



# Intelligent Data Service Management

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# Data Management

## Data Deluge

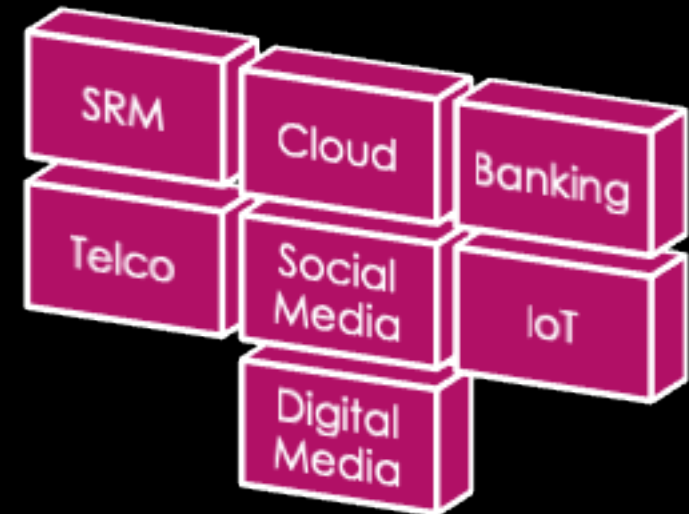
As per study, by 2020, >12k TB of data will be generated per second on earth

### 3A

- ▶ Analyze (Data)
- ▶ Align (Process)
- ▶ Ascend (Get value out of it)

### Achieve:

- ▶ Efficiency
- ▶ Productivity
- ▶ Mitigate Risks
- ▶ Data loss prevention
- ▶ Correct interpretation
- ▶ Decision making



# Data Management Service

## Back then

- ▶ Single Vendor shops

## Right Now

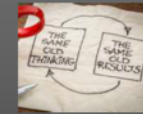
- ▶ Multi-Vendor Shops, Cloud

## Worries???

- ▶ Managing *heterogeneous assets* and consolidating reports
- ▶ Correct *interpretation* from these reports
- ▶ Storage consolidation
- ▶ Operational *preparedness*
- ▶ *Multi Cloud*
- ▶ Cloud storage utilization Capex
- ▶ *Security*

## Remember Storage Consolidation

### Then



- One storage system for enterprise
- One data protection solution
- Spread mediocre performance equally
- Data center evolved

### Now



- Five to six storage systems
- Three to four common
- Targeted performance per workload
- Agile data center revolutionizes

# Data Across multiple Clouds, Platforms, Heterogeneous Storage

## Key Requirements

- Data Provisioning
- Data Operation
- Data Protection
- Data Migration
- Data Analysis

## Key Challenges

- How can use data management service effectively?
- How can data be associated with application on the cloud?
- How can data be managed in a unified manner?



# Ahead

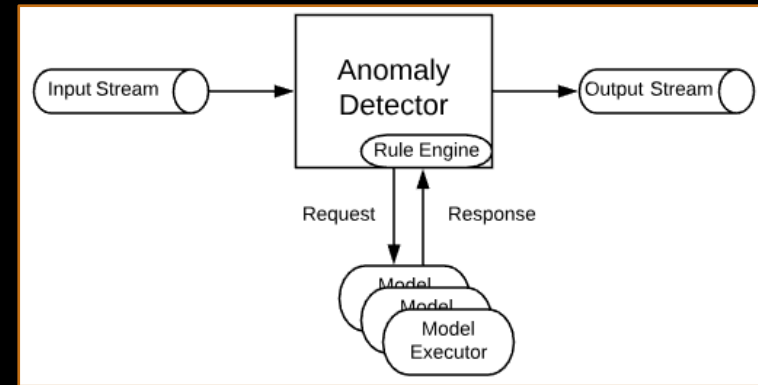
- **Storage automation capabilities**
- **Object data management and analytics**
- **Unified single pane of access and Management**
  - ▶ Across data centers...Across Geo
- **Filtering correct data-sets**
- **Deduplication**
  - ▶ Same data on the wire from different sources
- **Backup and recovery**
- **Continuous Data Access (Disaster Recovery)**

# Beyond

- Data Lifecycle Management
- Metering
- Chargeback
- Anomaly detection
- Performance analysis
- Meeting SLA
- Ticket Remediation

\$\$\$

$$\iiint_V (\nabla \cdot \mathbf{F}) dV = \oiint_S (\mathbf{F} \cdot \mathbf{n}) dS.$$



# Smart management

**Telemetry**

**AI/ML**

**Analytics**

**Data services**

- ▶ Enable
- ▶ Protect
- ▶ Incessant access

**Identity Management**



# What's needed to build the platform

*"If you want to lift yourself up, lift up someone else"*

*- Booker T. Washington*

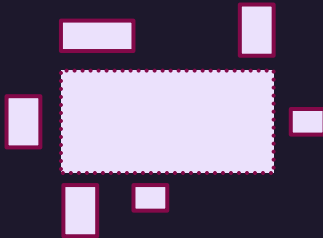
**Ubuntu**

*I am because we are*

THE FRAMEWORK

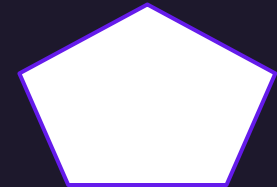


THE ECOSYSTEM



THE COMMUNITY

THE STANDARD & CERTIFICATION



# Let's Do It !!!

An open source community working under The Linux Foundation to address storage integration challenges in scale-out cloud native environments. Its vision is to connect *siloes* data solutions to build a self governed and intelligent data platform.

<https://www.opensds.io/>

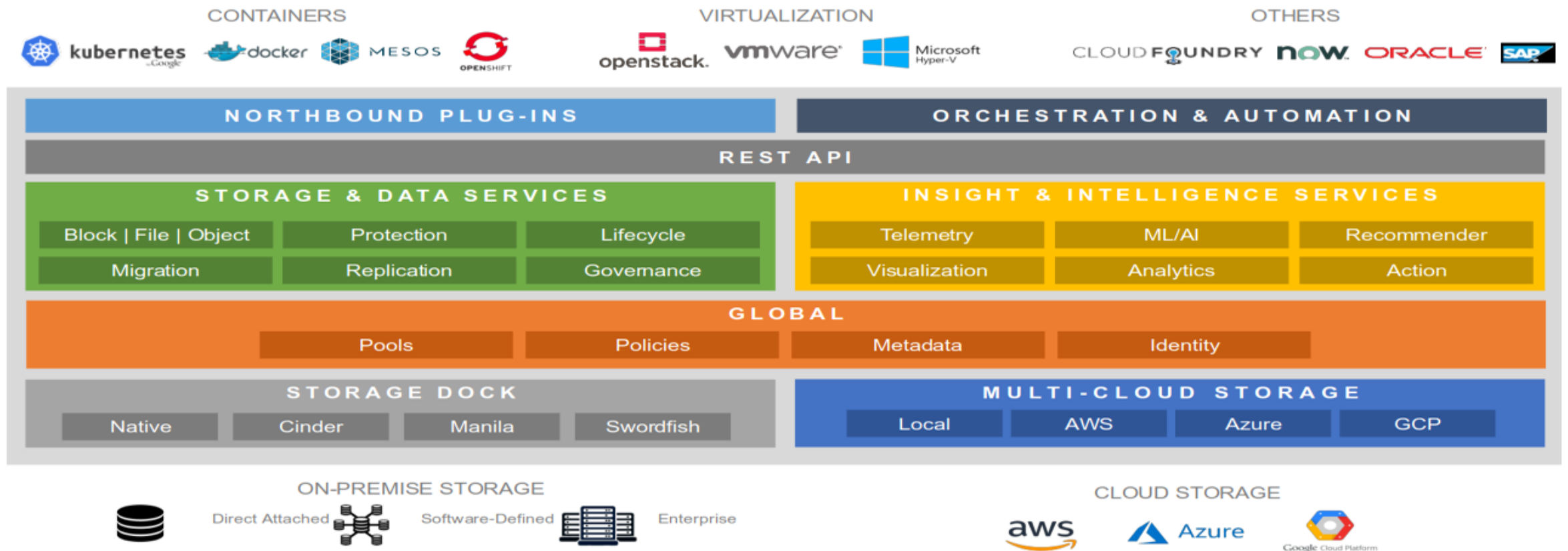
<https://github.com/opensds>





# (The Open Autonomous Data Platform)

## THE FRAMEWORK



# The Ecosystem



## OS & DB



## STORAGE & DATA MANAGEMENT



## STORAGE SYSTEMS



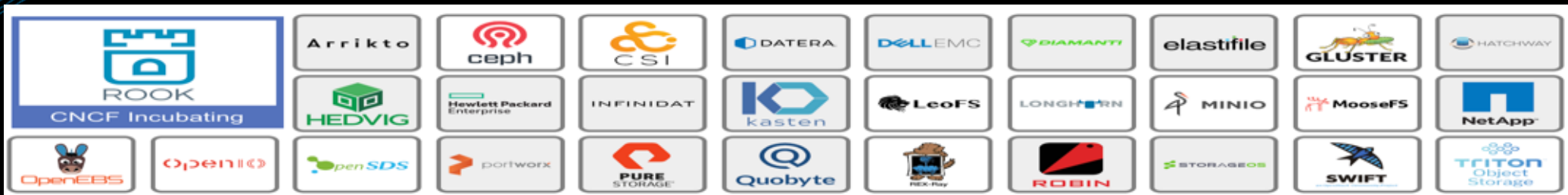
## ORCHESTRATION & AUTOMATION



## MONITORING & ANALYTICS



## CLOUD SERVICES & MANAGEMENT



# The Standards & Certification



Swordfish™

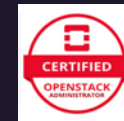
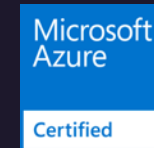
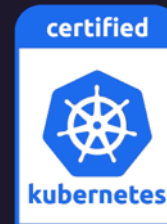


Storage  
Performance  
Council



OPEN METRICS

aws  CERTIFIED



Interoperable Components. Certified Solutions



# The Community



END USERS. DEVELOPERS. VENDORS



# Solution









## Data Services

## Telemetry

## Automation

## Orchestration

Analytics

 <b>CLOUD NATIVE</b> Run stateful Kubernetes services with cloud native data management integrated through CSI	 <b>HYBRID &amp; MUTLI-CLOUD</b> Enable data mobility from on-premise to/from and between AWS, Azure, and more using standard S3	 <b>VIRTUALIZATION &amp; CLOUD</b> Scale data management and eliminate silos for VMware and OpenStack	 <b>AUTOMATION &amp; ORCHESTRATION</b> Automate and orchestrate data and storage services using a programmable framework
 <b>DATA PROTECTION</b> Protect data with built-in snapshots or integrated 3rd-party backup software to meet RPO and RTO	 <b>DATA MIGRATION &amp; LIFECYCLE</b> Migrate data to the appropriate storage tier throughout different stages of its lifecycle	 <b>MONITORING &amp; ANALYTICS</b> Monitor performance and anomalies; use telemetry metrics and logs to gain insights	 <b>EDGE STORAGE</b> Centralize edge data management and seamlessly move data from edge to core or cloud

Anomaly detection

Intelligence

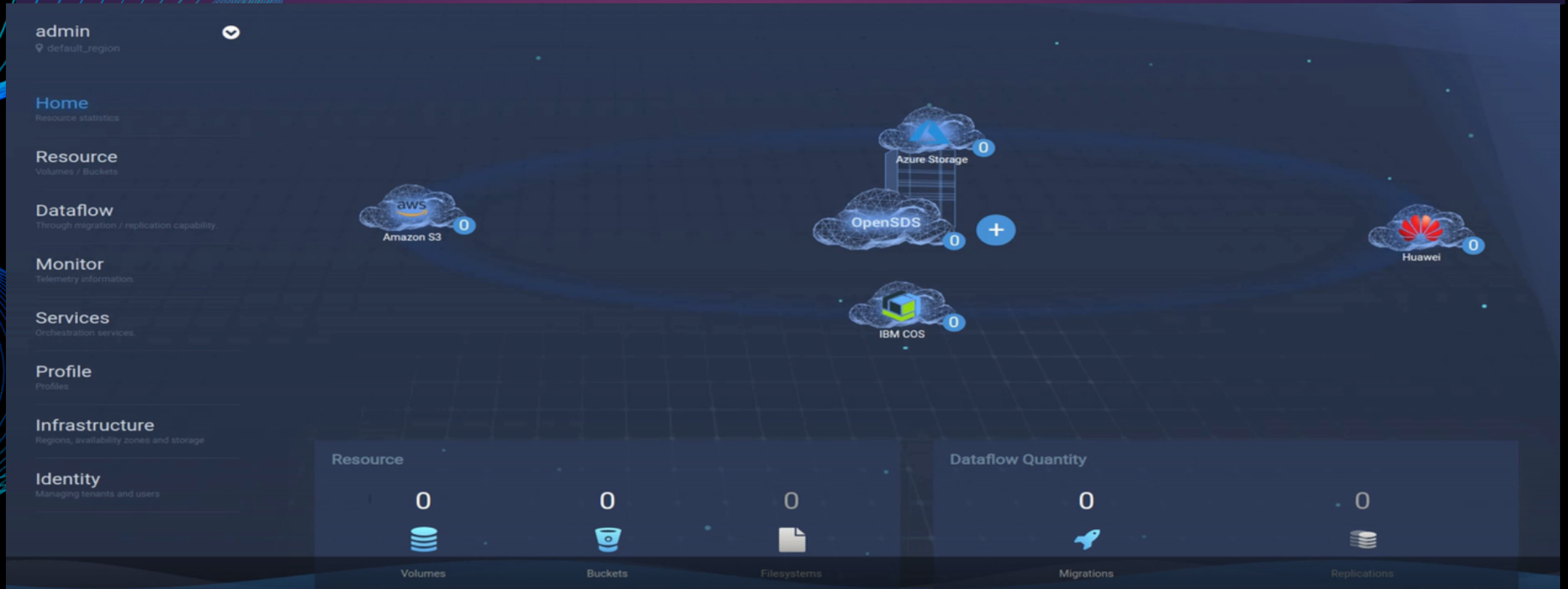
Cloud Native

File Share

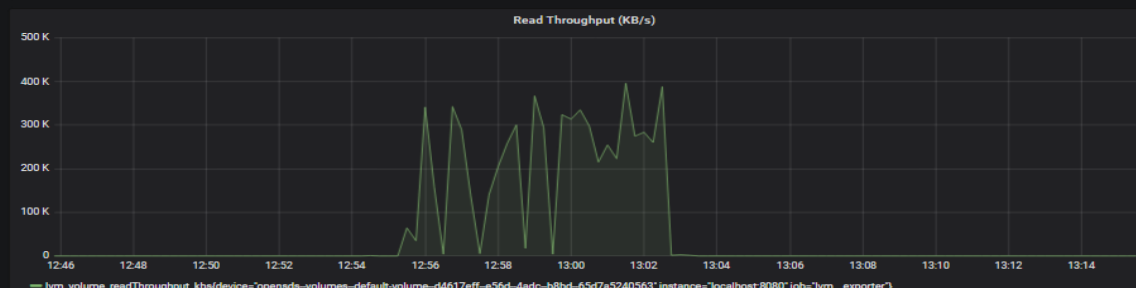
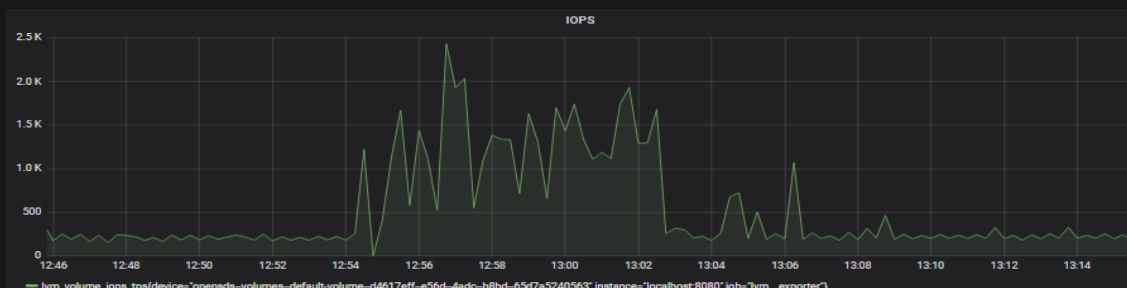
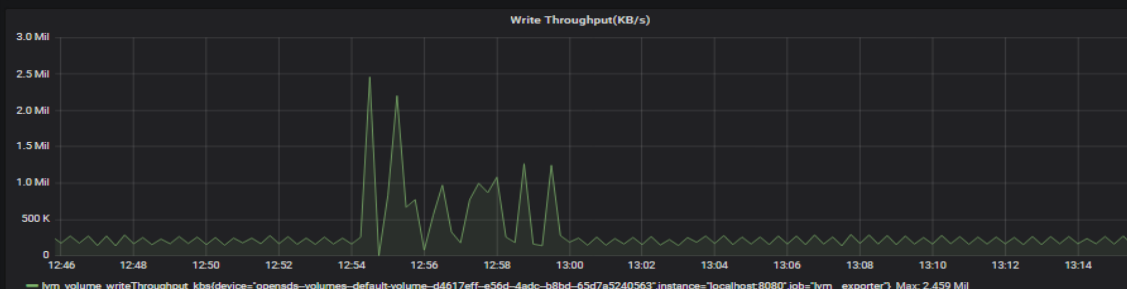
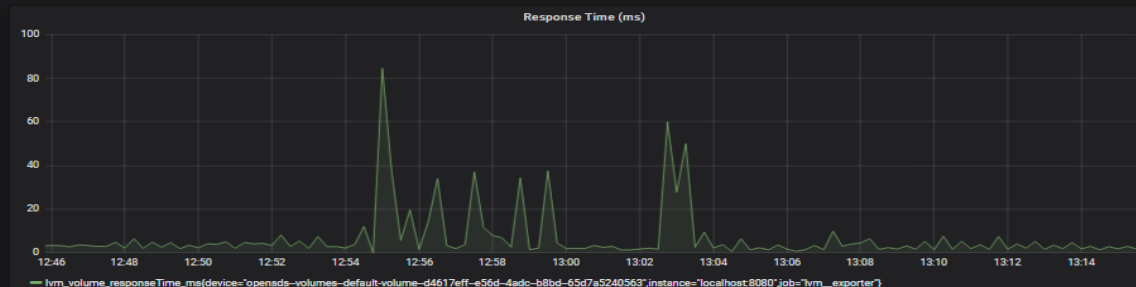
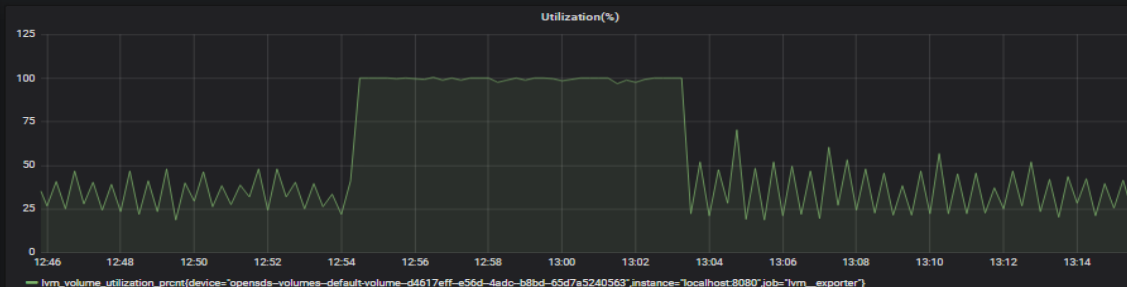
Data Lifecycle Management



# OpenSDS: Dashboard



# OpenSDS: Telemetry report



# OpenSDS: Bucket Migration

admin  
default\_region

Home  
Resource statistics

Resource  
Volumes / Buckets

Dataflow  
Through migration / replication capability

Profile  
Block profiles

Infrastructure  
Regions, availability zones and storage

Identity  
Managing tenants and users

Data flow

Data flow through buckets by migration / replication.

Migrations(1)Replications(0)

Create

search

Migration	Name	Source Bucket	Destination Bucket	Operation
aws → HUAWEI	testmigration	aws-orchestrate	hw-orchestrate	DeleteExecute
Start Time: 2019-05-15 23:27:44 End Time: 2019-05-15 23:28:10		Migrated Capacity: 826.11 KB Migrated objects: 1		
Source Bucket: aws-orchestrate Backend: aws-backend		Destination Bucket: hw-orchestrate Backend: hw-backend		

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Migrate from AWS bucket to HPC bucket





# REBRANDING

From Open SDS Project to Open Autonomous Data Project



# SODA

## The Open Autonomous Data Project

To build an open autonomous data storage platform with **self-driving protection, availability, security and optimization** capabilities for real world uses; to provide a neutral platform for **open source data storage projects collaboration**, and to **build a multi-vendor ecosystem** of products, solutions and services

PROJECT REBRANDING



# Join Us



<https://www.opensds.io>



<https://github.com/opensds>



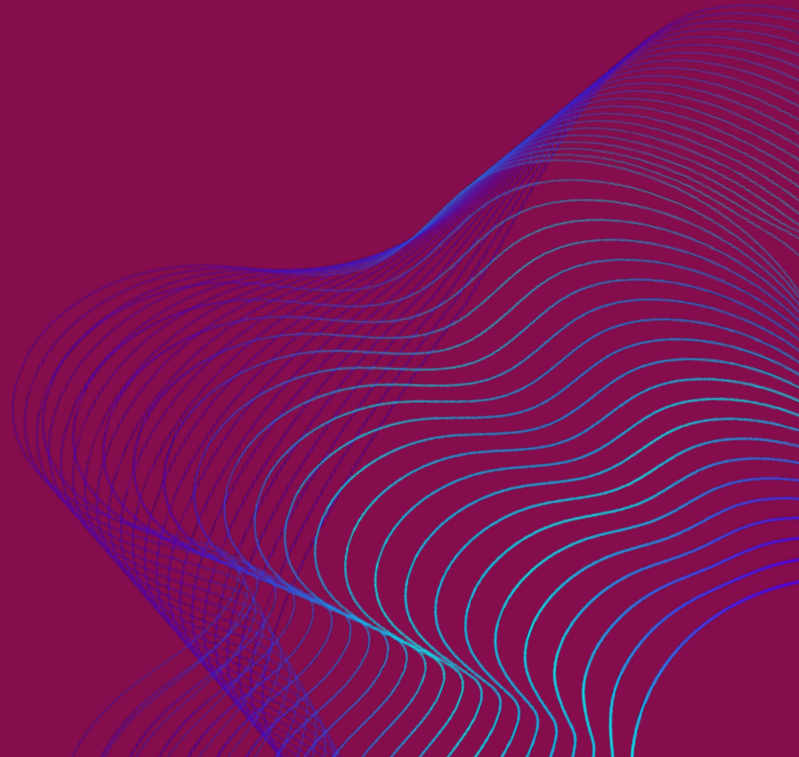
[info@opensds.io](mailto:info@opensds.io)



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[opensds.slack.com](https://opensds.slack.com)





Thank You!!