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2022-08-10-1558

KVM testing on Ubuntu 22.04 via the Phoronix Test Suite.

Automated Executive Summary

amd had the most wins, coming in first place for 51% of the tests.

Based on the geometric mean of all complete results, the fastest (amd) was 1.533x the speed of the slowest (ARMv8 Neoverse-N1 - BlockVolume). BlockVolume - Intel Xeon Platinum 8358 was 0.916x the speed of amd and ARMv8 Neoverse-N1 - BlockVolume was 0.712x the speed of BlockVolume - Intel Xeon Platinum 8358.

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

NAS Parallel Benchmarks (Test / Class: SP.B) at 22.751x

NAS Parallel Benchmarks (Test / Class: SP.C) at 21.883x

NAS Parallel Benchmarks (Test / Class: LU.C) at 14.571x

NAS Parallel Benchmarks (Test / Class: MG.C) at 11.351x

NAS Parallel Benchmarks (Test / Class: BT.C) at 9.864x

NAS Parallel Benchmarks (Test / Class: FT.C) at 8.352x

NAS Parallel Benchmarks (Test / Class: CG.C) at 6.627x

CacheBench (Test: Read) at 4.648x

NAS Parallel Benchmarks (Test / Class: EP.D) at 3.39x

NAS Parallel Benchmarks (Test / Class: EP.C) at 3.346x.

Test Systems:

BlockVolume - Intel Xeon Platinum 8358

Processor: Intel Xeon Platinum 8358 (2 Cores / 4 Threads), Motherboard: QEMU Standard PC (i440FX + PII 1996) (1.5.1 BIOS), Chipset: Intel 440FX 82441FX PMC, Memory: 32GB, Disk: 50GB BlockVolume, Graphics: bochs-drmdrmfb, Monitor: QEMU Monitor, Network: Red Hat Virtio device

OS: Ubuntu 22.04, Kernel: 5.15.0-1016-oracle (x86_64), Vulkan: 1.2.204, Compiler: GCC 11.2.0, File-System: ext4, Screen Resolution: 1024x768, System Layer: KVM

Kernel Notes: libiscsi.debug_libiscsi_eh=1 - Transparent Huge Pages: madvise
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --enable-cet --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-link-serialization=2 --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-11-gBFGDP/gcc-11-11.2.0/debian/tmp-nvptx/usr,amdgn-amdhsa=/build/gcc-11-gBFGDP/gcc-11-11.2.0/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-build-config=bootstrap-lto-lean --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
Disk Notes: MQ-DEADLINE / discard,errors=remount-ro,relatime,rw / Block Size: 4096
Processor Notes: CPU Microcode: 0x1
Security Notes: itlb_multihit: Not affected + I1tf: Not affected + mds: Not affected + meltdown: Not affected + mmio_stale_data: Vulnerable: Clear buffers attempted no microcode; SMT Host state unknown + rebleed: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swaps barriers and __user pointer sanitization + spectre_v2: Mitigation of Enhanced IBRS IPBP: conditional RSB filling + srbd: Not affected + tsx_async_abort: Not affected

amd

Processor: AMD EPYC 7J13 64-Core (2 Cores / 4 Threads), Motherboard: QEMU Standard PC (i440FX + PII 1996) (1.5.1 BIOS), Chipset: Intel 440FX 82441FX PMC, Memory: 32GB, Disk: 50GB BlockVolume, Graphics: bochs-drmdrmfb, Monitor: QEMU Monitor, Network: Red Hat Virtio device

OS: Ubuntu 22.04, Kernel: 5.15.0-1016-oracle (x86_64), Vulkan: 1.2.204, Compiler: GCC 11.2.0, File-System: ext4, Screen Resolution: 1024x768, System Layer: KVM

Kernel Notes: libiscsi.debug_libiscsi_eh=1 - Transparent Huge Pages: madvise
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --enable-cet --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-link-serialization=2 --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-11-gBFGDP/gcc-11-11.2.0/debian/tmp-nvptx/usr,amdgn-amdhsa=/build/gcc-11-gBFGDP/gcc-11-11.2.0/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-build-config=bootstrap-lto-lean --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
Disk Notes: MQ-DEADLINE / discard,errors=remount-ro,relatime,rw / Block Size: 4096
Processor Notes: CPU Microcode: 0x1000065
Security Notes: itlb_multihit: Not affected + I1tf: Not affected + mds: Not affected + meltdown: Not affected + mmio_stale_data: Not affected + rebleed: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swaps barriers and __user pointer sanitization + spectre_v2: Mitigation of Retpolines IPBP: conditional IBRS_FW STIBP: conditional RSB filling + srbd: Not affected + tsx_async_abort: Not affected

ARMv8 Neoverse-N1 - BlockVolume

Processor: ARMv8 Neoverse-N1 (2 Cores), Motherboard: QEMU KVM Virtual Machine (1.5.1 BIOS), Chipset: Red Hat QEMU PCIe, Memory: 12GB, Disk: 21475GB BlockVolume, Graphics: virtio_gpudrmfb, Monitor: QEMU Monitor, Network: Red Hat Virtio device

OS: Ubuntu 22.04, Kernel: 5.15.0-1016-oracle (aarch64), Compiler: GCC 11.2.0, File-System: ext4, Screen Resolution: 1024x768, System Layer: KVM

Kernel Notes: libiscsi.debug_libiscsi_eh=1 - Transparent Huge Pages: madvise

Compiler Notes: --build=aarch64-linux-gnu --disable-libquadmath --disable-libquadmath-support --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-fix-cortex-a53-843419 --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-link-serialization=2 --enable-multiarch --enable-nls --enable-objc-gc=auto --enable-plugin --enable-shared --enable-threads=posix --host=aarch64-linux-gnu --program-prefix=aarch64-linux-gnu- --target=aarch64-linux-gnu --with-build-config=bootstrap-lto-lean --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-target-system-zlib=auto -v

Disk Notes: MQ-DEADLINE / discard,errors=remount-ro,relatime,rw / Block Size: 4096

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 __user pointer sanitization + spectre_v2: Mitigation of CSV2 BHB + srbd: Not affected + tsx_async_abort: Not affected

	BlockVolume - Intel Xeon Platinum 8358	amd	ARMv8 Neoverse-N1 - BlockVolume
Dbench - 1 (MB/s)	321.756	294.806	183.665
Normalized	100%	91.62%	57.08%
Standard Deviation	0.6%	1.2%	0.7%
Dbench - 6 (MB/s)	391.670	377.967	399.485
Normalized	98.04%	94.61%	100%
Standard Deviation	0.7%	0.5%	0.1%
Dbench - 12 (MB/s)	423.661	412.398	518.781
Normalized	81.66%	79.49%	100%
Standard Deviation	0.1%	0.4%	0.5%
Dbench - 48 (MB/s)	491.926	419.632	669.669
Normalized	73.46%	62.66%	100%
Standard Deviation	0.4%	1.2%	0.6%
Dbench - 128 (MB/s)	461.125	414.234	666.546
Normalized	69.18%	62.15%	100%
Standard Deviation	0.4%	0.3%	0.7%
Dbench - 256 (MB/s)	403.590	366.539	644.585
Normalized	62.61%	56.86%	100%
Standard Deviation	0.5%	0.1%	0.2%
RAMspeed SMP - Add - Integer (MB/s)	28687	36536	41425
Normalized	69.25%	88.2%	100%
Standard Deviation	0.1%	0.6%	0.1%
RAMspeed SMP - Copy - Integer (MB/s)	25663	35819	44592
Normalized	57.55%	80.33%	100%
Standard Deviation	0.2%	0.8%	0.1%
RAMspeed SMP - Scale - Integer (MB/s)	22264	35914	26630
Normalized	61.99%	100%	74.15%
Standard Deviation	0.1%	1.3%	0.1%
RAMspeed SMP - Triad - Integer (MB/s)	28856	35538	32154
Normalized	81.2%	100%	90.48%
Standard Deviation	0.1%	2.2%	1.4%
RAMspeed SMP - Average - Integer (MB/s)	26393	36121	36271
Normalized	72.77%	99.59%	100%
Standard Deviation	0%	0%	0%
RAMspeed SMP - Add - Floating Point (MB/s)	26504	36593	41324
Normalized	64.14%	88.55%	100%
Standard Deviation	0.1%	0.5%	0.6%
RAMspeed SMP - Copy - Floating Point	25719	36059	44605
	(MB/s)		

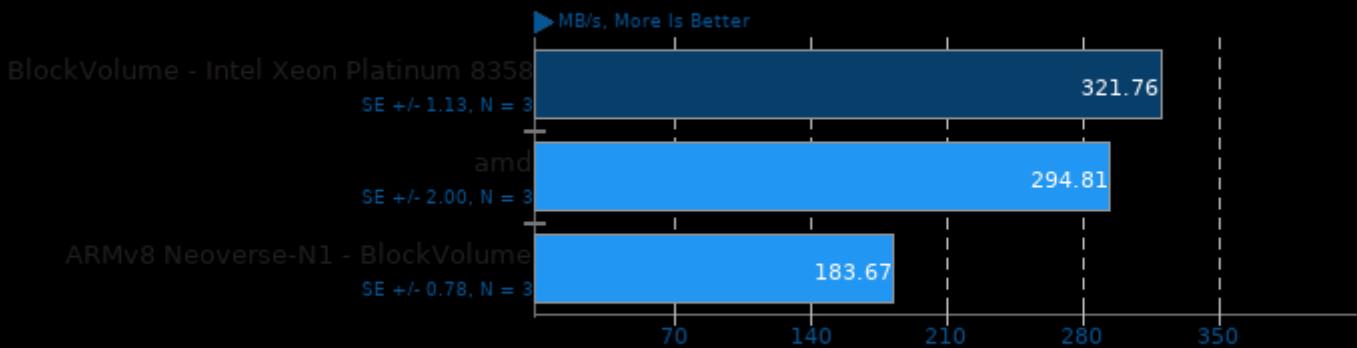
	Normalized	57.66%	80.84%	100%
	Standard Deviation	0%	0.4%	0.2%
RAMspeed SMP - Scale - Floating Point	23125	36530	43775	
	Normalized	52.83%	83.45%	100%
	Standard Deviation	0.1%	0.5%	0%
RAMspeed SMP - Triad - Floating Point	28700	36291	24152	
	Normalized	79.08%	100%	66.55%
	Standard Deviation	0%	1.3%	1.3%
RAMspeed SMP - Average - Floating Point	26017	36290	38512	
(MB/s)				
	Normalized	67.56%	94.23%	100%
	Standard Deviation	0%	0.3%	0.1%
Stream - Copy (MB/s)	50420	44702	45915	
	Normalized	100%	88.66%	91.07%
	Standard Deviation	1.4%	0.1%	0.1%
Stream - Scale (MB/s)	31210	32761	44916	
	Normalized	69.49%	72.94%	100%
	Standard Deviation	0.1%	0.1%	0.1%
Stream - Triad (MB/s)	32429	34717	42425	
	Normalized	76.44%	81.83%	100%
	Standard Deviation	0%	0.1%	0.1%
Stream - Add (MB/s)	32429	34740	42195	
	Normalized	76.86%	82.33%	100%
	Standard Deviation	0.1%	0.1%	0.1%
High Performance Conjugate Gradient	2.98460	4.17956	3.25129	
(GFLOP/s)				
	Normalized	71.41%	100%	77.79%
	Standard Deviation	1.3%	0.3%	0.3%
NAS Parallel Benchmarks - BT.C (Mop/s)	4000	4811	487.75	
	Normalized	83.14%	100%	10.14%
	Standard Deviation	0.2%	0.3%	0%
NAS Parallel Benchmarks - CG.C (Mop/s)	2971	3003	453.16	
	Normalized	98.91%	100%	15.09%
	Standard Deviation	0.6%	0.3%	0.3%
NAS Parallel Benchmarks - EP.C (Mop/s)	272.64	173.33	81.48	
	Normalized	100%	63.57%	29.89%
	Standard Deviation	3.4%	0.1%	0.5%
NAS Parallel Benchmarks - EP.D (Mop/s)	274.46	173.32	80.95	
	Normalized	100%	63.15%	29.49%
	Standard Deviation	2.8%	0.1%	0.2%
NAS Parallel Benchmarks - FT.C (Mop/s)	5823	7492	897.09	
	Normalized	77.72%	100%	11.97%
	Standard Deviation	0.1%	0%	1.3%
NAS Parallel Benchmarks - LU.C (Mop/s)	10884	11477	787.67	
	Normalized	94.83%	100%	6.86%
	Standard Deviation	0.1%	0.2%	1.5%
NAS Parallel Benchmarks - MG.C (Mop/s)	9700	11910	1049	
	Normalized	81.45%	100%	8.81%
	Standard Deviation	0.2%	0.3%	0.1%
NAS Parallel Benchmarks - SP.B (Mop/s)	3059	3889	170.95	
	Normalized	78.66%	100%	4.4%
	Standard Deviation	0.1%	0.3%	0.3%
NAS Parallel Benchmarks - SP.C (Mop/s)	3152	3703	169.23	
	Normalized	85.1%	100%	4.57%
	Standard Deviation	0.1%	0.1%	0.1%

FFTE - N.2.3.C.F.R (MFLOPS)	11987	13803	8706
Normalized	86.85%	100%	63.08%
Standard Deviation	0.3%	0.7%	0.2%
BLAKE2 (Cycles/Byte)	4.82	4.71	
Normalized	97.72%	100%	
Standard Deviation	0.1%	0%	
CacheBench - Read (MB/s)	2780	2458	11424
Normalized	24.34%	21.51%	100%
Standard Deviation	0%	0%	0%
CacheBench - Write (MB/s)	22830	22470	18929
Normalized	100%	98.42%	82.92%
Standard Deviation	0%	0.1%	0.1%
CacheBench - R.M.W (MB/s)	36071	44805	30161
Normalized	80.51%	100%	67.31%
Standard Deviation	0.1%	0.1%	0.1%
SciMark - Composite (Mflops)	508.61	589.67	462.78
Normalized	86.25%	100%	78.48%
Standard Deviation	0%	0.2%	0.8%
SciMark - Monte Carlo (Mflops)	111.88	125.64	116.42
Normalized	89.05%	100%	92.66%
Standard Deviation	0.2%	0.1%	0.6%
SciMark - F.F.T (Mflops)	258.35	341.00	134.48
Normalized	75.76%	100%	39.44%
Standard Deviation	0.3%	3.2%	0.4%
SciMark - S.M.M (Mflops)	572.11	554.42	473.45
Normalized	100%	96.91%	82.76%
Standard Deviation	0.1%	0.8%	0.2%
SciMark - D.L.M.F (Mflops)	687.23	1011	435.21
Normalized	68.01%	100%	43.07%
Standard Deviation	0.1%	0.1%	0.1%
SciMark - J.S.O.R (Mflops)	913.50	916.74	1154
Normalized	79.14%	79.42%	100%
Standard Deviation	0.1%	0%	1.5%
x264 - Bosphorus 4K (FPS)	5.90	6.52	3.08
Normalized	90.49%	100%	47.24%
Standard Deviation	0.1%	0.3%	2.5%
x264 - Bosphorus 1080p (FPS)	25.06	27.80	13.19
Normalized	90.14%	100%	47.45%
Standard Deviation	0.3%	0.4%	2.4%
Himeno Benchmark - P.P.S (MFLOPS)	3491	3499	3221
Normalized	99.77%	100%	92.07%
Standard Deviation	0.6%	5.3%	0.7%
7-Zip Compression - Compression Rating (MIPS)	16852	17659	10950
Normalized	95.43%	100%	62.01%
Standard Deviation	1.1%	0.5%	0.3%
7-Zip Compression - D.R (MIPS)	10649	13701	8940
Normalized	77.72%	100%	65.25%
Standard Deviation	0.4%	0.2%	0.1%
Stockfish - Total Time (Nodes/s)	4763024	5346542	2595956
Normalized	89.09%	100%	48.55%
Standard Deviation	2.4%	2.1%	2.4%
ebizzy (Records/s)	95054	44594	143273
Normalized	66.34%	31.13%	100%
Standard Deviation	7.6%	0.1%	6.6%

C-Ray - Total Time - 4.1.R.P.P (sec)	398.269	306.039	417.143
Normalized	76.84%	100%	73.37%
Standard Deviation	0.1%	0%	1%
Smallpt - G.I.R.1.S (sec)	53.401	50.115	70.743
Normalized	93.85%	100%	70.84%
Standard Deviation	0.1%	0.3%	1.5%
Gzip Compression - L.S.T.A.T.t.g (sec)	44.890	47.069	46.587
Normalized	100%	95.37%	96.36%
Standard Deviation	2.5%	2.5%	9%
FLAC Audio Encoding - WAV To FLAC (sec)	19.724	18.491	55.597
Normalized	93.75%	100%	33.26%
Standard Deviation	0.3%	0.3%	0.1%
LAME MP3 Encoding - WAV To MP3 (sec)	9.744	8.658	9.279
Normalized	88.85%	100%	93.31%
Standard Deviation	0.2%	0.2%	0.4%
Hierarchical INTegration - FLOAT (QUIPs)	391167613	347937958	325579648
Normalized	100%	88.95%	83.23%
Standard Deviation	2.4%	0.2%	0.1%

Dbench 4.0

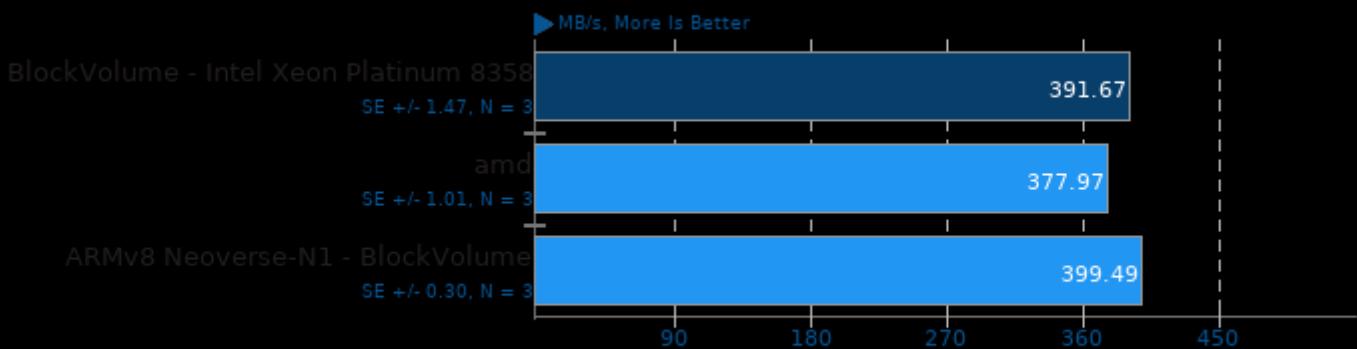
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1. (CC) gcc options: -lpopt -O2

Dbench 4.0

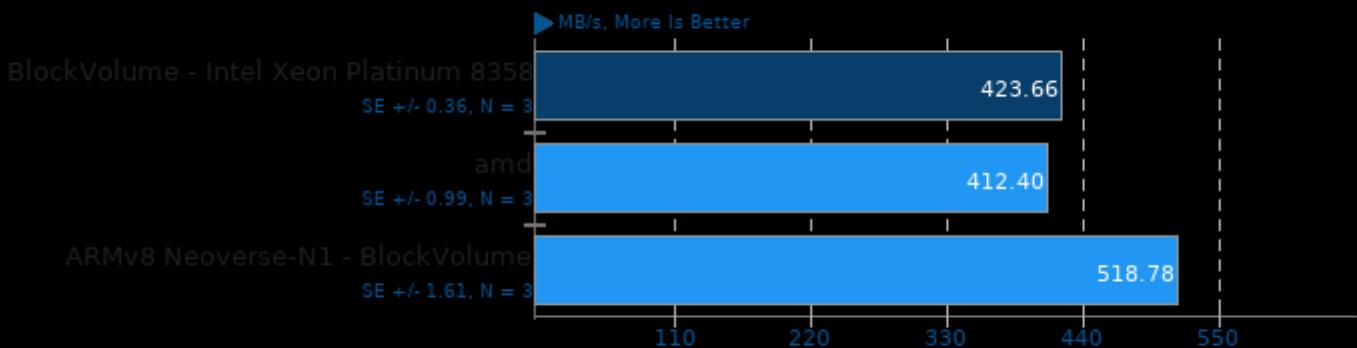
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1. (CC) gcc options: -lpopt -O2

Dbench 4.0

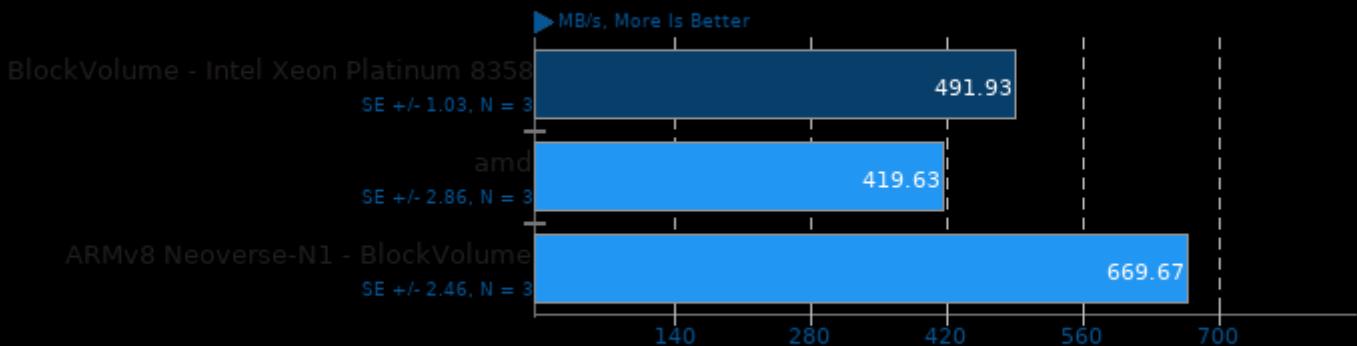
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1. (CC) gcc options: -lpopt -O2

Dbench 4.0

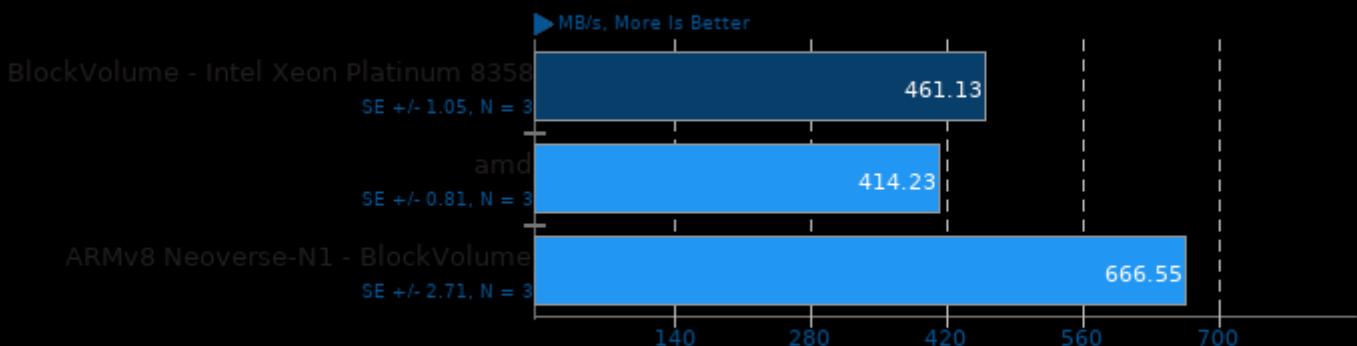
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1. (CC) gcc options: -lpopt -O2

Dbench 4.0

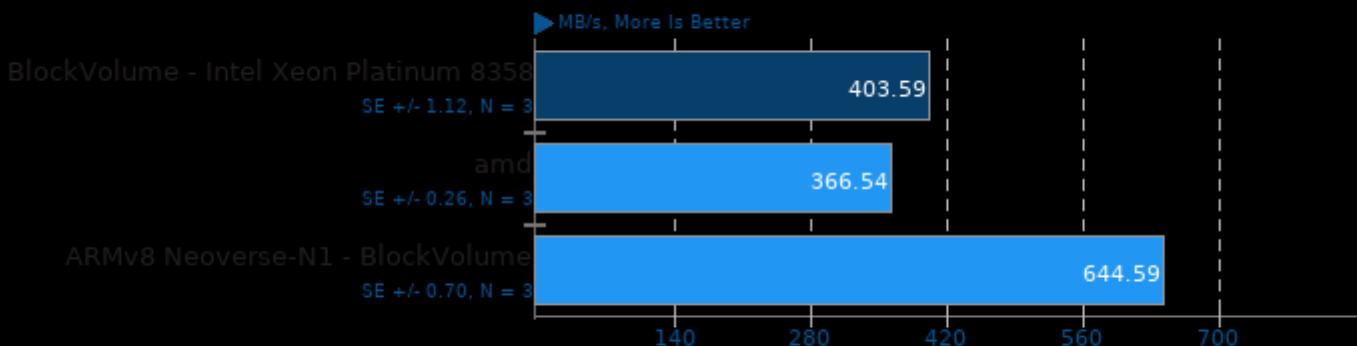
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1. (CC) gcc options: -lpopt -O2

Dbench 4.0

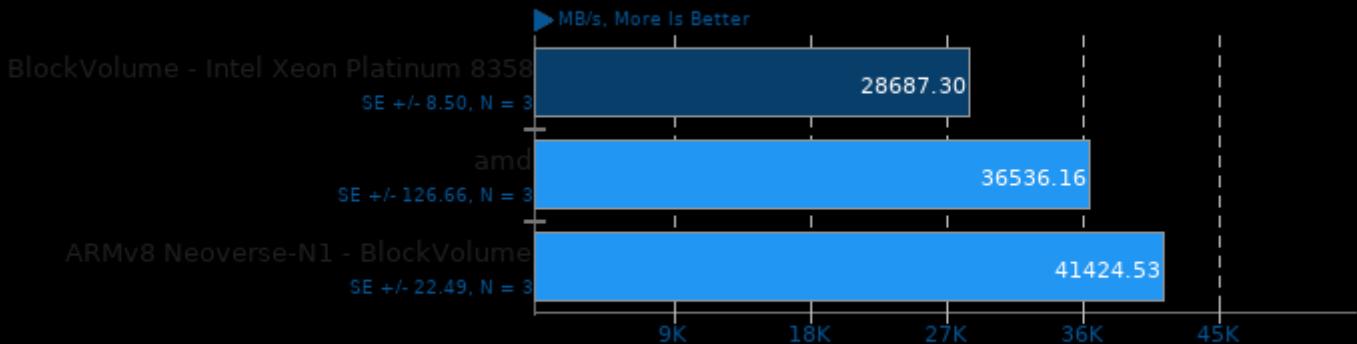
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1. (CC) gcc options: -lpopt -O2

RAMspeed SMP 3.5.0

Type: Add - Benchmark: Integer



1. (CC) gcc options: -O3 -march=native

RAMspeed SMP 3.5.0

Type: Copy - Benchmark: Integer



1. (CC) gcc options: -O3 -march=native

RAMspeed SMP 3.5.0

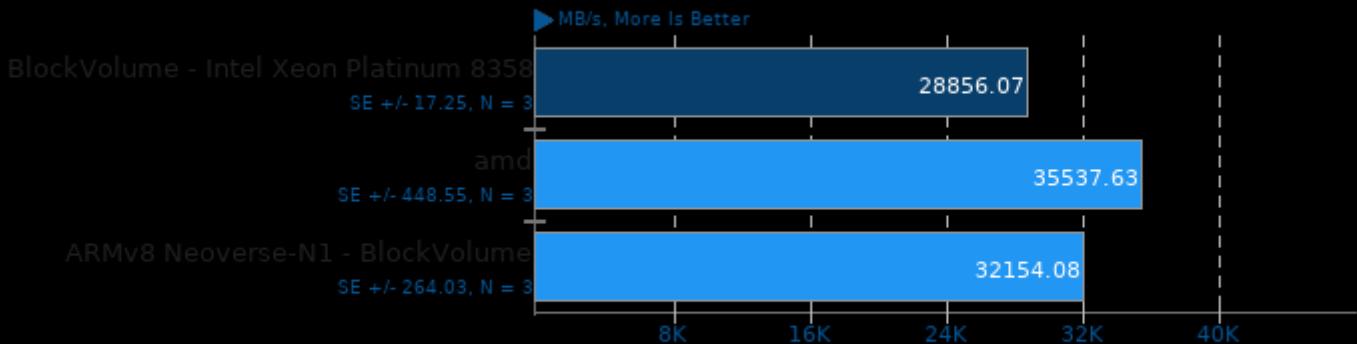
Type: Scale - Benchmark: Integer



1. (CC) gcc options: -O3 -march=native

RAMspeed SMP 3.5.0

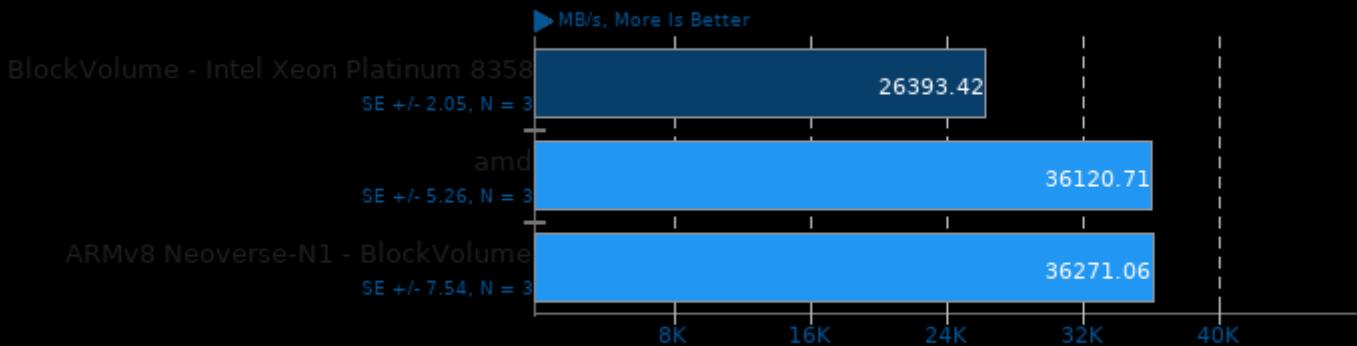
Type: Triad - Benchmark: Integer



1. (CC) gcc options: -O3 -march=native

RAMspeed SMP 3.5.0

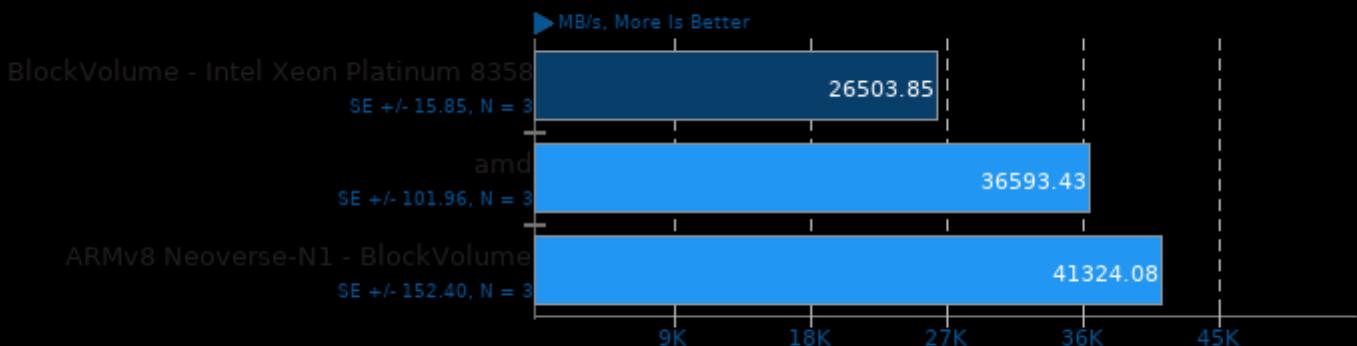
Type: Average - Benchmark: Integer



1. (CC) gcc options: -O3 -march=native

RAMspeed SMP 3.5.0

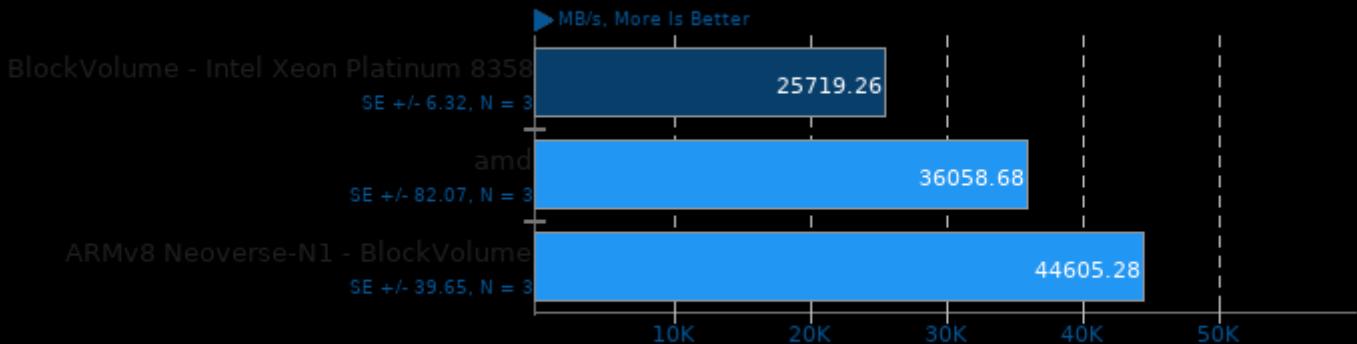
Type: Add - Benchmark: Floating Point



1. (CC) gcc options: -O3 -march=native

RAMspeed SMP 3.5.0

Type: Copy - Benchmark: Floating Point



1. (CC) gcc options: -O3 -march=native

RAMspeed SMP 3.5.0

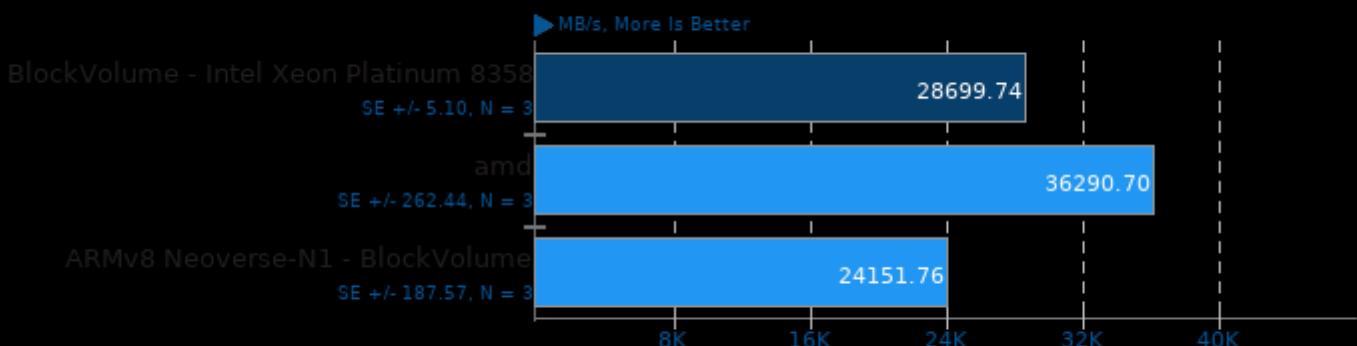
Type: Scale - Benchmark: Floating Point



1. (CC) gcc options: -O3 -march=native

RAMspeed SMP 3.5.0

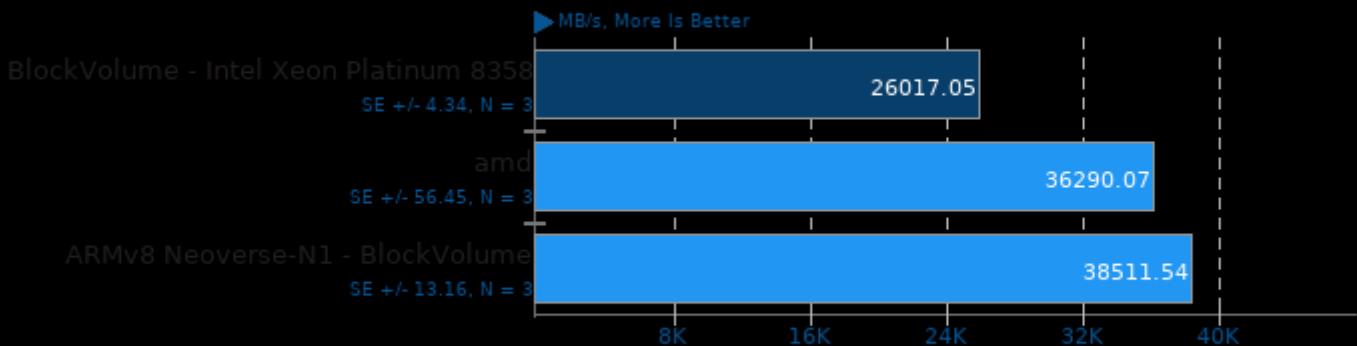
Type: Triad - Benchmark: Floating Point



1. (CC) gcc options: -O3 -march=native

RAMspeed SMP 3.5.0

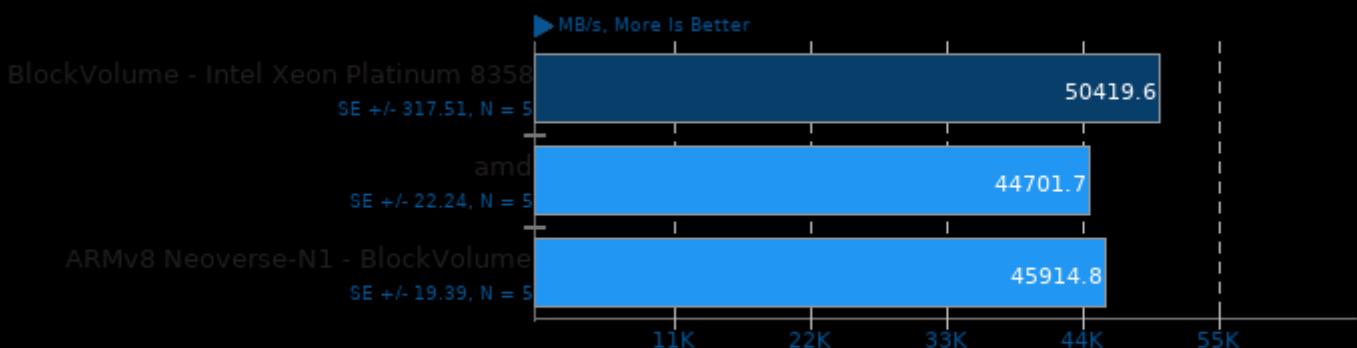
Type: Average - Benchmark: Floating Point



1. (CC) gcc options: -O3 -march=native

Stream 2013-01-17

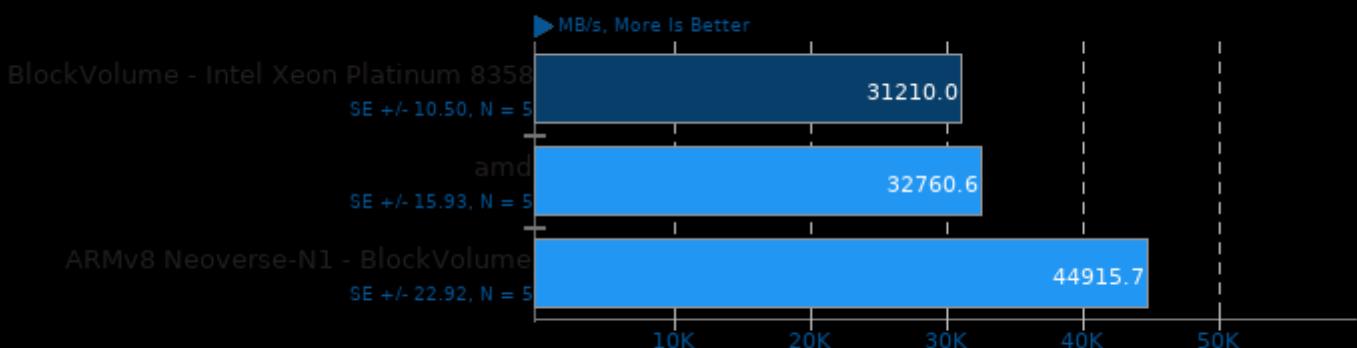
Type: Copy



1. (CC) gcc options: -O3 -march=native -fopenmp

Stream 2013-01-17

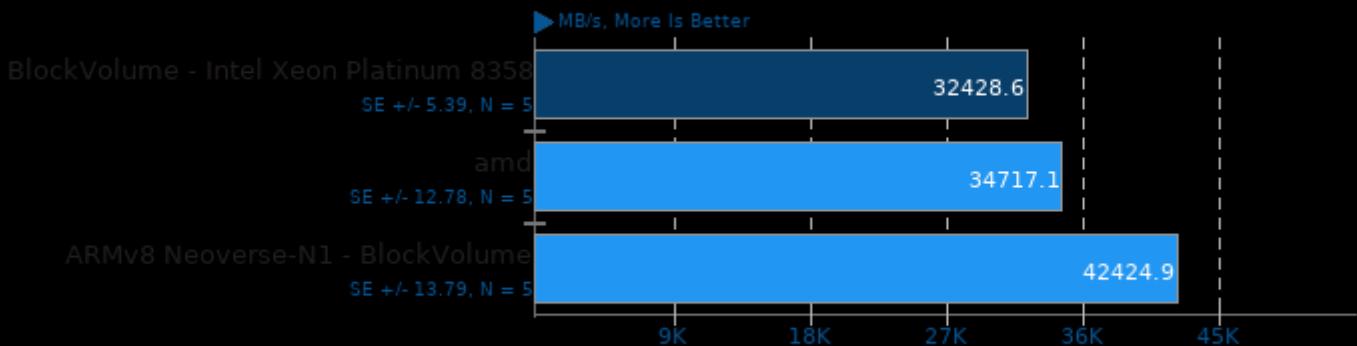
Type: Scale



1. (CC) gcc options: -O3 -march=native -fopenmp

Stream 2013-01-17

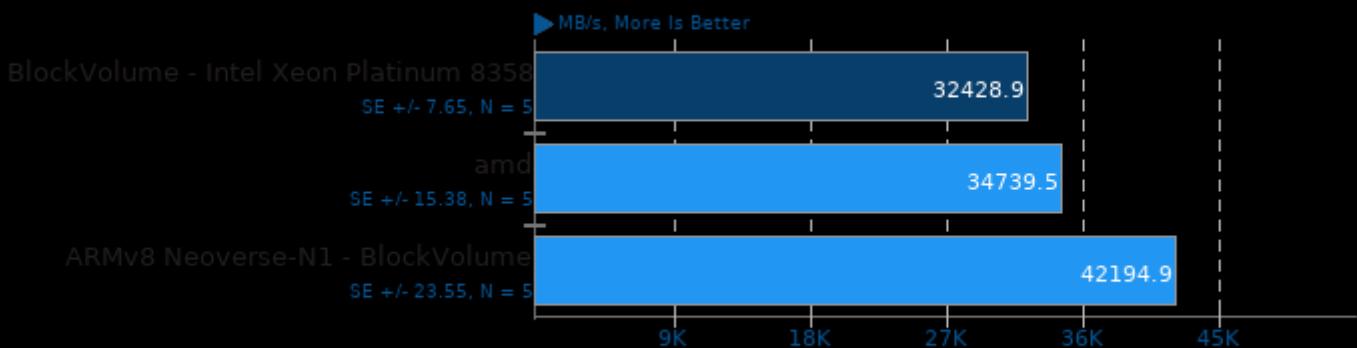
Type: Triad



1. (CC) gcc options: -O3 -march=native -fopenmp

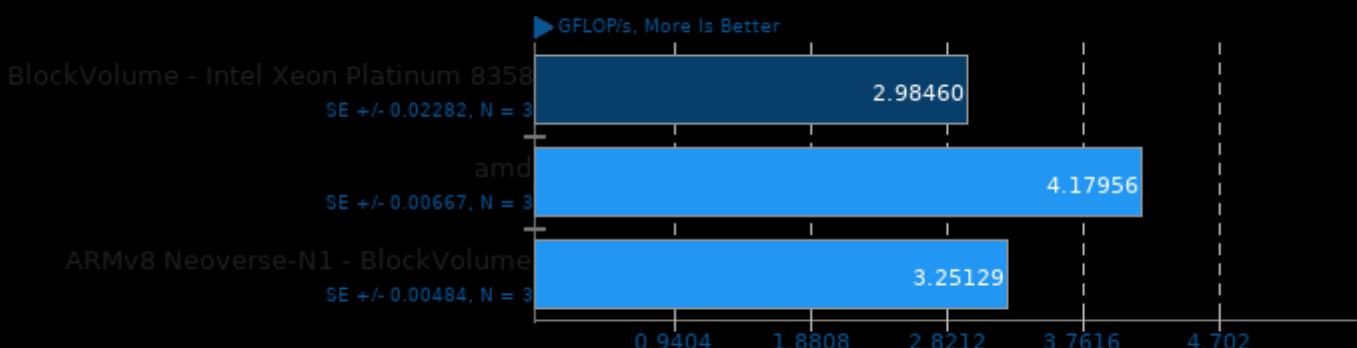
Stream 2013-01-17

Type: Add



1. (CC) gcc options: -O3 -march=native -fopenmp

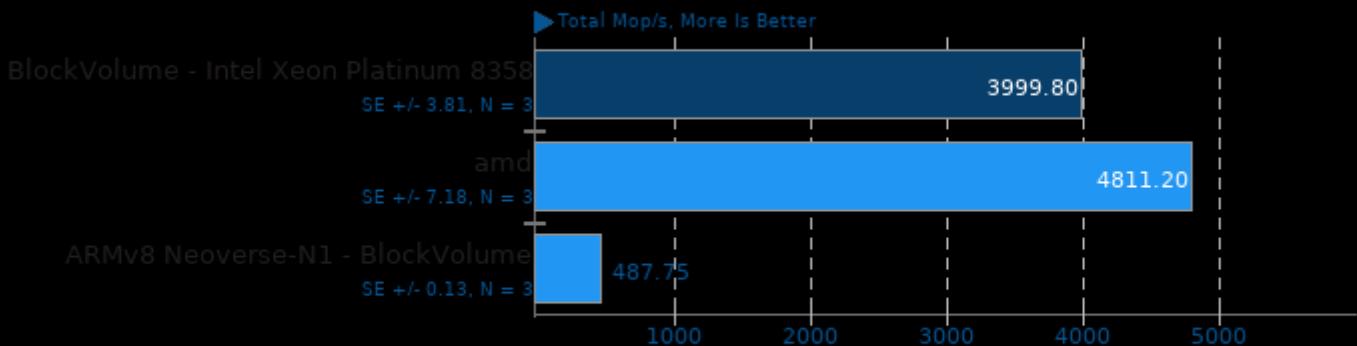
High Performance Conjugate Gradient 3.1



1. (CXX) g++ options: -O3 -ffast-math -ftree-vectorize -lmpi_cxx -lmpi

NAS Parallel Benchmarks 3.4

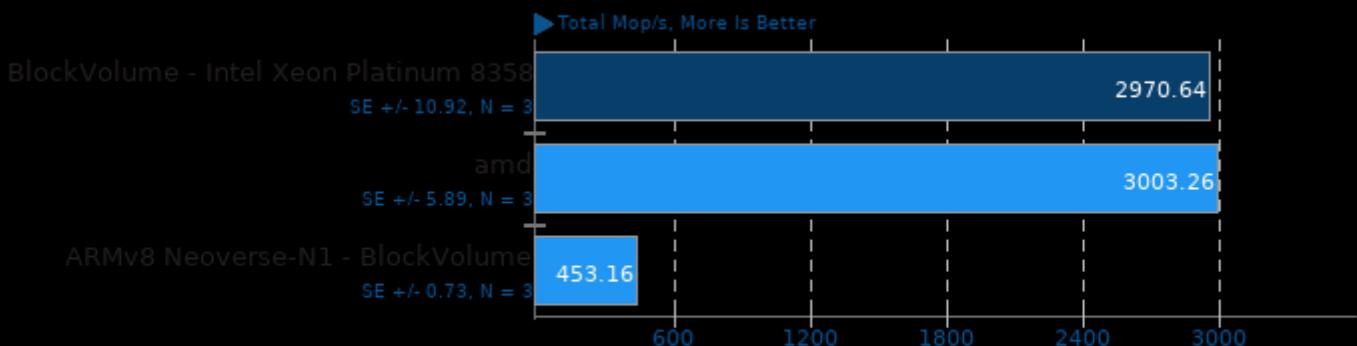
Test / Class: BT.C



1. (F9X) gfortran options: -O3 -march=native -Impi_usempif08 -Impi_mpifh -Impi -lopen-rte -lopen-pal -Ihwloc -levent_core -levent_pthreads -Im -Iz
2. Open MPI 4.1.2

NAS Parallel Benchmarks 3.4

Test / Class: CG.C



1. (F9X) gfortran options: -O3 -march=native -Impi_usempif08 -Impi_mpifh -Impi -lopen-rte -lopen-pal -Ihwloc -levent_core -levent_pthreads -Im -Iz
2. Open MPI 4.1.2

NAS Parallel Benchmarks 3.4

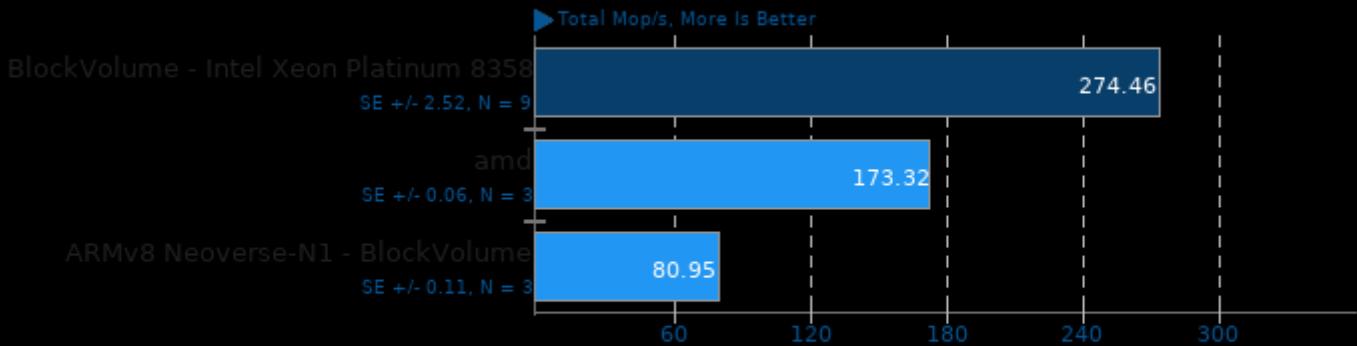
Test / Class: EP.C



1. (F9X) gfortran options: -O3 -march=native -Impi_usempif08 -Impi_mpifh -Impi -lopen-rte -lopen-pal -Ihwloc -levent_core -levent_pthreads -Im -Iz
2. Open MPI 4.1.2

NAS Parallel Benchmarks 3.4

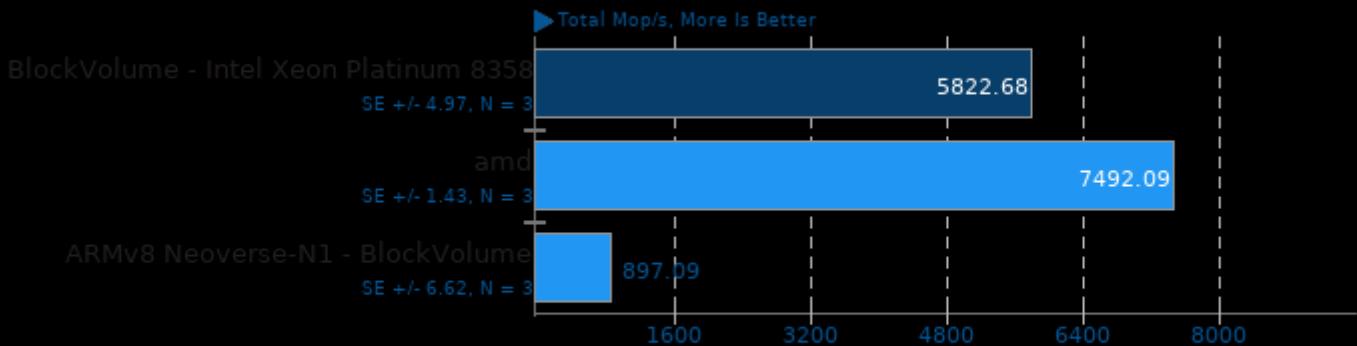
Test / Class: EP.D



1. (F9X) gfortran options: -O3 -march=native -Impi_usempif08 -Impi_mpifh -Impi -lopen-rte -lopen-pal -Ihwloc -levent_core -levent_pthreads -Im -Iz
2. Open MPI 4.1.2

NAS Parallel Benchmarks 3.4

Test / Class: FT.C



1. (F9X) gfortran options: -O3 -march=native -Impi_usempif08 -Impi_mpifh -Impi -lopen-rte -lopen-pal -Ihwloc -levent_core -levent_pthreads -Im -Iz
2. Open MPI 4.1.2

NAS Parallel Benchmarks 3.4

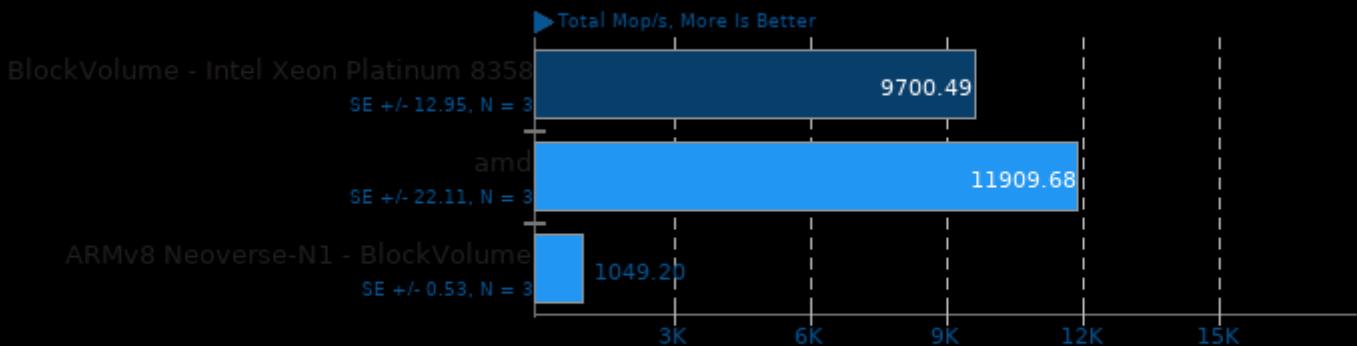
Test / Class: LU.C



1. (F9X) gfortran options: -O3 -march=native -Impi_usempif08 -Impi_mpifh -Impi -lopen-rte -lopen-pal -Ihwloc -levent_core -levent_pthreads -Im -Iz
2. Open MPI 4.1.2

NAS Parallel Benchmarks 3.4

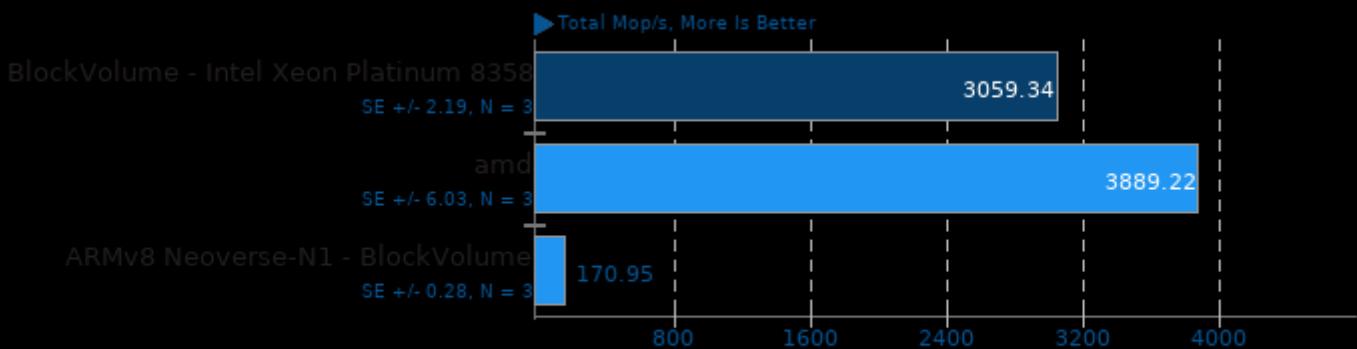
Test / Class: MG.C



1. (F9X) gfortran options: -O3 -march=native -Impi_usempif08 -Impi_mpifh -Impi -lopen-rte -lopen-pal -Ihwloc -levent_core -levent_pthreads -Im -Iz
2. Open MPI 4.1.2

NAS Parallel Benchmarks 3.4

Test / Class: SP.B



1. (F9X) gfortran options: -O3 -march=native -Impi_usempif08 -Impi_mpifh -Impi -lopen-rte -lopen-pal -Ihwloc -levent_core -levent_pthreads -Im -Iz
2. Open MPI 4.1.2

NAS Parallel Benchmarks 3.4

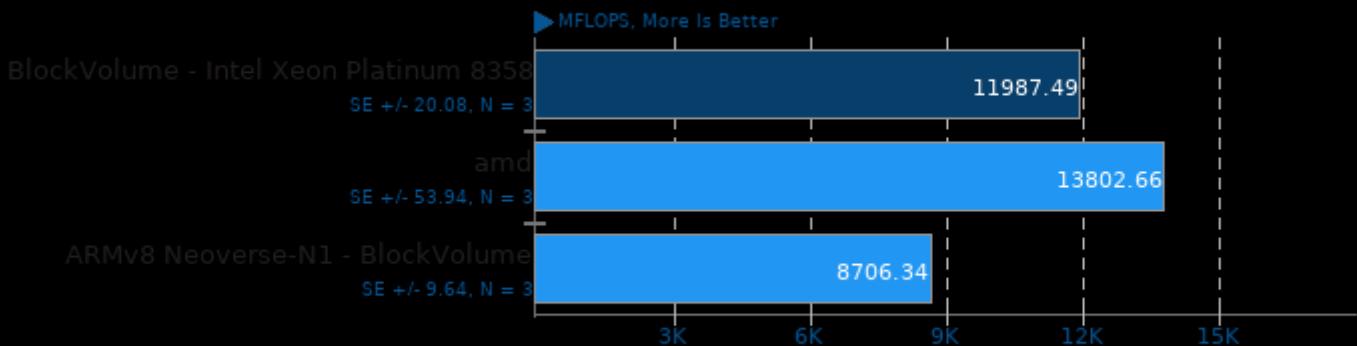
Test / Class: SPC



1. (F9X) gfortran options: -O3 -march=native -Impi_usempif08 -Impi_mpifh -Impi -lopen-rte -lopen-pal -Ihwloc -levent_core -levent_pthreads -Im -Iz
2. Open MPI 4.1.2

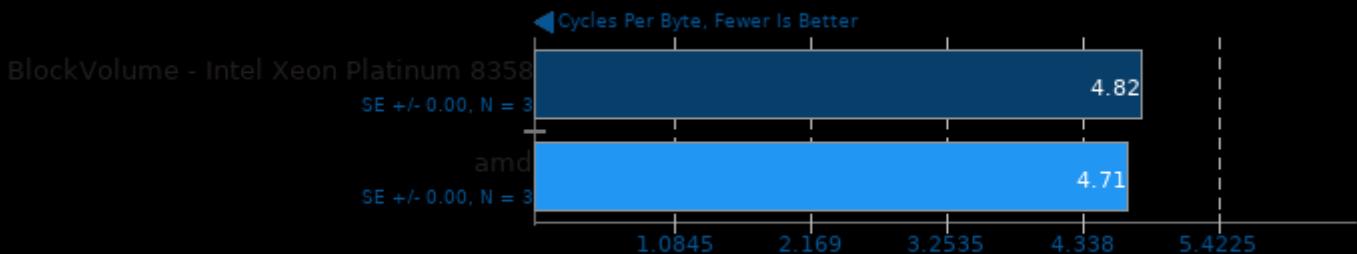
FFTE 7.0

N=256, 3D Complex FFT Routine



1. (F9X) gfortran options: -O3 -fomit-frame-pointer -fopenmp

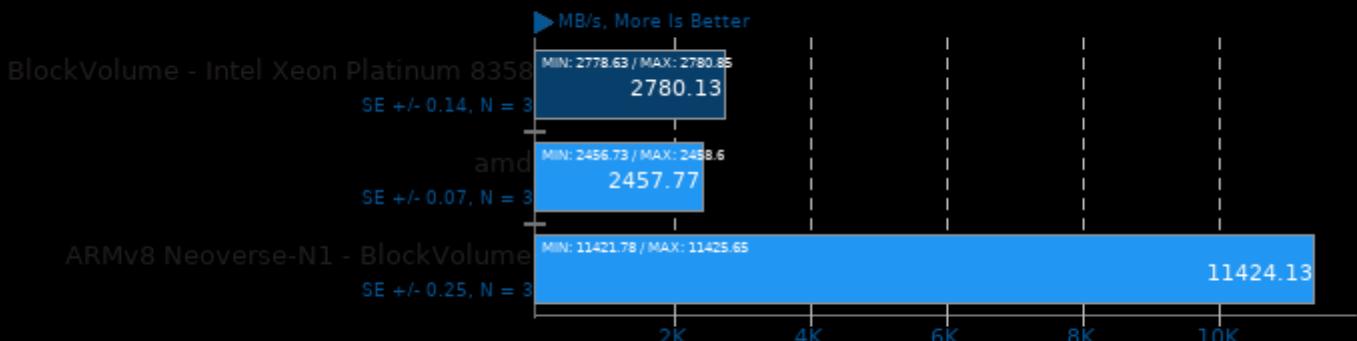
BLAKE2 20170307



1. (CC) gcc options: -O3 -march=native -lcrypto -lz

CacheBench

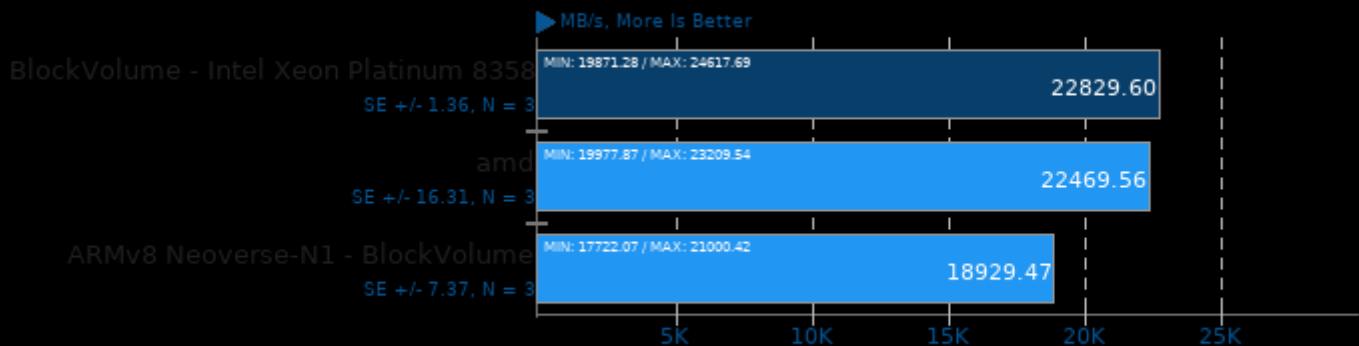
Test: Read



1. (CC) gcc options: -lrt

CacheBench

Test: Write



1. (CC) gcc options: -Irt

CacheBench

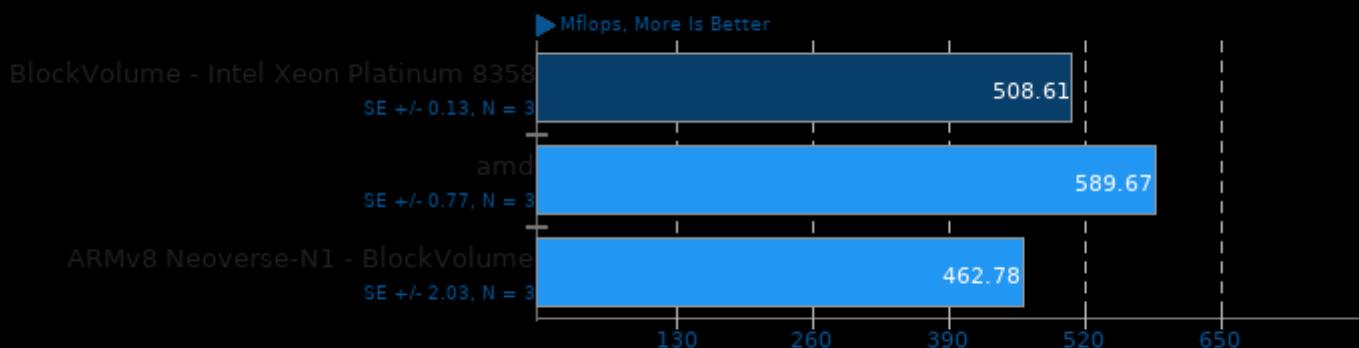
Test: Read / Modify / Write



1. (CC) gcc options: -Irt

SciMark 2.0

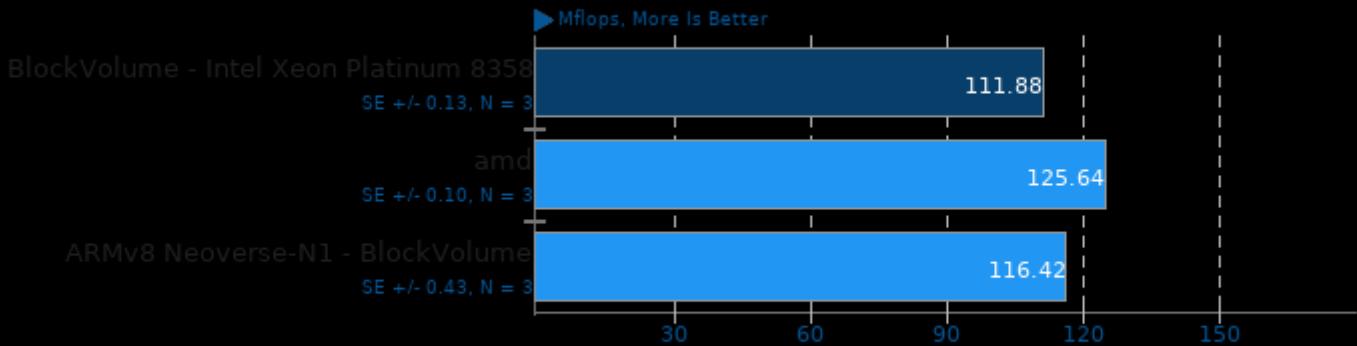
Computational Test: Composite



1. (CC) gcc options: -Im

SciMark 2.0

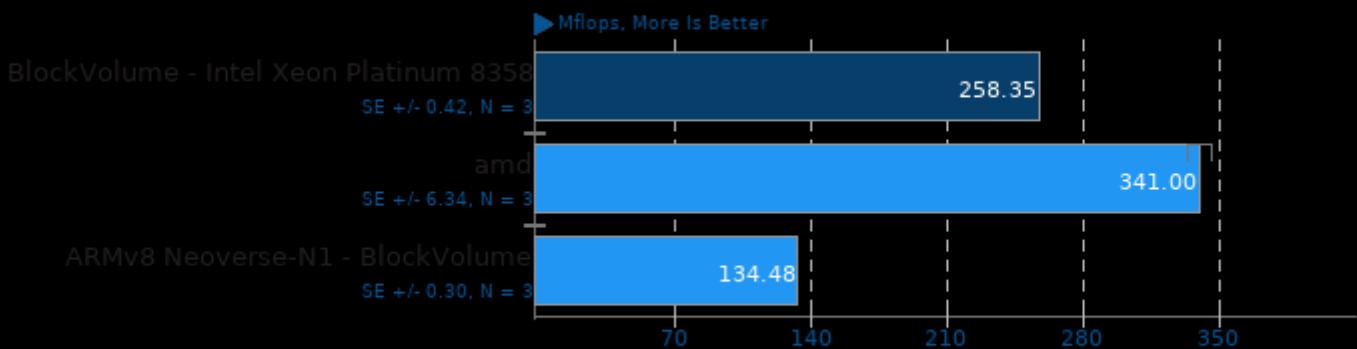
Computational Test: Monte Carlo



1. (CC) gcc options: -lm

SciMark 2.0

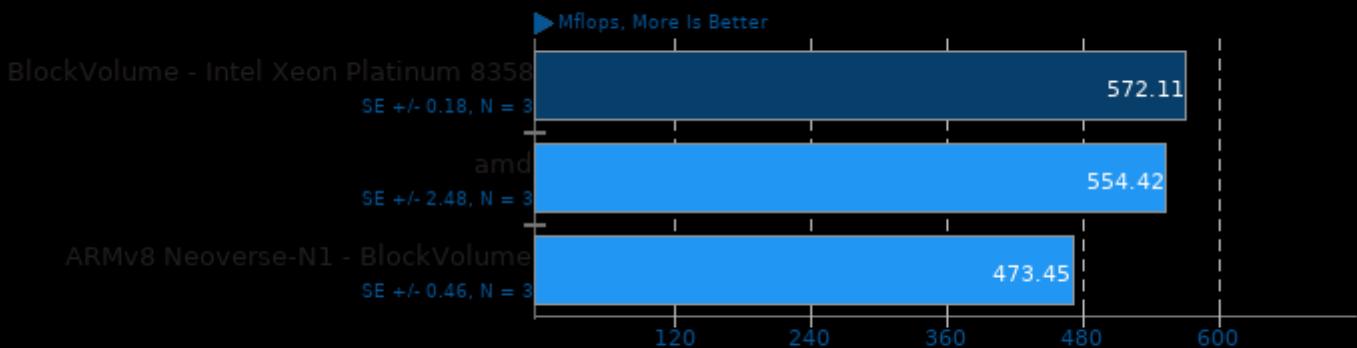
Computational Test: Fast Fourier Transform



1. (CC) gcc options: -lm

SciMark 2.0

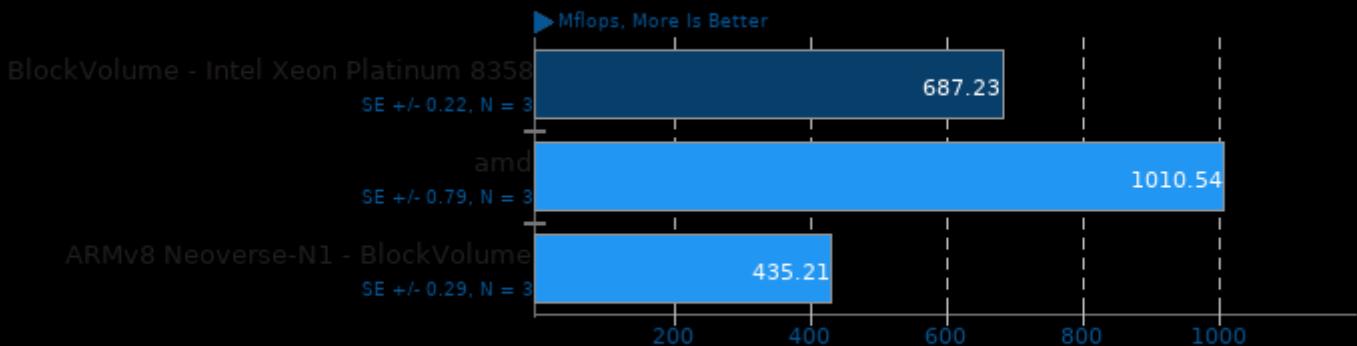
Computational Test: Sparse Matrix Multiply



1. (CC) gcc options: -lm

SciMark 2.0

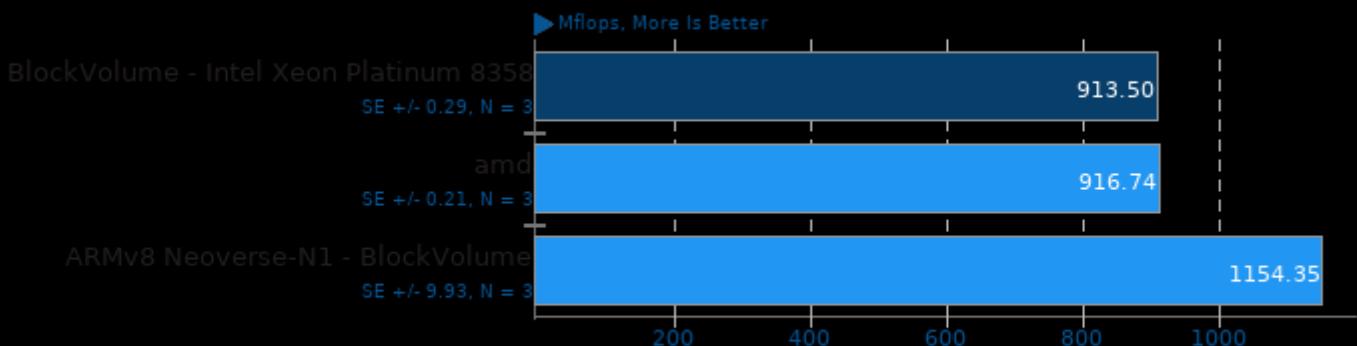
Computational Test: Dense LU Matrix Factorization



1. (CC) gcc options: -lm

SciMark 2.0

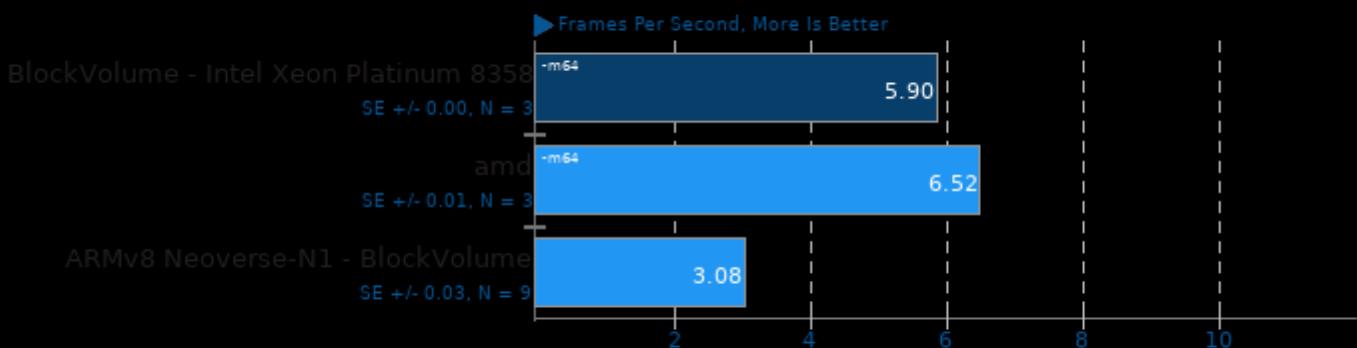
Computational Test: Jacobi Successive Over-Relaxation



1. (CC) gcc options: -lm

x264 2022-02-22

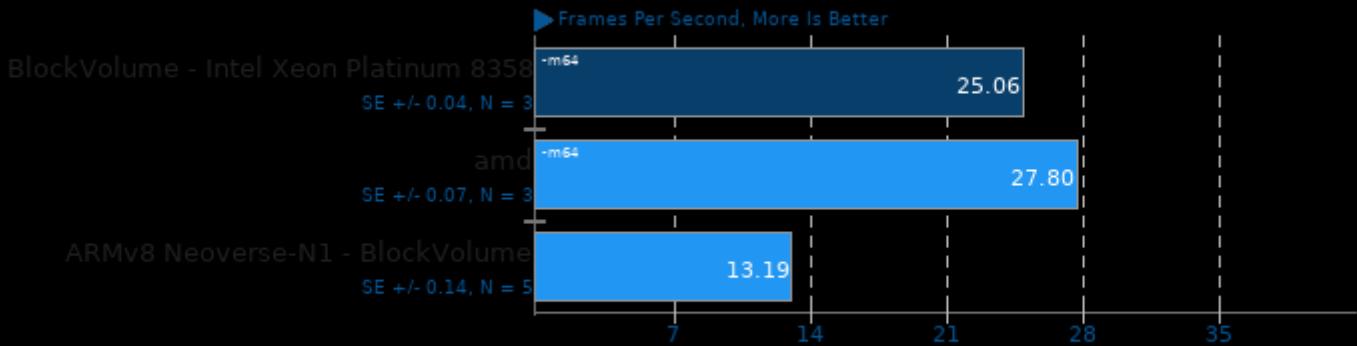
Video Input: Bosphorus 4K



1. (CC) gcc options: -ldl -lm -lpthread -O3 -fno

x264 2022-02-22

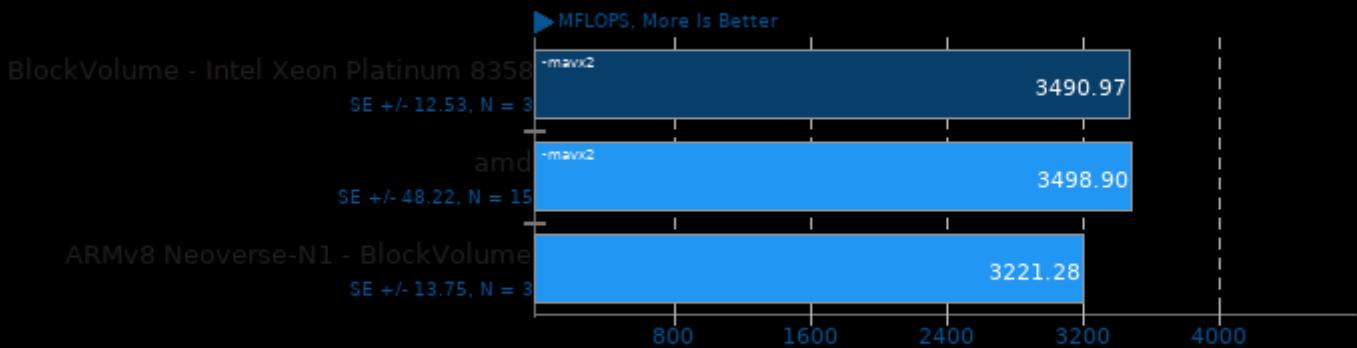
Video Input: Bosphorus 1080p



1. (CC) gcc options: -ldl -lm -lpthread -O3 -fipa

Himeno Benchmark 3.0

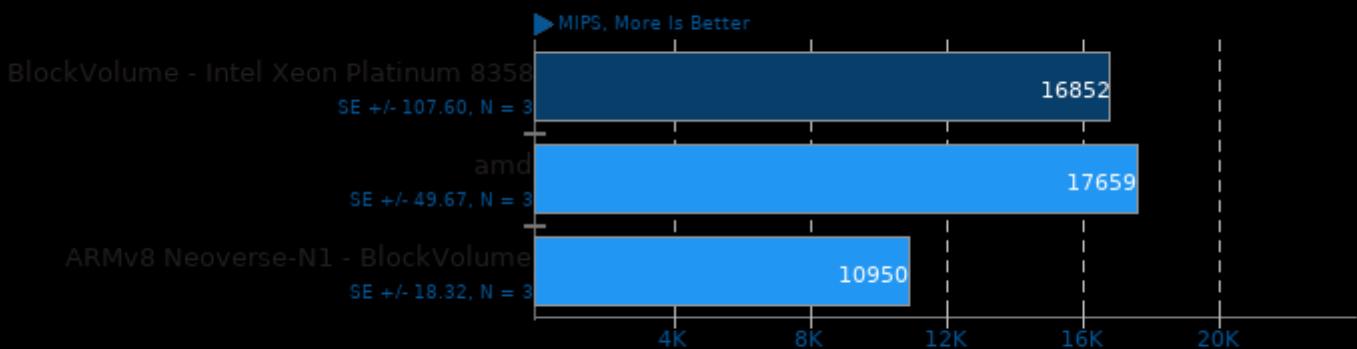
Poisson Pressure Solver



1. (CC) gcc options: -O3

7-Zip Compression 22.00

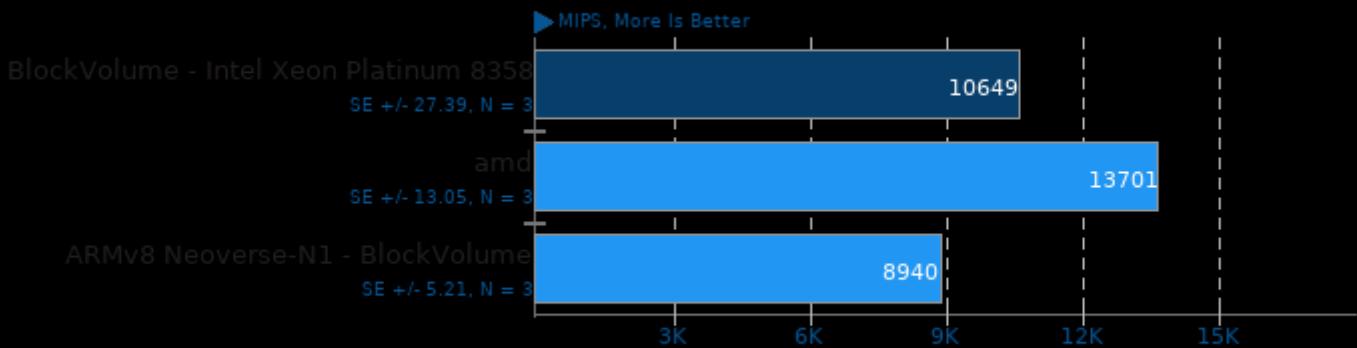
Test: Compression Rating



1. (CXX) g++ options: -lpthread -ldl -O2 -fPIC

7-Zip Compression 22.00

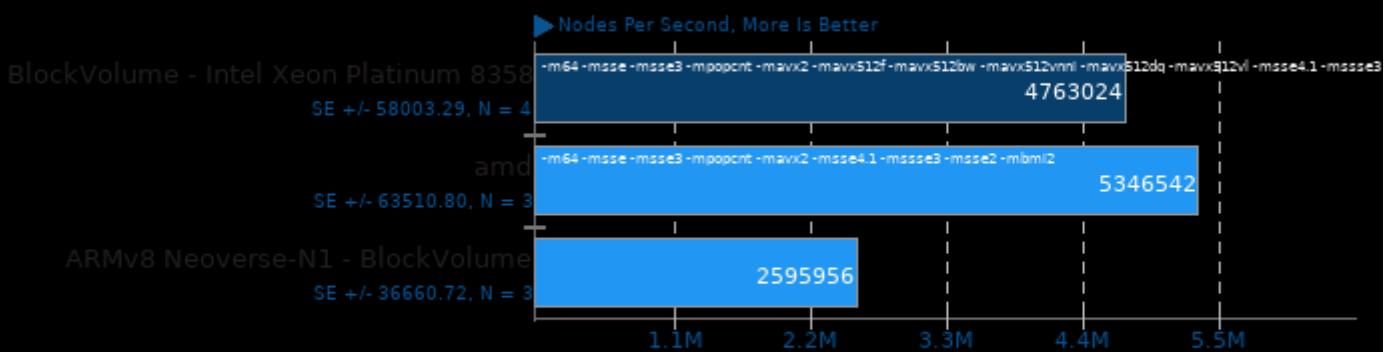
Test: Decompression Rating



1. (CXX) g++ options: -lpthread -ldl -O2 -fPIC

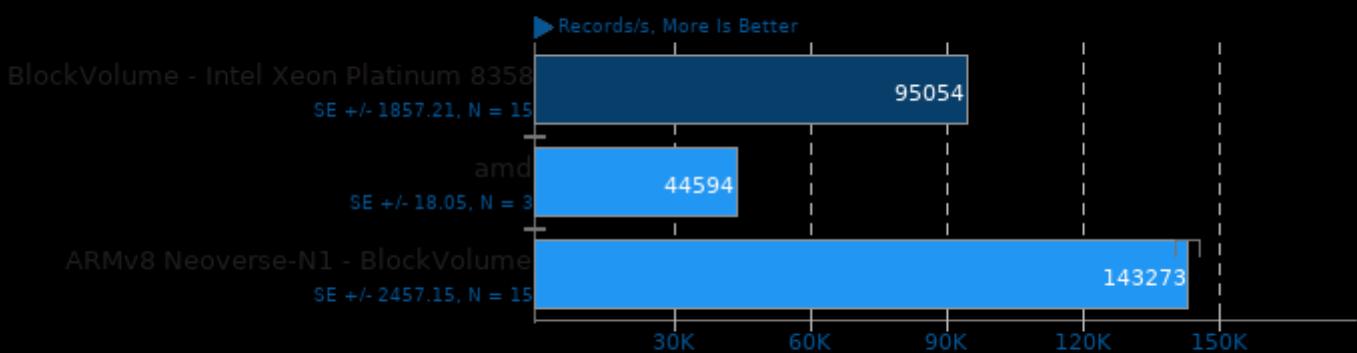
Stockfish 15

Total Time



1. (CXX) g++ options: -lgcov -lpthread -fno-exceptions -std=c++17 -fno-peel-loops -fno-tracer -pedantic -O3 -fno-finite-math-only

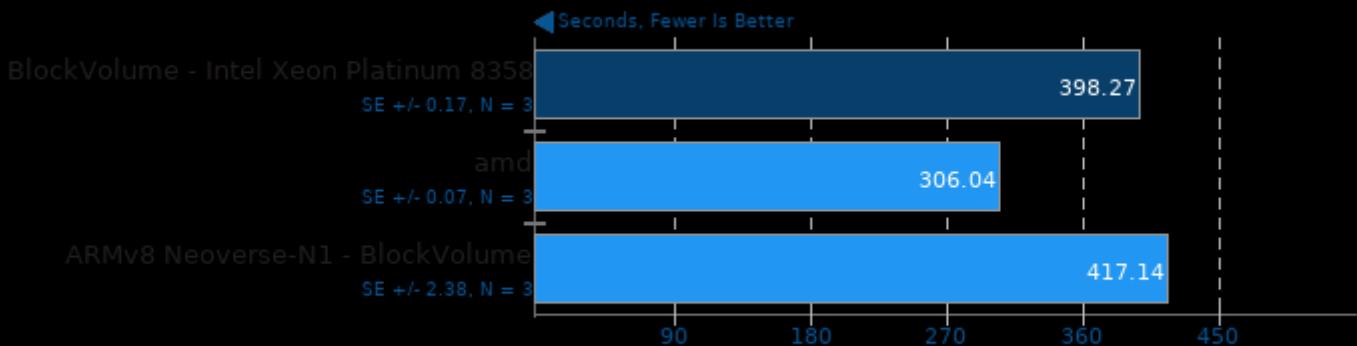
ebizzy 0.3



1. (CC) gcc options: -pthread -lpthread -O3 -march=native

C-Ray 1.1

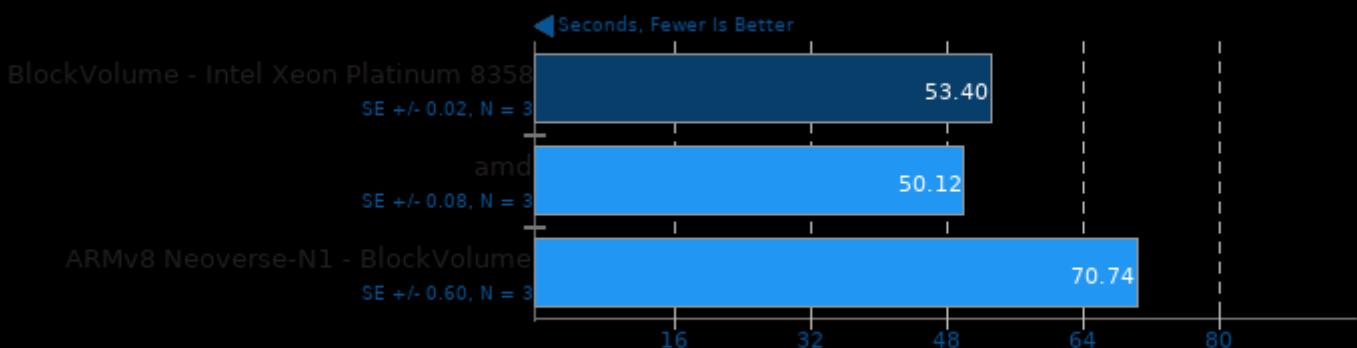
Total Time - 4K, 16 Rays Per Pixel



1. (CC) gcc options: -lm -lpthread -O3

Smallpt 1.0

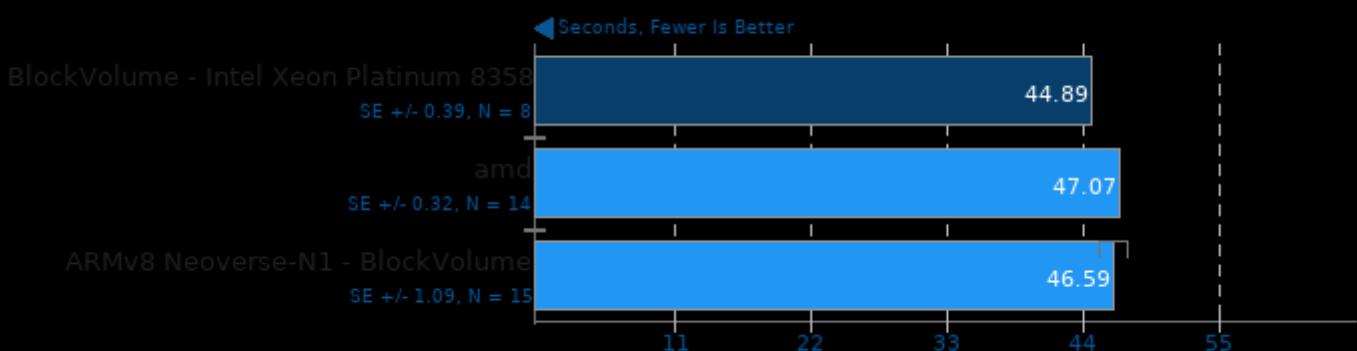
Global Illumination Renderer; 128 Samples



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

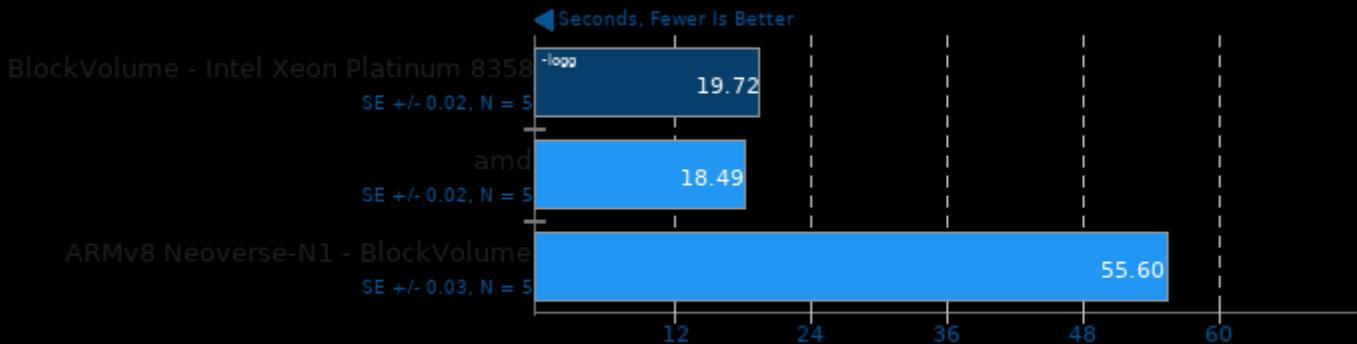
Gzip Compression

Linux Source Tree Archiving To .tar.gz



FLAC Audio Encoding 1.3.3

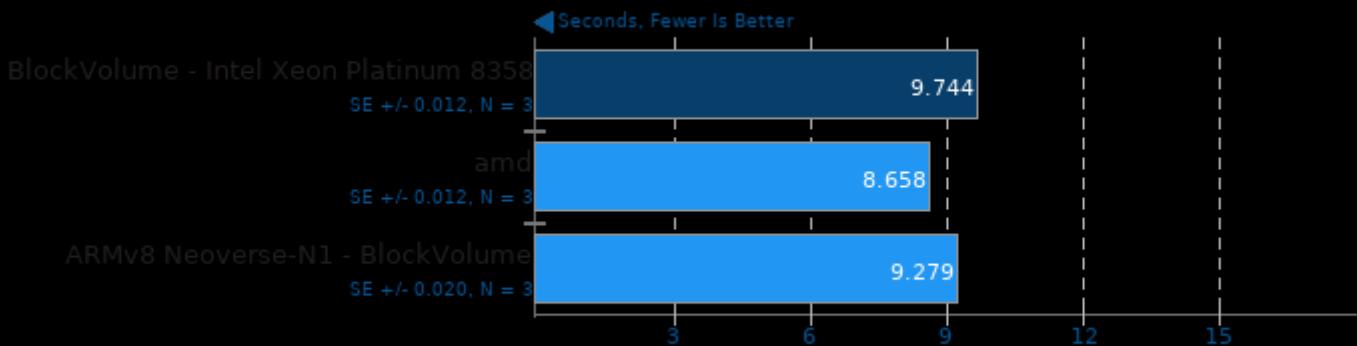
WAV To FLAC



1. (CXX) g++ options: -fvisibility=hidden -lm

LAME MP3 Encoding 3.100

WAV To MP3



1. (CC) gcc options: -O3 -ffast-math -funroll-loops -fschedule-insns2 -fbranch-count-reg -fforce-addr -pipe -lm

Hierarchical INTegration 1.0

Test: FLOAT

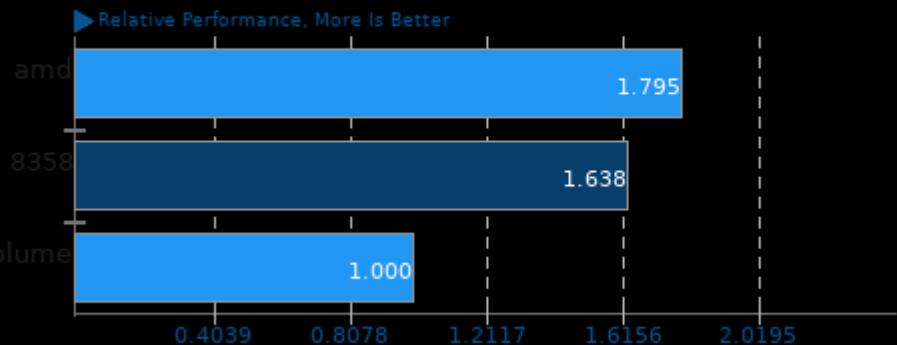


1. (CC) gcc options: -O3 -march=native -lm

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

Geometric Mean Of Audio Encoding Tests

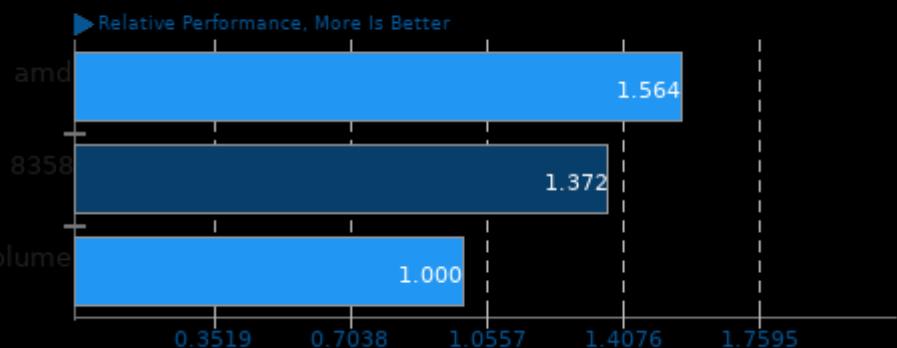
Result Composite - 2022-08-10-1558



Geometric mean based upon tests: pts/encode-mp3 and pts/encode-flac

Geometric Mean Of C/C++ Compiler Tests

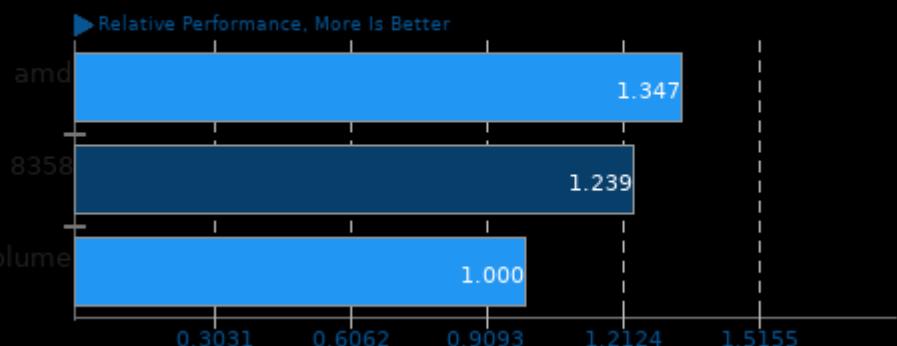
Result Composite - 2022-08-10-1558



Geometric mean based upon tests: pts/scimark2, pts/himeno, pts/stockfish, pts/c-ray, pts/compress-7zip, pts/encode-mp3, pts/encode-flac and pts/x264

Geometric Mean Of Compression Tests

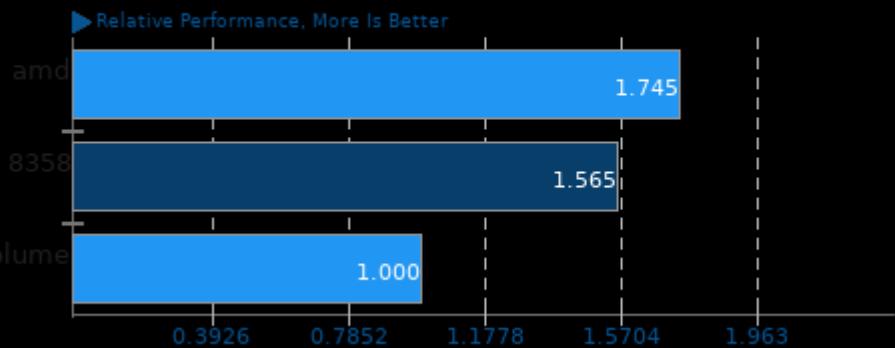
Result Composite - 2022-08-10-1558



Geometric mean based upon tests: pts/compress-7zip and pts/compress-gzip

Geometric Mean Of CPU Massive Tests

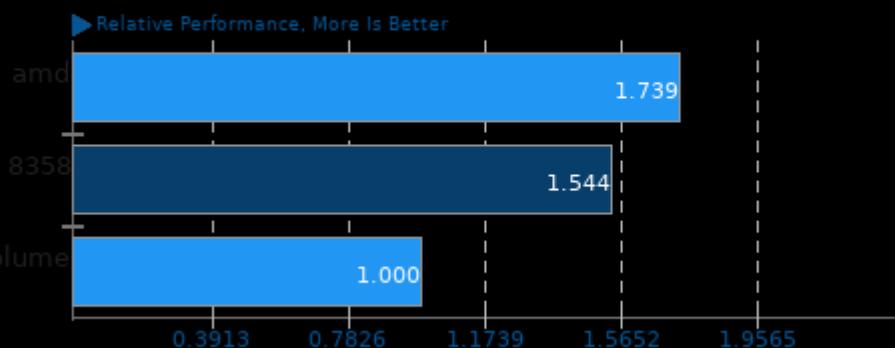
Result Composite - 2022-08-10-1558



Geometric mean based upon tests: pts/blake2, pts/c-ray, pts/cachebench, pts/compress-7zip, pts/x264, pts/ebizzy, pts/encode-flac, pts/encode-mp3, pts/himeno, pts/hint, pts/hpcg, pts/npb, pts/stockfish, pts/ramspeed and pts/stream

Geometric Mean Of Creator Workloads Tests

Result Composite - 2022-08-10-1558



Geometric mean based upon tests: pts/c-ray, pts/smallpt, pts/x264, pts/encode-mp3 and pts/encode-flac

Geometric Mean Of Encoding Tests

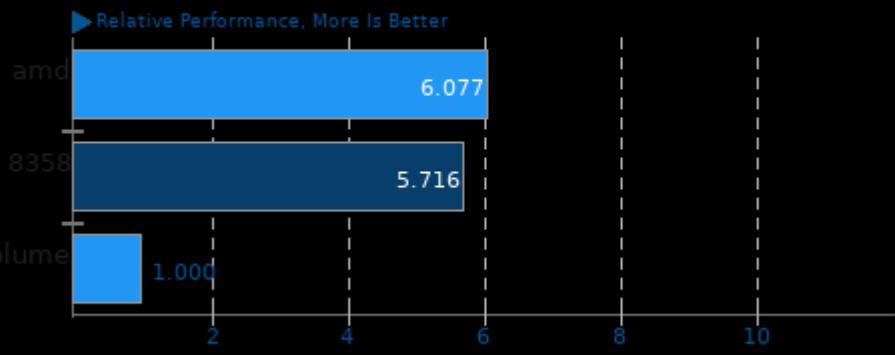
Result Composite - 2022-08-10-1558



Geometric mean based upon tests: pts/encode-mp3, pts/encode-flac and pts/x264

Geometric Mean Of Fortran Tests

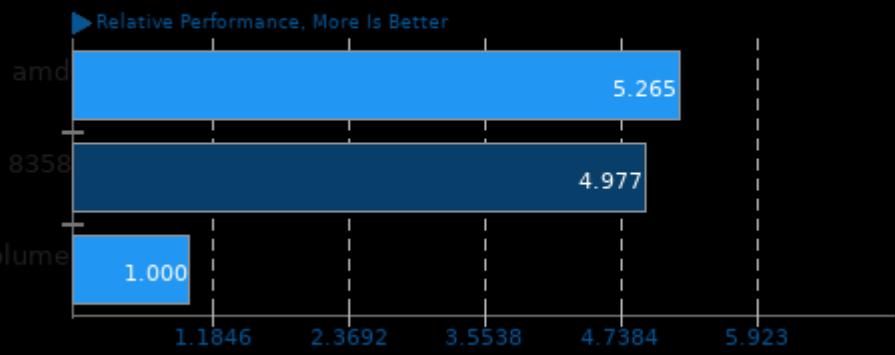
Result Composite - 2022-08-10-1558



Geometric mean based upon tests: pts/hpcg, pts/npb and pts/ffte

Geometric Mean Of HPC - High Performance Computing Tests

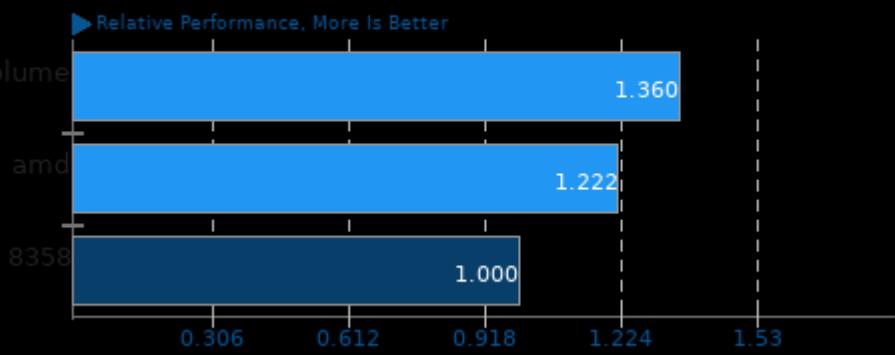
Result Composite - 2022-08-10-1558



Geometric mean based upon tests: pts/npb, pts/hpcg, pts/ffte and pts/himeno

Geometric Mean Of Memory Test Suite

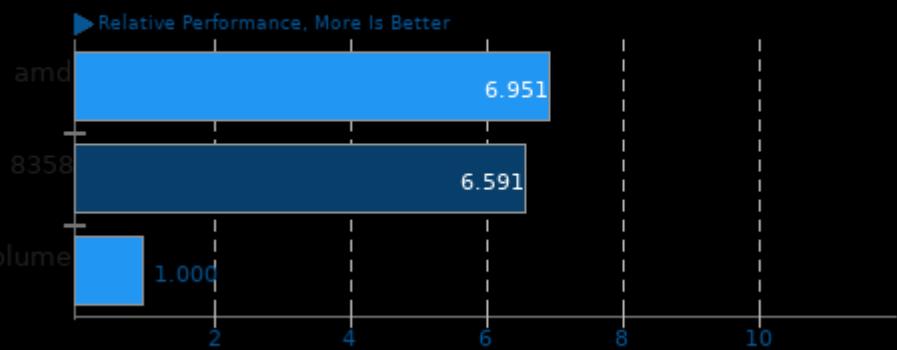
Result Composite - 2022-08-10-1558



Geometric mean based upon tests: pts/ramspeed, pts/stream and pts/cachebench

Geometric Mean Of MPI Benchmarks Tests

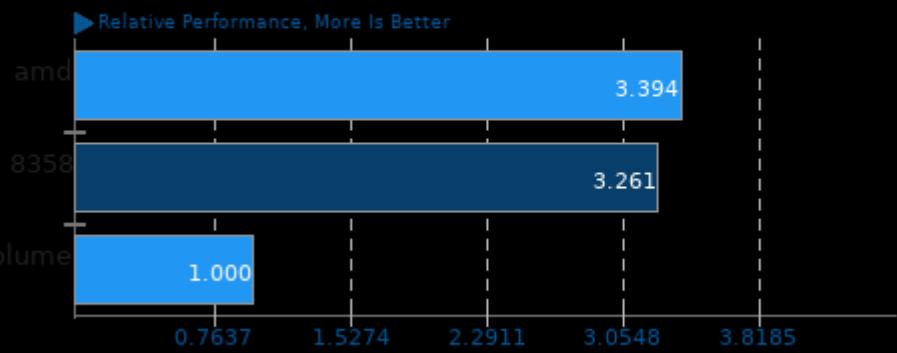
Result Composite - 2022-08-10-1558



Geometric mean based upon tests: pts/hpcg and pts/npb

Geometric Mean Of Multi-Core Tests

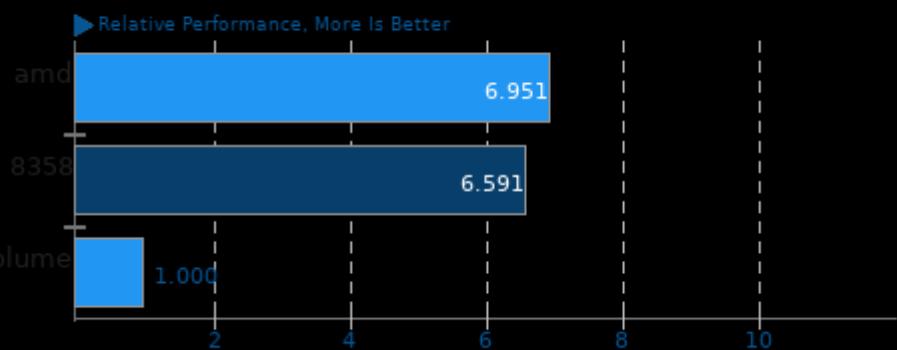
Result Composite - 2022-08-10-1558



Geometric mean based upon tests: pts/c-ray, pts/stockfish, pts/x264, pts/npb, pts/smallpt, pts/ebizzy, pts/compress-7zip and pts/hpcg

Geometric Mean Of OpenMPI Tests

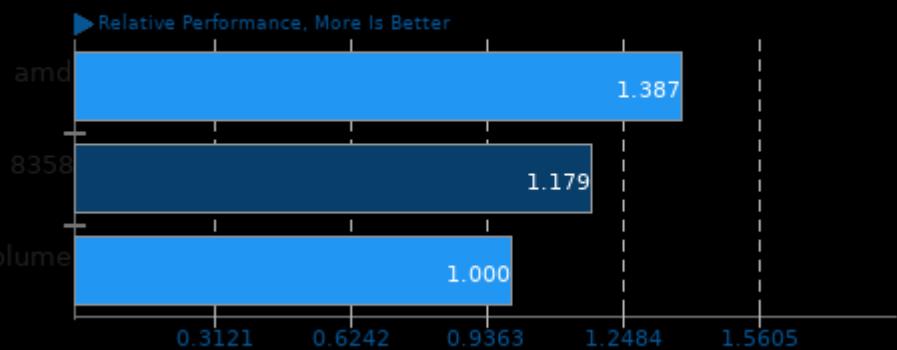
Result Composite - 2022-08-10-1558



Geometric mean based upon tests: pts/hpcg and pts/npb

Geometric Mean Of Renderers Tests

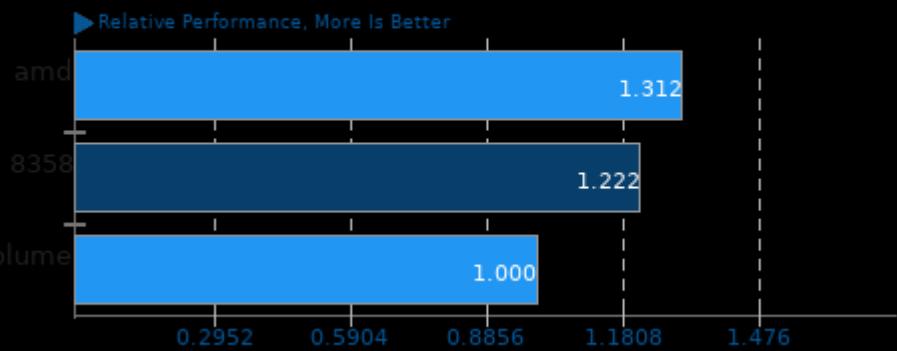
Result Composite - 2022-08-10-1558



Geometric mean based upon tests: pts/c-ray and pts/smallpt

Geometric Mean Of Scientific Computing Tests

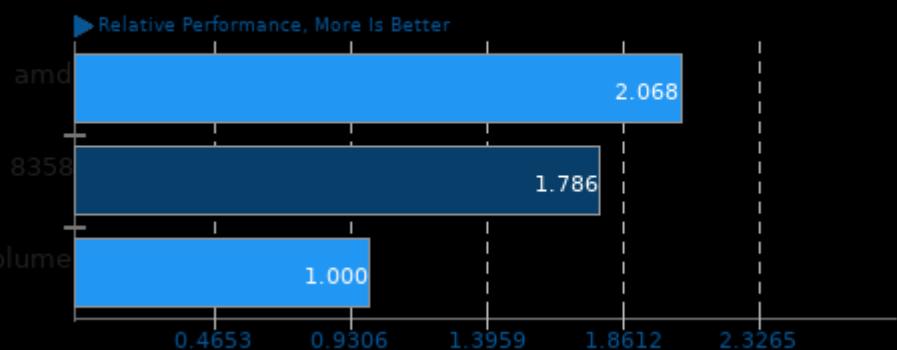
Result Composite - 2022-08-10-1558



Geometric mean based upon tests: pts/ffte and pts/himeno

Geometric Mean Of Server CPU Tests

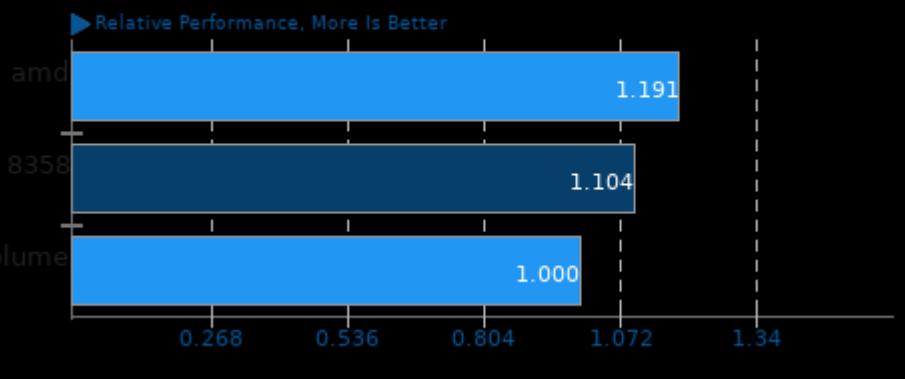
Result Composite - 2022-08-10-1558



Geometric mean based upon tests: pts/npb, pts/x264, pts/himeno, pts/compress-7zip, pts/stockfish, pts/c-ray, pts/ramspeed and pts/stream

Geometric Mean Of Single-Threaded Tests

Result Composite - 2022-08-10-1558



Geometric mean based upon tests: pts/blake2, pts/cachebench, pts/scimark2, pts/compress-gzip, pts/encode-flac, pts/encode-mp3 and pts/hint

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