

www.phoronix-test-suite.com

xeon sun

Intel Xeon E-2288G testing with a Compulab SBC-ATCFL v1.2 (ATOP3.PRD.0.29.2 BIOS) and NVIDIA Quadro RTX 4000 8GB on Ubuntu 20.10 via the Phoronix Test Suite.

Automated Executive Summary

1 had the most wins, coming in first place for 32% of the tests.

Based on the geometric mean of all complete results, the fastest (1) was 1.021x the speed of the slowest (3). 2 was 0.982x the speed of 1, 4 was 0.998x the speed of 2, 3 was 1x the speed of 4.

The results with the greatest spread from best to worst included:

Redis (Test: LPOP) at 1.625x
Redis (Test: GET) at 1.065x
Redis (Test: SADD) at 1.022x
FinanceBench (Benchmark: Black-Scholes OpenCL) at 1.018x
Redis (Test: LPUSH) at 1.018x
Redis (Test: SET) at 1.017x
lzbench (Test: Zstd 8 - Process: Decompression) at 1.016x
Cython Benchmark (Test: N-Queens) at 1.012x
lzbench (Test: Brotli 0 - Process: Compression) at 1.012x

lzbench (Test: Libdeflate 1 - Process: Compression) at 1.011x.

Test Systems:

1

2

3

4

Processor: Intel Xeon E-2288G @ 5.00GHz (8 Cores / 16 Threads), Motherboard: Compulab SBC-ATCFL v1.2 (ATOP3.PRD.0.29.2 BIOS), Chipset: Intel Cannon Lake PCH, Memory: 2 x 32 GB DDR4-2667MT/s Samsung M378A4G43MB1-CTD, Disk: Samsung SSD 970 EVO Plus 250GB, Graphics: NVIDIA Quadro RTX 4000 8GB, Audio: Intel Cannon Lake PCH cAVS, Network: Intel I219-LM + Intel I210

OS: Ubuntu 20.10, Kernel: 5.8.0-29-generic (x86_64), Desktop: GNOME Shell 3.38.1, Display Server: X Server 1.20.9, Display Driver: modesetting 1.20.9, OpenCL: OpenCL 1.2 CUDA 11.1.110, Vulkan: 1.2.142, Compiler: GCC 11.0.0 20201128, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --disable-multilib --enable-checking=release --enable-languages=c,c++,fortran
Processor Notes: Scaling Governor: intel_pstate powersave - CPU Microcode: 0xde - Thermald 2.3
Python Notes: Python 3.8.6
Security Notes: itlb_multihit: KVM: Mitigation of VMX disabled + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Enhanced IBRS IBPB: conditional RSB filling + srbds: Mitigation of TSX disabled + tsx_async_abort: Mitigation of TSX disabled

	1	2	3	4
lzbench - XZ 0 - Compression (MB/s)	48	48	48	48
Standard Deviation		1.2%		
lzbench - XZ 0 - Decompression	135	135	135	135
lzbench - Zstd 1 - Compression (MB/s)	**580**	579	578	**576**
Normalized	100%	99.83%	99.66%	99.31%
Standard Deviation	0.2%		0.1%	0.2%
lzbench - Zstd 1 - Decompression	1991	**1994**	**1984**	**1994**
Normalized	99.85%	100%	99.5%	100%
Standard Deviation	0.2%	0.1%	0.9%	0.1%
lzbench - Zstd 8 - Compression (MB/s)	**100**	**101**	**100**	**100**
Normalized	99.01%	100%	99.01%	99.01%
Standard Deviation		1.7%		
lzbench - Zstd 8 - Decompression	2146	**2176**	2165	**2141**
Normalized	98.62%	100%	99.49%	98.39%
Standard Deviation	1.2%	0.4%	0.5%	1.4%

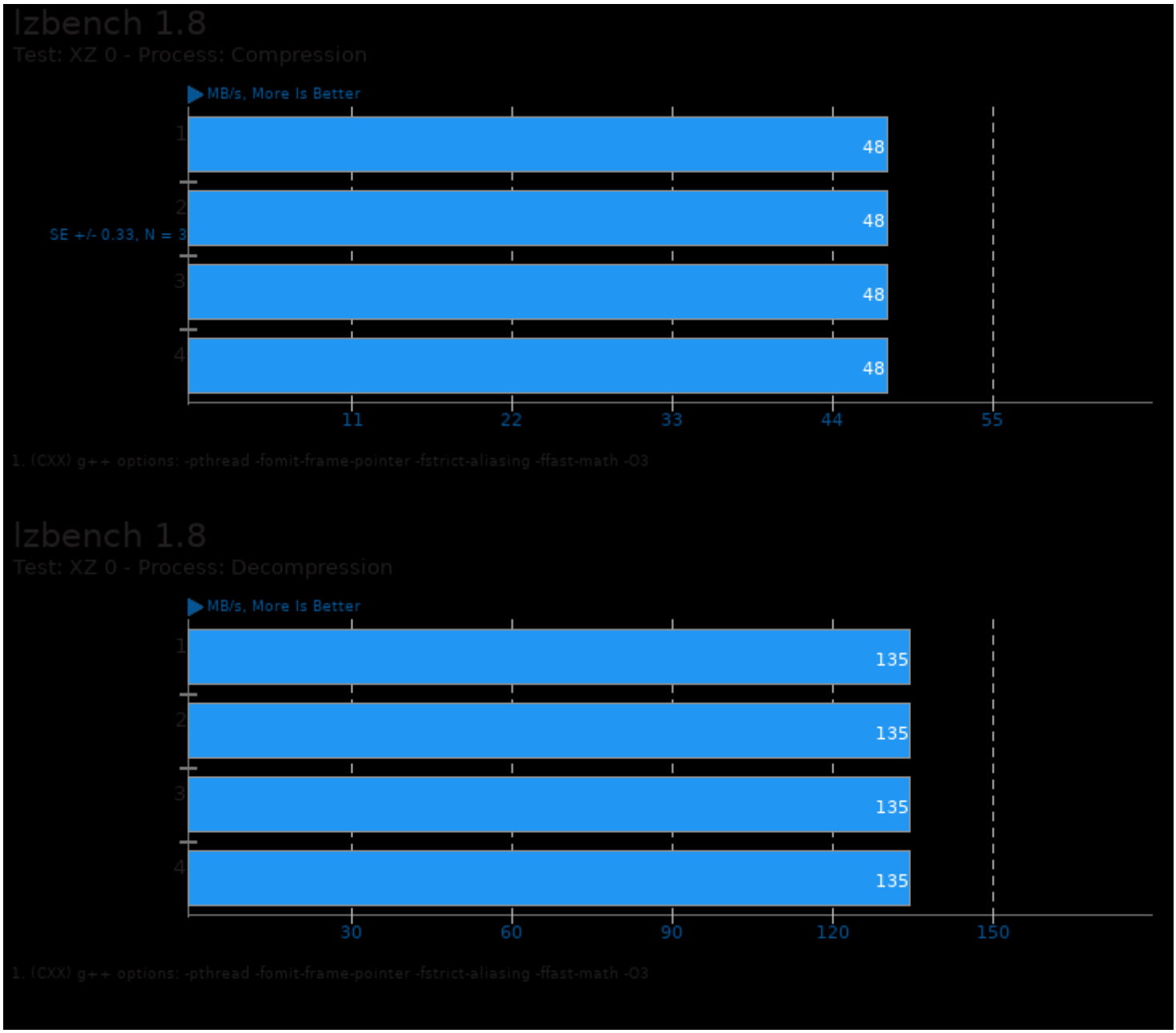
xeon sun

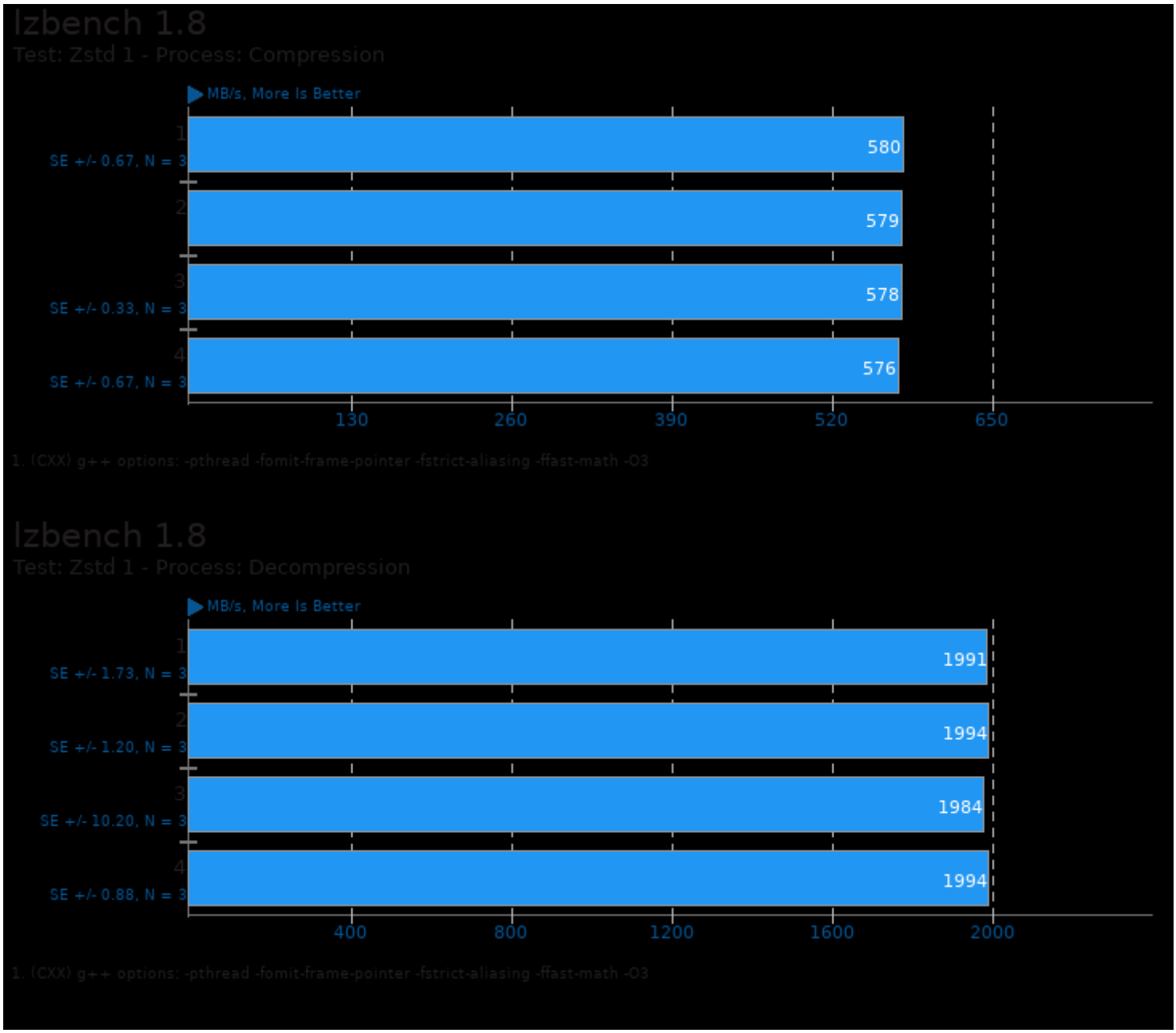
lzbench - Crush 0 - Compression	**117**	**117**	**117**	**116**
Normalized	100%	100%	100%	99.15%
Standard Deviation				0.9%
lzbench - Crush 0 - Decompression (MB/s)	**591**	**591**	**592**	**592**
Normalized	99.83%	99.83%	100%	100%
Standard Deviation	0.1%	0.2%		
lzbench - Brotli 0 - Compression	520	**519**	**519**	**525**
Normalized	99.05%	98.86%	98.86%	100%
Standard Deviation	0.2%		0.4%	
lzbench - Brotli 0 - Decompression (MB/s)	**709**	**708**	**708**	**709**
Normalized	100%	99.86%	99.86%	100%
Standard Deviation	0.1%		0.2%	0.2%
lzbench - Brotli 2 - Compression	221	**220**	**220**	**222**
Normalized	99.55%	99.1%	99.1%	100%
Standard Deviation		0.3%	0.3%	
lzbench - Brotli 2 - Decompression (MB/s)	817	816	**815**	**818**
Normalized	99.88%	99.76%	99.63%	100%
Standard Deviation			0.1%	
lzbench - Libdeflate 1 - Compression (MB/s)	263	**262**	264	**265**
Normalized	99.25%	98.87%	99.62%	100%
Standard Deviation	0.4%	0.2%		
ASKAP - tConvolve MT - Gridding (Million Grid Points/sec)	1140	1140	**1140**	**1142**
Normalized	99.86%	99.84%	99.83%	100%
Standard Deviation	0.2%	0.2%	0.2%	0.1%
ASKAP - tConvolve MT - Degridding (Million Grid Points/sec)	1732	1736	**1737**	**1731**
Normalized	99.7%	99.97%	100%	99.67%
Standard Deviation	0.2%	0.3%	0.7%	0.4%
ASKAP - tConvolve OpenMP - Gridding (Million Grid Points/sec)	1260	**1266**	1264	**1256**
Normalized	99.53%	100%	99.84%	99.23%
Standard Deviation	0.7%	0.3%	0.5%	1.4%
ASKAP - tConvolve OpenMP - Degridding (Million Grid Points/sec)	**2032**	**2032**	**2032**	**2038**
Normalized	99.74%	99.74%	99.74%	100%
Standard Deviation	0%	0%	0%	0.4%
Redis - LPOP (Reqs/sec)	**3685183**	2293598	2299115	**2267759**
Normalized	100%	62.24%	62.39%	61.54%
Standard Deviation	0.6%	1%	1.9%	2.7%
Redis - SADD (Reqs/sec)	2910117	**2940107**	**2876350**	2898992
Normalized	98.98%	100%	97.83%	98.6%
Standard Deviation	2.4%	1.3%	2.9%	1.4%
Redis - LPUSH (Reqs/sec)	2250316	**2279761**	2276820	**2238874**
Normalized	98.71%	100%	99.87%	98.21%
Standard Deviation	2.9%	1.2%	1.3%	1.9%
Redis - GET (Reqs/sec)	**3506300**	**3292522**	3298296	3311125
Normalized	100%	93.9%	94.07%	94.43%
Standard Deviation	1.2%	1.5%	0.7%	0.9%
Redis - SET (Reqs/sec)	2628563	2623541	**2585441**	**2629130**

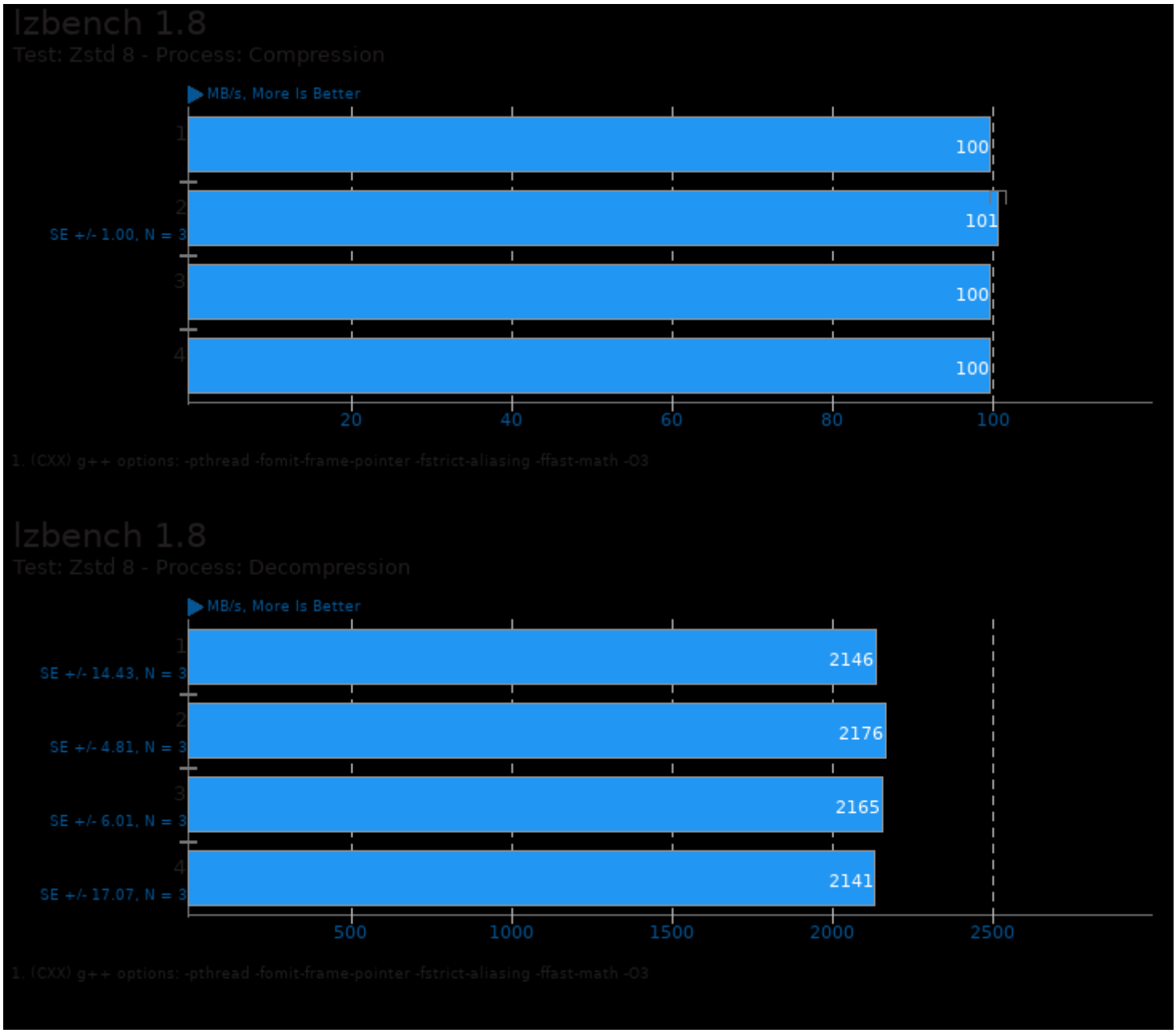
xeon sun

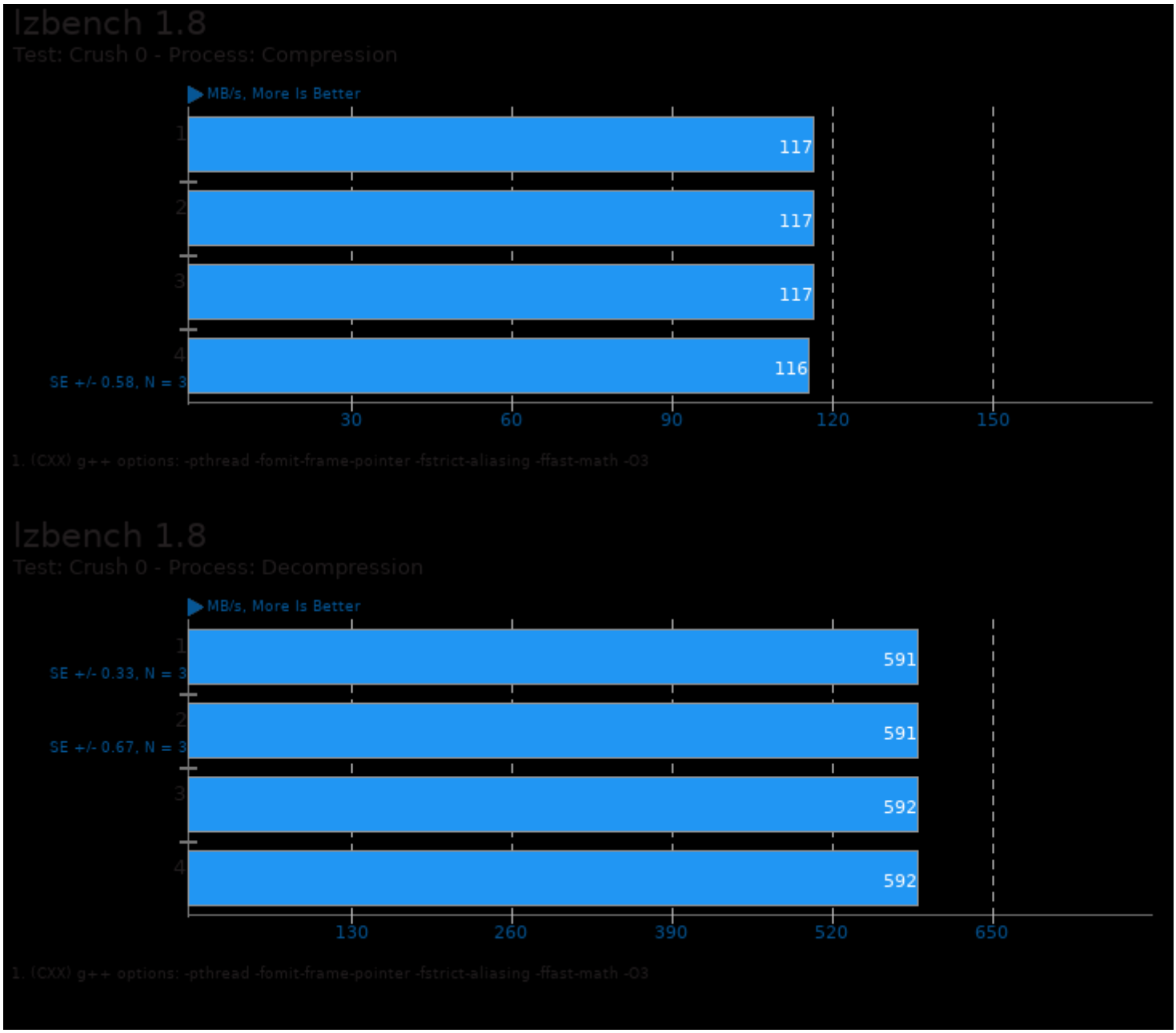
Normalized	99.98%	99.79%	98.34%	100%
Standard Deviation	1%	1.1%	2.5%	0.5%
FinanceBench - Repo OpenMP (ms)	35811	**35740**	35829	**35907**
Normalized	99.8%	100%	99.75%	99.53%
Standard Deviation	2.8%	2.4%	2.8%	2.7%
FinanceBench - Bonds OpenMP (ms)	51958	51891	**52315**	**51891**
Normalized	99.87%	100%	99.19%	100%
Standard Deviation	0.3%	0.6%	1%	0.7%
FinanceBench - Monte-Carlo OpenCL (ms)	735.472005	**737.312988**	736.723002	**734.812337**
Normalized	99.91%	99.66%	99.74%	100%
Standard Deviation	0.2%	0.4%	0.5%	0.3%
FinanceBench - B.S.O (ms)	**23.197666**	23.394666	23.506	**23.624333**
Normalized	100%	99.16%	98.69%	98.19%
Standard Deviation	1%	1.7%	0.8%	0.1%
Cython Benchmark - N-Queens (sec)	**20.324**	20.360	**20.573**	20.361
Normalized	100%	99.82%	98.79%	99.82%
Standard Deviation	0.1%	0.7%	3.5%	1.1%
Gcrypt Library (sec)	**181.198**	180.715	**180.331**	181.129
Normalized	99.52%	99.79%	100%	99.56%
Standard Deviation	0.2%	0.5%	0%	0.7%

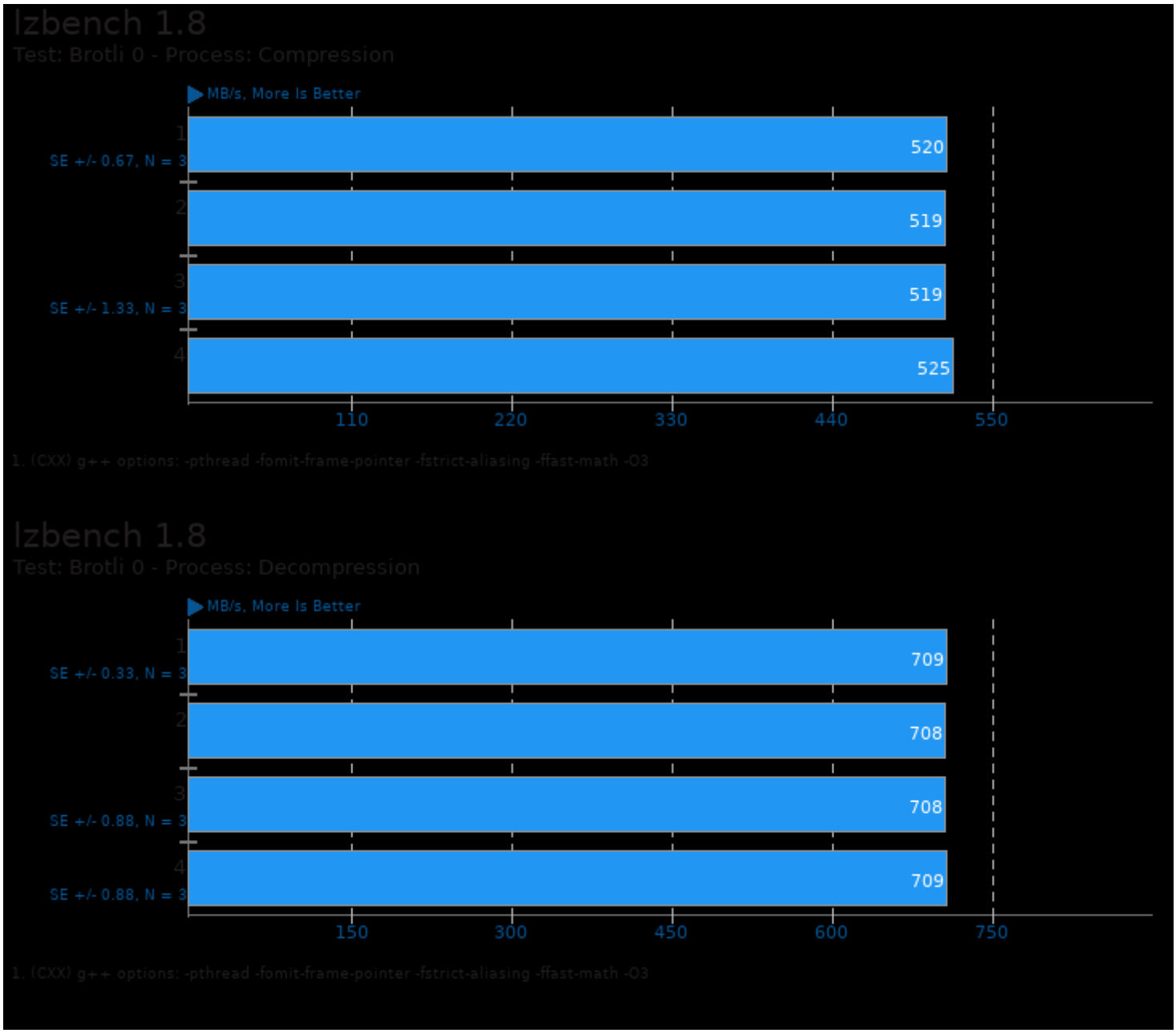
xeon sun

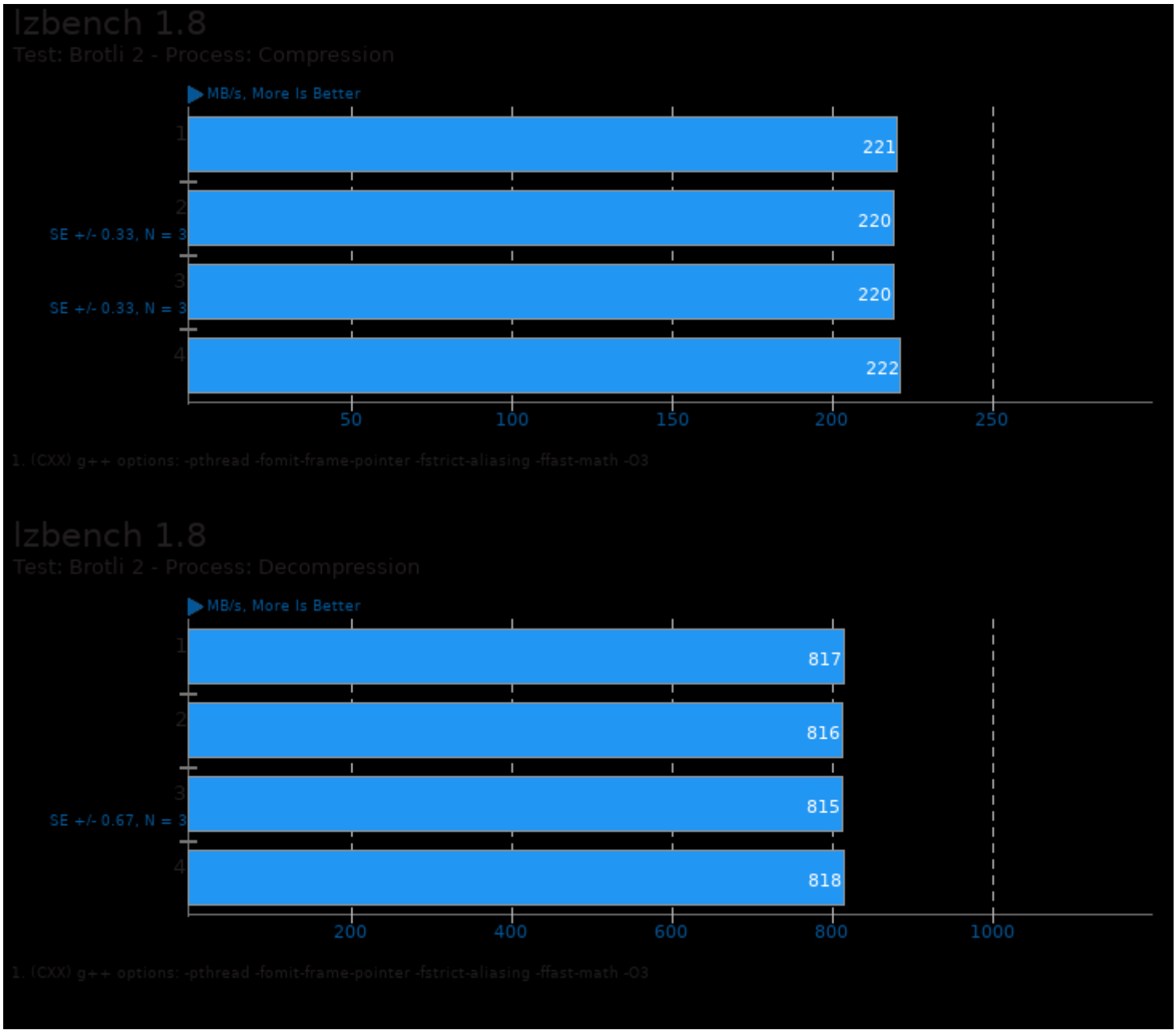

lzbench 1.8
Test: XZ 0 - Process: Compression
MB/s, More Is Better
SE +/- 0.33, N = 3
1
2
3
4
48
48
48
48
11
22
33
44
55
1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3
lzbench 1.8
Test: XZ 0 - Process: Decompression
MB/s, More Is Better
1
2
3
4
135
135
135
135
30
60
90
120
150
1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3


lzbench 1.8
Test: Zstd 1 - Process: Compression
MB/s, More Is Better
1
SE +/- 0.67, N = 3
580
2
579
3
SE +/- 0.33, N = 3
578
4
SE +/- 0.67, N = 3
576
130
260
390
520
650
1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3
lzbench 1.8
Test: Zstd 1 - Process: Decompression
MB/s, More Is Better
1
SE +/- 1.73, N = 3
1991
2
SE +/- 1.20, N = 3
1994
3
SE +/- 10.20, N = 3
1984
4
SE +/- 0.88, N = 3
1994
400
800
1200
1600
2000
1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

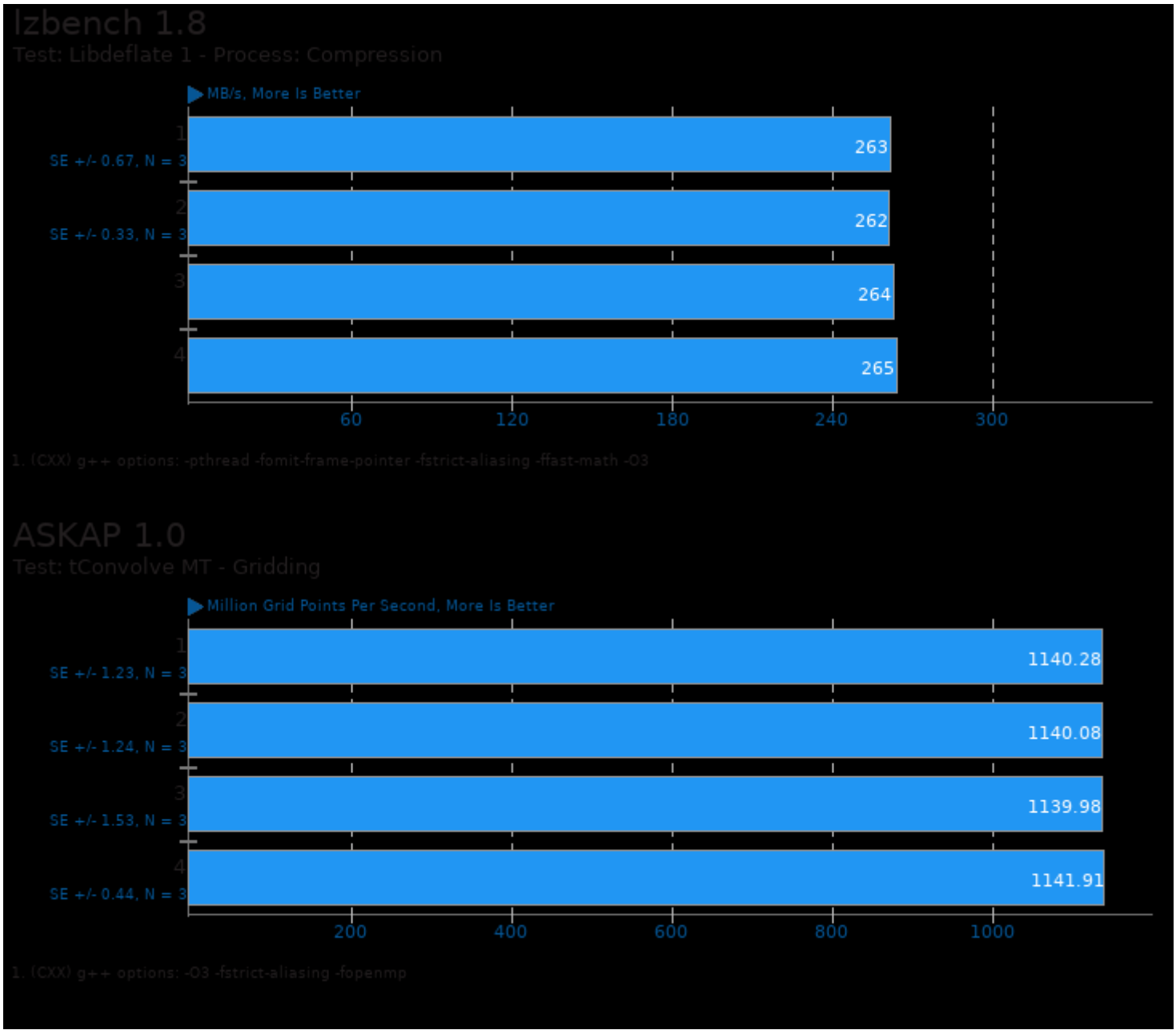

lzbench 1.8
Test: Zstd 8 - Process: Compression
MB/s, More Is Better
1
2
3
4
SE +/- 1.00, N = 3
100
101
100
100
20
40
60
80
100
1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3
lzbench 1.8
Test: Zstd 8 - Process: Decompression
MB/s, More Is Better
1
2
3
4
SE +/- 14.43, N = 3
SE +/- 4.81, N = 3
SE +/- 6.01, N = 3
SE +/- 17.07, N = 3
2146
2176
2165
2141
500
1000
1500
2000
2500
1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

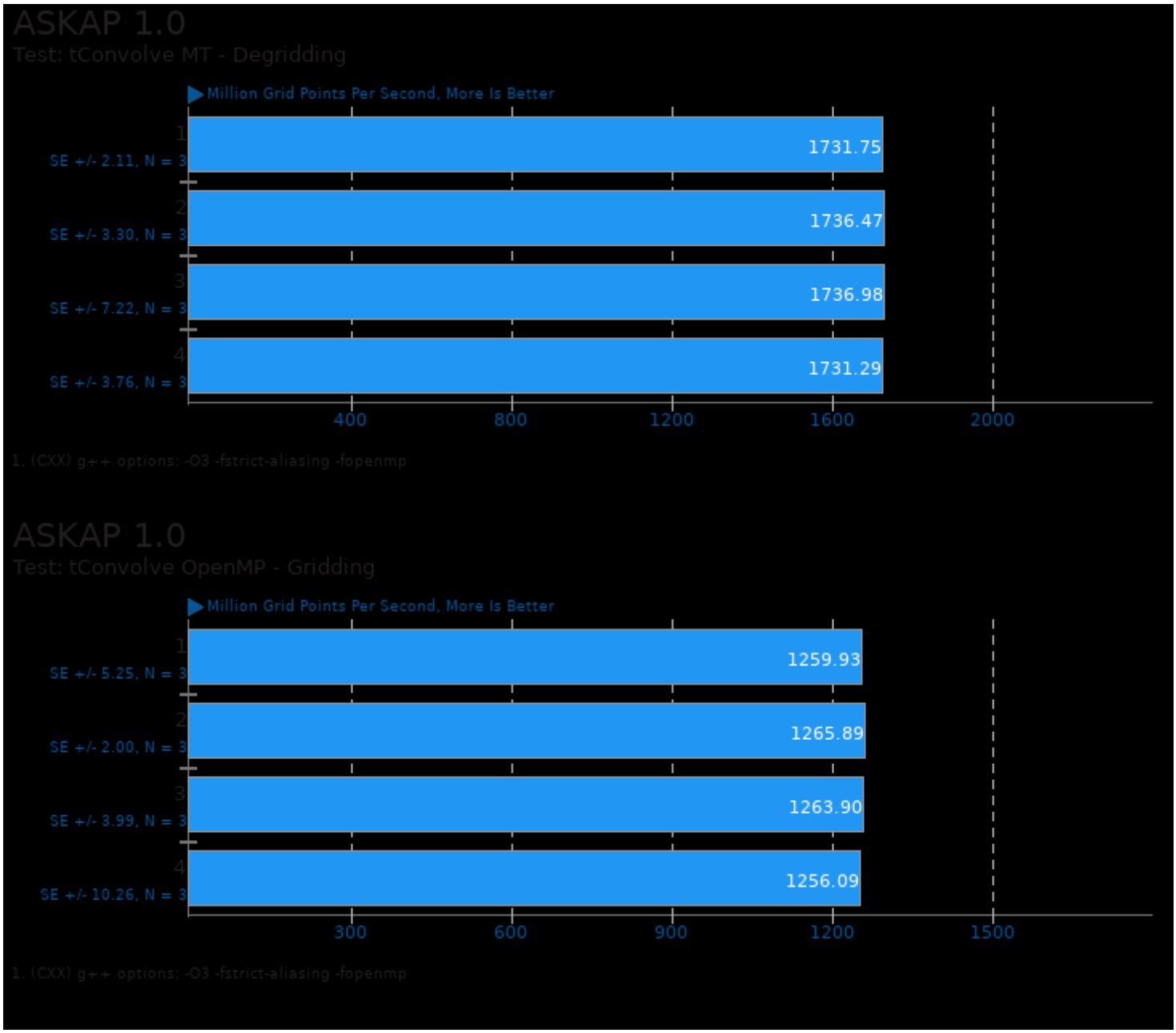

lzbench 1.8
Test: Crush 0 - Process: Compression
MB/s, More Is Better
1
2
3
4
117
117
117
116
SE +/- 0.58, N = 3
30
60
90
120
150
1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3
lzbench 1.8
Test: Crush 0 - Process: Decompression
MB/s, More Is Better
1
2
3
4
591
591
592
592
SE +/- 0.33, N = 3
SE +/- 0.67, N = 3
130
260
390
520
650
1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3


lzbench 1.8
Test: Brotli 0 - Process: Compression
MB/s, More Is Better
1
SE +/- 0.67, N = 3
520
2
519
3
SE +/- 1.33, N = 3
519
4
525
110
220
330
440
550
1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3
lzbench 1.8
Test: Brotli 0 - Process: Decompression
MB/s, More Is Better
1
SE +/- 0.33, N = 3
709
2
708
3
SE +/- 0.88, N = 3
708
4
SE +/- 0.88, N = 3
709
150
300
450
600
750
1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

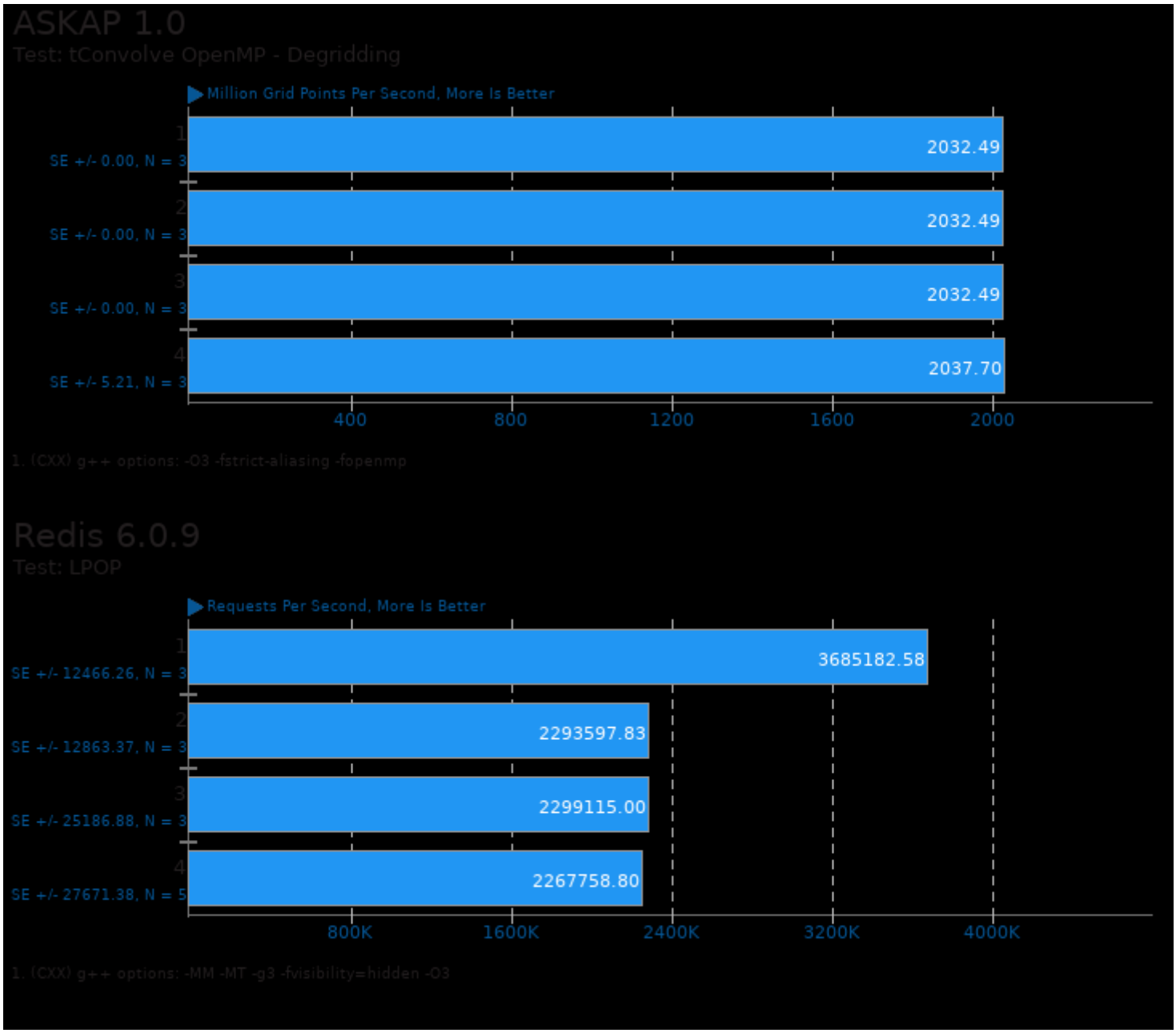

lzbench 1.8
Test: Brotli 2 - Process: Compression
MB/s, More Is Better
1
2
3
4
221
220
220
222
SE +/- 0.33, N = 3
SE +/- 0.33, N = 3
50
100
150
200
250
1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3
lzbench 1.8
Test: Brotli 2 - Process: Decompression
MB/s, More Is Better
1
2
3
4
817
816
815
818
SE +/- 0.67, N = 3
200
400
600
800
1000
1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

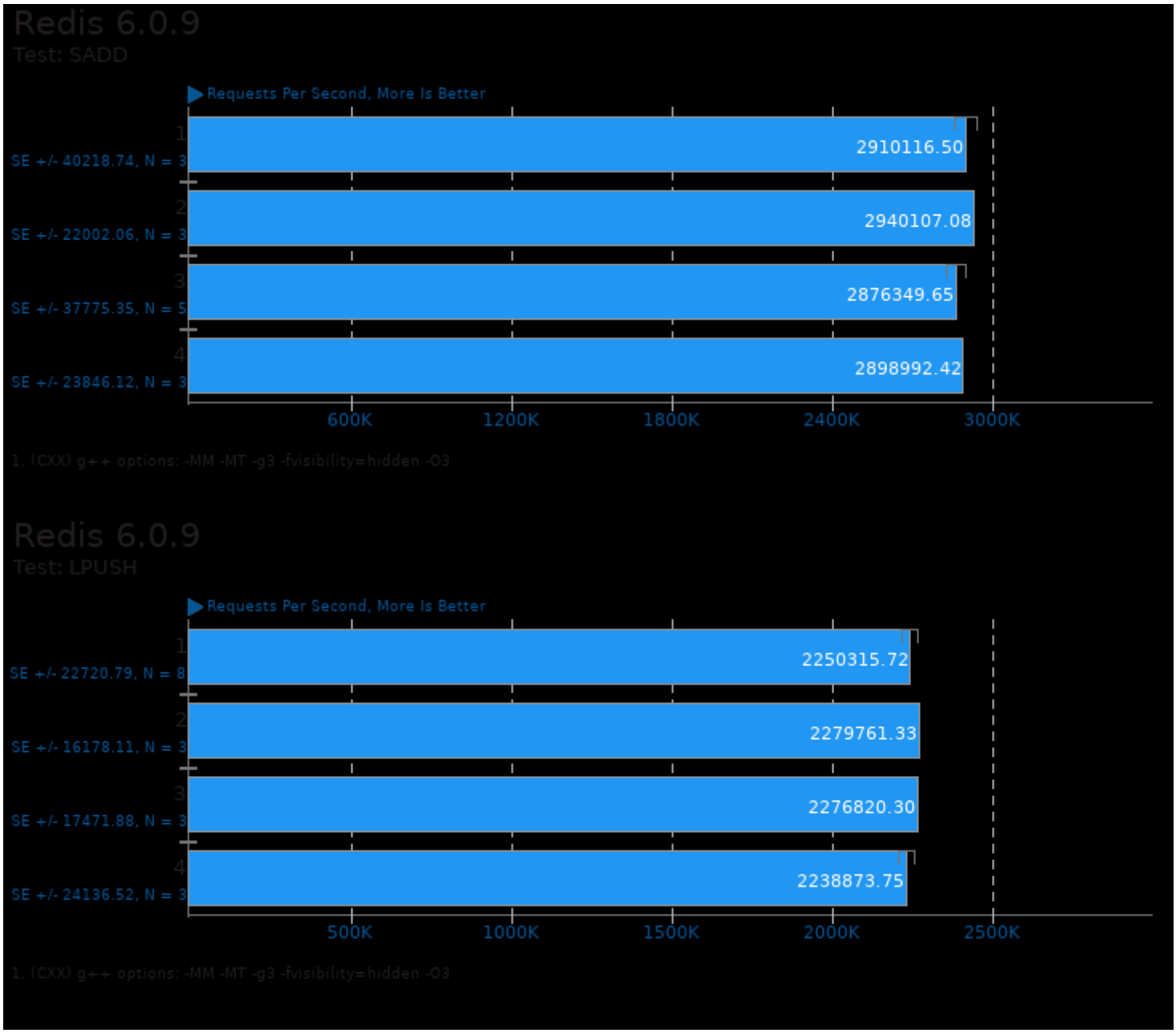
xeon sun

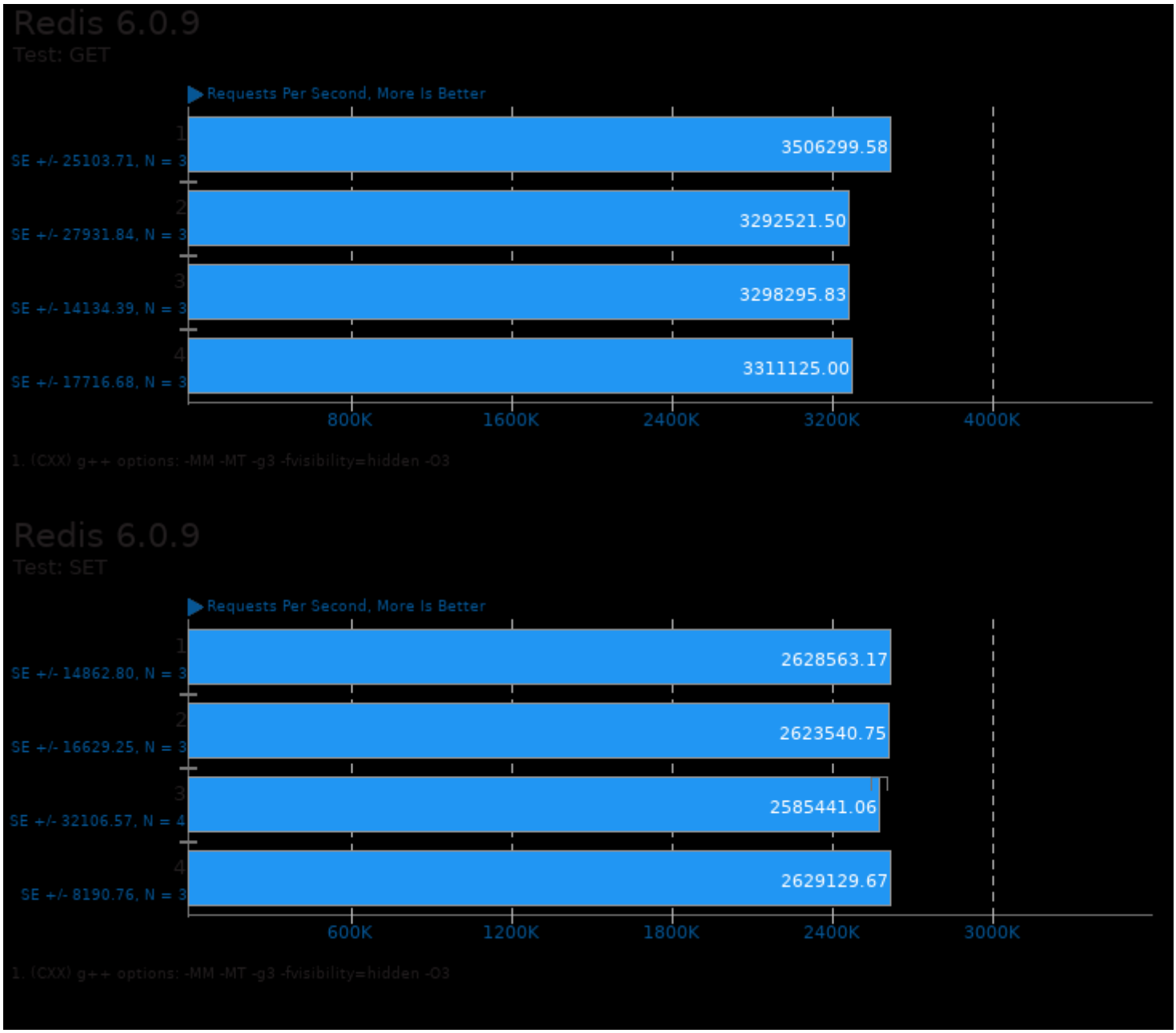

lzbench 1.8
Test: Libdeflate 1 - Process: Compression
MB/s, More Is Better
1
SE +/- 0.67, N = 3
263
2
SE +/- 0.33, N = 3
262
3
264
4
265
60
120
180
240
300
1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3
ASKAP 1.0
Test: tConvolve MT - Gridding
Million Grid Points Per Second, More Is Better
1
SE +/- 1.23, N = 3
1140.28
2
SE +/- 1.24, N = 3
1140.08
3
SE +/- 1.53, N = 3
1139.98
4
SE +/- 0.44, N = 3
1141.91
200
400
600
800
1000
1. (CXX) g++ options: -O3 -fstrict-aliasing -fopenmp

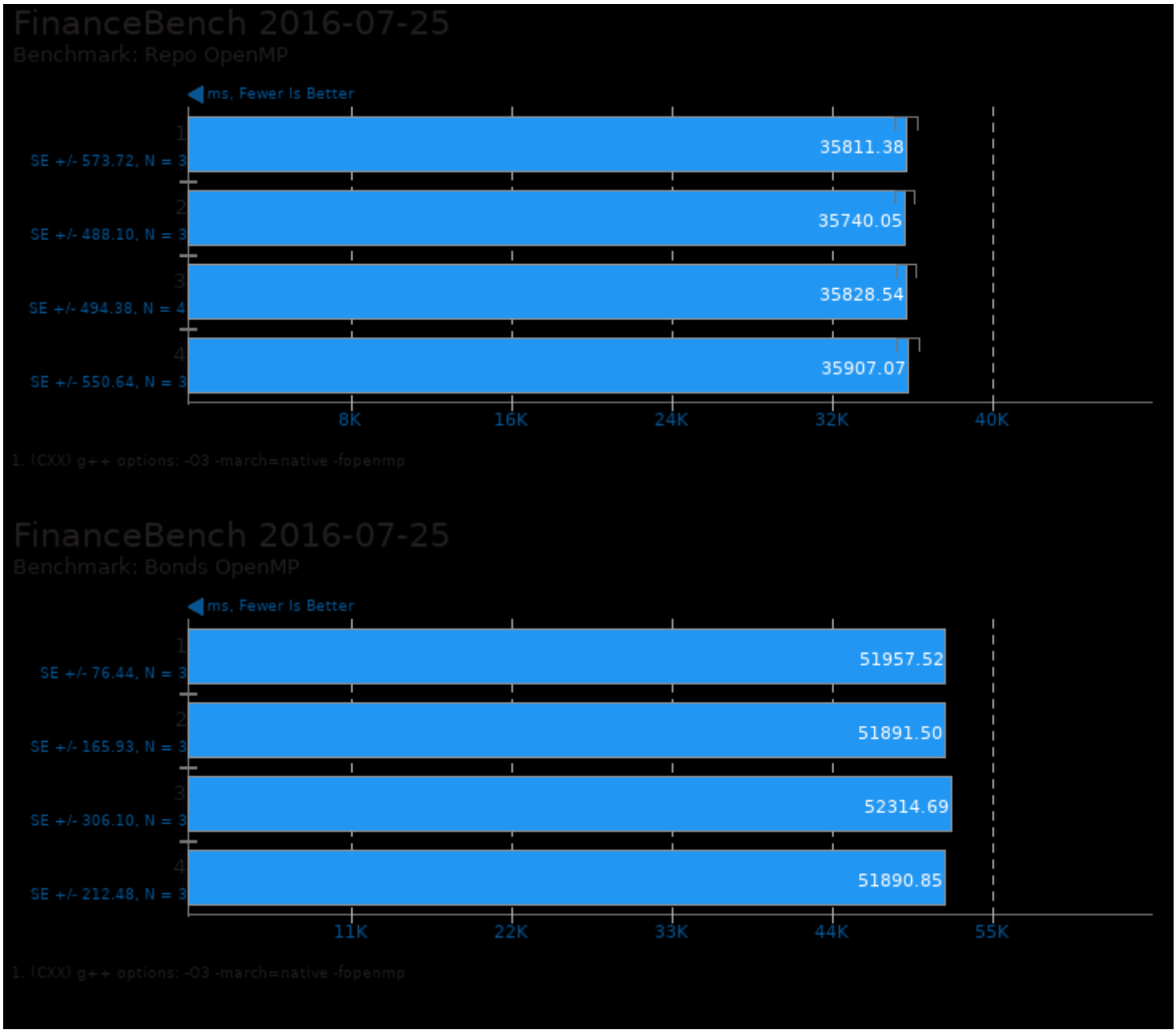

ASKAP 1.0
Test: tConvolve MT - Degridding
Million Grid Points Per Second, More Is Better
1
SE +/- 2.11, N = 3
1731.75
2
SE +/- 3.30, N = 3
1736.47
3
SE +/- 7.22, N = 3
1736.98
4
SE +/- 3.76, N = 3
1731.29
400
800
1200
1600
2000
1. (CXX) g++ options: -O3 -fstrict-aliasing -fopenmp
ASKAP 1.0
Test: tConvolve OpenMP - Gridding
Million Grid Points Per Second, More Is Better
1
SE +/- 5.25, N = 3
1259.93
2
SE +/- 2.00, N = 3
1265.89
3
SE +/- 3.99, N = 3
1263.90
4
SE +/- 10.26, N = 3
1256.09
300
600
900
1200
1500
1. (CXX) g++ options: -O3 -fstrict-aliasing -fopenmp

xeon sun


ASKAP 1.0
Test: tConvolve OpenMP - Degridding
Million Grid Points Per Second, More Is Better
1
SE +/- 0.00, N = 3
2032.49
2
SE +/- 0.00, N = 3
2032.49
3
SE +/- 0.00, N = 3
2032.49
4
SE +/- 5.21, N = 3
2037.70
400
800
1200
1600
2000
1. (CXX) g++ options: -O3 -fstrict-aliasing -fopenmp
Redis 6.0.9
Test: LPOP
Requests Per Second, More Is Better
1
SE +/- 12466.26, N = 3
3685182.58
2
SE +/- 12863.37, N = 3
2293597.83
3
SE +/- 25186.88, N = 3
2299115.00
4
SE +/- 27671.38, N = 5
2267758.80
800K
1600K
2400K
3200K
4000K
1. (CXX) g++ options: -MM -MT -g3 -fvisibility=hidden -O3

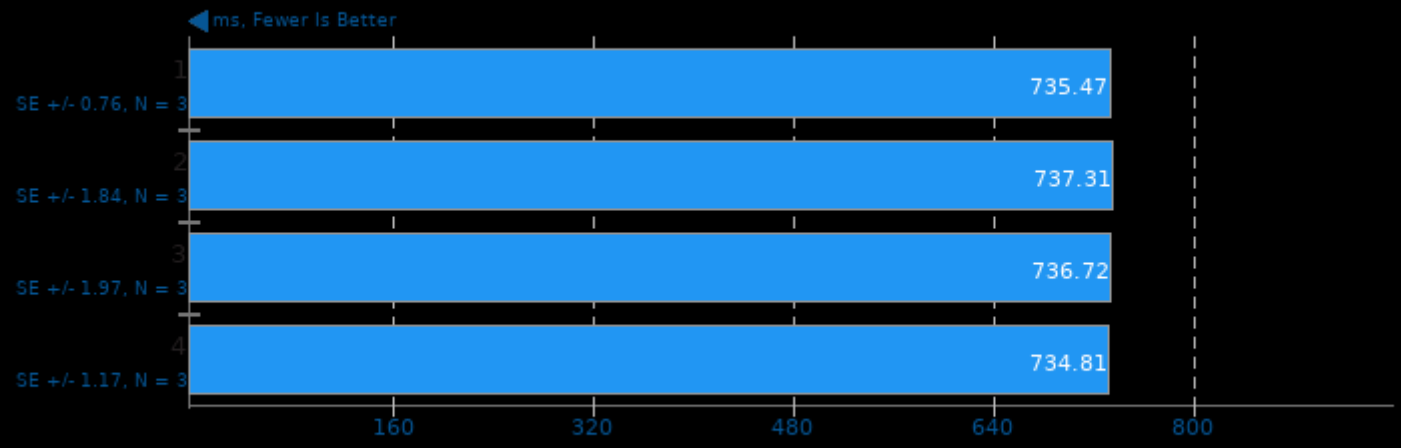

Redis 6.0.9
Test: SADD
Requests Per Second, More Is Better
1
SE +/- 40218.74, N = 3
2910116.50
2
SE +/- 22002.06, N = 3
2940107.08
3
SE +/- 37775.35, N = 5
2876349.65
4
SE +/- 23846.12, N = 3
2898992.42
600K
1200K
1800K
2400K
3000K
1. (CXX) g++ options: -MM -MT -g3 -fvisibility=hidden -O3
Redis 6.0.9
Test: LPUSH
Requests Per Second, More Is Better
1
SE +/- 22720.79, N = 8
2250315.72
2
SE +/- 16178.11, N = 3
2279761.33
3
SE +/- 17471.88, N = 3
2276820.30
4
SE +/- 24136.52, N = 3
2238873.75
500K
1000K
1500K
2000K
2500K
1. (CXX) g++ options: -MM -MT -g3 -fvisibility=hidden -O3


Redis 6.0.9
Test: GET
Requests Per Second, More Is Better
1
SE +/- 25103.71, N = 3
3506299.58
2
SE +/- 27931.84, N = 3
3292521.50
3
SE +/- 14134.39, N = 3
3298295.83
4
SE +/- 17716.68, N = 3
3311125.00
800K
1600K
2400K
3200K
4000K
1. (CXX) g++ options: -MM -MT -g3 -fvisibility=hidden -O3
Redis 6.0.9
Test: SET
Requests Per Second, More Is Better
1
SE +/- 14862.80, N = 3
2628563.17
2
SE +/- 16629.25, N = 3
2623540.75
3
SE +/- 32106.57, N = 4
2585441.06
4
SE +/- 8190.76, N = 3
2629129.67
600K
1200K
1800K
2400K
3000K
1. (CXX) g++ options: -MM -MT -g3 -fvisibility=hidden -O3


FinanceBench 2016-07-25
Benchmark: Repo OpenMP
ms, Fewer Is Better
1
SE +/- 573.72, N = 3
35811.38
2
SE +/- 488.10, N = 3
35740.05
3
SE +/- 494.38, N = 4
35828.54
4
SE +/- 550.64, N = 3
35907.07
8K
16K
24K
32K
40K
1. (CXX) g++ options: -O3 -march=native -fopenmp
FinanceBench 2016-07-25
Benchmark: Bonds OpenMP
ms, Fewer Is Better
1
SE +/- 76.44, N = 3
51957.52
2
SE +/- 165.93, N = 3
51891.50
3
SE +/- 306.10, N = 3
52314.69
4
SE +/- 212.48, N = 3
51890.85
11K
22K
33K
44K
55K
1. (CXX) g++ options: -O3 -march=native -fopenmp

FinanceBench 2016-07-25

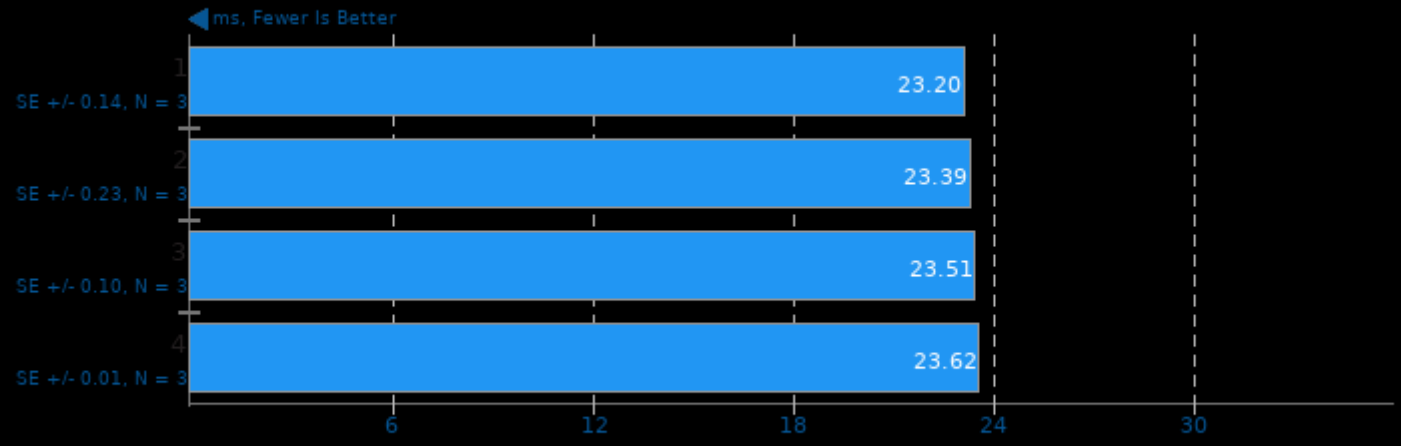
Benchmark: Monte-Carlo OpenCL



1. (CXX) g++ options: -O3 -march=native -fopenmp

FinanceBench 2016-07-25

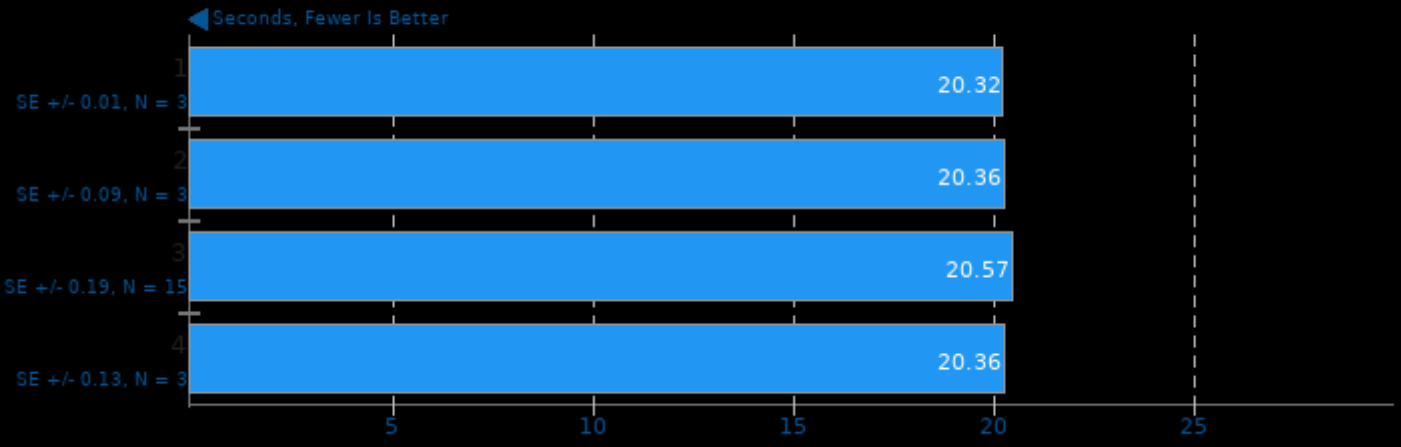
Benchmark: Black-Scholes OpenCL



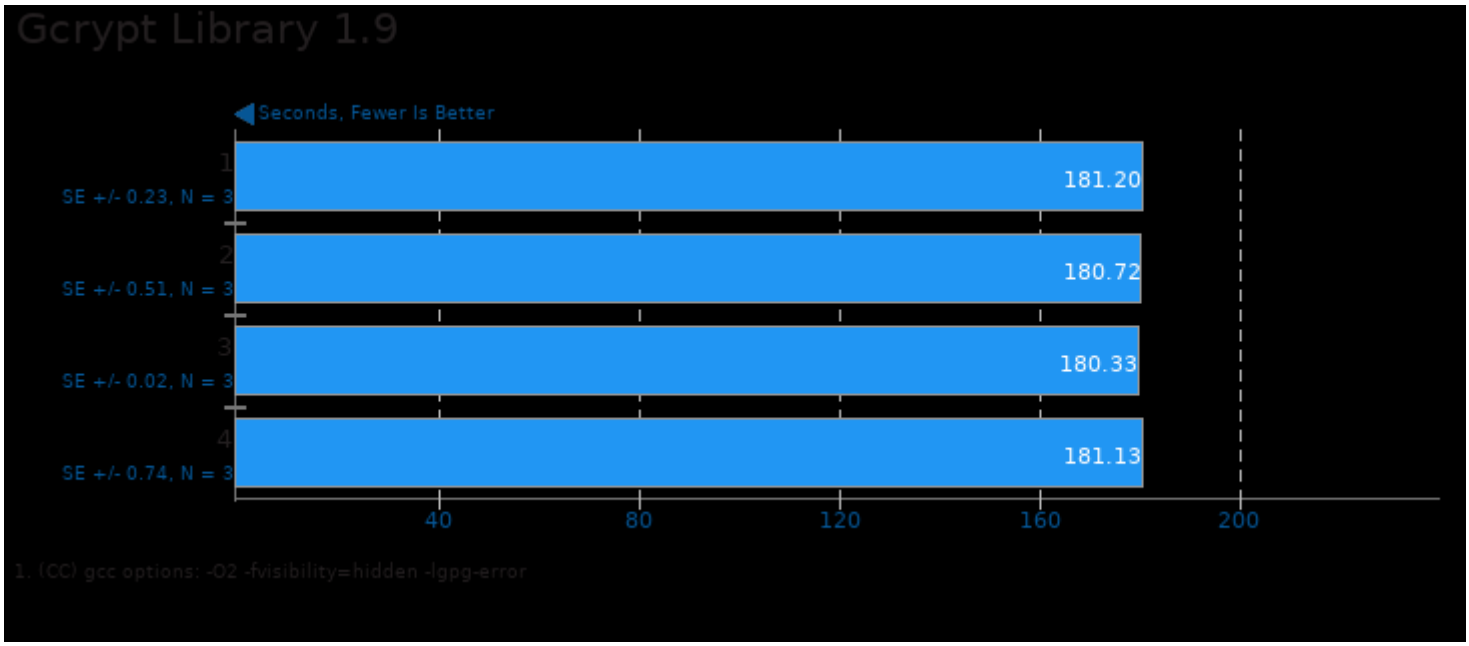
1. (CXX) g++ options: -O3 -march=native -fopenmp

Cython Benchmark 0.29.21

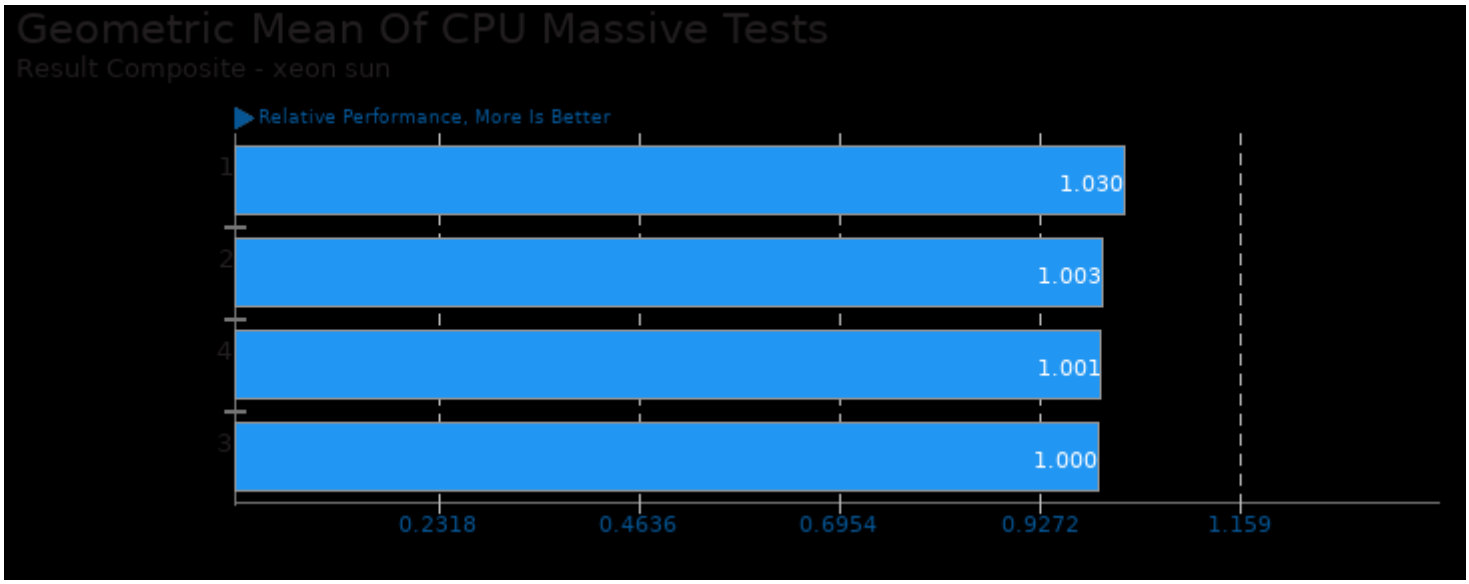
Test: N-Queens



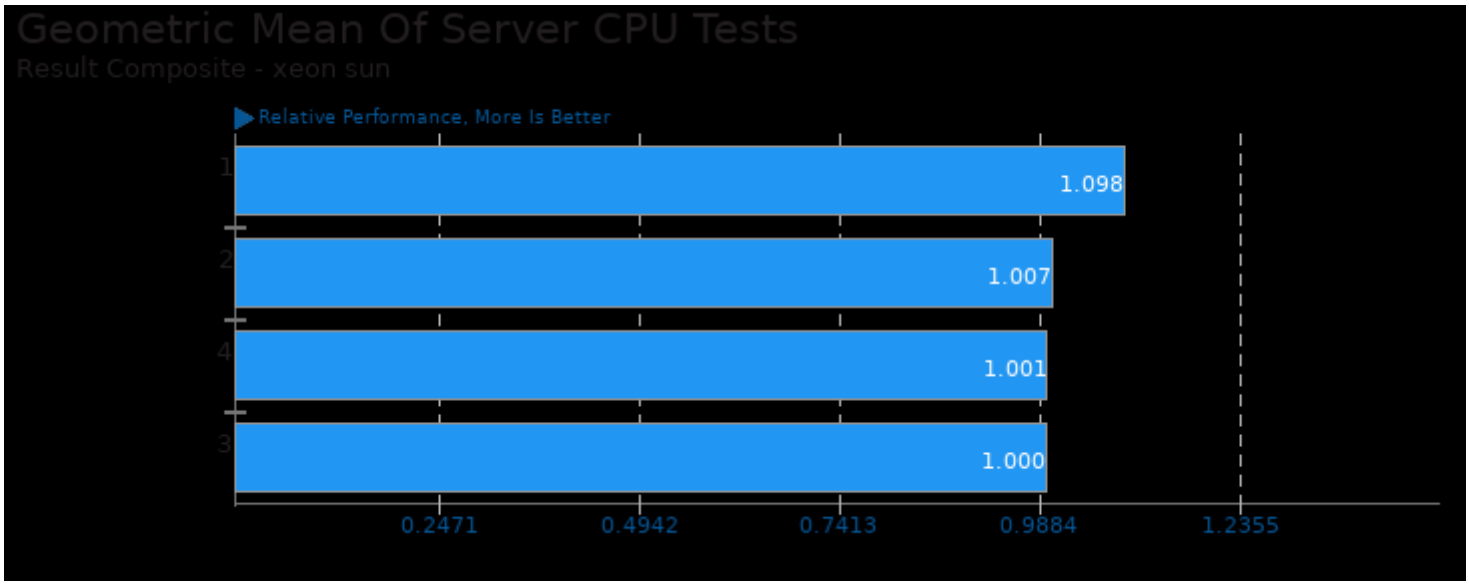
xeon sun


Gcrypt Library 1.9
Seconds, Fewer Is Better
1
SE +/- 0.23, N = 3
181.20
2
SE +/- 0.51, N = 3
180.72
3
SE +/- 0.02, N = 3
180.33
4
SE +/- 0.74, N = 3
181.13
40
80
120
160
200
1. (CC) gcc options: -O2 -fvisibility=hidden -lgpg-error

These geometric means are based upon test groupings / test suites for this result file.

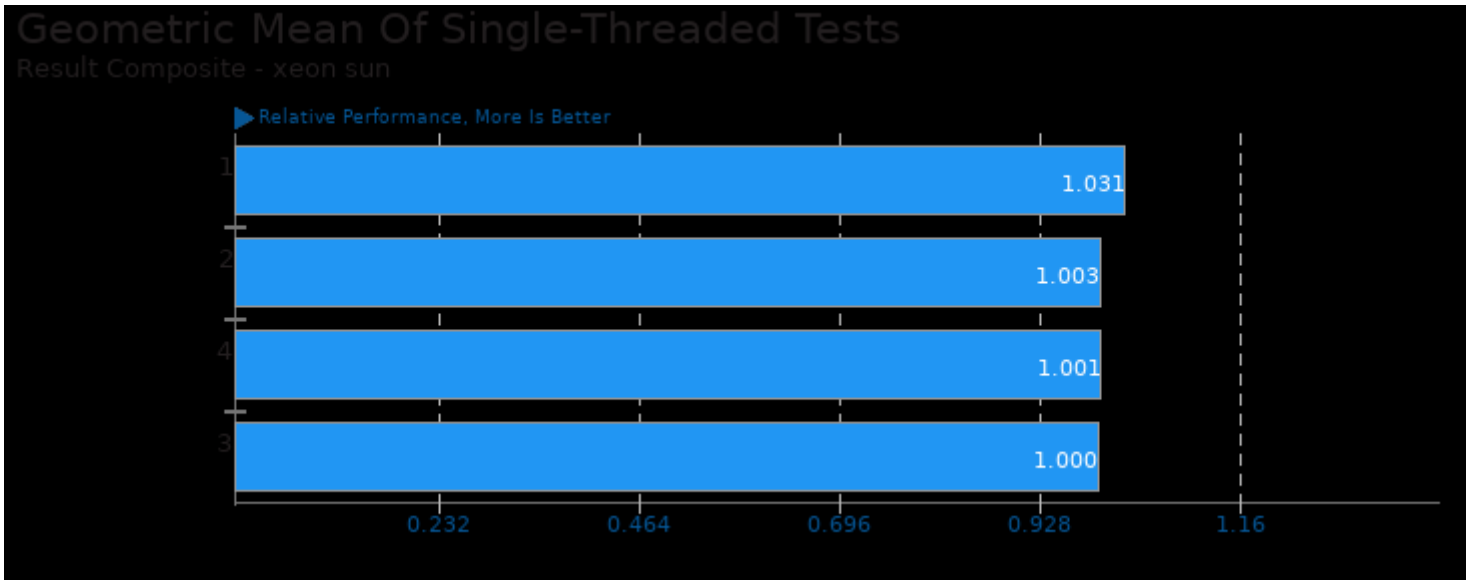


Geometric mean based upon tests: pts/cython-bench, pts/lzbench and pts/redis



Geometric mean based upon tests: pts/redis and pts/cython-bench

xeon sun



Geometric mean based upon tests: pts/lzbench and pts/redis

This file was automatically generated via the Phoronix Test Suite benchmarking software on Friday, 29 March 2024 03:06.