



HPE Alletra Storage

Elevate Kubernetes workloads with HPE Alletra Storage MP X10000

Delivering mission-critical scalability, orchestration, and portability

HPE 
GreenLake

Kubernetes has become a cornerstone of modern infrastructure, enabling organizations to build, deploy, and scale applications efficiently. However, the challenge of managing large-scale, data-intensive workloads persists—especially when it comes to high performance, scalable object storage that integrates seamlessly with cloud-native applications. With its ability to handle massive data volumes and dynamically scale, Kubernetes is an essential platform for AI/ML pipelines, analytics workloads, and large-scale data processing. Yet, without the right storage back end, organizations can struggle with performance bottlenecks, scalability limitations, and data silos. However, applications such as databases, analytics platforms, and AI/ML pipelines require persistent storage to ensure seamless performance, resilience, and efficiency.

Enter HPE Alletra Storage MP X10000, a next-generation S3-compatible object storage solution designed for Kubernetes environments. The HPE Alletra Storage MP X10000 with enterprise-grade, all-flash performance, and a unique disaggregated object-based architecture, the HPE Alletra Storage MP X10000 offers 6x faster performance than leading competitors, helping ensure seamless data persistence, rapid scalability, and optimized performance for mission-critical, resource-intensive applications.¹ Providing Petabyte-level scalability for managing large-scale unstructured data, the HPE Alletra Storage MP X10000 enables enterprises to extract value from data quickly and efficiently. By seamlessly integrating with Kubernetes, the HPE Alletra Storage MP X10000 optimizes scalability and helps eliminate performance silos, helping ensure that storage can dynamically adapt to application needs without compromise.

HPE COSI Driver for Kubernetes with for HPE Alletra Storage MP X10000: Enabling seamless object storage integration

Figure 1 shows the HPE COSI Driver for Kubernetes architecture for Kubernetes applications.

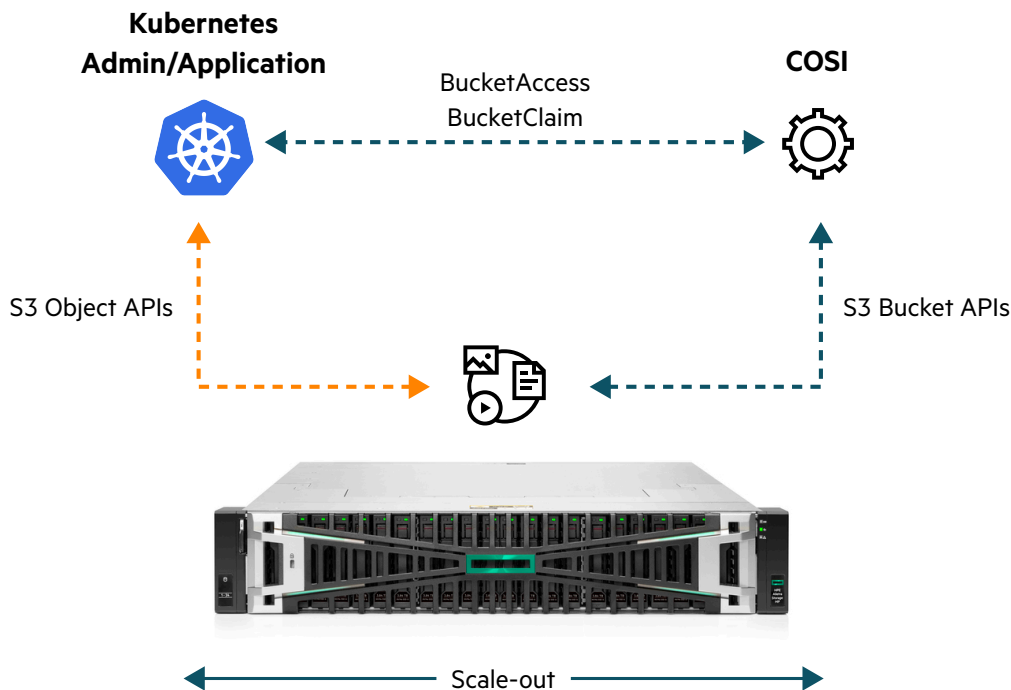


Figure 1. HPE COSI Driver for Kubernetes architecture for Kubernetes applications

¹ Up to 6x faster than two of the leading vendors delivering object storage. Based on HPE internal testing and analysis of publicly available data, November 2024.

The HPE COSI Driver for Kubernetes allows seamless integration of HPE Alletra Storage MP X10000 with containerized applications, providing a Kubernetes-native approach to managing object storage. Built to follow the gRPC specification provided by Kubernetes, the driver enables automated bucket management, dynamic provisioning, and access control for S3-compatible storage.

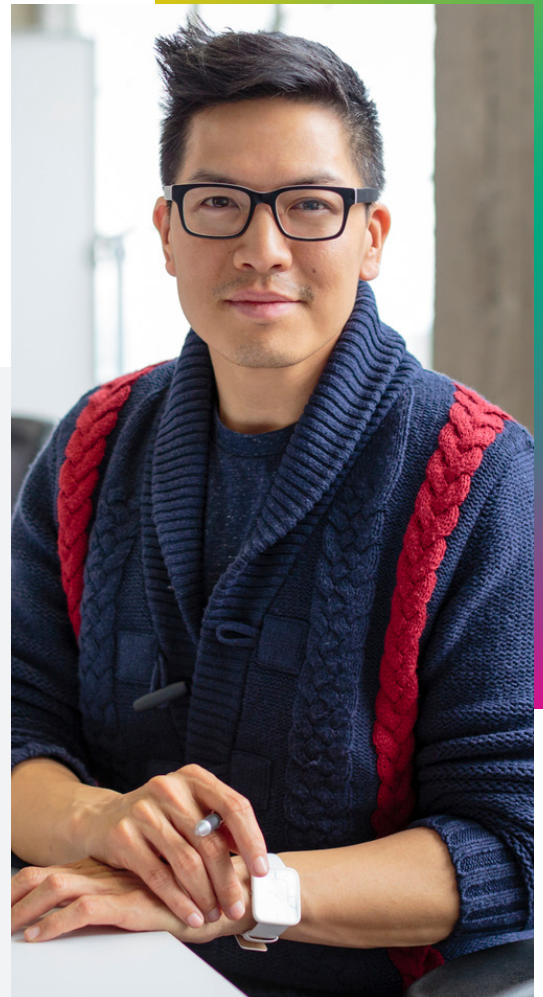
With support for BucketClasses, BucketClaims, and BucketAccess, the HPE COSI Driver for Kubernetes offers both Greenfield and Brownfield provisioning, allowing users to create new buckets or integrate existing ones into Kubernetes workflows. Administrators can define BucketClasses to standardize storage policies while developers can request and manage storage through BucketClaims, helping ensure a self-service, scalable, and efficient object storage experience.

COSI driver: Transforming cloud-native storage in Kubernetes

At the core of this integration is the Container Object Storage Interface (COSI), which is redefining how Kubernetes applications interact with object storage. COSI enables automated, Kubernetes-native storage provisioning, access control, and lifecycle management, allowing developers to focus on application performance rather than manual storage configurations.

Key benefits of COSI for Kubernetes workloads are:

- **Automated bucket provisioning:** Developers can dynamically request storage on demand using Kubernetes-native workflows, eliminating manual setup delays.
- **Simplified security:** COSI automatically manages access credentials (API keys, tokens) to minimize security risks and misconfigurations.
- **Native Kubernetes integration:** Developers can manage storage resources using familiar tools such as kubectl and YAML manifests.
- **Seamless multicluster data sharing:** COSI abstracts storage layers to enable consistent data sharing across hybrid and multicloud Kubernetes clusters, preventing vendor lock-in and facilitating smooth cross-cluster operations.



Value proposition of HPE Alletra Storage MP X10000 for Kubernetes

Simplified persistent storage management

By integrating COSI drivers, the HPE Alletra Storage MP X10000 seamlessly combines high performance, persistent object storage with Kubernetes-native operations. Using BucketClasses, BucketClaims, and Buckets, teams can rapidly provision and scale stateful workloads, helping ensure efficient, automated data management.

With an ecosystem of partner-led solutions such as Qumulo, WEKA, and Scality, along with HPE GreenLake for File Storage, organizations can customize their storage strategy to meet their specific unstructured data demands, removing storage silos and helping ensure fast application deployment.



High performance storage for data-intensive workloads

AI/ML, Big Data analytics, and real-time processing require high throughput, low latency, and scalable storage. The all-flash design of the HPE Alletra Storage MP X10000 allows Kubernetes workloads to efficiently store and retrieve massive unstructured datasets using S3 APIs, delivering predictable performance for data-intensive applications. Paired with HPE GreenLake, enterprises can help eliminate storage complexity, centralize object storage management, and help ensure seamless data access for business-critical insights.

Scalability for dynamic workloads

As Kubernetes workloads grow, their storage must be scaled efficiently to keep pace. The HPE Alletra Storage MP X10000 provides independent scaling of performance and capacity, helping eliminate infrastructure sprawl while helping ensure seamless data growth. Designed for massive scalability, the HPE Alletra Storage MP X10000 allows enterprises to scale object storage dynamically based on workload demands, making it ideal for AI/ML, analytics, and high-throughput applications.

Backed by HPE GreenLake intuitive cloud experience, IT directors can streamline file data management and avoid the complexity of scattered resources or silos. For LOB application owners, this efficiency means simpler setup and faster job completion. The unified experience of HPE GreenLake provides access to more than 50 cloud services, helping enterprises modernize their data strategy and drive tangible business outcomes.

COSI use cases with HPE for unstructured data workloads

COSI, though still in ALPHA, is rapidly evolving and gaining popularity as an innovative approach to Kubernetes-native object storage management. This presents an exciting opportunity to pioneer new integrations with HPE Alletra Storage MP X10000 all-flash object storage.

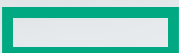
As COSI's capabilities grow, developers will utilize S3 bucket automation, enhance AI/ML data pipelines, and orchestrate object storage seamlessly across hybrid Kubernetes clusters. Imagine a future where AI-driven applications provision and manage storage in real time, eliminating manual overhead. A Kubernetes-native backup solution could instantly detect and store snapshots across distributed cloud environments. Data scientists training ML models could seamlessly collaborate across multiple clusters, using COSI for real-time shared dataset access.

In this evolving landscape, COSI will streamline storage operations, ensuring reliable data access, seamless workflows, and scalable storage that align with evolving business needs.

Backup and restore operations for Kubernetes clusters

Object storage streamlines the storage aspect of backup and restore tools, allowing Kubernetes-native solutions to access buckets for backups and disaster recovery. The wide-ranging portfolio of HPE helps ensure reliable and scalable data protection, helping IT leaders reduce complexity and break down silos.

- **Commvault for Kubernetes backup:** A robust backup and restore platform that uses object storage for automated snapshot storage and recovery. The high performance infrastructure of HPE speeds up backup processes and helps ensure uptime.
- **Veeam Kasten:** A Kubernetes-native backup and mobility solution that relies on object storage for efficient storage and data protection. This boosts productivity for both IT teams and LOB owners.





Summary

The integration of HPE Alletra Storage MP X10000 with COSI revolutionizes Kubernetes-native object storage by delivering unparalleled scalability, automation, and efficiency. By leveraging COSI, enterprises can seamlessly provision, manage, and access storage resources, making the HPE Alletra Storage MP X10000 a powerful foundation for AI, ML, and data-driven workloads. This solution helps ensure Kubernetes applications can dynamically consume, persist, and share unstructured data across hybrid and multicloud environments with ease.

HPE unstructured data solutions—such as the HPE Alletra Storage MP X10000—empower enterprises to modernize their Kubernetes storage strategy by:

- Providing a flexible, scalable object storage solution for any unstructured data workload
- Simplifying storage management through a seamless Kubernetes-native cloud experience with COSI
- Delivering enterprise-grade performance for AI, ML, and data-intensive applications
- Enhancing productivity by streamlining storage provisioning and automation
- Driving business outcomes with effortless scalability, increased efficiency, and reduced complexity

By integrating HPE Alletra Storage MP X10000 with COSI, enterprises unleash the full potential of cloud-native object storage—helping ensure seamless automation, efficient data access, and a truly scalable foundation for next-generation Kubernetes workloads.

Learn more at

HPE.com/us/en/Alletra-Storage-MP-X10000.html

[HPE COSI Driver for Kubernetes](#)

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