

Peer Review

Review of: "Host-Guided Data Placement—Whose Job Is It Anyway?"

Shashank Adavally^{1,2}

1. University of North Texas, United States; 2. Micron (United States), Boise, United States

This paper talks about decoupling the complexity of data placement policies from the applications and filesystems and being unhindered by changing interfaces. For this, they present a shim layer called "Reshim" that performs affinity and lifetime-based data placement and a backend Reshim-engine, which is backend device management for host-managed systems.

The paper shows that by using Reshim, the authors have observed improved throughput of up to 2-6 times and up to 6 times lower latency against the f2fs filesystem in the evaluation performed using these workloads: RocksDB, MongoDB, and CacheLib.

Strengths:

This paper proposes a tool that can potentially prevent the need to rewrite or recompile the application by dynamically linking the application to the reshim tool at runtime. As the flash storage subsystems are introduced with newer interfaces, some level of application modifications is needed to fully benefit from the latest interface. The mentioned improvements against f2fs are good too.

Questions and Improvements:

1. In hint-based systems, is the backend system both in reshim and f2fs the same one?
2. How many physical dedicated zones can the reshim support at any given time?
3. If possible, it could have been better if there were comparisons against other similar LD_PRELOAD-based filesystem works.
4. In Fig 9, are the performance improvements solely because of the physical separation to dedicated zones? Can you please clarify if f2fs with multiple streams with zns (I'm assuming zns) is why f2fs performs with up to 6 times slower performance?
5. Grammatical mistakes:

In section 2.1, under “The Middle Road: Shim Layers”, under ideal shim layer properties, the first point “No changes the applications” should be “No changes to the applications.”

Some missing punctuation.

Declarations

Potential competing interests: No potential competing interests to declare.