High-Performance Storage for the Oil and Gas Industry

Intel® Solutions for Lustre® software

Addressing Today’s Oil and Gas Storage Challenges
Oil and gas are becoming increasingly difficult to find. Large reservoirs are now located at greater depths and in sediments that are much harder to analyze. Discovering and interpreting these reservoirs requires analyzing a huge amount of data using high performance computing (HPC) technologies, high-speed parallel I/O, and complex algorithms.

The supergiant gas discovery by Eni at its Zohr Prospect, in the deep waters of Egypt, offers one example of the increased level of challenges and opportunities. The find represents one of the world’s largest natural gas finds and is poised to fulfill Egypt’s natural gas demand for decades. According to the well and seismic information available, the discovery could hold a potential of 30 trillion cubic feet of lean gas in place (5.5 billion barrels of oil equivalent in place) covering an area of about 100 square kilometers.¹

Processing these petabyte datasets using legacy technology like NFS requires months of compute time, even when the code is modernized and vectorized.

Because these activities bear considerable costs, advanced technologies are instrumental in saving money and time. New technologies are helping energy firms and their affiliates translate seismic surveys into higher fidelity models of subsurface formations. And as algorithms and applications continue to evolve—from wide azimuth to time-lapsed data acquisition techniques—even more data will be generated, further fueling the critical need for high-bandwidth, highly scalable storage solutions.

Intel® Solutions for Lustre® software provides advanced storage and management capabilities to help the oil and gas industry overcome complex data challenges.

Why the Oil and Gas Industry Is Choosing Intel
Purpose-built to meet the needs of high performance computing users and workloads, Intel’s scale-out storage solutions powered by Lustre include key features that make storage simpler, smarter, and more productive. As an element of Intel’s HPC scalable system framework, Intel’s scale-out storage solutions powered by Lustre are enabling customers to develop high-performance, balanced, power-efficient, and reliable systems capable of supporting both today’s needs and future requirements for compute- and data-intensive workloads.
Intel® Enterprise Edition for Lustre® software is a feature-enhanced version of the community version of Lustre that lowers management complexity and costs. Innovative software “connectors” eliminate the barriers often encountered when trying to deploy data analytics applications, such as Hadoop MapReduce®, onto HPC infrastructure. Enterprise Edition is ideally suited for storage administrators who require very fast, highly available, and massively scalable storage that’s simple to manage.

Intel Manager for Lustre lowers the complexity of Lustre with an easy-to-use Web interface and several metrics to assist researchers, geophysicists, and developers to obtain the maximum performance from their applications. Specific functions available in Intel Solutions for Lustre Software, such as ZFS and HSM, speed up the ROI of the storage solution. ZFS can increase the capacity of the storage, enabling compression and data protection. HSM can be used in combination with tape libraries or low-cost/low-speed media to transparently move old datasets from the first tier to a second tier.

Performance-optimized, scale-out storage solutions powered by Lustre software combined with global technical support from Intel meets the crushing demands of the oil and gas industry—without sacrificing management simplicity and bottom-line productivity. In addition to performance that scales, Intel Solutions for Lustre software preserves vendor choice, so users can select and deploy the storage hardware that best fits their specific technical requirements and budget constraints.

As the innovators, developers, and global technical support providers for Lustre, Intel also helps our worldwide network of partners create storage solutions to meet the data challenges of oil and gas workflows.

**Conclusion**

The massive amounts of data that must be created, gathered, processed, analyzed, and stored, often for decades, is a key characteristic of today’s energy industry. Frequent, sudden shifts in cost constraints, rapidly changing priorities, and limited resources further complicate these data challenges. As a result, the energy market demands very flexible, fast, immensely scalable storage solutions. Intel Solutions for Lustre bring advanced capabilities to the oil and gas industry to help solve today’s and tomorrow’s data and storage challenges.

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