

XaasIO Software-Defined Storage

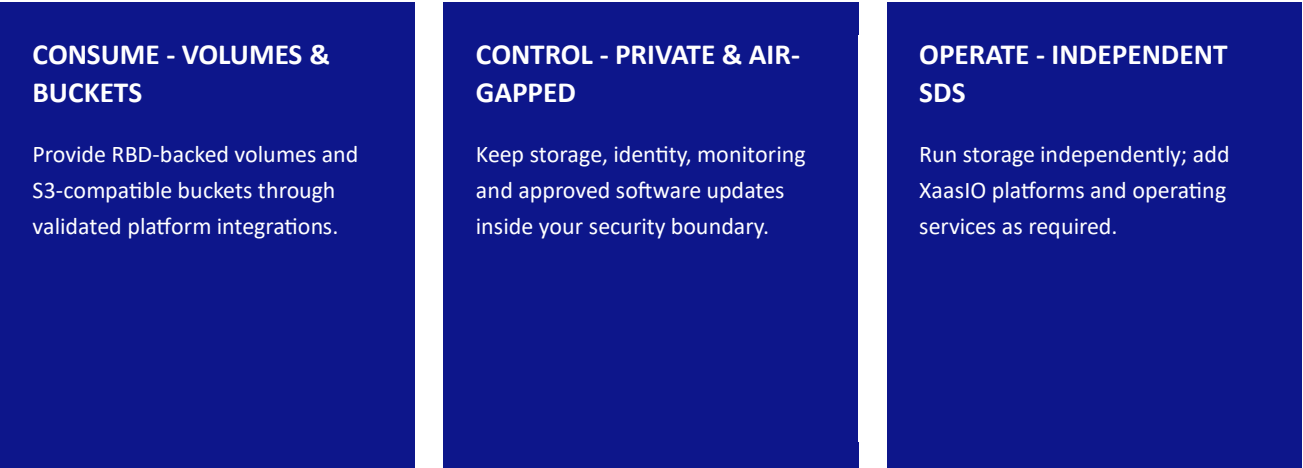
Block and Object Storage, Made Simple

Give private cloud, virtualization, Kubernetes, backup and AI workloads a shared storage foundation. Deliver persistent block volumes through Ceph RBD and S3-compatible object storage through Ceph Object Gateway, on infrastructure you control.



ONE PLATFORM - BLOCK AND OBJECT SERVICES

Consume storage through your cloud, virtualization and application interfaces.



CORE STORAGE CAPABILITIES

Persistent Block Storage

Create, attach, resize, snapshot and clone RBD volumes. Integrate with OpenStack Cinder, Nova and Glance, QEMU/libvirt and Kubernetes CSI.

Placement, Protection & Media

Use replicated or erasure-coded pools with CRUSH placement across selected failure domains. Match HDD, SSD and NVMe media to the workload.

Recovery, Backup & Disaster Recovery

Use checksums, scrubbing and self-healing for local resilience. Scope asynchronous RBD mirroring or RGW multisite separately from independent backup

S3-Compatible Object Storage

Use buckets, access policies, quotas, versioning, lifecycle rules and Object Lock where included. Validate application-specific S3 API compatibility.

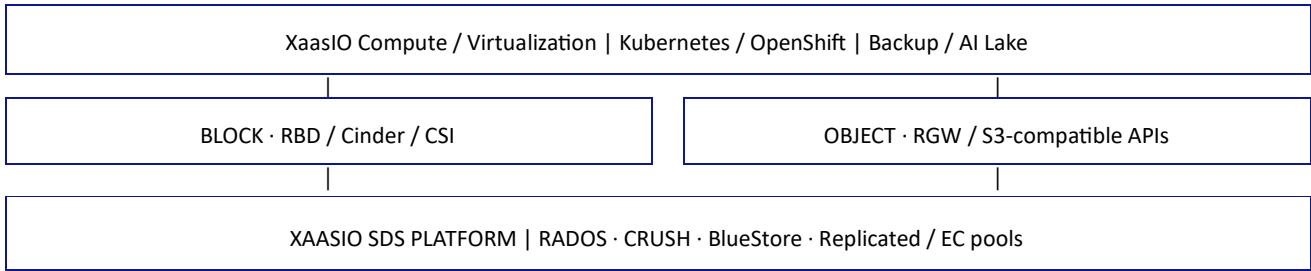
Identity, Encryption & Governance

Apply CephX and RGW access controls. Scope TLS, encrypted devices, RBD image encryption, object encryption and external key management to the design.

Management & Observability

Track health, capacity, device condition, latency and recovery. Use Ceph Manager and Dashboard, with optional XaasIO MLT for centralized visibility.

DEPLOYMENT ARCHITECTURE



DEPLOYMENT CHOICES

Dedicated storage · Converged cloud storage · HCI · Optional Rook-managed Ceph

OPTIONAL EXTENSIONS:

XaasIO CMP, MLT and Hyperscaler integrations; separately scoped NVMe-oF, CephFS/NFS, migration and DR services. Core storage does not require these extensions.

42U SAMPLE RACK SOLUTION

Dedicated Ceph storage for capacity-oriented block and object workloads.

16

Storage

192

20 TB data

3.84 PB

Raw data

42U • FRONT ELEVATION

42-41	Reserved / airflow
40	OOB management
39	100 GbE fabric B
38	100 GbE fabric A
37	RGW gateway 02
36	RGW gateway 01
35	Control 03
34	Control 02
33	Control 01
32-31	SDS-16 12 × 20 TB
30-29	SDS-15 12 × 20 TB
28-27	SDS-14 12 × 20 TB
26-25	SDS-13 12 × 20 TB
24-23	SDS-12 12 × 20 TB
22-21	SDS-11 12 × 20 TB
20-19	SDS-10 12 × 20 TB
18-17	SDS-09 12 × 20 TB
16-15	SDS-08 12 × 20 TB
14-13	SDS-07 12 × 20 TB
12-11	SDS-06 12 × 20 TB
10-09	SDS-05 12 × 20 TB
08-07	SDS-04 12 × 20 TB
06-05	SDS-03 12 × 20 TB
04-03	SDS-02 12 × 20 TB
02-01	SDS-01 12 × 20 TB

A/B 0U PDUs • dual server power supplies

OSD drives use direct access / JBOD, not hardware RAID. Qualify chassis slots, drive endurance and DB/WAL sharing. Size A/B feeds, cooling and floor loading for the final BOM; UPS is external. This HDD example is not an all-flash performance tier.

THREE WHOLE-RACK PROTECTION ALTERNATIVES

PROTECTION	LAYOUT	EFFICIENCY	LOGICAL MAXIMUM	AT 70% FILL
3× replication	3 full copies	33.3%	1,280 TB	896 TB
EC 4+2	4 data + 2 parity	66.7%	2,560 TB	1,792 TB
EC 8+3	8 data + 3 parity	72.7%	2,792.7 TB	1,954.9 TB

Planning assumption: 30% of raw capacity is held for operating and recovery headroom. Values are alternative calculations over the same 3,840 TB; do not add them. Decimal units (1 PB = 1,000 TB). Excludes metadata, indexes, formatting and EC padding; no compression or deduplication gain assumed.

ILLUSTRATIVE HARDWARE CONFIGURATION

EQUIPMENT	QTY / U	EXAMPLE SPCIFICATION
Storage	16 × 2U 32U	Per node: 12 × 20 TB enterprise CMR HDD; 32 physical cores; 256 GB ECC RAM; 2 × 100 GbE.
OS & DB/WAL	In nodes	Per storage node: mirrored 2 × 960 GB boot SSD; 2 × 7.68 TB enterprise NVMe for BlueStore DB/WAL. Not counted as data capacity.
Control	3 × 1U 3U	16 cores / 64 GB RAM; mirrored SSD. Three MONs; active/standby MGR services.
Object gateways	2 × 1U 2U	16 cores / 64 GB RAM; mirrored SSD; 2 × 100 GbE. RGW and redundant ingress.
Data network	2 × 1U 2U	Two 32-port 100 GbE switches; dual-attached servers; segmented client and recovery traffic.
Management	1 × 1U 1U	48-port out-of-band switch.
Reserved	2U	Cabling / airflow allowance. Total: 42U.

TRANSPARENT CAPACITY MATH

Raw = 16 nodes × 12 drives × 20 TB = 3,840 TB

Protected = raw ÷ 3, raw × 4/6, or raw × 8/11

Planning budget = protected capacity × 70%

POOL DESIGN, LIFECYCLE & SUPPORT

Match protection to the workload. Govern every change.

ONE RACK, THREE COEXISTING POOL GROUPS

Example allocation of the same 3,840 TB raw capacity; logical budgets use the 70% fill target.

POOL GROUP / INTENDED USE	RAW ALLOCATION	LOGICAL BUDGET*
3× replicated - capacity block + replicated metadata	20% / 768 TB	179.2 TB
EC 4+2 - object, backup and data-lake payloads	40% / 1,536 TB	716.8 TB
EC 8+3 - large-object, capacity-focused payloads	40% / 1,536 TB	782.0 TB

*Total logical budget: approximately 1,678 TB (1.678 PB), before metadata/index consumption and allocation overhead. Replicated metadata reduces the first row’s payload budget. These are shared-cluster capacity budgets, not dedicated disk partitions; enforce quotas and monitor aggregate use.

HOST-DOMAIN RESILIENCE

Place each copy or shard on a different host. Minimum domains are 3 / 6 / 11; this rack has 16. Proposed min_size: 2 / 5 / 9, respectively. From a healthy state, per-object recoverability is 2 / 2 / 3 host losses; continued I/O is 1 / 1 / 2 before recovery. Metadata and quorum may limit service earlier.

DEPLOYMENT GUARDRAILS

A single rack is not rack- or site-resilient. Keep RGW index/metadata and RBD metadata replicated. RBD on EC needs BlueStore and allow_ec_overwrites. Benchmark EC 8+3 write and recovery behavior. Validate headroom, failure scenarios and independent backup/DR before production.

PREDICTABLE RELEASES. CONTROLLED LIFECYCLE.

26.06 Nammalvar Current standard	25.12 Valluvar Current LTS baseline	26.12 Ilango Adigal Planned standard	27.12 Avvaiyar Planned LTS
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PORTFOLIO FRAMEWORK

June and December releases; YY.MM versions and YY.MM.N maintenance updates. LTS designations occur every 24 months, not a 24-month support term. Product availability, support duration, EOL and upgrade paths must be confirmed in the SDS release record and support agreement.

RELEASE EVIDENCE

Upstream and XaasIO release SBOMs, artifact verification and provenance, as listed per release. Validated air-gapped updates use approved offline bundles, local repositories and retained change records.

SUPPORT & SERVICES

Architecture, sizing, deployment, production acceptance, runbooks, training and lifecycle support. Customer-operated, co-managed, fully managed and dedicated Storage SRE Pod options.

XAASIO SOFTWARE DEFINED STORAGE

Build Storage Around Your Workloads.

Explore XaaSIO Software-Defined Storage at xaasio.com/platform/block-and-object-storage/

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