



# SUSE Enterprise Storage 6



# Agenda

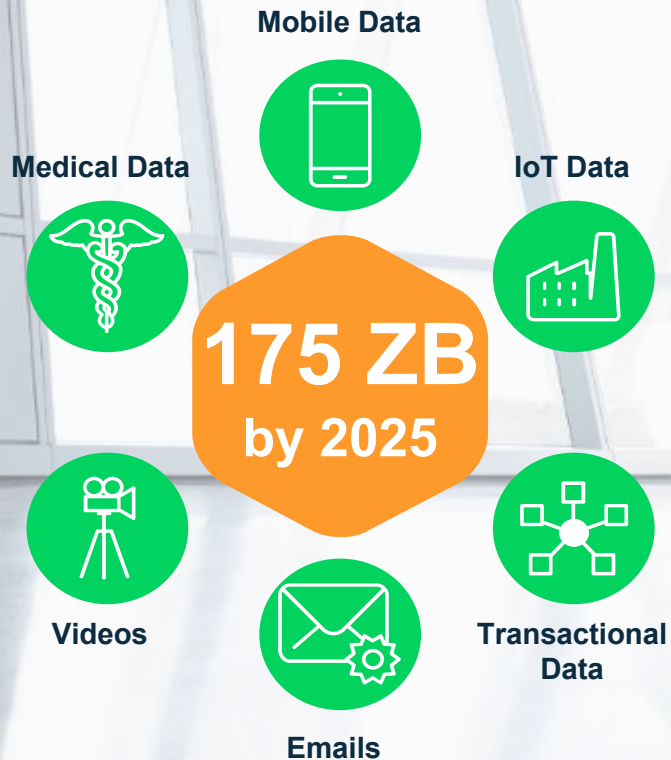
- **Enterprise Storage Business Challenges**
- **SUSE Enterprise Storage Architecture**
- **SUSE Enterprise Storage 6**
- **SUSE Enterprise Storage Use Cases**
- **Questions**



# Business Challenges



# The Data Explosion Continues



# 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 at the Heart of Our SDI and Application Delivery Approach



## Infrastructure & Lifecycle Management



Uyuni /  
Spacewalk

SALT



Monasca



Open  
Build  
Service

## 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  
CONTAINER  
INITIATIVE



### Storage



ceph



open  
ATTIC



### Networking



OLF  
NETWORKING



DPDK  
Data Plane Development Kit



Open vSwitch



### Multimodal Operating System



Linux



THE  
LINUX  
FOUNDATION



open  
SUSE

### Physical Infrastructure:



OpenPOWER™



OPEN  
MAINFRAME  
PROJECT



### Public Cloud



Alibaba Cloud



amazon  
web services



Google



IBM

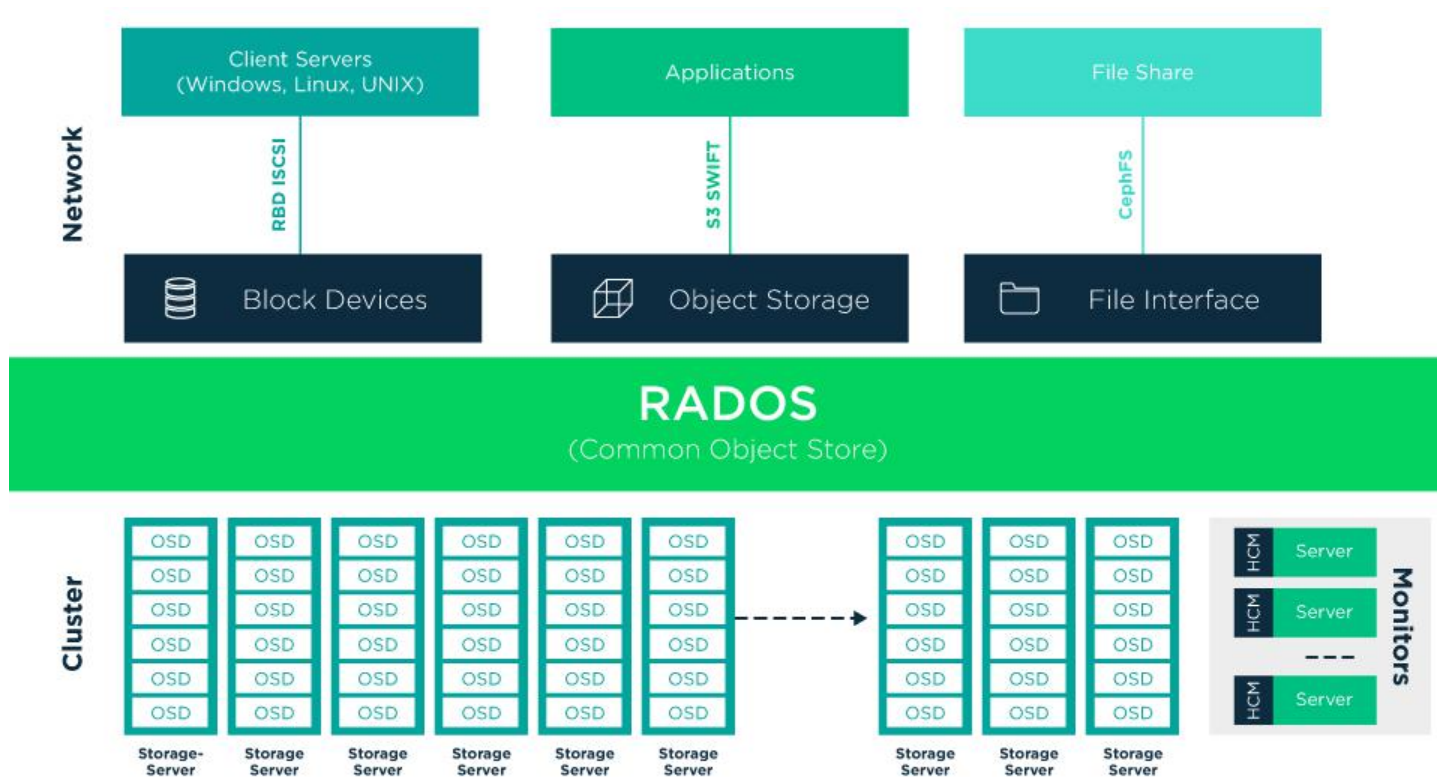


Microsoft  
Azure

# SUSE Enterprise Storage Architecture

# Powered by Ceph Technology

## SUSE Enterprise Storage Architecture





# SUSE Enterprise Storage 6

# 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

# SUSE Enterprise Storage Roadmap

SES 4: Nov 2016

SES 5: Oct 2017

SES 5.5: Oct 2018

SES 6: June 2019\*

SES 7: Q2 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



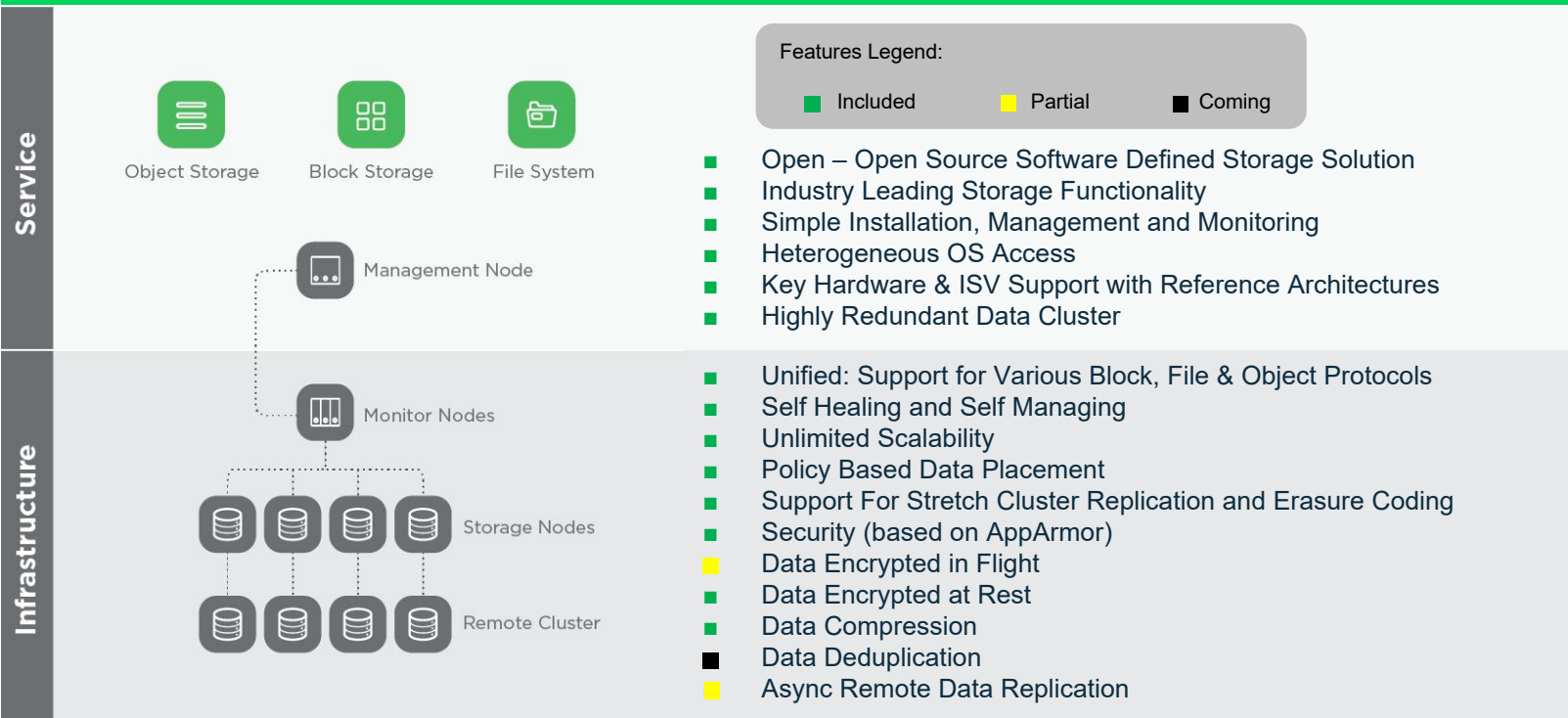
## Containerization and Autonomous Self Healing

- 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

# Key Features and Functions

## SUSE Enterprise Storage 6





# 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\*\*

# SUSE Enterprise Storage 6



Efficiency



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

# SUSE Enterprise Storage 6



Availability



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



# SUSE Enterprise Storage Use Cases

# Use Case Focused Solutions

## Partnership Ecosystem

### Classic Workloads

#### Backup to Disk Solution



#### Compliant Archives



#### HPC Storage



#### Certified Reference Architectures



#### Appliance

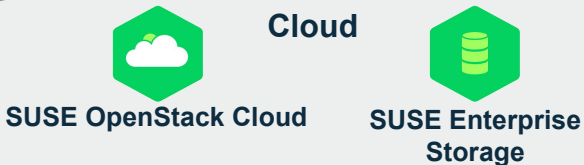


#### SAP Hana Storage Solution



### Cloud Native Workloads

#### Cloud



#### Analytics



#### CSPs +







