

Week#5 Space Utilization of MySQL

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1. INTRODUCTION

Compare the space utilization with before the benchmark and after the benchmark.

2. METHODS

In this experiment, I want to check the space utilization. So I used two binary files to get the number of free space of each page and calculated percentile of free space. Then start MySQL server and run the benchmark.

3. Performance Evaluation

3.1 Experimental Setup

System setup:

| Type | Specification |
|-------------|-------------------------------------|
| OS | Ubuntu 20.04.3 LTS |
| CPU | Intel® Core™ i3-9100F CPU @ 3.60GHz |
| Memory | 16GB |
| Kernel | 5.11.0-27-generic |
| Data Device | Western Digital WD Blue 500GB |
| Log Device | Western Digital WD Blue 500GB |

Benchmark setup:

| Type | Configuration |
|------------------|------------------------|
| DB size | 1GB (10 warehouse) |
| Buffer Pool Size | 300MB (30% of DB size) |
| Benchmark Tool | tpcc-mysql |
| Runtime | 1200s |
| Connections | 8 |

3.2 Experimental Results

Before benchmark

```
The parsed file is saved to space-summary.txt

Parse space-summary.txt

# Parsing Result
Total number of pages = 1085
Total free space = 8743205
Average free space per page = 8058 (49.18%)

- Leaf Pages
Total number of pages = 1084
Total free space = 8735505
Average free space per page = 8058 (49.19%)
Min free space = 1026
Max free space = 16384

- Non-leaf Pages
Total number of pages = 1
Total free space = 7700
Average free space per page = 7700 (47.00%)
Min free space = 7700
Max free space = 7700

The result is saved to result.txt
```

| Percentage | Count | |
|------------|-------|---------|
| 0 - 10 | 494 | (45.5%) |
| 10 - 20 | 0 | (0.0%) |
| 20 - 30 | 0 | (0.0%) |
| 30 - 40 | 1 | (0.1%) |
| 40 - 50 | 0 | (0.0%) |
| 50 - 60 | 0 | (0.0%) |
| 60 - 70 | 589 | (54.3%) |
| 70 - 80 | 0 | (0.0%) |
| 80 - 90 | 1 | (0.1%) |
| 90 - 100 | 0 | (0%) |
| Total | 1085 | (100%) |

After benchmark

```

Parse space-summary.txt

# Parsing Result
Total number of pages = 1085
Total free space = 8743205
Average free space per page = 8058 (49.18%)

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| 60 - 70 | 589 | (54.3%) |
| 70 - 80 | 0 | (0.0%) |
| 80 - 90 | 1 | (0.1%) |
| 90 - 100 | 0 | (0%) |
| Total | 1085 | (100%) |

The result is absolutely same with before benchmark from after benchmark. I run several time but the result was same.

4. Conclusion

For this experiment, I noticed some strange point from result about space utilization. I will find something wrong with my environment.

5. REFERENCES

[1] <https://github.com/meeeejin/SWE3033-F2021/tree/main/week-5>