



Oil and Gas Industry Modeling

Achieve Highest Productivity for Oil and Gas High Performance Simulations

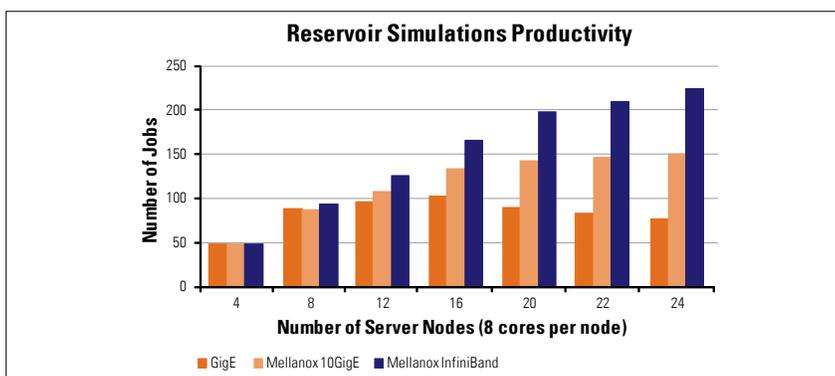


To reduce uncertainty in drilling and production, oil and gas company geologists and engineers conduct sophisticated and complex simulations and seismic analyses, including 3D modeling representing the fluid and rock properties of the subsurface and 4D modeling technology that includes production histories. Oil and gas reservoir simulation represents an essential tool for the management of oil and gas reservoirs, and a key aspect of reservoir simulation is the representation of the well in the simulator and the linkage of the well to the reservoir.

Oil and gas companies use high-performance computing solutions to minimize the time involved in processing the massive amounts of data, to accelerate reservoir and seismic simulations, and to perform more complex simulations. Those engineering simulations are essential in order to reduce costs and speed time to production. For example, reservoir simulation models are being used in the development of new fields, and in developed fields where production forecasts are needed to help make investment decisions, to identify the number of wells required, to improve oil recovery, to identify opportunities to increase oil production in heavy oil deposits, and much more. Oil and gas companies must invest in the required infrastructure to empower their engineers with the most advanced high-performance computing (HPC) resources.

THE CHALLENGE

Efficient HPC systems require high-bandwidth, low-latency connections between dozens or hundreds of multi-processor, multi-core CPUs and high-speed storage systems. Low-performance networking solutions or inflexible networking hardware creates an expensive bottleneck that degrades system performance, limits the capability of the HPC system, decreases the HPC system efficiency and utilization, and as a result limits the productivity of the oil and gas engineering simulations.



KEY ADVANTAGES

- The world's fastest interconnect technology, supporting: 100 and 200Gb/s InfiniBand, and 10/25/40/50/56/100/200 Gigabit Ethernet
- Sub-600 nanosecond latency with InfiniBand and sub-6 microsecond latency with Ethernet
- World-leading storage connectivity
- Lowest CPU overhead and highest networking infrastructure

THE MELLANOX SOLUTION

Mellanox's 200Gb/s InfiniBand and 10/40/56/100/200 Gigabit Ethernet interconnect solutions are designed for multi-core cluster environments and can efficiently handle multiple data streams simultaneously while guaranteeing fast and reliable data transfers for each of the streams. With sub 700 nanoseconds latency, throughput as high as 200Gb/s, an extremely high message rate, and low CPU overhead, Mellanox solutions enable fast and highly scalable communication among server processing units and storage systems, and therefore maximize the HPC system utilization into the 95th percentile range, on average 50% higher than other networking solutions.

MAXIMIZING RETURN ON INVESTMENT THROUGH EFFICIENCY AND UTILIZATION

Mellanox InfiniBand and Ethernet solutions accelerate and maximize the capability of HPC systems and enable simulations to be executed faster and in higher quantity. Mellanox InfiniBand provides the highest efficiency and utilization for oil and gas engineers, and maximizes their return on investment for HPC systems.

THE NEED FOR NETWORKING THROUGHOUT

The number one requirement of networking solutions for oil and gas simulations is that they achieve the highest available throughput. Mellanox 10/40/50/56/100/200Gb/s Ethernet solutions enable full wire-speed with the most advanced Ethernet NICs and PCI-Express 3.0 technology. Mellanox 200Gb/s InfiniBand provides the highest available throughput solution in the market, fulfilling the throughput need for simulations and enabling the highest scalability and efficiency.



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