ceph days

CEPH DAYS Berlin

12./13. November 2025

ceph days

CLYSO

Ceph Storage in Transition

Joachim Kraftmayer (CLYSO CEO)
Ceph Board Member & Ceph Ambassador DACH

Ceph Days Berlin - November 12th to 13th, 2025

Outline

- How am I?
- What is Ceph?
- Why Ceph?
- Who uses it?
- Ceph Foundation Update
- Community Update & Preview
- Cephalocon Update 2025
- Outlook 2026

How am I?

- Ceph Ambassador DACH & Founder of CLYSO
  - Supporting the Ceph community, Ceph project and Foundation
  - Building a Ceph-based professional services and support company
  - Ceph Consultant since 2012
- Ceph Foundation Board Member
- Focus since 2021
  - healthy community
  - new Ceph users
  - more Ceph days worldwide
  - support Cephalocon organization

Event organization team

Ingo Ebel (DESY)

Julia Eckert (DESY)

Ansgar Jazdzewski (Hetzner Cloud)

Roberto Vanoni (CLYSO)

Markus Wendland (CLYSO)

Kristina Seel (CLYSO)

THANK YOU!

CLYSO GmbH: Your Enterprise Ceph & Open Source Storage Partner*

CLYSO

- **World-Class Ceph Expertise**
  - **Sole Ceph Foundation Platinum Member** focused on commercial support for the entire ecosystem.
- **Solution Focus**
  - Scalable, flexible storage for Cloud-Native Infrastructures, Kubernetes, and HPC.
- **Proven Experience**
  - Over **500 successfully completed projects** in data-intensive Hybrid and Multi-Cloud environments.
- **Open Source DNA**
  - **No Vendor Lock-in** – Maximum flexibility and Cost Efficiency. Direct access to **Core Developers**.

ceph

ROOK

THE LINUX FOUNDATION

CLOUD NATIVE COMPUTING FOUNDATION

We deliver: Scalability, Performance, and Control.

* Managing Director: Joachim Kraftmayer,
Location: Munich/Utting (Since 2010), clyso.com

Hard Facts:
Our Leadership in the Ceph Community

- **Core Leadership** & Code Commitment
  - Founding Member of the Ceph Foundation (2018).
  - Represented on the Ceph Leadership Team and the Foundation Board.
  - Over 2,700 Commits to the Ceph codebase (Co-Creator, not just a user).
- Community & **Innovation Driver**
  - **Three Ceph Ambassadors** (DACH, France, India) on the team.
  - Active contributions to Rook and CephCSI for Cloud-Native stacks.
  - Organizer of Cephalocon and over six Ceph Day events annually worldwide.
- **Measurable Performance** & Focus
  - **Specialization:** Near-exclusive focus on Ceph with **20+ Developers** on the team.
  - **Proven performance:** Top ranking in the prestigious **IO500 list**.

Central Contributor to the World's Leading Open Source Storage Solution since 2012.

CLYSO GmbH: Your Enterprise Ceph & Open Source Storage Partner

CLYSO

- **19 Active CEPH experts & 3 Ceph Ambassadors***
  - Working regularly on CEPH upstream; **2778** Upstream Commits (Since 2010)
- **Premium Ceph Partner**
  - Specialist for Software-Defined Storage (SDS) & Multi-Petabyte Ceph Clusters.
- **Solution Focus**
  - Scalable, flexible storage for Cloud-Native Infrastructures, Kubernetes, and HPC.
- **Proven Experience**
  - Over **500 successfully completed projects** in data-intensive Hybrid and Multi-Cloud environments.
- **Open Source DNA**
  - **No Vendor Lock-in** via open architecture. Benefit from maximum flexibility and **Cost Efficiency**.

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ROOK

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We deliver Scalability, Performance and Control.

*** Location**: Munich/Utting (Since 2010)

What is Ceph?

- **Open Source Software-Defined Storage**
- **Unified:** Object, Block, and File in one system
- **Scalable:** From a few nodes to exabyte-scale environments
- **Resilient:** No single point of failure, self-healing, self-managing
- **Community-Driven:** Built by and for operators, researchers, enterprises
- **Proven:** Runs at scale at CERN, Bloomberg, cloud providers, and beyond

Ceph lets you build your own cloud-grade storage, with commodity hardware and full control.

What is Ceph?

- **First commit 21 years ago**
- **Runs Everywhere**
- **The Linux of Storage**
- **1418+ contributors**

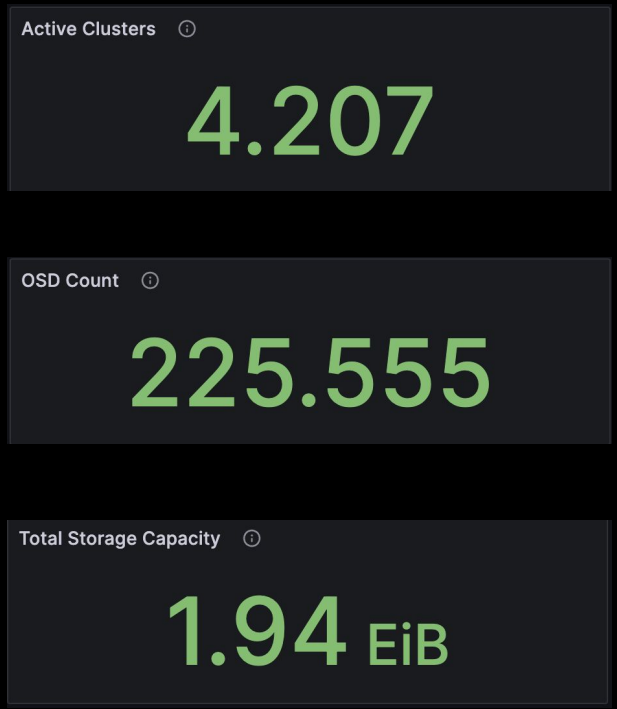
```
commit 1893aa1d7b882e93a15a237cc85148e5ab270762
Author: sage
Date:   Thu Jun 24 23:28:06 2004 +0000

diff --git a/ceph/dcache.cc b/ceph/dcache.cc
new file mode 100644
index 00000000000..6ac2235e192
--- /dev/null
+++ b/ceph/dcache.cc
@@ -0,0 +1,110 @@
+
+#include "include/mds.h"
...
```

https://github.com/ceph/ceph/graphs/contributors

What is Ceph?

- **Scalable:** exabyte-scale and thousands of clusters
- **Enterprise:** mature, reliable and widely adopted
- **Secure:** End to End



Source: https://telemetry-public.ceph.com/

What is Ceph for me!

CL⁾⁾SO

THE

Open Source

Software Defined Storage

Project

Together we will shape the future of Ceph!

Ceph is the *Linux* of Storage

- **Free & Open Source**
  - No licenses. No vendor lock-in. Total control.
- **Community-Powered**
  - Built and improved by a global ecosystem of users, developers, and companies.
- **Runs Everywhere**
  - From homelabs to hyperscale datacenters. Bare metal, VMs, Kubernetes, cloud.
- **Modular & Flexible**
  - Ceph is pluggable, extensible, adaptable to any workload.

If Linux gave us freedom to compute, Ceph gives us freedom to store.

Ultra-Reliable Storage from Unreliable Parts

CL:SO

- **Ceph vs. Hardware**
  - Exposed HDDs lying about flush — disabled volatile caches.
  - Caught NVMe and CPU firmware bugs causing crashes after long uptimes.
  - Detected unsafe power-loss behavior → drove improvements in vendor QA.
- **Ceph vs. Network**
  - Detects and survives silent packet corruption, flaky links, and bad routing.
  - Often the first system to notice when the network breaks.
- **Ceph vs. Linux**
  - Found bugs in memory allocators, block layers, and LZ4 compression.
  - BTRFS and XFS too unpredictable → built BlueStore for performance and reliability.

Ceph isn't just resilient — it makes the whole stack better.

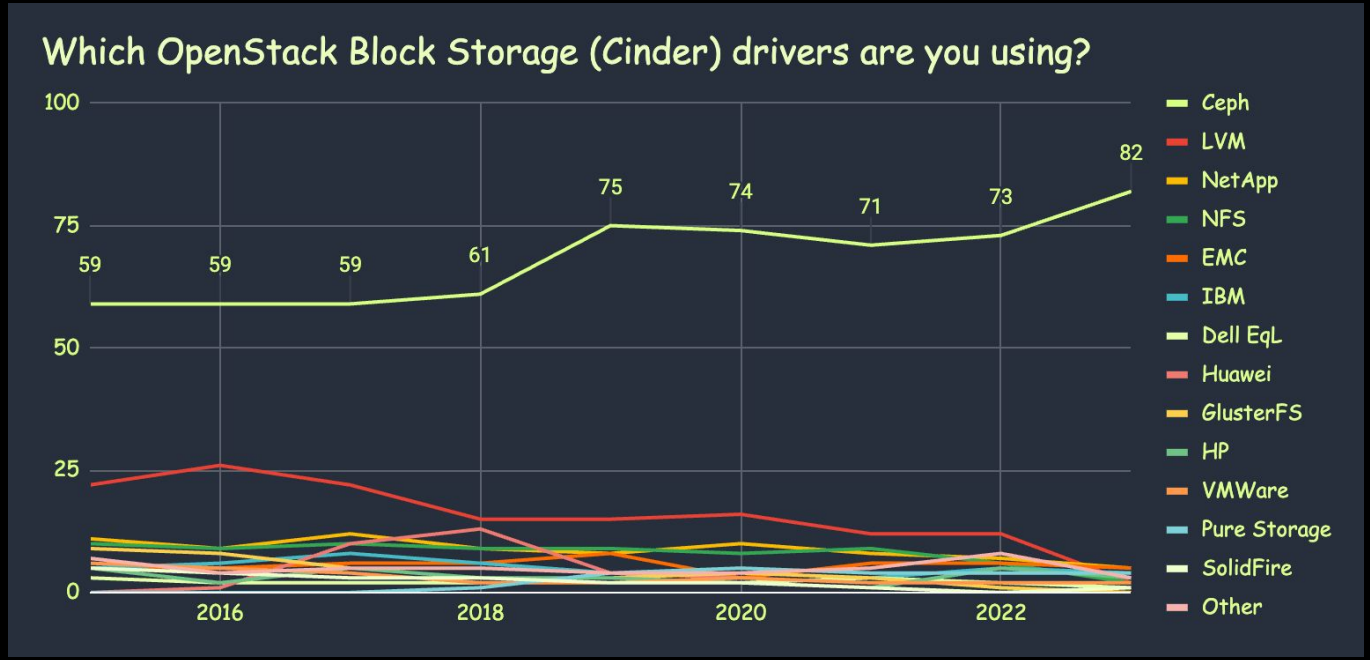
Who uses Ceph?

Speakers at recent Ceph events:

UK Research and Innovation | Elettra Sincrotrone Trieste
OVHcloud | Engin IT | INDITEX | etraveli | SWITCH | SpaceX |
Vultr | MLB | LINE | Deutsche Telekom | Samsung | Workday
Neuralink | Your.Online | Digital Ocean | Huawei | CERN
Pawsey Supercomputing Research Centre | Bloomberg | Flipkart
ETH Zurich | Walmart | Sony Interactive Entertainment | Proton

Do you want to be next on the list? Then get in touch!

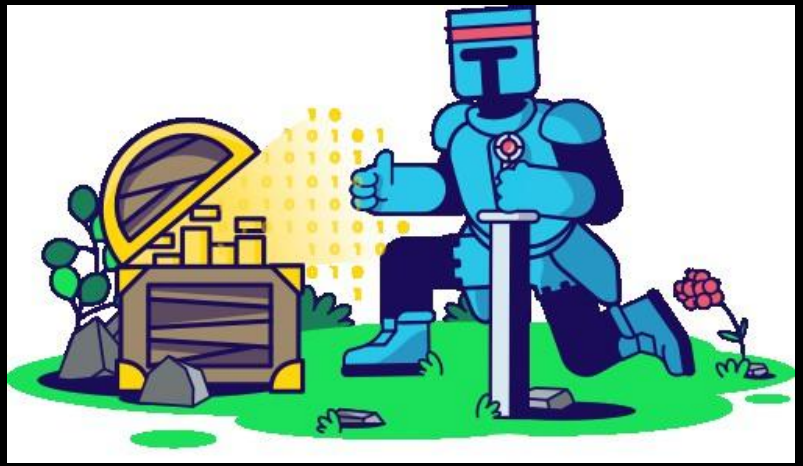
Who uses Ceph?



Source: https://www.openstack.org/analytics

Who uses Ceph?

- **Initial Release:** November 2016
- **CNCF Acceptance:** January 2018
- **Contributors:** 543
- **Github Starts:** 13.2k



Source: https://github.com/rook/rook

Ceph Foundation Update 2025

CL'ISO

New Ceph Foundation Members

27

ceph foundation members

Source: https://ceph.io/en/foundation/members/

Community Update & Preview

2025

- FOSDEM
- 3 x New User Workshop
- Ceph Days Berlin
- Ceph Days London
- Ceph Days Seattle
- Ceph Days Silicon Valley
- Ceph Days India

2026 (Preview)

- FOSDEM (31 January & 1 February)
- Ceph Days India (February)
- Ceph Days Germany
- Ceph Days Switzerland
- Ceph Days London
- Ceph Days Tokyo
- Ceph Days North America
- Cephalocon more Ceph Days ?

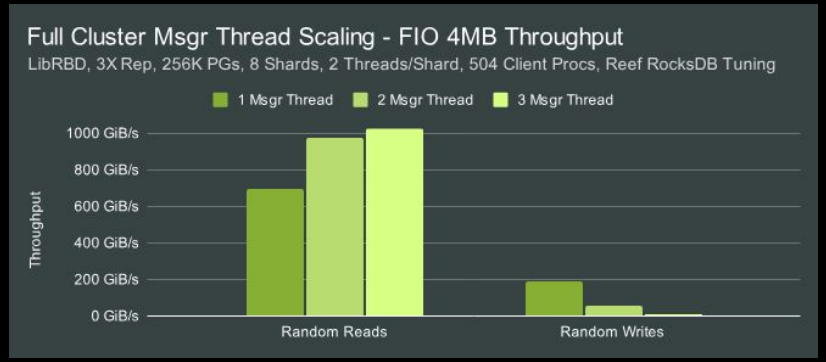
https://ceph.io/en/community/events/

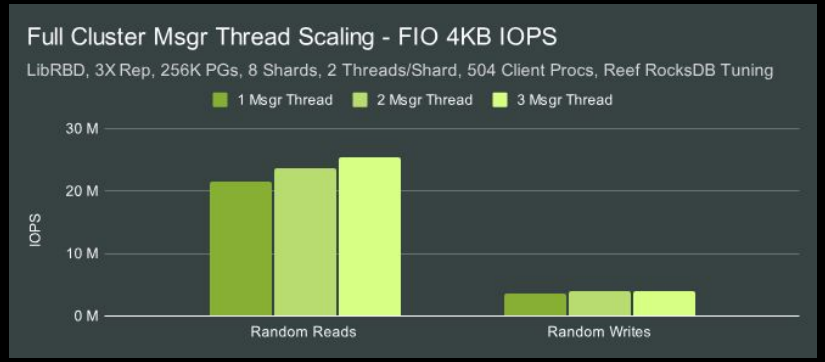
What do people use Ceph for?

- **Cloud Infrastructure**
  - Object, block, and file storage for OpenStack, Kubernetes, and sovereign clouds
- **High-Performance Computing**
  - Shared file systems (CephFS) and fast object stores for scientific data & AI training
- **Enterprise Backup & Archiving**
  - Scalable, durable object storage for long-term data retention
- **AI / ML Pipelines**
  - High-throughput block and object storage for model training and inference
- **Media & Content Delivery**
  - Ceph RGW used behind CDNs and media platforms for video, image, and file delivery
- **Internal Developer Platforms**
  - Backing internal services, CI pipelines, artifact storage, and observability data

Ceph adapts to your needs — from pet projects to petabytes in production.

Ultra High Performance Ceph





- **Myth:** Ceph is too slow for modern workloads
- **Reality:** Ceph exceeds 1 TiB/s and 25 million IOPS in real-world tests
  - https://ceph.io/en/news/blog/2024/ceph-a-journey-to-1tibps/

Ceph isn't slow. It's just waiting for the right tuning.

Innovation through Collaboration

- Ceph thrives because of contributions from users, researchers, vendors, and integrators around the world.
- A few notable highlights:
  - RBD was contributed by a user in 2010!
  - BlueStore had major input from Red Hat, SanDisk, SUSE, ZTE, XSKY, and others
  - Samsung is leading cluster-wide deduplication efforts
  - Crimson is backed by IBM, Intel, Samsung, Qi An Xin, and more

Ceph Reef Credits, 2023

Ceph isn't built by one company — it's built by all of us.

Cephalocon Update October 2025

- **Active Releases:**
  - The current active Ceph releases are **Reef (18.2.x)** and **Squid (19.2.x)**.
  - Real-world deployment trends can be seen on the Ceph Telemetry Dashboard.
- **Tentacle (20.x):**
  - Development for the next major release has just entered feature freeze.
  - The release is expected later in 2025.
- **What's Coming in Tentacle:**
  - Dramatically improved **erasure coding performance** for faster, more cost-efficient storage.
  - Enhanced **gateway support** with major upgrades to **Samba**, **NFS**, and **NVMe-oF**.

Ceph 20 brings practical improvements in performance, cost-efficiency, and protocol support.

Cephalocon 2025

- Vancouver, Canada 28-29 October 2025
- 230+ participant
- 60+ developers

Cephalocon Update October 2025

Favorit Talks

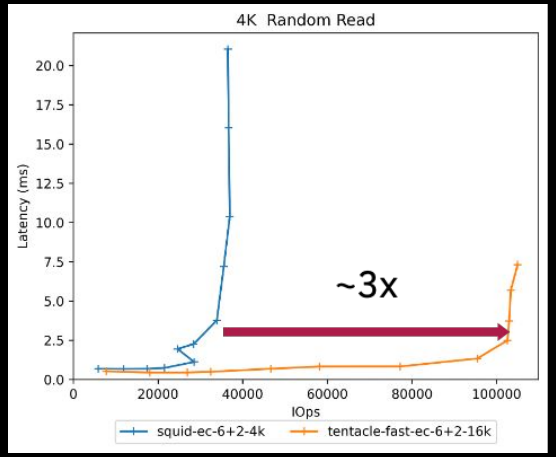
NEW FAST ERASURE CODING
(Bill Scales, IBM & Alex Ainscow, IBM)

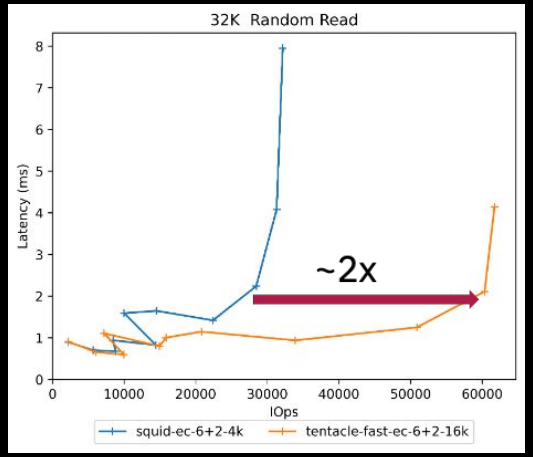
CEPHTRACE: efficient Ceph performance troubleshooting in production using eBPF
(Dongdong Tao, Canonical)

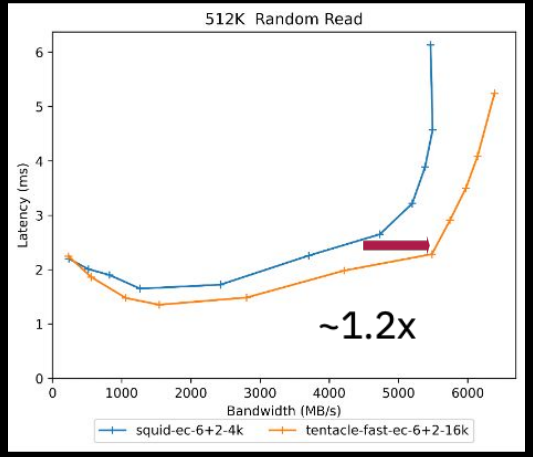
scientific user BoF
(user group for science)

Source:
https://cephalocon2025.sched.com/event/27f2C/inking-out-inefficiencies-in-ceph-erasure-coding-alex-ainscow-bill-scales-ibm

Fast EC: good for any application

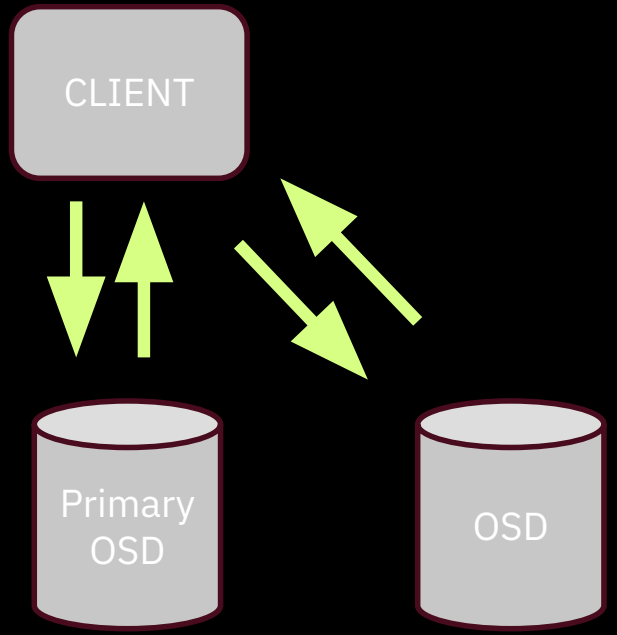


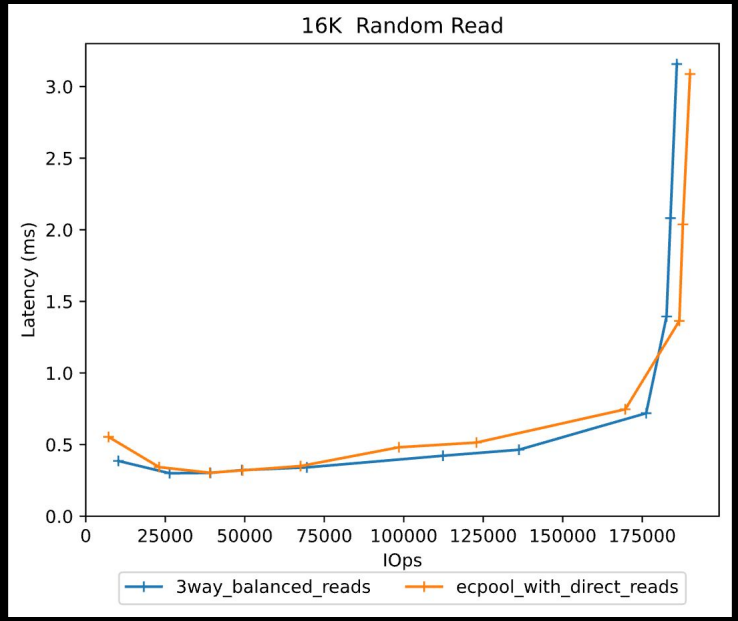




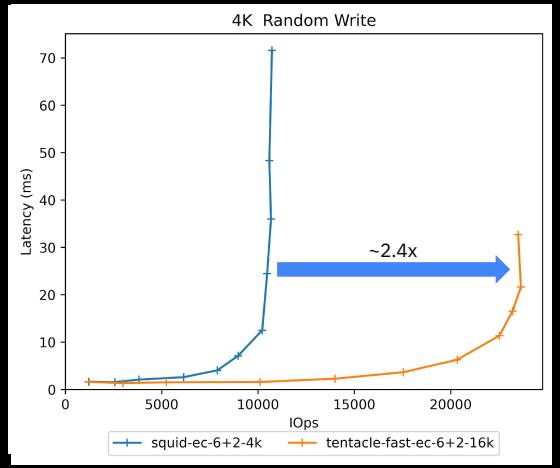
- Reads for small blocks is far better. => This is good for RBD, Ceph FS and small objects
- Reads for large blocks is marginally better. => This will provide a boost for large object workloads like RGW

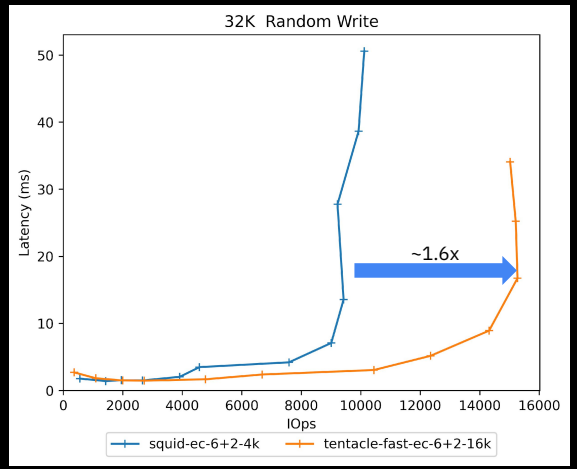
Fast EC direct reads (preview)

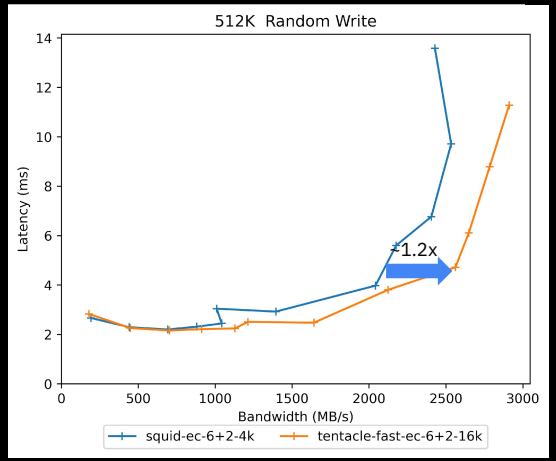




Fast EC: partial write performance







- There is still a cost to EC, compared to 3-way. However, it is much less significant
- Partial Reads/Writes mean performance has lower dependency on K.
- Rebuild will always read minimal data => rebuild performance improvement

Outlook 2026

Trends

- Digital sovereignty
  - Kubernetes, Openstack, Proxmox
- AI and ML
- Multi Cloud Strategies
  - Hyperscalers
  - VMware

Technic

- S3 Object Storage at Scale
- Massive improvements in TCO
- High encryption standards
- Massively distributed and fail-safe storage

CLYSO

- Ceph Analyser
- O.T.T.O.
- Ceph Config Viewer & Ceph Config Diff
- Rook/k8s Analyser
- Ceph API
- CHORUS
- Rook development
- Ceph development
  - cephadm
  - ceph-csi
  - ceph-rgw
  - ceph Messenger v2/v3
  - ceph-osd & ceph-mds

ceph days

CLYSO

Thank you!

Joachim Kraftmayer – joachim.kraftmayer@clyso.com