

2010 IEEE 26th Symposium on Mass Storage Systems and Technologies

(MSST 2010)

**Incline Village, Nevada, USA
3-7 May 2010**



**IEEE Catalog Number: CFP10257-PRT
ISBN: 978-1-4244-7152-2**

TABLE OF CONTENTS

SSD

An Adaptive Partitioning Scheme for DRAM-based Cache in Solid State Drives	1
<i>H. Shim, B. Seo, J. Kim, S. Maeng</i>	
High Performance Solid State Storage Under Linux	13
<i>E. Seppanen, M. O'Keefe, D. Lilja</i>	
Achieving Page-Mapping FTL Performance at Block-Mapping FTL Cost by Hiding Address Translation	25
<i>Y. Hu, H. Jiang, D. Feng, L. Tian, S. Zhang, J. Liu, W. Tong</i>	

SECURITY AND RELIABILITY

Block Storage Listener for Detecting File-level Intrusions	37
<i>M. Allalouf, M. Ben-Yehuda, J. Satran, I. Segall</i>	
Flat XOR-based Erasure Codes in Storage Systems Constructions, Efficient Recovery, and Tradeoffs	49
<i>K. Greenan, X. Li, J. Wylie</i>	
S2-RAID: A New RAID Architecture for Fast Data Recovery	63
<i>J. Wan, J. Wang, Q. Yang, C. Xie</i>	

FILE SYSTEM

Security Aware Partitioning for Efficient File System Search	72
<i>A. Parker-Wood, C. Strong, E. Miller, D. Long</i>	
Linear Tape File System	86
<i>D. Pease, A. Amir, L. Real, B. Biskeborn, M. Richmond, A. Abe</i>	
Hadoop Distributed File System	94
<i>K. Shvachko, H. Huang, S. Radia, R. Chansler</i>	

ENERGY EFFICIENCY AND QOS

Leveraging Disk Drive Acoustic Modes for Power Management	104
<i>D. Chen, G. Goldberg, R. Kahn, R. Kat, K. Meth</i>	
Energy and Thermal Aware Buffer Cache Replacement Algorithm	113
<i>J. Yue, Y. Zhu, Z. Cai, L. Lin</i>	
Mahanaxar: Quality of Service Guarantees in High-Bandwidth, Real-Time Streaming Data Storage	123
<i>D. Bigelow, S. Brandt, J. Bent, H. Chen</i>	

DISK AND MEMORY RECORDING TECHNOLOGY

A Content-Aware Block Placement Algorithm for Reducing PRAM Storage Bit Writes	134
<i>B. Wongchaowart, M. Iskander, S. Cho</i>	
Design Issues for a Shingled Write Disk System	145
<i>A. Amer, D. Long, E. Miller, J. Paris, T. Schwarz</i>	
Indirection Systems for Shingled-Recording Disk Drives	157
<i>Y. Cassuto, M. Sanvido, C. Guyot, D. Hall, Z. Bandic</i>	

HIGHER LEVEL ACCESS

MAD2: A Scalable High-Throughput Exact Deduplication Approach for Network Backup Services	171
<i>J. Wei, H. Jiang, K. Zhou, D. Feng</i>	
Enabling Active Storage on Parallel I/O Software Stacks	185
<i>S. Son, S. Lang, P. Carns, R. Ross, R. Thakur, B. Ozisikyilmaz, P. Kumar, W. Liao, A. Choudhary</i>	

Exporting Kernel Page Caching for Efficient User-Level I/O	197
<i>R. Spillane, S. Dixit, S. Archak, S. Bhanage, E. Zadok</i>	

SHORT PAPERS

Analysis and Modeling of Self-similarity in Parallel I/O Workloads	210
<i>Q. Zou</i>	
BPAC: An Adaptive Write Buffer Management Scheme for Flash-based Solid State Drives	216
<i>G. Wu, B. Eckart, X. He</i>	
Automated Lookahead Data Migration in SSD-enabled Multi-tiered Storage Systems	222
<i>G. Zhang, L. Chiu, C. Dickey, L. Liu, P. Muench, S. Seshadri</i>	
Delayed Partial Parity Scheme for Reliable and High-Performance Flash Memory SSD	228
<i>S. Im, D. Shin</i>	
Deferred Updates for Flash-Based Storage	234
<i>B. Debnath, M. Mokbel, D. Lilja, D. Du</i>	
dedupv1: Improving Deduplication Throughput Using Solid State Drives (SSD)	240
<i>D. Meister, A. Brinkmann</i>	
Red: An Efficient Replacement Algorithm Based on REsident Distance for Exclusive Storage Caches	246
<i>Y. Zhao, N. Xiao, F. Liu</i>	
A Performance Model and File System Space Allocation Scheme for SSD	252
<i>C. Hyun, Y. Oh, E. Kim, J. Choi, D. Lee, S. Noh</i>	
Observations Made While Running a Multi-petabyte Storage System	258
<i>M. Santos, D. Waldron</i>	
Write Amplification Reduction in NAND Flash Through Multi-Write Coding	262
<i>A. Jagmohan, M. Franceschini, L. Lastras</i>	
Disk-Enabled Authenticated Encryption	268
<i>K. Butler, S. McLaughlin, P. McDaniel</i>	
Scalable Storage Support for Data Stream Processing	274
<i>Z. Sebestou, K. Magoutis</i>	
Author Index	