Red Hat Ceph Storage: Past, Present and Future

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Director of Product Management
2017

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THE RED HAT STORAGE ECOSYSTEM

Standard interfaces and full APIs ease integration with applications and systems

Self-managing and self-healing software provides durability and adapts to changes

Industry-standard hardware provides choice and can be tailored for specific workloads

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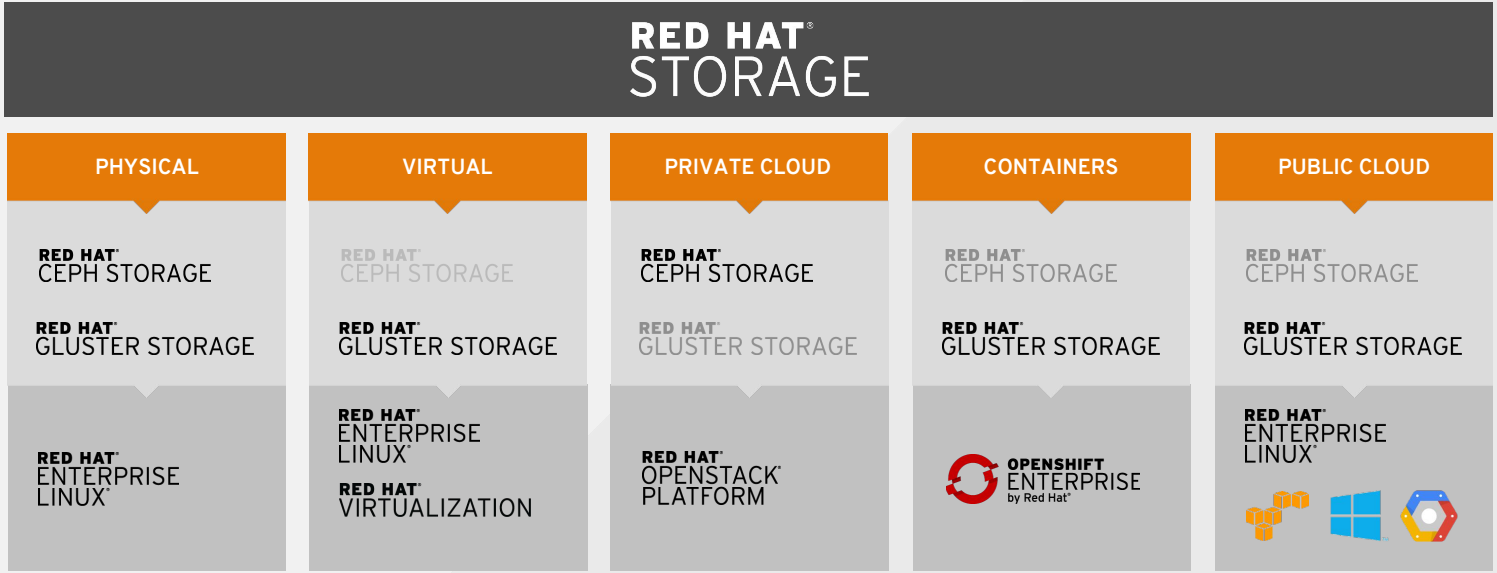
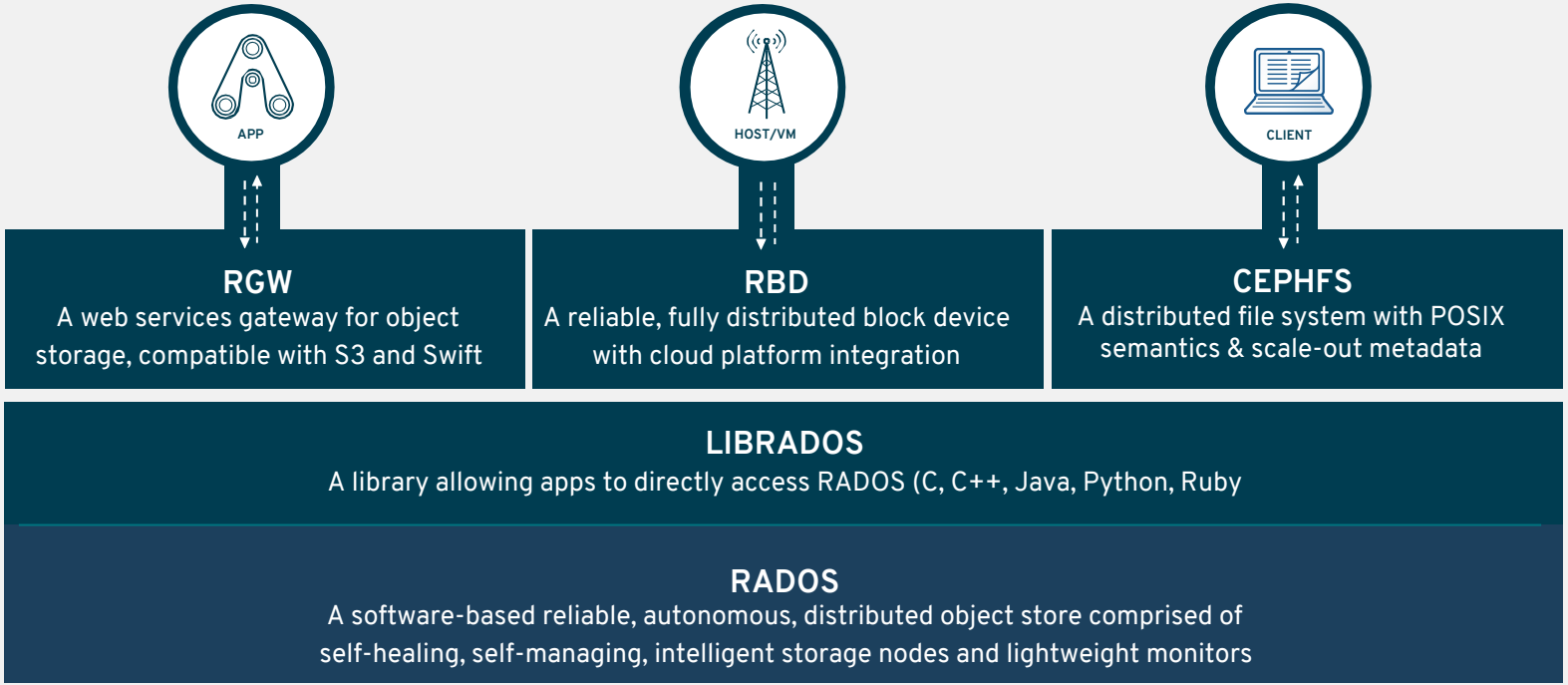
RED HAT STORAGE IS DEEPLY INTEGRATED



Ceph


APP
HOST/VM
CLIENT
RGW
A web services gateway for object storage, compatible with S3 and Swift
RBD
A reliable, fully distributed block device with cloud platform integration
CEPHFS
A distributed file system with POSIX semantics & scale-out metadata
LIBRADOS
A library allowing apps to directly access RADOS (C, C++, Java, Python, Ruby
RADOS
A software-based reliable, autonomous, distributed object store comprised of self-healing, self-managing, intelligent storage nodes and lightweight monitors

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Past

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Past 12 months

RHCS 2

August 2016

- Ansible support
- RGW: Global Clusters
- RGW: AD/LDAP Support
- RBD Mirroring

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Past 12 months

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RHCS 2.1

Nov 2016

- RGW: Indexless Buckets
- RGW: Static Website, Payer Request
- RBD: iSCSI (Tech Preview)

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Past 12 months

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RHCS 2.1

Nov 2016

- RGW: Indexless Buckets
- RGW: Static Website, Payer Request
- RBD: iSCSI (Tech Preview)

RHCS 2.2

Mar 2017

- RGW: Swift RefStack Compliance
- RGW: Native SSL Support for RGW

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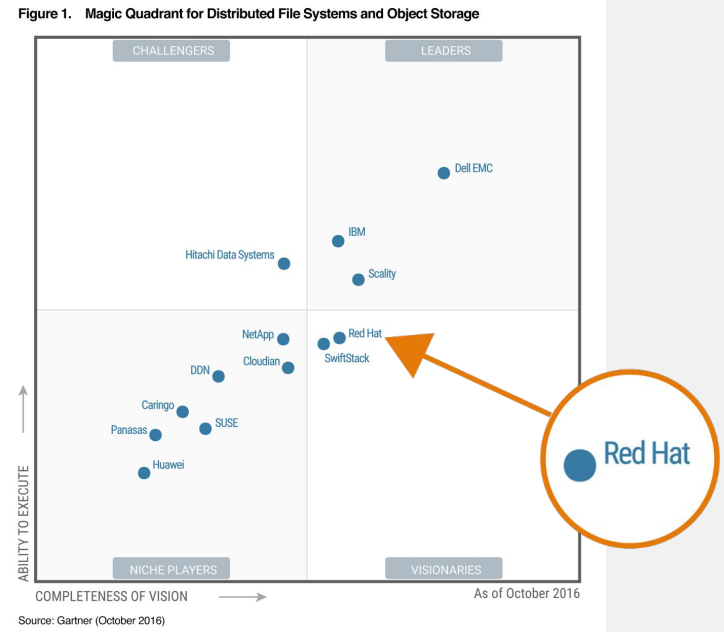
RED HAT RECOGNIZED AS A STORAGE VISIONARY



Red Hat Storage recognized as a Visionary
by Gartner in their first Magic Quadrant for Distributed File Systems and Object Storage.

This graphic was published by Gartner, Inc. as part of a larger research document and should be evaluated in the context of the entire document. The Gartner document is available upon request at https://engage.redhat.com/gartnermagic-quadrant-storage-s-201610121525

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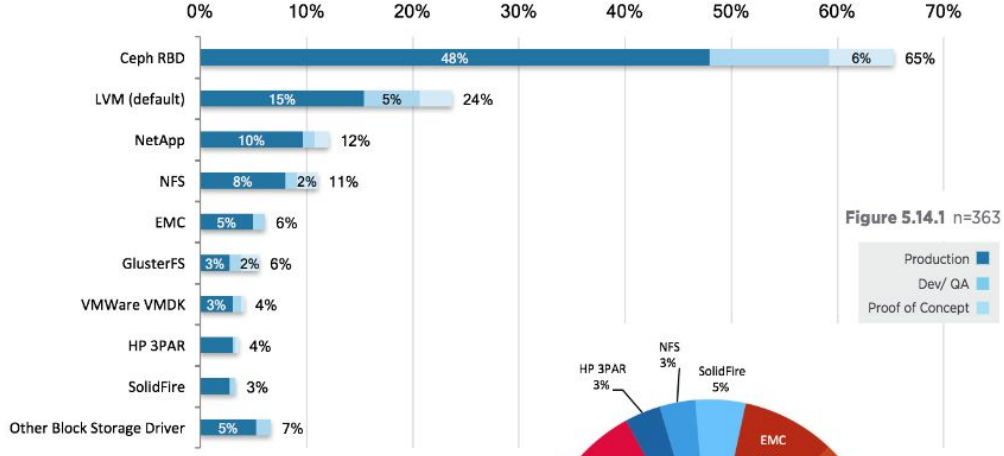
PERFORMANCE & SIZING GUIDES

IOPS OPTIMIZED	THROUGHPUT OPTIMIZED	COST/ CAPACITY OPTIMIZED

Red Hat Openstack Momentum



Among the largest clouds with 1,000 or more cores, Ceph RDB is still dominant, but not used by the majority, while other block storage drivers were also popular.

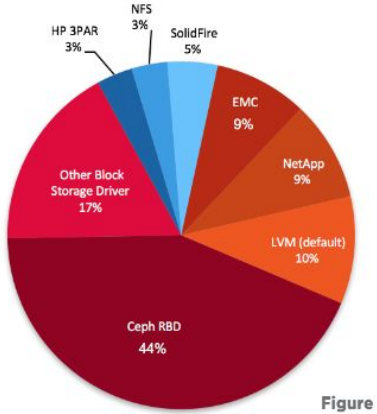


Figure 5.14.2 n=88

OpenStack User Survey

April 2017

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Red Hat Openstack Partner Momentum

Present

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Next 12 Months

RHCS 2.3

June 2017

- Container Support
- NFS Gateway for RGW (GA)
- S3A support for Big Data

These projects are currently active in the Ceph development community. They may be available and supported by Red Hat once they reach the necessary level of maturity.

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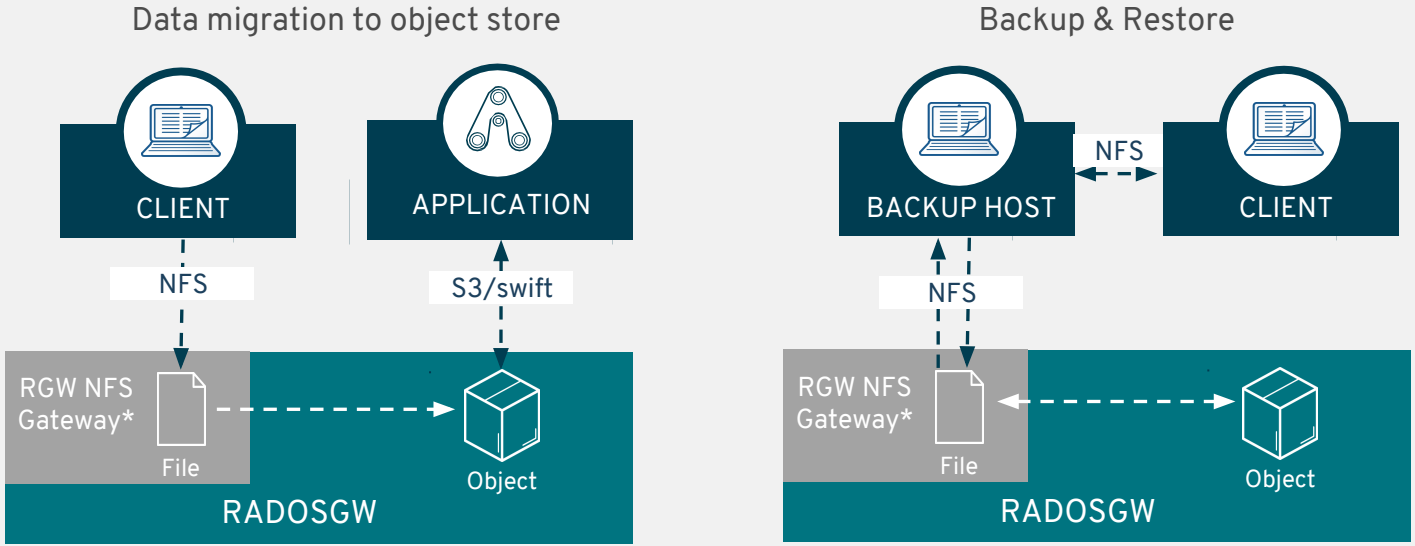
NFS Gateway for RGW



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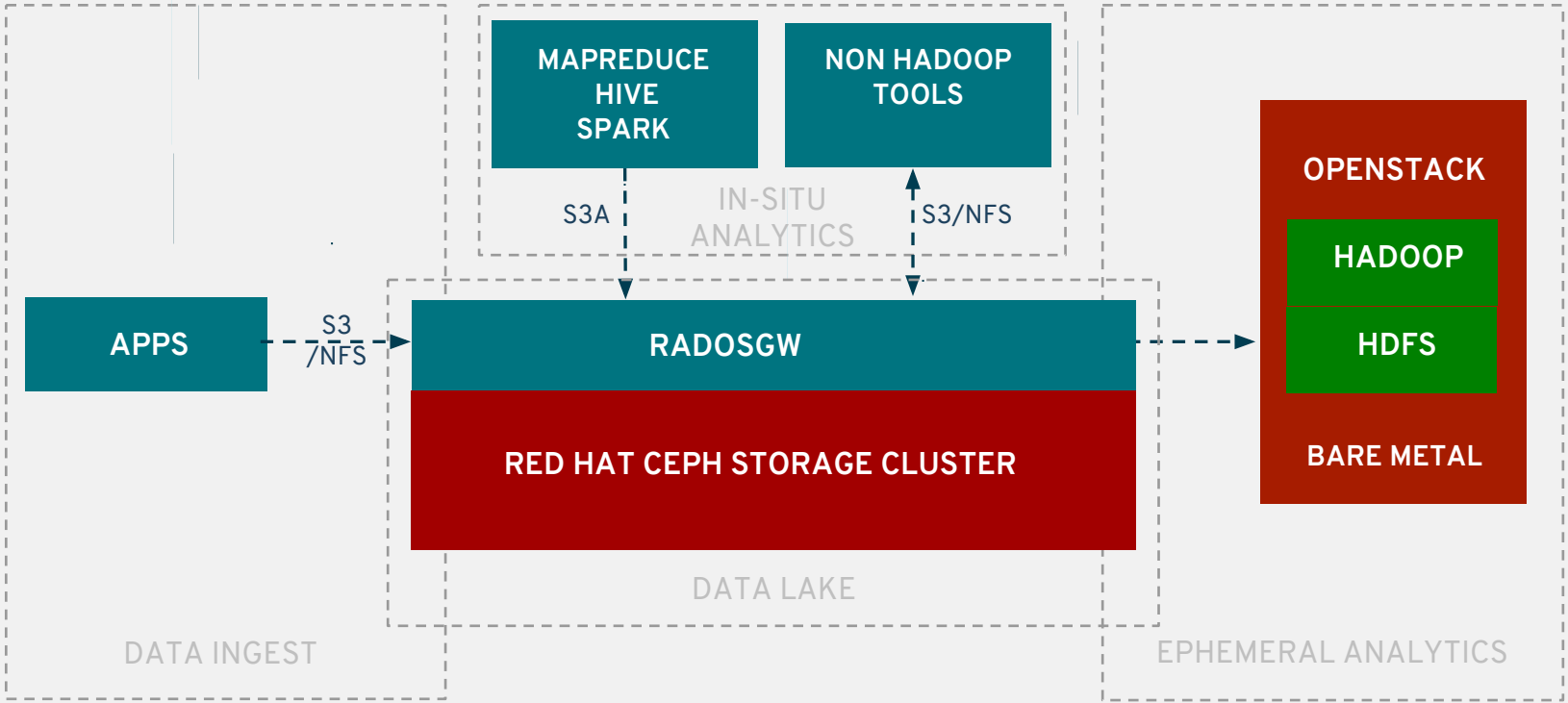
S3A for Big Data



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Next 12 months

RHCS 2.3

August 2016

- Container Support
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RHCS 3.0

- CephFS (GA)
- iSCSI (GA)
- BlueStore (TP)

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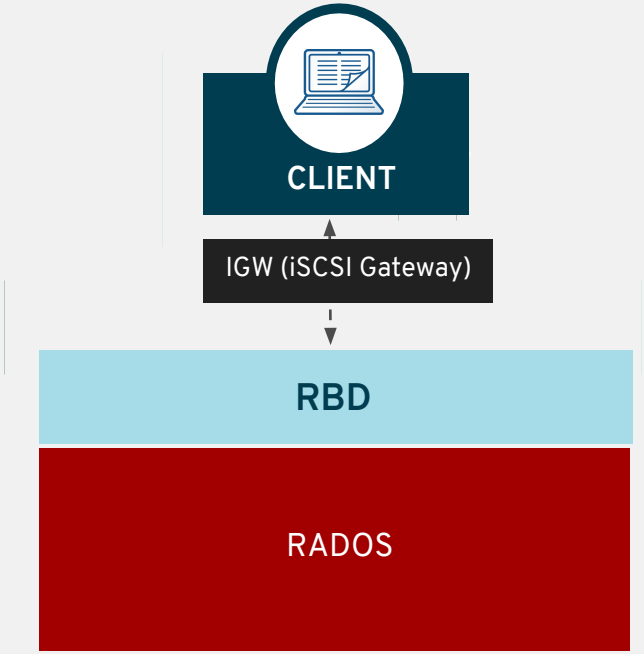
iSCSI



CONFIGURATION SUMMARY

- IGW (Gateways) require RHEL 7.3
- Single Portal per Gateway (node)
- CHAP based authentication
- 2-4 gateways per ceph cluster
- Active/passive multi-pathing (ALUA)
- Ansible based configuration management
- Dedicated or collocated gateways

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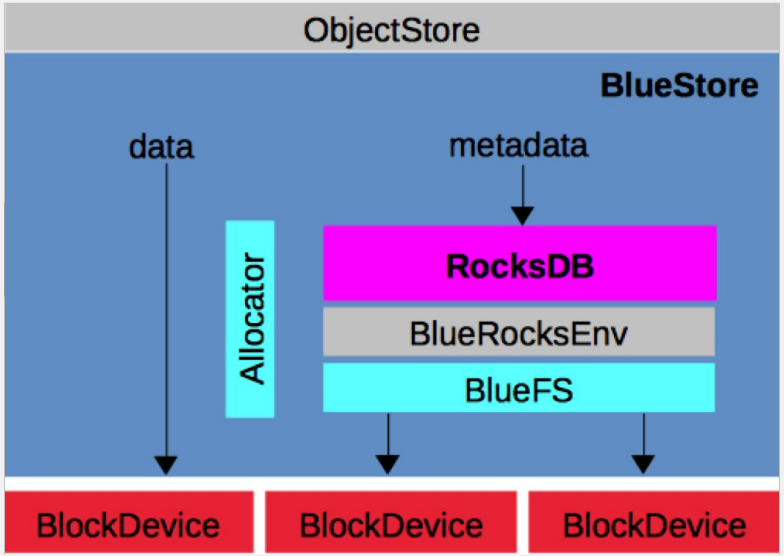
BlueStore



- Removes XFS layer
- 2-3x Performance Boost
- Flexible hardware topologies
- Optimized IO for media type

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OpenStack

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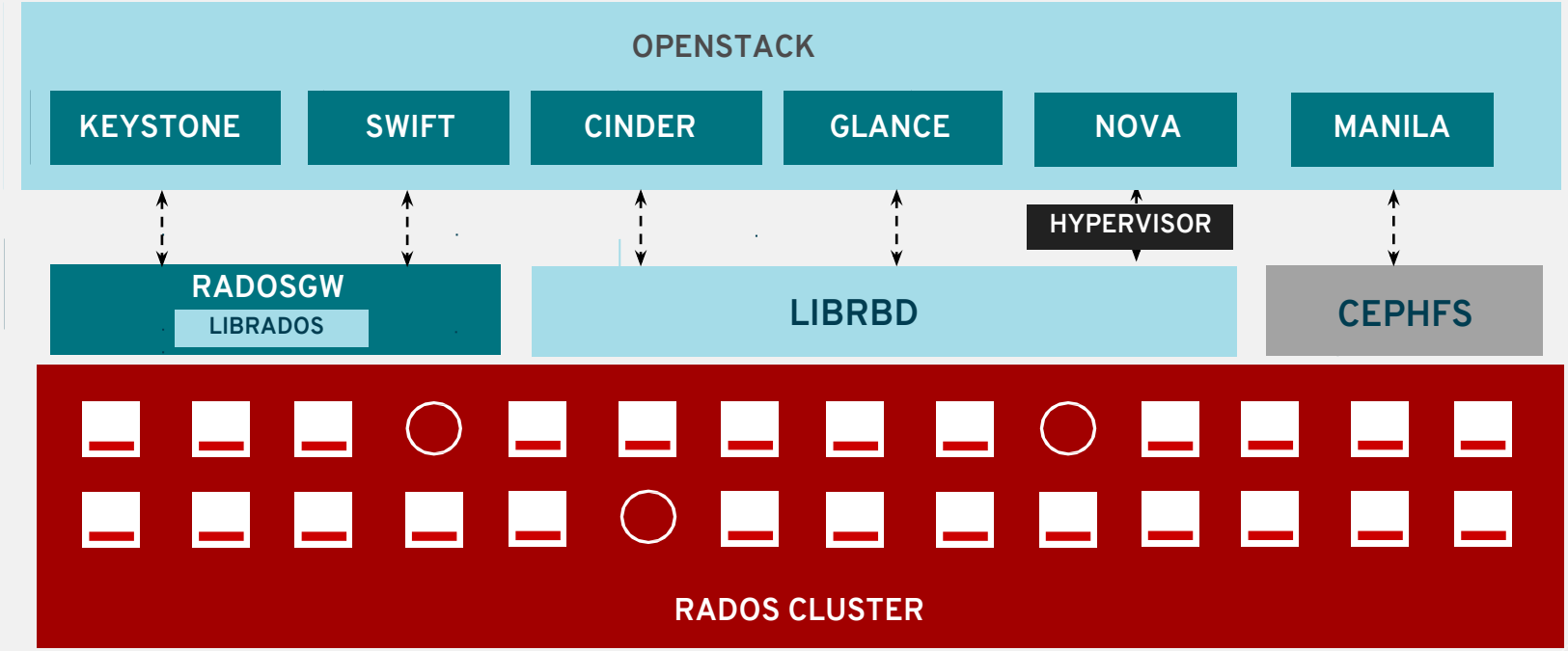
OpenStack



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Red Hat OpenStack

OSP 10

Dec 2016

- OSP Director support for RGW
- Hyper-converged support (TP)
- Manila with CephFS (TP)

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Red Hat OpenStack

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OSP 11

- OSP Director support for
  - Hyper-converged deployments (LA)
  - Dedicated MON nodes
  - Cinder Replication with RBD

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  - Dedicated MON nodes
  - Cinder Replication with RBD

OSP 12

- OSP Director support for
  - Containerized Ceph
- Encrypted RBD volumes
- Manila with CephFS...

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Future

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Upstream

RADOS

- BlueStore
- Block-level caching
- Key Manager integration

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Upstream

RADOS

- BlueStore
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RBD

- Erasure Code support
- iSCSI improvements

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Upstream

RADOS

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RGW

- Metadata Search
- Cloud Tiering
- Encryption

RBD

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Upstream

RADOS
- BlueStore
- Block-level caching
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RGW
- Metadata Search
- Cloud Tiering
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RBD
- Erasure Code support
- iSCSI improvements

CephFS
- Snapshots
- NFS/SMB
- Hypervisor integration

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Upstream

RADOS
- BlueStore
- Block-level caching
- Key Manager integration

RGW
- Metadata Search
- Cloud Tiering
- Encryption

Other
- Kubernetes
- ARM

RBD
- Erasure Code support
- iSCSI improvements

CephFS
- Snapshots
- NFS/SMB
- Hypervisor integration

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RED HAT SUMMIT

Storage Sessions (1 of 3)

Date	Time	Session Title	Speaker	Room
Tuesday, May 2	10:15 AM - 11:00 AM	Red Hat Ceph Storage Roadmap: Past, Present and Future	Neil Levine	157A
Tuesday, May 2	11:30 AM - 12:15 PM	Deterministic Storage Performance: 'The AWS Way' for capacity-based QoS with OpenStack and Ceph	Kyle Bader, Sean Cohen, Federico Lucifredi	154
Tuesday, May 2	11:30 AM - 12:15 PM	Architecting and Performance-Tuning Efficient Gluster Storage Pools	Dustin Black Ben Turner	157A
Tuesday, May 2	11:30 AM - 12:15 PM	Hyperconverged OpenStack and Ceph	John Fulton Andrew Theurer	151A
Tuesday, May 2	1:00 PM - 3:00 PM	Deploy Ceph Rados Gateway as a Replacement for OpenStack SWIFT	Sebastien Han Gregory Charot Cyril Lopez	254A
Tuesday, May 2	3:30 PM - 4:15 PM	Storage Lightning Talks	Asmita Jagtap Mukesh Bafna Abhijit Dey Brent Compton Irshad Raihan	101

RED HAT SUMMIT

Storage Sessions (2 of 3)

Date	Time	Session Title	Speaker	Room
Tuesday, May 2	3:30 PM - 4:15 PM	Building a Fast and Scalable Architectures for SKY TV Video Encoding with OpenShift Container Platform and Red Hat Gluster Storage	Davide Gandino Samuele Dell'Angelo Federico Nebiolo	157A
Tuesday, May 2	4:30PM - 5:15PM	Red Hat Gluster Storage Roadmap: Past, Present and Future	Sayan Saha	156C
Wednesday, May 3	3:30 PM - 4:15 PM	NVMe over Fabrics - High Performance SSD Networked over Ethernet	Rob Davis Ilker Cebeli	157A
Wednesday, May 3	3:30 PM - 4:15 PM	Red Hat Cloud Suite Roadmap	Jesse Wu	154
Wednesday, May 3	3:30 PM - 4:15 PM	Red Hat Storage Console 3: Unified Management of Ceph and Gluster Storage	Jeff Applewhite	156C
Wednesday, May 3	4:30 PM - 5:15 PM	Choosing the Right Storage for your OpenStack Cloud	Sadique Puthen Rahul Vijayan	157A

RED HAT SUMMIT

Storage Sessions (3 of 3)

Date	Time	Session Title	Speaker	Room
Thursday, May 4	10:15AM - 11:00AM	Big data analytics with Silicon Valley Data Science and Red Hat	Brent Compton Stephen O'Sullivan	157A
Thursday, May 4	11:30 AM - 12:15PM	Container-Native Storage for Modern Applications with OpenShift and Red Hat Gluster Storage	Sayan Saha Michael Adam	157A
Thursday, May 4	3:30 PM - 4:15 PM	OpenStack and Ceph at Scale	Ben England Jared King	157A
Thursday, May 4	3:30 PM - 4:15 PM	Schiphol Airport: Sharing the experience of running a multicloud OpenShift integration CPaaS with API management in production	Mechiel Aalbers Roel Hodzelmans	157B
Thursday, May 4	3:30 PM - 4:15 PM	Operating and introspecting an open cloud	Orran Krieger Peter Portante	153A

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RED HAT SUMMIT

Discovery Sessions/Panels

Date	Time	Session Title	Speaker	Room
Thursday, May 4	4:30pm - 5:15pm	Modernizing Storage Infrastructure with Open Scale-out Storage	Wolfgang Schulze	Services Showcase - Exhibit Hall A

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