

Leading With Containers

OpenShift 4.13 – What's new ?

Alfred Bach

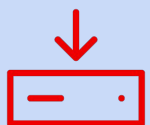
PSA RedHat EMEA

You can find the content here:

<https://github.com/RHEPDS/lwc0723>

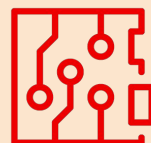
OpenShift 4.13

OPERATIONAL



3 Node Cluster Support in AWS,
Azure, GCP and vSphere
Single Click Scale of Control
Plane (Azure, GCP)

CORE



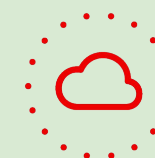
Custom Metric Auto
Scaler
Cgroups v2
Kubernetes 1.26

SECURITY



Cert-manager operator is GA
Deploy OpenShift on
encrypted VMs and encrypted
storage in vSphere
User managed key to encrypt
storage on AWS, Azure, and
GCP

EDGE



Single Node OpenShift on
AWS and Arm bare metal
LVM Storage resource
optimization
crun is GA

Kubernetes 1.26

Major Themes and Features

- ▶ CSI migration
- ▶ Azure file in-tree to CSI driver migration
- ▶ Kubernetes metrics improvements
- ▶ Pod scheduling improvements
- ▶ Non-Graceful Node Shutdown for StatefulSet Pods [Beta]
- ▶ Signing Release Artifacts [Beta]
- ▶ Reduction of Secret-Based Service Account Tokens [Beta]

Significant list of other graduations to stable:

- CSI migration for Azure File and vSphere
- Delegate FSGroup to CSI Driver
- Service Internal Traffic Policy
- Reserve Service IP Ranges for Dynamic and Static IP Allocation
- Mixed Protocols in Services with Type LoadBalancer
- kubelet Credential Provider

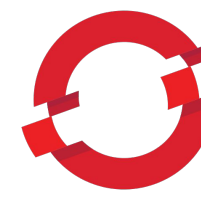
CRI-O
1.26



Kubernetes
1.26



OpenShift
4.13



OpenShift 4.13 + RHEL 9

**RHEL CoreOS is
now based on
RHEL 9.2**

RHEL where you are

The latest generation of RHEL is designed to meet the needs of the hybrid cloud environment, from the edge to the cloud

9.2 kernel

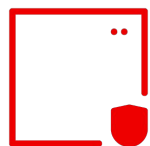
The latest in hardware support & performance
Cgroups v2 enhancements

Security & innovation

Industry-leading security response & upstream engineering leadership

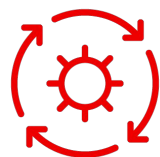
cert-manager Operator for Red Hat OpenShift GA

Certificate as a Service for Application workloads



Secure Application Access

Certificates made available to 1000s of Applications for Secure Ingress



Automate certificate management

Simplifies obtaining, renewing and using certificates



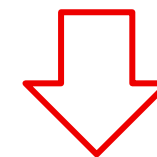
Validated Issuers

Validation for ACME, Self-Signed and CA certificates



Operator Configurations

Ability to configure custom CA for egress, HTTP and DNS Solvers



Available in OperatorHub

Utilizing OpenShift Virtualization to Consolidate OpenShift Clusters

Hosted Control Planes with KubeVirt provider



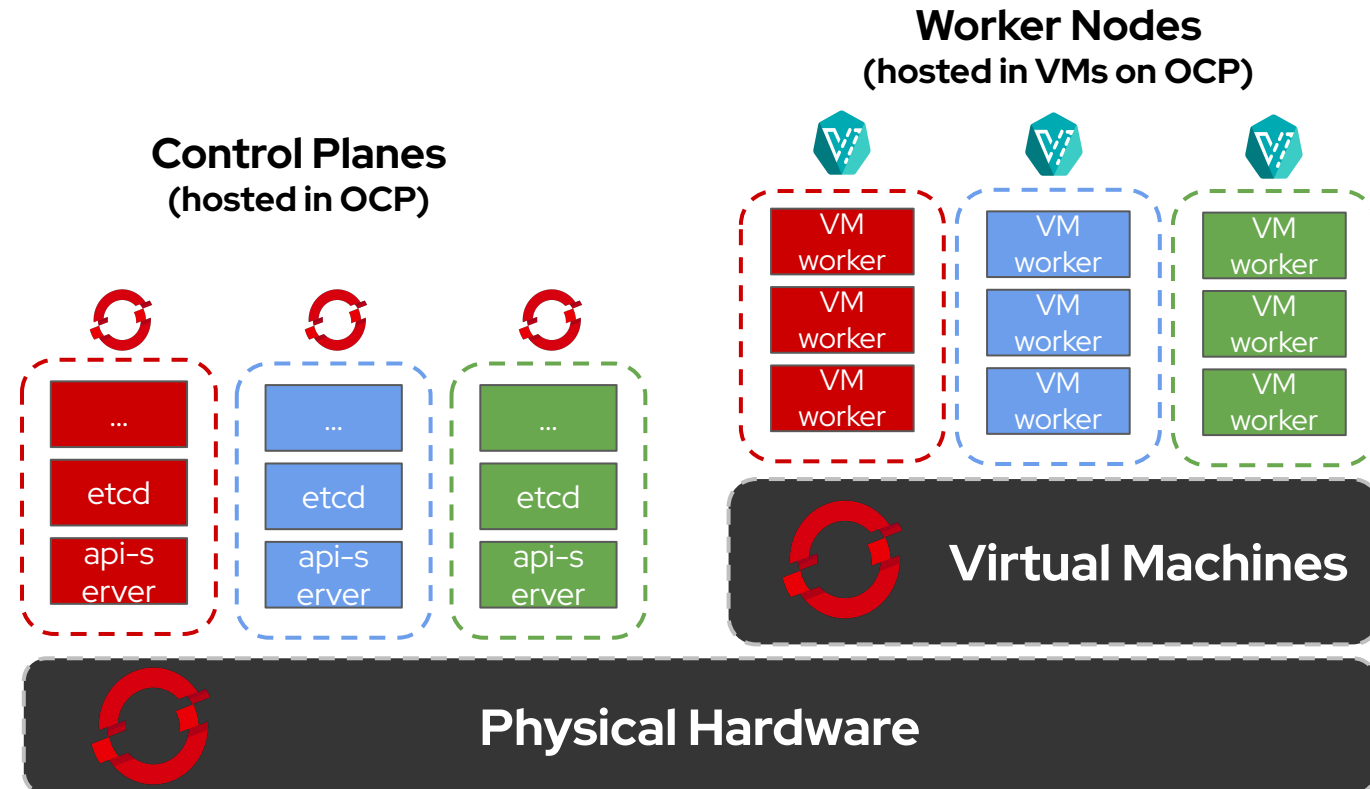
Increase Utilization of Infrastructure

- Reduce unused and underutilized infrastructure
- Increase bare metal node utilization by deploying multiple hosted clusters.



Reduce Dependency on Legacy Virtualization

- Eliminate legacy hypervisor hosting your container platform.
- Underlying virtualization layer is included with hosted OpenShift cluster entitlements (no separate licensing needed)



OpenShift Roadmap

Near Term

(2Q 2023)

PLATFORM

- Custom tags on Azure (TP)
- IPI for GCP shared VPC (XPN)
- Confidential computing and Shielded VMs on GCP
- vSphere multi-cluster, multi-datacenter support (GA)
- vSphere 8 support
- vSphere VMcrypt support (UPI)
- IBM Secure Execution on IBM zSystems and IBM LinuxONE GA
- Control node Scaling with ControlPlane Machine sets (AWS, Azure, GCP & vSphere)
- Stronger Cipher support for etcd encryption (AESGCM)
- Support for multiple values for ServiceAccountIssuer
- GCP cloud provider for OpenShift on ARM
- CoreOS Layering off-cluster builds (GA)
- Gateway API / Ingress Controller support
- Network Topology and Analysis Tooling
- SmartNIC Integrations, eBPF Support
- Utilize cgroups v2 (GA); Crun in Openshift (GA)
- Run once duration override
- CMA (custom metric autoscaler) GA
- Hosted Control Planes on AWS (incl. Arm control plane) TP
- Hosted Control Planes in ACM/MCE AWS/BM (TP)
- Hosted Control Planes in ACM/MCE KubeVirt (TP)
- Hosted Control Planes TP for Agent in ACM & MCE
- Node firewall support
- Azure CSI migration
- IBM PowerVS IPI (GA)

Mid Term

(2H 2023)

PLATFORM

- OpenShift on Oracle Cloud Infrastructure with VMs
- KMM in-tree kmod replacement, kmod granular upgrade flow
- Azure managed identity support
- Custom tags on GCP (TP)
- Agent Installer install OpenShift from ISO
- vSphere static IPs and multi-subnet support
- vSphere datastore clusters without storage vMotion
- vSphere CSI migration
- Multi-Arch Hosted Control Planes (Hypershift)
- Hosted Control Planes in ACM/MCE AWS/BM (GA)
- Multi-Architecture Compute support
- CoreOS Layering on-cluster build option
- Pod Security Admission enforcement GA
- Agent Installer (air-gapped installs) GUI
- Assisted Installer enable MCE and Hypershift
- ACM support for ZTP of BM clusters from ROSA
- BGP Advertised Services (FRR)
- Multi cluster Network Observability
- Automated etcd backup
- SWAP in Openshift (TP)
- CRI-O support for sigstore

Long Term

(CY 2024+)

PLATFORM

- OpenShift on Oracle Cloud Infrastructure with Baremetal
- Alibaba Cloud IPI (GA)
- Azure China
- Hosted Control Planes in ACM/MCE KubeVirt (GA)
- Stretched Cluster support on multiple Openstack AZs (GA)
- OpenStack Full Dual Stack support (control & workload) (GA)
- User Namespace
- Bandwidth-Aware Scheduler (QoS)
- Gateway API (GA)
- Ingress traffic mirroring/splitting
- Network Policy v2
- Routable IPs for Pods
- ESNI/ECH Support
- Automatic Intelligent Sharding
- Automatic etcd restore
- Kube KMS w/user provided plugin
- OpenShift CLI manager (via KREW) GA
- CoreOS Layering custom first-boot images
- CoreOS y-stream updated first-boot images
- Enable user namespaces

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Leading With Containers

OpenShift BackUp / DR / HA?

Alfred Bach

PSA RedHat EMEA

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'. On the left side, there is a sidebar with a list of topics under the heading 'Backup and restore'. 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 '1. Backup and restore' topic is currently selected. To the right of the sidebar, the main content area displays the title 'Backup and restore' followed by 'OPENSHIFT CONTAINER PLATFORM 4.11'. Below this is the subtitle 'Backing up and restoring your OpenShift Container Platform cluster'. The author is listed as 'Red Hat OpenShift Documentation Team' with 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.' At the bottom right of the main content area, there is a 'NEXT →' link.

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 >
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- Legal Notice

Backup and restore

OPENSHIFT CONTAINER PLATFORM 4.11

Backing up and restoring your OpenShift Container Platform cluster

Red Hat OpenShift Documentation Team

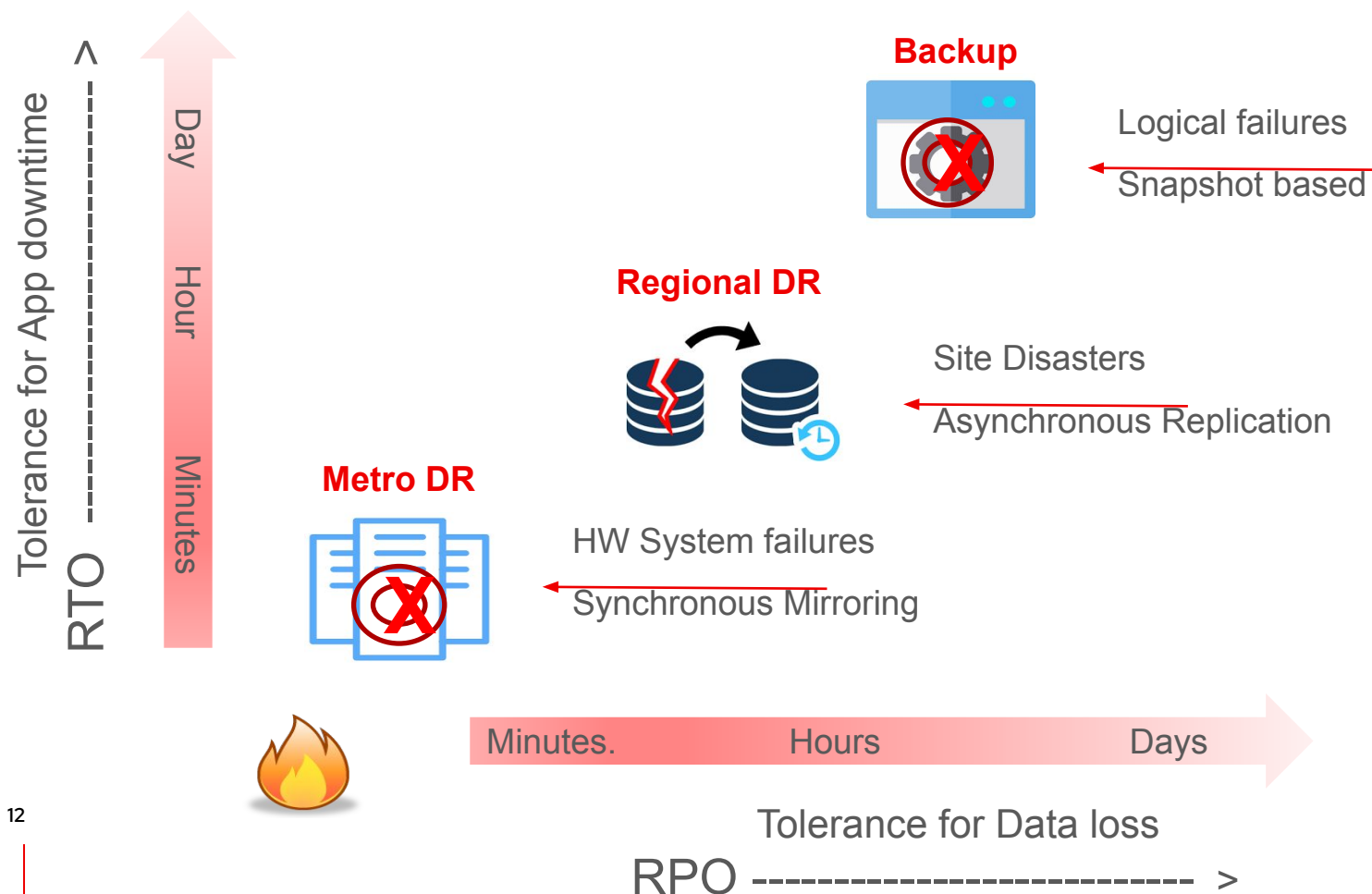
[Legal Notice](#)

Abstract

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

[NEXT →](#)

Resiliency Solutions for different service level objectives

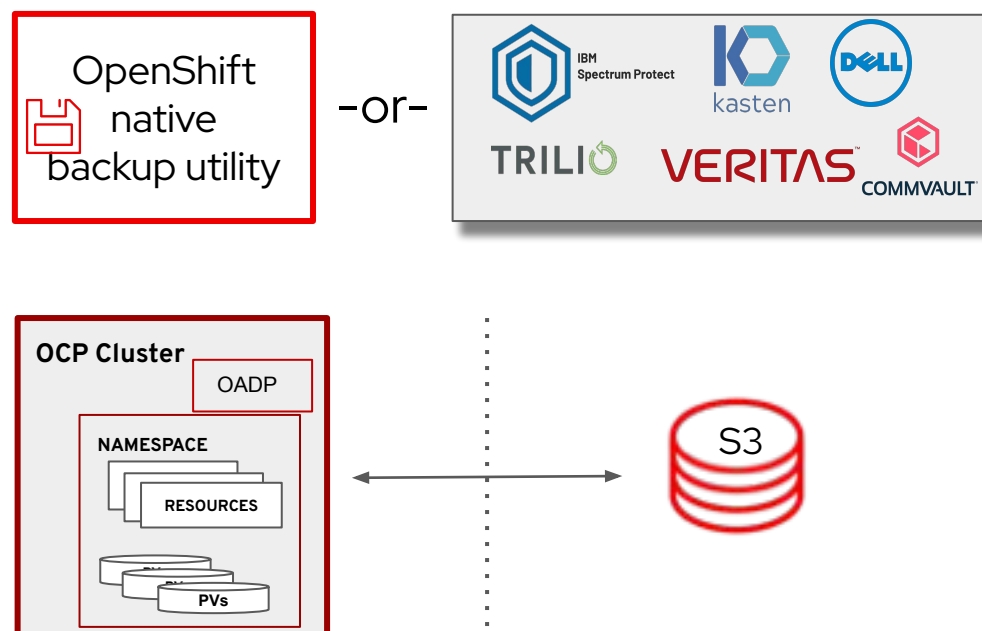


- ▶ Comprehensive protection solutions against wide spectrum of failures
- ▶ Beyond Data Protection --> Full Application protection
- ▶ Resiliency built into the platform – Available to all stateful and stateless applications on OpenShift
- ▶ OCP + ODF + ACM integrated stack lends towards Automated and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

Backup Solutions for Red Hat OpenShift

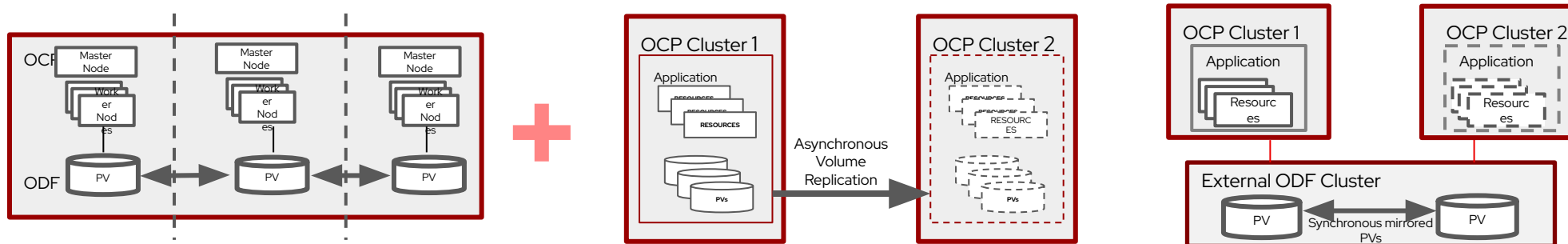
Business Continuity

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

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

Want to learn more about Upcoming Trainings:

Architecture workshop - OpenShift infrastructure

<https://connect.redhat.com/en/training/emea/architecture-workshop-openshift-infrastructure>

07 - 08 Aug 2023 Online instructor-led

16 - 17 Oct 2023 Online instructor-led

04 - 05 Dec 2023 Online instructor-led

Thank you

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