

1 Flash-Based SSDs

Vocabularies

1. Solid-State Storage

- Is a type of non-volatile computer storage that stores and retrieves digital information using only electronic circuits, without any involvement of moving mechanical parts

2. NAND-Based Flash

3. Flash Page

4. Flash Block

5. Single-Level Cell

6. Multi-Level Cell

7. Triple-Level Cell

8. Banks

9. Planes

10. Pages

11. Wear Out

12. Head Crash

13. Disturbance

14. Flash Transition Layer

15. Wear Leveling

16. Direct Mapped

17. Logging

18. Logical Block Address

19. Program Disturbance

20. In-Memory Mapping Table

21. Garbage

22. Garbage Collection (GC)

- 23. Dead Blocks
- 24. Cache Flush
- 25. Trim
- 26. Overprovision
- 27. Background
- 28. Page-Level FTL
- 29. Hybrid Mapping
- 30. Log Blocks
- 31. Switch Merge
- 32. Partial Merge
- 33. Full Merge

1.1 Storing a Single Bit

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1.2 From Bits to Banks / Planes

1.3 Basic Flash Operations

1.4 From Raw Flash to Flash-Based SSDs

1.5 FTL Organization: A Bad Approach

1.6 A Log Structured FTL

1.7 Garbage Collection

1.8 Mapping Table Size

1.9 Hybrid Mapping

1.10 Wear Leveling

1.11 SSD Performance And Cost