7019-Test: Perf Comparison [12/10 STCS]

Setup

3 nodes cluster.
200+GB of data per node.
Single table.
Schema:

```
    --compaction "{'class': 'SizeTieredCompactionStrategy'}"
    --compression "{'sstable_compression': 'LZ4Compressor'}"
```

QPS: 3K/s.
Read : Write : Delete = 5 : 4 : 1

Timings

Start Time: Thu Dec 10 17:46:59 PST 2020
GarbageCollect Triggering Time: Thu Dec 10 18:57:02 PST 2020
GarbageCollect Duration: ~1 hours

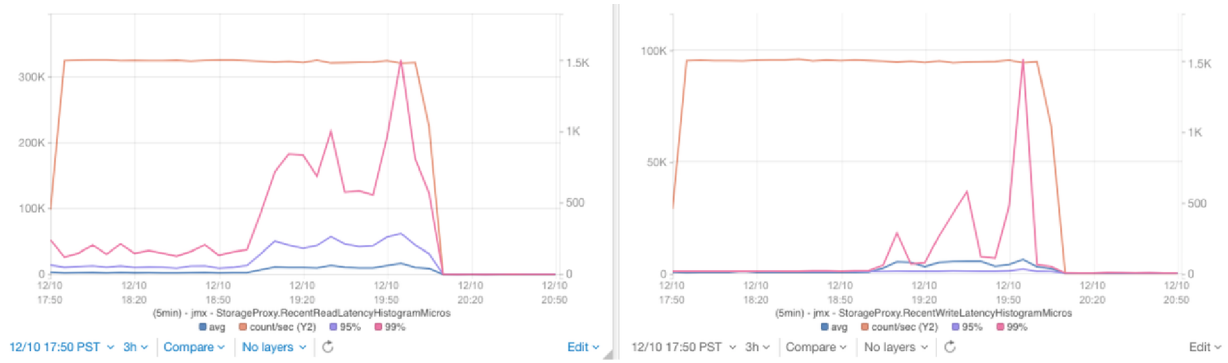
```
timestamp="2020-12-10T19:03:28,303-0800"
message="Starting Remove deleted data for tlp_stress.keyvaluelargeblob_2"

timestamp="2020-12-10T19:56:23,284-0800"
message="Finished Remove deleted data for tlp_stress.keyvaluelargeblob_2 successfully"
```

Result

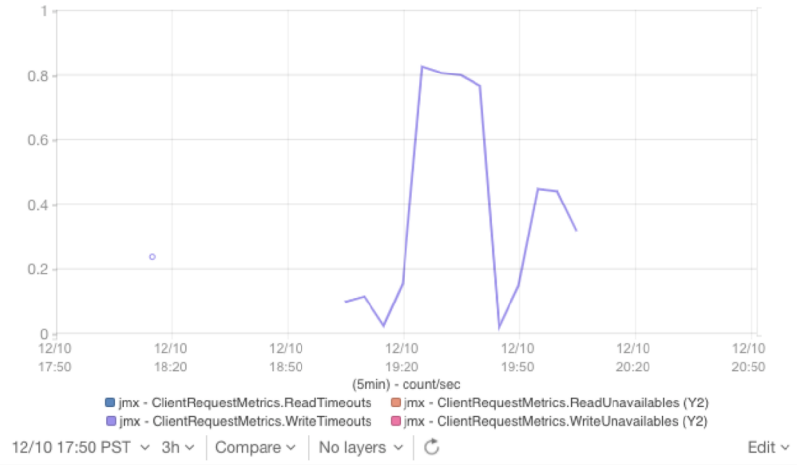
Metric	Steady State	With GarbageCollect
Read Throughput	1.5k/s	1.5k/s
Read Latency avg.	2.46k micros	11.08k micros
Read Latency p95	10.88k micros	50.67k micros
Read Latency p99	36.30k micros	183.10k micros
Write Throughput	1.5k/s	1.5k/s
Write Latency avg.	497.64 micros	5.52k micros
Write Latency p95	952.00 micros	1.23k micros
Write Latency p99	1.02k micros	36.62k micros

Read & Write Throughput and Latencies
Latencies (avg. p95, p99) increases during the GC is running.



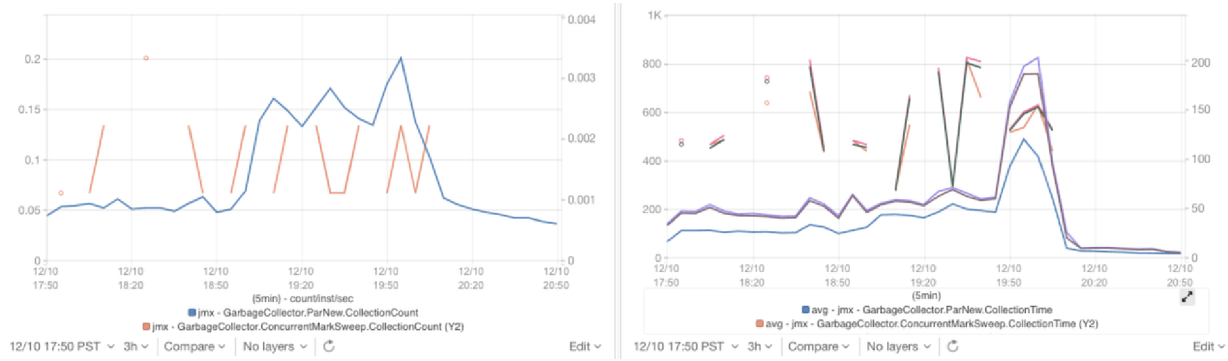
Write Timeouts

Write timeouts start to happen during the GC is running. The rate is low, below 0.8/s.



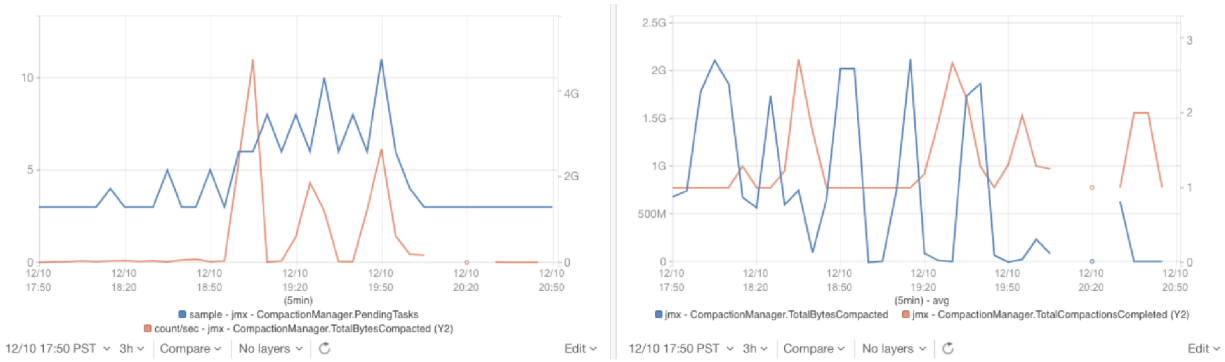
JVM GC Count & Duration

Both count and duration of the JVM GC increases with active `garbagecollect` running.



Compaction Rate & Throughput

When the `garbagecollect` is running, the rate of compaction tasks and the number of pending tasks increases, meanwhile the throughput (i.e. TotalBytesCompacted) is about the same.



Live SSTable Count

During `garbagecollect`, the live SSTables count increases slightly.