

Agile storage for the hybrid cloud

Red Hat OpenShift Container Storage on Amazon Web Services and hybrid clouds

Highlights

Deploy hybrid cloud storage that is developed, designed, and tested to work with Red Hat OpenShift and AWS.

Improve application performance and scale applications with more persistent volumes and fewer limitations.

Support file, block, and object storage modalities across multiple AWS instance types.

Fail applications and their data across AWS Availability Zones to improve resiliency and improve business continuity, independent of AWS instance types.

Deploy container-native storage your way

Container-based workloads are growing dramatically as organizations embrace Kubernetes orchestration and the advantages of the hybrid cloud. Despite the apparent benefits, managing storage in a dynamic hybrid cloud environment can present challenges. How can you be sure that your storage will scale? How will your storage remain available if your application needs to move within the hybrid cloud, or fail over to a different availability zone? Will your chosen storage allow a smooth transition from bare metal to the cloud or across different storage types within the public cloud?

Red Hat® OpenShift® Container Storage is container-native storage that is integrated with and optimized for Red Hat OpenShift Container Platform and the Amazon Web Services (AWS) public cloud. It combines software-defined Ceph storage technology, the Rook storage operator for Kubernetes, and multicloud object gateway technology based on NooBaa to provide rich functionality and advantages for cloud-based applications.

Transparent portability

Different teams have different needs. One group may want to develop on-premise and deploy in the cloud. Another may need to develop in the cloud and test on-premise. Throughout the process, they may need to support the same application across bare metal, virtual machines, or containers. Rather than rewriting the application, organizations need the flexibility to access application data on one platform and then shift to another as necessary.

OpenShift Container Storage offers transparent portability across on-premise and cloud vendor storage, devices, and availability zones offering consistency in everything from storage class naming, to expanding volumes, to application management and monitoring.

Support for multiple storage types

Different applications drive diverse storage requirements, and those storage requirements can drive very different cost profiles. General purpose cloud storage such as AWS Elastic Block Store (EBS) may suffice for some applications (or parts of applications). Databases and applications with more stringent performance and latency requirements may be better served by direct-attached storage instance classes such as those available with Amazon EC2 Instance Store in AWS.

As an independent storage layer, OpenShift Container Storage supports multiple AWS instance types, letting you choose the storage you need without rewriting the application.

Better data availability and application resiliency

AWS has advanced failover capabilities for container-based applications running in Red Hat OpenShift Container Platform. Container-based applications can fail over between multiple AWS Availability Zones, providing resilience against regional events and outages. Not all cloud-based storage provides failover support across AWS Availability Zones, however, resulting in applications losing access to the data they need to operate.



Almost 10 years of partnership between Red Hat and Amazon ensures that our joint customers can depend on smooth integration between Red Hat OpenShift Container Platform and OpenShift Container Storage on AWS.

OpenShift Container Storage supports storage failover between AWS Availability Zones, whether backed by AWS EBS instances or direct-attached Amazon EC2 Instance Store.

Fewer limitations

With the drive toward microservices and agile development, arbitrary limitations impede developers and operators alike. Cloud-based applications can be compromised by limits on persistent volumes. Limits on the number of application programming interface (API) calls can impact performance when operating with cloud block storage. Mount speed can also become an issue when many small agile microservices are the goal.

Red Hat OpenShift Container Storage expands the persistent volumes per node limit from a few dozen to hundreds while lowering AWS input/output operations per second (IOPS), eliminating throttling, and reducing volume mount time to about one second!

Independent scalability of compute and storage

AWS and Red Hat OpenShift Container Platform are built to serve unpredictable growth and scale. At the same time, applications typically do not scale uniformly in their demands for computational or storage resources. Organizations need to be able to scale compute and storage capacity as needs dictate, without one affecting the other.

Red Hat OpenShift Container Storage offers independent scalability between compute and storage resources, letting you balance performance and cost to achieve the best result in the AWS cloud.

Conclusion

OpenShift Container Storage lets you deploy container-native storage according to your needs and priorities. As a flexible and highly available container-native storage layer, it offers consistent behavior no matter where you develop and deploy—from on-premise to the AWS cloud. The platform lets organizations easily lift and shift their workloads, offering performance, flexibility, and availability for applications running on Red Hat OpenShift Container Platform in the AWS cloud.

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¹ Kuric, Elvir. "Scaling Persistent Volume Claims with Red Hat OpenShift Container Storage v4.2." Red Hat 27 Feb. 2020