www.phoronix-test-suite.com

EPYC 7F72 eo mar

AMD EPYC 7F72 24-Core testing with a ASRockRack EPYCD8 (P2.40 BIOS) and llvmpipe on Ubuntu 20.04 via the Phoronix Test Suite.

Automated Executive Summary

1 had the most wins, coming in first place for 72% of the tests.

Based on the geometric mean of all complete results, the fastest (1) was 1.007x the speed of the slowest (3). 4 was 0.995x the speed of 1, 2 was 0.999x the speed of 4, 3 was 0.999x the speed of 2.

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

ViennaCL (Test: CPU BLAS - dDOT) at 1.075x
ViennaCL (Test: CPU BLAS - dGEMM-TT) at 1.016x
ViennaCL (Test: CPU BLAS - dAXPY) at 1.016x
ViennaCL (Test: CPU BLAS - sAXPY) at 1.016x
ViennaCL (Test: CPU BLAS - sDOT) at 1.012x
ViennaCL (Test: CPU BLAS - dGEMV-T) at 1.012x
ViennaCL (Test: CPU BLAS - dGEMM-NT) at 1.011x
ViennaCL (Test: CPU BLAS - dGEMM-TN) at 1.007x
ViennaCL (Test: CPU BLAS - dGEMM-NN) at 1.004x

Botan (Test: ChaCha20Poly1305 - Decrypt) at 1.003x.

Test Systems:

1

Processor: AMD EPYC 7F72 24-Core @ 3.20GHz (24 Cores / 48 Threads), Motherboard: ASRockRack EPYCD8 (P2.40 BIOS), Chipset: AMD Starship/Matisse, Memory: 126GB, Disk: 3841GB Micron_9300_MTFDHAL3T8TDP, Graphics: llvmpipe, Monitor: VE228, Network: 2 x Intel I350

OS: Ubuntu 20.04, Kernel: 5.9.0-050900rc6daily20200921-generic (x86_64) 20200920, Desktop: GNOME Shell 3.36.4, Display Server: X Server 1.20.8, OpenGL: 3.3 Mesa 20.0.8 (LLVM 10.0.0 128 bits), Compiler: GCC 9.3.0, 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++,gm2 --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-9-HskZEa/gcc-9-9.3.0/debian/tmp-nvptx/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 ondemand (Boost: Enabled) - CPU Microcode: 0x8301034
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: conditional RSB filling + srbds: Not affected + tsx_async_abort: Not affected

2

3

4

Processor: AMD EPYC 7F72 24-Core @ 3.20GHz (24 Cores / 48 Threads), Motherboard: ASRockRack EPYCD8 (P2.40 BIOS), Chipset: AMD Starship/Matisse, Memory: 126GB, Disk: 3841GB Micron_9300_MTFDHAL3T8TDP, Graphics: llvmpipe, Monitor: VE228, Network: 2 x Intel I350

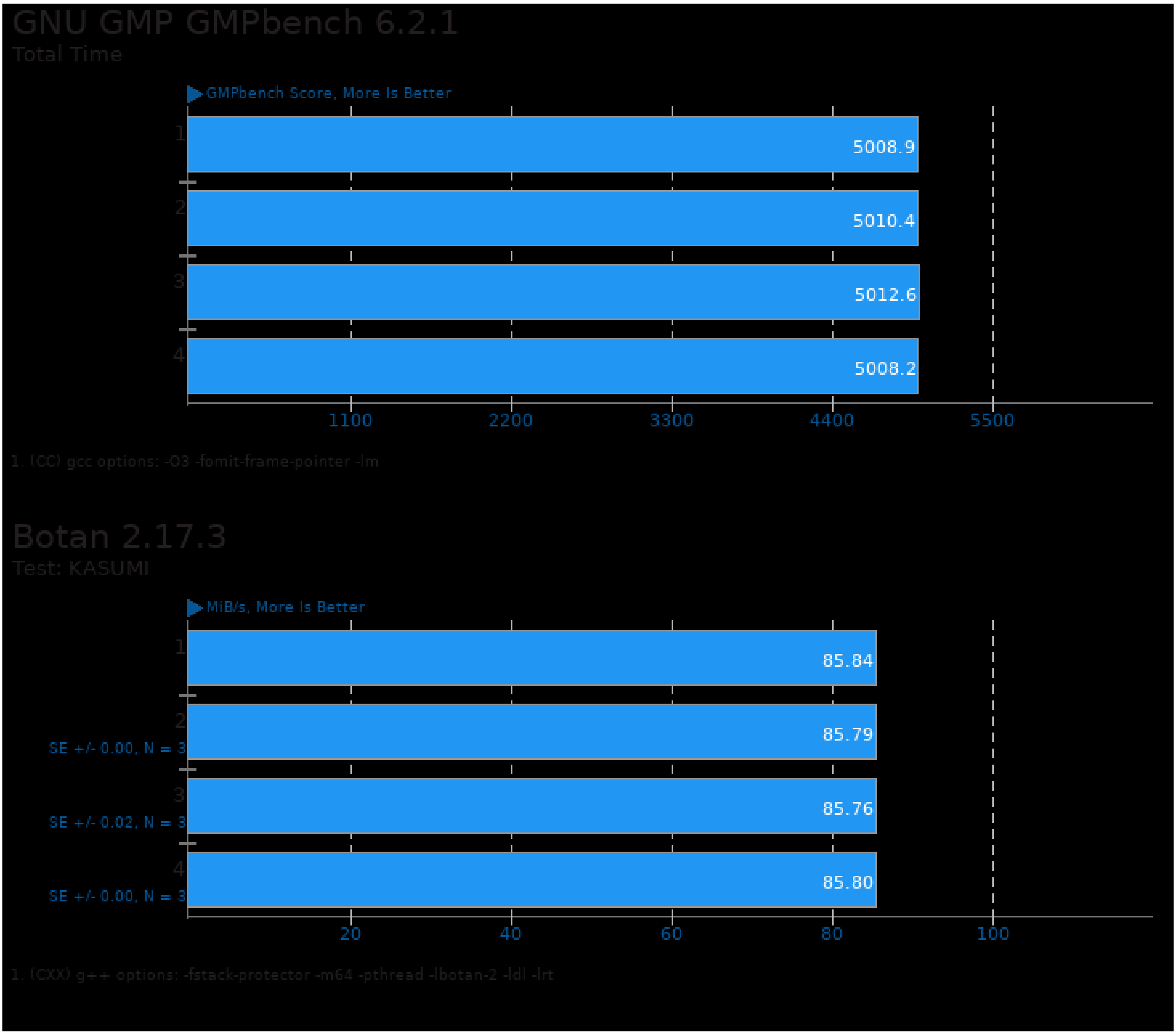
OS: Ubuntu 20.04, Kernel: 5.9.0-050900rc6daily20200921-generic (x86_64) 20200920, Desktop: GNOME Shell 3.36.4, Display Server: X Server 1.20.8, Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 1920x1080

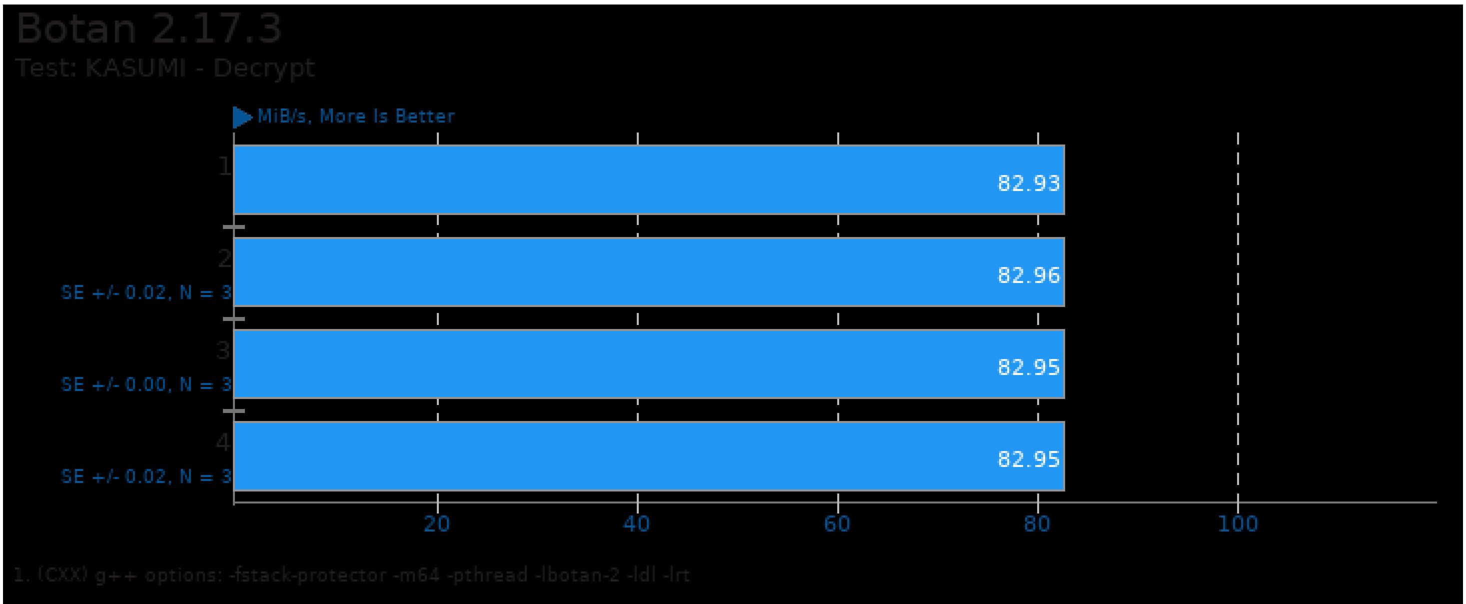
Kernel Notes: Transparent Huge Pages: madvise
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,gm2 --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-9-HskZEa/gcc-9-9.3.0/debian/tmp-nvptx/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 ondemand (Boost: Enabled) - CPU Microcode: 0x8301034
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: conditional RSB filling + srbds: Not affected + tsx_async_abort: Not affected

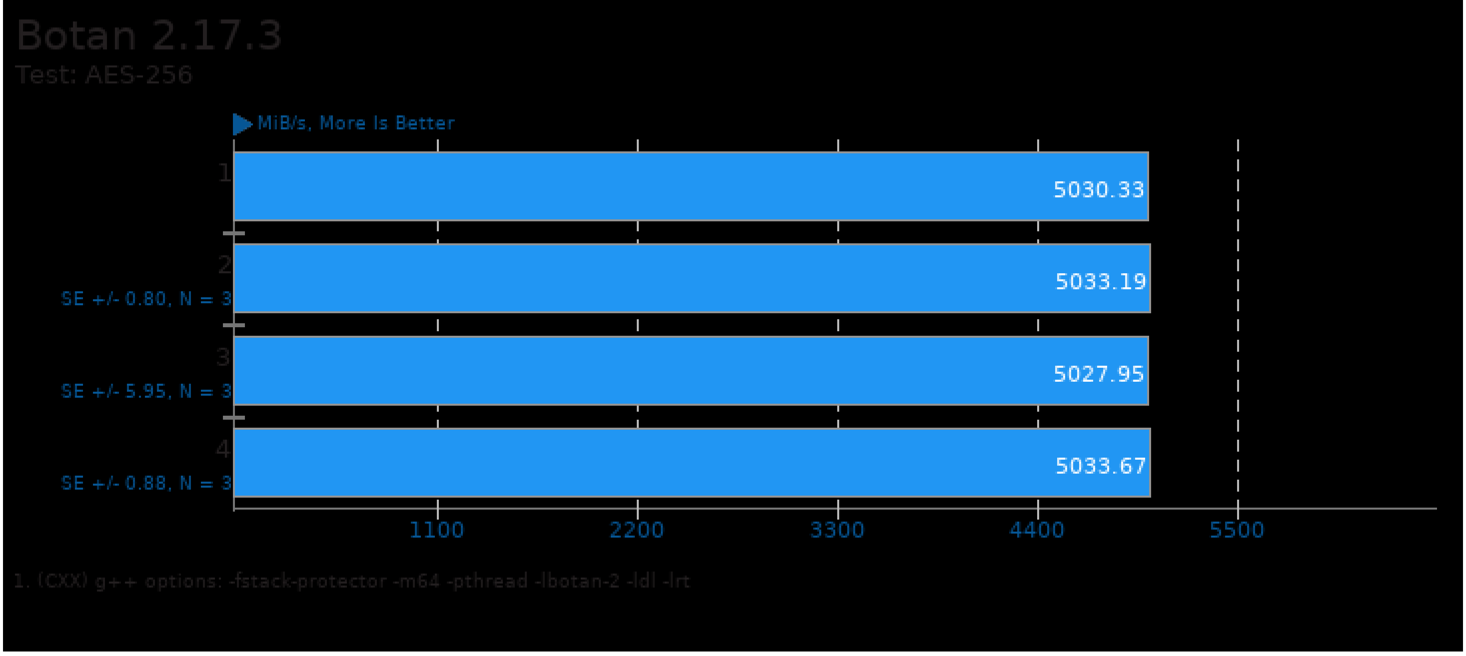
EPYC 7F72 eo mar

	1	2	3	4
GNU GMP GMPbench - Total Time (GMPbench Score)	5009	5010	5013	5008
Normalized	99.93%	99.96%	100%	99.91%
Botan - KASUMI (MiB/s)	85.841	85.787	85.757	85.795
Normalized	100%	99.94%	99.9%	99.95%
Standard Deviation		0%	0%	0%
Botan - KASUMI - Decrypt (MiB/s)	82.927	82.959	82.952	82.950
Normalized	99.96%	100%	99.99%	99.99%
Standard Deviation		0%	0%	0%
Botan - AES-256 (MiB/s)	5030	5033	5028	5034
Normalized	99.93%	99.99%	99.89%	100%
Standard Deviation		0%	0.2%	0%
Botan - AES-256 - Decrypt (MiB/s)	5038	5034	5029	5035
Normalized	100%	99.91%	99.82%	99.94%
Standard Deviation		0%	0.2%	0.1%
Botan - Twofish (MiB/s)	333.779	333.767	333.746	333.763
Normalized	100%	100%	99.99%	100%
Standard Deviation		0%	0.1%	0.1%
Botan - Twofish - Decrypt (MiB/s)	333.703	333.564	333.693	333.584
Normalized	100%	99.96%	100%	99.96%
Standard Deviation		0%	0.1%	0.1%
Botan - Blowfish (MiB/s)	407.744	407.187	407.259	407.604
Normalized	100%	99.86%	99.88%	99.97%
Standard Deviation		0.1%	0.1%	0.1%
Botan - Blowfish - Decrypt (MiB/s)	406.243	405.706	405.598	406.024
Normalized	100%	99.87%	99.84%	99.95%
Standard Deviation		0%	0.1%	0%
Botan - CAST-256 (MiB/s)	132.618	132.520	132.466	132.548
Normalized	100%	99.93%	99.89%	99.95%
Standard Deviation		0.1%	0.2%	0%
Botan - CAST-256 - Decrypt (MiB/s)	132.567	132.496	132.472	132.548
Normalized	100%	99.95%	99.93%	99.99%
Standard Deviation		0.1%	0.2%	0%
Botan - ChaCha20Poly1305 (MiB/s)	701.38	701.262	701.479	702.452
Normalized	99.85%	99.83%	99.86%	100%
Standard Deviation		0.2%	0.2%	0.1%
Botan - ChaCha20Poly1305 - Decrypt (MiB/s)	697.341	696.032	694.980	695.928
Normalized	100%	99.81%	99.66%	99.8%
Standard Deviation		0%	0.3%	0.1%
ViennaCL - CPU BLAS - sCOPY (GB/s)	882	1055	962	1065
Normalized	82.82%	99.06%	90.33%	100%
Standard Deviation		15%	14.3%	14.1%
ViennaCL - CPU BLAS - sAXPY (GB/s)	458	453	451	454
Normalized	100%	98.91%	98.47%	99.13%
Standard Deviation		1.2%	1.9%	0.1%
ViennaCL - CPU BLAS - sDOT (GB/s)	413	408	409	408
Normalized	100%	98.79%	99.03%	98.79%
Standard Deviation			0.4%	0.2%
ViennaCL - CPU BLAS - dCOPY (GB/s)	821	724	732	756
Normalized	100%	88.19%	89.16%	92.08%
Standard Deviation		4.6%	6.1%	5.5%
ViennaCL - CPU BLAS - dAXPY (GB/s)	849	836	837	839
Normalized	100%	98.47%	98.59%	98.82%

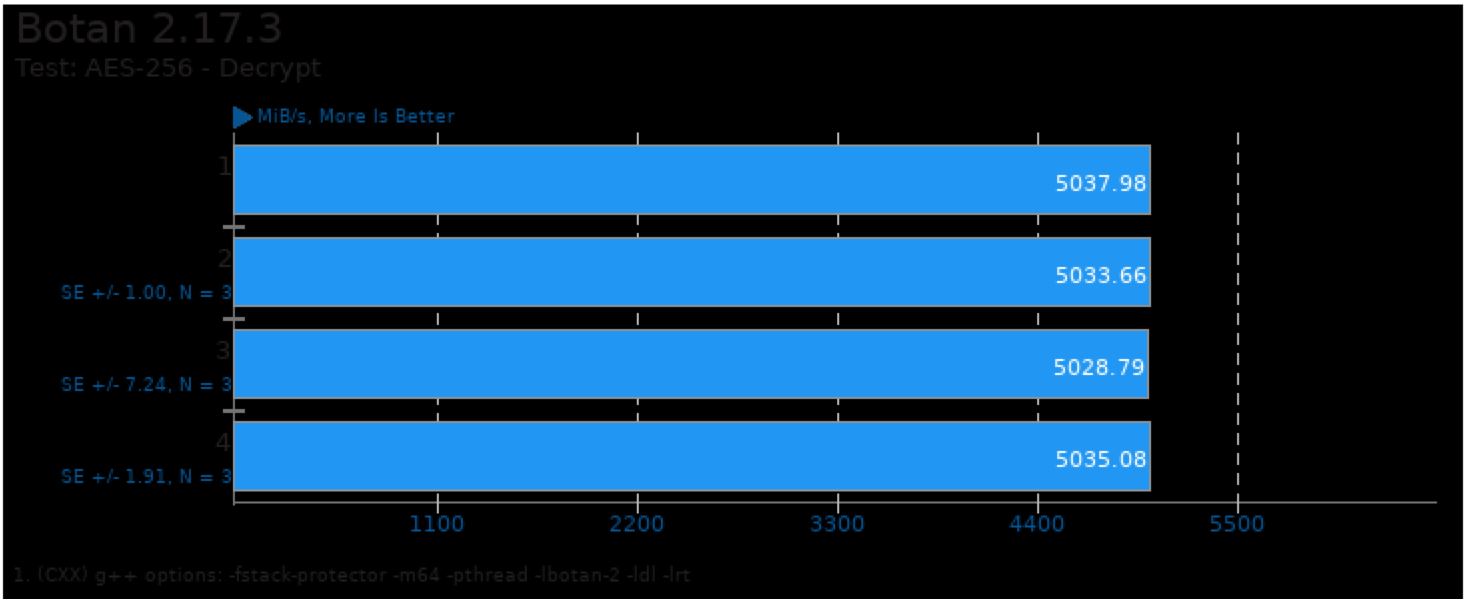
Standard Deviation		0.8%	0.9%	0.9%
ViennaCL - CPU BLAS - dDOT (GB/s)	**744**	**692**	696	702
Normalized	100%	93.01%	93.55%	94.35%
Standard Deviation		3.4%	2.9%	2.5%
ViennaCL - CPU BLAS - dGEMV-N (GB/s)	**183**	170.8	177	**163**
Normalized	100%	93.33%	96.72%	89.07%
Standard Deviation		25.2%	17.3%	23.2%
ViennaCL - CPU BLAS - dGEMV-T (GB/s)	**424**	420	420	**419**
Normalized	100%	99.06%	99.06%	98.82%
Standard Deviation		1.1%	1.7%	2.6%
ViennaCL - CPU BLAS - dGEMM-NN (GFLOPs/s)	79.3	**79.1**	**79.4**	79.3
Normalized	99.87%	99.62%	100%	99.87%
Standard Deviation		0.9%	0.7%	1.3%
ViennaCL - CPU BLAS - dGEMM-NT (GFLOPs/s)	**76.7**	76.0	76.0	**75.9**
Normalized	100%	99.09%	99.09%	98.96%
Standard Deviation		1.1%	1.8%	1.5%
ViennaCL - CPU BLAS - dGEMM-TN (GFLOPs/s)	**82.8**	**82.2**	82.4	82.4
Normalized	100%	99.28%	99.52%	99.52%
Standard Deviation		1.5%	1.4%	1.5%
ViennaCL - CPU BLAS - dGEMM-TT (GFLOPs/s)	**80.1**	80.6	**81.4**	81.1
Normalized	98.4%	99.02%	100%	99.63%
Standard Deviation		1.8%	1.3%	1.8%

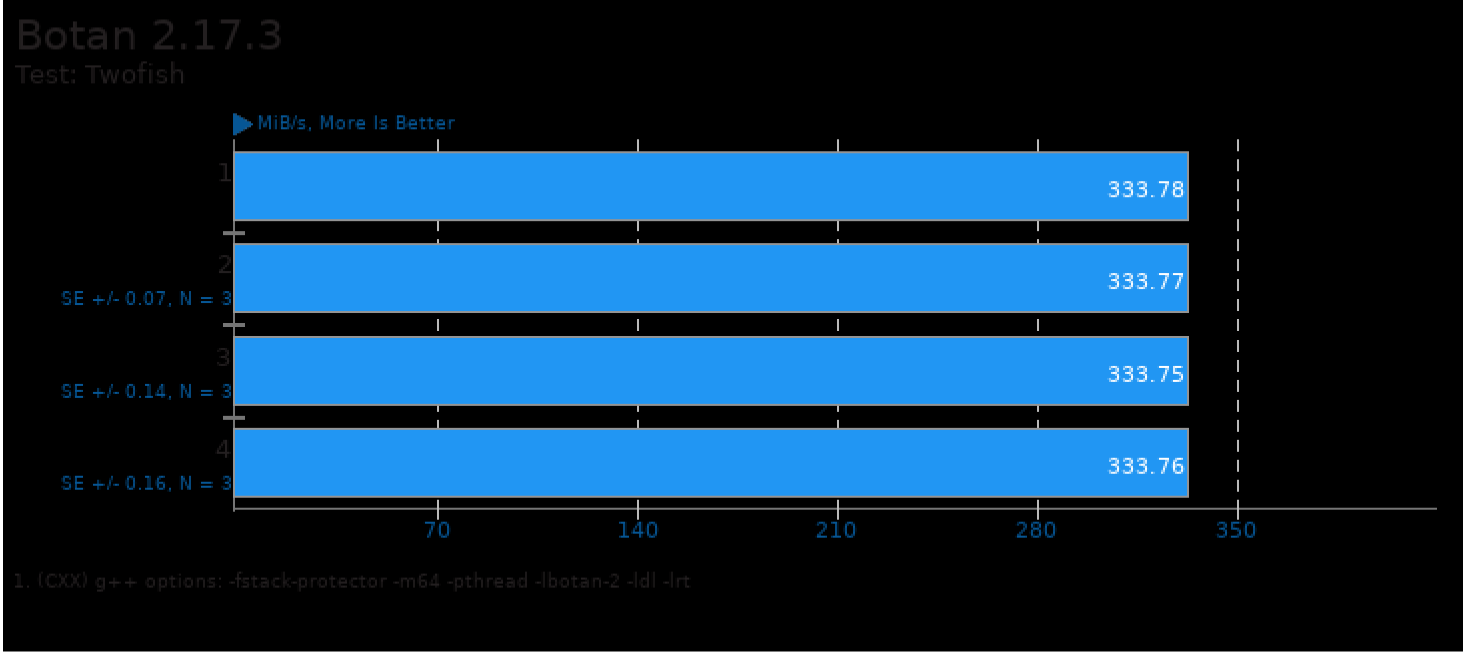

GNU GMP GMPbench 6.2.1
Total Time
GMPbench Score, More Is Better
1
2
3
4
5008.9
5010.4
5012.6
5008.2
1100
2200
3300
4400
5500
1. (CC) gcc options: -O3 -fomit-frame-pointer -lm
Botan 2.17.3
Test: KASUMI
MiB/s, More Is Better
1
2
3
4
SE +/- 0.00, N = 3
SE +/- 0.02, N = 3
SE +/- 0.00, N = 3
85.84
85.79
85.76
85.80
20
40
60
80
100
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt

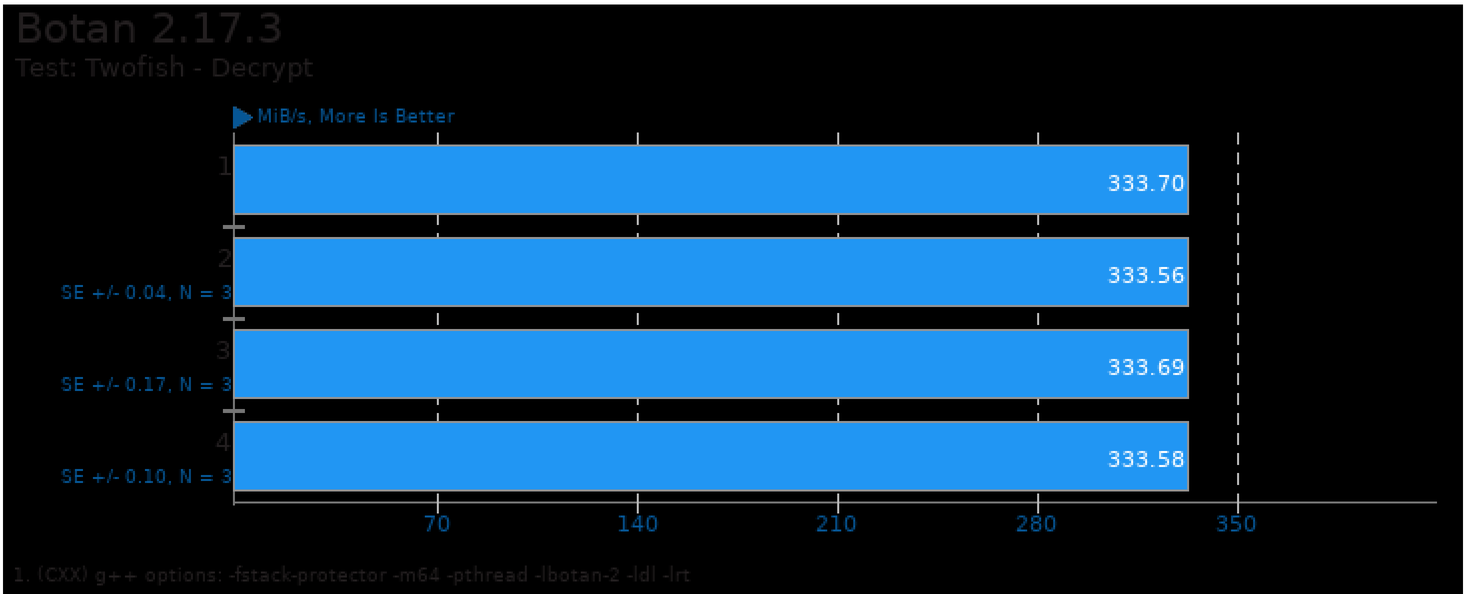

Botan 2.17.3
Test: KASUMI - Decrypt
MiB/s, More Is Better
1
82.93
2
SE +/- 0.02, N = 3
82.96
3
SE +/- 0.00, N = 3
82.95
4
SE +/- 0.02, N = 3
82.95
20
40
60
80
100
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt


Botan 2.17.3
Test: AES-256
MiB/s, More Is Better
1
5030.33
2
SE +/- 0.80, N = 3
5033.19
3
SE +/- 5.95, N = 3
5027.95
4
SE +/- 0.88, N = 3
5033.67
1100
2200
3300
4400
5500
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt

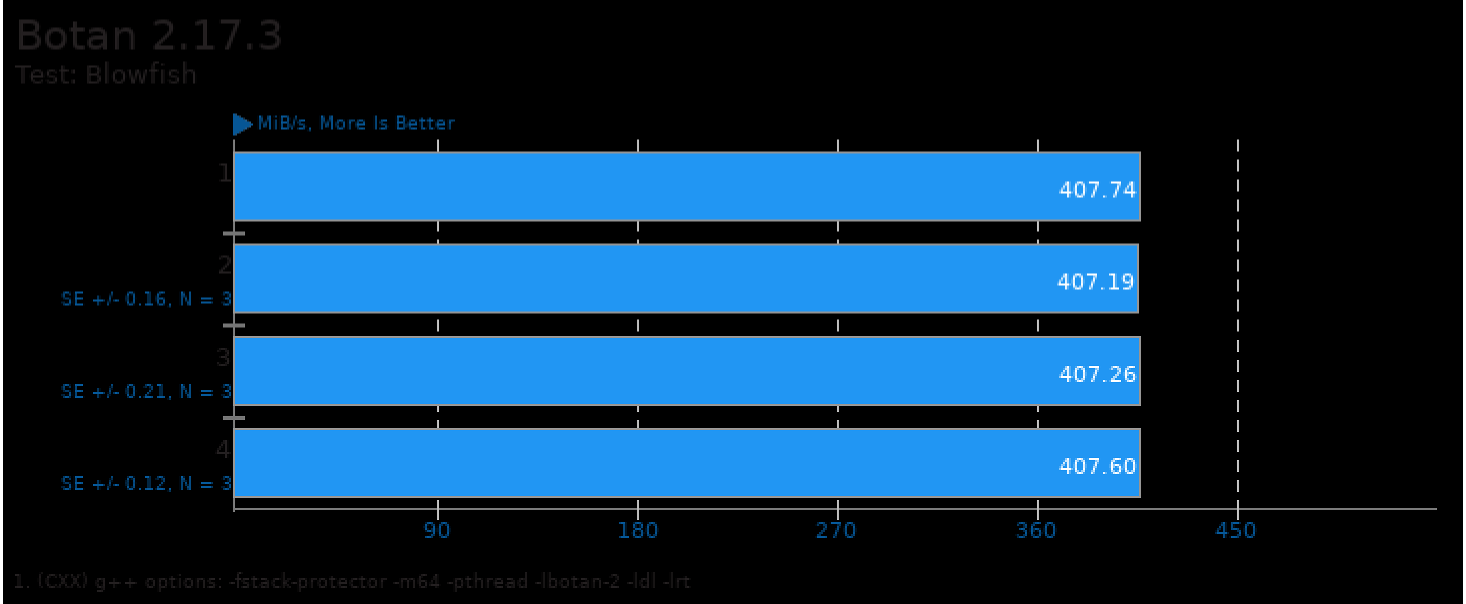
EPYC 7F72 eo mar





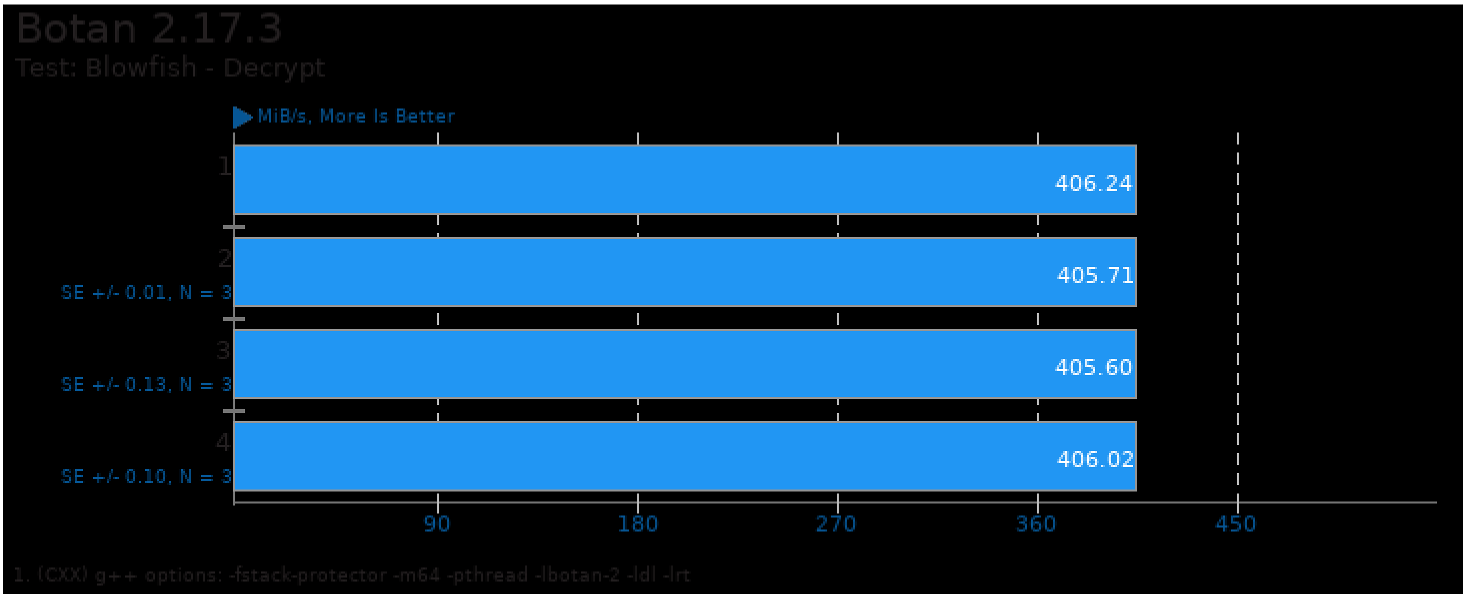


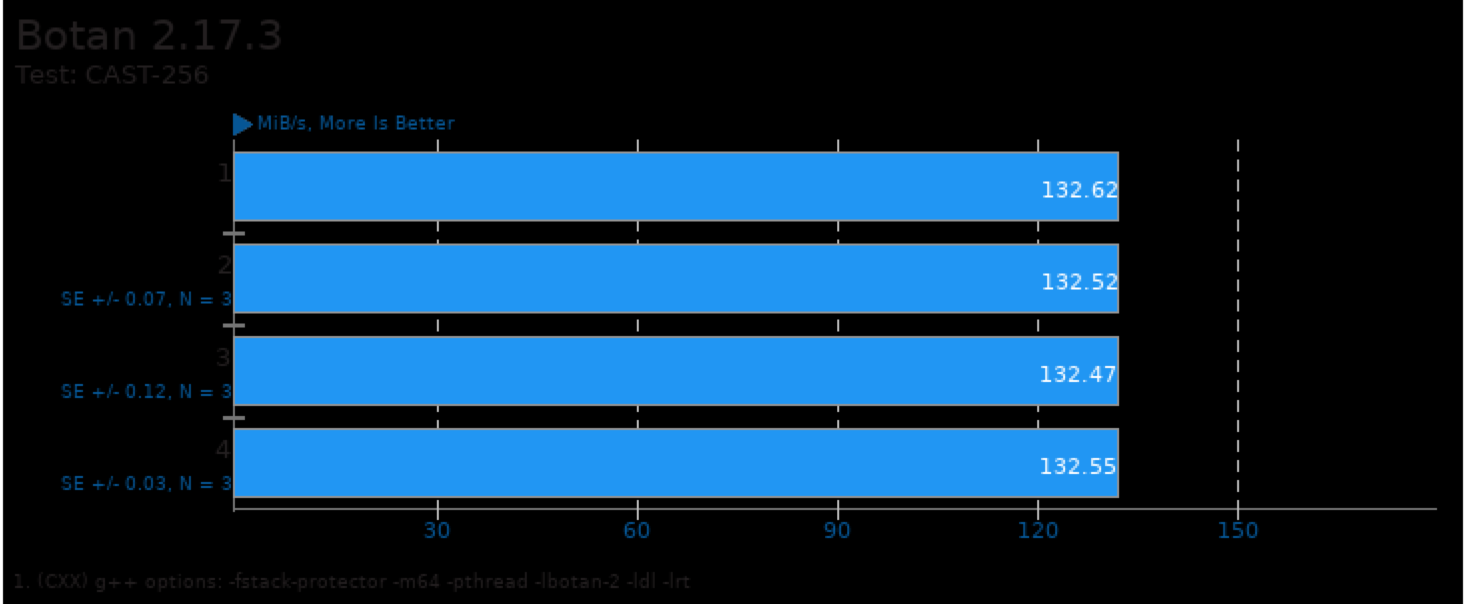
Botan 2.17.3
Test: Twofish - Decrypt
MiB/s, More Is Better
1
333.70
2
SE +/- 0.04, N = 3
333.56
3
SE +/- 0.17, N = 3
333.69
4
SE +/- 0.10, N = 3
333.58
70
140
210
280
350
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt

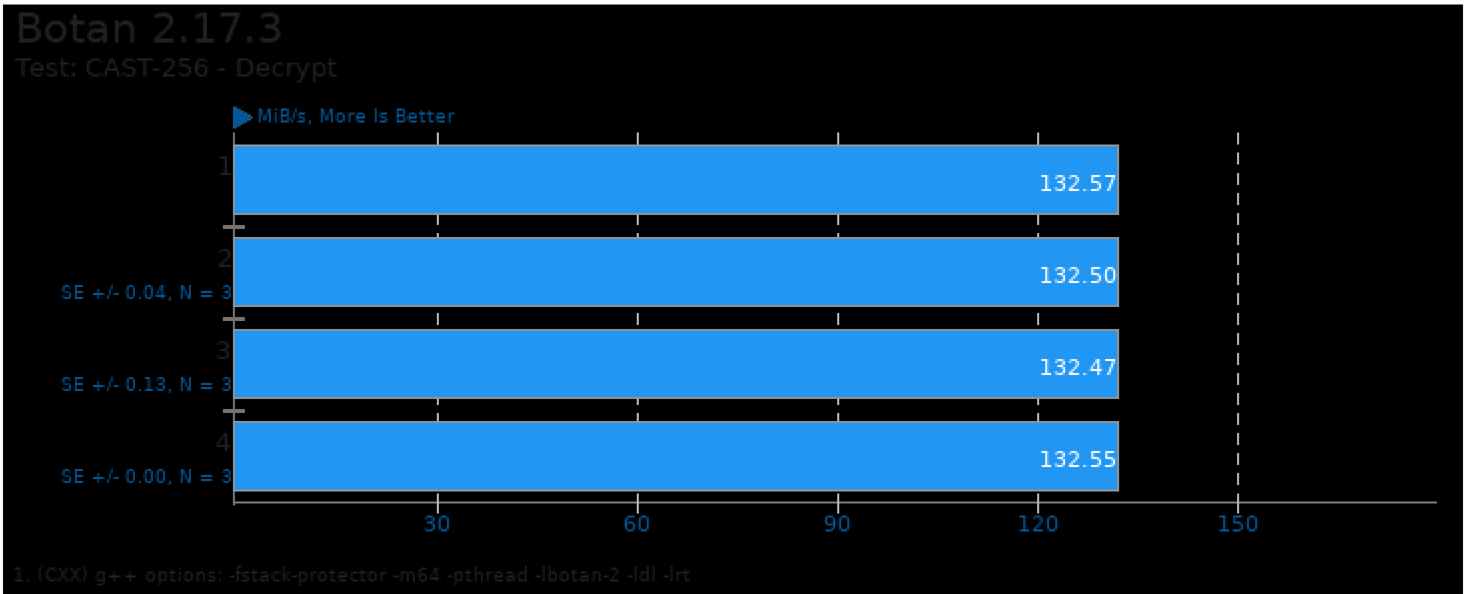


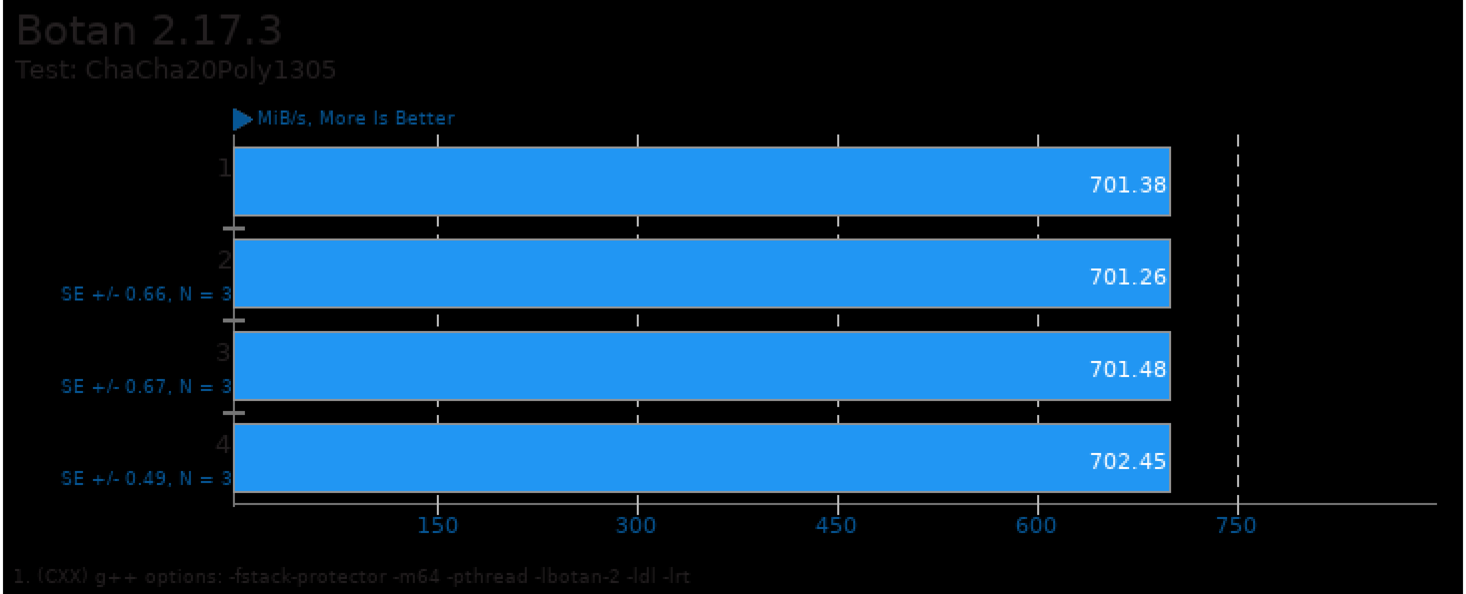
Botan 2.17.3
Test: Blowfish
MiB/s, More Is Better
1
407.74
2
SE +/- 0.16, N = 3
407.19
3
SE +/- 0.21, N = 3
407.26
4
SE +/- 0.12, N = 3
407.60
90
180
270
360
450
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt

EPYC 7F72 eo mar

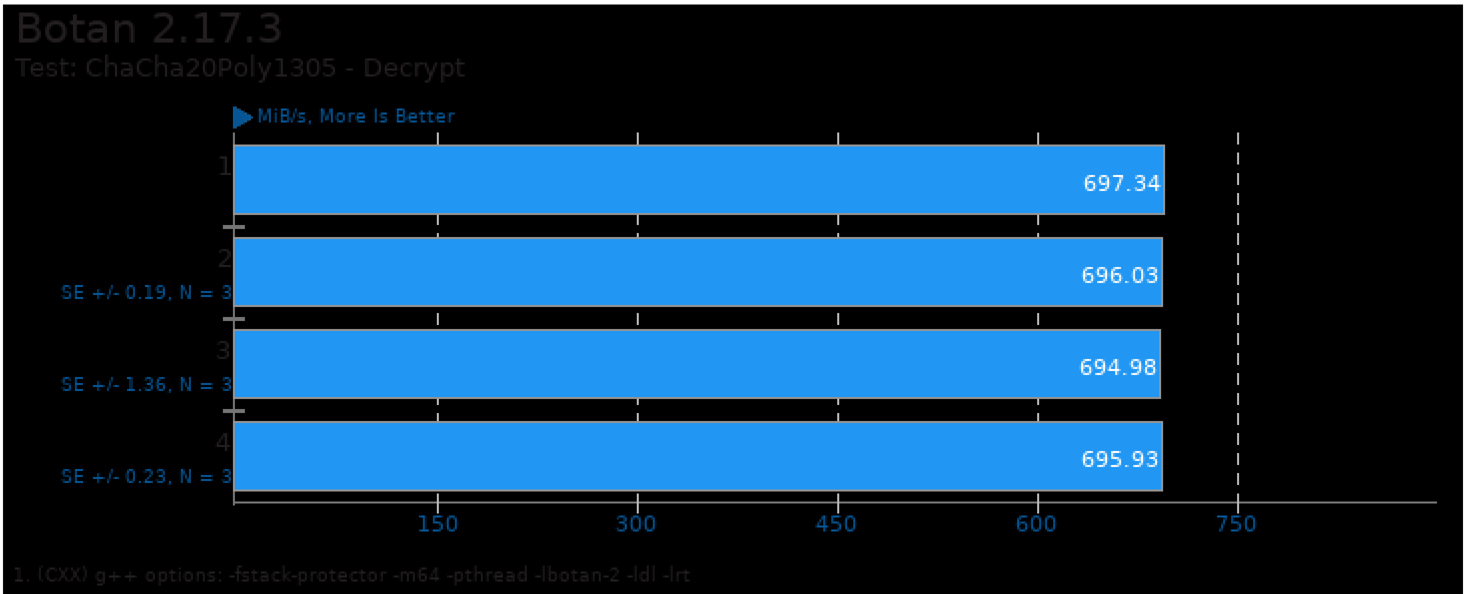


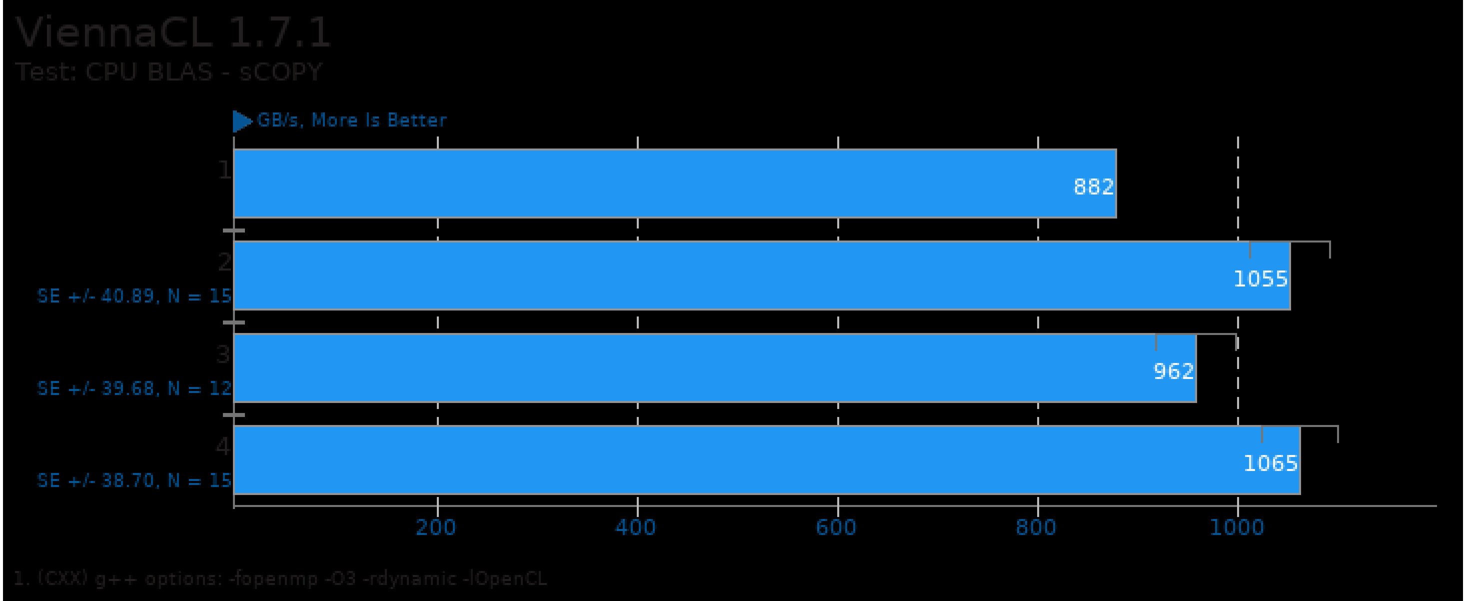


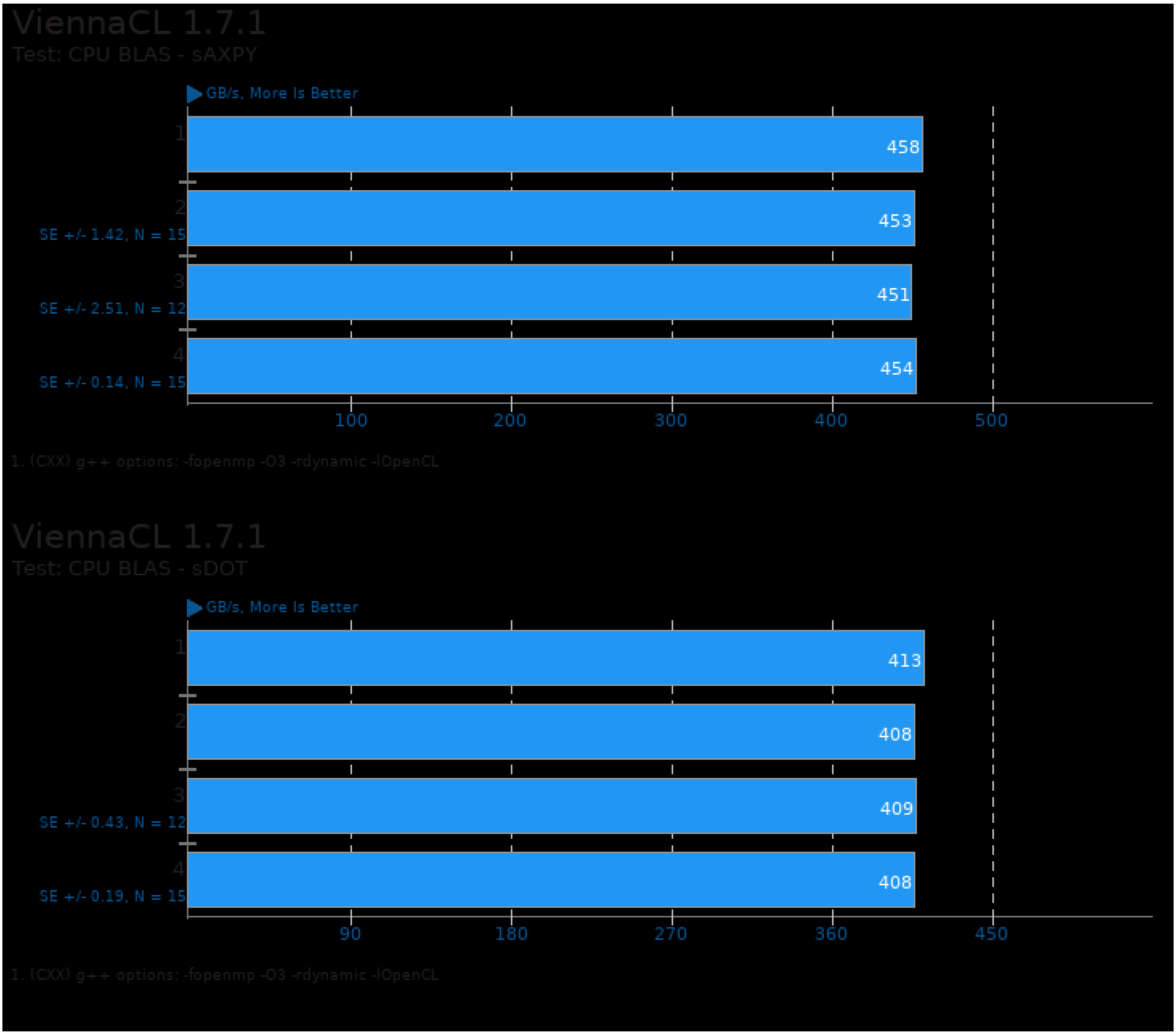

Botan 2.17.3
Test: CAST-256 - Decrypt
MiB/s, More Is Better
1
132.57
2
SE +/- 0.04, N = 3
132.50
3
SE +/- 0.13, N = 3
132.47
4
SE +/- 0.00, N = 3
132.55
30
60
90
120
150
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt

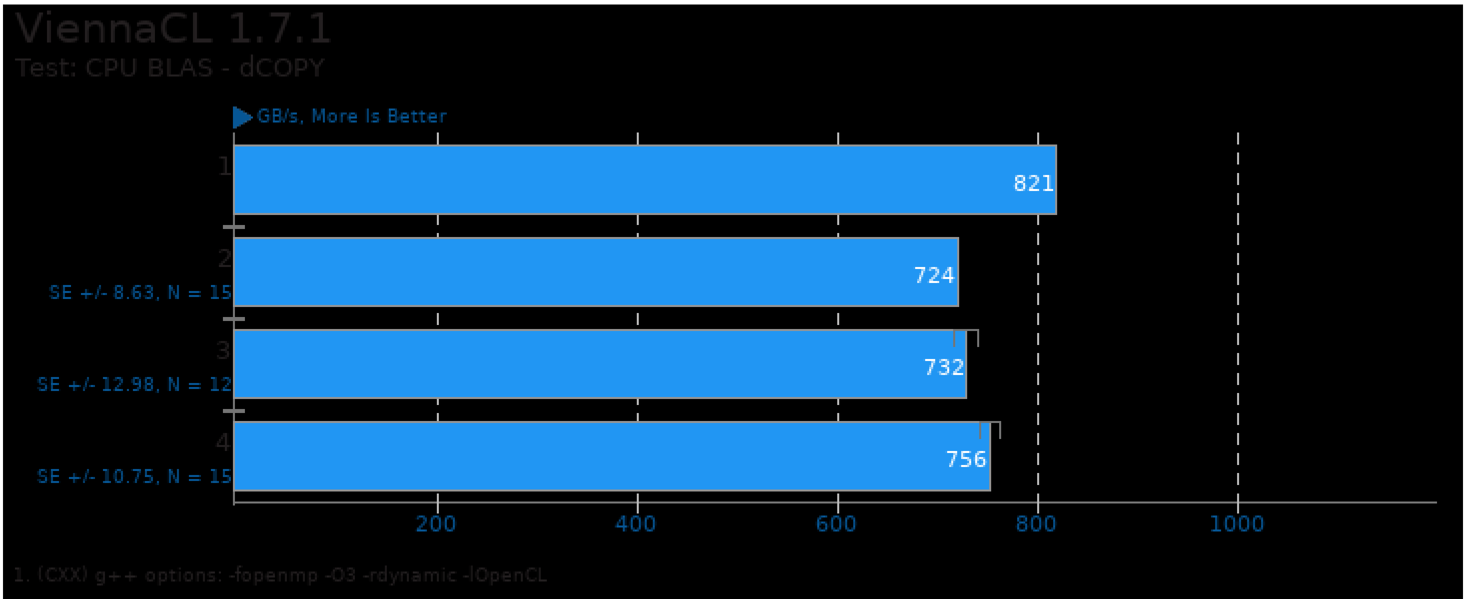

Botan 2.17.3
Test: ChaCha20Poly1305
MiB/s, More Is Better
1
701.38
2
SE +/- 0.66, N = 3
701.26
3
SE +/- 0.67, N = 3
701.48
4
SE +/- 0.49, N = 3
702.45
150
300
450
600
750
1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt

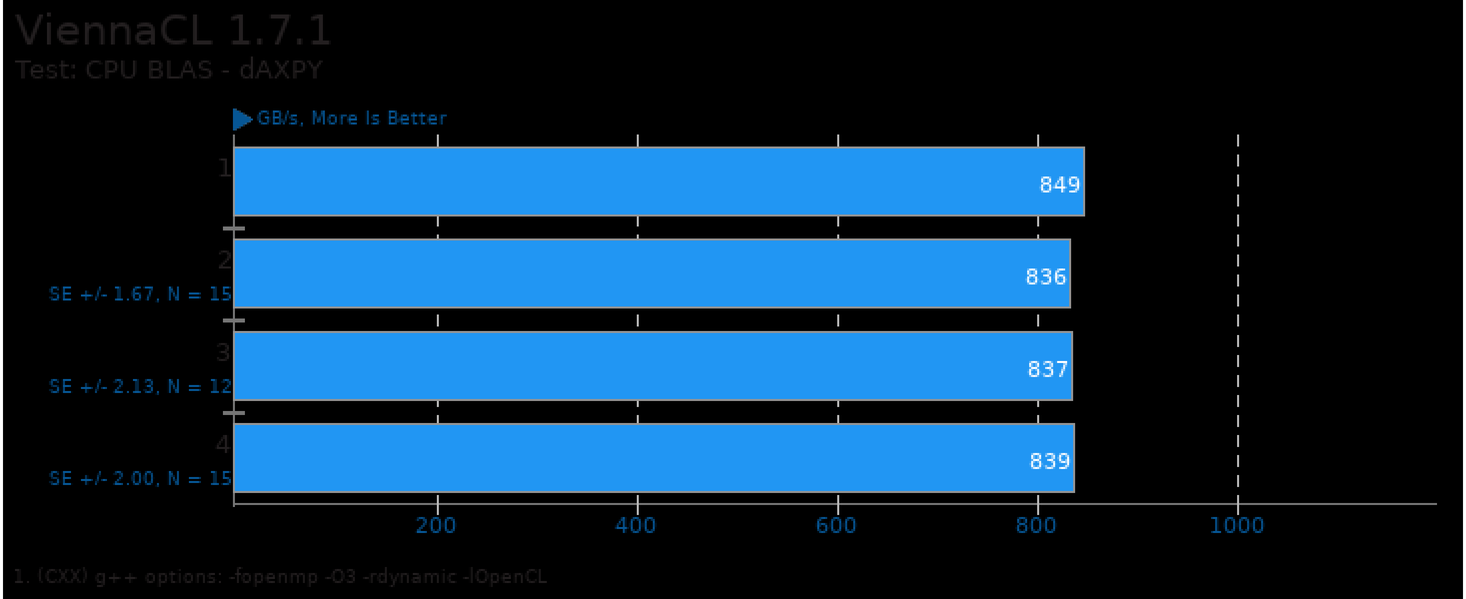
EPYC 7F72 eo mar

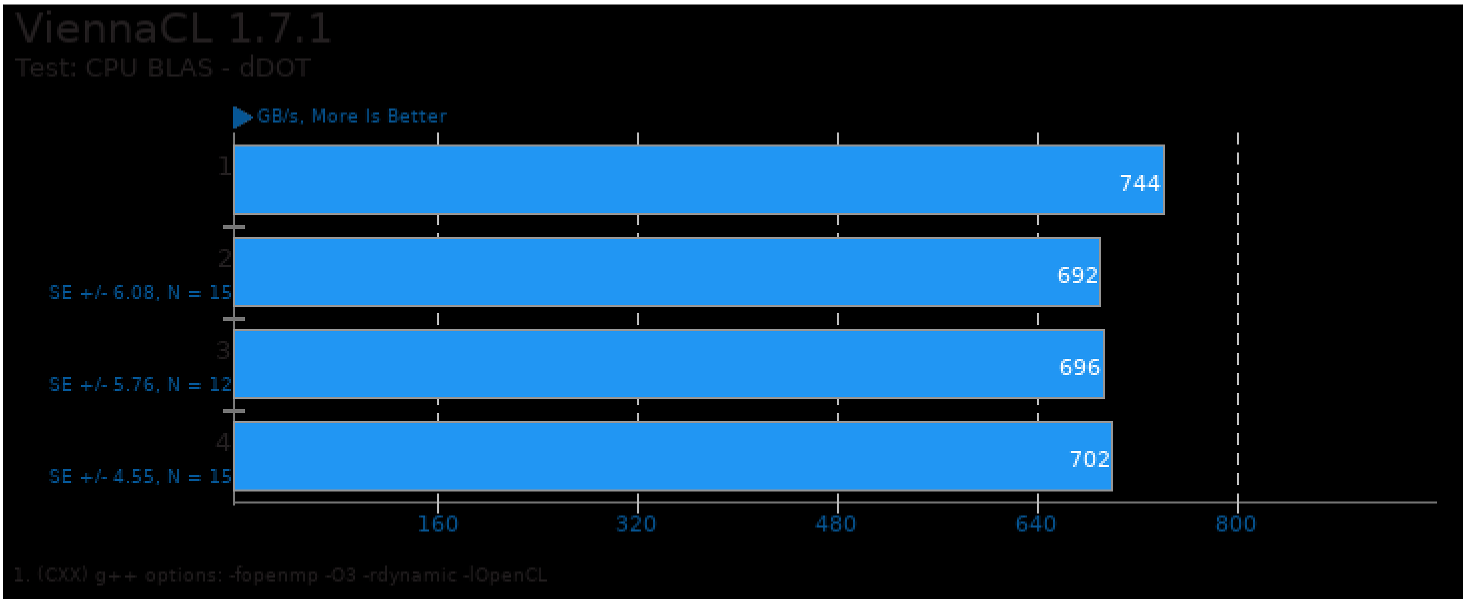


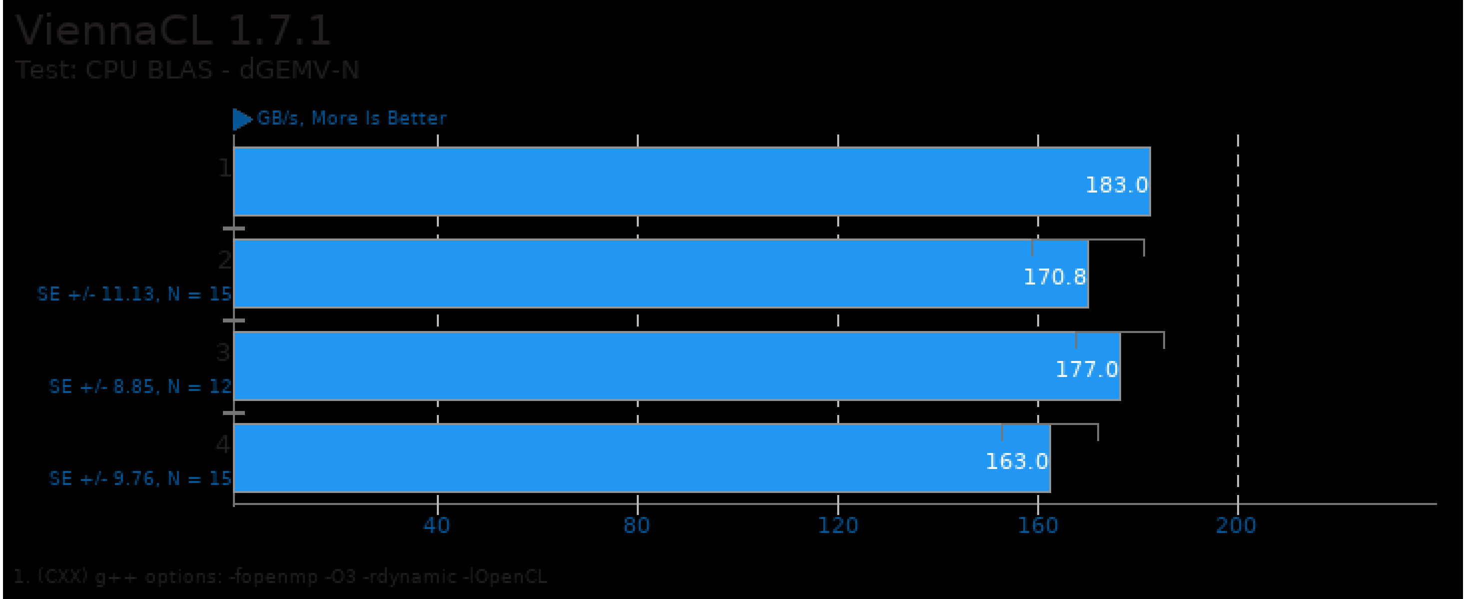


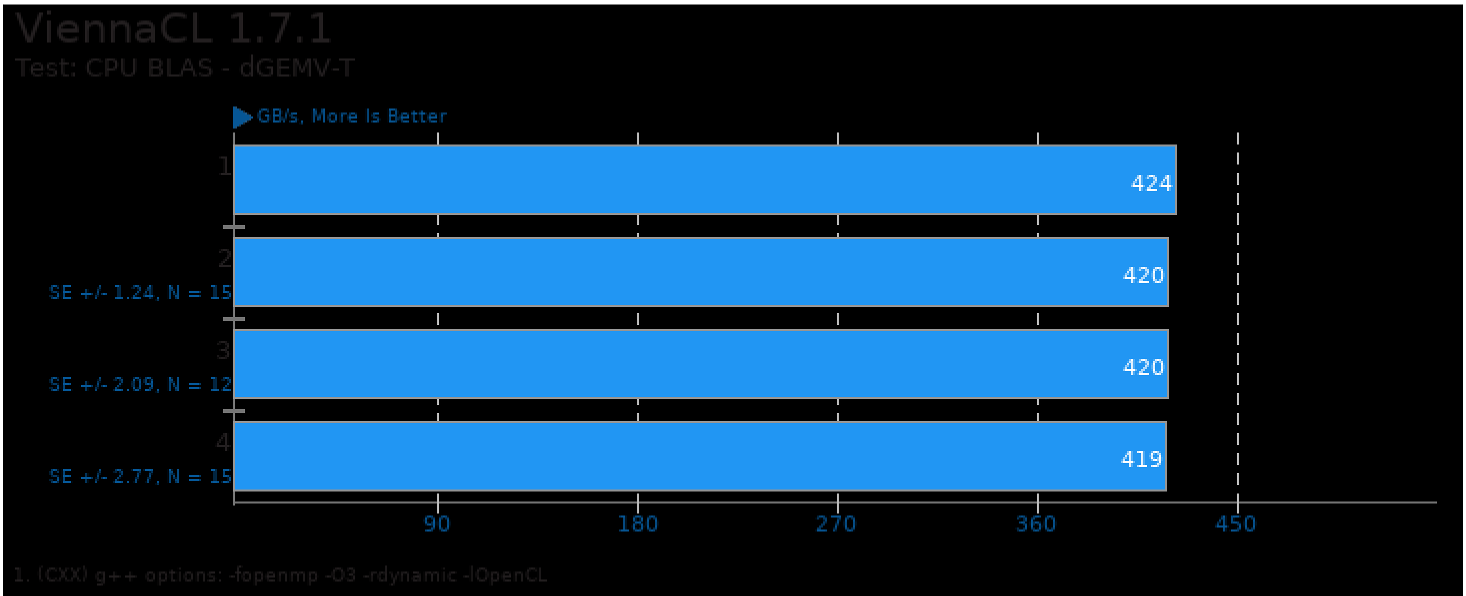

ViennaCL 1.7.1
Test: CPU BLAS - sAXPY
GB/s, More Is Better
1
2
SE +/- 1.42, N = 15
3
SE +/- 2.51, N = 12
4
SE +/- 0.14, N = 15
458
453
451
454
100
200
300
400
500
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL
ViennaCL 1.7.1
Test: CPU BLAS - sDOT
GB/s, More Is Better
1
2
3
SE +/- 0.43, N = 12
4
SE +/- 0.19, N = 15
413
408
409
408
90
180
270
360
450
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL

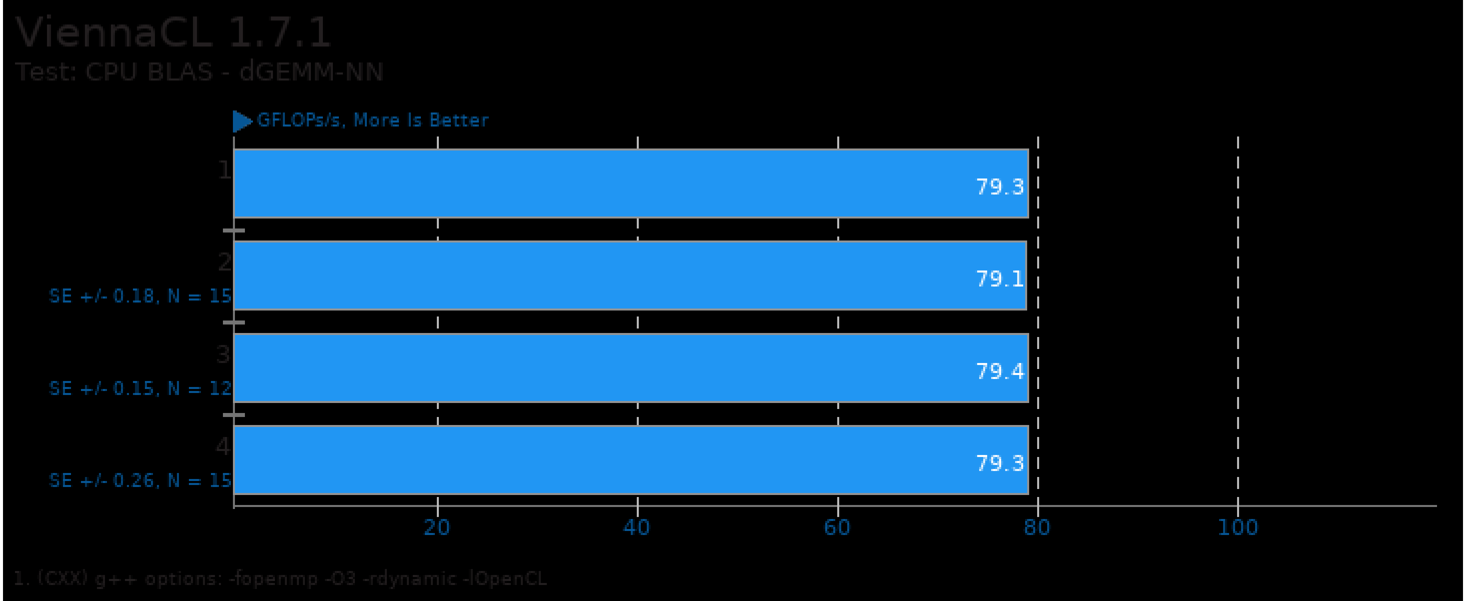

ViennaCL 1.7.1
Test: CPU BLAS - dCOPY
GB/s, More Is Better
1
821
2
SE +/- 8.63, N = 15
724
3
SE +/- 12.98, N = 12
732
4
SE +/- 10.75, N = 15
756
200
400
600
800
1000
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL


ViennaCL 1.7.1
Test: CPU BLAS - dAXPY
GB/s, More Is Better
1
849
2
SE +/- 1.67, N = 15
836
3
SE +/- 2.13, N = 12
837
4
SE +/- 2.00, N = 15
839
200
400
600
800
1000
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL

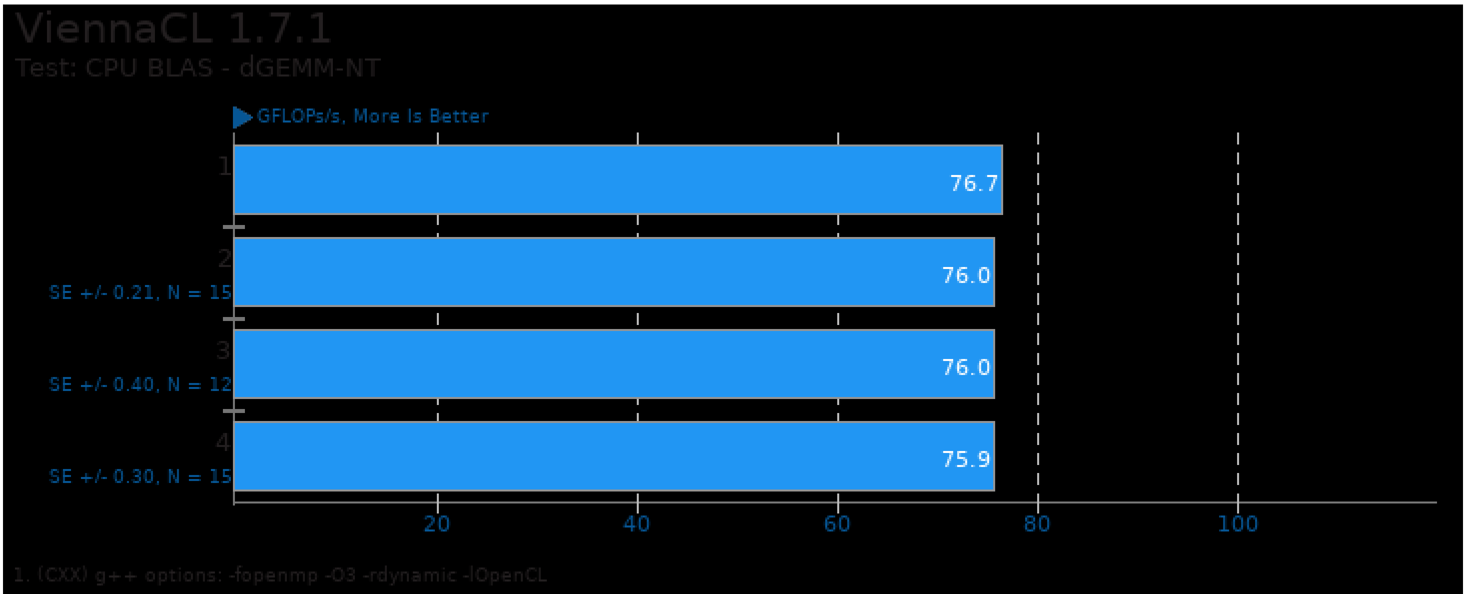

ViennaCL 1.7.1
Test: CPU BLAS - dDOT
GB/s, More Is Better
1
744
2
SE +/- 6.08, N = 15
692
3
SE +/- 5.76, N = 12
696
4
SE +/- 4.55, N = 15
702
160
320
480
640
800
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL

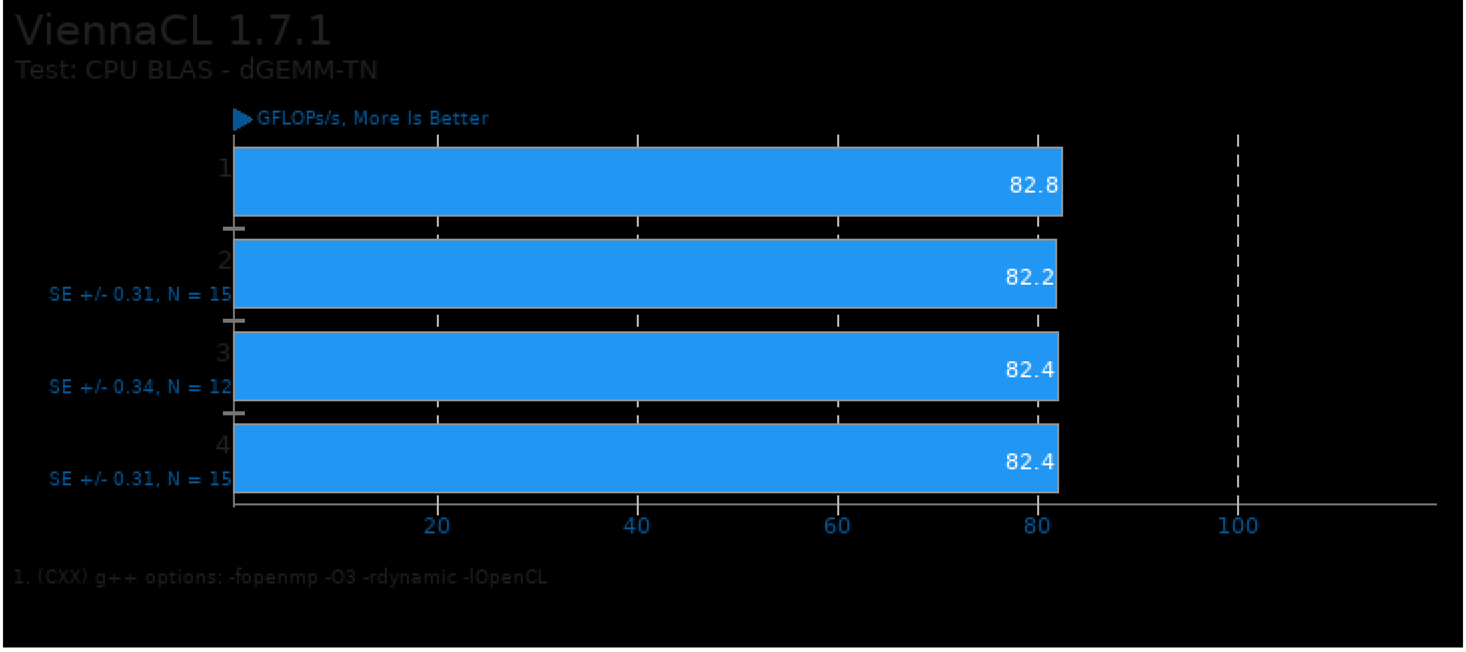

ViennaCL 1.7.1
Test: CPU BLAS - dGEMV-N
GB/s, More Is Better
1
183.0
2
SE +/- 11.13, N = 15
170.8
3
SE +/- 8.85, N = 12
177.0
4
SE +/- 9.76, N = 15
163.0
40
80
120
160
200
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL


ViennaCL 1.7.1
Test: CPU BLAS - dGEMV-T
GB/s, More Is Better
1
424
2
SE +/- 1.24, N = 15
420
3
SE +/- 2.09, N = 12
420
4
SE +/- 2.77, N = 15
419
90
180
270
360
450
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL

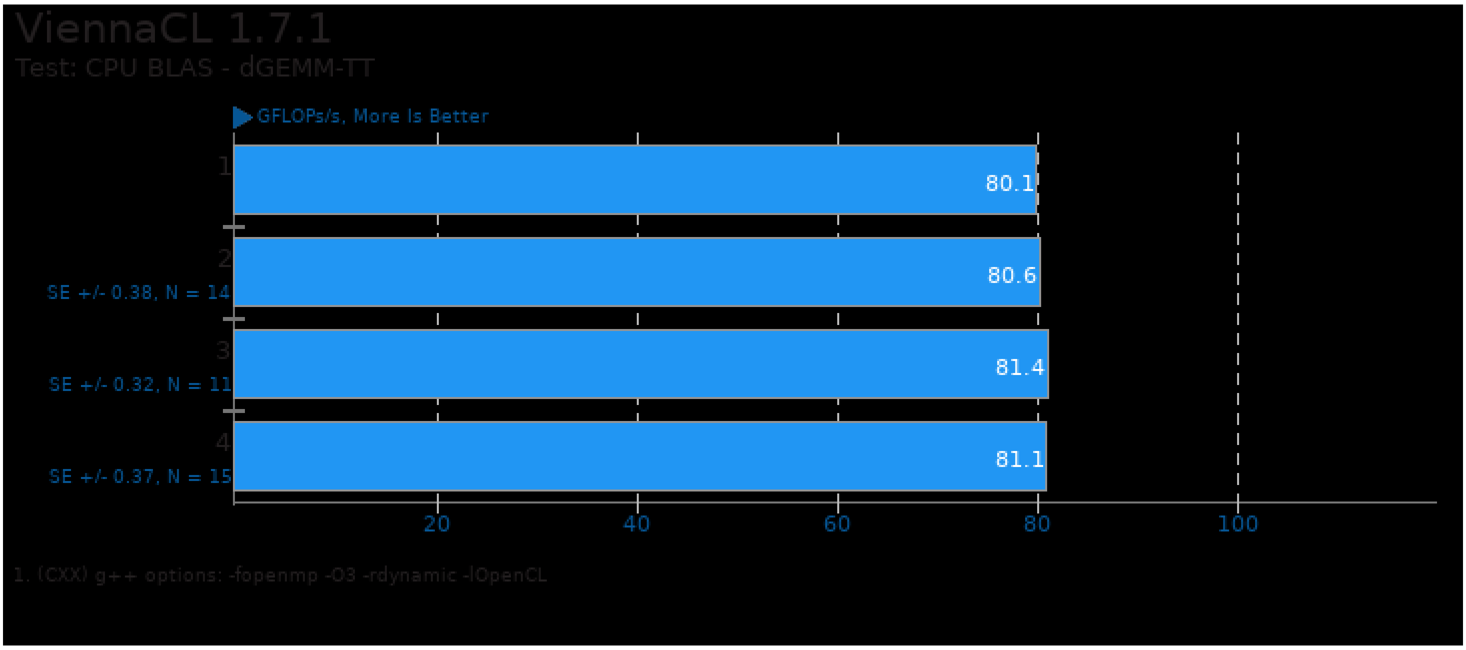

ViennaCL 1.7.1
Test: CPU BLAS - dGEMM-NN
GFLOPs/s, More Is Better
1
79.3
2
SE +/- 0.18, N = 15
79.1
3
SE +/- 0.15, N = 12
79.4
4
SE +/- 0.26, N = 15
79.3
20
40
60
80
100
1. (CXX) g++ options: -fopenmp -O3 -rdynamic -lOpenCL

EPYC 7F72 eo mar

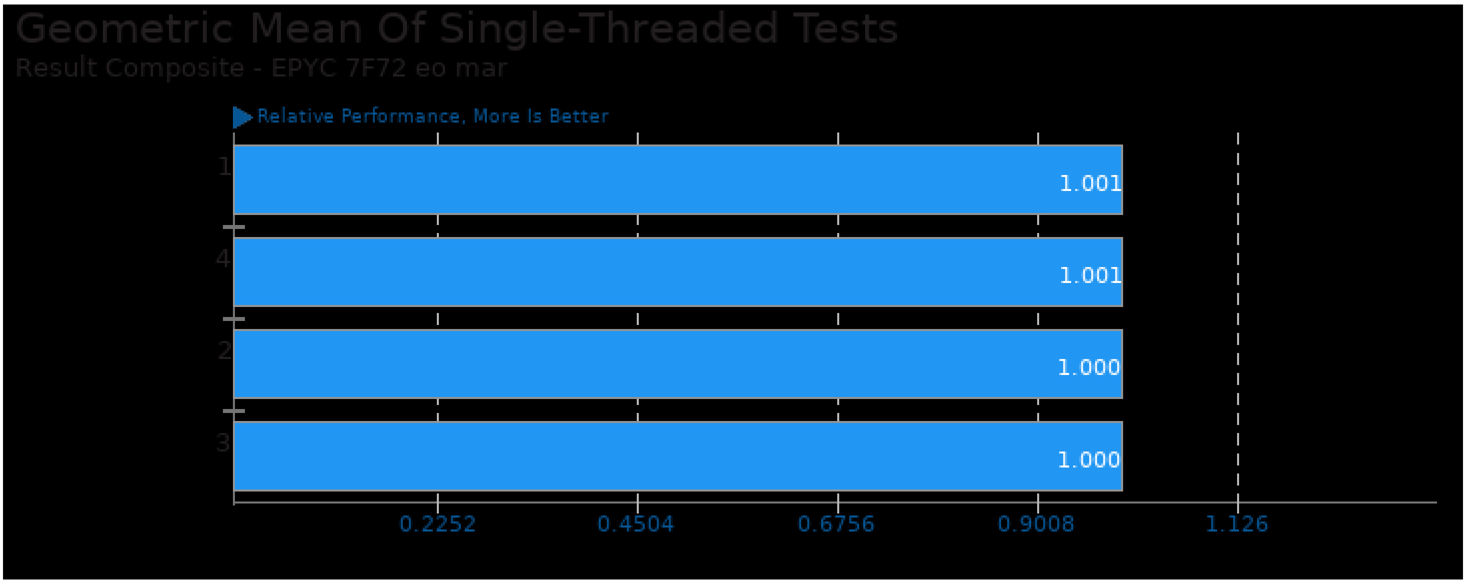




EPYC 7F72 eo mar



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 11:03.