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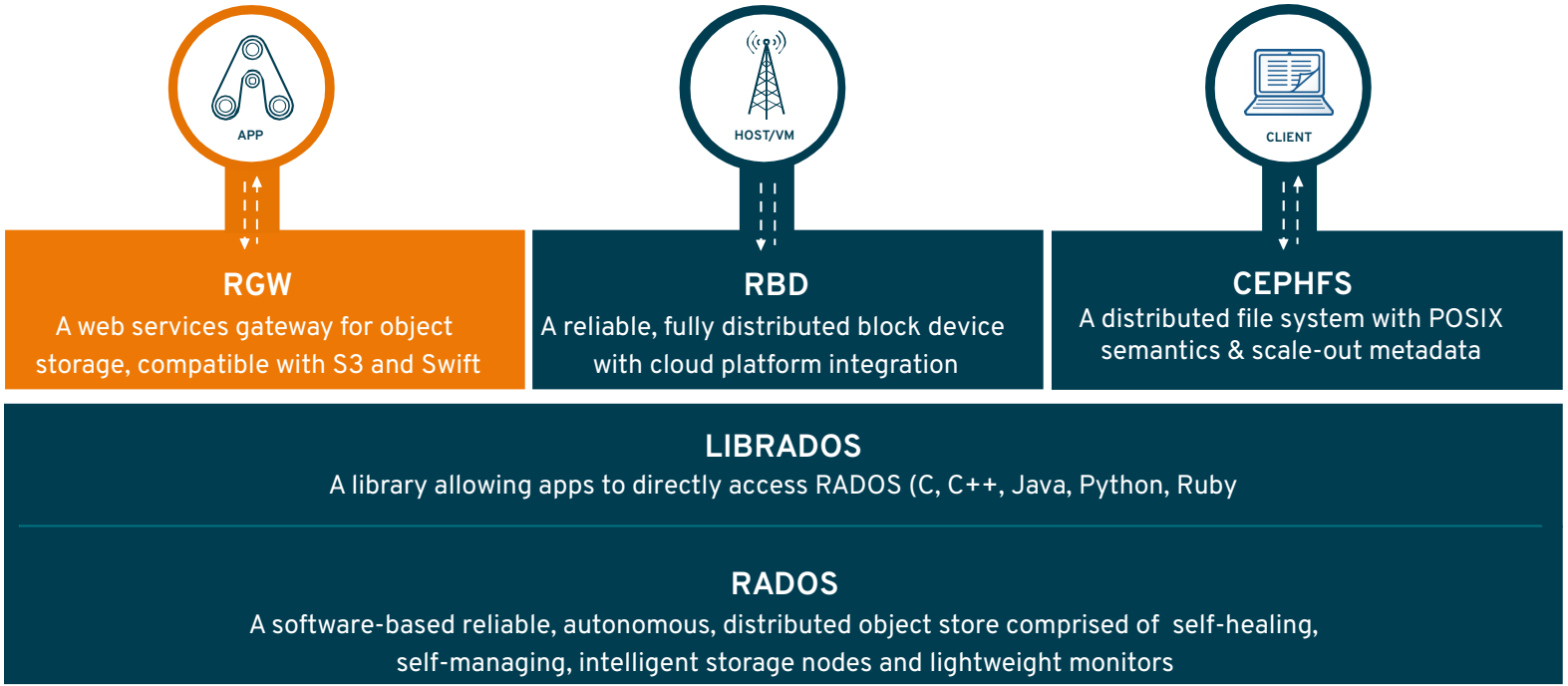
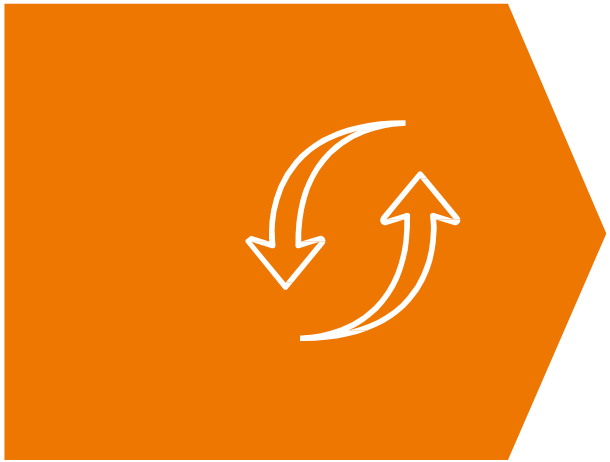
CEPH OBJECT:
EMERGING USE CASES FOR THE MODERN ENTERPRISE

Shawn Houston
Red Hat
Storage Solutions Architect

RED HAT CEPH STORAGE ARCHITECTURAL COMPONENTS



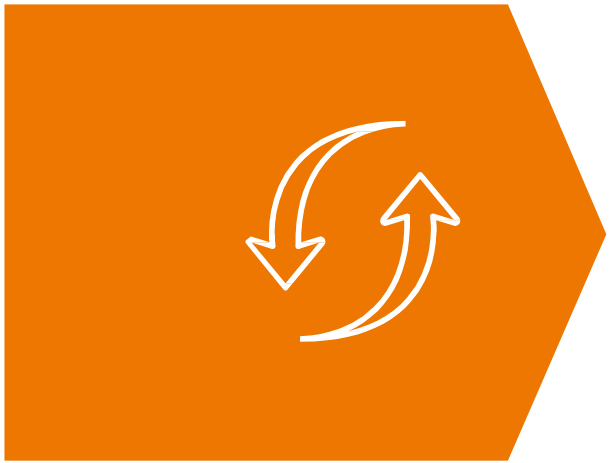
RGW MAKES RADOS WEBBY



RGW

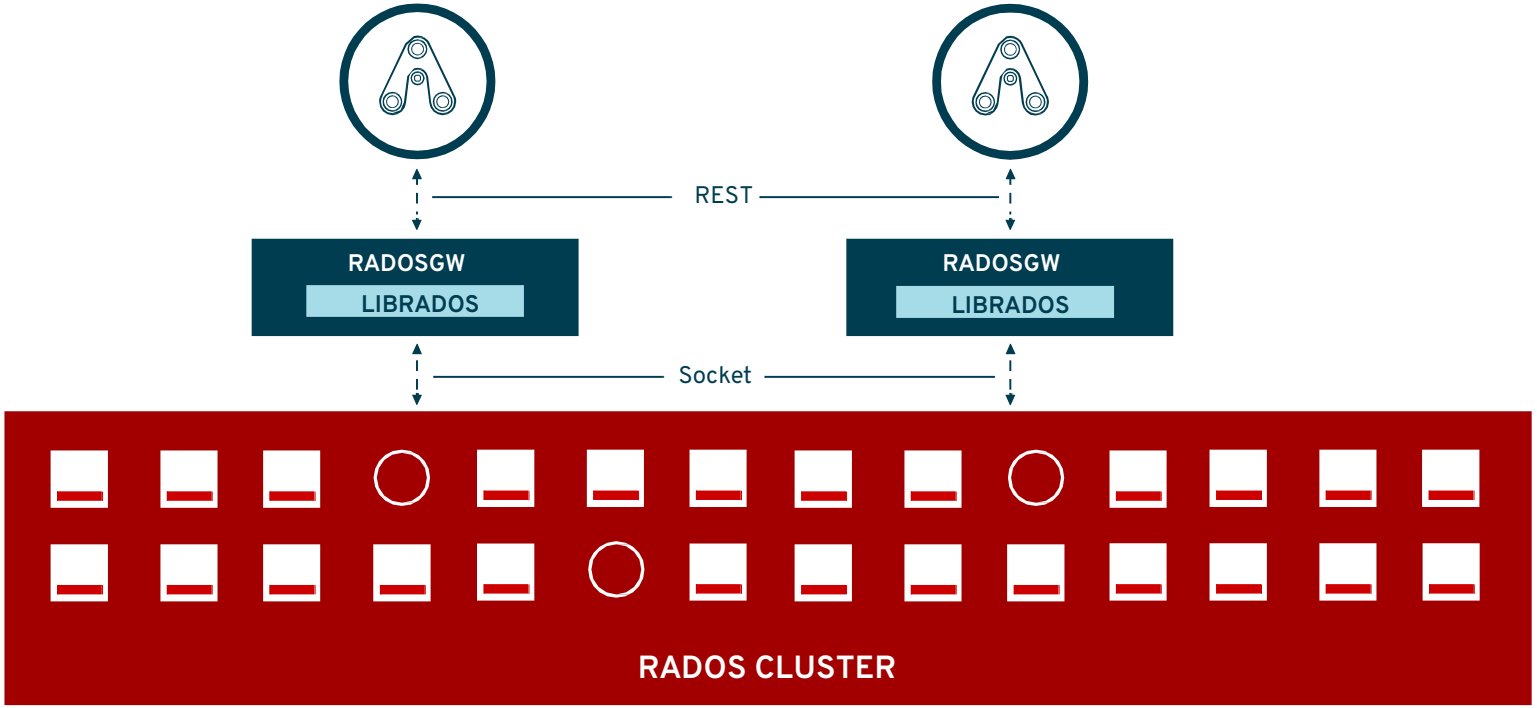
- REST-based object storage proxy
- Uses RADOS to store objects
- API supports buckets, accounts
- Usage accounting for billing (chargeback)
- Compatible with S3 and Swift applications

NFS RGW GATEWAY

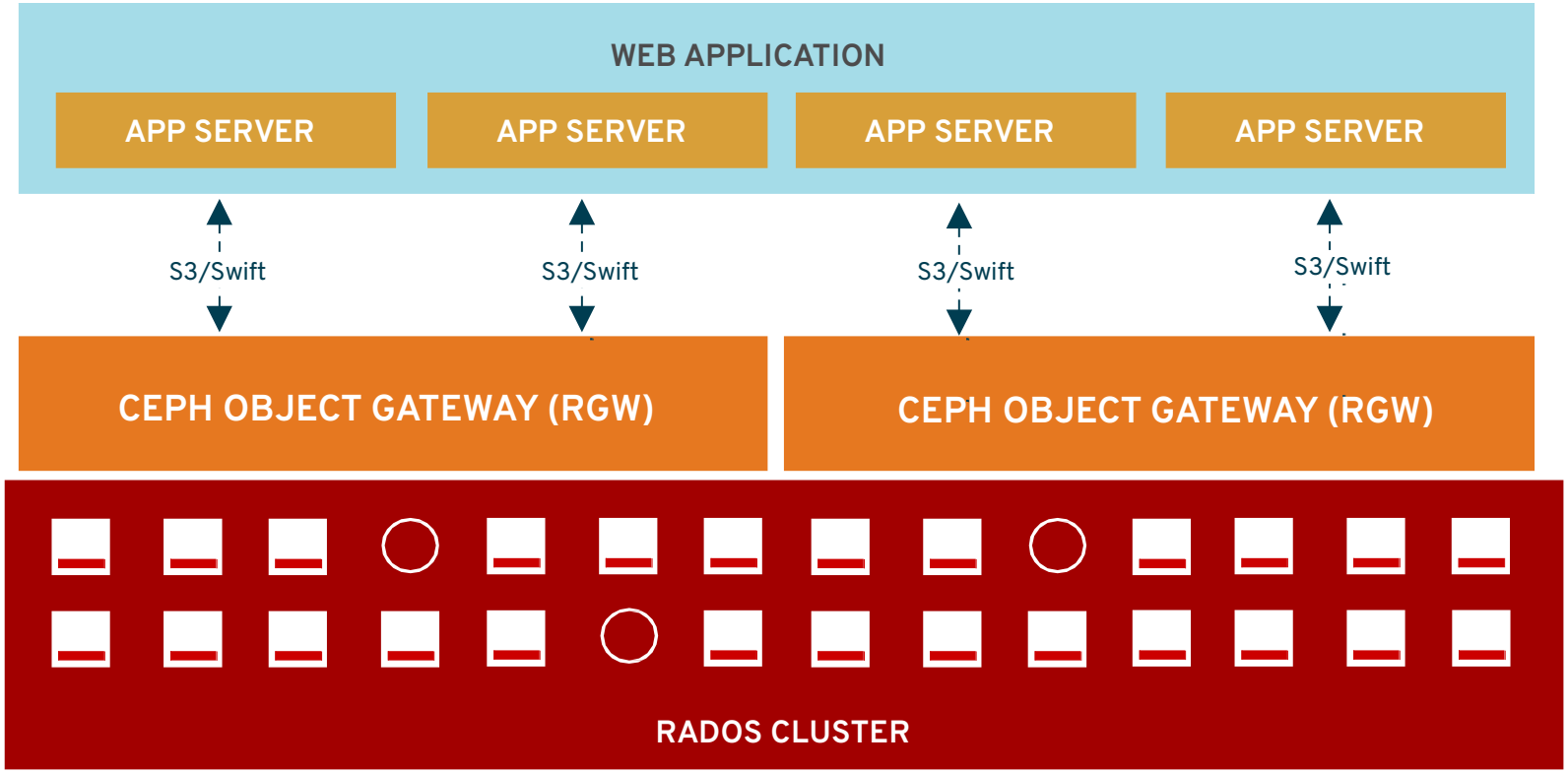


- Provides NFS file access on top of RGW object API
- NFS V4 support in RHCS 2.1
- Hosts can mount and access the object namespace using NFS mount
- Files are internally stored as objects inside buckets
- Gateway seamlessly translates between host file semantics and RHCS object semantics.
- No caching of files or data required

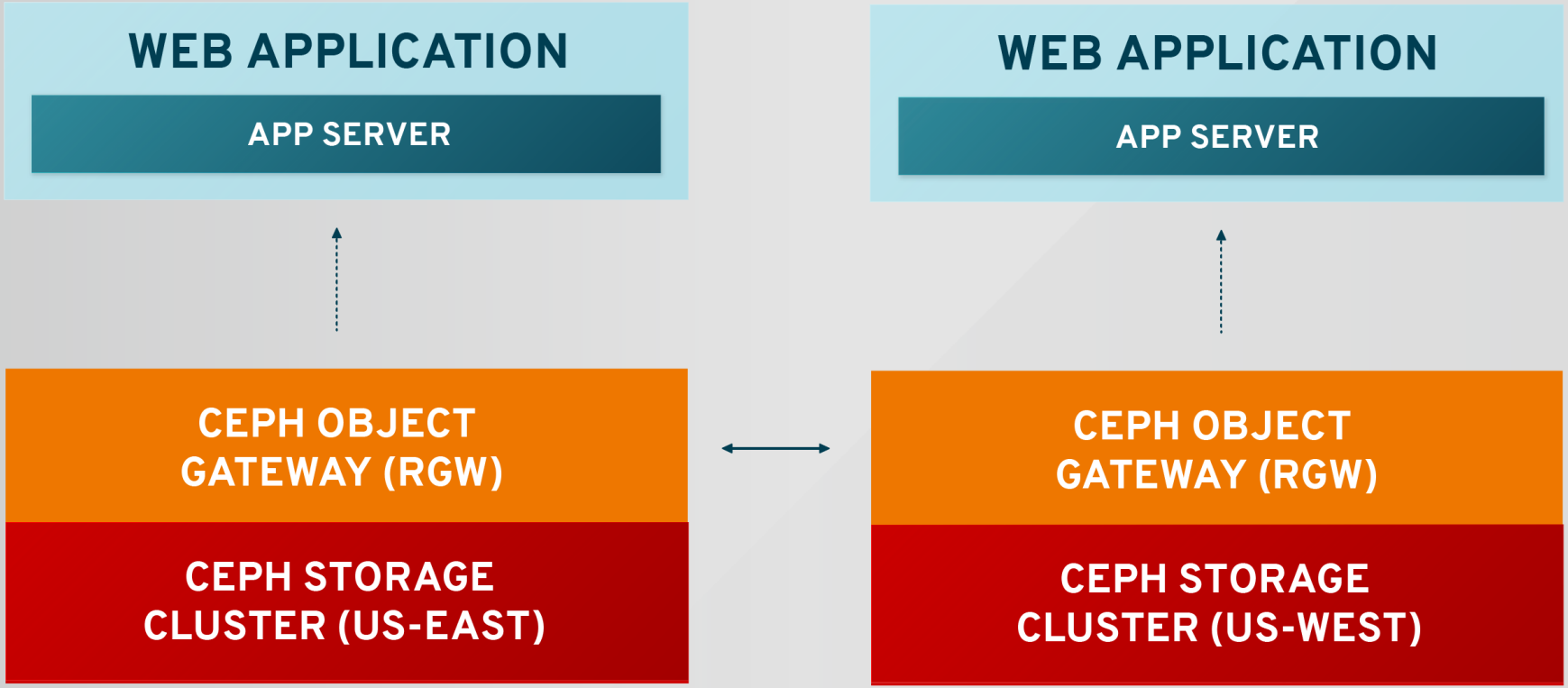
THE RADOS GATEWAY (RGW)



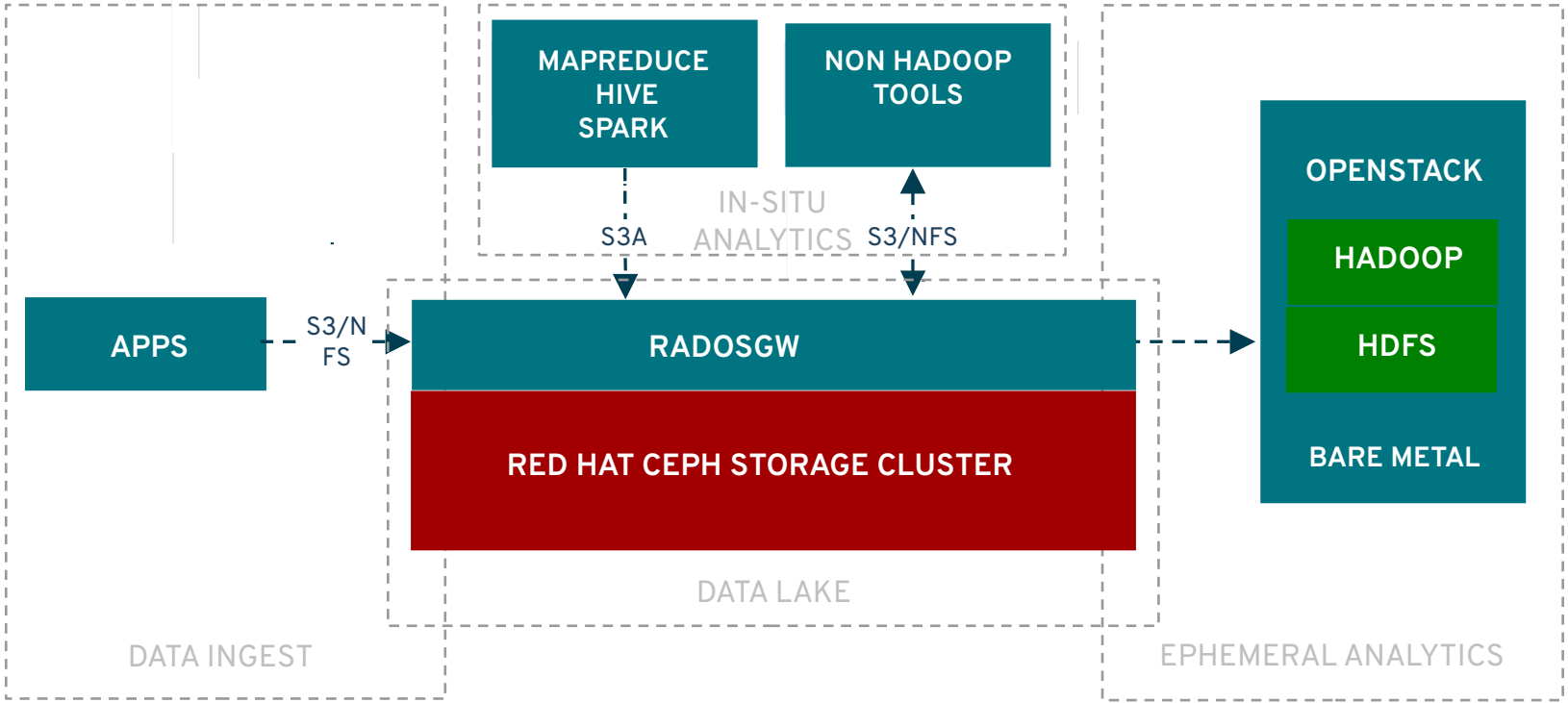
WEB APPLICATION STORAGE



MULTI-SITE OBJECT STORAGE



DATA LAKE FOR ANALYTICS WITH RED HAT CEPH STORAGE



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Use Case: Object Storage
Case Studies (names removed)

- An Automotive Insurance Backend (SaaS) Provider
  Automotive insurance claims process includes online forms (PDFs) and pictures for proof of damage/claim.

- A Medical Practice and Insurance Backend (SaaS) Provider
  Similar to automotive insurance, there are many online forms (PDFs), but instead of pictures there are usually x-ray images and tests result files.

- A Multinational Retail Chain
  Several related use cases including inventory management and data mining/informatics.

Case Study:
An Automotive Insurance Backend (SaaS) Provider

- PDFs
  - Online forms
- Images
  - Scans
  - Pictures

  Incumbent Solution: Oracle Database Blob Storage
  - Expensive
  - Scaling Issues
  - **Fast**

Solution

- Two Red Hat Ceph Storage Clusters (geographically distant)
  - Primary
    - Custom CRUSH Map
      - 2 SSD synchronous copies
      - 1 HDD asynchronous copy
  - Secondary
    - Asynchronous replication of all objects in primary
- Had to meet or beat Oracle Database speed/latency

Of Note

- Easily scaled solution
  - Need more storage?
    - Add OSD to node or entire new OSD node (+1 scaling)
- Beating Oracle solution both in price *and performance*
  - We only needed to match Oracle performance
  - Incremental storage increases using industry standard x86 servers drastically reduces the cost of the proprietary tier 1 storage the old Oracle solution used
  - Industry standard x86 servers allow economy of scale purchasing

Case Study:
A Medical Practice and Insurance Backend (SaaS) Provider

- PDFs
  - Online forms
- Images
  - X-ray images
  - Lab Results

  Incumbent Solution: NAS with custom front-end application
  - Scaling Issues
  - “self-support” perception (customer of customer wanted supported solution)

Solution

- Two Red Hat Ceph Storage Clusters (distant → different cities, same state)
  - Primary
    - Storage pools with different SLAs
      - Different protection levels for different data
  - Secondary
    - Asynchronous replication of some objects in primary
- Needed to provide a replacement for incumbent storage solution with minimal change in front-end application and without increasing costs beyond level customer-of-customer was willing to bear (control costs)

Of Note

- Easily scaled solution
  - Need more storage?
    - Add OSD to node or entire new OSD node (+1 scaling)
- Solution proved so successful that customer is now looking for projects to use RHCS on
  - Met cost constraints
  - Better scaling than incumbent solution
  - Red Hat Support proved worth the cost (customer's words)

Case Study:
A Multinational Retail Chain

- Two Known Use Cases
  - General Unstructured File Storage
    - Swift
  - Analytics
    - Dedicated storage using Swift protocol
    - Data Lakes using S3

Incumbent Solution: RHCS block and proprietary block

- Price is biggest driver off proprietary
- RHCS block works, object is seen as the correct solution moving forward
    - RHCS object did not meet scale when Ceph was introduced a few years ago

Solution

- Unstructured File Storage and General Analytics
  - Single Cluster Solutions
  - Many clusters dedicated to different teams
  - Swift (using customer maintained connectors)
- Data Lakes
  - Mostly single cluster, Some multi-cluster
  - S3

Of Note

- This customer is so big that scaling is a real issue
- Red Hat and customer have a tight partnership
  - Help drive RHCS product road map
  - Have direct communication path to Red Hat Engineering
  - TAM
- RHCS on Ubuntu solution
  - Yes, Red Hat Ceph Storage is available on Ubuntu

OpenShift Operations and Container Native Storage Test Drive

http://red.ht/openshift-ops-testdrive

Try it and see!

Get hands on!

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Thank You!

RED HAT®
CEPH STORAGE

Test drive:
bit.ly/cephtestdrive

RED HAT®
GLUSTER STORAGE

Test drive:
bit.ly/glustertestdrive

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RED HAT CEPH TECHNICAL REFERENCES

RHCS Hardware Selection Guide
- ★ http://bit.ly/RHCS-hardware-selection-guide

Red Hat Ceph Storage Hardware Configuration Guide
- ★ http://bit.ly/RHCS-hw-configuration-guide

MySQL on Red Hat Ceph Storage Reference Architecture
- ★ http://bit.ly/MySQL_DB-on-RHCS

Red Hat Ceph Storage on Intel CPUs and SSDs Config Guide
- ★ http://bit.ly/RHCS-on-Intel

Red Hat Ceph Storage Ready Supermicro Server SKUs
- ★ http://bit.ly/RHCS-SuperMicro-SKU

Red Hat Ceph Storage on CISCO UCS Servers
- ★ http://bit.ly/RHCS-on-Cisco-UCS

Red Hat Ceph Storage on QCT : Object Storage Perf & Sizing Guide
- ★ Coming Soon

Red Hat Ceph Storage on QCT Servers Perf & Sizing Guide
- ★ http://bit.ly/RHCS-on-QCT

Red Hat Ceph Storage on Supermicro Servers Perf & Sizing Guide
- ★ http://bit.ly/RHCS-on-SuperMicro

Red Hat Ceph Storage on DELL EMC PE 730xd Servers Perf & Sizing Guide
- ★ http://bit.ly/RHCS-on-DellEMC-PE730xd

Red Hat Ceph Storage on DELL EMC DSS 7000 Servers Perf & Sizing Guide
- ★ http://bit.ly/RHCS-on-DellEMC-DSS7000

Red Hat Ceph Storage on Samsung Sierra Flash Array Perf & Sizing Guide
- ★ http://bit.ly/RHCS-on-Samsung-flash-array

Red Hat Ceph Storage Ready QCT Server SKUs
- ★ http://bit.ly/RHCS-QCT-SKU

Red Hat Ceph Storage on SanDisk Infiniflash
- ★ http://bit.ly/RHCS-on-Sandisk-Infiniflash