HITACHI
Inspire the Next

Hitachi Data Systems Enhanced Backup and Recovery (EBR) for the Schlumberger Petrel Platform

Schlumberger

The race to discovery is won with innovation

Like you, we know innovation is the key to progress. Hitachi Data Systems (HDS) and our ecosystem of partners work closely with you to accelerate the total workflow, from data acquisition, data management, seismic processing, visual interoperation, modeling automation, petrophysical analysis, and property modeling, to simulation. By creating high-quality decision-support information, companies are able to confidently bid on very large contracts with immense responsibilities or decline participation where the information is less favorable. Either way, companies must arrive at well-researched decisions as quickly as possible.

Business success depends on keeping data pure and accessible. Hitachi Data Systems solutions create such efficiencies and protect your investment.

Challenges in oil and gas exploration

- Many interconnected, increasingly complex and rapidly changing workflows
- Exponential growth in the volume of data that needs to be analyzed in a shorter time
- Computational demands increasing by orders of magnitude
- Facilitating collaborative computing and secure access to data
- Managing the information lifecycle of all data associated with a project
- Flexibility to handle changing requirements and transparently optimize the use of different storage technologies without disrupting the workflow for end users

⊚**Hitachi Data Systems**

HDS EBR plug-in for the Schlumberger Petrel platform

Optimize exploration and development operations

The Petrel E&P software platform helps increase reservoir performance by improving asset team productivity. Geophysicists, geologists, and reservoir engineers can develop collaborative workflows and integrate operations to streamline processes.

- **Unify workflows for E&P teams** – Eliminate the gaps in traditional systems that require handoffs from one technical domain to the next, using Petrel model-centric workflows in a shared earth model.

- **Manage risk and uncertainty** – Easily test multiple scenarios, analyze risk and uncertainty, capture data relationships and parameters to perform rapid updates as new data arrives, and perform detailed simulation history matching.

- **Enable knowledge management and best practices** – Reduce workflow learning curves by capturing best practices via the Workflow Editor, providing quick access to preferred workflows and increased ease of use through intuitive and repeatable workflows.

- **Expand the Petrel environment** – EBR leverages the Ocean framework, enabling easy installation and access to the functionality within Petrel while still allowing additional plug-ins like EBR to be installed.

Take the Petrel software platform to new levels with EBR

At Hitachi Data Systems, we understand the value of your data. We believe that data drives our world and information is the new currency. To this end, we deliver enterprise-level data management and availability along with exceptional hardware and software solutions that make processing massive quantities of data, in the fastest possible times, appear simple. We manage the information lifecycle and ensure secure access to the right information via multiple access paths in an ever-changing environment, as well as provide cost-efficient and nondisruptive scaling. The EBR plug-in for the Petrel platform, backed by enterprise-class solutions from Hitachi Data Systems, provides

Business success depends on keeping data pure and accessible. Hitachi Data Systems EBR solutions create such efficiencies and protect your investment while centrally managing data on the server instead of the workstation.

- Up to 1,024 snapshots per file system, 4x more than the closest competitor, to save point-in-time copies of work in progress for workgroup collaboration and what-if analyses
- Hierarchical view of snapshots for easy and intuitive management of copies
- Permission-based access and separate role for system and workgroup level administration
- Ability to explore multiple what-if paths and the ability to restore a particular point in time or start over
- Space- and time-efficient storage with only incremental changes between snapshots stored
- Transparent background synchronization of local copies to central storage and ability to access CIFS shares directly
- Access to advanced NAS data management and protection for automated enforcement of company policies
- Project-level replication for disaster recovery requirements
- The ability to make higher-quality decisions faster by increasing the delivered performance and capacity in mixed application workflows
- Optimized storage technology use – in the right place – and transparent migration between technologies without impacting application workflows

Maximize productivity with seamless software and hardware integration

EBR complete integration with Hitachi Data Systems storage and server solutions makes it possible to centrally manage data on the server instead of the workstation. By serving the core data from shared storage with advanced data management the data is protected.

EBR links into HNAS snapshots to quickly make well-defined local copies that not only track where the files came from, but allow users to explore alternative paths. Each

"what-if path" is captured and stored transparently to the central storage repository while completely maintaining information and access permissions that are viewable by the system administrator at all times.

By eliminating the need to save multiple copies in separate files, EBR enables consistency, collaboration and data protection. HNAS snapshots, used by EBR, only store incremental changes which minimize transmission times and required storage capacity and are therefore extremely space efficient.

NAS Platform

HNAS is an advanced, and integrated, network attached storage (NAS) solution. It is a powerful tool for file sharing as well as file server consolidation, data protection and business-critical NAS workloads. With our NAS platforms, you can solve challenges associated with data growth while achieving a low total cost of ownership.

Features

- Powerful hardware-accelerated file system that represents the next generation of multiprotocol file services, dynamic provisioning, intelligent tiering, virtualization and cloud infrastructure
- High performance: Up to 1.25GB/sec and 96,000 input/outputs per second (IOPS) per node
- High scalability: Up to 8PB of usable capacity
- Seamless integration with Hitachi SAN storage, Hitachi Command Suite and Hitachi Data Discovery Suite for advanced search and indexing across NAS platforms
- Integration with Hitachi Content Platform for active archiving, regulatory compliance and large object storage for cloud infrastructure

USE CASES – USER CREATED SNAPSHOT

Collaborative "what–if" analysis

EBR facilitates the ability create unique point-in-time snapshots within the project – making it possible for multiple users to work on different "what-if" scenarios simultaneously. These scenarios can then be evaluated, compared and the results correlated for a defined point in the workflow process to determine the most effective or most valuable scenarios of that analysis and continue from those decision points.
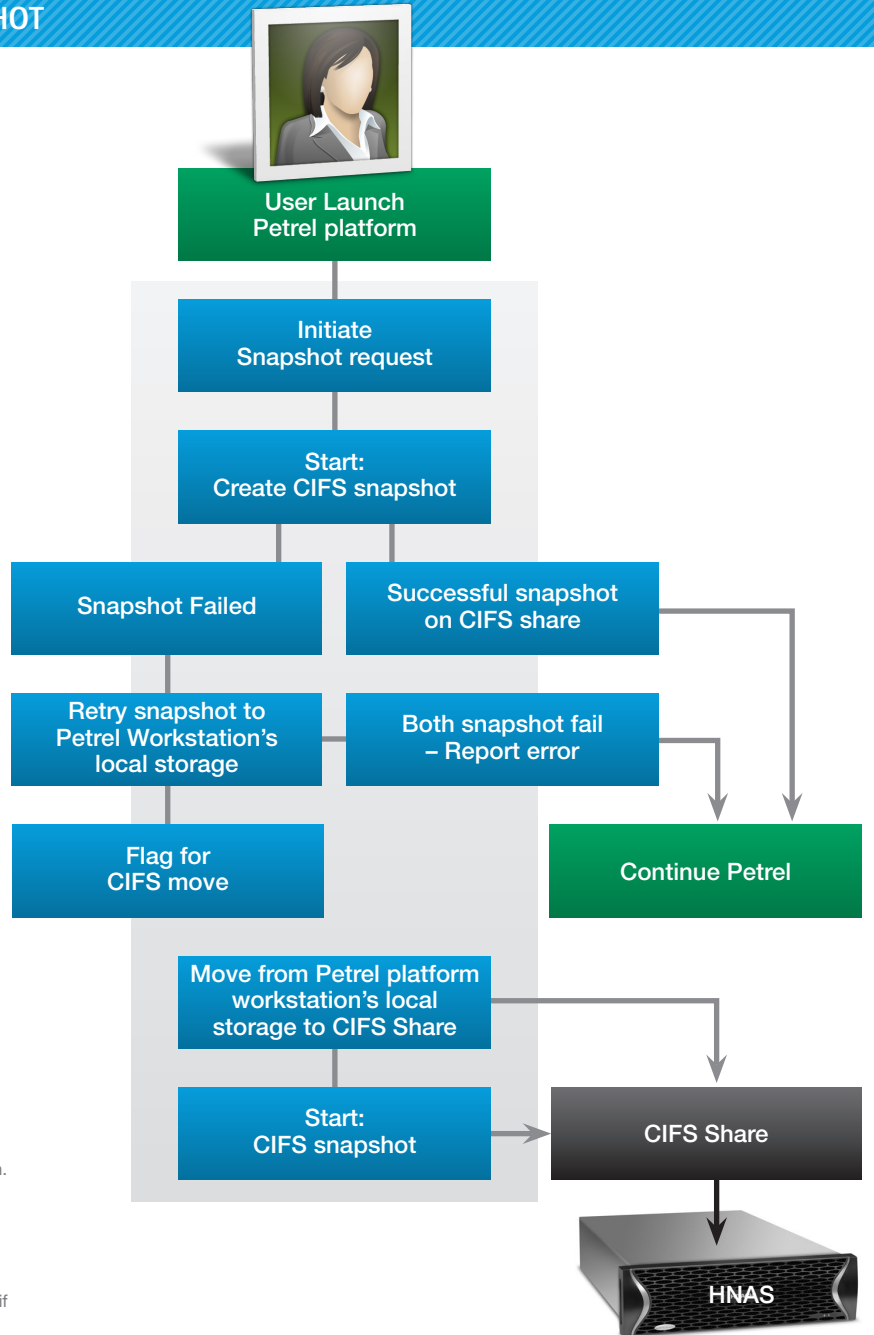
Key differentiators

- EBR provides 4x more snapshots than the nearest competitor
- Provides a project data management solution where active data automatically and transparently is synchronized with central storage
- Never have to reserve disk space in advance to create another snapshot
- Centrally manage the project information
- Create multiple tree and branches to simultaneously create "what-if" analysis

Use Case Pre-requisites

1. EBR plugin is installed
2. CIFS share log-ins/AD authentication is vailable for EBR plugin. (This data will be created during installation and modified and managed using the EBR Admin Utility)

Use Case Assumption

1. User data is on a CIFS share
2. User has enough storage on local disk to save local snapshot if CIFS snapshot fails

User Launch Petrel platform

Initiate Snapshot request

Start: Create CIFS snapshot

Snapshot Failed | **Successful snapshot on CIFS share**

Retry snapshot to Petrel Workstation's local storage | **Both snapshot fail – Report error**

Flag for CIFS move | **Continue Petrel**

Move from Petrel platform workstation's local storage to CIFS Share

Start: CIFS snapshot | **CIFS Share**

HNAS

Benefits

- Simplifies your IT infrastructure by allowing you to consolidate NAS devices or file servers
- Reduces the complexity of storage management and lowers your total cost of ownership
- Significantly improves efficiency, agility and utilization across NAS environments through advanced virtualization and data protection capabilities

- Offers exceptional performance and improves productivity for Schlumberger Petrel environments
- Reach decisions faster by reducing processing cycle times required for Schlumberger applications
- Responds rapidly to changing demands as datasets grow and new analysis methods are deployed
- Increases the number of simultaneous users or projects to support larger workgroups and increasing business

- Intelligent and transparent tiering to optimize the use of different storage technologies
- Automated data management that implements and enforces data retention policies without manual intervention
- Scalability to the highest capacity with standard file systems to manage larger projects
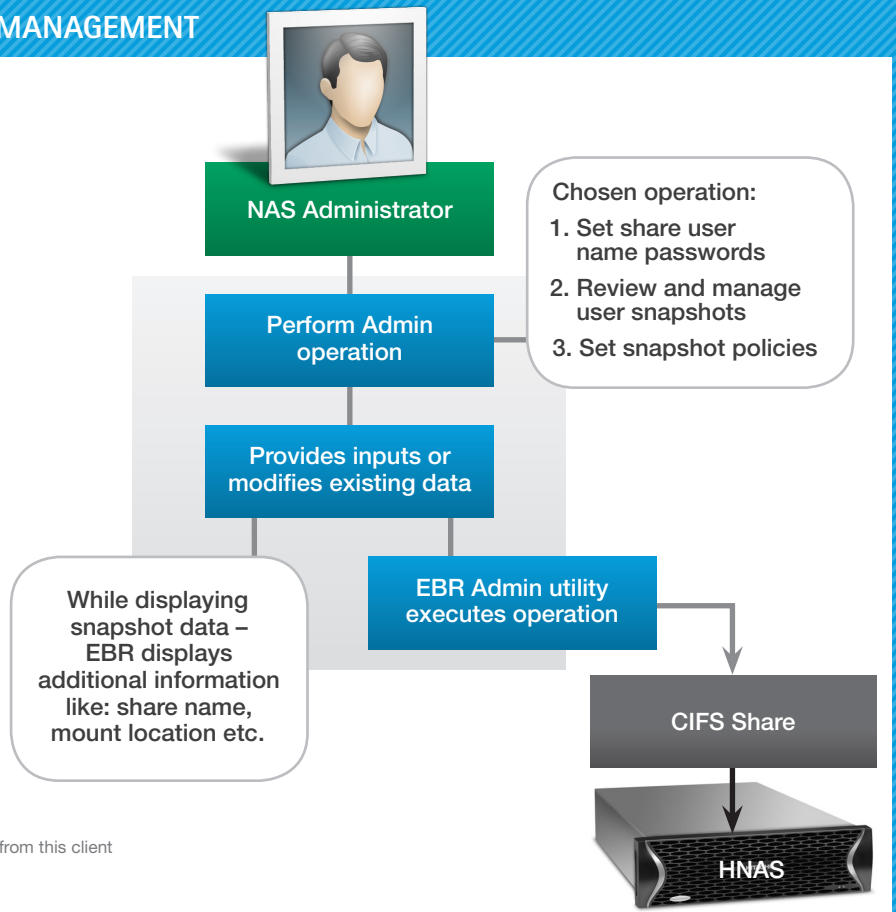
USE CASES – ADMIN REVIEW AND MANAGEMENT

Security and data protection for system administrators

By setting and maintaining access permissions, administrators may restrict access to individual workflow scenarios. Therefore, users may access only the files explicitly assigned by the administrator. Now you can maintain security between projects and protect data from different clients, geographies or contracts.

Data must be protected from loss, corruption, denial of access, and unauthorized access. Storage and backup administrators know very well that backups are important. They also know that users sometimes accidentally delete files and that files sometimes become corrupted. With complete solutions from Hitachi Data Systems, you can be assured that your data is protected.

Use Case Assumption

1. The admin application is run on a Windows client
2. All CIFS shares that are accessible to users are accessible from this client
3. Admin uility will need user authentication

NAS Administrator

Perform Admin operation

Provides inputs or modifies existing data

Chosen operation:
1. Set share user name passwords
2. Review and manage user snapshots
3. Set snapshot policies

While displaying snapshot data – EBR displays additional information like: share name, mount location etc.

EBR Admin utility executes operation

CIFS Share

HNAS

The Hitachi Data Systems advantage

When a few minutes or even seconds can make the difference in achieving business success, you need a complete solutions provider that has the business agility to manage and scale in real time with your business. We understand the importance of having constant access to your data along with the assurance that data protection has been architected into the solution from the outset.

Better storage for richer data

- Maintain high data throughput and high I/O performance to keep today's high-performance computing clusters satisfied
- Scale easily to accommodate the rapidly growing data sets from seismic imaging techniques for the data acquisition, processing, or interpretation phases
- Consolidate petabytes of data onto a single infrastructure with a common set of management tools
- Support standard protocols and accommodate applications running on all operating systems, even when they're accessing the same dataset

- Beyond performance, reduce the discovery process by days or even weeks by avoiding bottlenecks

Interpret more seismic data in less time

- Get performance and advanced data management features to meet the challenges of today's data-intensive oil and gas exploration activities and strict project deadlines
- Accelerate discovery in oil and gas exploration with high performance, massive scalability, reduced cost of ownership and multiple OS support

Hitachi Data Systems