華中科技大學

数据中心技术课程实验报告

院　　系　计算机科学与技术学院

班　　级　2107

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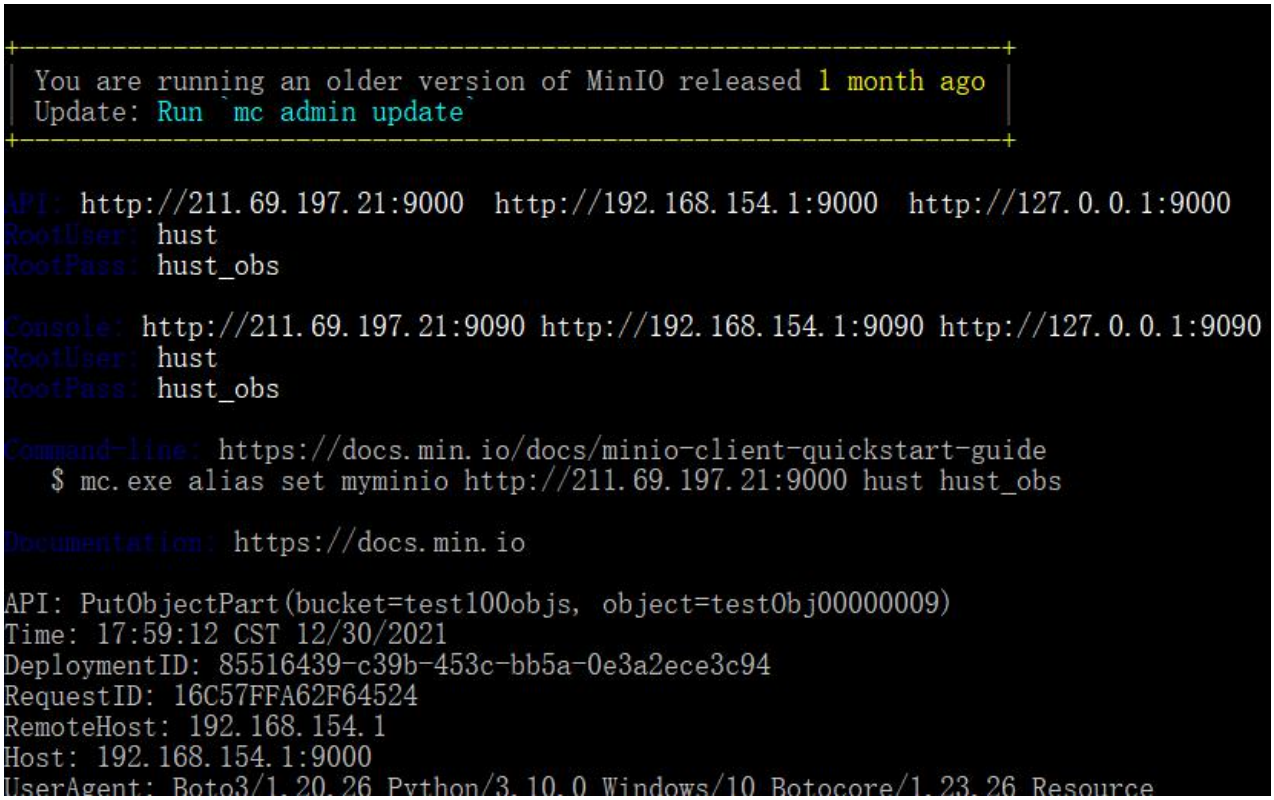
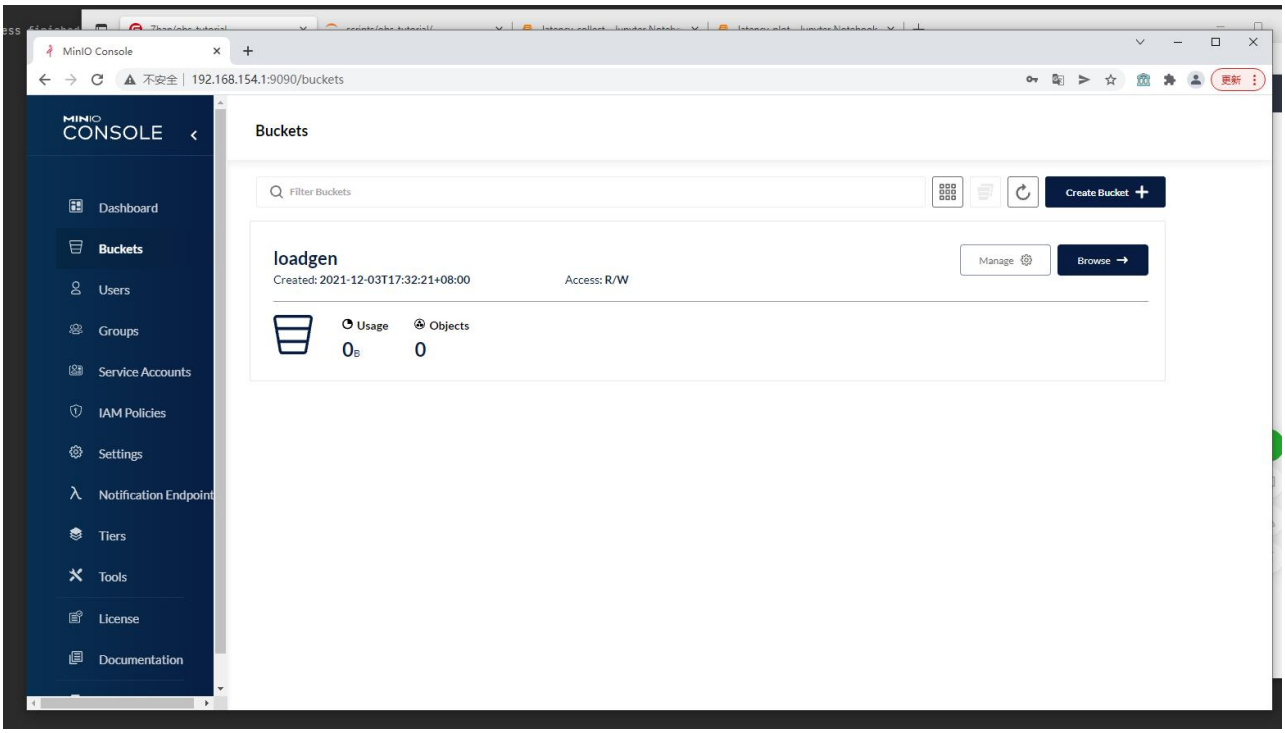
一、系统搭建

服务端：minio

run-minio.cmd:





二、性能观测

1. s3bench:

run-s3bench.cmd:

```
E:\coding\python\data-center>s3bench.exe     -accessKey=hust     -accessSecret=hust_obs     -bucket=loadgen
    -endpoint=http://192.168.154.1:9000     -numClients=8     -numSamples=256     -objectNamePrefix=loadgen
    -objectSize=1048576
Test parameters
endpoint(s):      [http://192.168.154.1:9000]
bucket:           loadgen
objectNamePrefix: loadgen
objectSize:       1.0000 MB
numClients:       8
numSamples:       256
verbose:       %!d(bool=false)

Generating in-memory sample data... Done (3.9869ms)

Running Write test...

Running Read test...

Test parameters
endpoint(s):      [http://192.168.154.1:9000]
bucket:           loadgen
objectNamePrefix: loadgen
objectSize:       1.0000 MB
numClients:       8
numSamples:       256
verbose:       %!d(bool=false)

Results Summary for Write Operation(s)
Total Transferred: 256.000 MB
Total Throughput:  4.02 MB/s
Total Duration:    63.643 s
Number of Errors:  0
------------------------------------
Write times Max:       3.892 s
Write times 99th %ile: 3.794 s
Write times 90th %ile: 3.023 s
Write times 75th %ile: 2.379 s
Write times 50th %ile: 1.975 s
Write times 25th %ile: 1.513 s
Write times Min:       0.441 s

Results Summary for Read Operation(s)
Total Transferred: 256.000 MB
Total Throughput:  947.49 MB/s
Total Duration:    0.270 s
Number of Errors:  0
------------------------------------
Read times Max:       0.043 s
Read times 99th %ile: 0.040 s
Read times 90th %ile: 0.014 s
Read times 75th %ile: 0.008 s
Read times 50th %ile: 0.006 s
Read times 25th %ile: 0.005 s
Read times Min:       0.002 s

Cleaning up 256 objects...
Deleting a batch of 256 objects in range {0, 255}... Succeeded
Successfully deleted 256/256 objects in 549.5487ms
```

客户数量：8
样本数量：256
对象大小：1MB

写操作结果：总传输量：256MB
总吞吐率：4.02MB/s
总时间：63.643s

最大写入延迟：3.892s
99%写入延迟：3.794s
90%写入延迟：3.023s
75%写入延迟：2.379s
50%写入延迟：1.975s
25%写入延迟：1.513s
最小写入延迟：0.441s

读操作结果：总传输量：256MB
总吞吐率：947.49MB/s
总时间：0.270s

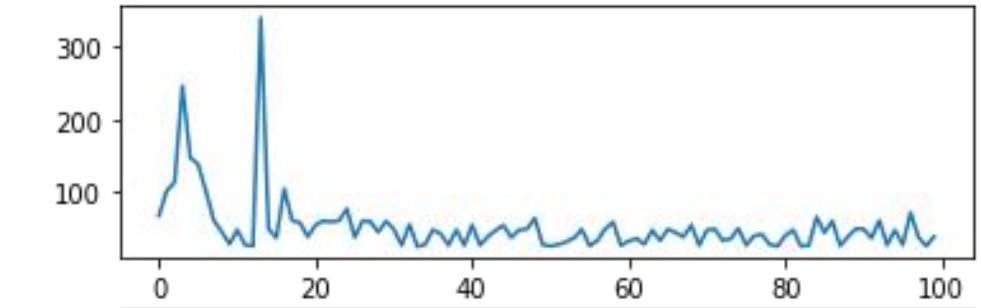
最大读取延迟：0.043s
99%读取延迟：0.040s
90%读取延迟：0.014s
75%读取延迟：0.008s
50%读取延迟：0.006s
25%读取延迟：0.005s
最小读取延迟：0.002s

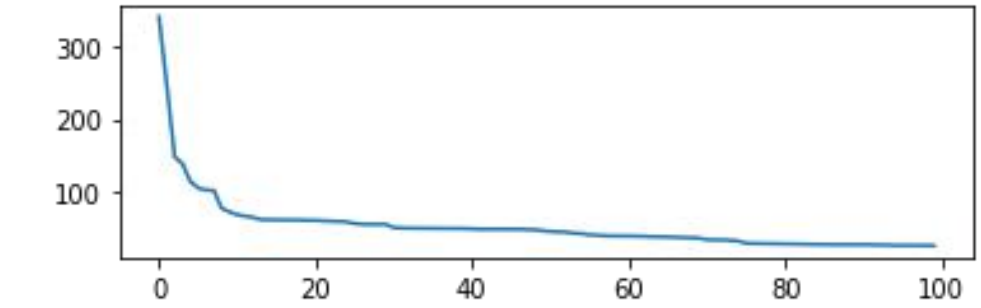
二、尾延迟

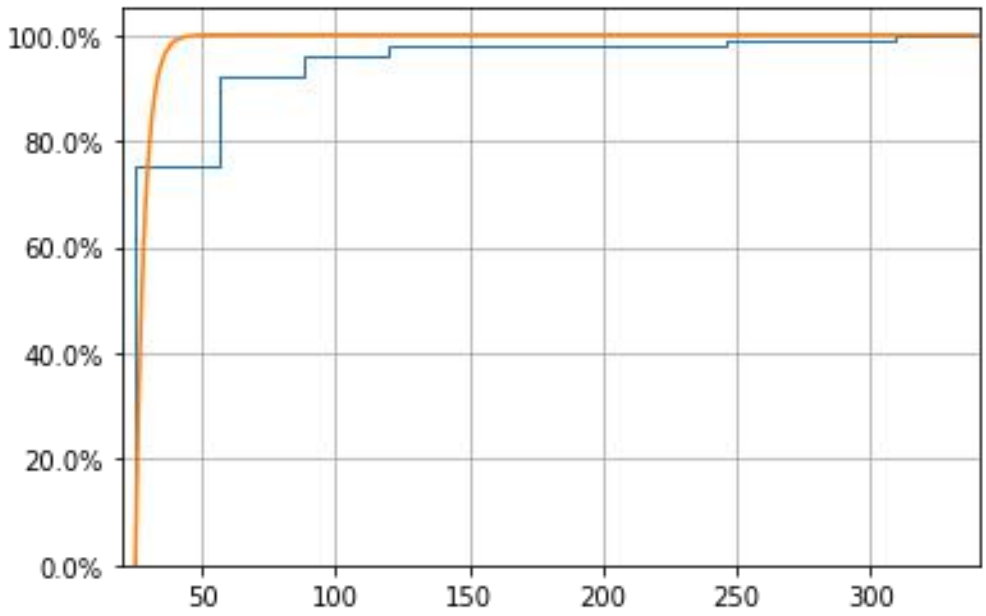
实验设置：文件大小：4KB

文件数量：100 个

1. 普通请求：

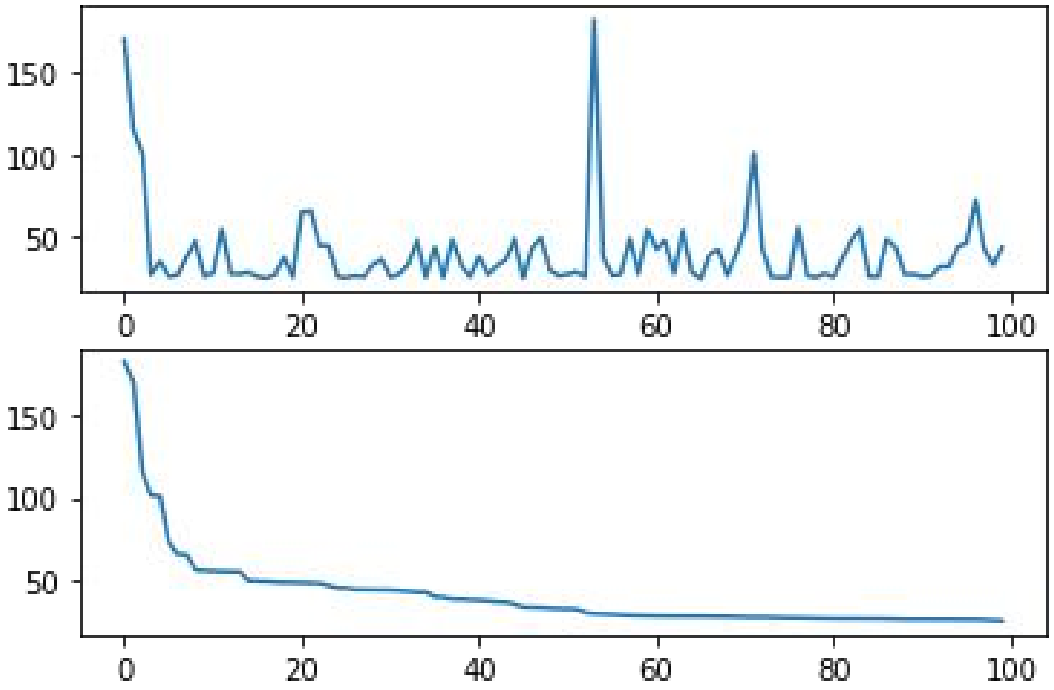


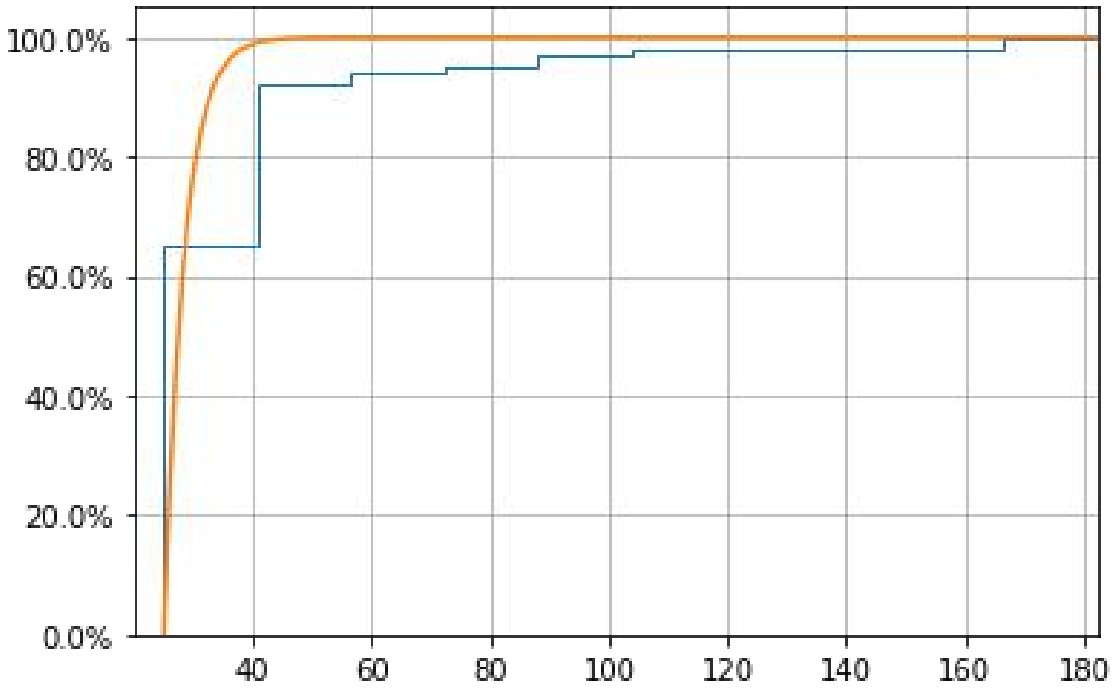




最大延迟：350ms 左右
90%延迟：60ms 内
99%延迟：250ms 内

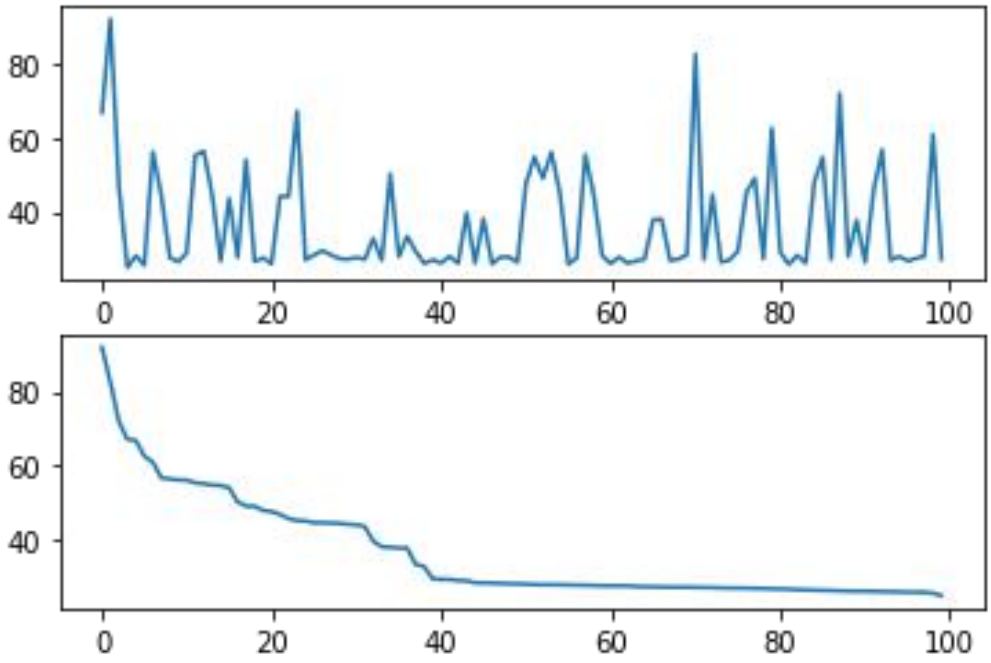
2. 对冲请求

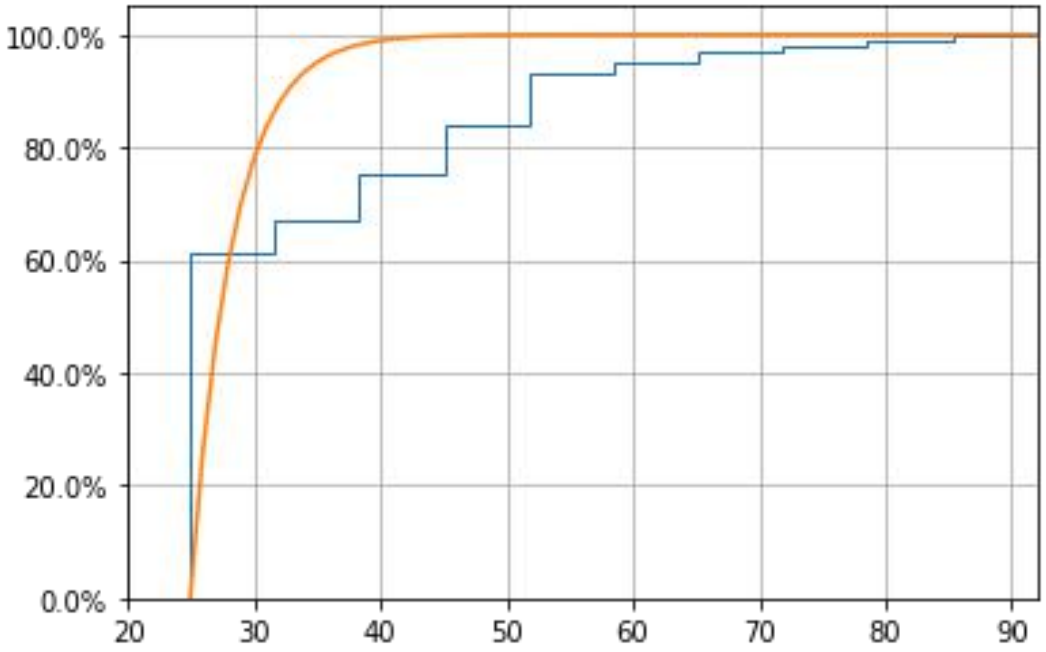




最大延迟：185ms 左右
90%延迟：42ms 内
99%延迟：110ms 内

3. 关联请求





最大延迟：95ms 左右
90%延迟：55ms 内
99%延迟：80ms 内

从实验结果可以看到：对冲请求和关联请求都有效的减轻了尾延迟现象