FUT1433
SUSE Enterprise Storage Roadmap

Larry Morris – SUSE Product Manager
Lars Marowsky-Bree – SUSE Distinguished Engineer
Agenda

• Enterprise Storage Business Challenges
• SUSE Enterprise Storage Architecture
• SUSE Enterprise Storage Roadmap
• SUSE Enterprise Storage Use Cases
• Questions
Enterprise Storage Business Challenges
The Data Explosion Continues

175 ZB by 2025

Types of Data:
- Mobile Data
- Medical Data
- IoT Data
- Videos
- Transactional Data
- Emails

175 ZB by 2025
Limiting Factors of Traditional Enterprise Storage

Difficult to Scale and Manage Data Growth

Expensive

Won't Extend to the Software-defined Data Center
Open Source
The Heart of Our Software-Defined Infrastructure

Application Delivery

Container Management
- kubernetes
- Cloud Native Computing Foundation
- Kubic

Platform as a Service
- Cloud Foundry

Software-Defined Infrastructure

Private Cloud / IaaS
- OpenStack

Compute
- KVM
- Xen Project
- Open Initiative

Storage
- Ceph
- openATTIC

Networking
- OpenDaylight
- DPDK
- OVS

Multimodal Operating System
- Linux
- The Linux Foundation
- OpenSUSE

Physical Infrastructure:
- OpenPOWER
- Open Mainframe Project

Infrastructure & Lifecycle Management
- Uyuni / Spacewalk
- SALT
- Monasca

Open Build Service

Public Cloud
- Alibaba Cloud
- Amazon Web Services
- Google
- IBM
- Microsoft Azure
SUSE Enterprise Storage Architecture
Powered by Ceph Technology

SUSE Enterprise Storage Architecture

RADOS
(Common Object Store)
SUSE Enterprise Storage Roadmap
SUSE Enterprise Storage
Last 12-month Accomplishments

• Launched SUSE Enterprise Storage 5.5
  o 8th release

• openATTIC team driving Ceph Dashboard upstream project

• Latest upstream release Ceph Nautilus
  o 8 out of top 20 Ceph contributors are from SUSE

• SUSE more than doubled Ceph customers in FY18 relative to FY17
SUSE Enterprise Storage
Development Focus Areas

Manageability
- Ease of Installation
- GUI based Monitoring & Management

Interoperability
- Unified Block, File & Object
- Fabric Interconnects

Efficiency
- Cache Tiering
- Containerization
- Hierarchical Storage Management

Availability
- Backup/Archive
- Continuous Data Protection
- Remote Replication
Traditional Enterprise Storage
Key Features and Functions

SUSE Enterprise Storage 6

Features Legend:
- Included
- Partial
- Coming

Object Storage  
Block Storage  
File System
Management Node

Service

Monitor Nodes

Infrastructure

Features:
- Open – Open Source Software Defined Storage Solution
- Industry-Leading Storage Functionality
- Simple Installation, Management and Monitoring
- Heterogeneous OS Access
- Key Hardware & ISV Support with Reference Architectures
- Highly Redundant Data Cluster
- Unified: Support for Various Block, File & Object Protocols
- Self-Healing and Self-Managing
- Unlimited Scalability
- Policy-Based Data Placement
- Support for Stretch Cluster Replication and Erasure Coding
- Security (based on AppArmor)
- Data Encrypted in Flight
- Data Encrypted at Rest
- Data Compression
- Data Deduplication
- Async Remote Data Replication
SUSE Enterprise Storage 6

Manageability

- Ceph Dashboard (oA replacement)
- Phone home (metrics and error analysis)
- Enhanced PG balancing
- Autonomous PG scaling**
- CephFS directory quotas
- Graceful system shutdown
- Storage enclosure disk integration

** Items are tech preview
SUSE Enterprise Storage 6

Interoperability

• IPv6
• RGW Elasticsearch sync module
• Node to node encryption**
• Multiple CephFS instances in one cluster**
• NFS-Ganesha active/active architecture**

** Items are tech preview
SUSE Enterprise Storage 6

Efficiency

- QoS for RBD
- QoS for background operations
- S3 object policy driven tiering**

** Items are tech preview
SUSE Enterprise Storage 6

Availability

- Unidirectional sync external cloud via S3
- CephFS snapshots
- Asynchronous file replication**

** Items are tech preview
SUSE Enterprise Storage Roadmap

- SES 4: Nov 2016
- SES 5: Oct 2017
- SES 5.5: Oct 2018
- SES 6: June 2019*
- SES 7: Q2/Q3 2020*

**Unified File, Object & Block**
- CephFS
- Multisite object replication
- Acquired openATTIC

**Performance and Ease of Use**
- BlueStore
- Compression
- Block/File Erasure code
- NFS/S3 interface
- NFS/CephFS interface
- OpenATTIC integrated with DeepSea
- Enhanced monitoring and management

**Interoperability and Security**
- Integration with SUSE OpenStack Cloud
- CIFS/Samba interface
- Non SUSE Ceph clients
- Event notification
- AppArmor integration
- Security audit testing

**Enhanced Management and Hybrid Cloud**
- Ceph Dashboard
- Enhanced monitoring
- Public cloud product
- Sync to external cloud
- Phone home
- RBD QoS
- CephFS snapshot
- Async file replication

**Containerization and Autonomous Self-Healing**
- Containerization
- Enhanced intelligent data placement
- Guided troubleshooting
- Guided HW upgrade
- Guided OSD repair
- Data deduplication
- RDMA interconnect
- Windows drivers

*: These dates are indicative only, not guaranteed
Kubernetes Features

Self-Healing
Horizontal Scaling
Load Balancing
Rollback
Configuration Management
Declarative Automation
  • Placement
  • Scheduling
  • Deployment
  • Health
  • Scalability
  • Failover
SUSE Enterprise Storage and Rook

Run SUSE Enterprise Storage on Kubernetes

Rook is a cloud-native storage orchestrator
Rook expands Kubernetes to run storage

• Deployment
• Configuration
• Provisioning
• Scaling
• Upgrading

Rook is not in the data path
Rook automates storage management tasks

• Rook manages Ceph/SES daemons
SUSE Enterprise Storage Use Cases
Use Case Focused Solutions
Partnership Ecosystem

- Backup to Disk Solution
- Compliant Archives
- HPC Storage
- Certified Reference Architectures
- Appliance
- SAP Hana Storage Solution
- Cloud
- SUSE OpenStack Cloud
- SUSE Enterprise Storage
- Analytics
- CSPs
- SUSE Enterprise Storage
Unpublished Work of SUSE LLC. All Rights Reserved.
This work is an unpublished work and contains confidential, proprietary and trade secret information of SUSE LLC. Access to this work is restricted to SUSE employees who have a need to know to perform tasks within the scope of their assignments. No part of this work may be practiced, performed, copied, distributed, revised, modified, translated, abridged, condensed, expanded, collected, or adapted without the prior written consent of SUSE. Any use or exploitation of this work without authorization could subject the perpetrator to criminal and civil liability.

General Disclaimer
This document is not to be construed as a promise by any participating company to develop, deliver, or market a product. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions. SUSE makes no representations or warranties with respect to the contents of this document, and specifically disclaims any express or implied warranties of merchantability or fitness for any particular purpose. The development, release, and timing of features or functionality described for SUSE products remains at the sole discretion of SUSE. Further, SUSE reserves the right to revise this document and to make changes to its content, at any time, without obligation to notify any person or entity of such revisions or changes. All SUSE marks referenced in this presentation are trademarks or registered trademarks of SUSE LLC. in the United States and other countries. All third-party trademarks are the property of their respective owners.