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Red Hat OpenShift Container Storage

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The demand on storage is growing

Data has become a valuable commodity. It can determine business success. That's putting pressure on storage—performance as well as capacity.

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Digital transformation is driving exponential growth in data

61%

Annual increase in data

Global data growth is set to increase at a compound annual growth rate (CAGR) of 61%, from 33ZB in 2018 to 125ZB in 2025.

25%

Year-over-year increase in AI use

Companies use of artificial intelligence in standard business processes has increased year-over-year by 25%, driving increased demand for storage.

25B

Connected IoT devices by 2025

IoT adoption is rising. There are now billions of devices generating data that needs to be stored, and the number is growing every day.

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This presents new challenges for businesses

Scaling storage quickly without sacrificing performance

Slow-to-scale infrastructure and legacy systems are holding back transformation.

Replacing manual processes with automation to speed DevOps

Manual processes and segregated operations hamper development and impede DevOps.

Recruiting and retaining the skills needed to maintain systems

Scarcity of key skills makes it difficult to find and retain talent to maintain operations.

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As cloud-native becomes the norm, a new approach is needed

**Where are you on the
workload transformation journey?**

Share of workloads

Not virtualized

Virtual
machines

Containers

Serverless
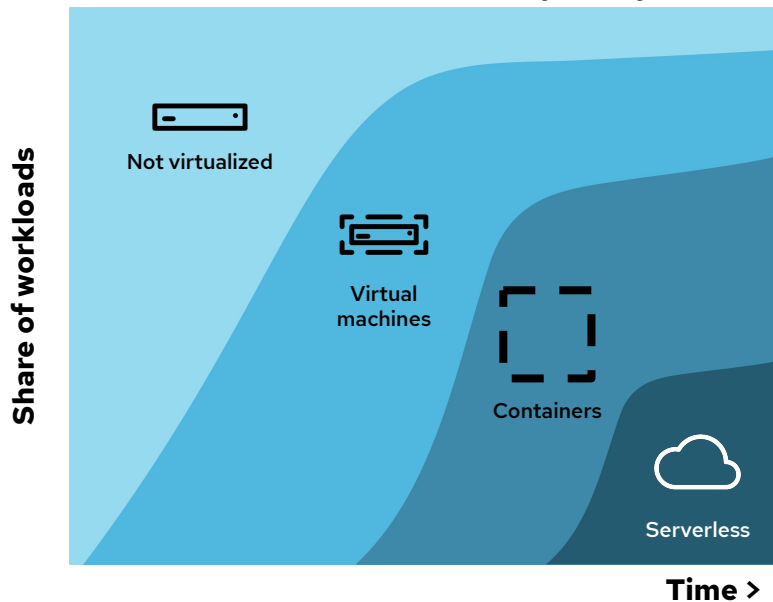
Time >

- Refactoring takes time, so the majority of legacy workloads are still running in VMs.

- But most new workloads are being developed and run in containers in the hybrid cloud.

- This requires scalable persistent storage.

- Companies need a single storage architecture for simplicity, scalability and cost-effectiveness as they migrate.

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Storage that's fit for the future

You need storage that:

- Scales as your needs change.
- Makes better use of your existing capacity.
- Maintains performance as capacity grows.
- Reduces the management burden.
- Simplifies application development.
- Supports common infrastructure environments.
- Improves cost-effectiveness.

The Red Hat Data Services approach

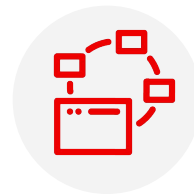Containers are increasingly being used to deploy stateful applications.

This is driving the need for persistent storage.

A change of mindset

Traditional, static approach

- Focus on improving efficiency
- Infrastructure-centric view
- Disconnected
- Manual, monolithic, and rigid

Dynamic, data services approach

- Focus on innovation
- Application-oriented view
- Highly scalable
- Always-on
- Automated, on-demand, and flexible

Our data services–ready, cloud–native storage portfolio

Red Hat
Ceph Storage

An open, massively scalable storage solution for modern workloads like cloud infrastructure, data analytics, and repositories

Scalability   **Reliability**   **Security-focused**

Red Hat
OpenShift
Container Storage

A platform for emerging data-intensive workloads on Kubernetes, with a consistent experience across environments

Agility   **Consistency**   **Scalability**

V0000000

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Why Red Hat OpenShift Container Storage?

Overcome your storage challenges with a solution that brings you agility, scalability, and portability.

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A complete, cloud–native solution

Red Hat
OpenShift
Container Storage

- Persistent storage for containers

- Integrated management
  from Red Hat OpenShift

- Storage provisioning for all types of data

- Backed by Red Hat expertise

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Stores all types of data
(structured, semi-structured, and unstructured)

Supports multicloud/hybrid cloud
(private and public)

Manages storage based on policies
(across clouds)

Simplifies management
(consumed and managed through Red Hat OpenShift)

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OpenShift
Container Storage

Red Hat
OpenShift

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Red Hat OpenShift Container Storage

Agility

- Automate common tasks like provisioning and management

- Accelerate Day-1 and Day-2 installation and management

Scalability

- Start small, scale as you need

- Automate app scaling

- Maintain performance as capacity grows

Consistency

- Consistent user and developer experience, regardless of underlying infrastructure

- On-premise or cloud

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Key use cases

Cloud-native apps
CI/CD and code
repositories

Structured data
Databases and
data warehouses

Big data
Data analytics
and AI/ML

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Agility

Speed up development and accelerate workflows with developer-driven storage.

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Agility

Accelerate development and increase developer productivity
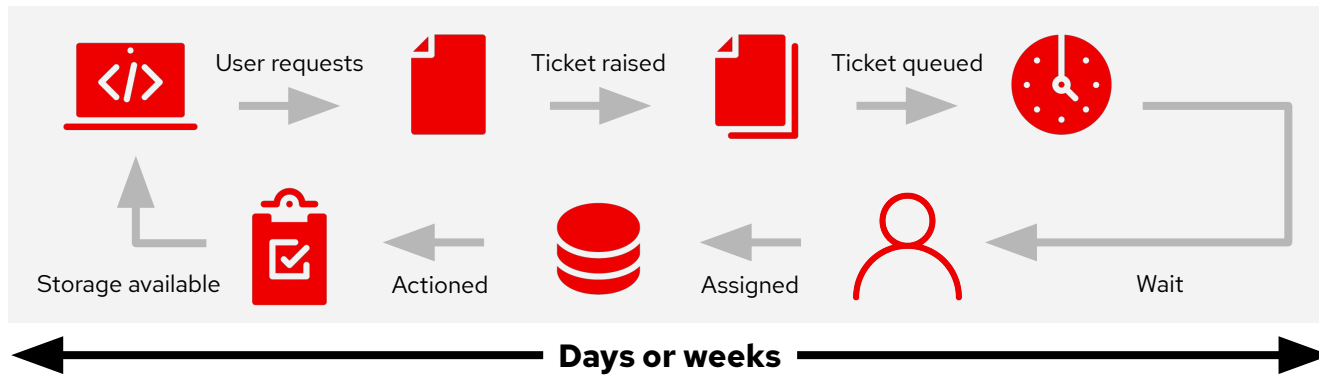

Features

- API-driven persistence

- Simplified installation and upgrades

- Integrated experience with Red Hat OpenShift
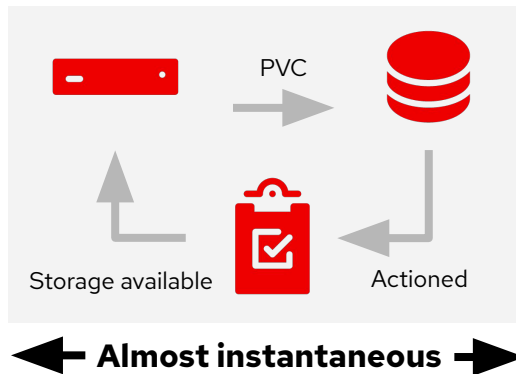
Benefits

- Simplifies and speeds up application development

- Accelerates workloads and data pipelines

- Reduces need for specialist knowledge

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Accelerating workflows with developer-driven storage

Traditional way

User requests → Ticket raised → Ticket queued →

← Storage available ← Actioned ← Assigned ← Wait

Days or weeks

API-enabled developer-driven storage

PVC →

Storage available ← Actioned

Almost instantaneous

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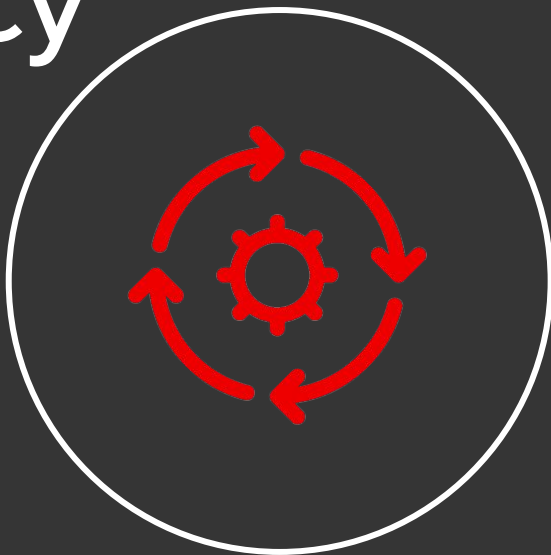
Consistency

Get a consistent experience across public, private, and hybrid clouds.

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Consistency

Leave data where it lands, move workloads instead
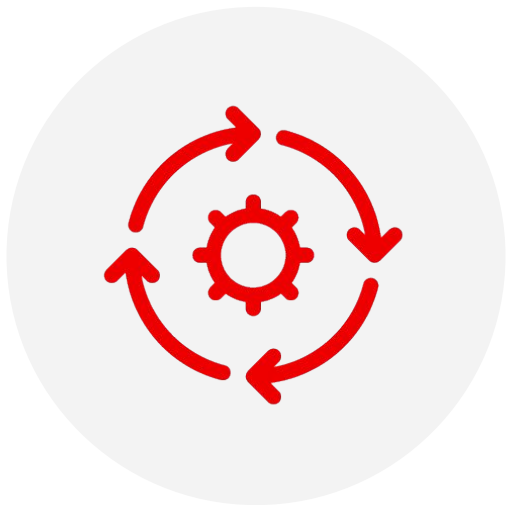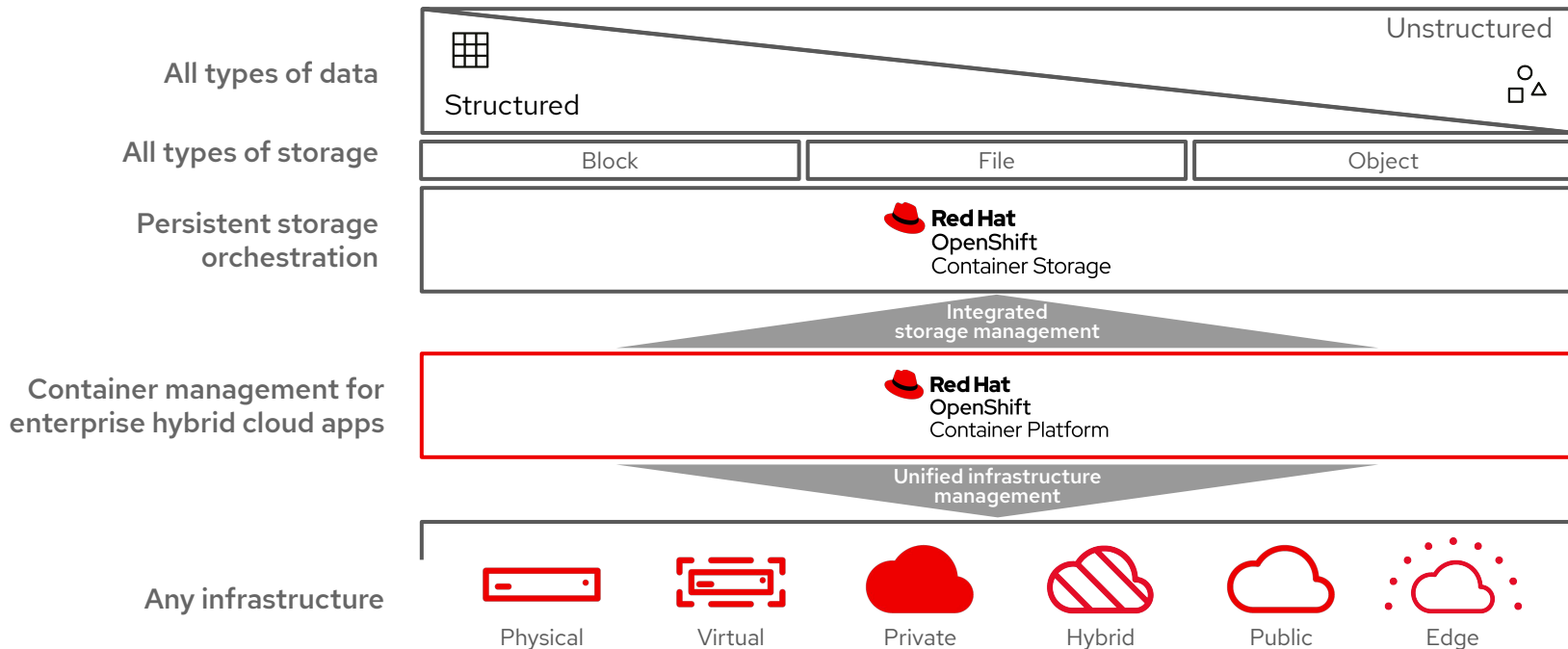
Features

- Enhanced multicloud object gateway

- Supports public, private, virtualized, and bare-metal environments
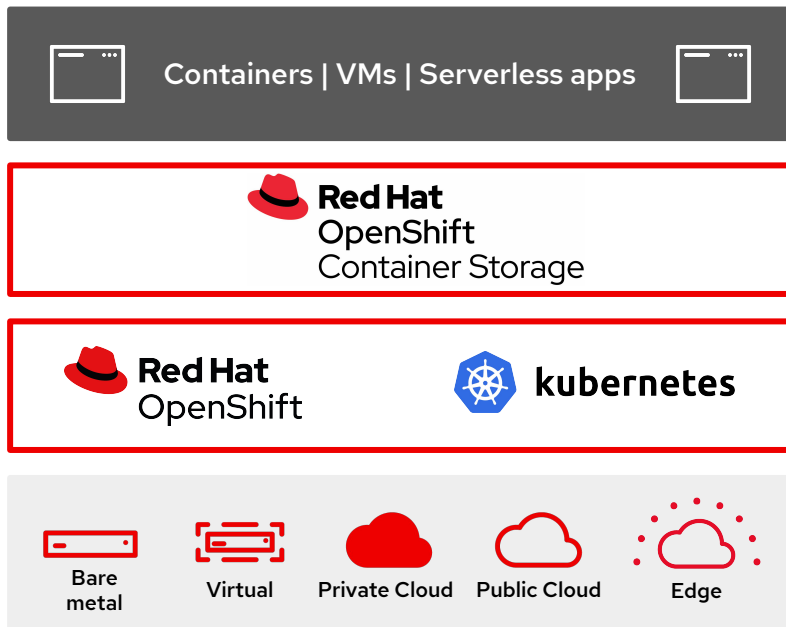
- S3-based object storage

Benefits

- Simplifies multicloud and hybrid cloud implementations

- Eliminates the need for data migration

- Accelerates innovation—lets you run apps anywhere Red Hat OpenShift runs

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One common interface

The power of the Red Hat portfolio

All types of data	Structured / Unstructured
All types of storage	Block / File / Object
Persistent storage orchestration	Red Hat OpenShift Container Storage
	Integrated storage management
Container management for enterprise hybrid cloud apps	Red Hat OpenShift Container Platform
	Unified infrastructure management
Any infrastructure	Physical / Virtual / Private / Hybrid / Public / Edge

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Manage containers and storage through one platform

Containers | VMs | Serverless apps

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OpenShift
Container Storage

Red Hat
OpenShift

kubernetes

Bare metal | Virtual | Private Cloud | Public Cloud | Edge

- Enterprise-ready open source stack

- Persistent storage for cloud-native apps

- Supports apps running in VMs, containers, and serverless environments

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Scalability

The storage you need, whenever and wherever you need it, without sacrificing performance.

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Scalability

Scale quickly, cost-effectively, and with ease
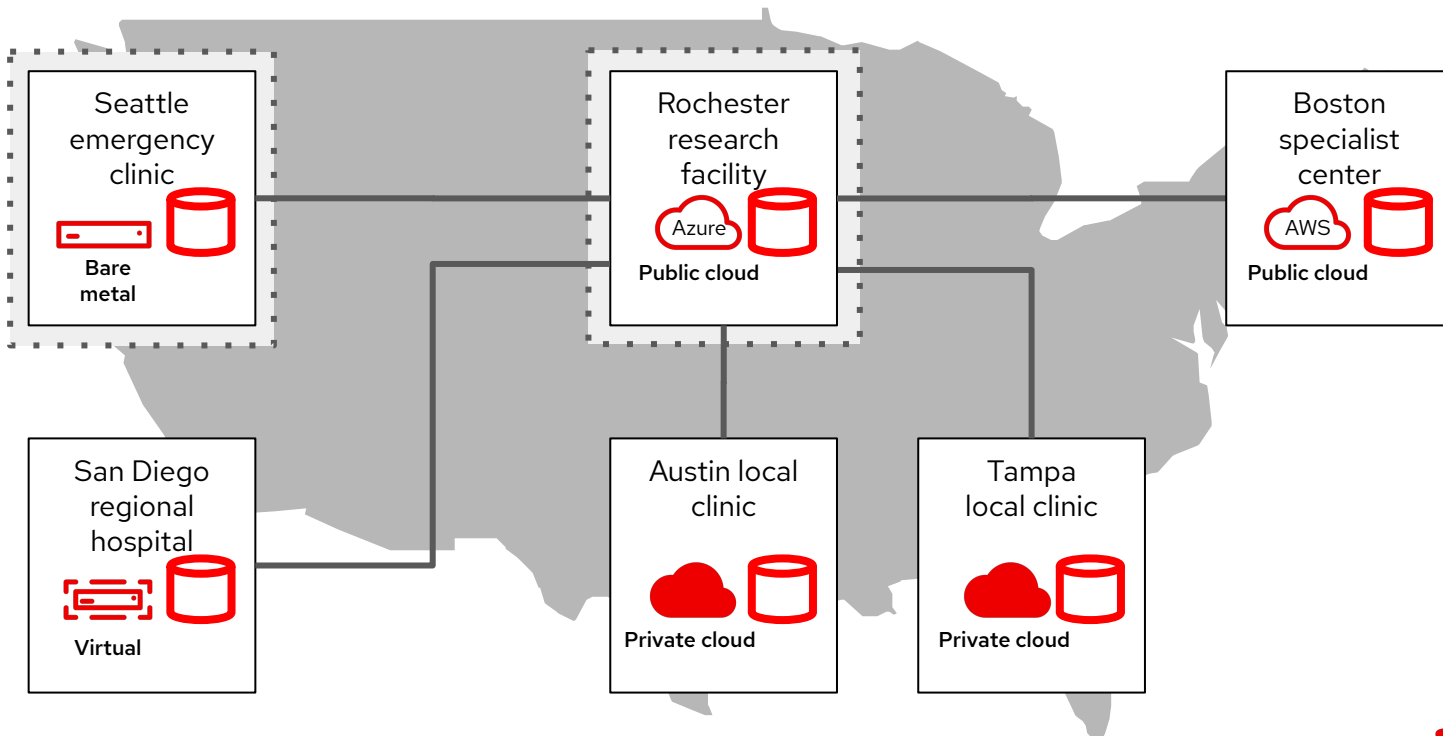

Features

- Simplified storage management and monitoring, embedded in Red Hat OpenShift

- Flexible provisioning of any workload, including databases and AI/ML

- Full stack integration with Red Hat OpenShift

Benefits

- Reduces the burden on DevOps

- Decreases the cost of a multicloud or a hybrid cloud approach

- Accelerates data pipelines

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Agnostic automated data pipelines, from edge to core

Red Hat OpenShift Container Platform and Red Hat OpenShift Container Storage

Version 4.6:

Release highlights

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Key new features in Red Hat OpenShift Container Storage 4.6

Container-aware backup

- Application persistent volume level backup

- Cluster protection on namespace level
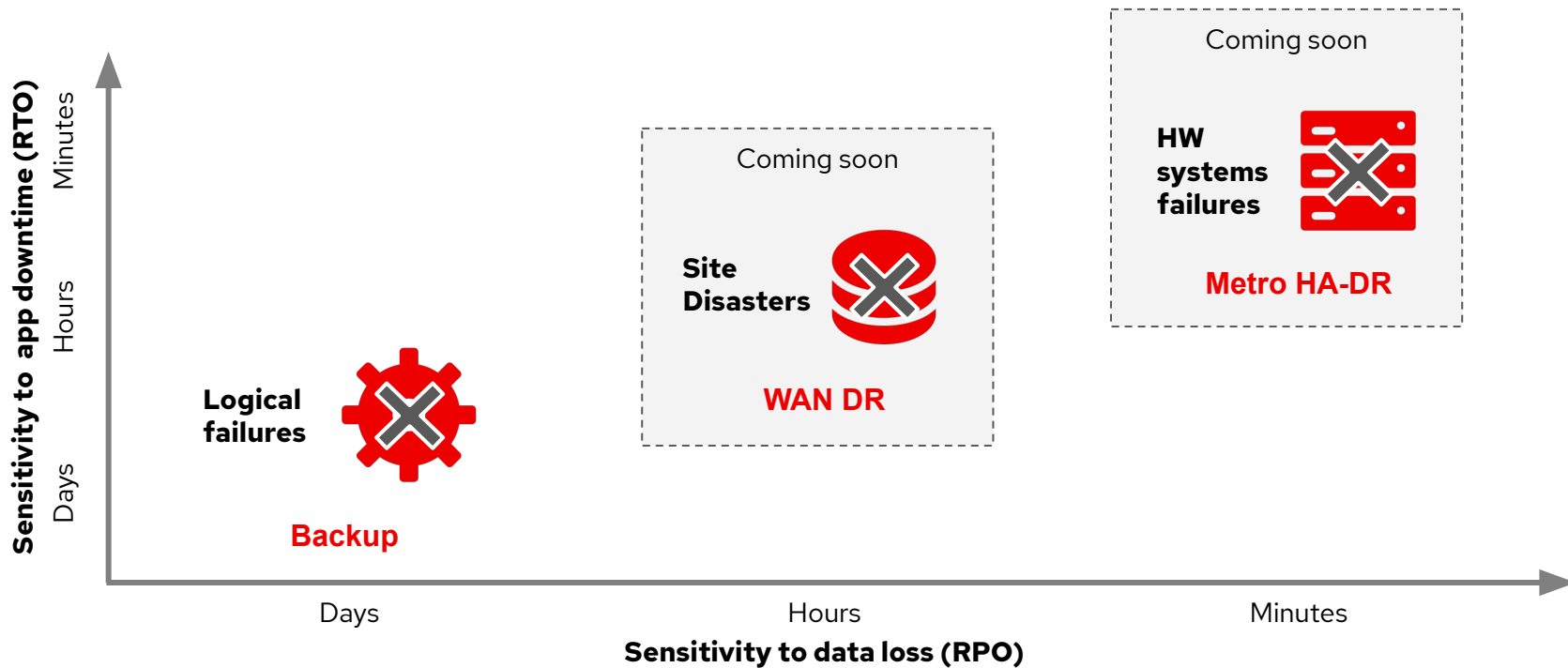
Works alongside existing solutions

- Use existing backup solution

- OpenShift Container Storage will orchestrate container backup

- No need to replace backup software

Built on open standards

- Container storage interface (CSI)

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Data protection solutions tailored to service-level objectives

Sensitivity to app downtime (RTO)

Minutes

Hours

Days

Logical failures

Backup

Coming soon

Site Disasters

WAN DR

Coming soon

HW systems failures

Metro HA-DR

Days   Hours   Minutes

Sensitivity to data loss (RPO)

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Other new features in Red Hat OpenShift Container Storage 4.6

Encryption at rest for entire cluster

Multicloud object gateway namespaces

Multiple storage classes to introduce new capabilities

OpenShift Container Storage snapshot and clone with UI

LSO enhancement

Improved bare-metal deployment

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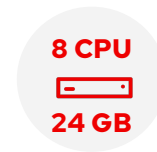# Tech previews in Red Hat OpenShift Container Storage 4.6

Enable multicloud object gateway autoscale of S3 endpoints and performance improvements

Tech preview

Support OpenShift Container Platform compact mode for edge in OpenShift Container Storage

Tech preview

8 CPU

24 GB

Support OpenShift Container Storage in
8 CPUs, 24 GB RAM nodes cluster

Tech preview

Support expanding OpenShift Container Storage capacity using multiple backend storage classes provided by the platform

Tech preview

Support IBM P and IBM Z OpenShift Container Storage can now be installed and managed using IBM Power Systems, IBM Z and LinuxONE

Tech preview

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OpenShift Container Storage: A performance-led approach

To solve meet tomorrow's storage challenges, businesses need to ditch yesterday's storage solutions.

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Why Red Hat OpenShift Container Storage?

Open source

Complete integrated solution through entire life cycle

Portability

Deploy storage where you want—on-premise or in the cloud

Any workload

Supports all major storage protocols for container workloads

Reduced need for storage expertise

Simplified installation and operations from the Red Hat OpenShift UI
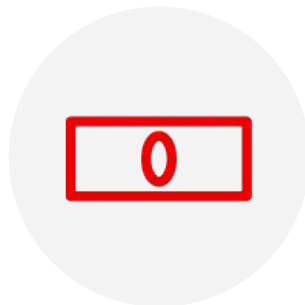
Performance at scale

Delivers performance as application load increases

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Red Hat OpenShift Container Storage

An integrated, single platform.

A single, open, and unified platform that can cover all your object, file, and block storage needs.

A cost-effective solution.

A solution that isn't picky about hardware and can be built using standard, economical servers and disks.

Ongoing support.

Get access to training and support from Red Hat experts and the open source community to help you get the most from your storage.

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Further resources

Visit our product pages to find out more about Red Hat OpenShift Container Storage and the benefits it can bring to your business.

https://redhat.com/dataservices

Demo—YouTube:
Deploying, monitoring, and using OpenShift Container Storage 4 with apps (8 minutes)

Test drive—learn.openshift.com:
Developing apps with OpenShift Container Storage services (15 minutes)

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Thank you

Red Hat is the world's leading provider of

enterprise open source software solutions.

Award-winning support, training, and consulting

services make

Red Hat a trusted adviser to the Fortune 500.

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