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Performance test of seismic data streaming for interpretation platforms

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Abstract

Interoperability in oil and gas exploration is the ability of different software, systems, and basically different data formats to exchange and make use of information seamlessly. It is essential for fast geophysical analysis and decision-making. It allows geologists, geophysicists, and engineers to consolidate data from all sources — including seismic surveys, well logs, drilling data and production metrics, on multiple interpretation platforms. The principles of cloud computing, open standards, and AI-powered tools allow for interoperability, greater collaboration, less redundancy, and acceleration of exploration and production workflows. Bluware FAST™ (Fullwave Analytics & Streaming Technology) is a comprehensive data analytics and management platform for geophysical data accelerating data-intensive workflows for seismic in oil and gas exploration. It facilitates streaming seismic data in real time, without preloading the full data set everywhere in memory. VDS effective data compression is important because dealing with large datasets demands many hours of analysis and processing. High-performance computing integration accelerates seismic processing improvements, enabling an environment where geoscientists can make exploration and production decisions faster. This work is based on the usability tests of FAST™. The seismic interpretation platform used in this project was PaleoScan™ 2024. Several surveys were tested with native/local seismic SEGY files and VDS objects from Blob Vanilla. The main goals on these tests were to compare processing times of native SEGY, VDS streamed to SEGY and PS formats. The processes used in this comparison were data importing, data visualization, attributes creation, model-grid building, and project final size. On PaleoScan™ it was performed more than 80 tests. On the importation context, FAST™ was superior to the usual SEGY data. Regarding attributes generation, times were very similar. Model-grid shows better performance with PS format from native SEGY. Streamed data surely contributes to a smaller project final size in disk. Otherwise, data visualization has incremental delay using streamed data from FAST™. The present project shows a better user experience when the VDS data is streamed to SEGY and then imported to the interpretation platform so as that it can generates its PS internal format. From the tests, it seems the network stability had an important contribution on the delay of on-the-fly visualization and model-grid creation and interpretation.