

**Hewlett Packard
Enterprise**

PROTECT YOUR CONTAINERS WITH HPE AND KASTEN K10 BY VEEAM

Flexible, granular, and hybrid protection for enterprise-scale containers



WHAT'S DRIVING GROWTH IN CONTAINER ADOPTION?

Container technology adoption is increasing at an amazing rate.¹

This growth results from the ease with which containerized applications can be ported and deployed across environments. Containers virtually package the applications with everything they need to run (configuration files, dependencies, and so forth) and isolate them for the deployment environment, which enables containerized applications to run easily on a variety of environments: local desktops; virtual and physical servers; development, testing, and production environments; and private or public clouds.

Another benefit of containers is that physical servers can host a greater number of them than of virtual machines. Because each container shares access to the host's operating system kernel, it requires much less space than an equivalent virtual machine running on a physical server. The average size of a container is within the range of tens of megabytes; virtual machines can be up to gigabytes in size.

Finally, use cases for containers have extended to [artificial intelligence](#) (AI) and analytics applications. Containers are becoming the standard way to build and deploy machine learning (ML) models, create real-time analytics pipelines, and run batch analytics and extract, transform, load (ETL) jobs. Their portability across environments makes containers the perfect vehicle to manage the full lifecycle of AI/ML models and, for that matter, almost any analytics application. The massive adoption of containers for analytics and AI/ML applications is creating a demand for containers for stateful applications that use and generate a lot of data and therefore need persistent storage.

Why protect containerized applications?

There are many use cases for the backup and recovery of container environments such as [Kubernetes](#) and their associated applications:

- Recovery of stateful containerized applications from failures and disasters
- Replication to seed a new development initiative or migration between test/dev and production
- Protection before container lifecycle activities begin
- Easy consolidation of container clusters to reduce cluster sprawl

Container protection requirements

The challenge for protecting containerized applications is managing their dynamic deployment. A complete solution must handle multiple tasks:

- **Implement seamless operations and policies across on-premises and cloud environments.** Container deployment can span on-premises, cloud, and even multicloud environments. Backup and restore operations must reflect this flexibility.
- **Back up and restore at the level of a single container (and its data).** By their nature, containers are not bundled with physical servers or virtual machines. Protection must be application-centric and must collect all application subcomponents (data and metadata) to permit recovery.
- **Maintain protection granularity.** Kubernetes clusters must be able to be backed up with different levels of granularity, including cluster, namespace, label selector, application, and persistent volume levels.
- **Automatically restore.** For managing large container environments, a complete solution must include fully automatic application restore.
- **Perform data-centric tasks.** A solution must leverage industry-standard Container Storage Interface (CSI) drivers, such as the HPE CSI Driver for Kubernetes, to perform dynamic provisioning, snapshots, clones, and restores.



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¹ Best Practices for Running Containers and Kubernetes in Production, Gartner, August 2020



How HPE and Kasten by Veeam meet Kubernetes cluster protection requirements

The global container application market size is expected to reach USD 8.2 billion by 2025, according to a new report by Grand View Research, Inc. and other analytics firms, registering a 26.5% CAGR during the forecast period.

Top reasons to protect containers:

- Recovery of stateful containerized applications from failures and disasters
- Replication of the environment for migrating a test/dev environment to production or from production to staging before an upgrade
- Easy migration of container clusters

Top requirements for a container protection solution:

- Public cloud and on-premises coverage
- Application-level protection
- Automatic policies
- High level of security

The HPE and Kasten by Veeam container protection solution:

- Is fully tested, validated, and optimized
- Provides the maximum level of flexibility and granularity for containers backup and restore
- Can be deployed and managed in hybrid environments (public clouds and on-premises)
- Offers a step-by-step deployment for containers protection

HPE AND KASTEN K10 BY VEEAM SOLUTION

Kasten K10 by Veeam offers enterprise operations teams an easy-to-use, scalable, and secure system for backup/restore, disaster recovery, and application mobility.

The combination of HPE storage and the Kasten K10 by Veeam platform provides end-to-end enterprise-grade Kubernetes clusters protection, safeguarding containers wherever they live (on-premises, in the cloud, or hybrid) and restoring them wherever they are needed. Through the HPE Complete program, Hewlett Packard Enterprise provides one-stop shopping for validated turnkey backup and recovery solutions that reduce risk and improve recovery readiness while protecting your data.

This solution for protecting containerized applications includes HPE hardware, HPE CSI Driver for Kubernetes, and Kasten K10 by Veeam software.

HPE Storage

The HPE data protection solution for Kubernetes clusters includes these key hardware components:

- **HPE Alletra**, a cloud-native data infrastructure, helps IT shift from having to own and maintain data infrastructure to simply accessing and using it on demand and as a service. Built for every app, from traditional to modern, HPE Alletra spans workload-optimized systems to deliver architectural flexibility without the complexity of traditional storage management. By mobilizing data across clouds, it unleashes the true potential of the hybrid cloud.
- **HPE Primera** delivers the agility of cloud and raises the bar on resiliency and performance. Built on proven resiliency and powered by HPE InfoSight, it delivers instant access to data with storage that sets up in minutes, upgrades transparently, and is delivered as a service.
- **HPE Nimble Storage** combines robust system design with predictive analytics to deliver the highest measured availability in the storage industry and a transformed support experience. Building predictive analytics into the core architecture from Day One enables infrastructure to learn, no matter how long it has been deployed.
- **HPE Nimble Storage dHCI** is an intelligent platform with the flexibility of a converged infrastructure and the simplicity of a hyperconverged infrastructure (HCI). It disaggregates compute and storage and integrates hyperconverged control to offer enterprises simple infrastructure management on a flexible architecture. Built with one of the world's most secure servers, HPE ProLiant, and the self-managing flash storage of HPE Nimble Storage, this platform provides the flexibility to scale compute and storage independently for unpredictable growth and the data resiliency and performance needed for business-critical apps.
- **HPE Apollo 4000 Systems with Scality RING Scalable Storage** is a scale-out software-defined storage platform that runs on HPE Apollo 4000 servers and provides a backup target option. It is designed for multiapplication environments that must store unstructured data at petabyte scale.
- **HPE StoreOnce** is another backup target option. It offers a highly efficient deduplication solution that reduces the storage capacity requirement by up to 95%,² providing more recovery points and faster restores from backups.
- **HPE StoreEver tape library** is a true air-gapped backup solution for today's digital world. It delivers absolute reliability, unbeatable cost economics, off-the-charts scalability, and ease of use while securely storing large volumes of data without exceeding your budget.

HPE CSI Driver for Kubernetes

The HPE CSI Driver for Kubernetes makes it possible to use a container storage provider (CSP) to perform data management operations on storage resources. The architecture of the CSI driver enables block storage vendors to implement a CSP that follows the specification. The CSI driver supports the HPE primary storage portfolio.

² Based on standard dedupe ratio of 20:1 as compared to a fully hydrated backup.



Kasten K10 by Veeam software

Kasten K10 by Veeam is a true Kubernetes-native backup solution that protects cloud-native applications and business-critical data. It automatically captures and protects an entire application stack, including resource definitions, configurations, and underlying data. Through dynamic policies that apply to auto-discovered applications, backups can be managed at scale. When volume-level protection is not sufficient, the workflow can be extended with a Kanister blueprint to apply application-specific operations. Kasten K10 by Veeam provides automated policies to manage the way backups are securely replicated off-site. With robust scheduled and on-demand workflows, disaster recovery is enabled for applications.

With Kasten K10 by Veeam, entire applications can be moved between clouds and on-premises for test/dev, load balancing, and upgrades. With no need for custom scripting, applications can be migrated with robust scheduled and on-demand workflows and across public or private cloud infrastructures with seamless data conversion between infrastructure formats. For better environment isolation and operational control, migration can occur between non-federated clusters. When the Kubernetes clusters running on HPE Nimble Storage dHCI create volume snapshots and clones, Kasten K10 by Veeam orchestrates sending copies of the snapshots to the HPE Apollo System with Scalality RING Scalable Storage backup targets.

CONCLUSION

Enterprise-grade container platforms are here to stay. The HPE and Kasten K10 by Veeam joint solution for protecting containerized applications offers unparalleled benefits:

- Is fully tested, validated, and optimized
- Provides maximum flexibility and granularity for container backup and restore
- Can be deployed and managed in hybrid environments (public clouds and on-premises)

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