RED HAT SUMMIT

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Enabling the Data Driven Enterprise

The right platform for your open source workloads

Matthew Curley
Hewlett-Packard Technologist, Enterprise Group
Density Optimized Servers
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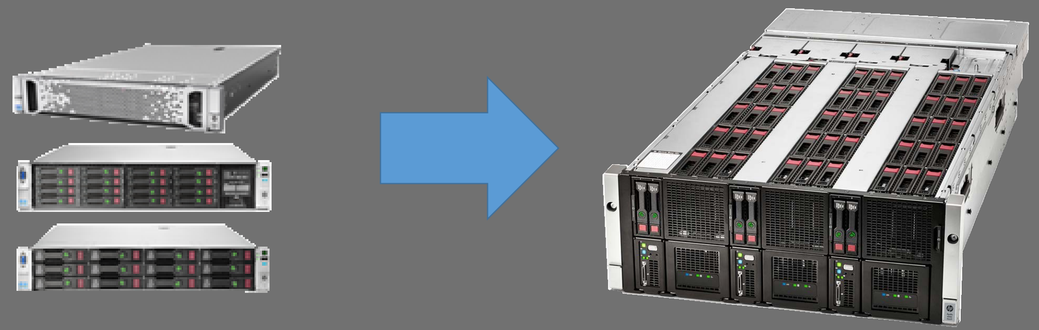
Main content

Why the HP Apollo 4000 Series



HP and Red Hat help optimize value of open source deployments

Apollo 4000 solution use case: HP Servers is investing in Ceph

Introduction

ISS/Density Optimized Servers

- My focus around dense storage solutions

Scale-out storage solutions on industry standard hardware

- Big Data and object storage

Commercial and open source solutions

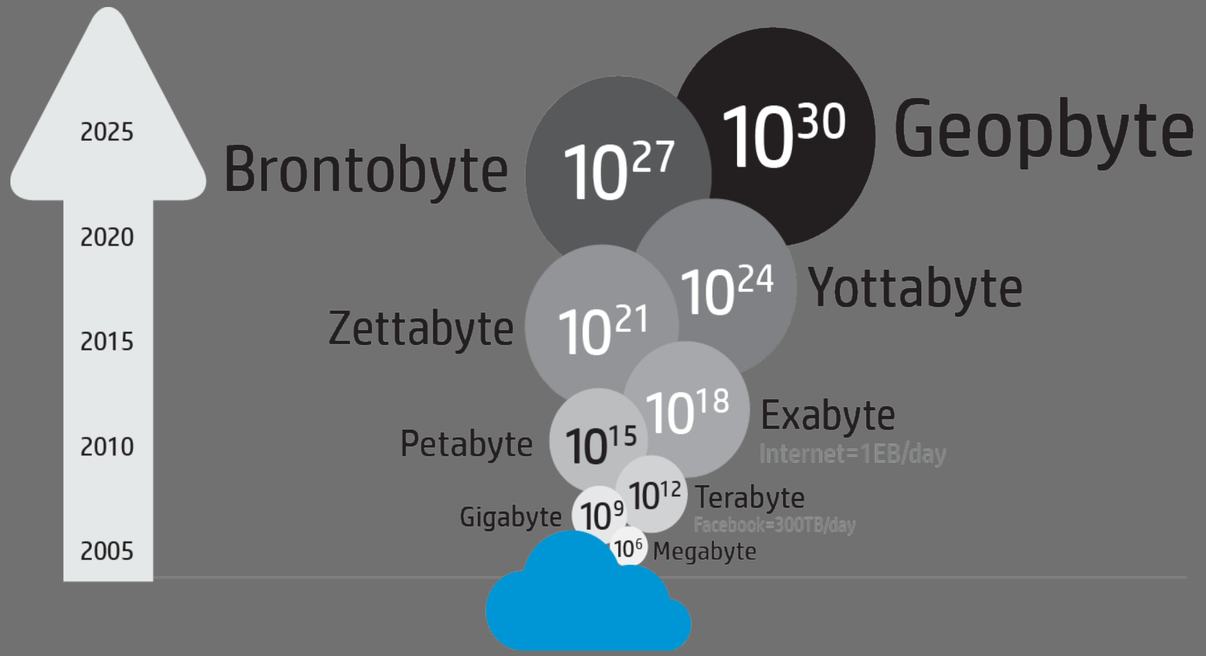
- Open source important to enterprise customers & HP

Overview

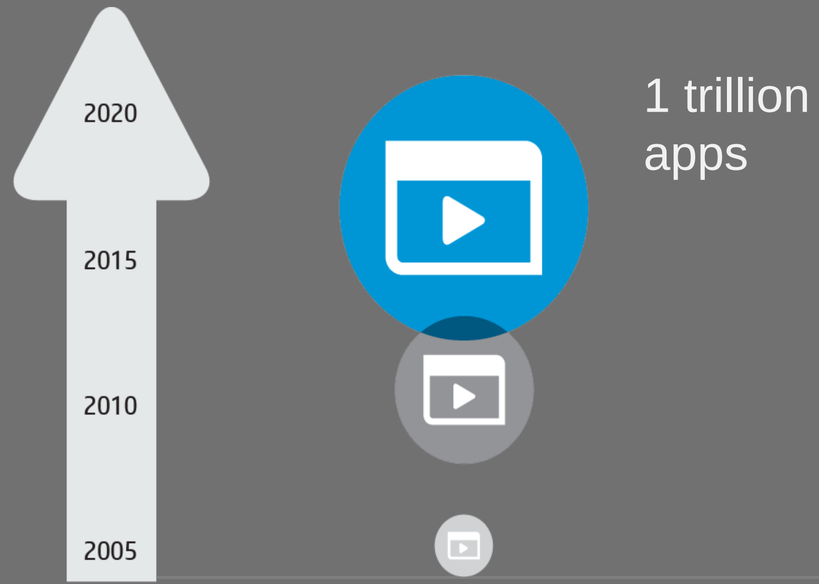
Data growth and IT complexity soaring

A new approach for speed, agility, and security needed

Data explosion

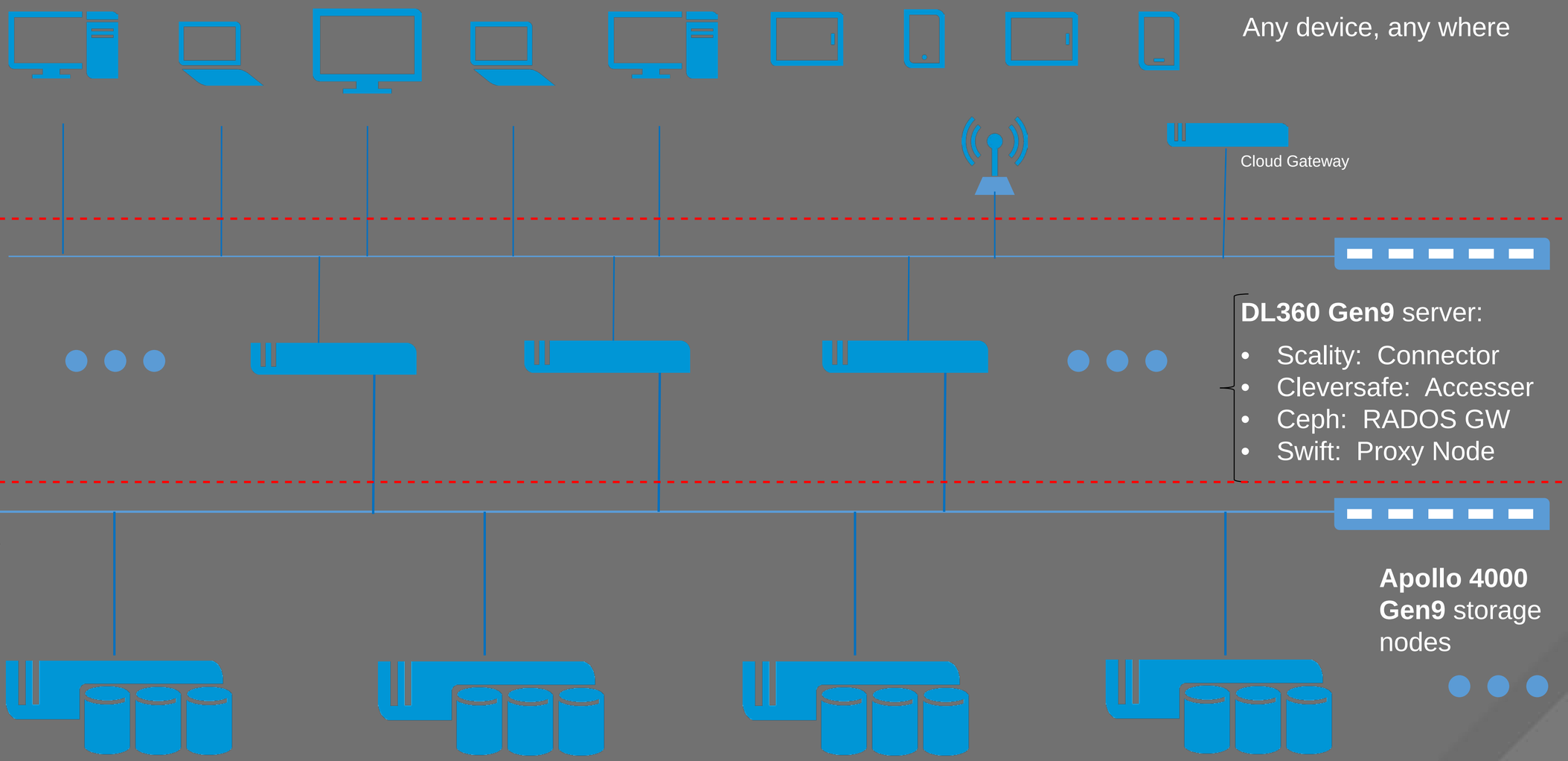


IT complexity



Object storage environment architecture

Storage on servers



Scale-out storage solution categories

From most to least open source control

ceph

RED HAT STORAGE

HP Helion

HP Helion Content Depot

SwiftStack

SCALITY

cleversafe

VSA

Open Source Community Versions

- Dynamic development cycles
- Large amount of packages
- Community driven
- Little to no software cost
- Not all features Enterprise Ready
- No support included
- No HW/SW certifications

Enterprise-ready Distributions

- Selected packages
- Based on Open Source
- Additional commercial packages
- Contribute back to the Open Source community
- Charging for support and some additional features
- Integrated Solutions
- Reference Architectures
- Certification ecosystem with ISVs and OEMs

Proprietary

- Proprietary algorithms
- In-house software development
- Special modules for Standards
- Significant license and support cost

HP Apollo 4000 Family

Better industry-standard building blocks at scale

Outgrowing 12 drive, 2U

At large scale, you need improved $/GB **and** GB/Rack U

But it’s more then just stuffing drives in a chassis

HP ProLiant DL380

Apollo 4000 System

Density Optimized Storage Servers

Choosing a dense storage building block

CPU Density

Drive Density

Apollo 4530 Gen9

3 compute nodes in 4U
up to 15 LFF and 2 SFF hard drives per node.

Apollo 4200 System

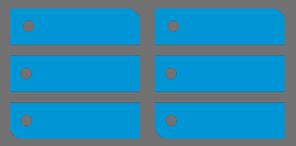
1 Compute node in 2U
Up to 28 LFF or
50 SFF Hard Drives

Apollo 4510 Gen9
(available 8/17/2015)

1 compute node in 4U
up to 68 LFF and 2 SFF hard drives.

Key HP Differentiators

Why Apollo 4000 family is a better fit for scale-out solutions



Footprint

Storage & rack density

Cost

Reduced TCO vs typical white box building blocks

Performance

More throughput

More slots & qualified options

Security

HP Secure Encryption

FIPS 140-2 on standard drives

Apollo 4500 Gen9

Purpose built for Big Data and Scale-out Storage Applications

Density optimized

Up to 30 nodes per rack or ~5.4 PB per 42U rack

Configuration flexibility

Compute, Storage, and Networking

Shared Chassis Resources

Power, cooling, management

Gen9 improvements

4U Chassis; New drive carrier

5 I/O slots; 4 standard PCIe and 1 FlexibleLOM

Socket R (vs Socket B in Gen 8)

Optional H or P series controller option for two boot drives

Additional support for M.2

1 x 60+8

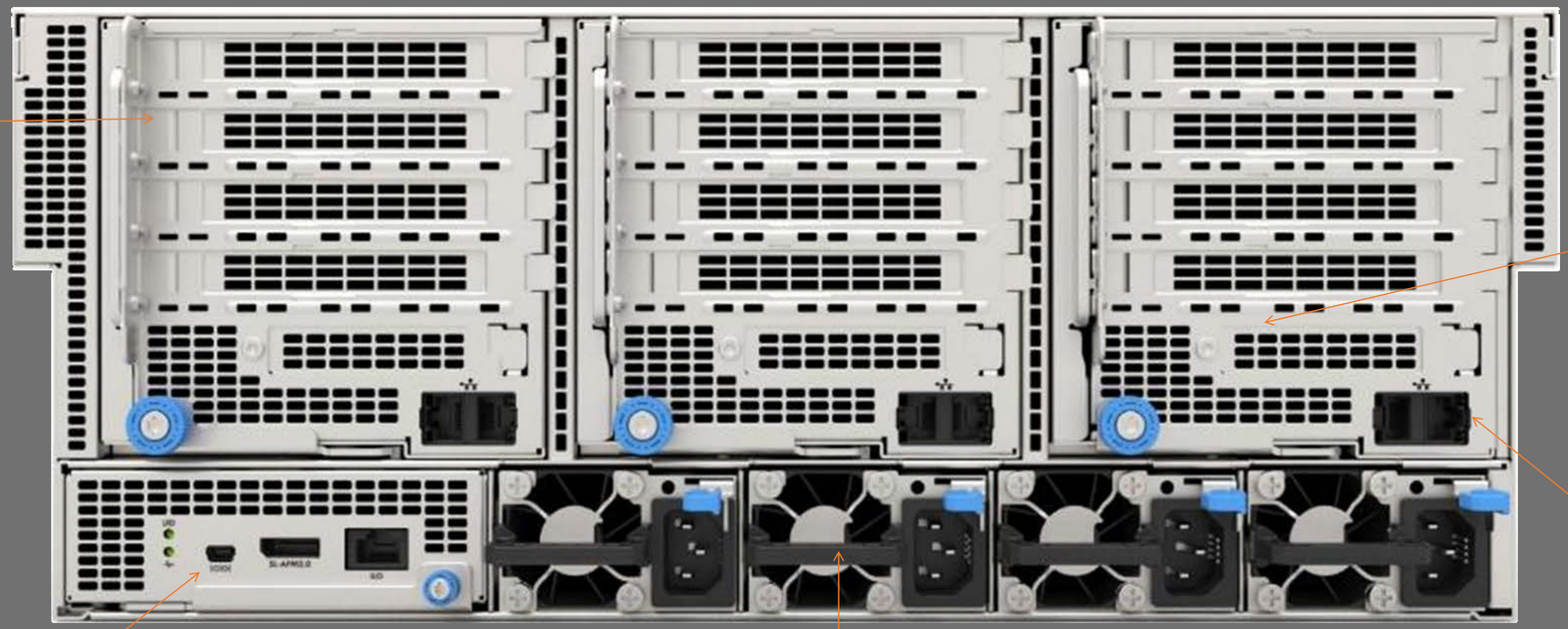
3 x 15

Apollo 4500 Gen9

Apollo 4530 rear view

4 PCI Express Gen 3 slots

- 4 FHHL x8
- 1 x8 slot w/drive controller



FlexibleLOM

2x1Gb NICs Embedded

Management module

- Shared iLO port goes to 1Gb
- Support for new enhanced SL-APM

Gen 9 power supplies

- Choice of AC or DC supplies

Apollo 4200 Gen9

Scale-out storage in a tried-and-true size

Density optimized

- Up to 1000 SFF drives or ~3.36 PB per 42U rack

Datacenter Standards

- 2U form factor, fits in 1075mm rack
- 24 Front-loading & 2-4 rear cage hot plug drives.

Gen9 Features

- Up to 8 I/O slots, 7 PCI and 1 FlexibleLOM
- Socket R
- Optional H or P series controller option for two boot drives
- Additional support for M.2
- Same new drive carrier as Apollo 4500 Gen9

24+4 LFF

48+2 SFF

Apollo 4200 Gen9

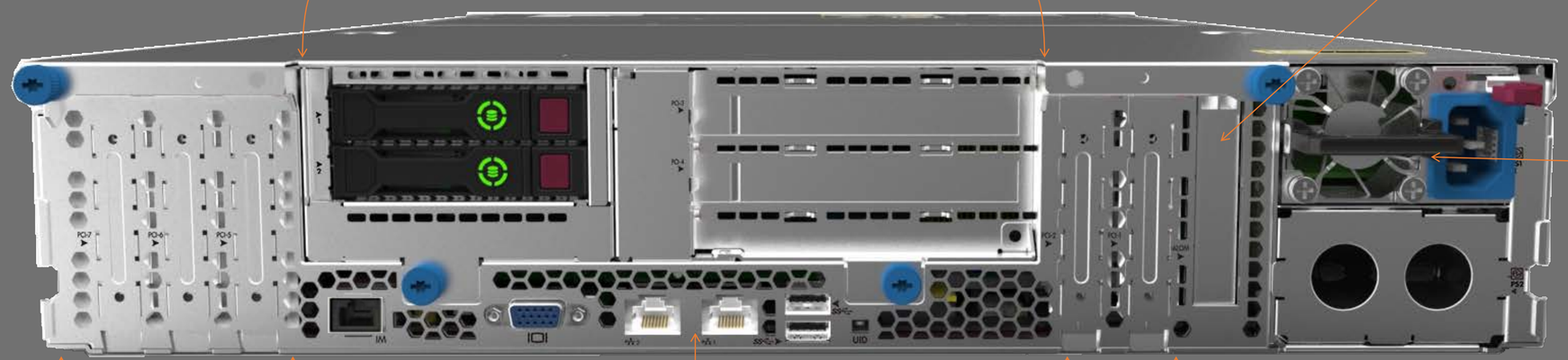
Rear view

Rear Drive Cage Kit

2 SFF + 2 FHHL x8 slots (shown)

Or 4 LFF

FlexibleLOM



Gen 9 power supplies

Choice of AC or DC supplies

CPU #2 Slots

HHHL x16, x8, x16

2x1Gb NICs Embedded

CPU #1 Slots

HHHL x8, x16

Building a better solution with Open Source On HP servers and Red Hat software

Extending a proven partnership for success

Market Development

Certification, Integration, Support

Superior Results:
Most servers and storage certified
Leading benchmark results

Superior Experience:
Over 4,000 Linux Service Professionals x86 server Linux market share leader

14+ years

Our Alliance

Superior Alignment: Partnering to deliver the future of computing

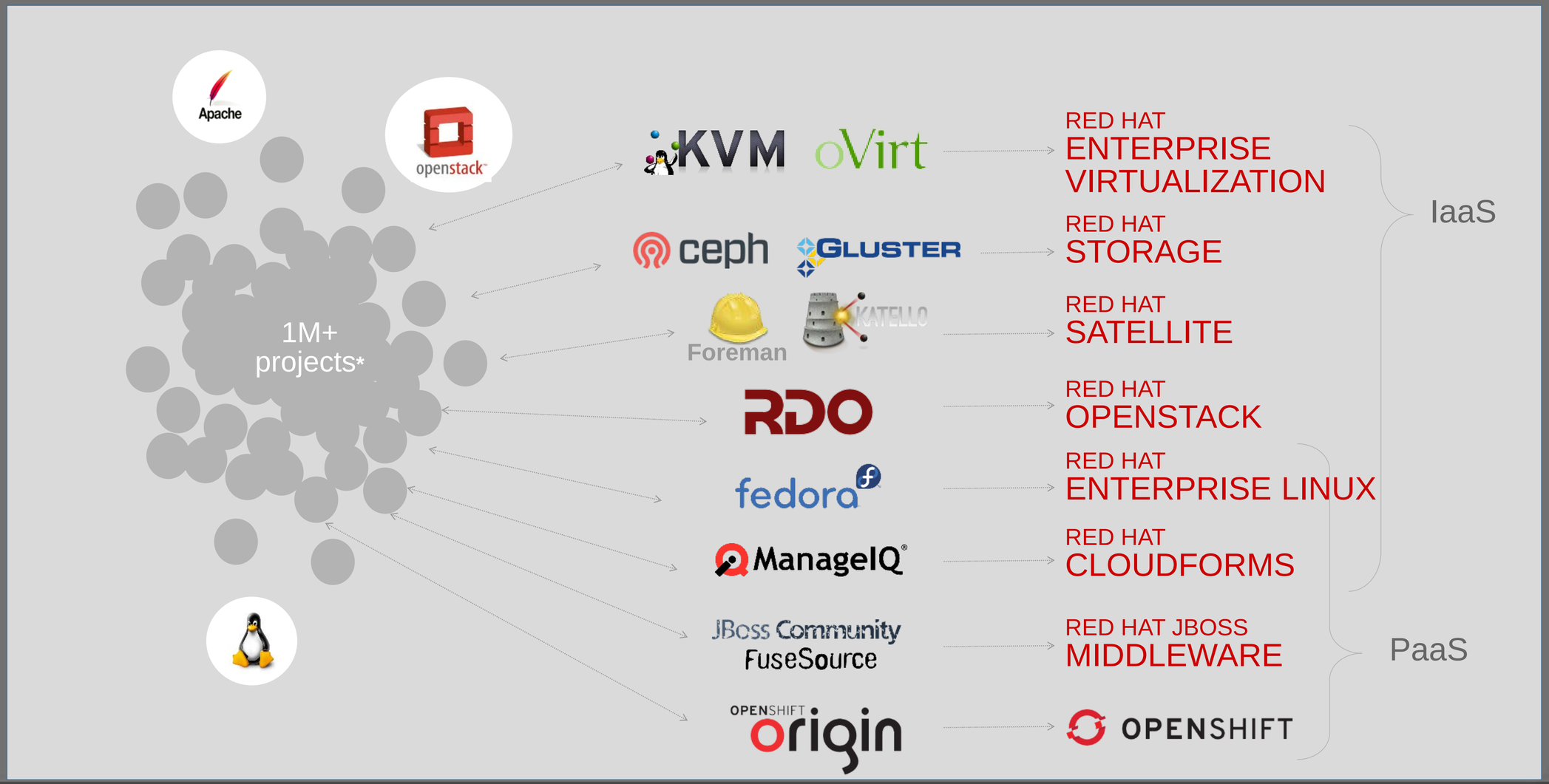
Open Source and Open Standards Innovation

Our Customers

Superior Commitment:
More customers run RHEL on HP servers than any other platform

Strategic Development

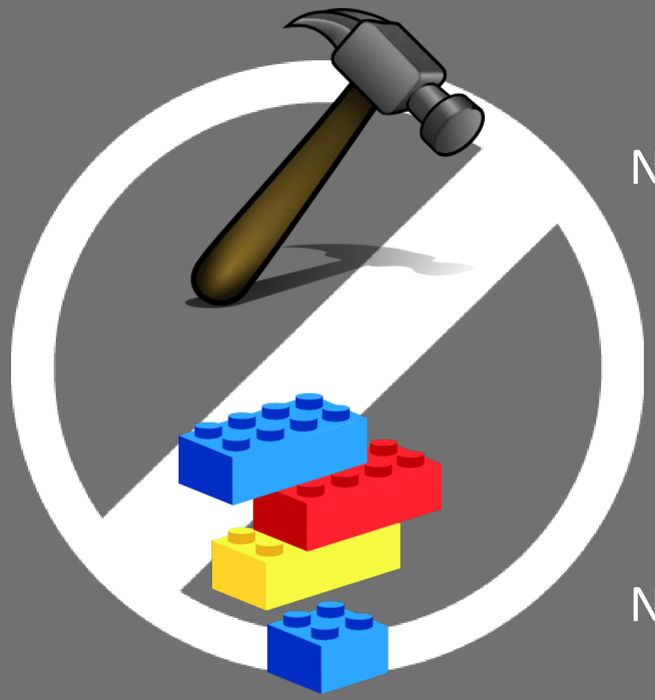
Open source to the enterprise



Why invest in open source solutions

Enterprise scale-out storage customers want a flexible, powerful tool

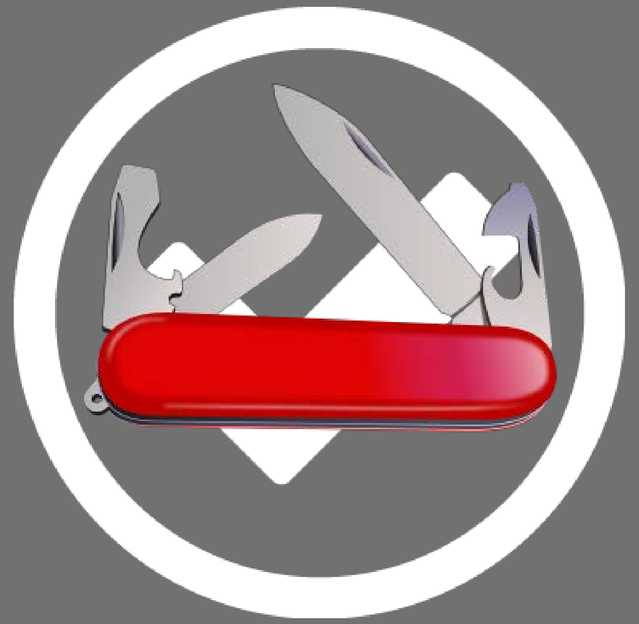
As well as support that works with how they use it



Not ‘one function’

Not completely DIY

The right set of functions



Red Hat storage differentiators

Based on open source

- Customers can extend / modify the solution
- Open API allows easy implementation and adaption in application layer

Backed by Red Hat

- Well-known partner to HP with established processes
- Proven support and well-known in the field

No design trade-offs

- The right solution to the right problem
- No inflexible one-size fits all approach

Based on Red Hat Enterprise Linux

- Together with HP servers the most and best selling server-OS combination

Red Hat Storage and HP Apollo Servers

Business outcomes

Reliable performance

Workload-optimized platforms with right-sized availability, management features, and data protection.

Unmatched scalability

High-density compute and storage, with the ability to independently scale components up or out.

Red Hat Storage and HP Apollo Servers

Business outcomes

Faster time-to-value

Purpose-built solutions eliminate months of planning and design.

Reduced risk

Partners committed to a mission-critical x86 architecture and long-term, customer-focused roadmap.

Lower cost of ownership

Affordable, workload-optimized, scalable industry standard platforms and open solutions.

HP Servers Investment in Ceph

Ceph

Brief overview

Open Source
Community Version

Object Storage cluster

Inktank key developer, acquired by Red Hat in April 2014.

- Supports object, block, and file* access models
- VM Storage on block, cloud, and tenant object storage are key current use cases.
- Can integrate with OpenStack.

Enterprise-ready Distribution

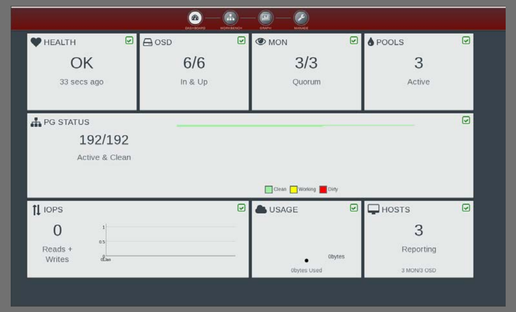
* File is available, but not fully enterprise-ready today.

HP is investing resources in Ceph

Staffed engineering team, 100% upstream contribution focus

Help advance Ceph installation, operation, and performance experience
Red Hat & open source community supporting collaboration

Management



Deployment, provisioning, configuration management

Cluster reference architectures and performance improvements

Cluster Management

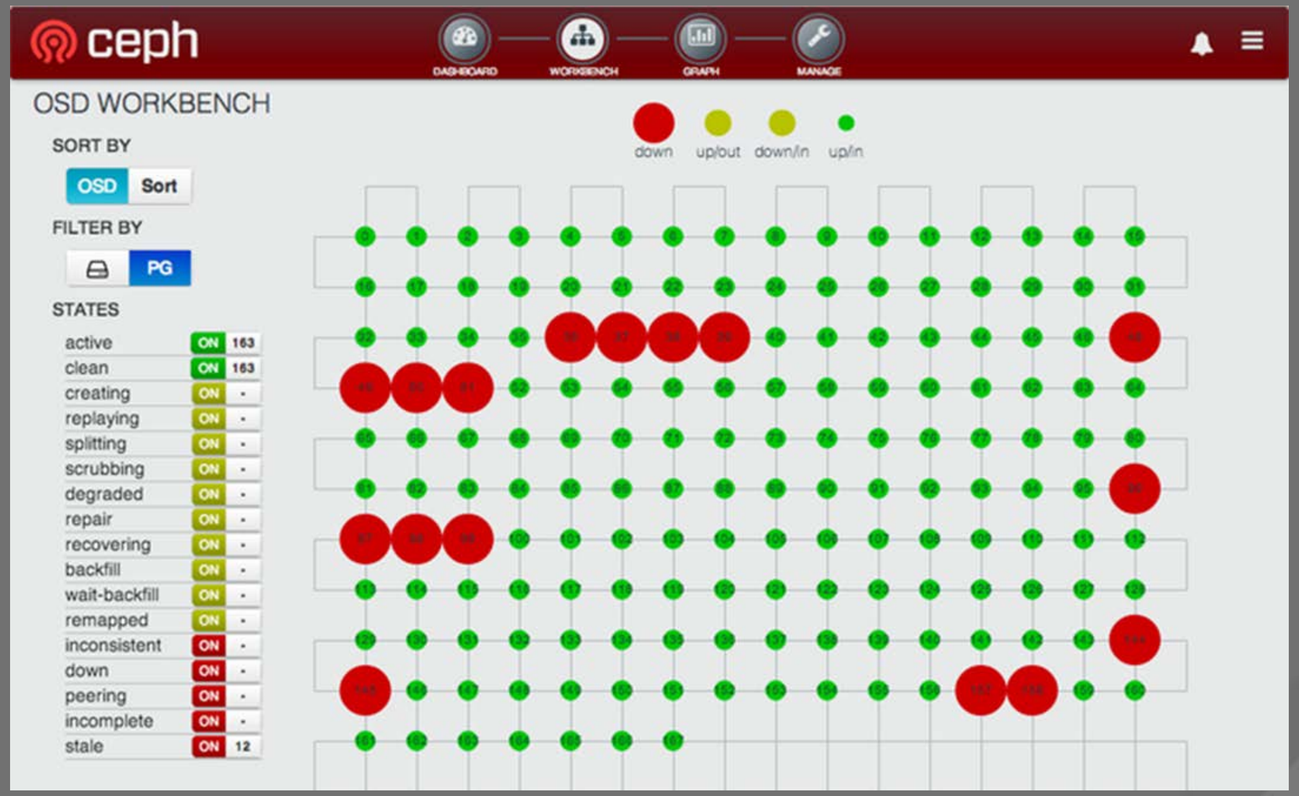
Need: better ways to map cluster state and decisions to the hardware it runs on. Integrate HP's hardware knowledge into cluster management.

First step: helping design this integration on Ceph

First functional goal: blink drive LEDs when a Ceph OSD fails.

Future work ideas:

- Query drive health data
- Query controller management tools
- GUI buttons for LED toggling.
- Fetch vendor specific IPMI/BMC information.



Provisioning and Configuring Ceph

Bare metal/VM life cycle tool

Configuration management utility

Need: an easier way to go from factory hardware to running Ceph cluster

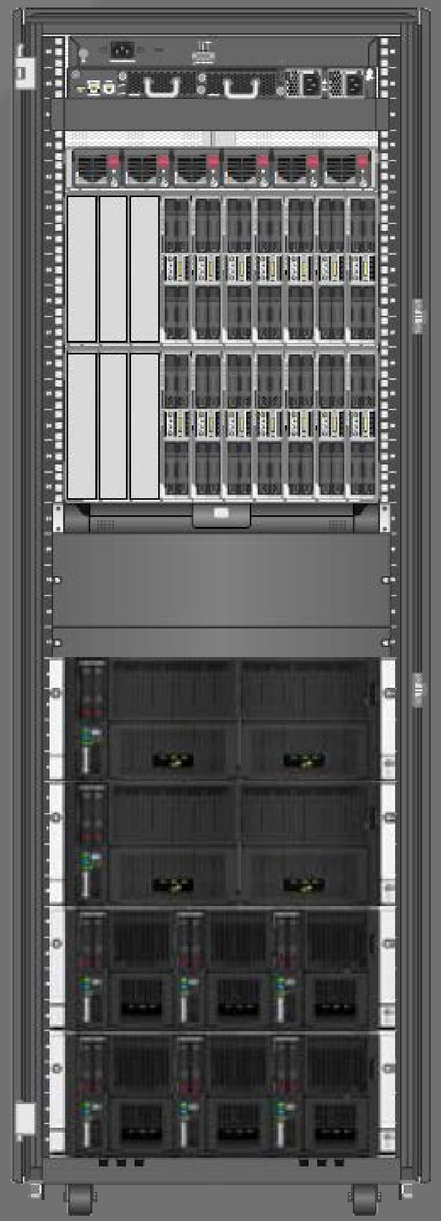
First step: improve our own lab deployment and lifecycle management story

First functional goal: Foreman to configure our hardware, Puppet to set up Ceph.

User experience:

- Contributions here make deploying on HP hardware easy for customers
- Helps enforce proper/optimal configurations
- Foreman/Puppet aligned with RH story

Future work can help build more complicated Ceph configurations, or best practice modifications to operating clusters. Also leverage on other solutions



Building better clusters

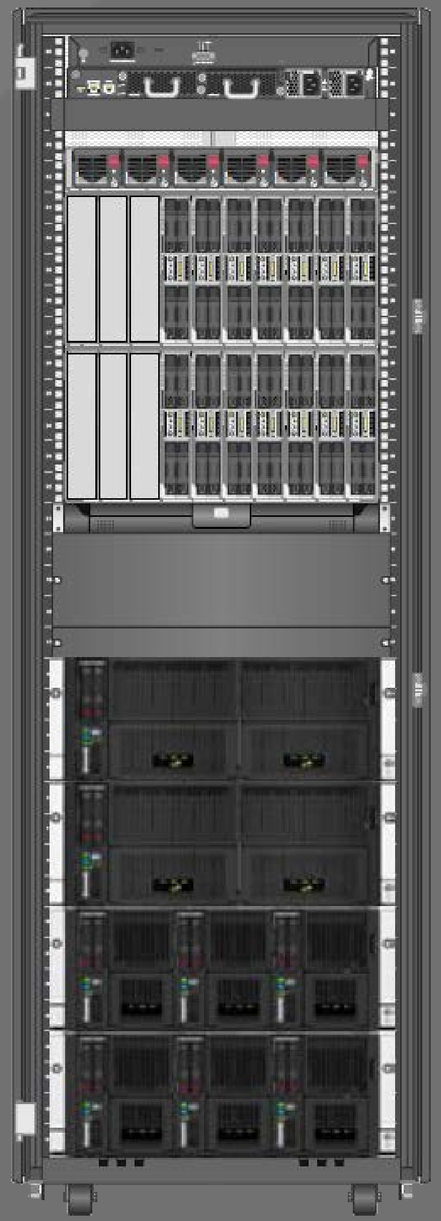
Need: ability to recommend the right hardware for a customer purchase

First step: Engineering team to build process around evaluating HP hardware portfolio.

First functional goal: Build common scale/performance case templates.

Future work areas:

- Continue testing configurations of interest to user community, share results and use as input to builder tools.
- Build better reference architectures and technical guidance.



Building better clusters

Need: performance to reach more use cases

First step: Code investigation around storage performance (focus on OSD).

First functional goal: Source base knowledge, relevant profiling data, initial small performance pulls/contribution.

Future code work around technologies that reduce latency and improve density.

HP Helion and Ceph

HP Helion Content Depot

Uses Ceph for block/object storage in an Open Stack private cloud solution

Reduce installation and management complexity, no code customization

Focused use case improves qualification, enables targeted value-add features

DO Servers teams are platform consultants

- Our performance evaluation and product improvements roll back to open source.

Thank You

Enabling the Data Driven Enterprise

Apollo 4000 and Red Hat Software
the right platform for your open source workloads

Visit our website: www.hp.com/go/objectstorage

Questions?
- Hyperscale Storage Ecosystem: bigdataecosystem@hp.com
- SL4500 / Apollo 4000: Apollo4000@hp.com

LEARN. NETWORK.
EXPERIENCE OPEN SOURCE.