



## Overview

### NetApp Solutions

NetApp  
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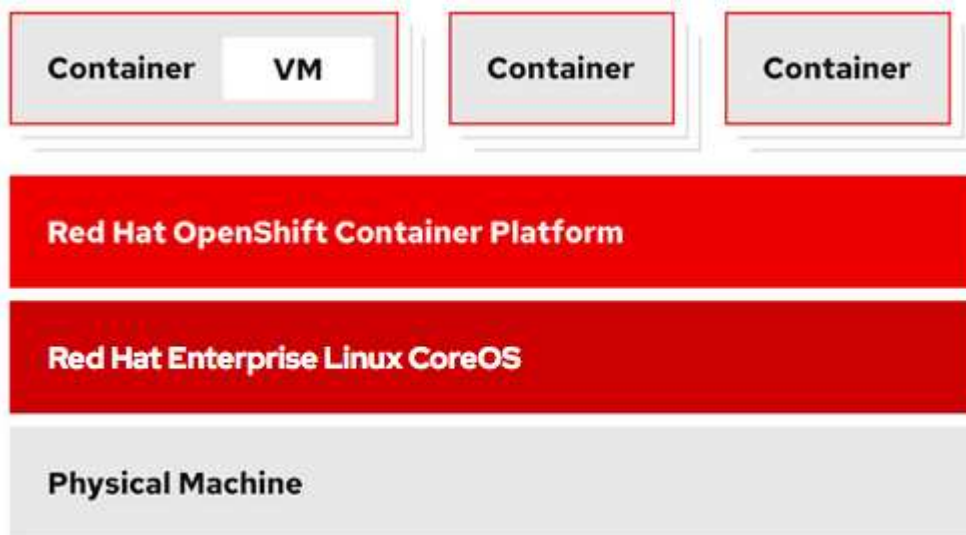
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# Overview

## Red Hat OpenShift Virtualization with NetApp ONTAP

Depending on the specific use case, both containers and virtual machines (VMs) can serve as optimal platforms for different types of applications. Therefore, many organizations run some of their workloads on containers and some on VMs. Often, this leads organizations to face additional challenges by having to manage separate platforms: a hypervisor for VMs and a container orchestrator for applications.

To address this challenge, Red Hat introduced OpenShift Virtualization (formerly known as Container Native Virtualization) starting from OpenShift version 4.6. The OpenShift Virtualization feature enables you to run and manage virtual machines alongside containers on the same OpenShift Container Platform installation, providing hybrid management capability to automate deployment and management of VMs through operators. In addition to creating VMs in OpenShift, with OpenShift Virtualization, Red Hat also supports importing VMs from VMware vSphere, Red Hat Virtualization, and Red Hat OpenStack Platform deployments.

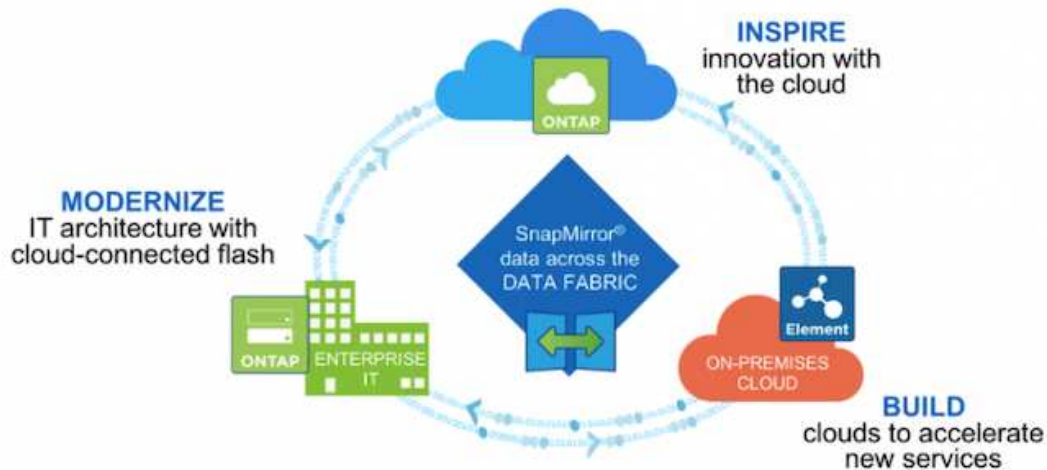


Certain features like live VM migration, VM disk cloning, VM snapshots and so on are also supported by OpenShift Virtualization with assistance from Trident when backed by NetApp ONTAP. Examples of each of these workflows are discussed later in this document in their respective sections.

To learn more about Red Hat OpenShift Virtualization, see the documentation [here](#).

## NetApp Storage Overview

NetApp has several storage platforms that are qualified with our Trident Storage Orchestrator to provision storage for applications deployed on Red Hat OpenShift.



- AFF and FAS systems run NetApp ONTAP and provide storage for both file-based (NFS) and block-based (iSCSI) use cases.
- Cloud Volumes ONTAP and ONTAP Select provide the same benefits in the cloud and virtual space respectively.
- NetApp Cloud Volumes Service (AWS/GCP) and Azure NetApp Files provide file-based storage in the cloud.
- NetApp Element storage systems provide for block-based (iSCSI) use cases in a highly scalable environment.



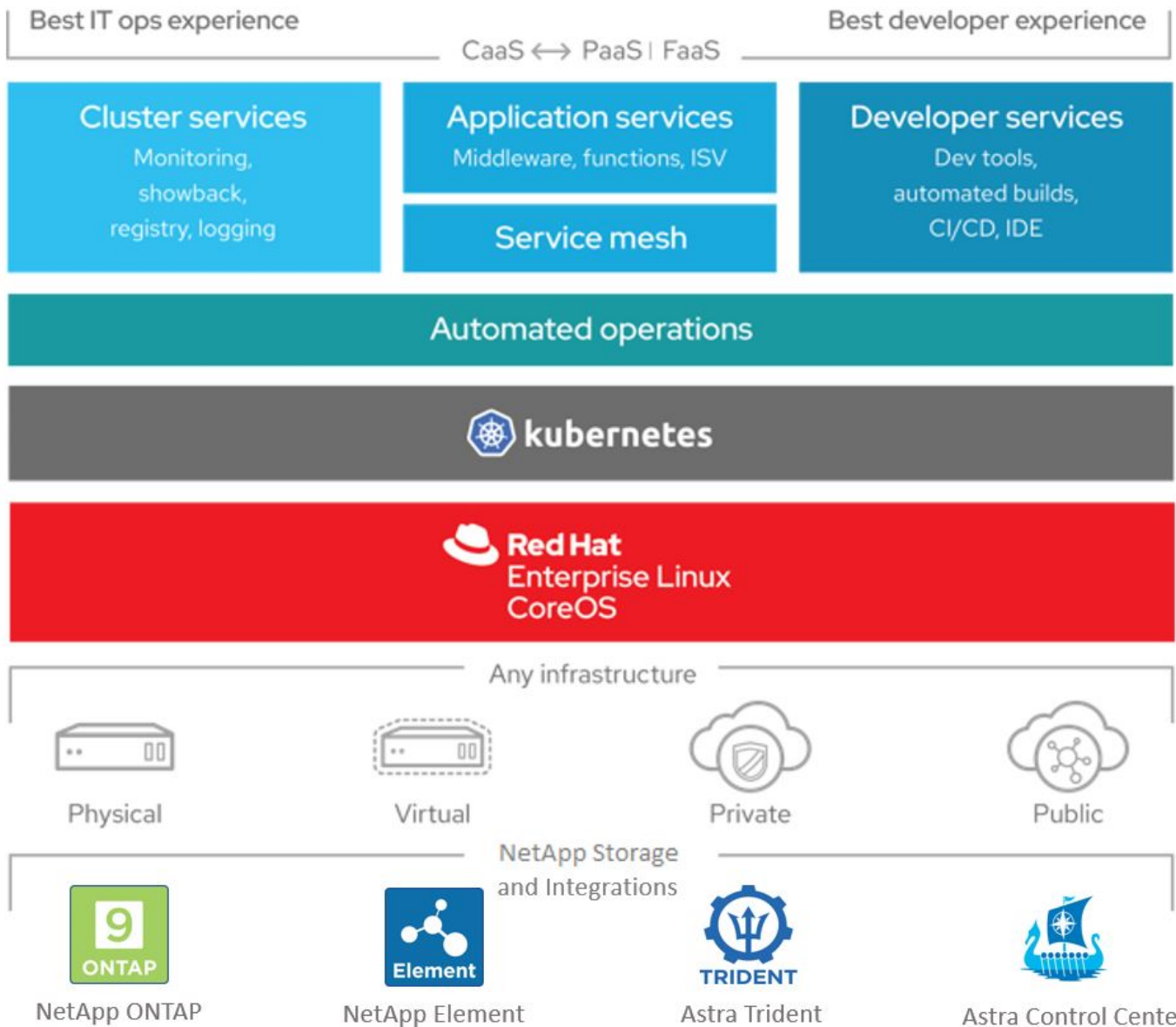
Each storage system in the NetApp portfolio can ease both data management and movement between on-premises sites and the cloud, ensuring that your data is where your applications are.

The following pages have additional information about the NetApp storage systems validated in the Red Hat OpenShift with NetApp solution:

- [NetApp ONTAP](#)
- [NetApp Element](#)

## NetApp Storage Integration Overview

NetApp provides a number of products to help you with orchestrating and managing persistent data in container based environments, such as Red Hat OpenShift.



NetApp Astra Control offers a rich set of storage and application-aware data management services for stateful Kubernetes workloads, powered by NetApp data protection technology. The Astra Control Service is available to support stateful workloads in cloud-native Kubernetes deployments. The Astra Control Center is available to support stateful workloads in on-premises deployments, like Red Hat OpenShift. For more information visit the NetApp Astra Control website [here](#).

NetApp Trident is an open-source and fully-supported storage orchestrator for containers and Kubernetes distributions, including Red Hat OpenShift. For more information, visit the Trident website [here](#).

The following pages have additional information about the NetApp products that have been validated for application and persistent storage management in the Red Hat OpenShift with NetApp solution:

- [NetApp Astra Control Center](#)
- [NetApp Trident](#)

# Videos and Demos: Red Hat OpenShift with NetApp

The following videos demonstrate some of the capabilities documented in this document:

[Ansible automation to deploy Trident and create Storage Class on the OpenShift Cluster](#)

[The playbook used to install NetApp Trident, StorageClasses, and Backend using Ansible can be found in github.](#)

[Deploy a new VM in OpenShift Virtualization using ONTAP SAN \(iSCSI\) Storage Class](#)

[Deploy a postgresql container app using ONTAP NAS Storage Class](#)

[Cloud Insights integration with Openshift Virtualization](#)

[Using Red Hat MTV to migrate VMs to OpenShift Virtualization with NetApp ONTAP Storage](#)

[Failover/Failback of OpenShift VMs using advanced data management capabilities of Trident \(Only Early Access Program available\)](#)

[Cloud Insights integration with Openshift Virtualization](#)

[Ansible automation to deploy Trident and create Storage Class on the OpenShift Cluster](#)

## **Sample Ansible code in GitHub**

[The playbook used to install NetApp Trident, StorageClasses, and Backend using Ansible can be found in github.](#)

[Deploy a postgresql container app using ONTAP NAS Storage Class](#)

[Accelerate Software Development with Astra Control and NetApp FlexClone Technology - Red Hat OpenShift with NetApp](#)

[Leverage NetApp Astra Control to Perform Post-mortem Analysis and Restore Your Application](#)

[Data Protection in CI/CD pipeline with Astra Control Center](#)

[Workload Migration using Astra Control Center - Red Hat OpenShift with NetApp](#)

[Workload Migration - Red Hat OpenShift with NetApp](#)

[Installing OpenShift Virtualization - Red Hat OpenShift with NetApp](#)

[Deploying a Virtual Machine with OpenShift Virtualization - Red Hat OpenShift with NetApp](#)

[NetApp HCI for Red Hat OpenShift on Red Hat Virtualization](#)

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