RocksDB Festival
2nd

Supported by IITP, StarLab.

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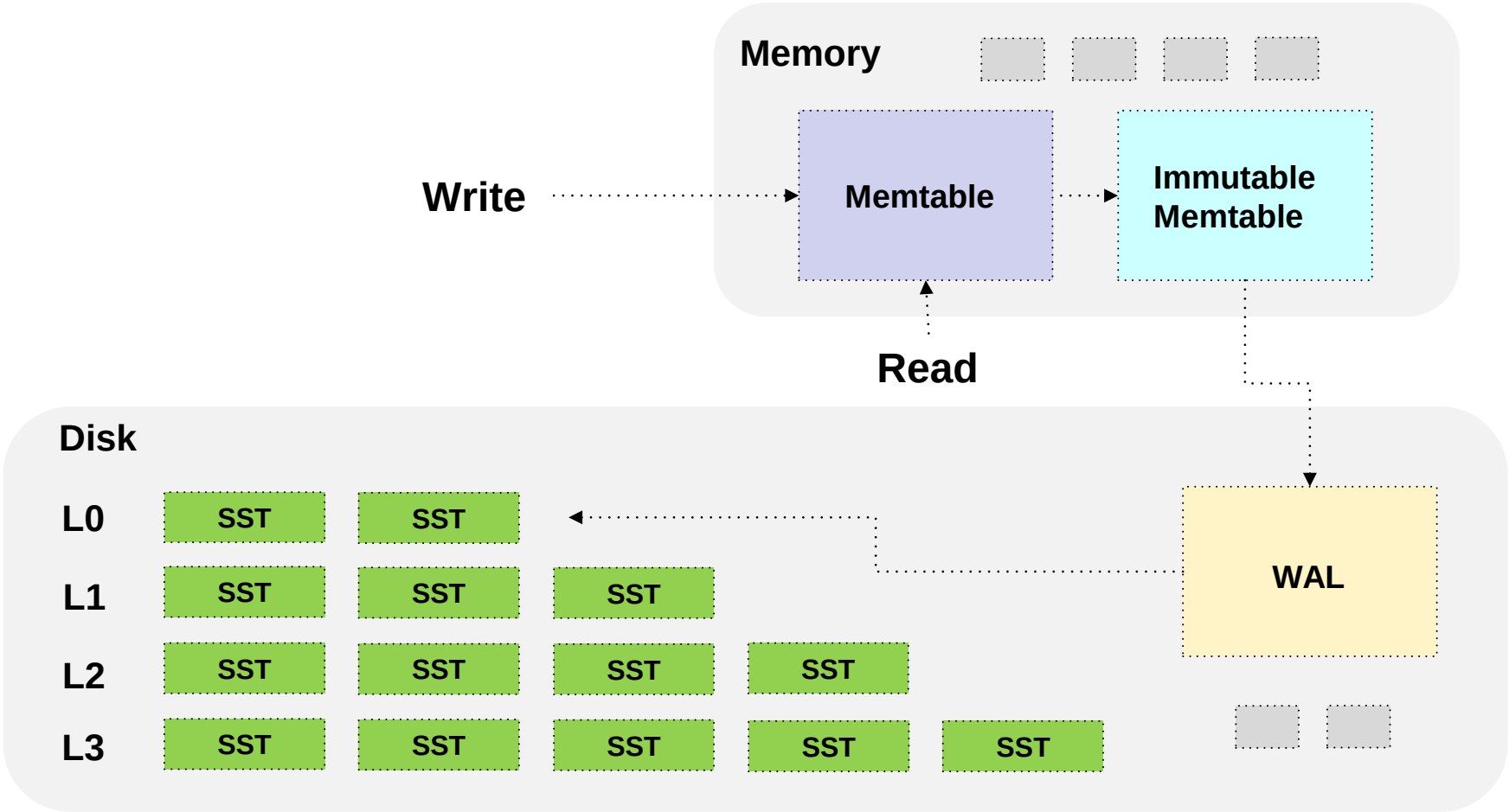
박경미, 황예진
kmi0817@naver.com, hyj3463@naver.com
BGR

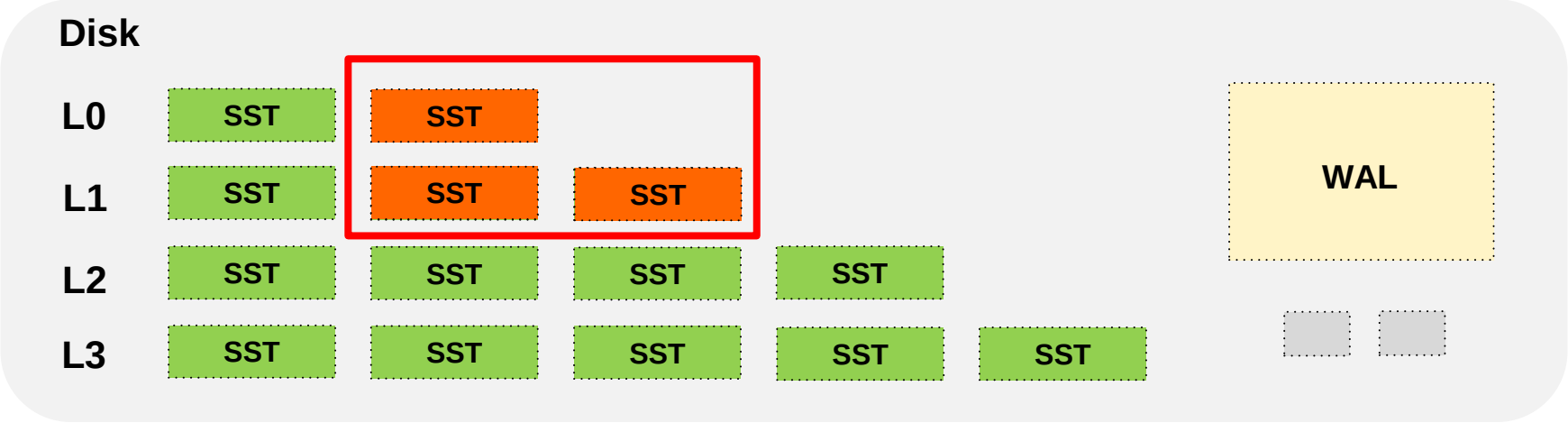
RocksDB Festival

- Contents
  - ✔ Memtable & SSTable Overview
  - ✔ Related Options
  - ✔ Experiment
    - memtable sizes
    - SSTable sizes
    - various memtable + SSTable sizes
    - level0 file num compaction trigger
  - ✔ Next week

- Overview


Memory
Write
Memtable
Immutable
Memtable
Read
Disk
L0
L1
L2
L3
SST
WAL

- Discussion
  - ✔ Occurred Write-Amplification



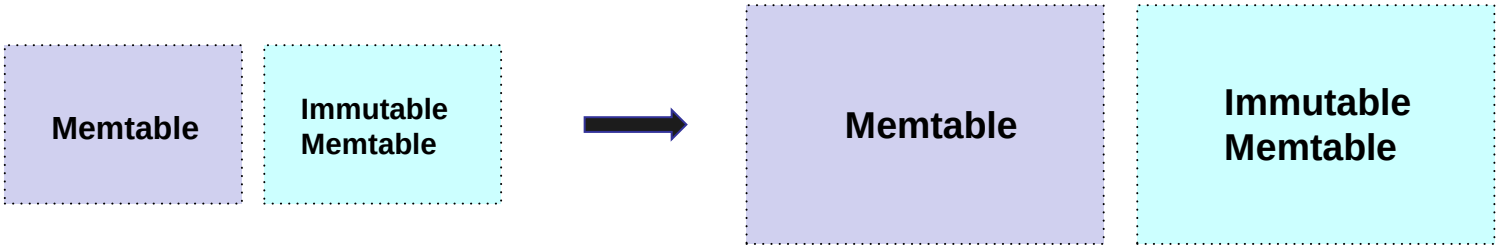
  - ✔ How can we reduce write amplification?
  - ✔ reduce number of compaction…

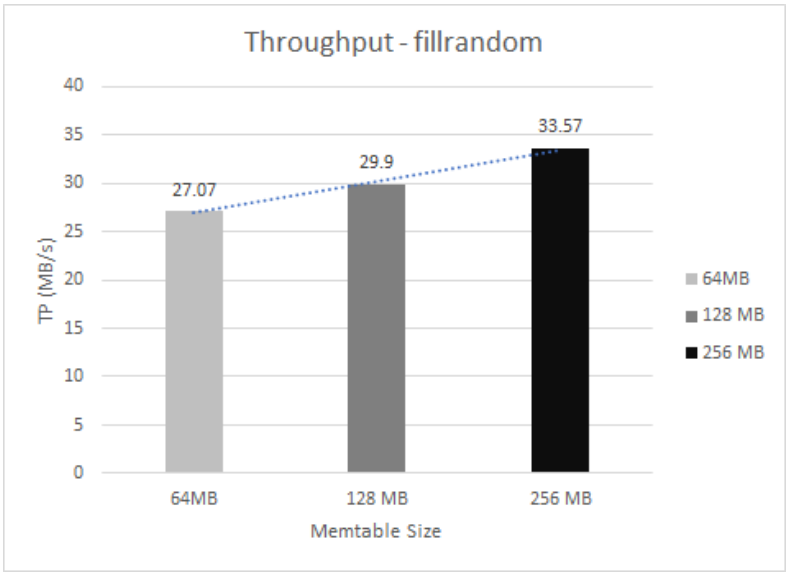
RocksDB Festival

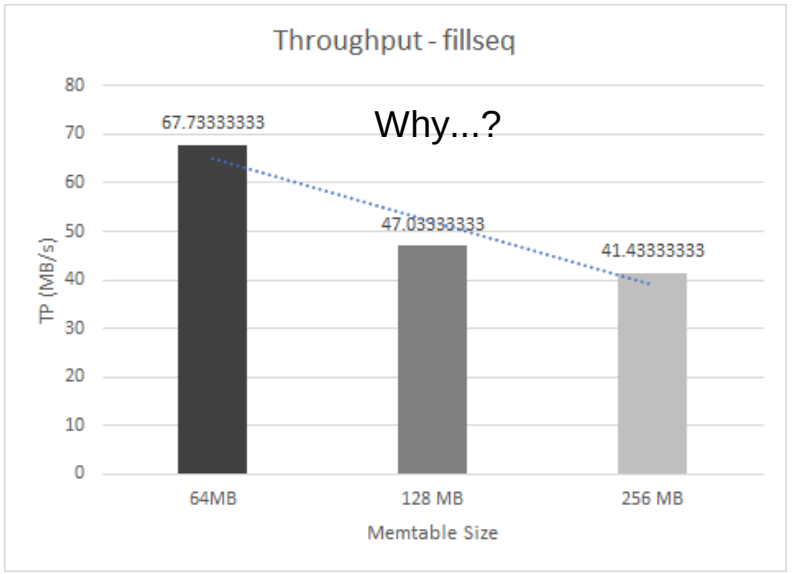
- Experiment Info

✔ RocksDB	version 6.21
✔ CPU	1 * Intel(R) Core(TM) i5-7500 CPU @ 3.40GHz
✔ Key	16 bytes
✔ Values	1KB
✔ Entries	4,000,000
✔ Other options are defaults	

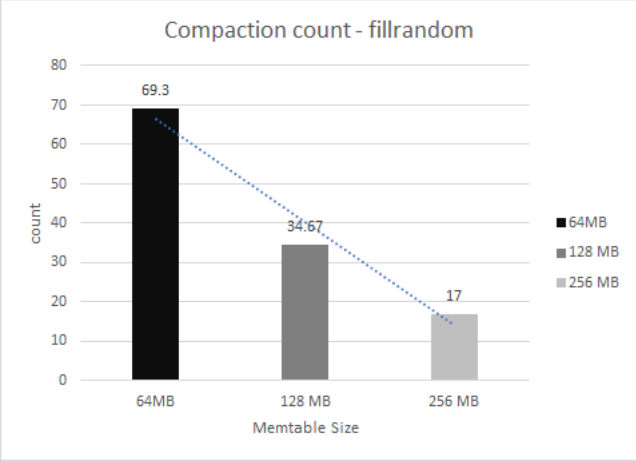
- Experiment
  - ✔ memtable sizes

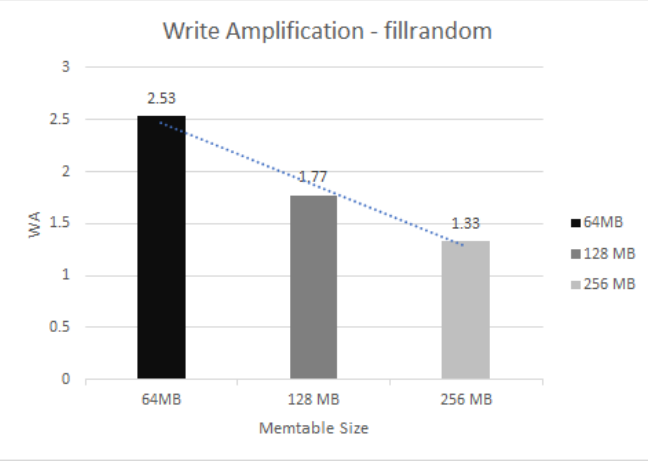


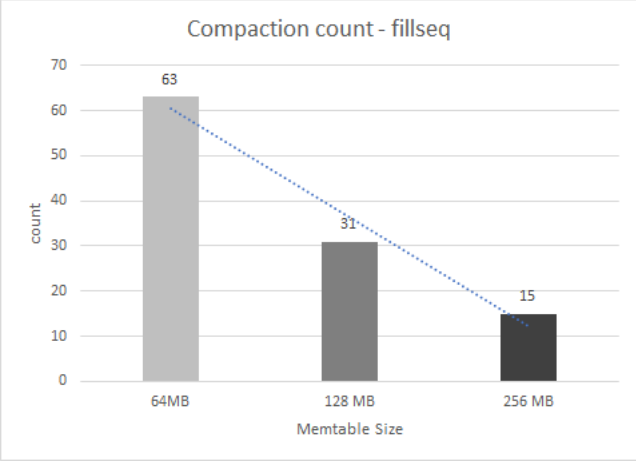




- Experiment
  - ✔ memtable sizes

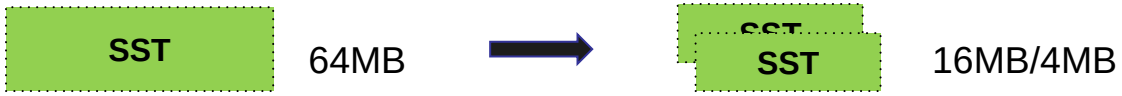




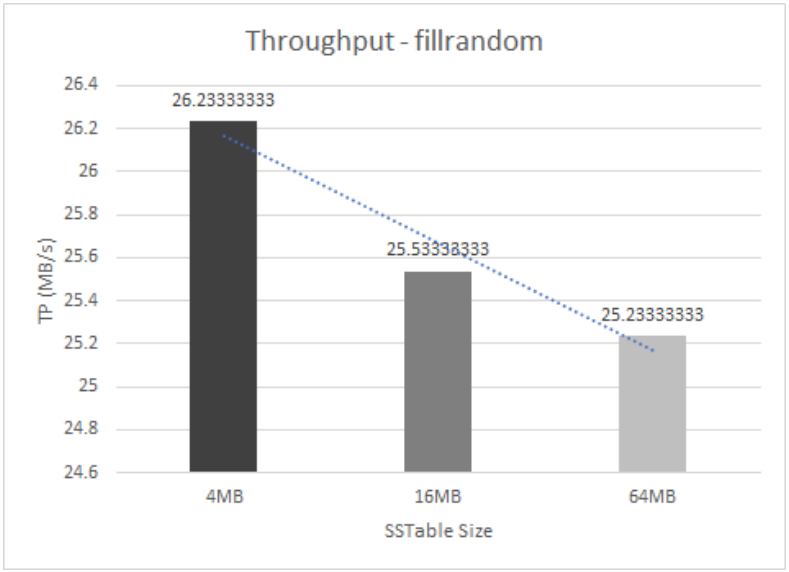


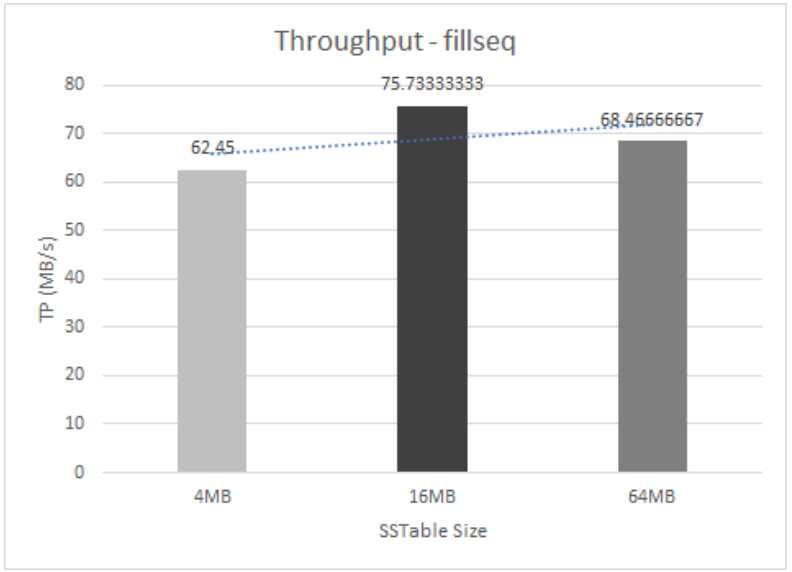
Do not affect WA when sequential write

- Experiment
  - ✔ SSTable sizes



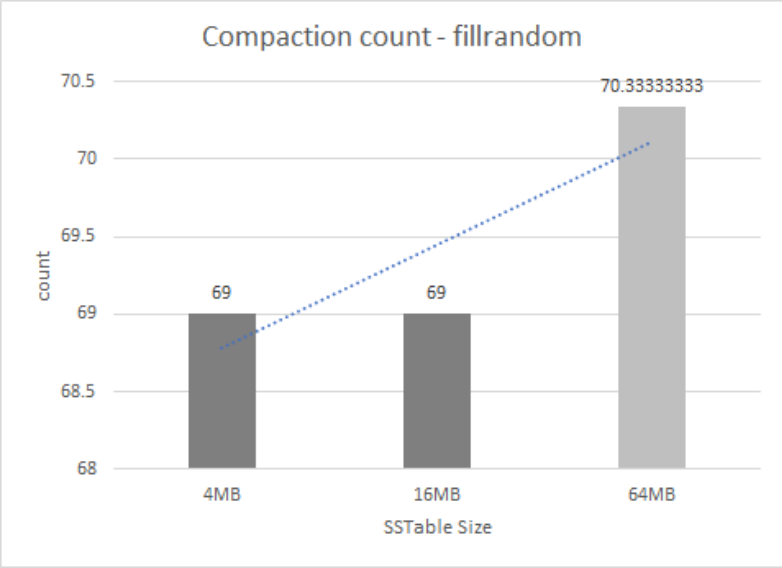
※ 1MB, 256KB, 64KB… too many open files

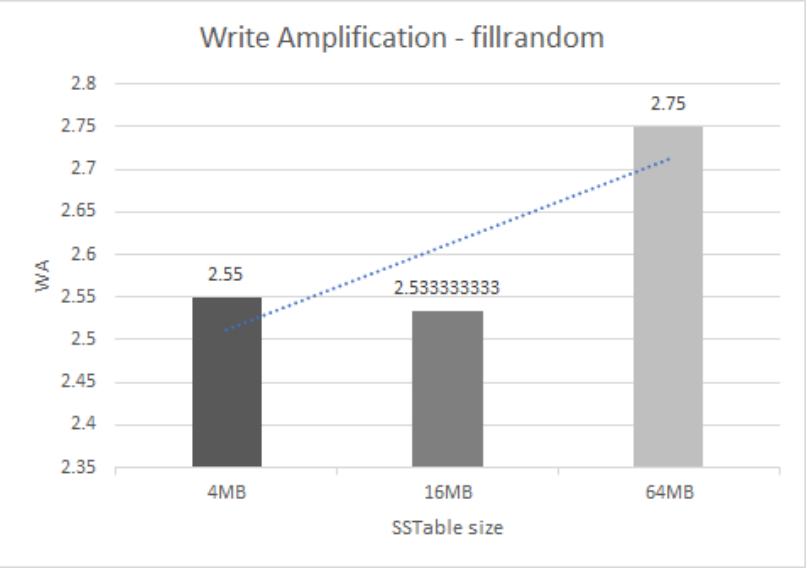




- Experiment
  - ✔ SSTable sizes

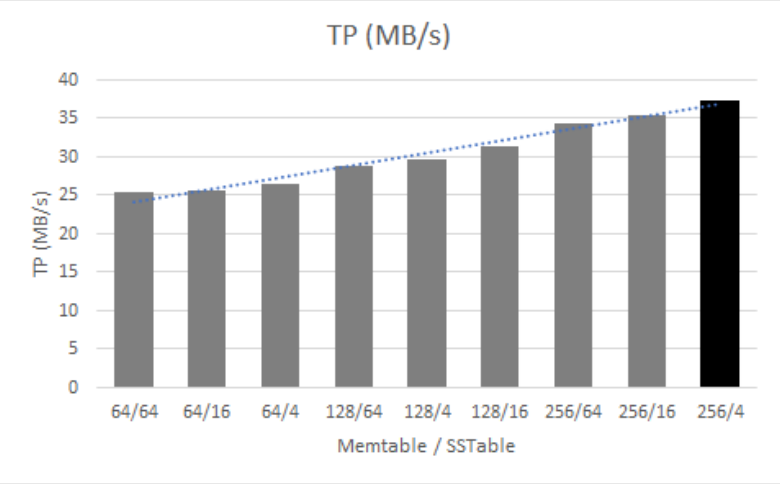
Reduce both compaction and WA when smaller

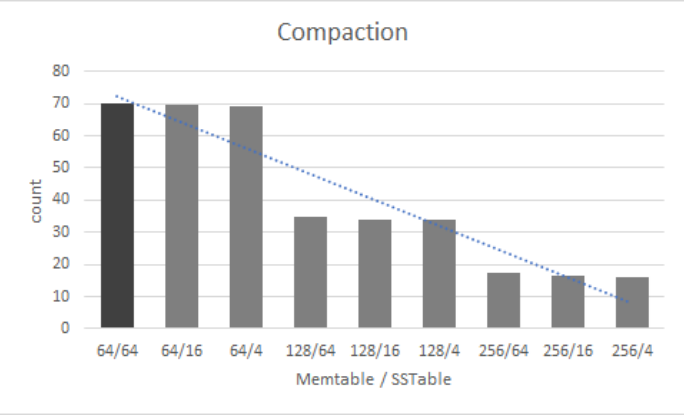


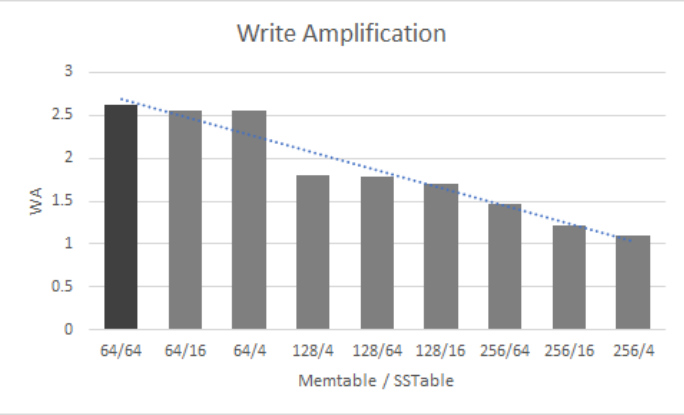


+) Do not affect sequential write.

- Experiment
  - ✔ various memtable(64,128,256MB) + SSTable sizes(4,16,64MB)





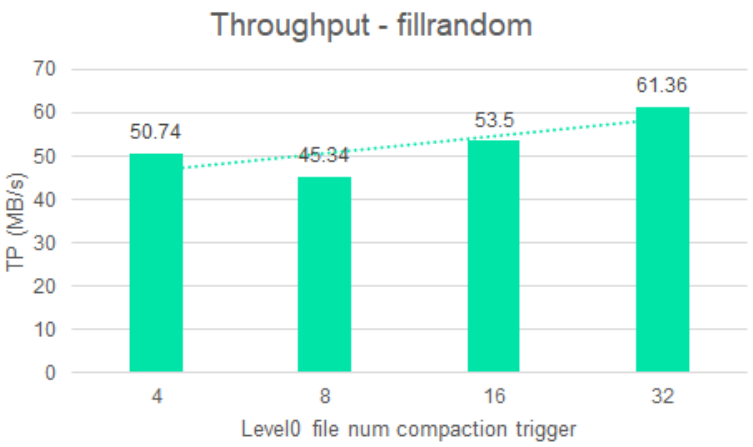


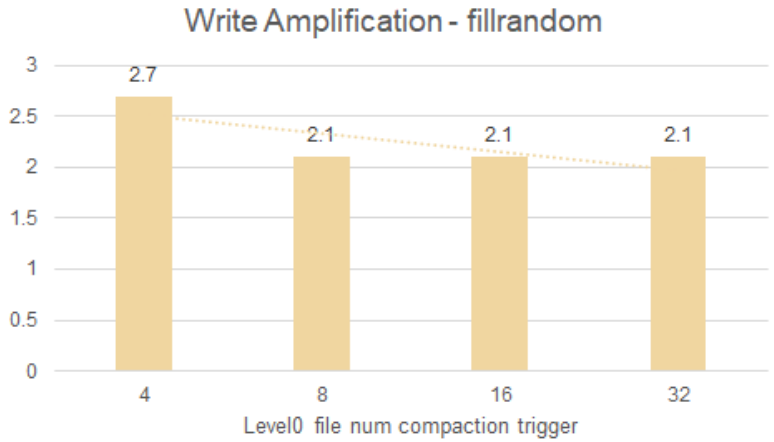
- Experiment

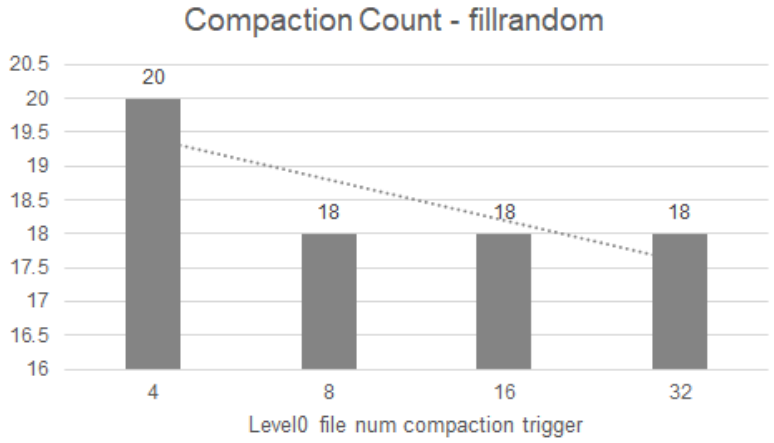
✔ level0 file num compaction trigger

The number of **WA** and **compaction** does not continue to decrease.

but, **Throughput** increases.







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- Next week
  - ✔ Disadvantages of increasing memtable size
  - ✔ Performance differences depending on cache size (the options remain the same)
  - ✔ Change the number of memtable
  - ✔ Use max_background_compactions, max_background_flushes
  - ✔ **Other ways to reduce Write Amplification !**

Discussion