NetApp E-Series High-Performance Computing Solutions for Oil and Gas

BACKGROUND

Oil and gas companies are turning to modern technologies to help them become more agile and efficient. By adopting digital technologies, the International Energy Agency (IEA) estimates that oil and gas companies could cut production costs by as much as 20 percent—cumulative savings of US$100 billion to $1 trillion by 2025.[1]

CHALLENGE

With digital technologies, oil and gas companies must manage and store exabytes of data—including 2D and 3D seismic data, current and historic well data, maps, and more. Putting this data to use requires a high-performance computing infrastructure to process and deliver real-time analytics.

Bain & Company estimates that better data analysis could help oil and gas companies boost production by 6% to 8%.[2] For example, machine learning can help more quickly and accurately identify where to drill new oil wells. Real-time data from oil rigs can help prevent downtime, optimize production, reduce environmental risks, and enhance operational safety.

Having the right data storage solution can help deliver faster, more accurate analysis that helps turn data into oil.

1. www.strategyand.pwc.com/report/drilling-for-data
2. www.cnbc.com/2015/03/05/us-energy-industry-collects-a-lot-of-operational-data-but-doesnt-use-it.html

SOLUTION OVERVIEW

The NetApp® E-Series high-performance computing (HPC) solution features a complete line of high-performance, highly reliable storage systems. A modular architecture with industry-leading price/performance offers a true pay-as-you-grow solution to support storage requirements for the terabytes of data generated each day by exploration and drilling operations. The system is integrated with leading oil and gas applications, making sure that data is captured from all sources so that the best decisions can be made quickly.

THE SPEED YOU NEED

To keep up with market demands and remain a competitive force in the industry, accelerated time to market is crucial. The NetApp HPC solution gives you consistent, near-real-time access to exploration data like 3D seismic images. Adding machine learning capabilities to this data can turn months of analysis into weeks, enabling better, faster decisions for getting new oil wells into production.

NetApp E-Series performance is optimized to support any number of workloads simultaneously. It can process up to 1 million random read IOPS and 13GBps sustained (maximum burst) write bandwidth per scalable building block. Optimized for both flash and spinning media, the NetApp E-Series HPC solution includes built-in technology that monitors workloads and automatically adjusts configurations to maximize performance.

AROUND-THE-CLOCK RELIABILITY

Processing and analyzing exploration data can take months to complete. Downtime during that run can mean starting over. For other uses that require real-time data, such as tracking the seismic effect of drilling or anomalies in drilling, downtime can result in danger to citizens and the environment.

The NetApp E-Series HPC solution offers nonstop reliability with a fault-tolerant design that delivers greater than 99.9999% availability. With best-in-class redundancy, the NetApp E-Series HPC solution provides outstanding resilience, proven by more than 1 million systems deployed. Built-in data assurance features help increase data accuracy by avoiding drops, corruption, and missed bits—all the way from host to storage media.

With our extensive partner ecosystem to help us validate configurability, stability, interoperability, and reliability, you can be certain that your NetApp E-Series HPC solution will deliver the 24/7 availability your exploration and production operations require.

EASY DEPLOYMENT AND SUPPORT

Managing terabytes of data from multiple remote sources at once can be overwhelming. The NetApp E-Series HPC solution makes enterprise storage easy. As systems are scaled, the solution is easy to install and manage as a single unit or scaling to hundreds of units with Spectrum Scale, Lustre, BeeGFS, and other file systems. The modular design enables your IT staff to nondisruptively add performance and capacity without complex deployments or migrations. Scripting allows dynamic replication, so you can spontaneously configure new systems for faster deployment and automate common tasks for easier management.

NetApp enterprise architecture also features proactive monitoring and support to automate issue resolution and reduce management overhead. Worldwide support and 4-hour parts delivery help keep the oil flowing. NetApp also offers secure support options for sensitive government sites.

LIMITLESS SCALABILITY

As the demand for oil continues to grow, so does the amount of data generated by oil and gas companies. With each well capable of generating tens of terabytes of data each week, and massive amounts of new exploration data continually being ingested, oil and gas companies need an agile storage solution that scales easily and seamlessly.

The modular design of the NetApp E-Series HPC solution offers a granular, building-block approach to growth. The solution enables you to scale seamlessly from terabytes to petabytes by adding capacity in any increment—one or multiple drives at a time.

BUSINESS BENEFITS

Accelerate Time to Market
- Reduce time to analyze exploratory data from months to weeks with the industry's fastest ingestion and retrieval speeds.

Make More Informed Decisions
- Use real-time data from storage systems that deliver 99.9999%+ availability and industry-leading durability.

Scale Cost Effectively
- Grow as needed with price/performance building blocks that make small to large configurations cost efficient.

LOWER TCO

An unpredictable market and datasets that are growing exponentially mean that oil and gas companies need to be smart about storage. With price/performance-optimized building blocks from NetApp, small to large configurations are cost efficient. In addition, NetApp HDDs and SSDs are required to meet strict quality, performance, and interoperability requirements before acceptance. This extra scrutiny results in failure rates that are four times lower than commodity HDD and SSD devices. Also, NetApp employs the industry's best performance density per rack unit, resulting in lower power, cooling, and support costs. Finally, you enjoy the flexibility to support 100Gb InfiniBand (IB), 100Gb NVMe over Fabrics (NVMe-oF), 32GB FC, and 12Gb SAS connectivity. All of these capabilities add up to significantly lower TCO.

MORE INFORMATION

To learn more about NetApp high-performance computing solutions for oil and gas, visit netapp.com/hpc.

ABOUT NETAPP

NetApp is the data authority for hybrid cloud. We provide a full range of hybrid cloud data services that simplify management of applications and data across cloud and on-premises environments to accelerate digital transformation. Together with our partners, we empower global organizations to unleash the full potential of their data to expand customer touchpoints, foster greater innovation and optimize their operations. For more information, visit **www.netapp.com**. #DataDriven