

DELL EMC SCALE-OUT GEOSCIENCE™ SOLUTION FOR OIL & GAS

Automated Data Management for Upstream

Exponential data growth of upstream data

There are 3 key factors that continue to cause dramatic increases in the volume of seismic data being used during exploration and production:

- Introduction of seismic acquisition techniques to cover wider areas of the subsurface in a single survey (as opposed to a number of smaller individual surveys)
- Increasing use of higher resolution 3D and 4D visualization of seismic data
- Multi-component seismic surveys using seabed sensors

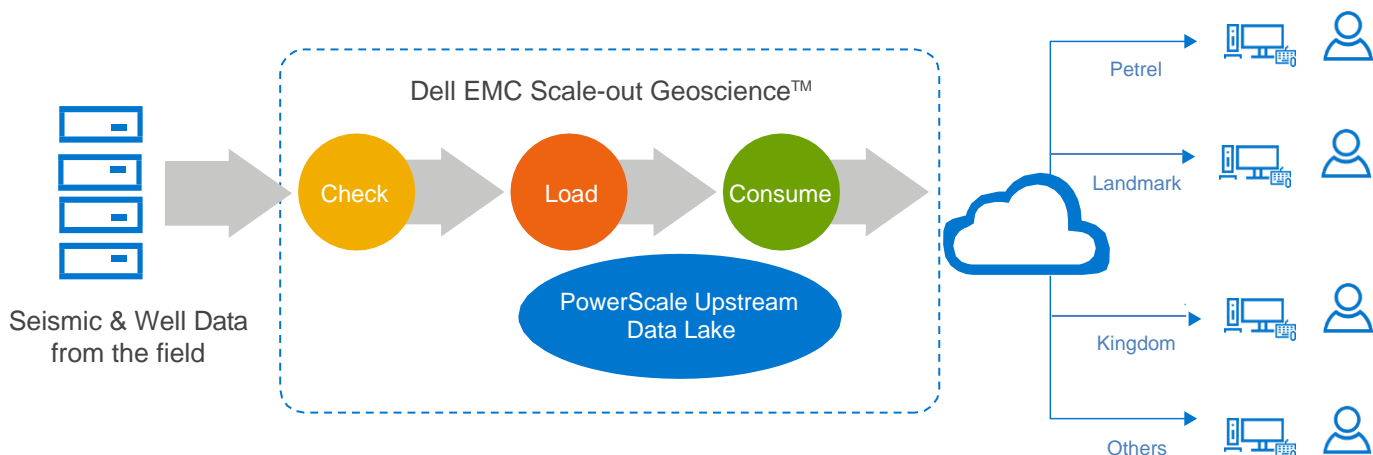
Based on these factors, Dell EMC has developed a solution that significantly improves the management of this data growth—Dell EMC Scale-Out Geoscience™.

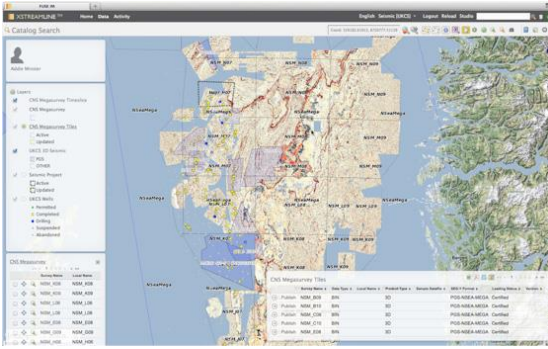
What is scale-out geoscience™?

Scale-Out Geoscience™ is a uniquely agile platform that accelerates the delivery of quality-checked data to geoscientists by combining the quality checking and data management workflow software from TARGET with Dell EMC PowerScale scale-out storage platform.

It utilizes an approach that is automated with full auditability, creating the critical missing link between the seismic data sources and project environments driven by interpretation and modeling tools from Schlumberger, Halliburton Landmark, IHS and others.

The solution dramatically reduces the petrotechnical IT burden of taking seismic data from the field and preparing it for consumption by geoscientists.





Value

- 68% reduction in IT admin
- 40% reduction in big data storage costs
- Overall ROI of 80%

Value

- Transformed 80-hour multi-terabyte seismic loading, indexing & visualization into 7.2-hour exercise
 - 10 times faster!

Scale-out Geoscience offers:

- Automated Data Management Workflow for delivery of quality-checked, application-ready seismic data, resulting in faster time to discovery.
- Improved project lifecycle management and analysis experience for geoscience applications end-users.
- Linear scalability in performance and capacity for improved productivity and consistency of the interpretation & modeling experience.
- The creation of an Active Upstream Data environment that facilitates bringing tape archive data online for richer Upstream analytics and better protection of digital assets.
- Simplified administration without compromise for Petrotechnical IT, even at Petabyte levels, and at a significantly lower Total Cost of Ownership (TCO).
- A foundation platform on which an Exploration & Production Data Lake can be built to drive unified big data analytics for Upstream.

Key capabilities of scale-out Geoscience™

Scale-Out Geoscience™ provides the capability to handle the largest seismic datasets—from single survey projects through to large regional multi-terabyte surveys and beyond.

For regional scale surveys, Scale-Out Geoscience™ uses a unique combination of tiled and bricked data to optimally partition datasets for high performance data access, visualization, and transcoding to application-ready formats. Its Data Management Workflows automate the management of large datasets and can reduce data update times from weeks to hours.

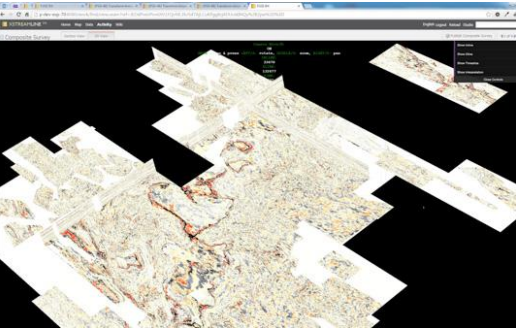
- Efficient management of multi-terabyte datasets using survey partitioning to ensure scalability and efficient distribution
- Real-time survey visualization, presenting a single integrated view of multi-terabyte seismic datasets
- Dynamic transcoding of data from various sources to application-ready formats, including powerful spatial sub-setting tools
- Automated workflows for efficiently updating survey contents, including partial updates to surveys
- Management of user subscriptions, including tracking of user-registered Areas of Interest (AOI), and notification of updates to existing and new surveys within the registered AOI

Efficient utilization of the Dell EMC PowerScale storage platform, a proven high-performance multi-processor server that scales linearly in capacity and performance non-disruptively, and to Petabyte levels.

Data-sharing with users and other Upstream eco-system stakeholders using mobile-enabled web user interfaces.

End-user features for Geoscience

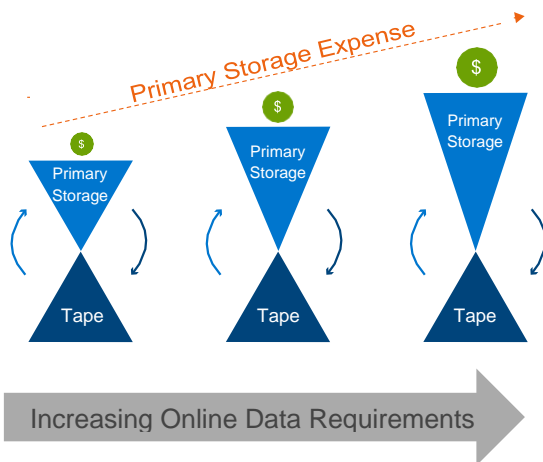
- Pure web browser-based user interface
- Data load from SEG-Y input datasets
- Data output in SEG-Y or ZGY formats
- 2D dynamic section views of inline/xline and time slice views
- 3D views in web browsers using open standards and without plug-ins
- Customizable workflows and full audit history based on the TARGET Omni platform



Features in Support of Petrotechnical IT

- **Simplicity:** You do not need to add data administrators as seismic data grows, driving down operating expenditures and keeping the focus on processing data, and not managing data.
- **Scalability:** The Dell EMC PowerScale platform scales non-disruptively and linearly in capacity and performance, and in line with the workflow-driven usage patterns of seismic data. With our ability to support 16 TB files, PowerScale will enable organizations to more seamlessly process and manage the large seismic datasets.
- **Performance:** By being able to scale performance linearly, interpretation software can be deployed more aggressively to accelerate Upstream analytics.
- **Agility:** Using the high-speed scan and search capabilities of Dell EMC DataIQ, Oil and Gas companies can identify and classify data that are meaningful to business processes. IT and storage admins view data across billions of files through a single pane of glass and gain a deeper understanding of their environment. DataIQ enables organizations to move data from on-prem storage platforms to the cloud and back again to efficiently manage storage costs.
- **Availability and data protection:** Dell EMC PowerScale offers unparalleled end-to-end data and failure protection.

Reducing primary storage costs and complexity for petrotechnical computing



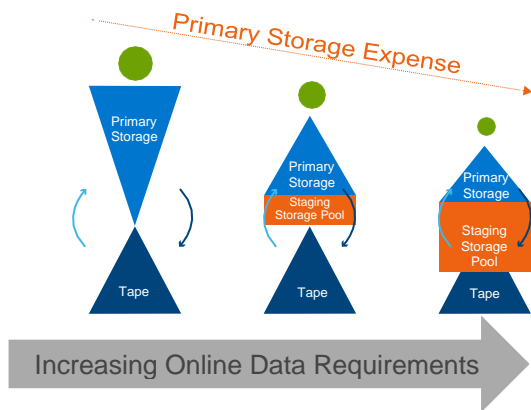
In a typical deployment model for seismic data management, all data is stored on a tier-1 architecture, which drives up costs and management complexity. Typically, less than 30 percent of that data on primary storage is being accessed over a six-month period, so paying to store that data at top-tier premium rates is not cost-effective. In addition, adding more capacity to traditional network-attached storage (NAS) has consequences. It is labor intensive, can cause downtime, and increases administrative overhead.

This petrotechnical data management challenge will only increase as new interpretation technologies require more data types to be online. Increased compute capabilities and evolving analysis methods create even more data.

In the Scale-Out Geoscience™ solution, using Dell EMC PowerScale enables you to reduce the cost of online data by adding a staging pool of capacity between primary storage and tape, which also:

- Enhances data availability for processing and interpretation workflows
- Reduces costly primary storage expansion – just-in-time scalability
- Keeps more data online at a lower overall cost
- Coexists with any primary storage platform – easier to deploy and manage

The “next-generation deployment model” yields a 35 percent overall cost savings compared to the “typical deployment model”.



The storage management component of Scale-Out Geoscience™ is built on the Dell EMC PowerScale OneFS® operating system and performs all data protection, volume management, and file system activities in one powerful layer. This removes the management of RAID, logical unit numbers (LUNs), or multiple file systems, enabling you to control all the seismic data capacity in one file system, and through a single interface.

In conclusion, the Scale-Out Geoscience™ solution through Dell EMC PowerScale, offers a layer of scalable, cost-effectiveness, and easily managed capacity between primary storage and tape that brings numerous benefits to the oil and gas industry—enabling you to keep more relevant data online and accessible for improved analysis.

Summary

The Scale-Out Geoscience™ solution:

- Is a uniquely agile platform that dramatically boosts geoscientist productivity.
- Accelerates the delivery of quality-checked data to geoscientists to drive overall sustainable efficiency in upstream operations.
- Is automated with full auditability, creating the critical missing link between the upstream data sources and project environments.

Contact Us

To learn more, contact your local representative or authorized reseller.

About Dell Technologies in Oil & Gas

Dell Technologies is a global leader in enabling businesses and service providers to transform and deliver enterprise information technology as a service (ITaaS).

Dell Technologies' dedicated Oil & Gas Practice offers petrotechnical IT Innovation focused on data management, application optimization, big data & analytics, and cloud technologies to exploration & Production businesses, enabling them to:

- Make better decisions faster
- Reduce costs through efficient operations
- Maximize Production & Recovery