Week#3

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1. INTRODUCTION

In this week, we learned how to measure the hit/miss ratio in MySQL while running the TPC-C benchmark by changing buffer sizes.

2. METHODS

I analyzed the impact of different buffer sizes on the overall performance by buffer-size 10%, 20%, 30%, 40%, 50%

3. Performance Evaluation

3.1 Experimental Setup

Type	Specification
OS	Ubuntu 18.04.65 LTS
CPU	Intel(R) Core(TM) i5-10400F CPU @ 2.90GHz
Memory	3994720 kB
Kernel	Linux ubuntu 5.4.0-144-genericcat /proc

3.2 Experimental Results

10%

```
<Raw Results>
  [0] sc:0 lt:0  rt:3870504  fl:1935 avg_rt: -nan (5)
  [1] sc:0 lt:0  rt:3872189  fl:1940 avg_rt: -nan (5)
  [2] sc:0 lt:0  rt:389045  fl:193 avg_rt: -nan (5)
  [3] sc:193 lt:0  rt:0  fl:0 avg_rt: 4.3 (80)
  [4] sc:0 lt:0  rt:389654  fl:195 avg_rt: -nan (20)
 in 1200 sec.

<Raw Results2(sum ver.)>
  [0] sc:0  lt:0  rt:3870581  fl:1935
  [1] sc:0  lt:0  rt:3872295  fl:1940
  [2] sc:0  lt:0  rt:389045  fl:193
  [3] sc:193  lt:0  rt:0  fl:0
  [4] sc:0  lt:0  rt:389654  fl:195

<Constraint Check> (all must be [OK])
 [transaction percentage]
        Payment: 0.00% (>=43.0%) [NG] *
   Order-Status: 0.00% (>= 4.0%) [NG] *
       Delivery: 100.00% (>= 4.0%) [OK]
    Stock-Level: 0.00% (>= 4.0%) [NG] *
 [response time (at least 90% passed)]
      New-Order: -nan%  [NG] *
        Payment: -nan%  [NG] *
   Order-Status: -nan%  [NG] *
       Delivery: 100.00%  [OK]
    Stock-Level: -nan%  [NG] *

<TpmC>
                0.000 TpmC
```

20%

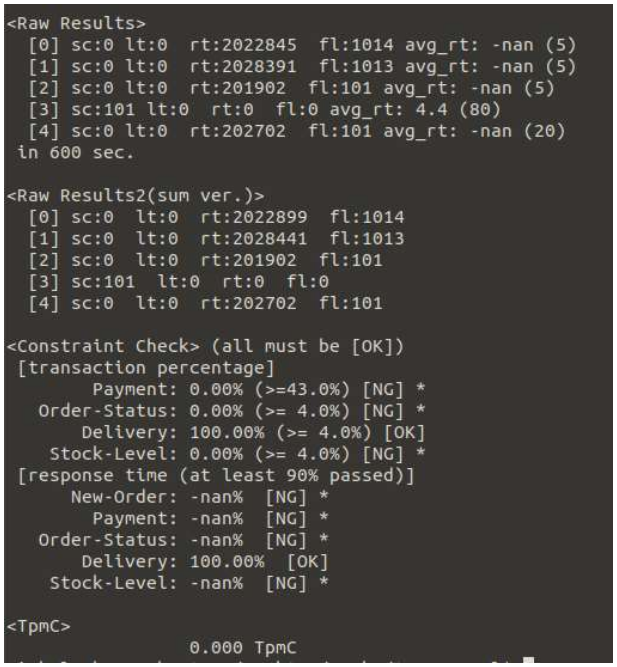
```
avg-cpu:  %user   %nice %system %iowait  %steal   %idle
          21.00    0.00   78.50    0.00    0.00    0.50

Device            r/s     w/s     rMB/s     wMB/s   rrqm/s   wrqm/s  %rrqm  %wrqm r_await w_await aqu-sz rareq-sz wareq-sz  svctm  %util
loop0            0.00    0.00      0.00      0.00     0.00     0.00   0.00   0.00    0.00    0.00   0.00     0.00     0.00   0.00   0.00
loop1            0.00    0.00      0.00      0.00     0.00     0.00   0.00   0.00    0.00    0.00   0.00     0.00     0.00   0.00   0.00
loop2            0.00    0.00      0.00      0.00     0.00     0.00   0.00   0.00    0.00    0.00   0.00     0.00     0.00   0.00   0.00
loop3            0.00    0.00      0.00      0.00     0.00     0.00   0.00   0.00    0.00    0.00   0.00     0.00     0.00   0.00   0.00
loop4            0.00    0.00      0.00      0.00     0.00     0.00   0.00   0.00    0.00    0.00   0.00     0.00     0.00   0.00   0.00
loop5            0.00    0.00      0.00      0.00     0.00     0.00   0.00   0.00    0.00    0.00   0.00     0.00     0.00   0.00   0.00
loop6            0.00    0.00      0.00      0.00     0.00     0.00   0.00   0.00    0.00    0.00   0.00     0.00     0.00   0.00   0.00
loop7            0.00    0.00      0.00      0.00     0.00     0.00   0.00   0.00    0.00    0.00   0.00     0.00     0.00   0.00   0.00
sda              0.00    3.00      0.00      0.02     0.00     3.00   0.00  50.00    0.00    0.00   0.00     0.00     0.00   1.33   0.40
loop8            0.00    0.00      0.00      0.00     0.00     0.00   0.00   0.00    0.00    0.00   0.00     0.00     0.00   0.00   0.00
loop9            0.00    0.00      0.00      0.00     0.00     0.00   0.00   0.00    0.00    0.00   0.00     0.00     0.00   0.00   0.00
```

```
<Raw Results>
  [0] sc:0 lt:0  rt:4160650  fl:2081 avg_rt: -nan (5)
  [1] sc:0 lt:0  rt:4161042  fl:2081 avg_rt: -nan (5)
  [2] sc:0 lt:0  rt:414979  fl:207 avg_rt: -nan (5)
  [3] sc:208 lt:0  rt:0  fl:0 avg_rt: 4.1 (80)
  [4] sc:0 lt:0  rt:416712  fl:209 avg_rt: -nan (20)
 in 1200 sec.

<Raw Results2(sum ver.)>
  [0] sc:0  lt:0  rt:4160817  fl:2081
  [1] sc:0  lt:0  rt:4161201  fl:2081
  [2] sc:0  lt:0  rt:414979  fl:207
  [3] sc:208  lt:0  rt:0  fl:0
  [4] sc:0  lt:0  rt:416713  fl:209

<Constraint Check> (all must be [OK])
 [transaction percentage]
        Payment: 0.00% (>=43.0%) [NG] *
   Order-Status: 0.00% (>= 4.0%) [NG] *
       Delivery: 100.00% (>= 4.0%) [OK]
    Stock-Level: 0.00% (>= 4.0%) [NG] *
 [response time (at least 90% passed)]
      New-Order: -nan%  [NG] *
        Payment: -nan%  [NG] *
   Order-Status: -nan%  [NG] *
       Delivery: 100.00%  [OK]
    Stock-Level: -nan%  [NG] *

<TpmC>
                0.000 TpmC
```

30%

```
avg-cpu:  %user   %nice %system %iowait  %steal   %idle
          23.00    0.00   77.00    0.00    0.00    0.00

Device            r/s     w/s     rMB/s     wMB/s   rrqm/s   wrqm/s  %rrqm  %wrqm r_await w_await aqu-sz rareq-sz wareq-sz  svctm  %util
loop0            0.00    0.00      0.00      0.00     0.00     0.00   0.00   0.00    0.00    0.00   0.00     0.00     0.00   0.00   0.00
loop1            0.00    0.00      0.00      0.00     0.00     0.00   0.00   0.00    0.00    0.00   0.00     0.00     0.00   0.00   0.00
loop2            0.00    0.00      0.00      0.00     0.00     0.00   0.00   0.00    0.00    0.00   0.00     0.00     0.00   0.00   0.00
loop3            0.00    0.00      0.00      0.00     0.00     0.00   0.00   0.00    0.00    0.00   0.00     0.00     0.00   0.00   0.00
loop4            0.00    0.00      0.00      0.00     0.00     0.00   0.00   0.00    0.00    0.00   0.00     0.00     0.00   0.00   0.00
loop5            0.00    0.00      0.00      0.00     0.00     0.00   0.00   0.00    0.00    0.00   0.00     0.00     0.00   0.00   0.00
loop6            0.00    0.00      0.00      0.00     0.00     0.00   0.00   0.00    0.00    0.00   0.00     0.00     0.00   0.00   0.00
loop7            0.00    0.00      0.00      0.00     0.00     0.00   0.00   0.00    0.00    0.00   0.00     0.00     0.00   0.00   0.00
sda              0.00    3.00      0.00      0.02     0.00     3.00   0.00  50.00    0.00    0.00   0.00     0.00     0.00   1.33   0.40
loop8            0.00    0.00      0.00      0.00     0.00     0.00   0.00   0.00    0.00    0.00   0.00     0.00     0.00   0.00   0.00
loop9            0.00    0.00      0.00      0.00     0.00     0.00   0.00   0.00    0.00    0.00   0.00     0.00     0.00   0.00   0.00
```

```
Buffer pool hit rate 1000 / 1000, young-making rate 0 / 1000 not 0 / 1000
Pages read ahead 0.00/s, evicted without access 0.00/s, Random read ahead 0.0
LRU len: 288, unzip_LRU len: 0
I/O sum[0]:cur[0], unzip sum[0]:cur[0]
----------
ROW OPERATIONS
--------------
0 queries inside InnoDB, 0 queries in queue
8 read views open inside InnoDB
Process ID=107006, Main thread ID=140677518866176, state: sleeping
Number of rows inserted 0, updated 0, deleted 0, read 8
0.00 inserts/s, 0.00 updates/s, 0.00 deletes/s, 0.00 reads/s
---------------------------
END OF INNODB MONITOR OUTPUT
===========================
```



4. Conclusion

Buffersize 가 커질수록 hitratio 가 증가한다는 것을 알수 있다.