



redhat

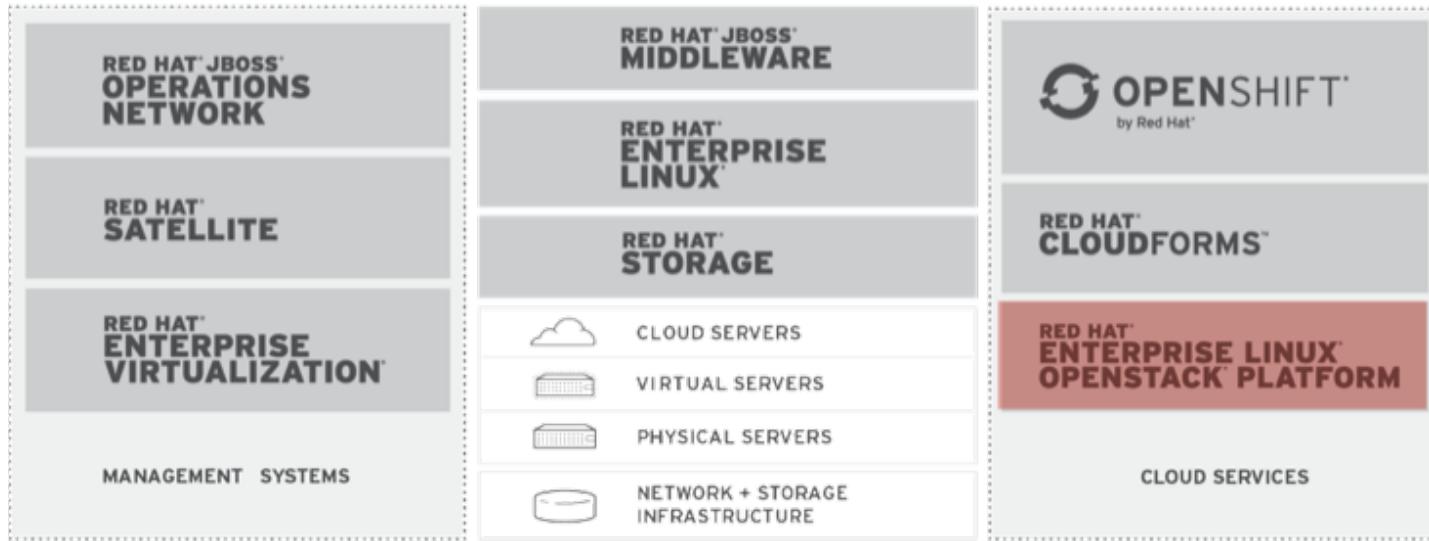
Red Hat Enterprise Linux OpenStack Platform

Overview

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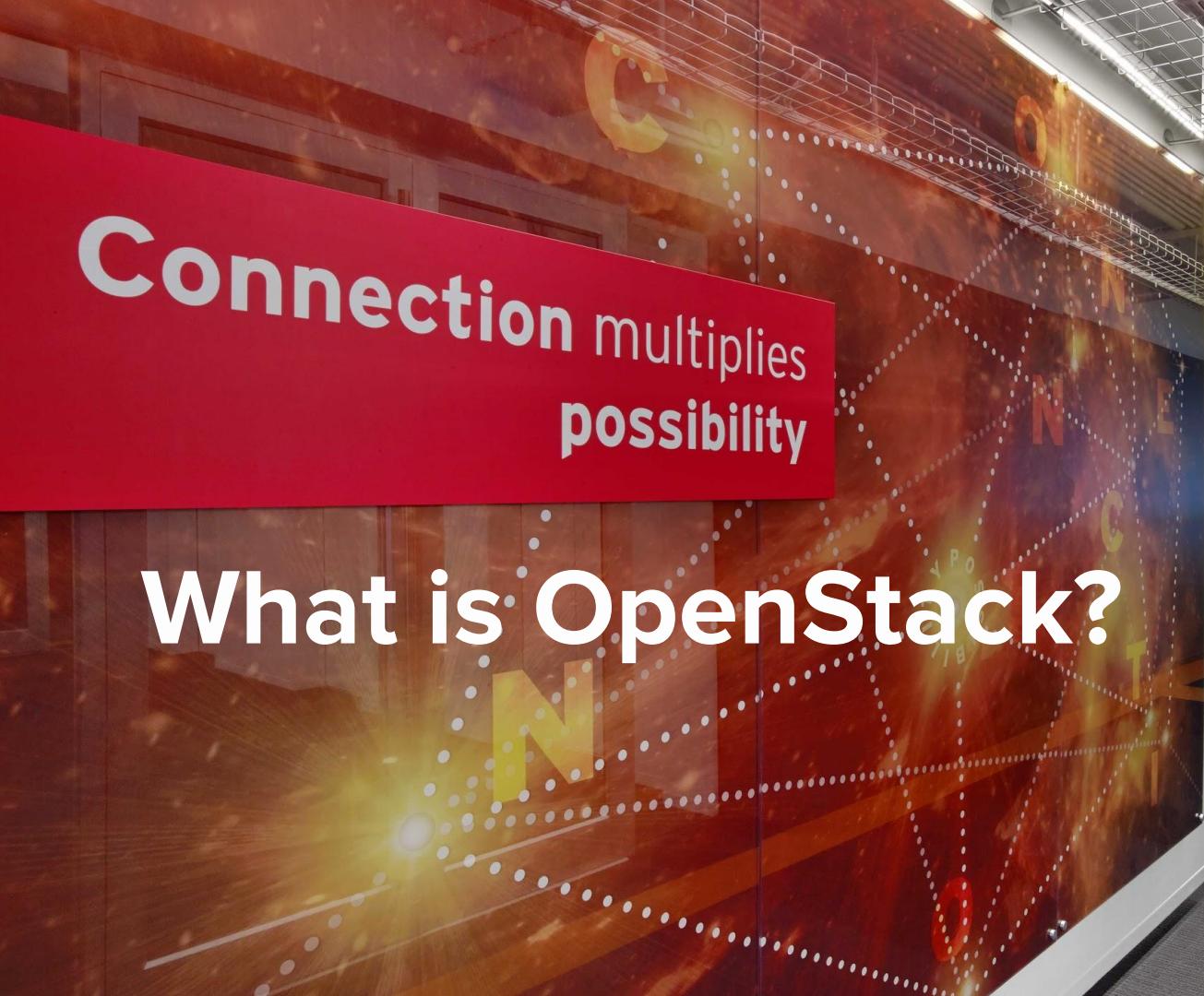
January 27
2015

Red Hat Product Portfolio



Agenda

- What is OpenStack?
- OpenStack Architecture
- RHEL OpenStack Platform: from Community to Enterprise
- What's coming in RHEL OpenStack Platform 6
- Red Hat and Cisco OpenStack partnership
- Useful links and resources



Connection multiplies
possibility

What is OpenStack?



GROW

What is OpenStack?

- Fully open-source cloud “operating system”
- Comprised of several open source sub-projects
- Provides building blocks to create an IaaS cloud
- Governed by the vendor agnostic OpenStack Foundation
- Enormous market momentum



Why does the world need OpenStack?

- Cloud is widely seen as the next-generation IT model
 - Agile and flexible
 - On demand consumption
 - Self service
- Not all organizations are ready for public clouds
- Applications are being written differently
 - More tolerant of a failure
 - Making use of scale-out architecture

How does OpenStack fit in?

- A cloud-like IaaS platform
 - Internal private cloud
 - Test and Dev environments
 - Public Cloud Service Provider for compute, storage, and network
- Scale-out platform for cloud-enabled workloads
 - Web-scale applications (e.g., NetFlix)
 - Academic, research or pharma workloads
- Platform of choice for Network Functions Virtualization (NFV)

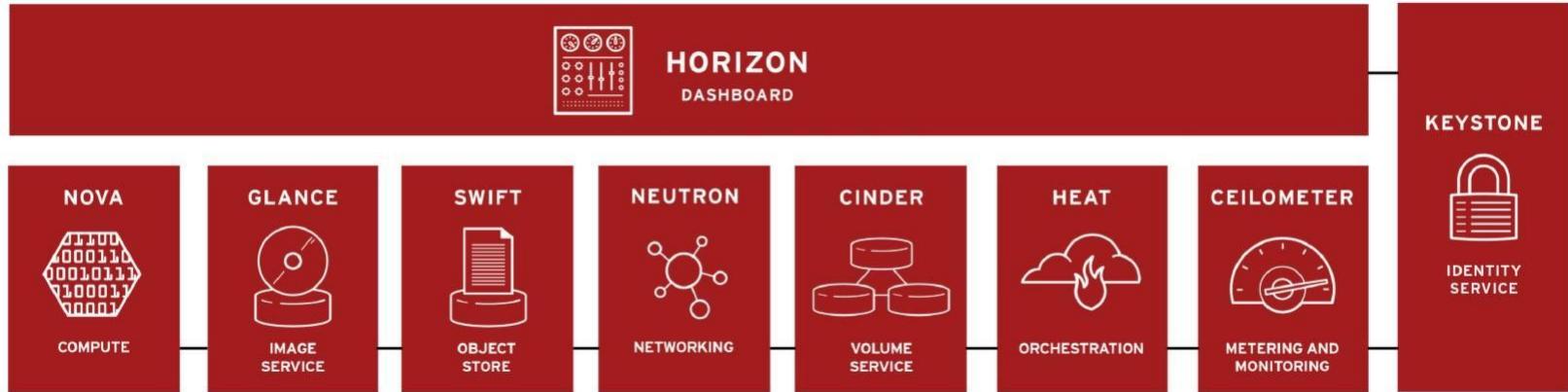


OpenStack Architecture

Disruptive is productive

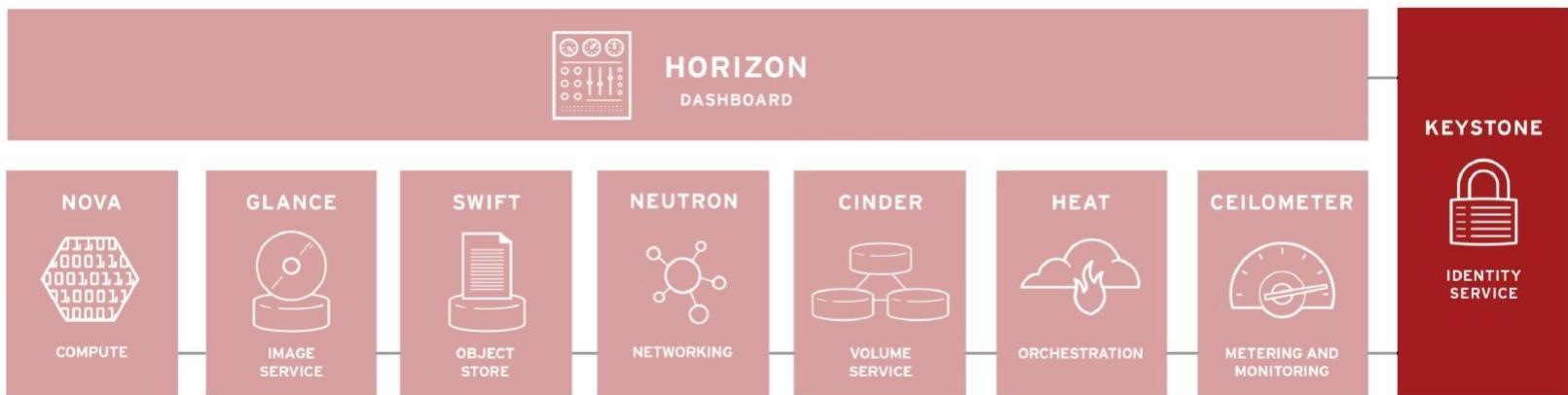


OpenStack Architecture



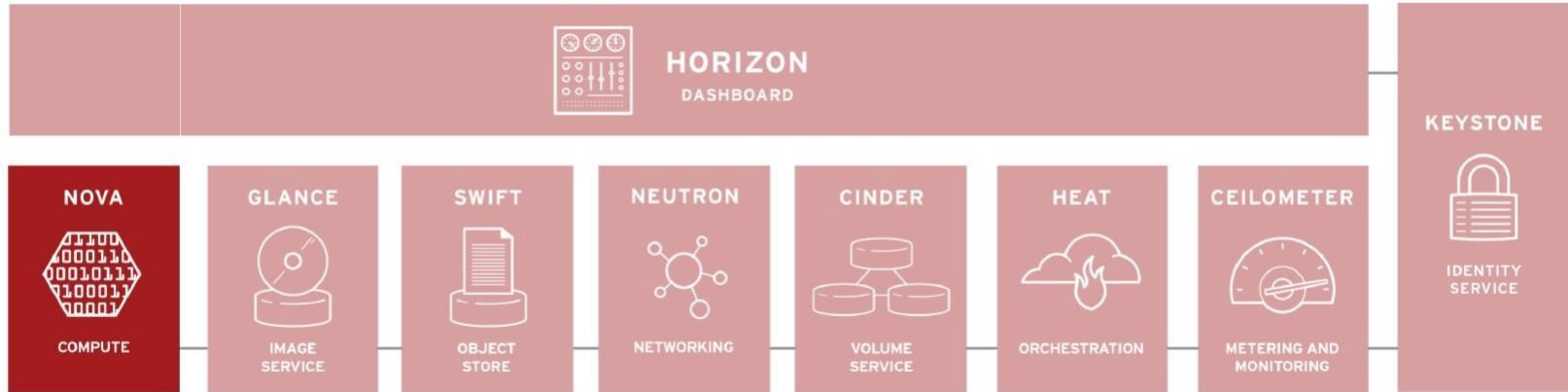
- Made up of individual autonomous **components**
- A framework, relies on drivers and **plugins**
- Heavily dependant on **Linux**

OpenStack Identity (Keystone)



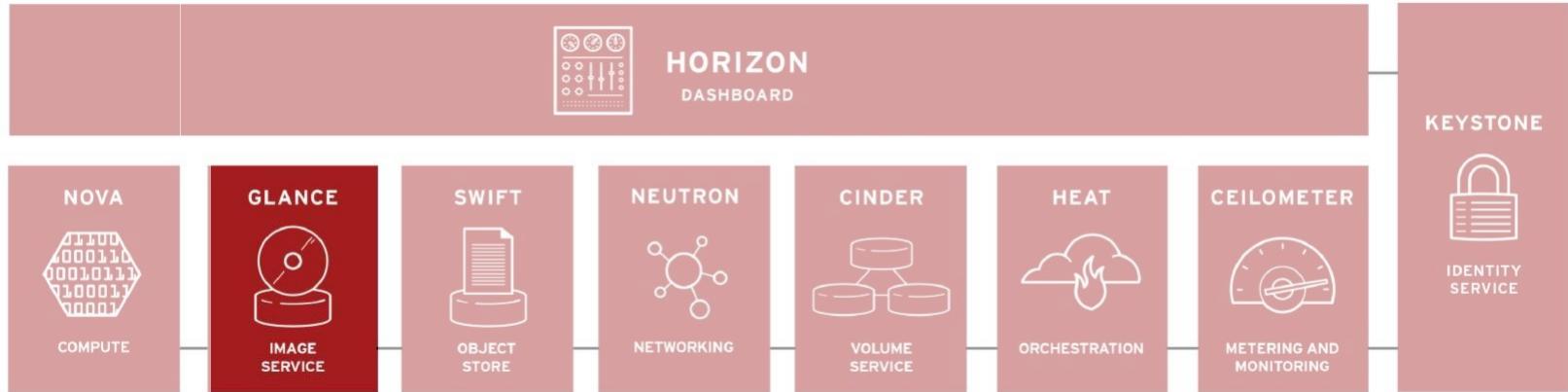
- Common authentication and authorization store
- Responsible for users and to which projects they belong to
- All OpenStack services rely on Keystone to verify user requests

OpenStack Compute (Nova)



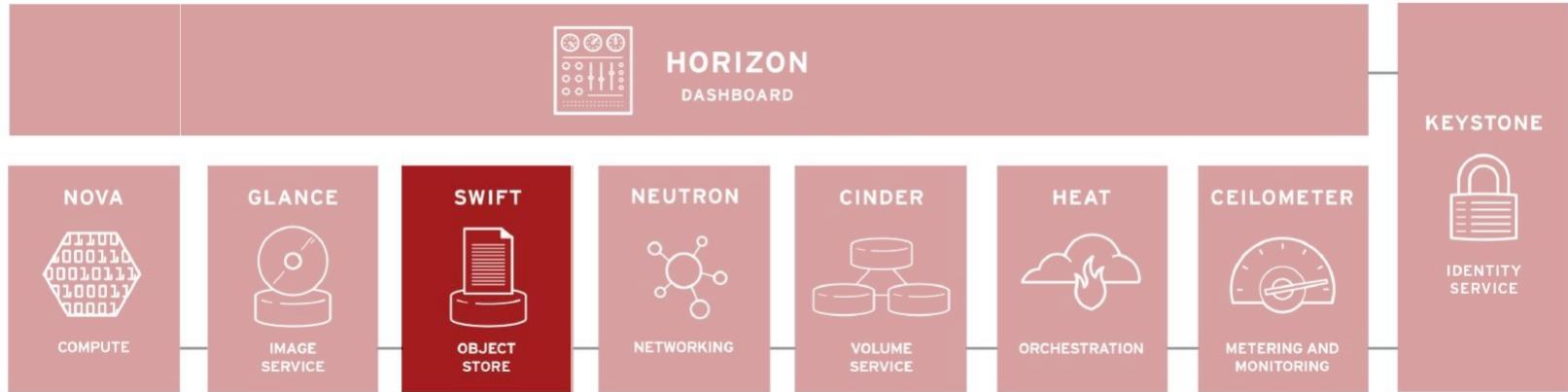
- Responsible for the lifecycle of running instances
- Manages multiple hypervisor types via drivers
 - e.g., Red Hat Enterprise Linux with KVM

OpenStack Image (Glance)



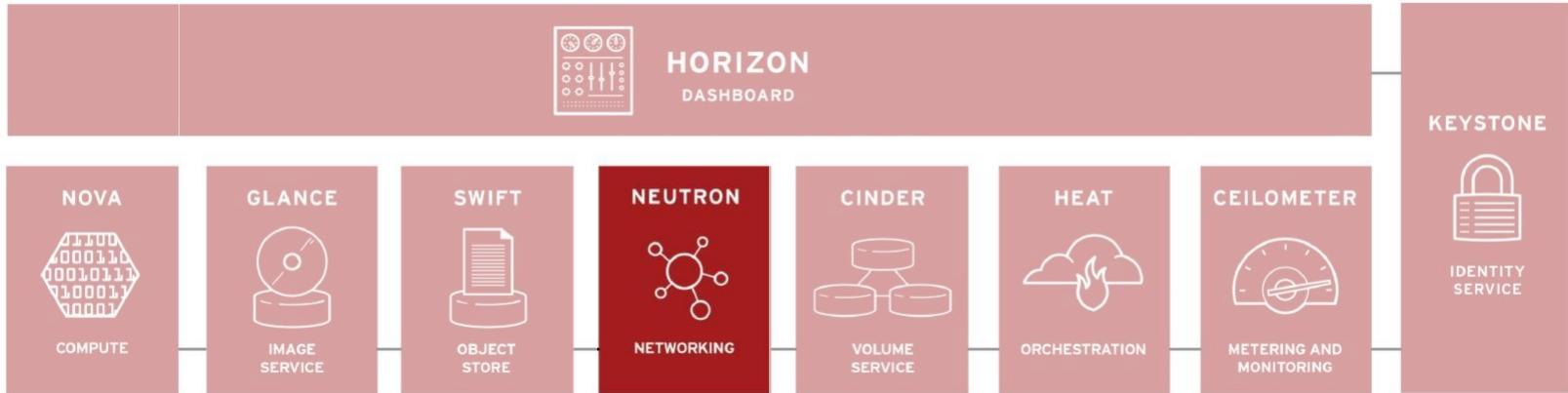
- Storage and retrieval of disk images/templates
- Supports a large variety of image formats (e.g., qcow2, vmdk)
- Different backend storage options (e.g., NFS, Ceph)

OpenStack Object Store (Swift)



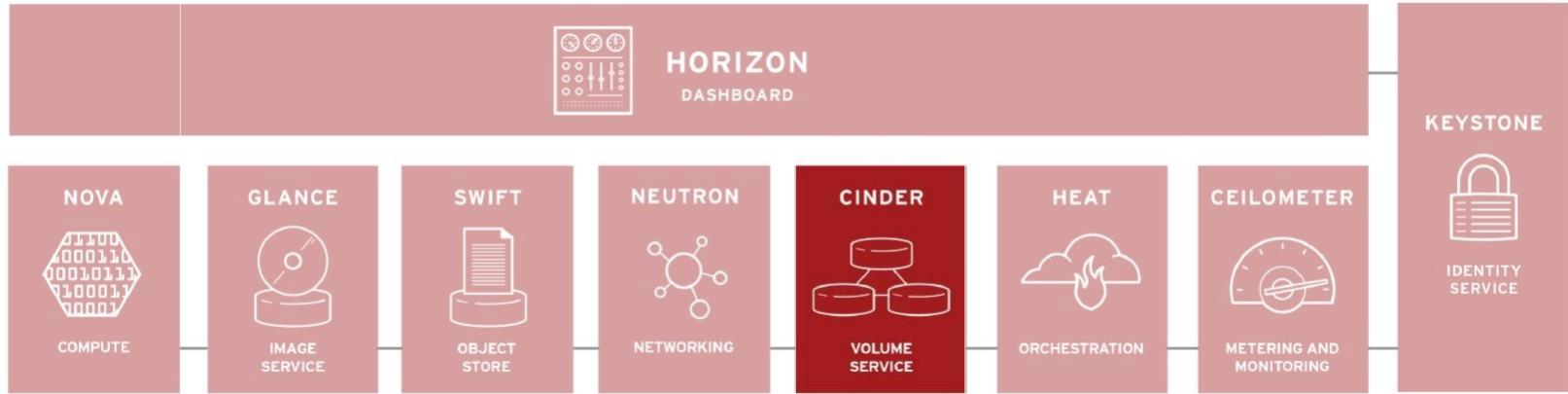
- Storage and retrieval of arbitrary unstructured data
- Provides object based interface via REST API
- Replication, self-healing and load-balancing

OpenStack Networking (Neutron)



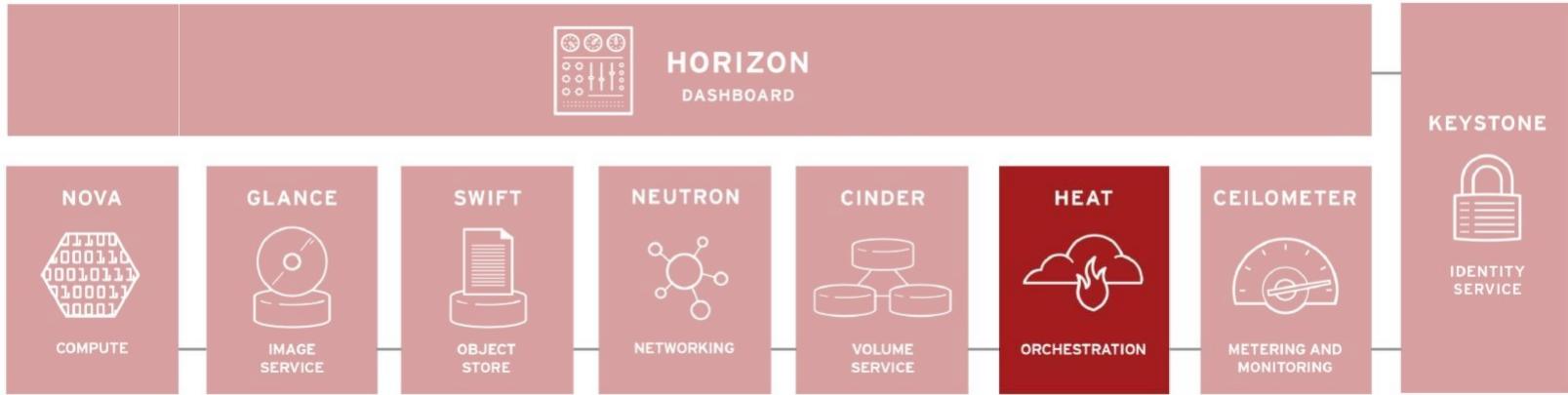
- Everything networking to instances running within OpenStack
- API for defining, configuring, and using networks
- Relies on a plugin/driver architecture for implementation

OpenStack Volume (Cinder)



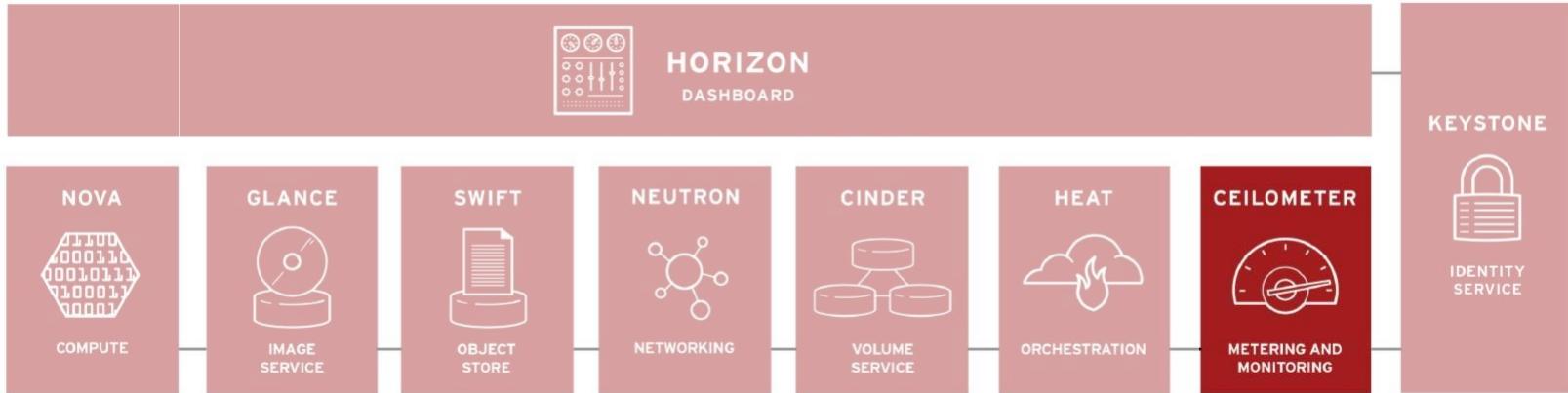
- Block storage to instances running within OpenStack
- Used for providing persistent and/or additional storage
- Relies on a plugin/driver architecture for implementation

OpenStack Orchestration (Heat)



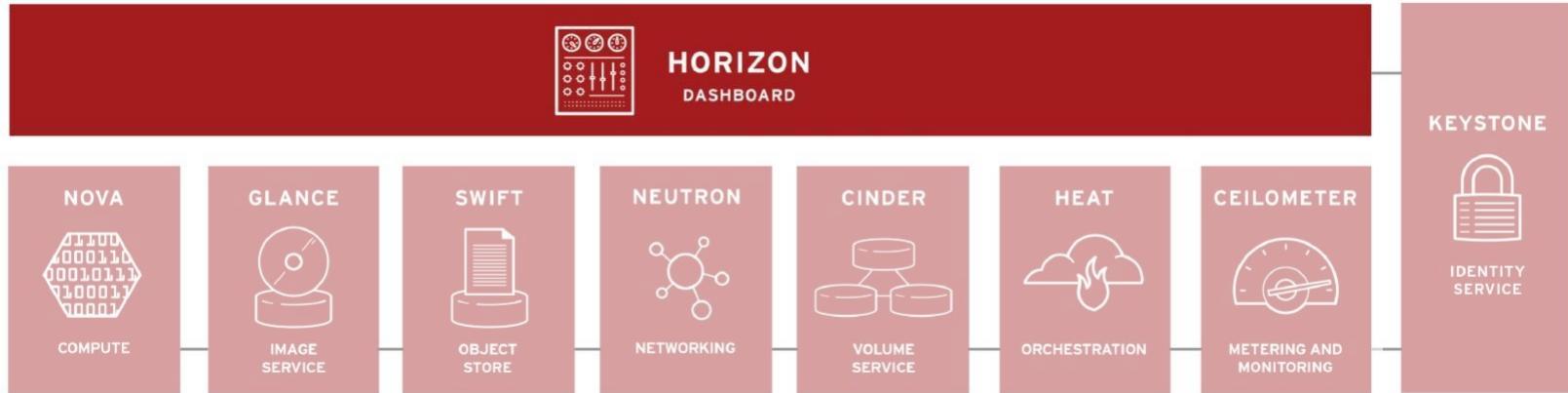
- Facilitates the creation of ‘application stacks’
- Stacks are imported as descriptive template language
- Allows for dynamic scaling based on configurable metrics

OpenStack Telemetry (Ceilometer)



- Central collection of metering and monitoring data
- Consume data from the other components
- Primarily used for chargeback of resource usage

OpenStack Dashboard (Horizon)



- OpenStack's web-based self service portal
- Sits on top of all other components via API interaction
- Provides a subset of underlying functionality



Connection multiplies
possibility

**Red Hat's involvement
in OpenStack**



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Upstream Release Process

- Thousand foot view:
 - Design summit
 - Three milestones - M1, M2, M3
 - Feature Proposal Freeze
 - Feature Freeze
 - Release Candidate
 - General Availability

The OpenStack community

- A new major version every six months
- Current upstream version codenamed Juno (October 2014)
- Ships source code from trunk
 - No certifications, support or packages



The OpenStack community

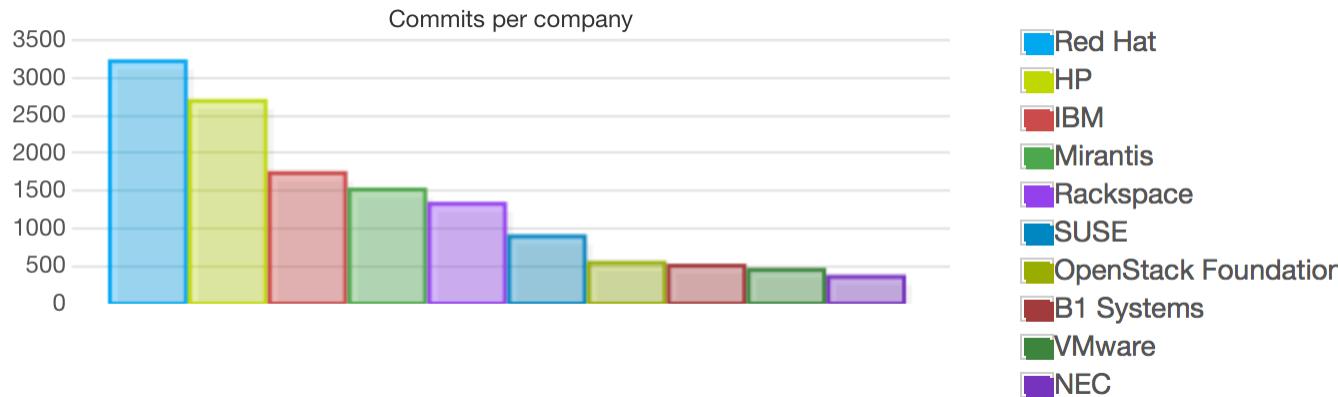
- The Juno version had:
 - 18,300+ code commits
 - 1400+ individual contributors
 - 130+ organization contributing
 - 340+ new features

JUNO
THE TENTH OPENSTACK RELEASE

Red Hat's OpenStack contribution

- Red Hat is a Platinum Founding member
- Red Hat has been the #1 contributor to Grizzly, Havana, Icehouse and Juno
- Consistent leadership across individual commits, lines of code, and bugs fixed

Red Hat's OpenStack contribution

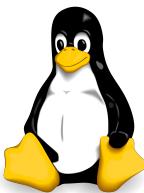


- Statistics shown are based on the Juno release

Source: <http://activity.openstack.org/dash/browser/scm-companies.html?release=juno>

Red Hat's OpenStack contribution

- Red Hat is also leading development in underlying dependencies:
 - The Linux kernel
 - KVM (Qumranet acquisition)
 - Libvirt
 - Open vSwitch
 - Ceph (Inktank acquisition)



Red Hat's OpenStack contribution

- Acquisition of eNovance, 2014
 - Top-10 contributor to OpenStack
 - Brings an enormous amount of production/implementation experience
 - Extends Red Hat's field expertise with consulting teams



Red Hat's OpenStack contribution

- Acquisition of Inktank, 2014
 - The team behind Ceph, distributed storage software
 - Complements Red Hat's existing GlusterFS-based storage portfolio
 - Allows customers to receive a tightly integrated OpenStack platform with Ceph, from Red Hat



Why does it matter?

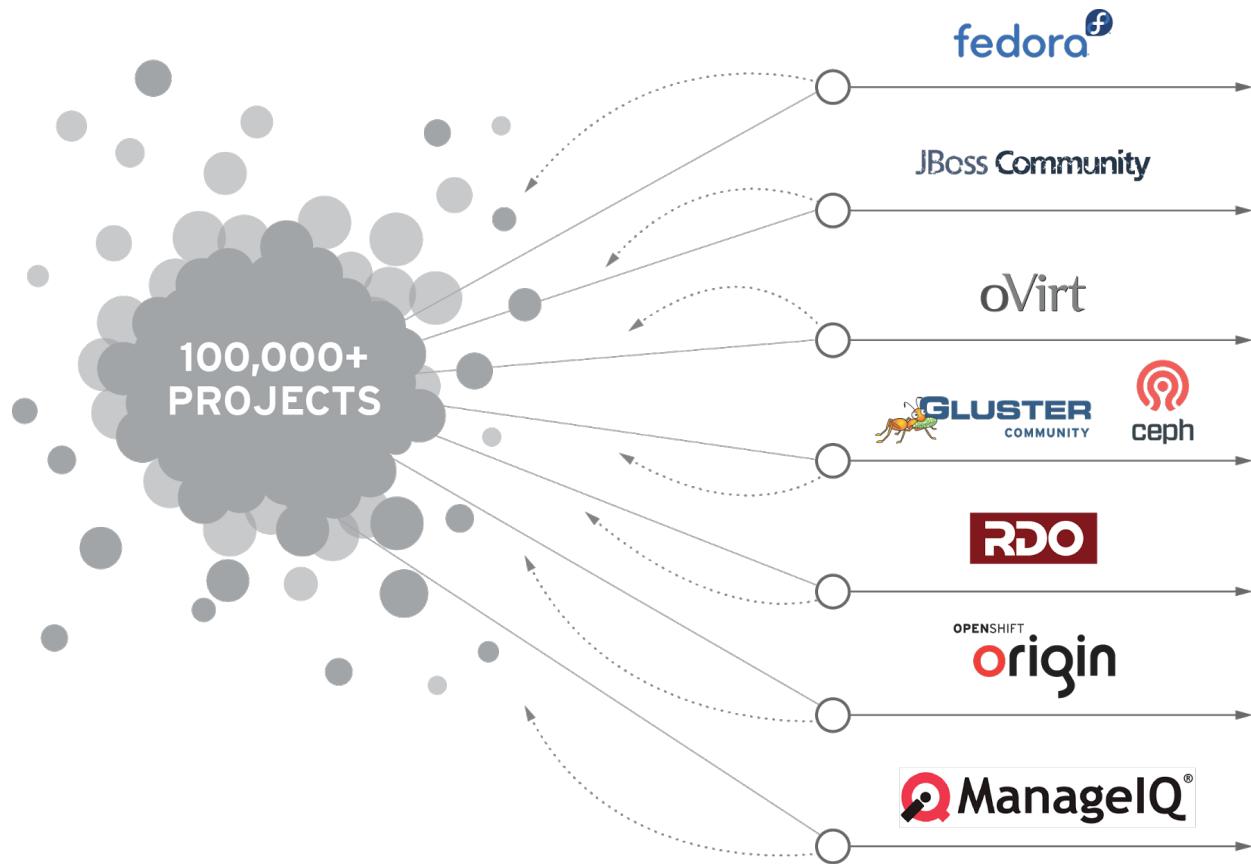
- Proves that Red Hat has the skills and resources to -
 - **Support** customers through the **entire stack**
 - Engineer **hot-fixes**, backport security/stability fixes
 - Drive **new feature** requests
 - **Influence** the **strategy** and direction of the OpenStack project



RHEL OpenStack Platform: from Community to Enterprise

Disruptive is productive





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RED HAT® JBOSS®
MIDDLEWARE

RED HAT®
ENTERPRISE
VIRTUALIZATION

RED HAT®
STORAGE

RED HAT®
ENTERPRISE LINUX®
OPENSTACK® PLATFORM

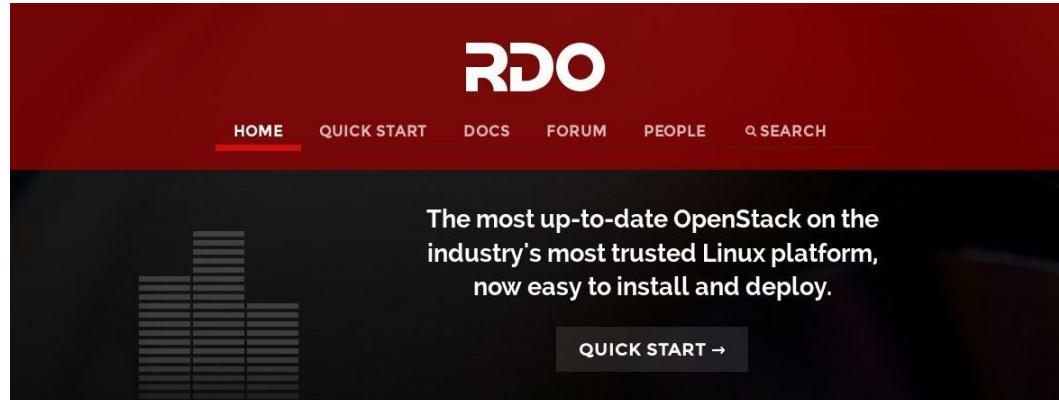
 OPENSHIFT®
by Red Hat®

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CLOUDFORMS

R10055

Building an OpenStack Community

- RDO project
 - Red Hat's community distribution of OpenStack
 - Packaged for Red Hat Enterprise Linux and derivatives
 - Freely available without registration at openstack.redhat.com
 - Easy to install



RHEL OpenStack Platform

- Red Hat's officially supported OpenStack distribution
- Tightly integrated with Red Hat Enterprise Linux
- Released every six months; Two-three months **after** upstream
- Focus on:
 - Code maturity, stability and security
 - Backports of important patches through lifecycle
 - 3rd party ecosystem of certified platforms
 - Product documentation and reference architectures

RHEL OpenStack Platform

- Red Hat is heavily focused on “upstream first” -
 - All patches are contributed to the community
 - Red Hat will not fragment their OpenStack distribution or support forks



RED HAT®
ENTERPRISE LINUX®
OPENSTACK® PLATFORM

Bleeding edge upstream

Source code

6 months lifecycle

Bleeding edge upstream

Packaged as RPMs

6 months lifecycle

Enterprise Linux distros
(RHEL, CentOS, Fedora)

Stable and supported

Packaged as RPMs

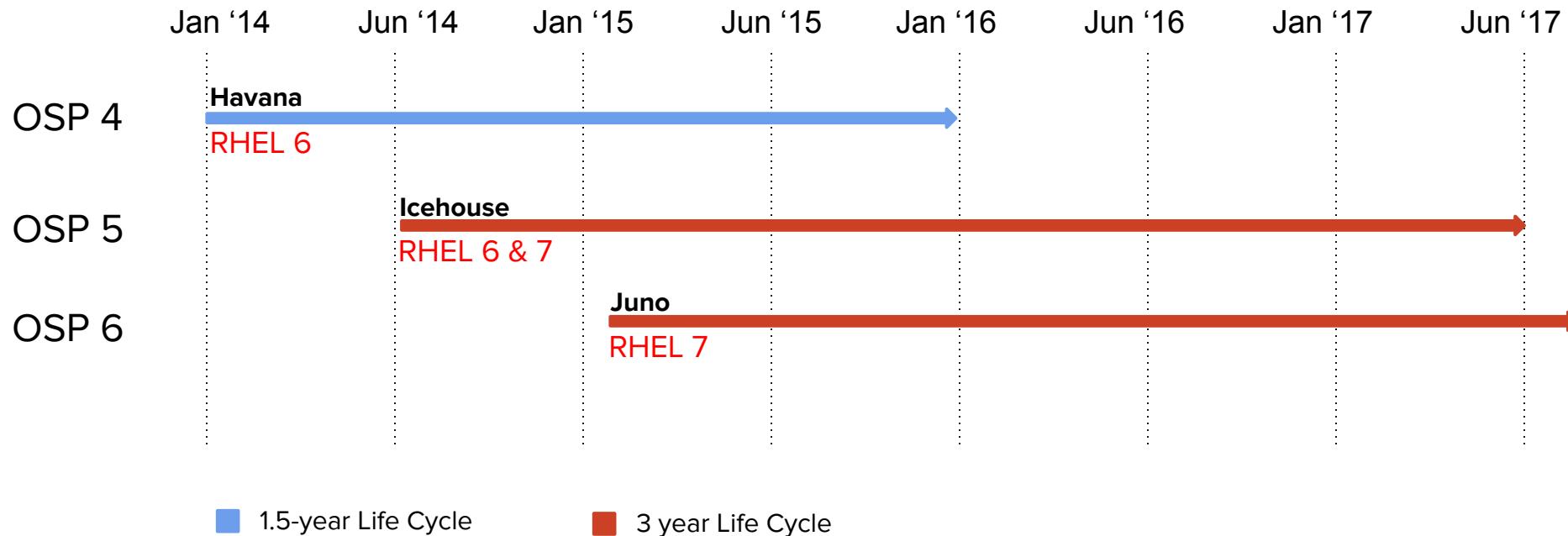
3 Years lifecycle

Co-engineered
Red Hat Enterprise Linux

**World Class Support and
Partner Certifications**



RHEL OpenStack Platform Lifecycle



RHEL OpenStack Platform Ecosystem

- Red Hat offers a rich ecosystem of certified solutions
 - Underlying hardware, inherited from underlying Linux certification
 - Layered integration components
- Offering maximum flexibility and choice of available integration via plugin/driver certification
- Allowing customers to leverage existing choices or pursue new options

RHEL OpenStack Platform Ecosystem

- Close engineering relationship with our partners
 - Cooperative development
 - Upstream collaboration
- Joint customer support via TSANet
- Supported documentation
- Validated Design/Reference Architecture

So, why Red Hat?

- Red Hat brings what's needed to the OpenStack Community & Project
 - A vendor to provide the entire stack
 - Tight integration of OpenStack, Linux, KVM, Ceph and Open vSwitch
- Support from top contributors to OpenStack and Linux
- A predictable and proven enterprise lifecycle and roadmap
- The richest 3rd party certification matrix - including guest certification
- Focus on integrating emerging technologies like Docker and PaaS
- Building next-generation deployment, configuration, and management tools



What's coming in Red Hat Enterprise Linux OpenStack Platform 6

Disruptive is productive

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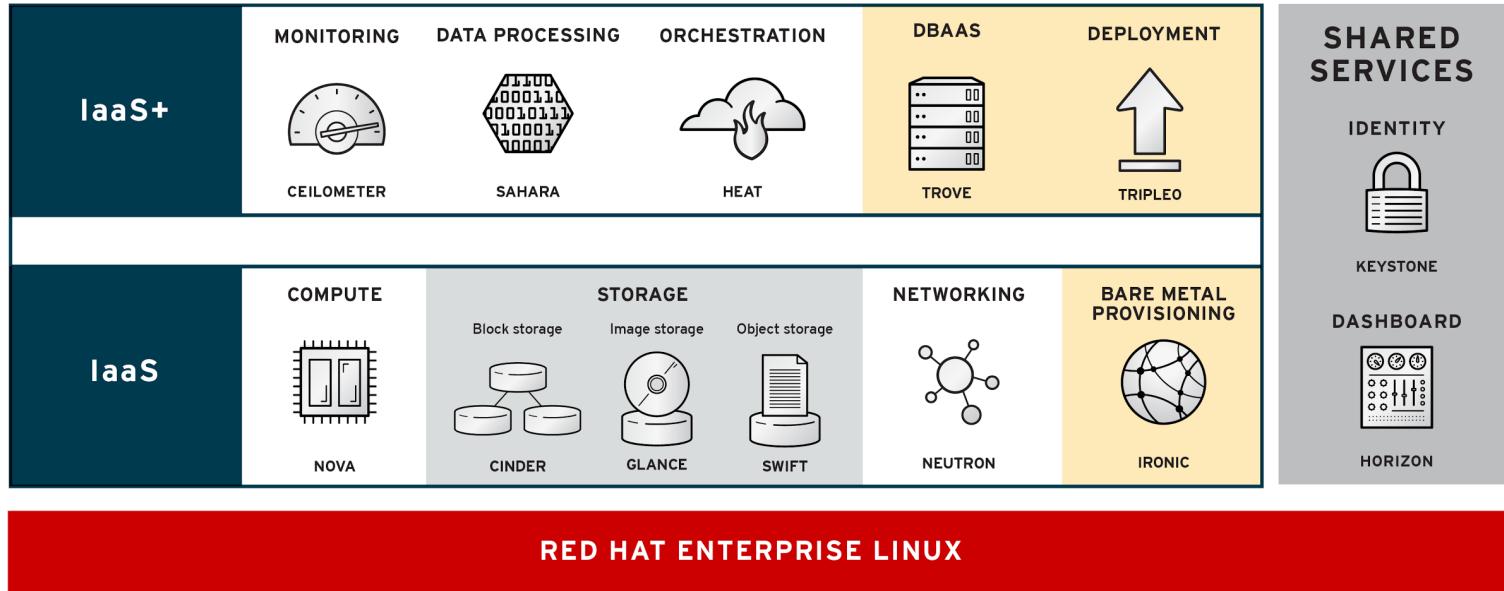
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RHEL OpenStack Platform 6

- Based on OpenStack Juno, expected February 2015
- Support for Data Processing service (Sahara)
- New services included as Technology Preview:
 - Deployment (TripleO)
 - Bare metal provisioning (Ironic)
 - Database service (Trove)

RHEL OpenStack Platform 6



= Tech preview

RHELOSP0012-C

RHEL OpenStack Platform 6

- New major features:
 - IPv6 networking support
 - SR-IOV networking
 - Node evacuation scheduling
 - Guest vCPU topology configuration
 - Cinder volume replication
 - Multi-backend Keystone
 - VRRP based Network HA



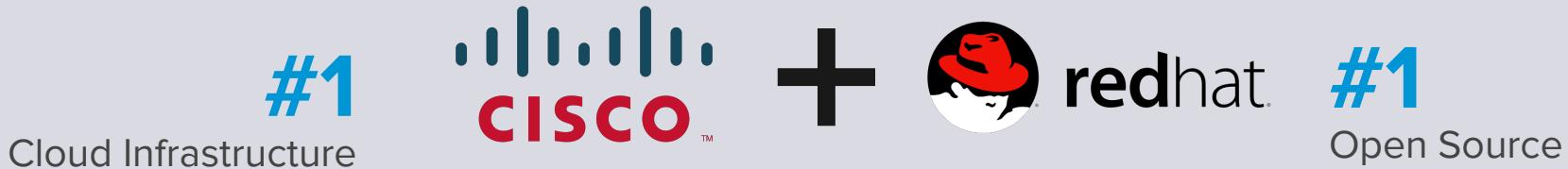
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Red Hat and Cisco OpenStack partnership



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Red and Cisco Partnership



- Architecture designed for virtualization and cloud
- Leading OpenStack contributor
- Driving ACI integration

- Enterprise-hardened distribution
- Award-winning support and training
- RHEL with KVM

Certified Neutron plugins from Cisco*

- Cisco Nexus plugin
- Cisco N1KV
- Cisco Application Policy Infrastructure Controller (APIC)

*As of RHEL OpenStack Platform 5

UCSO

- Cisco UCS Integrated Infrastructure for Red Hat OpenStack Platform
- Three editions: Starter, Advanced, and Advanced ACI
- Includes Cisco Validated Design, Bill of Materials, 24x7 Integrated Support, and Cloud Consulting Services for a complete solution approach
- Based on RHEL OpenStack Platform with KVM and Ceph storage

Resources

- Are you ready for OpenStack?
 - redhat.com/openstack
- Follow Red Hat's OpenStack blog
 - redhatstackblog.redhat.com/
- Learn more about the Red Hat Certification Program
 - access.redhat.com/certifications
- Learn more about UCSO
 - cisco.com/go/ucsopenstack

Thank you

