

SOFTWARE-DEFINED PERSISTENT STORAGE FOR CONTAINERS

SOLUTION BRIEF



Red Hat is driving the future of storage in the container-centric data center.

Software-defined scale-out storage technology is ideally suited to containers.

Red Hat's comprehensive container technology stack helps enable container adoption, while easily integrating a flexible choice of persistent storage.

Red Hat is working to enable containerization of the storage platform itself—going beyond the efforts of any other storage vendor.

INTRODUCTION

In environments where agility holds an increasingly important business value, resolving the demands of development and operations has never been more important. Developers need speed, choice, and an isolated sandbox where they can run and test applications. At the same time, operations requires stability to deliver reliable production environments. Linux container technology is now offering an opportunity to bridge the Dev/Ops divide.

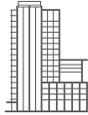
Containers are revolutionizing the ways that organizations develop, test, and deploy applications—with the potential to impact almost every process and person within the data center. Container technology will also affect how organizations think about storage for applications and emerging microservices. However, while containers do a great job of encapsulating application logic, they do not offer a viable solution for storing application data across the lifecycle of the container. Ephemeral (or local) storage is not enough—stateful container-based applications require that data remain available beyond the life of the container. Moreover, application requirements are often not served by narrowly-focused cloud storage APIs—forcing potentially inappropriate semantics onto applications.

With its inherent hardware independence, software-defined storage is specially designed to address these challenges. In particular, software-defined scale-out storage is uniquely capable of being managed under a single control plane—a key value of containers and something that traditional storage technology will find challenging. Red Hat Storage plays an integral part of Red Hat's comprehensive container technology stack, addressing persistent container storage by streamlining the interaction of administrators and developers.

CONTAINER-READY PERSISTENT STORAGE: THE RED HAT STACK

Containers require less overhead than virtualized environments, and instantiate quickly, offering better isolation and easier scalability. However, while run-time containers are intended to be disposable, their data is definitely not. Despite their light-weight nature, containers still require reliable and available storage so that data is persistent—in the event of failed containers, failed disks, or crashed servers.

Red Hat has been building a rich storage ecosystem around containers, bringing stability, security, and simplicity to this critical area. Rather than expecting organizations to cobble together container environments—or hire significant container expertise—Red Hat's full technology stack approach (Figure 1) provides an end-to-end containerized ecosystem. From the developer perspective, Red Hat® OpenShift 3.1 offers services and a flexible choice of native storage platform, including options such as Red Hat Gluster Storage and Red Hat Ceph Storage. Containerized applications get access to the highly available persistent block, file, or object storage that they need without compromise.



ABOUT RED HAT

Red Hat is the world’s leading provider of open source solutions, using a community-powered approach to provide reliable and high-performing cloud, virtualization, storage, Linux, and middleware technologies. Red Hat also offers award-winning support, training, and consulting services. Red Hat is an S&P company with more than 80 offices spanning the globe, empowering its customers’ businesses.

NORTH AMERICA
1 888 REDHAT1

**EUROPE, MIDDLE EAST,
AND AFRICA**
00800 7334 2835
europe@redhat.com

ASIA PACIFIC
+65 6490 4200
apac@redhat.com

LATIN AMERICA
+54 11 4329 7300
info-latam@redhat.com



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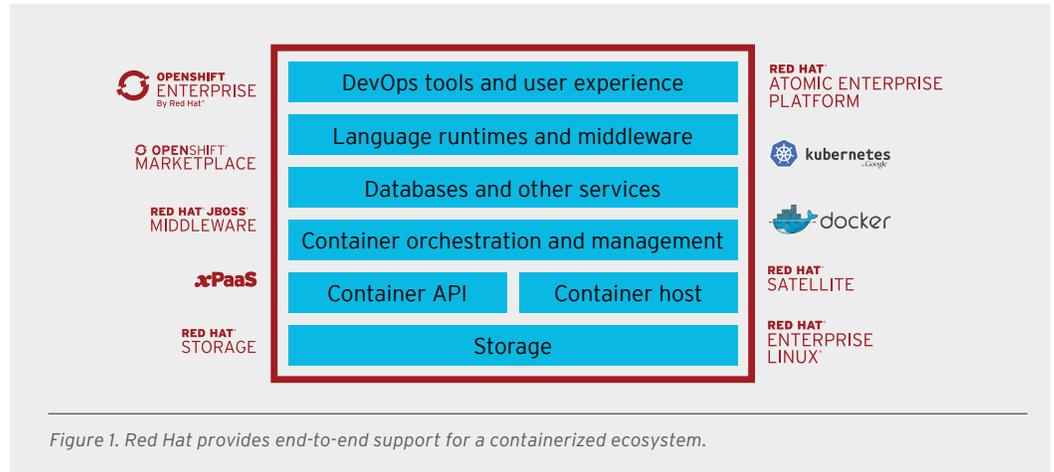


Figure 1. Red Hat provides end-to-end support for a containerized ecosystem.

With this comprehensive approach, Red Hat makes container adoption as easy and seamless as possible. Red Hat’s vision is to become the de-facto platform for containers. To this end, Red Hat is part of the Open Container Initiative—a lightweight, open governance structure (under the Linux Foundation) dedicated to creating open industry standards around container formats and runtime environments.

CONCLUSION

Container technology stands to truly revolutionize DevOps, but only if it remains open, standardized, secure, and simple to deploy. Red Hat’s open stack-based approach helps deliver on the promise of portable containerized applications by offering proven enterprise-grade storage options. Developers get their choice of flexible, persistent storage to support the specific needs of their application. Operations can rapidly deploy applications and their storage resources together with a unified control plane.

Red Hat can enable containerized and Platform as a Service (PaaS) environments better than any other competing vendor—with key container support in Red Hat® Enterprise Linux Atomic, Red Hat® OpenShift and Red Hat Storage. Red Hat is also going beyond what any other storage vendor is doing by working toward containerization of the storage platform itself. Uniquely, all of this technology is developed and tested together at Red Hat, helping to ensure that software components work together. Using Red Hat technology, organizations can save valuable time and effort as they begin to deploy containerized applications and streamline software-defined scale-out storage infrastructure.