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Intel Core i9-13900K testing with a ASUS PRIME Z790-P WIFI (0809 BIOS) and AMD Radeon RX 6800 16GB on Ubuntu 23.04 via the Phoronix Test Suite.

Automated Executive Summary

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

Based on the geometric mean of all complete results, the fastest (a) was 1.001x the speed of the slowest (d). a was 1x the speed of b, c was 0.999x the speed of a, d was 1x the speed of c.

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

Darmstadt Automotive Parallel Heterogeneous Suite (Backend: OpenMP - Kernel: Points2Image) at 1.041x
Darmstadt Automotive Parallel Heterogeneous Suite (Backend: OpenMP - Kernel: Euclidean Cluster) at 1.031x
John The Ripper (Test: WPA PSK) at 1.013x
Darmstadt Automotive Parallel Heterogeneous Suite (Backend: OpenMP - Kernel: NDT Mapping) at 1.008x
Glibc Benchmarks (Benchmark: modf) at 1.007x
John The Ripper (Test: bcrypt) at 1.007x
Google Draco (Model: Church Facade) at 1.007x
John The Ripper (Test: MD5) at 1.006x
Glibc Benchmarks (Benchmark: cos) at 1.006x

Glibc Benchmarks (Benchmark: atanh) at 1.006x.

Test Systems:

a

b

c

d

Processor: Intel Core i9-13900K @ 4.00GHz (24 Cores / 32 Threads), Motherboard: ASUS PRIME Z790-P WIFI (0809 BIOS), Chipset: Intel Device 7a27, Memory: 32GB, Disk: 1000GB Western Digital WDS100T1X0E-00AFY0, Graphics: AMD Radeon RX 6800 16GB (2475/1000MHz), Audio: Realtek ALC897, Monitor: ASUS VP28U, Network: Intel Device 7a70

OS: Ubuntu 23.04, Kernel: 5.19.0-21-generic (x86_64), Desktop: GNOME Shell 43.2, Display Server: X Server + Wayland, OpenGL: 4.6 Mesa 22.2.5 (LLVM 15.0.6 DRM 3.47), Compiler: GCC 12.2.0, File-System: ext4, Screen Resolution: 3840x2160

Kernel Notes: Transparent Huge Pages: madvise
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-cet --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,d,fortran,objc,obj-c++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-defaulted --enable-offload-targets=nvptx-none=/build/gcc-12-PG9DkL/gcc-12-12.2.0/debian/tmp-nvptx/usr,amdgcn-amdhsa=/build/gcc-12-PG9DkL/gcc-12-12.2.0/debian/tmp-gcn/usr --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: intel_pstate powersave (EPP: balance_performance) - CPU Microcode: 0x112 - Thermald 2.5.2
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + mmio_stale_data: Not affected + retbleed: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Enhanced IBRS IBPB: conditional RSB filling PBRSB-eIBRS: SW sequence + srbds: Not affected + tsx_async_abort: Not affected

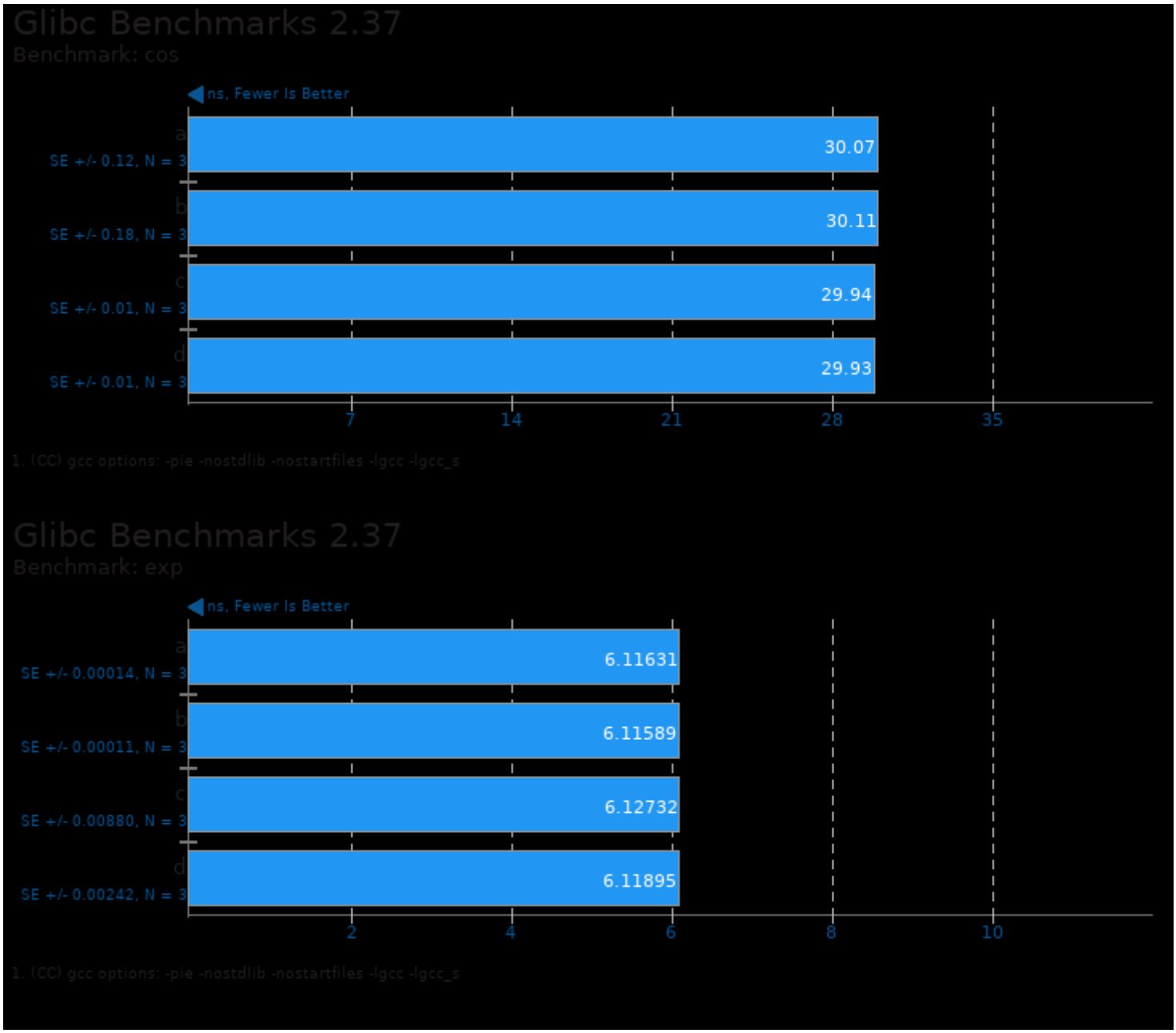
	a	b	c	d
Glibc Benchmarks - cos (ns)	30.0715	**30.1127**	29.9427	**29.9276**
Normalized	99.52%	99.39%	99.95%	100%
Standard Deviation	0.7%	1%	0.1%	0.1%
Glibc Benchmarks - exp (ns)	6.11631	**6.11589**	**6.12732**	6.11895
Normalized	99.99%	100%	99.81%	99.95%
Standard Deviation	0%	0%	0.2%	0.1%
Glibc Benchmarks - ffs (ns)	2.65023	2.64995	**2.65085**	**2.64927**
Normalized	99.96%	99.97%	99.94%	100%
Standard Deviation	0%	0%	0%	0%
Glibc Benchmarks - pow (ns)	**13.9842**	13.9799	**13.9688**	13.9810
Normalized	99.89%	99.92%	100%	99.91%
Standard Deviation	0%	0.1%	0%	0%

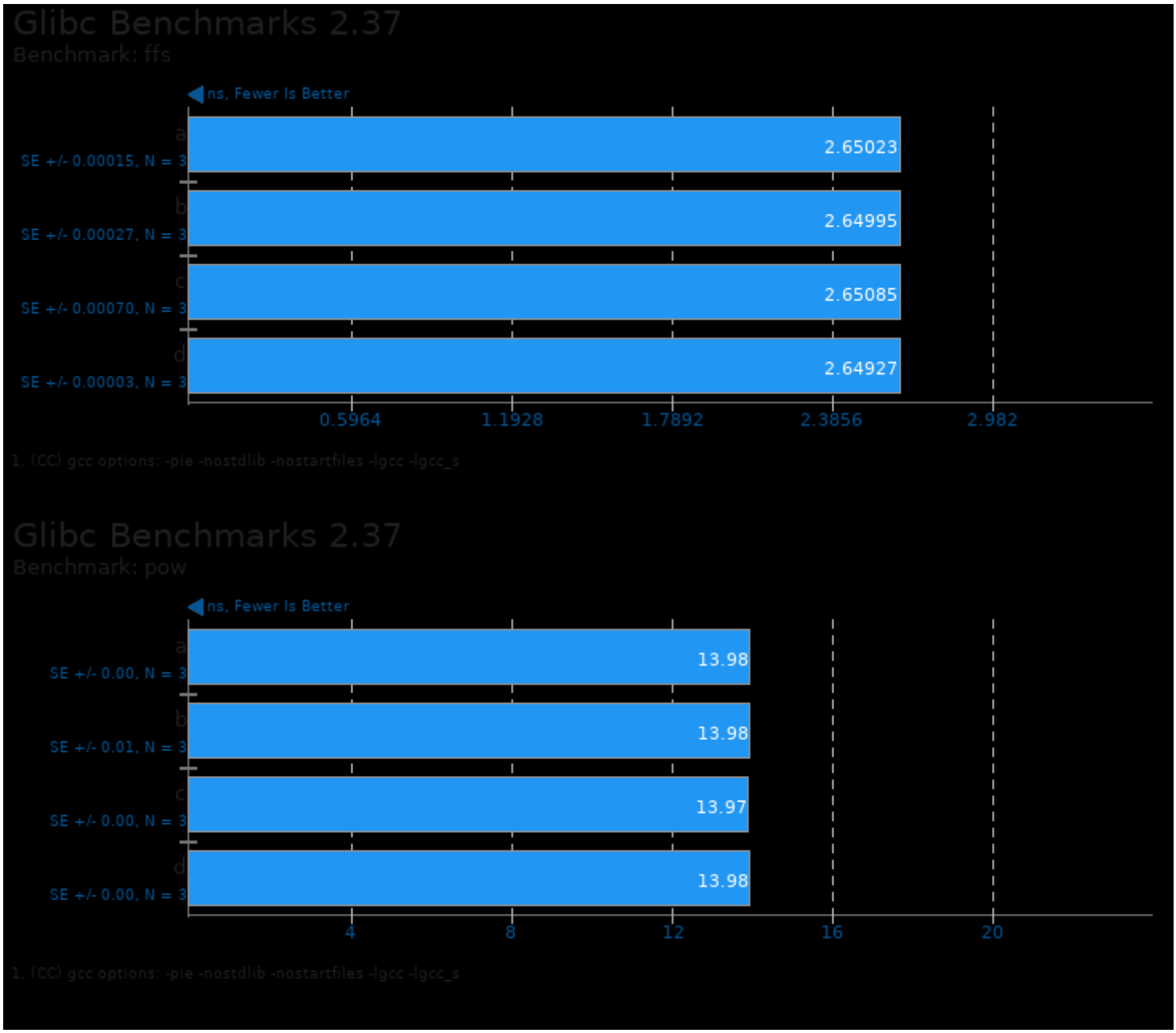
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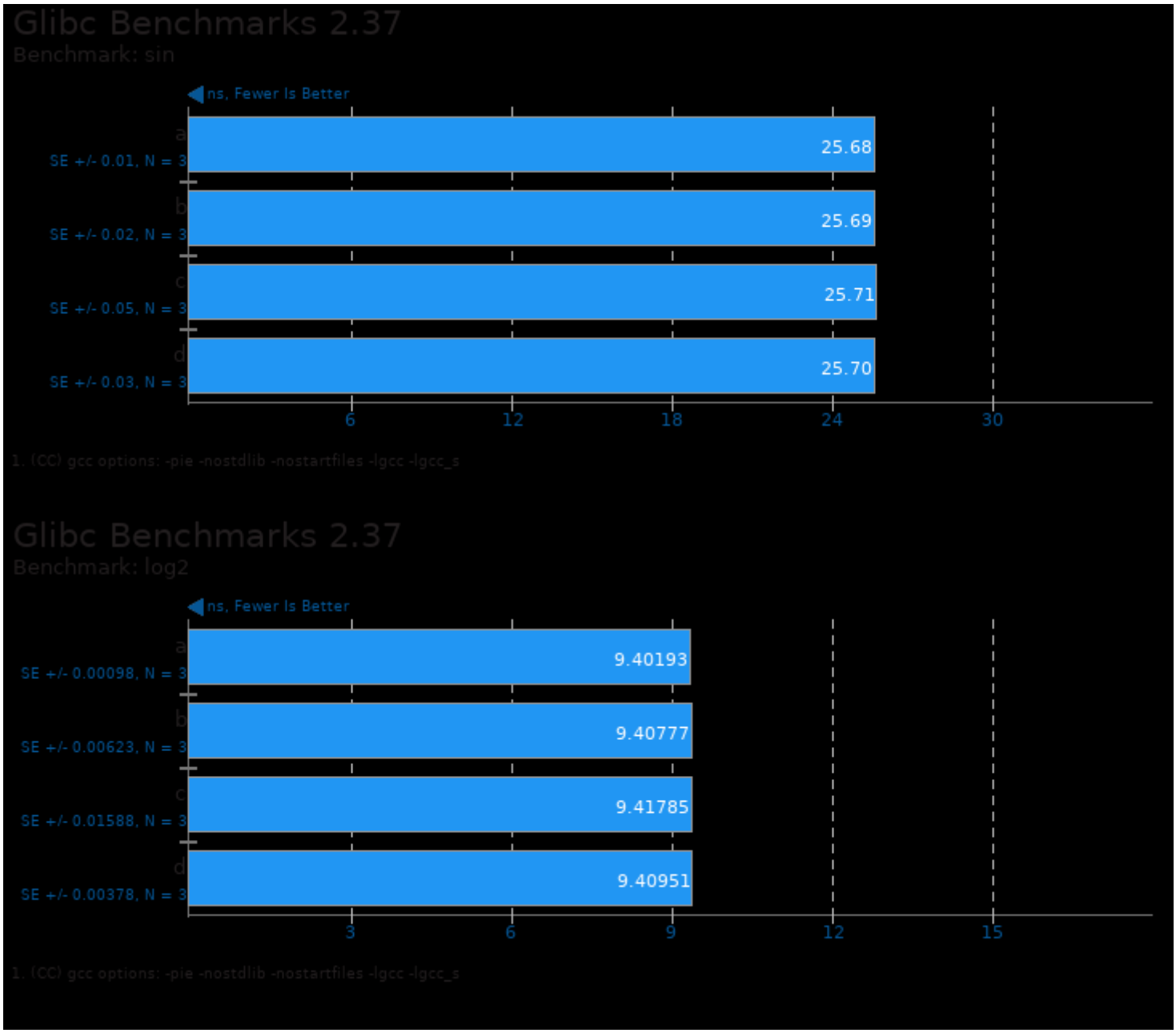
Glibc Benchmarks - sin (ns)	**25.6762**	25.6881	**25.7118**	25.7016
Normalized	100%	99.95%	99.86%	99.9%
Standard Deviation	0.1%	0.1%	0.3%	0.2%
Glibc Benchmarks - log2 (ns)	**9.40193**	9.40777	**9.41785**	9.40951
Normalized	100%	99.94%	99.83%	99.92%
Standard Deviation	0%	0.1%	0.3%	0.1%
Glibc Benchmarks - modf (ns)	**2.77935**	**2.75912**	2.76336	2.77140
Normalized	99.27%	100%	99.85%	99.56%
Standard Deviation	0.4%	0.7%	0.5%	0.5%
Glibc Benchmarks - sinh (ns)	9.74243	**9.74164**	**9.79690**	9.74603
Normalized	99.99%	100%	99.44%	99.95%
Standard Deviation	0%	0.1%	0.4%	0.1%
Glibc Benchmarks - sqrt (ns)	**2.95486**	**2.95256**	2.95292	2.95333
Normalized	99.92%	100%	99.99%	99.97%
Standard Deviation	0.2%	0%	0%	0%
Glibc Benchmarks - tanh (ns)	**15.3473**	15.3317	15.3379	**15.3306**
Normalized	99.89%	99.99%	99.95%	100%
Standard Deviation	0.1%	0%	0%	0.1%
Glibc Benchmarks - asinh (ns)	11.8703	**11.8658**	**11.8720**	11.8669
Normalized	99.96%	100%	99.95%	99.99%
Standard Deviation	0%	0%	0.1%	0%
Glibc Benchmarks - atanh (ns)	**15.7427**	15.7516	**15.8367**	15.7431
Normalized	100%	99.94%	99.41%	100%
Standard Deviation	0%	0.1%	1%	0%
Glibc Benchmarks - ffsll (ns)	2.65265	**2.65523**	**2.64969**	2.65076
Normalized	99.89%	99.79%	100%	99.96%
Standard Deviation	0.1%	0.3%	0.1%	0.1%
Glibc Benchmarks - sincos (ns)	14.9808	**14.9542**	14.9640	**14.9816**
Normalized	99.82%	100%	99.93%	99.82%
Standard Deviation	0.2%	0%	0.1%	0.3%
Glibc Benchmarks - pthread_once	1.42567	**1.42467**	**1.42640**	1.42551
Normalized	99.93%	100%	99.88%	99.94%
Standard Deviation	0%	0.1%	0.2%	0.1%
John The Ripper - bcrypt (Real C/S)	39831	39937	**40096**	**39815**
Normalized	99.34%	99.6%	100%	99.3%
Standard Deviation	2.2%	2.4%	2.2%	1.6%
John The Ripper - WPA PSK (Real	**59227**	59372	59781	**60004**
Normalized	98.71%	98.95%	99.63%	100%
Standard Deviation	0.3%	0.1%	0.6%	1.3%
John The Ripper - Blowfish (Real C/S)	39382	**39248**	**39445**	39387
Normalized	99.84%	99.5%	100%	99.85%
Standard Deviation	0.3%	0.1%	0.2%	0.5%
John The Ripper - HMAC-SHA512 (Real C/S)	**33420667**	33436333	33452667	**33458667**
Normalized	99.89%	99.93%	99.98%	100%
Standard Deviation	0.2%	0.1%	0.1%	0.1%
John The Ripper - MD5 (Real C/S)	1476667	**1475333**	1480000	**1484667**
Normalized	99.46%	99.37%	99.69%	100%
Standard Deviation	0.8%	0.9%	0.4%	0.4%
Darmstadt Automotive Parallel Heterogeneous Suite - OpenMP - NDT Mapping (Test Cases/min)	1481	1473	**1472**	**1484**
Normalized	99.77%	99.25%	99.19%	100%
Standard Deviation	0.8%	0.5%	1%	0.4%

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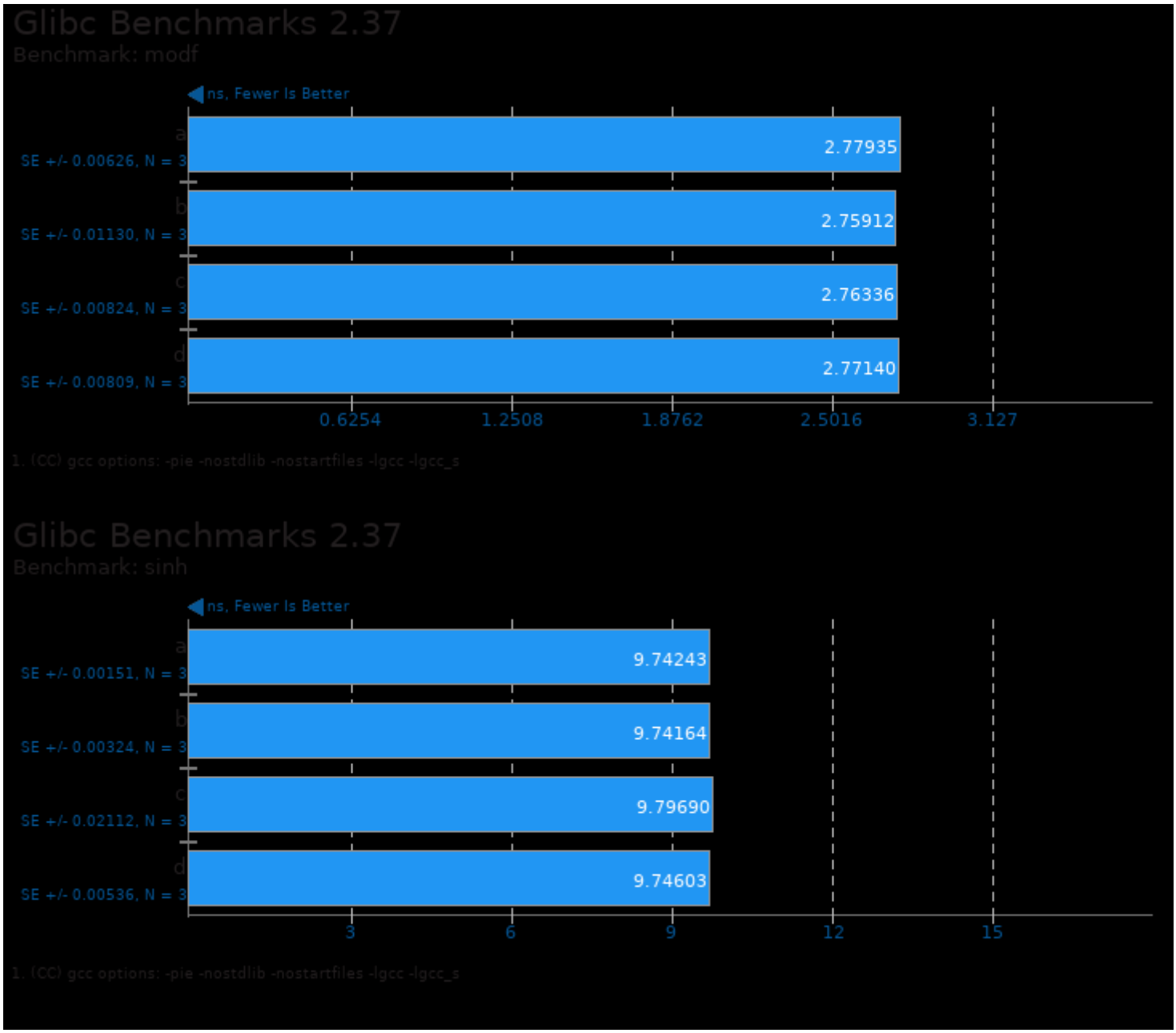
Darmstadt Automotive Parallel Heterogeneous Suite - OpenMP - Points2Image (Test Cases/min)	**33500**	33097	**32195**	32700
Normalized	100%	98.8%	96.1%	97.61%
Standard Deviation	0.4%	2.5%	1.4%	0.5%
Darmstadt Automotive Parallel Heterogeneous Suite - OpenMP - Euclidean Cluster (Test Cases/min)	2264	2273	**2279**	**2210**
Normalized	99.34%	99.73%	100%	96.98%
Standard Deviation	0.5%	0.2%	0.5%	0.2%
Google Draco - Lion (ms)	3079	3070	**3068**	**3082**
Normalized	99.64%	99.93%	100%	99.55%
Standard Deviation	1.2%	0.1%	0.2%	0.1%
Google Draco - Church Facade (ms)	4324	**4321**	4330	**4351**
Normalized	99.93%	100%	99.79%	99.31%
Standard Deviation	0.2%	0.3%	0.2%	0.4%

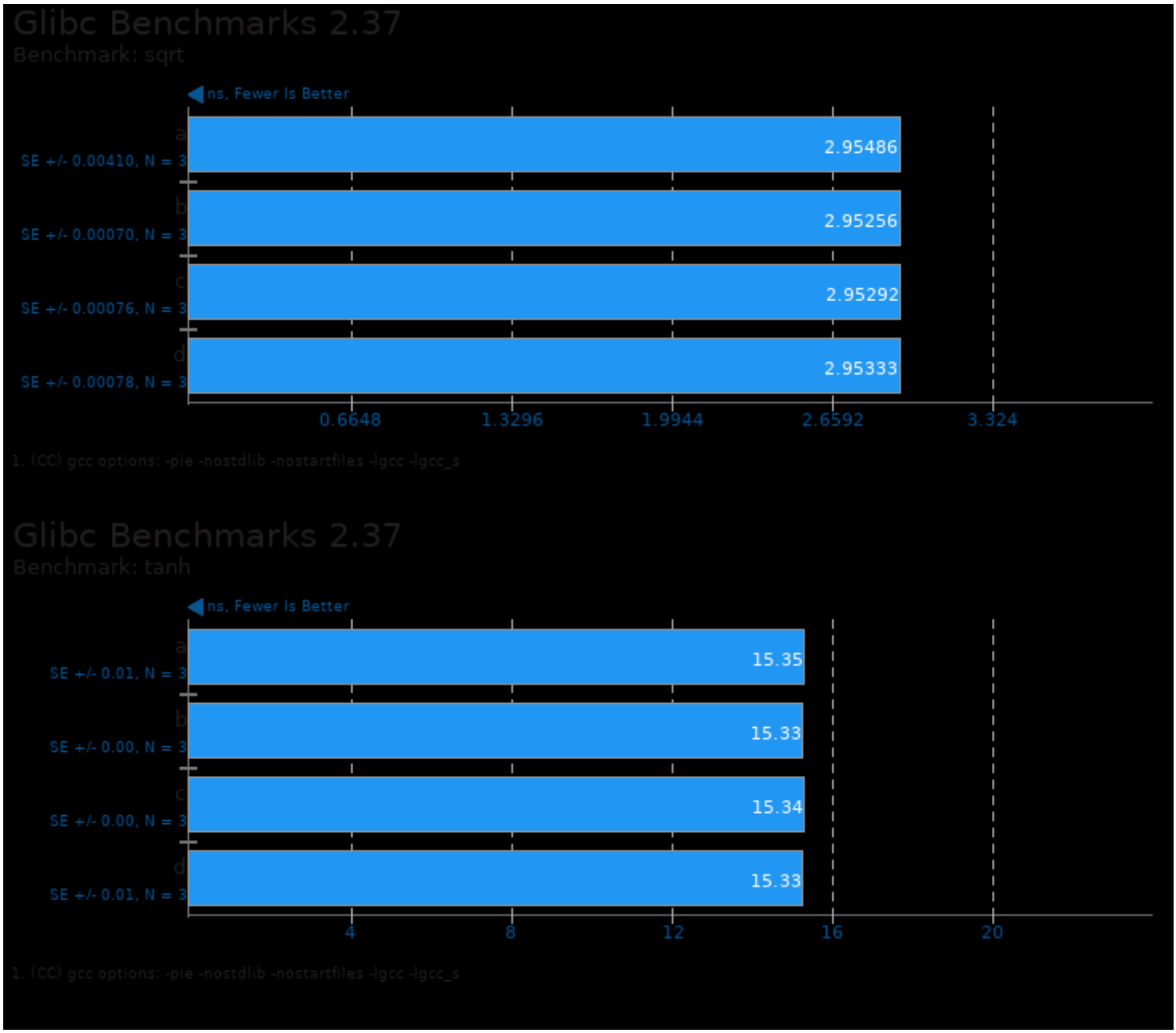

Glibc Benchmarks 2.37
Benchmark: cos
ns, Fewer Is Better
a
SE +/- 0.12, N = 3
30.07
b
SE +/- 0.18, N = 3
30.11
c
SE +/- 0.01, N = 3
29.94
d
SE +/- 0.01, N = 3
29.93
7
14
21
28
35
1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s
Glibc Benchmarks 2.37
Benchmark: exp
ns, Fewer Is Better
a
SE +/- 0.00014, N = 3
6.11631
b
SE +/- 0.00011, N = 3
6.11589
c
SE +/- 0.00880, N = 3
6.12732
d
SE +/- 0.00242, N = 3
6.11895
2
4
6
8
10
1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s

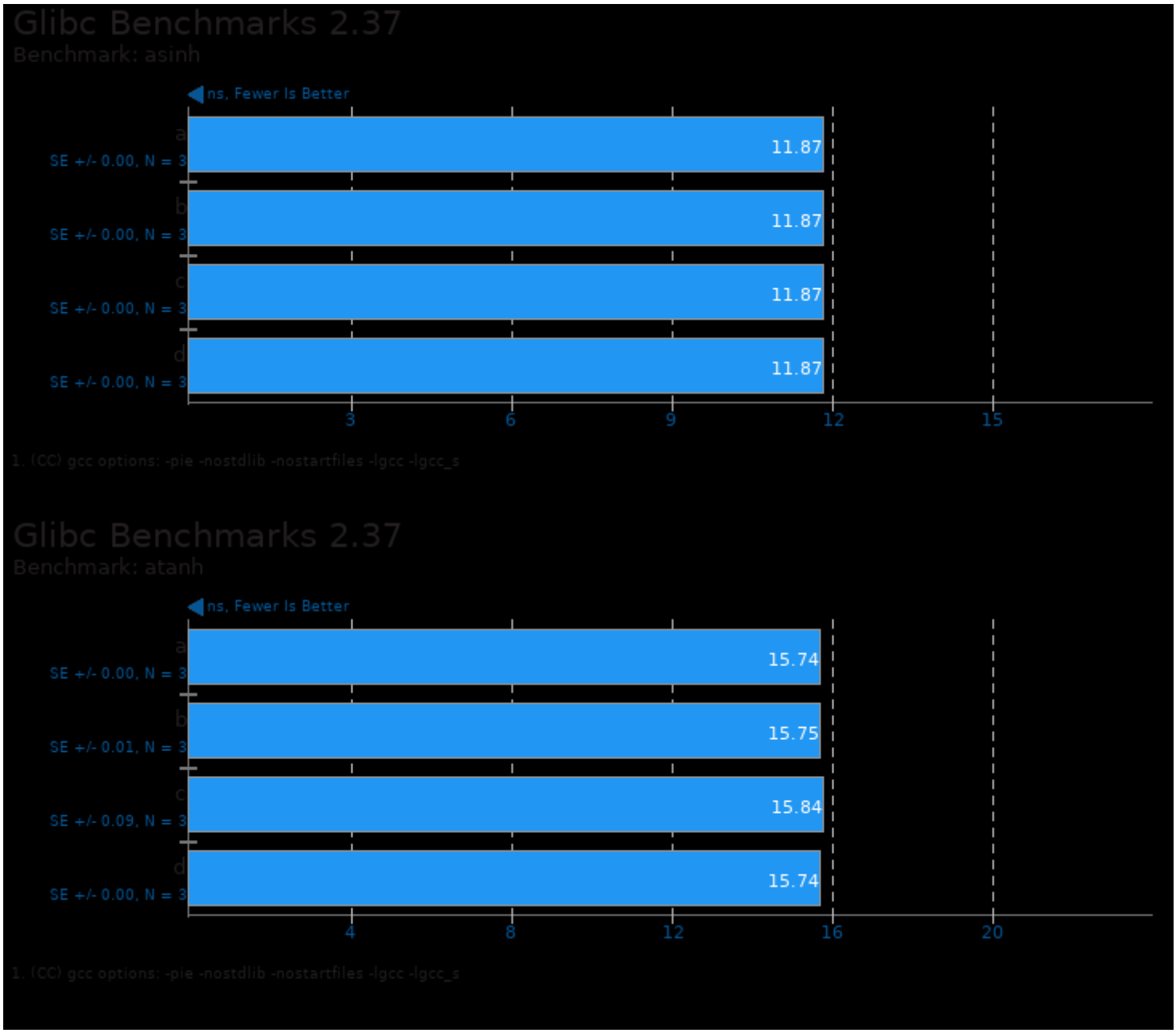

Glibc Benchmarks 2.37
Benchmark: ffs
ns, Fewer Is Better
a
SE +/- 0.00015, N = 3
2.65023
b
SE +/- 0.00027, N = 3
2.64995
c
SE +/- 0.00070, N = 3
2.65085
d
SE +/- 0.00003, N = 3
2.64927
0.5964
1.1928
1.7892
2.3856
2.982
1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s
Glibc Benchmarks 2.37
Benchmark: pow
ns, Fewer Is Better
a
SE +/- 0.00, N = 3
13.98
b
SE +/- 0.01, N = 3
13.98
c
SE +/- 0.00, N = 3
13.97
d
SE +/- 0.00, N = 3
13.98
4
8
12
16
20
1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s

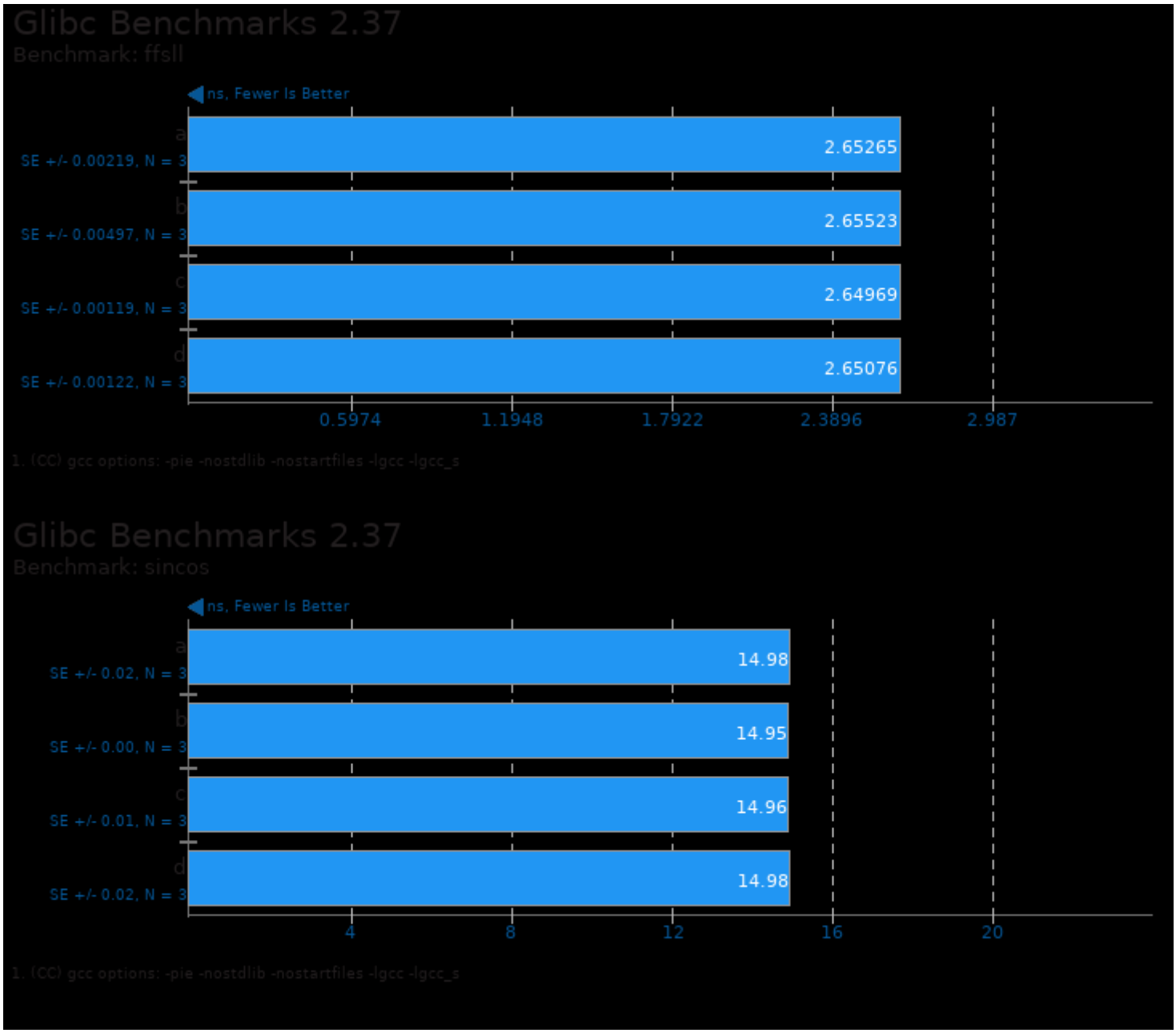

Glibc Benchmarks 2.37
Benchmark: sin
ns, Fewer Is Better
a
SE +/- 0.01, N = 3
25.68
b
SE +/- 0.02, N = 3
25.69
c
SE +/- 0.05, N = 3
25.71
d
SE +/- 0.03, N = 3
25.70
6
12
18
24
30
1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s
Glibc Benchmarks 2.37
Benchmark: log2
ns, Fewer Is Better
a
SE +/- 0.00098, N = 3
9.40193
b
SE +/- 0.00623, N = 3
9.40777
c
SE +/- 0.01588, N = 3
9.41785
d
SE +/- 0.00378, N = 3
9.40951
3
6
9
12
15
1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s

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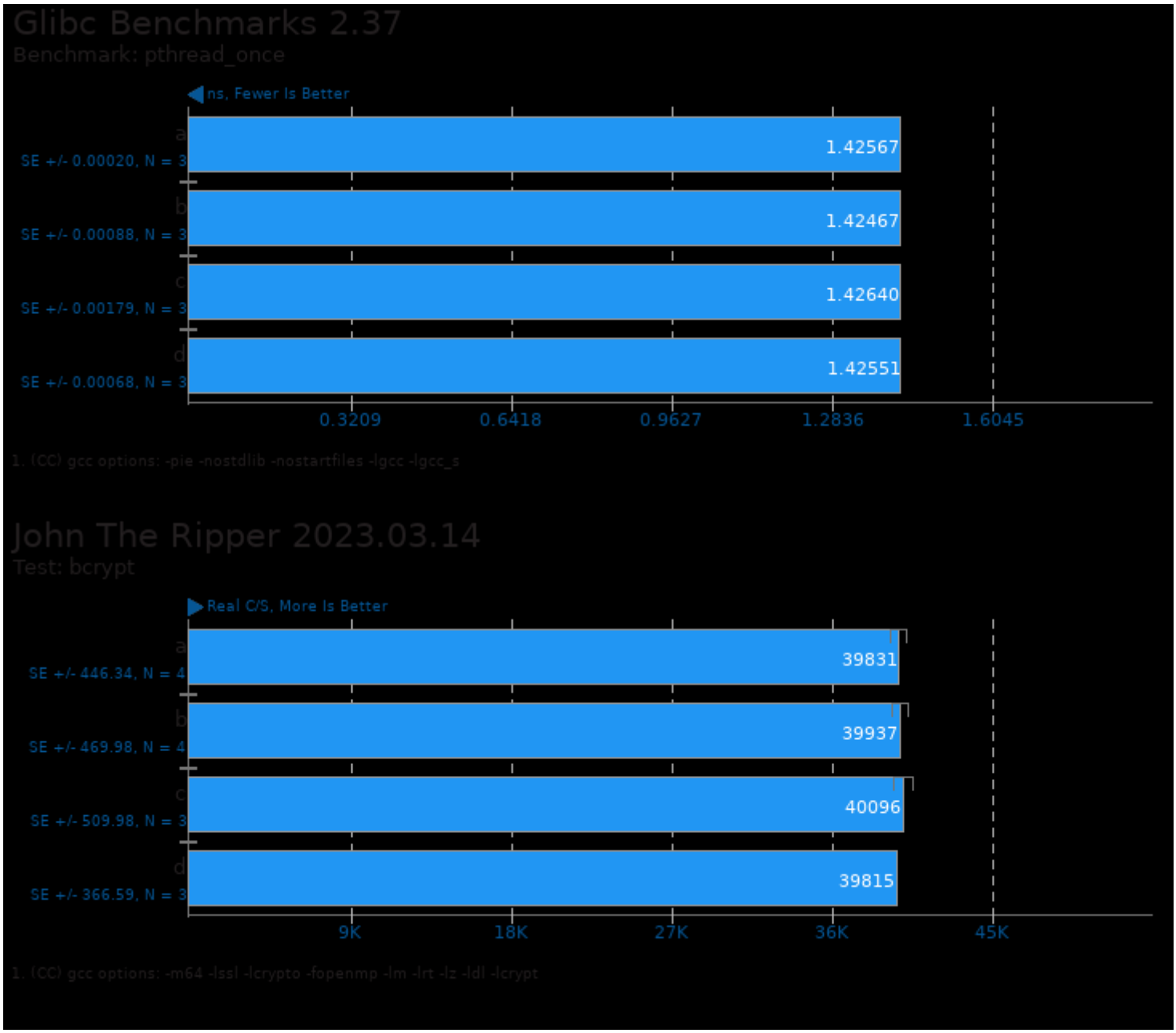

Glibc Benchmarks 2.37
Benchmark: modf
ns, Fewer Is Better
a
SE +/- 0.00626, N = 3
2.77935
b
SE +/- 0.01130, N = 3
2.75912
c
SE +/- 0.00824, N = 3
2.76336
d
SE +/- 0.00809, N = 3
2.77140
0.6254
1.2508
1.8762
2.5016
3.127
1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s
Glibc Benchmarks 2.37
Benchmark: sinh
ns, Fewer Is Better
a
SE +/- 0.00151, N = 3
9.74243
b
SE +/- 0.00324, N = 3
9.74164
c
SE +/- 0.02112, N = 3
9.79690
d
SE +/- 0.00536, N = 3
9.74603
3
6
9
12
15
1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s

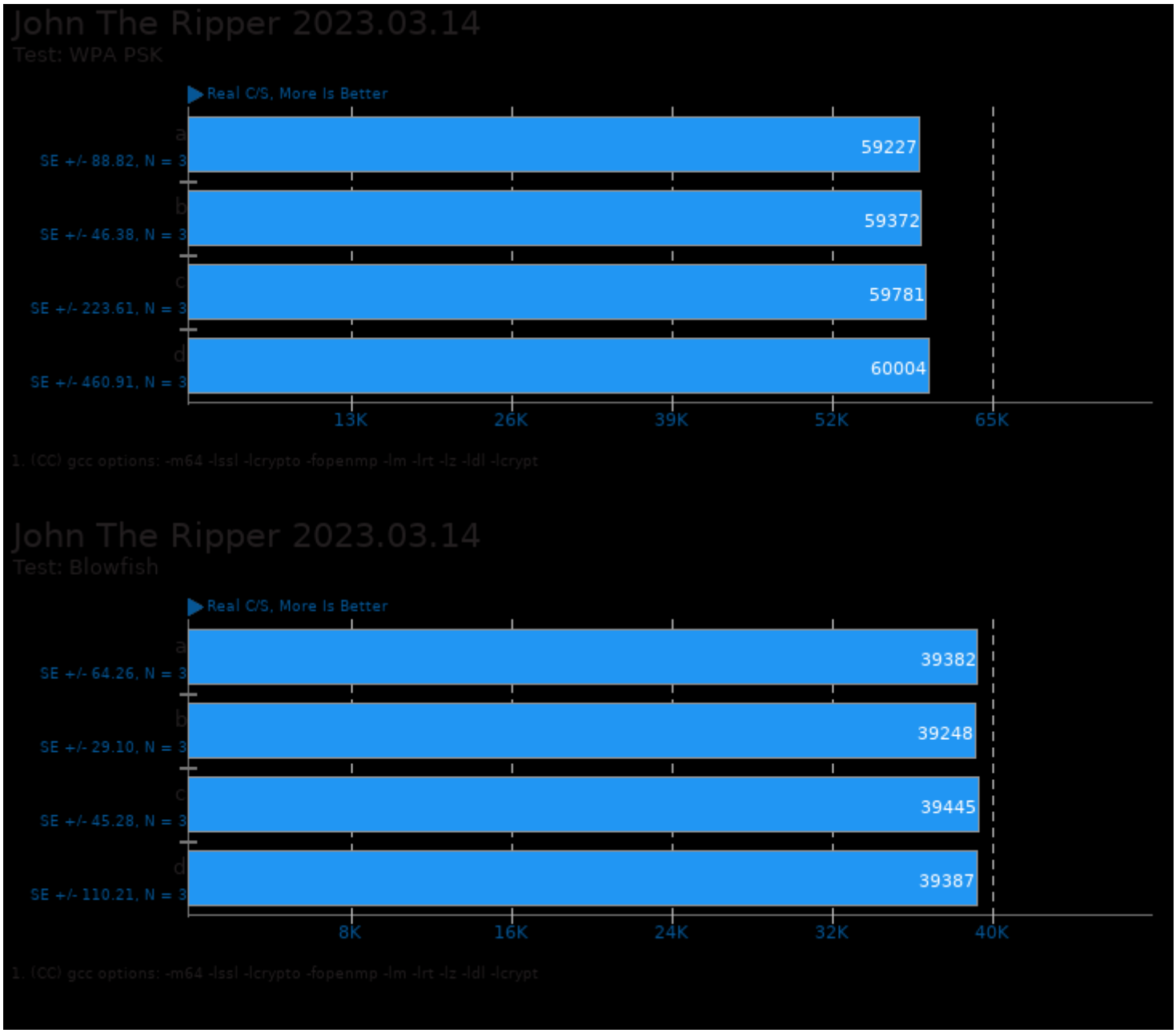

Glibc Benchmarks 2.37
Benchmark: sqrt
ns, Fewer Is Better
a
SE +/- 0.00410, N = 3
2.95486
b
SE +/- 0.00070, N = 3
2.95256
c
SE +/- 0.00076, N = 3
2.95292
d
SE +/- 0.00078, N = 3
2.95333
0.6648
1.3296
1.9944
2.6592
3.324
1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s
Glibc Benchmarks 2.37
Benchmark: tanh
ns, Fewer Is Better
a
SE +/- 0.01, N = 3
15.35
b
SE +/- 0.00, N = 3
15.33
c
SE +/- 0.00, N = 3
15.34
d
SE +/- 0.01, N = 3
15.33
4
8
12
16
20
1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s

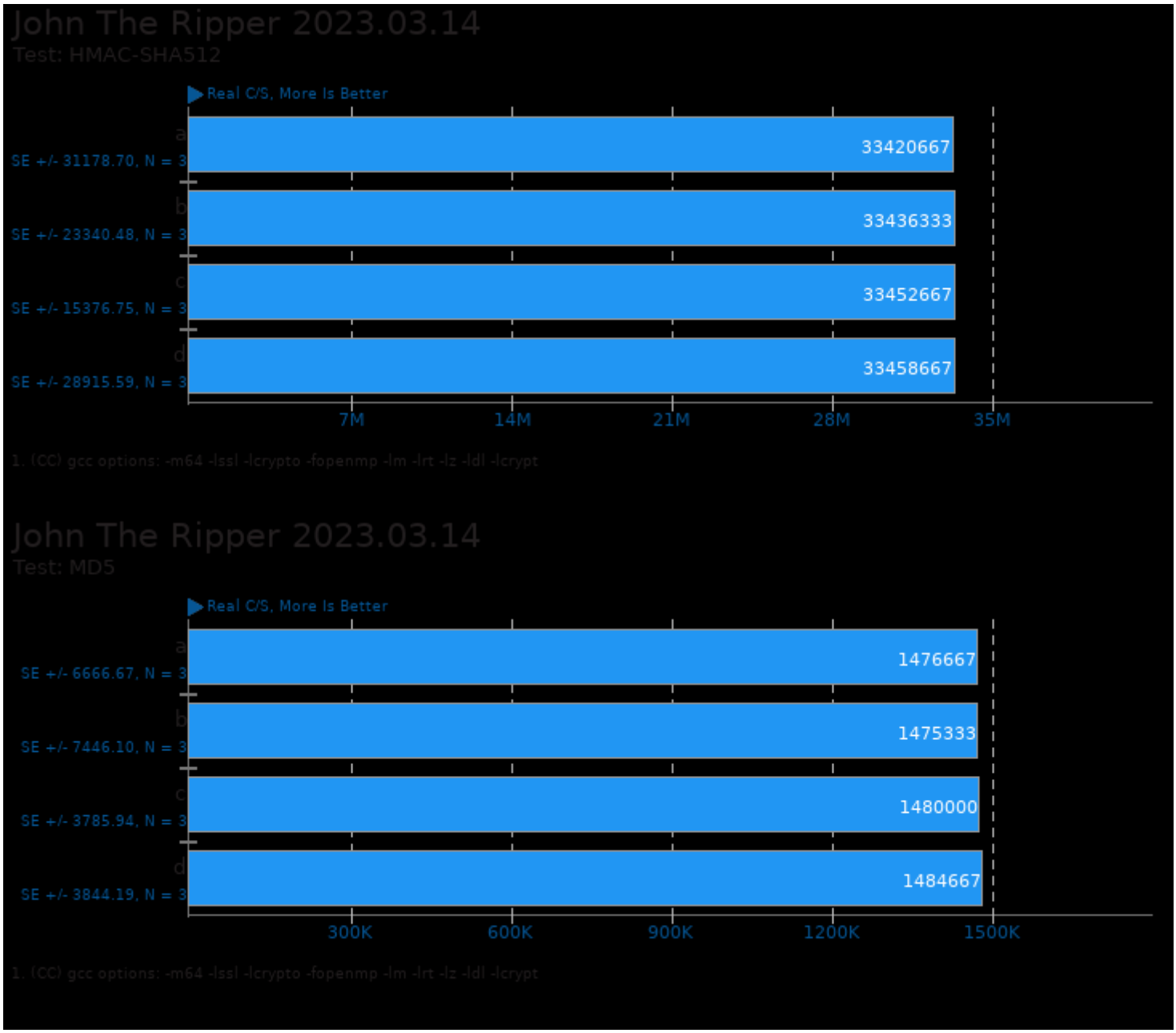

Glibc Benchmarks 2.37
Benchmark: asinh
ns, Fewer Is Better
a
SE +/- 0.00, N = 3
11.87
b
SE +/- 0.00, N = 3
11.87
c
SE +/- 0.00, N = 3
11.87
d
SE +/- 0.00, N = 3
11.87
3
6
9
12
15
1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s
Glibc Benchmarks 2.37
Benchmark: atanh
ns, Fewer Is Better
a
SE +/- 0.00, N = 3
15.74
b
SE +/- 0.01, N = 3
15.75
c
SE +/- 0.09, N = 3
15.84
d
SE +/- 0.00, N = 3
15.74
4
8
12
16
20
1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s

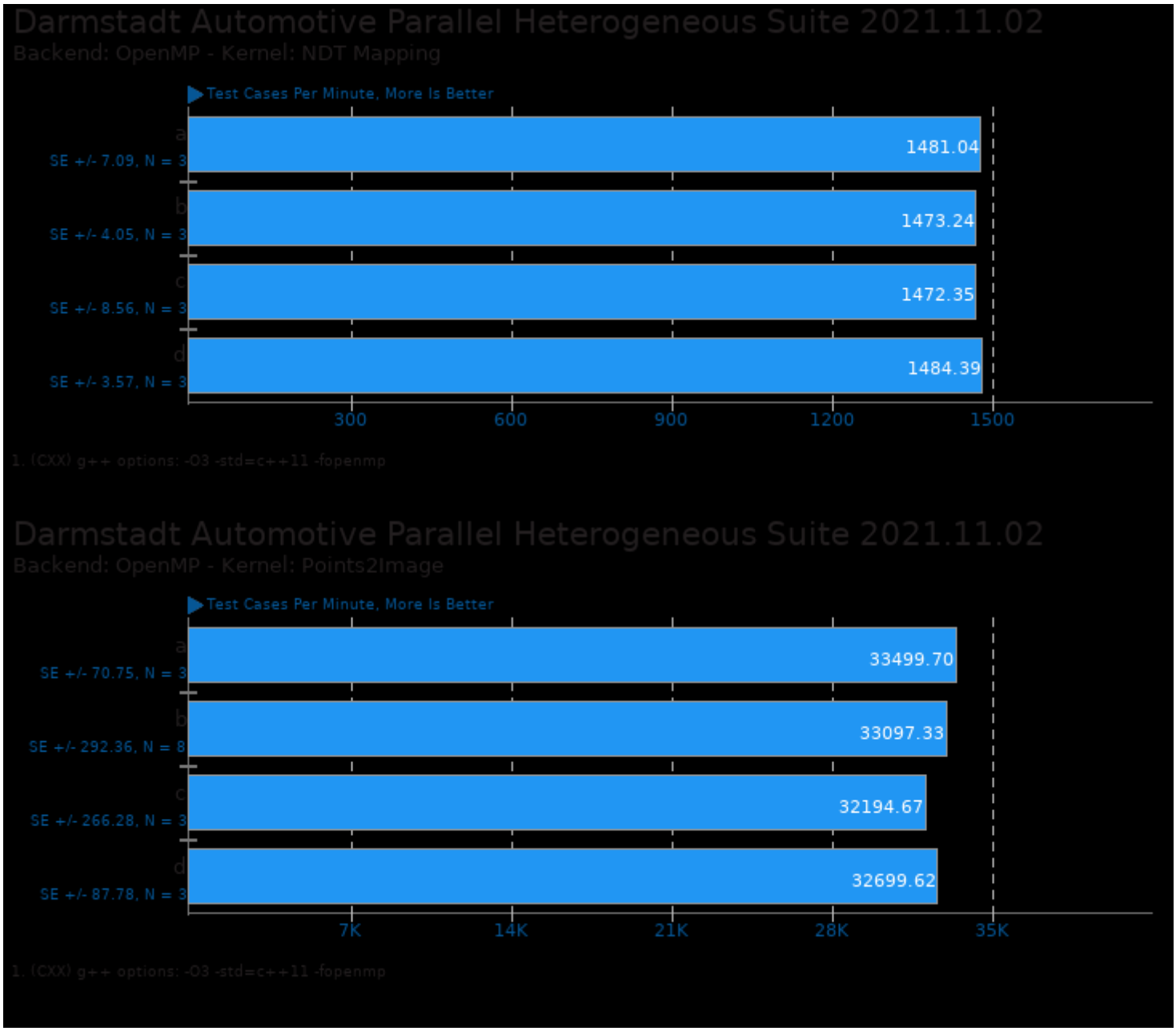

Glibc Benchmarks 2.37
Benchmark: ffsll
ns, Fewer Is Better
a
SE +/- 0.00219, N = 3
2.65265
b
SE +/- 0.00497, N = 3
2.65523
c
SE +/- 0.00119, N = 3
2.64969
d
SE +/- 0.00122, N = 3
2.65076
0.5974
1.1948
1.7922
2.3896
2.987
1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s
Glibc Benchmarks 2.37
Benchmark: sincos
ns, Fewer Is Better
a
SE +/- 0.02, N = 3
14.98
b
SE +/- 0.00, N = 3
14.95
c
SE +/- 0.01, N = 3
14.96
d
SE +/- 0.02, N = 3
14.98
4
8
12
16
20
1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s

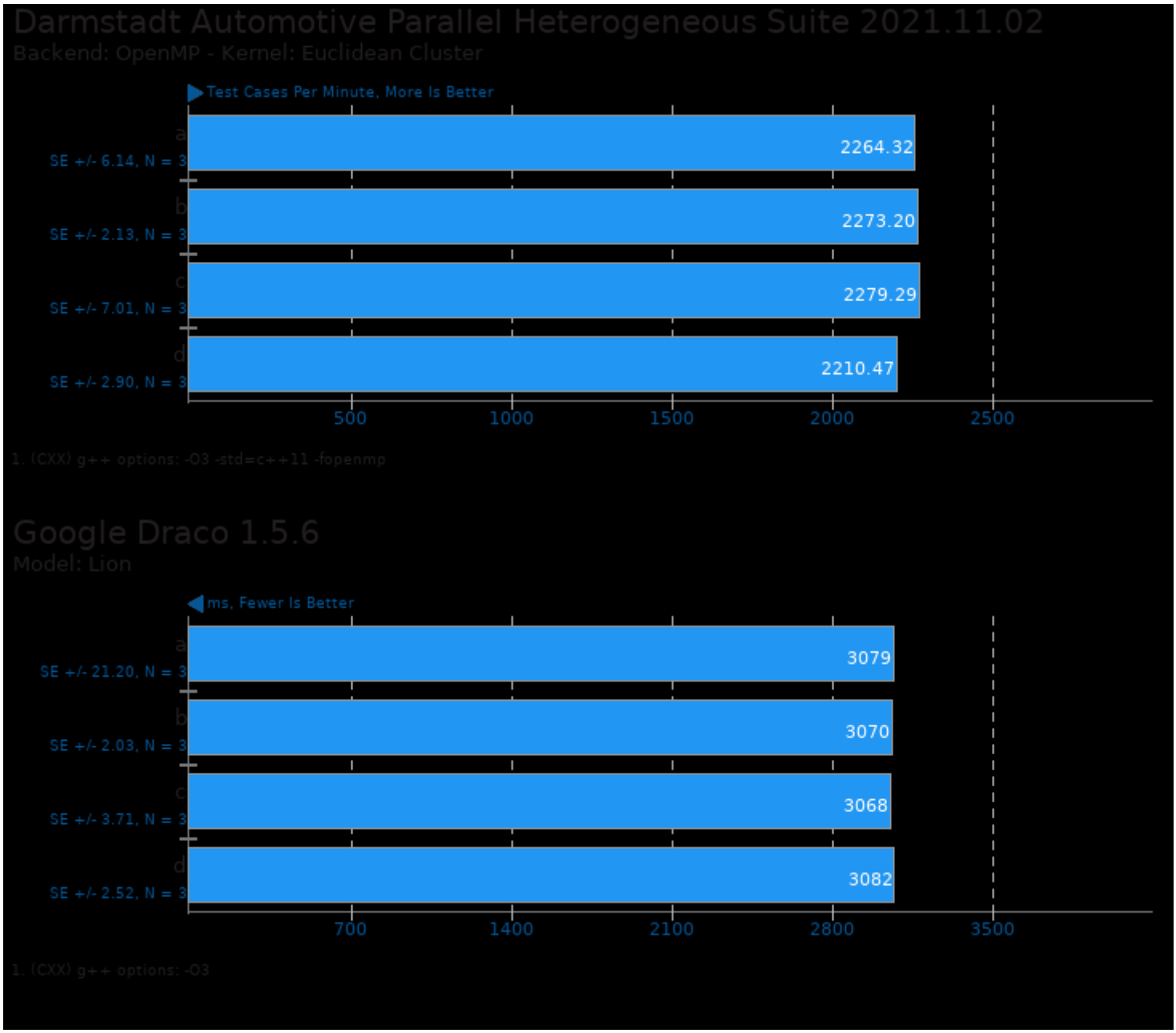
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Glibc Benchmarks 2.37
Benchmark: pthread_once
ns, Fewer Is Better
a
SE +/- 0.00020, N = 3
1.42567
b
SE +/- 0.00088, N = 3
1.42467
c
SE +/- 0.00179, N = 3
1.42640
d
SE +/- 0.00068, N = 3
1.42551
0.3209
0.6418
0.9627
1.2836
1.6045
1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s
John The Ripper 2023.03.14
Test: bcrypt
Real C/S, More Is Better
a
SE +/- 446.34, N = 4
39831
b
SE +/- 469.98, N = 4
39937
c
SE +/- 509.98, N = 3
40096
d
SE +/- 366.59, N = 3
39815
9K
18K
27K
36K
45K
1. (CC) gcc options: -m64 -lssl -lcrypto -fopenmp -lm -lrt -lz -ldl -lcrypt

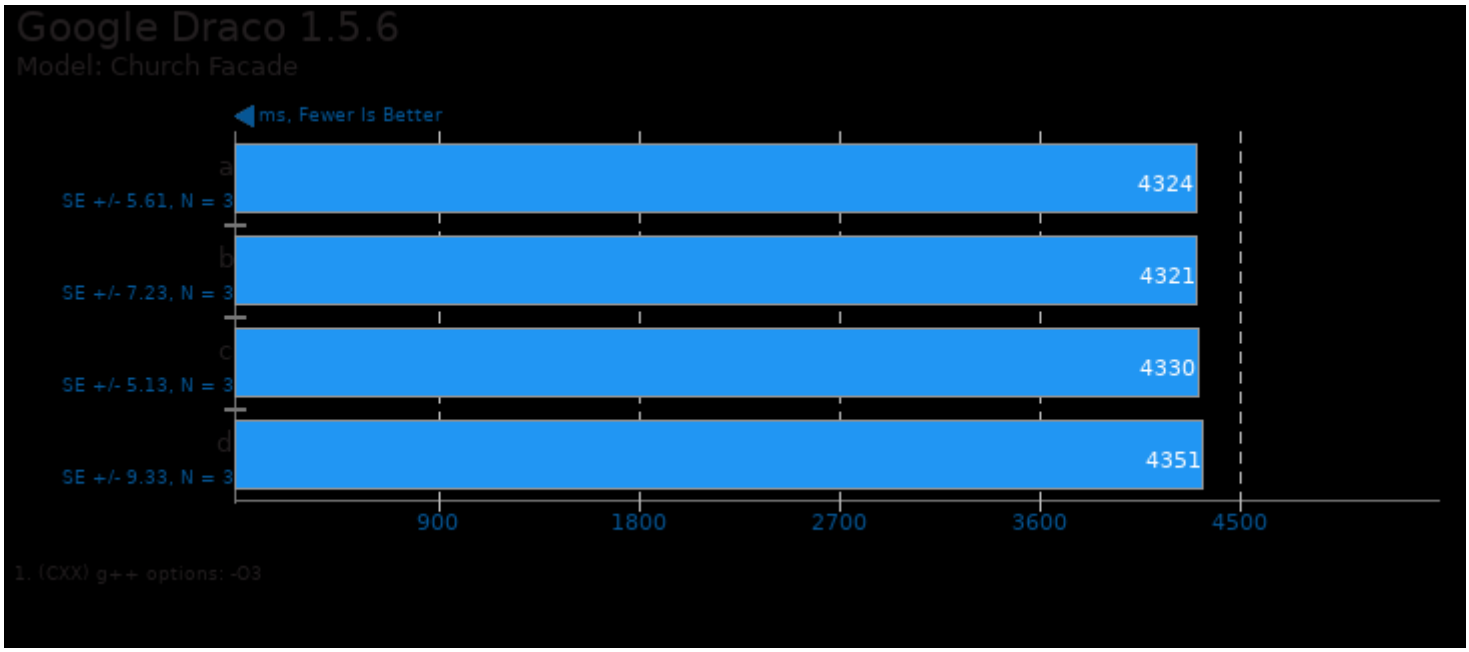

John The Ripper 2023.03.14
Test: WPA PSK
Real C/S, More Is Better
a
SE +/- 88.82, N = 3
59227
b
SE +/- 46.38, N = 3
59372
c
SE +/- 223.61, N = 3
59781
d
SE +/- 460.91, N = 3
60004
13K
26K
39K
52K
65K
1. (CC) gcc options: -m64 -lssl -lcrypto -fopenmp -lm -lrt -lz -ldl -lcrypt
John The Ripper 2023.03.14
Test: Blowfish
Real C/S, More Is Better
a
SE +/- 64.26, N = 3
39382
b
SE +/- 29.10, N = 3
39248
c
SE +/- 45.28, N = 3
39445
d
SE +/- 110.21, N = 3
39387
8K
16K
24K
32K
40K
1. (CC) gcc options: -m64 -lssl -lcrypto -fopenmp -lm -lrt -lz -ldl -lcrypt


John The Ripper 2023.03.14
Test: HMAC-SHA512
Real C/S, More Is Better
a
SE +/- 31178.70, N = 3
33420667
b
SE +/- 23340.48, N = 3
33436333
c
SE +/- 15376.75, N = 3
33452667
d
SE +/- 28915.59, N = 3
33458667
7M
14M
21M
28M
35M
1. (CC) gcc options: -m64 -lssl -lcrypto -fopenmp -lm -lrt -lz -ldl -lcrypt
John The Ripper 2023.03.14
Test: MD5
Real C/S, More Is Better
a
SE +/- 6666.67, N = 3
1476667
b
SE +/- 7446.10, N = 3
1475333
c
SE +/- 3785.94, N = 3
1480000
d
SE +/- 3844.19, N = 3
1484667
300K
600K
900K
1200K
1500K
1. (CC) gcc options: -m64 -lssl -lcrypto -fopenmp -lm -lrt -lz -ldl -lcrypt

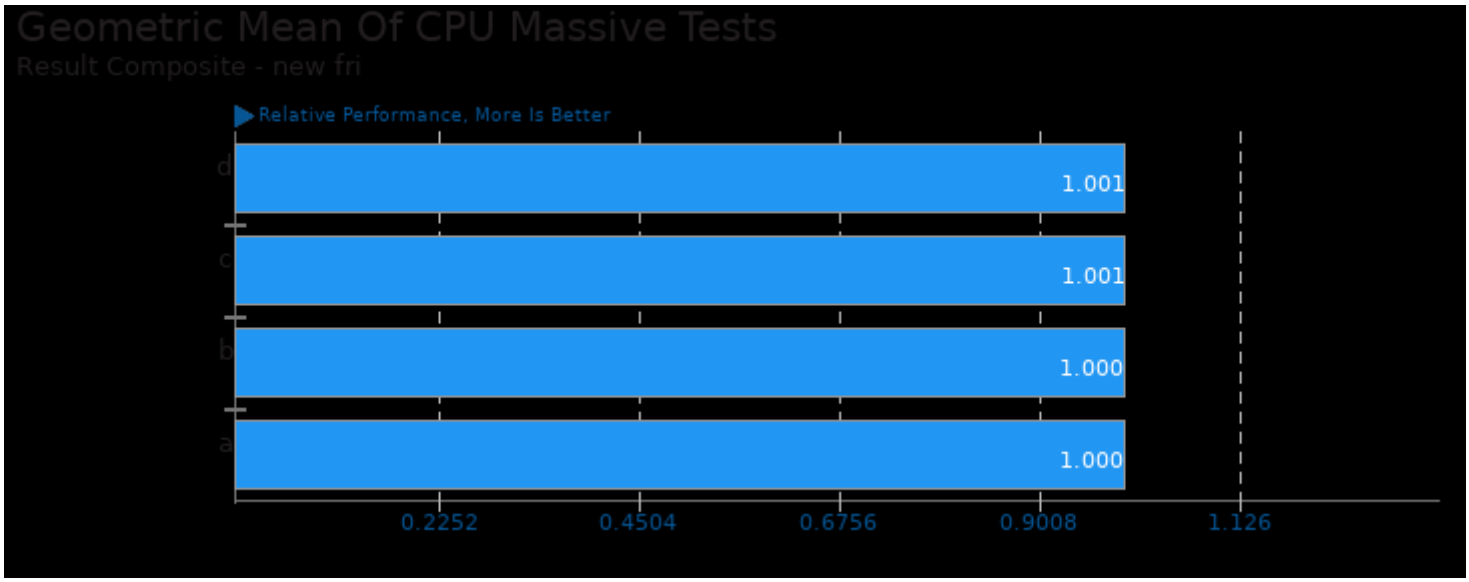

Darmstadt Automotive Parallel Heterogeneous Suite 2021.11.02
Backend: OpenMP - Kernel: NDT Mapping
Test Cases Per Minute, More Is Better
a
SE +/- 7.09, N = 3
1481.04
b
SE +/- 4.05, N = 3
1473.24
c
SE +/- 8.56, N = 3
1472.35
d
SE +/- 3.57, N = 3
1484.39
300
600
900
1200
1500
1. (CXX) g++ options: -O3 -std=c++11 -fopenmp
Darmstadt Automotive Parallel Heterogeneous Suite 2021.11.02
Backend: OpenMP - Kernel: Points2Image
Test Cases Per Minute, More Is Better
a
SE +/- 70.75, N = 3
33499.70
b
SE +/- 292.36, N = 8
33097.33
c
SE +/- 266.28, N = 3
32194.67
d
SE +/- 87.78, N = 3
32699.62
7K
14K
21K
28K
35K
1. (CXX) g++ options: -O3 -std=c++11 -fopenmp


Darmstadt Automotive Parallel Heterogeneous Suite 2021.11.02
Backend: OpenMP - Kernel: Euclidean Cluster
Test Cases Per Minute, More Is Better
a
SE +/- 6.14, N = 3
2264.32
b
SE +/- 2.13, N = 3
2273.20
c
SE +/- 7.01, N = 3
2279.29
d
SE +/- 2.90, N = 3
2210.47
500
1000
1500
2000
2500
1. (CXX) g++ options: -O3 -std=c++11 -fopenmp
Google Draco 1.5.6
Model: Lion
ms, Fewer Is Better
a
SE +/- 21.20, N = 3
3079
b
SE +/- 2.03, N = 3
3070
c
SE +/- 3.71, N = 3
3068
d
SE +/- 2.52, N = 3
3082
700
1400
2100
2800
3500
1. (CXX) g++ options: -O3

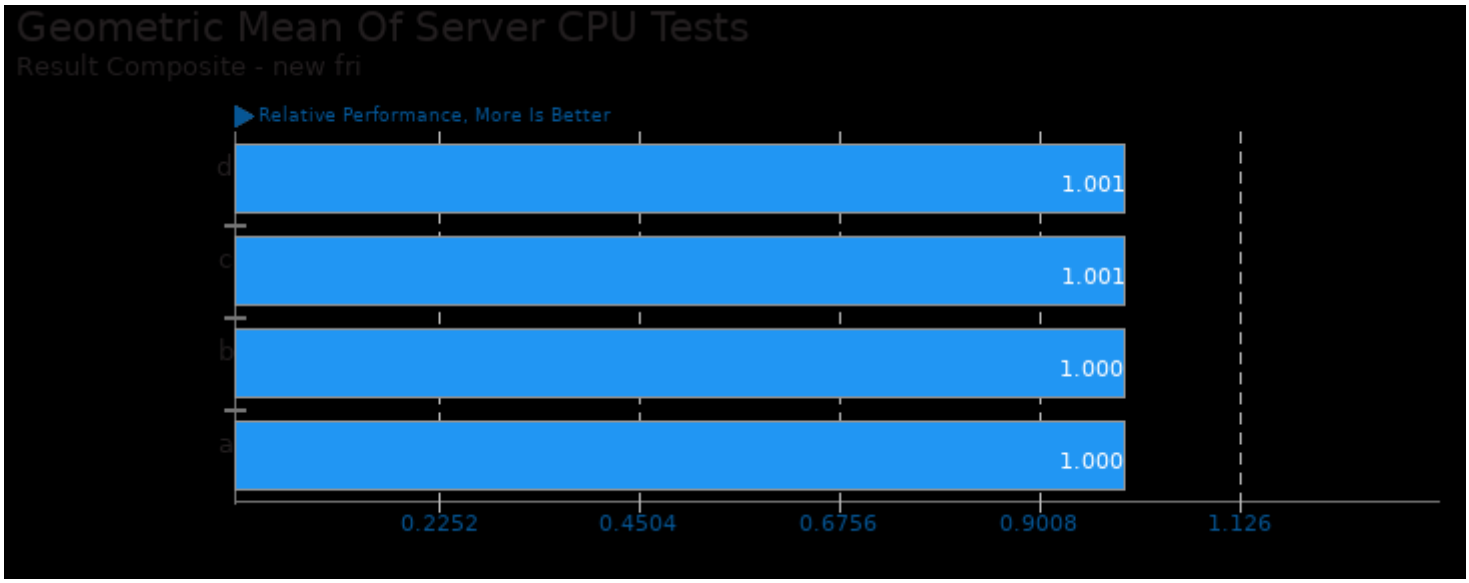
new fri


Google Draco 1.5.6
Model: Church Facade
ms, Fewer Is Better
a
SE +/- 5.61, N = 3
4324
b
SE +/- 7.23, N = 3
4321
c
SE +/- 5.13, N = 3
4330
d
SE +/- 9.33, N = 3
4351
900
1800
2700
3600
4500
1. (CXX) g++ options: -O3

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



Geometric mean based upon tests: pts/glibc-bench and pts/john-the-ripper



Geometric mean based upon tests: pts/john-the-ripper and pts/glibc-bench

This file was automatically generated via the Phoronix Test Suite benchmarking software on Thursday, 28 March 2024 21:14.