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## HAMMERSPACE HYPERSCALE NAS

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### CONTEXT

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Hammerspace [unveiled](#) its new high-performance NAS architecture, Hyperscale NAS, to cater to the growing demands of enterprise AI, machine learning, deep learning initiatives, and the increasing use of GPU computing both on-premises and in the cloud.

The new solution addresses the limitations of traditional NAS systems by offering enhanced performance and scalability for processing large datasets, a critical requirement for AI model training.

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### OVERVIEW

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Hammerspace describes its Hyperscale NAS as a "new category" of high-performance NAS (Network Attached Storage) architecture, one designed to meet the demanding requirements of enterprise AI, machine learning, and deep learning, as well as GPU computing in both on-premises and cloud environments.

Here's an overview of what Hyperscale NAS entails:

1. **Designed for Broad-Based Enterprise AI and GPU Computing:** Hyperscale NAS is specifically built to address the complex needs of AI/ML/DL initiatives and the widespread rise of GPU computing. It caters to the intensive data processing and storage requirements these technologies demand.
2. **High-Performance and Efficiency:** Its architecture provides the speed and efficiency required to power GPU clusters of any size. It's optimized for generative AI, rendering, and high-performance computing tasks, making it suitable for environments where large-scale data processing and fast data retrieval are crucial.
3. **Support for Large Language Model Training:** Hyperscale NAS is built on the principles required for training large language models (LLMs), central to many AI applications. It ensures the high-speed data access necessary for these models to learn and evolve effectively.
4. **Addressing a Range of Workload Characteristics:** The architecture is designed to handle a variety of workload characteristics, including those that

demand storage solutions with enterprise features, high performance, and the ability to operate at the edge or in classical HPC and interactive environments.

5. **Overcoming Limitations of Traditional NAS Architectures:** Traditional scale-out NAS architectures, including all-flash systems, often fall short in meeting the performance or scale requirements of AI training at scale. Hyperscale NAS overcomes these limitations, providing consistent performance for even the most demanding applications.
6. **Proven as the Fastest File System for AI Model Training:** In practical deployments, Hyperscale NAS has been proven to be the fastest file system for enterprise and web-scale AI training. It supports thousands of storage nodes and GPUs, achieving high aggregate performance over standard Ethernet and TCP/IP.
7. **Compatibility and Certification:** Hyperscale NAS is certified as NVIDIA GPUDirect Storage, allowing for efficient unification of unstructured data and acceleration of data pipelines. It integrates seamlessly with existing storage systems, Ethernet or InfiniBand networks, and meets a comprehensive set of data compliance, security, and governance requirements.

Hyperscale NAS brings the scalability, performance, and efficiency required by modern AI-driven enterprises, addressing a critical need in the evolving landscape of high-performance computing.

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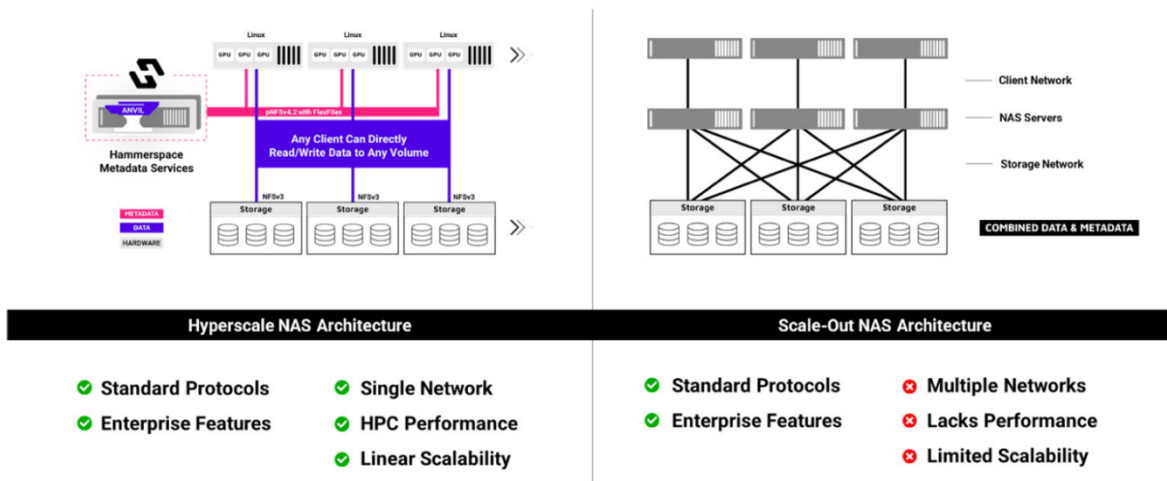
## DETAILS

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Hammerspace's new Hyperscale NAS can be summarized as follows:

- **High Performance and Scalability:** Combines the scalability of HPC parallel file systems with the traditional NAS features.
- **GPU Computing Optimization:** Ideal for GPU computing at scale, facilitating AI training, inference, and other parallel processing tasks.
- **NFS 4.2 Flex Files:** Utilizes NFS 4.2 Flex Files in Linux to create a parallel file system from existing NFS-based NAS setups.
- **Challenges Addressed:** Solves the scalability and performance issues inherent in standard NFS storage, especially for AI and HPC workloads.
- **Global File System Platform:** An additional offering to the Hammerspace's Global File System that simplifies deploying parallel file systems.
- **Metadata Separation:** Uses an out-of-band metadata server (managed by Hammerspace Anvil software) to separate metadata from data paths, enhancing scalability.

- **Performance Comparable to Scale-Out Systems:** Delivers file storage performance on par with parallel scale-out file systems, using standard NFS-based NAS with a Linux client.
- **Protocol Support:** Facilitates simultaneous data access through NFS or SMB with proper permissions handling and protocol locking.
- **Networking and Data Governance:** Supports various networking technologies and comprehensive enterprise data governance and management.
- **Linear Scalability:** Offers linear scalability to thousands of nodes, maintaining consistent throughput and IOPs performance, optimizing for large-scale GPU computing.
- **Nvidia GPUDirect Storage Self-Certification:** Hyperscale NAS is certified to present any storage system as GPUDirect Storage, ensuring high performance for Nvidia GPUs.



## ANALYSIS

The new Hyperscale NAS addresses the complex demands of modern high-performance computing, particularly in AI, machine learning, and GPU-intensive workloads.

Its ability to deliver consistent performance across a range of mixed I/O workloads and to scale linearly while maintaining this performance is particularly impressive. It's a departure from the limitations of scale-out NAS architectures, which often struggle with performance bottlenecks as they expand.

The proven capability of Hyperscale NAS in AI model training, supporting thousands of storage nodes and GPUs, underscores its potential as a leading solution in this space. It's not just the performance that makes Hyperscale NAS stand out; it's also the



architecture's ability to improve the performance of existing NAS systems without requiring modifications.

The new offering expands Hammerspace's addressable market while also bringing the company a fiercely competitive environment. Hyperscale NAS, while differing architecturally, competes directly against Weka.io's Data Platform, IBM Spectrum Scale, and solutions from VAST Data.

The new solutions build on an impressive period of growth for Hammerspace. The privately held company recently released details of its overall performance. It has grown its sales pipeline by more than 300%, increased its partner channel by 65%, and closed a \$56.7 million institutional funding round. The company has doubled its sales force and added an impressive roster of executives to its leadership rank.

The introduction of Hyperscale NAS is timely, given the growing reliance on AI and machine learning in enterprise operations. As the concerns of IT organizations shift from storage systems to understanding and managing data, Hammerspace finds itself at the right place at the right time. Its new Hyperscale NAS solution raises the bar, positioning Hammerspace to solve today's enterprises' increasingly complex data challenges.

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