www.phoronix-test-suite.com

os bench

VMware testing on Ubuntu 18.04 via the Phoronix Test Suite.

Automated Executive Summary

ubuntu 18.04 + kernel 4.15.0-130 had the most wins, coming in first place for 82% of the tests.

Based on the geometric mean of all complete results, the fastest (ubuntu 18.04 + kernel 4.15.0-130) was 1.041x the speed of the slowest (Debian PVE kernel).

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

FFTW (Build: Stock - Size: 2D FFT Size 32) at 1.133x
LULESH at 1.132x
FFTW (Build: Stock - Size: 1D FFT Size 32) at 1.132x
FFTW (Build: Stock - Size: 1D FFT Size 4096) at 1.102x
ACES DGEMM (Sustained Floating-Point Rate) at 1.102x
FFTW (Build: Float + SSE - Size: 2D FFT Size 32) at 1.038x
FFTW (Build: Float + SSE - Size: 1D FFT Size 4096) at 1.034x
FFTW (Build: Stock - Size: 2D FFT Size 4096) at 1.027x
FFTW (Build: Float + SSE - Size: 1D FFT Size 32) at 1.026x
FFTW (Build: Float + SSE - Size: 2D FFT Size 4096) at 1.011x.

Test Systems:

Debian PVE kernel

Processor: 2 x Intel Celeron J3455 (3 Cores), Motherboard: Intel 440BX (6.00 BIOS), Chipset: Intel 440BX/ZX/DX, Memory: 4096MB, Disk: 34GB Virtual disk, Graphics: VMware SVGA II, Network: VMware VMXNET3

OS: Debian 10, Kernel: 5.4.78-2-pve (x86_64), Compiler: GCC 8.3.0, File-System: ext4, Screen Resolution: 1176x885, System Layer: VMware

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --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++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --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 --with-tune=generic --without-cuda-driver -v
Processor Notes: CPU Microcode: 0x32
Python Notes: Python 2.7.16 + Python 3.7.3
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Mitigation of PTI + spec_store_bypass: Vulnerable + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Full generic retpoline IBPB: conditional IBRS_FW STIBP: disabled RSB filling + srbds: Not affected + tsx_async_abort: Not affected

ubuntu 18.04 + kernel 4.15.0-130

Processor: 2 x Intel Celeron J3455 (3 Cores), Motherboard: Intel 440BX (6.00 BIOS), Chipset: Intel 440BX/ZX/DX, Memory: 4096MB, Disk: 34GB Virtual disk, Graphics: VMware SVGA II, Network: VMware VMXNET3

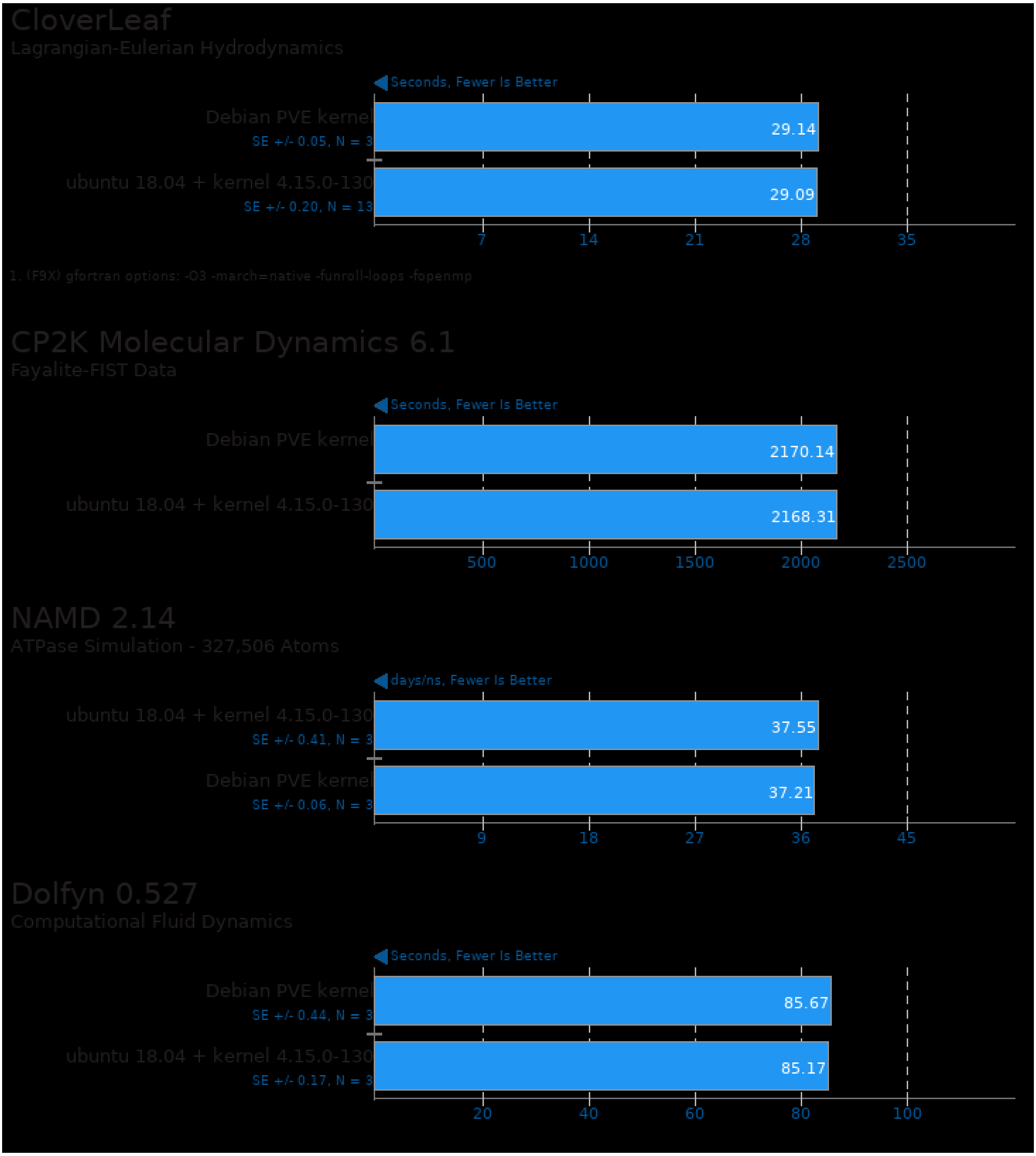
OS: Ubuntu 18.04, Kernel: 4.15.0-130-generic (x86_64), Compiler: GCC 7.5.0, File-System: ext4, Screen Resolution: 1176x885, System Layer: VMware

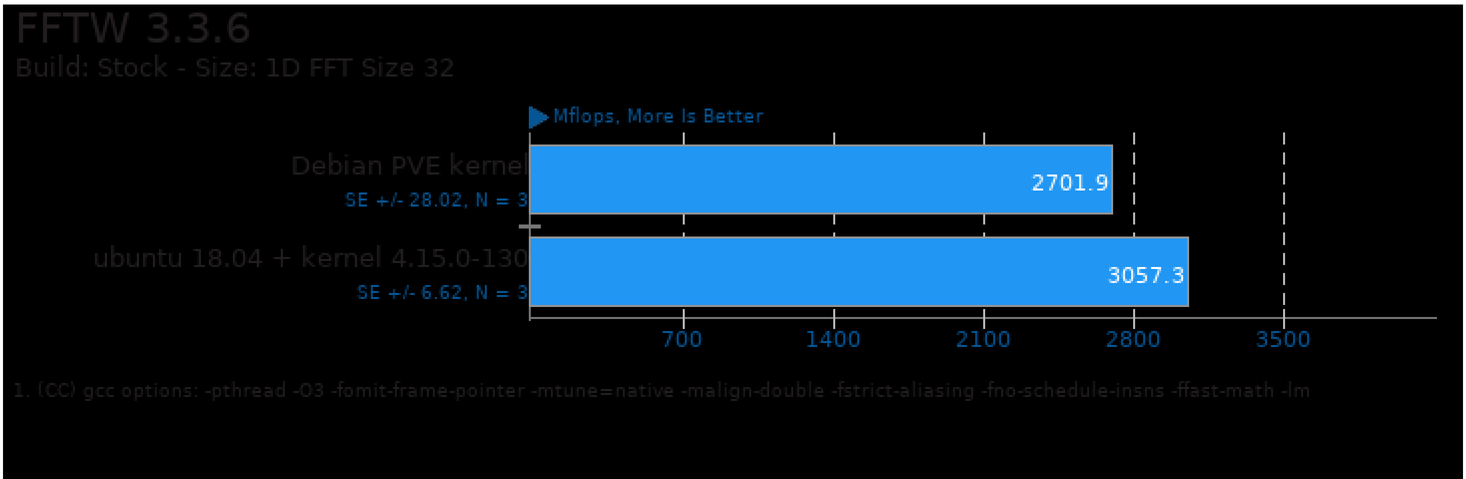
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --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 --with-tune=generic --without-cuda-driver -v
Processor Notes: CPU Microcode: 0x32
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Vulnerable + spec_store_bypass: Vulnerable + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Vulnerable IBPB: disabled STIBP: disabled + srbds: Not affected + tsx_async_abort: Not affected

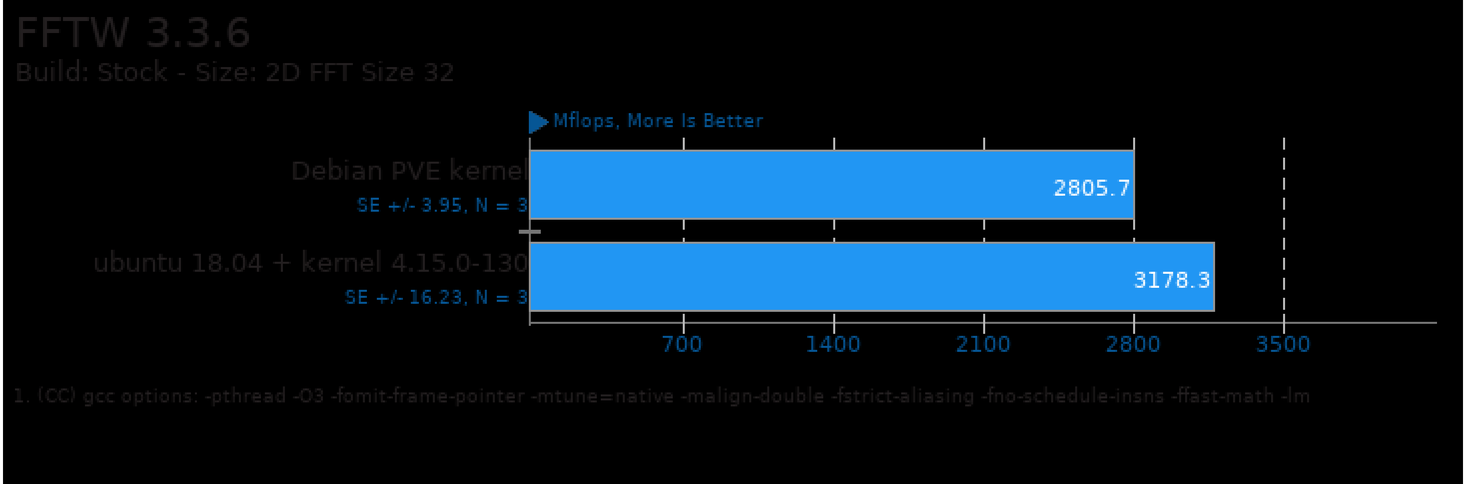
	Debian PVE kernel	ubuntu 18.04 + kernel 4.15.0-130
CloverLeaf - L.E.H (sec)	29.14	29.09
Normalized	99.83%	100%
Standard Deviation	0.3%	2.5%
CP2K Molecular Dynamics - Fayalite-FIST Data (sec)	2170	2168
Normalized	99.92%	100%
NAMD - ATPase Simulation - 327,506 Atoms (days/ns)	37.21223	37.55273
Normalized	100%	99.09%
Standard Deviation	0.3%	1.9%
Dolfyn - C.F.D (sec)	85.669	85.171
Normalized	99.42%	100%
Standard Deviation	0.9%	0.3%
FFTW - Stock - 1D FFT Size 32 (Mflops)	2702	3057
Normalized	88.38%	100%
Standard Deviation	1.8%	0.4%

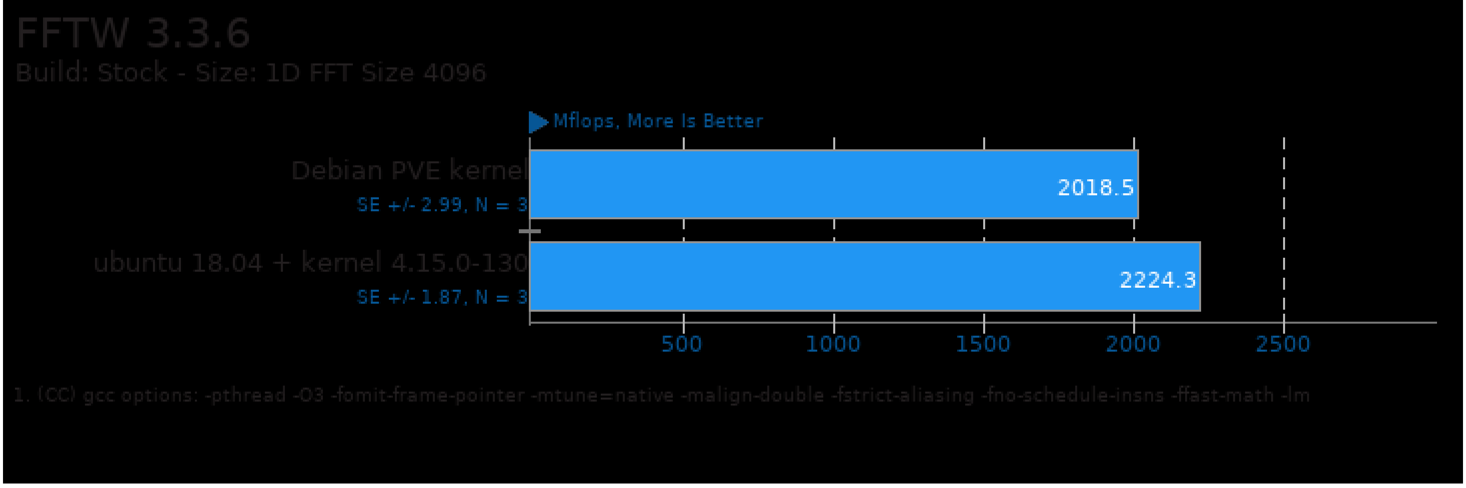
os bench

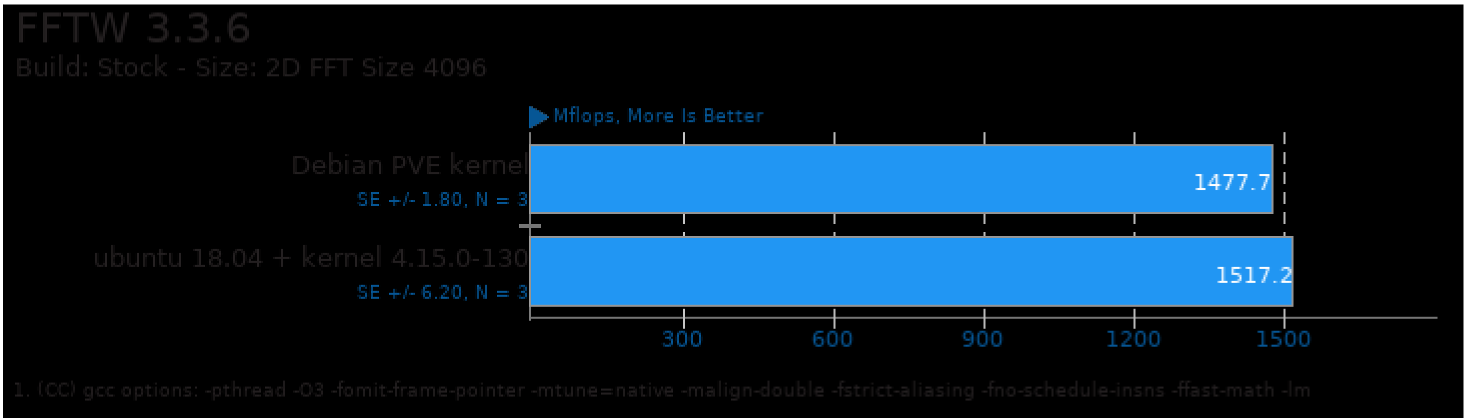
FFTW - Stock - 2D FFT Size 32 (Mflops)	**2806**	**3178**
Normalized	88.28%	100%
Standard Deviation	0.2%	0.9%
FFTW - Stock - 1D FFT Size 4096 (Mflops)	**2019**	**2224**
Normalized	90.75%	100%
Standard Deviation	0.3%	0.1%
FFTW - Stock - 2D FFT Size 4096 (Mflops)	**1478**	**1517**
Normalized	97.4%	100%
Standard Deviation	0.2%	0.7%
FFTW - Float + SSE - 1D FFT Size 32 (Mflops)	**3818**	**3917**
Normalized	97.48%	100%
Standard Deviation	0.5%	1.4%
FFTW - Float + SSE - 2D FFT Size 32 (Mflops)	**7452**	**7734**
Normalized	96.35%	100%
Standard Deviation	1%	0.7%
FFTW - Float + SSE - 1D FFT Size 4096 (Mflops)	**6330**	**6543**
Normalized	96.75%	100%
Standard Deviation	0.6%	0.3%
FFTW - Float + SSE - 2D FFT Size 4096 (Mflops)	**3160**	**3125**
Normalized	100%	98.89%
Standard Deviation	2.2%	3.1%
Timed HMMer Search - P.D.S (sec)	**352.745**	**354.250**
Normalized	100%	99.58%
Standard Deviation	0.3%	0.1%
LULESH (z/s)	**246.72501**	**279.30310**
Normalized	88.34%	100%
Standard Deviation	1.7%	2.2%
ArrayFire - BLAS CPU (GFLOPS)	**22.2800**	**22.3431**
Normalized	99.72%	100%
Standard Deviation	1.8%	2%
ACES DGEMM - S.F.P.R (GFLOP/s)	**0.073005**	**0.080419**
Normalized	90.78%	100%
Standard Deviation	1.3%	2.4%
Himeno Benchmark - P.P.S (MFLOPS)	**1200**	**1213**
Normalized	98.93%	100%
Standard Deviation	0.2%	0.6%

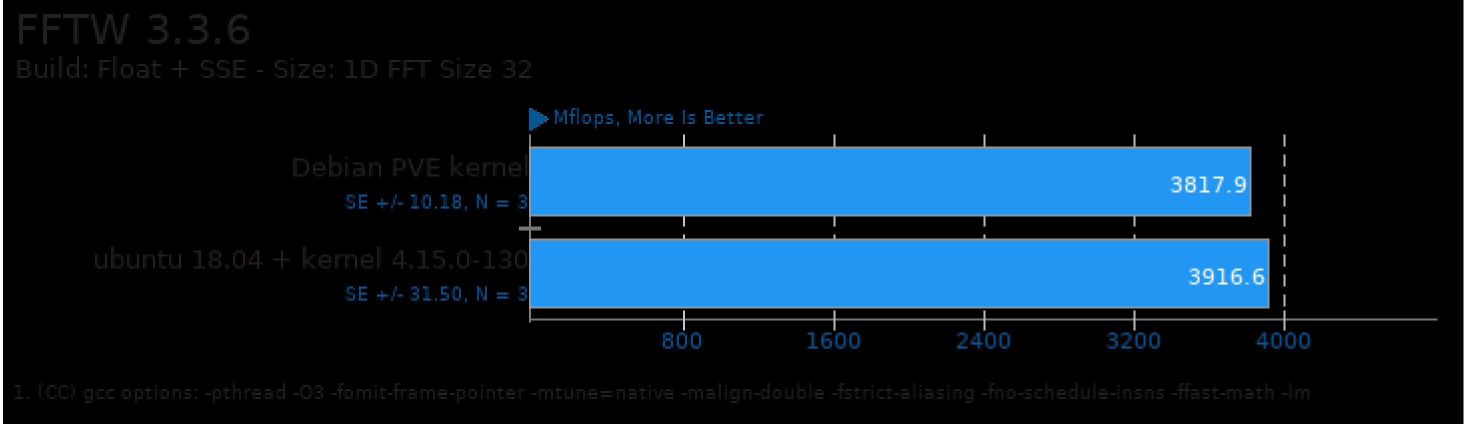

CloverLeaf
Lagrangian-Eulerian Hydrodynamics
Seconds, Fewer Is Better
Debian PVE kernel
SE +/- 0.05, N = 3
29.14
ubuntu 18.04 + kernel 4.15.0-130
SE +/- 0.20, N = 13
29.09
7
14
21
28
35
1. (F9X) gfortran options: -O3 -march=native -funroll-loops -fopenmp
CP2K Molecular Dynamics 6.1
Fayalite-FIST Data
Seconds, Fewer Is Better
Debian PVE kernel
2170.14
ubuntu 18.04 + kernel 4.15.0-130
2168.31
500
1000
1500
2000
2500
NAMD 2.14
ATPase Simulation - 327,506 Atoms
days/ns, Fewer Is Better
ubuntu 18.04 + kernel 4.15.0-130
SE +/- 0.41, N = 3
37.55
Debian PVE kernel
SE +/- 0.06, N = 3
37.21
9
18
27
36
45
Dolfyn 0.527
Computational Fluid Dynamics
Seconds, Fewer Is Better
Debian PVE kernel
SE +/- 0.44, N = 3
85.67
ubuntu 18.04 + kernel 4.15.0-130
SE +/- 0.17, N = 3
85.17
20
40
60
80
100

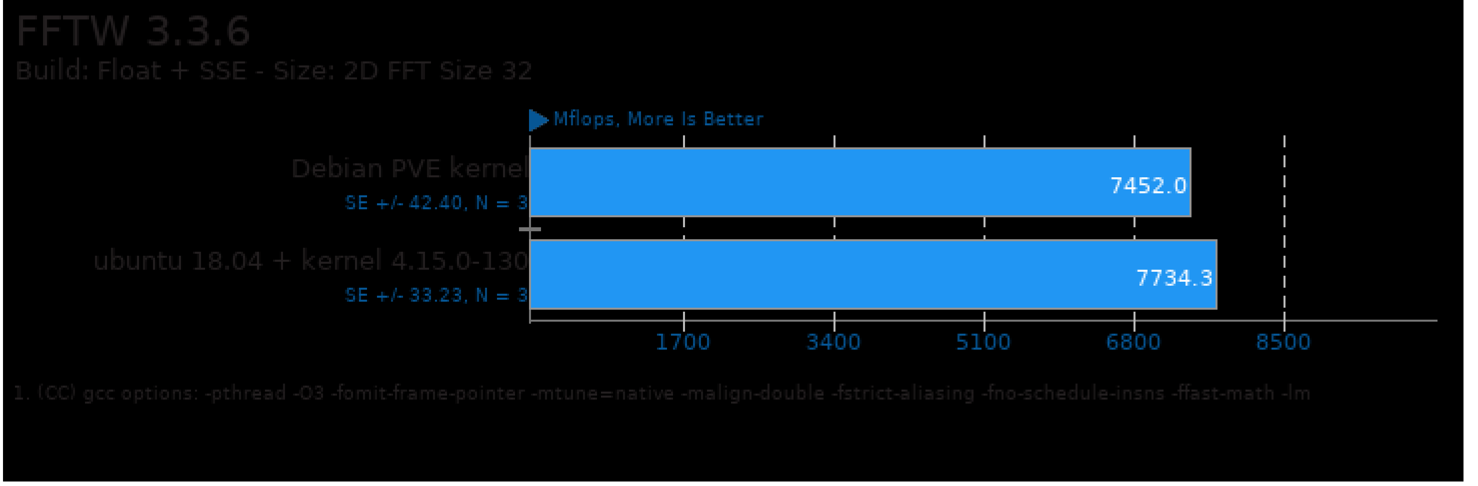

FFTW 3.3.6
Build: Stock - Size: 1D FFT Size 32
Mflops, More Is Better
Debian PVE kernel
SE +/- 28.02, N = 3
2701.9
ubuntu 18.04 + kernel 4.15.0-130
SE +/- 6.62, N = 3
3057.3
700
1400
2100
2800
3500
1. (CC) gcc options: -pthread -O3 -fomit-frame-pointer -mtune=native -malign-double -fstrict-aliasing -fno-schedule-insns -ffast-math -lm


FFTW 3.3.6
Build: Stock - Size: 2D FFT Size 32
Mflops, More Is Better
Debian PVE kernel
SE +/- 3.95, N = 3
2805.7
ubuntu 18.04 + kernel 4.15.0-130
SE +/- 16.23, N = 3
3178.3
700
1400
2100
2800
3500
1. (CC) gcc options: -pthread -O3 -fomit-frame-pointer -mtune=native -malign-double -fstrict-aliasing -fno-schedule-insns -ffast-math -lm

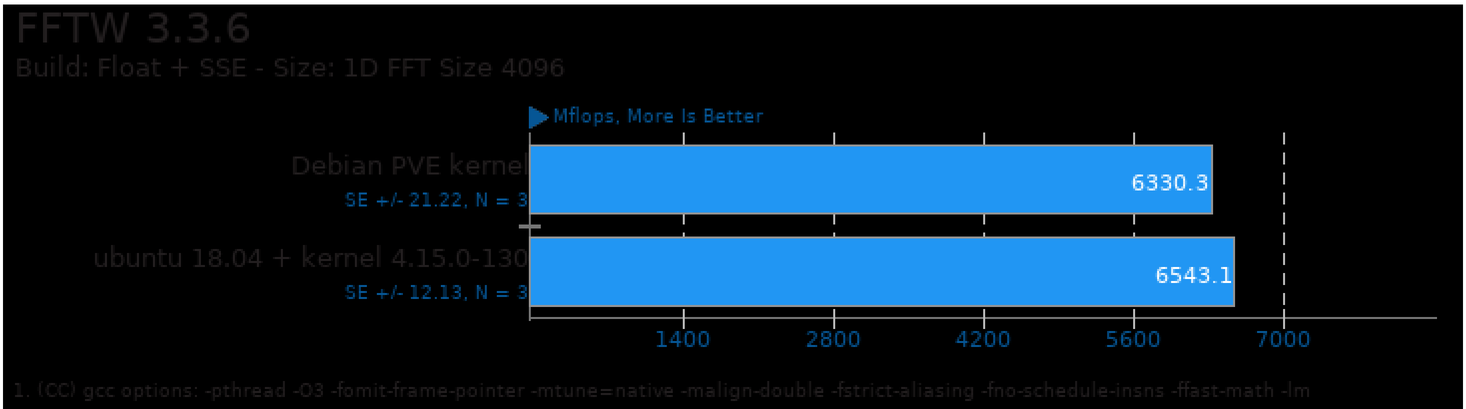

FFTW 3.3.6
Build: Stock - Size: 1D FFT Size 4096
Mflops, More Is Better
Debian PVE kernel
SE +/- 2.99, N = 3
2018.5
ubuntu 18.04 + kernel 4.15.0-130
SE +/- 1.87, N = 3
2224.3
500
1000
1500
2000
2500
1. (CC) gcc options: -pthread -O3 -fomit-frame-pointer -mtune=native -malign-double -fstrict-aliasing -fno-schedule-insns -ffast-math -lm

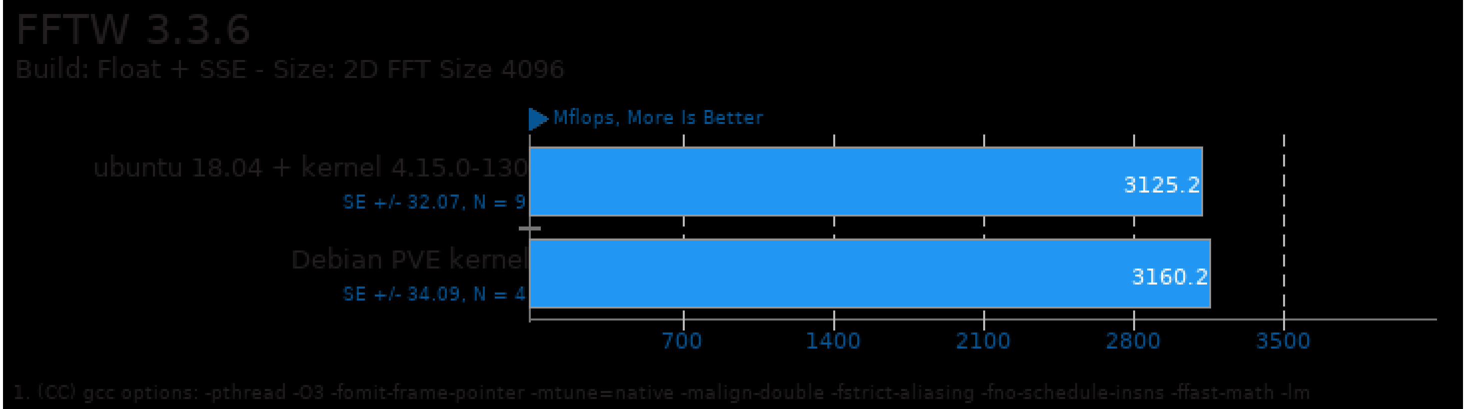

FFTW 3.3.6
Build: Stock - Size: 2D FFT Size 4096
Mflops, More Is Better
Debian PVE kernel
SE +/- 1.80, N = 3
1477.7
ubuntu 18.04 + kernel 4.15.0-130
SE +/- 6.20, N = 3
1517.2
300
600
900
1200
1500
1. (CC) gcc options: -pthread -O3 -fomit-frame-pointer -mtune=native -malign-double -fstrict-aliasing -fno-schedule-insns -ffast-math -lm

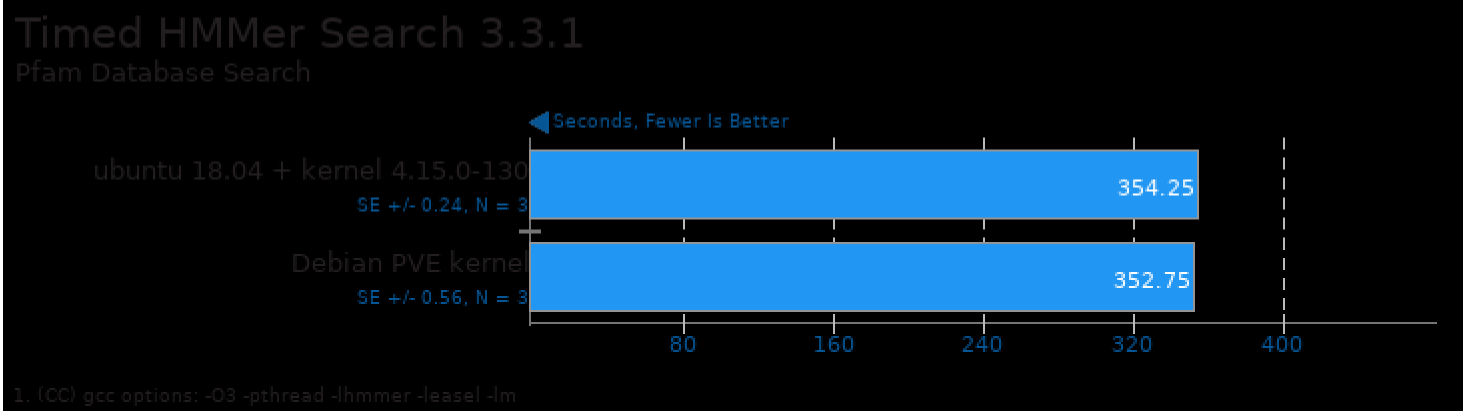

FFTW 3.3.6
Build: Float + SSE - Size: 1D FFT Size 32
Mflops, More Is Better
Debian PVE kernel
SE +/- 10.18, N = 3
3817.9
ubuntu 18.04 + kernel 4.15.0-130
SE +/- 31.50, N = 3
3916.6
800
1600
2400
3200
4000
1. (CC) gcc options: -pthread -O3 -fomit-frame-pointer -mtune=native -malign-double -fstrict-aliasing -fno-schedule-insns -ffast-math -lm

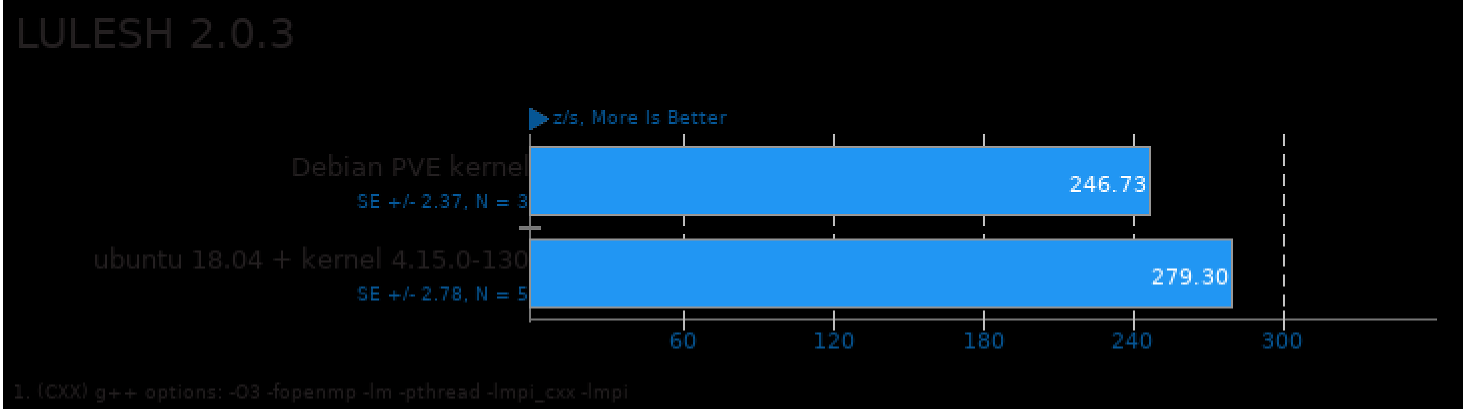

FFTW 3.3.6
Build: Float + SSE - Size: 2D FFT Size 32
Mflops, More Is Better
Debian PVE kernel
SE +/- 42.40, N = 3
7452.0
ubuntu 18.04 + kernel 4.15.0-130
SE +/- 33.23, N = 3
7734.3
1700
3400
5100
6800
8500
1. (CC) gcc options: -pthread -O3 -fomit-frame-pointer -mtune=native -malign-double -fstrict-aliasing -fno-schedule-insns -ffast-math -lm

os bench

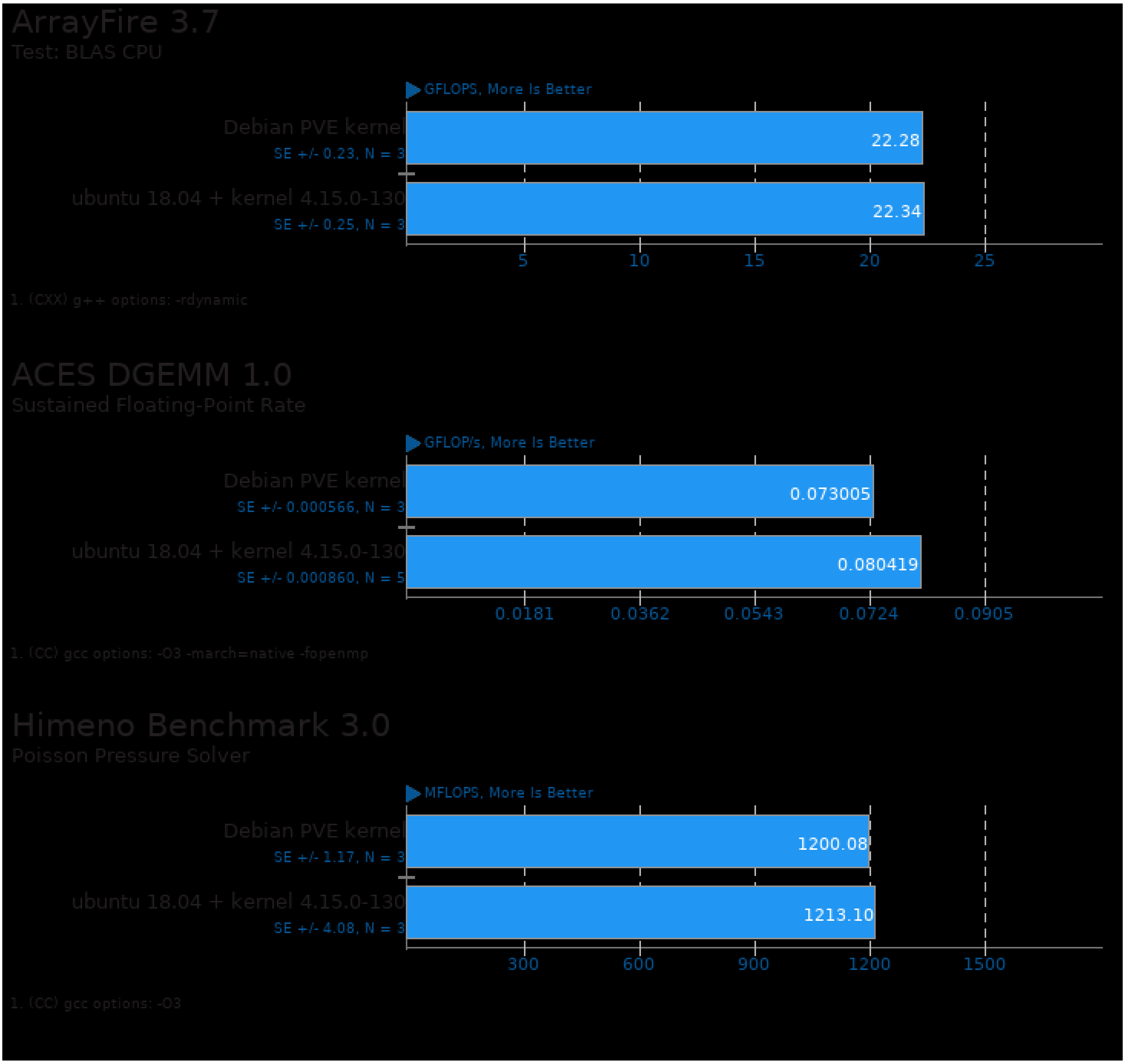

FFTW 3.3.6
Build: Float + SSE - Size: 1D FFT Size 4096
Mflops, More Is Better
Debian PVE kernel
SE +/- 21.22, N = 3
6330.3
ubuntu 18.04 + kernel 4.15.0-130
SE +/- 12.13, N = 3
6543.1
1400
2800
4200
5600
7000
1. (CC) gcc options: -pthread -O3 -fomit-frame-pointer -mtune=native -malign-double -fstrict-aliasing -fno-schedule-insns -ffast-math -lm


FFTW 3.3.6
Build: Float + SSE - Size: 2D FFT Size 4096
Mflops, More Is Better
ubuntu 18.04 + kernel 4.15.0-130
SE +/- 32.07, N = 9
3125.2
Debian PVE kernel
SE +/- 34.09, N = 4
3160.2
700
1400
2100
2800
3500
1. (CC) gcc options: -pthread -O3 -fomit-frame-pointer -mtune=native -malign-double -fstrict-aliasing -fno-schedule-insns -ffast-math -lm


Timed HMMer Search 3.3.1
Pfam Database Search
Seconds, Fewer Is Better
ubuntu 18.04 + kernel 4.15.0-130
SE +/- 0.24, N = 3
354.25
Debian PVE kernel
SE +/- 0.56, N = 3
352.75
80
160
240
320
400
1. (CC) gcc options: -O3 -pthread -lhmmer -leasel -lm

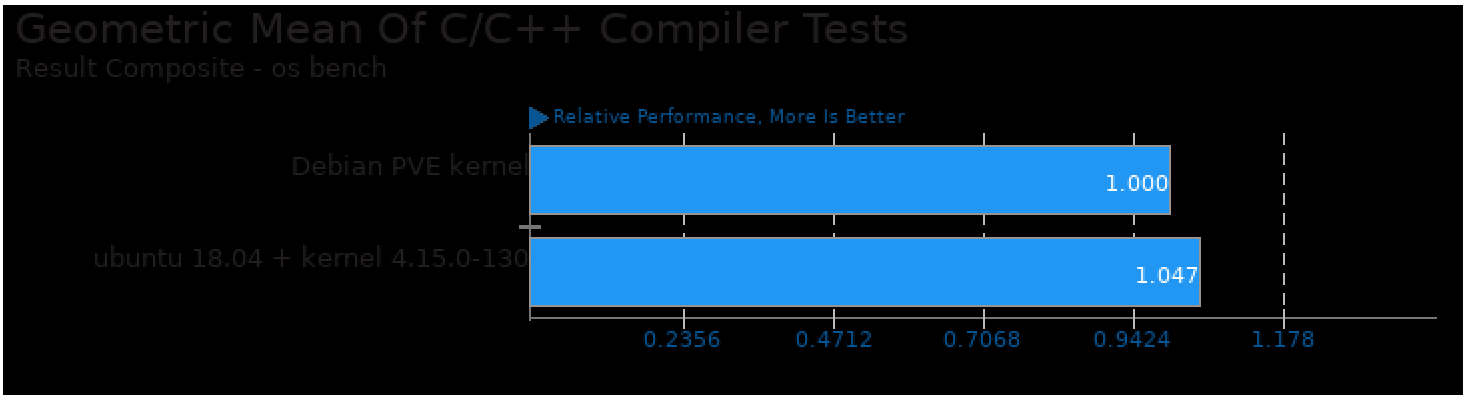

LULESH 2.0.3
z/s, More Is Better
Debian PVE kernel
SE +/- 2.37, N = 3
246.73
ubuntu 18.04 + kernel 4.15.0-130
SE +/- 2.78, N = 5
279.30
60
120
180
240
300
1. (CXX) g++ options: -O3 -fopenmp -lm -pthread -lmpi_cxx -lmpi

os bench


ArrayFire 3.7
Test: BLAS CPU
GFLOPS, More Is Better
Debian PVE kernel
SE +/- 0.23, N = 3
22.28
ubuntu 18.04 + kernel 4.15.0-130
SE +/- 0.25, N = 3
22.34
5
10
15
20
25
1. (CXX) g++ options: -rdynamic
ACES DGEMM 1.0
Sustained Floating-Point Rate
GFLOP/s, More Is Better
Debian PVE kernel
SE +/- 0.000566, N = 3
0.073005
ubuntu 18.04 + kernel 4.15.0-130
SE +/- 0.000860, N = 5
0.080419
0.0181
0.0362
0.0543
0.0724
0.0905
1. (CC) gcc options: -O3 -march=native -fopenmp
Himeno Benchmark 3.0
Poisson Pressure Solver
MFLOPS, More Is Better
Debian PVE kernel
SE +/- 1.17, N = 3
1200.08
ubuntu 18.04 + kernel 4.15.0-130
SE +/- 4.08, N = 3
1213.10
300
600
900
1200
1500
1. (CC) gcc options: -O3

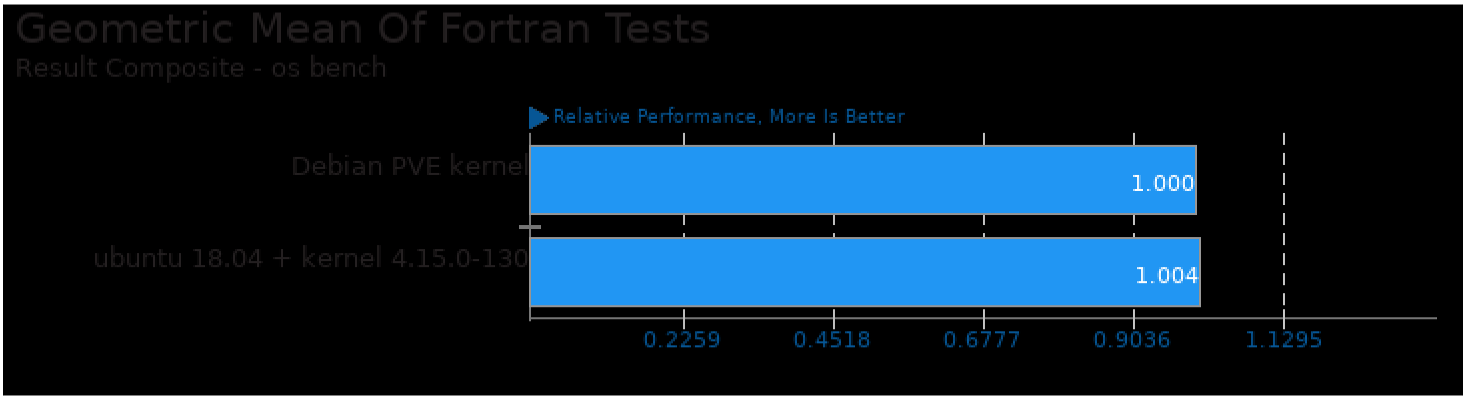
These geometric means are based upon test groupings / test suites for this result file.

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

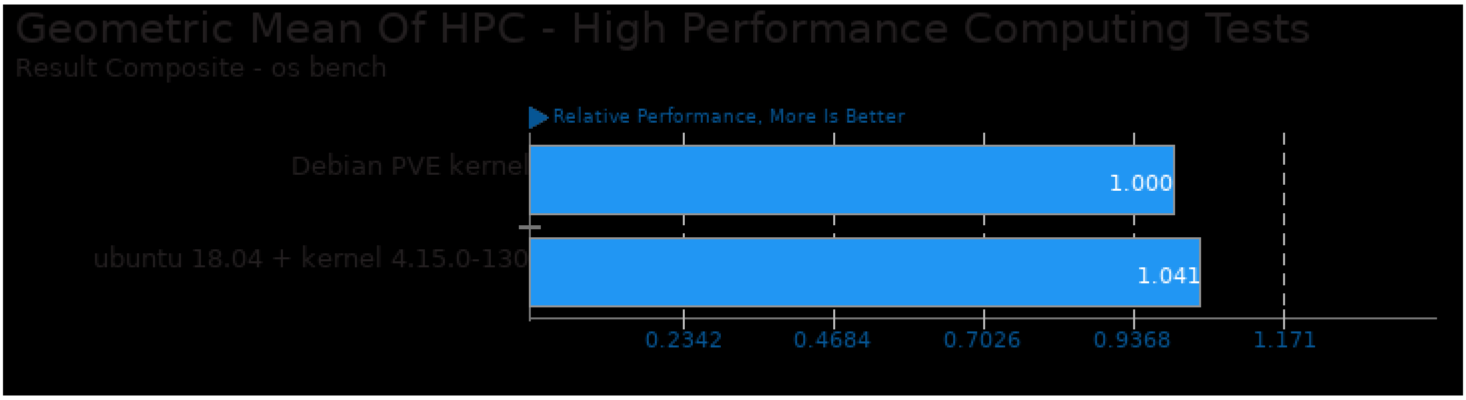


Geometric mean based upon tests: pts/fftw, pts/himeno and pts/hmmer

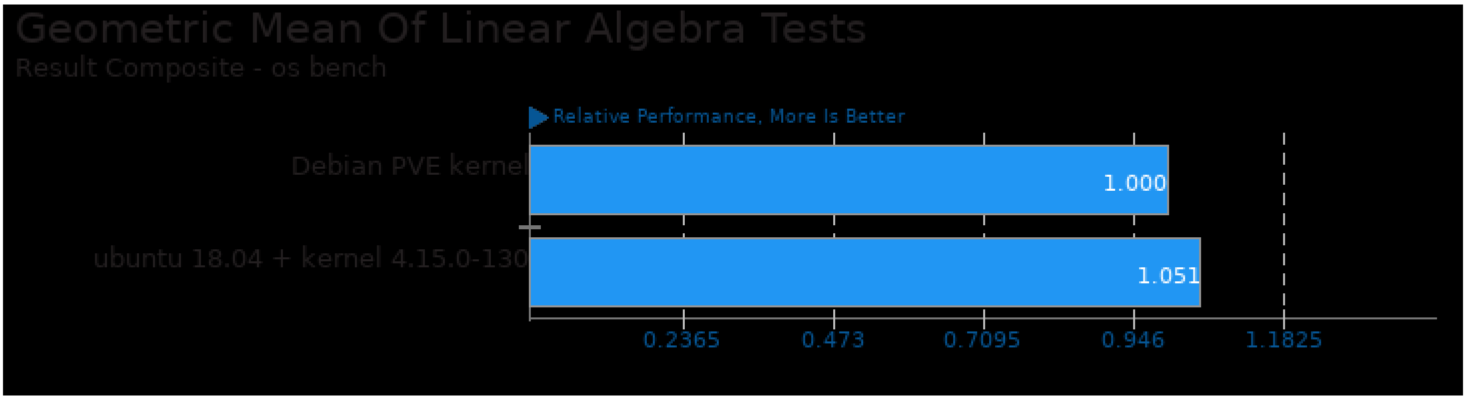
Geometric mean based upon tests: pts/cloverleaf, pts/dolfyn, pts/fftw, pts/himeno, pts/hmmer and pts/namd



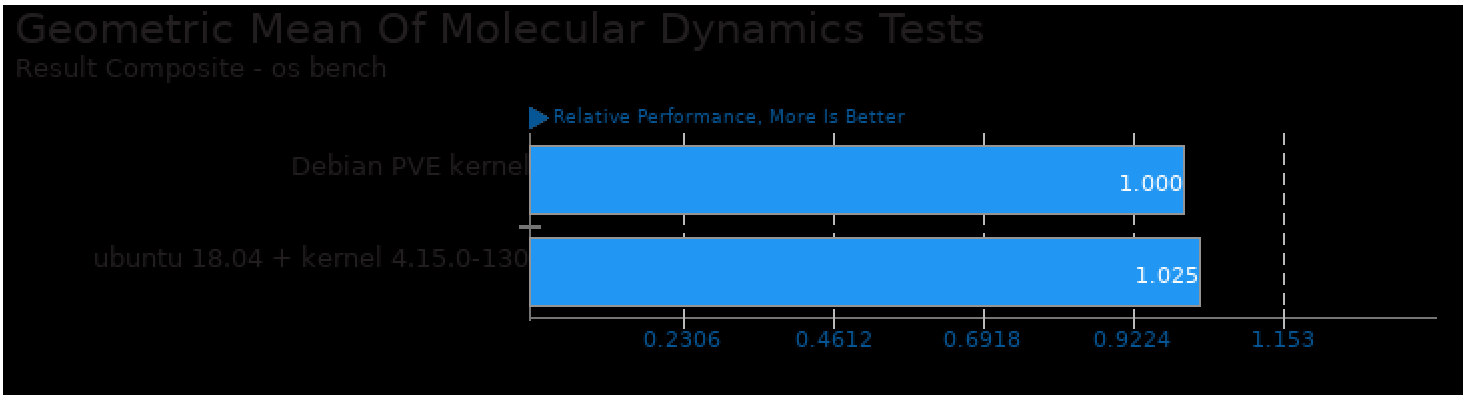
Geometric mean based upon tests: pts/cloverleaf and pts/dolfyn



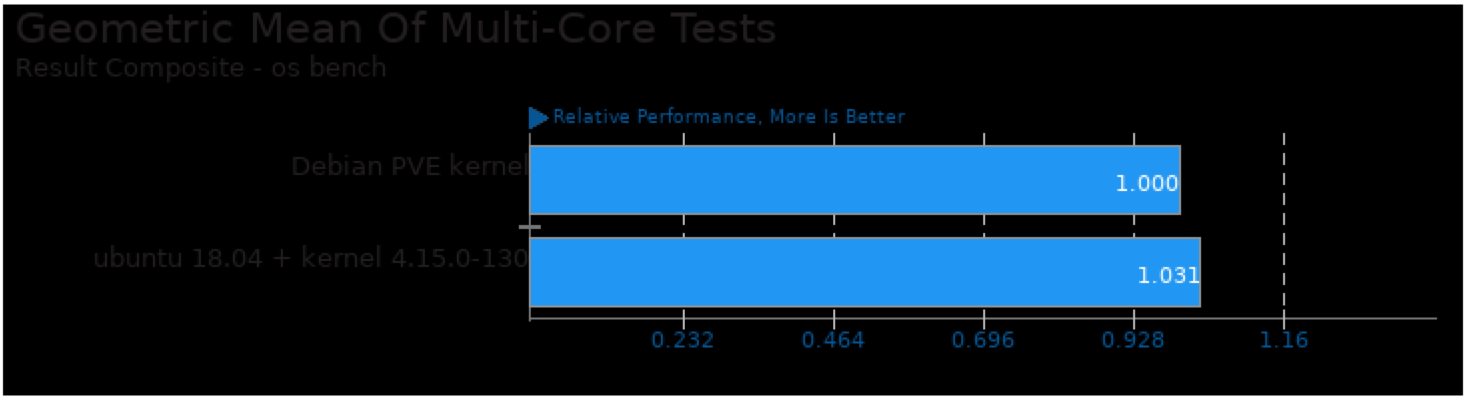
Geometric mean based upon tests: pts/fftw, pts/mt-dgemm, pts/arrayfire, pts/namd, pts/cp2k, pts/dolfyn, pts/cloverleaf, pts/lulesh, pts/himeno and pts/hmmer



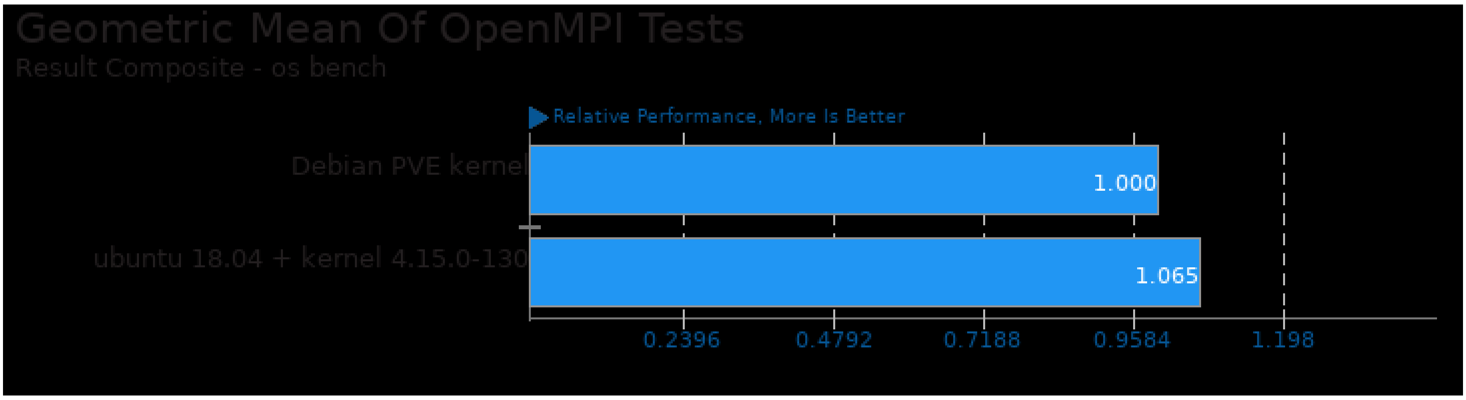
Geometric mean based upon tests: pts/mt-dgemm and pts/arrayfire



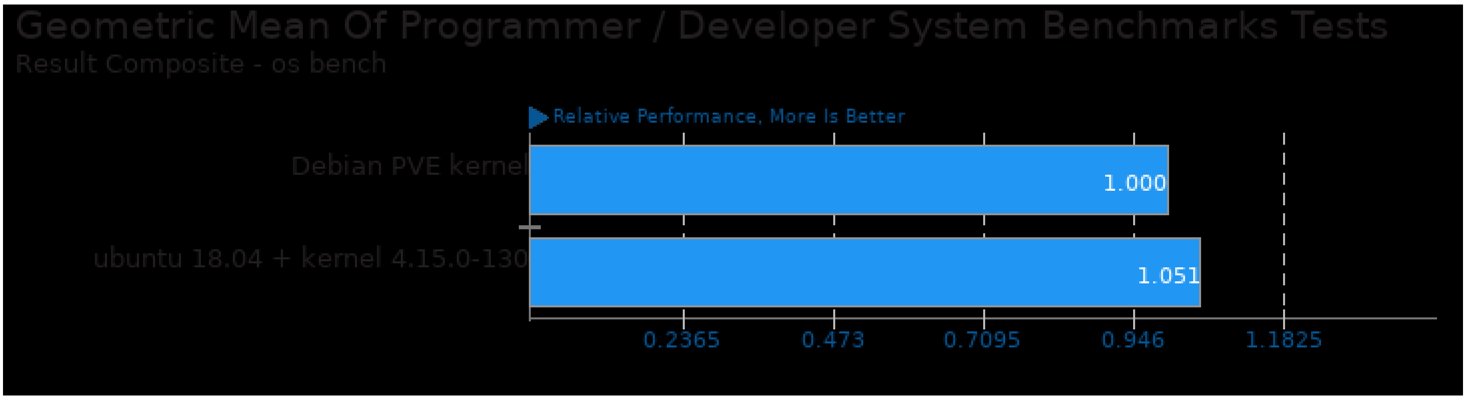
Geometric mean based upon tests: pts/namd, pts/cp2k, pts/dolfyn, pts/cloverleaf and pts/lulesh



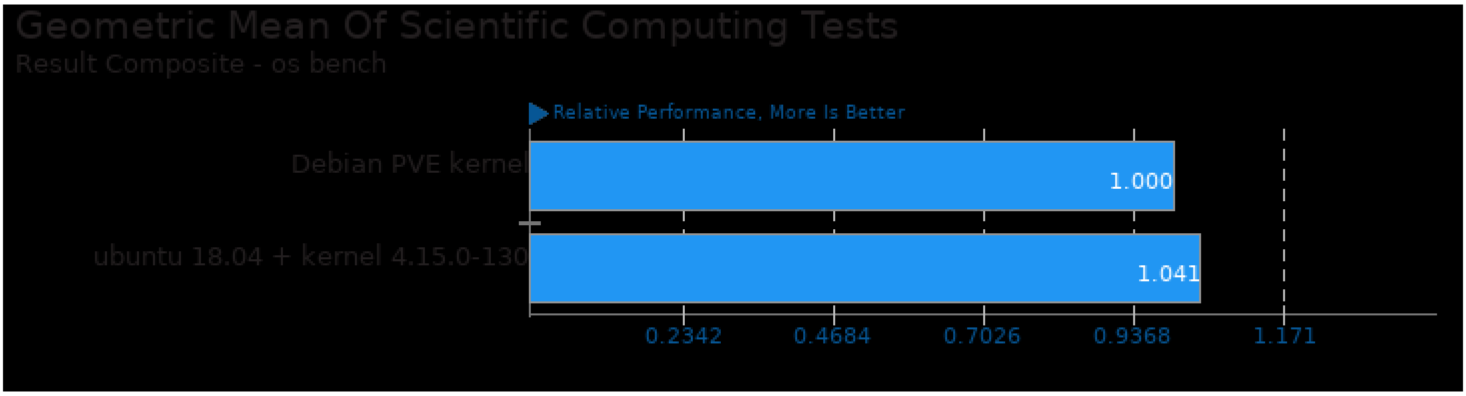
Geometric mean based upon tests: pts/arrayfire, pts/namd and pts/mt-dgemm



Geometric mean based upon tests: pts/cloverleaf and pts/lulesh

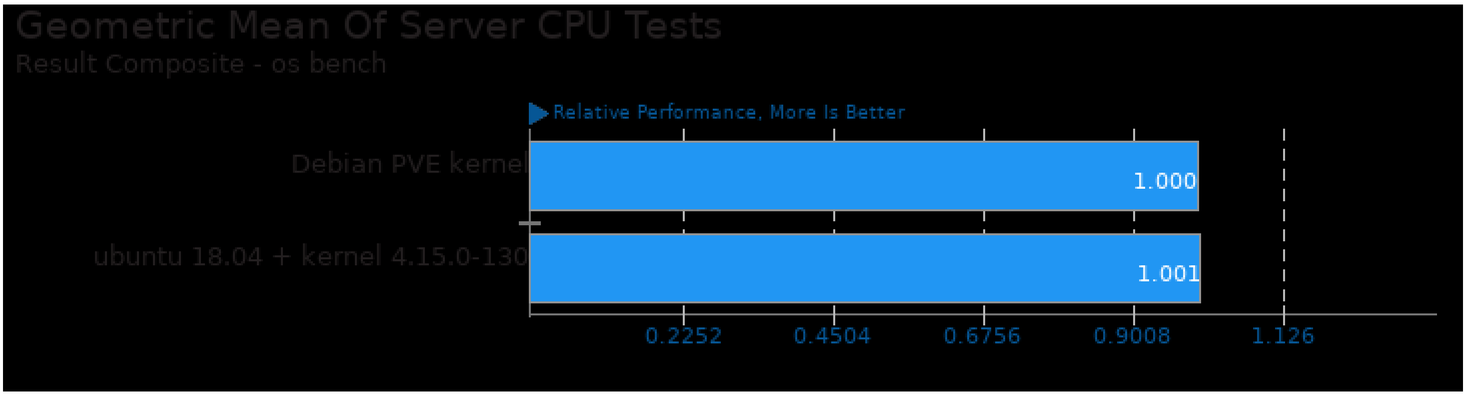


Geometric mean based upon tests: pts/mt-dgemm and pts/arrayfire



os bench

Geometric mean based upon tests: pts/fftw, pts/mt-dgemm, pts/arrayfire, pts/namd, pts/cp2k, pts/dolfyn, pts/cloverleaf, pts/lulesh, pts/himeno and pts/hmmer



Geometric mean based upon tests: pts/cp2k, pts/namd and pts/himeno

This file was automatically generated via the Phoronix Test Suite benchmarking software on Friday, 29 March 2024 03:09.