

Cryo-EM data challenges and solutions

1

Ever-growing data volumes mean scalability is key.



Challenge

Typical cryo-EM experiments produce at least 3 terabytes of data, and a single microscope can easily generate petabytes per year.¹ You need storage solutions that scale limitlessly and easily – without breaking the budget – to support the increasing demands for data storage capacity in cryo-EM.

2

Increased data output demands higher throughput.

Challenge

Upgrading to a faster direct detector camera can increase FPS by nearly fourfold.² Cryo-EM instruments capture images at a high rate, producing a continuous stream of data. To avoid bottlenecks in the image acquisition and analysis stages, storage solutions must support high data throughput.



3

Poor data retention practices undermine progress.

Challenge

Researchers are often unable to archive all the data generated over the course of an experiment, and much of the primary data may not survive the departure of the lead researcher from a lab.³ To identify relevant cryo-EM data for retention and facilitate easy transfers, researchers need intelligent and easy to use data insight and mobility solutions.



4

Storage failures bring research to a halt.

Challenge

In a survey of admins overseeing high-performance storage, 75% reported reduced productivity throughout the year due to storage-related issues.⁴ Storage downtime threatens project timetables, frustrates IT staff, and increases the risk of losing your data. Reliability should only increase as you scale your storage.



Solution Optimize your cryo-EM workflows with Panasas

1

Scale limitlessly.

And that includes data capacity, performance, and protection. Start with a small entry-point and expand as needed without creating data silos or interrupting workflows.

2

Accelerate analysis.

High-speed data access lets you quickly retrieve and analyze large datasets and allows multiple teams to work together on the same dataset simultaneously.

3

Unlock the full potential of your data.

Powerful search and scan capabilities enable you to quickly locate specific datasets and experiments, and an easy-to-use data movement tool lets you manage backup and archive options.

4

Experience unparalleled reliability and simplicity.

There's a misconception in the high-performance storage space that you have to compromise system reliability and ease of management to meet your performance needs. Panasas is proof otherwise.

With Panasas in place, scientists carry out their cryo-EM research without ever having to worry about the storage foundation supporting it.

[Read Customer Success Story](#)

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¹Andrii Iudin et al. "EMPIAR: the Electron Microscopy Public Image Archive." Nucleic Acids Research, 51 (D1), 6 January 2023. <https://academic.oup.com/nar/article/51/D1/D1503/6849493>

²Gatan, K3 Cameras, <https://www.gatan.com/K3>

³Edward Eng et al. "Reducing cryoEM file storage using lossy image formats." Journal of Structural Biology, 207(1), 2019. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6597182/>

⁴Hyperion Research (commissioned by Panasas). "New Study Details Importance of TCO for HPC Storage Buyers." <https://www.panasas.com/resources/hyperion-research-new-study-details-importance-of-tco-for-hpc-storage-buyers/>