Practical sysbench

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This talk...

- Is beginner level
- Probably you will benefit the most if you have very little knowledge about sysbench

Agenda

- Benchmarking in general
- Benchmarking disk IO with sysbench fileio
- Benchmark MySQL with sysbench
- Some tips on processing sysbench data

A benchmark ...

- is Syntethic
- does not represent a real-world workload normally
- is good for comparing
- is easily repeatable and deterministic

Compiling sysbench

- Always use trunk
- On red hat or fedora, use Frederic Descamps's packages (lefred.be), which is usually close to trunk.

```
# cd /opt
# bzr co lp:sysbench
# ./autogen.sh
# ./configure
# make
# make install
```

Sysbench fileio

Creating files for the benchmark

```
petya@ptp:~/practical_sysbench$ sysbench
--test=fileio --file-total-size=32G --file-
num=32 prepare
sysbench 0.5:  multi-threaded system
evaluation benchmark

32 files, 1048576Kb each, 32768Mb total
Creating files for the test...
Extra file open flags: 0
Creating file test_file.0
Creating file test_file.1
Creating file test_file.2
```

Fileio parameters we will use

- --file-block-size (16k)
- --file-total-size (32G)
- --file-num (32)

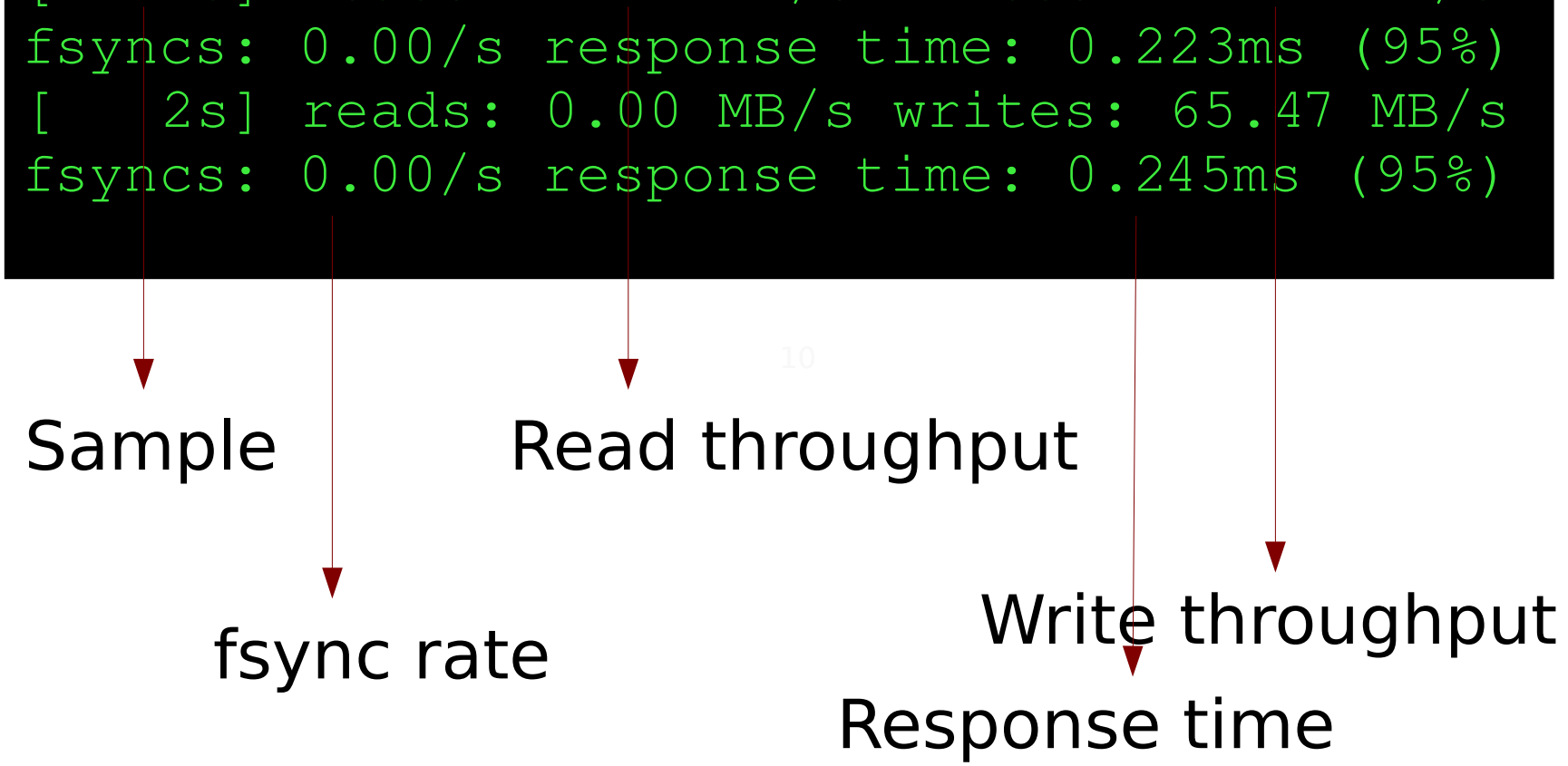
  --file-extra-flags (direct)
- --rand-init (on)
- --num-threads (?)

Fileio parameters we will use II.

- --file-io-mode (sync,async)
- --file-test-mode
  - rndwr, rndrd, rndwr
  - seqrd, seqwr, seqrewr
- --max-requests (0)
- --max-time (?)
- --report-interval (1)

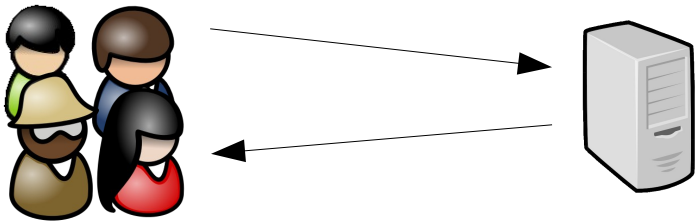
Interpreting the output

```
[   1s] reads: 0.00 MB/s writes: 72.18 MB/s
fsyncs: 0.00/s response time: 0.223ms (95%)
[   2s] reads: 0.00 MB/s writes: 65.47 MB/s
fsyncs: 0.00/s response time: 0.245ms (95%)
```

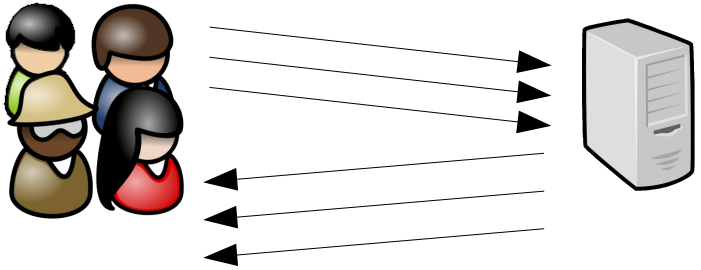


Does number of threads matter?

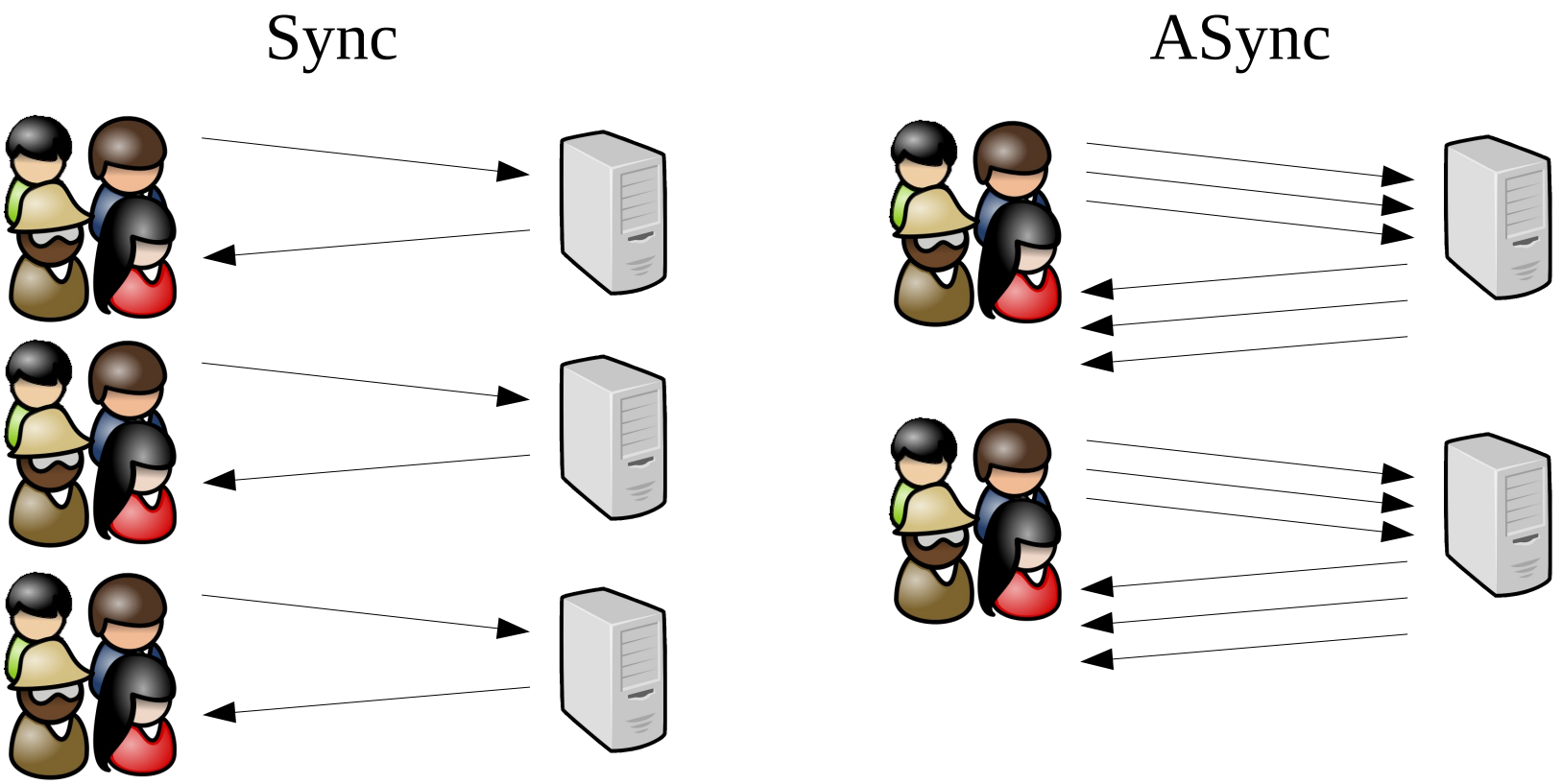
Sync



ASync



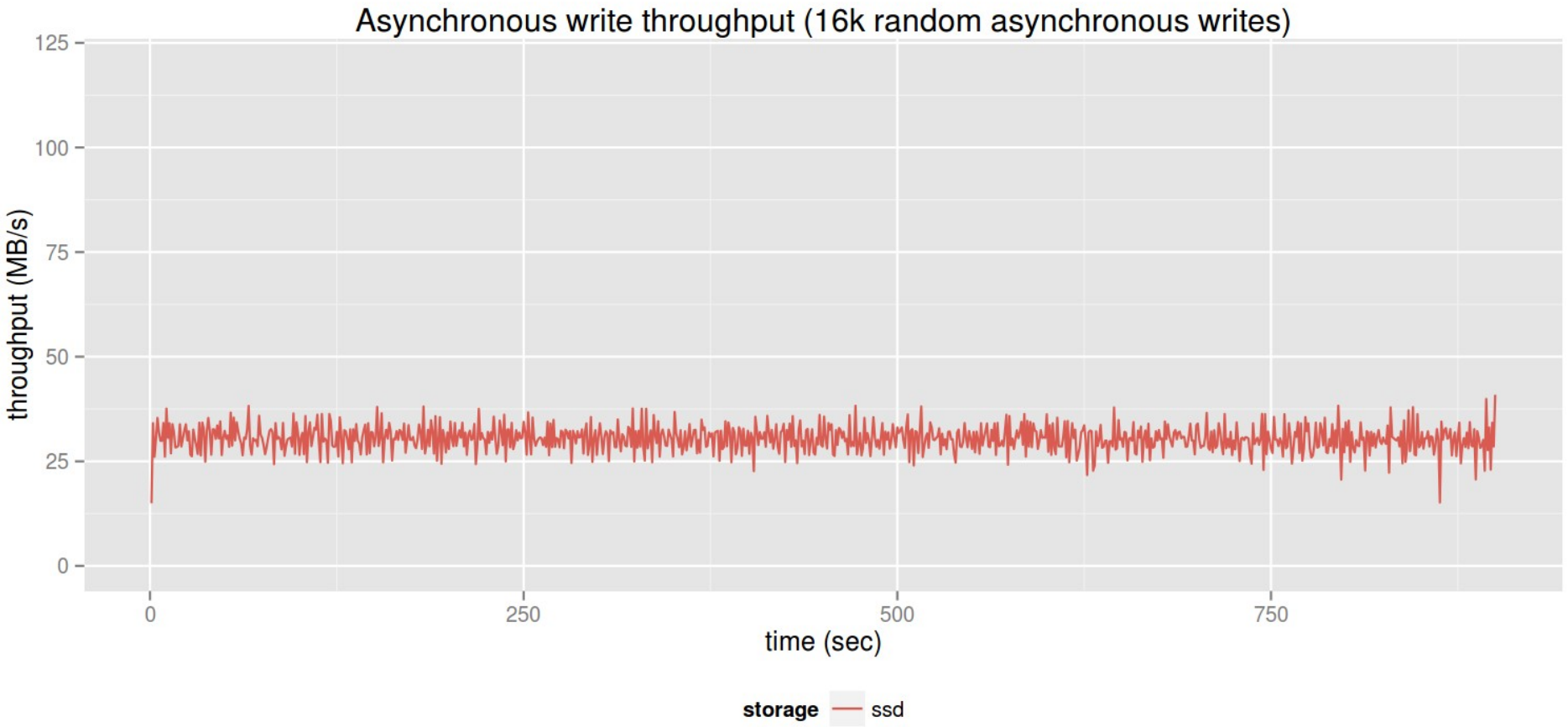
Does number of threads matter?



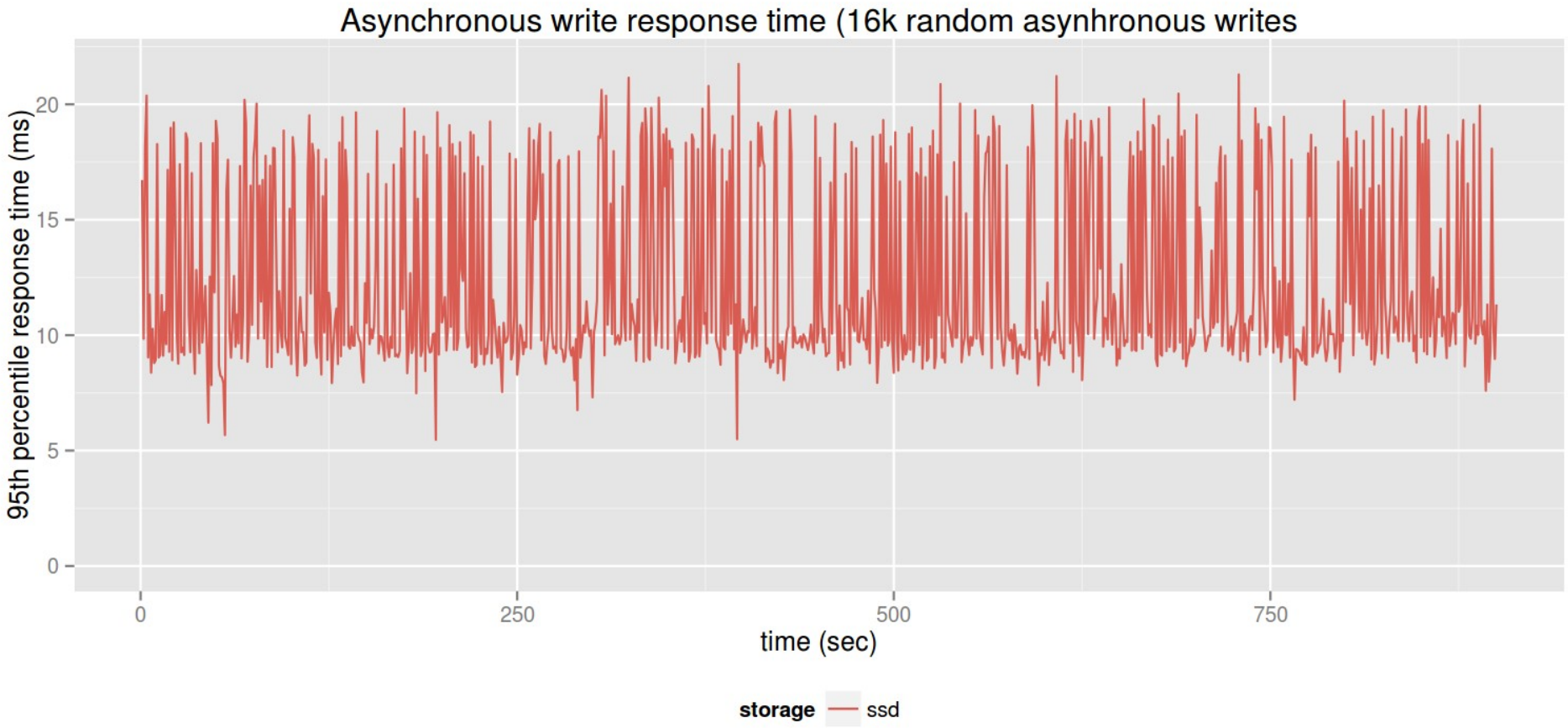
Sysbench demo

```
petya@ptp:~/practical_sysbench$ cat sb_demo.sh
#!/bin/bash
sysbench --test=fileio \
  --file-block-size=16384 \
  --file-total-size=32G \
  --file-num=32 \
  --file-extra-flags=direct \
  --file-fsync-freq=0 \
  --rand-init=on \
  --num-threads=1 \
  --file-io-mode=sync \
  --file-test-mode=rndwr \
  --max-requests=0 \
  --max-time=120 \
  --report-interval=1 \
  run
```

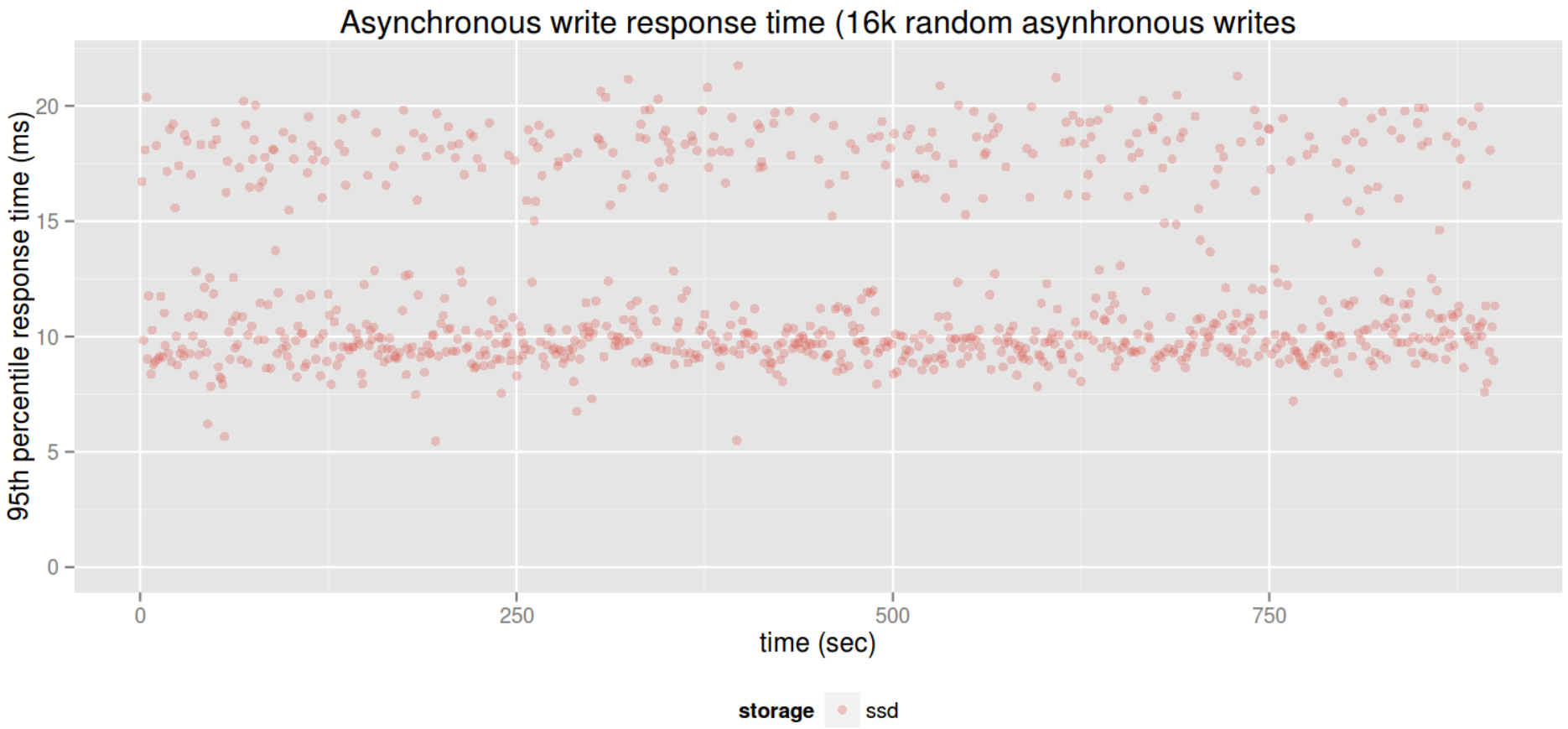
Graphing results



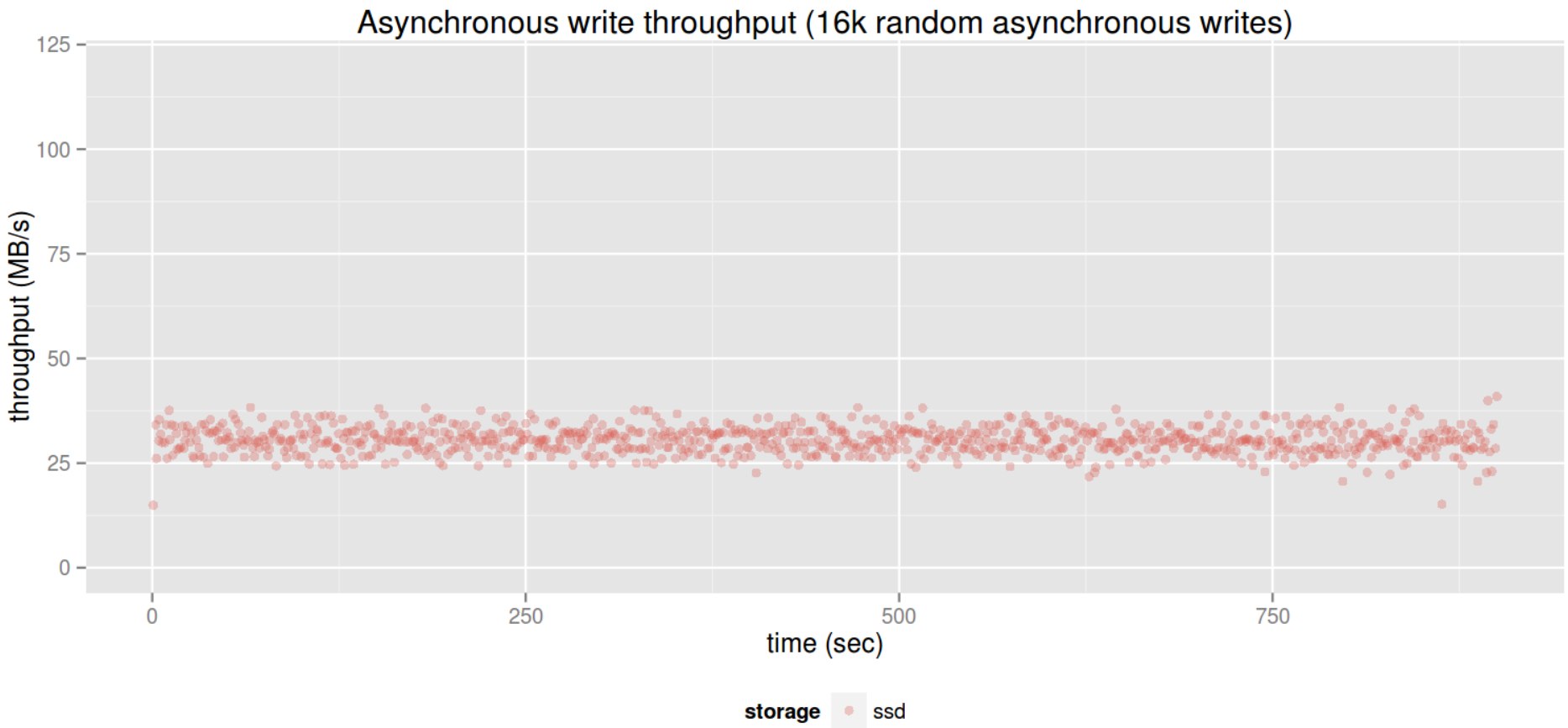
Graphing results



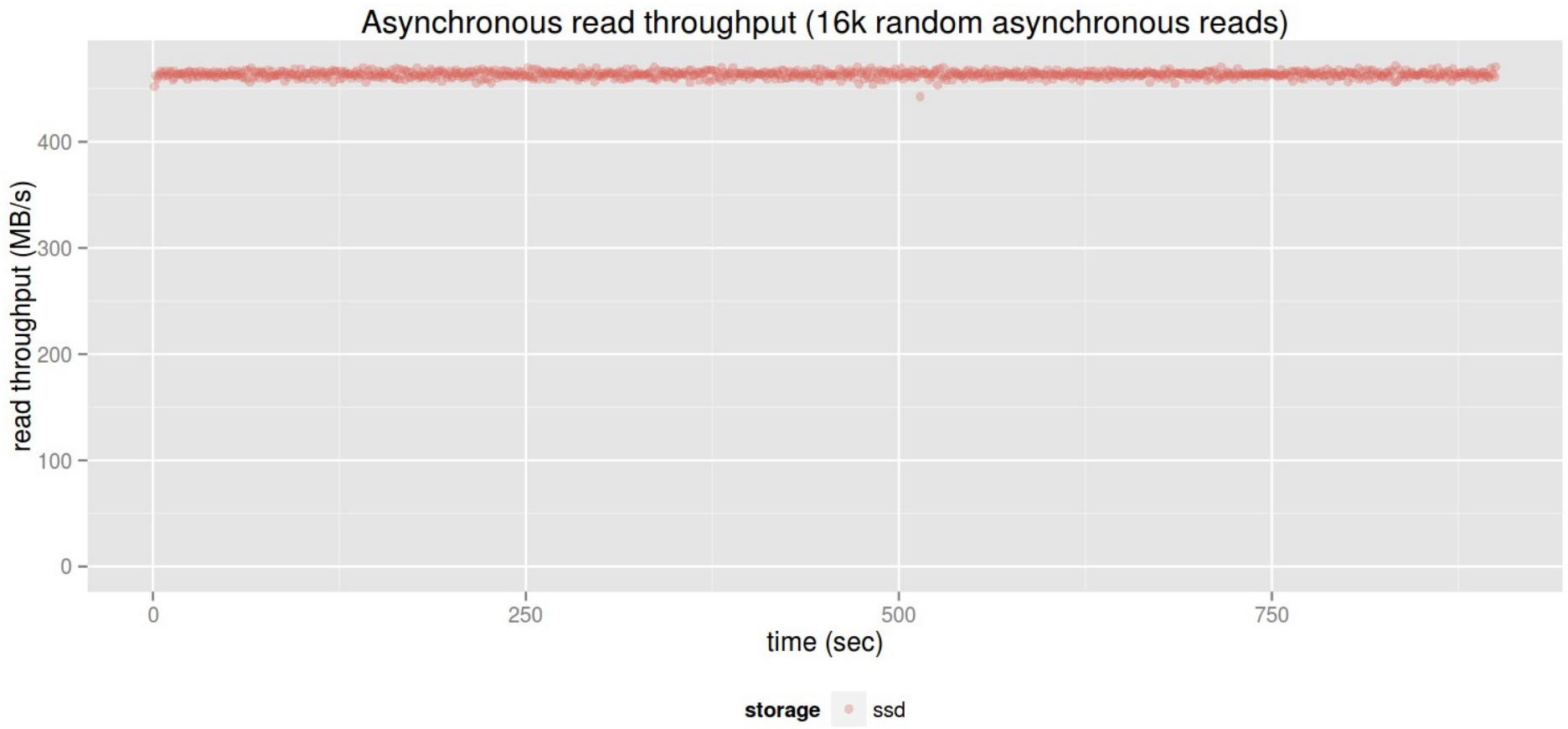
Graphing results



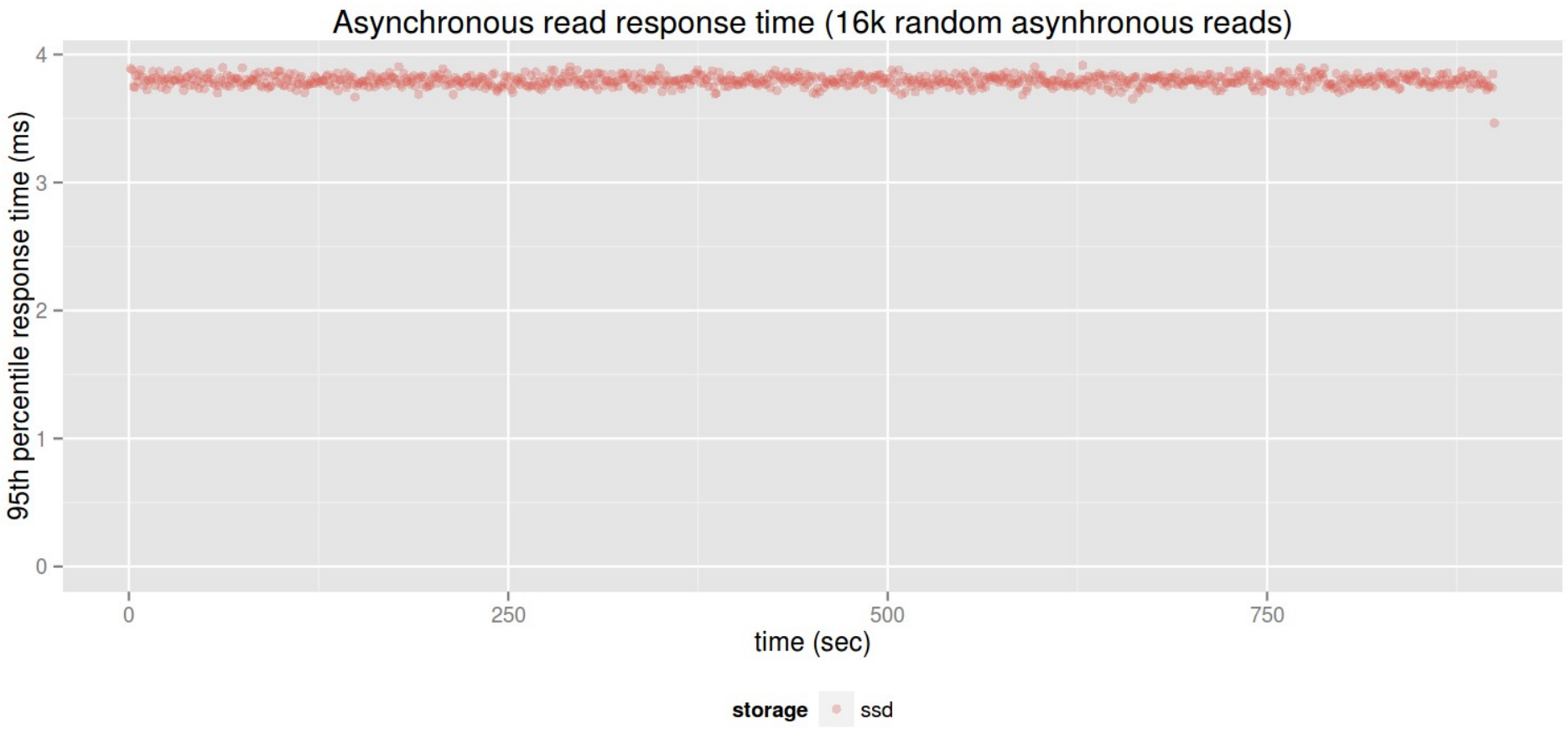
Graphing results



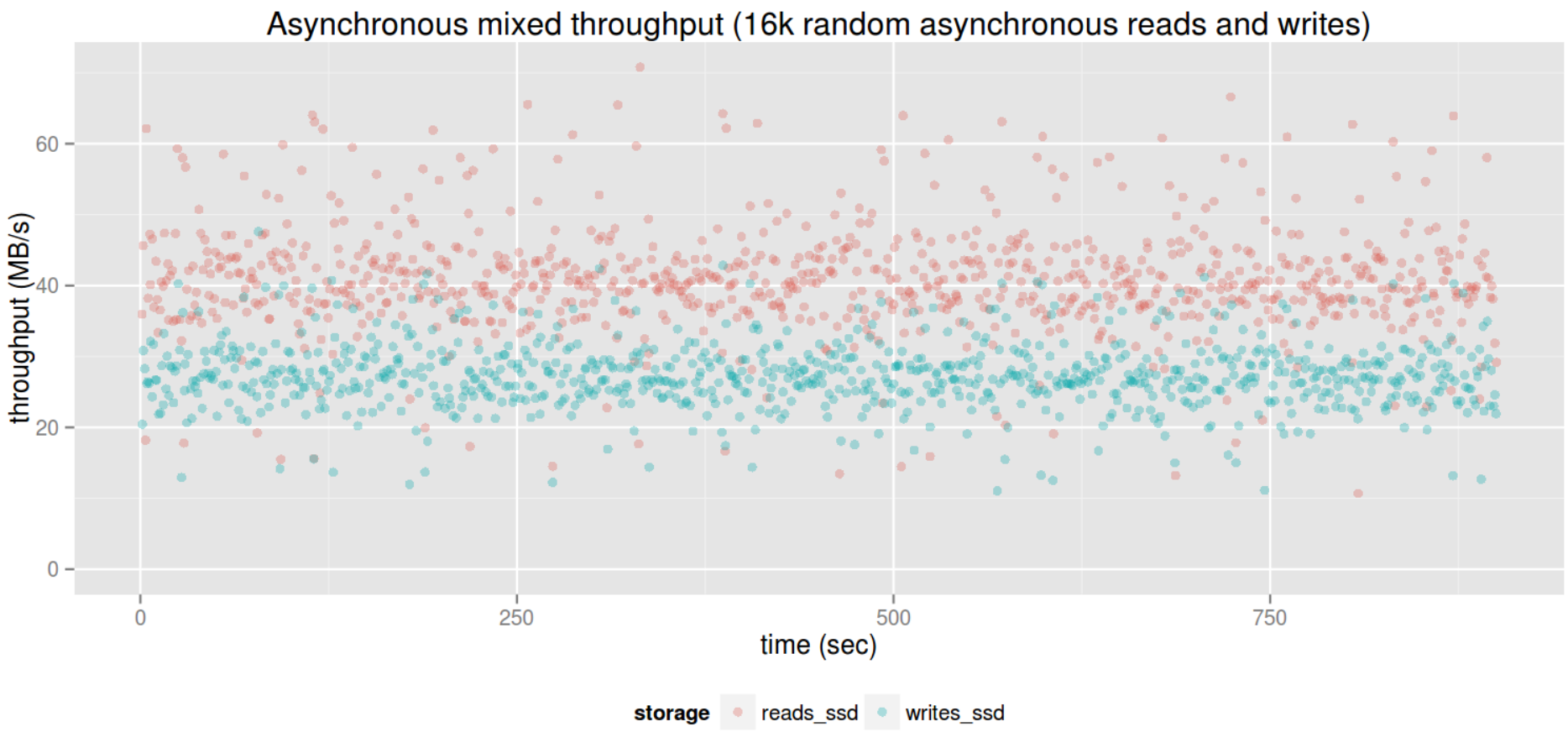
Graphing results



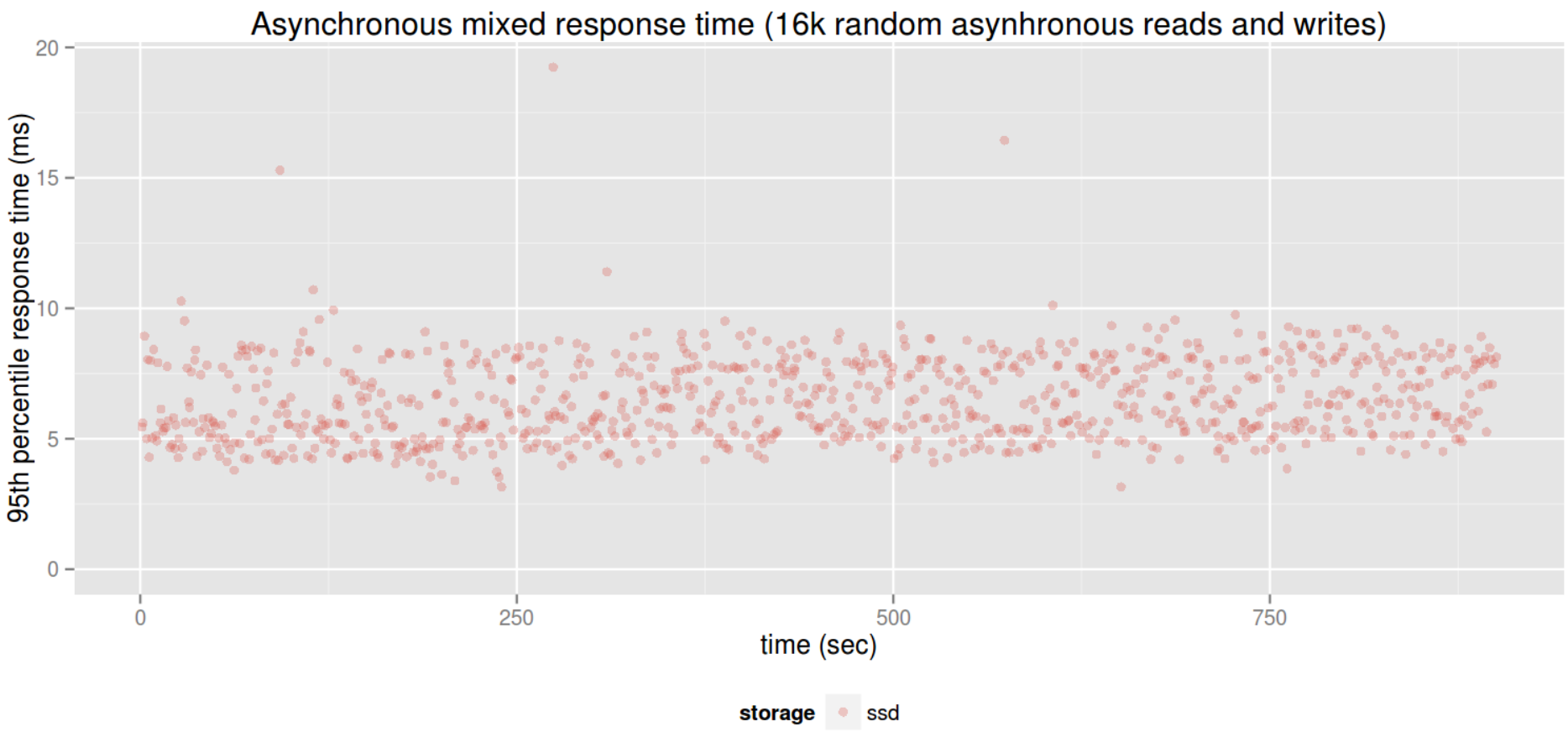
Graphing results



Graphing results



Graphing results

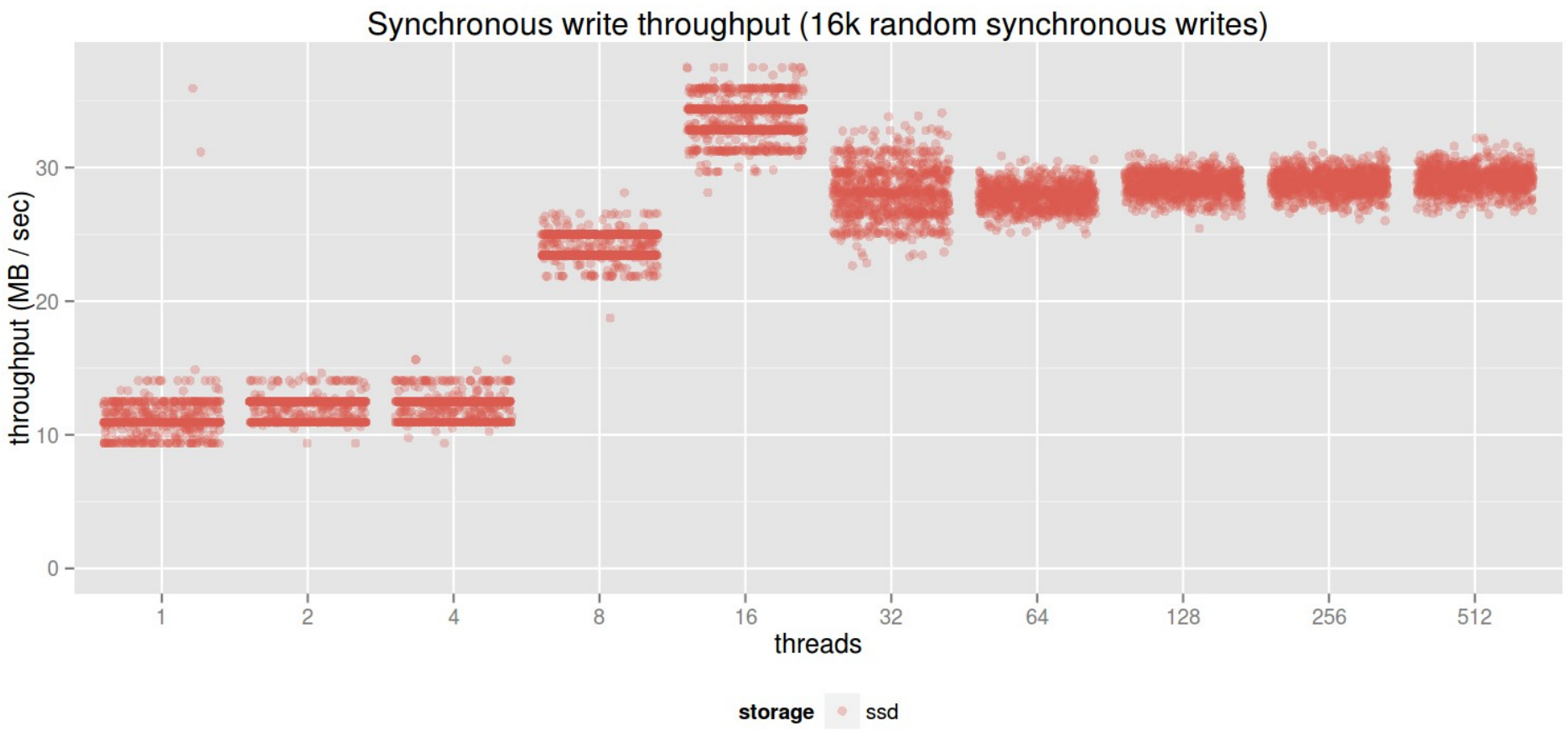


Sync vs async IO

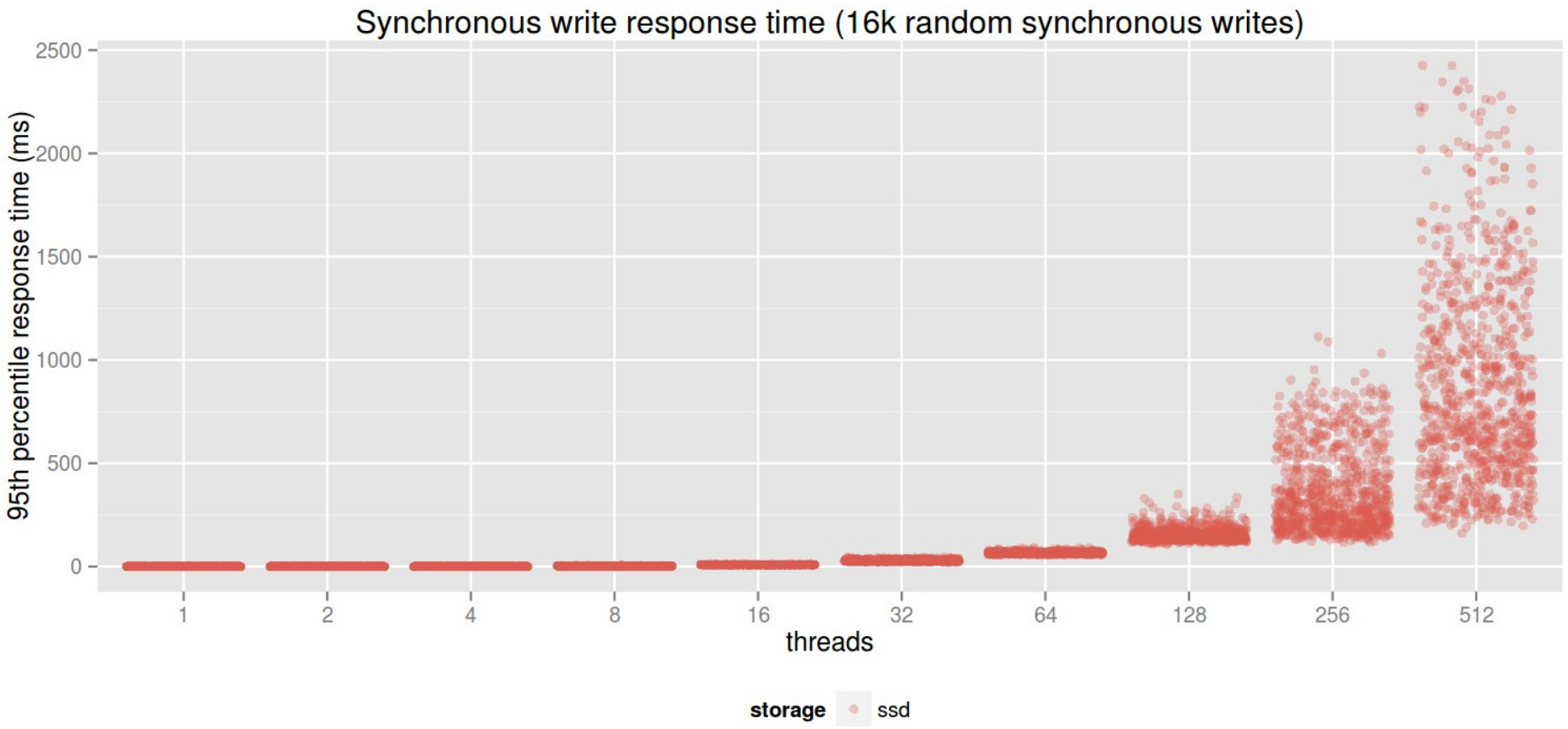
```
2013-11-10 20:01:05 5798 [Note]
InnoDB: Using Linux native AIO
```

So sync io doesn't matter?

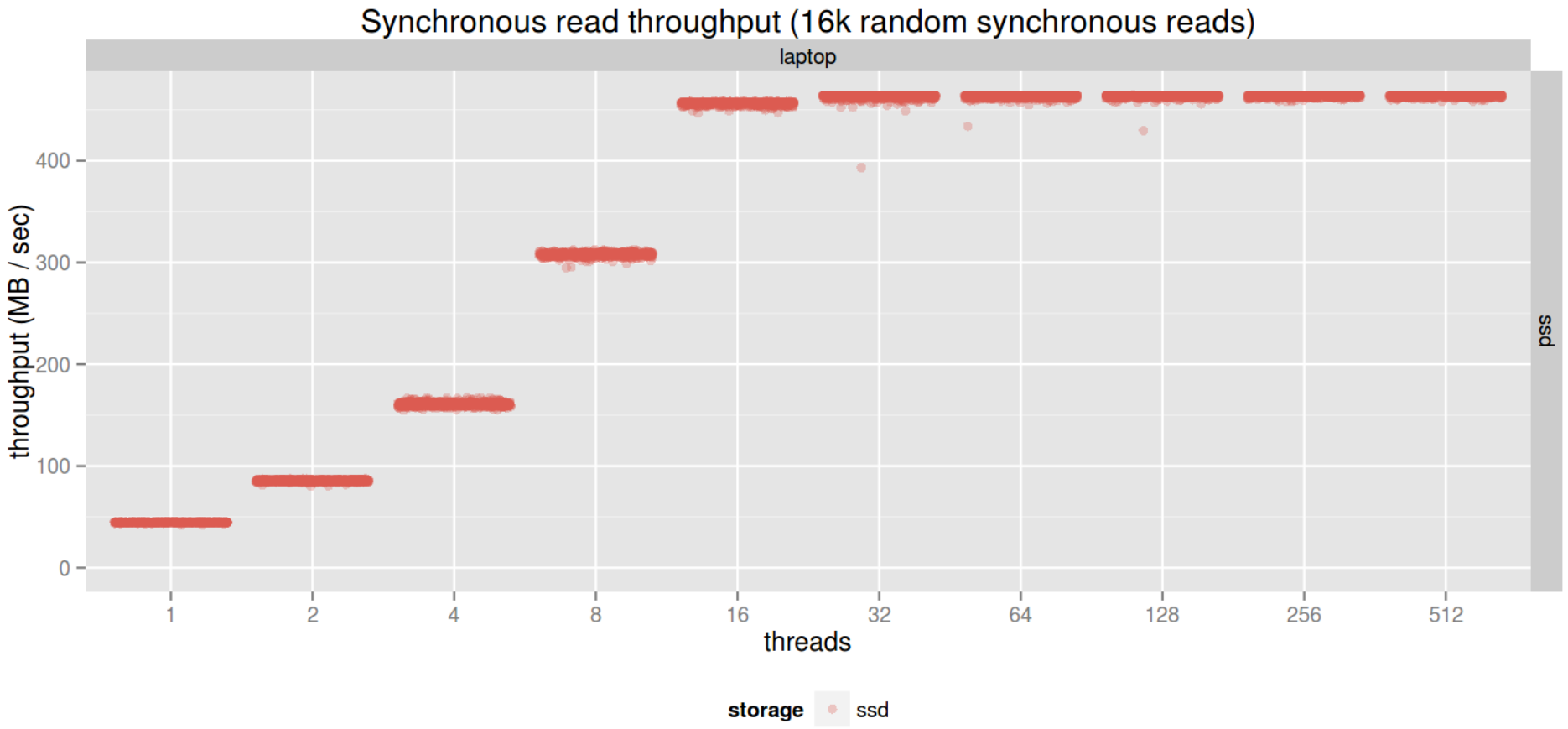
Graphing results



Graphing results



Graphing results



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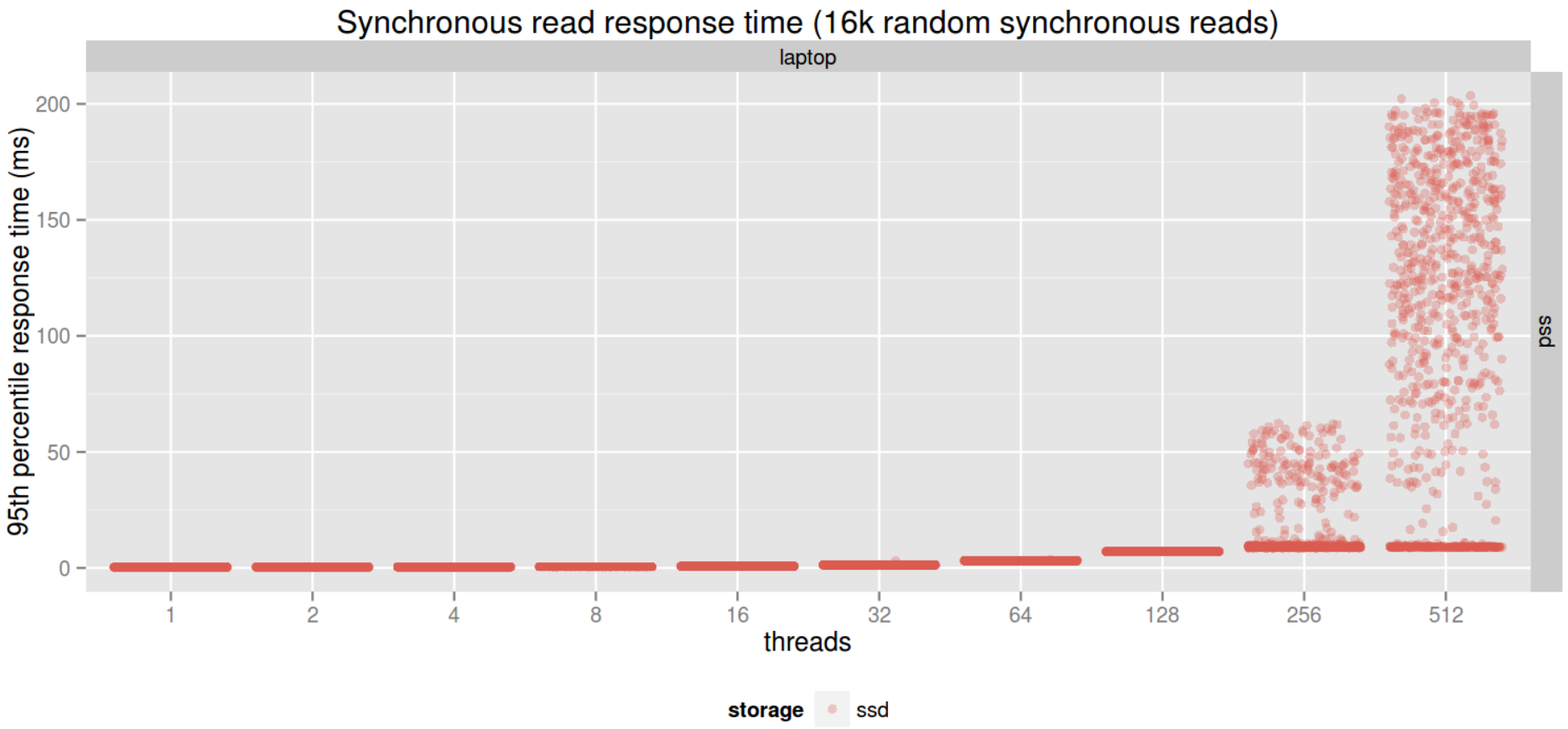

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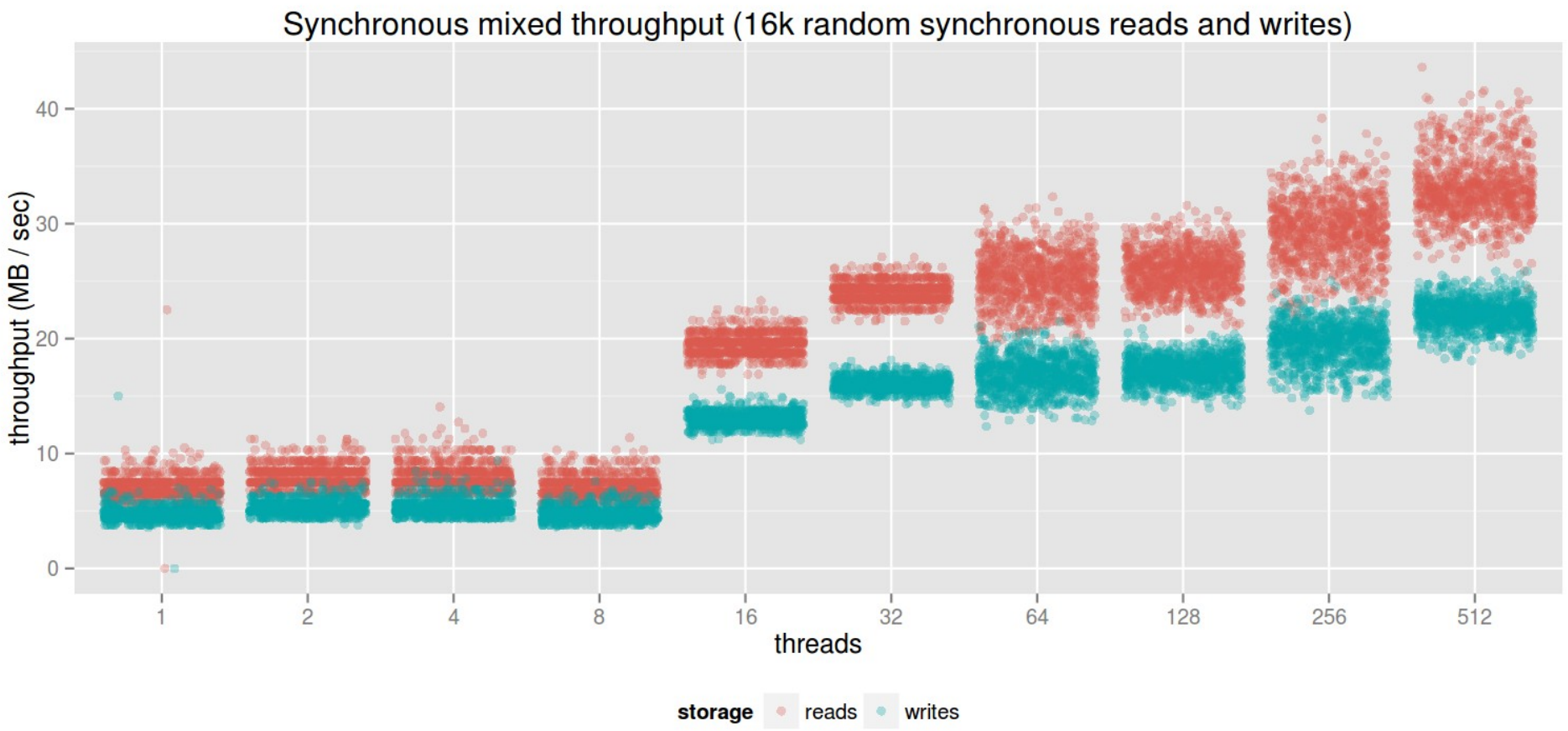
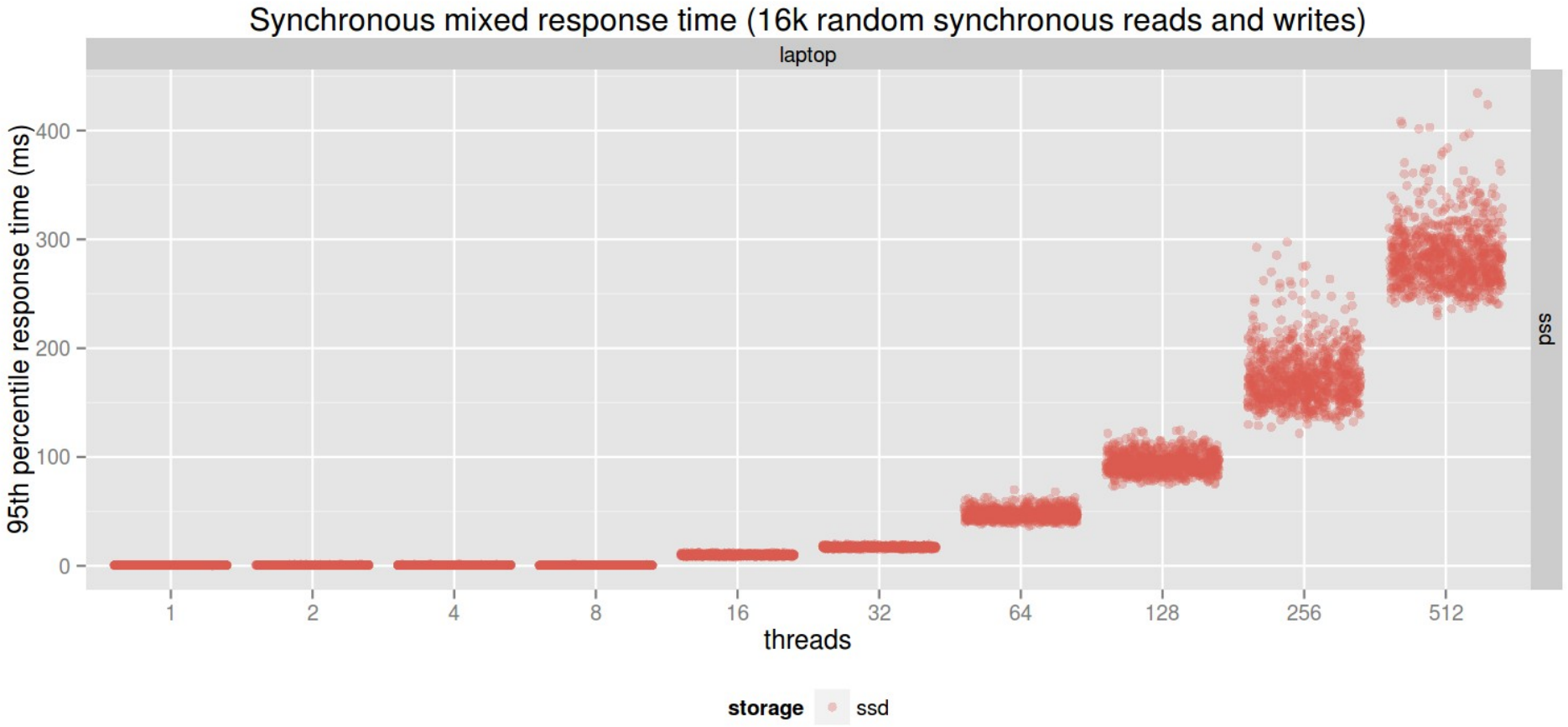


Graphing results



Benchmarking MySQL with Sysbench

Preparing test database

```
create database sysbench;
grant all on sbtest.*
to 'sbtest'@'localhost'
identified by 'sbtest';
```

```
sysbench
--test=/opt/sysbench/sysbench/tests/db/parallel_prepare.lua \
  --oltp-table-size=100000 \
  --oltp-tables-count=16 \
  --num-threads=32 \
  --mysql-user=sbtest \
  --mysql-password=sbtest \
  --mysql-host=127.0.0.1 \
  run
```

Doing one benchmark iteration

```
sysbench \
  --test=/opt/sysbench/sysbench/tests/db/oltp.lua \
  --oltp-table-size=100000 \
  --oltp-tables-count=16 \
  --num-threads=32 \
  --mysql-user=sbtest \
  --mysql-password=sbtest \
  --mysql-host=127.0.0.1 \
  --max-requests=0 \
  --report-interval=1 \
run
```

Modifying lua

Default parameters for oltp

- oltp_table_size = oltp_table_size or 10000
- oltp_range_size = oltp_range_size or 100
- oltp_tables_count = oltp_tables_count or 1
- oltp_point_selects = oltp_point_selects or 10
- oltp_simple_ranges = oltp_simple_ranges or 1
- oltp_sum_ranges = oltp_sum_ranges or 1
- oltp_order_ranges = oltp_order_ranges or 1
- oltp_distinct_ranges = oltp_distinct_ranges or 1
- oltp_index_updates = oltp_index_updates or 1
- oltp_non_index_updates = oltp_non_index_updates or 1

Reconnecting workload

Reconnecting update_index

- Just the update transaction by primary key
- If we modify it to call `db_disconnect()` in the event function, it stops after a few seconds
- With persistent connections, we seem to be ok

Fixing update_index

- The issue is tcp/ip source ip:port pair exhaustion
- Lots of connections in TIME_WAIT
- One solution is to set tcp_max_tw_buckets to a more reasonable value

Thanks!