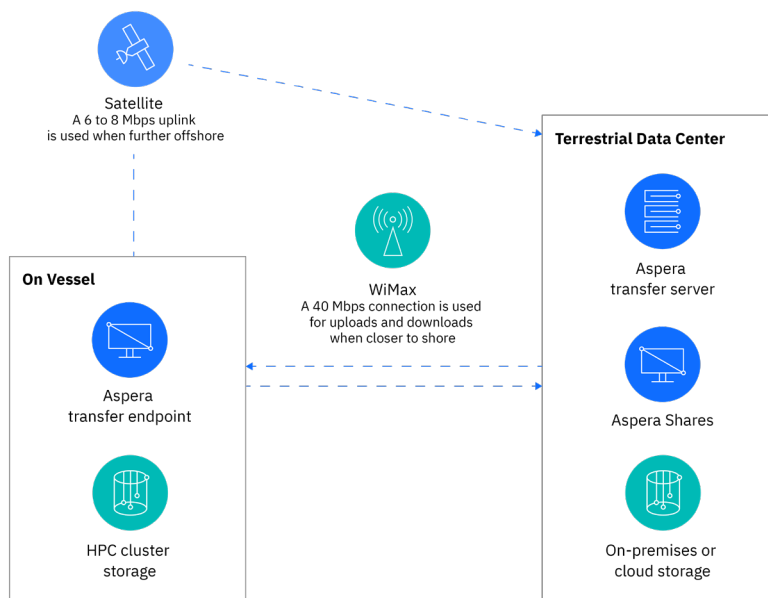


Fig. 1 – Ship-to-shore system architecture and deployment diagram showing Aspera transfers over satellite and WiMax.

Administrators can easily configure directories on the server storage with fine-grained access control by user or user group including browse, upload, and download permissions via the Aspera Shares interface. All changes are automatically visible to end users on shore and the crews at sea allowing for easy collaboration around documents, videos and data files regardless of file size or quantity. The scalability of Aspera Shares and performance of Aspera's patented FASP protocol ensure that directories with millions of files or very large files can be browsed and downloaded with ease over wireless connections.

Results

Transfers over satellite connections are consistently 6-8 Mbps with Aspera (at full available bandwidth capacity) and ramp up to 40 Mbps+ when the vessels move into the WiMAX zone where bandwidth capacity increases, making transfers noticeably much faster.

Encryption at rest and in transit built into the Aspera FASP protocol ensures files stored on the storage exposed by the Aspera server host remain private and can be decrypted only by authorized teams and users. Finally, the company can connect the Aspera Shares server to its LDAP, Active Directory and Single Sign On systems, allowing for scalable user authentication and security as the system's use grows.

About IBM Aspera

IBM Aspera offers 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.

For more information

For more information on IBM Aspera solutions, please visit <https://www.ibm.com/products/aspera> or contact us at aspera-sales@ibm.com



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