

Backup and Disaster Recovery

Optional subheading

BACKUP an OPENSHIFT Cluster

The screenshot shows the Red Hat Customer Portal interface. The top navigation bar includes the Red Hat logo, 'Red Hat Customer Portal', and links for 'Products & Services', 'Tools', 'Security', and 'Community'. Below this, a breadcrumb trail reads: 'Products & Services > Product Documentation > OpenShift Container Platform > 4.11 > Backup and restore'. The left sidebar contains a list of topics under the heading 'Backup and restore', with 'Expand all' and 'Collapse all' buttons at the top. The topics are: '1. Backup and restore', '2. Shutting down the cluster gracefully', '3. Restarting the cluster gracefully', '4. Application backup and restore', '5. Control plane backup and restore', and 'Legal Notice'. The main content area is titled 'Backup and restore' and includes the text 'OPENSHIFT CONTAINER PLATFORM 4.11', 'Backing up and restoring your OpenShift Container Platform cluster', 'Red Hat OpenShift Documentation Team', and a link to 'Legal Notice'. An 'Abstract' section follows, stating: 'This document provides instructions for backing up your cluster's data and for recovering from various disaster scenarios.' A 'NEXT →' link is located at the bottom right of the main content area.

Red Hat Customer Portal

Products & Services Tools Security Community

Products & Services > Product Documentation > OpenShift Container Platform > 4.11 > Backup and restore

Expand all Collapse all

Backup and restore

- 1. Backup and restore >
- 2. Shutting down the cluster gracefully >
- 3. Restarting the cluster gracefully >
- 4. Application backup and restore >
- 5. Control plane backup and restore >
- Legal Notice

Backup and restore

OPENSHIFT CONTAINER PLATFORM 4.11

Backing up and restoring your OpenShift Container Platform cluster

Red Hat OpenShift Documentation Team

[Legal Notice](#)

Abstract

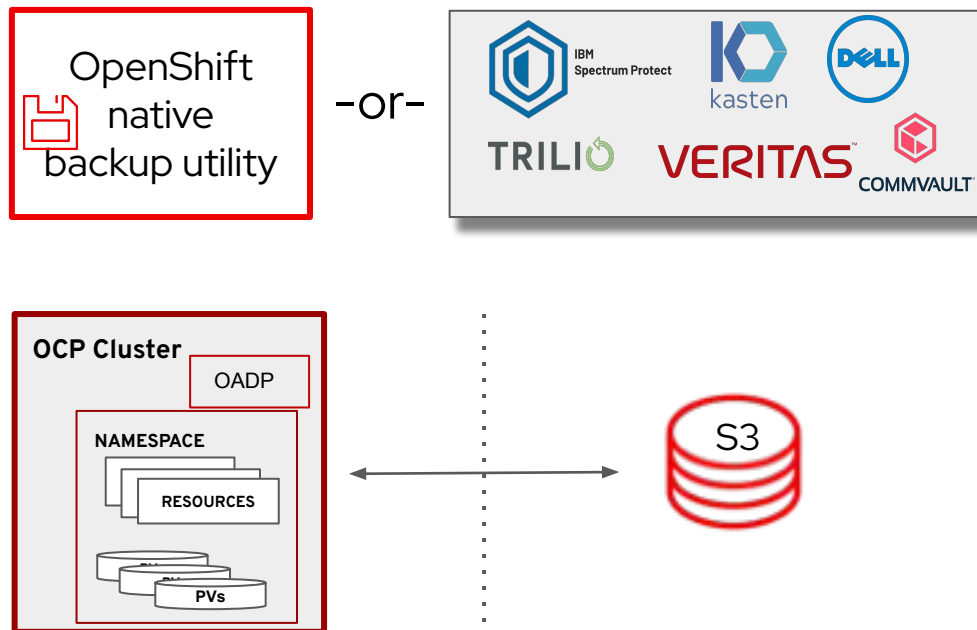
This document provides instructions for backing up your cluster's data and for recovering from various disaster scenarios.

[NEXT →](#)

Backup Solutions for Red Hat OpenShift

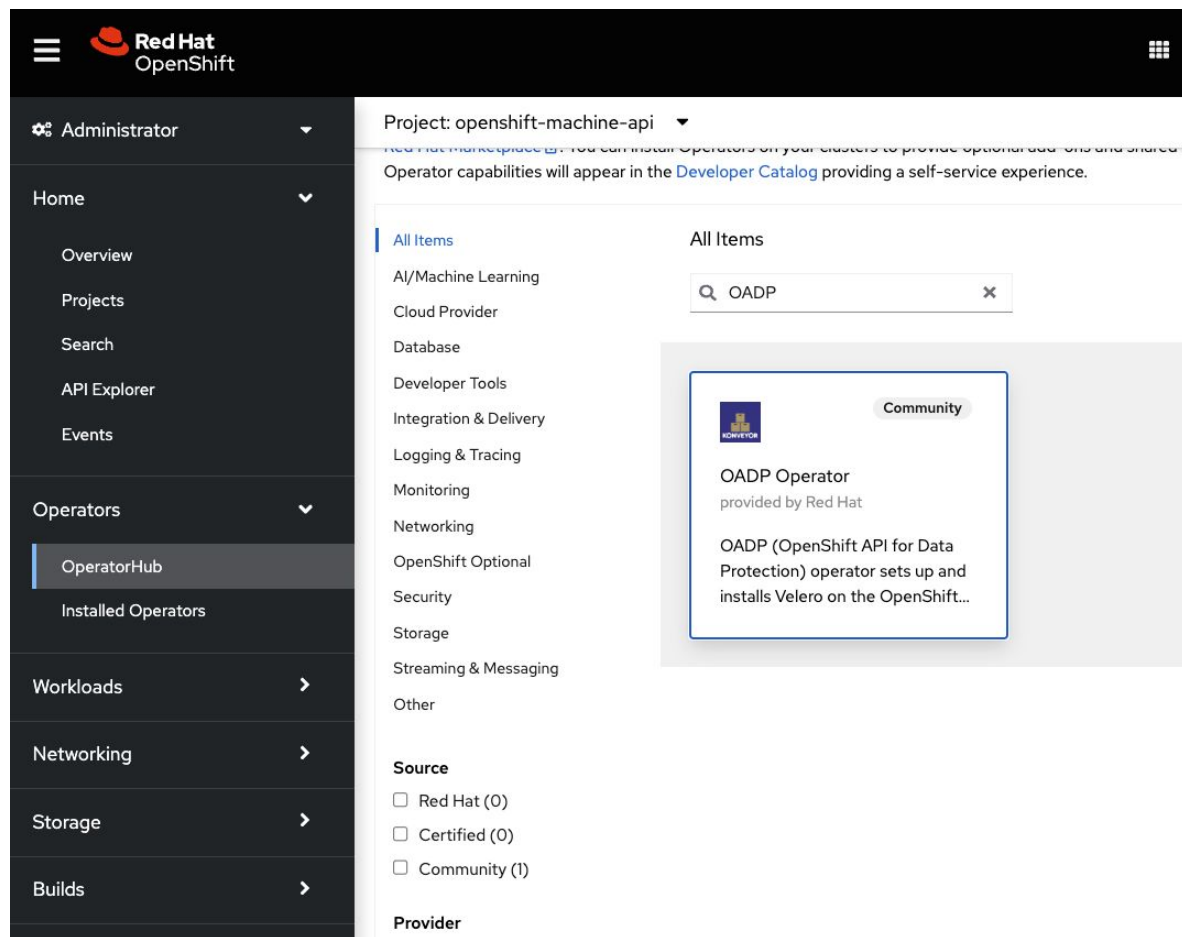
Business Continuity

OpenShift OADP 1.1 – Native backup utility with 4.12



- **Application level (Namespace), consistent backups with OADP**
- CLI based **scheduling and management** of backups
- **Built-in data mover** enables CSI-based storage snapshots to be backed up to a remote S3 compatible object store.
 - **Pluggable DataMover** support is Tech Preview (ie. VolSync)
- **Supports all OpenShift storage provisioners** that also support **CSI Snapshots**

OADP Operator



OpenShift API for Data Protection (OADP) supports the following features:

Backup

You can back up all resources in your cluster or you can filter the resources by type, namespace, or label.

OADP backs up Kubernetes objects and internal images by saving them as an archive file on object storage. Restore

You can restore resources and PVs from a backup. You can restore all objects in a backup or filter the restored objects by namespace, PV, or label.

Schedule

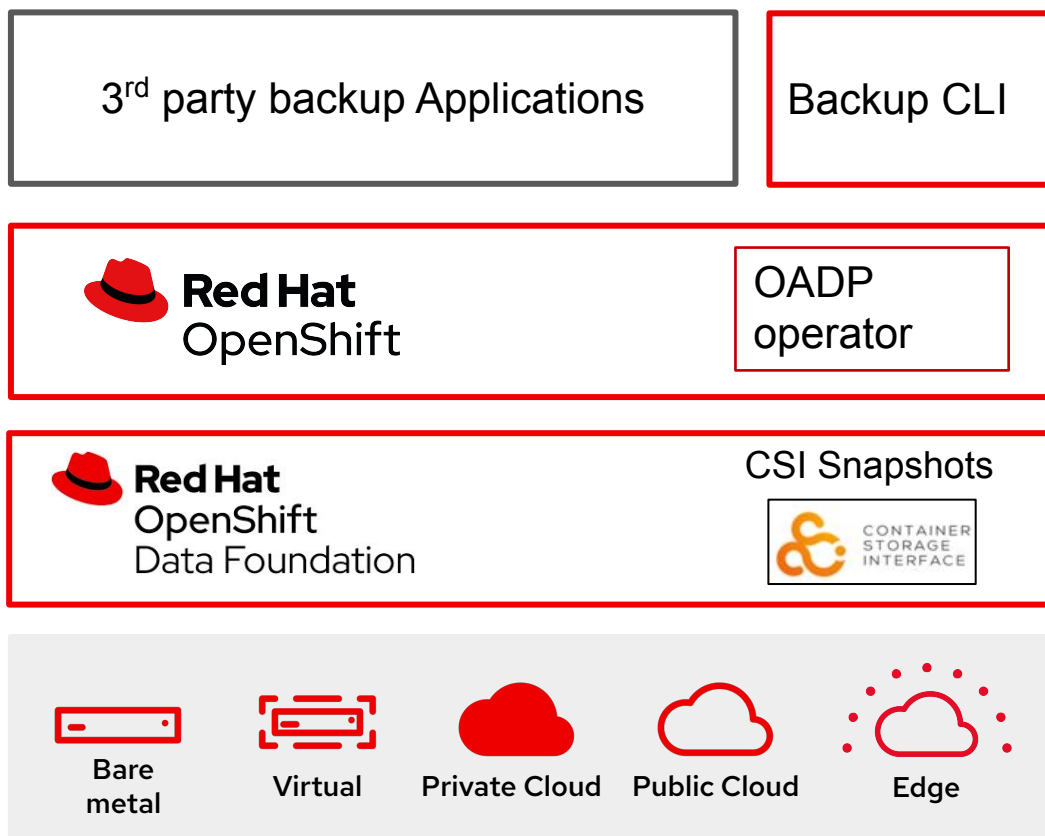
You can schedule backups at specified intervals.

Hooks

You can use hooks to run commands in a container on a pod

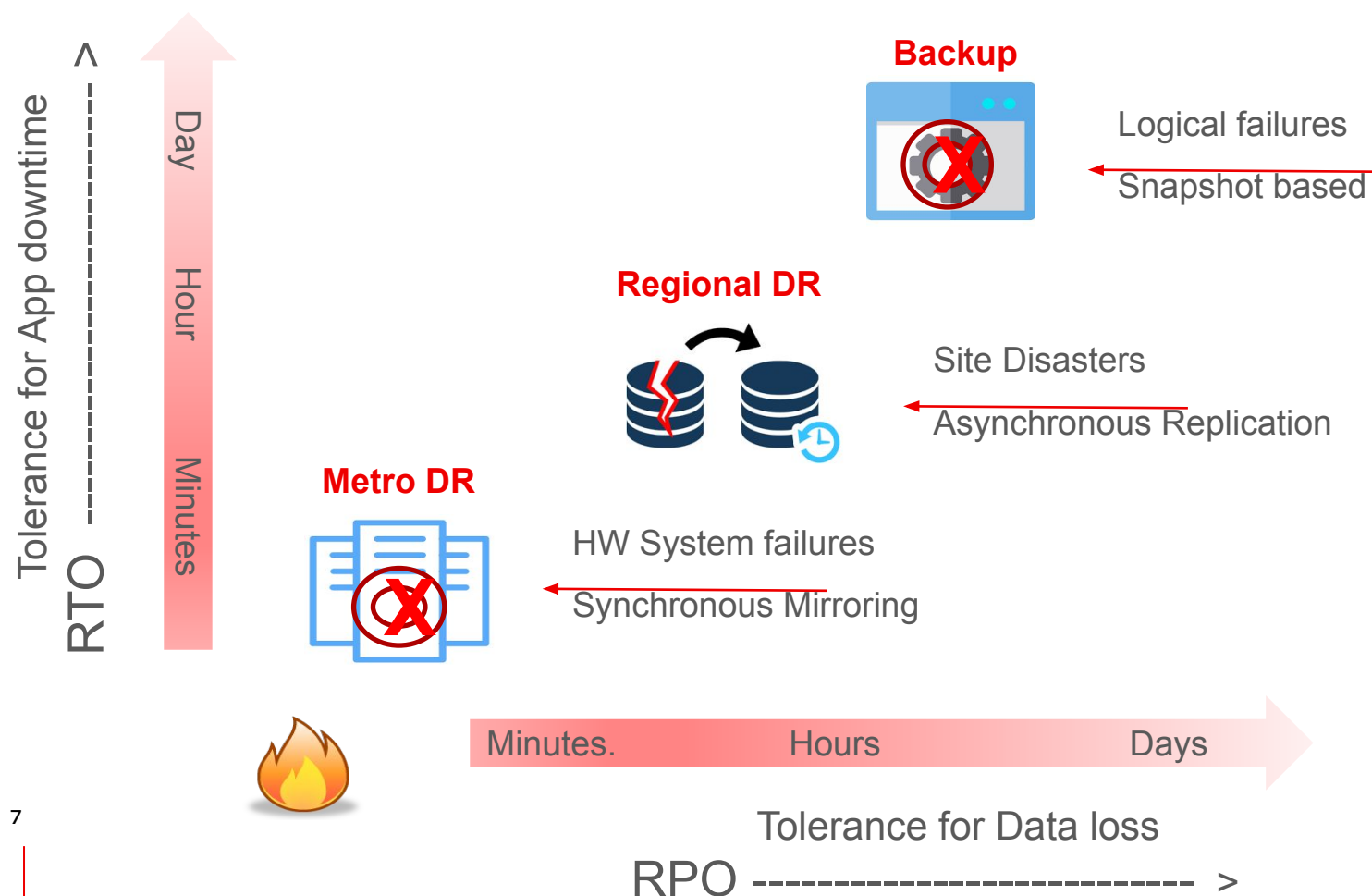
Business Continuity and Disaster recovery

OCP Application Backup – Key Components



- Third party backup Applications /native CLI
 - Handles Backup policy management, backup scheduling, retention and restore management and data movement
- OADP – OpenShift App Data Protection API
 - Enables namespace or label scoped backups with all ensuing cluster resources and application data (PVs)
 - Ensures OCP version independence and works across storage providers (via plug-ins)
- ODF PV Snapshots via CSI
 - PV/PVC backups of ODF volumes through standard CSI interfaces
 - Can be used with or without OADP

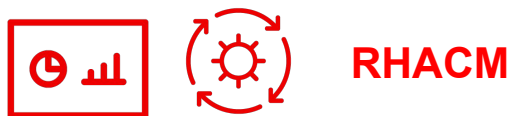
Resiliency Solutions for different service level objectives



- ▶ Comprehensive protection solutions against wide spectrum of failures
- ▶ Beyond Data Protection --> Full Application protection
- ▶ Resiliency built into the platform – Available to all stateful and stateless applications on OpenShift
- ▶ OCP + ODF + ACM integrated stack lends towards Automated and Simplified Application granular protection

OCP Integrated, Full Stack DR Protection

Multi-Site
Multi Cluster
Manager



- ODR Hub Operator – Orchestrates & Automates DR operations across clusters

Platform



- ODR Cluster Operator – Manages and synchronizes cluster meta data and application data

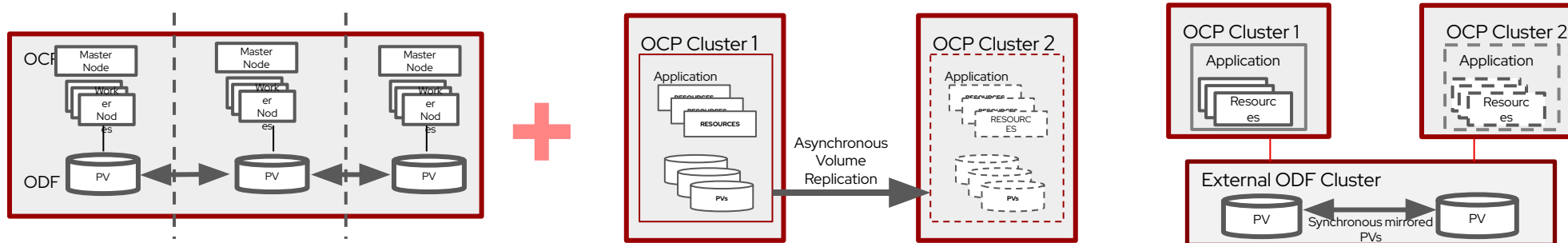
Persistence
Layer



- Asynchronous replication of Application volumes – or –
- Synchronous Mirroring of Application volumes

- Easy configuration DR across cluster and sites as part of application deployment
- Automated DR Failover and Failback operations reduces RTO
- Manage and Monitor DR across clusters and Apps
- Same consistent DR operations for both Metro-DR and Regional-DR
- Both Application Data and State is protected and used for Application granular protection
- Consistent Data replication or mirroring or both based on infrastructure and desired protection.

OCP Cluster HA + DR for stateful Applications



Cluster HA

Regional-DR

Metro-DR

| Topology | Single OCP+ODF clusters deployed over multiple AZs in a single region | Multi OCP + ODF clusters spread over multiple regions | Multi OCP clusters + single external ODF stretched cluster deployed over low latency networks |
|--------------------------|---|--|---|
| RTO (Downtime) | RTO=0 (Continuous)* | RTO = minutes DR Automation from ACM+ODF reduces RTO | RTO = minutes DR Automation from ACM+ODF reduces RTO |
| RPO (Data loss exposure) | RPO=0 No Data loss due due to Synchronous mirroring of ODF data | RPO > 0; Usually 5 min or higher Depends upon network bandwidth & change rate | RPO=0 No Data loss due due to Synchronous mirroring of ODF data |
| Infra Requirements | Multi-AZ supported public clouds (vSphere support in OCP 4.10) | All ODF supported platforms No network latency limits | On-prem only (vSphere, bare metal) <10ms network latency between sites |

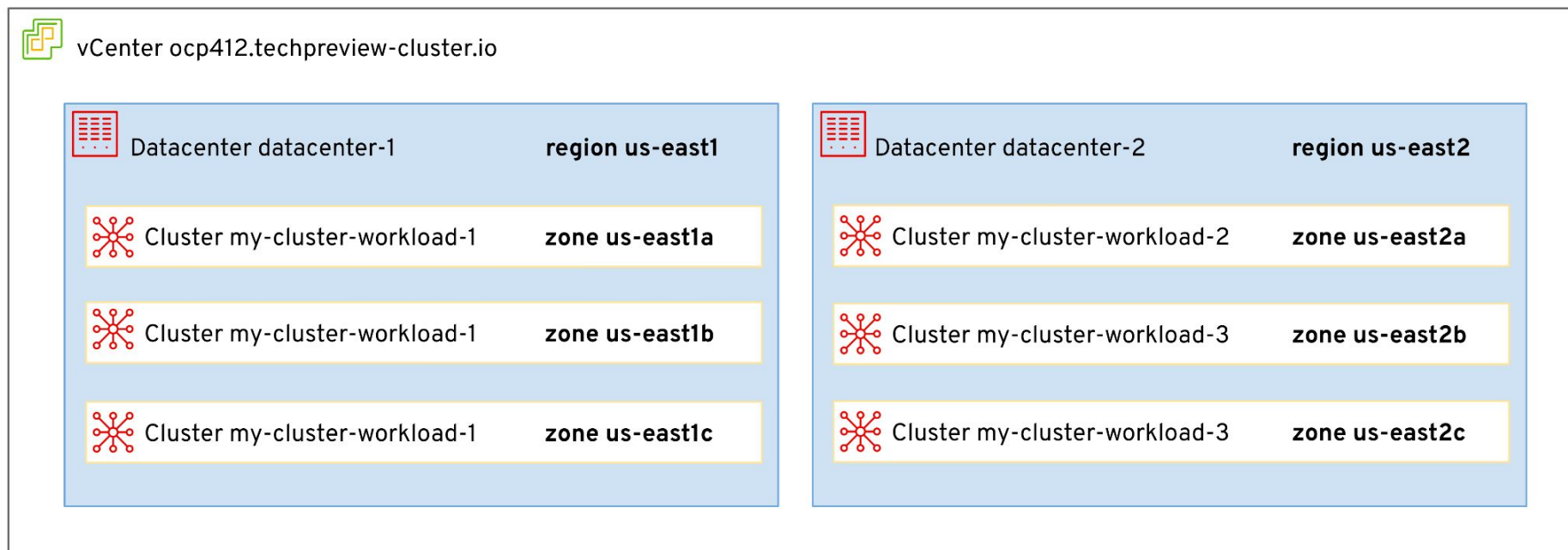
V0000000



* Subject to RWO PV limitations

OpenShift in vSphere is Zone Aware

- ▶ Create highly-available OpenShift clusters in vSphere with installer provisioned infrastructure (IPI)
- ▶ Applies zonal tags (regions and zones) to multiple vCenter datacenters and clusters in a single vCenter
- ▶ Excludes User Provisioned infrastructure (UPI) deployments



Thank you

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