SUSE Storage Solutions

SUSECON 2019

April 2, 2019

Mike Dilio & Sanjeet Singh
Agenda

- Business Challenges
- SUSE Enterprise Storage
- Solutions
A Data Explosion
Demand For Data Storage Will Outstrip Production

Mobile Data
Medical Data
IoT Data
Videos
Emails
Transactional Data

175ZB by 2025
Limiting Factors
Traditional Enterprise Storage

Difficult to Scale and Manage Data Growth
Expensive
Won’t Extend to the Software-defined Data Center
How Can You Address These Limiting Factors?
SUSE Enterprise Storage

An intelligent software-defined storage solution, powered by Ceph technology that enables IT to transform their enterprise storage infrastructure to:

- **Deliver a highly scalable and resilient environment with no single points of failure**

- **Reduce IT costs** by using off-the-shelf servers and disk drives

- **Seamlessly adapt to changing demands** by automatically optimizing storage when upgraded or added without disruption
SUSE Enterprise Storage 5.5
Current Release

Enhanced Performance, Security and Stability
- Embedded support for AppArmor
- Performance and stability improvements

Easier to Manage
- Next iteration openATTIC and DeepSea management infrastructure
- Tighter integration with SUSE OpenStack Cloud
- Event notification

Expanded Heterogeneous Support
- CIFS/Samba export of CephFS
- Support for non-SUSE Ceph RBD and CephFS clients
Ease of Management Focus
SUSE Advanced Graphical Interface

Session: TUT1102
Managing and Monitoring Ceph with Ceph Dashboard
Powered by Ceph Technology
SUSE Enterprise Storage Reference Architecture

RADOS
(Common Object Store)
Supported Protocols, Legacy and Native

SUSE hasn’t left the traditional data center behind
• NFS is provided for both file and S3 objects. File is a re-export of CephFS
• NFS for S3 provides a mechanism to bulk load existing data to an S3 repository
• SMB/CIFS Microsoft client access is a requirement for almost every data center environment!
• iSCSI provide access mechanisms to bridge your data center to the future

Native protocol support includes
• RBD (Block)
• RADOS (Object)
• CephFS (With multiple active MDS Servers)
• S3 and Swift
Supported Hardware Platforms
The Way You Need It

YOU choose the best hardware platform that fits your needs

SUSE Enterprise Storage server roles supported for:
- x86_64 (Intel and AMD)
- 64-bit ARM platforms

Balance data protection, space consumption and performance
- Replication can be set from one to infinity, though practical limits are less than 10
- Erasure coding is heavily customizable to balance consumption with recoverability

Stretch your cluster across racks, rows, data centers, campus or even the Metro area!
- Designing for PB scale means we have to think about constant data availability, recovering 100PB from tape just isn’t reasonable
- Protect it how you need it
Supported Deployment
Multiple Methods to Deploy Clusters

Custom Build
DIY with Off-the-shelf Servers

Reference Architecture
Pre-validated Flexible Easy deployment

Appliance
Pre-configured Fast deployment

SUSE Linux Enterprise Server “Yes” Certified Hardware
Solutions
Use Case Focused Solutions

Partnership Ecosystem

**Classic Workloads**
- Backup to Disk Solution
  - Commvault
  - Micro Focus Data Protector
  - Sep
- Custom Build
- DIY with COTS Servers
- HPC Storage
  - iRODS
  - Lenovo

**Flexible Configs**
- Certified Reference Architectures
  - Hewlett Packard Enterprise
  - Lenovo
  - Dell
  - Supermicro
  - Cisco
- Appliance
- DIY with COTS Servers

**Cloud Native Workloads**
- Cloud & App Delivery
  - SUSE OpenStack Cloud
- Container as a Service
- Analytics
  - Data Lake
- Custom Apps
  - SUSE Enterprise Storage
Backup Solutions and Benefits

- **Lower Cost**
- **Improved SLAs**
- **Scalability**
- **Meet Regulatory Requirements**

Block, File or S3

SUSE Enterprise Storage
Session: TUT1235
Using Veeam with SUSE Enterprise Storage
SUSE Enterprise Storage for OpenStack Cloud

Ceph is the Most Deployed Block Storage Backend for OpenStack

- Ceph RBD is used in almost Half the Deployments
- 48% Usage in Large Clouds with over 1000 Cores

“SAP has been working with SUSE to solve IT infrastructure challenges for more than 18 years. We are excited that SAP Cloud Platform in SAP data centers now leverages SUSE’s reliable and high-performing open source solutions for managing and deploying virtual machines, as well as storing and managing critical enterprise data.”¹

“Our new cloud service, based on SUSE OpenStack Cloud and SUSE Enterprise Storage gives our colocated customers the best of both world, combining security with flexibility.”²
HPC Storage Solution
Most Common Use Case as Tier 2 Storage

- Use Cases:
  - Primary Storage (Certain Use Cases)
  - Nearline or Archival Storage
  - Home Directories

- Certified with HPE Data Management Framework (DMF) and iRODS
Data Management

• Use Cases:
  • Workflow Automation
  • Storage Tiering
  • Landing Zones for Data
  • Transformation
  • Data Discovery

• Benefits
  • Reduce Opex by Automating Workflows
  • No More Storage Silos
  • Single Pane of Glass Management for Storage
  • S3 Connectivity Available; Native RBD Connectivity in Beta
Containers

SUSE Container as a Service Platform

Container Storage Interface

SUSE Enterprise Storage *

Container Storage Interface

Kubernetes

*: Currently not supported on the same node as Kubernetes
Analytics

The Ideal Data Lakes Platform

The Central Repository for Data Supporting Multiple Workloads

Supported thru various protocols (CephFS, S3, S3A)

Various use cases:

- Data pipeline
- AI & HPC
- Archival for Spark and NoSQL

*Coming Soon

*Coming Soon
Datawarehouse Optimization

Enhanced via a Data Lake

Data Lake

Logstash

Spark (A)  Spark (B)  Spark (C)

Other Ent Apps

IoT Data

Kafka

Elastic  Kibana

BI Apps

Data Consolidation  Agility  Better Predictive Capability  Cost Reduction
File Sync and Services Solution

- Built on SUSE Enterprise Storage
- Integrates with various portals
- Use Cases (dependent on portal used):
  - Internal Drop-box Like File Sharing Solution
  - Remote Office Backup
  - Enables Self Service Storage Access

Secure File Sharing
Open Source File Sync and Share
Enterprise File Services
Secure File Sharing
SUSE Compliant Archive Solution
Partnership with iTernity

• iTernity iCAS is a middleware that protects application data on SUSE Enterprise Storage
• iCAS is certified to meet the legal requirements of healthcare and financial industries*

• Use Cases:
  • Email and file archiving
  • Banking transaction data
  • Voice recordings
  • Patient data
  • X-Rays, scans and MRIs
  • Records retention
  • PII data

* www.iternity.com/software-partner.html
Archival Solution with PSM
Policy-based File Archiving and Tiering

How It Works

1. Monitoring primary storage and classifying files to be
2. Copying classified files to secondary storage/archive device
3. Replacing original file by stub file and retain transparent access
4. Accessing archived/stubbed files by applications through primary storage
5. Providing archived file to application/“pass through read”

Primary Storage Supported: EMC VNX, NetApp FAS, Windows Filers, Other NAS Systems