Red Hat Ceph Storage: Building an Object Storage Active/Active Multi-site Solution

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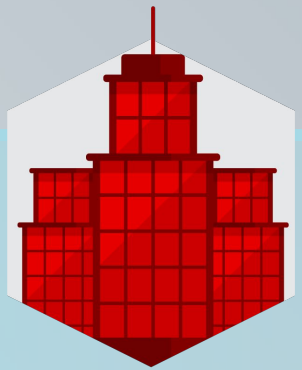
STORAGE FOR THE OPEN HYBRID CLOUD

OPENSHIFT CONTAINER STORAGE

COMPLETE DATA PORTABILITY

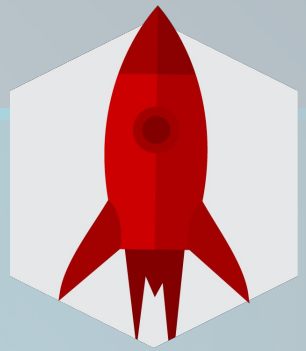
For OpenShift Across the Hybrid Cloud



HYBRID CLOUD OBJECT STORAGE

MOST SCALABLE DATA PLATFORM

For Data Analytics, AI/ML, and emerging workloads



HYPERCONVERGENCE

ELASTIC INFRA ACROSS THE DATA CENTER AND EDGE

Built to enable flexibility, scale, and ease of use

AGENDA

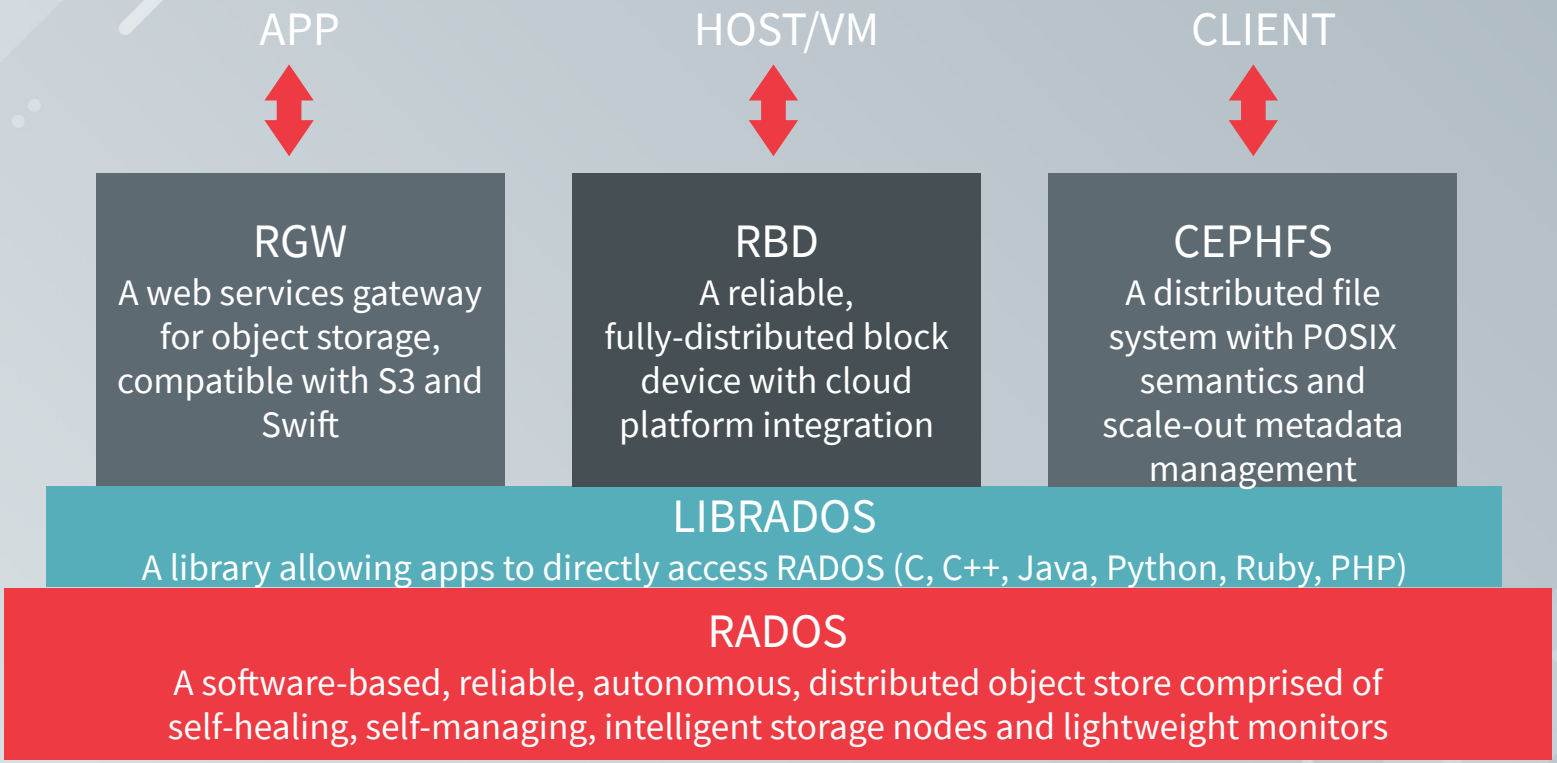
1. Introduction
2. Red Hat Ceph Storage Introduction & Architecture.
3. Red Hat Ceph Rados Gateway Multi-Site use cases.
4. Goals of the Lab
5. Lab description
6. Environment Access
7. Lab conclusions
8. Q&A

RHCS INTRODUCTION
&
ARCHITECTURE

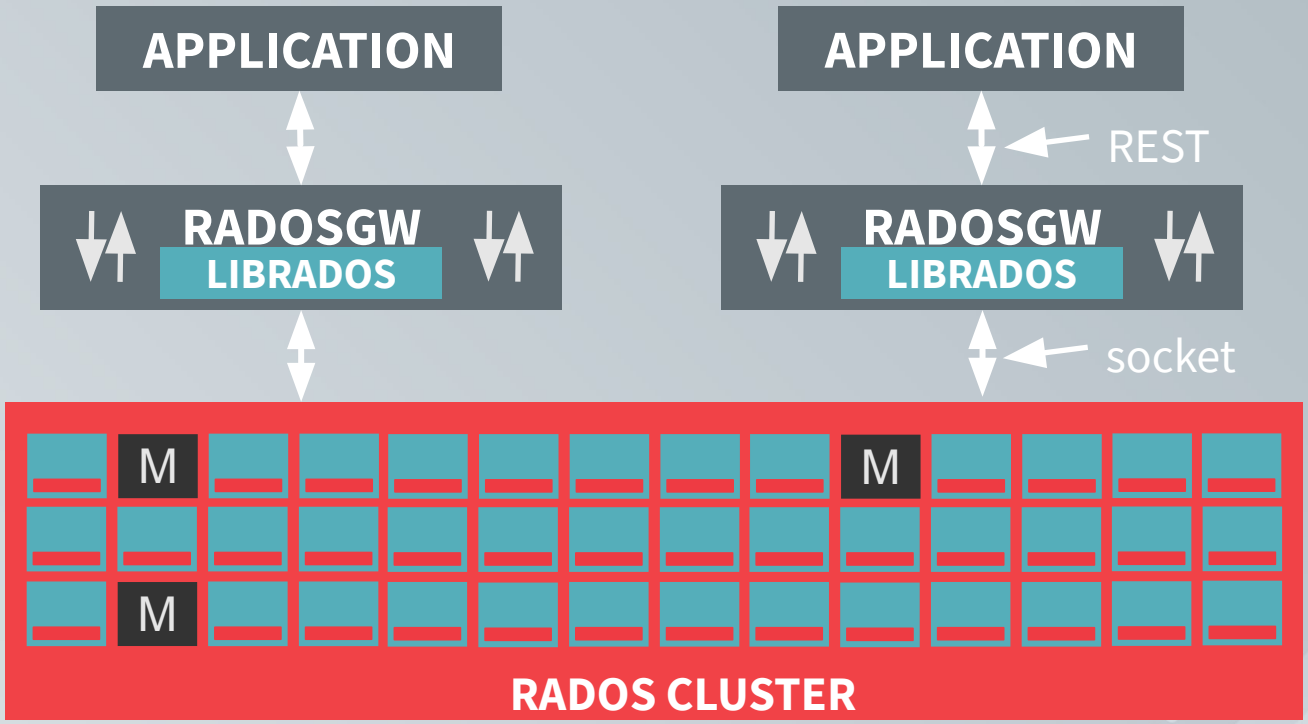
Red Hat Ceph Storage Introduction

- Open source project more than 10 years ago
- Unified Software Defined Storage
- No Single Point Of Failure
- Horizontal scaling
- Self-managing/healing
- Hardware agnostic, runs on *commodity* hardware

ARCHITECTURAL COMPONENTS

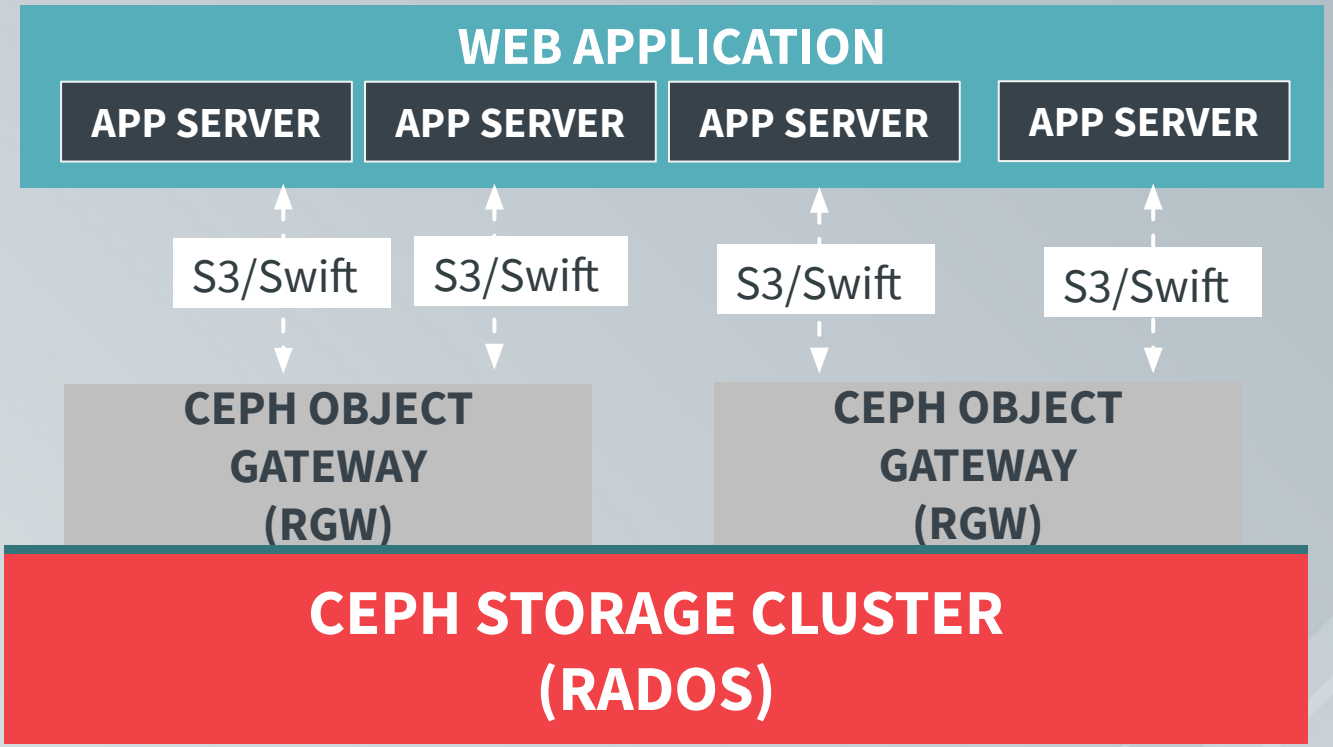


THE RADOS GATEWAY

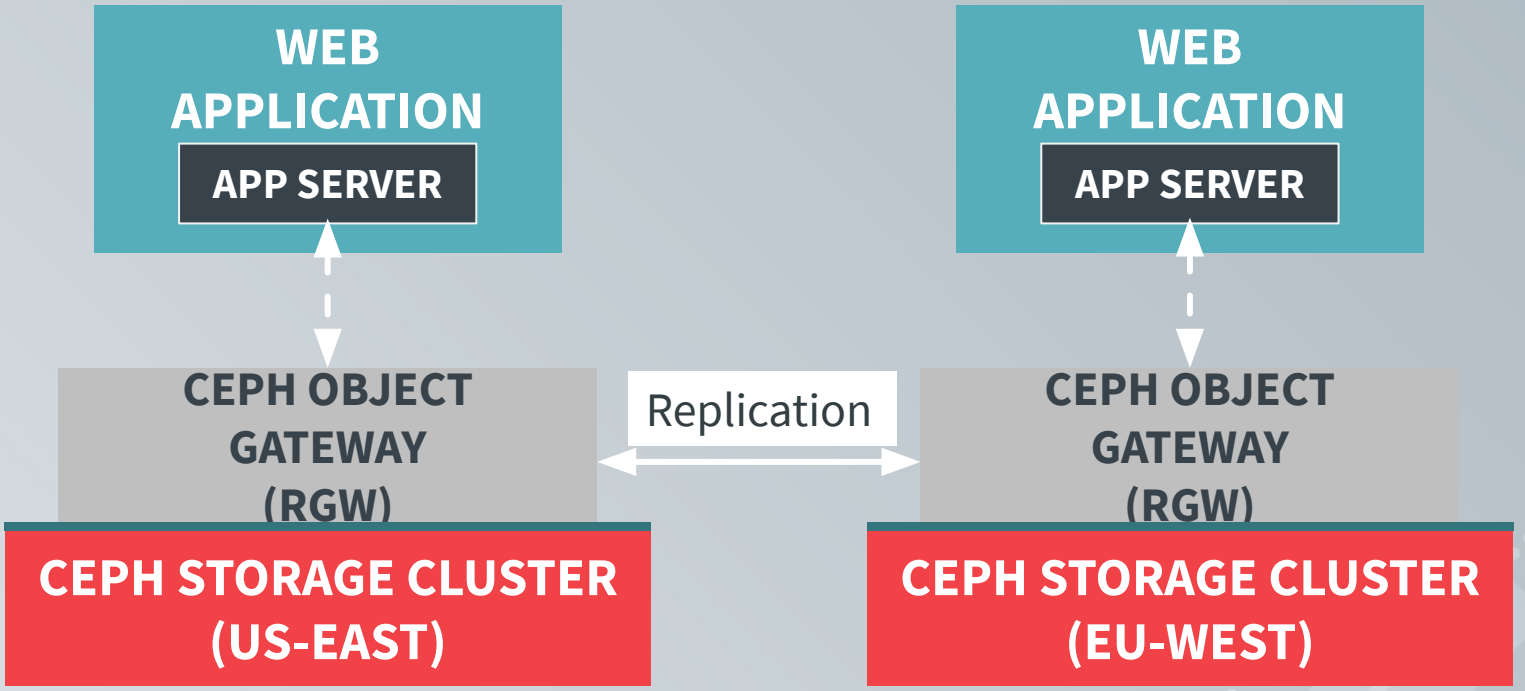


RADOS GATEWAY MULTISITE USE CASES

WEB APPLICATION STORAGE



MULTI-SITE OBJECT STORAGE



GOALS OF THE LAB

Goals of this RH Summit Lab

- Have a better understanding of Red Hat Ceph Storage architecture and concepts.
- Get a taste of installing, setting up and provisioning a containerized Red Hat Ceph deployment.
- Take a peek into Red Hat Ceph Storage metrics solution, included by default in the product.
- Enhance your skills building a Red Hat Ceph Storage Rados Gateway Multi-Site cluster.
- Learn how to configure a S3 client to validate and troubleshoot newly deployed RadosGW clusters.

LAB DESCRIPTION

LAB INTRO

- We will follow a variety of scenarios, to finally achieve the final result :
  - **Two Ceph clusters (DC1 & DC2) deployed and configured for Object Storage with multi-site replication.**

- At high level you would need to:
  - **Deploy DC2 Ceph cluster, configure RGWs in both clusters, configure multi-site replication, configure Ceph metrics in DC2 and finally tests that everything works by creating and managing buckets and objects.**

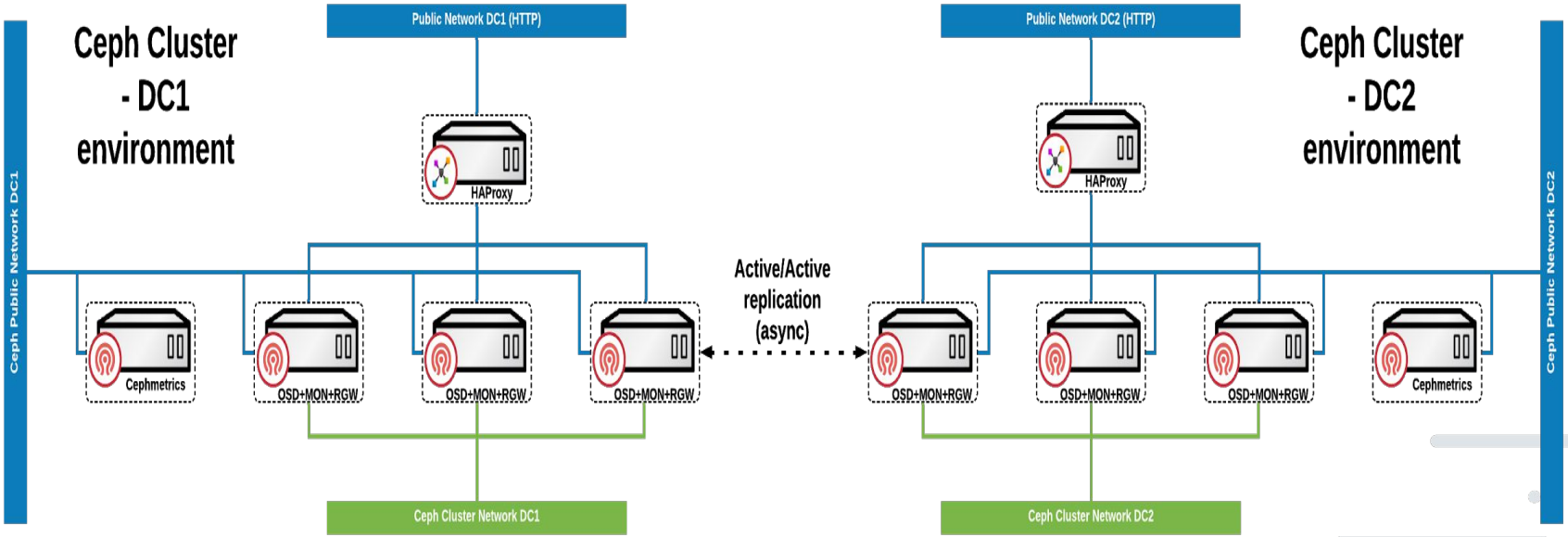
LAB SCENARIOS

1. Install and configure a Ceph cluster in DC2
2. Configure RGWs in both Ceph clusters DC1 & DC2
3. Configure RGWs Active-Active Multi-site replication
4. Configure an S3 client
5. Configure Ceph metrics in Ceph cluster DC2
6. Use S3 policies to Give external users access buckets [OPTIONAL]

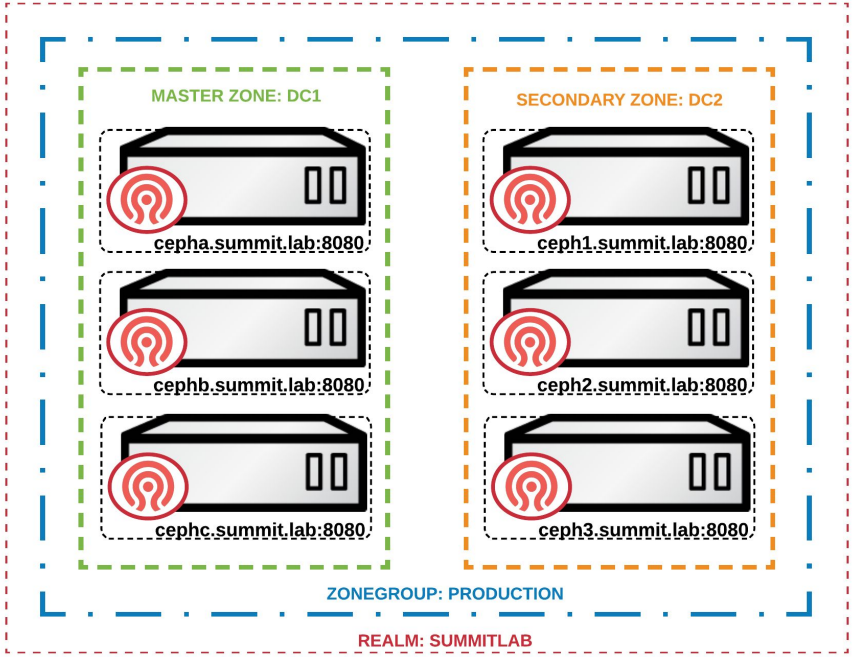
LAB INTRO - TOOLS

- Tools used during the Lab:
  - ceph-ansible (Ceph installer)
  - ceph-metrics (Ceph metrics collectors & dashboards)
  - HAProxy LBs (To balance RGWs)
  - s3cmd (S3 API client)

LAB INTRO - PHYSICAL ARCH



LAB INTRO - LOGICAL ARCH



ENVIRONMENT ACCESS

ENVIRONMENT ACCESS

Docs: http://bit.ly/ceph-docs
Access (GUID Grabber): http://bit.ly/lab-grabber

Activation Key: **green**

ssh-user-to-bastion: **lab-user**
ssh-user-from-bastion-to-nodes: **cloud-user** (ex: ssh cloud-user@cepha)

ssh into bastion: '**ssh bastion-<GUID>.rhpds.opentlc.com**'

!!!!!SSH connection from your laptop to your bastion is already configured!!!!

ENVIRONMENT ACCESS

*** THIS IS THE UAT ENVIRONMENT - FOR TESTING ONLY ***

Please choose the lab code for this session, enter the activation key, and your e-mail address then click **Submit**.

Lab Code: T168C8 - Red Hat Ceph Storage: Building an Object Storage Active/Active Multi-site Solutior

Activation Key:

E-Mail Address:

All fields are **required**.

- **Unless your event organizer says otherwise, we will not e-mail you and your e-mail address will be deleted from this system after this session is over**. Normally it is only used for tracking this session.
- You may need to refresh this page if you do not see an option for this lab session in the dropdown.
- If you are unsure which lab code to choose or what the activation key is please notify a lab assistant.

Submit

*** THIS IS THE UAT ENVIRONMENT - FOR TESTING ONLY ***

LAB VMs

DC1 has the following VMs:

- 1 HAProxy node:

Hostname	IP
lbdc1.summit.lab	10.0.0.100

- 3 Ceph nodes:

Hostname	IP
cepha.summit.lab	10.0.0.11
cephb.summit.lab	10.0.0.12
cephc.summit.lab	10.0.0.13

- 1 Cephmetrics node:

Hostname	IP
metricsd.summit.lab	10.0.0.14

You can ssh using the shortname!

DC2 has the following VMs:

- 1 HAProxy node:

Hostname	IP
lbdc1.summit.lab	172.16.0.100

- 3 Ceph nodes:

Hostname	IP
ceph1.summit.lab	172.16.0.11
ceph2.summit.lab	172.16.0.12
ceph3.summit.lab	172.16.0.13

- 1 Cephmetrics node:

Hostname	IP
metrics4.summit.lab	172.16.0.14

ENVIRONMENT ACCESS - TEST IT!!

1. ssh into your bastion:
   a. **'ssh bastion-<GUID>.rhpds.opentlc.com'**

2. From your bastion, ssh into a DC1 ceph node:
   a. **ssh cloud-user@cepha**

3. From your bastion, ssh into a DC2 ceph node:
   a. **ssh cloud-user@ceph2**

4. Test Ceph metrics URL in DC1:
   a. http://metricsd-GUID.rhpds.opentlc.com:3000
   b. User: **admin**
   c. Password: **redhat01**

LAB CONCLUSIONS

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- **Red Hat Ceph Storage:** Open, Scalable and Software Defined solution that provides Block, Object and Filesystem storage.
- **Ceph-ansible:** Centralized deployment and management tool for the clusters.
- **Ceph cluster with Active-Active Multisite:** Providing Failover and Disaster Recovery capabilities to the cluster for Object Storage use cases.
- **Red Hat Ceph Storage Dashboard (Ceph metrics):** monitoring dashboard that uses Prometheus as data source and allows to the storage cluster state.

FIND US AT RED HAT SUMMIT

redhat.com/storage

@redhatstorage

redhatstorage.redhat.com

- At the Storage lockers
- At the Red Hat booth
- At one of Storage dedicated sessions (red.ht/storageatsummit)
- At the Community Happy Hour (Tues 6:30, Harpoon Brewery)
- At the Hybrid Cloud Party (Wed, 7:30, “Committee” restaurant)

Red Hat OpenShift Container Storage
red.ht/videos-RHOCS

Red Hat data analytics infrastructure solution
red.ht/videos-RHDAIS

Red Hat Hyperconverged Infrastructure
red.ht/videos-RHHI

Q&A

RED HAT SUMMIT

THANK YOU

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twitter.com/RedHat

FINAL TASK:

FILL IN EVALUATION FORM IN RED HAT SUMMIT APP, DO IT NOW!

Fill in: Red Hat Ceph Storage: Building an Object Storage Active Active Multi Site Solution

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