

TimescaleDB

Scale=10
Use case=devops

Small

Load:

Workers: 1

```
user@snf-40236:~/go/src/tsbs$ cat ./datasets/timescale_small.gz | gunzip | tsbs_load_timescaledb --host="localhost" --port=5432 --pass="12345678" --user="postgres" --workers=1 --do-create-db=false --force-text-format=false --do-abort-on-exist=false --db-name="small"
time,per. metric/s,metric total,overall metric/s,per. row/s,row total,overall row/s
1705439106,269301.04,2.693130E+06,269301.04,23998.93,2.400000E+05,23998.93
1705439116,224432.56,4.937580E+06,246866.68,19998.89,4.400000E+05,21998.90
1705439126,246910.99,7.406570E+06,246881.45,22001.07,6.600000E+05,21999.62
1705439136,403979.56,1.144657E+07,286156.96,35998.18,1.020000E+06,25499.35

Summary:
loaded 13725900 metrics in 44.616sec with 1 workers (mean rate 307641.82 metrics/sec)
loaded 1223100 rows in 44.616sec with 1 workers (mean rate 27413.63 rows/sec)
```

Workers: 2

```
user@snf-40236:~/go/src/tsbs$ cat ./datasets/timescale_small.gz | gunzip | tsbs_load_timescaledb --host="localhost" --port=5432 --pass="12345678" --user="postgres" --workers=2 --in-table-partition-tag=true --chunk-time=8h --field-ind-ex-count=1 --do-create-db=false --force-text-format=false --do-abort-on-exist=false --db-name="small"
time,per. metric/s,metric total,overall metric/s,per. row/s,row total,overall row/s
1705243720,639586.28,6.396570E+06,639586.28,56993.70,5.700000E+05,56993.70
1705243730,650882.74,1.290531E+07,645234.16,58000.78,1.150000E+06,57497.21

Summary:
loaded 13725900 metrics in 22.247sec with 2 workers (mean rate 616972.01 metrics/sec)
loaded 1223100 rows in 22.247sec with 2 workers (mean rate 54977.70 rows/sec)
```

Workers: 4

```
user@snf-40236:~/go/src/tsbs$ cat ./datasets/timescale_small.gz | gunzip | tsbs_load_timescaledb --host="localhost" --port=5432 --pass="12345678" --user="postgres" --workers=4 --do-create-db=false --force-text-format=false --do-abort-on-exist=false --db-name="small"
time,per. metric/s,metric total,overall metric/s,per. row/s,row total,overall row/s
1705439367,908729.09,9.090000E+06,908729.09,80975.86,8.100000E+05,80975.86

Summary:
loaded 13725900 metrics in 14.538sec with 4 workers (mean rate 944163.93 metrics/sec)
loaded 1223100 rows in 14.538sec with 4 workers (mean rate 84133.42 rows/sec)
```

Workers: 8

```
user@snf-40236:~/go/src/tsbs$ cat ./datasets/timescale_small.gz | gunzip | tsbs_load_timescaledb --host="localhost" --port=5432 --pass="12345678" --user="postgres" --workers=8 --do-create-db=false --force-text-format=false --do-abort-on-exist=false --db-name="small"
time,per. metric/s,metric total,overall metric/s,per. row/s,row total,overall row/s
1705439481,1234361.84,1.234439E+07,1234361.84,109993.12,1.100000E+06,109993.12

Summary:
loaded 13725900 metrics in 10.717sec with 8 workers (mean rate 1280767.63 metrics/sec)
loaded 1223100 rows in 10.717sec with 8 workers (mean rate 114127.81 rows/sec)
```

Queries:

```
user@snf-40236:~/go/src/tsbs/generate_queries$ ./timescale_small.sh
TimescaleDB 1 cpu metric(s), random 1 hosts, random 1h0m0s by 1m: 1000 points
TimescaleDB 1 cpu metric(s), random 1 hosts, random 12h0m0s by 1m: 1000 points
TimescaleDB 1 cpu metric(s), random 8 hosts, random 1h0m0s by 1m: 1000 points
TimescaleDB 5 cpu metric(s), random 1 hosts, random 1h0m0s by 1m: 1000 points
TimescaleDB 5 cpu metric(s), random 1 hosts, random 12h0m0s by 1m: 1000 points
TimescaleDB 5 cpu metric(s), random 8 hosts, random 1h0m0s by 1m: 1000 points
TimescaleDB max of all CPU metrics, random 1 hosts, random 8h0m0s by 1h: 1000 points
TimescaleDB max of all CPU metrics, random 8 hosts, random 8h0m0s by 1h: 1000 points
TimescaleDB mean of 1 metrics, all hosts, random 12h0m0s by 1h: 1000 points
TimescaleDB mean of 5 metrics, all hosts, random 12h0m0s by 1h: 1000 points
TimescaleDB mean of 10 metrics, all hosts, random 12h0m0s by 1h: 1000 points
TimescaleDB CPU over threshold, all hosts: 1000 points
TimescaleDB CPU over threshold, 1 host(s): 1000 points
TimescaleDB last row per host: 1000 points
TimescaleDB max cpu over last 5 min-intervals (random end): 1000 points
```

SGB-1-1-1, Workers(B) = 1/2/4

```
Run complete after 1000 queries with 1 workers (Overall query rate 480.62 queries/sec):
TimescaleDB 1 cpu metric(s), random 1 hosts, random 1h0m0s by 1m:
min: 1.15ms, med: 2.08ms, mean: 2.06ms, max: 14.94ms, stddev: 0.51ms, sum: 2.1sec, count: 1000
all queries :
min: 1.15ms, med: 2.08ms, mean: 2.06ms, max: 14.94ms, stddev: 0.51ms, sum: 2.1sec, count: 1000
wall clock time: 2.089292sec
Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_small/timescaledb_single-groupby-1-1-1.gz |
gunzip | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=1 --postgres="host=localhost password=12345678 user=postgres
sslmode=disable database=small""
User time (seconds): 0.15
System time (seconds): 0.15
Percent of CPU this job got: 14%
```

```
Run complete after 1000 queries with 2 workers (Overall query rate 825.89 queries/sec):
TimescaleDB 1 cpu metric(s), random 1 hosts, random 1h0m0s by 1m:
min: 1.93ms, med: 2.26ms, mean: 2.38ms, max: 18.98ms, stddev: 0.82ms, sum: 2.4sec, count: 1000
all queries :
min: 1.93ms, med: 2.26ms, mean: 2.38ms, max: 18.98ms, stddev: 0.82ms, sum: 2.4sec, count: 1000
wall clock time: 1.217279sec
```

User time (seconds): 0.14
System time (seconds): 0.08
Percent of CPU this job got: 19%

```
Run complete after 1000 queries with 4 workers (Overall query rate 1435.48 queries/sec):
TimescaleDB 1 cpu metric(s), random 1 hosts, random 1h0m0s by 1m:
min: 1.93ms, med: 2.35ms, mean: 2.71ms, max: 25.96ms, stddev: 1.53ms, sum: 2.7sec, count: 1000
all queries :
min: 1.93ms, med: 2.35ms, mean: 2.71ms, max: 25.96ms, stddev: 1.53ms, sum: 2.7sec, count: 1000
wall clock time: 0.704932sec
```

User time (seconds): 0.16
System time (seconds): 0.08
Percent of CPU this job got: 34%

SGB-1-1-12, Workers(B) = 1/2/4

```
Run complete after 1000 queries with 1 workers (Overall query rate 118.00 queries/sec):
TimescaleDB 1 cpu metric(s), random 1 hosts, random 12h0m0s by 1m:
min: 4.89ms, med: 7.29ms, mean: 8.38ms, max: 459.30ms, stddev: 15.38ms, sum: 8.4sec, count: 1000
all queries :
min: 4.89ms, med: 7.29ms, mean: 8.38ms, max: 459.30ms, stddev: 15.38ms, sum: 8.4sec, count: 1000
wall clock time: 8.501987sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_small/timescaledb_single-groupby-1-1-12.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timescaledb --workers=1 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=small""
        User time (seconds): 0.76
        System time (seconds): 0.16
        Percent of CPU this job got: 10%
Run complete after 1000 queries with 2 workers (Overall query rate 109.19 queries/sec):
TimescaleDB 1 cpu metric(s), random 1 hosts, random 12h0m0s by 1m:
min: 13.15ms, med: 18.18ms, mean: 18.27ms, max: 34.77ms, stddev: 1.24ms, sum: 18.3sec, count: 1000
all queries :
min: 13.15ms, med: 18.18ms, mean: 18.27ms, max: 34.77ms, stddev: 1.24ms, sum: 18.3sec, count: 1000
wall clock time: 9.170864sec
    Command being timed: "sh -c cat ./queries/timescaledb_single1-1-12.gz | gunzip | tsbs_run_queries_timescaledb --workers=2 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=small""
        User time (seconds): 0.48
        System time (seconds): 0.18
        Percent of CPU this job got: 7%
Run complete after 1000 queries with 4 workers (Overall query rate 204.07 queries/sec):
TimescaleDB 1 cpu metric(s), random 1 hosts, random 12h0m0s by 1m:
min: 14.16ms, med: 19.00ms, mean: 19.51ms, max: 52.02ms, stddev: 2.95ms, sum: 19.5sec, count: 1000
all queries :
min: 14.16ms, med: 19.00ms, mean: 19.51ms, max: 52.02ms, stddev: 2.95ms, sum: 19.5sec, count: 1000
wall clock time: 4.914200sec
    Command being timed: "sh -c cat ./queries/timescaledb_single1-1-12.gz | gunzip | tsbs_run_queries_timescaledb --workers=4 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=small""
        User time (seconds): 0.52
        System time (seconds): 0.13
        Percent of CPU this job got: 13%
```

SGB-1-8-1, Workers(B) = 1/2/4

```
Run complete after 1000 queries with 1 workers (Overall query rate 315.14 queries/sec):
TimescaleDB 1 cpu metric(s), random 8 hosts, random 1h0m0s by 1m:
min: 2.78ms, med: 3.11ms, mean: 3.16ms, max: 16.07ms, stddev: 0.50ms, sum: 3.2sec, count: 1000
all queries :
min: 2.78ms, med: 3.11ms, mean: 3.16ms, max: 16.07ms, stddev: 0.50ms, sum: 3.2sec, count: 1000
wall clock time: 3.180595sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_small/timescaledb_single-groupby-1-8-1.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timescaledb --workers=1 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=small""
        User time (seconds): 0.16
        System time (seconds): 0.14
        Percent of CPU this job got: 9%
Run complete after 1000 queries with 2 workers (Overall query rate 612.18 queries/sec):
TimescaleDB 1 cpu metric(s), random 8 hosts, random 1h0m0s by 1m:
min: 2.75ms, med: 3.12ms, mean: 3.24ms, max: 19.63ms, stddev: 0.82ms, sum: 3.2sec, count: 1000
all queries :
min: 2.75ms, med: 3.12ms, mean: 3.24ms, max: 19.63ms, stddev: 0.82ms, sum: 3.2sec, count: 1000
wall clock time: 1.644934sec
    Command being timed: "sh -c cat ./queries/timescaledb_single1-8-1.gz | gunzip | tsbs_run_queries_timescaledb --workers=2 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=small""
        User time (seconds): 0.19
        System time (seconds): 0.06
        Percent of CPU this job got: 15%
Run complete after 1000 queries with 4 workers (Overall query rate 1082.64 queries/sec):
TimescaleDB 1 cpu metric(s), random 8 hosts, random 1h0m0s by 1m:
min: 2.70ms, med: 3.26ms, mean: 3.65ms, max: 18.19ms, stddev: 1.43ms, sum: 3.6sec, count: 1000
all queries :
min: 2.70ms, med: 3.26ms, mean: 3.65ms, max: 18.19ms, stddev: 1.43ms, sum: 3.6sec, count: 1000
wall clock time: 0.930271sec
    Command being timed: "sh -c cat ./queries/timescaledb_single1-8-1.gz | gunzip | tsbs_run_queries_timescaledb --workers=4 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=small""
        User time (seconds): 0.15
        System time (seconds): 0.09
        Percent of CPU this job got: 26%
```

SGB-5-1-1, Workers(B) = 1/2/4

```
Run complete after 1000 queries with 1 workers (Overall query rate 413.47 queries/sec):
TimescaleDB 5 cpu metric(s), random 1 hosts, random 1h0m0s by 1m:
min: 1.30ms, med: 2.43ms, mean: 2.40ms, max: 15.68ms, stddev: 0.60ms, sum: 2.4sec, count: 1000
all queries :
min: 1.30ms, med: 2.43ms, mean: 2.40ms, max: 15.68ms, stddev: 0.60ms, sum: 2.4sec, count: 1000
wall clock time: 2.424849sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_small/timescaledb_single-groupby-5-1-1.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=1 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=small""
        User time (seconds): 0.19
        System time (seconds): 0.13
        Percent of CPU this job got: 13%
Run complete after 1000 queries with 2 workers (Overall query rate 724.21 queries/sec):
TimescaleDB 5 cpu metric(s), random 1 hosts, random 1h0m0s by 1m:
min: 2.26ms, med: 2.56ms, mean: 2.70ms, max: 23.34ms, stddev: 0.90ms, sum: 2.7sec, count: 1000
all queries :
min: 2.26ms, med: 2.56ms, mean: 2.70ms, max: 23.34ms, stddev: 0.90ms, sum: 2.7sec, count: 1000
wall clock time: 1.388335sec
    Command being timed: "sh -c cat ./queries/timescaledb_single5-1-1.gz | gunzip | tsbs_run_queries_timestabledb --worker
s=2 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=small"
        User time (seconds): 0.19
        System time (seconds): 0.08
        Percent of CPU this job got: 19%
Run complete after 1000 queries with 4 workers (Overall query rate 1312.05 queries/sec):
TimescaleDB 5 cpu metric(s), random 1 hosts, random 1h0m0s by 1m:
min: 2.23ms, med: 2.66ms, mean: 3.00ms, max: 23.66ms, stddev: 1.42ms, sum: 3.0sec, count: 1000
all queries :
min: 2.23ms, med: 2.66ms, mean: 3.00ms, max: 23.66ms, stddev: 1.42ms, sum: 3.0sec, count: 1000
wall clock time: 0.772440sec
    Command being timed: "sh -c cat ./queries/timescaledb_single5-1-1.gz | gunzip | tsbs_run_queries_timestabledb --worker
s=4 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=small"
        User time (seconds): 0.19
        System time (seconds): 0.07
        Percent of CPU this job got: 33%
```

SGB-5-1-12, Workers(B) = 1/2/4

```
Run complete after 1000 queries with 1 workers (Overall query rate 123.18 queries/sec):
TimescaleDB 5 cpu metric(s), random 1 hosts, random 12h0m0s by 1m:
min: 5.66ms, med: 7.96ms, mean: 8.10ms, max: 21.76ms, stddev: 1.38ms, sum: 8.1sec, count: 1000
all queries :
min: 5.66ms, med: 7.96ms, mean: 8.10ms, max: 21.76ms, stddev: 1.38ms, sum: 8.1sec, count: 1000
wall clock time: 8.128582sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_small/timescaledb_single-groupby-5-1-12.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=1 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=small"
        User time (seconds): 0.69
        System time (seconds): 0.25
        Percent of CPU this job got: 11%
Run complete after 1000 queries with 2 workers (Overall query rate 91.26 queries/sec):
TimescaleDB 5 cpu metric(s), random 1 hosts, random 12h0m0s by 1m:
min: 16.62ms, med: 21.77ms, mean: 21.84ms, max: 35.84ms, stddev: 1.46ms, sum: 21.8sec, count: 1000
all queries :
min: 16.62ms, med: 21.77ms, mean: 21.84ms, max: 35.84ms, stddev: 1.46ms, sum: 21.8sec, count: 1000
wall clock time: 10.970629sec
    Command being timed: "sh -c cat ./queries/timescaledb_single5-1-12.gz | gunzip | tsbs_run_queries_timestabledb --worker
rs=2 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=small"
        User time (seconds): 0.79
        System time (seconds): 0.22
        Percent of CPU this job got: 9%
Run complete after 1000 queries with 4 workers (Overall query rate 175.84 queries/sec):
TimescaleDB 5 cpu metric(s), random 1 hosts, random 12h0m0s by 1m:
min: 17.01ms, med: 21.97ms, mean: 22.61ms, max: 77.06ms, stddev: 3.38ms, sum: 22.6sec, count: 1000
all queries :
min: 17.01ms, med: 21.97ms, mean: 22.61ms, max: 77.06ms, stddev: 3.38ms, sum: 22.6sec, count: 1000
wall clock time: 5.707461sec
    Command being timed: "sh -c cat ./queries/timescaledb_single5-1-12.gz | gunzip | tsbs_run_queries_timestabledb --worker
rs=4 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=small"
        User time (seconds): 0.81
        System time (seconds): 0.16
        Percent of CPU this job got: 17%
```

SGB-5-8-1, Workers(B) = 1/2/4

```
Run complete after 1000 queries with 1 workers (Overall query rate 260.02 queries/sec):
TimescaleDB 5 cpu metric(s), random 8 hosts, random 1h0m0s by 1m:
min: 3.40ms, med: 3.67ms, mean: 3.82ms, max: 27.73ms, stddev: 0.84ms, sum: 3.8sec, count: 1000
all queries :
min: 3.40ms, med: 3.67ms, mean: 3.82ms, max: 27.73ms, stddev: 0.84ms, sum: 3.8sec, count: 1000
wall clock time: 3.854253sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_small/timescaledb_single-groupby-5-8-1.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timestcaledb --workers=1 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=small"
        User time (seconds): 0.21
        System time (seconds): 0.14
        Percent of CPU this job got: 9%
Run complete after 1000 queries with 2 workers (Overall query rate 498.84 queries/sec):
TimescaleDB 5 cpu metric(s), random 8 hosts, random 1h0m0s by 1m:
min: 3.33ms, med: 3.77ms, mean: 3.98ms, max: 18.61ms, stddev: 0.88ms, sum: 4.0sec, count: 1000
all queries :
min: 3.33ms, med: 3.77ms, mean: 3.98ms, max: 18.61ms, stddev: 0.88ms, sum: 4.0sec, count: 1000
wall clock time: 2.011238sec
    Command being timed: "sh -c cat ./queries/timescaledb_single5-8-1.gz | gunzip | tsbs_run_queries_timestcaledb --worker=2 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=small"
        User time (seconds): 0.19
        System time (seconds): 0.08
        Percent of CPU this job got: 13%
Run complete after 1000 queries with 4 workers (Overall query rate 933.87 queries/sec):
TimescaleDB 5 cpu metric(s), random 8 hosts, random 1h0m0s by 1m:
min: 3.34ms, med: 3.90ms, mean: 4.23ms, max: 27.12ms, stddev: 1.59ms, sum: 4.2sec, count: 1000
all queries :
min: 3.34ms, med: 3.90ms, mean: 4.23ms, max: 27.12ms, stddev: 1.59ms, sum: 4.2sec, count: 1000
wall clock time: 1.080331sec
    Command being timed: "sh -c cat ./queries/timescaledb_single5-8-1.gz | gunzip | tsbs_run_queries_timestcaledb --worker=4 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=small"
        User time (seconds): 0.22
        System time (seconds): 0.06
        Percent of CPU this job got: 26%
```

CPU-MAX-ALL-1

```
Run complete after 1000 queries with 1 workers (Overall query rate 143.25 queries/sec):
TimescaleDB max of all CPU metrics, random 1 hosts, random 8h0m0s by 1h:
min: 4.18ms, med: 5.60ms, mean: 6.96ms, max: 18.87ms, stddev: 3.39ms, sum: 7.0sec, count: 1000
all queries :
min: 4.18ms, med: 5.60ms, mean: 6.96ms, max: 18.87ms, stddev: 3.39ms, sum: 7.0sec, count: 1000
wall clock time: 6.989932sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_small/timescaledb_cpu-max-all-1.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timestcaledb --workers=1 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=small"
        User time (seconds): 0.20
        System time (seconds): 0.17
        Percent of CPU this job got: 5%
Run complete after 1000 queries with 2 workers (Overall query rate 124.88 queries/sec):
TimescaleDB max of all CPU metrics, random 1 hosts, random 8h0m0s by 1h:
min: 11.97ms, med: 16.22ms, mean: 15.98ms, max: 31.38ms, stddev: 1.32ms, sum: 16.0sec, count: 1000
all queries :
min: 11.97ms, med: 16.22ms, mean: 15.98ms, max: 31.38ms, stddev: 1.32ms, sum: 16.0sec, count: 1000
wall clock time: 8.017784sec
    Command being timed: "sh -c cat ./queries/timescaledb_cpu-max-all-1.gz | gunzip | tsbs_run_queries_timestcaledb --workers=2 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=small"
        User time (seconds): 0.22
        System time (seconds): 0.14
        Percent of CPU this job got: 4%
Run complete after 1000 queries with 4 workers (Overall query rate 239.18 queries/sec):
TimescaleDB max of all CPU metrics, random 1 hosts, random 8h0m0s by 1h:
min: 11.92ms, med: 16.34ms, mean: 16.65ms, max: 39.18ms, stddev: 2.80ms, sum: 16.6sec, count: 1000
all queries :
min: 11.92ms, med: 16.34ms, mean: 16.65ms, max: 39.18ms, stddev: 2.80ms, sum: 16.6sec, count: 1000
wall clock time: 4.196760sec
    Command being timed: "sh -c cat ./queries/timescaledb_cpu-max-all-1.gz | gunzip | tsbs_run_queries_timestcaledb --workers=4 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=small"
        User time (seconds): 0.21
        System time (seconds): 0.13
        Percent of CPU this job got: 8%
```

CPU-MAX-ALL-8

```
Run complete after 1000 queries with 1 workers (Overall query rate 44.65 queries/sec):
TimescaleDB max of all CPU metrics, random 8 hosts, random 8h0m0s by 1h:
min: 20.95ms, med: 22.39ms, mean: 22.37ms, max: 43.18ms, stddev: 0.94ms, sum: 22.4sec, count: 1000
all queries
min: 20.95ms, med: 22.39ms, mean: 22.37ms, max: 43.18ms, stddev: 0.94ms, sum: 22.4sec, count: 1000
wall clock time: 22.410240sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_small/timescaledb_cpu-max-all-8.gz | gunzip
| /home/user/go/bin/tsbs_run_queries_timescaledb --workers=1 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=small"
        User time (seconds): 0.37
        System time (seconds): 0.19
        Percent of CPU this job got: 2%
Run complete after 1000 queries with 2 workers (Overall query rate 86.91 queries/sec):
TimescaleDB max of all CPU metrics, random 8 hosts, random 8h0m0s by 1h:
min: 19.90ms, med: 23.05ms, mean: 22.96ms, max: 40.10ms, stddev: 1.24ms, sum: 23.0sec, count: 1000
all queries
min: 19.90ms, med: 23.05ms, mean: 22.96ms, max: 40.10ms, stddev: 1.24ms, sum: 23.0sec, count: 1000
wall clock time: 11.51889sec
    Command being timed: "sh -c cat ./queries/timescaledb_cpu-max-all-8.gz | gunzip | tsbs_run_queries_timescaledb --workers=2 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=small"
        User time (seconds): 0.25
        System time (seconds): 0.14
        Percent of CPU this job got: 3%
Run complete after 1000 queries with 4 workers (Overall query rate 171.09 queries/sec):
TimescaleDB max of all CPU metrics, random 8 hosts, random 8h0m0s by 1h:
min: 19.45ms, med: 22.91ms, mean: 23.26ms, max: 50.83ms, stddev: 3.07ms, sum: 23.3sec, count: 1000
all queries
min: 19.45ms, med: 22.91ms, mean: 23.26ms, max: 50.83ms, stddev: 3.07ms, sum: 23.3sec, count: 1000
wall clock time: 5.858370sec
    Command being timed: "sh -c cat ./queries/timescaledb_cpu-max-all-8.gz | gunzip | tsbs_run_queries_timescaledb --workers=4 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=small"
        User time (seconds): 0.20
        System time (seconds): 0.16
        Percent of CPU this job got: 6%
```

DGB-1

```
Run complete after 1000 queries with 1 workers (Overall query rate 42.15 queries/sec):
TimescaleDB mean of 1 metrics, all hosts, random 12h0m0s by 1h:
min: 20.02ms, med: 23.30ms, mean: 23.68ms, max: 94.04ms, stddev: 3.19ms, sum: 23.7sec, count: 1000
all queries
min: 20.02ms, med: 23.30ms, mean: 23.68ms, max: 94.04ms, stddev: 3.19ms, sum: 23.7sec, count: 1000
wall clock time: 23.740289sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_small/timescaledb_double-groupby-1.gz | gunzip
| /home/user/go/bin/tsbs_run_queries_timescaledb --workers=1 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=small"
        User time (seconds): 0.44
        System time (seconds): 0.21
        Percent of CPU this job got: 2%
Run complete after 1000 queries with 2 workers (Overall query rate 84.90 queries/sec):
TimescaleDB mean of 1 metrics, all hosts, random 12h0m0s by 1h:
min: 19.56ms, med: 23.32ms, mean: 23.48ms, max: 42.67ms, stddev: 1.69ms, sum: 23.5sec, count: 1000
all queries
min: 19.56ms, med: 23.32ms, mean: 23.48ms, max: 42.67ms, stddev: 1.69ms, sum: 23.5sec, count: 1000
wall clock time: 11.798610sec
    Command being timed: "sh -c cat ./queries/timescaledb_double-groupby-1.gz | gunzip | tsbs_run_queries_timescaledb --workers=2 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=small"
        User time (seconds): 0.32
        System time (seconds): 0.16
        Percent of CPU this job got: 4%
Run complete after 1000 queries with 4 workers (Overall query rate 171.52 queries/sec):
TimescaleDB mean of 1 metrics, all hosts, random 12h0m0s by 1h:
min: 20.10ms, med: 22.49ms, mean: 23.25ms, max: 56.47ms, stddev: 3.13ms, sum: 23.3sec, count: 1000
all queries
min: 20.10ms, med: 22.49ms, mean: 23.25ms, max: 56.47ms, stddev: 3.13ms, sum: 23.3sec, count: 1000
wall clock time: 5.847141sec
    Command being timed: "sh -c cat ./queries/timescaledb_double-groupby-1.gz | gunzip | tsbs_run_queries_timescaledb --workers=4 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=small"
        User time (seconds): 0.27
        System time (seconds): 0.16
        Percent of CPU this job got: 7%
```

DGB-5

```
Run complete after 1000 queries with 1 workers (Overall query rate 32.52 queries/sec):
TimescaleDB mean of 5 metrics, all hosts, random 12h0m0s by 1h:
min: 27.51ms, med: 30.55ms, mean: 30.72ms, max: 48.33ms, stddev: 1.87ms, sum: 30.7sec, count: 1000
all queries :
min: 27.51ms, med: 30.55ms, mean: 30.72ms, max: 48.33ms, stddev: 1.87ms, sum: 30.7sec, count: 1000
wall clock time: 30.769036sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_small/timescaledb_double-groupby-5.gz | gunz
ip | /home/user/go/bin/tsbs_run_queries_timescaledb --workers=1 --postgres="host=localhost password=12345678 user=postgres ss
lmode=disable database=small"
        User time (seconds): 0.52
        System time (seconds): 0.14
        Percent of CPU this job got: 2%
Run complete after 1000 queries with 2 workers (Overall query rate 63.82 queries/sec):
TimescaleDB mean of 5 metrics, all hosts, random 12h0m0s by 1h:
min: 28.33ms, med: 31.08ms, mean: 31.27ms, max: 53.74ms, stddev: 1.48ms, sum: 31.3sec, count: 1000
all queries :
min: 28.33ms, med: 31.08ms, mean: 31.27ms, max: 53.74ms, stddev: 1.48ms, sum: 31.3sec, count: 1000
wall clock time: 15.683156sec
    Command being timed: "sh -c cat ./queries/timescaledb_double-groupby-5.gz | gunzip | tsbs_run_queries_timescaledb --w
orkers=2 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=small"
        User time (seconds): 0.38
        System time (seconds): 0.17
        Percent of CPU this job got: 3%
Run complete after 1000 queries with 4 workers (Overall query rate 125.66 queries/sec):
TimescaleDB mean of 5 metrics, all hosts, random 12h0m0s by 1h:
min: 27.60ms, med: 30.88ms, mean: 31.69ms, max: 75.03ms, stddev: 4.06ms, sum: 31.7sec, count: 1000
all queries :
min: 27.60ms, med: 30.88ms, mean: 31.69ms, max: 75.03ms, stddev: 4.06ms, sum: 31.7sec, count: 1000
wall clock time: 7.977584sec
    Command being timed: "sh -c cat ./queries/timescaledb_double-groupby-5.gz | gunzip | tsbs_run_queries_timescaledb --w
orkers=4 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=small"
        User time (seconds): 0.38
        System time (seconds): 0.12
        Percent of CPU this job got: 6%
```

DGB-ALL

```
Run complete after 1000 queries with 1 workers (Overall query rate 25.52 queries/sec):
TimescaleDB mean of 10 metrics, all hosts, random 12h0m0s by 1h:
min: 35.51ms, med: 39.12ms, mean: 39.15ms, max: 55.65ms, stddev: 2.08ms, sum: 39.2sec, count: 1000
all queries :
min: 35.51ms, med: 39.12ms, mean: 39.15ms, max: 55.65ms, stddev: 2.08ms, sum: 39.2sec, count: 1000
wall clock time: 39.206760sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_small/timescaledb_double-groupby-all.gz | gu
nzip | /home/user/go/bin/tsbs_run_queries_timescaledb --workers=1 --postgres="host=localhost password=12345678 user=postgres
sslmode=disable database=small"
        User time (seconds): 0.57
        System time (seconds): 0.18
        Percent of CPU this job got: 1%
Run complete after 1000 queries with 2 workers (Overall query rate 50.84 queries/sec):
TimescaleDB mean of 10 metrics, all hosts, random 12h0m0s by 1h:
min: 36.28ms, med: 38.98ms, mean: 39.28ms, max: 63.27ms, stddev: 1.79ms, sum: 39.3sec, count: 1000
all queries :
min: 36.28ms, med: 38.98ms, mean: 39.28ms, max: 63.27ms, stddev: 1.79ms, sum: 39.3sec, count: 1000
wall clock time: 19.685493sec
    Command being timed: "sh -c cat ./queries/timescaledb_double-groupby-all.gz | gunzip | tsbs_run_queries_timescaledb -
-workers=2 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=small"
        User time (seconds): 0.48
        System time (seconds): 0.17
        Percent of CPU this job got: 3%
Run complete after 1000 queries with 4 workers (Overall query rate 98.33 queries/sec):
TimescaleDB mean of 10 metrics, all hosts, random 12h0m0s by 1h:
min: 36.08ms, med: 39.45ms, mean: 40.46ms, max: 75.65ms, stddev: 4.44ms, sum: 40.5sec, count: 1000
all queries :
min: 36.08ms, med: 39.45ms, mean: 40.46ms, max: 75.65ms, stddev: 4.44ms, sum: 40.5sec, count: 1000
wall clock time: 10.197791sec
    Command being timed: "sh -c cat ./queries/timescaledb_double-groupby-all.gz | gunzip | tsbs_run_queries_timescaledb -
-workers=4 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=small"
        User time (seconds): 0.46
        System time (seconds): 0.15
        Percent of CPU this job got: 6%
```

HIGH-CPU-ALL

```
Run complete after 1000 queries with 1 workers (Overall query rate 72.12 queries/sec):
TimescaleDB CPU over threshold, all hosts:
min:    8.39ms, med:   13.85ms, mean:   13.83ms, max:  45.89ms, stddev:    2.66ms, sum:  13.8sec, count: 1000
all queries
min:    8.39ms, med:   13.85ms, mean:   13.83ms, max:  45.89ms, stddev:    2.66ms, sum:  13.8sec, count: 1000
wall clock time: 13.878459sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_small/timescaledb_high-cpu-all.gz | gunzip | ./home/user/go/bin/tsbs_run_queries_timescaledb --workers=1 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=small"
        User time (seconds): 2.90
        System time (seconds): 0.76
        Percent of CPU this job got: 26%
Run complete after 1000 queries with 2 workers (Overall query rate 229.70 queries/sec):
TimescaleDB CPU over threshold, all hosts:
min:   1.60ms, med:   6.77ms, mean:   8.41ms, max: 785.50ms, stddev: 30.60ms, sum:  8.4sec, count: 1000
all queries
min:   1.60ms, med:   6.77ms, mean:   8.41ms, max: 785.50ms, stddev: 30.60ms, sum:  8.4sec, count: 1000
wall clock time: 4.382139sec
    Command being timed: "sh -c cat ./queries/timescaledb_high-cpu-all.gz | gunzip | tsbs_run_queries_timescaledb --workers=2 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=small"
        User time (seconds): 2.93
        System time (seconds): 0.34
        Percent of CPU this job got: 74%
Run complete after 1000 queries with 4 workers (Overall query rate 378.61 queries/sec):
TimescaleDB CPU over threshold, all hosts:
min:   1.75ms, med:  9.52ms, mean:  10.47ms, max: 33.69ms, stddev:  5.38ms, sum: 10.5sec, count: 1000
all queries
min:   1.75ms, med:  9.52ms, mean:  10.47ms, max: 33.69ms, stddev:  5.38ms, sum: 10.5sec, count: 1000
wall clock time: 2.650920sec
    Command being timed: "sh -c cat ./queries/timescaledb_high-cpu-all.gz | gunzip | tsbs_run_queries_timescaledb --workers=4 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=small"
        User time (seconds): 2.86
        System time (seconds): 0.26
        Percent of CPU this job got: 117%
```

HIGH-CPU-1

```
Run complete after 1000 queries with 1 workers (Overall query rate 194.12 queries/sec):
TimescaleDB CPU over threshold, 1 host(s):
min:   2.75ms, med:  4.90ms, mean:  5.13ms, max: 17.99ms, stddev:  1.39ms, sum:  5.1sec, count: 1000
all queries
min:   2.75ms, med:  4.90ms, mean:  5.13ms, max: 17.99ms, stddev:  1.39ms, sum:  5.1sec, count: 1000
wall clock time: 5.157818sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_small/timescaledb_high-cpu-1.gz | gunzip | ./home/user/go/bin/tsbs_run_queries_timescaledb --workers=1 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=small"
        User time (seconds): 0.43
        System time (seconds): 0.22
        Percent of CPU this job got: 12%
Run complete after 1000 queries with 2 workers (Overall query rate 525.27 queries/sec):
TimescaleDB CPU over threshold, 1 host(s):
min:   1.18ms, med:  3.54ms, mean:  3.77ms, max: 20.01ms, stddev:  1.67ms, sum:  3.8sec, count: 1000
all queries
min:   1.18ms, med:  3.54ms, mean:  3.77ms, max: 20.01ms, stddev:  1.67ms, sum:  3.8sec, count: 1000
wall clock time: 1.909925sec
    Command being timed: "sh -c cat ./queries/timescaledb_high-cpu-1.gz | gunzip | tsbs_run_queries_timescaledb --workers=2 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=small"
        User time (seconds): 0.47
        System time (seconds): 0.12
        Percent of CPU this job got: 31%
Run complete after 1000 queries with 4 workers (Overall query rate 860.23 queries/sec):
TimescaleDB CPU over threshold, 1 host(s):
min:   1.19ms, med:  3.92ms, mean:  4.56ms, max: 25.49ms, stddev:  2.67ms, sum:  4.6sec, count: 1000
all queries
min:   1.19ms, med:  3.92ms, mean:  4.56ms, max: 25.49ms, stddev:  2.67ms, sum:  4.6sec, count: 1000
wall clock time: 1.171158sec
    Command being timed: "sh -c cat ./queries/timescaledb_high-cpu-1.gz | gunzip | tsbs_run_queries_timescaledb --workers=4 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=small"
        User time (seconds): 0.44
        System time (seconds): 0.14
        Percent of CPU this job got: 50%
```

LASTPOINT

```
Run complete after 1000 queries with 1 workers (Overall query rate 3180.18 queries/sec):
TimescaleDB last row per host:
min:    0.22ms, med:    0.23ms, mean:    0.28ms, max:  14.73ms, stddev:    0.56ms, sum:   0.3sec, count: 1000
all queries :
min:    0.22ms, med:    0.23ms, mean:    0.28ms, max:  14.73ms, stddev:    0.56ms, sum:   0.3sec, count: 1000
wall clock time: 0.321373sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_small/timescaledb_lastpoint.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timescaledb --workers=1 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=small"
        User time (seconds): 0.12
        System time (seconds): 0.04
        Percent of CPU this job got: 48%
Run complete after 1000 queries with 2 workers (Overall query rate 3143.70 queries/sec):
TimescaleDB last row per host:
min:    0.21ms, med:    0.26ms, mean:    0.45ms, max:  58.87ms, stddev:   2.67ms, sum:   0.5sec, count: 1000
all queries :
min:    0.21ms, med:    0.26ms, mean:    0.45ms, max:  58.87ms, stddev:   2.67ms, sum:   0.5sec, count: 1000
wall clock time: 0.331171sec
    Command being timed: "sh -c cat ./queries/timescaledb_lastpoint.gz | gunzip | tsbs_run_queries_timescaledb --workers=2 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=small"
        User time (seconds): 0.18
        System time (seconds): 0.04
        Percent of CPU this job got: 67%
Run complete after 1000 queries with 4 workers (Overall query rate 6584.26 queries/sec):
TimescaleDB last row per host:
min:    0.24ms, med:    0.27ms, mean:    0.42ms, max:  20.50ms, stddev:   1.18ms, sum:   0.4sec, count: 1000
all queries :
min:    0.24ms, med:    0.27ms, mean:    0.42ms, max:  20.50ms, stddev:   1.18ms, sum:   0.4sec, count: 1000
wall clock time: 0.160816sec
    Command being timed: "sh -c cat ./queries/timescaledb_lastpoint.gz | gunzip | tsbs_run_queries_timescaledb --workers=4 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=small"
        User time (seconds): 0.10
        System time (seconds): 0.03
        Percent of CPU this job got: 85%
```

GROUPBY-ORDERBY-LIMIT

```
Run complete after 1000 queries with 1 workers (Overall query rate 1177.26 queries/sec):
TimescaleDB max cpu over last 5 min-intervals (random end):
min:    0.55ms, med:    0.78ms, mean:    0.82ms, max:  12.73ms, stddev:   0.42ms, sum:   0.8sec, count: 1000
all queries :
min:    0.55ms, med:    0.78ms, mean:    0.82ms, max:  12.73ms, stddev:   0.42ms, sum:   0.8sec, count: 1000
wall clock time: 0.857738sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_small/timescaledb_groupby-orderby-limit.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timescaledb --workers=1 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=small"
        User time (seconds): 0.08
        System time (seconds): 0.12
        Percent of CPU this job got: 24%
Run complete after 1000 queries with 2 workers (Overall query rate 2019.93 queries/sec):
TimescaleDB max cpu over last 5 min-intervals (random end):
min:    0.56ms, med:    0.85ms, mean:    0.94ms, max:  15.48ms, stddev:   0.75ms, sum:   0.9sec, count: 1000
all queries :
min:    0.56ms, med:    0.85ms, mean:    0.94ms, max:  15.48ms, stddev:   0.75ms, sum:   0.9sec, count: 1000
wall clock time: 0.500714sec
    Command being timed: "sh -c cat ./queries/timescaledb_groupby-orderby-limit.gz | gunzip | tsbs_run_queries_timescaledb --workers=2 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=small"
        User time (seconds): 0.09
        System time (seconds): 0.07
        Percent of CPU this job got: 33%
Run complete after 1000 queries with 4 workers (Overall query rate 3189.80 queries/sec):
TimescaleDB max cpu over last 5 min-intervals (random end):
min:    0.57ms, med:    1.00ms, mean:    1.17ms, max:  16.85ms, stddev:   1.01ms, sum:   1.2sec, count: 1000
all queries :
min:    0.57ms, med:    1.00ms, mean:    1.17ms, max:  16.85ms, stddev:   1.01ms, sum:   1.2sec, count: 1000
wall clock time: 0.319104sec
    Command being timed: "sh -c cat ./queries/timescaledb_groupby-orderby-limit.gz | gunzip | tsbs_run_queries_timescaledb --workers=4 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=small"
        User time (seconds): 0.10
        System time (seconds): 0.06
        Percent of CPU this job got: 51%
```

Medium

Load:

Workers: 1

```
user@snf-40236:~/go/src/tsbs$ cat ./datasets/timescale_medium.gz | gunzip | tsbs_load_tscaledb --host="localhost" --port=5432 --pass="12345678" --user="postgres" --workers=1 --do-create-db=false --force-text-format=false --do-abort-on-exist=false --db-name="medium"
time,per.,metric total,overall metric/s,metric total,overall metric/s,metric total,overall metric/s,metric total,overall metric/s
1705440154,572300.96,5.723130E+06,572300.96,50998.93,5.100000E+05,50998.93
1705440164,493786.68,1.066994E+07,533044.46,44000.51,9.500000E+05,47499.77
1705440174,134659.61,1.200758E+07,406247.04,11999.61,1.070000E+06,35666.17
1705440184,482528.85,1.683313E+07,420818.11,42997.67,1.500000E+06,37499.18
1705440194,493795.35,2.177094E+07,435412.94,44001.28,1.940000E+06,38799.48
1705440204,437689.16,2.614758E+07,435792.29,39002.24,2.330000E+06,38833.27
1705440214,302992.31,2.917758E+07,416820.48,26999.32,2.600000E+06,37142.67
1705440224,302986.49,3.220758E+07,402590.73,26998.80,2.870000E+06,35874.64
1705440234,347896.14,3.58657E+07,396513.57,38999.75,3.180000E+06,35332.99
1705440244,213219.84,3.781874E+07,378184.57,19000.25,3.370000E+06,33699.75
1705440254,493798.10,4.690874E+07,396903.83,44001.61,4.180000E+06,34833.13
1705440274,258115.68,4.949000E+07,380689.04,22999.08,4.410000E+06,33922.79
1705440284,404011.32,5.353000E+07,382354.86,36001.01,4.770000E+06,34071.23
1705440294,426452.61,5.779439E+07,385294.61,38001.21,5.150000E+06,34333.21
1705440304,448876.94,6.228313E+07,389268.46,40000.26,5.550000E+06,34687.40
1705440314,381542.66,6.609874E+07,388813.99,33998.37,5.890000E+06,34646.87
1705440324,291807.50,6.901657E+07,383425.19,26002.18,6.150000E+06,34166.65
1705440334,359160.70,7.260758E+07,382144.95,31999.97,6.470000E+06,34052.61
1705440344,504962.54,7.765758E+07,388286.26,44996.66,6.920000E+06,34599.85

Summary:
loaded 81446400 metrics in 209.403sec with 1 workers (mean rate 388945.08 metrics/sec)
loaded 7257600 rows in 209.403sec with 1 workers (mean rate 34658.47 rows/sec)
```

Workers: 2

```
user@snf-40236:~/go/src/tsbs$ cat ./datasets/timescale_medium.gz | gunzip | tsbs_load_tscaledb --host="localhost" --port=5432 --pass="12345678" --user="postgres" --workers=2 --do-create-db=false --force-text-format=false --do-abort-on-exist=false --db-name="medium"
time,per.,metric total,overall metric/s,metric total,overall metric/s,metric total,overall metric/s,metric total,overall metric/s
1705440776,852846.44,8.528740E+06,852846.44,75997.54,7.600000E+05,75997.54
1705440786,763114.75,1.616000E+07,807980.99,67999.00,1.440000E+06,71998.31
1705440796,549756.29,2.165874E+07,721895.15,48989.51,1.930000E+06,64327.73
1705440806,651001.16,2.816758E+07,704175.20,58010.44,2.510000E+06,62748.73
1705440816,516270.00,3.333000E+07,666596.40,46002.49,2.970000E+06,59399.68
1705440826,527440.07,3.860439E+07,643403.82,47000.10,3.440000E+06,57333.09
1705440836,504962.37,4.365439E+07,623625.28,44996.65,3.890000E+06,55570.64
1705440846,628458.39,4.993874E+07,624229.39,56002.08,4.450000E+06,55624.57
1705440856,280571.24,5.274439E+07,586046.17,25000.56,4.700000E+06,52221.99
1705440866,673316.71,5.947758E+07,594773.22,59999.80,5.300000E+06,52999.77
1705440876,594786.54,6.542531E+07,594774.43,53001.21,5.830000E+06,52999.90
1705440886,291754.35,6.834313E+07,569520.60,25997.54,6.090000E+06,50749.51
1705440896,493821.26,7.328094E+07,563698.07,44003.59,6.530000E+06,50230.64
1705440906,628420.99,7.956531E+07,568321.23,55998.57,7.090000E+06,50642.64

Summary:
loaded 81446400 metrics in 142.115sec with 2 workers (mean rate 573103.95 metrics/sec)
loaded 7257600 rows in 142.115sec with 2 workers (mean rate 51068.67 rows/sec)
```

Workers: 4

```
user@snf-40236:~/go/src/tsbs$ cat ./datasets/timescale_medium.gz | gunzip | tsbs_load_tscaledb --host="localhost" --port=5432 --pass="12345678" --user="postgres" --workers=4 --do-create-db=false --force-text-format=false --do-abort-on-exist=false --db-name="medium"
time,per.,metric total,overall metric/s,metric total,overall metric/s,metric total,overall metric/s,metric total,overall metric/s
1705439983,1211892.24,1.212000E+07,1211892.24,107990.40,1.080000E+06,107990.40
1705439993,1111015.53,2.322979E+07,1161456.96,990083.25,2.070000E+06,103497.10
1705440003,740490.83,3.063657E+07,1021113.89,65983.32,2.730000E+06,90990.63
1705440013,695955.68,3.759439E+07,939845.83,62015.48,3.350000E+06,83748.76
1705440023,1077263.14,4.836758E+07,967330.10,95995.02,4.310000E+06,86198.08
1705440033,1054962.27,5.891657E+07,981934.46,94005.64,5.250000E+06,87499.25
1705440043,1200810.16,7.092439E+07,1013201.56,107002.51,6.320000E+06,90285.36
1705440053,718198.25,7.810657E+07,976325.39,63998.24,6.960000E+06,86999.40

Summary:
loaded 81446400 metrics in 85.915sec with 4 workers (mean rate 947988.31 metrics/sec)
loaded 7257600 rows in 85.915sec with 4 workers (mean rate 84474.21 rows/sec)
```

Workers: 8

```
user@snf-40236:~/go/src/tsbs$ cat ./datasets/timescale_medium.gz | gunzip | tsbs_load_tscaledb --host="localhost" --port=5432 --pass="12345678" --user="postgres" --workers=8 --do-create-db=false --force-text-format=false --do-abort-on-exist=false --db-name="medium"
time,per. metric/s,metric total,overall metric/s,per. row/s,overall row/s
1705439633,1245637.39,1.245657E+07,1245637.39,110998.25,1.110000E+06,110998.25
1705439643,684560.39,1.930218E+07,965100.97,60999.95,1.720000E+06,85999.28
1705439653,583524.89,2.513758E+07,837907.45,51998.65,2.240000E+06,74665.61
1705439663,1088470.93,3.602313E+07,900551.28,96992.51,3.210000E+06,80247.60
1705439673,751987.57,4.354221E+07,870841.77,67007.09,3.880000E+06,77599.78
1705439683,976033.38,5.330531E+07,888377.80,86975.35,4.750000E+06,79162.74
1705439693,931734.19,6.262000E+07,894569.80,83023.63,5.580000E+06,79714.14
1705439703,460060.03,6.722094E+07,846252.66,40996.97,5.990000E+06,74874.19
1705439713,1010081.69,7.732094E+07,859121.01,90007.28,6.890000E+06,76555.51

Summary:
loaded 81446400 metrics in 92.803sec with 8 workers (mean rate 877625.47 metrics/sec)
loaded 7257600 rows in 92.803sec with 8 workers (mean rate 78204.25 rows/sec)
```

Query

```
user@snf-40236:~/go/src/tsbs$ ./timescale_medium.sh
TimescaleDB 1 cpu metric(s), random      1 hosts, random 1h0m0s by 1m: 1000 points
TimescaleDB 1 cpu metric(s), random      1 hosts, random 12h0m0s by 1m: 1000 points
TimescaleDB 1 cpu metric(s), random      8 hosts, random 1h0m0s by 1m: 1000 points
TimescaleDB 5 cpu metric(s), random      1 hosts, random 1h0m0s by 1m: 1000 points
TimescaleDB 5 cpu metric(s), random      1 hosts, random 12h0m0s by 1m: 1000 points
TimescaleDB 5 cpu metric(s), random      8 hosts, random 1h0m0s by 1m: 1000 points
TimescaleDB max of all CPU metrics, random 1 hosts, random 8h0m0s by 1h: 1000 points
TimescaleDB max of all CPU metrics, random 8 hosts, random 8h0m0s by 1h: 1000 points
TimescaleDB mean of 1 metrics, all hosts, random 12h0m0s by 1h: 1000 points
TimescaleDB mean of 5 metrics, all hosts, random 12h0m0s by 1h: 1000 points
TimescaleDB mean of 10 metrics, all hosts, random 12h0m0s by 1h: 1000 points
TimescaleDB CPU over threshold, all hosts: 1000 points
TimescaleDB CPU over threshold, 1 host(s): 1000 points
TimescaleDB last row per host: 1000 points
TimescaleDB max cpu over last 5 min-intervals (random end): 1000 points
```

SGB-1-1-1, Workers(B) = 1/2/4

```
Run complete after 1000 queries with 1 workers (Overall query rate 400.40 queries/sec):
TimescaleDB 1 cpu metric(s), random      1 hosts, random 1h0m0s by 1m:
min:   1.20ms, med:   2.32ms, mean:   2.47ms, max:  18.90ms, stddev:   1.41ms, sum:   2.5sec, count: 1000
all queries
min:   1.20ms, med:   2.32ms, mean:   2.47ms, max:  18.90ms, stddev:   1.41ms, sum:   2.5sec, count: 1000
wall clock time: 2.504476sec
Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_single-groupby-1-1-1.gz | gunzip | /home/user/go/bin/tsbs_run_queries_tscaledb --workers=1 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=medium"
User time (seconds): 0.21
System time (seconds): 0.25
Percent of CPU this job got: 18%

Run complete after 1000 queries with 2 workers (Overall query rate 878.23 queries/sec):
TimescaleDB 1 cpu metric(s), random      1 hosts, random 1h0m0s by 1m:
min:   1.14ms, med:   2.25ms, mean:   2.25ms, max:  15.10ms, stddev:   0.76ms, sum:   2.2sec, count: 1000
all queries
min:   1.14ms, med:   2.25ms, mean:   2.25ms, max:  15.10ms, stddev:   0.76ms, sum:   2.2sec, count: 1000
wall clock time: 1.145130sec
Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_single-groupby-1-1-1.gz | gunzip | /home/user/go/bin/tsbs_run_queries_tscaledb --workers=2 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=medium"
User time (seconds): 0.16
System time (seconds): 0.08
Percent of CPU this job got: 20%

Run complete after 1000 queries with 4 workers (Overall query rate 1577.91 queries/sec):
TimescaleDB 1 cpu metric(s), random      1 hosts, random 1h0m0s by 1m:
min:   1.20ms, med:   2.36ms, mean:   2.49ms, max:  17.34ms, stddev:   1.09ms, sum:   2.5sec, count: 1000
all queries
min:   1.20ms, med:   2.36ms, mean:   2.49ms, max:  17.34ms, stddev:   1.09ms, sum:   2.5sec, count: 1000
wall clock time: 0.642232sec
Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_single-groupby-1-1-1.gz | gunzip | /home/user/go/bin/tsbs_run_queries_tscaledb --workers=4 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=medium"
User time (seconds): 0.15
System time (seconds): 0.07
Percent of CPU this job got: 34%
```

SGB-1-1-12, Workers(B) = 1/2/4

```
Run complete after 1000 queries with 1 workers (Overall query rate 126.26 queries/sec):
TimescaleDB 1 cpu metric(s), random 1 hosts, random 12h0m0s by 1m:
min:    5.36ms, med:    7.51ms, mean:    7.89ms, max:  70.51ms, stddev:    3.08ms, sum:  7.9sec, count: 1000
all queries :
min:    5.36ms, med:    7.51ms, mean:    7.89ms, max:  70.51ms, stddev:    3.08ms, sum:  7.9sec, count: 1000
wall clock time: 7.938925sec
Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_single-groupby-1-1-12.gz
| gunzip | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=1 --postgres="host=localhost password=12345678 user=postgres
res sslmode=disable database=medium"
User time (seconds): 0.55
System time (seconds): 0.24
Percent of CPU this job got: 10%
Run complete after 1000 queries with 2 workers (Overall query rate 263.94 queries/sec):
TimescaleDB 1 cpu metric(s), random 1 hosts, random 12h0m0s by 1m:
min:    5.14ms, med:    7.38ms, mean:    7.54ms, max:  25.24ms, stddev:    1.48ms, sum:  7.5sec, count: 1000
all queries :
min:    5.14ms, med:    7.38ms, mean:    7.54ms, max:  25.24ms, stddev:    1.48ms, sum:  7.5sec, count: 1000
wall clock time: 3.798360sec
Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_single-groupby-1-1-12.gz
| gunzip | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=2 --postgres="host=localhost password=12345678 user=postgres
res sslmode=disable database=medium"
User time (seconds): 0.43
System time (seconds): 0.14
Percent of CPU this job got: 15%
Run complete after 1000 queries with 4 workers (Overall query rate 478.38 queries/sec):
TimescaleDB 1 cpu metric(s), random 1 hosts, random 12h0m0s by 1m:
min:    5.04ms, med:    7.83ms, mean:    8.31ms, max:  29.93ms, stddev:    2.71ms, sum:  8.3sec, count: 1000
all queries :
min:    5.04ms, med:    7.83ms, mean:    8.31ms, max:  29.93ms, stddev:    2.71ms, sum:  8.3sec, count: 1000
wall clock time: 2.099824sec
Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_single-groupby-1-1-12.gz
| gunzip | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=4 --postgres="host=localhost password=12345678 user=postgres
res sslmode=disable database=medium"
User time (seconds): 0.43
System time (seconds): 0.16
Percent of CPU this job got: 28%
```

SGB-1-8-1, Workers(B) = 1/2/4

```
Run complete after 1000 queries with 1 workers (Overall query rate 313.72 queries/sec):
TimescaleDB 1 cpu metric(s), random 8 hosts, random 1h0m0s by 1m:
min:    2.79ms, med:    3.09ms, mean:    3.17ms, max:  16.27ms, stddev:    0.53ms, sum:  3.2sec, count: 1000
all queries :
min:    2.79ms, med:    3.09ms, mean:    3.17ms, max:  16.27ms, stddev:    0.53ms, sum:  3.2sec, count: 1000
wall clock time: 3.195853sec
Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_single-groupby-1-8-1.gz
| gunzip | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=1 --postgres="host=localhost password=12345678 user=postgres
res sslmode=disable database=medium"
User time (seconds): 0.21
System time (seconds): 0.10
Percent of CPU this job got: 9%
Run complete after 1000 queries with 2 workers (Overall query rate 593.76 queries/sec):
TimescaleDB 1 cpu metric(s), random 8 hosts, random 1h0m0s by 1m:
min:    2.71ms, med:    3.17ms, mean:    3.34ms, max:  19.96ms, stddev:    0.99ms, sum:  3.3sec, count: 1000
all queries :
min:    2.71ms, med:    3.17ms, mean:    3.34ms, max:  19.96ms, stddev:    0.99ms, sum:  3.3sec, count: 1000
wall clock time: 1.691336sec
Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_single-groupby-1-8-1.gz
| gunzip | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=2 --postgres="host=localhost password=12345678 user=postgres
res sslmode=disable database=medium"
User time (seconds): 0.14
System time (seconds): 0.11
Percent of CPU this job got: 15%
Run complete after 1000 queries with 4 workers (Overall query rate 1040.61 queries/sec):
TimescaleDB 1 cpu metric(s), random 8 hosts, random 1h0m0s by 1m:
min:    2.79ms, med:    3.30ms, mean:    3.77ms, max:  31.04ms, stddev:    2.01ms, sum:  3.8sec, count: 1000
all queries :
min:    2.79ms, med:    3.30ms, mean:    3.77ms, max:  31.04ms, stddev:    2.01ms, sum:  3.8sec, count: 1000
wall clock time: 0.972530sec
Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_single-groupby-1-8-1.gz
| gunzip | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=4 --postgres="host=localhost password=12345678 user=postgres
res sslmode=disable database=medium"
User time (seconds): 0.19
System time (seconds): 0.07
Percent of CPU this job got: 27%
```

SGB-5-1-1

```
Run complete after 1000 queries with 1 workers (Overall query rate 405.45 queries/sec):
TimescaleDB 5 cpu metric(s), random 1 hosts, random 1h0m0s by 1m:
min: 1.34ms, med: 2.48ms, mean: 2.45ms, max: 16.65ms, stddev: 0.62ms, sum: 2.4sec, count: 1000
all queries :
min: 1.34ms, med: 2.48ms, mean: 2.45ms, max: 16.65ms, stddev: 0.62ms, sum: 2.4sec, count: 1000
wall clock time: 2.473418sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_single-groupby-5-1-1.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timescaledb --workers=1 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=medium"
        User time (seconds): 0.22
        System time (seconds): 0.11
        Percent of CPU this job got: 13%
Run complete after 1000 queries with 2 workers (Overall query rate 784.42 queries/sec):
TimescaleDB 5 cpu metric(s), random 1 hosts, random 1h0m0s by 1m:
min: 1.34ms, med: 2.51ms, mean: 2.52ms, max: 16.15ms, stddev: 0.77ms, sum: 2.5sec, count: 1000
all queries :
min: 1.34ms, med: 2.51ms, mean: 2.52ms, max: 16.15ms, stddev: 0.77ms, sum: 2.5sec, count: 1000
wall clock time: 1.283982sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_single-groupby-5-1-1.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timescaledb --workers=2 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=medium"
        User time (seconds): 0.20
        System time (seconds): 0.06
        Percent of CPU this job got: 20%
Run complete after 1000 queries with 4 workers (Overall query rate 1329.24 queries/sec):
TimescaleDB 5 cpu metric(s), random 1 hosts, random 1h0m0s by 1m:
min: 1.36ms, med: 2.63ms, mean: 2.91ms, max: 32.21ms, stddev: 1.86ms, sum: 2.9sec, count: 1000
all queries :
min: 1.36ms, med: 2.63ms, mean: 2.91ms, max: 32.21ms, stddev: 1.86ms, sum: 2.9sec, count: 1000
wall clock time: 0.764933sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_single-groupby-5-1-1.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timescaledb --workers=4 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=medium"
        User time (seconds): 0.20
        System time (seconds): 0.08
        Percent of CPU this job got: 37%
```

SGB-5-1-12

```
Run complete after 1000 queries with 1 workers (Overall query rate 108.76 queries/sec):
TimescaleDB 5 cpu metric(s), random 1 hosts, random 12h0m0s by 1m:
min: 6.50ms, med: 9.03ms, mean: 9.17ms, max: 26.06ms, stddev: 1.39ms, sum: 9.2sec, count: 1000
all queries :
min: 6.50ms, med: 9.03ms, mean: 9.17ms, max: 26.06ms, stddev: 1.39ms, sum: 9.2sec, count: 1000
wall clock time: 9.206573sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_single-groupby-5-1-12.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timescaledb --workers=1 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=medium"
        User time (seconds): 0.78
        System time (seconds): 0.28
        Percent of CPU this job got: 11%
Run complete after 1000 queries with 2 workers (Overall query rate 227.40 queries/sec):
TimescaleDB 5 cpu metric(s), random 1 hosts, random 12h0m0s by 1m:
min: 6.21ms, med: 8.63ms, mean: 8.75ms, max: 23.02ms, stddev: 1.35ms, sum: 8.7sec, count: 1000
all queries :
min: 6.21ms, med: 8.63ms, mean: 8.75ms, max: 23.02ms, stddev: 1.35ms, sum: 8.7sec, count: 1000
wall clock time: 4.405638sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_single-groupby-5-1-12.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timescaledb --workers=2 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=medium"
        User time (seconds): 0.66
        System time (seconds): 0.22
        Percent of CPU this job got: 20%
Run complete after 1000 queries with 4 workers (Overall query rate 395.63 queries/sec):
TimescaleDB 5 cpu metric(s), random 1 hosts, random 12h0m0s by 1m:
min: 6.42ms, med: 9.60ms, mean: 10.02ms, max: 33.66ms, stddev: 2.56ms, sum: 10.0sec, count: 1000
all queries :
min: 6.42ms, med: 9.60ms, mean: 10.02ms, max: 33.66ms, stddev: 2.56ms, sum: 10.0sec, count: 1000
wall clock time: 2.542126sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_single-groupby-5-1-12.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timescaledb --workers=4 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=medium"
        User time (seconds): 0.67
        System time (seconds): 0.18
        Percent of CPU this job got: 33%
```

SGB-5-8-1

```
Run complete after 1000 queries with 1 workers (Overall query rate 248.55 queries/sec):
TimescaleDB 5 cpu metric(s), random 8 hosts, random 1h0m0s by 1m:
min: 3.58ms, med: 3.92ms, mean: 4.00ms, max: 17.64ms, stddev: 0.52ms, sum: 4.0sec, count: 1000
all queries :
min: 3.58ms, med: 3.92ms, mean: 4.00ms, max: 17.64ms, stddev: 0.52ms, sum: 4.0sec, count: 1000
wall clock time: 4.029495sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_single_groupby-5-8-1.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timescaledb --workers=1 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=medium"
        User time (seconds): 0.19
        System time (seconds): 0.17
        Percent of CPU this job got: 9%
Run complete after 1000 queries with 2 workers (Overall query rate 506.61 queries/sec):
TimescaleDB 5 cpu metric(s), random 8 hosts, random 1h0m0s by 1m:
min: 3.42ms, med: 3.77ms, mean: 3.92ms, max: 17.40ms, stddev: 0.76ms, sum: 3.9sec, count: 1000
all queries :
min: 3.42ms, med: 3.77ms, mean: 3.92ms, max: 17.40ms, stddev: 0.76ms, sum: 3.9sec, count: 1000
wall clock time: 1.983340sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_single_groupby-5-8-1.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timescaledb --workers=2 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=medium"
        User time (seconds): 0.21
        System time (seconds): 0.07
        Percent of CPU this job got: 14%
Run complete after 1000 queries with 4 workers (Overall query rate 868.56 queries/sec):
TimescaleDB 5 cpu metric(s), random 8 hosts, random 1h0m0s by 1m:
min: 3.39ms, med: 3.96ms, mean: 4.55ms, max: 30.58ms, stddev: 1.96ms, sum: 4.6sec, count: 1000
all queries :
min: 3.39ms, med: 3.96ms, mean: 4.55ms, max: 30.58ms, stddev: 1.96ms, sum: 4.6sec, count: 1000
wall clock time: 1.161651sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_single_groupby-5-8-1.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timescaledb --workers=4 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=medium"
        User time (seconds): 0.19
        System time (seconds): 0.10
        Percent of CPU this job got: 26%
```

CPU-MAX-ALL-1

```
Run complete after 1000 queries with 1 workers (Overall query rate 125.31 queries/sec):
TimescaleDB max of all CPU metrics, random 1 hosts, random 8h0m0s by 1h:
min: 4.71ms, med: 6.63ms, mean: 7.95ms, max: 20.73ms, stddev: 3.57ms, sum: 8.0sec, count: 1000
all queries :
min: 4.71ms, med: 6.63ms, mean: 7.95ms, max: 20.73ms, stddev: 3.57ms, sum: 8.0sec, count: 1000
wall clock time: 7.987230sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_cpu-max-all-1.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timescaledb --workers=1 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=medium"
        User time (seconds): 0.31
        System time (seconds): 0.13
        Percent of CPU this job got: 5%
Run complete after 1000 queries with 2 workers (Overall query rate 262.73 queries/sec):
TimescaleDB max of all CPU metrics, random 1 hosts, random 8h0m0s by 1h:
min: 4.33ms, med: 6.25ms, mean: 7.59ms, max: 21.25ms, stddev: 3.58ms, sum: 7.6sec, count: 1000
all queries :
min: 4.33ms, med: 6.25ms, mean: 7.59ms, max: 21.25ms, stddev: 3.58ms, sum: 7.6sec, count: 1000
wall clock time: 3.814684sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_cpu-max-all-1.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timescaledb --workers=2 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=medium"
        User time (seconds): 0.17
        System time (seconds): 0.11
        Percent of CPU this job got: 7%
Run complete after 1000 queries with 4 workers (Overall query rate 490.52 queries/sec):
TimescaleDB max of all CPU metrics, random 1 hosts, random 8h0m0s by 1h:
min: 4.25ms, med: 6.45ms, mean: 8.09ms, max: 33.25ms, stddev: 4.16ms, sum: 8.1sec, count: 1000
all queries :
min: 4.25ms, med: 6.45ms, mean: 8.09ms, max: 33.25ms, stddev: 4.16ms, sum: 8.1sec, count: 1000
wall clock time: 2.051743sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_cpu-max-all-1.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timescaledb --workers=4 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=medium"
        User time (seconds): 0.15
        System time (seconds): 0.12
        Percent of CPU this job got: 13%
```

CPU-MAX-ALL-8

```
Run complete after 1000 queries with 1 workers (Overall query rate 44.75 queries/sec):
TimescaleDB max of all CPU metrics, random 8 hosts, random 8h0m0s by 1h:
min: 20.77ms, med: 22.25ms, mean: 22.32ms, max: 43.04ms, stddev: 1.04ms, sum: 22.3sec, count: 1000
all queries
min: 20.77ms, med: 22.25ms, mean: 22.32ms, max: 43.04ms, stddev: 1.04ms, sum: 22.3sec, count: 1000
wall clock time: 22.360265sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_cpu-max-all-8.gz | gunzip
    | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=1 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=medium"
        User time (seconds): 0.32
        System time (seconds): 0.23
        Percent of CPU this job got: 2%
Run complete after 1000 queries with 2 workers (Overall query rate 88.05 queries/sec):
TimescaleDB max of all CPU metrics, random 8 hosts, random 8h0m0s by 1h:
min: 20.71ms, med: 22.53ms, mean: 22.65ms, max: 36.31ms, stddev: 1.05ms, sum: 22.7sec, count: 1000
all queries
min: 20.71ms, med: 22.53ms, mean: 22.65ms, max: 36.31ms, stddev: 1.05ms, sum: 22.7sec, count: 1000
wall clock time: 11.370237sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_cpu-max-all-8.gz | gunzip
    | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=2 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=medium"
        User time (seconds): 0.25
        System time (seconds): 0.16
        Percent of CPU this job got: 3%
Run complete after 1000 queries with 4 workers (Overall query rate 173.26 queries/sec):
TimescaleDB max of all CPU metrics, random 8 hosts, random 8h0m0s by 1h:
min: 20.41ms, med: 22.34ms, mean: 22.99ms, max: 62.38ms, stddev: 3.39ms, sum: 23.0sec, count: 1000
all queries
min: 20.41ms, med: 22.34ms, mean: 22.99ms, max: 62.38ms, stddev: 3.39ms, sum: 23.0sec, count: 1000
wall clock time: 5.789074sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_cpu-max-all-8.gz | gunzip
    | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=4 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=medium"
        User time (seconds): 0.24
        System time (seconds): 0.14
        Percent of CPU this job got: 6%
```

DOUBLE-GROUPBY-1

```
Run complete after 1000 queries with 1 workers (Overall query rate 41.36 queries/sec):
TimescaleDB mean of 1 metrics, all hosts, random 12h0m0s by 1h:
min: 20.77ms, med: 23.76ms, mean: 24.14ms, max: 60.00ms, stddev: 2.06ms, sum: 24.1sec, count: 1000
all queries
min: 20.77ms, med: 23.76ms, mean: 24.14ms, max: 60.00ms, stddev: 2.06ms, sum: 24.1sec, count: 1000
wall clock time: 24.197676sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_double-groupby-1.gz | gunzip
    | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=1 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=medium"
        User time (seconds): 0.42
        System time (seconds): 0.25
        Percent of CPU this job got: 2%
Run complete after 1000 queries with 2 workers (Overall query rate 83.19 queries/sec):
TimescaleDB mean of 1 metrics, all hosts, random 12h0m0s by 1h:
min: 19.18ms, med: 23.90ms, mean: 23.99ms, max: 40.92ms, stddev: 1.94ms, sum: 24.0sec, count: 1000
all queries
min: 19.18ms, med: 23.90ms, mean: 23.99ms, max: 40.92ms, stddev: 1.94ms, sum: 24.0sec, count: 1000
wall clock time: 12.034721sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_double-groupby-1.gz | gunzip
    | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=2 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=medium"
        User time (seconds): 0.29
        System time (seconds): 0.16
        Percent of CPU this job got: 3%
Run complete after 1000 queries with 4 workers (Overall query rate 159.90 queries/sec):
TimescaleDB mean of 1 metrics, all hosts, random 12h0m0s by 1h:
min: 20.58ms, med: 24.60ms, mean: 24.90ms, max: 59.24ms, stddev: 3.73ms, sum: 24.9sec, count: 1000
all queries
min: 20.58ms, med: 24.60ms, mean: 24.90ms, max: 59.24ms, stddev: 3.73ms, sum: 24.9sec, count: 1000
wall clock time: 6.269297sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_double-groupby-1.gz | gunzip
    | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=4 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=medium"
        User time (seconds): 0.30
        System time (seconds): 0.17
        Percent of CPU this job got: 7%
```

DOUBLE-GROUPBY-5

```
Run complete after 1000 queries with 1 workers (Overall query rate 31.81 queries/sec):
TimescaleDB mean of 5 metrics, all hosts, random 12h0m0s by 1h:
min: 27.74ms, med: 31.23ms, mean: 31.41ms, max: 42.51ms, stddev: 1.86ms, sum: 31.4sec, count: 1000
all queries :
min: 27.74ms, med: 31.23ms, mean: 31.41ms, max: 42.51ms, stddev: 1.86ms, sum: 31.4sec, count: 1000
wall clock time: 31.451156sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_double-groupby-5.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=1 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=medium""
        User time (seconds): 0.50
        System time (seconds): 0.18
        Percent of CPU this job got: 2%
Run complete after 1000 queries with 2 workers (Overall query rate 64.03 queries/sec):
TimescaleDB mean of 5 metrics, all hosts, random 12h0m0s by 1h:
min: 26.52ms, med: 31.04ms, mean: 31.16ms, max: 46.29ms, stddev: 1.95ms, sum: 31.2sec, count: 1000
all queries :
min: 26.52ms, med: 31.04ms, mean: 31.16ms, max: 46.29ms, stddev: 1.95ms, sum: 31.2sec, count: 1000
wall clock time: 15.635356sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_double-groupby-5.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=2 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=medium""
        User time (seconds): 0.38
        System time (seconds): 0.12
        Percent of CPU this job got: 3%
Run complete after 1000 queries with 4 workers (Overall query rate 123.27 queries/sec):
TimescaleDB mean of 5 metrics, all hosts, random 12h0m0s by 1h:
min: 27.52ms, med: 32.21ms, mean: 32.33ms, max: 75.62ms, stddev: 4.13ms, sum: 32.3sec, count: 1000
all queries :
min: 27.52ms, med: 32.21ms, mean: 32.33ms, max: 75.62ms, stddev: 4.13ms, sum: 32.3sec, count: 1000
wall clock time: 8.130674sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_double-groupby-5.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=4 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=medium""
        User time (seconds): 0.42
        System time (seconds): 0.12
        Percent of CPU this job got: 6%
```

DOUBLE-GROUPBY-ALL

```
Run complete after 1000 queries with 1 workers (Overall query rate 24.94 queries/sec):
TimescaleDB mean of 10 metrics, all hosts, random 12h0m0s by 1h:
min: 35.64ms, med: 40.95ms, mean: 40.07ms, max: 51.20ms, stddev: 2.08ms, sum: 40.1sec, count: 1000
all queries :
min: 35.64ms, med: 40.95ms, mean: 40.07ms, max: 51.20ms, stddev: 2.08ms, sum: 40.1sec, count: 1000
wall clock time: 40.117974sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_double-groupby-all.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=1 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=medium""
        User time (seconds): 0.61
        System time (seconds): 0.18
        Percent of CPU this job got: 1%
Run complete after 1000 queries with 2 workers (Overall query rate 50.47 queries/sec):
TimescaleDB mean of 10 metrics, all hosts, random 12h0m0s by 1h:
min: 35.59ms, med: 39.19ms, mean: 39.56ms, max: 58.22ms, stddev: 2.18ms, sum: 39.6sec, count: 1000
all queries :
min: 35.59ms, med: 39.19ms, mean: 39.56ms, max: 58.22ms, stddev: 2.18ms, sum: 39.6sec, count: 1000
wall clock time: 19.835732sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_double-groupby-all.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=2 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=medium""
        User time (seconds): 0.46
        System time (seconds): 0.15
        Percent of CPU this job got: 3%
Run complete after 1000 queries with 4 workers (Overall query rate 97.13 queries/sec):
TimescaleDB mean of 10 metrics, all hosts, random 12h0m0s by 1h:
min: 35.41ms, med: 40.36ms, mean: 41.03ms, max: 89.67ms, stddev: 4.99ms, sum: 41.0sec, count: 1000
all queries :
min: 35.41ms, med: 40.36ms, mean: 41.03ms, max: 89.67ms, stddev: 4.99ms, sum: 41.0sec, count: 1000
wall clock time: 10.322343sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_double-groupby-all.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=4 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=medium""
        User time (seconds): 0.46
        System time (seconds): 0.19
        Percent of CPU this job got: 6%
```

HIGH-CPU-ALL

```
Run complete after 1000 queries with 1 workers (Overall query rate 65.35 queries/sec):
TimescaleDB CPU over threshold, all hosts:
min:   8.26ms, med:  15.21ms, mean:  15.27ms, max:  31.96ms, stddev:  2.89ms, sum:  15.3sec, count: 1000
all queries
min:   8.26ms, med:  15.21ms, mean:  15.27ms, max:  31.96ms, stddev:  2.89ms, sum:  15.3sec, count: 1000
wall clock time: 15.315610sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_high-cpu-all.gz | gunzip
| /home/user/go/bin/tsbs_run_queries_timestabledb --workers=1 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=medium""
        User time (seconds): 4.06
        System time (seconds): 1.06
        Percent of CPU this job got: 33%
Run complete after 1000 queries with 2 workers (Overall query rate 133.31 queries/sec):
TimescaleDB CPU over threshold, all hosts:
min:   7.78ms, med:  14.89ms, mean:  14.95ms, max:  32.67ms, stddev:  2.87ms, sum:  14.9sec, count: 1000
all queries
min:   7.78ms, med:  14.89ms, mean:  14.95ms, max:  32.67ms, stddev:  2.87ms, sum:  14.9sec, count: 1000
wall clock time: 7.517390sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_high-cpu-all.gz | gunzip
| /home/user/go/bin/tsbs_run_queries_timestabledb --workers=2 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=medium""
        User time (seconds): 3.82
        System time (seconds): 0.80
        Percent of CPU this job got: 61%
Run complete after 1000 queries with 4 workers (Overall query rate 173.37 queries/sec):
TimescaleDB CPU over threshold, all hosts:
min:   9.65ms, med:  21.70ms, mean:  22.94ms, max:  62.38ms, stddev:  7.34ms, sum:  22.9sec, count: 1000
all queries
min:   9.65ms, med:  21.70ms, mean:  22.94ms, max:  62.38ms, stddev:  7.34ms, sum:  22.9sec, count: 1000
wall clock time: 5.784689sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_high-cpu-all.gz | gunzip
| /home/user/go/bin/tsbs_run_queries_timestabledb --workers=4 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=medium""
        User time (seconds): 3.82
        System time (seconds): 0.49
        Percent of CPU this job got: 74%
```

HIGH-CPU-1

```
Run complete after 1000 queries with 1 workers (Overall query rate 185.02 queries/sec):
TimescaleDB CPU over threshold, 1 host(s):
min:   3.22ms, med:  5.22ms, mean:  5.38ms, max:  21.70ms, stddev:  1.44ms, sum:  5.4sec, count: 1000
all queries
min:   3.22ms, med:  5.22ms, mean:  5.38ms, max:  21.70ms, stddev:  1.44ms, sum:  5.4sec, count: 1000
wall clock time: 5.411766sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_high-cpu-1.gz | gunzip
| /home/user/go/bin/tsbs_run_queries_timestabledb --workers=1 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=medium""
        User time (seconds): 0.60
        System time (seconds): 0.22
        Percent of CPU this job got: 15%
Run complete after 1000 queries with 2 workers (Overall query rate 350.47 queries/sec):
TimescaleDB CPU over threshold, 1 host(s):
min:   2.91ms, med:  5.47ms, mean:  5.68ms, max:  22.05ms, stddev:  1.68ms, sum:  5.7sec, count: 1000
all queries
min:   2.91ms, med:  5.47ms, mean:  5.68ms, max:  22.05ms, stddev:  1.68ms, sum:  5.7sec, count: 1000
wall clock time: 2.862475sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_high-cpu-1.gz | gunzip
| /home/user/go/bin/tsbs_run_queries_timestabledb --workers=2 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=medium""
        User time (seconds): 0.53
        System time (seconds): 0.18
        Percent of CPU this job got: 25%
Run complete after 1000 queries with 4 workers (Overall query rate 622.21 queries/sec):
TimescaleDB CPU over threshold, 1 host(s):
min:   2.78ms, med:  5.93ms, mean:  6.37ms, max:  24.93ms, stddev:  2.38ms, sum:  6.4sec, count: 1000
all queries
min:   2.78ms, med:  5.93ms, mean:  6.37ms, max:  24.93ms, stddev:  2.38ms, sum:  6.4sec, count: 1000
wall clock time: 1.615312sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_high-cpu-1.gz | gunzip
| /home/user/go/bin/tsbs_run_queries_timestabledb --workers=4 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=medium""
        User time (seconds): 0.57
        System time (seconds): 0.14
        Percent of CPU this job got: 43%
```

LASTPOINT

```
Run complete after 1000 queries with 1 workers (Overall query rate 2382.18 queries/sec):
TimescaleDB last row per host:
min:    0.28ms, med:    0.33ms, mean:    0.38ms, max:  18.71ms, stddev:    0.63ms, sum:   0.4sec, count: 1000
all queries
min:    0.28ms, med:    0.33ms, mean:    0.38ms, max:  18.71ms, stddev:    0.63ms, sum:   0.4sec, count: 1000
wall clock time: 0.425259sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_lastpoint.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=1 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=medium""
        User time (seconds): 0.12
        System time (seconds): 0.04
        Percent of CPU this job got: 39%
Run complete after 1000 queries with 2 workers (Overall query rate 3989.39 queries/sec):
TimescaleDB last row per host:
min:    0.29ms, med:    0.33ms, mean:    0.41ms, max:  20.55ms, stddev:    0.93ms, sum:   0.4sec, count: 1000
all queries
min:    0.29ms, med:    0.33ms, mean:    0.41ms, max:  20.55ms, stddev:    0.93ms, sum:   0.4sec, count: 1000
wall clock time: 0.257551sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_lastpoint.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=2 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=medium""
        User time (seconds): 0.13
        System time (seconds): 0.03
        Percent of CPU this job got: 62%
Run complete after 1000 queries with 4 workers (Overall query rate 4470.03 queries/sec):
TimescaleDB last row per host:
min:    0.31ms, med:    0.40ms, mean:    0.60ms, max:  32.90ms, stddev:    1.83ms, sum:   0.6sec, count: 1000
all queries
min:    0.31ms, med:    0.40ms, mean:    0.60ms, max:  32.90ms, stddev:    1.83ms, sum:   0.6sec, count: 1000
wall clock time: 0.235325sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_lastpoint.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=4 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=medium""
        User time (seconds): 0.15
        System time (seconds): 0.04
        Percent of CPU this job got: 80%
```

GROUPBY-ORDERBY-LIMIT

```
Run complete after 1000 queries with 1 workers (Overall query rate 590.78 queries/sec):
TimescaleDB max cpu over last 5 min-intervals (random end):
min:    0.61ms, med:    1.62ms, mean:    1.67ms, max:  17.21ms, stddev:    0.80ms, sum:   1.7sec, count: 1000
all queries
min:    0.61ms, med:    1.62ms, mean:    1.67ms, max:  17.21ms, stddev:    0.80ms, sum:   1.7sec, count: 1000
wall clock time: 1.698370sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_groupby-orderby-limit.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=1 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=medium""
        User time (seconds): 0.14
        System time (seconds): 0.10
        Percent of CPU this job got: 15%
Run complete after 1000 queries with 2 workers (Overall query rate 1182.12 queries/sec):
TimescaleDB max cpu over last 5 min-intervals (random end):
min:    0.59ms, med:    1.56ms, mean:    1.66ms, max:  16.90ms, stddev:    0.94ms, sum:   1.7sec, count: 1000
all queries
min:    0.59ms, med:    1.56ms, mean:    1.66ms, max:  16.90ms, stddev:    0.94ms, sum:   1.7sec, count: 1000
wall clock time: 0.852414sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_groupby-orderby-limit.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=2 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=medium""
        User time (seconds): 0.10
        System time (seconds): 0.09
        Percent of CPU this job got: 23%
Run complete after 1000 queries with 4 workers (Overall query rate 1752.97 queries/sec):
TimescaleDB max cpu over last 5 min-intervals (random end):
min:    0.59ms, med:    1.85ms, mean:    2.17ms, max:  26.38ms, stddev:    1.80ms, sum:   2.2sec, count: 1000
all queries
min:    0.59ms, med:    1.85ms, mean:    2.17ms, max:  26.38ms, stddev:    1.80ms, sum:   2.2sec, count: 1000
wall clock time: 0.580532sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_medium/timescaledb_groupby-orderby-limit.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=4 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=medium""
        User time (seconds): 0.14
        System time (seconds): 0.09
        Percent of CPU this job got: 40%
```

Big

Load:

```
Summary:  
loaded 366508800 metrics in 944.353sec with 1 workers (mean rate 388105.71 metrics/sec)  
loaded 32659200 rows in 944.353sec with 1 workers (mean rate 34583.68 rows/sec)
```

```
Summary:  
loaded 366508800 metrics in 743.450sec with 2 workers (mean rate 492983.73 metrics/sec)  
loaded 32659200 rows in 743.450sec with 2 workers (mean rate 43929.24 rows/sec)
```

```
Summary:  
loaded 366508800 metrics in 602.491sec with 4 workers (mean rate 608322.77 metrics/sec)  
loaded 32659200 rows in 602.491sec with 4 workers (mean rate 54206.98 rows/sec)
```

```
Summary:  
loaded 366508800 metrics in 485.313sec with 8 workers (mean rate 755200.66 metrics/sec)  
loaded 32659200 rows in 485.313sec with 8 workers (mean rate 67295.11 rows/sec)
```

Queries:

```
user@snf-40236:~/go/src/tsbs$ ./timescale_big.sh  
TimescaleDB 1 cpu metric(s), random 1 hosts, random 1h0m0s by 1m: 1000 points  
TimescaleDB 1 cpu metric(s), random 1 hosts, random 12h0m0s by 1m: 1000 points  
TimescaleDB 1 cpu metric(s), random 8 hosts, random 1h0m0s by 1m: 1000 points  
TimescaleDB 5 cpu metric(s), random 1 hosts, random 1h0m0s by 1m: 1000 points  
TimescaleDB 5 cpu metric(s), random 1 hosts, random 12h0m0s by 1m: 1000 points  
TimescaleDB 5 cpu metric(s), random 8 hosts, random 1h0m0s by 1m: 1000 points  
TimescaleDB max of all CPU metrics, random 1 hosts, random 8h0m0s by 1h: 1000 points  
TimescaleDB max of all CPU metrics, random 8 hosts, random 8h0m0s by 1h: 1000 points  
TimescaleDB mean of 1 metrics, all hosts, random 12h0m0s by 1h: 1000 points  
TimescaleDB mean of 5 metrics, all hosts, random 12h0m0s by 1h: 1000 points  
TimescaleDB mean of 10 metrics, all hosts, random 12h0m0s by 1h: 1000 points  
TimescaleDB CPU over threshold, all hosts: 1000 points  
TimescaleDB CPU over threshold, 1 host(s): 1000 points  
TimescaleDB last row per host: 1000 points  
TimescaleDB max cpu over last 5 min-intervals (random end): 1000 points
```

SGB-1-1-1-1, Workers(B) = 1/2/4

```
Run complete after 1000 queries with 1 workers (Overall query rate 120.66 queries/sec):
TimescaleDB 1 cpu metric(s), random 1 hosts, random 1h0m0s by 1m:
min: 1.34ms, med: 2.81ms, mean: 8.16ms, max: 1428.67ms, stddev: 47.56ms, sum: 8.2sec, count: 1000
all queries :
min: 1.34ms, med: 2.81ms, mean: 8.16ms, max: 1428.67ms, stddev: 47.56ms, sum: 8.2sec, count: 1000
wall clock time: 8.318965sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_single-groupby-1-1-1.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timescaledb --workers=1 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=big"
        User time (seconds): 0.45
        System time (seconds): 0.12
        Percent of CPU this job got: 6%
Run complete after 1000 queries with 2 workers (Overall query rate 799.43 queries/sec):
TimescaleDB 1 cpu metric(s), random 1 hosts, random 1h0m0s by 1m:
min: 1.18ms, med: 2.40ms, mean: 2.48ms, max: 18.04ms, stddev: 0.86ms, sum: 2.5sec, count: 1000
all queries :
min: 1.18ms, med: 2.40ms, mean: 2.48ms, max: 18.04ms, stddev: 0.86ms, sum: 2.5sec, count: 1000
wall clock time: 1.260803sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_single-groupby-1-1-1.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timescaledb --workers=2 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=big"
        User time (seconds): 0.12
        System time (seconds): 0.10
        Percent of CPU this job got: 18%
Run complete after 1000 queries with 4 workers (Overall query rate 1332.29 queries/sec):
TimescaleDB 1 cpu metric(s), random 1 hosts, random 1h0m0s by 1m:
min: 1.21ms, med: 2.52ms, mean: 2.91ms, max: 30.43ms, stddev: 1.67ms, sum: 2.9sec, count: 1000
all queries :
min: 1.21ms, med: 2.52ms, mean: 2.91ms, max: 30.43ms, stddev: 1.67ms, sum: 2.9sec, count: 1000
wall clock time: 0.759543sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_single-groupby-1-1-1.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timescaledb --workers=4 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=big"
        User time (seconds): 0.20
        System time (seconds): 0.05
        Percent of CPU this job got: 32%
```

SGB-1-1-12

```
Run complete after 1000 queries with 1 workers (Overall query rate 55.17 queries/sec):
TimescaleDB 1 cpu metric(s), random 1 hosts, random 12h0m0s by 1m:
min: 5.35ms, med: 9.74ms, mean: 18.01ms, max: 1089.47ms, stddev: 52.58ms, sum: 18.0sec, count: 1000
all queries :
min: 5.35ms, med: 9.74ms, mean: 18.01ms, max: 1089.47ms, stddev: 52.58ms, sum: 18.0sec, count: 1000
wall clock time: 18.154898sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_single-groupby-1-1-12.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timescaledb --workers=1 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=big"
        User time (seconds): 0.76
        System time (seconds): 0.23
        Percent of CPU this job got: 5%
Run complete after 1000 queries with 2 workers (Overall query rate 263.55 queries/sec):
TimescaleDB 1 cpu metric(s), random 1 hosts, random 12h0m0s by 1m:
min: 5.22ms, med: 7.43ms, mean: 7.56ms, max: 25.18ms, stddev: 1.57ms, sum: 7.6sec, count: 1000
all queries :
min: 5.22ms, med: 7.43ms, mean: 7.56ms, max: 25.18ms, stddev: 1.57ms, sum: 7.6sec, count: 1000
wall clock time: 3.802948sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_single-groupby-1-1-12.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timescaledb --workers=2 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=big"
        User time (seconds): 0.46
        System time (seconds): 0.16
        Percent of CPU this job got: 16%
Run complete after 1000 queries with 4 workers (Overall query rate 461.23 queries/sec):
TimescaleDB 1 cpu metric(s), random 1 hosts, random 12h0m0s by 1m:
min: 5.36ms, med: 8.21ms, mean: 8.62ms, max: 28.00ms, stddev: 2.42ms, sum: 8.6sec, count: 1000
all queries :
min: 5.36ms, med: 8.21ms, mean: 8.62ms, max: 28.00ms, stddev: 2.42ms, sum: 8.6sec, count: 1000
wall clock time: 2.177978sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_single-groupby-1-1-12.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timescaledb --workers=4 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=big"
        User time (seconds): 0.44
        System time (seconds): 0.12
        Percent of CPU this job got: 25%
```

SGB-1-8-1

```
Run complete after 1000 queries with 1 workers (Overall query rate 261.54 queries/sec):
TimescaleDB 1 cpu metric(s), random 8 hosts, random 1h0m0s by 1m:
min: 2.87ms, med: 3.25ms, mean: 3.75ms, max: 107.86ms, stddev: 4.71ms, sum: 3.7sec, count: 1000
all queries :
min: 2.87ms, med: 3.25ms, mean: 3.75ms, max: 107.86ms, stddev: 4.71ms, sum: 3.7sec, count: 1000
wall clock time: 3.839359sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_single-groupby-1-8-1.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timescaledb --workers=1 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=big"
        User time (seconds): 0.22
        System time (seconds): 0.16
        Percent of CPU this job got: 10%
Run complete after 1000 queries with 2 workers (Overall query rate 575.12 queries/sec):
TimescaleDB 1 cpu metric(s), random 8 hosts, random 1h0m0s by 1m:
min: 2.78ms, med: 3.26ms, mean: 3.41ms, max: 29.38ms, stddev: 1.14ms, sum: 3.4sec, count: 1000
all queries :
min: 2.78ms, med: 3.26ms, mean: 3.41ms, max: 29.38ms, stddev: 1.14ms, sum: 3.4sec, count: 1000
wall clock time: 1.748241sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_single-groupby-1-8-1.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timescaledb --workers=2 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=big"
        User time (seconds): 0.19
        System time (seconds): 0.06
        Percent of CPU this job got: 15%
Run complete after 1000 queries with 4 workers (Overall query rate 1036.12 queries/sec):
TimescaleDB 1 cpu metric(s), random 8 hosts, random 1h0m0s by 1m:
min: 2.79ms, med: 3.40ms, mean: 3.73ms, max: 40.83ms, stddev: 2.31ms, sum: 3.7sec, count: 1000
all queries :
min: 2.79ms, med: 3.40ms, mean: 3.73ms, max: 40.83ms, stddev: 2.31ms, sum: 3.7sec, count: 1000
wall clock time: 0.978956sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_single-groupby-1-8-1.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timescaledb --workers=4 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=big"
        User time (seconds): 0.18
        System time (seconds): 0.09
        Percent of CPU this job got: 27%
```

SGB-5-1-1

```
Run complete after 1000 queries with 1 workers (Overall query rate 371.46 queries/sec):
TimescaleDB 5 cpu metric(s), random 1 hosts, random 1h0m0s by 1m:
min: 1.40ms, med: 2.67ms, mean: 2.67ms, max: 15.73ms, stddev: 0.56ms, sum: 2.7sec, count: 1000
all queries :
min: 1.40ms, med: 2.67ms, mean: 2.67ms, max: 15.73ms, stddev: 0.56ms, sum: 2.7sec, count: 1000
wall clock time: 2.697456sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_single-groupby-5-1-1.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timescaledb --workers=1 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=big"
        User time (seconds): 0.18
        System time (seconds): 0.11
        Percent of CPU this job got: 10%
Run complete after 1000 queries with 2 workers (Overall query rate 723.01 queries/sec):
TimescaleDB 5 cpu metric(s), random 1 hosts, random 1h0m0s by 1m:
min: 1.41ms, med: 2.67ms, mean: 2.73ms, max: 19.01ms, stddev: 0.93ms, sum: 2.7sec, count: 1000
all queries :
min: 1.41ms, med: 2.67ms, mean: 2.73ms, max: 19.01ms, stddev: 0.93ms, sum: 2.7sec, count: 1000
wall clock time: 1.391344sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_single-groupby-5-1-1.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timescaledb --workers=2 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=big"
        User time (seconds): 0.19
        System time (seconds): 0.08
        Percent of CPU this job got: 20%
Run complete after 1000 queries with 4 workers (Overall query rate 1246.23 queries/sec):
TimescaleDB 5 cpu metric(s), random 1 hosts, random 1h0m0s by 1m:
min: 1.40ms, med: 2.81ms, mean: 3.15ms, max: 24.16ms, stddev: 1.59ms, sum: 3.1sec, count: 1000
all queries :
min: 1.40ms, med: 2.81ms, mean: 3.15ms, max: 24.16ms, stddev: 1.59ms, sum: 3.1sec, count: 1000
wall clock time: 0.817469sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_single-groupby-5-1-1.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timescaledb --workers=4 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=big"
        User time (seconds): 0.18
        System time (seconds): 0.08
        Percent of CPU this job got: 32%
```

SGB-5-1-12

```
Run complete after 1000 queries with 1 workers (Overall query rate 111.15 queries/sec):
TimescaleDB 5 cpu metric(s), random 1 hosts, random 12h0m0s by 1m:
min: 6.56ms, med: 8.89ms, mean: 8.98ms, max: 29.47ms, stddev: 1.47ms, sum: 9.0sec, count: 1000
all queries :
min: 6.56ms, med: 8.89ms, mean: 8.98ms, max: 29.47ms, stddev: 1.47ms, sum: 9.0sec, count: 1000
wall clock time: 9.009135sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_single-groupby-5-1-12.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=1 --postgres="host=localhost password=12345678 user=postgres
    sslmode=disable database=big"
        User time (seconds): 0.73
        System time (seconds): 0.25
        Percent of CPU this job got: 10%
Run complete after 1000 queries with 2 workers (Overall query rate 210.00 queries/sec):
TimescaleDB 5 cpu metric(s), random 1 hosts, random 12h0m0s by 1m:
min: 6.55ms, med: 9.39ms, mean: 9.50ms, max: 29.71ms, stddev: 1.74ms, sum: 9.5sec, count: 1000
all queries :
min: 6.55ms, med: 9.39ms, mean: 9.50ms, max: 29.71ms, stddev: 1.74ms, sum: 9.5sec, count: 1000
wall clock time: 4.777158sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_single-groupby-5-1-12.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=2 --postgres="host=localhost password=12345678 user=postgres
    sslmode=disable database=big"
        User time (seconds): 0.75
        System time (seconds): 0.14
        Percent of CPU this job got: 18%
Run complete after 1000 queries with 4 workers (Overall query rate 388.55 queries/sec):
TimescaleDB 5 cpu metric(s), random 1 hosts, random 12h0m0s by 1m:
min: 6.44ms, med: 9.74ms, mean: 10.21ms, max: 35.15ms, stddev: 2.68ms, sum: 10.2sec, count: 1000
all queries :
min: 6.44ms, med: 9.74ms, mean: 10.21ms, max: 35.15ms, stddev: 2.68ms, sum: 10.2sec, count: 1000
wall clock time: 2.587610sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_single-groupby-5-1-12.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=4 --postgres="host=localhost password=12345678 user=postgres
    sslmode=disable database=big"
        User time (seconds): 0.68
        System time (seconds): 0.18
        Percent of CPU this job got: 33%
```

SGB-5-8-1

```
Run complete after 1000 queries with 1 workers (Overall query rate 241.64 queries/sec):
TimescaleDB 5 cpu metric(s), random 8 hosts, random 1h0m0s by 1m:
min: 3.58ms, med: 4.00ms, mean: 4.12ms, max: 17.02ms, stddev: 0.58ms, sum: 4.1sec, count: 1000
all queries :
min: 3.58ms, med: 4.00ms, mean: 4.12ms, max: 17.02ms, stddev: 0.58ms, sum: 4.1sec, count: 1000
wall clock time: 4.145817sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_single-groupby-5-8-1.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=1 --postgres="host=localhost password=12345678 user=postgres
    sslmode=disable database=big"
        User time (seconds): 0.21
        System time (seconds): 0.12
        Percent of CPU this job got: 8%
Run complete after 1000 queries with 2 workers (Overall query rate 482.63 queries/sec):
TimescaleDB 5 cpu metric(s), random 8 hosts, random 1h0m0s by 1m:
min: 3.48ms, med: 3.94ms, mean: 4.12ms, max: 20.90ms, stddev: 1.02ms, sum: 4.1sec, count: 1000
all queries :
min: 3.48ms, med: 3.94ms, mean: 4.12ms, max: 20.90ms, stddev: 1.02ms, sum: 4.1sec, count: 1000
wall clock time: 2.079209sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_single-groupby-5-8-1.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=2 --postgres="host=localhost password=12345678 user=postgres
    sslmode=disable database=big"
        User time (seconds): 0.18
        System time (seconds): 0.10
        Percent of CPU this job got: 13%
Run complete after 1000 queries with 4 workers (Overall query rate 855.00 queries/sec):
TimescaleDB 5 cpu metric(s), random 8 hosts, random 1h0m0s by 1m:
min: 3.49ms, med: 4.20ms, mean: 4.61ms, max: 27.79ms, stddev: 1.88ms, sum: 4.6sec, count: 1000
all queries :
min: 3.49ms, med: 4.20ms, mean: 4.61ms, max: 27.79ms, stddev: 1.88ms, sum: 4.6sec, count: 1000
wall clock time: 1.194256sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_single-groupby-5-8-1.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=4 --postgres="host=localhost password=12345678 user=postgres
    sslmode=disable database=big"
        User time (seconds): 0.21
        System time (seconds): 0.08
        Percent of CPU this job got: 24%
```

CPU-MAX-ALL-1

```
Run complete after 1000 queries with 1 workers (Overall query rate 90.22 queries/sec):
TimescaleDB max of all CPU metrics, random 1 hosts, random 8h0m0s by 1h:
min: 4.60ms, med: 6.88ms, mean: 10.97ms, max: 1054.85ms, stddev: 45.92ms, sum: 11.0sec, count: 1000
all queries
min: 4.60ms, med: 6.88ms, mean: 10.97ms, max: 1054.85ms, stddev: 45.92ms, sum: 11.0sec, count: 1000
wall clock time: 11.121083sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_cpu-max-all-1.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=1 --postgres="host=localhost password=12345678 user=postgres sslmode =disable database=big"
        User time (seconds): 0.43
        System time (seconds): 0.12
        Percent of CPU this job got: 5%
```

```
Run complete after 1000 queries with 2 workers (Overall query rate 248.11 queries/sec):
TimescaleDB max of all CPU metrics, random 1 hosts, random 8h0m0s by 1h:
min: 4.55ms, med: 6.56ms, mean: 8.02ms, max: 25.21ms, stddev: 3.81ms, sum: 8.0sec, count: 1000
all queries
min: 4.55ms, med: 6.56ms, mean: 8.02ms, max: 25.21ms, stddev: 3.81ms, sum: 8.0sec, count: 1000
wall clock time: 4.039336sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_cpu-max-all-1.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=2 --postgres="host=localhost password=12345678 user=postgres sslmode =disable database=big"
        User time (seconds): 0.18
        System time (seconds): 0.11
        Percent of CPU this job got: 7%
```

```
Run complete after 1000 queries with 4 workers (Overall query rate 461.28 queries/sec):
TimescaleDB max of all CPU metrics, random 1 hosts, random 8h0m0s by 1h:
min: 4.60ms, med: 6.74ms, mean: 8.57ms, max: 46.79ms, stddev: 4.66ms, sum: 8.6sec, count: 1000
all queries
min: 4.60ms, med: 6.74ms, mean: 8.57ms, max: 46.79ms, stddev: 4.66ms, sum: 8.6sec, count: 1000
wall clock time: 2.186901sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_cpu-max-all-1.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=4 --postgres="host=localhost password=12345678 user=postgres sslmode =disable database=big"
        User time (seconds): 0.20
        System time (seconds): 0.08
        Percent of CPU this job got: 13%
```

CPU-ALL-MAX-8

```
Run complete after 1000 queries with 1 workers (Overall query rate 43.88 queries/sec):
TimescaleDB max of all CPU metrics, random 8 hosts, random 8h0m0s by 1h:
min: 20.41ms, med: 22.62ms, mean: 22.76ms, max: 54.23ms, stddev: 1.41ms, sum: 22.8sec, count: 1000
all queries
min: 20.41ms, med: 22.62ms, mean: 22.76ms, max: 54.23ms, stddev: 1.41ms, sum: 22.8sec, count: 1000
wall clock time: 22.808988sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_cpu-max-all-8.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=1 --postgres="host=localhost password=12345678 user=postgres sslmode =disable database=big"
        User time (seconds): 0.40
        System time (seconds): 0.12
        Percent of CPU this job got: 2%
```

```
Run complete after 1000 queries with 2 workers (Overall query rate 87.56 queries/sec):
TimescaleDB max of all CPU metrics, random 8 hosts, random 8h0m0s by 1h:
min: 20.43ms, med: 22.50ms, mean: 22.79ms, max: 41.79ms, stddev: 1.33ms, sum: 22.8sec, count: 1000
all queries
min: 20.43ms, med: 22.50ms, mean: 22.79ms, max: 41.79ms, stddev: 1.33ms, sum: 22.8sec, count: 1000
wall clock time: 11.439431sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_cpu-max-all-8.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=2 --postgres="host=localhost password=12345678 user=postgres sslmode =disable database=big"
        User time (seconds): 0.25
        System time (seconds): 0.12
        Percent of CPU this job got: 3%
```

```
Run complete after 1000 queries with 4 workers (Overall query rate 168.80 queries/sec):
TimescaleDB max of all CPU metrics, random 8 hosts, random 8h0m0s by 1h:
min: 20.69ms, med: 22.89ms, mean: 23.61ms, max: 51.20ms, stddev: 3.12ms, sum: 23.6sec, count: 1000
all queries
min: 20.69ms, med: 22.89ms, mean: 23.61ms, max: 51.20ms, stddev: 3.12ms, sum: 23.6sec, count: 1000
wall clock time: 5.972396sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_cpu-max-all-8.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=4 --postgres="host=localhost password=12345678 user=postgres sslmode =disable database=big"
        User time (seconds): 0.28
        System time (seconds): 0.08
        Percent of CPU this job got: 6%
```

DOUBLE-GROUPBY-1

```
Run complete after 1000 queries with 1 workers (Overall query rate 40.65 queries/sec):
TimescaleDB mean of 1 metrics, all hosts, random 12h0m0s by 1h:
min: 20.22ms, med: 25.07ms, mean: 24.57ms, max: 40.05ms, stddev: 1.83ms, sum: 24.6sec, count: 1000
all queries :
min: 20.22ms, med: 25.07ms, mean: 24.57ms, max: 40.05ms, stddev: 1.83ms, sum: 24.6sec, count: 1000
wall clock time: 24.613423sec
Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_double-groupby-1.gz | gunzip
| /home/user/go/bin/tsbs_run_queries_timestabledb --workers=1 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=big"
User time (seconds): 0.40
System time (seconds): 0.16
Percent of CPU this job got: 2%


Run complete after 1000 queries with 2 workers (Overall query rate 81.58 queries/sec):
TimescaleDB mean of 1 metrics, all hosts, random 12h0m0s by 1h:
min: 20.04ms, med: 24.79ms, mean: 24.47ms, max: 43.84ms, stddev: 2.12ms, sum: 24.5sec, count: 1000
all queries :
min: 20.04ms, med: 24.79ms, mean: 24.47ms, max: 43.84ms, stddev: 2.12ms, sum: 24.5sec, count: 1000
wall clock time: 12.272896sec
Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_double-groupby-1.gz | gunzip
| /home/user/go/bin/tsbs_run_queries_timestabledb --workers=2 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=big"
User time (seconds): 0.28
System time (seconds): 0.18
Percent of CPU this job got: 3%


Run complete after 1000 queries with 4 workers (Overall query rate 157.28 queries/sec):
TimescaleDB mean of 1 metrics, all hosts, random 12h0m0s by 1h:
min: 20.67ms, med: 25.13ms, mean: 25.32ms, max: 58.02ms, stddev: 3.65ms, sum: 25.3sec, count: 1000
all queries :
min: 20.67ms, med: 25.13ms, mean: 25.32ms, max: 58.02ms, stddev: 3.65ms, sum: 25.3sec, count: 1000
wall clock time: 6.388892sec
Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_double-groupby-1.gz | gunzip
| /home/user/go/bin/tsbs_run_queries_timestabledb --workers=4 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=big"
User time (seconds): 0.29
System time (seconds): 0.14
Percent of CPU this job got: 6%
```

DOUBLE-GROUPBY-5

```
Run complete after 1000 queries with 1 workers (Overall query rate 31.30 queries/sec):
TimescaleDB mean of 5 metrics, all hosts, random 12h0m0s by 1h:
min: 27.57ms, med: 32.73ms, mean: 31.91ms, max: 48.58ms, stddev: 2.19ms, sum: 31.9sec, count: 1000
all queries :
min: 27.57ms, med: 32.73ms, mean: 31.91ms, max: 48.58ms, stddev: 2.19ms, sum: 31.9sec, count: 1000
wall clock time: 31.968379sec
Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_double-groupby-5.gz | gunzip
| /home/user/go/bin/tsbs_run_queries_timestabledb --workers=1 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=big"
User time (seconds): 0.51
System time (seconds): 0.18
Percent of CPU this job got: 2%


Run complete after 1000 queries with 2 workers (Overall query rate 63.01 queries/sec):
TimescaleDB mean of 5 metrics, all hosts, random 12h0m0s by 1h:
min: 27.49ms, med: 31.36ms, mean: 31.70ms, max: 52.02ms, stddev: 2.35ms, sum: 31.7sec, count: 1000
all queries :
min: 27.49ms, med: 31.36ms, mean: 31.70ms, max: 52.02ms, stddev: 2.35ms, sum: 31.7sec, count: 1000
wall clock time: 15.885858sec
Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_double-groupby-5.gz | gunzip
| /home/user/go/bin/tsbs_run_queries_timestabledb --workers=2 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=big"
User time (seconds): 0.40
System time (seconds): 0.15
Percent of CPU this job got: 3%


Run complete after 1000 queries with 4 workers (Overall query rate 121.92 queries/sec):
TimescaleDB mean of 5 metrics, all hosts, random 12h0m0s by 1h:
min: 27.41ms, med: 32.08ms, mean: 32.70ms, max: 62.50ms, stddev: 4.05ms, sum: 32.7sec, count: 1000
all queries :
min: 27.41ms, med: 32.08ms, mean: 32.70ms, max: 62.50ms, stddev: 4.05ms, sum: 32.7sec, count: 1000
wall clock time: 8.228320sec
Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_double-groupby-5.gz | gunzip
| /home/user/go/bin/tsbs_run_queries_timestabledb --workers=4 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=big"
User time (seconds): 0.41
System time (seconds): 0.10
Percent of CPU this job got: 6%
```

DOUBLE-GROUPBY-ALL

```
Run complete after 1000 queries with 1 workers (Overall query rate 24.70 queries/sec):
TimescaleDB mean of 10 metrics, all hosts, random 12h0m0s by 1h:
min: 35.64ms, med: 41.29ms, mean: 40.45ms, max: 71.06ms, stddev: 2.63ms, sum: 40.4sec, count: 1000
all queries :
min: 35.64ms, med: 41.29ms, mean: 40.45ms, max: 71.06ms, stddev: 2.63ms, sum: 40.4sec, count: 1000
wall clock time: 40.502501sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_double-groupby-all.gz | gunz
ip | /home/user/go/bin/tsbs_run_queries_timescaledb --workers=1 --postgres="host=localhost password=12345678 user=postgres ss
lmode=disable database=big"
        User time (seconds): 0.62
        System time (seconds): 0.22
        Percent of CPU this job got: 2%
Run complete after 1000 queries with 2 workers (Overall query rate 49.65 queries/sec):
TimescaleDB mean of 10 metrics, all hosts, random 12h0m0s by 1h:
min: 35.26ms, med: 40.95ms, mean: 40.22ms, max: 60.12ms, stddev: 2.47ms, sum: 40.2sec, count: 1000
all queries :
min: 35.26ms, med: 40.95ms, mean: 40.22ms, max: 60.12ms, stddev: 2.47ms, sum: 40.2sec, count: 1000
wall clock time: 20.158303sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_double-groupby-all.gz | gunz
ip | /home/user/go/bin/tsbs_run_queries_timescaledb --workers=2 --postgres="host=localhost password=12345678 user=postgres ss
lmode=disable database=big"
        User time (seconds): 0.53
        System time (seconds): 0.15
        Percent of CPU this job got: 3%
Run complete after 1000 queries with 4 workers (Overall query rate 96.66 queries/sec):
TimescaleDB mean of 10 metrics, all hosts, random 12h0m0s by 1h:
min: 35.25ms, med: 40.32ms, mean: 41.22ms, max: 76.44ms, stddev: 4.87ms, sum: 41.2sec, count: 1000
all queries :
min: 35.25ms, med: 40.32ms, mean: 41.22ms, max: 76.44ms, stddev: 4.87ms, sum: 41.2sec, count: 1000
wall clock time: 10.381992sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_double-groupby-all.gz | gunz
ip | /home/user/go/bin/tsbs_run_queries_timescaledb --workers=4 --postgres="host=localhost password=12345678 user=postgres ss
lmode=disable database=big"
        User time (seconds): 0.49
        System time (seconds): 0.12
        Percent of CPU this job got: 5%
```

HIGH-CPU-ALL

```
Run complete after 1000 queries with 1 workers (Overall query rate 65.82 queries/sec):
TimescaleDB CPU over threshold, all hosts:
min: 8.24ms, med: 14.97ms, mean: 15.17ms, max: 32.46ms, stddev: 2.77ms, sum: 15.2sec, count: 1000
all queries :
min: 8.24ms, med: 14.97ms, mean: 15.17ms, max: 32.46ms, stddev: 2.77ms, sum: 15.2sec, count: 1000
wall clock time: 15.205412sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_high-cpu-all.gz | gunzip | /
home/user/go/bin/tsbs_run_queries_timescaledb --workers=1 --postgres="host=localhost password=12345678 user=postgres sslmode=
disable database=big"
        User time (seconds): 4.17
        System time (seconds): 1.03
        Percent of CPU this job got: 34%
Run complete after 1000 queries with 2 workers (Overall query rate 122.17 queries/sec):
TimescaleDB CPU over threshold, all hosts:
min: 9.50ms, med: 16.00ms, mean: 16.33ms, max: 41.73ms, stddev: 3.67ms, sum: 16.3sec, count: 1000
all queries :
min: 9.50ms, med: 16.00ms, mean: 16.33ms, max: 41.73ms, stddev: 3.67ms, sum: 16.3sec, count: 1000
wall clock time: 8.200455sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_high-cpu-all.gz | gunzip | /
home/user/go/bin/tsbs_run_queries_timescaledb --workers=2 --postgres="host=localhost password=12345678 user=postgres sslmode=
disable database=big"
        User time (seconds): 4.03
        System time (seconds): 0.78
        Percent of CPU this job got: 58%
Run complete after 1000 queries with 4 workers (Overall query rate 170.99 queries/sec):
TimescaleDB CPU over threshold, all hosts:
min: 9.21ms, med: 22.31ms, mean: 23.21ms, max: 63.19ms, stddev: 7.10ms, sum: 23.2sec, count: 1000
all queries :
min: 9.21ms, med: 22.31ms, mean: 23.21ms, max: 63.19ms, stddev: 7.10ms, sum: 23.2sec, count: 1000
wall clock time: 5.875713sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_high-cpu-all.gz | gunzip | /
home/user/go/bin/tsbs_run_queries_timescaledb --workers=4 --postgres="host=localhost password=12345678 user=postgres sslmode=
disable database=big"
        User time (seconds): 3.97
        System time (seconds): 0.40
        Percent of CPU this job got: 74%
```

HIGH-CPU-1

```
Run complete after 1000 queries with 1 workers (Overall query rate 101.58 queries/sec):
TimescaleDB CPU over threshold, 1 host(s):
min:    2.69ms, med:    6.05ms, mean:   9.64ms, max: 1548.35ms, stddev:   67.83ms, sum:   9.6sec, count: 1000
all queries :
min:    2.69ms, med:    6.05ms, mean:   9.64ms, max: 1548.35ms, stddev:   67.83ms, sum:   9.6sec, count: 1000
wall clock time: 9.876665sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_high-cpu-1.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=1 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=big"
        User time (seconds): 0.85
        System time (seconds): 0.23
        Percent of CPU this job got: 10%
Run complete after 1000 queries with 2 workers (Overall query rate 328.17 queries/sec):
TimescaleDB CPU over threshold, 1 host(s):
min:    3.16ms, med:    5.85ms, mean:   6.04ms, max: 28.24ms, stddev:   1.79ms, sum:   6.0sec, count: 1000
all queries :
min:    3.16ms, med:    5.85ms, mean:   6.04ms, max: 28.24ms, stddev:   1.79ms, sum:   6.0sec, count: 1000
wall clock time: 3.065201sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_high-cpu-1.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=2 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=big"
        User time (seconds): 0.59
        System time (seconds): 0.13
        Percent of CPU this job got: 23%
Run complete after 1000 queries with 4 workers (Overall query rate 567.04 queries/sec):
TimescaleDB CPU over threshold, 1 host(s):
min:    3.18ms, med:    6.50ms, mean:   7.00ms, max: 26.24ms, stddev:   2.77ms, sum:   7.0sec, count: 1000
all queries :
min:    3.18ms, med:    6.50ms, mean:   7.00ms, max: 26.24ms, stddev:   2.77ms, sum:   7.0sec, count: 1000
wall clock time: 1.785010sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_high-cpu-1.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=4 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=big"
        User time (seconds): 0.54
        System time (seconds): 0.16
        Percent of CPU this job got: 39%
```

LASTPOINT

```
Run complete after 1000 queries with 1 workers (Overall query rate 1019.37 queries/sec):
TimescaleDB last row per host:
min:    0.72ms, med:    0.83ms, mean:   0.89ms, max: 45.07ms, stddev:   1.41ms, sum:   0.9sec, count: 1000
all queries :
min:    0.72ms, med:    0.83ms, mean:   0.89ms, max: 45.07ms, stddev:   1.41ms, sum:   0.9sec, count: 1000
wall clock time: 0.992740sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_lastpoint.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=1 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=big"
        User time (seconds): 0.17
        System time (seconds): 0.10
        Percent of CPU this job got: 28%
Run complete after 1000 queries with 2 workers (Overall query rate 1615.90 queries/sec):
TimescaleDB last row per host:
min:    0.75ms, med:    0.91ms, mean:   1.08ms, max: 51.50ms, stddev:   2.27ms, sum:   1.1sec, count: 1000
all queries :
min:    0.75ms, med:    0.91ms, mean:   1.08ms, max: 51.50ms, stddev:   2.27ms, sum:   1.1sec, count: 1000
wall clock time: 0.634080sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_lastpoint.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=2 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=big"
        User time (seconds): 0.20
        System time (seconds): 0.06
        Percent of CPU this job got: 40%
Run complete after 1000 queries with 4 workers (Overall query rate 2325.89 queries/sec):
TimescaleDB last row per host:
min:    0.74ms, med:    0.93ms, mean:   1.39ms, max: 58.01ms, stddev:   3.61ms, sum:   1.4sec, count: 1000
all queries :
min:    0.74ms, med:    0.93ms, mean:   1.39ms, max: 58.01ms, stddev:   3.61ms, sum:   1.4sec, count: 1000
wall clock time: 0.459980sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_lastpoint.gz | gunzip | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=4 --postgres="host=localhost password=12345678 user=postgres sslmode=disable database=big"
        User time (seconds): 0.21
        System time (seconds): 0.02
        Percent of CPU this job got: 51%
```

GROUPBY-ORDERBY-LIMIT

```
Run complete after 1000 queries with 1 workers (Overall query rate 177.84 queries/sec):
TimescaleDB max cpu over last 5 min-intervals (random end):
min:    0.69ms, med:    5.29ms, mean:    5.60ms, max:  24.38ms, stddev:    3.01ms, sum:    5.6sec, count: 1000
all queries
min:    0.69ms, med:    5.29ms, mean:    5.60ms, max:  24.38ms, stddev:    3.01ms, sum:    5.6sec, count: 1000
wall clock time: 5.630243sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_groupby-orderby-limit.gz | g
unzip | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=1 --postgres="host=localhost password=12345678 user=postgres
sslmode=disable database=big"
        User time (seconds): 0.14
        System time (seconds): 0.17
        Percent of CPU this job got: 5%
Run complete after 1000 queries with 2 workers (Overall query rate 325.25 queries/sec):
TimescaleDB max cpu over last 5 min-intervals (random end):
min:    0.64ms, med:    5.67ms, mean:    6.11ms, max: 41.11ms, stddev:    3.65ms, sum:    6.1sec, count: 1000
all queries
min:    0.64ms, med:    5.67ms, mean:    6.11ms, max: 41.11ms, stddev:    3.65ms, sum:    6.1sec, count: 1000
wall clock time: 3.088388sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_groupby-orderby-limit.gz | g
unzip | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=2 --postgres="host=localhost password=12345678 user=postgres
sslmode=disable database=big"
        User time (seconds): 0.18
        System time (seconds): 0.12
        Percent of CPU this job got: 9%
Run complete after 1000 queries with 4 workers (Overall query rate 600.23 queries/sec):
TimescaleDB max cpu over last 5 min-intervals (random end):
min:    0.66ms, med:    5.91ms, mean:    6.56ms, max: 46.55ms, stddev:    4.47ms, sum:    6.6sec, count: 1000
all queries
min:    0.66ms, med:    5.91ms, mean:    6.56ms, max: 46.55ms, stddev:    4.47ms, sum:    6.6sec, count: 1000
wall clock time: 1.678584sec
    Command being timed: "sh -c cat /home/user/go/src/tsbs/queries/timescale_big/timescaledb_groupby-orderby-limit.gz | g
unzip | /home/user/go/bin/tsbs_run_queries_timestabledb --workers=4 --postgres="host=localhost password=12345678 user=postgres
sslmode=disable database=big"
        User time (seconds): 0.22
        System time (seconds): 0.06
        Percent of CPU this job got: 17%
```