



[www.phoronix-test-suite.com](http://www.phoronix-test-suite.com)

## Xeon E3 1275 v6 Okt

Intel Xeon E3-1275 v6 testing with a ASUS P10S-M WS (4401 BIOS) and Intel HD P630 3GB on Ubuntu 20.04 via the Phoronix Test Suite.

### Automated Executive Summary

*Linux 5.4 had the most wins, coming in first place for 51% of the tests.*

*Based on the geometric mean of all complete results, the fastest (Linux 5.9) was 1.006x the speed of the slowest (2). Linux 5.4 was 0.994x the speed of Linux 5.9 and 2 was 0.999x the speed of Linux 5.4.*

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

VkFFT at 1.079x

Apache CouchDB (Bulk Size: 100 - Inserts: 1000 - Rounds: 24) at 1.071x

Milpack Benchmark (Benchmark: scikit\_ica) at 1.066x

KeyDB at 1.039x

Milpack Benchmark (Benchmark: scikit\_qda) at 1.026x

Caffe (Model: GoogleNet - Acceleration: CPU - Iterations: 100) at 1.019x

LeelaChessZero (Backend: BLAS) at 1.018x

Milpack Benchmark (Benchmark: scikit\_svm) at 1.017x

LeelaChessZero (Backend: Eigen) at 1.014x

OpenVINO (Model: Person Detection 0106 FP16 - Device: CPU) at 1.013x.

## Test Systems:

### Linux 5.4

#### 2

Processor: Intel Xeon E3-1275 v6 @ 4.20GHz (4 Cores / 8 Threads), Motherboard: ASUS P10S-M WS (4401 BIOS), Chipset: Intel Xeon E3-1200 v6/7th, Memory: 16GB, Disk: Samsung SSD 970 EVO Plus 500GB, Graphics: Intel HD P630 3GB (1150MHz), Audio: Realtek ALC1150, Monitor: VA2431, Network: 2 x Intel I210

OS: Ubuntu 20.04, Kernel: 5.4.0-48-generic (x86\_64), Desktop: GNOME Shell 3.36.4, Display Server: X Server 1.20.8, Display Driver: modesetting 1.20.8, OpenGL: 4.6 Mesa 20.0.4, OpenCL: OpenCL 2.1, 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: intel\_pstate powersave - CPU Microcode: 0xd6  
Python Notes: Python 3.8.2  
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 + srbd: Mitigation of Microcode + tsx\_async\_abort: Mitigation of Clear buffers; SMT vulnerable

### Linux 5.9

Processor: Intel Xeon E3-1275 v6 @ 4.20GHz (4 Cores / 8 Threads), Motherboard: ASUS P10S-M WS (4401 BIOS), Chipset: Intel Xeon E3-1200 v6/7th, Memory: 16GB, Disk: Samsung SSD 970 EVO Plus 500GB, Graphics: Intel HD P630 3GB (1150MHz), Audio: Realtek ALC1150, Monitor: VA2431, Network: 2 x Intel I210

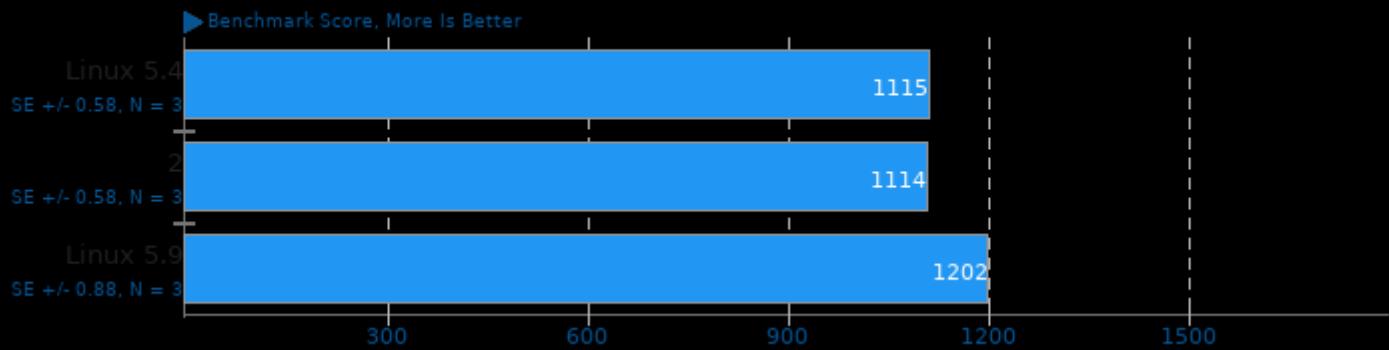
OS: Ubuntu 20.04, Kernel: 5.9.0-050900rc8daily20201007-generic (x86\_64) 20201006, Desktop: GNOME Shell 3.36.4, Display Server: X Server 1.20.8, Display Driver: modesetting 1.20.8, OpenGL: 4.6 Mesa 20.0.4, OpenCL: OpenCL 2.1, Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 1920x1080

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: intel\_pstate powersave - CPU Microcode: 0xd6  
Python Notes: Python 3.8.2  
Security Notes: itlb\_multihit: KVM: Mitigation of VMX disabled + 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 + srbd: Mitigation of Microcode + tsx\_async\_abort: Mitigation of Clear buffers; SMT vulnerable

	Linux 5.4	2	Linux 5.9
VkFFT (Benchmark Score)	1115	<b>1114</b>	<b>1202</b>
Normalized	92.76%	92.68%	100%
Standard Deviation	0.1%	0.1%	0.1%
LeelaChessZero - BLAS (Nodes/s)	<b>897</b>	<b>881</b>	887
Normalized	100%	98.22%	98.89%
Standard Deviation	1.4%	2.8%	
LeelaChessZero - Eigen (Nodes/s)	<b>795</b>	<b>806</b>	
Normalized	98.64%	100%	
Standard Deviation	0.9%	1%	
LeelaChessZero - Rand (Nodes/s)	<b>223860</b>	<b>223803</b>	
Normalized	100%	99.97%	
Standard Deviation	0.1%	0.3%	
Dolfyn - C.F.D (sec)	<b>19.575</b>	19.578	<b>19.579</b>
Normalized	100%	99.98%	99.98%
Standard Deviation	0.7%	0.2%	0.3%
FFTE - N.2.3.C.F.R (MFLOPS)	<b>22462</b>	<b>22233</b>	22362
Normalized	100%	98.98%	99.55%
Standard Deviation	0.4%	0.6%	0.2%
Timed HMMer Search - P.D.S (sec)	<b>114.069</b>	<b>114.174</b>	114.151
Normalized	100%	99.91%	99.93%
Standard Deviation	0%	0%	0%
Timed MAFFT Alignment - M.S.A - LSU RNA (sec)	<b>11.262</b>	<b>11.198</b>	11.201
Normalized	99.43%	100%	99.97%
Standard Deviation	1.9%	1%	0.2%
BYTE Unix Benchmark - Dhrystone 2 (LPS)	<b>41609980</b>	41481693	<b>41393101</b>
Normalized	100%	99.69%	99.48%
Standard Deviation	0.2%	0.3%	0.4%
RNNoise (sec)	<b>25.709</b>	25.751	<b>25.842</b>
Normalized	100%	99.84%	99.49%
Standard Deviation	0.1%	0.1%	0.2%
Apache CouchDB - 100 - 1000 - 24 (sec)	<b>150.715</b>	149.592	<b>140.720</b>
Normalized	93.37%	94.07%	100%
Standard Deviation	0.6%	1.7%	0.5%
KeyDB (Ops/sec)	<b>434487</b>	432111	<b>418252</b>
Normalized	100%	99.45%	96.26%
Standard Deviation	0.2%	0.1%	0.2%
GROMACS - Water Benchmark (Ns/Day)	<b>0.553</b>	<b>0.553</b>	<b>0.552</b>
Normalized	100%	100%	99.82%
Standard Deviation	0.7%	0.4%	0.4%
Caffe - AlexNet - CPU - 100 (ms)	58778	<b>58842</b>	<b>58755</b>
Normalized	99.96%	99.85%	100%
Standard Deviation	0.1%	0.2%	0.1%
Caffe - AlexNet - CPU - 200 (ms)	<b>117319</b>	117471	<b>117514</b>
Normalized	100%	99.87%	99.83%
Standard Deviation	0.3%	0.1%	0.1%
Caffe - GoogleNet - CPU - 100 (ms)	<b>145923</b>	146017	<b>148763</b>
Normalized	100%	99.94%	98.09%
Standard Deviation	0.2%	0%	2.8%
Caffe - GoogleNet - CPU - 200 (ms)	<b>291651</b>	291689	<b>292130</b>
Normalized	100%	99.99%	99.84%
Standard Deviation	0.2%	0.1%	0.1%
OpenVINO - F.D.O.F - CPU (FPS)	<b>1.33</b>	<b>1.32</b>	<b>1.33</b>
Normalized	100%	99.25%	100%

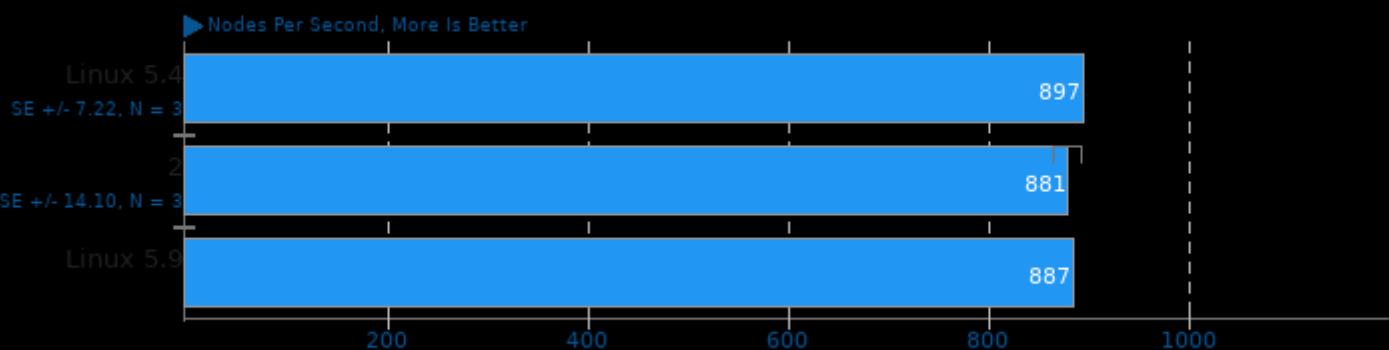
	Standard Deviation	0.4%	0%	0.4%
<b>OpenVINO - F.D.O.F - CPU (ms)</b>	<b>3005</b>	<b>3013</b>		3012
Normalized	100%	99.72%	99.75%	
Standard Deviation	0.3%	0.3%	0.3%	
<b>OpenVINO - F.D.O.F - CPU (FPS)</b>	<b>1.32</b>	<b>1.33</b>	<b>1.33</b>	
Normalized	99.25%	100%	100%	
Standard Deviation	0.9%	0%	0.8%	
<b>OpenVINO - F.D.O.F - CPU (ms)</b>	<b>3018</b>		3004	<b>3004</b>
Normalized	99.52%	99.98%	100%	
Standard Deviation	1.1%	0.4%	0.5%	
<b>OpenVINO - P.D.O.F - CPU (FPS)</b>	<b>0.8</b>	<b>0.8</b>	<b>0.81</b>	
Normalized	98.77%	98.77%	100%	
Standard Deviation	0%	0%	1.2%	
<b>OpenVINO - P.D.O.F - CPU (ms)</b>	4865	<b>4866</b>	<b>4848</b>	
Normalized	99.66%	99.63%	100%	
Standard Deviation	0.3%	0.2%	0.9%	
<b>OpenVINO - P.D.O.F - CPU (FPS)</b>	0.8	0.80	0.80	
Standard Deviation	0%	0.7%	0.7%	
<b>OpenVINO - P.D.O.F - CPU (ms)</b>	<b>4853</b>	4857	<b>4884</b>	
Normalized	100%	99.93%	99.38%	
Standard Deviation	0.2%	0.3%	1.1%	
<b>OpenVINO - A.G.R.R.O.F - CPU (FPS)</b>	3220	<b>3210</b>	<b>3232</b>	
Normalized	99.63%	99.31%	100%	
Standard Deviation	0.2%	0.2%	0.6%	
<b>OpenVINO - A.G.R.R.O.F - CPU (ms)</b>	<b>1.23</b>	<b>1.23</b>	<b>1.22</b>	
Normalized	99.19%	99.19%	100%	
Standard Deviation	0%	0.5%	0.5%	
<b>OpenVINO - A.G.R.R.O.F - CPU (FPS)</b>	3226	<b>3204</b>	<b>3232</b>	
Normalized	99.83%	99.15%	100%	
Standard Deviation	0.5%	0.4%	0.5%	
<b>OpenVINO - A.G.R.R.O.F - CPU (ms)</b>	<b>1.23</b>	<b>1.24</b>	<b>1.23</b>	
Normalized	100%	99.19%	100%	
Standard Deviation	0.5%	0.5%	0.5%	
<b>Hierarchical INTegration - FLOAT (QUIPs)</b>	412753358	<b>413515198</b>	<b>411542229</b>	
Normalized	99.82%	100%	99.52%	
Standard Deviation	0.3%	0.2%	0.2%	
<b>Milpack Benchmark - scikit_ica (sec)</b>	<b>65.59</b>	64.73	<b>61.52</b>	
Normalized	93.79%	95.04%	100%	
Standard Deviation	1.5%	0.4%	2.1%	
<b>Milpack Benchmark - scikit_qda (sec)</b>	<b>77.09</b>	77.05	<b>75.11</b>	
Normalized	97.43%	97.48%	100%	
Standard Deviation	0.3%	0.5%	1%	
<b>Milpack Benchmark - scikit_svm (sec)</b>	26.21	<b>25.94</b>	<b>26.39</b>	
Normalized	98.97%	100%	98.29%	
Standard Deviation	0.5%	0.1%	0.3%	

## VkFFT 2020-09-29



## LeelaChessZero 0.26

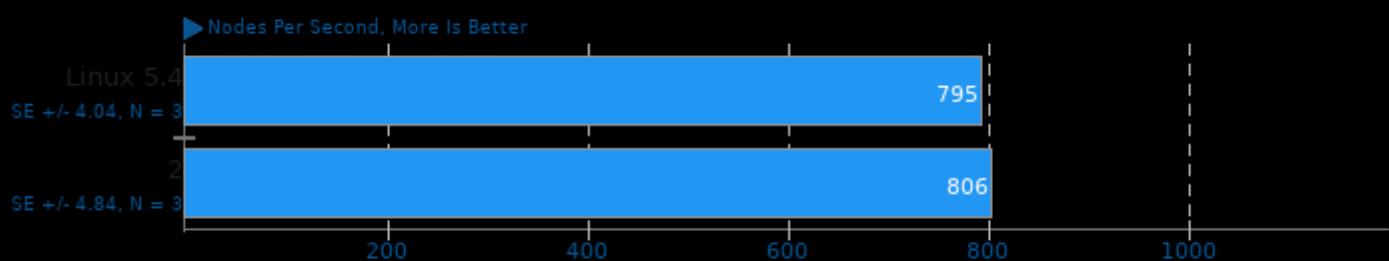
Backend: BLAS



1. (CXX) g++ options: -fno -pthread

## LeelaChessZero 0.26

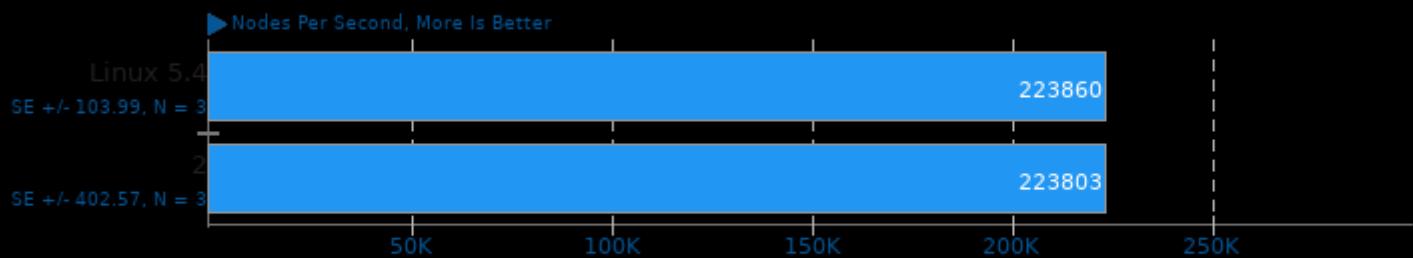
Backend: Eigen



1. (CXX) g++ options: -fno -pthread

## LeelaChessZero 0.26

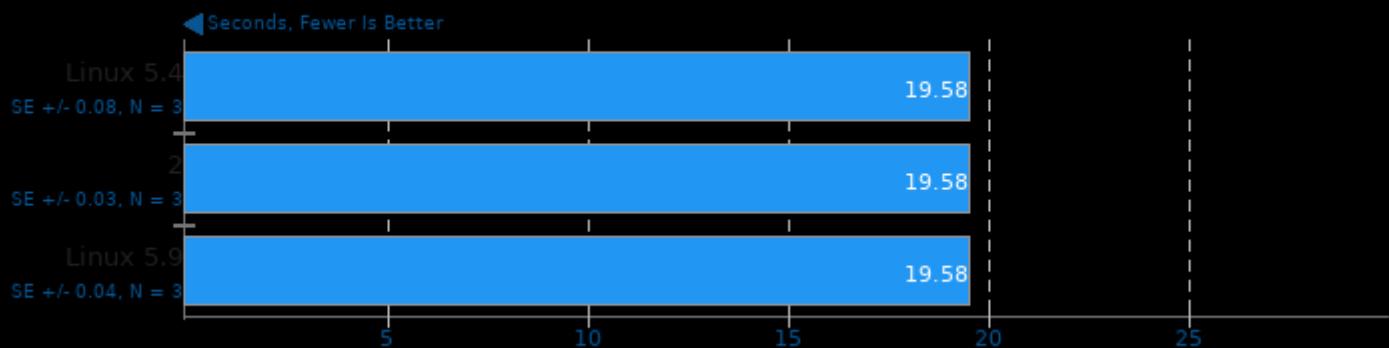
Backend: Random



1. (CXX) g++ options: -fno -pthread

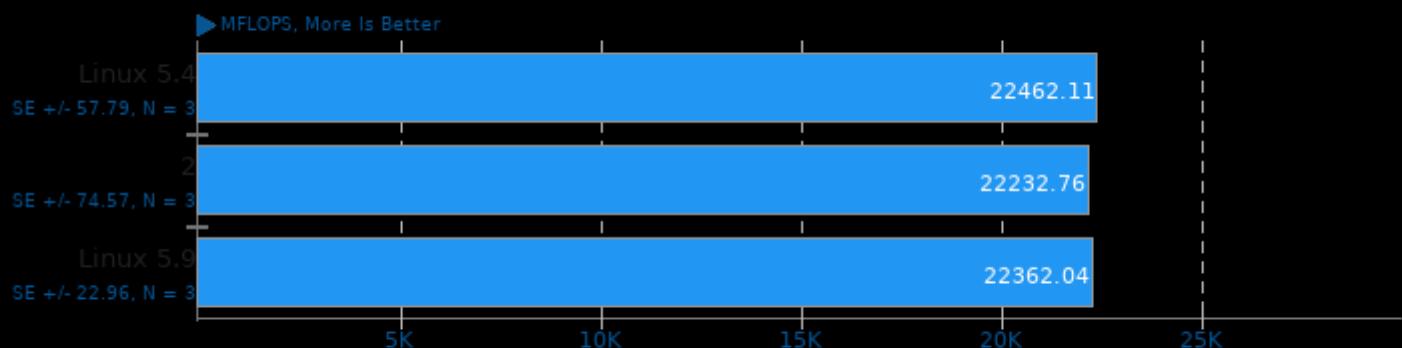
## Dolfyn 0.527

Computational Fluid Dynamics



## FFTE 7.0

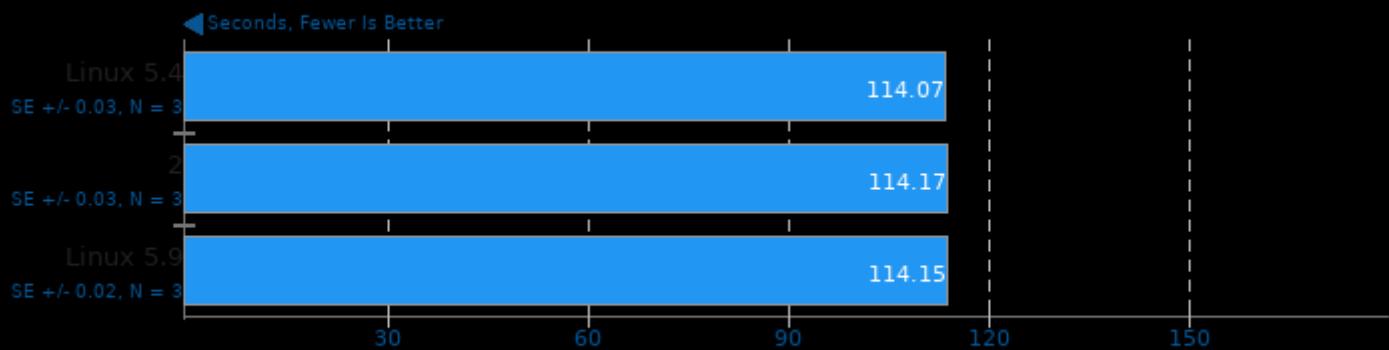
N=256, 3D Complex FFT Routine



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

## Timed HMMer Search 3.3.1

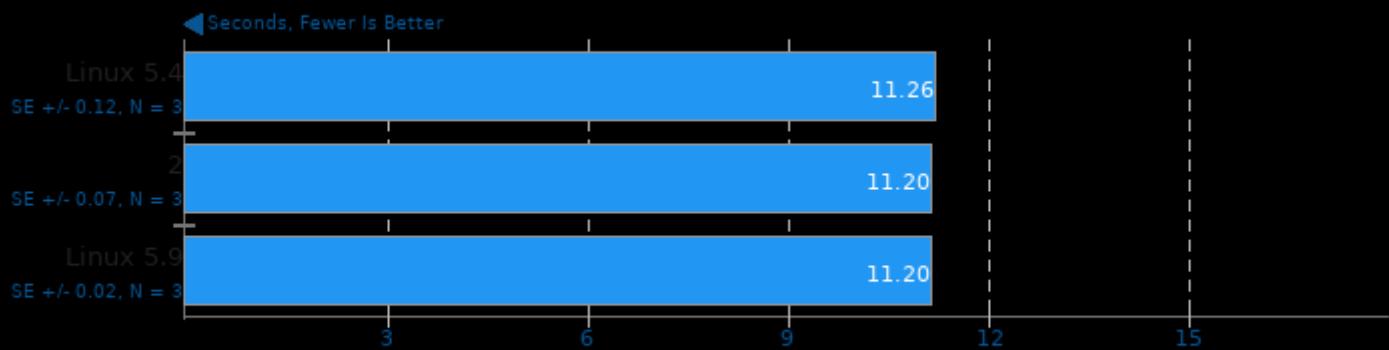
Pfam Database Search



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

## Timed MAFFT Alignment 7.471

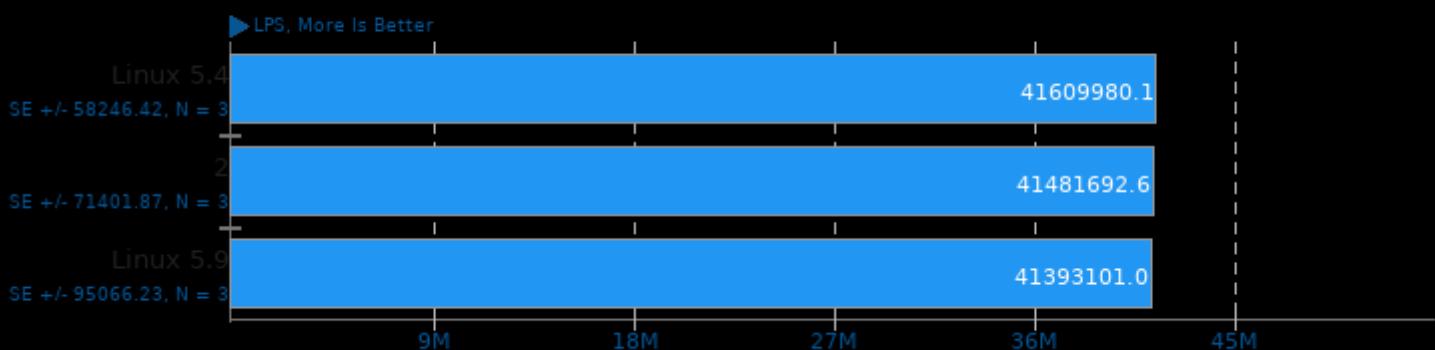
Multiple Sequence Alignment - LSU RNA



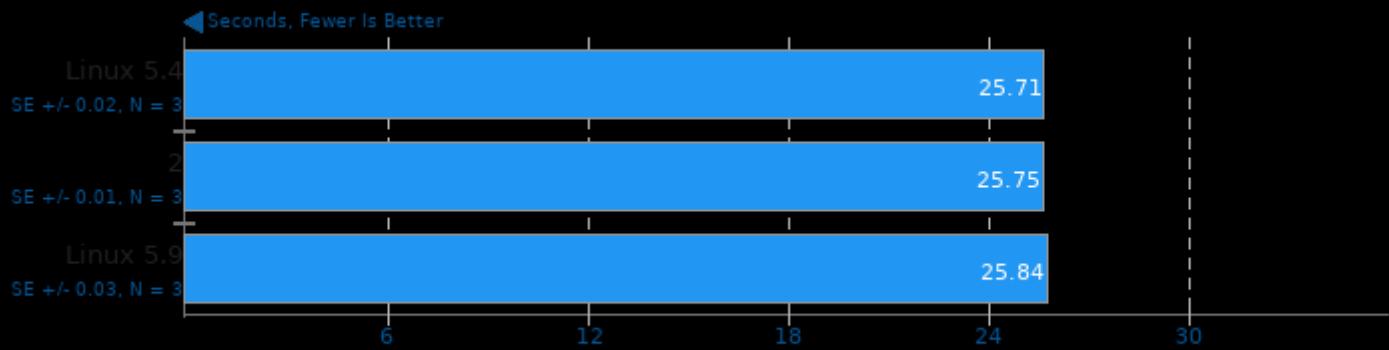
1. (CC) gcc options: -std=c99 -O3 -lm -lpthread

## BYTE Unix Benchmark 3.6

Computational Test: Dhrystone 2



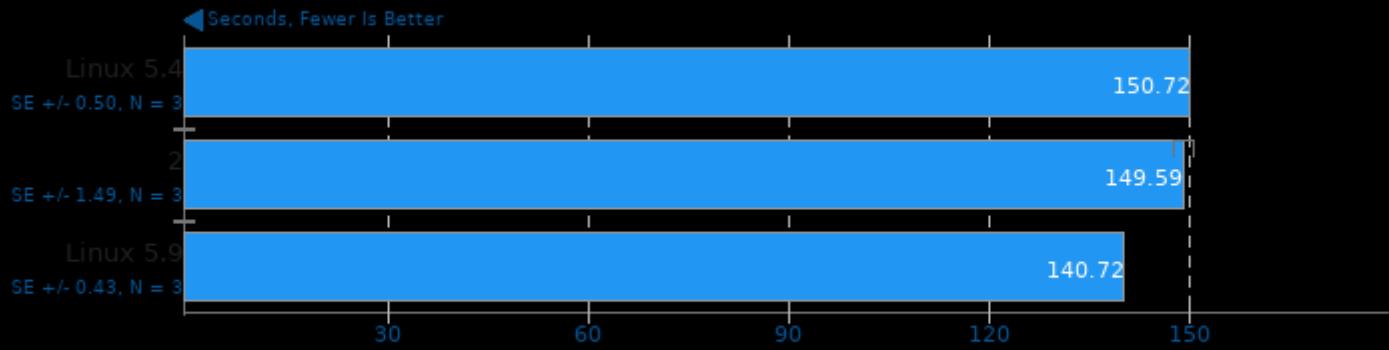
## RNNoise 2020-06-28



1. (CC) gcc options: -O2 -pedantic -fvisibility=hidden

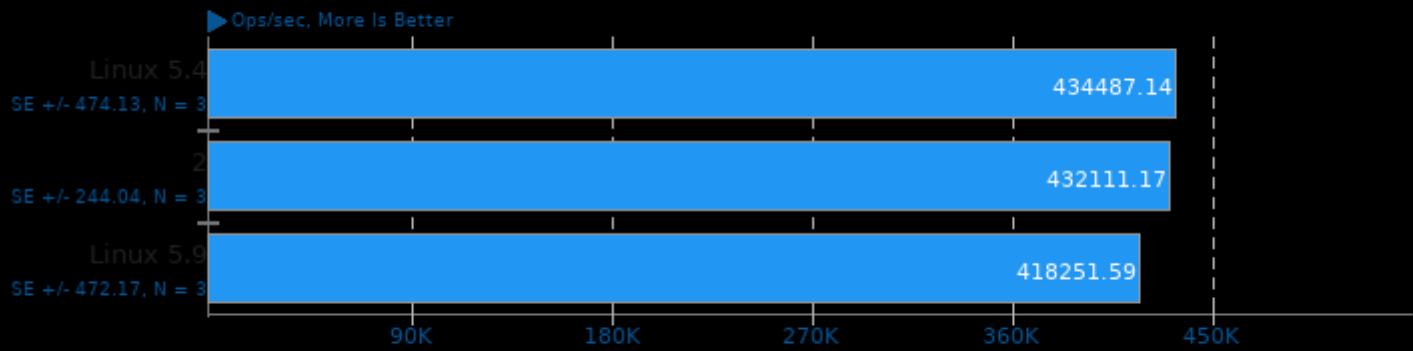
## Apache CouchDB 3.1.1

Bulk Size: 100 - Inserts: 1000 - Rounds: 24



1. (CXX) g++ options: -std=c++14 -lmozjs-68 -lm -l Erl\_interface -lei -fPIC -MMD

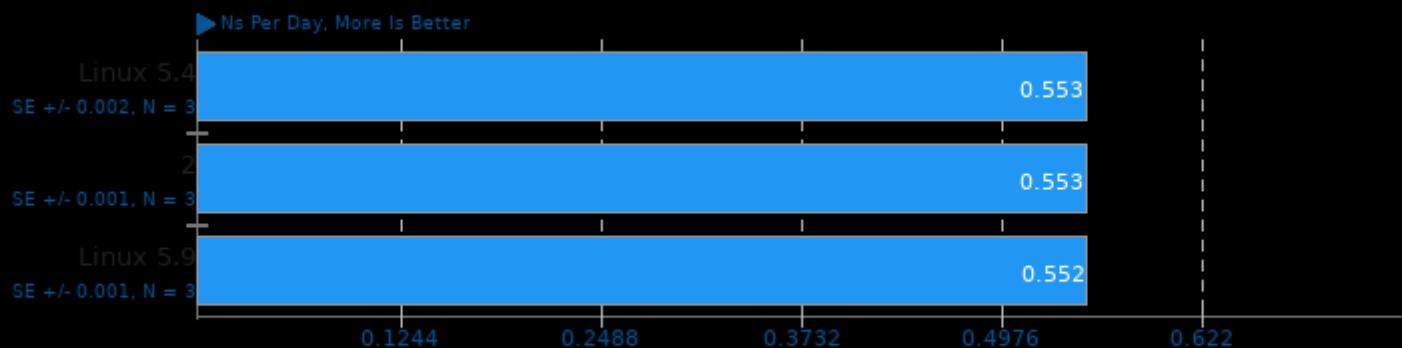
## KeyDB 6.0.16



1. (CXX) g++ options: -O2 -levent\_openssl -levent -lcrypto -lssl -lpthread -lz -lpcre

## GROMACS 2020.3

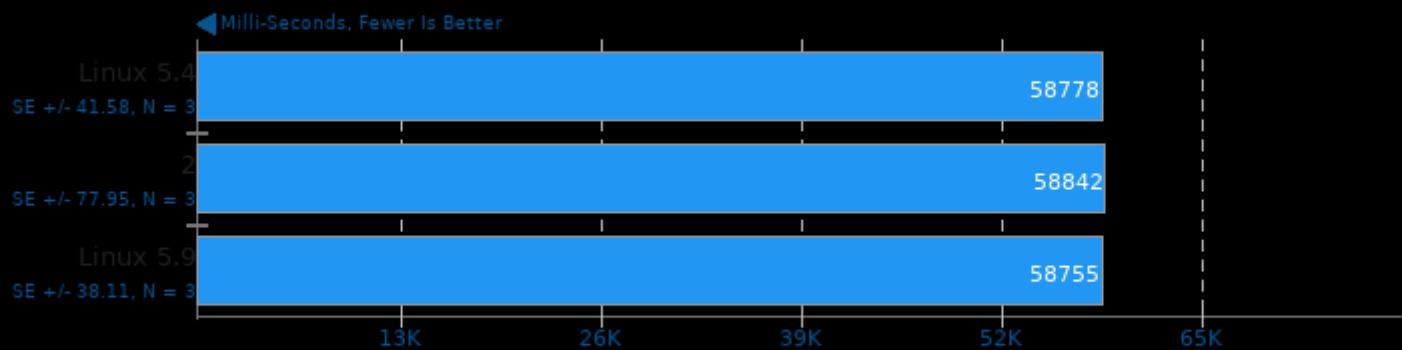
Water Benchmark



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

## Caffe 2020-02-13

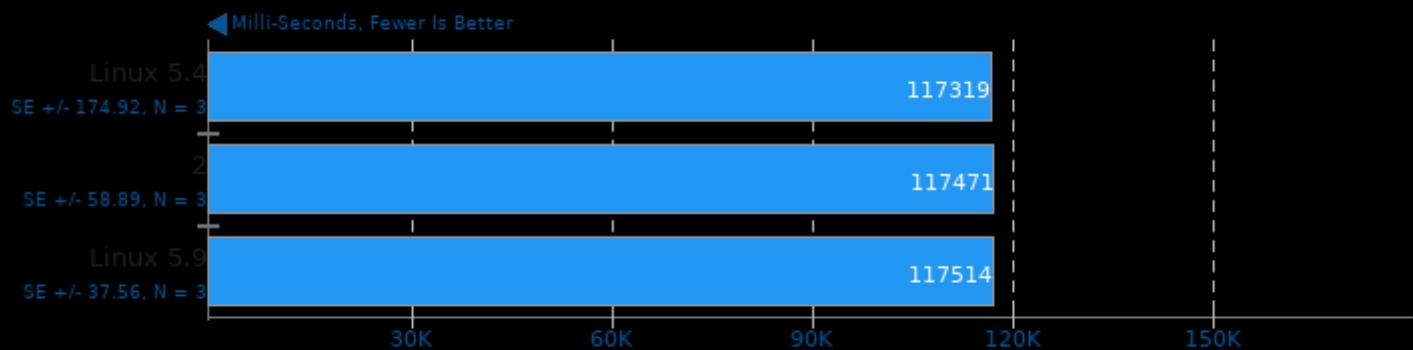
Model: AlexNet - Acceleration: CPU - Iterations: 100



1. (CXX) g++ options: -fPIC -O3 -rdynamic -lglog -lflags -lprotobuf -lpthread -lsz -lz -ldl -lm -lmbdb -lopenblas

## Caffe 2020-02-13

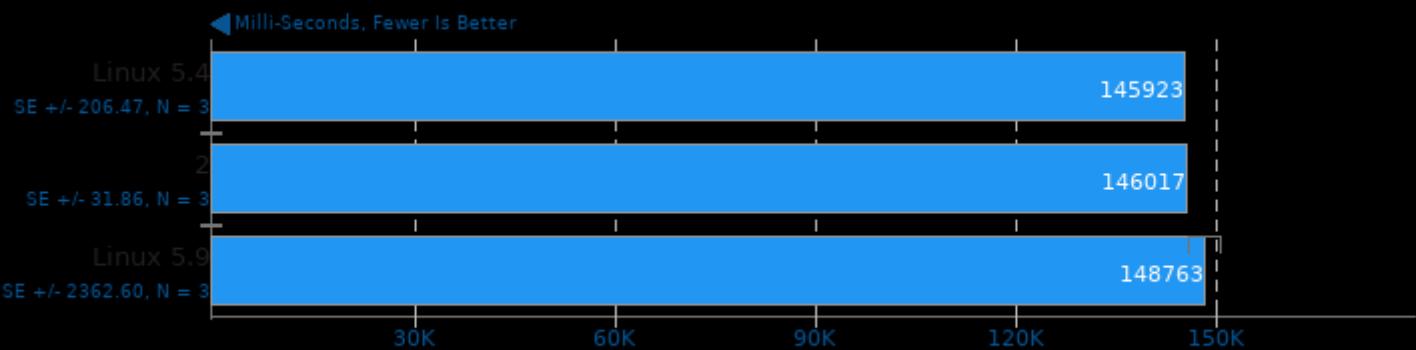
Model: AlexNet - Acceleration: CPU - Iterations: 200



1. (CXX) g++ options: -fPIC -O3 -rdynamic -lglog -lflags -lprotobuf -lpthread -lsz -lz -ldl -lm -lmbdb -lopenblas

## Caffe 2020-02-13

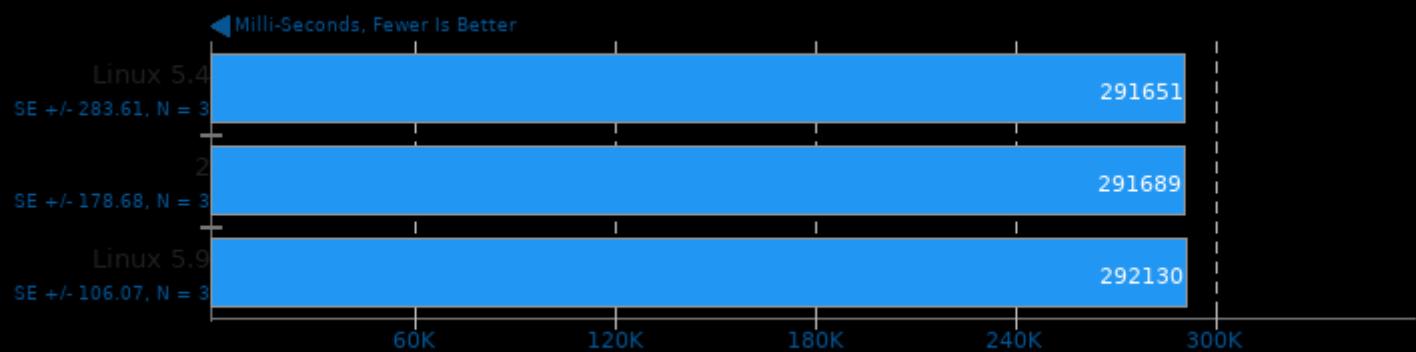
Model: GoogleNet - Acceleration: CPU - Iterations: 100



1. (CXX) g++ options: -fPIC -O3 -rdynamic -lglog -lflags -lprotobuf -lpthread -lsz -lz -ldl -lm -llmdb -lopenblas

## Caffe 2020-02-13

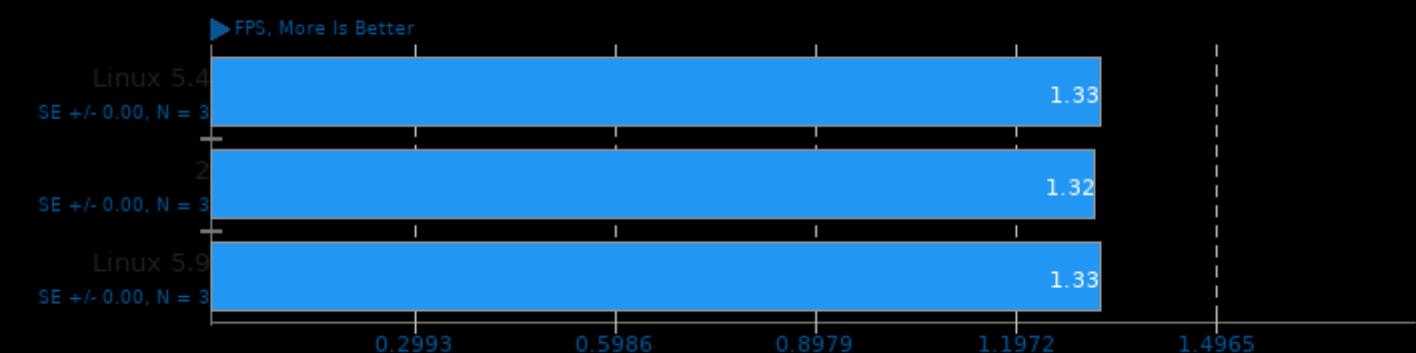
Model: GoogleNet - Acceleration: CPU - Iterations: 200



1. (CXX) g++ options: -fPIC -O3 -rdynamic -lglog -lflags -lprotobuf -lpthread -lsz -lz -ldl -lm -llmdb -lopenblas

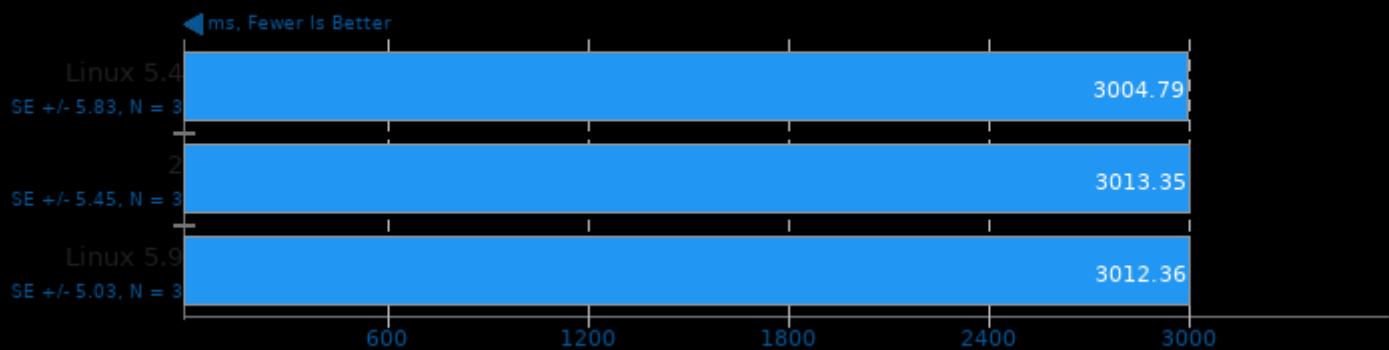
## OpenVINO 2021.1

Model: Face Detection 0106 FP16 - Device: CPU



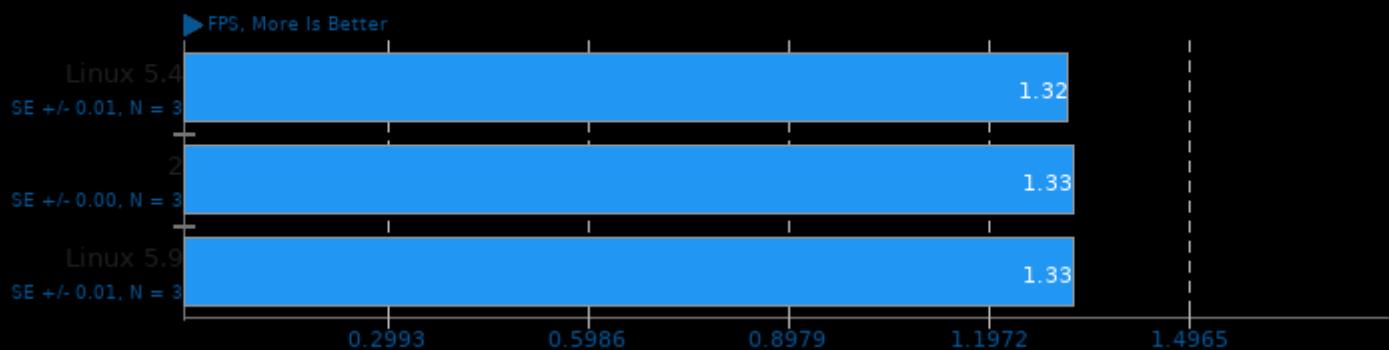
## OpenVINO 2021.1

Model: Face Detection 0106 FP16 - Device: CPU



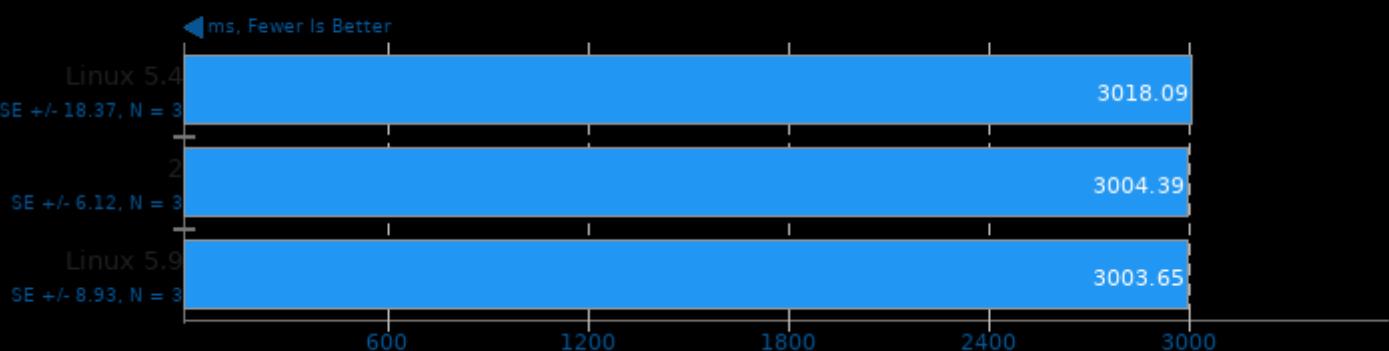
## OpenVINO 2021.1

Model: Face Detection 0106 FP32 - Device: CPU



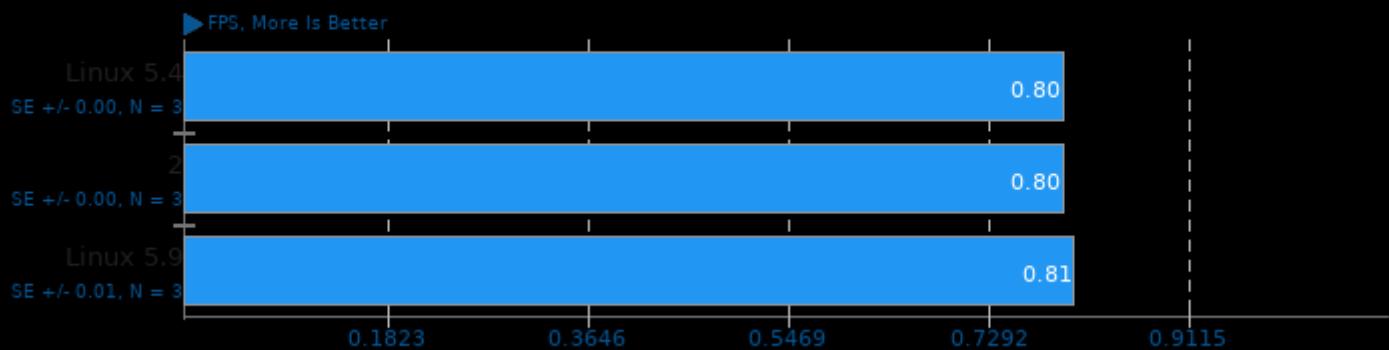
## OpenVINO 2021.1

Model: Face Detection 0106 FP32 - Device: CPU



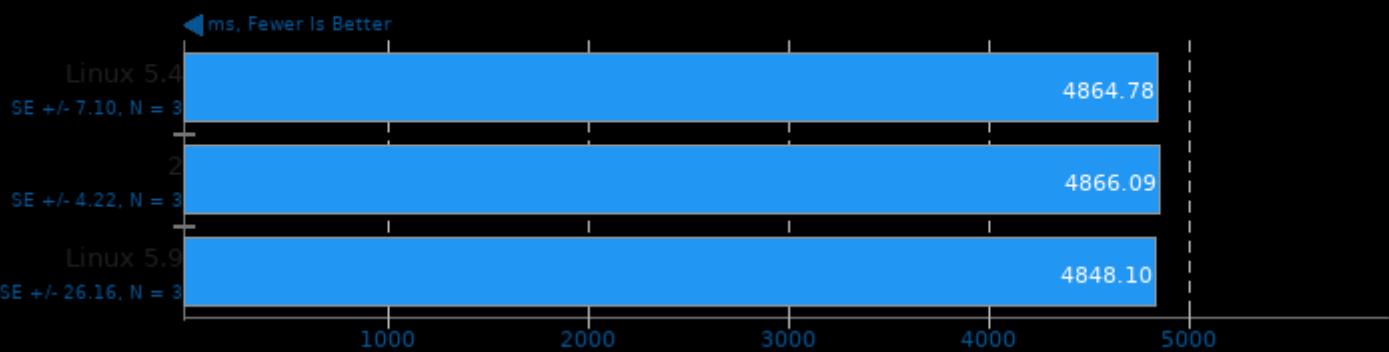
## OpenVINO 2021.1

Model: Person Detection 0106 FP16 - Device: CPU



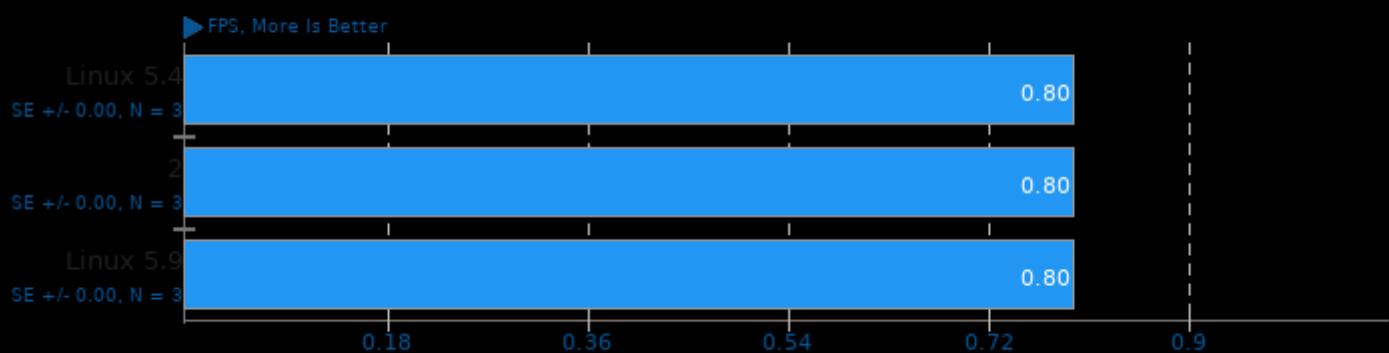
## OpenVINO 2021.1

Model: Person Detection 0106 FP16 - Device: CPU



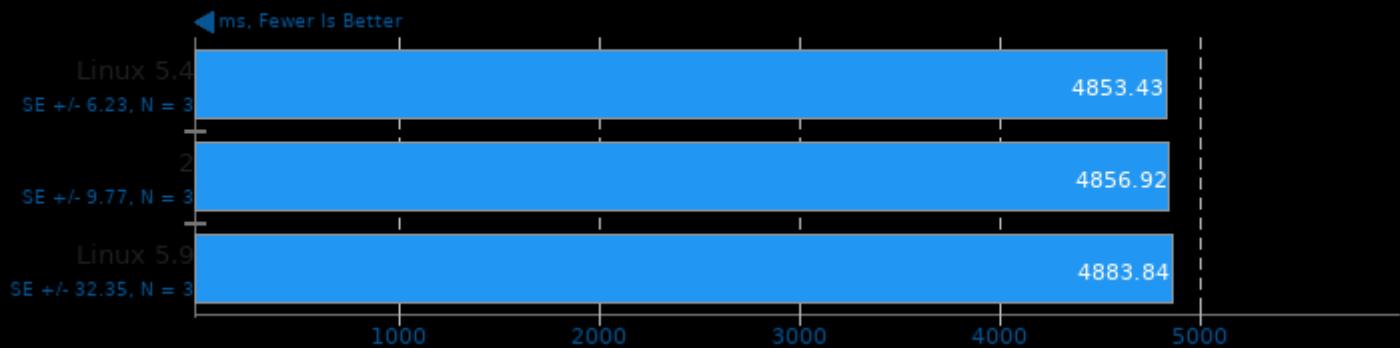
## OpenVINO 2021.1

Model: Person Detection 0106 FP32 - Device: CPU



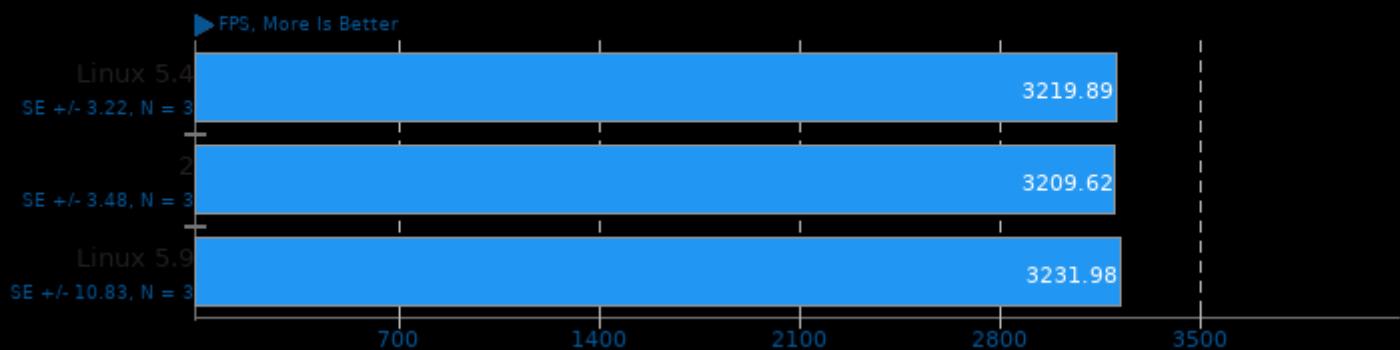
## OpenVINO 2021.1

Model: Person Detection 0106 FP32 - Device: CPU



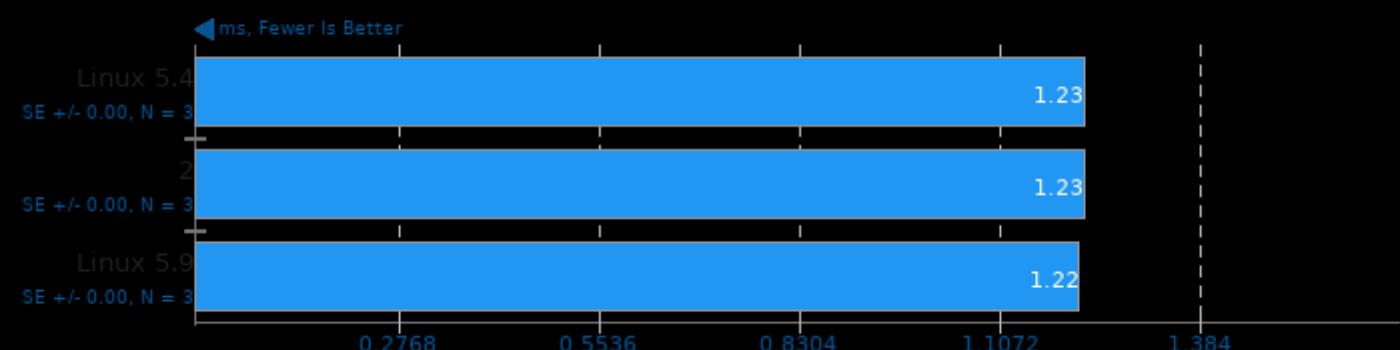
## OpenVINO 2021.1

Model: Age Gender Recognition Retail 0013 FP16 - Device: CPU



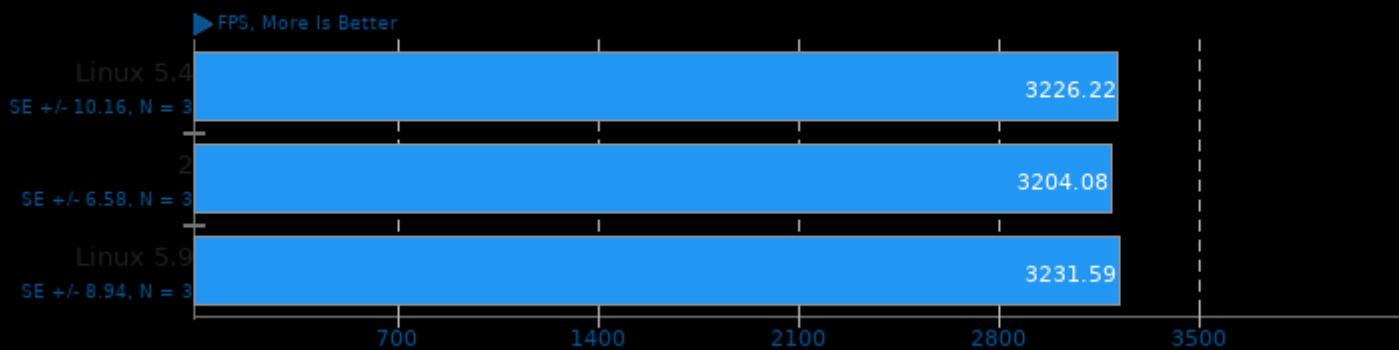
## OpenVINO 2021.1

Model: Age Gender Recognition Retail 0013 FP16 - Device: CPU



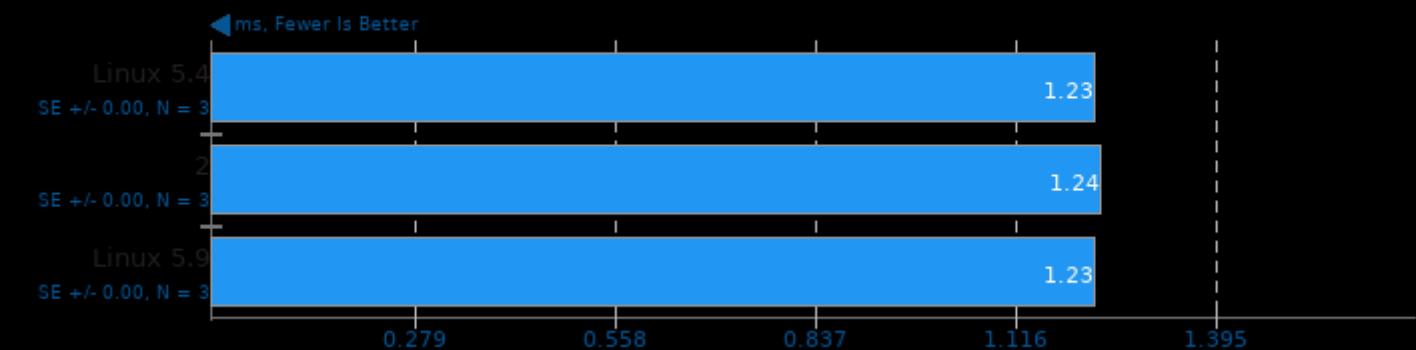
## OpenVINO 2021.1

Model: Age Gender Recognition Retail 0013 FP32 - Device: CPU



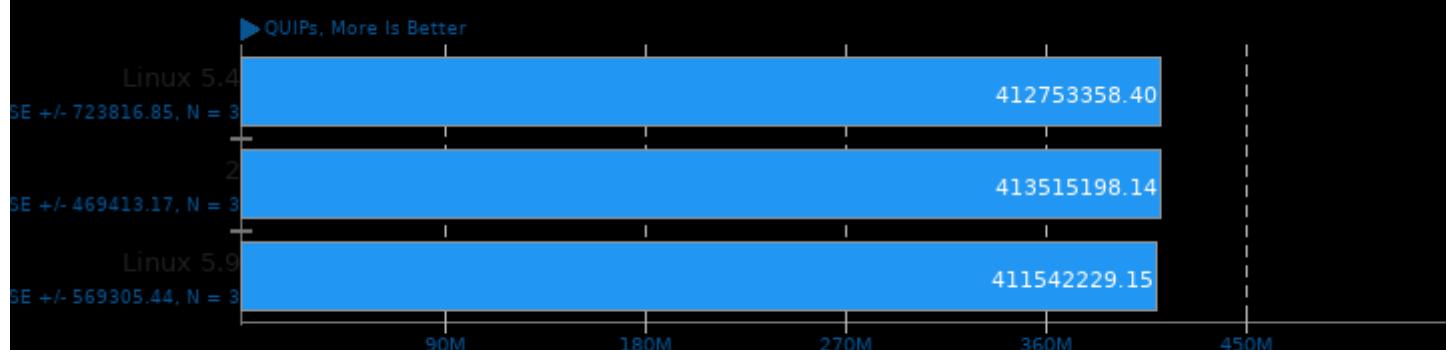
## OpenVINO 2021.1

Model: Age Gender Recognition Retail 0013 FP32 - Device: CPU



## Hierarchical INTegration 1.0

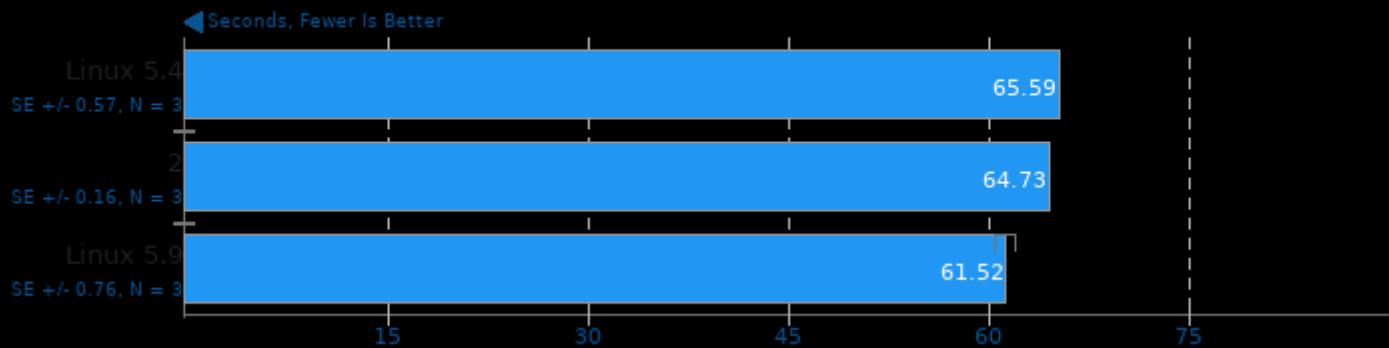
Test: FLOAT



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

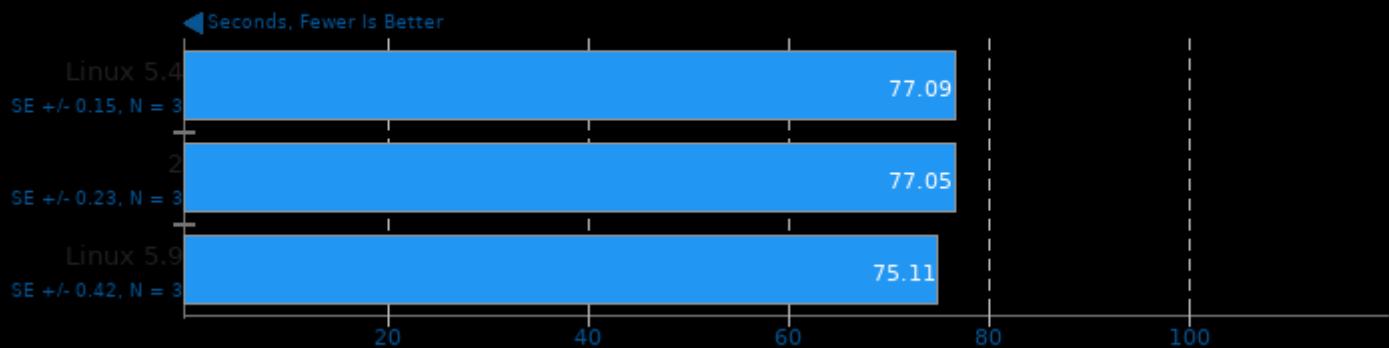
## Milpack Benchmark

Benchmark: scikit\_ica



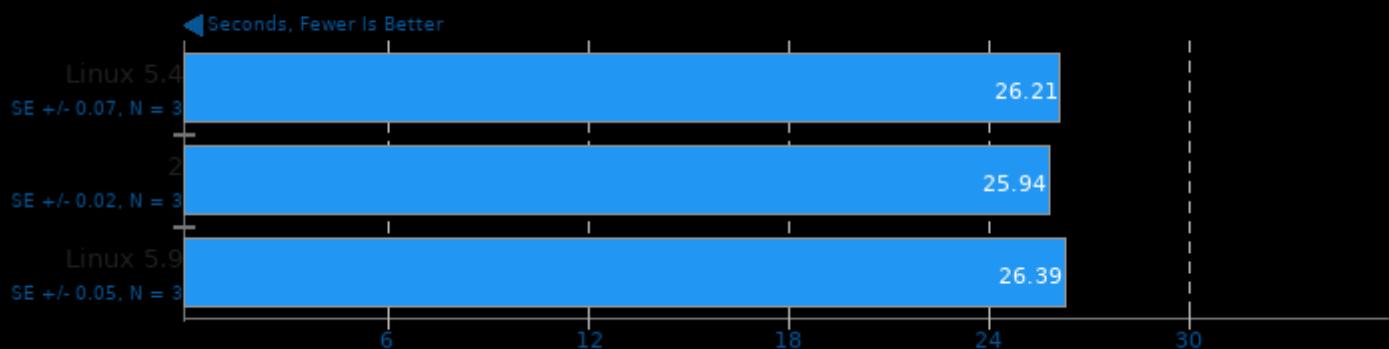
## Milpack Benchmark

Benchmark: scikit\_qda



## Milpack Benchmark

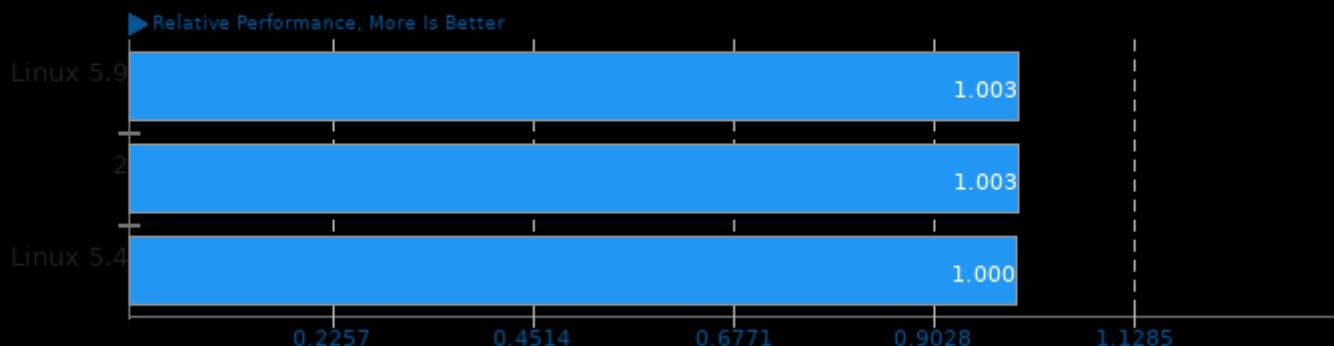
Benchmark: scikit\_svm



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

### Geometric Mean Of Bioinformatics Tests

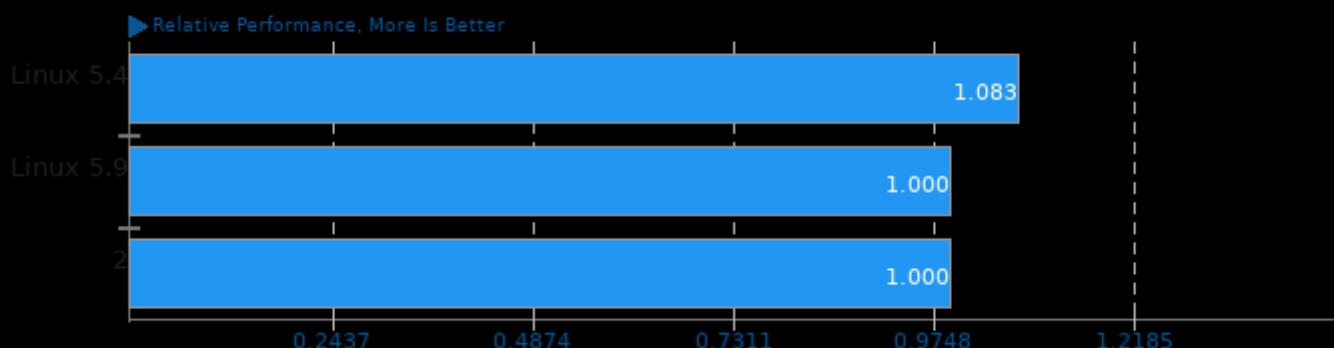
Result Composite - Xeon E3 1275 v6 Okt



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

### Geometric Mean Of BLAS (Basic Linear Algebra Sub-Routine) Tests

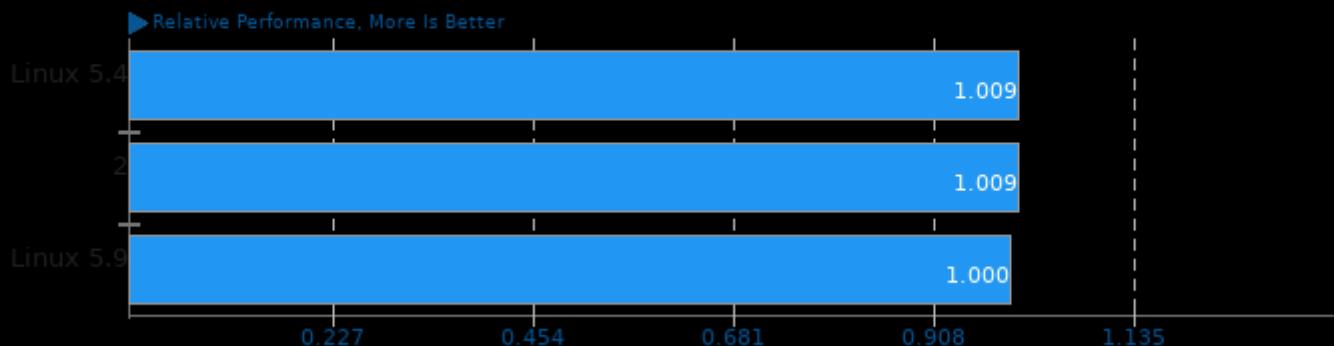
Result Composite - Xeon E3 1275 v6 Okt



Geometric mean based upon tests: pts/lczero and pts/caffe

### Geometric Mean Of C/C++ Compiler Tests

Result Composite - Xeon E3 1275 v6 Okt

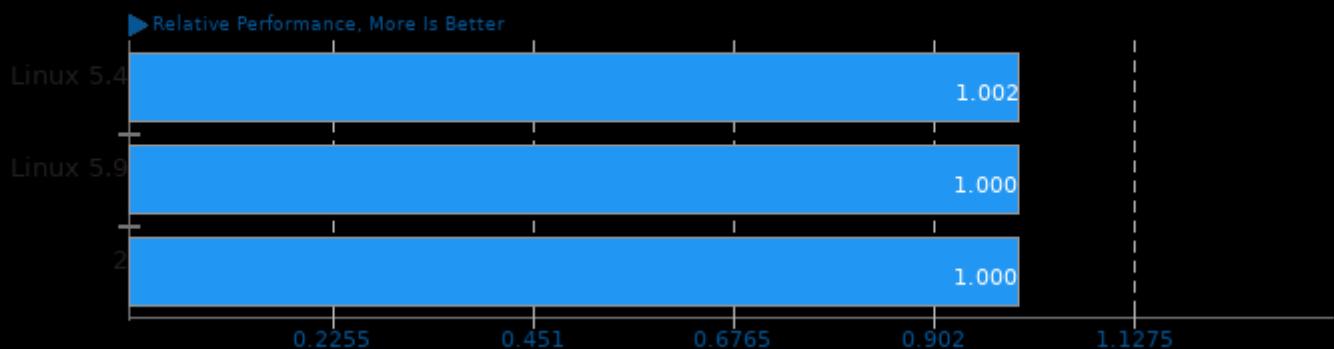


Geometric mean based upon tests: pts/mafft, pts/hmmer, pts/gromacs and pts/keydb

## Xeon E3 1275 v6 Okt

### Geometric Mean Of CPU Massive Tests

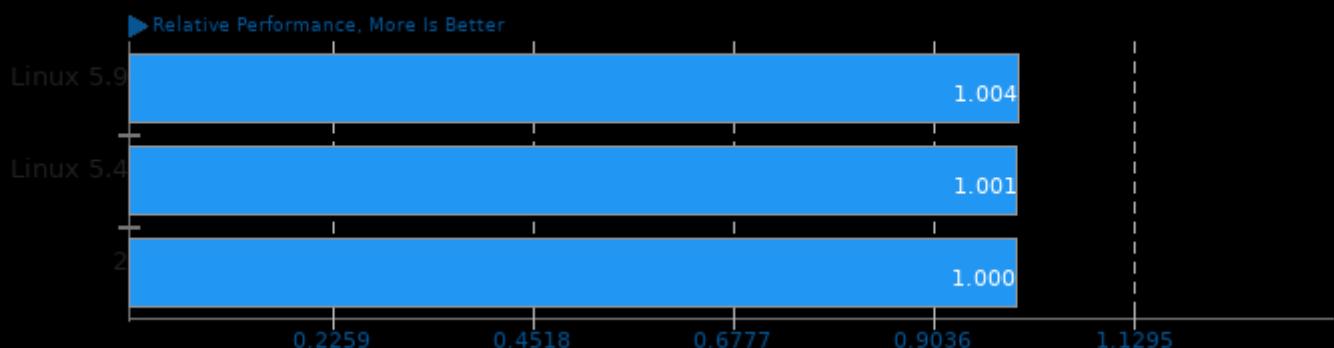
Result Composite - Xeon E3 1275 v6 Okt



Geometric mean based upon tests: pts/dolfyn, pts/hint, pts/hmmer, pts/lczero and pts/mafft

### Geometric Mean Of Creator Workloads Tests

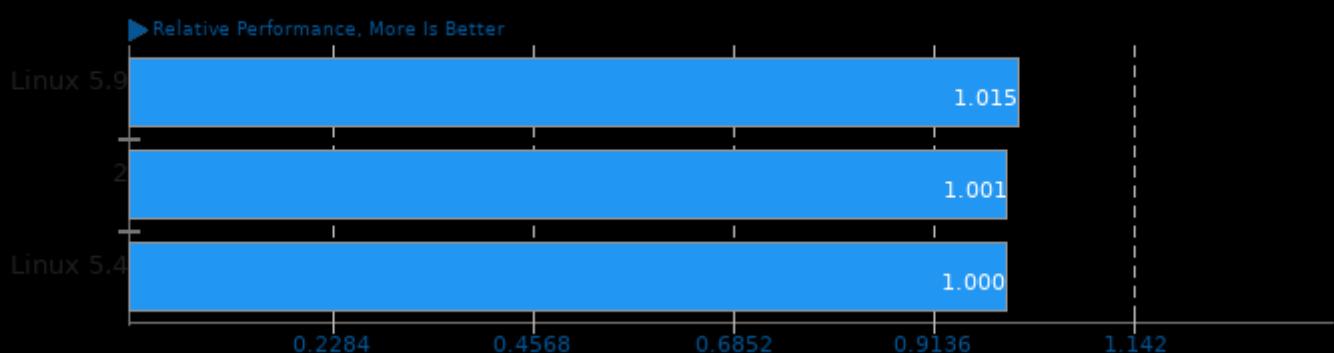
Result Composite - Xeon E3 1275 v6 Okt



Geometric mean based upon tests: pts/openvino and pts/rnnoise

### Geometric Mean Of Database Test Suite

Result Composite - Xeon E3 1275 v6 Okt

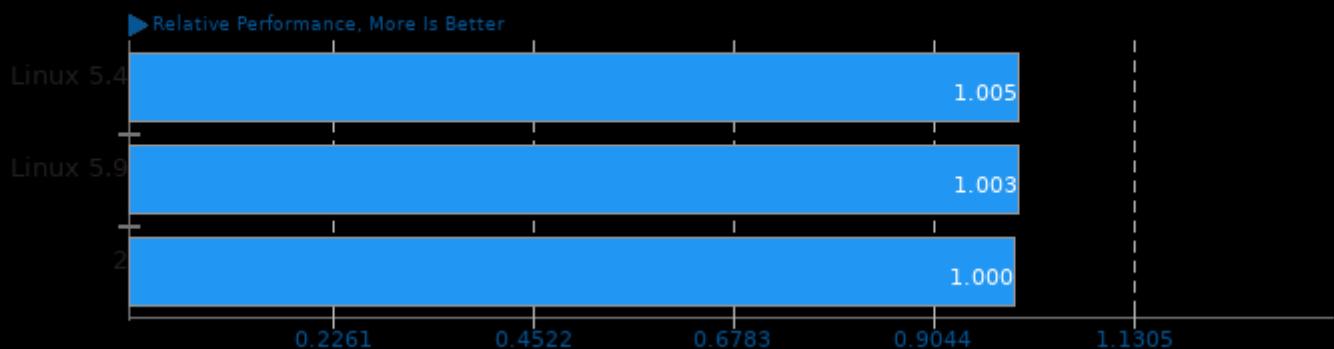


Geometric mean based upon tests: pts/keydb and pts/couchdb

## Xeon E3 1275 v6 Okt

### Geometric Mean Of Fortran Tests

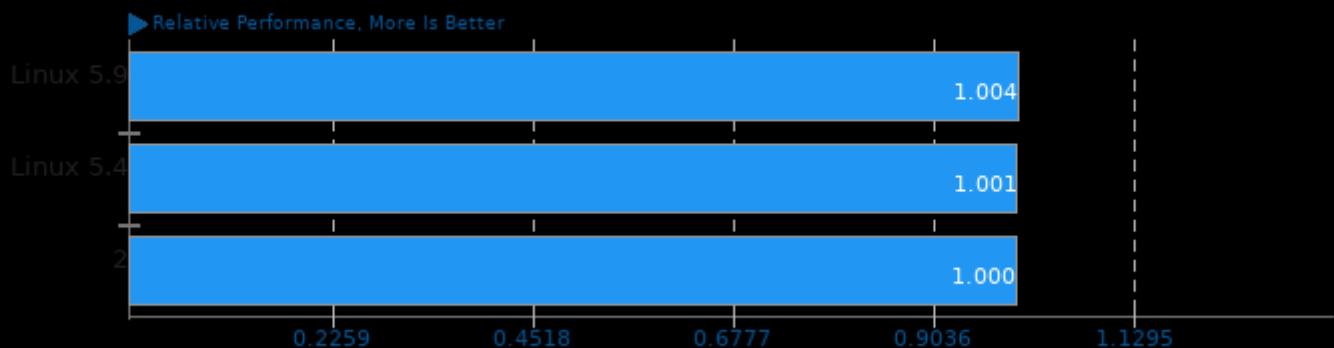
Result Composite - Xeon E3 1275 v6 Okt



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

### Geometric Mean Of HPC - High Performance Computing Tests

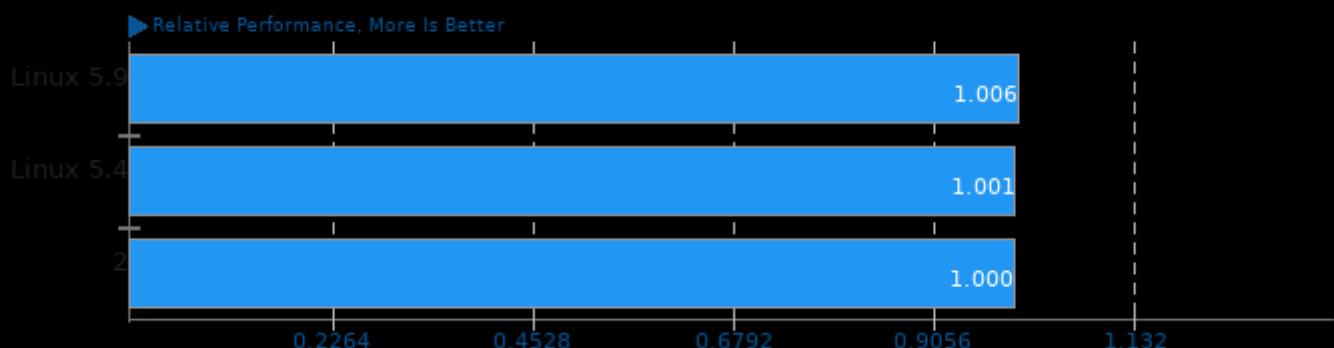
Result Composite - Xeon E3 1275 v6 Okt



Geometric mean based upon tests: pts/ffte, pts/gromacs, pts/dolfyn, pts/hmmer, pts/mafft, pts/caffe, pts/rnnoise, pts/mlpack, pts/openvino and pts/lczero

### Geometric Mean Of Machine Learning Tests

Result Composite - Xeon E3 1275 v6 Okt

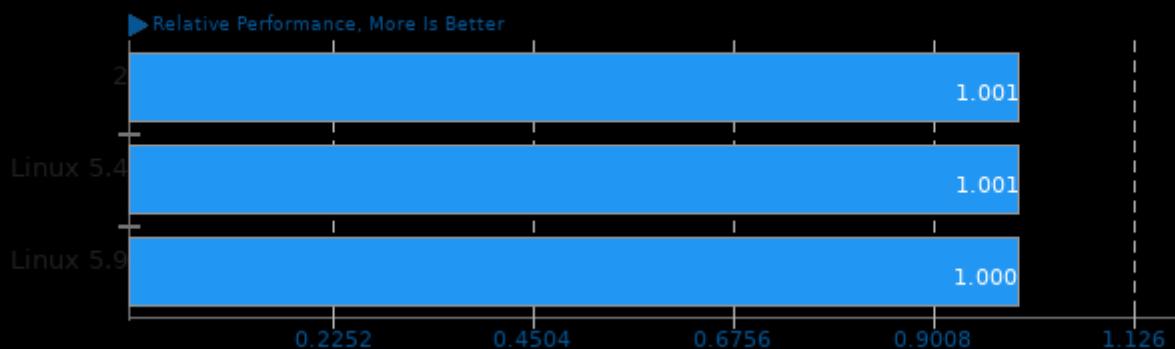


Geometric mean based upon tests: pts/caffe, pts/rnnoise, pts/mlpack, pts/openvino and pts/lczero

## Xeon E3 1275 v6 Okt

### Geometric Mean Of Molecular Dynamics Tests

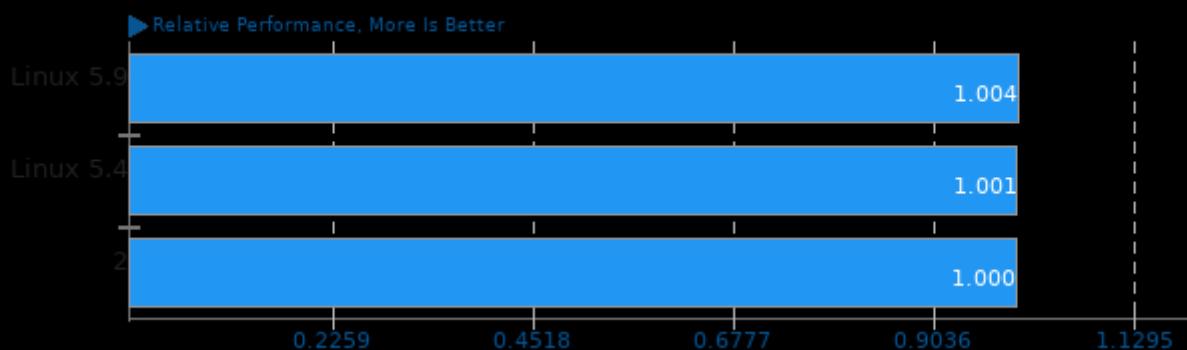
Result Composite - Xeon E3 1275 v6 Okt



Geometric mean based upon tests: pts/gromacs and pts/dolfin

### Geometric Mean Of Multi-Core Tests

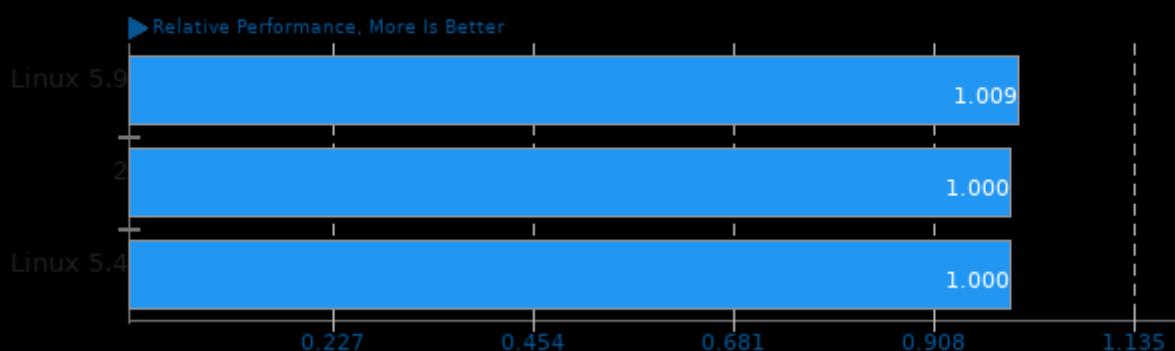
Result Composite - Xeon E3 1275 v6 Okt



Geometric mean based upon tests: pts/gromacs and pts/openvino

### Geometric Mean Of NVIDIA GPU Compute Tests

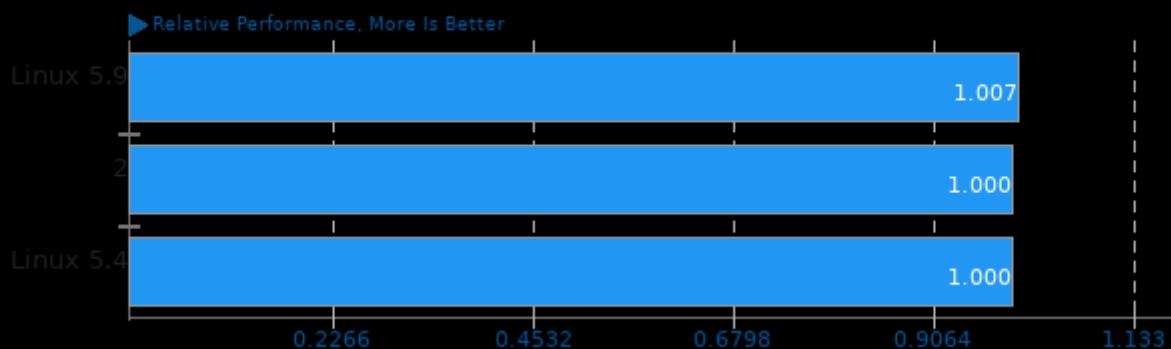
Result Composite - Xeon E3 1275 v6 Okt



Geometric mean based upon tests: pts/gromacs, pts/lczero, pts/caffe and pts/vkfft

**Geometric Mean Of Python Tests**

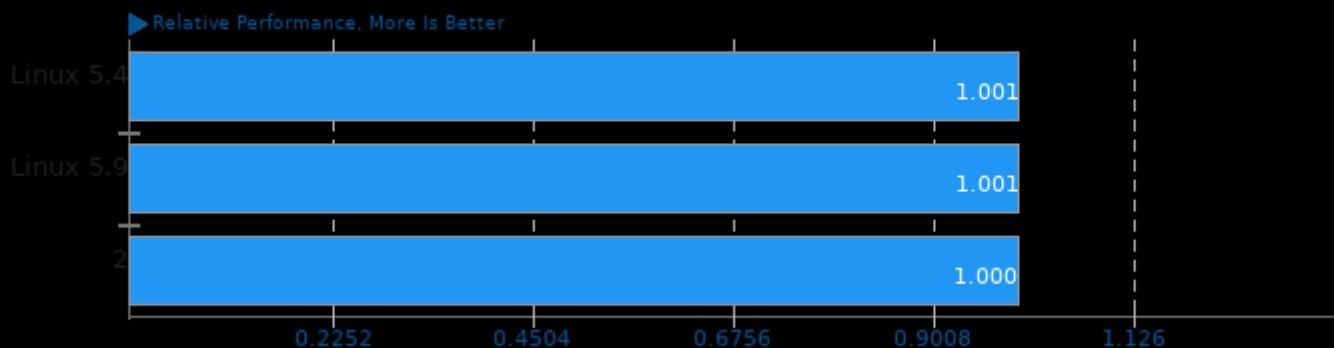
Result Composite - Xeon E3 1275 v6 Okt



Geometric mean based upon tests: pts/caffe, pts/openvino and pts/mlpack

**Geometric Mean Of Scientific Computing Tests**

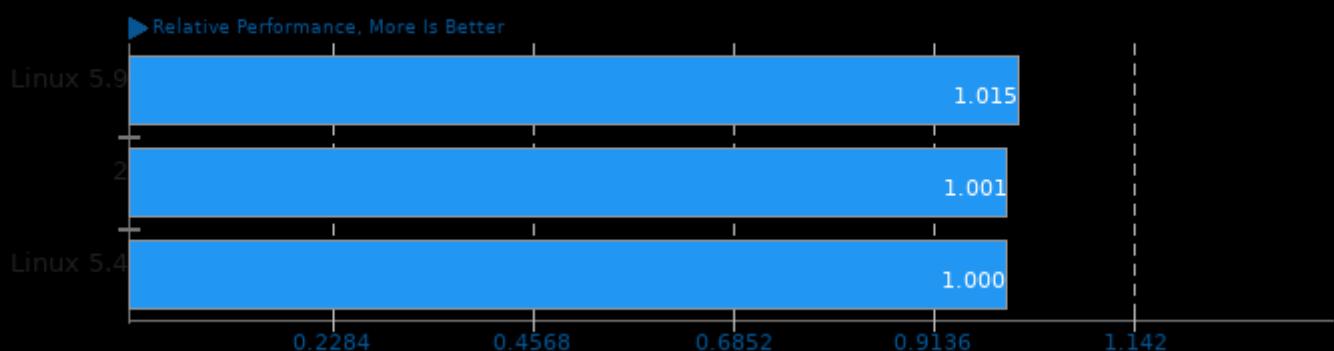
Result Composite - Xeon E3 1275 v6 Okt



Geometric mean based upon tests: pts/ffte, pts/gromacs, pts/dolfin, pts/hmmer and pts/mafft

**Geometric Mean Of Server Tests**

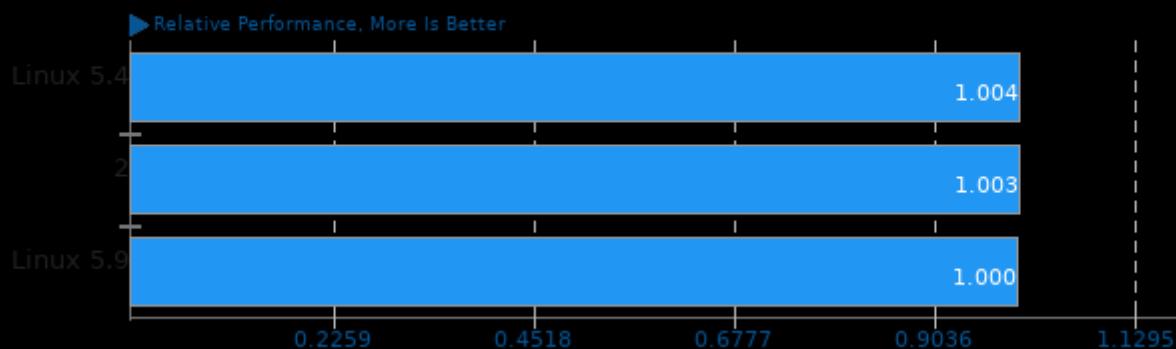
Result Composite - Xeon E3 1275 v6 Okt



Geometric mean based upon tests: pts/keydb and pts/couchdb

**Geometric Mean Of Single-Threaded Tests**

Result Composite - Xeon E3 1275 v6 Okt



Geometric mean based upon tests: pts/byte and pts/hint

*This file was automatically generated via the Phoronix Test Suite benchmarking software on Friday, 29 March 2024 05:52.*