SSD Data Protection and Recovery

David Blunden

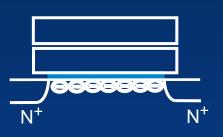Applications Engineer Supporting Americas Channel for the NVM Solutions Group,

Intel® Corporation

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Internal Protection Mechanisms

- NAND Level
    - Spare blocks and reserve areas
    - Data Scramblers
    - NAND Programming Optimizations
    - Premium NAND
- Drive Level
    - XOR
    - ECC
    - End to End data protection
    - Wear Leveling
    - BDR (Background Data Refresh)
    - System Assist (Read Retry)

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Data Recovery Challenges

- Data Formats
  - Meta Data and ECC Data Structures
  - Flash Translation Layer
- Data Manipulation
  - Encryption
  - Compression
- Erase
  - Secure Erase
  - Trim
- Physical Differences between SSDs and HDDs
  - Platter vs. NAND Packages
  - Heads vs. NAND Channels (Can't Adjust a NAND Channel)

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