



www.phoronix-test-suite.com

FreeBSD vs. DragonFlyBSD vs. Ubuntu Linux - Intel Core i9 10900K

Intel Core i9-10900K BSD vs. Linux benchmarking for a future article.

Automated Executive Summary

Ubuntu 20.04 had the most wins, coming in first place for 89% of the tests.

Based on the geometric mean of all complete results, the fastest (Ubuntu 20.04) was 1.791x the speed of the slowest (DragonFlyBSD 5.8.1). FreeBSD 12.1 was 0.779x the speed of Ubuntu 20.04, FreeBSD 12.1 + GCC9 was 0.888x the speed of FreeBSD 12.1, DragonFlyBSD 5.8.1 + GCC9 was 0.813x the speed of FreeBSD 12.1 + GCC9, DragonFlyBSD 5.8.1 was 0.992x the speed of DragonFlyBSD 5.8.1 + GCC9.

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

*LAME MP3 Encoding (WAV To MP3) at 4.729x
GraphicsMagick (Operation: HWB Color Space) at 3.528x
GraphicsMagick (Operation: Noise-Gaussian) at 3.067x
PyPerformance (Benchmark: django_template) at 2.831x
PyBench (Total For Average Test Times) at 2.385x
Git (Time To Complete Common Git Commands) at 2.332x
PyPerformance (Benchmark: float) at 2.11x
PHPBench (PHP Benchmark Suite) at 2.012x*

GraphicsMagick (Operation: Resizing) at 2.006x

GraphicsMagick (Operation: Swirl) at 1.955x.

Test Systems:

FreeBSD 12.1

Processor: Intel Core i9-10900K @ 3.60GHz (20 Cores), Motherboard: Gigabyte Z490 AORUS MASTER-CF, Chipset: Intel, Memory: 16GB, Disk: Samsung SSD 970 EVO 250GB, Graphics: NVIDIA GeForce RTX 2060 Rev. A, Audio: NVIDIA (0x10f9) HDA

OS: FreeBSD, Kernel: 12.1-RELEASE (x86_64), Compiler: Clang 8.0.1 (SVN 366581), File-System: zfs, Screen Resolution: 1024x768

Python Notes: Python 3.7.7

FreeBSD 12.1 + GCC9

Processor: Intel Core i9-10900K @ 3.60GHz (20 Cores), Motherboard: Gigabyte Z490 AORUS MASTER-CF, Chipset: Intel, Memory: 16GB, Disk: Samsung SSD 970 EVO 250GB, Graphics: NVIDIA GeForce RTX 2060 Rev. A, Audio: NVIDIA (0x10f9) HDA

OS: FreeBSD, Kernel: 12.1-RELEASE (x86_64), Compiler: GCC 9.3.0 + Clang 8.0.1 (SVN 366581), File-System: zfs, Screen Resolution: 1024x768

Compiler Notes: --build=x86_64-portbld-freebsd12.1 --disable-nls --enable-gnu-indirect-function --enable-languages=c,c++,objc,fortran --enable-multilib --enable-plugin --localstatedir=/var --mandir=/usr/local/man --with-as=/usr/local/bin/as --with-build-config=bootstrap-debug --with-gmp=/usr/local --with-ld=/usr/local/bin/ld
Python Notes: Python 3.7.7

DragonFlyBSD 5.8.1

Processor: Intel Core i9-10900K @ 3.60GHz (10 Cores / 20 Threads), Motherboard: Gigabyte Z490 AORUS MASTER-CF, Chipset: Intel, Memory: 16GB, Disk: NVME-PCIe, Graphics: NVIDIA GeForce RTX 2060 Rev. A

OS: DragonFly, Kernel: 5.8-RELEASE (x86_64), Compiler: GCC 8.3, File-System: hammer2

Security Notes: Meltdown Mitigation

DragonFlyBSD 5.8.1 + GCC9

Processor: Intel Core i9-10900K @ 3.60GHz (10 Cores / 20 Threads), Motherboard: Gigabyte Z490 AORUS MASTER-CF, Chipset: Intel, Memory: 16GB, Disk: NVME-PCIe, Graphics: NVIDIA GeForce RTX 2060 Rev. A

OS: DragonFly, Kernel: 5.8-RELEASE (x86_64), Compiler: GCC 9.3.0, File-System: hammer2

Compiler Notes: --build=x86_64-portbld-dragonfly5.8 --disable-multilib --disable-nls --enable-gnu-indirect-function --enable-languages=c,c++,objc,fortran --enable-plugin --localstatedir=/var --mandir=/usr/local/man --with-as=/usr/local/bin/as --with-build-config=bootstrap-debug --with-gmp=/usr/local --with-ld=/usr/local/bin/ld

Python Notes: Python 3.7.7

Security Notes: Meltdown Mitigation

Ubuntu 20.04

Processor: Intel Core i9-10900K @ 5.30GHz (10 Cores / 20 Threads), Motherboard: Gigabyte Z490 AORUS MASTER (F3 BIOS), Chipset: Intel Comet Lake PCH, Memory: 16GB, Disk: Samsung SSD 970 EVO 250GB, Graphics: llvmpipe 16GB, Audio: Realtek ALC1220, Network: Intel Device 15f3 + Intel Wi-Fi 6 AX201

OS: Ubuntu 20.04, Kernel: 5.4.0-37-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 9.0.1 256 bits), Compiler: GCC 9.3.0, File-System: zfs, Screen Resolution: 1024x768

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: 0xc8
Python Notes: Python 3.8.2

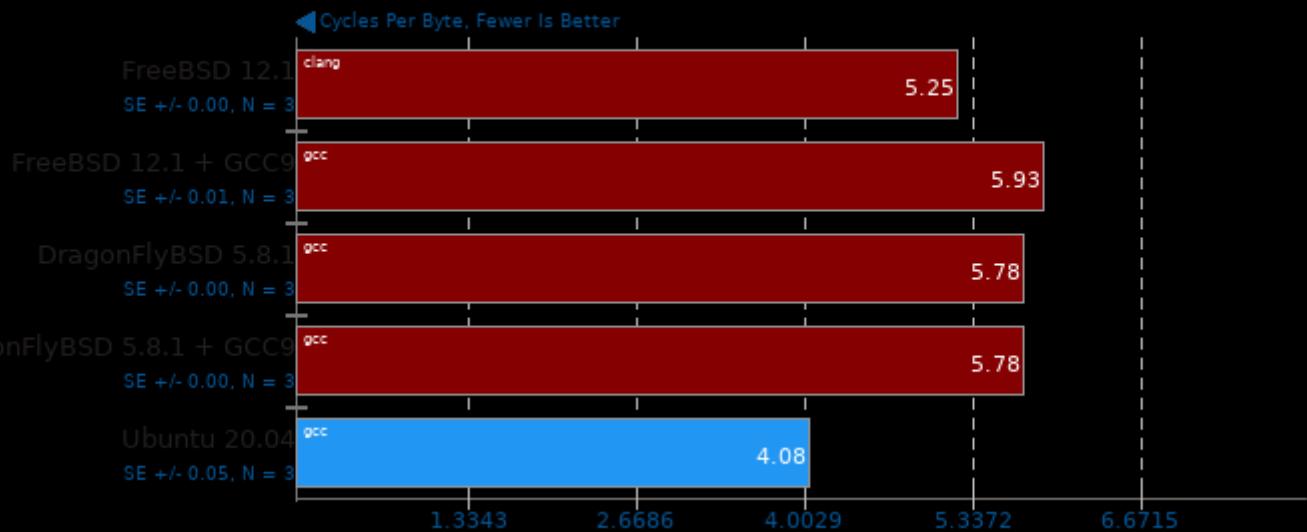
Security Notes: itlb_multihit: KVM: Mitigation of Split huge pages + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swappgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Enhanced IBRS IPB: conditional RSB filling + srbds: Not affected + tsx_async_abort: Not affected

	FreeBSD 12.1	FreeBSD 12.1 + GCC9	DragonFlyBSD 5.8.1	DragonFlyBSD 5.8.1 + GCC9	Ubuntu 20.04
BLAKE2 (Cycles/Byte)	5.25	5.93	5.78	5.78	4.08
Normalized	77.71%	68.8%	70.59%	70.59%	100%
Standard Deviation	0.1%	0.2%	0%	0.1%	2.1%
GraphicsMagick - Swirl	391	408	268	271	524
(Iterations/min)					
Normalized	74.62%	77.86%	51.15%	51.72%	100%
Standard Deviation		0.7%	0.2%		
GraphicsMagick - Rotate	1034	824	391	391	908
(Iterations/min)					
Normalized	100%	79.69%	37.81%	37.81%	87.81%
Standard Deviation	5.8%	6.1%	1.3%		
GraphicsMagick - Sharpen	130	130	107	127	175
(Iterations/min)					
Normalized	74.29%	74.29%	61.14%	72.57%	100%
Standard Deviation			0.5%		
GraphicsMagick - Enhanced	205	201	193	192	269
(Iterations/min)					
Normalized	76.21%	74.72%	71.75%	71.38%	100%
GraphicsMagick - Resizing	1005	981	666	644	1292
(Iterations/min)					
Normalized	77.79%	75.93%	51.55%	49.85%	100%
Standard Deviation	0.3%		0.4%		
GraphicsMagick -	263	194	104	104	319
Noise-Gaussian (Iterations/min)					
Normalized	82.45%	60.82%	32.6%	32.6%	100%
Standard Deviation	0.2%	0.3%	0.6%	1%	
GraphicsMagick - HWB Color Space	1792	1321	514	508	1245
(Iterations/min)					
Normalized	100%	73.72%	28.68%	28.35%	69.48%

	Standard Deviation	0%			
x264 - H.2.V.E (FPS)	99.11	90.66	0.9%		
Normalized	77.94%	71.29%			0.4%
Standard Deviation	1.7%	2.3%			100%
x265 - H.2.1.V.E (FPS)	60.75	59.32	46.98	71.47	4.8%
Normalized	85%	83%	65.73%	100%	
Standard Deviation	0.5%	1%	1.6%	0.7%	
Himeno Benchmark - P.P.S (MFLOPS)	2722	3204	3079	4481	
Normalized	60.75%	71.5%	68.6%	100%	
Standard Deviation	0.2%	0%	0.3%	2.3%	
Stockfish - Total Time (Nodes/s)	27633674	27541766	28529054	35115270	
Normalized	78.69%	78.43%	79.9%	100%	
Standard Deviation	1.4%	1.3%	0.7%	0.8%	
libavif avifenc - 0 (sec)	96.142	103.859	102.985	71.110	
Normalized	73.96%	68.47%	69.05%	100%	
Standard Deviation	1.2%	1.9%	1.6%	0.7%	
libavif avifenc - 2 (sec)	58.493	60.874	62.587	42.584	
Normalized	72.8%	69.95%	68.04%	100%	
Standard Deviation	1.6%	1.5%	0.7%	0.9%	
libavif avifenc - 8 (sec)	6.515	6.392	8.743	4.532	
Normalized	69.56%	70.9%	51.84%	100%	
Standard Deviation	0.1%	1.1%	0.6%	0.2%	
libavif avifenc - 10 (sec)	6.292	6.155	8.422	4.332	
Normalized	68.85%	70.38%	51.44%	100%	
Standard Deviation	0.4%	0.2%	0.5%	0.4%	
Timed LLVM Compilation - Time	511.701	631.611	656.535	507.058	
To Compile (sec)					
Normalized	99.09%	80.28%	77.23%	100%	
Standard Deviation	0.5%	1.1%	0.4%	1.3%	
Timed PHP Compilation - Time	35.101	57.662	62.544	48.284	
To Compile (sec)					
Normalized	100%	60.87%	56.12%	72.7%	
Standard Deviation	0.5%	0.4%	0.7%	0.5%	
C-Ray - Total Time - 4.1.R.P.P	89.692	71.469	69.902	52.119	
(sec)					
Normalized	58.11%	72.93%	74.45%	100%	
Standard Deviation	0%	0%	0.2%	0%	
FLAC Audio Encoding - WAV To FLAC (sec)	12.143	9.816	9.810	7.097	
FLAC (sec)					
Normalized	58.45%	72.3%	71.9%	100%	
Standard Deviation	0.1%	0.1%	1.1%	1.3%	
LAME MP3 Encoding - WAV To MP3 (sec)	11.905	33.058	32.467	6.991	
MP3 (sec)					
Normalized	58.72%	21.15%	21.53%	100%	
Standard Deviation	1.5%	0.3%	0.1%	0.2%	
OpenSSL - R.4.b.P (Signs/sec)	2758	2759	2834	3757	
(Signs/sec)					
Normalized	73.42%	73.45%	75.05%	100%	
Standard Deviation	0%	0%	0.8%	0.1%	
libjpeg-turbo tjbench - D.T	166.441449	165.752161	170.278508	236.262763	
(Megapixels/sec)					
Normalized	70.45%	70.16%	72.07%	100%	
Standard Deviation	0%	0.1%	0.1%	0.5%	
PyBench - T.F.A.T.T	1746	1744	1616	732	
(Milliseconds)					

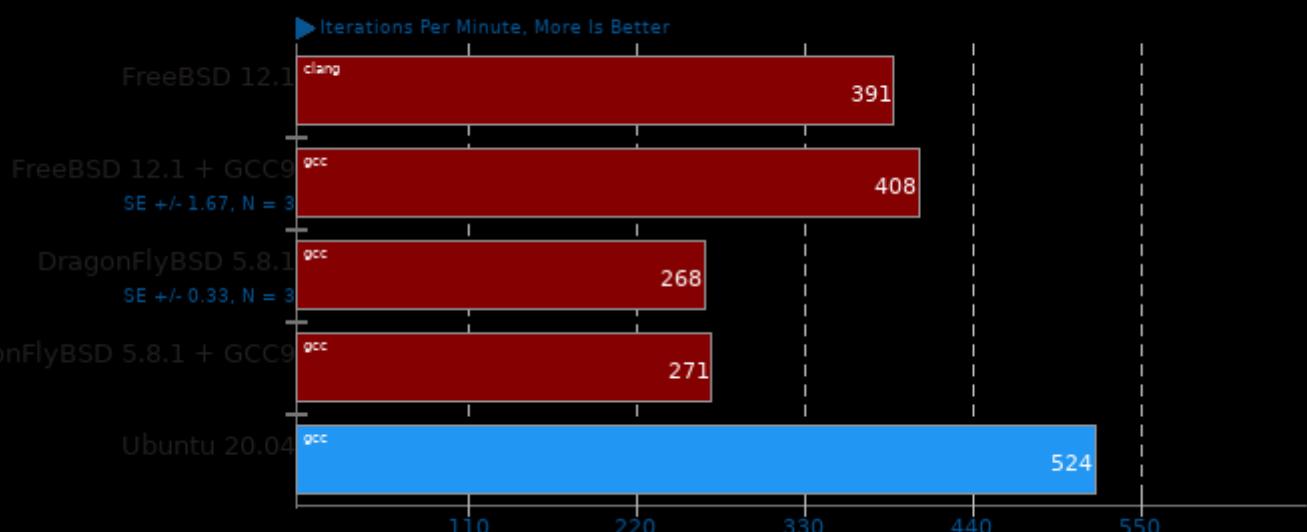
PyPerformance - float (Milliseconds)	Normalized Standard Deviation	41.92% 0.4%	41.97% 0.3%	45.3% 0.3%	100%
	PyPerformance - float (Milliseconds)	172	172	170	81.5
django_template (Milliseconds)	Normalized Standard Deviation	47.38% 0.1%	47.38%	47.94%	100%
	PyPerformance - django_template (Milliseconds)	107	107	95.3	37.8
PHPBench - P.B.S (Score)	Normalized Standard Deviation	35.33% 0.2%	35.33%	39.66% 0.2%	100%
	PHPBench - P.B.S (Score)	486707	479335	438893	445751
Git - T.T.C.C.G.C (sec)	Normalized Standard Deviation	55.1% 0.2%	54.27% 0%	49.69% 0.1%	100% 1.8%
	Git - T.T.C.C.G.C (sec)	64.271	64.469	97.526	41.826
	Normalized Standard Deviation	65.08% 0.1%	64.88% 0.4%	42.89% 0.8%	100% 1.4%

BLAKE2 20170307



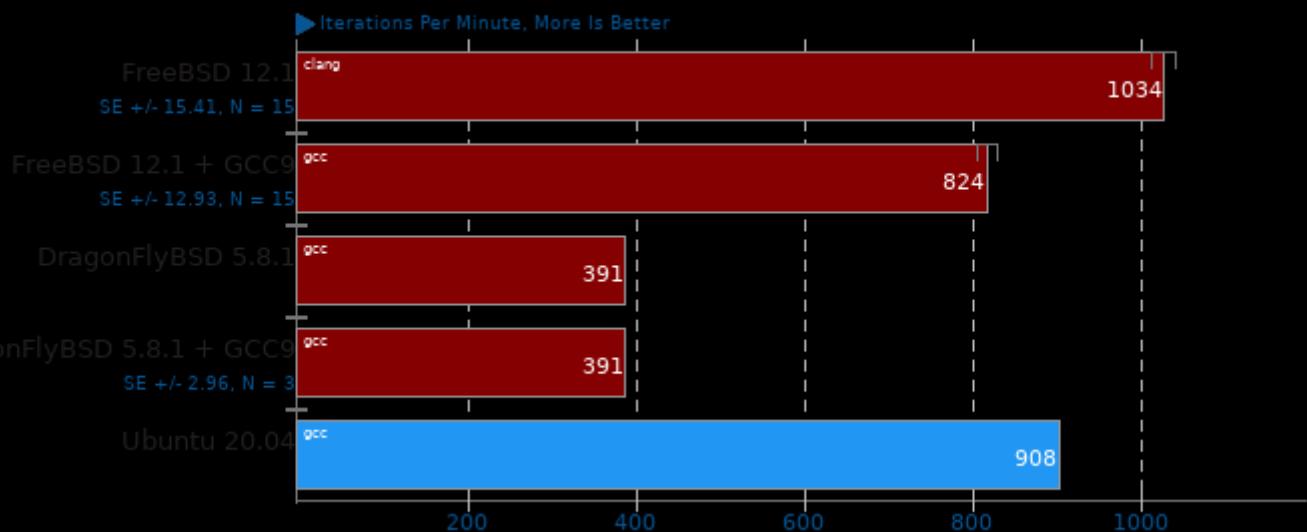
GraphicsMagick 1.3.33

Operation: Swirl



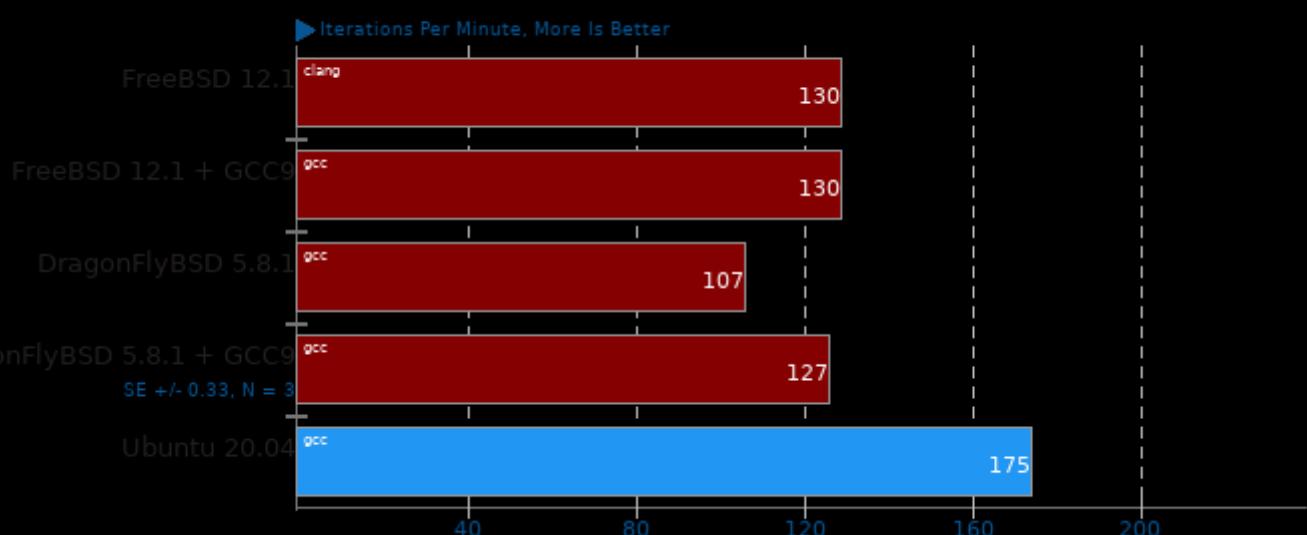
GraphicsMagick 1.3.33

Operation: Rotate



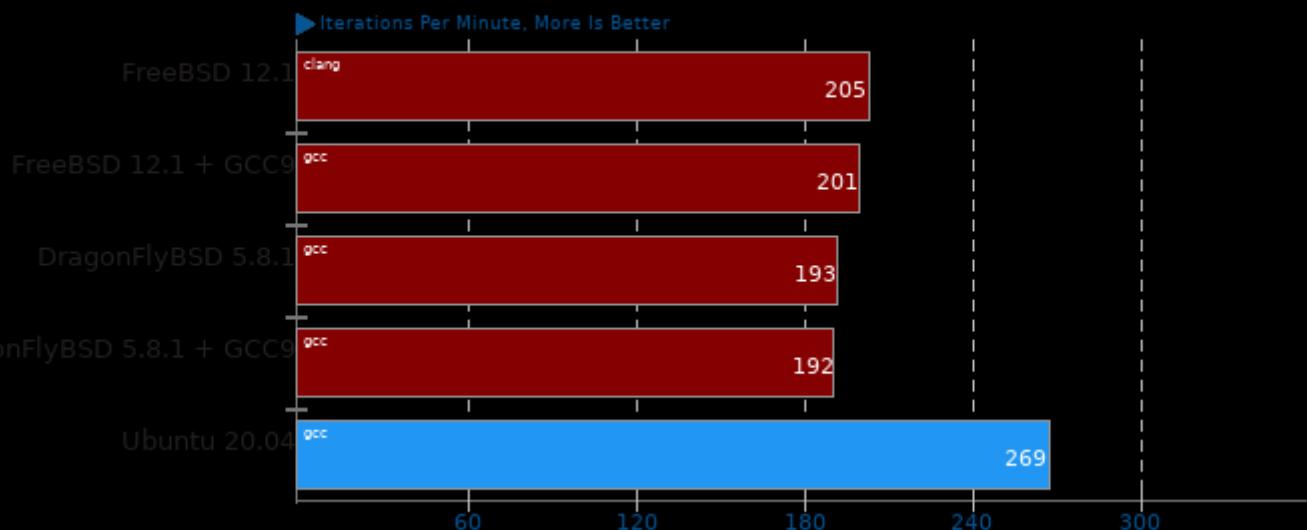
GraphicsMagick 1.3.33

Operation: Sharpen



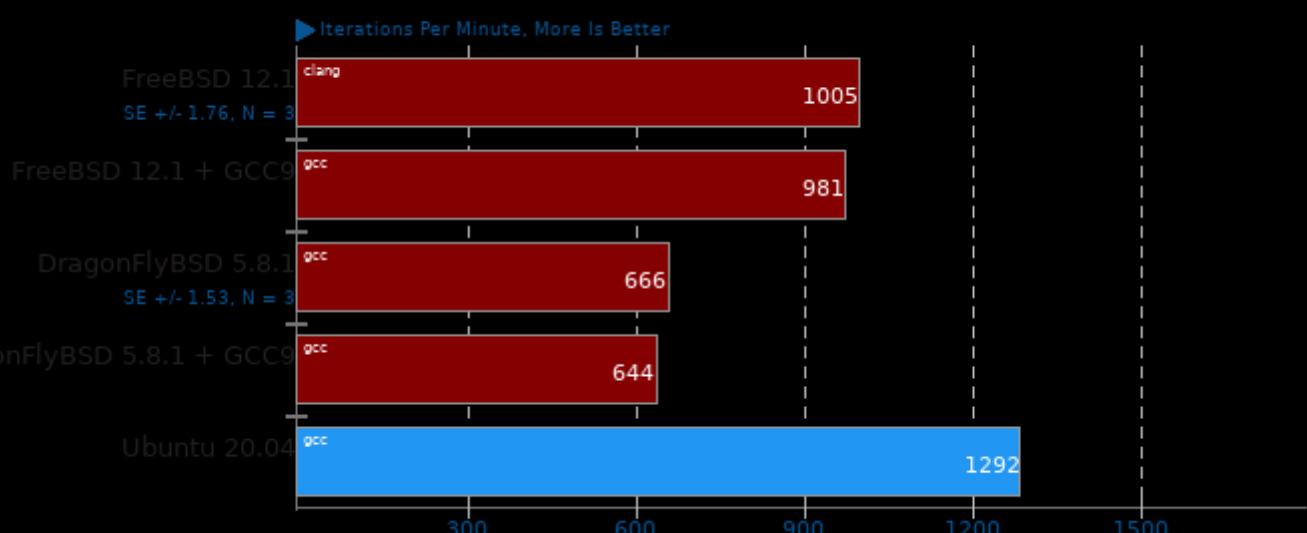
GraphicsMagick 1.3.33

Operation: Enhanced



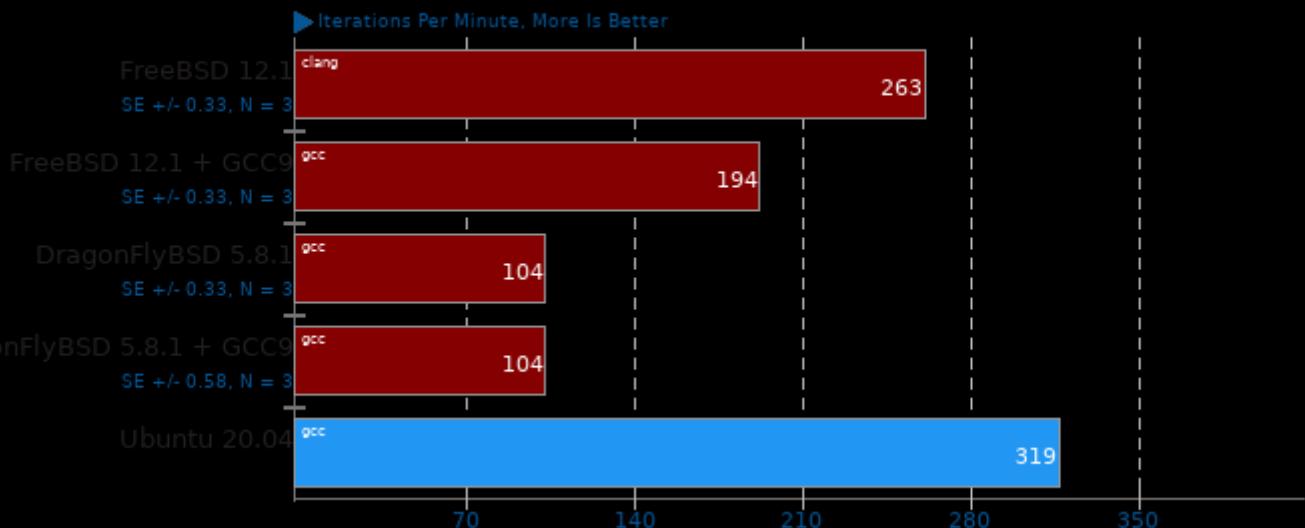
GraphicsMagick 1.3.33

Operation: Resizing



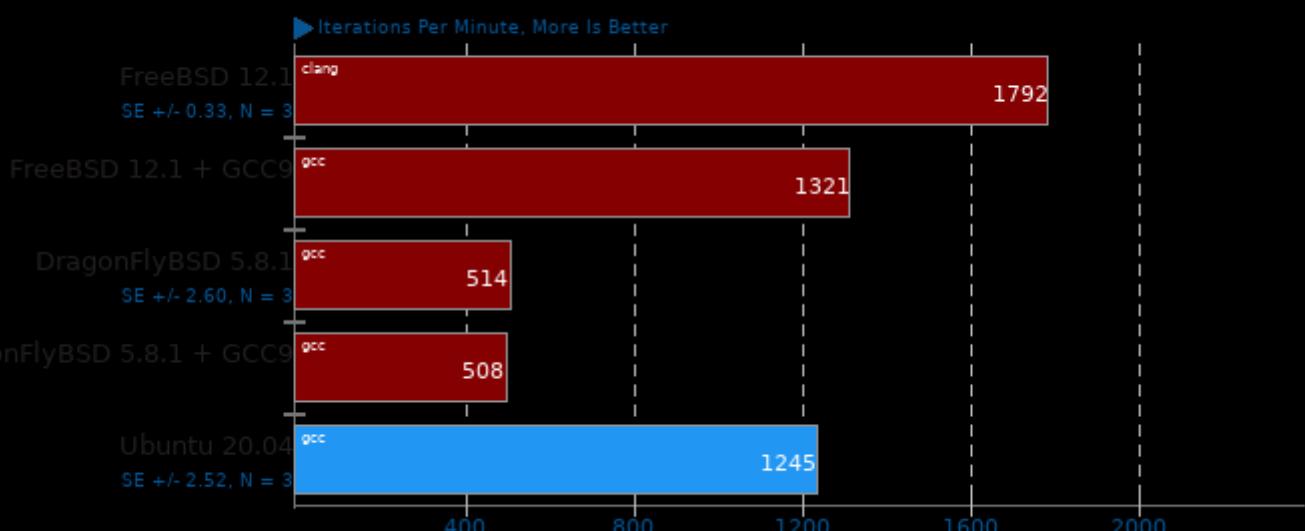
GraphicsMagick 1.3.33

Operation: Noise-Gaussian



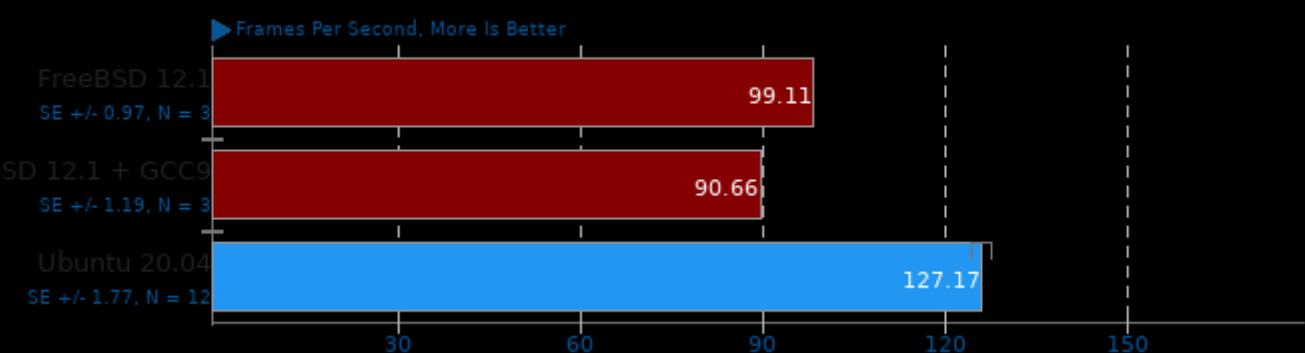
GraphicsMagick 1.3.33

Operation: HWB Color Space



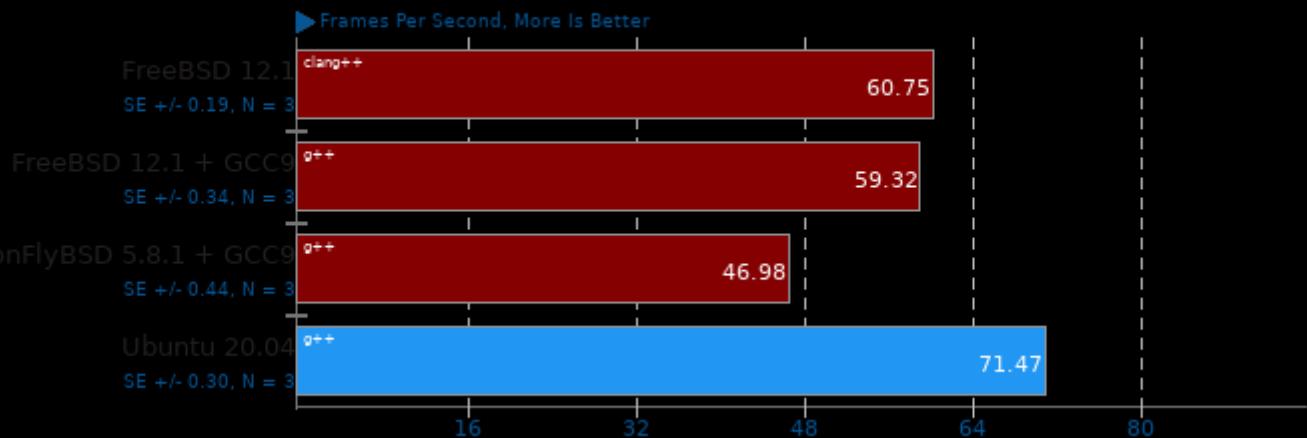
x264 2019-12-17

H.264 Video Encoding



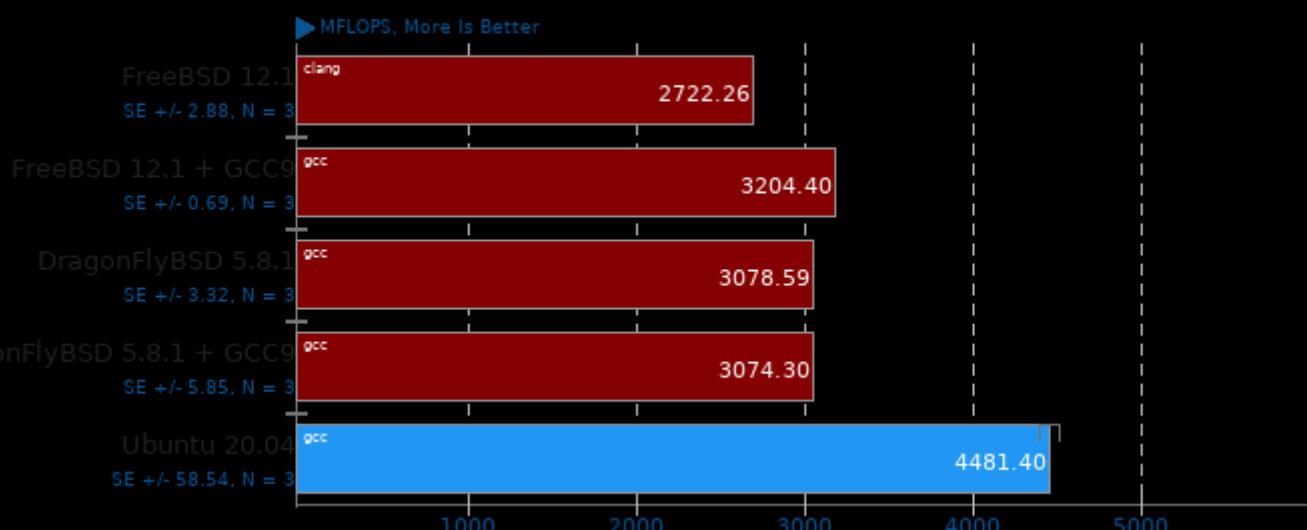
x265 3.1.2

H.265 1080p Video Encoding



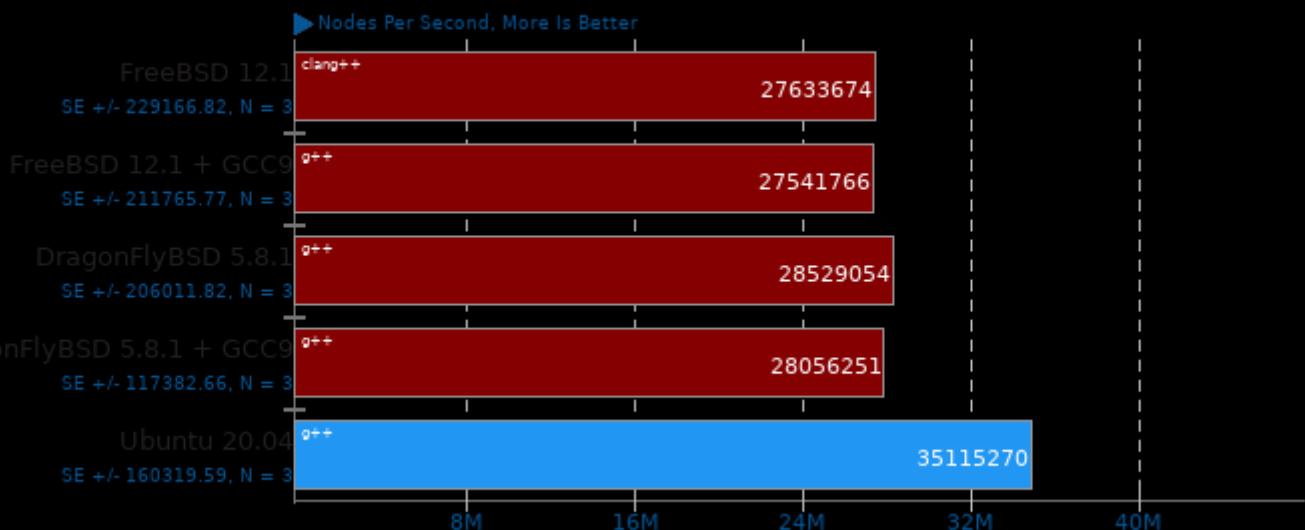
Himeno Benchmark 3.0

Poisson Pressure Solver



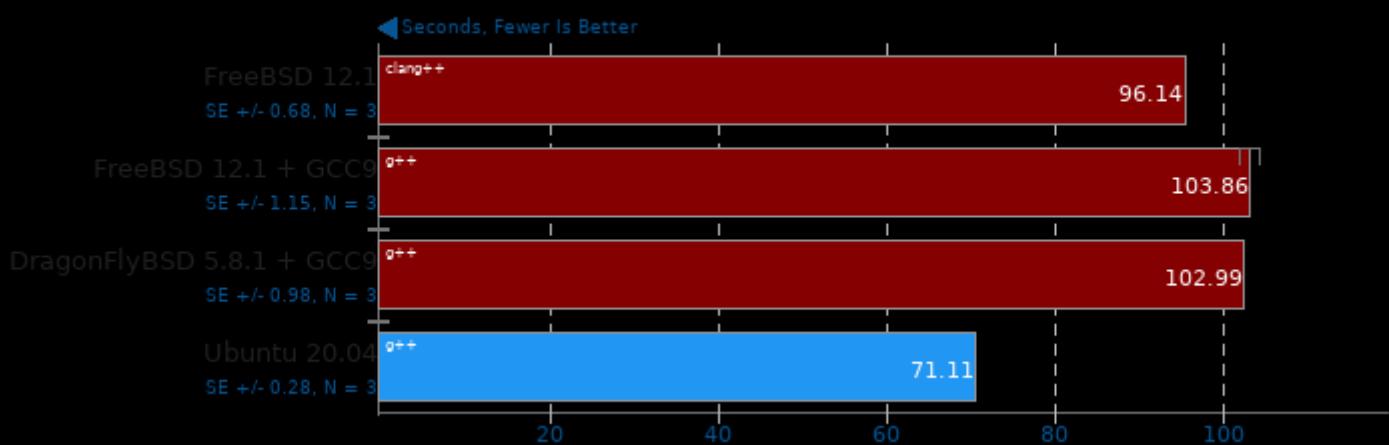
Stockfish 9

Total Time



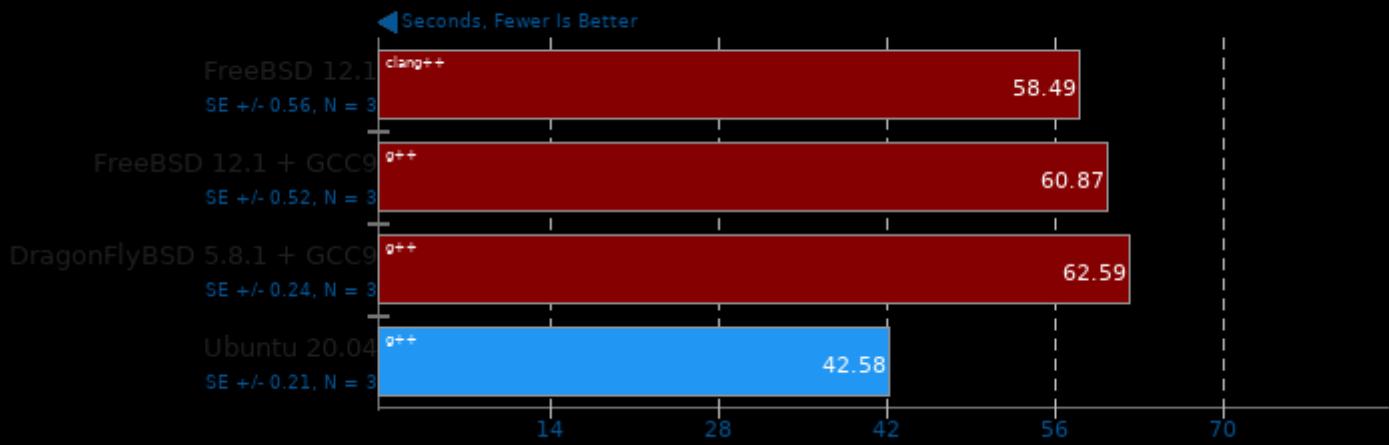
libavif avifenc 0.7.3

Encoder Speed: 0



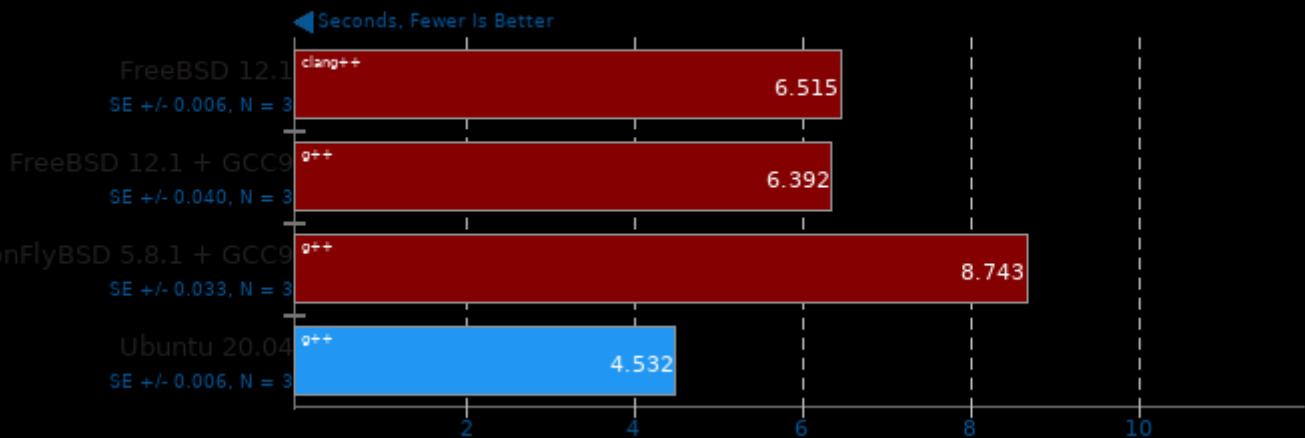
libavif avifenc 0.7.3

Encoder Speed: 2



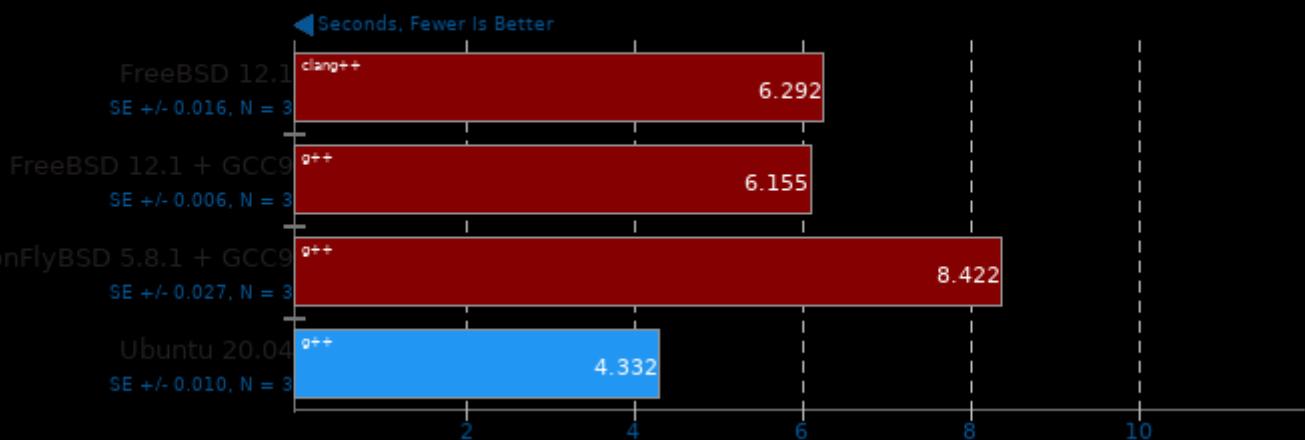
libavif avifenc 0.7.3

Encoder Speed: 8



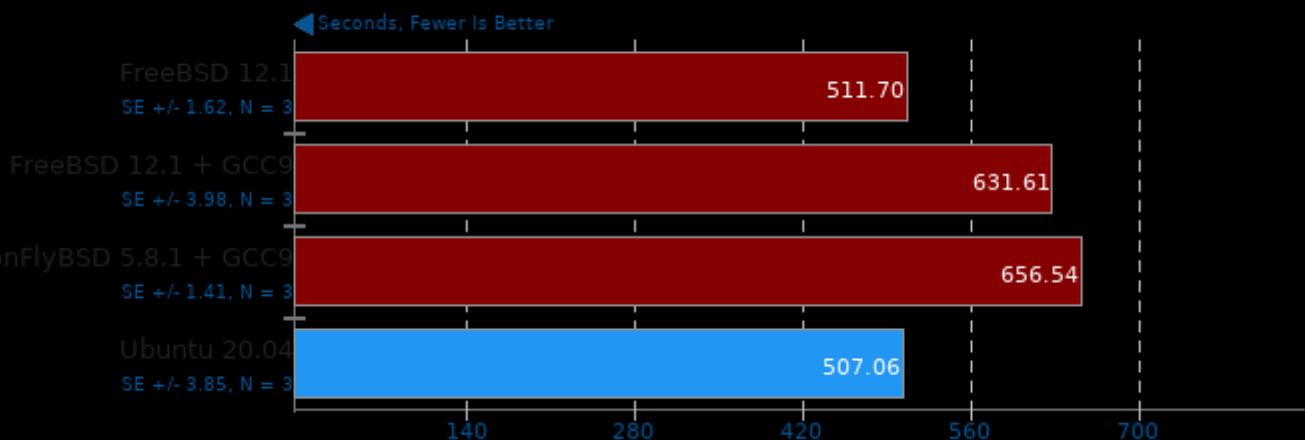
libavif avifenc 0.7.3

Encoder Speed: 10



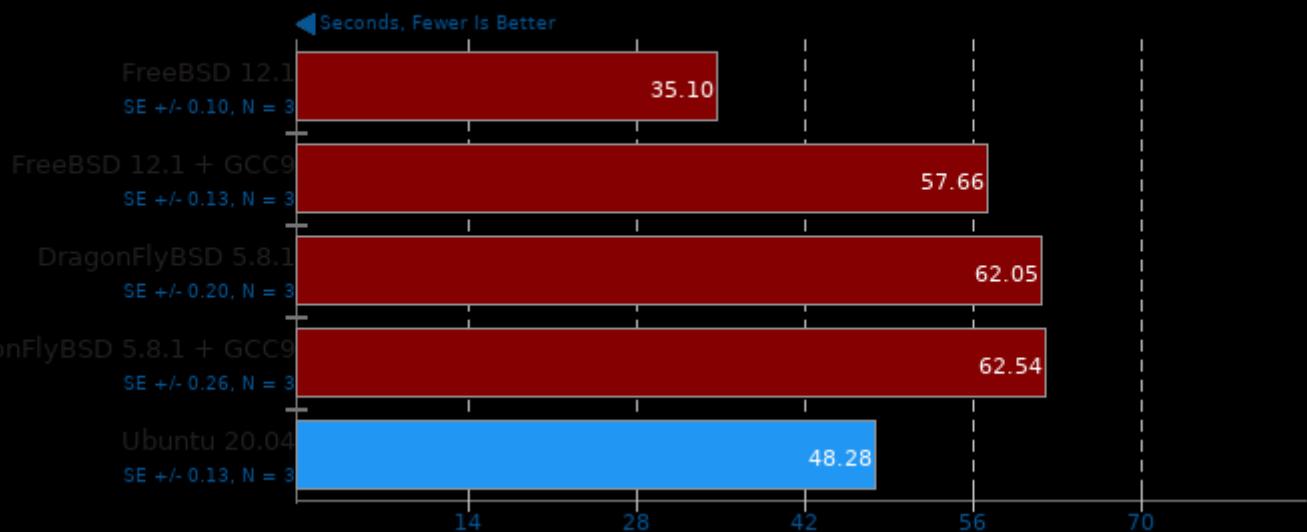
Timed LLVM Compilation 10.0

Time To Compile



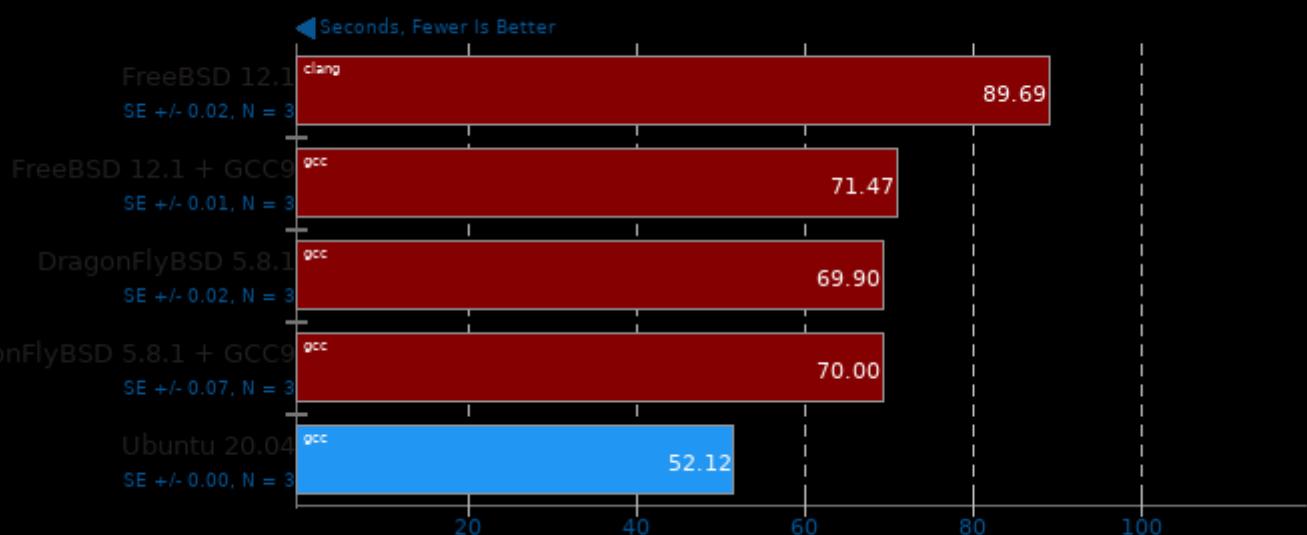
Timed PHP Compilation 7.4.2

Time To Compile



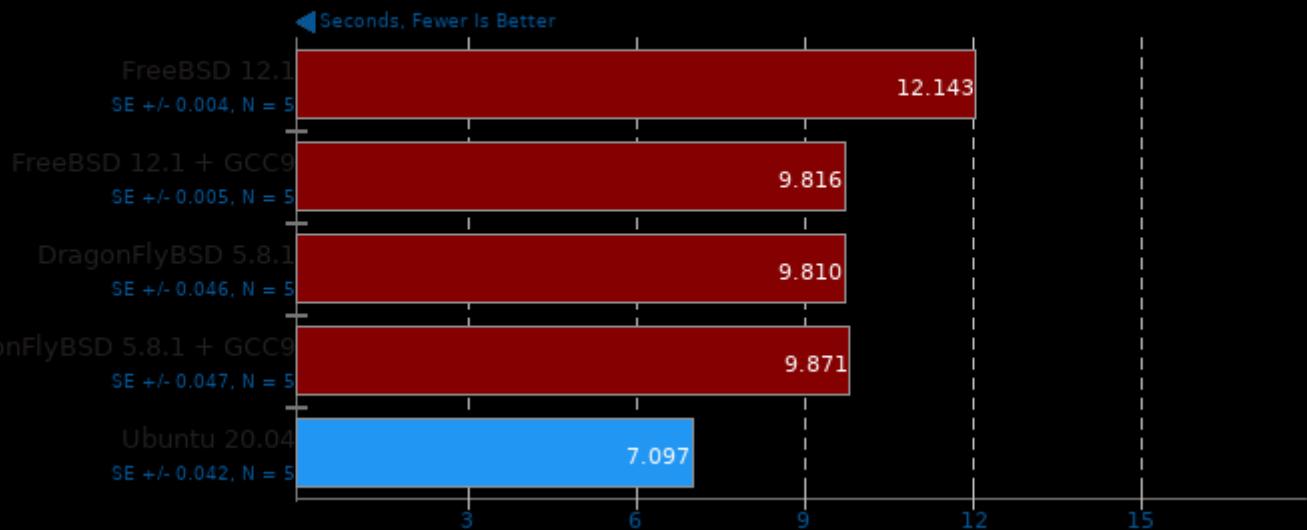
C-Ray 1.1

Total Time - 4K, 16 Rays Per Pixel



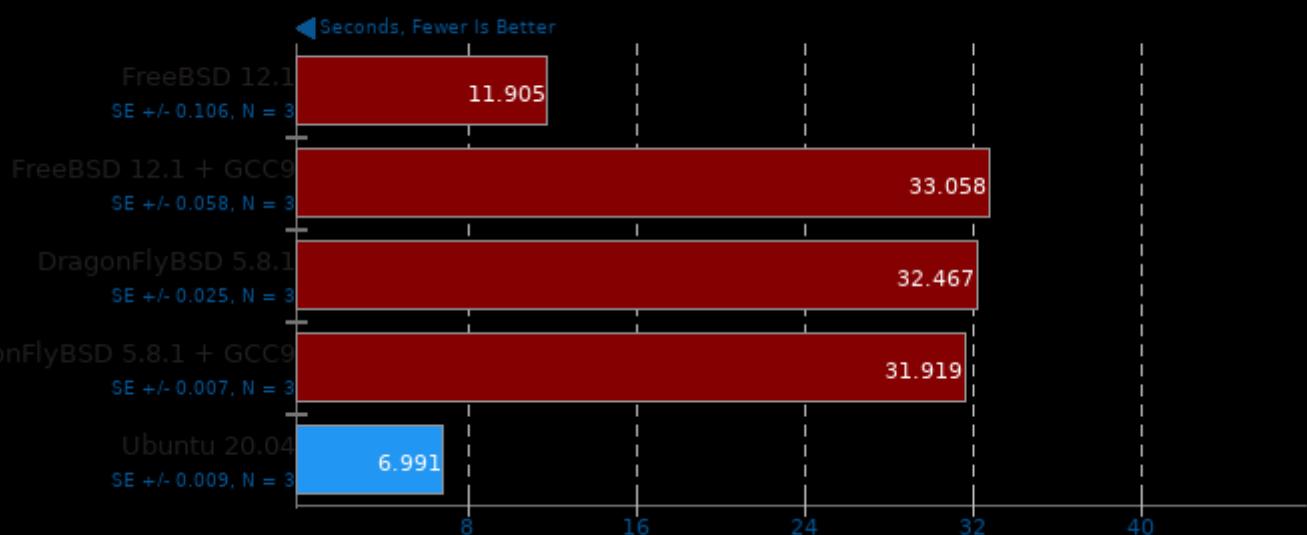
FLAC Audio Encoding 1.3.2

WAV To FLAC



LAME MP3 Encoding 3.100

WAV To MP3



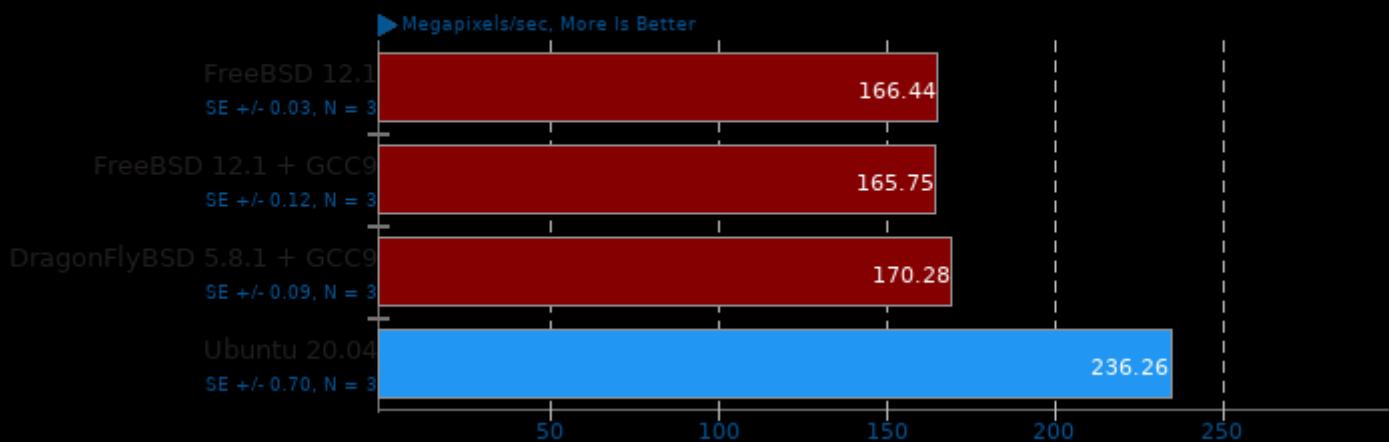
OpenSSL 1.1.1

RSA 4096-bit Performance



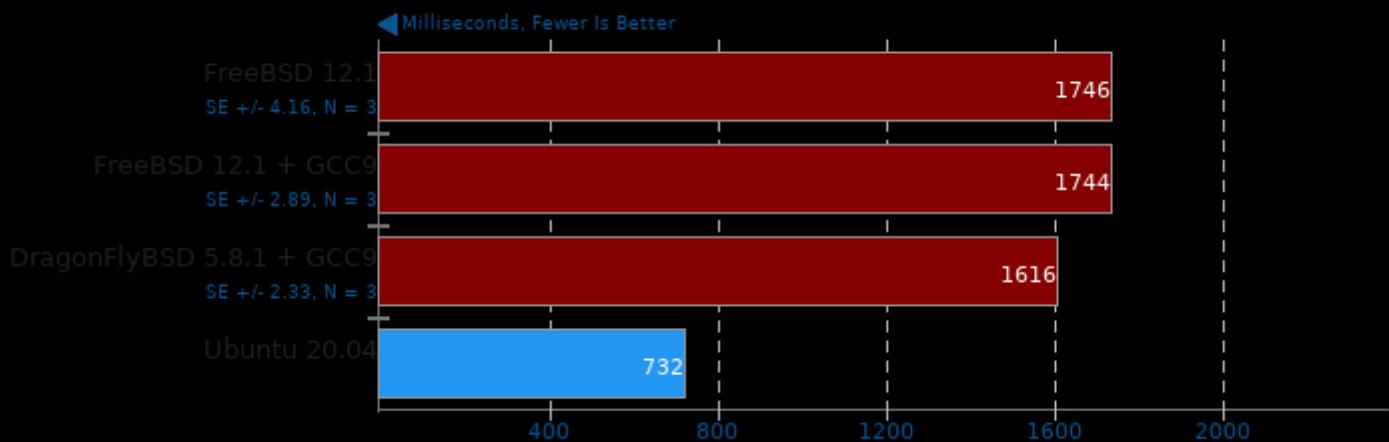
libjpeg-turbo tjbench 2.0.2

Test: Decompression Throughput



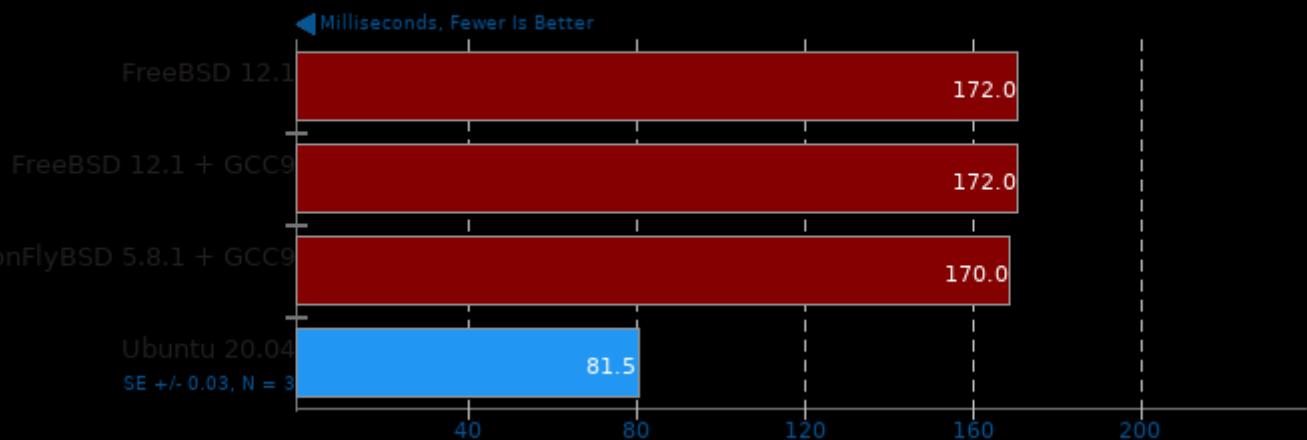
PyBench 2018-02-16

Total For Average Test Times



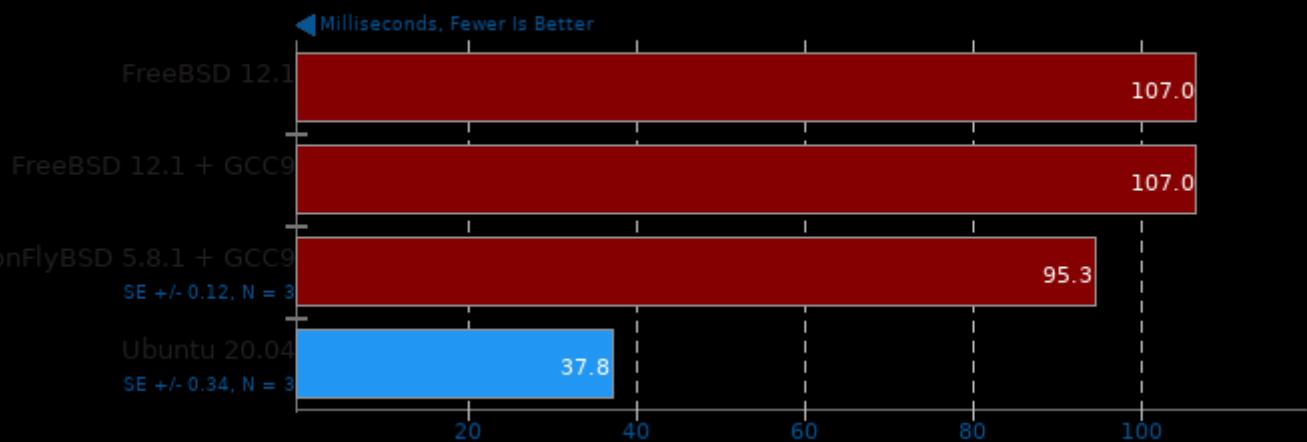
PyPerformance 1.0.0

Benchmark: float



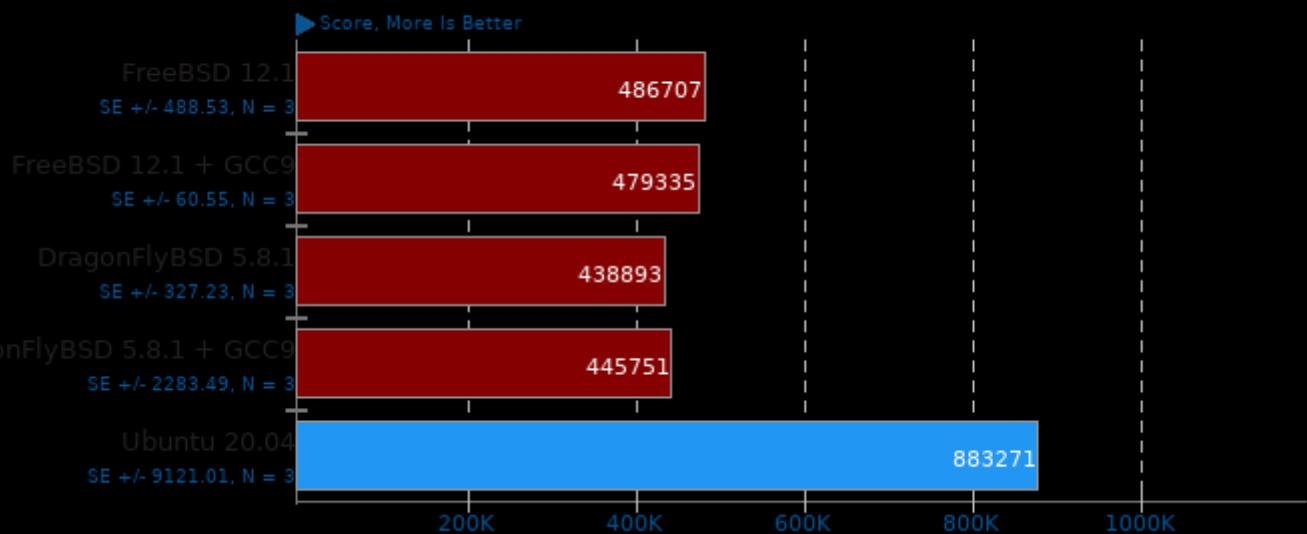
PyPerformance 1.0.0

Benchmark: django_template



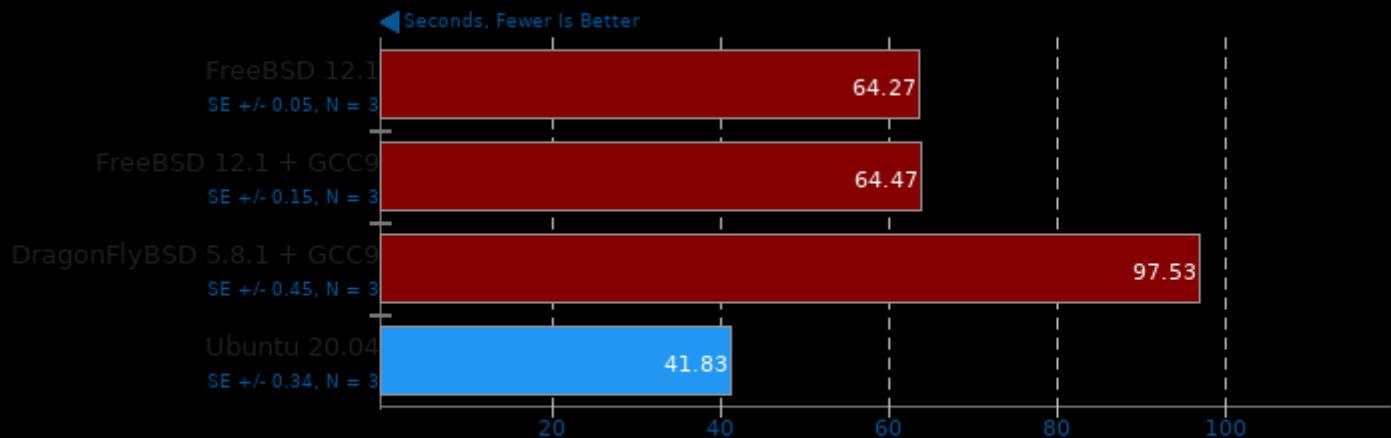
PHPBench 0.8.1

PHP Benchmark Suite



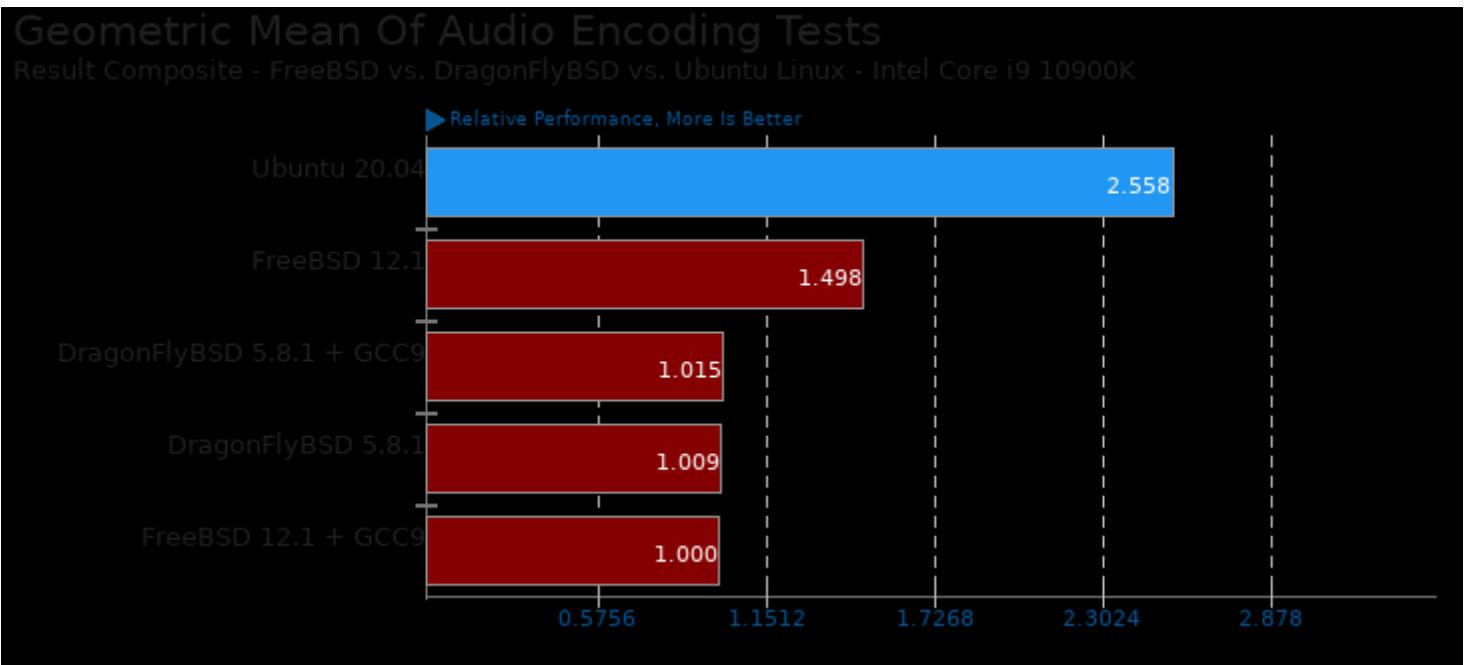
Git

Time To Complete Common Git Commands

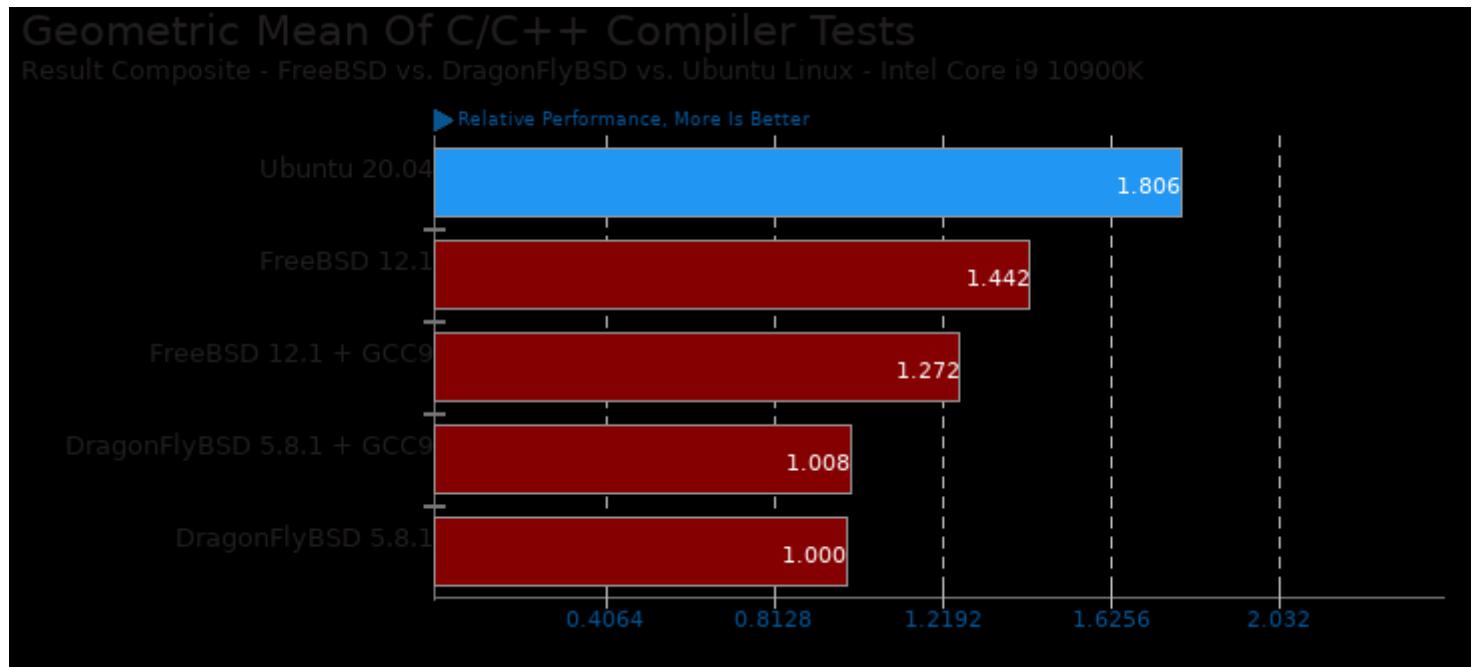


1. FreeBSD 12.1: git version 2.26.2
2. FreeBSD 12.1 + GCC9: git version 2.26.2
3. DragonFlyBSD 5.8.1 + GCC9: git version 2.26.2
4. Ubuntu 20.04: git version 2.25.1

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



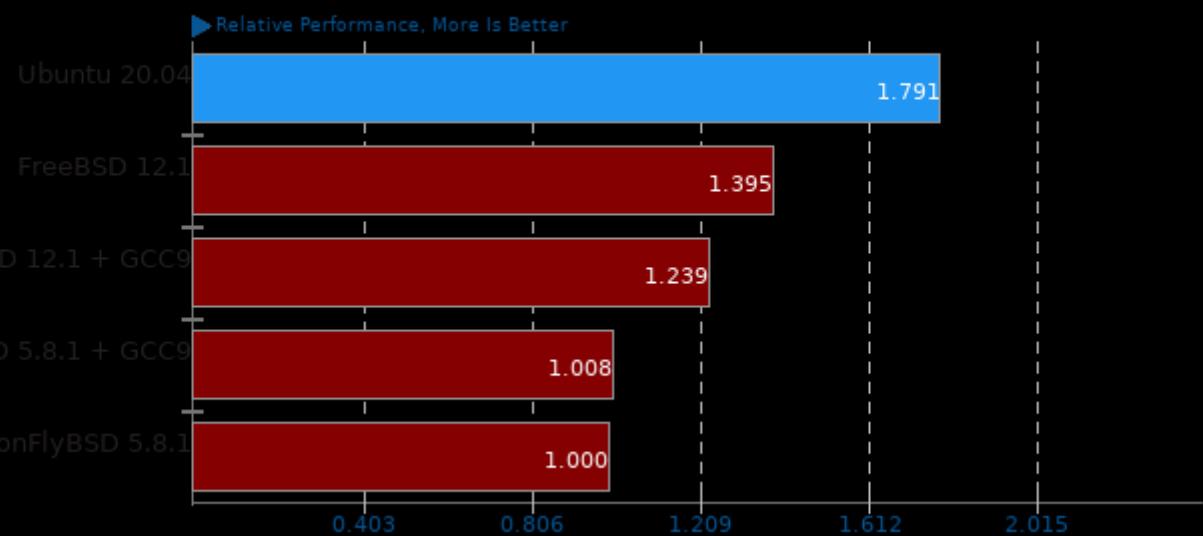
Geometric mean based upon tests: pts/encode-mp3 and pts/encode-flac



Geometric mean based upon tests: pts/graphics-magick, pts/himeno, pts/stockfish, pts/build-php, pts/build-llvm, pts/c-ray, pts/encode-mp3, pts/encode-flac, pts/x264, pts/x265 and pts/openssl

Geometric Mean Of CPU Massive Tests

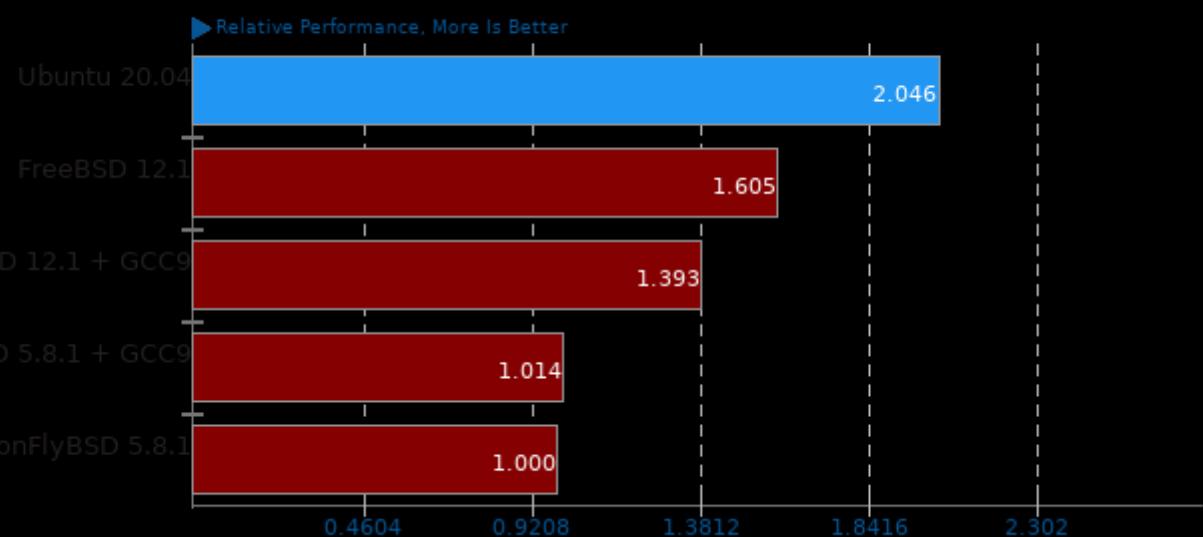
Result Composite - FreeBSD vs. DragonFlyBSD vs. Ubuntu Linux - Intel Core i9 10900K



Geometric mean based upon tests: pts/blake2, pts/build-llvm, pts/build-php, pts/c-ray, pts/x264, pts/x265, pts/encode-flac, pts/encode-mp3, pts/graphics-magick, pts/himeno, pts/openssl, pts/phpbench, pts/stockfish and pts/tjbench

Geometric Mean Of Creator Workloads Tests

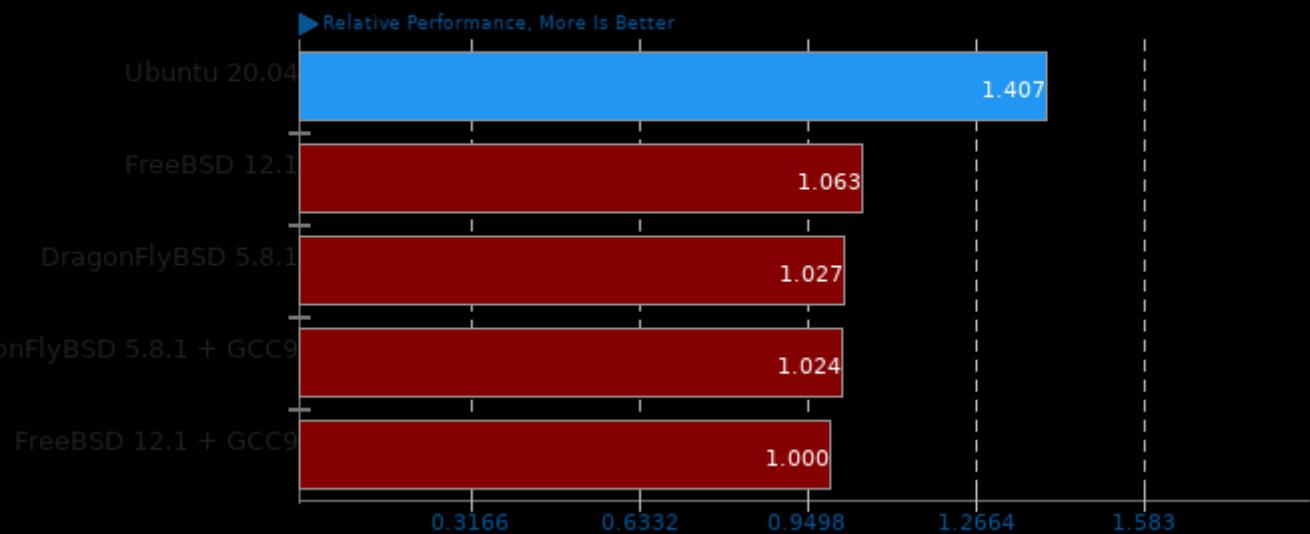
Result Composite - FreeBSD vs. DragonFlyBSD vs. Ubuntu Linux - Intel Core i9 10900K



Geometric mean based upon tests: pts/c-ray, pts/x264, pts/x265, pts/avifenc, pts/encode-mp3, pts/encode-flac, pts/graphics-magick and pts/tjbench

Geometric Mean Of Cryptography Tests

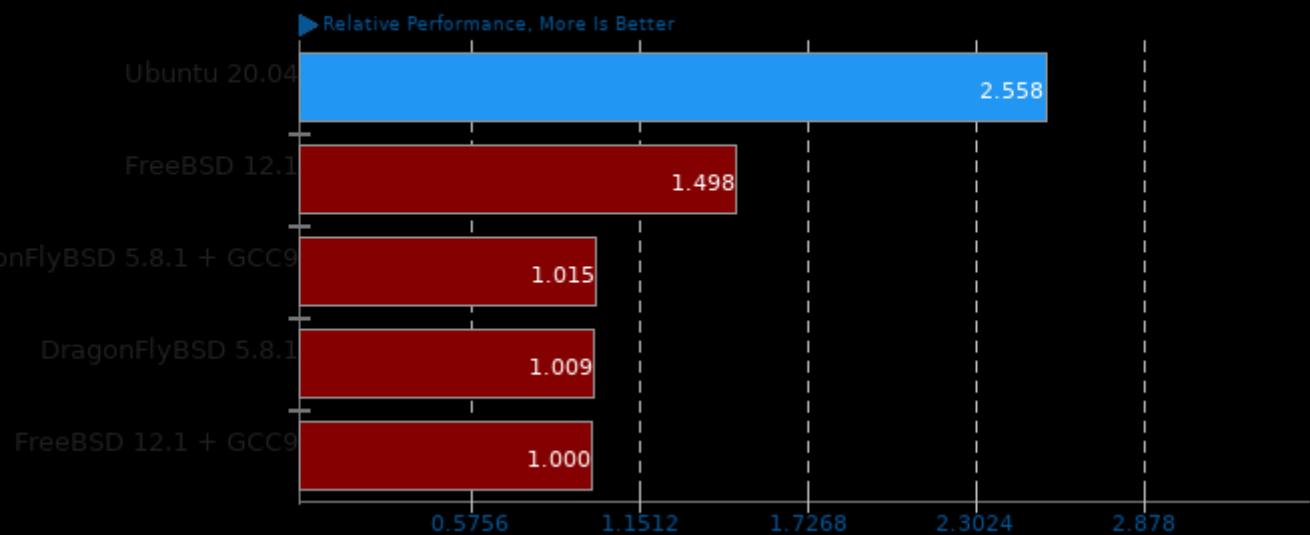
Result Composite - FreeBSD vs. DragonFlyBSD vs. Ubuntu Linux - Intel Core i9 10900K



Geometric mean based upon tests: pts/openssl and pts/blake2

Geometric Mean Of Encoding Tests

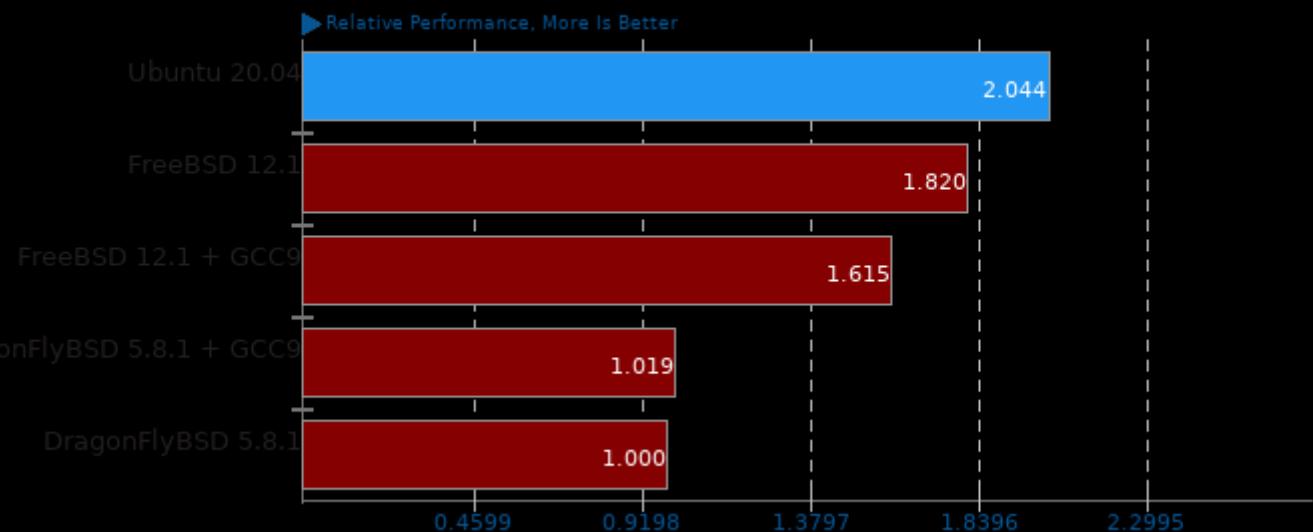
Result Composite - FreeBSD vs. DragonFlyBSD vs. Ubuntu Linux - Intel Core i9 10900K



Geometric mean based upon tests: pts/encode-mp3, pts/encode-flac, pts/x264, pts/x265 and pts/avifenc

Geometric Mean Of Imaging Tests

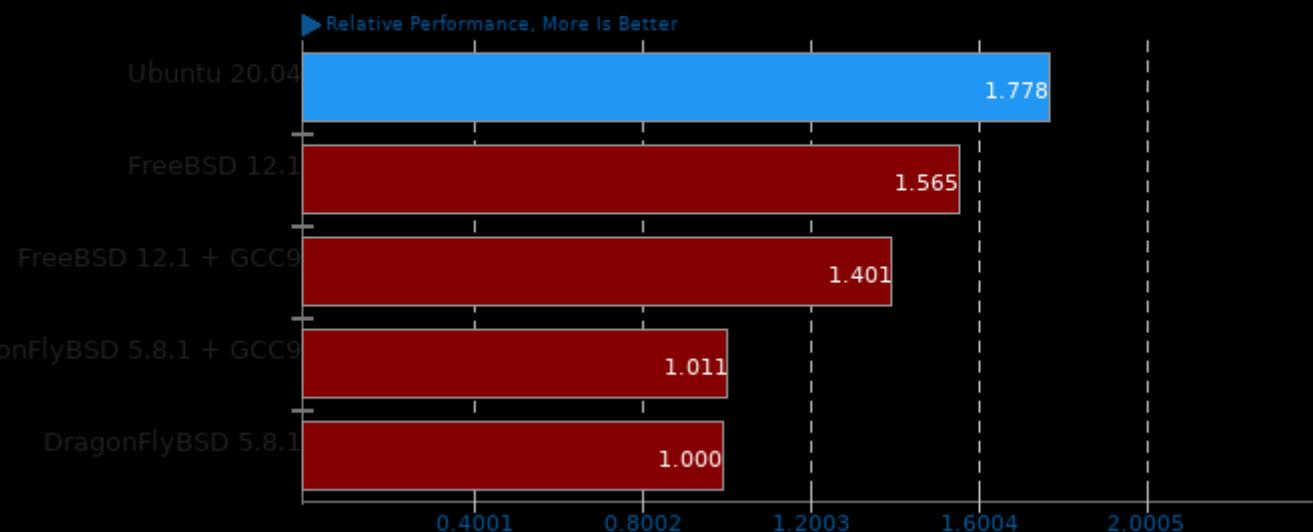
Result Composite - FreeBSD vs. DragonFlyBSD vs. Ubuntu Linux - Intel Core i9 10900K



Geometric mean based upon tests: pts/graphics-magick, pts/tjbench and pts/avifenc

Geometric Mean Of Multi-Core Tests

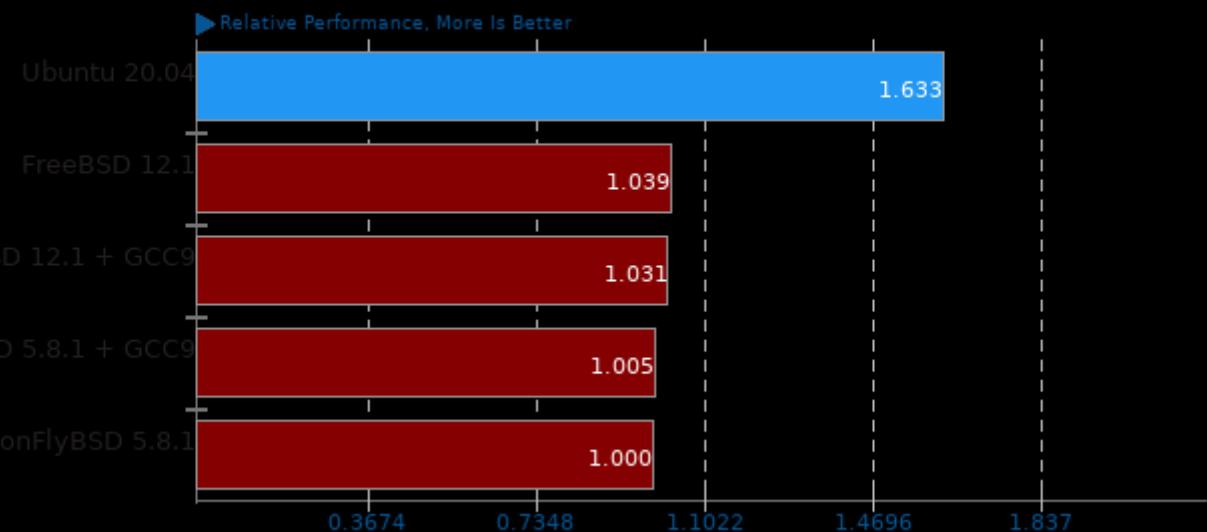
Result Composite - FreeBSD vs. DragonFlyBSD vs. Ubuntu Linux - Intel Core i9 10900K



Geometric mean based upon tests: pts/c-ray, pts/stockfish, pts/x264, pts/x265, pts/avifenc, pts/graphics-magick, pts/build-php and pts/build-llvm

Geometric Mean Of Server Tests

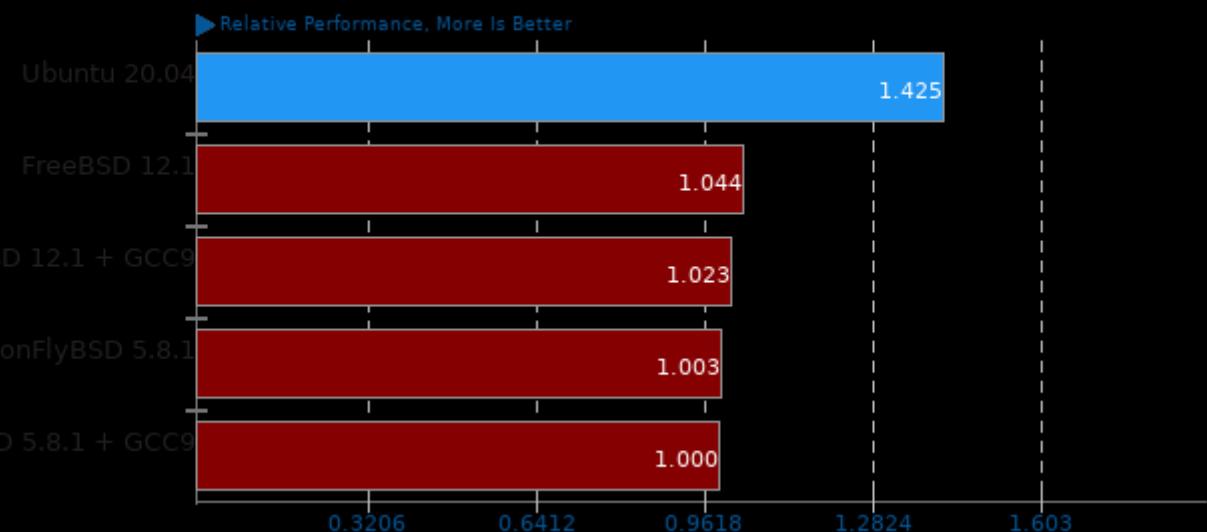
Result Composite - FreeBSD vs. DragonFlyBSD vs. Ubuntu Linux - Intel Core i9 10900K



Geometric mean based upon tests: pts/phpbench and pts/openssl

Geometric Mean Of Server CPU Tests

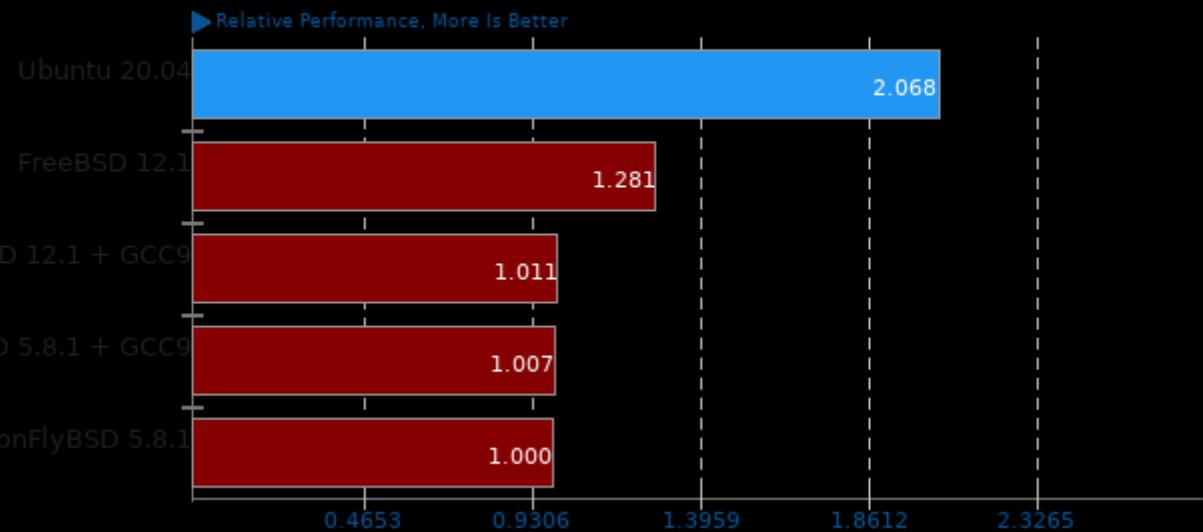
Result Composite - FreeBSD vs. DragonFlyBSD vs. Ubuntu Linux - Intel Core i9 10900K



Geometric mean based upon tests: pts/x264, pts/x265, pts/himeno, pts/stockfish, pts/build-php, pts/build-llvm, pts/c-ray, pts/openssl, pts/tjbench, pts/pybench and pts/phpbench

Geometric Mean Of Single-Threaded Tests

Result Composite - FreeBSD vs. DragonFlyBSD vs. Ubuntu Linux - Intel Core i9 10900K



Geometric mean based upon tests: pts/blake2, pts/encode-flac, pts/encode-mp3, pts/tjbench, pts/pybench, pts/phpbench and pts/git

This file was automatically generated via the Phoronix Test Suite benchmarking software on Thursday, 28 March 2024 21:10.