
RED HAT
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RED HAT SUMMIT

Integration of Storage, OpenStack & Virtualization

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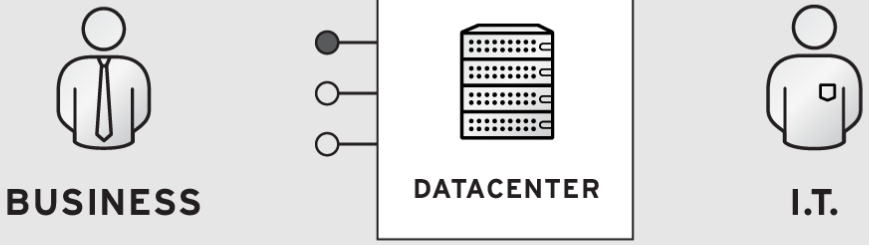
Agenda

- IT Industry Transformation
- IT environments are diverging
  - Virtualization, Private Clouds and Public Clouds
- Convergence
  - Red Hat Storage (RHS)
  - Red Hat Enterprise Virtualization (RHEV)
  - Red Hat OpenStack (RHOS)
- Use Cases
- Summary
- Q&A

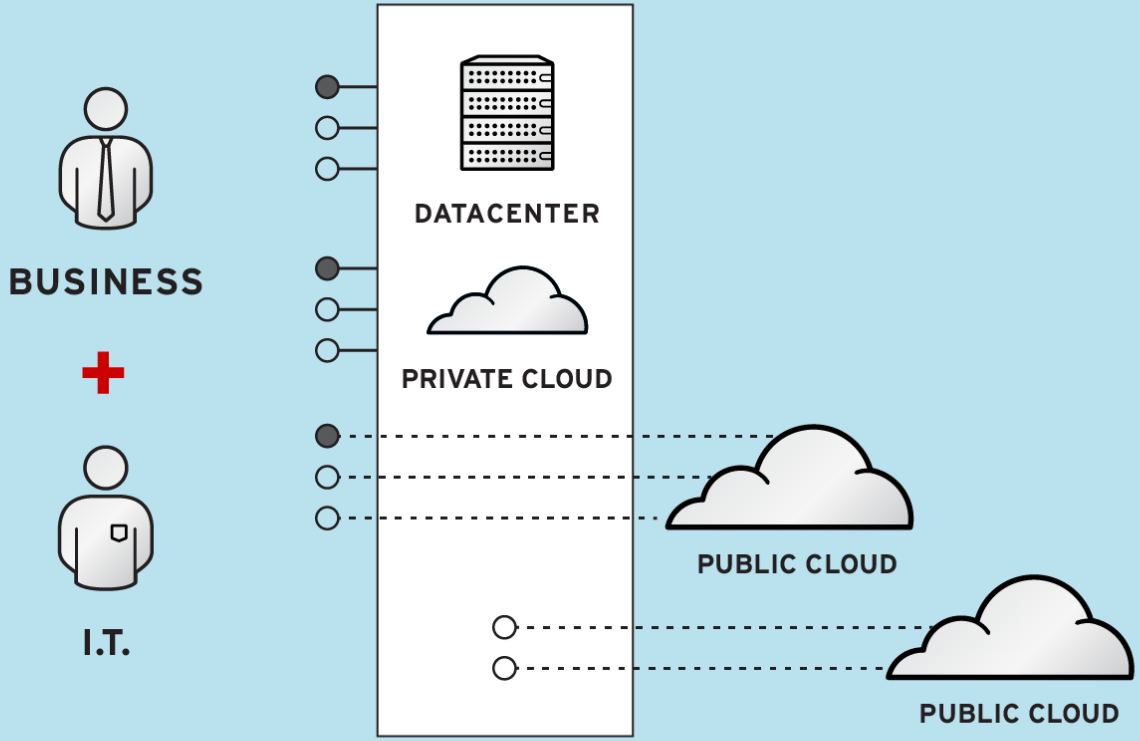
THE ROLE OF I.T. IS CHANGING

From service provider to strategic partner



TRADITIONAL I.T.

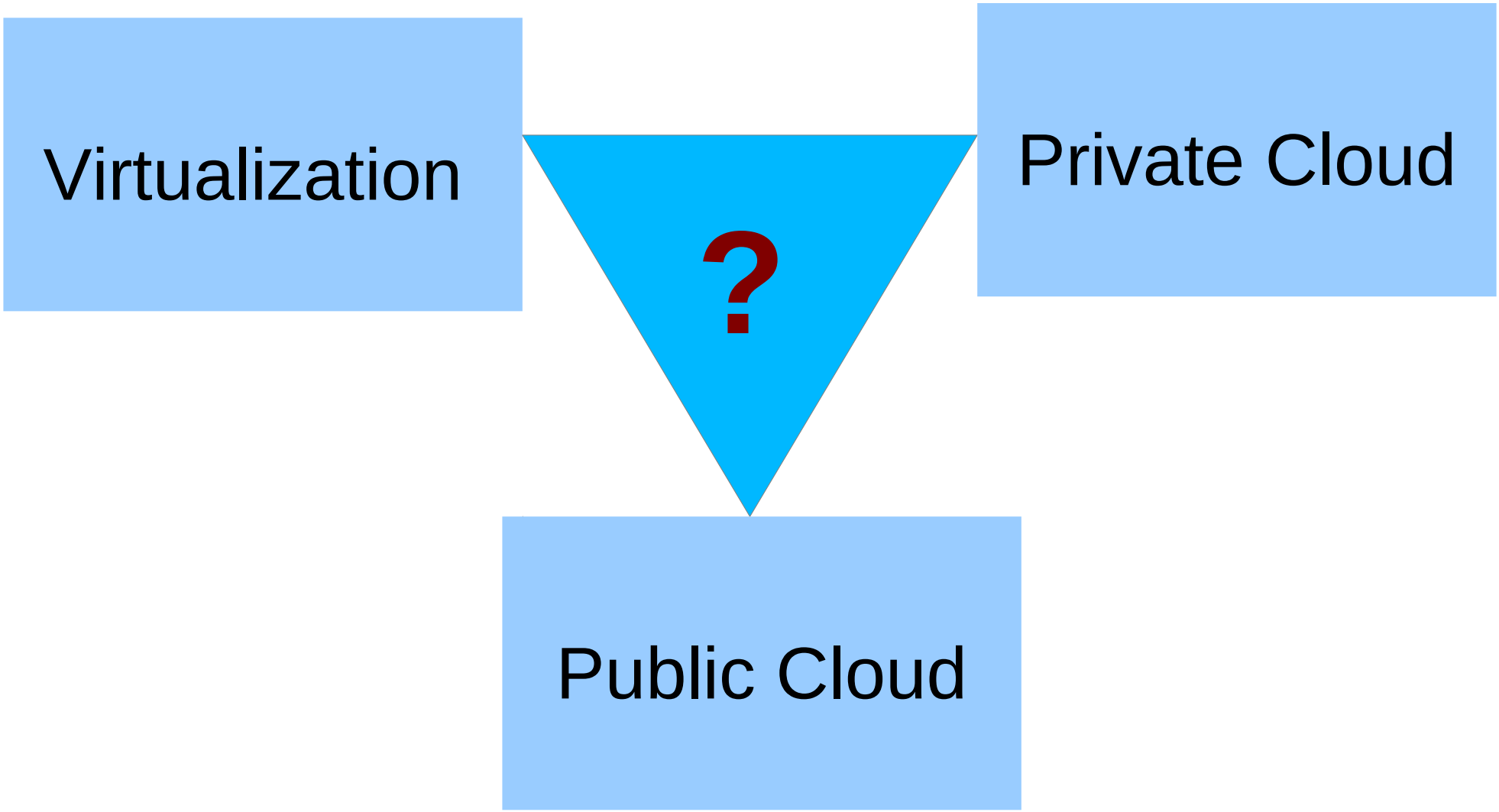
- Provides services on traditional infrastructure



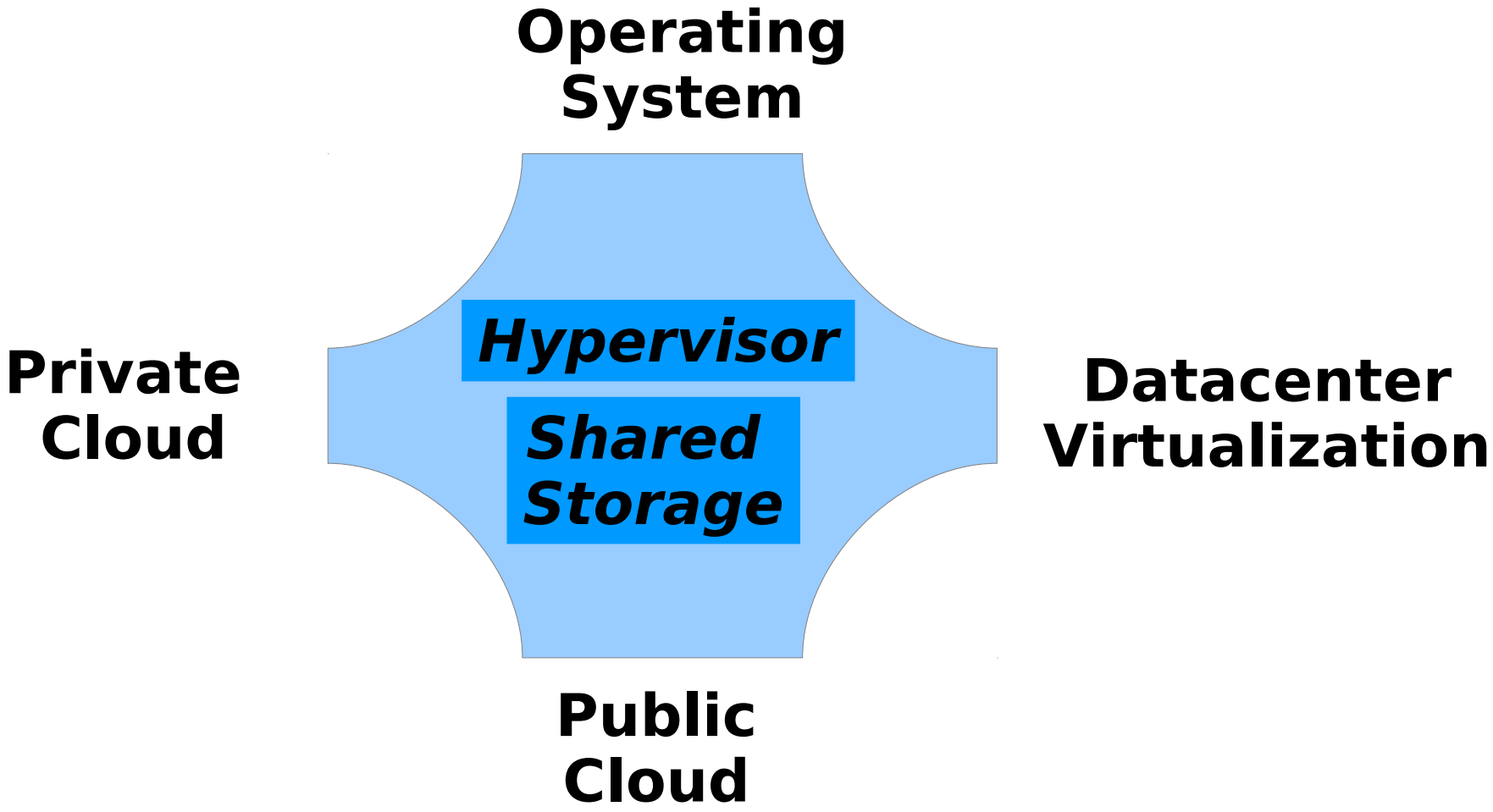
HYBRID I.T.

- Provides services on traditional infrastructure
- Provides services on private cloud
- Brokers services from public clouds
- Consumes services from public clouds

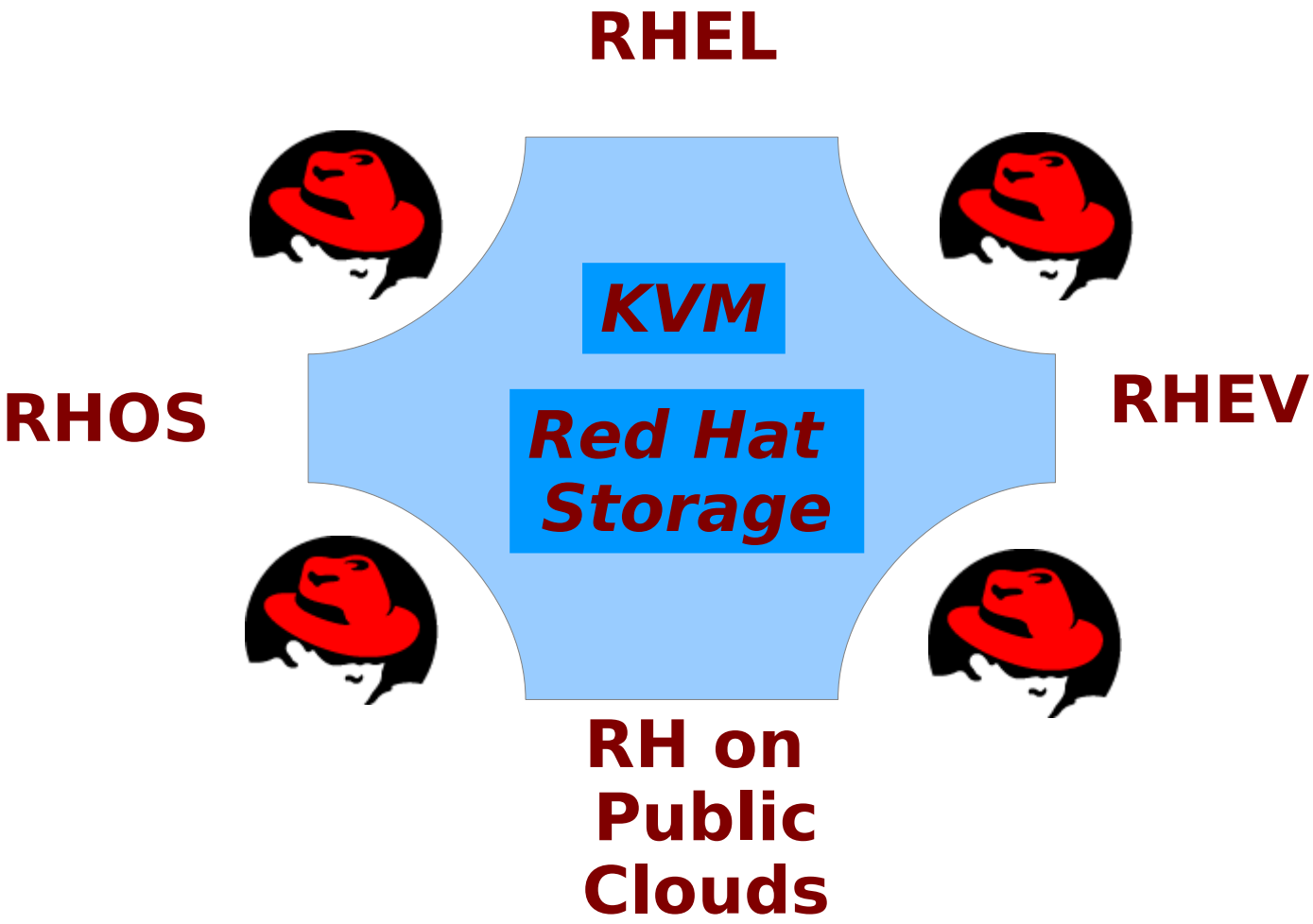
ENTERPRISE IS DIVERGING



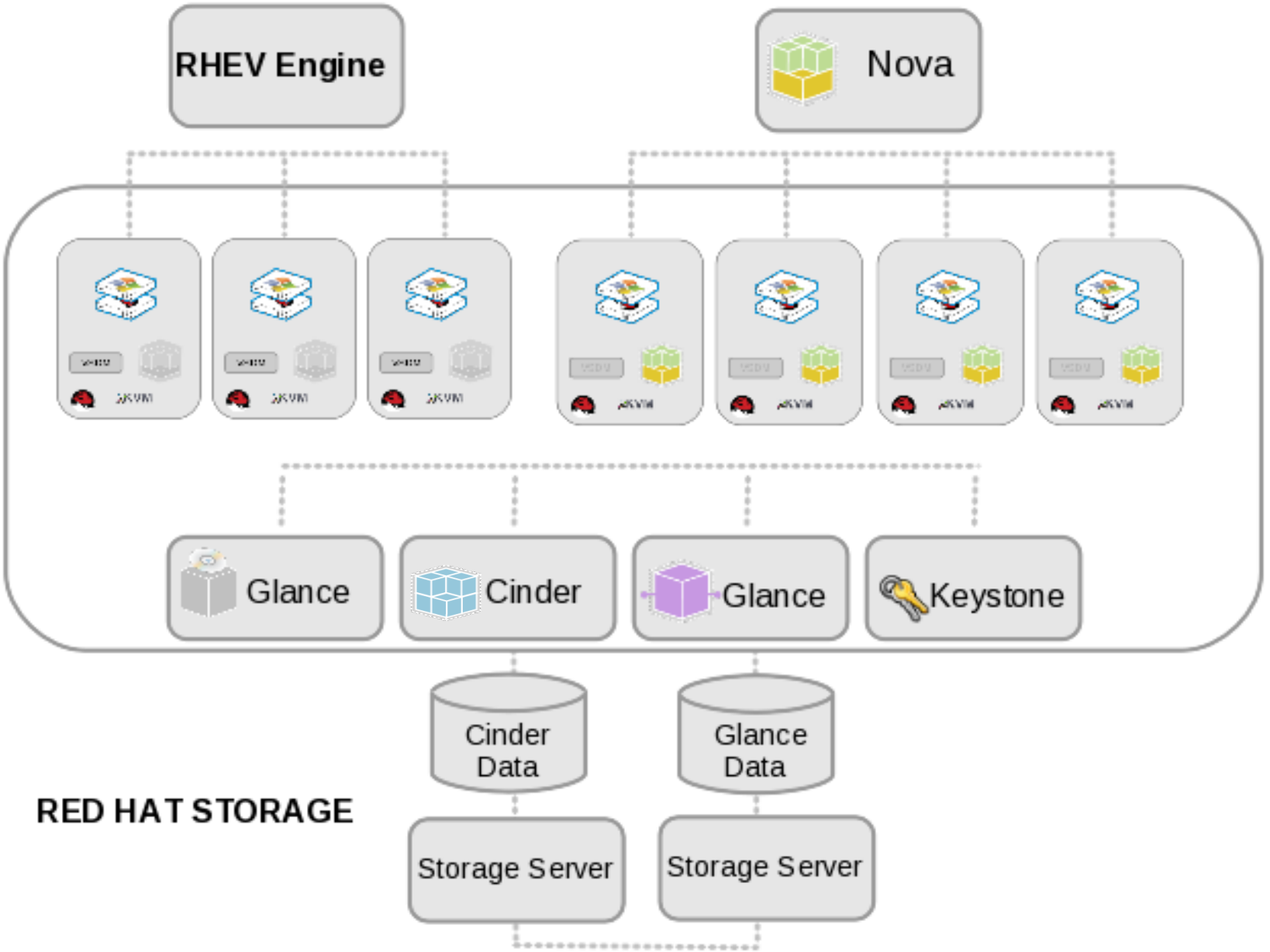
A COMMON HYPERVISOR AND SHARED STORAGE FOR THE BRIDGE



Red Hat Technology Integration with KVM and Red Hat Storage (RHS)

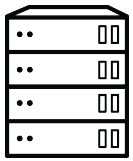


RHOS, RHEV, AND RHS INTEGRATION

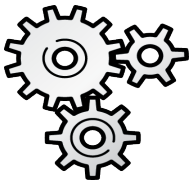


STORAGE REQUIREMENTS

No Vendor Lock-in



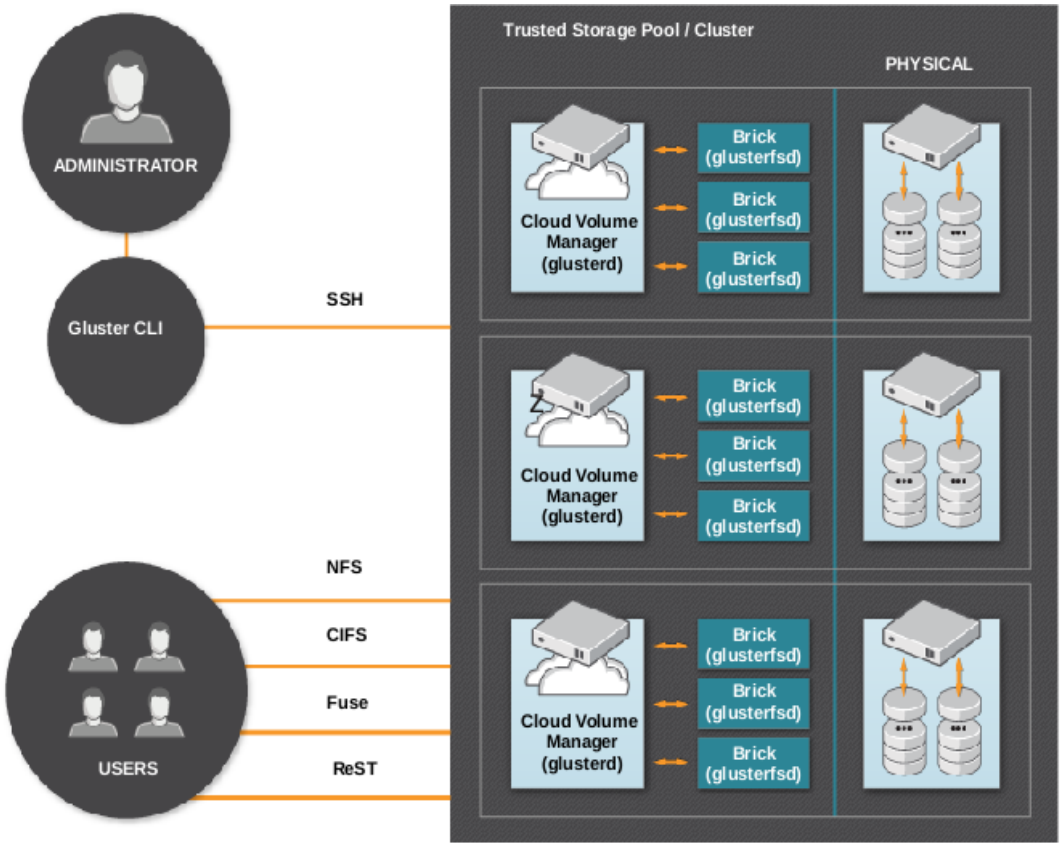
Commodity hardware-based



File and Object access to data and unified management

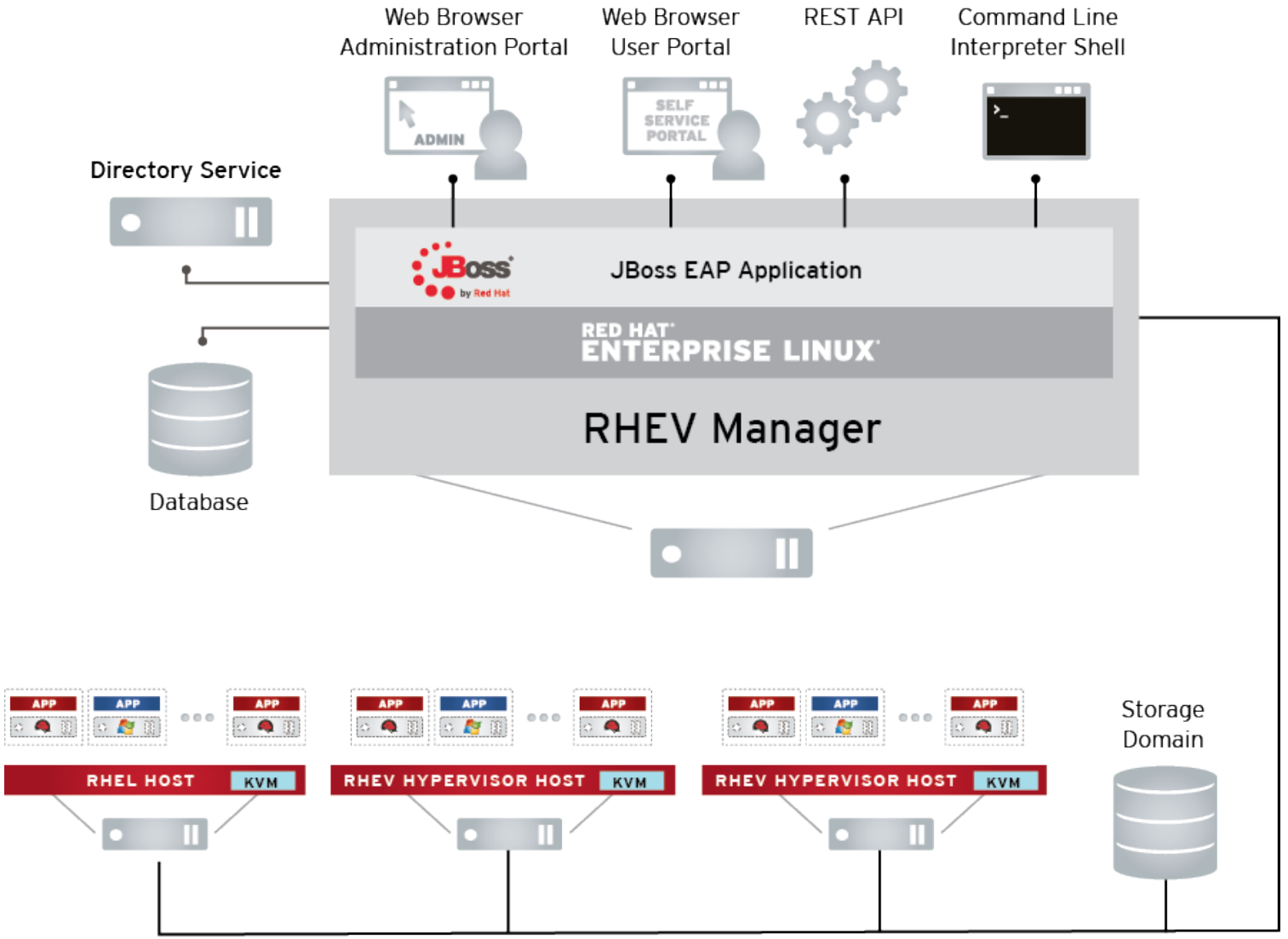
Scale-out and highly available architecture

RED HAT STORAGE (RHS) OVERVIEW

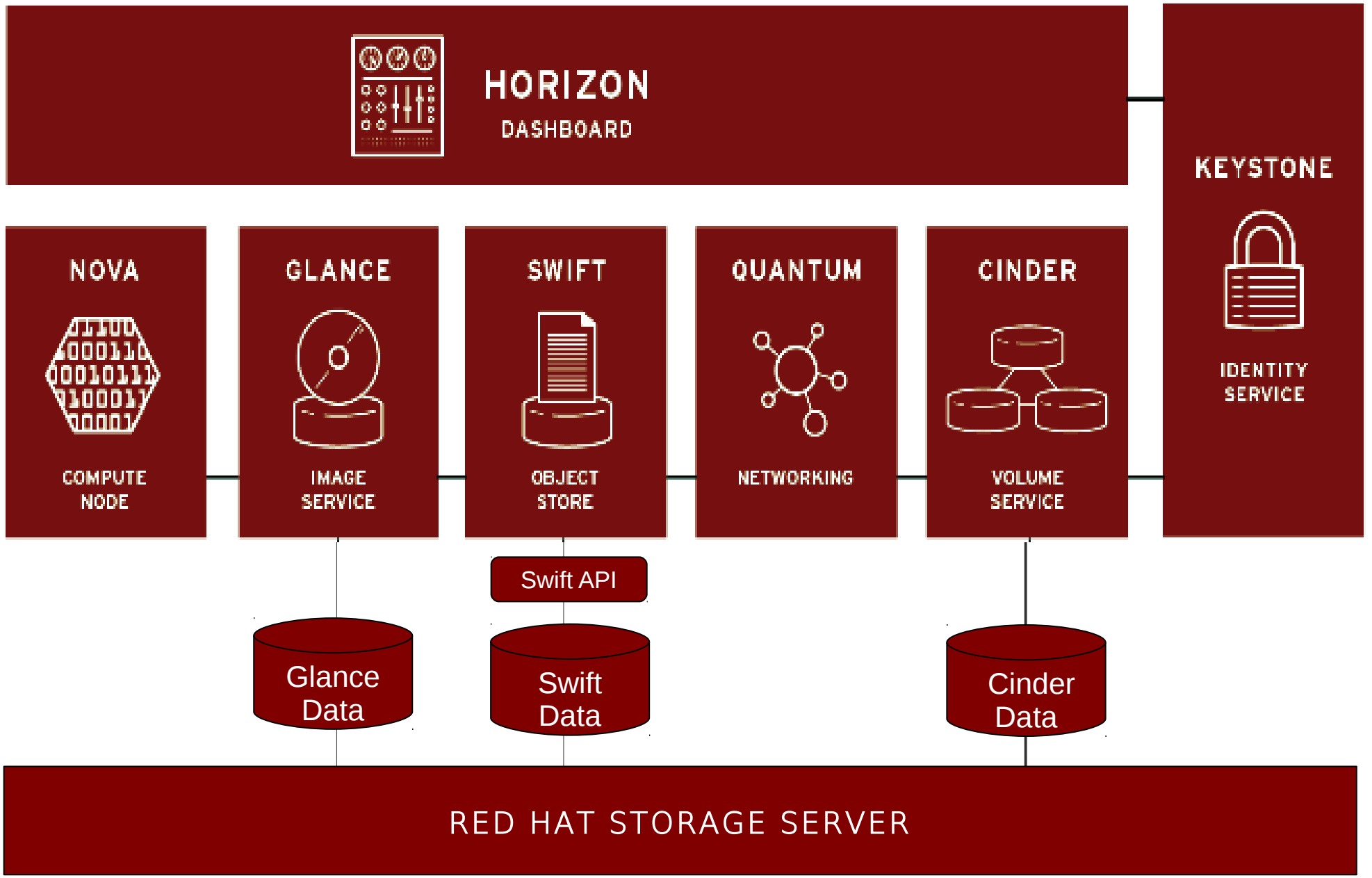


- Started as Gluster, Inc
- Acquired by Red Hat in 2011
- Distributed architecture
- File and Object access
- Deployed at scale
  - Intuit, Pandora, Pattern Energy, BrightCove, Cornell

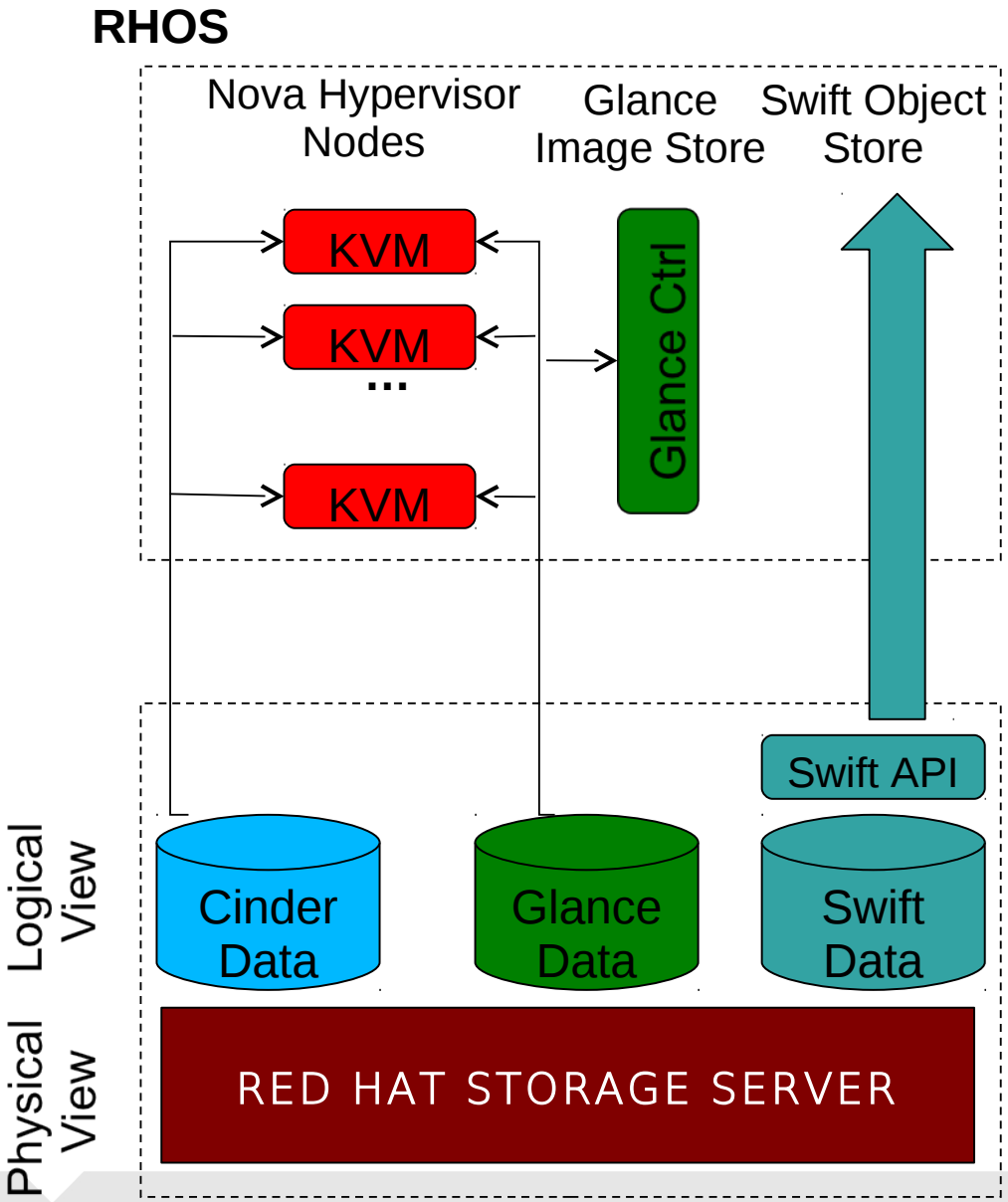
RED HAT ENTERPRISE VIRTUALIZATION (RHEV) OVERVIEW



RED HAT OPENSTACK OVERVIEW



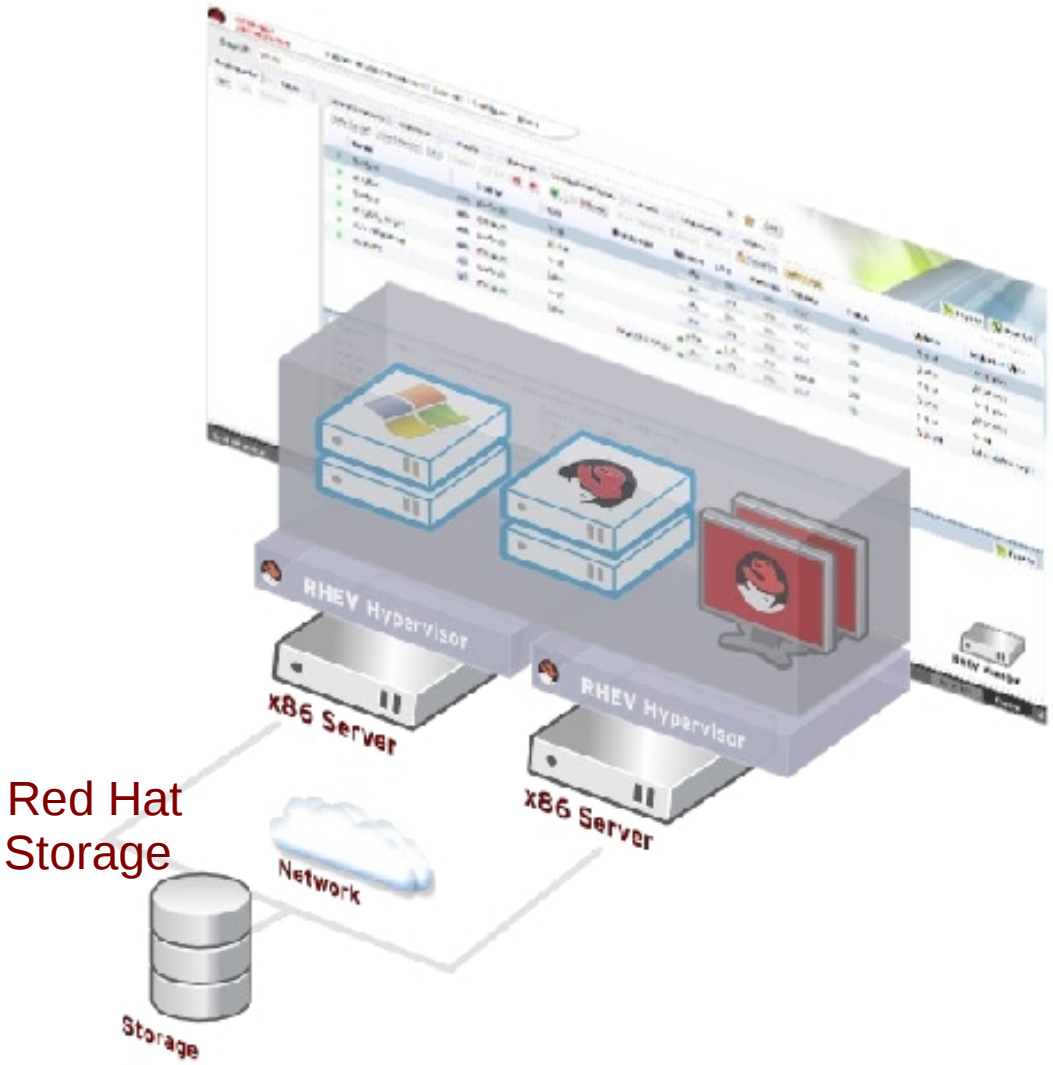
PRIVATE CLOUD WITH RED HAT OPENSTACK AND RED HAT STORAGE



RHS provides:

- Cinder Block Service
- Glance Image Service
- Swift Object Service

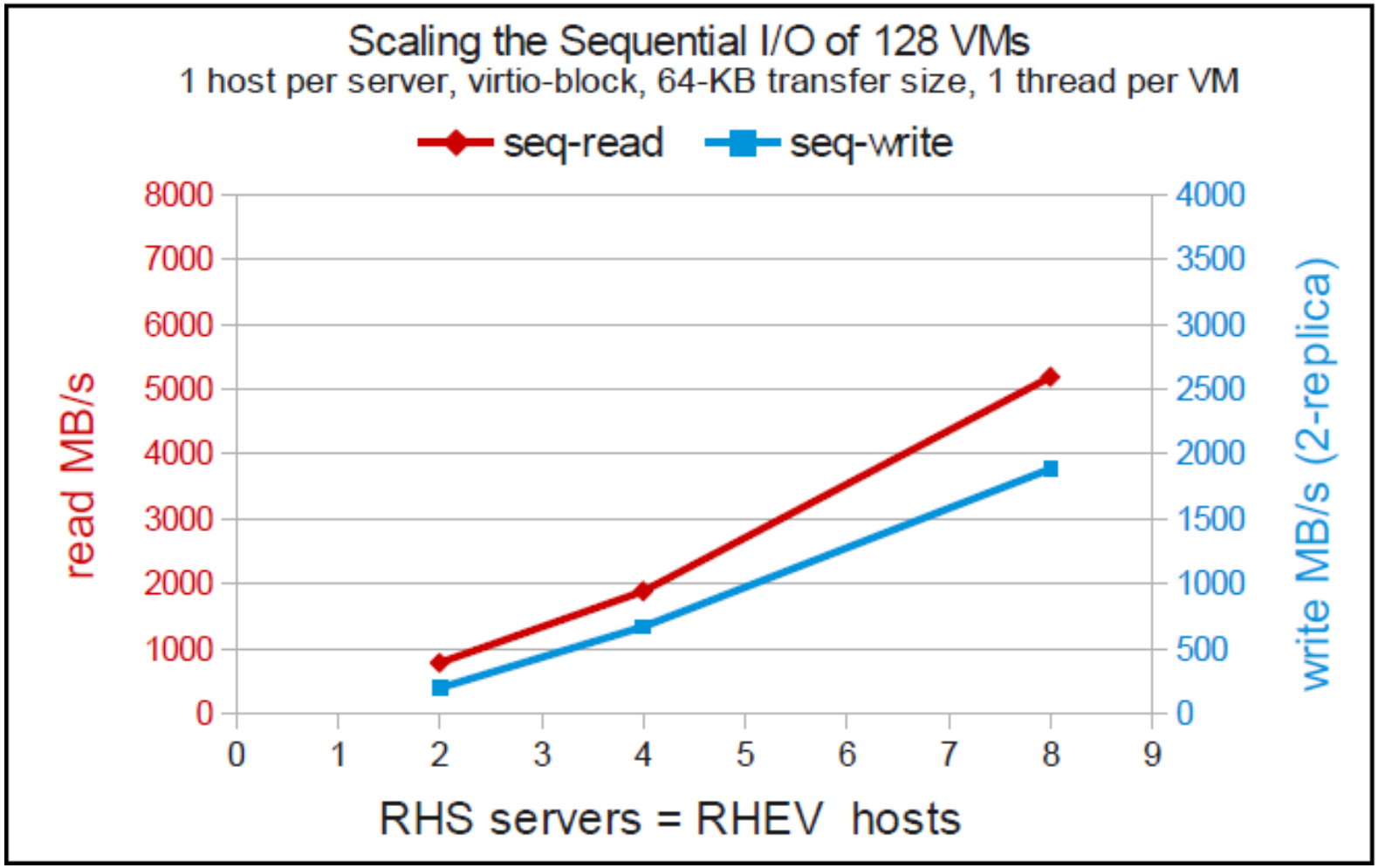
CONVERGED VIRTUALIZATION AND STORAGE WITH RED HAT



Red Hat Storage

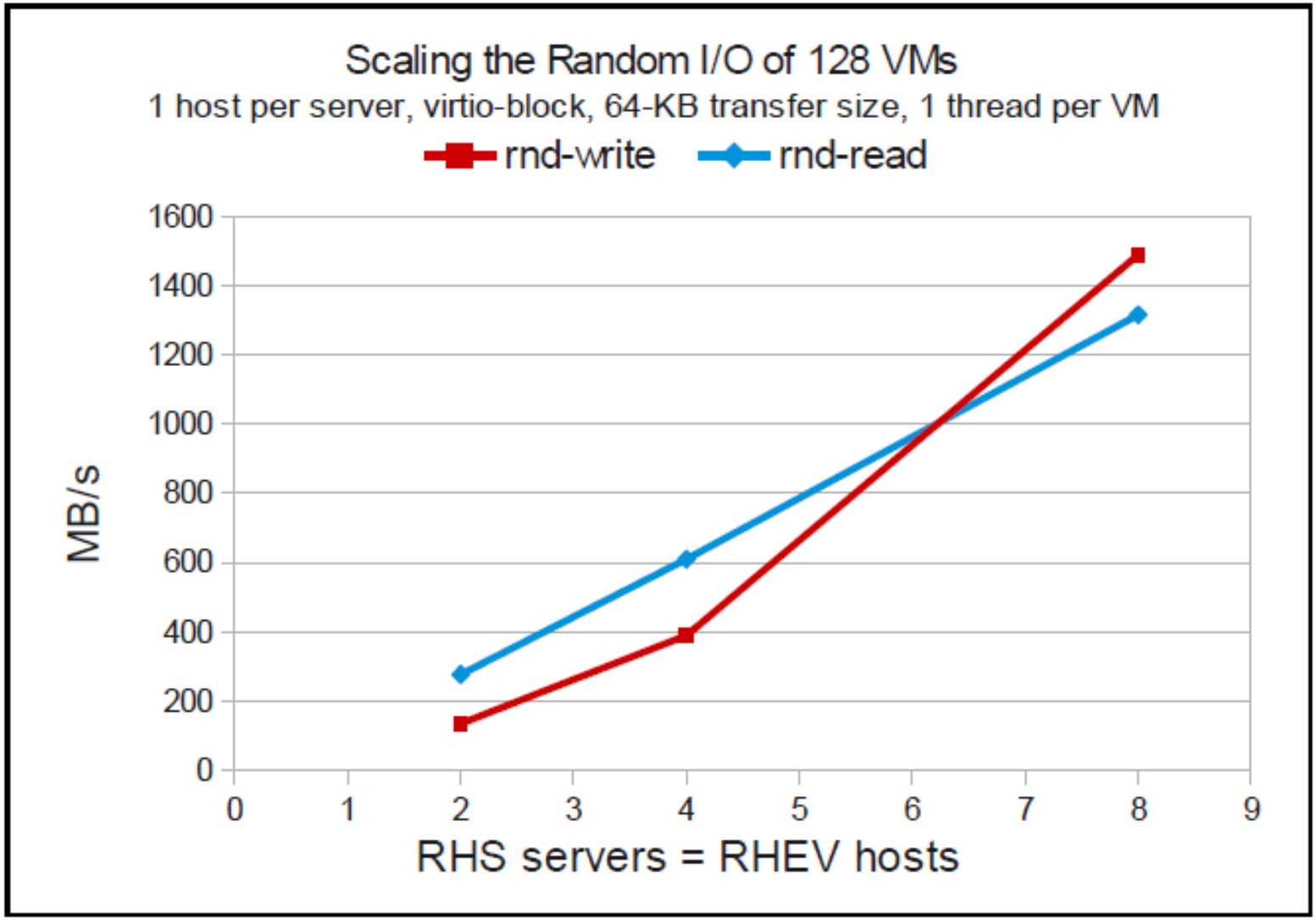
- Store live VM images
- Live Migration of VM
- High Availability
- Common Management

KVM SCALES WITH RHS



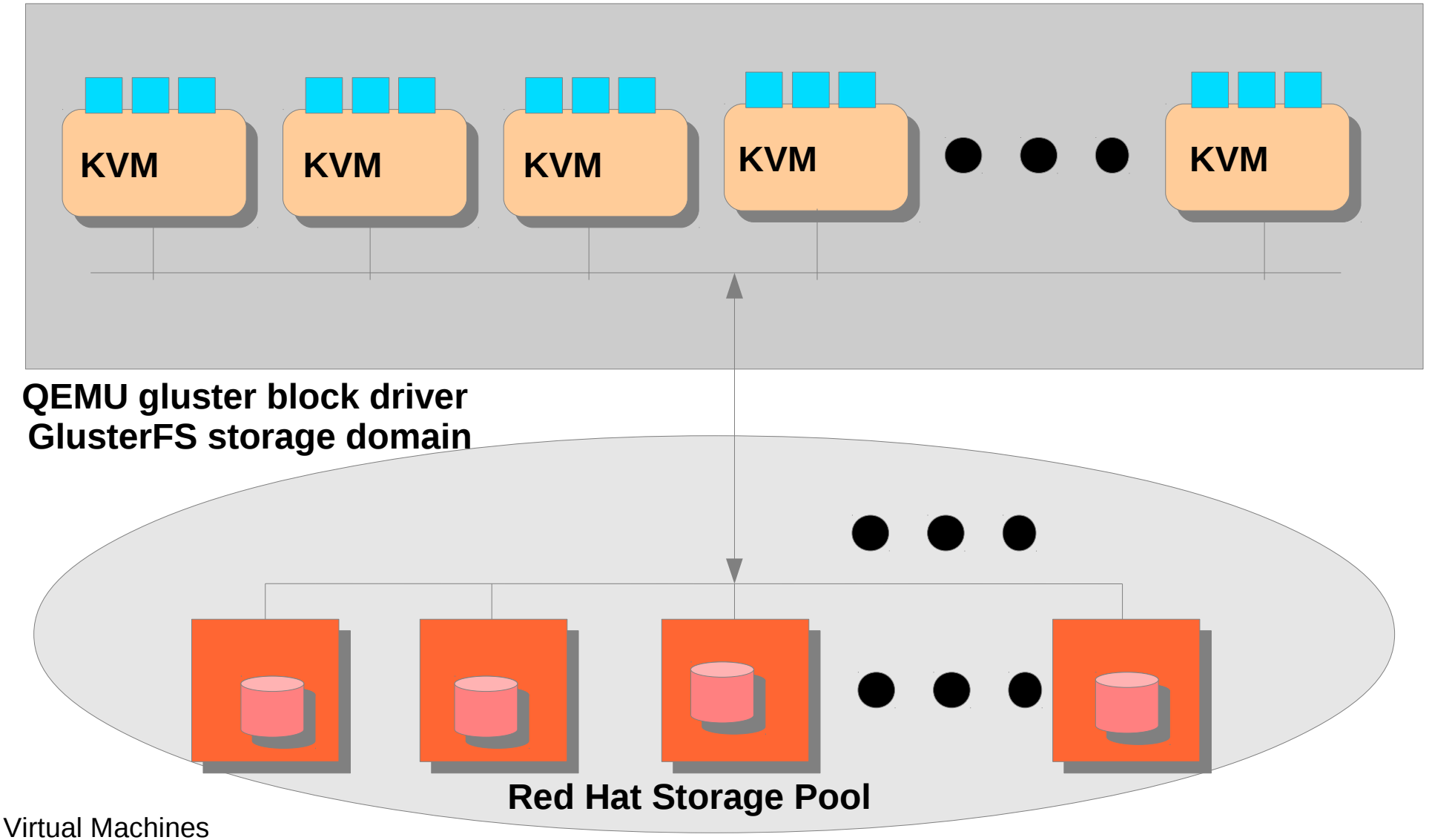
(for sequential IO and .....)

KVM SCALES WITH RHS

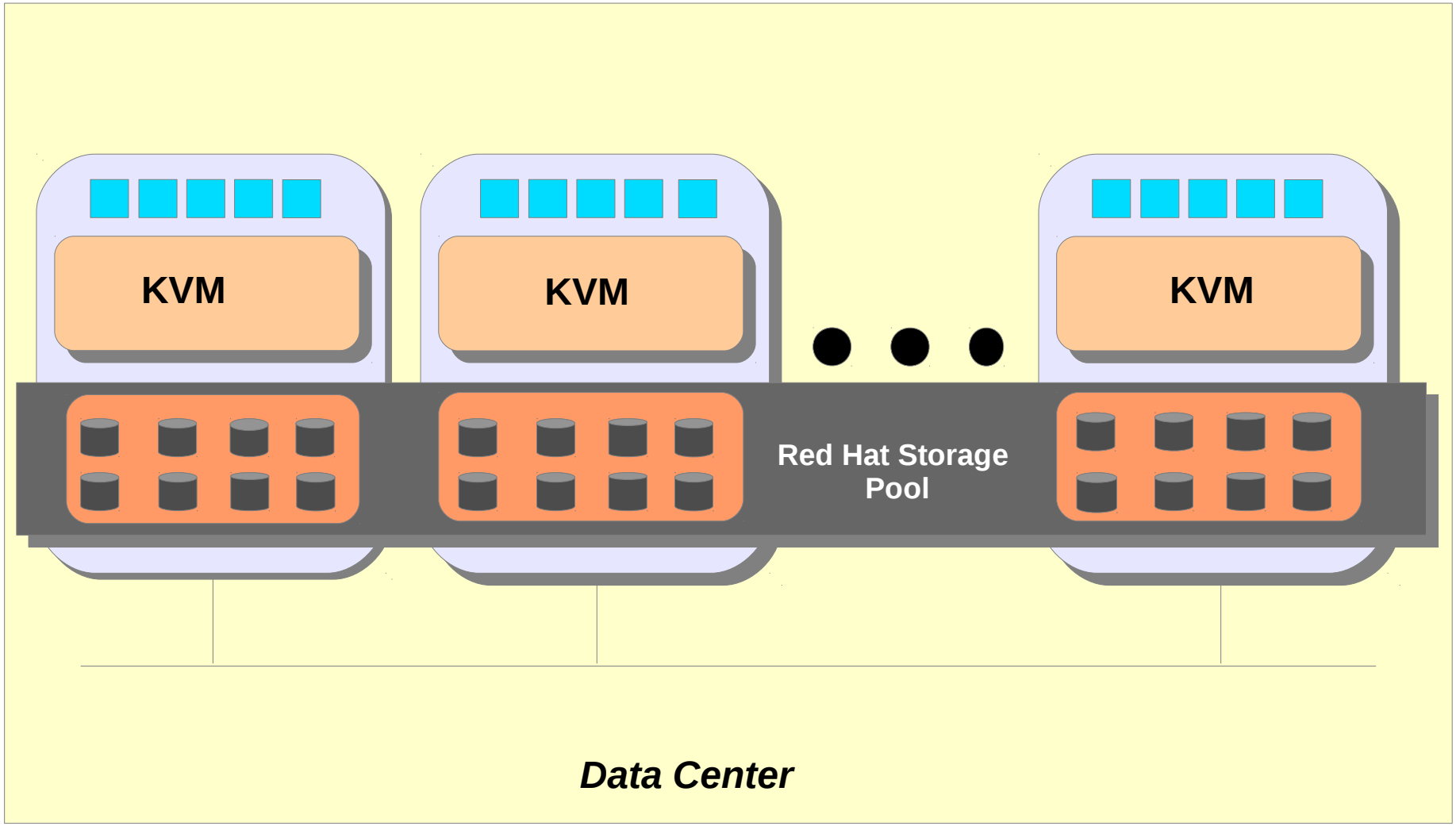


(..... Random IO)

FUTURE: QEMU Gluster Block Driver and GlusterFS storage domain

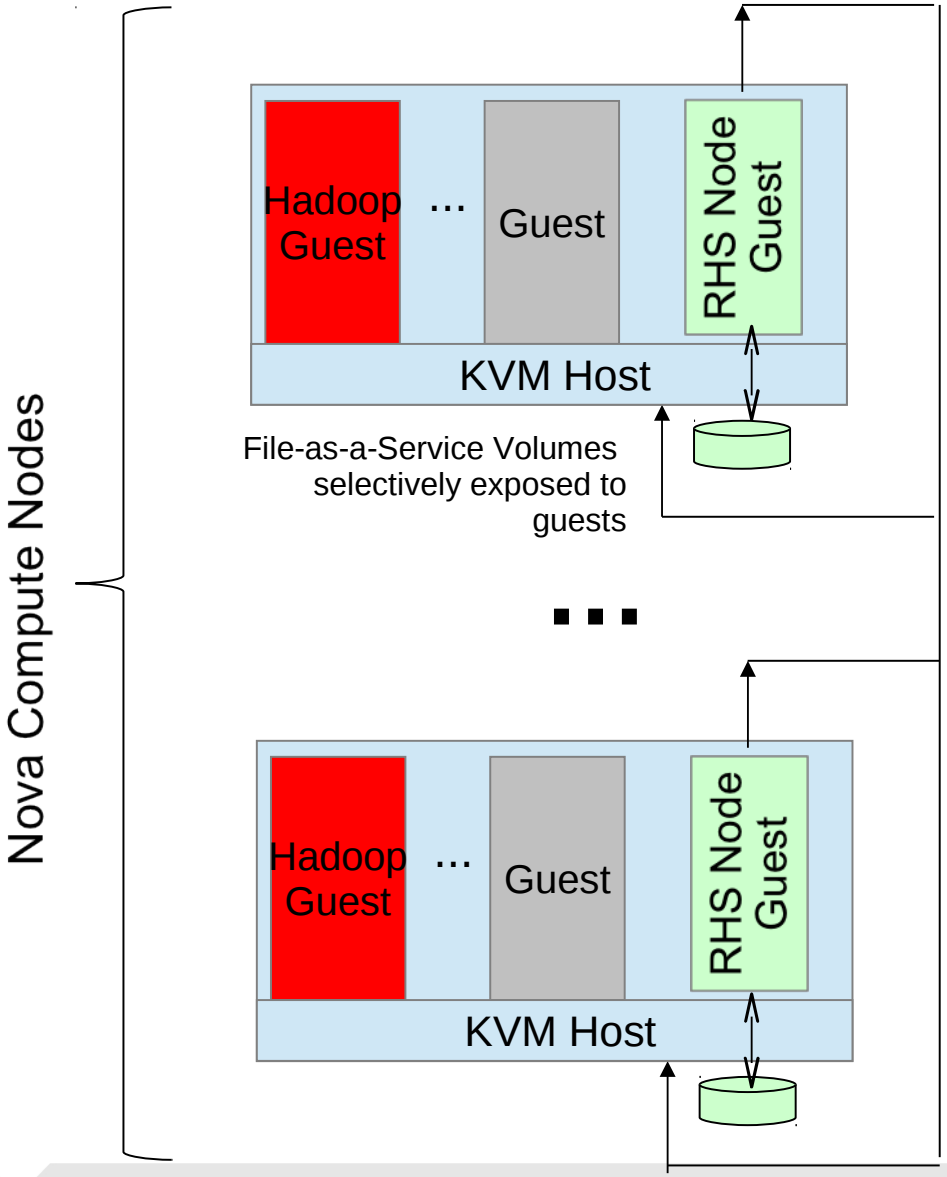


FUTURE: VMs and RHS are co-located



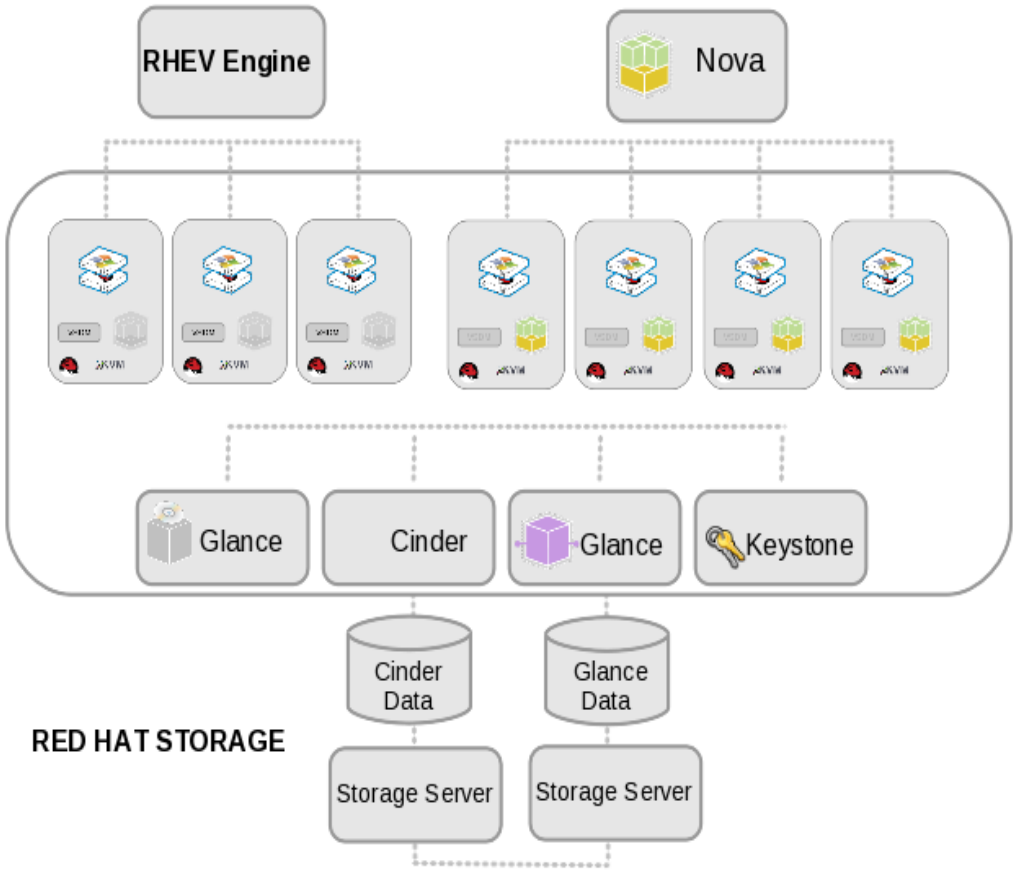
Virtual Machines

FUTURE: OpenStack File-as-a-Service with RHS



- File is presented directly inside the guest
  - No virtual block
  - No network roundtrip
- Tenant specific shares
- Use-cases
  - Virtual NAS
  - Hadoop on OpenStack
  - Tenant-private SMB or Swift services

RHS, RHOS and RHEV INTEGRATION BENEFITS



- Scale-out
- Highly Available
- Enterprise-ready
- Open

RHOS – RHEV
Integration Benefits

- Both provide:
  - VM Life Cycle deployment
  - VM image repository
  - VM Storage services

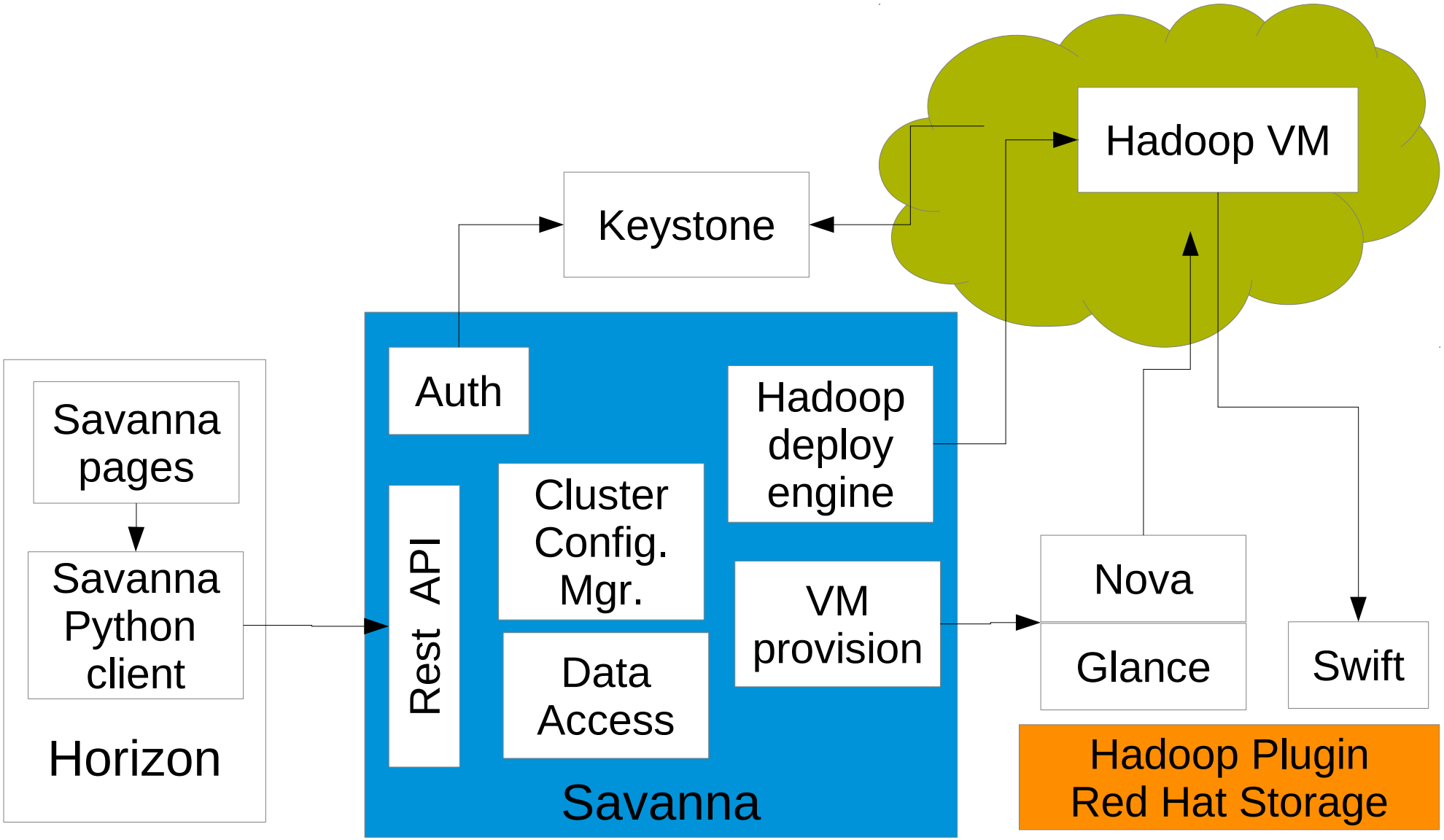
- OpenStack automates the largest data centers by abstracting virtual resources and the VM lifecycle, in massive scale.
- Both solve similar problems in different ways and work better together like a bass & electric guitar in a rock band...

RHOS – RHEV
Zoom in

- Once you enter a more virtualized use case, is where RHEV is needed to provide a deeper and more complete treatment
- If you drill down the stack, OpenStack doesn't actually create the VM – it invokes hypervisor specific libraries for it (e.g. libvirt)
- RHEV has a full-blown rich Hypervisor that exposes all KVM features as soon as available
- RHEV can also provide advanced virtual storage services to the applications and provide transparently:
  - Live Storage Migration
  - VM Backup & Restore using Independent Software Vendors*

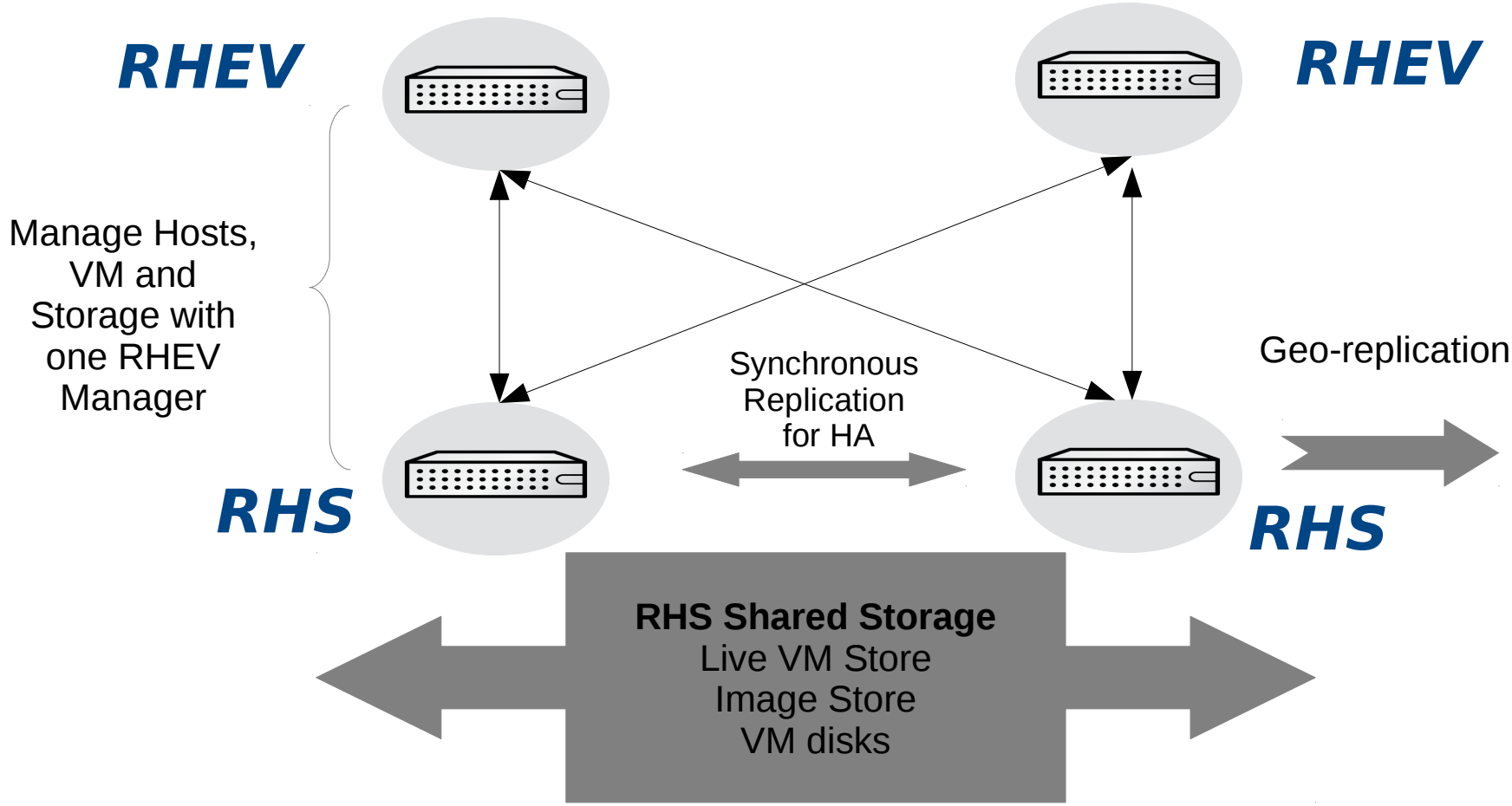
USE CASES

HADOOP ON DEMAND WITH OPENSTACK AND RHS

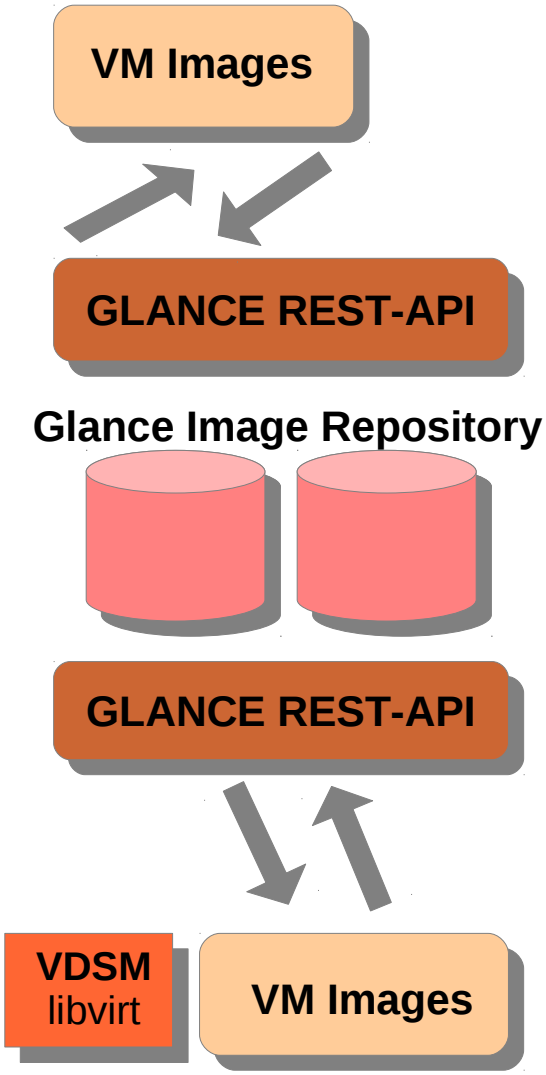


RHS and RHEV for Branch office

High levels of data protection and resiliency through RHS self-healing, and synchronous and asynchronous replication.



RHOS and RHEV integrated Image Repositories



- Red Hat OpenStack can immediately benefit from the availability of RHEV images to the entire Data Center via the Glance-API.
- RHEV users will be able to import Glance images directly.
- Perfect for DevOps use case, where the Dev., QA & Staging are performed on OpenStack & then rolled into Production images in RHEV.
- OpenStack can gain the benefit of more VM images to deploy, while the RHEV image repository can consume, export to and from Glance.

Summary and Conclusions

- IT is diverging because of business and forces technological trends
- KVM and RHS are essential to connect RHEV, RHOS and Public Clouds
- Benefits
  - Integrated and hardened for enterprises
  - Global support for entire stack
  - Innovative future that provides more choices

Related Sessions

- **RHOS plus RHS Demo at the Red Hat Booth**
- Thursday, June 13
  - **10:40 AM:** KVM Hypervisor Roadmap & Technology Update + SELinux for Mere Mortals
  - **3:40 PM:** Hadoop on Red Hat Storage Server: A Reference Architecture
  - **3:50 PM: Red Hat Enterprise Virtualization & Red Hat Storage Server Integration LAB**
  - **4:50 PM:** Best Practices for Red Hat Storage Server Performance + Red Hat Enterprise Virtualization Performance
- Friday, June 14
  - **11:00 AM:** Red Hat Storage Server: Best Practices & Advanced Configurations

THANK YOU

CONNECT TO THE INFORMATION REVOLUTION

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Backup

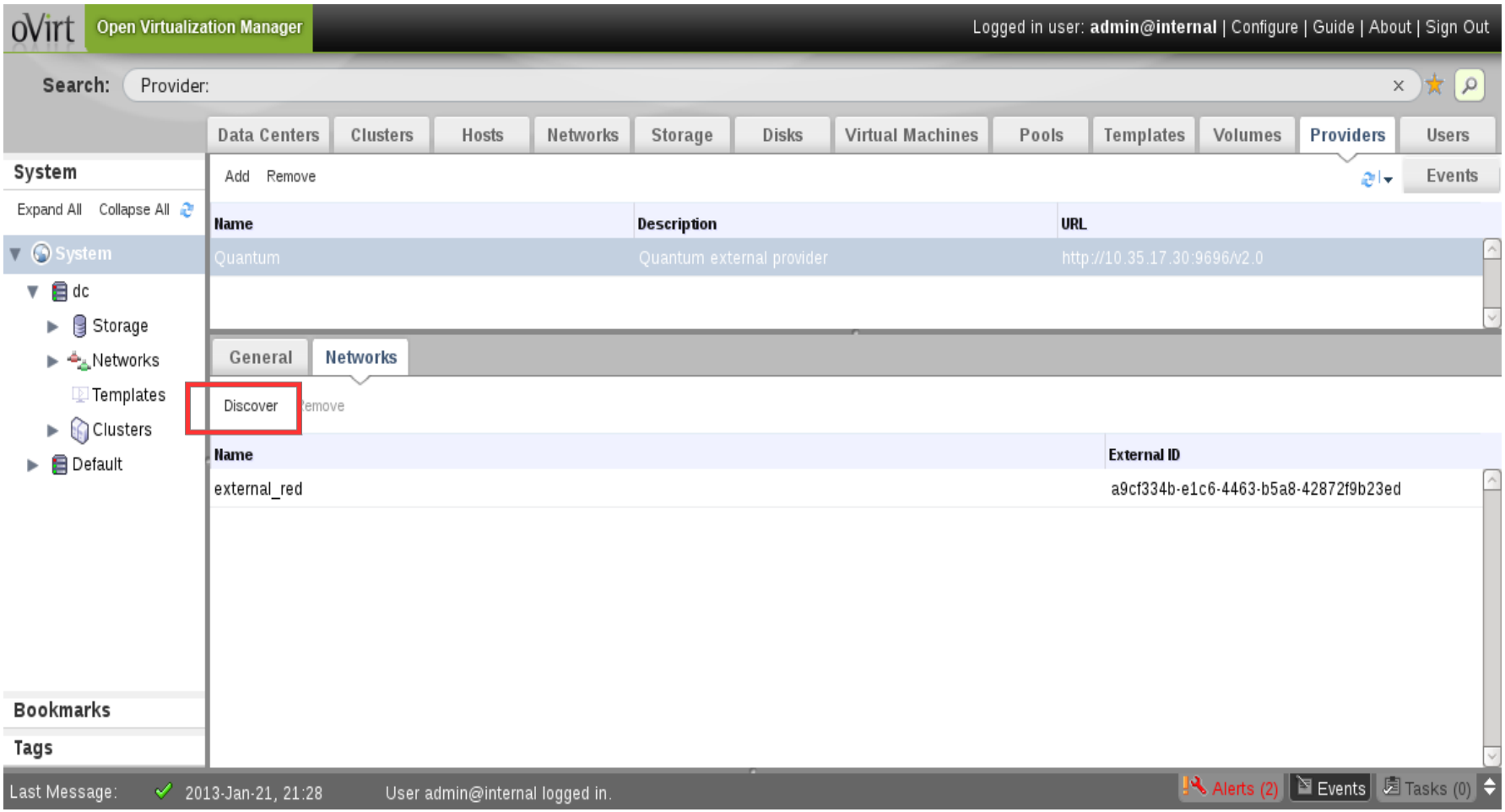
RED HAT ENTERPRISE VIRTUALIZATION
ROADMAP

	RHEV 3.2 – June 2013
RHEL 6.4	- Based on RHEL 6.4 Hypervisor
New CPU Support	- Intel Haswell and AMD Opteron G5 (Seoul)
New guest Support	- Windows 8 and Windows Server 2012
VDI Smart Card	- Support smart card for client authentication
VDI Spice Proxy	- Support for Network proxy for Spice traffic
Network Mgmt	- New Network Management UI including Network permissions
UI Plugins	- Framework for vendor supplied UI plugins
Reporting	- New reports including cloud provider utilization report

RED HAT ENTERPRISE VIRTUALIZATION
ROADMAP

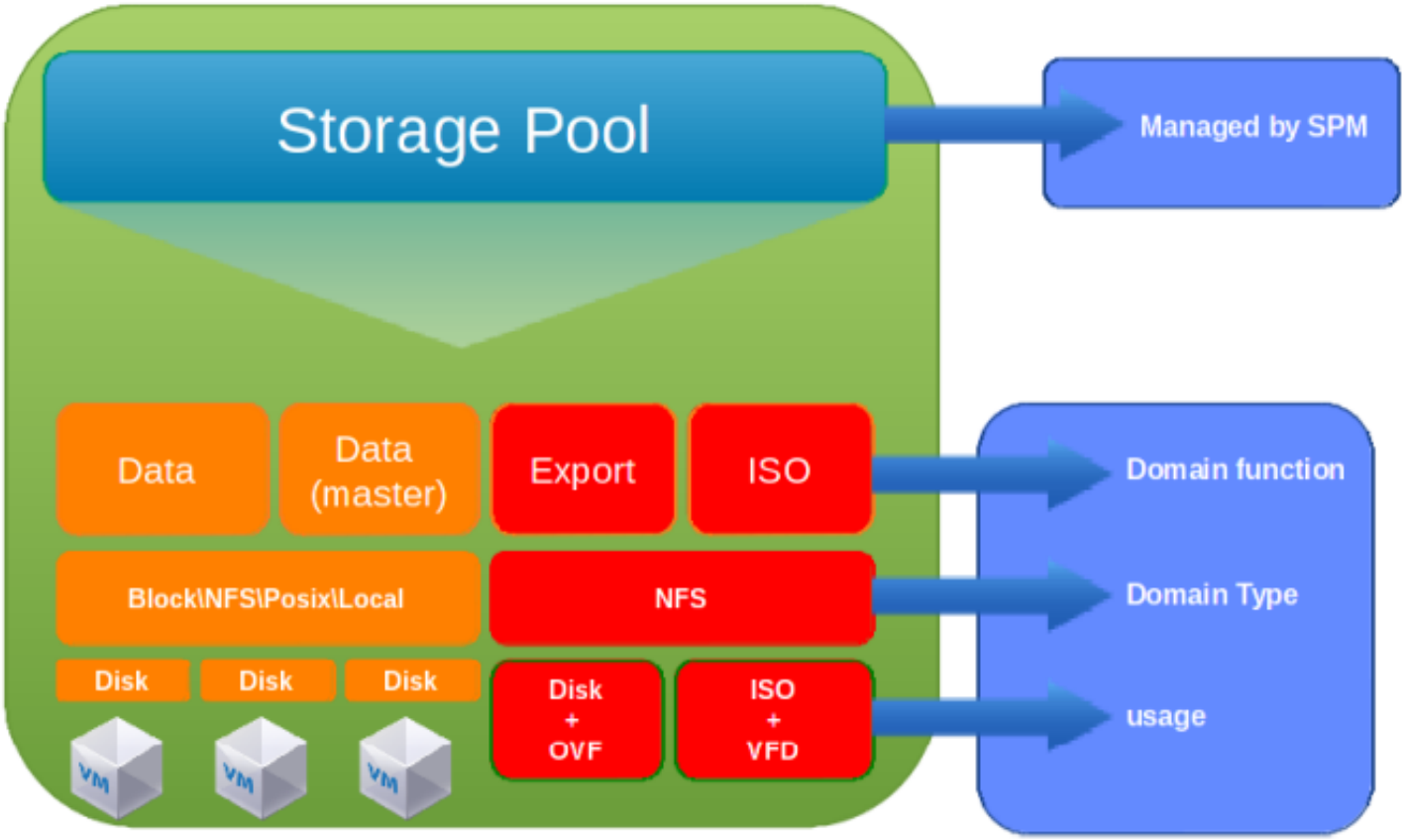
	RHEV 3.3 Release
RHS Native Support	- Glusterfs as Storage Domain
Hosted RHEV-M	- Run RHEV Manager as a managed virtual machine with HA
Backup API	- Backup and Restore API for Independent Software Vendors
SLA Manager	- SLA Manager (Quality of Service for Virtual Machines)
Quantum Integration	- Integration with OpenStack Network Service Management
Glance Integration	- Integration with OpenStack Glance for templates/images
VirtIO SCSI	- Paravirtualized SCSI support in guests
Resize disks	- Live resize of virtual disks
UI Plugins	- Framework for vendor supplied UI plugins
Self Service	- Expanded self service options – Instance types/images/etc

RHEV OPENSTACK QUANTOM INTEGRATION

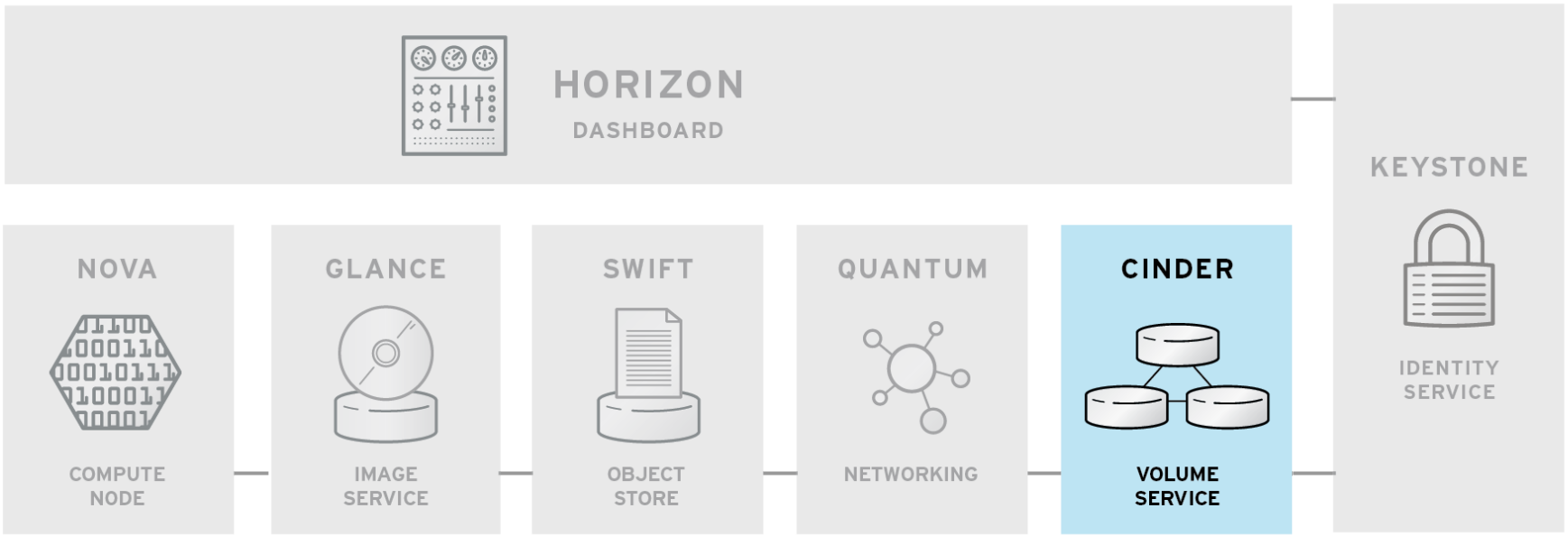


Add RHS Roadmap

Overview of RHEV Storage concepts



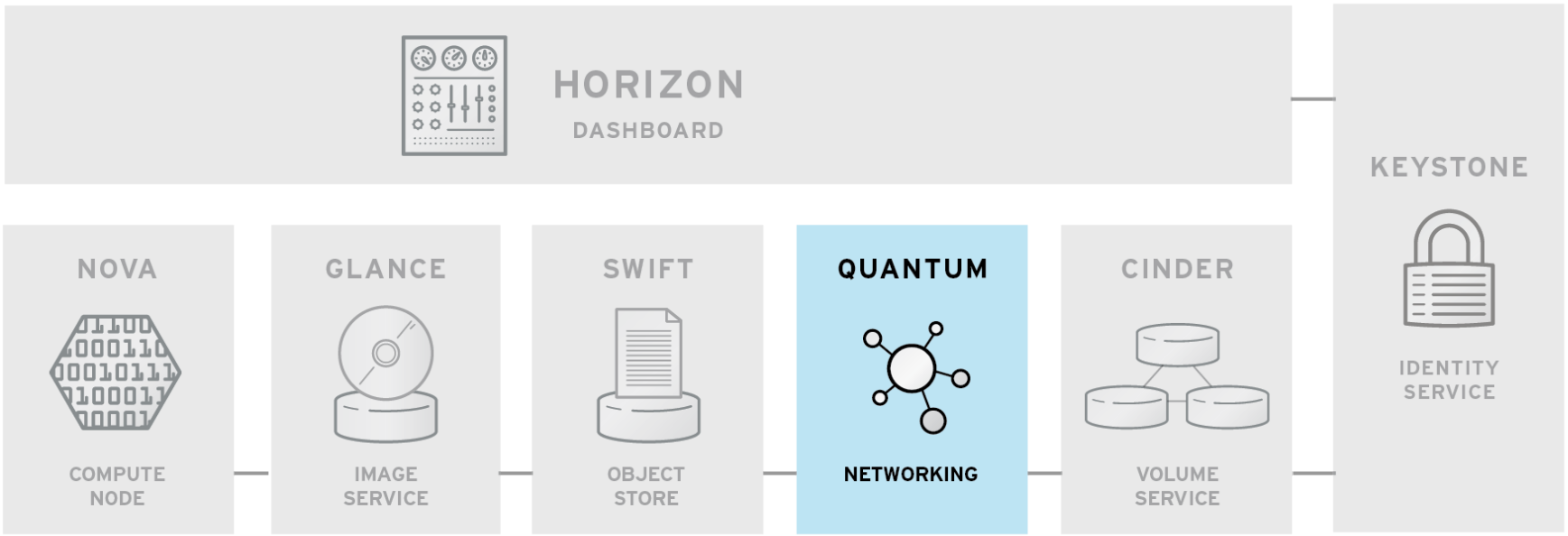
OPENSTACK CORE PROJECTS



OpenStack Block Storage (CINDER)

- Block Storage (Volume) Service
- Provides block storage for virtual machines (persistent disks)
- Similar to Amazon EBS service
- GlusterFS Driver for Cinder
- Plugin architecture for vendor extensions

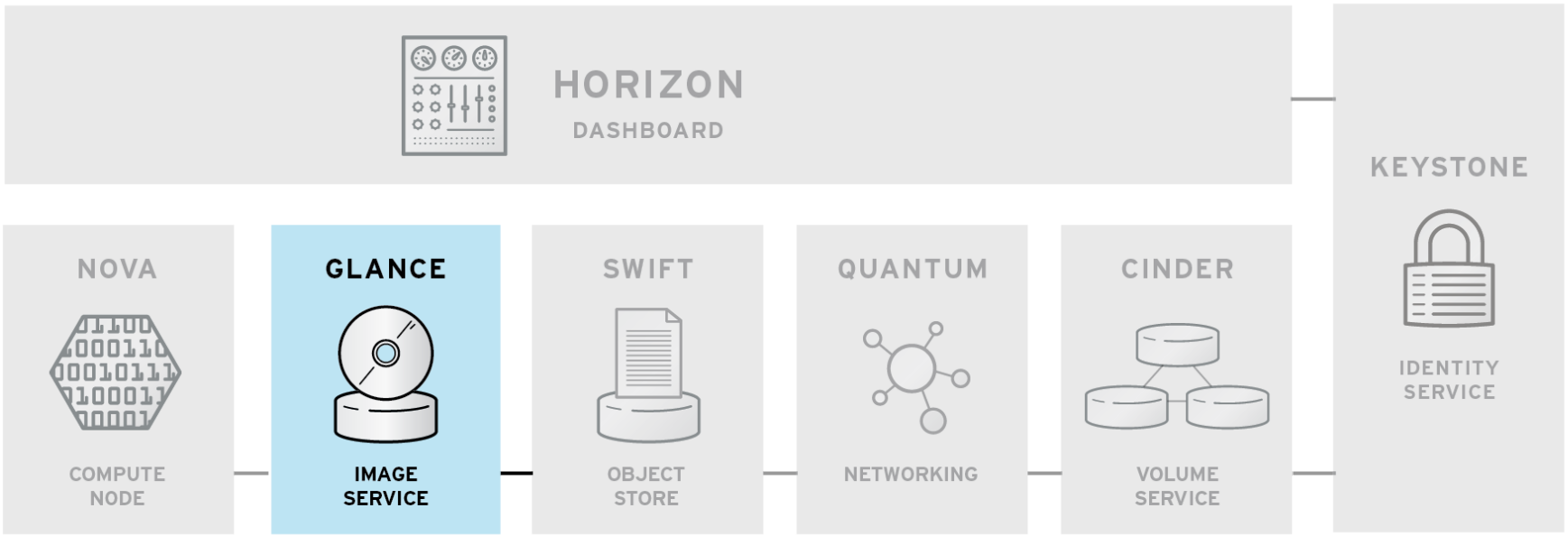
OPENSTACK CORE PROJECTS



OpenStack Networking (formerly QUANTUM)

- Network Service
- Provides framework for Software Defined Network (SDN)
- Plugin architecture
  - Allows integration of hardware and software based network solutions

OPENSTACK CORE PROJECTS



OpenStack Image Service (GLANCE)

- Image service
- Stores and retrieves disk images (virtual machine templates)
- Supports Raw, QCOW, VMDK, VHD, ISO, OVF & AMI/AKI
- Backend storage : Filesystem, Swift, Amazon S3

Red Hat Open Stack Overview

OpenStack is software and tools for building and managing Cloud infrastructure

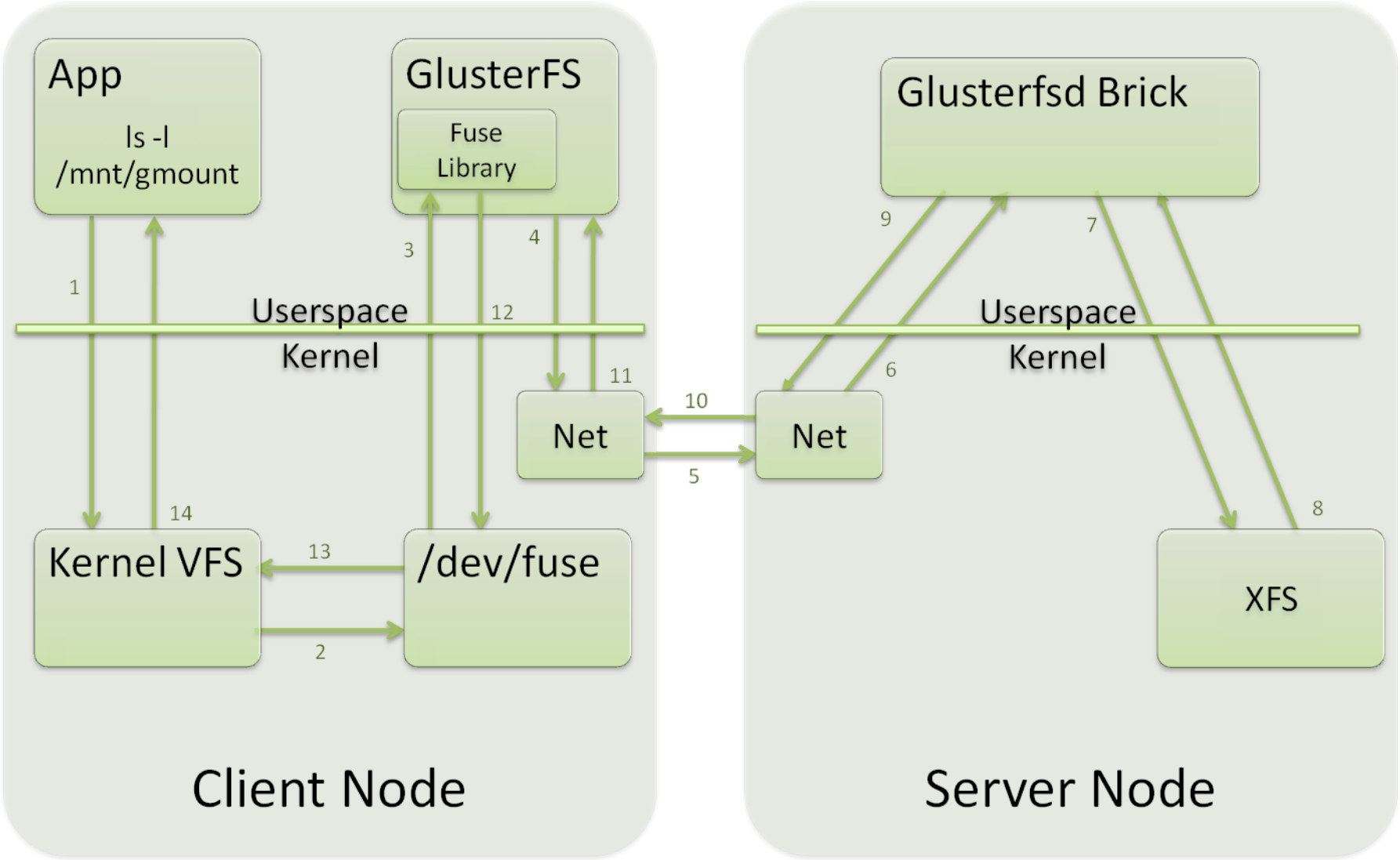
9429 users distributed across 87 countries and 100s of deployments

RDO is a community of people using and deploying OpenStack on Red Hat platforms

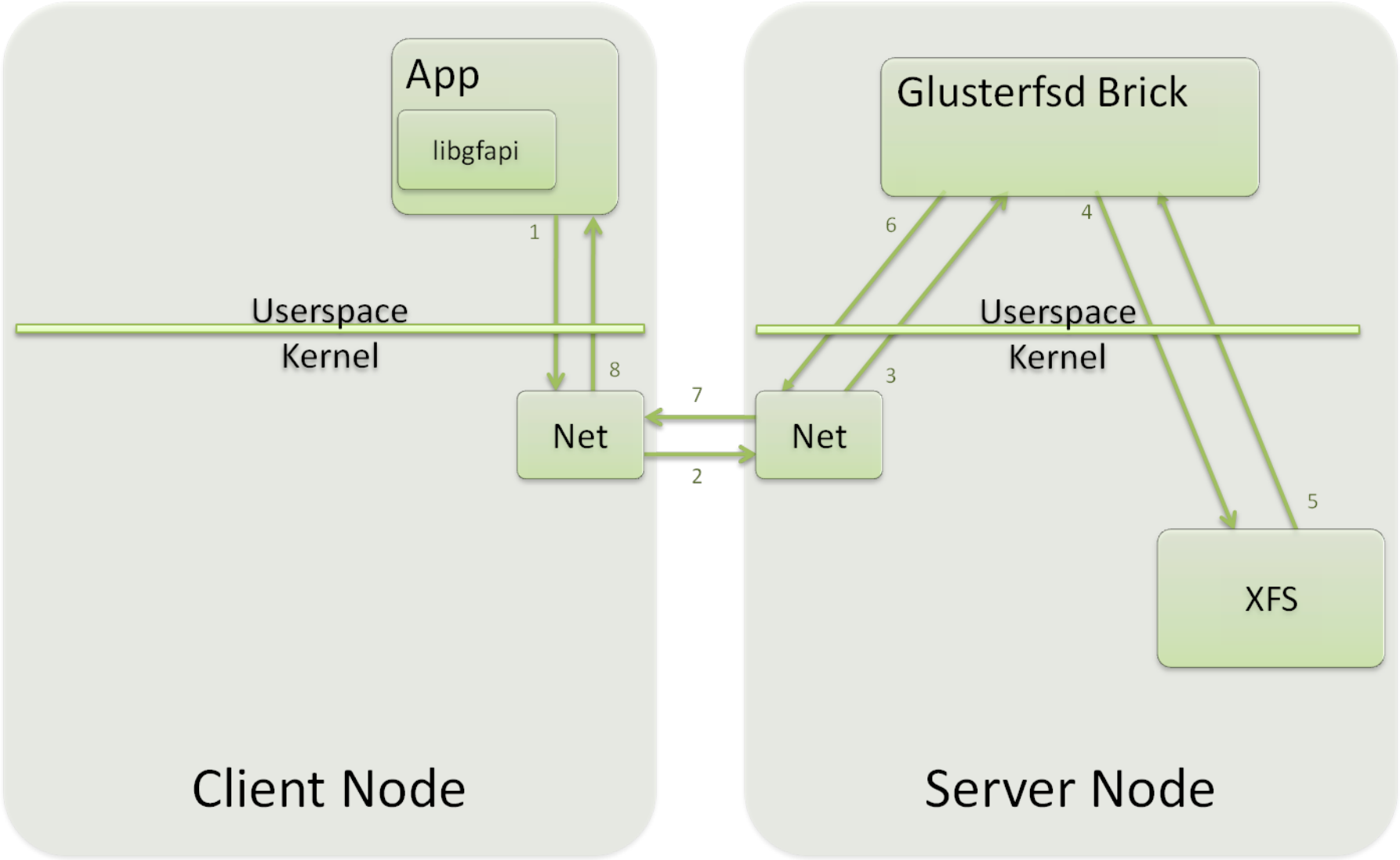
Red Hat Open Stack is the Community Invented Open Stack that has been Hardened and Supported by Red Hat

Red Hat is very actively involved and is the largest contributor to the latest release (Grizzly)

Native Application, FUSE-based Access



Native Application, libgfapi-based Access



Red Hat Storage server roadmap summary