Oceangoing Multi-Core

Case Study

Intel® Xeon® processor 5400 series
Energy

Geotrace Technologies takes multi-core Intel® Xeon® processors to sea to power an onboard processing center for oil and gas exploration

Geotrace Technologies offers some of the world's most comprehensive petroleum reservoir imaging and analysis services. The company's proprietary software tools, which enable Geotrace to obtain more useful information from seismic data sets, are a powerful differentiator from competitors. Geotrace partners with another company that performs offshore acquisition of the seismic data using a specialized oceangoing vessel.

As oil and gas companies requested faster results from offshore exploration, Geotrace shifted its business practice to do more processing at sea. "We started with a limited amount of computer equipment on board to make sure data was being processed properly," says Matt Gaskamp, datacenter operations manager at Geotrace. "We soon realized there was enough demand to justify a full seismic processing and reservoir analysis center on the vessel. We could save customers valuable time by processing data as it was acquired instead of waiting until the ship was back in port."

The Geotrace team began looking for the best servers and processors to meet the multiple challenges involved. "Our proprietary software required a large amount of processing capacity, but the hardware had to fit in a confined area on the vessel," says Gaskamp. "We had limited power, air conditioning, and space available to us."

"We're turning projects around in about half the time with the new multi-core Intel® Xeon® processors."

Matt Gaskamp,
Datacenter Operations Manager, Geotrace Technologies

Geotrace chooses blade servers with multi-core Intel® Xeon® processors

The team chose Dell* M1000 blade servers with the Intel® Xeon® processor 5400 series to maximize processing density. "With eight cores per blade, we have the processing power to run all of our software without taking up a lot of space. The Intel Xeon processors are also energy efficient and cool-running, so we're able to stay within the power constraints of the onboard environment."

Measures of Success

- To meet demand for faster offshore oil exploration and analysis, Geotrace decided to begin processing seismic data at sea, immediately after acquiring the data
- The Geotrace IT team needed to implement a seagoing data center with servers and processors powerful enough to run demanding proprietary software
- The new hardware had to fit in a confined area on the exploration vessel, where power, air conditioning, and space would be limited

Using two-socket, quad-core Intel® Xeon® processors, Geotrace deployed 128 cores per chassis for a high-density seagoing blade environment.

Two to three times faster performance

The Intel Xeon processors not only helped provide high density, but also delivered faster performance running the company's demanding software. "We saw two to three times faster performance with the Intel Xeon quad-core processors compared to our onshore servers with dual-core processors," says Gaskamp. "Certain phases of our analysis process are particularly CPU intensive, and we knew they would test the new servers. When the time came, there were no problems and everything worked as planned."

Low-voltage processors for energy efficiency

Geotrace used a low-voltage model of the Intel Xeon processor 5400 series, which helped increase the energy efficiency of the systems and enabled the company to put more processing capability in a limited power envelope. "The new low-voltage Intel Xeon processors give us approximately twice the compute capability per circuit compared to our onshore facility," says Gaskamp.

Project turnaround in half the time

The increased performance provided by the new Intel processor–based servers is enabling the Geotrace team to cut the time required for a typical project from six or eight months down to three or four months. "We're turning projects around in about half the time with the new multi-core Intel Xeon processors," says Gaskamp. "Once we have acquired about 10 percent of the data, we start our onboard processing and continue it as more data comes in. We can deliver the finished analysis months earlier, saving our clients time and money and giving them a head start on developing energy sources. That's a real competitive advantage."

Return on Investment

- Dell* blade servers with Intel® Xeon® multi-core processors provide high processing density and two to three times faster performance running demanding Geotrace analysis software
- The new low-voltage Intel Xeon processors deliver approximately twice the compute capability per circuit of the company's onshore facility, enabling high performance within power and cooling constraints
- With more powerful, multi-core Intel Xeon processors, the Geotrace team is able to cut average project time from six to eight months down to three to four months, providing cost savings and competitive advantages

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