Faster Time to Oil –
Seismic Repositories

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These trends are putting significant strain on infrastructure solutions currently in place across multiple O&G workflows, forcing an evolution.
Business process – Seismic Processing Workflow

Infrastructure Challenges

- Clusters can be complex, hard to scale, and difficult to manage
- Demand reduction for storage and compute offset by growth in data density
- Moving data from system to system can be time-consuming
- Technology limitations in the past created steps in workflow that may be outdated, but hard to lean out because of capital constraints

Business Impact

- Slower Time to Oil
- Cost Improvement within a Process Step challenging and siloed
Impacting Time to Oil – Seismic Repository Workflow

Workflow Opportunities

- Move some pre-processing tasks into the Seismic repository to improve hit rates
- Reduce data migration times of large Seismic repository files

Current Workflow

- Tape transfer into repository from Seismic Boats, Land Survey crews & other repositories into bulk storage.
- When data in the repository needs to be evaluated, data moved via tape to 3rd party processors or uses POSIX-compliant protocols to present disks to internal seismic processing centers.
- When data is processed, copies of the process data are then stored back into the repository, usually multiple times.
Impacting Time to Oil – Seismic Repository Architecture

Current Market Solutions

- Ability to get things into and out of tape essential to current designs
- The bulk storage is primarily on very low cost storage-centric hardware devices
- Cheap (under $200 per TB stored)
- Big (PB’s of data)
- Slow, lots of data movement between environments required
- Minimal capability to do any pre-processing while in the repository without adding other bolt-on’s that drive up cost

Architecture Opportunities

- Leverage Shared-Nothing solutions to perform bespoke Storage Array tasks
- Improve performance of reads and large migrations of data using scale-out solutions
Compute and storage infrastructure evolution

- Converged Systems
  - Hypervisor environments
  - Hadoop clusters

- Scale-out Cluster Storage
  - Clustered Servers
  - Clustered Storage

- “Traditional” Approach
  - Servers / Clusters
  - Scale-up Storage

Hybrid Cloud

Best of both worlds. Better outcomes.

- Maximize return on existing IT investments
- Match workloads to best-fit infrastructure
- Hit the right balance of risk to speed
- Meet seasonal capacity without CapEx
- Add new capabilities quickly

Business Pressures
New Applications
Data Growth
Hybrid Cloud

Converged Management
Why Hybrid Cloud for Seismic Repositories?

Striking the perfect balance

Control
- Traditional IT
  - Security
- Private Clouds
  - Data
  - Sovereignty
- Economics
- Speed
- Provider Clouds
- Scale

Hybrid

Choice
- Freedom to place workloads across compute and data resources

Consistency
- Data placement enables easy re-use
- Compute resources enable easy access

Control
- Unified workload and data management across infrastructure

Compliance
- Policy-based deployment
  - Automatic migration based on usage
Beyond Hyperconverged to HyperScale

Efficiently access, analyze and protect your data on an integrated web-scale application & data-optimized fabric

- **Policy based, workload-aware resource management** to accelerate insights by reducing the complexity of “distributed everything” environments

- **Intelligent data lifecycle management** to reduce costs with maximum availability and security across globally accessible resources
Automated, multi-tier, hybrid cloud storage

Transparent cloud tiering

• **Open Beta** at ibm.com/developerworks
• Add private or public cloud object storage as a tier for “HyperScale” managed data
• Based on Spectrum Scale technology
• **Cleversafe**, **SoftLayer** or **Amazon S3** storage tier added with the same ease of adding local storage
• Not a gateway solution, cloud-scale storage is directly integrated
  – Learn more: [blog](#)

**Code name “Hyperscale”**
with Tier 0 and Tier 1 storage
*Flash performance & latency*

**Cleversafe**
Object repository / active archive
*Disk speed*

**Spectrum Archive**
fully visible ready archive
*Lowest cost storage*

Cloud Applications – Cognitive Solutions
Analytics – High Performance Computing
Hyperscale Infrastructure Architecture

Heterogeneous Infrastructure Support

On-premise, On-cloud, Hybrid Infrastructure
(heterogeneous distributed computing and storage environment)
Lets Explore the Possibilities

Data Layer Management Solution

Hyperscale Management Solution

Run Anywhere – Store Everywhere
Thank you.
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