Next Generation Storage for The Software–Defined World

> John Hoffer Solution Architect Red Hat, Inc.

BUSINESS PAINS DEMAND NEW MODELS



PROPRIETARY/TRADITIONAL ARCHITECTURES

- High up-front costs, amortized ROI
- Enterprise agreements, inflexible terms
- Proprietary stacks with lock-in
- Single-vendor commitment
- High utilization of existing resources

CLOUD ARCHITECTURES

- Based on open source, low up front costs
- Pay-as-you-go, metering and chargeback
- Heterogeneous architecture
- Multiple vendors, best of breed
- Grow and shrink resources according to demand, SLA, cost



TRADITIONAL ARCHITECTURE IS NOT THE ANSWER



Source: IBM



STORAGE DESIGN GOALS

Scale out

- Elimination of metadata
- Effective distribution of data to achieve scalability and flexibility

Linear Scaling

- Capacity scale up vertically
- Performance scale out horizontally

Elasticity

- Flexibly adapt to the growth or reduction of data in the enterprise
- Add or remove resources to/from storage pool with zero application disruption

Deployment Agnostic

 Deploy on-premise, in the public cloud or a hybrid setup.

Must run on commodity hardware

- Industry standard servers.
- No-purpose built hardware.



Upstream is Active!



RED HAT STORAGE 2.1 USE CASES

- Content Cloud
- Tier 2 or 3
- Backup target
- General purpose file storage
- VM Store (RHEV)
- HPC throughput not IOPs



OPENSTACK

SOFTWARE DEFINED INFRASTRUCTURE FOR CLOUD-ENABLED WORKLOADS

- Modular architecture
- Designed to easily scale out
- Based on (growing) set of core services



Redhat.

OPEN HYBRID SCALE-OUT SOFTWARE-DEFINED STORAGE PLATFORM



Red Hat Storage technology stack





Red Hat Storage concepts





Red Hat Storage user perspective

(distributed volumes)





Red Hat Storage user perspective

(replicated volumes)





Red Hat Storage user perspective

(distributed replicated volumes)





Red Hat Storage Server for On-premise

Scale out performance, capacity, and availability



SINGLE GLOBAL NAMESPACE

- Global namespace
- Aggregates CPU, memory, network capacity.
- Deploys on Red Hat-supported servers and underlying storage: DAS, JBOD.
- Scale out linearly.
- Scale out performance and capacity as needed.
- Replicate synchronously and asynchronously.



Red Hat Storage Server for Public Cloud





SINGLE GLOBAL NAMESPACE

- GlusterFS Amazon Machine Images (AMIs)
- The only way to achieve high availability of Elastic Block Storage (EBS)
- Multiple EBS devices pooled
- POSIX compatible (no application to rewrite required to run on Amazon EC2)
- Scale out capacity and performance as needed



What is productized in Red Hat Storage?

RED HAT' STORAGE

- Red Hat Enterprise Linux
- XFS
- GlusterFS
- Red Hat Storage console management station

A pre-integrated, pre-verified and ready to run software platform

Physical Server: 2 socket x86 with 12-36 disks

or

Virtual Server: Amazon, AWS, Red Hat Virtualization, or VMware

Sourced by customer



UNSTRUCTURED DATA GROWTH AND ACCELERATION



CLOUD/VIRT DRIVING
use of scale-out storage

Scale-out storage shipments will exceed

- 63,000 PB by 2015 (74% CAGR)*
- 40% OF CORE CLOUD SPEND is storage related

Unstructured data volumes

• EXPECTED TO GROW44X BY 2020*

Scale-out NAS software **\$7B BY 2015**

*Source: Gartner, IDC, 451 Group