



## Success Story

# Apache Corporation: Drilling for Opportunities with Fast Access to Seismic Data



### KEY HIGHLIGHTS

#### Industry

Oil and gas

#### The Challenge

Streamline scientific workflows and accelerate time to discovery for oil and gas reserves.

#### The Solution

Move seismic simulation software to NetApp® All Flash FAS (AFF) and business applications to NetApp hybrid flash systems.

#### Benefits

- Speeds time to discovery for drilling opportunities as geoscientists enjoy rapid, near-real-time access to 3D models
- Enables more iterations of seismic data models, directly affecting Apache's bottom line
- Reduces storage latency to microseconds for applications, boosting productivity by hours each day
- Helps Apache "do more with less" and remain competitive

### Exploring New Energy Reserves

In the oil and gas industry, seismic data is the key to evaluating and exploring oil and gas discovery sites. Fast, accurate data modeling is essential because drilling rights are costly to secure and drilling operations require significant infrastructure investments.

For Apache Corporation, one of the world's largest independent oil and gas exploration and production companies, unlocking the secrets in seismic data can translate into hundreds of millions of dollars in drilling opportunities. To capitalize on this, scientists constantly generate new models, using the data to determine the most efficient and effective ways to find hydrocarbons.

### The Challenge

#### Providing fast access to seismic data models

Data is constantly growing, and seismic models are becoming more complex. For years, Apache IT has used NetApp flash solutions to keep pace with scientists' needs, which are constantly evolving.

"Each time IT adds more horsepower to accelerate results, our scientists develop

richer, more data-intensive models," explains Bradley Lauritsen, director of exploration applications at Apache. "They keep setting the bar higher, and we need to respond with more powerful solutions to help them succeed."

A popular trend in the industry and on the horizon for Apache is a new computing model for remote visualization of Earth's subsurface that will greatly improve decision making in the field. Instead of deploying on-site infrastructures, which can lead workers into locales with unstable power grids or challenging political climates, Apache will deliver Schlumberger Petrel seismic-to-simulation software and other critical applications to scientists through NVIDIA GPU-accelerated virtual desktops.

"Remote visualization can make a big difference in business success," says Lauritsen. "High-end remote graphics technology is now available that can allow geoscientists to make faster decisions about where to drill for oil efficiently, potentially having a huge impact on our bottom line."

Storage latency had to be extremely low, however, for the solution to work. "We've

been able to keep pace with our scientists so far by using NetApp Flash Cache controller-attached intelligent caching and NetApp Flash Pool SSD tiering,” says Lauritsen. “But to make remote visualization feasible, we needed an all-flash storage solution to ensure that our scientists could get to data fast enough.”

## The Solution

### All-flash storage for remote visualization

Seeking to build upon its past success and remove disk bottlenecks for remote, high-end graphics, Apache turned to NetApp. With critical operations on the line, Apache deployed a NetApp AFF8080 system in its new Aberdeen, Scotland, data center to support remote visualization throughout Europe, the Middle East, and Africa.

“We didn’t have to learn a new storage platform, which helped speed time to value,” says Lauritsen. “Our engineers are already familiar with NetApp, and we can use the same SnapMirror replication and SnapVault backup software on which we have come to depend.”

Additionally, Apache upgraded the NetApp storage in its U.S. data centers to the NetApp clustered Data ONTAP® operating system, with assistance from a NetApp on-site resident engineer. Hybrid flash clusters in Houston and Dallas, Texas, now support exploration and corporate IT, so data is always available.

“The combination of NetApp flash solutions and nondisruptive operations with clustered Data ONTAP provides a solid and flexible infrastructure that gives us many options,” says Lauritsen. “Storage challenges in the oil and gas industry can be daunting, and NetApp provides excellent solutions to keep us moving forward.”

## Business Benefits

### Faster time to discovery drives profits

With the flash solution in place, Apache’s scientists will now be able to access 3D models in near real time, allowing them to achieve better, faster results. Scientists can generate more iterations of seismic data models in less time, with access to data on the depths and paths of thousands of existing wells, and have the ability to visualize seismic data remotely. At the same time, Apache can shift from on-site infrastructures in challenging environments to a centralized, global data center model, reducing business risk and costs.

“We’re accelerating discovery and turning drilling opportunities into assets by using NetApp flash solutions to feed CPUs and GPUs faster,” says Lauritsen. “Scientists can move faster, because they don’t have to wait. They can get to data immediately, from anywhere.”

### Increased productivity for the entire business

NetApp flash solutions have reduced storage latency to microseconds for Apache’s core applications and Oracle databases, giving back hours of productivity every day to both scientists and business users.

“Keeping storage latency in the microseconds is increasingly important for our business, and with NetApp flash solutions, we’re confident that we can keep it there even as demands increase,” says Lauritsen. “The performance improvements for processes add up over time, reverberating throughout the organization.”

### A strong competitive advantage

NetApp solutions are enabling Apache to adopt remote visualization sooner than some of its competitors, helping

the company to “do more with less” and compete in a volatile energy market.

“With remote visualization of seismic data, we can offer scientists a more effective, comfortable, and compelling work environment, helping us attract and retain top talent,” says Lauritsen. “They can work from anywhere, and that’s a competitive advantage for us. NetApp is helping us support this new model and remain at the forefront of our industry.”

## SOLUTION COMPONENTS

### NetApp Products

- NetApp AFF8080 systems
- NetApp FAS8080 systems
- NetApp clustered Data ONTAP 8.3
- NetApp Flash Cache™ intelligent caching
- NetApp Flash Pool™ intelligent caching
- NetApp Snapshot® and SnapRestore® technologies
- NetApp SnapMirror software
- NetApp SnapVault software

### NetApp Professional Services

- NetApp Residency Services
- NetApp Clustered Data ONTAP Migration Service

### Environment

- Applications: Schlumberger Petrel seismic-to-simulation software
- Databases: Oracle
- Server Platform: Cisco Unified Computing System
- Virtual Desktop Delivery: NVIDIA GRID

### Protocols

- NFS, SMB2



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