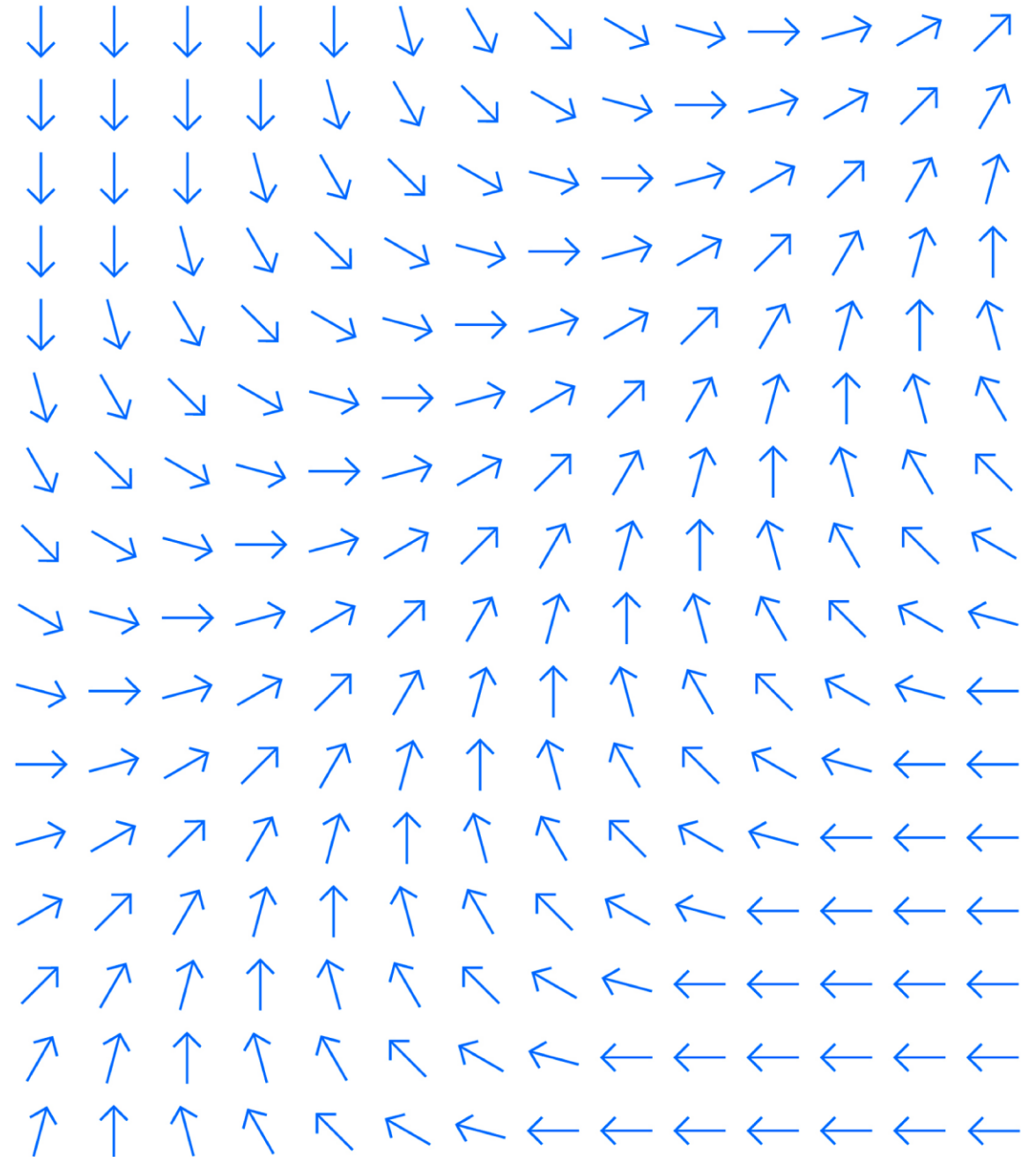# S3 Object Deduplication in Ceph

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The Question:

- Full S3 Object dedup or Chunk level dedup?
  - Full S3 Object dedup is far more efficient
    - Consumes less resources, lower latency
    - Easier and faster to implement
  - Chunk level dedup yields higher dedup ratio
  - Does it worth it?

- Answering this requires access to real world user data

Help Wanted!

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The Estimation Tool

- Easy to use and fast (up to 100K objects/sec) tool to estimate deduplication levels

- Based on eTags that are already available in S3 (not ideal for multipart uploads)

- Low impact on the cluster – the user controls the thread count

- No dependencies (container based)

- Open-source tool available at:
  - https://github.com/benhanokh/s3_dedup_estimate/tree/main

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Full S3 Object: real-world data

- Cloud Computing system with huge objects
  - 114 buckets / 21,439 Objects / 49.3TB
  - dedup ratio 1.24

- "images" zone:
  - 651,770 Objects / 13.5TB (20MB avg)
  - dedup-ratio of 1.07 (1.35TB -> 12.6TB)

- Standard zone:
  - 4,872,996 Objects / 2.75TB (560KB avg)
  - dedup-ratio of 1.22

- Archived zone:
  - 4,872,996 Objects / 3TB
  - dedup-ratio of 1.27

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