The Hammerspace Data Platform on Oracle Cloud Infrastructure (OCI)

SOLUTION GUIDE

Introduction

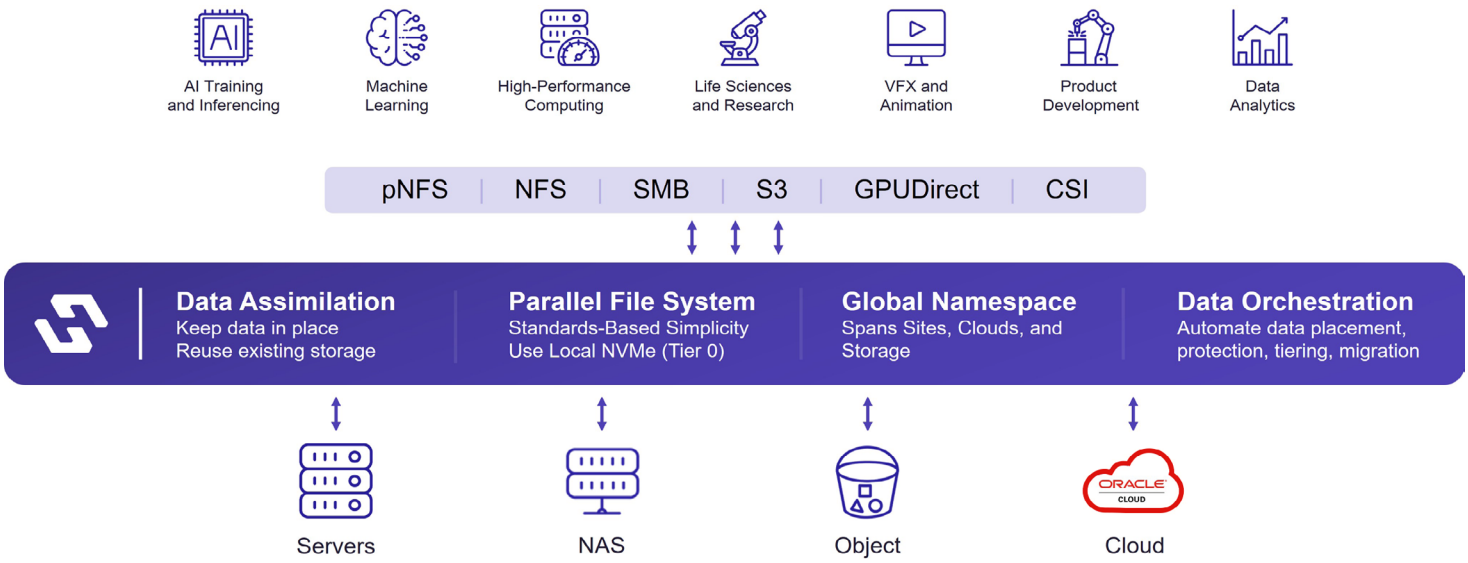
The future of accelerated computing is hybrid-cloud and multi-cloud — but staging and accessing unstructured data fast enough to feed GPUs across on-prem and cloud environments remains a major challenge.

Together, Hammerspace and Oracle Cloud Infrastructure (OCI) simplify hybrid-cloud AI by providing a high-performance data platform that spans on-prem and OCI cloud regions in a single global namespace.

With Hammerspace on OCI, organizations can easily orchestrate and move data from any storage source to OCI resources, deliver unmatched file and object performance for AI workloads, and power GPU computing across multiple OCI regions and on-prem environments — all while simplifying global data access and management.

Benefits

- Unify Distributed, Siloed Data with a Global Namespace
- Migrate Data from On-Prem and Other Clouds to OCI
- Run Demanding AI/HPC Workloads in the Cloud
- Simplify Hybrid-Cloud Infrastructure
- Streamline Cloud Data Pipelines and Workflows
- Drive OCI Compute and Storage Consumption



Deploying Hammerspace on OCI

Hammerspace software is deployed on standard OCI infrastructure. There are two components of the Hammerspace software architecture:

- **Metadata servers, called Anvils**, host the metadata database, act as the control plane, and provide routing information to the clients. There are two Anvil metadata servers per cluster, in other words per site, for high-availability.
- **Data services nodes, or DSX nodes**, are used to scale out client access across NFSv3, SMB, and S3 protocols, can act as a data store in the cloud and on-prem, and can also act as a data mover for NAS-to-NAS and NAS-to-Object data mobility. There are 2 to 60 DSX nodes per cluster depending on the performance and scale requirements.

Hammerspace can also add storage volumes from any Linux storage server and make those volumes part of the Hammerspace file system. For example, you can add high-performance storage by using OCI shapes with NVMe storage.

Hammerspace allows you to add the NVMe storage volumes that are local to the OCI GPU shapes, and aggregate these volumes together to create a tier of ultra-fast, low-latency NVMe storage that is called "Tier 0."

With Tier 0, files stored on these local NVMe volumes can be protected by mirroring data on different nodes, and data can also be tiered off to external storage - for example OCI object - for long term storage.

No matter where the files are stored physically within the Hammerspace global namespace, the files and objects remain visible and accessible via NFS, SMB, and S3.

	Bare Metal	Virtual Machine
Standard Shapes	✓	✓
Dense I/O Shapes	✓	✓
GPU Shapes	✓	✓
HPC Shapes	✓	✓

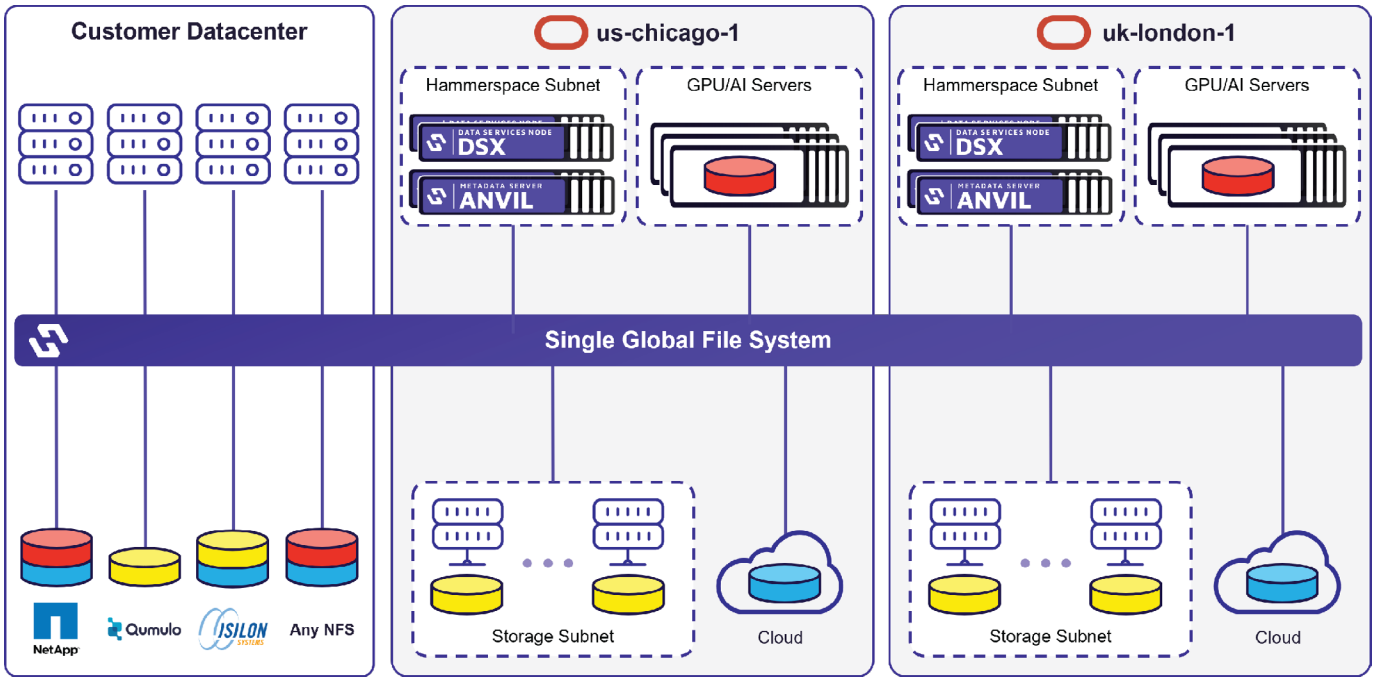
**As of June 2025, Standard Baremetal Shapes are being tested. Flexible shapes are not currently supported.*

The figure above displays the shapes (Baremetal and VM) that can run Hammerspace in OCI.

All of these shapes are supported so a customer can choose the shape that makes the most sense for their business requirements, and Hammerspace solution architects can determine the best shape(s) for your use case.

Example Hybrid-Cloud Deployment

An example hybrid-cloud deployment is shown in the figure below, which shows one customer data center and two OCI cloud regions connected with a Hammerspace global file system.



In this example, the Hammerspace metadata servers are deployed on (2) VM.Standard.E2.8 shapes, and the Hammerspace DSX nodes are also deployed on (2) VM.Standard.E2.8 shapes.

Each of the OCI cloud regions have H100 GPU VMs that are connected to the Hammerspace Data Platform. The local drives in these VMs are used as a Tier 0 layer for the applications running on those VM's.

A Tier 1 storage layer is also being used. These are Linux VM's with internal NVMe drives in them (DenseIO shapes were used).

And finally, OCI object store is used as a tiering bucket as well as the shared object store used to transport data between sites.

Boost GPU Performance on OCI with a Hammerspace Tier 0 Architecture

In order to characterize the performance benefits of using a Hammerspace Tier 0 architecture on OCI, Hammerspace and OCI conducted a series of tests comparing a Tier 0 architecture (which uses local NVMe storage in the OCI GPU shapes), to networked storage on OCI.

The results of the testing showed that a Hammerspace Tier 0 architecture delivered:

- **6x faster read bandwidth**
- **3x faster write bandwidth**
- **Up to 7x reduction in latency**

compared to networked storage running on OCI.