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## epsilon-all2

2 x Intel Xeon E5-2630 v4 testing with a Supermicro X10DRT-H v1.02 (2.0a BIOS) and ASPEED on Debian 10 via the Phoronix Test Suite.

## Test Systems:

### epsilon112

Processor: 2 x Intel Xeon E5-2630 v4 @ 3.10GHz (20 Cores / 40 Threads), Motherboard: Supermicro X10DRT-H v1.02 (2.0a BIOS), Chipset: Intel Xeon E7 v4/Xeon, Memory: 8 x 16384 MB DDR4-2400MT/s Samsung M393A2G40EB1-CRC, Disk: 2 x 1000GB Western Digital WD1003FBYZ-0, Graphics: ASPEED, Network: 2 x Intel I350

OS: Debian 10, Kernel: 4.19.0-16-amd64 (x86\_64), Compiler: GCC 8.3.0, File-System: ext4, Screen Resolution: 1024x768

Kernel Notes: Transparent Huge Pages: always  
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: Scaling Governor: intel\_pstate powersave - CPU Microcode: 0xb000038

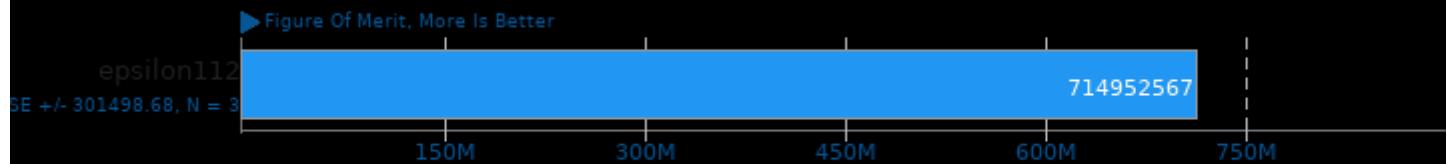
Security Notes: itlb\_multihit: KVM: Mitigation of Split huge pages + l1tf: Mitigation of PTE Inversion; VMX: conditional cache flushes SMT vulnerable + mds: Mitigation of Clear buffers; SMT vulnerable + meltdown: Mitigation of PTI + spec\_store\_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre\_v1: Mitigation of usercopy/swaps barriers and \_\_user pointer sanitization + spectre\_v2: Mitigation of Full generic retpoline IBPB: conditional IBRS\_FW STIBP: conditional RSB filling + srbs: Not affected + tsx\_async\_abort: Mitigation of Clear buffers; SMT vulnerable

## epsilon112

### Algebraic Multi-Grid Benchmark (Figure Of Merit) 714952567

	Standard Deviation	0.1%
<b>ACES DGEMM - S.F.P.R (GFLOP/s)</b>	7.521309	
	Standard Deviation	3.5%
<b>Himeno Benchmark - P.P.S (MFLOPS)</b>	3136	
	Standard Deviation	0.1%
<b>GROMACS - MPI CPU - water_GMX50_bare (Ns/Day)</b>	1.408	
	Standard Deviation	0.7%
<b>Kripke (Throughput FoM)</b>	61170736	
	Standard Deviation	6.3%
<b>LULESH (z/s)</b>	6128	
	Standard Deviation	2%
<b>NAMD - ATPase Simulation - 327,506 Atoms (days/ns)</b>	1.25392	
	Standard Deviation	0.2%
<b>Timed HMMer Search - P.D.S (sec)</b>	174.883	
	Standard Deviation	0.2%
<b>Xcompact3d Incompact3d - i.i.1.C.P.D (sec)</b>	14.9024264	
	Standard Deviation	1.1%
<b>Xcompact3d Incompact3d - i.i.1.C.P.D (sec)</b>	58.0882212	
	Standard Deviation	0.1%
<b>Timed MAFFT Alignment - M.S.A - LSU RNA (sec)</b>	15.699	
	Standard Deviation	0.9%
<b>Monte Carlo Simulations of Ionised Nebulae - Dust 2D tau100.0</b>	278	
	Standard Deviation	0.2%
<b>OpenFOAM - Motorbike 30M (sec)</b>	215.72	
	Standard Deviation	0.1%
<b>Quantum ESPRESSO - AUSURF112 (sec)</b>	2299	
	Standard Deviation	0.2%
<b>Smallpt - G.I.R.1.S (sec)</b>	8.382	
	Standard Deviation	0.3%
<b>GNU Octave Benchmark (sec)</b>	11.588	
	Standard Deviation	0.6%

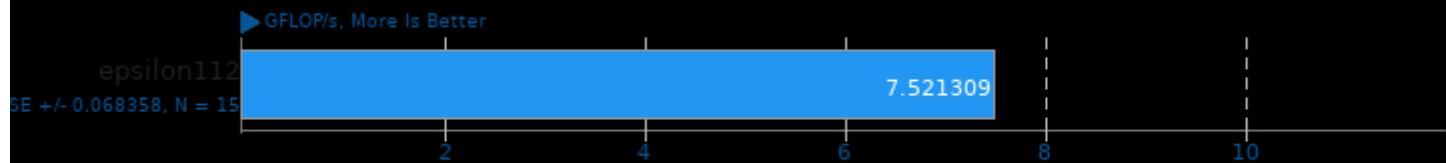
## Algebraic Multi-Grid Benchmark 1.2



1. (CC) gcc options: -fparcsr\_ls -fparcsr\_mv -fseq\_mv -fij\_mv -fkrylov -fHYPRE\_utilities -fim -fopenmp -fthread -fmpi

## ACES DGEMM 1.0

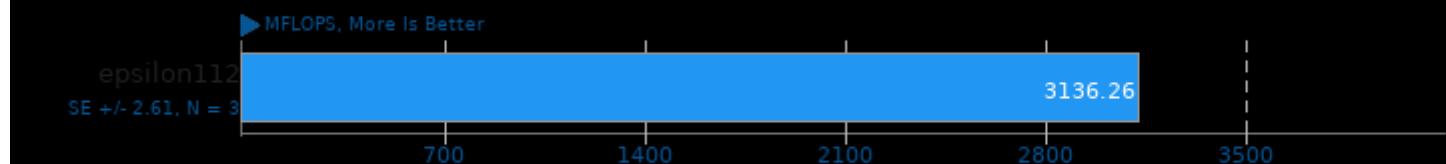
Sustained Floating-Point Rate



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

## Himeno Benchmark 3.0

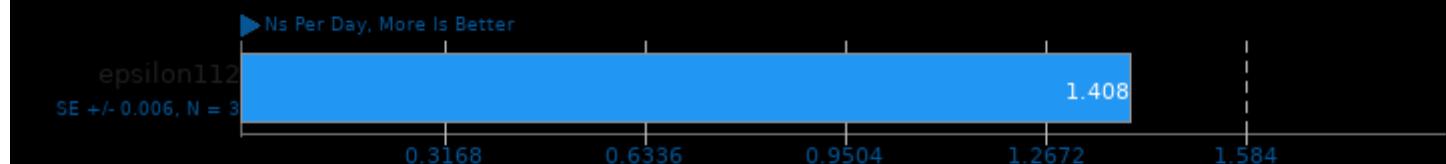
Poisson Pressure Solver



1. (CC) gcc options: -O3 -mavx2

## GROMACS 2021.2

Implementation: MPI CPU - Input: water\_GMX50\_bare



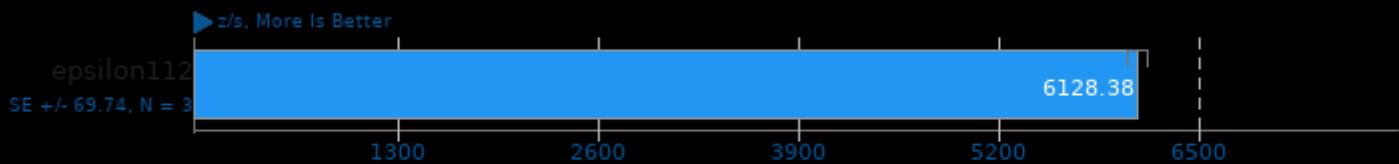
1. (CXX) g++ options: -O3 -fthread

## Kripke 1.2.4



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

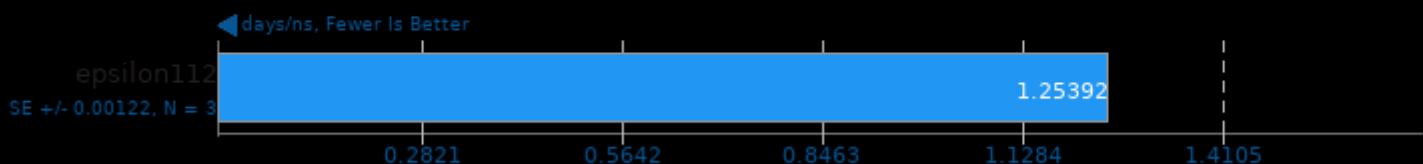
## LULESH 2.0.3



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

## NAMD 2.14

ATPase Simulation - 327,506 Atoms



## Timed HMMer Search 3.3.2

Pfam Database Search



1. (CC) gcc options: -O3 -pthread -lhmmmer -leasel -lm -lmpi

## Xcompact3d Incompact3d 2021-03-11

Input: input.i3d 129 Cells Per Direction



1. (F9X) gfortran options: -cpp -O2 -funroll-loops -floop-optimize -fcray-pointer -fbacktrace -pthread -lmpi\_usempif08 -lmpi\_mpifh -lmpi

## Xcompact3d Incompact3d 2021-03-11

Input: input.i3d 193 Cells Per Direction



1. (F9X) gfortran options: -cpp -O2 -funroll-loops -floop-optimize -fcray-pointer -fbacktrace -pthread -lmpi\_usempif08 -lmpi\_mpifh -lmpi

## Timed MAFFT Alignment 7.471

Multiple Sequence Alignment - LSU RNA



1. (CC) gcc options: -std=c99 -O3 -lm -lpthread

## Monte Carlo Simulations of Ionised Nebulae 2019-03-24

Input: Dust 2D tau100.0



1. (F9X) gfortran options: -cpp -jsource/ -ffree-line-length-0 -lm -std=legacy -O3 -O2 -pthread -lmpi\_usempif08 -lmpi\_mpifh -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 -

## 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 -

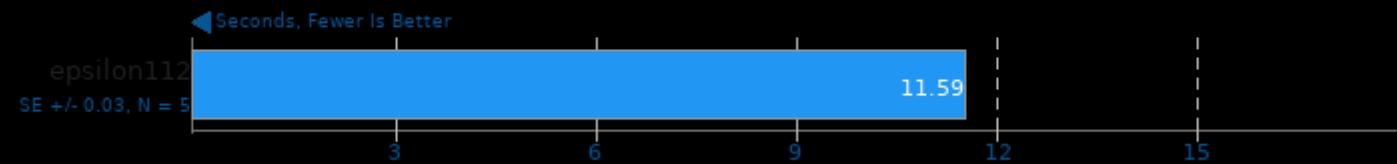
## Smallpt 1.0

Global Illumination Renderer; 128 Samples



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

## GNU Octave Benchmark 4.4.1



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