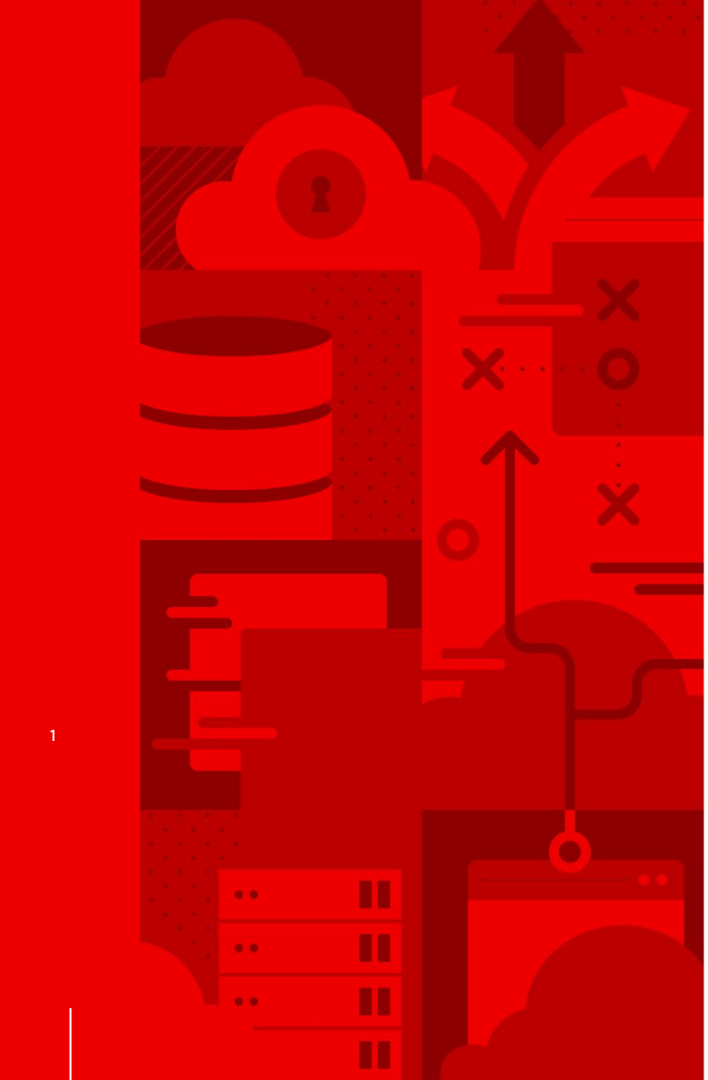
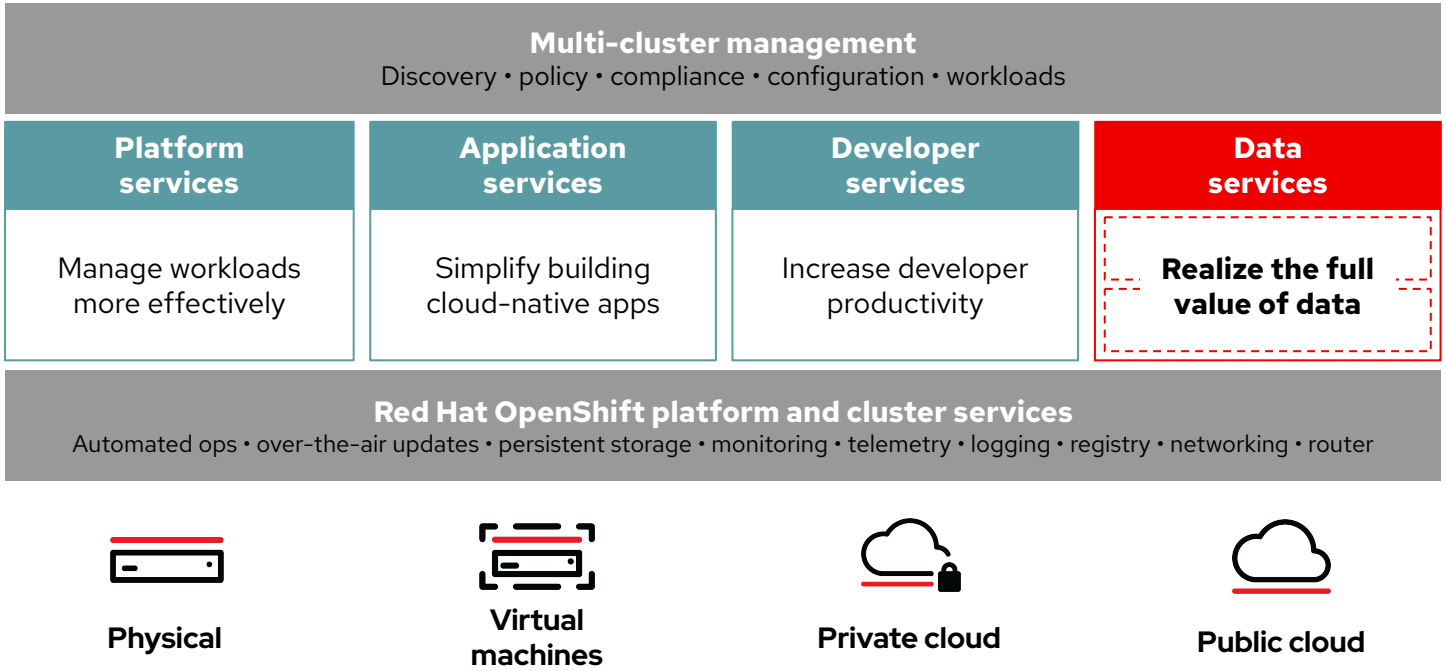


Red Hat OpenShift Data Foundation

Alfred Bach
Pr. Solution Architect
Partner Enablement Team / EMEA

Red Hat OpenShift Data Foundation

How Red Hat Data Foundation services fit

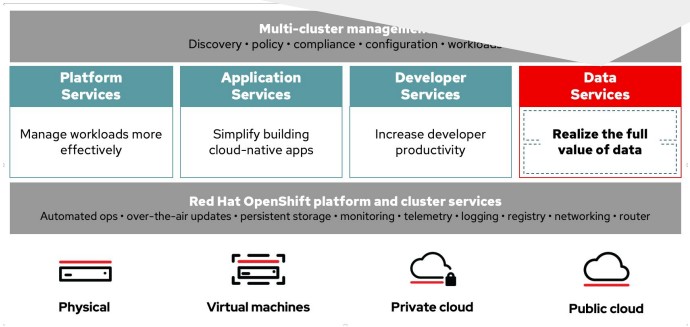


Red Hat OpenShift Data Foundation

The Red Hat Data Foundation opportunity

Red Hat Data Foundation

Data efficiency	Data resilience	Data security	Data governance	Data discovery



Red Hat OpenShift Data Foundation

Red Hat Data Foundation services in a nutshell

Data efficiency

- Erasure coding
- Compression
- Performance

Data resilience

- Snapshots
- Clones
- Backup
- Recovery
- Business continuity
- Disaster recovery

Data security

- At rest encryption
- In flight encryption
- Key management

Data governance

- WORM
- Auditing
- Compliance
- SEC & FINRA
- GDPR

Data discovery

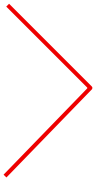
- Cataloging
- Tagging
- Search

Red Hat OpenShift Data Foundation

Data Foundation: a change of mindset

Traditional, static approach

- Focus on improving efficiency
- Infrastructure-up view
- Poor performance at scale
- Disconnected
- Manual, monolithic and rigid



Dynamic, data foundation approach

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

Data is the most significant asset in today's businesses —give it Red Hat Openshift Data Foundation

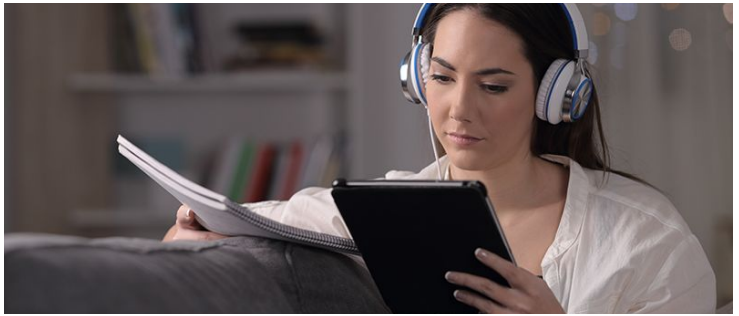
- Red Hat OpenShift Data foundation focuses on infrastructure and application needs, enabling them both to run and interact within an easy and efficient way.
- Provides a foundational data layer for applications to function and interact with data in a simplified, consistent and scalable manner
- Provides smart capabilities for handling of object data and disaster recovery
- Red Hat Ceph Storage is a foundational component to drive data services offered by Red Hat OpenShift Data Foundation

What Red Hat OpenShift Data Foundation means to developers/data scientists

Traditional, static approach

- Must visit the library, again and again
- Strictly limited usage, with limited content on offer
- Can only check out a few items at a time

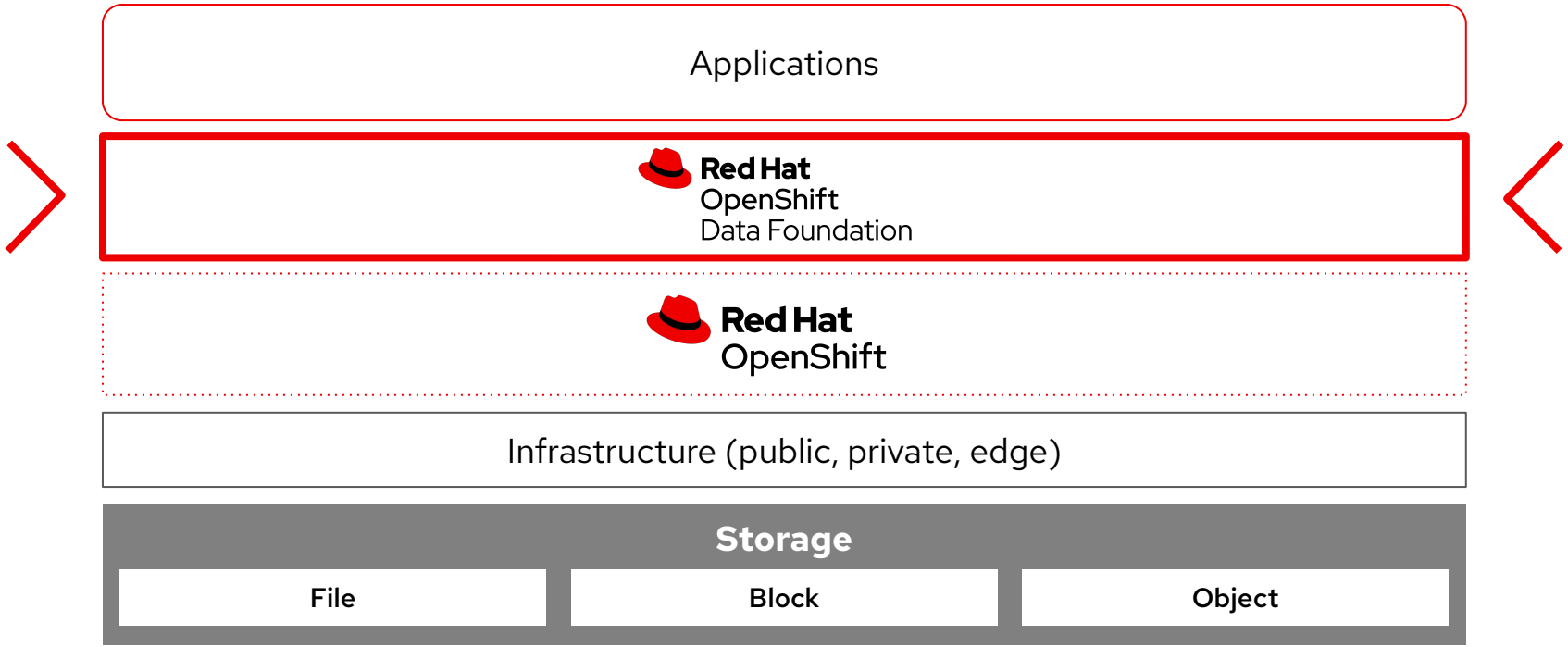
Data foundation approach



- Access to data from anywhere, indefinitely
- Simultaneous access to a wide range of content, and almost unlimited usage
- Self-service—no need for manual supervision

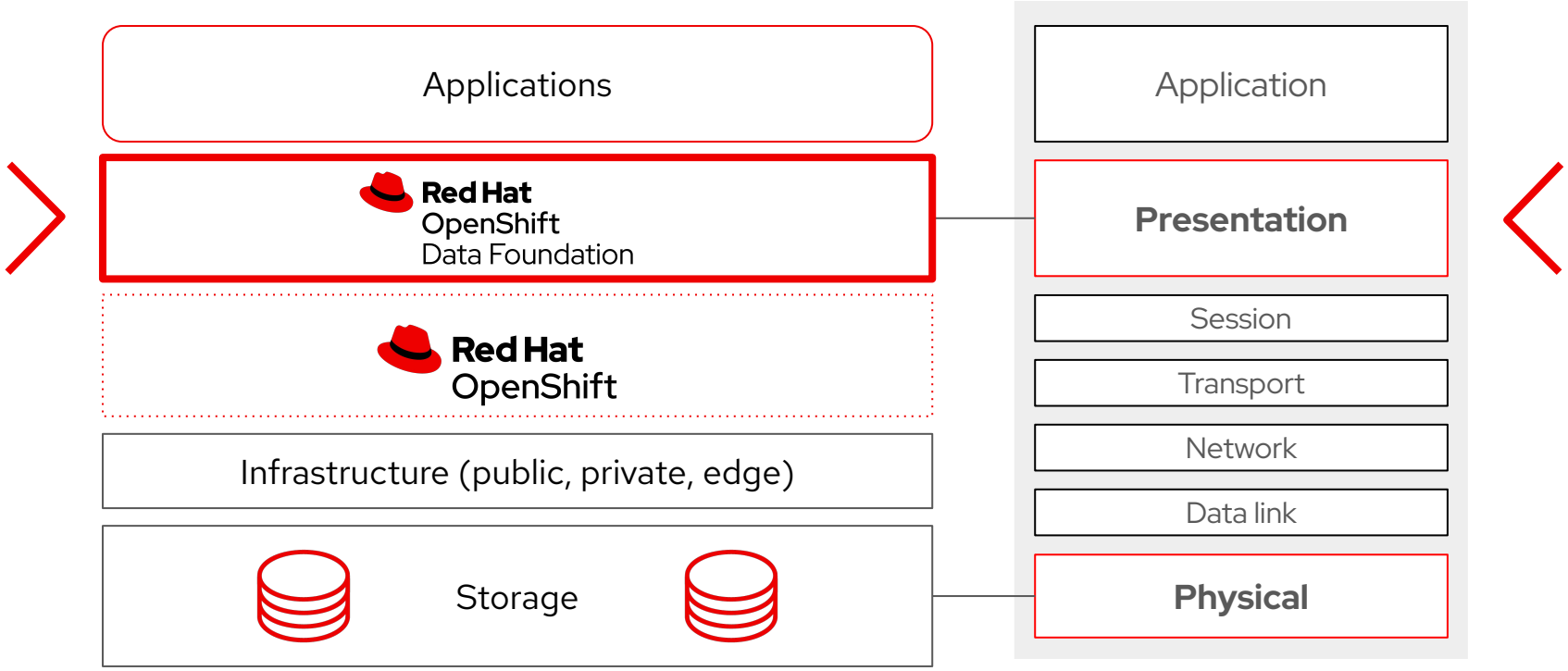
Red Hat OpenShift Data Foundation

The Red Hat OpenShift Data Foundation stack



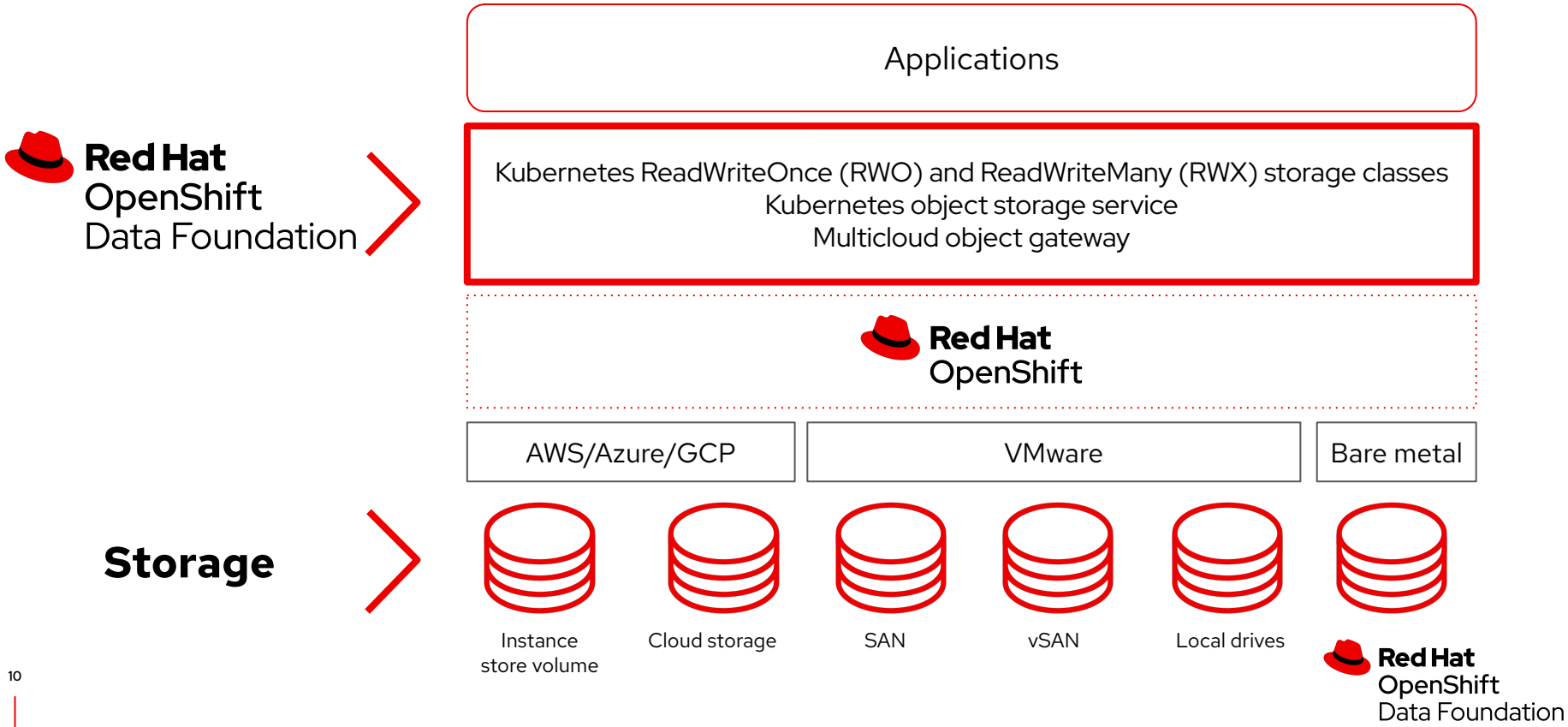
Red Hat
OpenShift
Data Foundation

The Red Hat OpenShift Data Foundation stack



Red Hat
OpenShift
Data Foundation

The Red Hat OpenShift Data Foundation stack



Red Hat OpenShift Data Foundation workloads

Workload specialized data foundation

For data at rest

Databases, warehouses and lakes

- Microsoft SQL Server
- crunchy data
- mongoDB.
- Red Hat Ceph Storage
- MySQL
- IBM Db2 Warehouse

For data in motion

Streaming and messaging

- Red Hat Ceph Storage
- ceph
- Red Hat AMQ Streams
- kafka
- Red Hat OpenShift Serverless
- K

For data in action

Data analytics, intelligence, AI/ML

- Apache Spark
- jupyter notebook
- TensorFlow
- PyTorch
- Starburst Analytics Anywhere
- Jenkins
- TEKTON
- Microsoft SQL Server Big Data Clusters
- SAP Data Intelligence

Cloud-native infrastructure data foundation

For any stateful app

Infrastructure services

- Red Hat Quay
- Prometheus
- elasticsearch
- fluentd
- kibana

Red Hat OpenShift Data Foundation

Data resilience with Red Hat OpenShift Data Foundation

FUNCTIONALITY

Multicloud gateway bucket replication
Extended control plane
Overprovision level policy control

SECURITY

Persistent volume encryption
service account per namespace

PERFORMANCE

Component rescheduling improvement

EFFICIENCY

Lifecycle alignment with Red Hat OpenShift

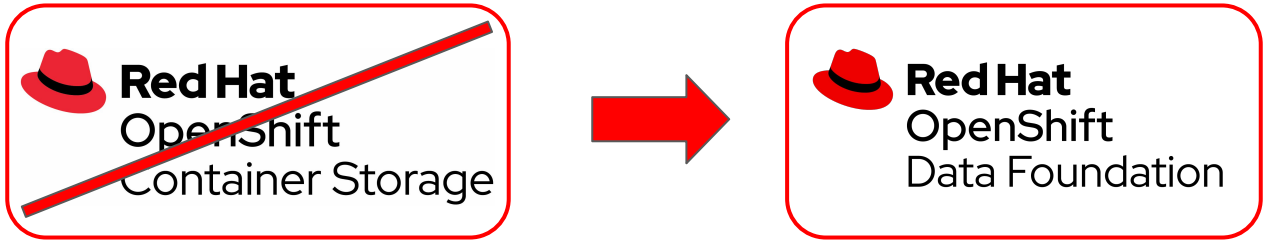
Red Hat
OpenShift
Data Foundation

REBRANDED NAMING

Product name rebranding

Red Hat OpenShift Data Foundation

- Reflected within Red Hat OpenShift Data Foundation UI



What's new?

Red Hat OpenShift Data Foundation 4.9

FUNCTIONALITY

SECURITY

PERFORMANCE

EFFICIENCY

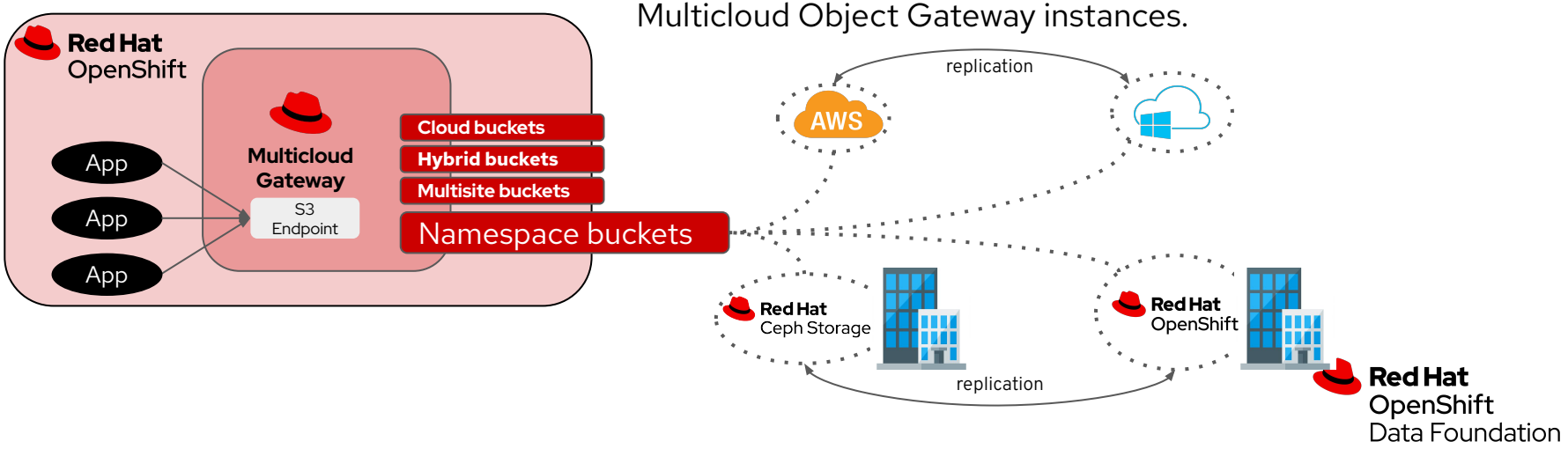
Red Hat
OpenShift
Data Foundation

FUNCTIONALITY

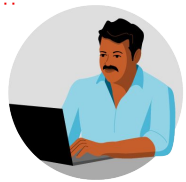
Multicloud Object Gateway
Namespace bucket replication

Provides improved resiliency and more collaboration options by replicating data to other locations.

This could be S3 or S3 compatible, including other Multicloud Object Gateway instances.



BUSINESS VALUE



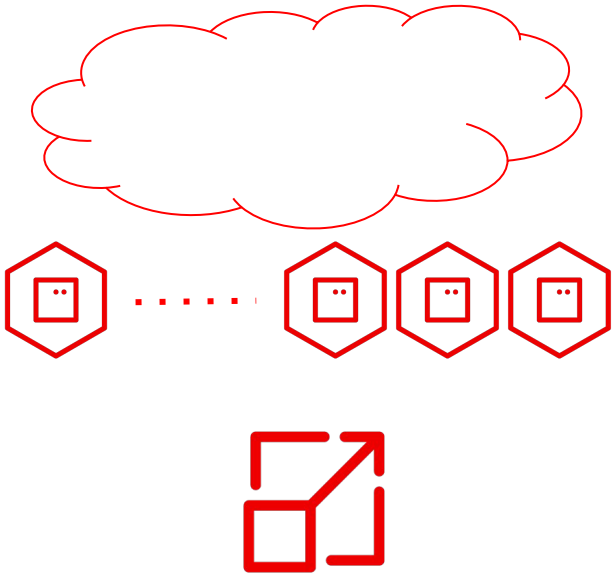
Data engineer

Can now replicate on-premise plain data to the cloud to take advantage of in example, cloud native AI\ML services

System administrator

Can now allow collaboration on the same data between two different locations and replicate objects data to another location in order to access the data, whenever a site location experiences outage

FUNCTIONALITY



Multicloud Object Gateway

Auto scale

This feature automatically scales Multicloud Object Gateway (MCG) endpoints, as a response to load from apps, using Red Hat OpenShift autoscaling features

General availability in Red Hat OpenShift Data Foundation 4.9

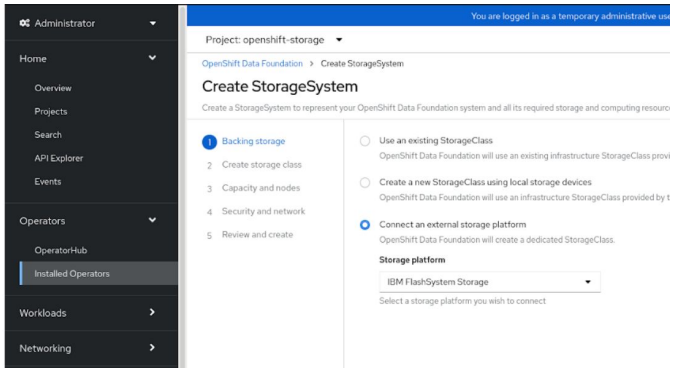
BUSINESS VALUE

System administrator

Can now move from staging to production and have backing support from Red Hat.

Can keep using the previously Tech Preview feature in the same way, but now GA, without any need for re-installation or manual workarounds.

FUNCTIONALITY



- *IBM FlashSystem for mission critical workloads*
- *Extend IBM FlashSystem to file and object with Red Hat OpenShift Data Foundation*

Extended control plane
for pluggable external storage

Red Hat OpenShift Data Foundation control plane is an extended deployment and monitoring layer, to be used with supported external storage providers.

IBM FlashSystem is a first pluggable external storage provider which is supported with Red Hat OpenShift Data Foundation version 4.9

The Red Hat OpenShift Data Foundation deployment wizard now includes IBM Flashsystem as an external storage option

Red Hat OpenShift Data Foundation

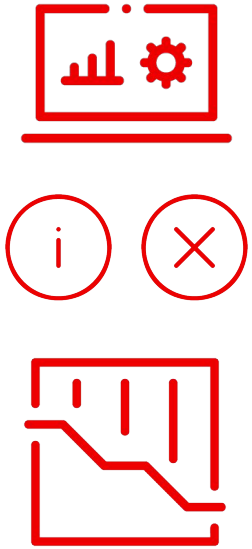
BUSINESS VALUE

System administrator

- Can easily consume storage directly from IBM FlashSystem with as few as possible questions.
- Extends IBM FlashSystem to file and object storage with Red Hat OpenShift Data Foundation
- Is able to easily get the overall capacity, freespace and monitoring information for all my storage systems managed by OpenShift Data Foundation

Red Hat OpenShift Data Foundation

FUNCTIONALITY



Overprovision level policy control
improved control

- More control over our levels of over-provisioning, alerting, and remediation to avoid depleting of available physical storage

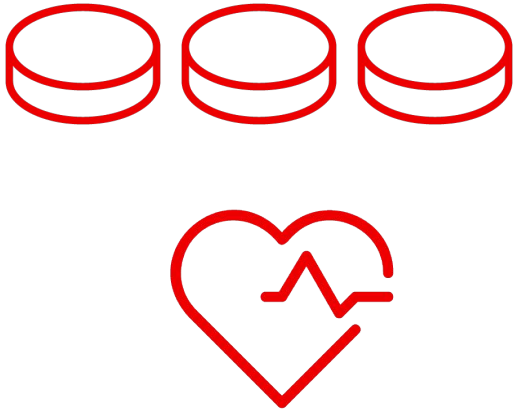
BUSINESS VALUE

System administrator

- Insight to allocate thinly provisioned volumes and an ability to limit the level of over commitment of the physical storage in order to prevent issues.

- Ability to see full physical capacity being approached—and provide automated and UI driven actions to remediate the problem of running out of physical storage.

FUNCTIONALITY



Local storage operator
health and maintainability

LSO maintainability with additional health information and alerts, in example:

- Monitor disk status for local volumes
- LSO volume clean up for easier debugging and maintainability

BUSINESS VALUE

System administrator

- Ability to easily get disk health information and also get alerts on disk errors and/or warnings

- An important feature to plan ahead and get alerts in case of upcoming issues, so that replacement can be carried out, before possible data loss occurs.

FUNCTIONALITY

New alert messaging

Red Hat Ceph Storage Monitor

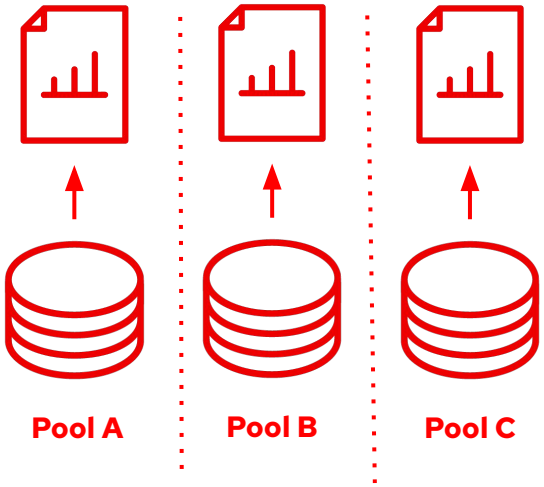
- Provides alerts when a Red Hat Ceph Storage MON disk capacity is running out of sufficient space.

BUSINESS VALUE

System administrator

- Gets timely alerts, before actual issues occur
- Prevention of component outage

FUNCTIONALITY



Compression and mirroring metrics

On a per pool basis

- Exposes pool's compression and mirroring state to the consumer
- With this, admins have insight for potential cost savings and more efficient data consumption

BUSINESS VALUE

System administrator

- Ability to easily see per-pool compression metrics and understand the amount of storage consumed and saved, by using compression.
- Ability to easily follow the mirroring progress to monitor the actual Disaster Recovery state.

FUNCTIONALITY

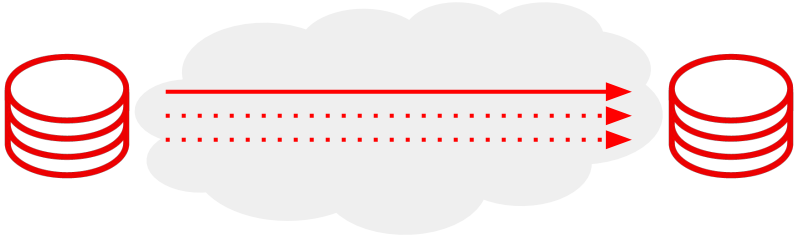
Red Hat Advanced Cluster Manager (ACM) is required for automated regional DR

(required SKU bundle: MW01699)

Capability for use with higher latency connections like WAN

Regional disaster recovery (DR)
automated protection for block volumes

- Automated protection for Rados Block Device volumes
- For OpenShift Data Foundation Internal-mode only
- Recovery point objective (RPO) and recovery time objective (RTO) times are in minutes.

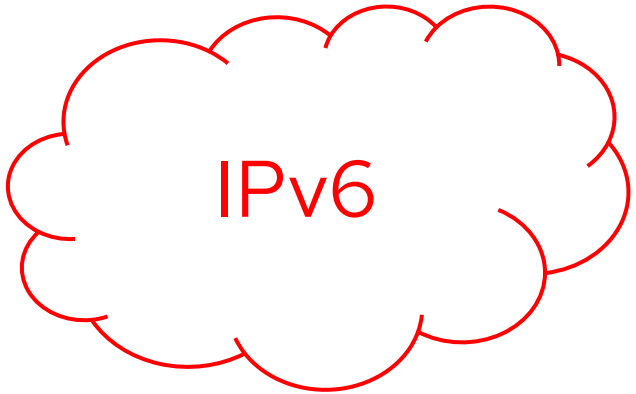


BUSINESS VALUE

Enterprise architect

- Asynchronous DR for Data Center failures
- DR sites beyond the blast radius, connected by WAN latency lines.
- Protection from regional disasters
- Application/Namespace is active on primary site and hot standby at DR site.

FUNCTIONALITY



IPv6 support

Support IPv6 network addressing

- Supporting a single-stack by following IPv6 support in Red Hat OpenShift
- for internal mode

More background on IPv6

BUSINESS VALUE

System administrator

- Ability to either use an IPv4 or an IPv6 network, with identical behavior
- Telco and edge use cases often require IPv6

FUNCTIONALITY

Object quota support

Enabling quota on object bucket claim

- Enables for setting a quota on object bucket claim level, for RGW quota.

BUSINESS VALUE

System administrator

- Ability to easily create Object Bucket Claims with a quota set to limit the object bucket consumption
- Prevent resource starvation and have the ability to limit an intensive bucket consumer in advance

FUNCTIONALITY

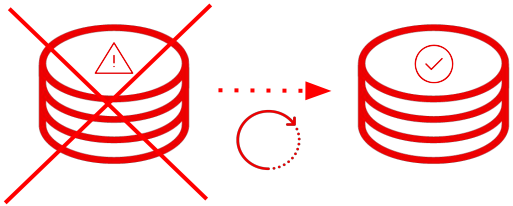
SECURITY

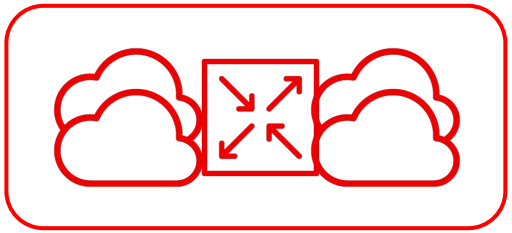
PERFORMANCE

EFFICIENCY

Red Hat
OpenShift
Data Foundation

PERFORMANCE





Component rescheduling improvements

Multicloud Object Gateway

- Improves components recovery in case of a node failure.
- Improvements concern both the Multicloud Object Gateway database and it’s core

BUSINESS VALUE

System administrator

- Data services need to be available at all times and should have a minimal as possible outage
- Fast component rescheduling has been realized to keep these types of outages short

What's new?

Red Hat OpenShift Data Foundation 4.9

FUNCTIONALITY

SECURITY

PERFORMANCE

EFFICIENCY

Red Hat
OpenShift
Data Foundation

SECURITY

Persistent Volume encryption

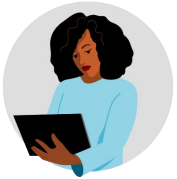
service account per namespace

- Authenticate with Vault via a service account.

  In every namespace, we will have a service account that is used for KMS authentication for persistent volume encryption.

  This enables for use of a service account per tenant to authenticate with Vault and encrypt persistent volumes.

BUSINESS VALUE



Automation architect

- Authenticate with Vault via service account
- Capability to use an authentication token with a one hour expiration or similar
- Provides a backend path for vault secret to override a default configuration.

What's new?

Red Hat OpenShift Data Foundation 4.9

FUNCTIONALITY

SECURITY

PERFORMANCE

EFFICIENCY

Red Hat
OpenShift
Data Foundation

EFFICIENCY

Lifecyle alignment with Red Hat OpenShift

Red Hat OpenShift

Commencing with Red Hat OpenShift Data Foundation 4.8, Red Hat will denote all even numbered minor releases as Extended Update Support (EUS) releases.

In example, OpenShift Data Foundation 4.8, 4.10, 4.12

Extended Update Support explanation

BUSINESS VALUE

System administrator

- As a layered product, OpenShift Data Foundation follows the same lifecycle change in comparison with Red Hat OpenShift
- Less downtime when upgrade activities need to be carried out

SUMMARY

General Available √

- UI rebranding to OpenShift Data Foundation
- Multicloud object gateway namespace bucket replication
- Multicloud object gateway auto scale
- Local storage operator health and maintainability
- Ceph Monitor alert messaging when running out of space
- Per-pool metrics for compression and mirroring

Tech Preview

- Persistent volume encryption using a service account–per namespace

Dev Preview

- Automated Regional Disaster Recovery with advanced cluster manager
- Overprovision level policy control
- IPv6 support for single stack
- Quota support for Object data
- Extended control plane for pluggable external storage

Red Hat OpenShift Data Foundation

MORE INFORMATION

- http://redhat.com/dataservices
- https://www.redhat.com/en/technologies/cloud-computing/openshift-data-foundation
- https://www.redhat.com/en/resources/openshift-data-foundation-overview
- https://www.redhat.com/en/resources/openshift-data-foundation-brief
- https://www.redhat.com/en/resources/openshift-data-foundation-datasheet

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