HPE 3PAR StoreServ for Docker Containers

Enterprise adoption is growing for Docker Containers

Containers speed up time to market for applications and services, accelerate cloud strategy, and enable optimized IT. With container portability, you can package or containerize applications once and know that they will run anywhere across a Hybrid IT environment.

Containers aren't just for ephemeral, cloud native applications. Many organizations want to use them to develop and deploy enterprise applications faster, make these applications more portable, and reduce infrastructure and maintenance costs.

The challenge: How to run production containers in enterprise environments?

Production containers and stateful applications bring daunting IT challenges that leave teams reluctant to get started. How do you:

- Meet production requirements for stateful containers and enterprise applications—without overburdening IT teams?

- Give DevOps teams the data they need to deliver high-quality applications and achieve faster time to market?

The solution: Enterprise-class persistent storage for any container platform, any workload

Now you can run traditional and containerized apps on a single enterprise-grade storage platform that meets requirements for both. HPE 3PAR combines powerful Docker, Kubernetes, OpenShift, and Mesos integration with tier-one predictive flash, rich data services, and six-nines availability from storage guaranteed.[1] You can choose your own container platform, simplify container operations, and speed up DevOps.

Simplify container operations
With HPE 3PAR container integration, IT and storage admins have everything they need to deliver multitenancy and storage efficiency for production containers-as-a-service (CaaS) and platform-as-a-service (PaaS). You can:

- **Clearly segregate data and resources** for tenants' container workloads using virtual domains

- **Prevent noisy neighbors** with Quality of Service (QoS) rules that limit the use of bandwidth and IOPS on a per-volume basis

- **Meet production service-level agreements (SLAs)** that provide highly efficient latency, IOPS, and bandwidth for your high-priority apps and limit access for mainstream apps

Performance and availability	Multi-tenant storage	Easily copy container data	Storage efficiency
- **Six-nines availability guaranteed from storage** - Optional volume placement on flash cache to enhance hybrid array performance	- Rules to limit or enhance IOPS, latency, and bandwidth at the container level - Virtual domains segregate tenant access to data and resources	- Writeable snapshots and clones - Retain or expire copies whenever you need - Express Protect container volumes to HPE StoreOnce[2]	- **Reduced data footprint and storage costs** - Thin provisioning - Deduplication - Compression

Figure 1. Capabilities to control with HPE 3PAR container integration

- **Support both Fibre Channel and iSCSI** environments

- **Get storage efficiency** with the HPE 3PAR Data Reduction Guarantee and get more out of your flash investment[3]

And since storage admins can define QoS policies that cluster admins enforce and DevOps teams use—right from the container interface—compliance is easy.

Tier-one predictive flash

In addition, every HPE 3PAR StoreServ array comes with HPE InfoSight, to enable easy troubleshooting, planning, and maintenance for container infrastructure. This cloud-based engine gathers analytics from compute, storage sensors, networking, and virtual machines and analyzes it with machine learning. With HPE InfoSight, it's easy to predict and prevent infrastructure problems before they impact your enterprise applications and containers. HPE InfoSight:

- Sees across the infrastructure stack and helps pinpoint issues beyond storage

- Simplifies planning with forecasts into capacity and resource needs

- Enables proactive fault detection with faster time to resolution

- Delivers global visibility with detailed performance, capacity, and bandwidth analytics[4]

Best of all, with every system and issue analyzed, HPE InfoSight and our entire install base get smarter and more reliable.

Speed up DevOps with cloud-like automation on-premises

Combine the HPE 3PAR flash acceleration for building code with self-service storage automation to speed up your entire DevOps cycle. No more waiting for data from IT. Developers can use the HPE 3PAR container integration to provision persistent volumes and create data copies to speed up development, QA, and staging or continuous integration and continuous deployment (CI/CD) workflows. And with the HPE StorageClass provisioner for HPE 3PAR, Kubernetes users

can use policies to provision persistent volumes with the QoS and efficiency characteristics that each container and application needs.

It's easy to rollback data to the last-known-good state between experiments. You can simply delete the corrupted copy and mount a clean one. With enterprise storage efficiency and space-efficient snapshots that can be set to expire when developers no longer need them, copies are affordable no matter how many you need or how big your database.

In addition to containers, HPE 3PAR offers many other options for developers to provision, manage, and copy data from enterprise applications, including REST APIs and software development kits (SDKs), and modules for Ansible, Puppet, and Chef.

Figure 2. Pre-built tools for DevOps automation

Timeless Storage

Whether you choose to gain cloud economics for data on-premises with **HPE GreenLake Flex Capacity** or own your array, you can future-proof your investment. Under our Timeless Storage program, every HPE 3PAR array comes with: all-inclusive software licensing, six-nines of availability guaranteed, and flexible upgrade and payment options.[5]

Try it now:

- Visit **hpe.com/storage/containers**

- Download **HPE 3PAR Volume Plug-in for Docker** from the Docker Store

- **Install HPE Kubernetes FlexVolume Driver and Storage Class Provisioner for HPE 3PAR** from GitHub

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[3] **Reduce your data footprint and storage costs: HPE 3PAR Data Reduction Guarantee**

[4] **Eliminate compromise with flash-optimized storage architecture**

[5] **HPE 3PAR Timeless Storage**

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