Empowering Exploration and Production with High-Performance Storage

Oil & Gas Solution Brief

The oil and gas industry relies heavily on processing vast volumes of seismic data, reservoir simulations, and real-time analytics to optimize exploration, drilling, and production. The award parallel file system BeeGFS, offers a high-performance, scalable parallel file system designed to meet these demanding workloads, accelerating data-driven decision-making and operational efficiency. Leading oil and gas companies worldwide are turning to BeeGFS as their parallel file system of choice.

Key Benefits

The award-winning parallel file system BeeGFS delivers lightning-fast data throughput enabling rapid access and processing of massive seismic datasets and complex reservoir models, reducing turnaround times from days to hours. As exploration and production workloads continue to increase data volumes, BeeGFS provides scalable, high-performance storage capable of supporting petabytes of data, driving its growing adoption across the oil and gas sector.

Purpose-built for heterogeneous environments, BeeGFS combines innovative architecture with cost-efficient performance. Its seamless integration with industry-standard HPC clusters, simulation tools, and analytics platforms alongside intuitive management tools minimizes IT overhead and accelerates operational efficiency. BeeGFS further empowers secure, high-performance collaboration for geoscientists, engineers, and stakeholders worldwide.

BeeGFS delivers the speed, scalability, and reliability the oil and gas industry demands for data-intensive workflows, empowering companies to accelerate exploration and production cycles, improve operational insights, and maximize ROI on their infrastructure investments.

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High Performance

- Parallel I/O for massive throughput
- Low latency access to small and large files
- Optimized for HPC workloads

Robust

- High availability with BeeGFS on HA
- Fault-tolerant services using Pacemaker/Corosync
- Resilient under heavy metadata and I/O load

Scalable Architecture

- Scale metadata and storage nodes independently
- Seamless scale-out as data grows
- No single point of bottle neck

Ease of Use

- Fast deployment & management tools
- Monitoring via Grafana/ Prometheus
- Integration via Slurm, Kubernetes, Singularity

Data Management

- BeeOND for burst buffer on compute nodes
- Temporary, job-specific scratch space
- Fine-grained control with QoS and striping

Architecture Agnostic

- All kinds of Linux distributions
- Multiple network technologies
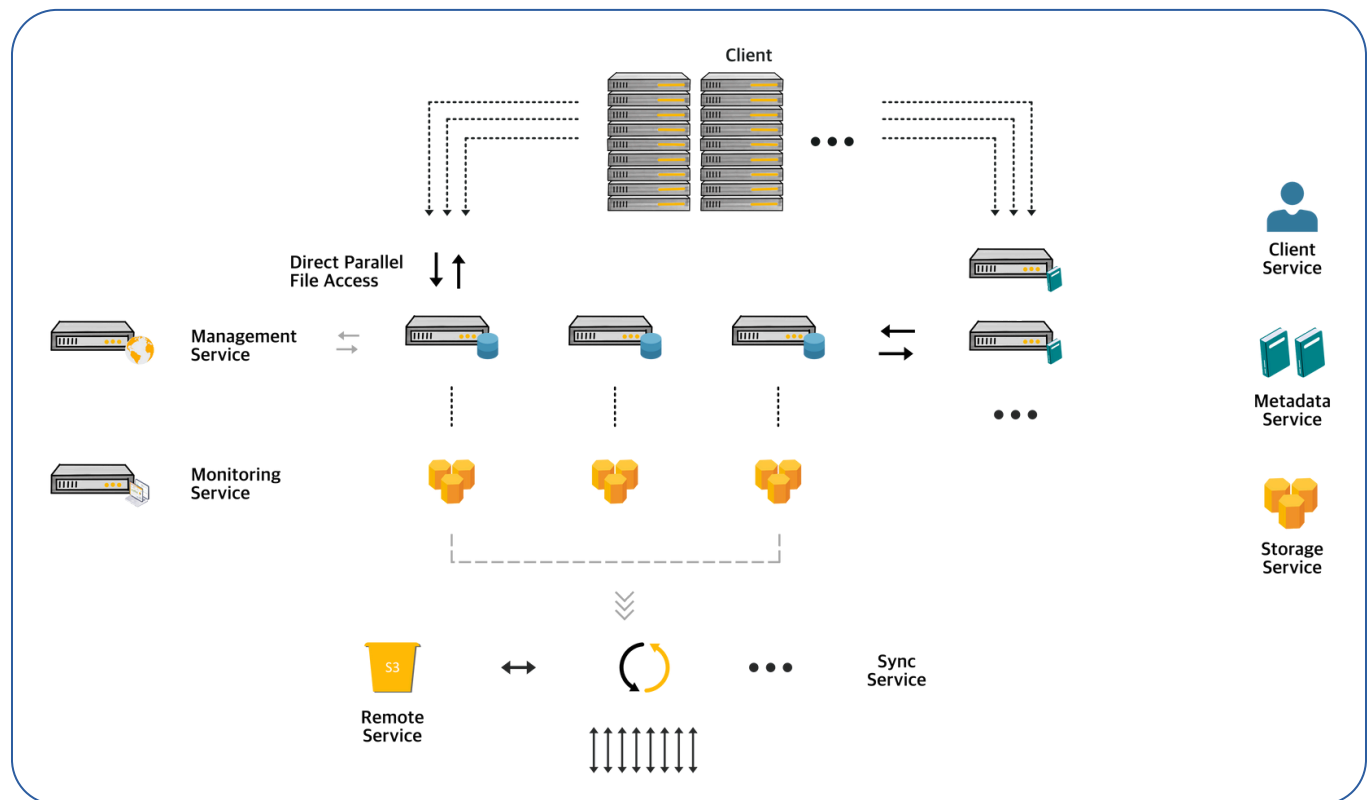- Multitude of CPU/GPU architectures
- All types of storage technologies

Eliminating I/O Bottlenecks in HPC/AI Workloads

I/O Throughput & Bandwidth	Stripes data across multiple storage servers to boost throughput. Enables low-latency, high-speed transfers using RDMA and user-space I/O, minimizing CPU load.
Metadata Performance	Eliminates metadata bottlenecks by distributing operations across nodes—ideal for small file workloads.
Scalability	Add servers or disks to scale linearly. No downtime, No disruption.
Concurrency & Contention	Handles many clients accessing the same data simultaneously, with no single point of contention.
Latency	Bypasses kernel and enables direct memory transfers, reducing latency and CPU overhead.
Cost-Effectiveness & Management	Runs on standard Linux servers with HDDs, SSDs, or NVMe, flexible and cost-effective. BeeOND: Creates fast, temporary file systems on local storage for burst-buffering HPC jobs.

Choose BeeGFS if you value:

- ⊘ Fast, scalable storage that is simple to deploy and manage
- ⊘ High-performance for both large and small I/O workloads
- ⊘ A trusted technology used in leading HPC sites worldwide
- ⊘ The ability to scale flexibly without vendor lock-in

The BeeGFS Architecture

Explore the BeeGFS Hive of Possibilities

ThinkParQ offers BeeGFS as a self-supported Community Edition and a fully supported Enterprise Edition with additional features and functionalities.

Features	BeeGFS Community	BeeGFS Hive Enterprise
Scratch File System	✔	✔
Access Control Lists	✔	✔
Monitoring Tool	✔	✔
Community Mailing List	✔	✔
Commercial License Key		✔
High Availability		✔
Mirroring		✔
Quota Enforcement		✔
Storage Pools		✔
Remote Storage Targets		✔
Copy		✔
Watch		✔
Index		✔

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