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3950X Monday

AMD Ryzen 9 3950X 16-Core testing with a ASUS ROG CROSSHAIR VII HERO (WI-FI) (3103 BIOS) and Sapphire AMD Radeon RX 470/480/570/570X/580/580X/590 4GB on Ubuntu 20.04 via the Phoronix Test Suite.

Automated Executive Summary

2 had the most wins, coming in first place for 46% of the tests.

Based on the geometric mean of all complete results, the fastest (2) was 1.005x the speed of the slowest (3). 1 was 0.998x the speed of 2 and 3 was 0.997x the speed of 1.

Test Systems:

1

2

3

Processor: AMD Ryzen 9 3950X 16-Core @ 3.50GHz (16 Cores / 32 Threads), Motherboard: ASUS ROG CROSSHAIR VII HERO (WI-FI) (3103 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: Samsung SSD 970 EVO 250GB, Graphics: Sapphire AMD Radeon RX 470/480/570/570X/580/580X/590 4GB (1260/1750MHz), Audio: AMD Ellesmere HDMI Audio, Monitor: VA2431, Network: Intel I211 + Realtek RTL8822BE 802.11a/b/g/n/ac

OS: Ubuntu 20.04, Kernel: 5.9.0-050900rc6daily20200922-generic (x86_64) 20200921, Desktop: GNOME Shell 3.36.4, Display Server: X Server 1.20.8, Display Driver: modesetting 1.20.8, OpenGL: 4.6 Mesa 20.0.8 (LLVM 10.0.0), Vulkan: 1.2.128, Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 1920x1080

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: 0x8701021
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 STIBP: conditional RSB filling + srbds: Not affected + tsx_async_abort: Not affected

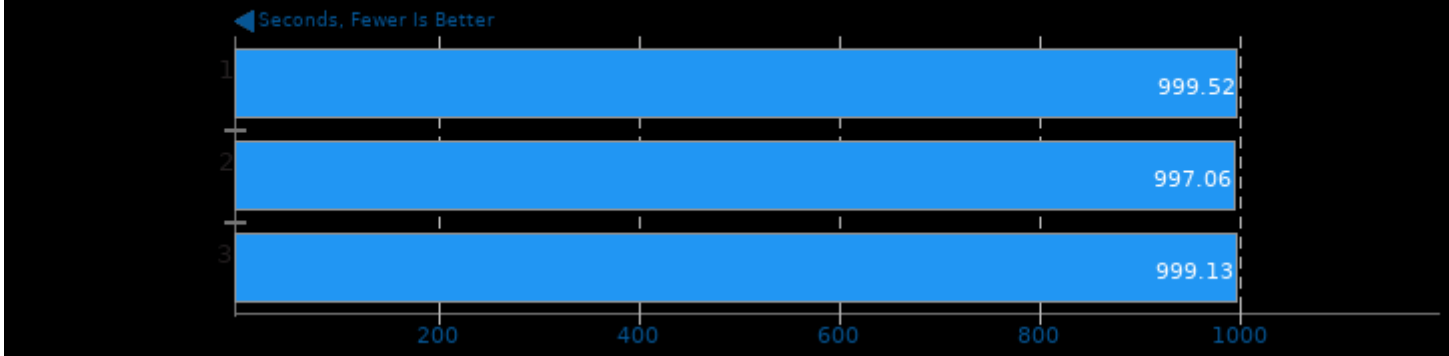
	1	2	3
CP2K Molecular Dynamics - Fayalite-FIST Data (sec)	**999.518**	**997.062**	999.13
Normalized	99.75%	100%	99.79%
Algebraic Multi-Grid Benchmark (Figure Of Merit)	**203725833**	205097000	**205504467**
Normalized	99.13%	99.8%	100%
Standard Deviation	1.9%	0.7%	0.9%
OpenFOAM - Motorbike 30M (sec)	**105.16**	103.92	**103.77**
Normalized	98.68%	99.86%	100%
Standard Deviation	1%	0.2%	0.5%
OpenFOAM - Motorbike 60M (sec)	1444	**1446**	**1442**
Normalized	99.87%	99.74%	100%
Standard Deviation	0.1%	0.3%	0%
Quantum ESPRESSO - AUSURF112 (sec)	**1215**	1219	**1220**
Normalized	100%	99.61%	99.57%
Standard Deviation	0.4%	0.7%	0.5%
LAMMPS Molecular Dynamics Simulator - 20k Atoms (ns/day)	11.386	**11.459**	**11.299**
Normalized	99.36%	100%	98.6%
Standard Deviation	1.1%	0.4%	0.4%
LAMMPS Molecular Dynamics Simulator - Rhodopsin Protein (ns/day)	11.378	**11.557**	**11.035**
Normalized	98.45%	100%	95.48%
Standard Deviation	5.3%	0.9%	1.8%
LULESH (z/s)	**4497**	**4506**	4498
Normalized	99.8%	100%	99.82%
Standard Deviation	0.2%	0.3%	0.8%
dav1d - Chimera 1080p (FPS)	**620.80**	**622.88**	622.77
Normalized	99.67%	100%	99.98%
Standard Deviation	0.3%	0.5%	0.3%

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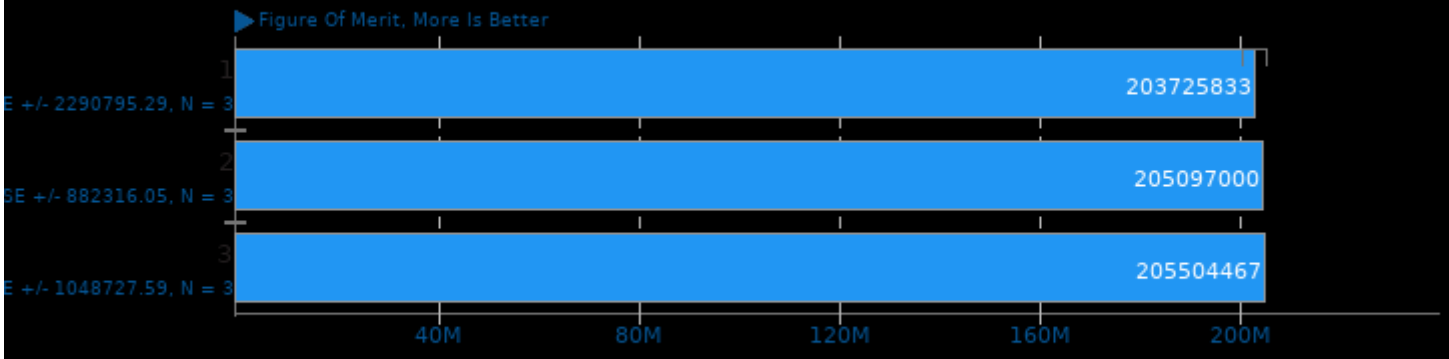
dav1d - Summer Nature 4K (FPS)	**208.13**	**207.49**	207.88
Normalized	100%	99.69%	99.88%
Standard Deviation	0.3%	0.3%	0.2%
dav1d - S.N.1 (FPS)	**588.42**	**591.48**	589.30
Normalized	99.48%	100%	99.63%
Standard Deviation	0.4%	0.5%	0.2%
dav1d - C.1.1.b (FPS)	114.81	**115.20**	**114.56**
Normalized	99.66%	100%	99.44%
Standard Deviation	0.1%	0.3%	0.2%
TNN - CPU - MobileNet v2 (ms)	**259.638**	258.645	**258.323**
Normalized	99.49%	99.88%	100%
Standard Deviation	0.7%	0.4%	0.3%
TNN - CPU - SqueezeNet v1.1 (ms)	**238.552**	**241.991**	241.916
Normalized	100%	98.58%	98.61%
Standard Deviation	1.8%	0.4%	0.6%
Kripke (Throughput FoM)	**64410143**	64091347	**63486967**
Normalized	100%	99.51%	98.57%
Standard Deviation	1.9%	2.8%	2.4%

CP2K Molecular Dynamics 8.1

Fayalite-FIST Data



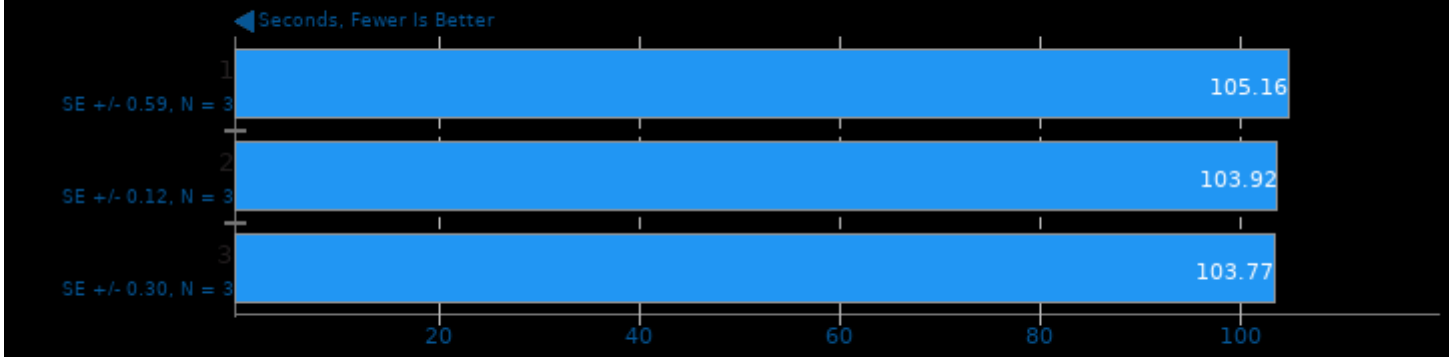
Algebraic Multi-Grid Benchmark 1.2



1. (CC) gcc options: -lparcsr_ls -lparcsr_mv -lseq_mv -lIJ_mv -lkrylov -lHYPRE_utilities -lm -fopenmp -pthread -lmpi

OpenFOAM 8

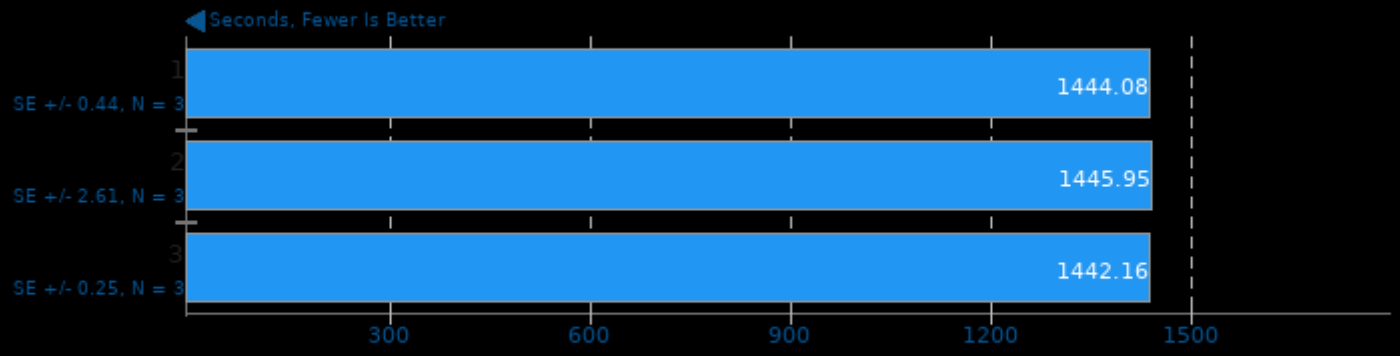
Input: Motorbike 30M



1. (CXX) g++ options: -std=c++11 -m64 -O3 -ftemplate-depth-100 -fPIC -fuse-ld=bfd -Xlinker --add-needed --no-as-needed -lfoamToVTK -ldynamicMesh -

OpenFOAM 8

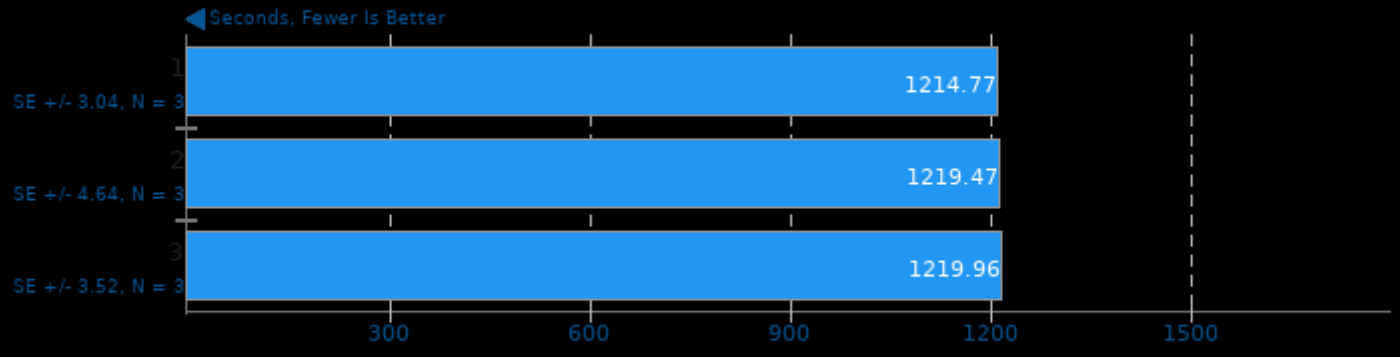
Input: Motorbike 60M



1. (CXX) g++ options: -std=c++11 -m64 -O3 -ftemplate-depth-100 -fPIC -fuse-ld=bfd -Xlinker --add-needed --no-as-needed -lfoamToVTK -ldynamicMesh -

Quantum ESPRESSO 6.7

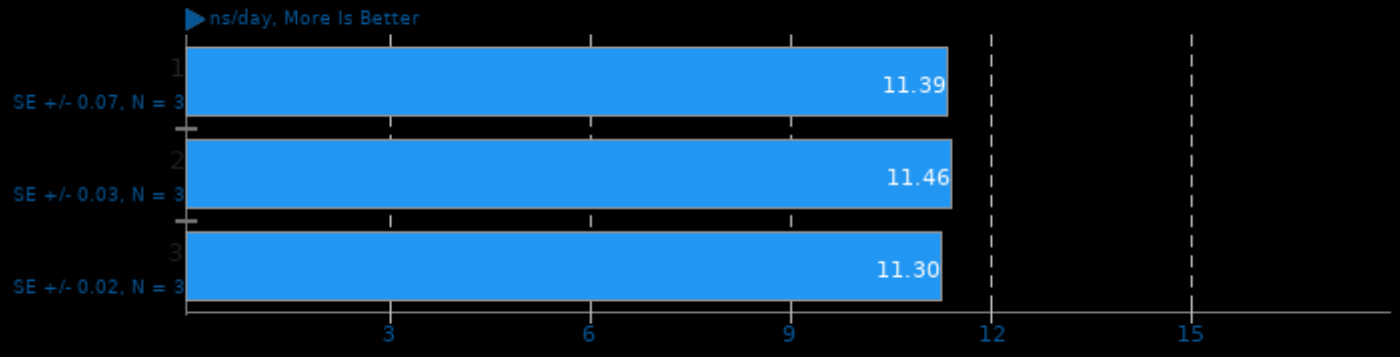
Input: AUSURF112



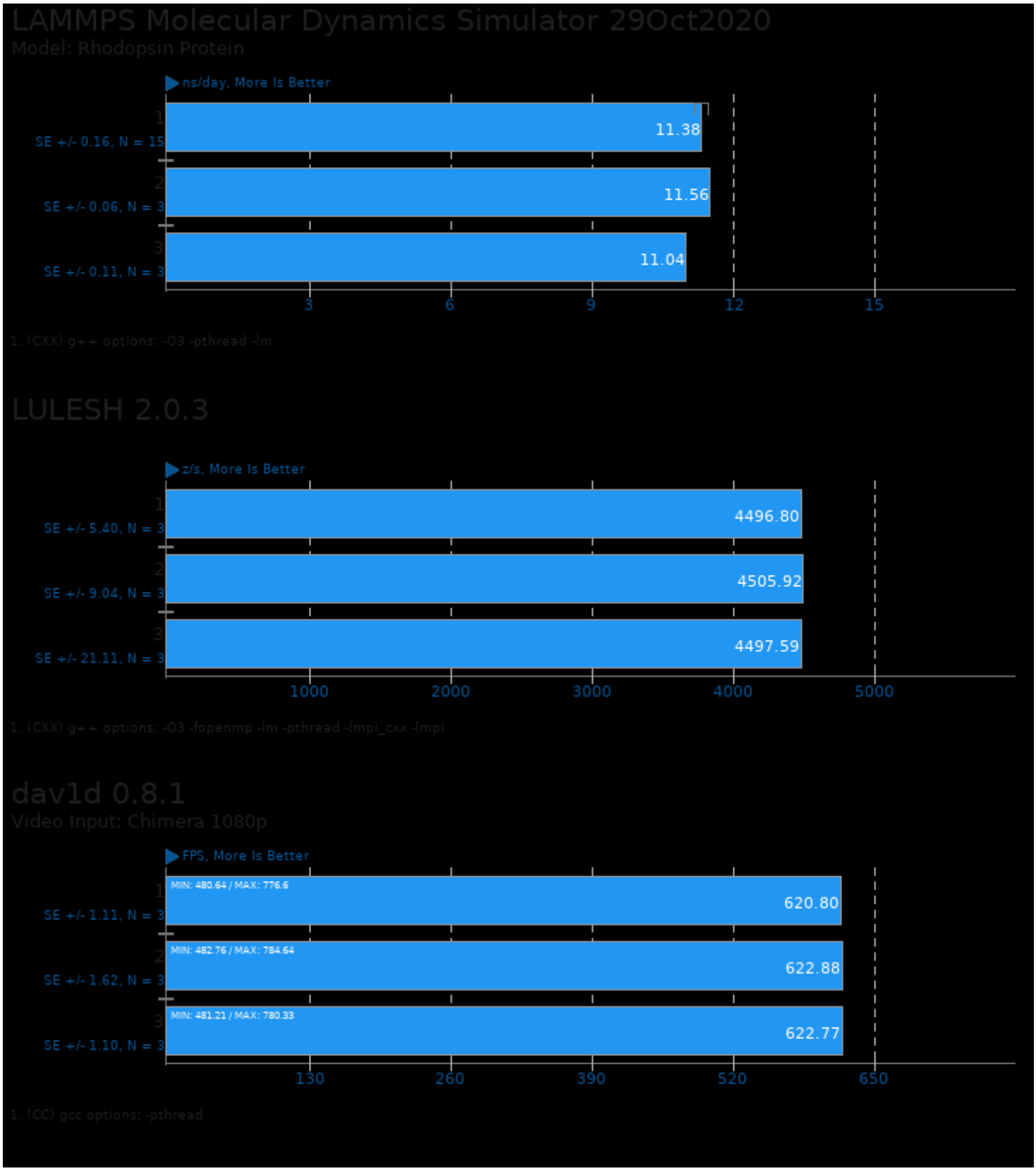
1. (F9X) gfortran options: -lopenblas -lFoX_dom -lFoX_sax -lFoX_wxml -lFoX_common -lFoX_utils -lFoX_fsys -lfftw3 -pthread -lmpi_usempif08 -lmpi_mpifh -

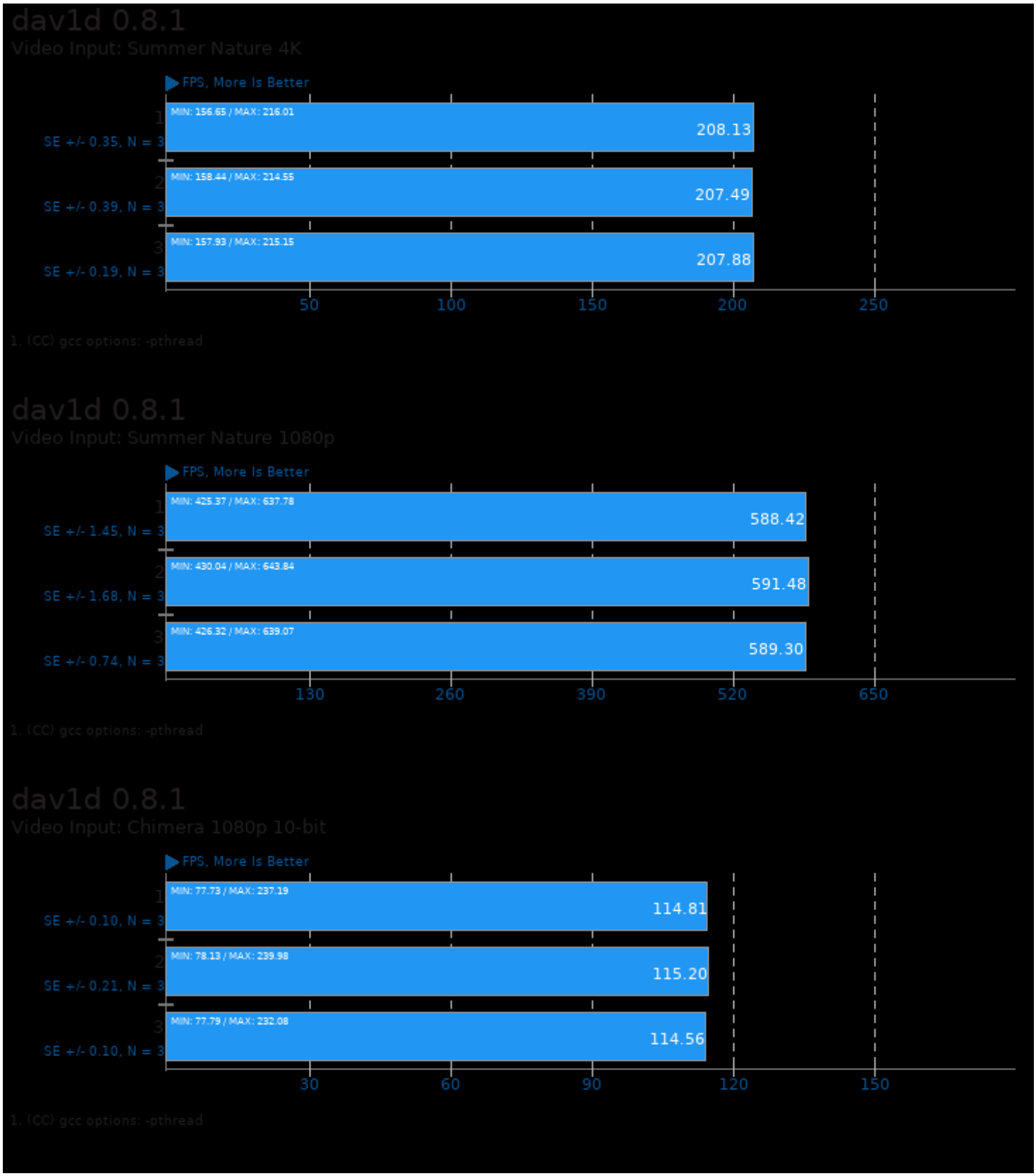
LAMMPS Molecular Dynamics Simulator 29Oct2020

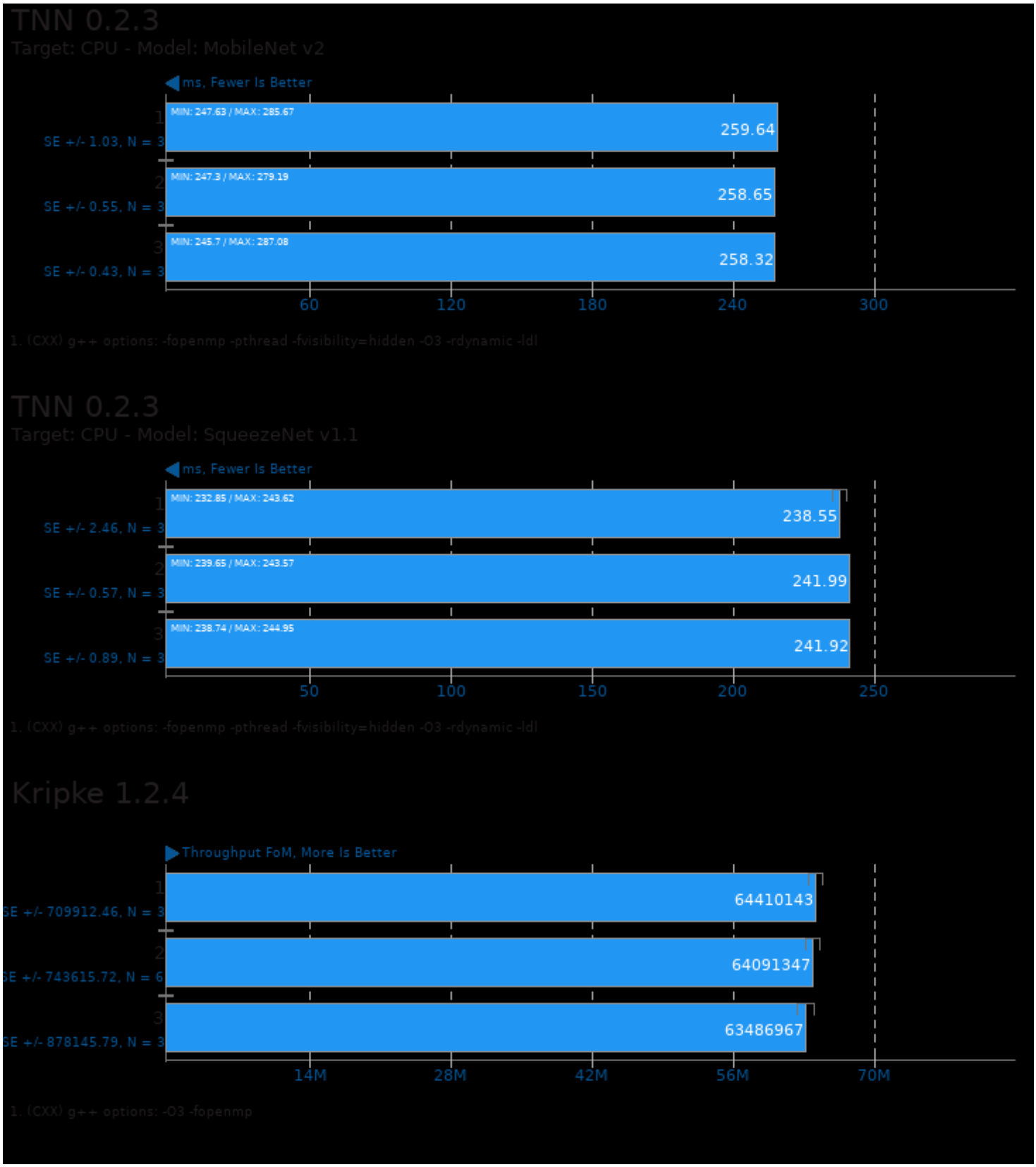
Model: 20k Atoms



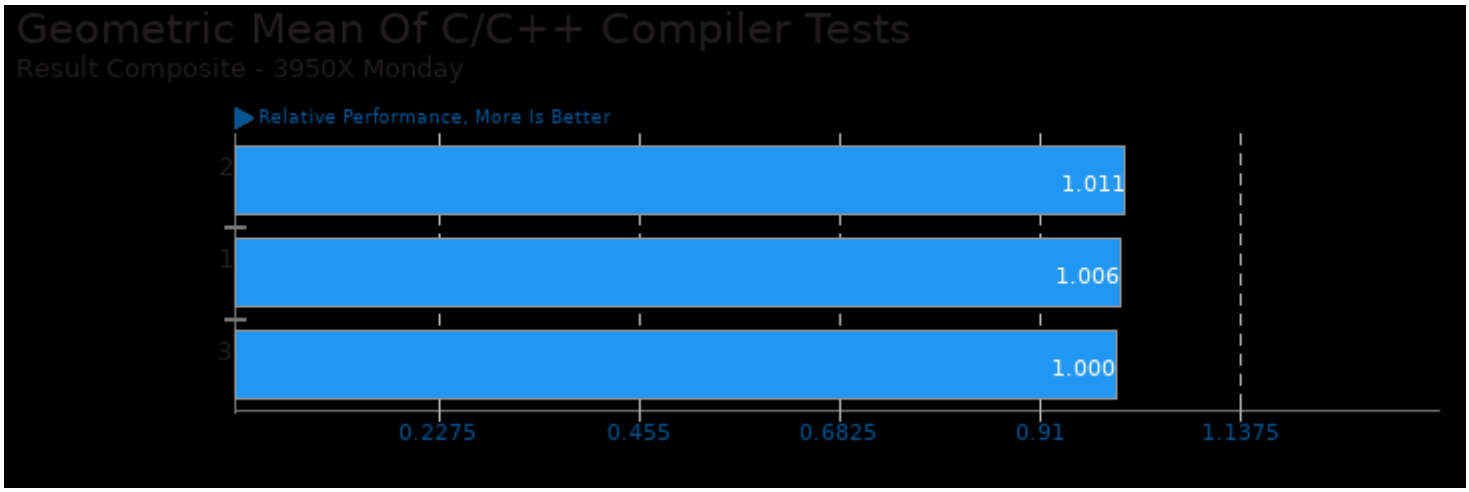
1. (CXX) g++ options: -O3 -pthread -lm


LAMMPS Molecular Dynamics Simulator 29Oct2020
Model: Rhodopsin Protein
ns/day, More Is Better
1
SE +/- 0.16, N = 15
11.38
2
SE +/- 0.06, N = 3
11.56
3
SE +/- 0.11, N = 3
11.04
3
6
9
12
15
1. (CXX) g++ options: -O3 -pthread -lm
LULESH 2.0.3
z/s, More Is Better
1
SE +/- 5.40, N = 3
4496.80
2
SE +/- 9.04, N = 3
4505.92
3
SE +/- 21.11, N = 3
4497.59
1000
2000
3000
4000
5000
1. (CXX) g++ options: -O3 -fopenmp -lm -pthread -lmpi_cxx -lmpi
dav1d 0.8.1
Video Input: Chimera 1080p
FPS, More Is Better
1
SE +/- 1.11, N = 3
MIN: 480.64 / MAX: 776.6
620.80
2
SE +/- 1.62, N = 3
MIN: 482.76 / MAX: 784.64
622.88
3
SE +/- 1.10, N = 3
MIN: 481.21 / MAX: 780.33
622.77
130
260
390
520
650
1. (CC) gcc options: -pthread


dav1d 0.8.1
Video Input: Summer Nature 4K
FPS, More Is Better
1
MIN: 156.65 / MAX: 216.01
208.13
SE +/- 0.35, N = 3
2
MIN: 158.44 / MAX: 214.55
207.49
SE +/- 0.39, N = 3
3
MIN: 157.93 / MAX: 215.15
207.88
SE +/- 0.19, N = 3
50
100
150
200
250
1. (CC) gcc options: -pthread
dav1d 0.8.1
Video Input: Summer Nature 1080p
FPS, More Is Better
1
MIN: 425.37 / MAX: 637.78
588.42
SE +/- 1.45, N = 3
2
MIN: 430.04 / MAX: 643.84
591.48
SE +/- 1.68, N = 3
3
MIN: 426.32 / MAX: 639.07
589.30
SE +/- 0.74, N = 3
130
260
390
520
650
1. (CC) gcc options: -pthread
dav1d 0.8.1
Video Input: Chimera 1080p 10-bit
FPS, More Is Better
1
MIN: 77.73 / MAX: 237.19
114.81
SE +/- 0.10, N = 3
2
MIN: 78.13 / MAX: 239.98
115.20
SE +/- 0.21, N = 3
3
MIN: 77.79 / MAX: 232.08
114.56
SE +/- 0.10, N = 3
30
60
90
120
150
1. (CC) gcc options: -pthread


TNN 0.2.3
Target: CPU - Model: MobileNet v2
ms, Fewer Is Better
1
MIN: 247.63 / MAX: 285.67
259.64
SE +/- 1.03, N = 3
2
MIN: 247.3 / MAX: 279.19
258.65
SE +/- 0.55, N = 3
3
MIN: 245.7 / MAX: 287.08
258.32
SE +/- 0.43, N = 3
60
120
180
240
300
1. (CXX) g++ options: -fopenmp -pthread -fvisibility=hidden -O3 -rdynamic -ldl
TNN 0.2.3
Target: CPU - Model: SqueezeNet v1.1
ms, Fewer Is Better
1
MIN: 232.85 / MAX: 243.62
238.55
SE +/- 2.46, N = 3
2
MIN: 239.65 / MAX: 243.57
241.99
SE +/- 0.57, N = 3
3
MIN: 238.74 / MAX: 244.95
241.92
SE +/- 0.89, N = 3
50
100
150
200
250
1. (CXX) g++ options: -fopenmp -pthread -fvisibility=hidden -O3 -rdynamic -ldl
Kripke 1.2.4
Throughput FoM, More Is Better
1
64410143
SE +/- 709912.46, N = 3
2
64091347
SE +/- 743615.72, N = 6
3
63486967
SE +/- 878145.79, N = 3
14M
28M
42M
56M
70M
1. (CXX) g++ options: -O3 -fopenmp

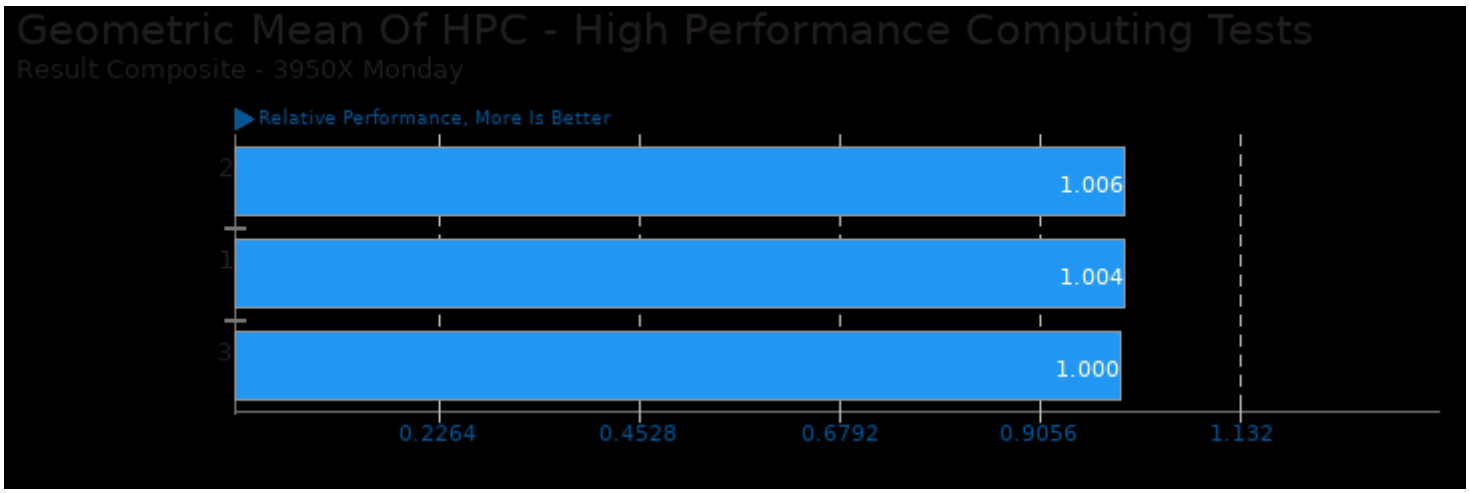
These geometric means are based upon test groupings / test suites for this result file.



Geometric mean based upon tests: pts/dav1d and pts/lammps

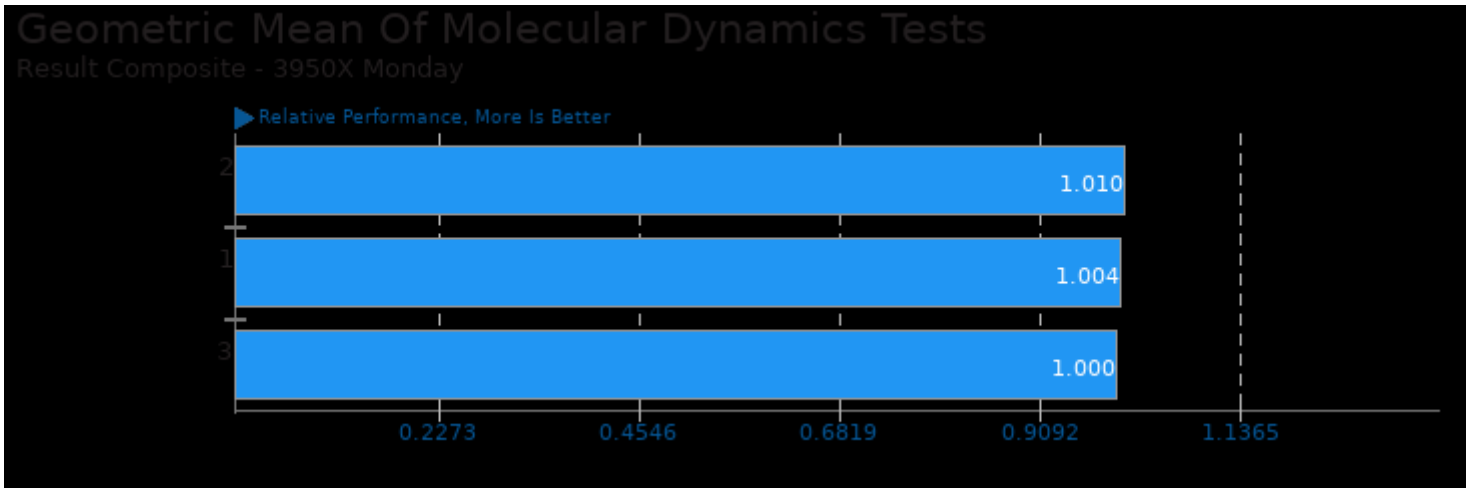


Geometric mean based upon tests: pts/dav1d and pts/lammps



Geometric mean based upon tests: pts/qe, pts/amg, pts/cp2k, pts/lammps, pts/lulesh, pts/openfoam, pts/kripke and pts/tnn

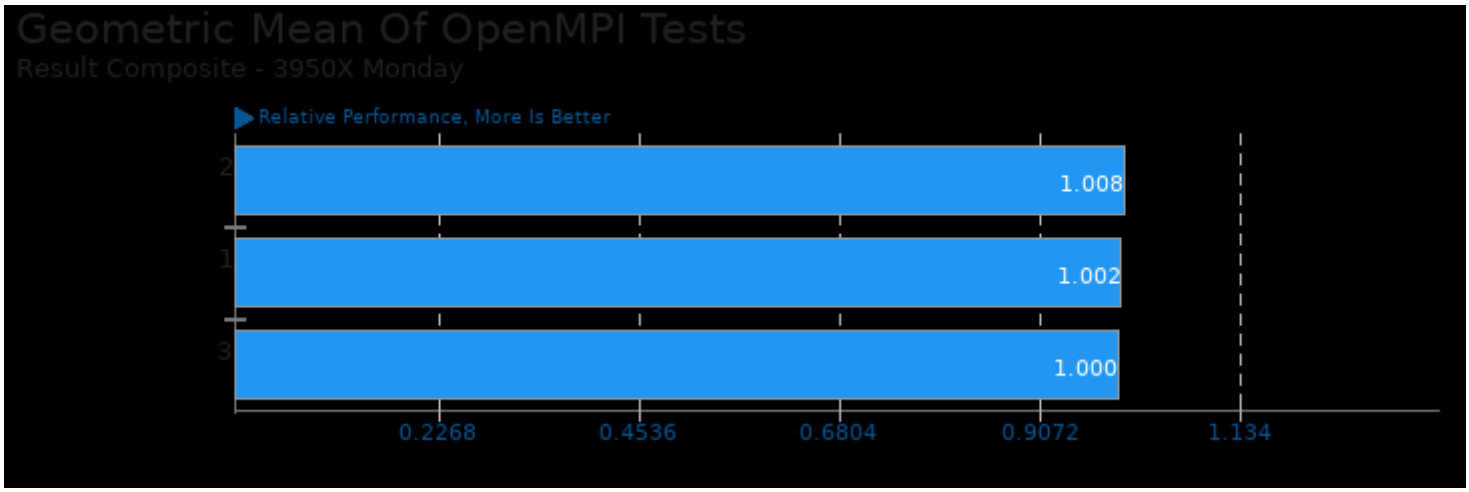
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Geometric mean based upon tests: pts/cp2k, pts/lammps, pts/lulesh and pts/openfoam

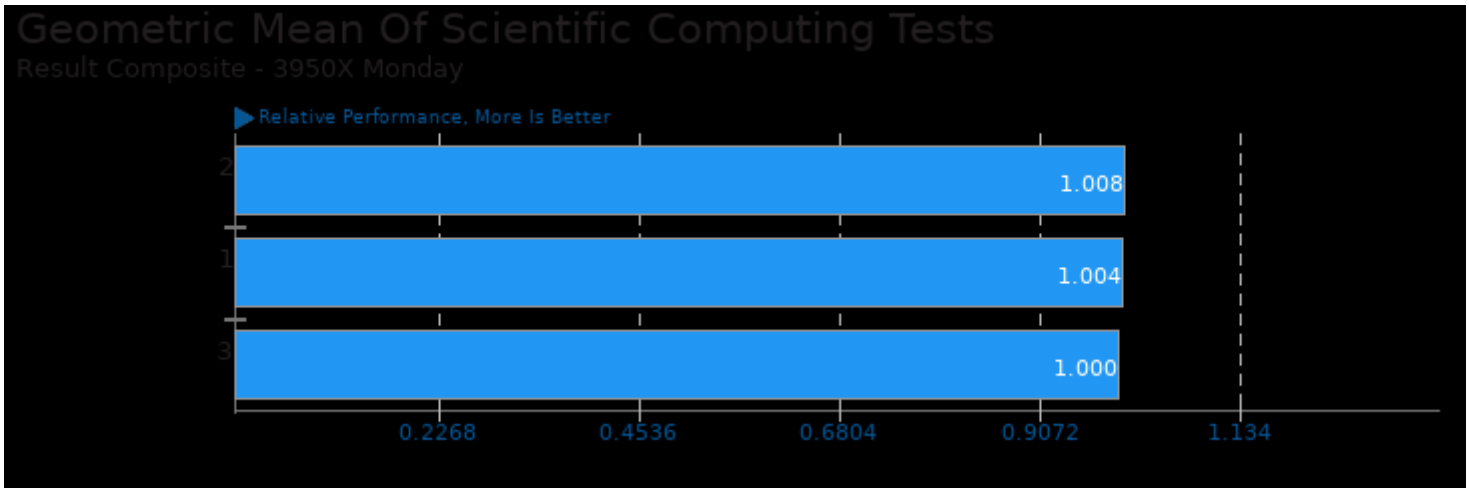


Geometric mean based upon tests: pts/dav1d and pts/lammps

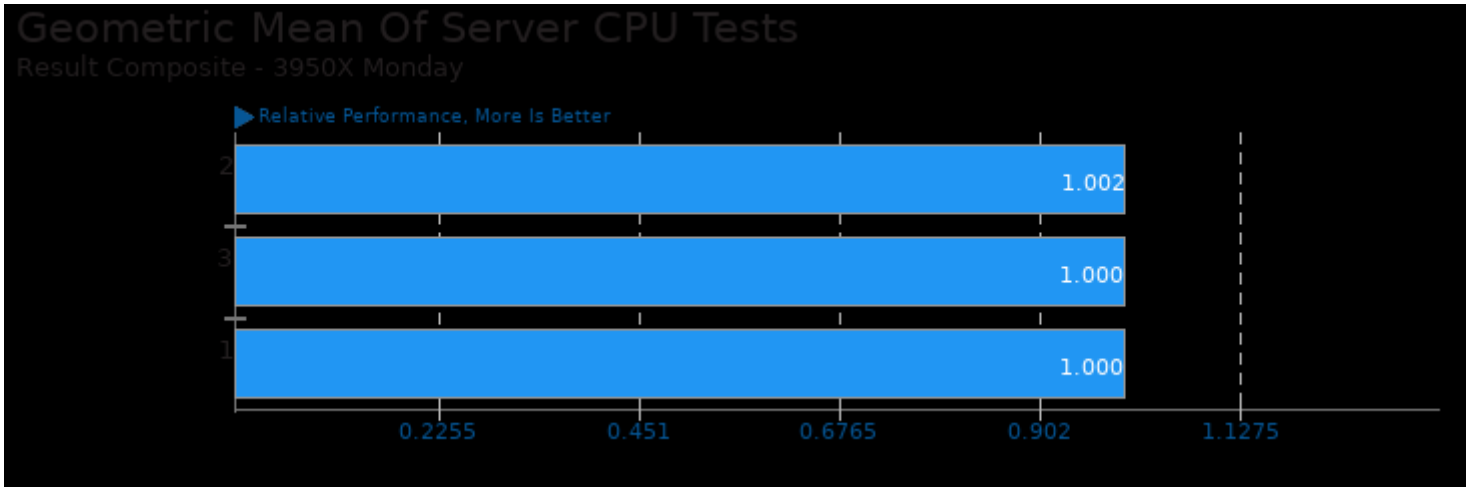


Geometric mean based upon tests: pts/cp2k, pts/amg, pts/openfoam, pts/lammps and pts/lulesh

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Geometric mean based upon tests: pts/amg, pts/cp2k, pts/lammps, pts/lulesh, pts/openfoam, pts/qe and pts/kripke



Geometric mean based upon tests: pts/cp2k and pts/dav1d

This file was automatically generated via the Phoronix Test Suite benchmarking software on Friday, 29 March 2024 03:12.