Solution Brief

VAST for Containers



A Modern Data Foundation for Stateful Containers

Containers have reshaped the enterprise data center by replacing tightly coupled, infrastructure dependent applications with portable services that run consistently across the edge, on-premises, and the public cloud. AI is accelerating this shift as organizations package models, data pipelines, inference services, and development environments in containers, making it easier to deploy and scale across CPU and GPU platforms.

At the same time, Kubernetes has emerged as the default orchestration layer for these environments, automating container deployment, improving scaling and availability, and providing lifecycle management across increasingly distributed infrastructure.

This surge in container adoption has introduced new demands on enterprise storage for IT leaders. Though containers are ephemeral, the databases, analytics systems, and business applications running inside them still require persistent, performant, highly accessible, and resilient data.

VAST AI OS

VAST AI OS streamlines data services for Kubernetes by offering a unified foundation for persistent applications across clusters, data centers, and cloud environments. Through the VAST CSI Operator, companies can provision and manage VAST storage using familiar Kubernetes storage classes and persistent volume claims (PVCs). Since the VAST DataStore is a multi-protocol architecture, developers can dynamically provision NFS and block volumes through CSI, or storage buckets through COSI, for content libraries, AI model repositories, or large volumes of unstructured data. Additionally, advanced data management capabilities allow organizations to run container applications with resilient data protection, streamlined operations, and granular visibility.

Why VAST AI OS?

VAST AI OS revolutionizes data services for containers.

All-Flash Performance

VAST DASE provides stateful containers with sub-millisecond access and gigabytes-per-second throughput.

Byte-Granular Efficiency

Similarity-Based Data Reduction achieves a 3:1 reduction ratio across consolidated containers and backups.

View-per-Volume

PVCs are a first class-citizen in VAST analytics, providing granular visibility to data flows for specific pods.

Writable Clones

Rapid writable clones, enabling instant rollbacks or the creation of identical “golden-image” sandbox environments.



All-Flash Infrastructure

VAST's DASE architecture serves thousands of containers from a single tier.

Protect by Default

Snapshots, DR, and ransomware resiliency built into the data layer.

Policy Drive Storage Services

Use Kubernetes storage classes to apply access controls, protection policies, and other storage parameters.

SAN-Levels of Performance over Ethernet

RDMA-over-NFS makes it possible to direct up to 10 GB/s of performance to each pod.

Multi-tenant Infrastructure

Map storage classes to isolated tenants, policies, virtual IP pools, and storage paths.

Enterprise-Grade Data Protection and Resilience

As containerized architectures scale to support mission-critical, stateful enterprise and AI applications, data security is no longer a best practice; it's a non-negotiable baseline requirement. Standard file-by-file backups strain container compute resources and introduce high overhead. VAST AI OS addresses this by embedding robust, enterprise-grade data protection directly into the storage and orchestration layers.

- Through the VAST CSI Driver, Kubernetes administrators and application developers can manage backup workflows directly through standard Kubernetes APIs. By utilizing standard Custom Resource Definitions (CRDs) in Kubernetes, users can trigger instantaneous and space-efficient volume snapshots of running persistent volumes.
- Ransomware attacks on production databases and containerized microservices have made off-cluster backups inadequate. VAST incorporates defense-in-depth directly into the storage tier with immutable, indestructible snapshots. Once written, these snapshots are locked against administrative tampering, deletion, or rogue encryption by malware.

Bring Transformative Benefits to Modern Applications

Containers have become a critical component for application modernization efforts and emerging AI pipelines. But these applications require a data foundation engineered for consistent performance, seamless scalability, without compromising data services.

That's where VAST Data steps in! VAST provides persistent storage for Kubernetes environments, enabling developers to provision storage through familiar cloud-native workflows. Administrators define infrastructure policies once and deliver standardized, self-service storage to application developers—without isolated storage silos, complex storage tiers, or compromised data governance.

Trusted by Industry Leaders

VAST Data is trusted by leading companies around the world, providing a state-of-the-art all-flash solution tailored for containerized workloads and modern applications.

CoreWeave · NSCALE · Boston Children's Hospital — Until every child is well™ · NHL · SK telecom · CROWDSTRIKE · TACC — Texas Advanced Computing Center · CINECA

About VAST Data

VAST Data is the AI Operating System company – powering the next generation of intelligent systems with a unified software infrastructure stack that was purpose-built to unlock the full potential of AI. The VAST AI OS consolidates foundational data and compute services and agentic execution into one scalable platform, enabling organizations to deploy and facilitate communication between AI agents, reason over real-time data, and automate complex workflows at global scale. Built on VAST's breakthrough DASE architecture – the world's first true parallel distributed system architecture that eliminates tradeoffs between performance, scale, simplicity, and resilience – VAST has transformed its modern infrastructure into a global fabric for reasoning AI. Learn more at vastdata.com and follow VAST Data on LinkedIn, YouTube and X.

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