DDN DELIVERS UNPARALLELED PERFORMANCE FOR ACQUISITION, PROCESSING & MODELING WORKFLOWS

Companies engaged in oil and gas exploration and production recognize the value of speed and precision. Oil and gas companies and their partners are investing tens of billions of dollars in new gas and oil development projects. With this much money at stake, there is no room for anything but the most precise and accurate information on where to drill, how much to bid on a site, and how to apply the most sophisticated modeling and simulation technology to maximize reservoir performance.

OIL AND GAS INDUSTRY LEADING IT TRANSFORMATION

Oil and Gas Companies are pushing the boundaries of scientific discovery in two fundamental ways:

- **Higher-resolution capture methods**, such as wide azimuth (WAZ), which uses a multi-sensor array to produce a higher-fidelity image, as well as newer approaches, such as multi-azimuth (MAZ) or rich- azimuth (RAZ). The deployment of any of these richer formats significantly increases the amount of data the company must process and manage.
- **Constant algorithmic evolution**, incorporating new analytics techniques that allow for continued advancement in the interpretation of seismic data both for new data coming in and for historical oil field data as well. This means more data to be analyzed at greater speeds.

HIGH RESOLUTION CAPTURE METHODS

By stretching the boundaries of scientific discovery, companies engaged in seismic exploration and processing are also pushing the limits of their underlying technology infrastructures. With the transition to these newer formats for higher- resolution capture methods, single-file sizes in excess of 100TB are not uncommon, and this data must be ingested before it can be processed and analyzed. In some cases, a dedicated seismic specialist firm will handle the data capture, and contract with an oil company. In these cases, the data still needs to be transferred, and in all cases the data needs to be stored, updated and revised.

ALGORITHMIC EVOLUTIONS

The push for constant advance in algorithms puts even more pressure on the storage infrastructure to handle high- volume and high-velocity data. The oil and gas companies engaged in seismic processing can be much more precise in their discovery if they can process larger data sets in shorter periods of time to conduct a greater number of simulations within a specified time frame. Their models can be more accurate if these simulations can be processed and analyzed using ever-greater amounts of input data.

In addition, another major change in seismic processing pushing the limits of storage is the use of pre-stack data in routine seismic interpretation and characterization workflows. With pre-stack processing, organizations can use the entire seismic data set to create clearer understandings of earth models. This can help organizations make better business decisions in a much shorter time frame, but it puts a huge amount of pressure on the storage infrastructure.

THE RIGHT INFRASTRUCTURE REDUCES TIME TO OIL

The pressure to analyze more data faster requires concurrent innovation in the underlying storage infrastructure supporting today's seismic processing initiatives. Only DDN delivers the combined capacity, performance and scalability to meet the requirements of the world's toughest seismic processing workflows. DDN is the undisputed leader in the oil and gas industry with more than 50% of the largest oil and gas companies relying on DDN's storage infrastructure to deliver on mission critical workloads and enable faster time to oil. By using fast, scalable, external disk systems with massively parallel access to data, geoscientists can now perform analysis against much larger data sets delivering more effective models, and enable faster time to oil.

A US-based "supermajor" oil and gas company utilized SFA12K® technology for managing mission critical oil and gas initiatives with outstanding performance on key applications including Kirchhoff migration, RTM, SRME and more.

A European supermajor oil and gas company deployed state of the art petabyte-scale EXAScaler®, enabling them to scale their seismic simulations by 10x, enabling unprecedented return on investment (ROI) coupled with faster time to oil.

A well-known European multinational oil and gas company deployed a petabyte-scale SFA12K storage solution to deliver high performance oriented storage solution to support mission critical exploration and reservoir simulation workloads. Using DDN's SFA® platform, the geoscientists were able to deliver simulation results at unprecedented speed and resolution while reducing footprint with industry-leading storage density.

A large global petroleum company outgrew their NAS storage performance and scalability capabilities to deliver high-performance data for mission critical workloads. The company deployed petabyte-scale GRIDScaler® and was immediately able to transform their exploration and acquisition workflows. Using DDN solutions, their geoscientists are now able to execute processing and simulation workflows faster while optimizing licensing costs by leveraging DDN's embedded file systems solutions.

A large Asian oil and gas company wanted to utilize advanced computing technologies that their existing NAS infrastructure couldn't handle. They chose a multi-petabyte EXAScaler solution and was immediately able to access advanced computing technologies and superfast storage subsystems to reduce time to oil production significantly.

Underscoring the strength and breadth of our entire end-to-end HPC product portfolio, DDN was awarded six top honors in the 2014 HPCwire Readers' and Editors' Choice Awards, including "Best use of HPC in Oil and Gas Industry" award.

DDN PRODUCTS FOR ACQUISITION, PROCESSING AND MODELING

POWERING OVER ½ OF THE LARGEST OIL AND GAS SITES

SFA14K™

SFA storage powers more than 2/3 of the fastest computers in the world and is helping top Oil and gas companies significantly accelerate their workload processing, and reducing the time to Oil. By integrating the latest high performance technologies from silicon, to interconnect, memory and storage, the revolutionary DDN SFA14K™ Hybrid and Hyper-Converged Solution is the industry's fastest platform, delivering 6 to 660 GB/s of performance or 6 to 66 Million IOPs per rack. With massively parallel IO capabilities and a zero interrupt RAID engine, SFA systems deliver unprecedented performance with highly efficient capacity management, and latency lower than many flash devices.

SFA7700X

SFA7700 is a hybrid flash storage appliance, purpose-built for Big Data requirements. Leveraging the capabilities of SFA12KX, SFA7700 configurations start at less than 100TB and scale to Petabytes. SFA7700 is the first system to offer SFX™ technology, designed to extract maximum performance and value from hybrid (spinning disk & flash) media. SFX integrates application-centric intelligence with the power of flash media to marry the performance of flash with the economy of hard disk drives. Many of the leading Oil and Gas companies are deploying SFA7700 for acquisition and for regional deployments.

GRIDScaler®

GRIDScaler® is a versatile, appliance-based solution that can be configured as a parallel file system and a NAS. With scalable data and metadata technology, the GRIDScaler® platform eliminates bottlenecks to achieve true parallelism and maximum application performance. GRIDScaler® combines SFA storage with IBM® GPFS™ to deliver a factory integrated, easy to deploy and manage solution. Several of the most advanced Oil and Gas infrastructures in the world rely on GRIDScaler® for industry leading performance on mission critical acquisition, processing and modeling workloads.

EXAScaler®

EXAScaler® is a next generation parallel file storage system appliance that combines DDN award winning HPC storage technology with the open-source Lustre File System. Built by HPC experts, and supported by the world's most skilled parallel I/O team, the EXAScaler® blueprint is known worldwide as the gold standard in HPC Storage clustering and powers the largest number of Top500® supercomputer sites world wide. Many of the largest Oil and Gas infrastructures in the world rely on EXAScaler® for unprecedented scalability, reliability and industry leading performance on mission critical acquisition, processing and modeling workloads.

WOS®

WOS is a turnkey object storage appliance used for secure collaboration, cost effective local or remote archives and disaster recovery. With no POSIX file system layer, WOS offers extremely high utilization rates. Easy to set policies ensure data is retained at user-defined locations and redundancy levels, automatically. WOS integrates seamlessly with GRIDScaler®, so Oil and Gas services customers can share processing, acquisition and modeling datasets seamlessly across global locations.

IME®

For Oil and Gas companies engaged in seismic processing, burst buffers are emerging as a game changing technology for Reverse Time Migration workflows among other IO constrained workflows. Early adopters of IME are experiencing a three-fold faster turn around time for their mission critical Reverse Time Migration workflows.

ABOUT DDN®

DataDirect Networks (DDN) is the world's leading big data storage supplier to data-intensive, global organizations. For more than 15 years, DDN has designed, developed, deployed and optimized systems, software and solutions that enable enterprises, service providers, universities and government agencies to generate more value and to accelerate time to insight from their data and information, on premise and in the cloud. Organizations leverage the power of DDN technology and the deep technical expertise of its team to capture, store, process, analyze, collaborate and distribute data, information and content at largest scale in the most efficient, reliable and cost effective manner. DDN customers include many of the world's leading financial services firms and banks, healthcare and life science organizations, manufacturing and energy companies, government and research facilities, and web and cloud service providers. For more information, visit our website www.ddn.com or call 1-800-837-2298.

DDN® STORAGE

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