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EPYC 7F52 Mon

AMD EPYC 7F52 16-Core testing with a Supermicro H11DSi-NT v2.00 (2.1 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 46% of the tests.

Based on the geometric mean of all complete results, the fastest (3) was 1.003x the speed of the slowest (1). 2 was 0.998x the speed of 3 and 1 was 0.999x the speed of 2.

Test Systems:

1

2

3

Processor: AMD EPYC 7F52 16-Core @ 3.50GHz (16 Cores / 32 Threads), Motherboard: Supermicro H11DSi-NT v2.00 (2.1 BIOS), Chipset: AMD Starship/Matisse, Memory: 64GB, Disk: 280GB INTEL SSDPE21D280GA, Graphics: llvmpipe, Monitor: VE228

OS: Ubuntu 20.04, Kernel: 5.10.3-051003-generic (x86_64), Desktop: GNOME Shell 3.36.1, Display Server: X Server 1.20.8, Display Driver: modesetting 1.20.8, OpenGL: 3.3 Mesa 20.0.4 (LLVM 9.0.1 128 bits), Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 1920x1080

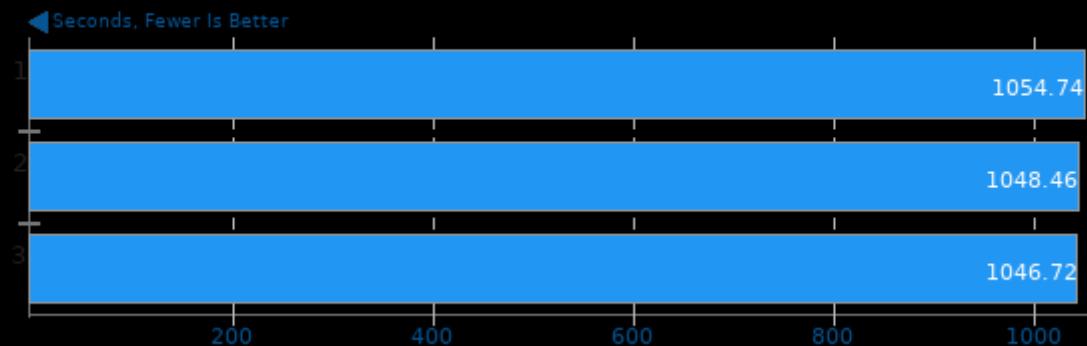
```
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie
--enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,gm2 --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch
--enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none,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
```

| | 1 | 2 | 3 |
|---|------------------|------------------|------------------|
| CP2K Molecular Dynamics - Fayalite-FIST | 1055 | 1048 | 1047 |
| Data (sec) | | | |
| Normalized | 99.24% | 99.83% | 100% |
| Algebraic Multi-Grid Benchmark (Figure Of Merit) | 840172933 | 840647367 | 840974867 |
| Normalized | 99.9% | 99.96% | 100% |
| Standard Deviation | 0.1% | 0.1% | 0% |
| OpenFOAM - Motorbike 30M (sec) | 33.22 | 33.32 | 33.34 |
| Normalized | 100% | 99.7% | 99.64% |
| Standard Deviation | 0.3% | 0.3% | 0.4% |
| OpenFOAM - Motorbike 60M (sec) | 265.32 | 266.23 | 266.63 |
| Normalized | 100% | 99.66% | 99.51% |
| Standard Deviation | 0.1% | 0.2% | 0.4% |
| Quantum ESPRESSO - AUSURF112 (sec) | 1220 | 1225 | 1210 |
| Normalized | 99.15% | 98.78% | 100% |
| Standard Deviation | 0.9% | 0.8% | 1.1% |
| LAMMPS Molecular Dynamics Simulator - 20k Atoms (ns/day) | 12.270 | 12.232 | |
| Normalized | 100% | 99.69% | |
| Standard Deviation | 0.1% | 0.5% | |
| LAMMPS Molecular Dynamics Simulator - Rhodopsin Protein (ns/day) | 11.557 | 11.655 | |
| Normalized | 99.16% | 100% | |
| Standard Deviation | 9% | 8.4% | |
| LULESH (z/s) | 396.84667 | 396.87227 | |
| Normalized | 99.99% | 100% | |
| Standard Deviation | 0.1% | 0.1% | |
| dav1d - Chimera 1080p (FPS) | 589.24 | 588.29 | |
| Normalized | 100% | 99.84% | |
| Standard Deviation | 0.4% | 0.3% | |
| dav1d - Summer Nature 4K (FPS) | 238.11 | 238.07 | |

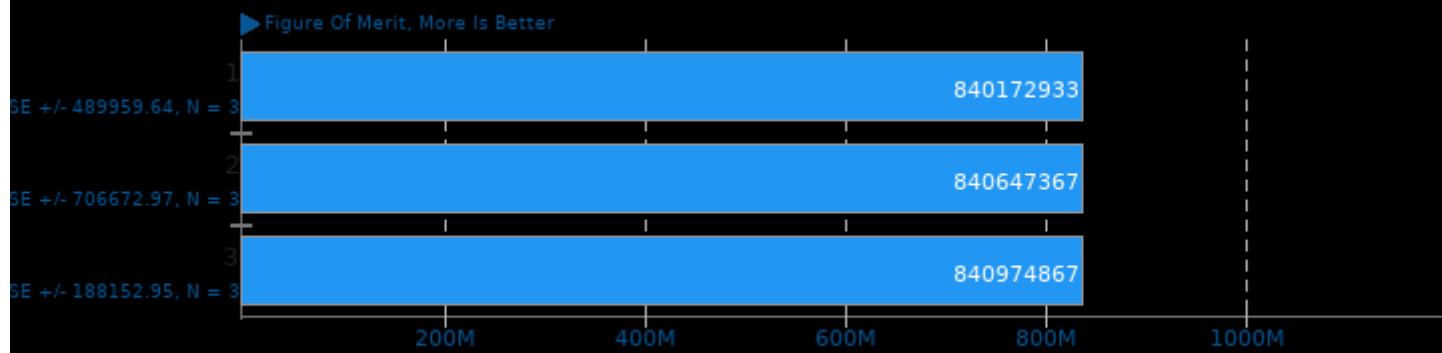
| | | |
|--------------------------------|------------------|------------------|
| Normalized | 100% | 99.98% |
| Standard Deviation | 0.2% | 0.1% |
| dav1d - S.N.1 (FPS) | 553.64 | 553.29 |
| Normalized | 100% | 99.94% |
| Standard Deviation | 0.6% | 0.2% |
| dav1d - C.1.1.b (FPS) | 113.10 | 113.17 |
| Normalized | 99.94% | 100% |
| Standard Deviation | 0.4% | 0.3% |
| Kripke (Throughput FoM) | 160215800 | 162101275 |
| Normalized | 98.78% | 99.95% |
| Standard Deviation | 2.1% | 3.9% |
| | | 162187433 |

CP2K Molecular Dynamics 8.1

Fayalite-FIST Data



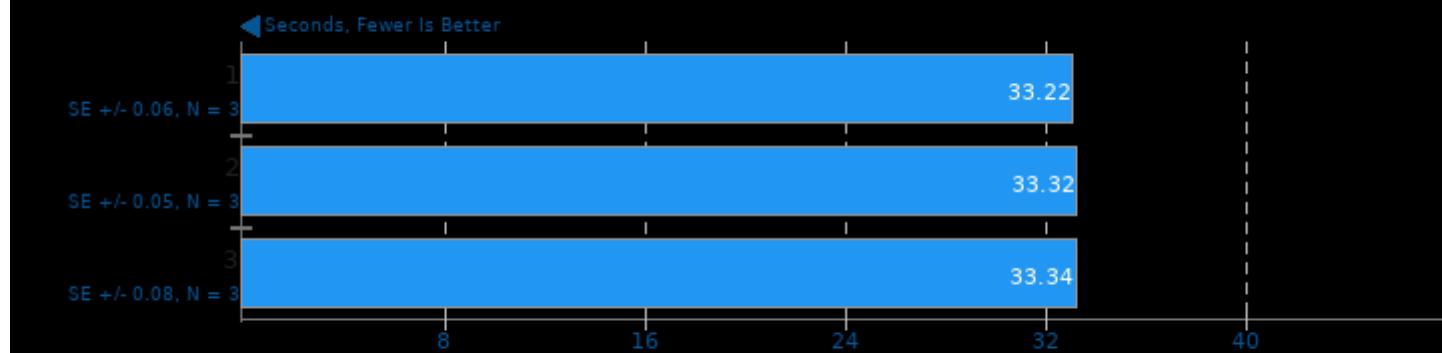
Algebraic Multi-Grid Benchmark 1.2



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

OpenFOAM 8

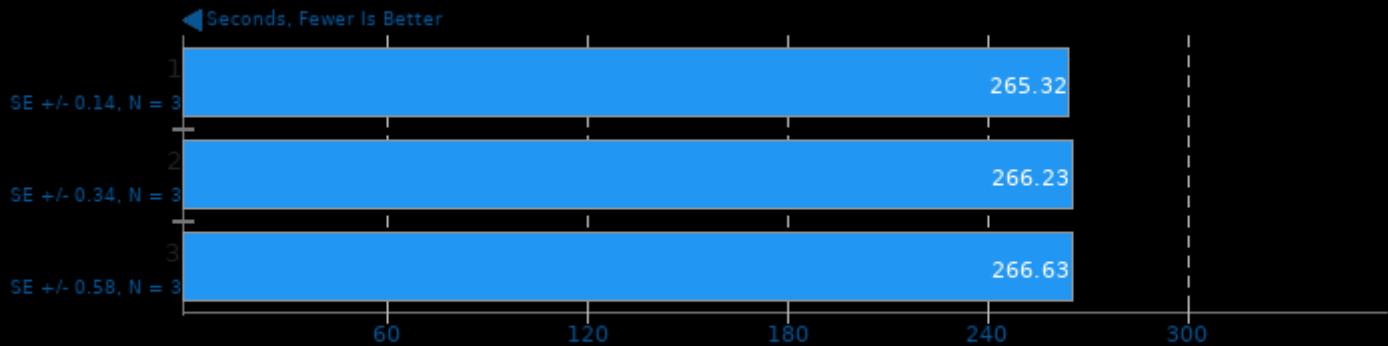
Input: Motorbike 30M



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

OpenFOAM 8

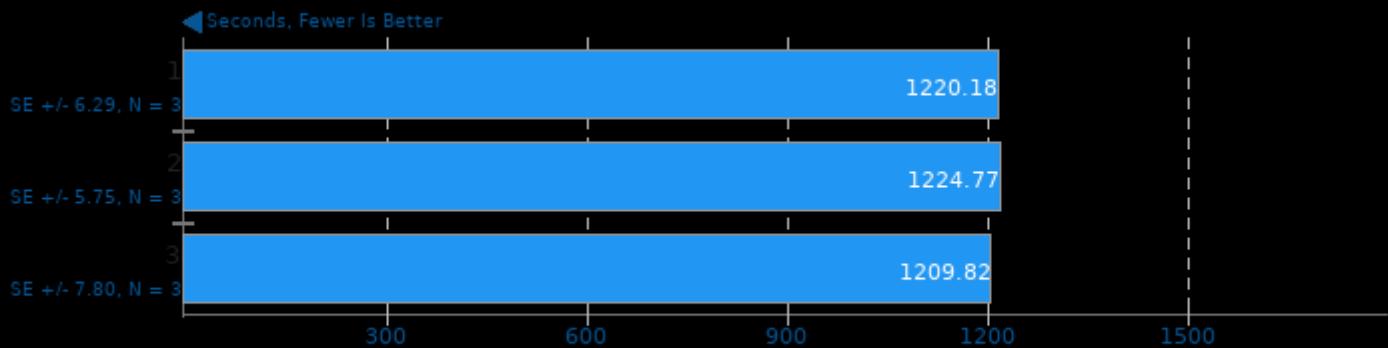
Input: Motorbike 60M



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

Quantum ESPRESSO 6.7

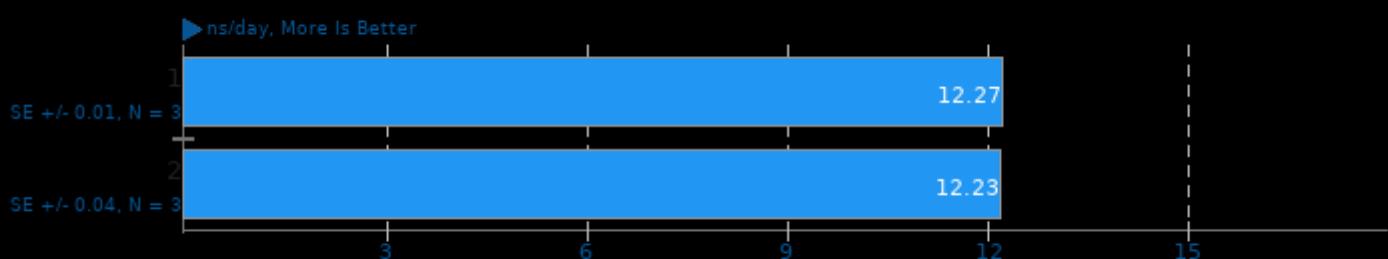
Input: AUSURF112



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

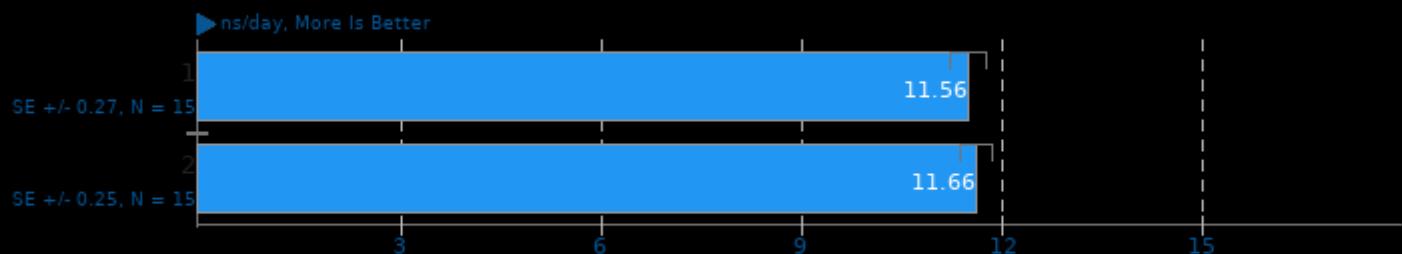
Model: 20k Atoms



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

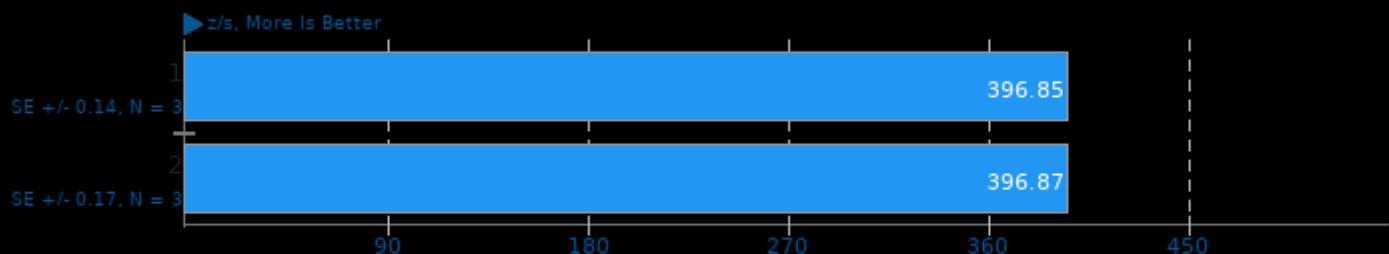
LAMMPS Molecular Dynamics Simulator 29Oct2020

Model: Rhodopsin Protein



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

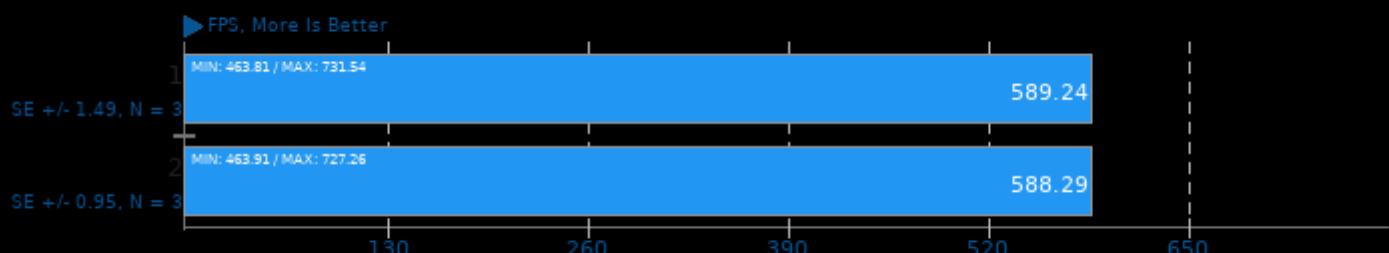
LULESH 2.0.3



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

dav1d 0.8.1

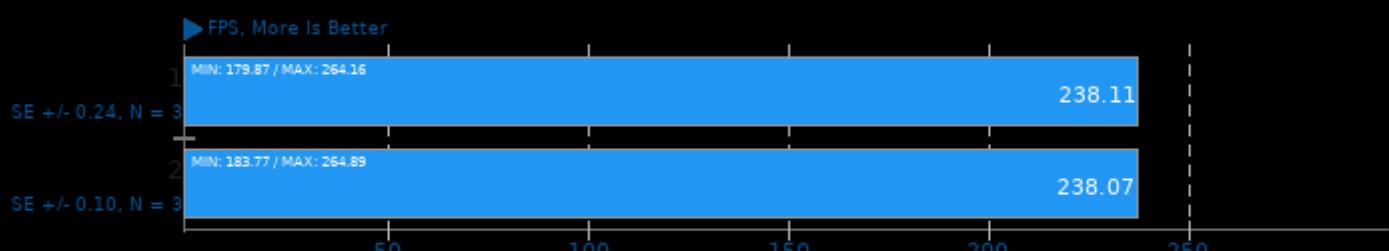
Video Input: Chimera 1080p



1. (CC) gcc options: -pthread

dav1d 0.8.1

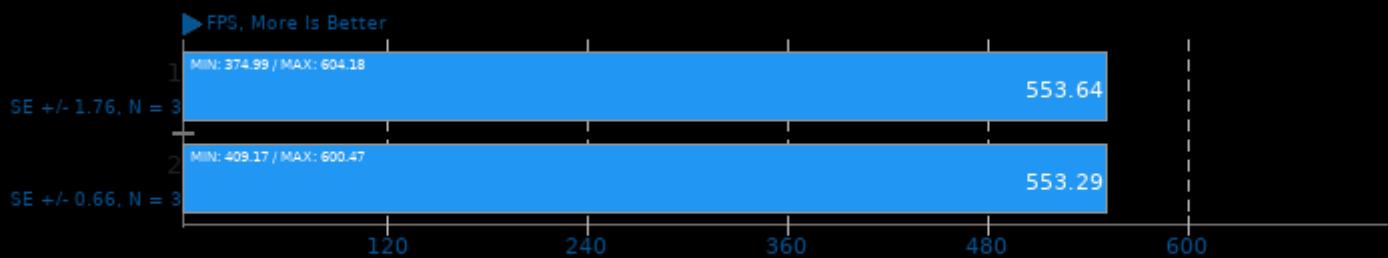
Video Input: Summer Nature 4K



1. (CC) gcc options: -pthread

dav1d 0.8.1

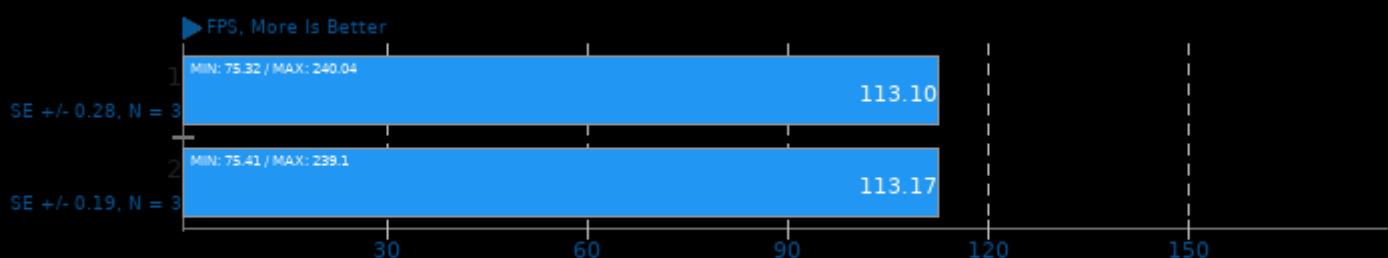
Video Input: Summer Nature 1080p



1. (CC) gcc options: -pthread

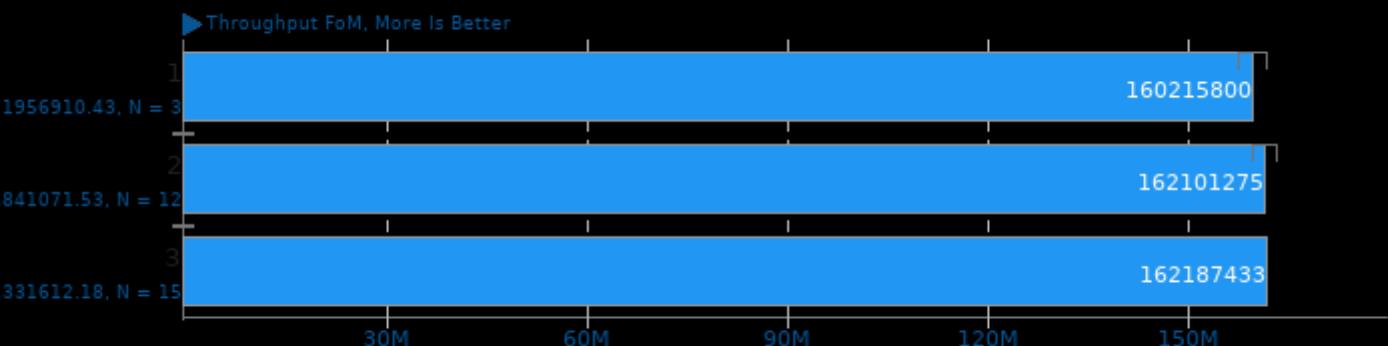
dav1d 0.8.1

Video Input: Chimera 1080p 10-bit



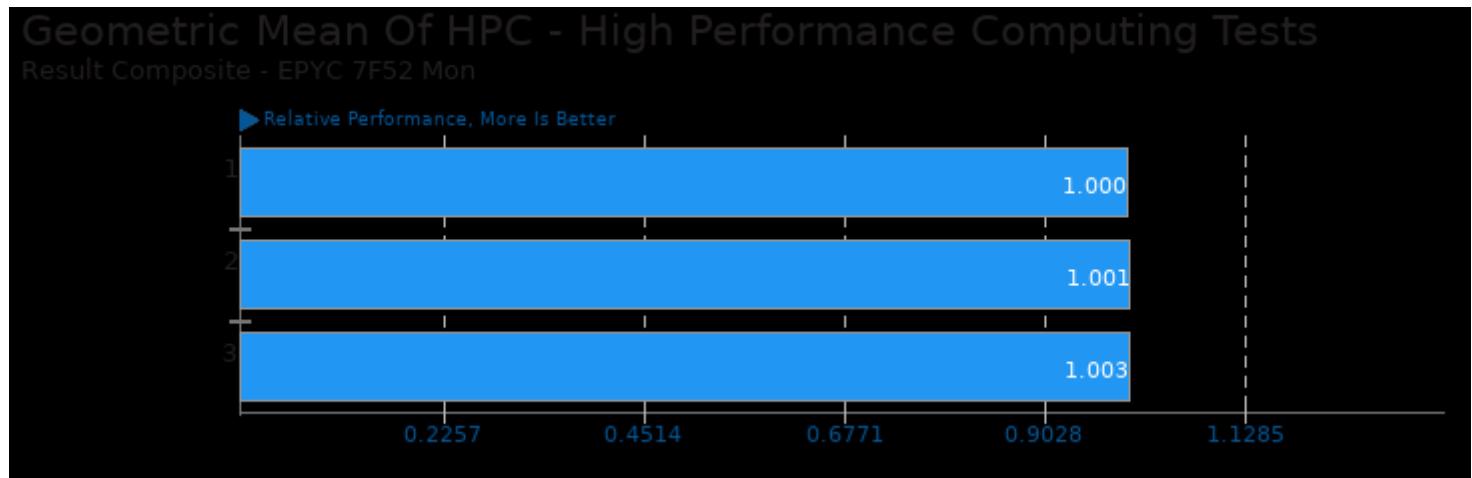
1. (CC) gcc options: -pthread

Kripke 1.2.4

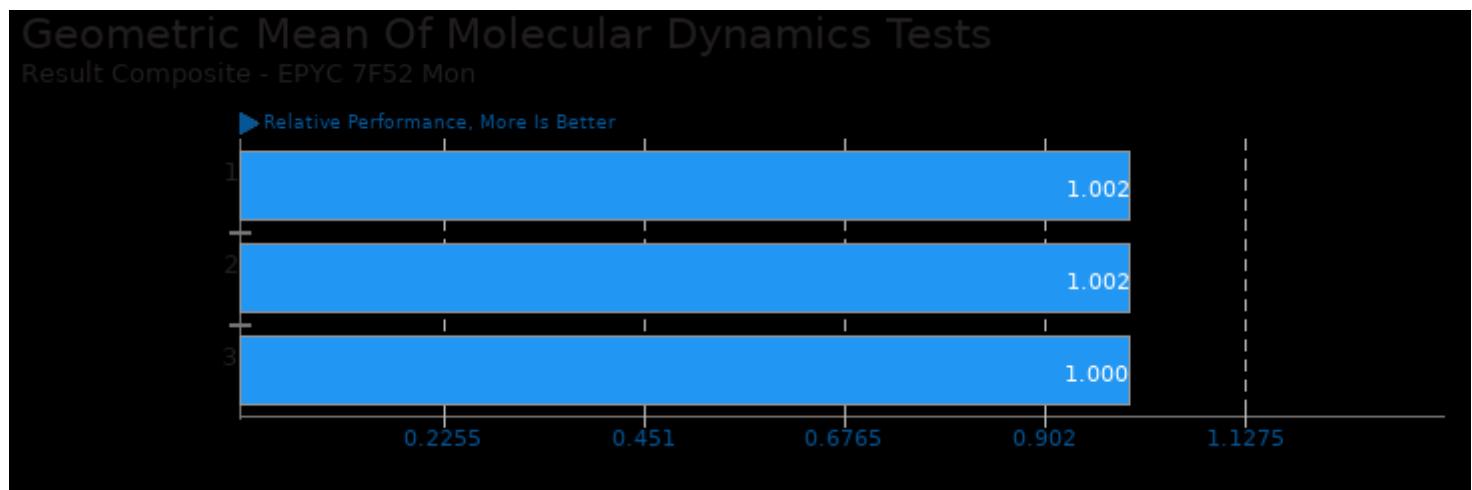


1. (CXX) g++ options: -O3 -fopenmp

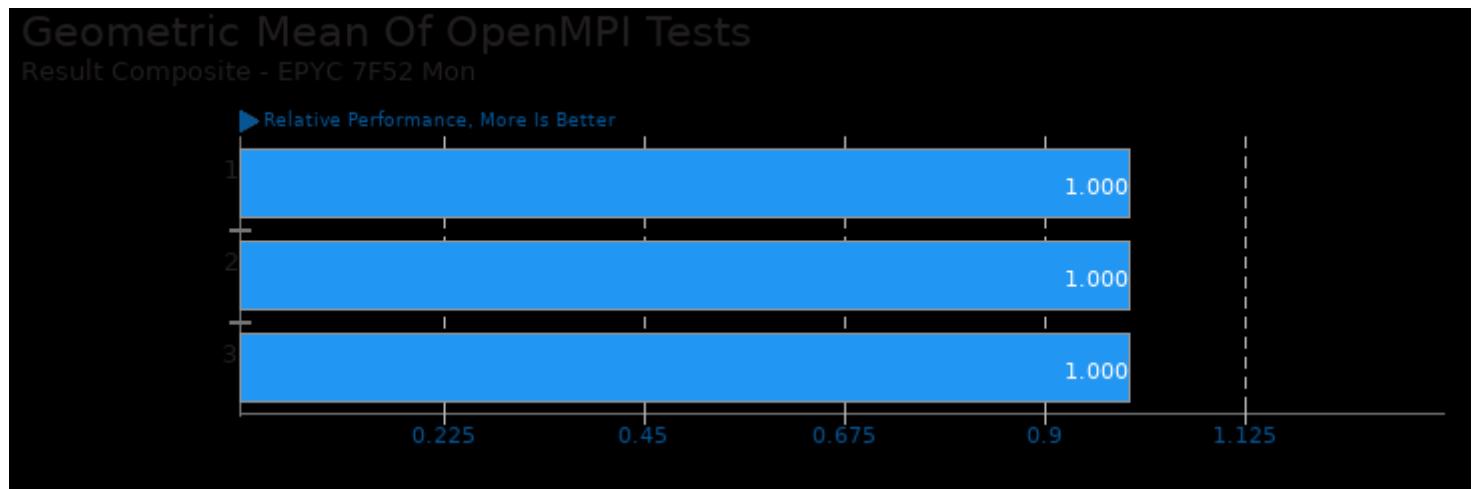
These geometric means are based upon test groupings / test suites for this result file.



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



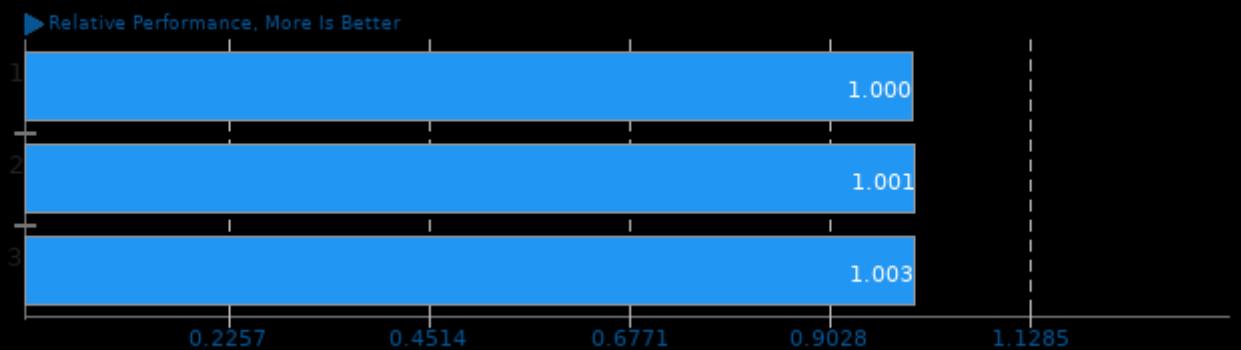
Geometric mean based upon tests: pts/cp2k, pts/lammps, pts/lulesh and pts/openfoam



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

Geometric Mean Of Scientific Computing Tests

Result Composite - EPYC 7F52 Mon



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

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