Weidong Zhu

Master, Xiamen University

Personal Information

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Education

2016 - now M.S, Computer Science, School of Information and Engineering
Adviser: Prof. Suzhen Wu and Prof. Bo Mao
Xiamen University, China

2012 - 2016 B.S, Information Security, School of Computer Science and Technology
Huazhong University of Science and Technology, China

Research Intersts

Areas: Storage System, Database, Parallel/Distributed Systems
Focus: Deduplication, SSD, K-V Stores, SSD RAID

Conference Publications

- Suzhen Wu, Weidong Zhu, Guixin Liu, Hong Jiang, and Bo Mao. **GC-aware Request Steering with Improved Performance and Reliability for SSD-based RAIDs**. To appear in Proceedings of the 32nd IEEE International Parallel & Distributed Processing Symposium (IPDPS 18). Vancouver, British Columbia, Canada, May 21-May 25, 2018.

Journal Publications

- Suzhen Wu, Weidong Zhu, Bo Mao, Kuan-Ching Li. **PP: Popularity-based Proactive Data Recovery for HDFS RAID systems**. Future Generation Computer Systems (2017), http://dx.doi.org/10.1016/j.future.2017.03.032.

Research & Experience

Research Assistant **Mentor: Suzhen Wu** **July 2016 - now**
Advanced Storage Technology Lab, Xiamen University

- **KV-based Stores**
  LSM tree is one of the most popular data structures in K-V stores implementation, because it transfers the random writes into sequential writes. However, there are still have some problem in the LSM-based K-V store, just like write/read amplification. So, I am studying the structure and characteristics of Leveldb(A LSM-based KV database.) and OpenChannel-SSD to find a way to decrease the impact that write/read amplifications brought about.

- **Deduplication**
  Deduplication can significantly reduce write traffic and it has great profit for flash-based storage system, like SSD RAID. So, deduplication can help to improve the performance and reliability in the flash storage system. Moreover, with the advent of NVMe and 3D NAND flash technologies, the performance of flash-based storage systems has been improved significantly. So, this brought a new problem that the hash operation might become the bottleneck in the deduplication systems. So, I proceeded my research with this direction. **(ATC'18 Waiting)**

- **SSD-based Array**
  SSD-based RAIDs suffer from significant performance degradation whenever user I/O requests conflict with the ongoing Garbage Collection (GC) operations which introduces tail latency. And it will also brought great tail latency in the SSD-based Array. Moreover, the uncorrectable error occurred of SSD in the SSD-based RAIDs will trigger the fail-recovery process. So, proposing a scheme that aware of the GC process within an SSD-based RAID, to address both the performance and reliability issues of SSD-based RAIDs alluded to above is our main target in this research project. **(IPDPS'18)**

Team Leader **2014 - 2015**
Information Security Lab, Huazhong University of Science and Technology

- **A USB-based Device with Encryption**
  To ensure the security of USB-based device, encryption or the other security technology used on the USB-based device. However, existing schemes were always built in the software layer and its access control function is not perfect. So, we built a security system with USB-based device by using AES algorithm to encrypt the data and provided a strong access control system on the PC. Besides, the encryption system built on the firmware of the USB-based device.

Honors & Awards

Excellent Merit Student, Xiamen University, China Nov. 2017
National Scholarship, Ministry of Education of China Oct. 2017
Third Price of 2015 National College Students Information Security Contest Aug. 2015

Computer Skills

Operating System: Linux, Windows
Database: Leveldb
Programming: C, C++, Python, GO, LaTeX