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5800x new

AMD Ryzen 7 5800X 8-Core testing with a ASRock X570 Pro4 (P3.90 BIOS) and Sapphire AMD Radeon RX 470/480/570/570X/580/580X/590 on Ubuntu 20.10 via the Phoronix Test Suite.

Automated Executive Summary

1 had the most wins, coming in first place for 43% of the tests.

Based on the geometric mean of all complete results, the fastest (3) was 1.003x the speed of the slowest (4). 2 was 1x the speed of 3, 1 was 1x the speed of 2, 4 was 0.997x the speed of 1.

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

ViennaCL (Test: CPU BLAS - sDOT) at 1.016x
Botan (Test: AES-256 - Decrypt) at 1.015x
Botan (Test: AES-256) at 1.014x
Botan (Test: KASUMI) at 1.013x
ViennaCL (Test: CPU BLAS - dGEMV-T) at 1.013x
ViennaCL (Test: CPU BLAS - dGEMM-NT) at 1.013x
Botan (Test: Twofish) at 1.012x
Botan (Test: Blowfish - Decrypt) at 1.012x
Botan (Test: Blowfish) at 1.012x

Botan (Test: Twofish - Decrypt) at 1.011x.

Test Systems:

1

2

3

4

Processor: AMD Ryzen 7 5800X 8-Core @ 3.80GHz (8 Cores / 16 Threads), Motherboard: ASRock X570 Pro4 (P3.90 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: 1000GB Sabrent Rocket 4.0 1TB, Graphics: Sapphire AMD Radeon RX 470/480/570/570X/580/580X/590 (1560/2100MHz), Audio: AMD Ellesmere HDMI Audio, Monitor: G237HL, Network: Intel I211

OS: Ubuntu 20.10, Kernel: 5.11.0-051100rc3daily20210116-generic (x86_64) 20210115, Desktop: GNOME Shell 3.38.1, Display Server: X Server 1.20.9, Vulkan: 1.2.131, Compiler: GCC 10.2.0, File-System: ext4, Screen Resolution: 1920x1080

Kernel Notes: Transparent Huge Pages: madvise
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,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-targets=nvptx-none=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-nvptx/usr,amdgcn-amdhsa=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-gcn/usr,hsa --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: acpi-cpufreq schedutil (Boost: Enabled) - CPU Microcode: 0xa201009
Python Notes: Python 3.8.6
Security Notes: itlb_multihit: Not affected + 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 Full AMD retpoline IBPB: conditional IBRS_FW STIBP: always-on RSB filling + srbds: Not affected + tsx_async_abort: Not affected

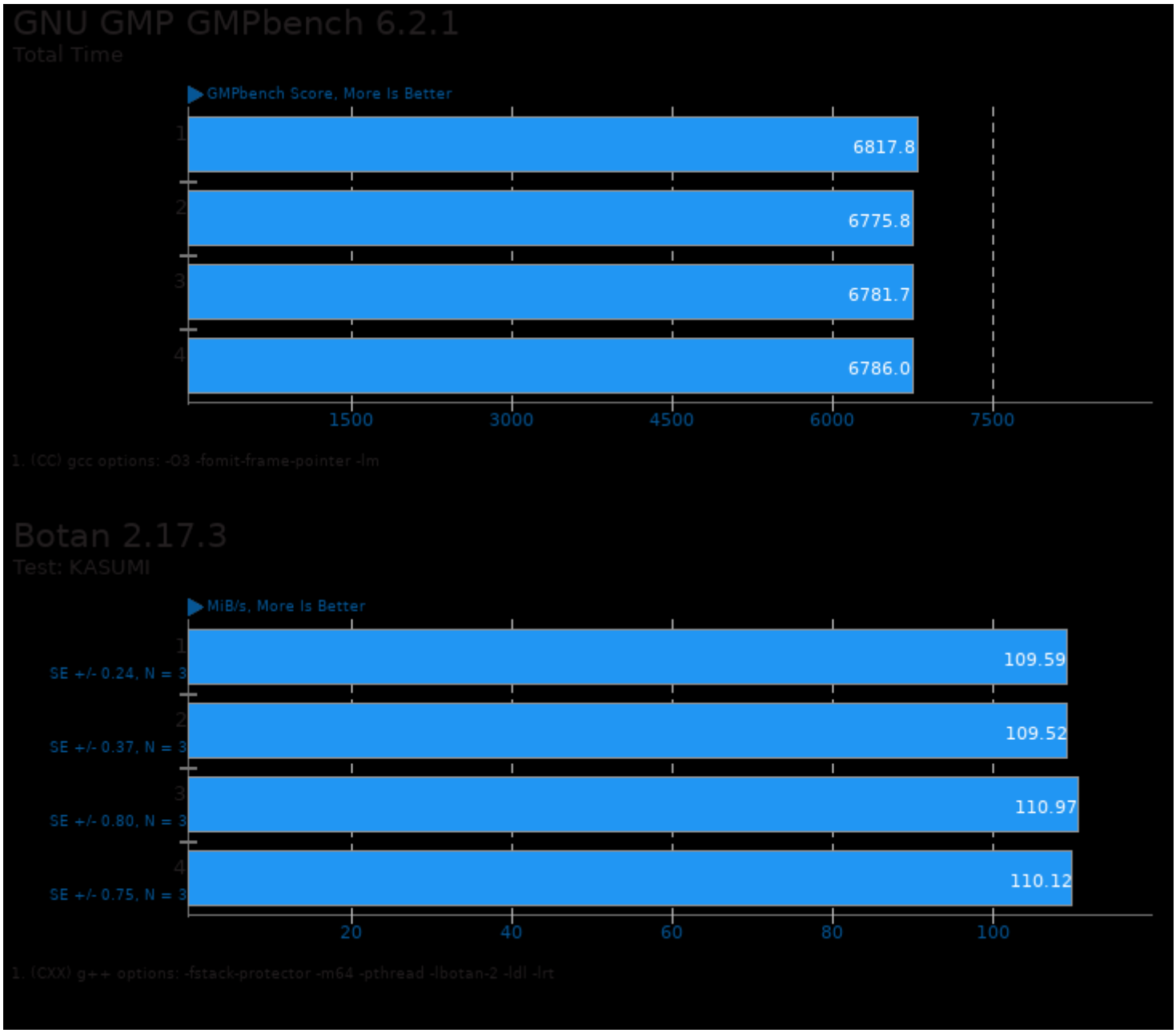
	1	2	3	4
GNU GMP GMPbench - Total Time (GMPbench Score)	**6818**	**6776**	6782	6786
Normalized	100%	99.38%	99.47%	99.53%
Botan - KASUMI (MiB/s)	109.589	**109.520**	**110.971**	110.116
Normalized	98.75%	98.69%	100%	99.23%
Standard Deviation	0.4%	0.6%	1.2%	1.2%
Botan - KASUMI - Decrypt (MiB/s)	105.667	**105.571**	**106.308**	106.199
Normalized	99.4%	99.31%	100%	99.9%
Standard Deviation	0.4%	0.6%	1.1%	1.2%
Botan - AES-256 (MiB/s)	7367	**7437**	**7335**	7336
Normalized	99.06%	100%	98.63%	98.64%

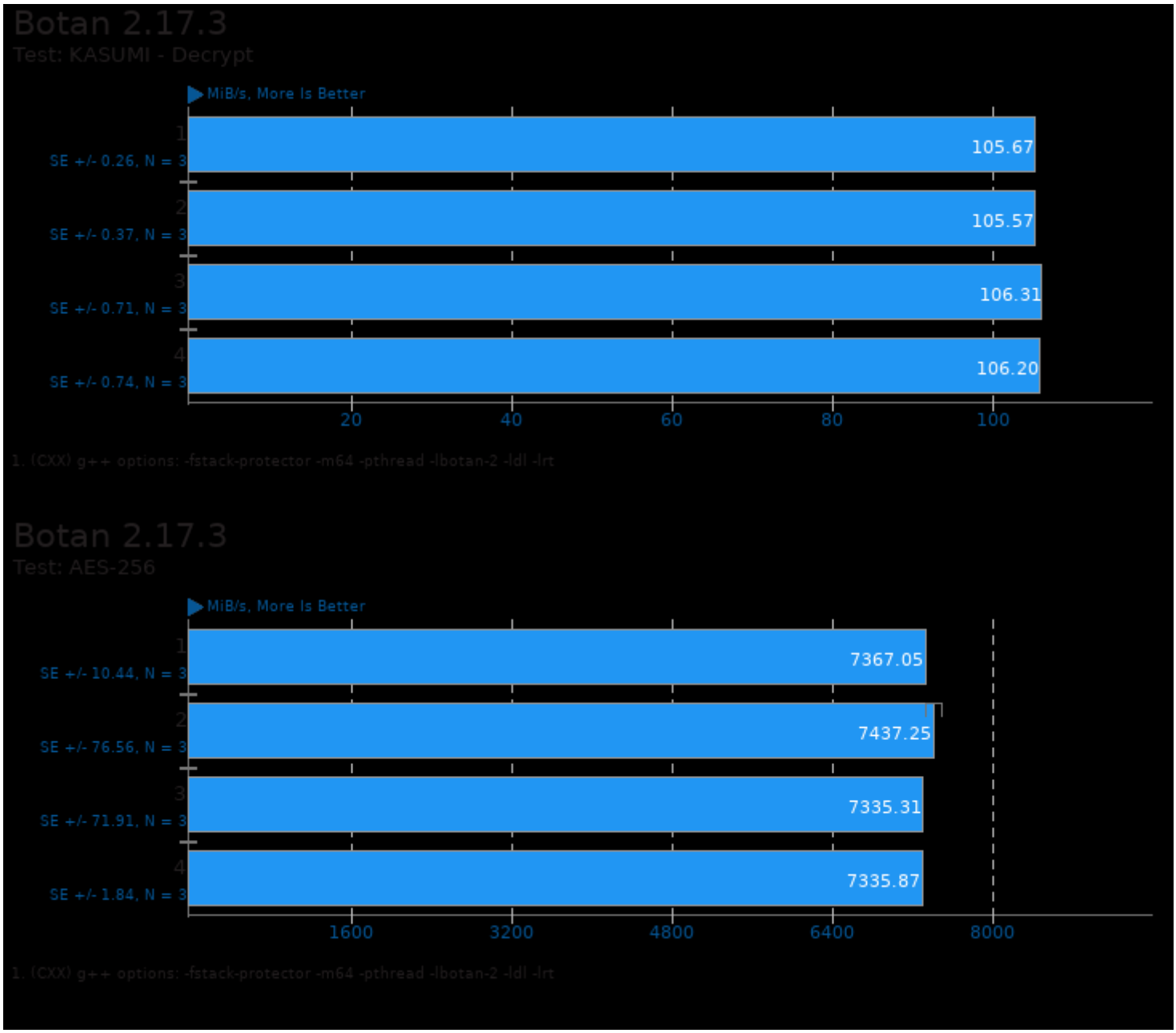
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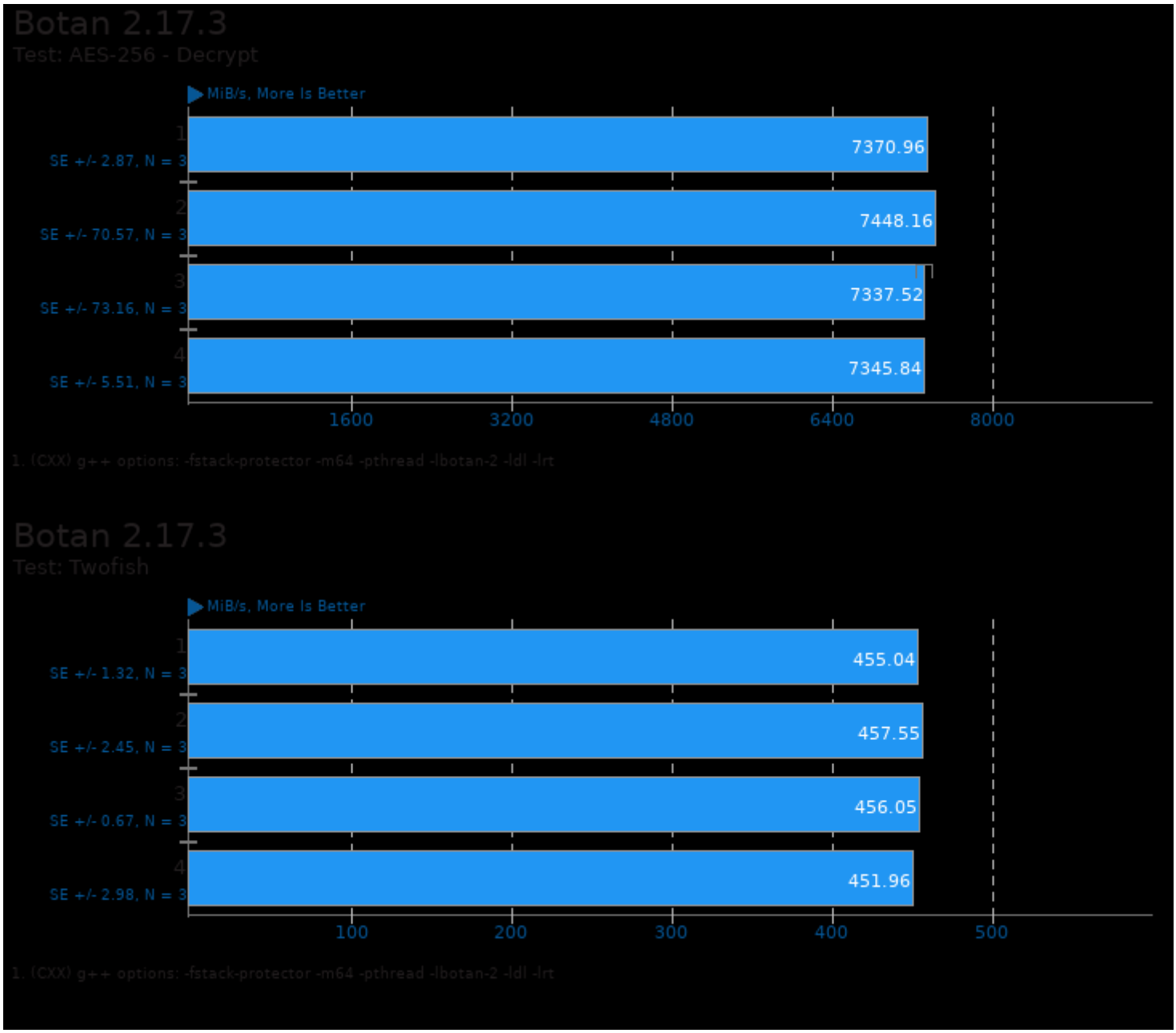
Standard Deviation	0.2%	1.8%	1.7%	0%
Botan - AES-256 - Decrypt (MiB/s)	7371	**7448**	**7338**	7346
Normalized	98.96%	100%	98.51%	98.63%
Standard Deviation	0.1%	1.6%	1.7%	0.1%
Botan - Twofish (MiB/s)	455.036	**457.554**	456.048	**451.959**
Normalized	99.45%	100%	99.67%	98.78%
Standard Deviation	0.5%	0.9%	0.3%	1.1%
Botan - Twofish - Decrypt (MiB/s)	454.938	**457.513**	455.967	**452.476**
Normalized	99.44%	100%	99.66%	98.9%
Standard Deviation	0.4%	0.8%	0.3%	1.1%
Botan - Blowfish (MiB/s)	**556.559**	**550.169**	555.106	554.461
Normalized	100%	98.85%	99.74%	99.62%
Standard Deviation	0.1%	0.6%	0.3%	0.9%
Botan - Blowfish - Decrypt (MiB/s)	**554.128**	**547.671**	552.423	549.731
Normalized	100%	98.83%	99.69%	99.21%
Standard Deviation	0%	0.6%	0.3%	1.5%
Botan - CAST-256 (MiB/s)	**171.987**	171.669		**171.232**
Normalized	100%	99.82%		99.56%
Standard Deviation	0.6%	0.6%		0.5%
Botan - CAST-256 - Decrypt (MiB/s)	**172.001**	171.675		**171.161**
Normalized	100%	99.81%		99.51%
Standard Deviation	0.6%	0.6%		0.4%
Botan - ChaCha20Poly1305 (MiB/s)	**808.580**	**815.527**		813.947
Normalized	99.15%	100%		99.81%
Standard Deviation	0.5%	1.1%		1.2%
Botan - ChaCha20Poly1305 - Decrypt (MiB/s)	**795.799**	**804.365**		802.383
Normalized	98.94%	100%		99.75%
Standard Deviation	0.9%	1.1%		1.3%
ViennaCL - CPU BLAS - sCOPY (GB/s)	**24.3**	**24.3**		**24.4**
Normalized	99.59%	99.59%		100%
Standard Deviation	0.4%	0.2%		0.2%
ViennaCL - CPU BLAS - sAXPY (GB/s)	**36.0**	**36.1**		**36.1**
Normalized	99.72%	100%		100%
Standard Deviation	0.5%	0.2%		0.2%
ViennaCL - CPU BLAS - sDOT (GB/s)	**44.2**	**43.5**		44.1
Normalized	100%	98.42%		99.77%
Standard Deviation	0.2%	1.3%		1.3%
ViennaCL - CPU BLAS - dCOPY (GB/s)	**19.5**	**19.7**		**19.7**
Normalized	98.98%	100%		100%
Standard Deviation	1%	0.3%		0.3%
ViennaCL - CPU BLAS - dAXPY (GB/s)	**28.9**	**29.0**		**28.9**
Normalized	99.66%	100%		99.66%
Standard Deviation	0.4%	0.4%		0.5%
ViennaCL - CPU BLAS - dDOT (GB/s)	32.1	32.1		32.1
Standard Deviation	0.2%	0.8%		0.2%
ViennaCL - CPU BLAS - dGEMV-N (GB/s)	**46.2**	**46.7**		**46.7**
Normalized	98.93%	100%		100%
Standard Deviation	1.2%	0.1%		0.2%
ViennaCL - CPU BLAS - dGEMM-NN (GFLOPs/s)	**47.1**	**47.2**		**47.2**
Normalized	99.79%	100%		100%
Standard Deviation	0.3%	0.6%		0.5%

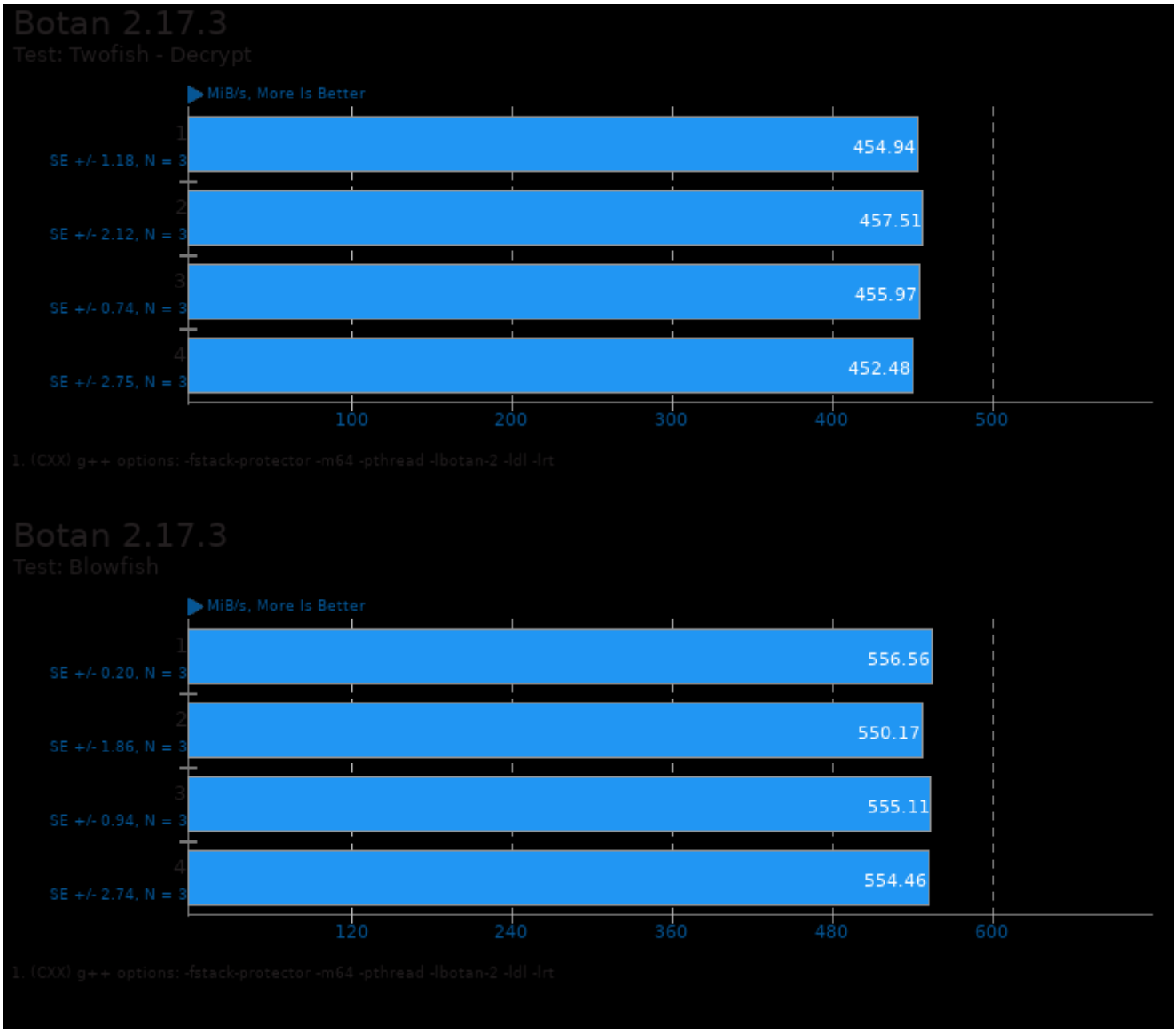
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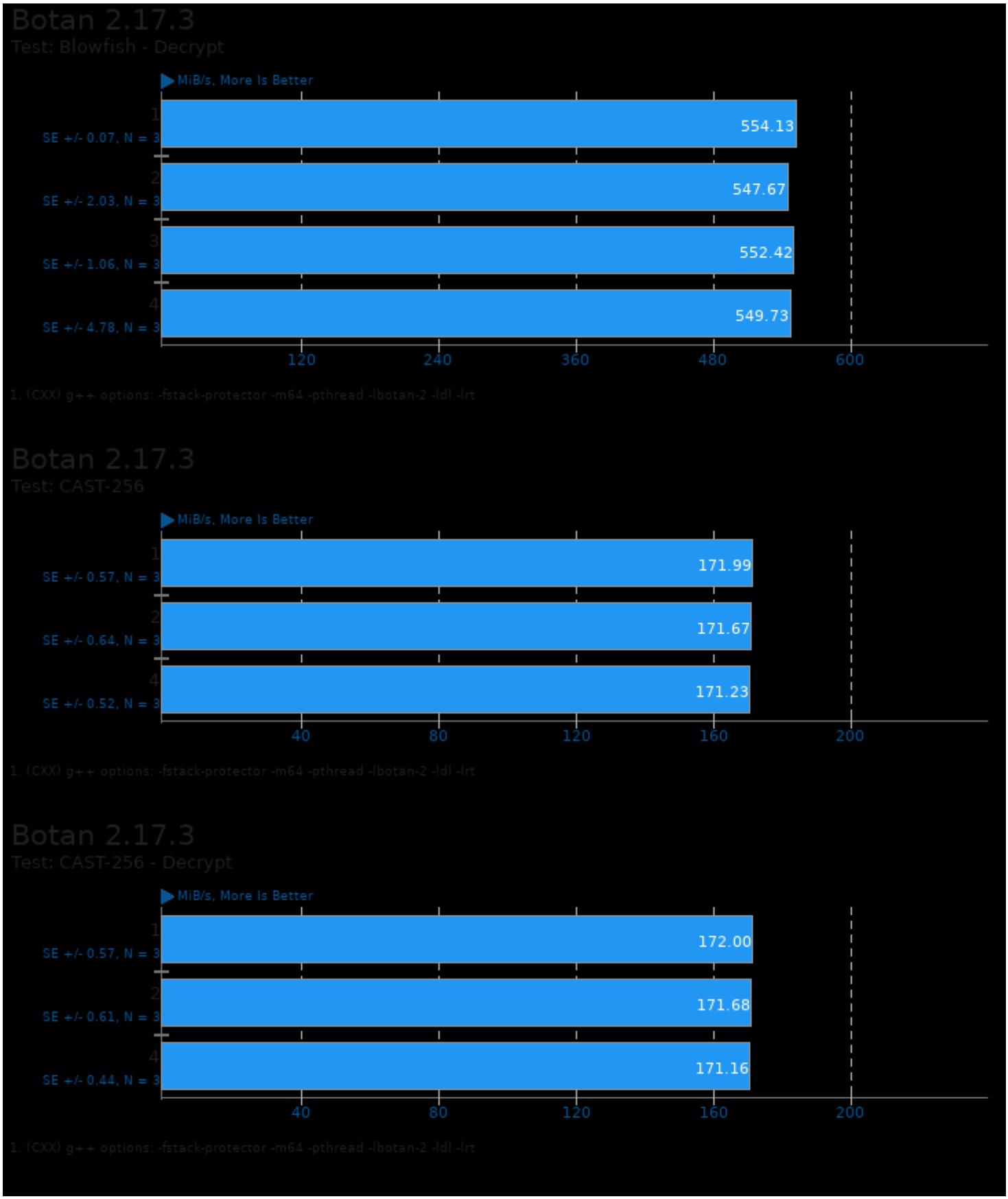
ViennaCL - CPU BLAS - dGEMM-NT (GFLOPs/s)	**47.5**	**46.9**	**47.5**
Normalized	100%	98.74%	100%
Standard Deviation	1.8%		0.5%
ViennaCL - CPU BLAS - dGEMM-TN (GFLOPs/s)	**49.6**	49.8	**50.1**
Normalized	99%	99.4%	100%
Standard Deviation	1.2%	1.7%	2.7%
ViennaCL - CPU BLAS - dGEMM-TT (GFLOPs/s)	**49.6**	**49.7**	**49.7**
Normalized	99.8%	100%	100%
Standard Deviation	0.1%	0.2%	0.1%
ViennaCL - CPU BLAS - dGEMV-T (GB/s)	**46.0**	**46.6**	46.5
Normalized	98.71%	100%	99.79%
Standard Deviation	1.4%	0.2%	0.3%
Systemd Total Boot Time - Total (ms)	26028	26028	26028
Systemd Total Boot Time - Kernel	2705	2705	2705
Systemd Total Boot Time - Loader	3605	3605	3605
Systemd Total Boot Time - Firmware (ms)	13579	13579	13579
Systemd Total Boot Time - Userspace (ms)	23323	23323	23323

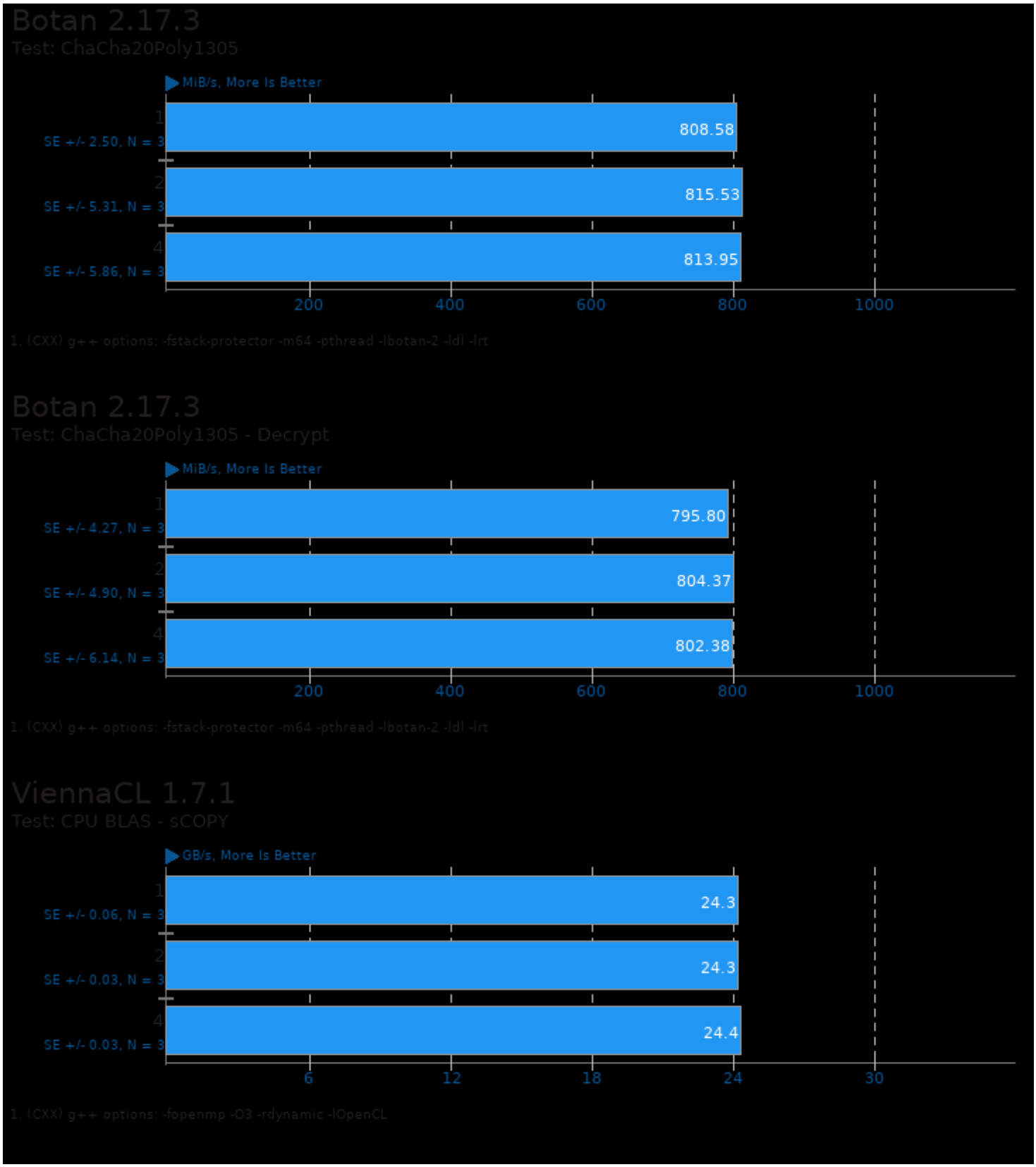

GNU GMP GMPbench 6.2.1
Total Time
GMPbench Score, More Is Better
1
6817.8
2
6775.8
3
6781.7
4
6786.0
1500
3000
4500
6000
7500
1. (CC) gcc options: -O3 -fomit-frame-pointer -lm
Botan 2.17.3
Test: KASUMI
MiB/s, More Is Better
1
SE +/- 0.24, N = 3
109.59
2
SE +/- 0.37, N = 3
109.52
3
SE +/- 0.80, N = 3
110.97
4
SE +/- 0.75, N = 3
110.12
20
40
60
80
100
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt

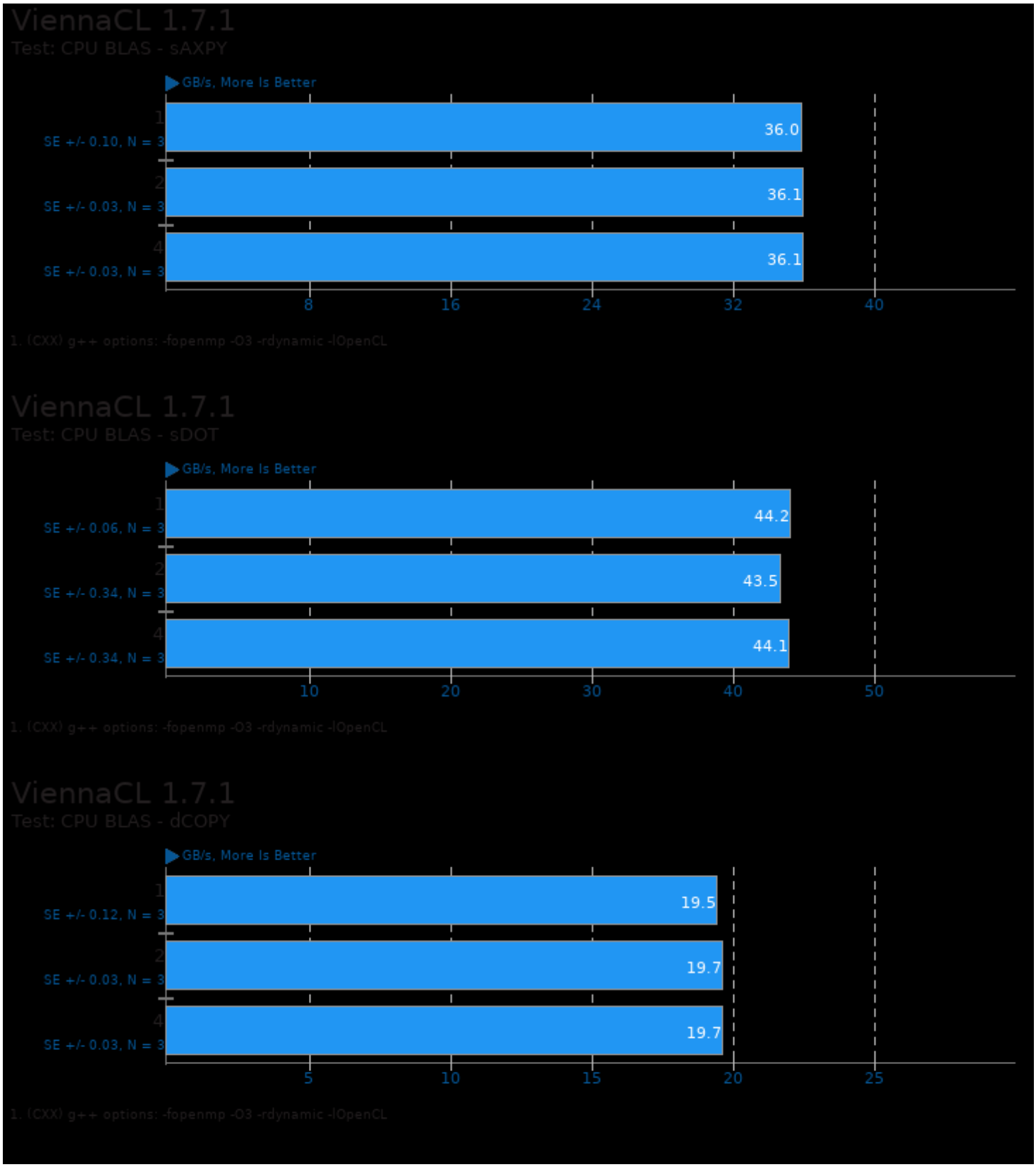

Botan 2.17.3
Test: KASUMI - Decrypt
MiB/s, More Is Better
1
SE +/- 0.26, N = 3
105.67
2
SE +/- 0.37, N = 3
105.57
3
SE +/- 0.71, N = 3
106.31
4
SE +/- 0.74, N = 3
106.20
20
40
60
80
100
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt
Botan 2.17.3
Test: AES-256
MiB/s, More Is Better
1
SE +/- 10.44, N = 3
7367.05
2
SE +/- 76.56, N = 3
7437.25
3
SE +/- 71.91, N = 3
7335.31
4
SE +/- 1.84, N = 3
7335.87
1600
3200
4800
6400
8000
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt

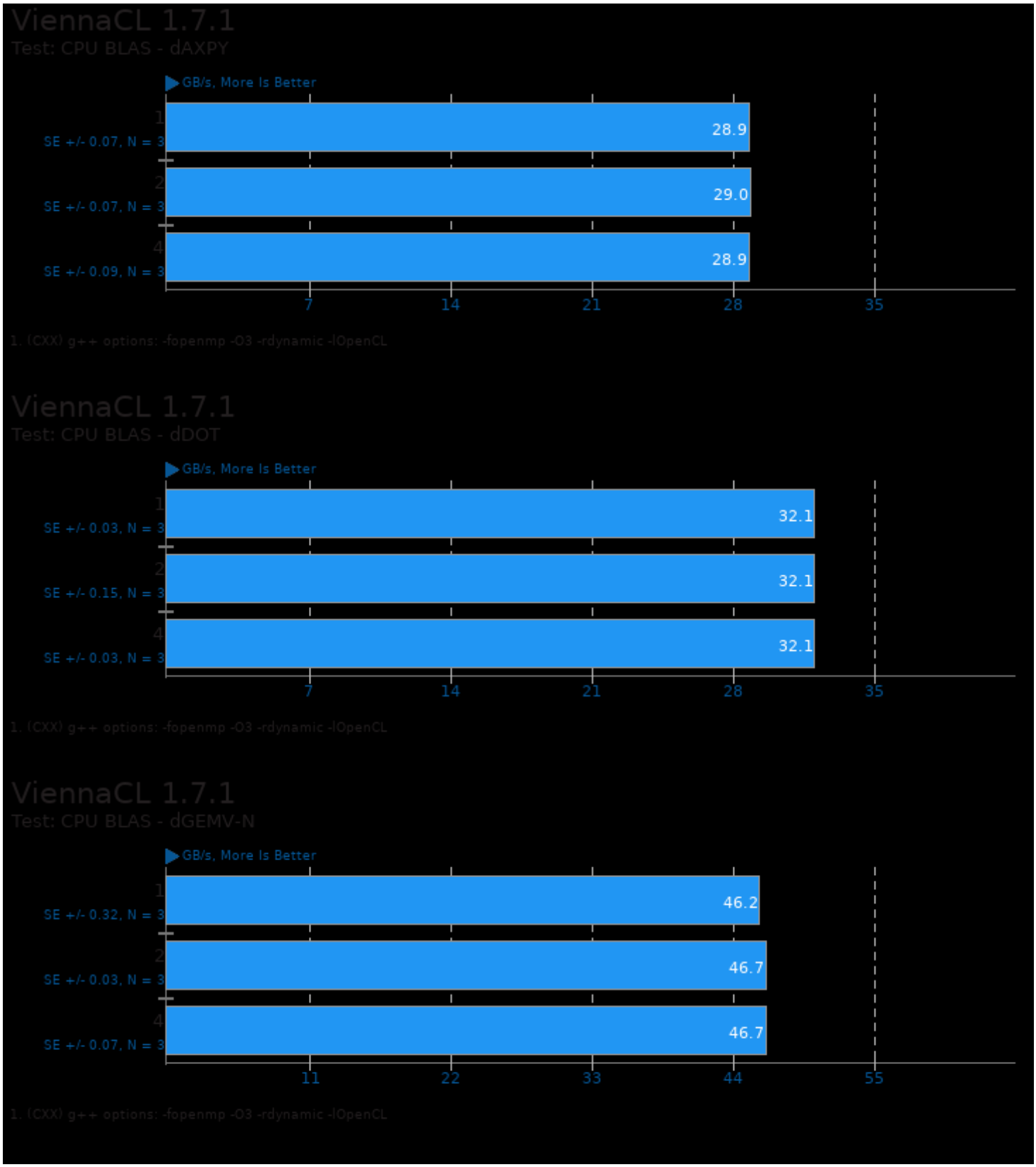

Botan 2.17.3
Test: AES-256 - Decrypt
MiB/s, More Is Better
1
SE +/- 2.87, N = 3
7370.96
2
SE +/- 70.57, N = 3
7448.16
3
SE +/- 73.16, N = 3
7337.52
4
SE +/- 5.51, N = 3
7345.84
1600
3200
4800
6400
8000
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt
Botan 2.17.3
Test: Twofish
MiB/s, More Is Better
1
SE +/- 1.32, N = 3
455.04
2
SE +/- 2.45, N = 3
457.55
3
SE +/- 0.67, N = 3
456.05
4
SE +/- 2.98, N = 3
451.96
100
200
300
400
500
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt

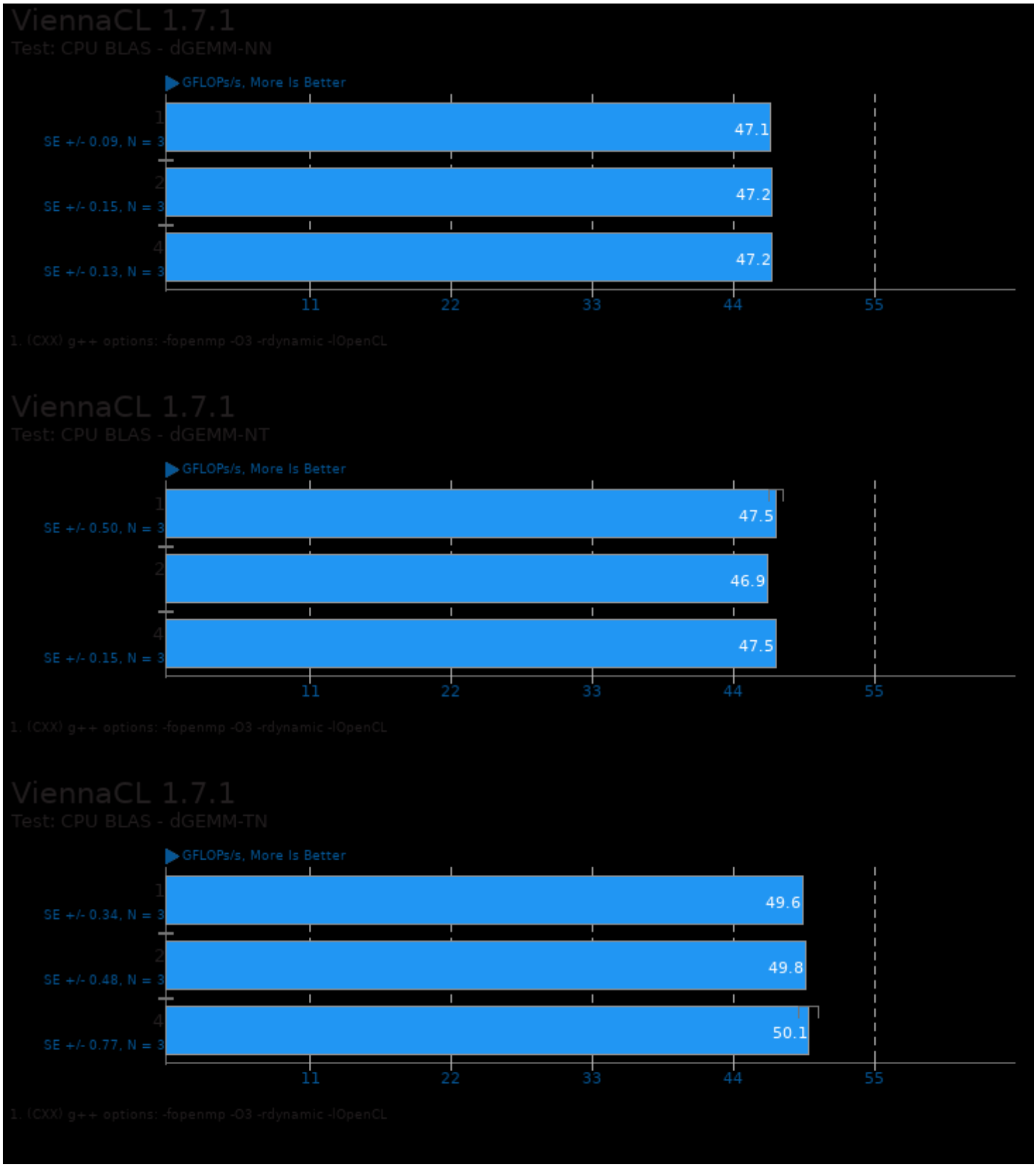

Botan 2.17.3
Test: Twofish - Decrypt
MiB/s, More Is Better
1
SE +/- 1.18, N = 3
454.94
2
SE +/- 2.12, N = 3
457.51
3
SE +/- 0.74, N = 3
455.97
4
SE +/- 2.75, N = 3
452.48
100
200
300
400
500
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt
Botan 2.17.3
Test: Blowfish
MiB/s, More Is Better
1
SE +/- 0.20, N = 3
556.56
2
SE +/- 1.86, N = 3
550.17
3
SE +/- 0.94, N = 3
555.11
4
SE +/- 2.74, N = 3
554.46
120
240
360
480
600
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt

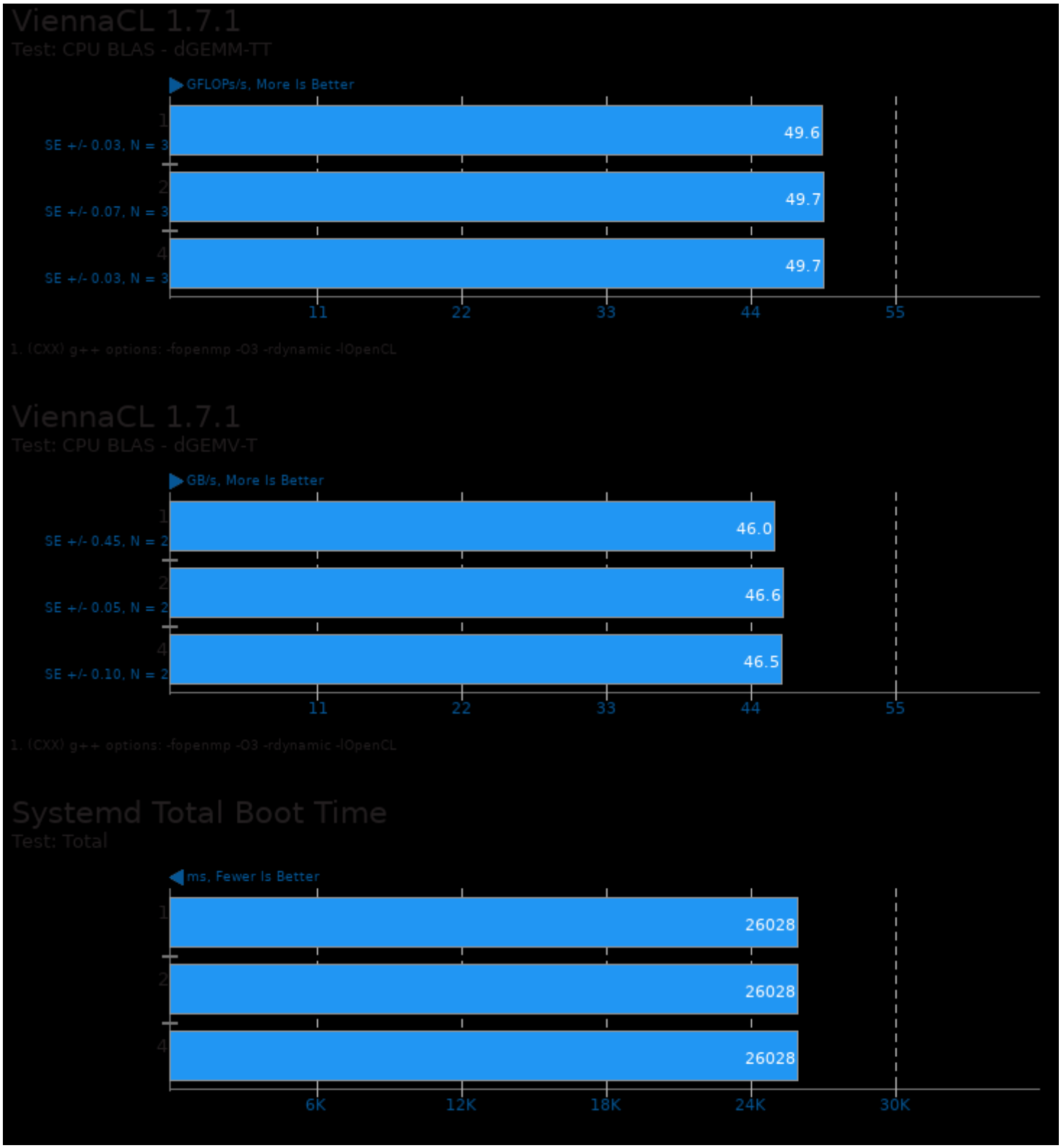

Botan 2.17.3
Test: Blowfish - Decrypt
MiB/s, More Is Better
1
SE +/- 0.07, N = 3
554.13
2
SE +/- 2.03, N = 3
547.67
3
SE +/- 1.06, N = 3
552.42
4
SE +/- 4.78, N = 3
549.73
120
240
360
480
600
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt
Botan 2.17.3
Test: CAST-256
MiB/s, More Is Better
1
SE +/- 0.57, N = 3
171.99
2
SE +/- 0.64, N = 3
171.67
4
SE +/- 0.52, N = 3
171.23
40
80
120
160
200
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt
Botan 2.17.3
Test: CAST-256 - Decrypt
MiB/s, More Is Better
1
SE +/- 0.57, N = 3
172.00
2
SE +/- 0.61, N = 3
171.68
4
SE +/- 0.44, N = 3
171.16
40
80
120
160
200
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt

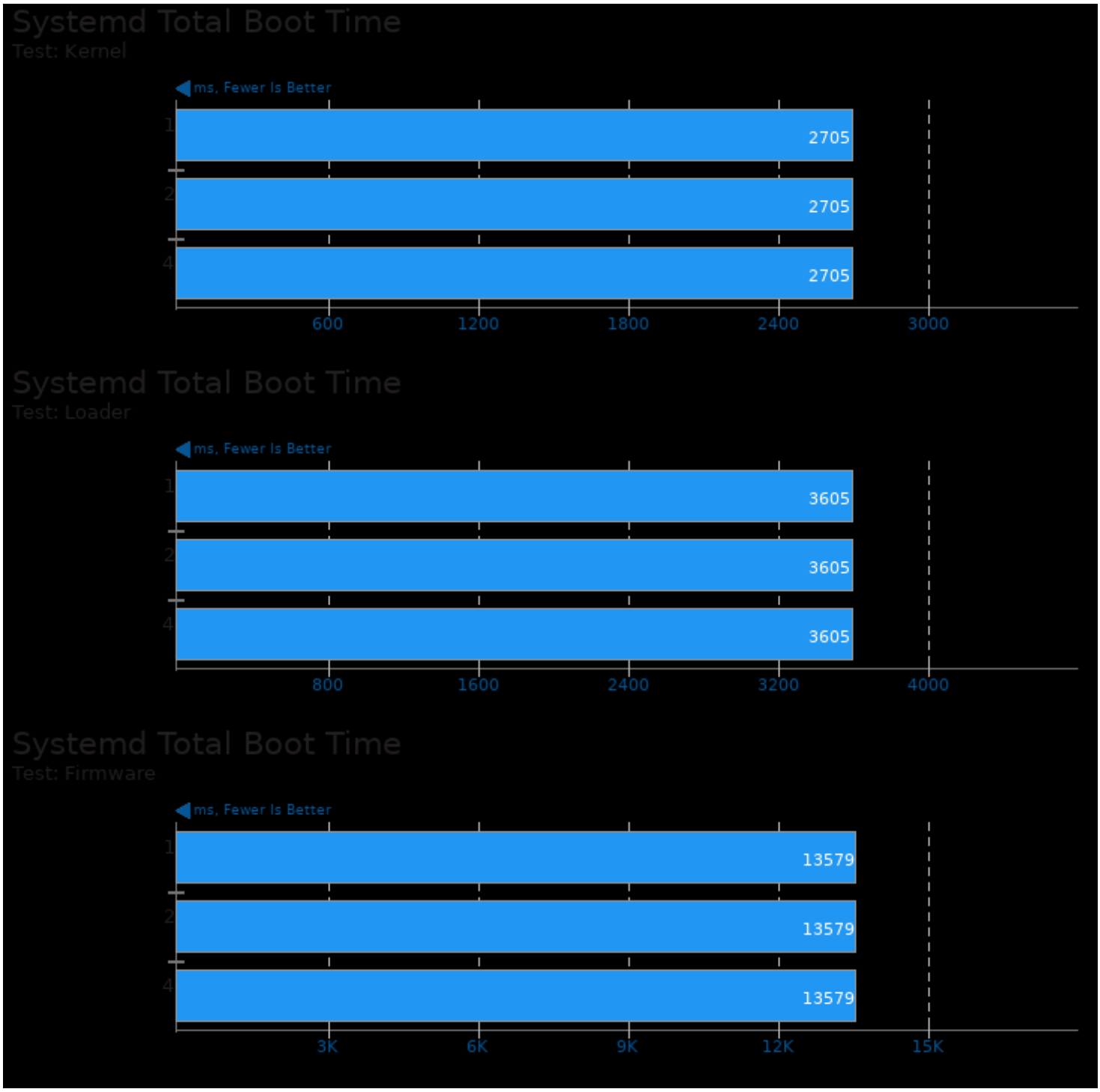

Botan 2.17.3
Test: ChaCha20Poly1305
MiB/s, More Is Better
1
808.58
SE +/- 2.50, N = 3
2
815.53
SE +/- 5.31, N = 3
4
813.95
SE +/- 5.86, N = 3
200
400
600
800
1000
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt
Botan 2.17.3
Test: ChaCha20Poly1305 - Decrypt
MiB/s, More Is Better
1
795.80
SE +/- 4.27, N = 3
2
804.37
SE +/- 4.90, N = 3
4
802.38
SE +/- 6.14, N = 3
200
400
600
800
1000
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt
ViennaCL 1.7.1
Test: CPU BLAS - sCOPY
GB/s, More Is Better
1
24.3
SE +/- 0.06, N = 3
2
24.3
SE +/- 0.03, N = 3
4
24.4
SE +/- 0.03, N = 3
6
12
18
24
30
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL

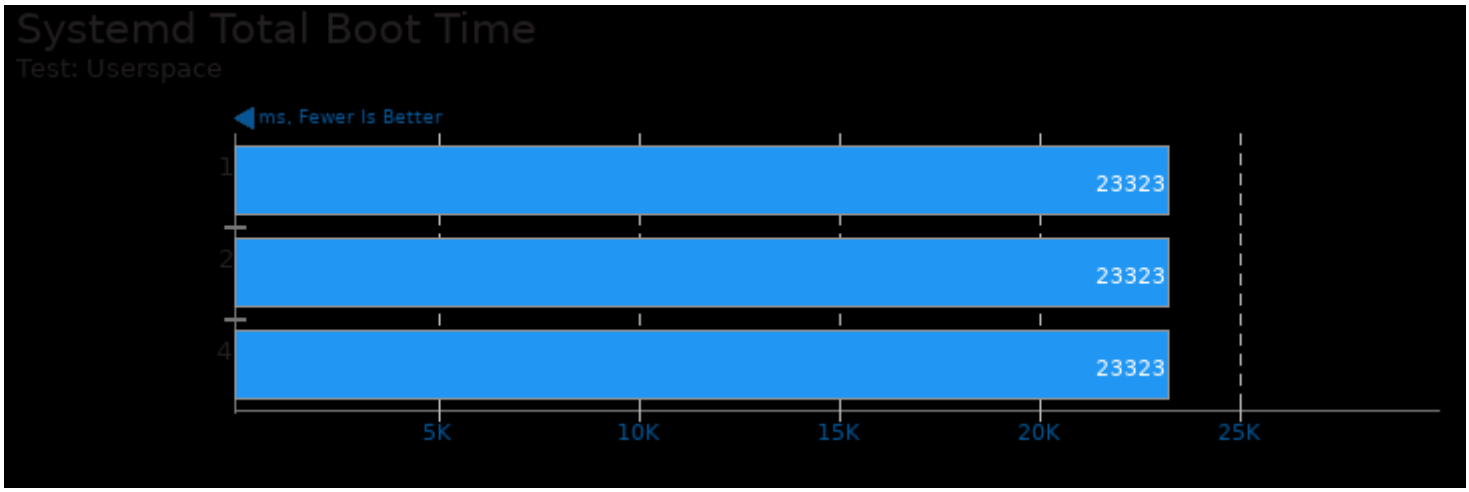

ViennaCL 1.7.1
Test: CPU BLAS - sAXPY
GB/s, More Is Better
1
SE +/- 0.10, N = 3
36.0
2
SE +/- 0.03, N = 3
36.1
4
SE +/- 0.03, N = 3
36.1
8
16
24
32
40
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL
ViennaCL 1.7.1
Test: CPU BLAS - sDOT
GB/s, More Is Better
1
SE +/- 0.06, N = 3
44.2
2
SE +/- 0.34, N = 3
43.5
4
SE +/- 0.34, N = 3
44.1
10
20
30
40
50
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL
ViennaCL 1.7.1
Test: CPU BLAS - dCOPY
GB/s, More Is Better
1
SE +/- 0.12, N = 3
19.5
2
SE +/- 0.03, N = 3
19.7
4
SE +/- 0.03, N = 3
19.7
5
10
15
20
25
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL


ViennaCL 1.7.1
Test: CPU BLAS - dAXPY
GB/s, More Is Better
1
SE +/- 0.07, N = 3
28.9
2
SE +/- 0.07, N = 3
29.0
4
SE +/- 0.09, N = 3
28.9
7
14
21
28
35
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL
ViennaCL 1.7.1
Test: CPU BLAS - dDOT
GB/s, More Is Better
1
SE +/- 0.03, N = 3
32.1
2
SE +/- 0.15, N = 3
32.1
4
SE +/- 0.03, N = 3
32.1
7
14
21
28
35
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL
ViennaCL 1.7.1
Test: CPU BLAS - dGEMV-N
GB/s, More Is Better
1
SE +/- 0.32, N = 3
46.2
2
SE +/- 0.03, N = 3
46.7
4
SE +/- 0.07, N = 3
46.7
11
22
33
44
55
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL

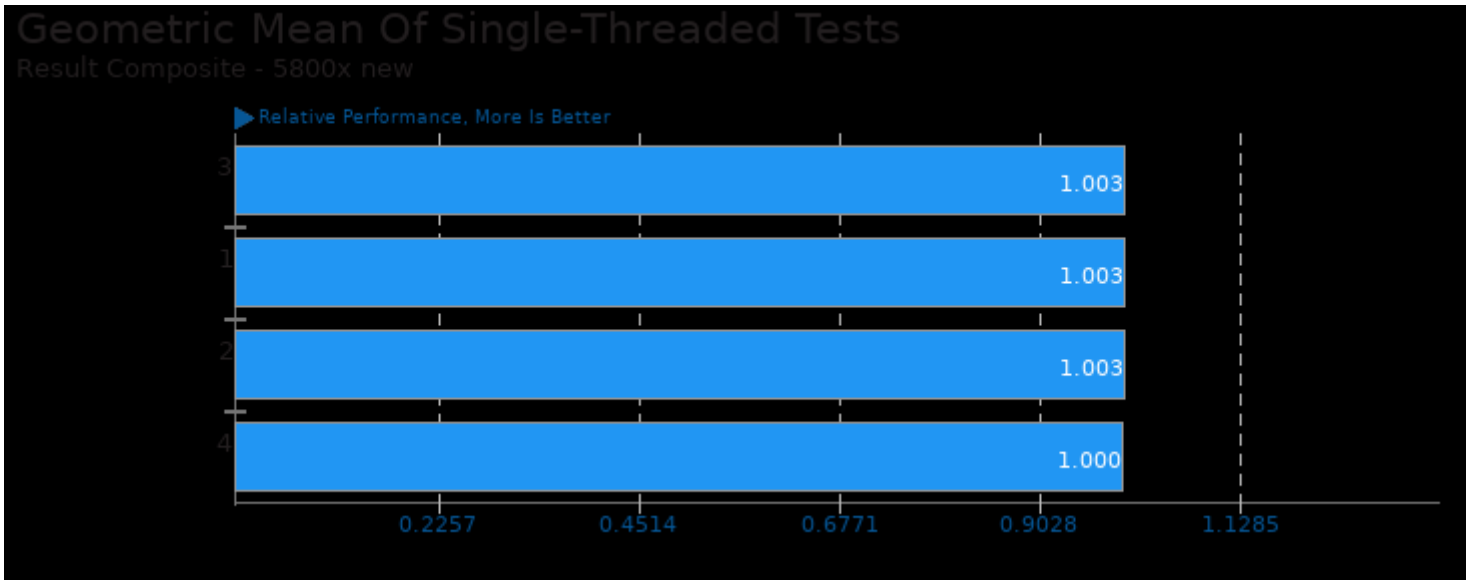

ViennaCL 1.7.1
Test: CPU BLAS - dGEMM-NN
GFLOPs/s, More Is Better
1
SE +/- 0.09, N = 3
47.1
2
SE +/- 0.15, N = 3
47.2
4
SE +/- 0.13, N = 3
47.2
11
22
33
44
55
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL
ViennaCL 1.7.1
Test: CPU BLAS - dGEMM-NT
GFLOPs/s, More Is Better
1
SE +/- 0.50, N = 3
47.5
2
46.9
4
SE +/- 0.15, N = 3
47.5
11
22
33
44
55
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL
ViennaCL 1.7.1
Test: CPU BLAS - dGEMM-TN
GFLOPs/s, More Is Better
1
SE +/- 0.34, N = 3
49.6
2
SE +/- 0.48, N = 3
49.8
4
SE +/- 0.77, N = 3
50.1
11
22
33
44
55
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL


ViennaCL 1.7.1
Test: CPU BLAS - dGEMM-TT
GFLOPs/s, More Is Better
1
SE +/- 0.03, N = 3
49.6
2
SE +/- 0.07, N = 3
49.7
4
SE +/- 0.03, N = 3
49.7
11
22
33
44
55
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL
ViennaCL 1.7.1
Test: CPU BLAS - dGEMV-T
GB/s, More Is Better
1
SE +/- 0.45, N = 2
46.0
2
SE +/- 0.05, N = 2
46.6
4
SE +/- 0.10, N = 2
46.5
11
22
33
44
55
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL
Systemd Total Boot Time
Test: Total
ms, Fewer Is Better
1
26028
2
26028
4
26028
6K
12K
18K
24K
30K


Systemd Total Boot Time
Test: Kernel
ms, Fewer Is Better
1
2
4
2705
2705
2705
600
1200
1800
2400
3000
Systemd Total Boot Time
Test: Loader
ms, Fewer Is Better
1
2
4
3605
3605
3605
800
1600
2400
3200
4000
Systemd Total Boot Time
Test: Firmware
ms, Fewer Is Better
1
2
4
13579
13579
13579
3K
6K
9K
12K
15K


Systemd Total Boot Time
Test: Userspace
ms, Fewer Is Better
1
2
4
23323
23323
23323
5K
10K
15K
20K
25K

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



Geometric mean based upon tests: pts/gmpbench and pts/botan

This file was automatically generated via the Phoronix Test Suite benchmarking software on Friday, 29 March 2024 02:21.