Who’s Afraid of Uncorrectable Bit Errors?
Online Recovery of Flash Errors with Distributed Redundancy

Friday, July 12th, Track 1 @ 11:50am

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Denser flash $\rightarrow$ shorter lifetime

How can we increase flash lifetimes?

Increasing acceptable error rate → increase lifetimes

But.. hardware is expected to have low error rates

- Software is designed so bit errors are rare
  - Corruption errors cause failed operations (correctness)
  - Error-handling path is not performant (performance)
Solution:
Distributed error Isolation and RECovery Techniques (DIRECT)

Observations:
1. Replication can fix bit errors in distributed storage systems without adding additional storage redundancy
2. Optimize error-recovery performance by reducing error amplification

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