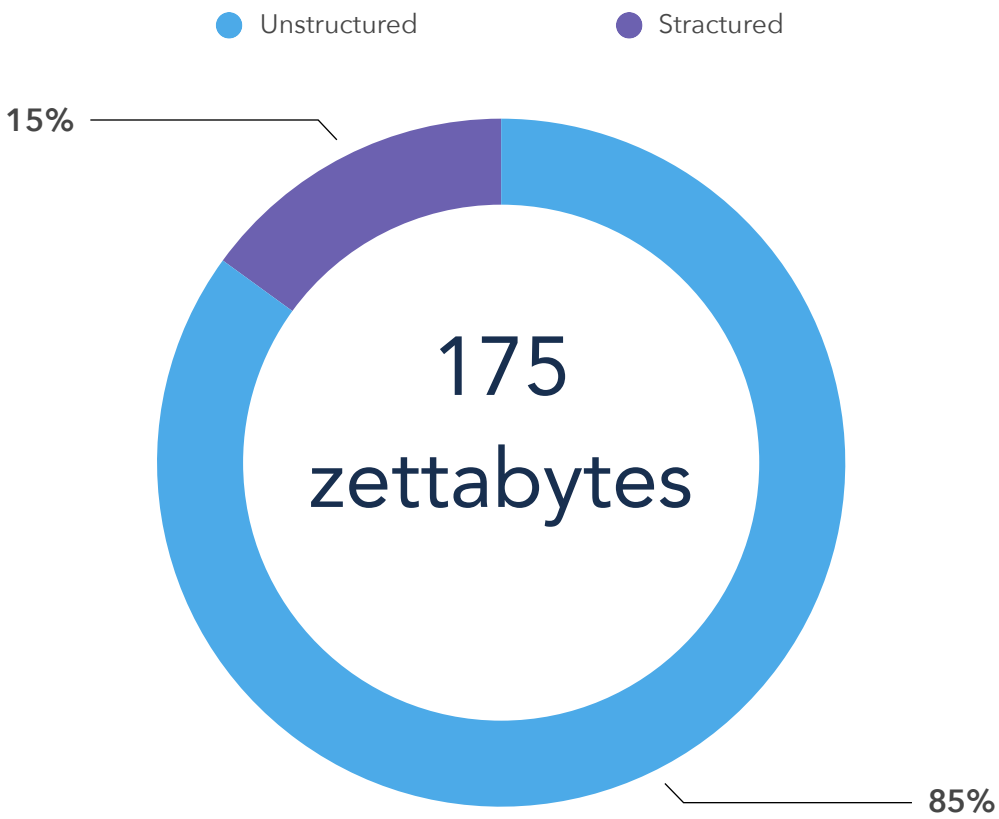
SARDINA

FishOS Ceph: Unified and Object Storage for the New Era



Data and storage are inseparable — and both are expanding relentlessly. Estimated global data volume in 2025 is 175 zettabytes, with unstructured data making up 85% of the total.
The number is projected to more than double by 2028, reaching 394 zettabytes.



Autonomous vehicles (AVs):
Each vehicle produces around 30 TB of data per day, adding up to hundreds of petabytes over the course of the R&D cycle.

Low-temperature electron microscopy:
A single experiment generates 50–100 TB of data, adding up to tens of petabytes annually.

Next-generation 8K video:
Each audio-video stream reaches 5 Gb, with every channel producing up to 20 PB of data annually.

FishOS Ceph provides a unified storage platform, enabling block, object, and file access from a single, scalable cluster. Whether you’re powering virtual machines, Kubernetes workloads, or archiving petabytes of data, FishOS Ceph adapts to your architecture with no compromises.

Sardina Systems Offers Two Ceph-Based Solutions

Ceph is an open-source, distributed storage platform designed to provide object, block, and file storage from a single system. Built on the CRUSH algorithm, Ceph eliminates single points of failure.

It offers automatic data and rebalancing, and supports horizontal scalability across commodity hardware. Its flexible architecture makes it a foundation for modern cloud-native, virtualized, and archival workloads.

Object, image, and file storage unified within FishOS infrastructure

FishOS Ceph in the FishOS Environment: Full-Featured, Unified Storage

FishOS Ceph is natively integrated into **FishOS Cloud**, delivering a unified storage solution for all data types:

- **Object Storage** via RGW/S3
- **Block Storage** via RBD (for VMs, Kubernetes, and databases)
- **File Storage** via CephFS

Included in the FishOS Deployer, Ceph benefits from fully automated deployment, seamless upgrades, advanced monitoring, and centralized management via a web-based GUI. It's available out-of-the-box and scales alongside your private or hybrid cloud with zero downtime.

Object storage for straightforward integration with any cloud or virtualization platform.

FishOS Ceph Standalone: Focused, High-Performance Object Storage

For organizations that only require **object storage**, **FishOS Ceph Object Storage** is available as a standalone deployment, ideal for use cases such as:

- Backup targets
- Immutable storage for ransomware protection
- S3-compatible object storage workloads

Sardina Systems provides full lifecycle support: integration, deployment, upgrades, and continuous technical assistance.

Choose the Ceph deployment that fits your needs — standalone object storage or fully integrated within FishOS Cloud — and get it expertly tuned and supported.

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Why Ceph with Sardina Systems?

Deploying open-source Ceph can be complex without the right tooling and support.
Sardina Systems simplifies and industrializes the experience:

Post-deployment onboarding
to enable smooth adoption and knowledge transfer to your team

Support is included
with no hidden support tiers or “enterprise plans”

Per-core licensing
no charges based on capacity, disks, or protocol types

Managing upstream Ceph can be complex — FishOS Ceph makes it easy. With a streamlined GUI, API-driven operations, and advanced automation, you get all the power of Ceph without the operational overhead.

Benefits of Ceph as a Storage Technology

Ceph offers a unified platform to consolidate different storage types across a single cluster. Its design eliminates the limitations of traditional SAN/NAS appliances.

Core Advantages of Ceph:

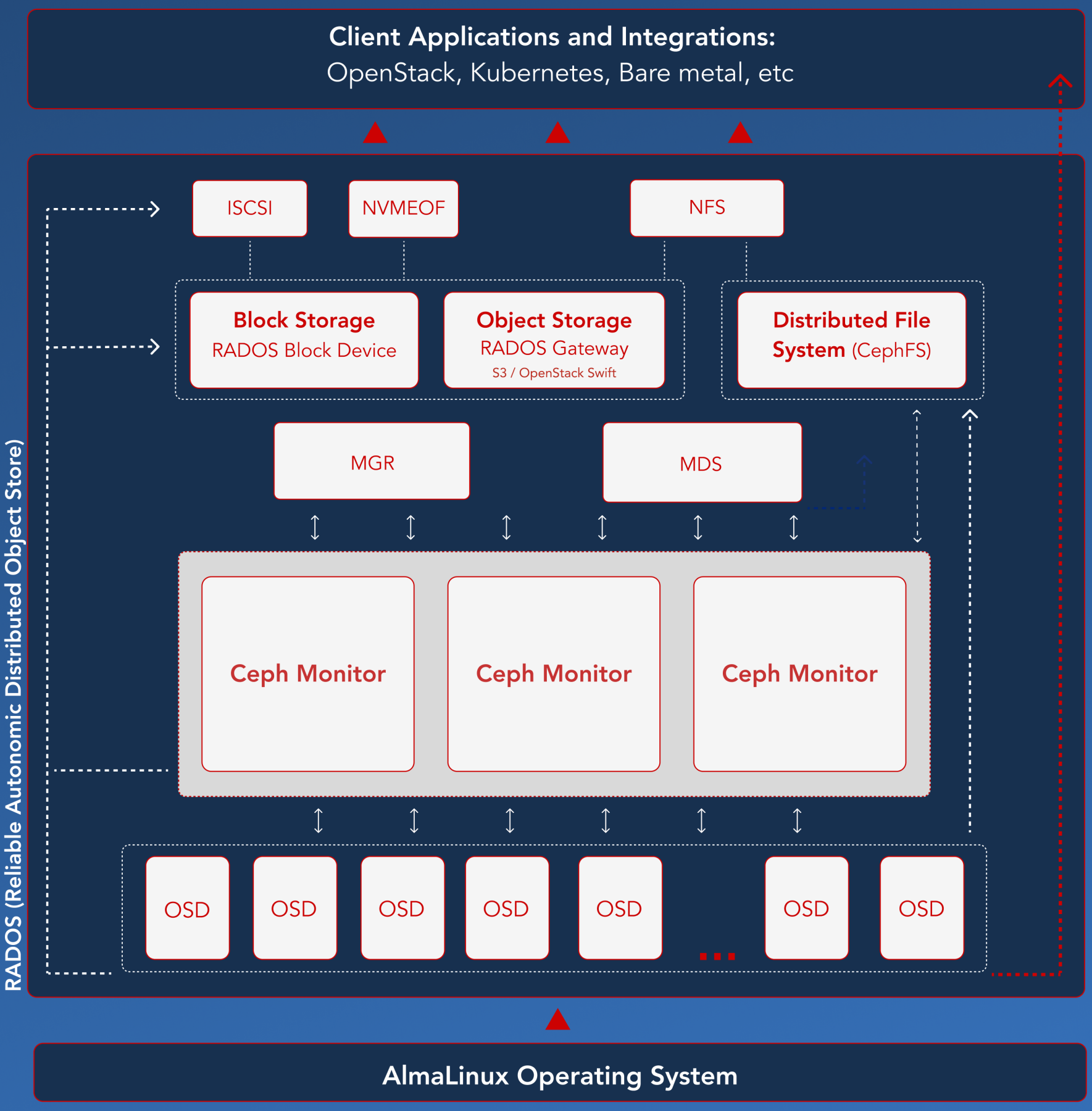
Horizontal scalability with no service disruption and lower TCO	Runs on commodity hardware with no vendor lock-in	Data scrubbing to detect and prevent data loss and bit rot
Unified support for S3, block (RBD), and file (CephFS)	Self-healing and rebalance capabilities	High availability through Replica-3 or Erasure Coding

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Key Components of FishOS Ceph

All components **scale independently**, support HA operations, and enable tailored policies for data distribution and protection.

Component	Role
MON (Monitor)	Maintains cluster state and ensures quorum
OSD (Object Storage Daemon)	Stores data, handles replication, recovery, and rebalancing
MGR (Manager Daemon)	Provides monitoring, metrics, dashboard functionality
RGW (RADOS Gateway)	Enables object storage via S3/Swift APIs
RBD (RADOS Block Device)	Block storage for VMs, containers, databases
CephFS	POSIX-compliant distributed file system



Server and network Configuration

While Ceph is a single software-defined storage platform, its behavior changes significantly based on the underlying hardware and software tuning. By adjusting parameters like placement groups, CRUSH maps, and hardware selection, our team optimizes FishOS to meet specific performance or budgetary requirements.

	Option 1: 10 PB, Erasure Coding 3+2	**Option 2: 4 PB, Erasure Coding 3+2**	**Option 3: 11 PB, Erasure Coding 3+2**
Use Case	Archive, cold storage, backups	High-Performance / Primary Storage	For Competitive Object / Capacity Storage
CPU	2x 24 or 1x 48 Cores	128 Cores	96 or 128 Cores
RAM	1024GB	512GB	1024GB
Disk (Boot)	2x 960GB NBMe	2x 960GB NBMe	2x 960GB NBMe
Disk (WAL/DB)	30x 30.72TB NVMe	3x 15.36TB NVMe	30x 30.72TB NVMe
Disk (OSD)	102x 20TB HDD	30x 30.72TB NVMe	102x 22TB HDD
Network	4x 25GbE	4x 25GbE	4x 25GbE
Network	2x 1GbE	2x 1GbE	2x 1GbE

FishOS Ceph Object Storage

Technical Capabilities:

Primary Use Cases:

- Object storage for S3-compatible applications
- Immutable storage for ransomware protection
- Backup and archival data lakes
- Media, medical, or video surveillance storage

- **Automated deployment** with bare-metal provisioning and Ansible automation
- **Simplified installation** using predefined templates and best practices
- **Rapid system launch** with production-ready Ops tools
- **Zero-downtime operations** with HA, failover, DR, and monitoring

- **Integrated web-based dashboard** for full storage cluster management
- **Real-time log monitoring** for rapid issue diagnostics
- **Advanced monitoring** to detect latency and health anomalies
- **Machine learning-based monitoring** with alerting and predictive insights

FishOS Ceph + FishOS Cloud

Primary Use Cases:

- **Block storage (RBD)** – for OpenStack VMs, Kubernetes Persistent Volumes, databases
- **File storage (CephFS)** – for shared workspaces or POSIX workloads
- **Multi-protocol management** from a single control plane

Same core strengths plus:

- **Automated** provisioning
- **GUI-based** cluster operations
- ML-based observability
- **No downtime** for scaling, upgrades, or recovery

FishOS Ceph Simplified

Your Platform, Your Way

Deploy FishOS Ceph on bare metal, virtual machines, or in containers — on-prem or in the cloud. With flexible licensing and hardware freedom, you are in control of your infrastructure and your budget.

Security, Compliance, and Control

FishOS Ceph includes robust encryption, role-based access control, and audit capabilities to meet modern enterprise and regulatory demands, staying compliant and secure by design.

Scale Without Limits

Start small and scale to petabytes without re-architecting. FishOS Ceph delivers horizontal scalability with consistent performance and no single point of failure — perfect for unpredictable growth and data-intensive environments.

Intelligent, Policy-Driven Storage

FishOS Ceph leverages Ceph's CRUSH algorithm and erasure coding to deliver efficient, self-healing, and policy-aware storage. Automate data placement, durability levels, and QoS — no manual tuning required.

S3-Compatible Object Storage That Scales

Built-in support for S3-compatible object storage means you can run cloud-native applications on-prem or in hybrid clouds without rewriting a line of code. FishOS Ceph offers high-performance, multi-tenant object storage ideal for backup, analytics, and AI pipelines.

Optimized for Kubernetes and OpenStack

With deep integrations for Kubernetes (via CSI drivers) and OpenStack (via Cinder, Glance, Nova, Manila), FishOS Ceph is the natural choice for modern infrastructure platforms. Provision storage dynamically across your cloud-native stack — with resilience and speed.

Backed by Experts, Not Just Code

FishOS Ceph it's a fully supported solution backed by experts in Ceph, Linux, and cloud infrastructure. From onboarding to day-two operations, our team ensures you're never alone in your storage journey.

TCO Comparison: FishOS Ceph vs Traditional Storage

FishOS Ceph provides unmatched flexibility and economic advantage, especially at petabyte scale.

Category	Legacy SAN/NAS	FishOS Ceph
Licensing Model	Per TB / feature	Per CPU core
Disk & Pool Charges	Often extra	Unlimited
Hardware Platform	Proprietary	Commodity
Scale Model	Vertical, expensive	Horizontal, modular
Flexibility	Vendor locked	Open source, portable
TCO	High	Predictable, low

FishOS Ceph is the answer for organizations seeking modern, flexible, and robust storage that scales with their infrastructure and adapts to evolving data needs. Whether you're building a private cloud, securing backups, or serving data-heavy applications, FishOS Ceph brings the best of open-source storage to production — fully automated, highly available, and enterprise supported.

As a **component of FishOS Cloud**, it supports object, block, and file storage from a unified interface.

As a **standalone object store**, it enables enterprise-grade S3-compatible infrastructure with simplicity and resilience.

With **Sardina Systems,** organizations gain the tools, support, and expertise to deploy, manage, and evolve their Ceph environments confidently — without vendor lock-in or unpredictable costs.

Choose the Version That Works for You

Whether you're building a private cloud, powering your next AI workload, or scaling storage for modern apps — FishOS Ceph has you covered.



Ready to Get Started? Schedule a Demo

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