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Core i9 9900KS Intel Linux LKRG Testing

LKRG - Linux Kernel Runtime Guard benchmarks by Michael Larabel for a future article.

Automated Executive Summary

Linux 5.4 Ubuntu Build had the most wins, coming in first place for 74% of the tests.

Based on the geometric mean of all complete results, the fastest (Linux 5.4 Ubuntu Build) was 1.046x the speed of the slowest (LKRG Default).

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

Stress-NG (Test: Forking) at 5.592x

SQLite (Threads / Copies: 8) at 1.852x

PostMark (Disk Transaction Performance) at 1.247x

Timed GCC Compilation (Time To Compile) at 1.237x

Timed Apache Compilation (Time To Compile) at 1.205x

Inkscape (Operation: SVG Files To PNG) at 1.11x

Timed GDB GNU Debugger Compilation (Time To Compile) at 1.109x

Flexible IO Tester (Type: Random Write - Engine: IO_uring - Buffered: Yes - Direct: No - Block Size: 2MB - Disk Target: Default Test Directory) at 1.097x

Flexible IO Tester (Type: Random Write - Engine: IO_uring - Buffered: Yes - Direct: No - Block Size: 2MB - Disk Target:

Default Test Directory) at 1.097x

Flexible IO Tester (Type: Random Write - Engine: IO_uring - Buffered: Yes - Direct: No - Block Size: 4KB - Disk Target: Default Test Directory) at 1.067x.

Test Systems:

Linux 5.4 Ubuntu Build

LKRG Default

Processor: Intel Core i9-9900KS @ 5.00GHz (8 Cores / 16 Threads), Motherboard: ASUS PRIME Z390-A (1302 BIOS), Chipset: Intel Cannon Lake PCH, Memory: 16GB, Disk: Samsung SSD 970 EVO 250GB, Graphics: ASUS Intel UHD 630 3GB (1200MHz), Audio: Realtek ALC1220, Monitor: ASUS MG28U, Network: Intel I219-V

OS: Ubuntu 20.04, Kernel: 5.4.0-14-generic (x86_64), Desktop: GNOME Shell 3.34.3, Display Server: X Server 1.20.7, Display Driver: modesetting 1.20.7, OpenGL: 4.6 Mesa 20.0.0, Vulkan: 1.2.131, Compiler: GCC 9.2.1 20200220, 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

Disk Notes: NONE / errors=remount-ro,relatime,rw

Processor Notes: Scaling Governor: intel_pstate powersave - CPU Microcode: 0xca

Java Notes: OpenJDK Runtime Environment (build 11.0.6+10-post-Ubuntu-1ubuntu1)

Python Notes: + Python 3.8.2rc1

Security Notes: itlb_multihit: KVM: Vulnerable + 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 Enhanced IBRS IBPB: conditional RSB filling + tsx_async_abort: Mitigation of TSX disabled

	Linux 5.4 Ubuntu Build	LKRG Default
Stress-NG - Forking (Bogo Ops/s)	89525	16010
Normalized	100%	17.88%
Standard Deviation	0.9%	0.1%
Stress-NG - Semaphores (Bogo Ops/s)	5107309	5065052
Normalized	100%	99.17%
Standard Deviation	0.5%	3.6%
Stress-NG - Socket Activity (Bogo Ops/s)	7830	7644
Normalized	100%	97.61%
Standard Deviation	0.3%	0.3%
Stress-NG - Context Switching (Bogo Ops/s)	4003948	4093128
Normalized	97.82%	100%
Standard Deviation	1.9%	3%
Stress-NG - S.V.M.P (Bogo Ops/s)	12907903	13341083
Normalized	96.75%	100%
Standard Deviation	0.3%	0.2%

Ethr - TCP - Connections/s - 1 (Connections/sec)	20190	18276
Normalized	100%	90.52%
Standard Deviation	10.2%	12.8%
SVT-AV1 - Enc Mode 8 - 1080p (FPS)	30.549	30.534
Normalized	100%	99.95%
Standard Deviation	0.4%	0.4%
VP9 libvpx Encoding - Speed 5 (FPS)	28.64	28.71
Normalized	99.76%	100%
Standard Deviation	0.6%	0.2%
x264 - H.2.V.E (FPS)	98.84	97.77
Normalized	100%	98.92%
Standard Deviation	1.8%	1.5%
Flexible IO Tester - Rand Read - IO_uring - Yes - No - 2MB (IOPS)	329	323
Normalized	100%	98.18%
Standard Deviation	0.4%	0.8%
Flexible IO Tester - Rand Read - IO_uring - Yes - No - 4KB (IOPS)	126000	126000
Flexible IO Tester - Rand Write - IO_uring - Yes - No - 2MB (IOPS)	757	690
Normalized	100%	91.15%
Standard Deviation	0.9%	1.2%
Flexible IO Tester - Rand Write - IO_uring - Yes - No - 4KB (IOPS)	229667	215333
Normalized	100%	93.76%
Standard Deviation	0.3%	0.7%
Flexible IO Tester - Seq Read - IO_uring - Yes - No - 2MB (IOPS)	324	314
Normalized	100%	96.91%
Standard Deviation	0.3%	0.6%
Flexible IO Tester - Seq Read - IO_uring - Yes - No - 4KB (IOPS)	580333	580000
Normalized	100%	99.94%
Standard Deviation	0.2%	0.6%
Coremark - CoreMark Size 666 - I.P.S (Iterations/Sec)	397297	395375
Normalized	100%	99.52%
Standard Deviation	1%	2.7%
Flexible IO Tester - Rand Read - IO_uring - Yes - No - 2MB (MB/s)	664	654
Normalized	100%	98.49%
Standard Deviation	0.3%	0.8%
Flexible IO Tester - Rand Read - IO_uring - Yes - No - 4KB (MB/s)	491	491
Flexible IO Tester - Rand Write - IO_uring - Yes - No - 2MB (MB/s)	1522	1387
Normalized	100%	91.13%
Standard Deviation	0.8%	1.3%
Flexible IO Tester - Rand Write - IO_uring - Yes - No - 4KB (MB/s)	898	842
Normalized	100%	93.76%
Standard Deviation	0.4%	0.9%

Flexible IO Tester - Seq Read - IO_uring - Yes - No - 2MB (MB/s)	656	635
Normalized	100%	96.8%
Standard Deviation	0.3%	0.6%
Flexible IO Tester - Seq Read - IO_uring - Yes - No - 4KB (MB/s)	2267	2266
Normalized	100%	99.96%
Standard Deviation	0.1%	0.7%
Ethr - HTTP - Bandwidth - 1 (Mbits/s)	196086875230	196320580634
Normalized	99.88%	100%
Standard Deviation	105.2%	104.4%
iPerf - 5201 - 10 Seconds - TCP - 1 (Mbits/s)	72451	71743
Normalized	100%	99.02%
Standard Deviation	2.5%	1.2%
iPerf - 5201 - 10 Seconds - UDP - 1 (Mbits/s)	1.05	1.05
Standard Deviation	0%	0%
iPerf - 5201 - 10 Seconds - TCP - 10 (Mbits/s)	73447	74322
Normalized	98.82%	100%
Standard Deviation	1.9%	1.6%
iPerf - 5201 - 10 Seconds - UDP - 10 (Mbits/s)	10.5	10.5
Standard Deviation	0%	0%
Sockperf - Throughput (Messages/sec)	531513	567697
Normalized	93.63%	100%
Standard Deviation	6.9%	4.4%
Java SciMark - Composite (Mflops)	2770	2754
Normalized	100%	99.42%
Standard Deviation	0.4%	0.9%
rays1bench - Large Scene (mrays/s)	54.73	54.70
Normalized	100%	99.95%
Standard Deviation	0.1%	0.1%
Selenium - StyleBench - Firefox (Runs / Minute)	108	110
Normalized	98.18%	100%
Standard Deviation	1.9%	0.5%
Selenium - StyleBench - Google Chrome (Runs / Minute)	34.73	34.6
Normalized	100%	99.63%
Standard Deviation	0.5%	0%
Selenium - Speedometer - Firefox (Runs/min)	104.5	104
Normalized	100%	99.52%
Standard Deviation	0.4%	
Selenium - Speedometer - Google Chrome (Runs/min)	130	132
Normalized	98.48%	100%
Standard Deviation		0.9%
Numpy Benchmark (Score)	447.85	447.62
Normalized	100%	99.95%
Standard Deviation	0.3%	0.5%
PHPBench - P.B.S (Score)	827204	826284
Normalized	100%	99.89%
Standard Deviation	0.2%	0.4%
Selenium - Jetstream 2 - Firefox (Score)	102.970	105.887
Normalized	97.25%	100%
Standard Deviation	1.9%	1.1%
Selenium - Jetstream 2 - Google Chrome (Score)	136.096	134.621
Normalized	100%	98.92%
Standard Deviation	0.9%	1.2%

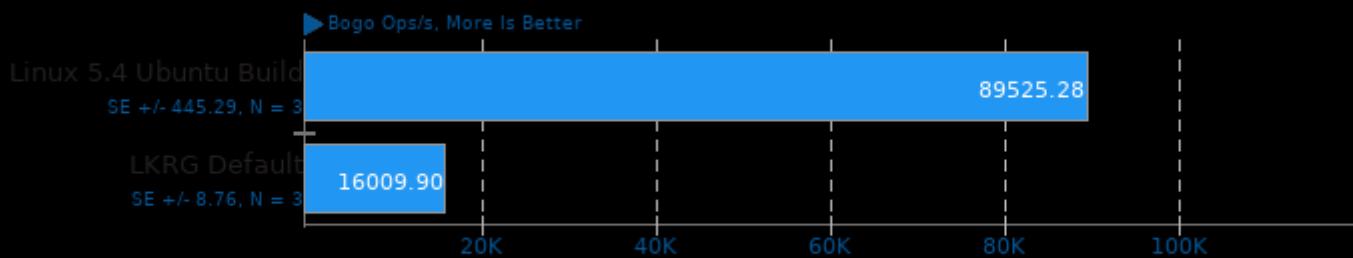
PostMark - D.T.P (TPS)	8825	7076
Normalized	100%	80.18%
Standard Deviation	2%	1.6%
PostgreSQL pgbench - Buffer Test - Normal Load - Read Only (TPS)	229031	227085
Normalized	100%	99.15%
Standard Deviation	0.1%	0.2%
PostgreSQL pgbench - Buffer Test - Normal Load - Read Write (TPS)	5536	5409
Normalized	100%	97.71%
Standard Deviation	2.9%	2.4%
ctx_clock - C.S.T (Clocks)	157	160
Normalized	100%	98.13%
Standard Deviation	2.2%	0.7%
Ethr - TCP - Latency - 1 (us)	8.05917	8.232917
Normalized	100%	97.89%
Standard Deviation	1.2%	2.1%
PyBench - T.F.A.T.T (Milliseconds)	858	857
Normalized	99.88%	100%
Standard Deviation		0.2%
Selenium - Kraken - Firefox (ms)	764.5	756.3
Normalized	98.93%	100%
Standard Deviation	1.1%	0.7%
Selenium - Kraken - Google Chrome (ms)	870.6	847.0
Normalized	97.29%	100%
Standard Deviation	2.9%	1.8%
Selenium - W.i - Firefox (ms)	30.4	30.4
Standard Deviation	0.5%	0%
Selenium - W.c - Firefox (ms)	438.7	439.5
Normalized	100%	99.82%
Standard Deviation	0%	0.2%
Selenium - W.i - Google Chrome (ms)	38.4815	39.8516
Normalized	100%	96.56%
Standard Deviation	0.3%	2.8%
Selenium - W.c - Google Chrome (ms)	372.9043	372.7315
Normalized	99.95%	100%
Standard Deviation	0.4%	0.4%
BenchmarkMutex - M.L.U.s (ns)	35.3	35.3
Standard Deviation	0.3%	0.3%
BenchmarkMutex - M.L.U.s.m (ns)	16	16
Selenium - PSPDFKit WASM - Firefox (Score)	1191	1186
Normalized	99.58%	100%
Standard Deviation	0.8%	
Selenium - PSPDFKit WASM - Google Chrome (Score)	1567	1585
Normalized	100%	98.86%
Standard Deviation	2.3%	0.8%
SQLite - 1 (sec)	41.735	42.987
Normalized	100%	97.09%
Standard Deviation	0.1%	0.6%
SQLite - 8 (sec)	126.033	233.377
Normalized	100%	54%
Standard Deviation	1.1%	1.1%
t-test1 - 1 (sec)	12.958	13.597
Normalized	100%	95.3%
Standard Deviation	0.2%	1%

t-test1 - 2 (sec)	4.514	4.764
Normalized	100%	94.75%
Standard Deviation	0.7%	0.3%
Timed Apache Compilation - Time To Compile (sec)	19.965	24.054
Normalized	100%	83%
Standard Deviation	0.5%	0.5%
Timed FFmpeg Compilation - Time To Compile (sec)	58.030	59.592
Normalized	100%	97.38%
Standard Deviation	2.1%	1.4%
Timed GCC Compilation - Time To Compile (sec)	797.985	986.835
Normalized	100%	80.86%
Standard Deviation	0.1%	0.4%
Timed GDB GNU Debugger Compilation - Time To Compile (sec)	96.002	106.437
Normalized	100%	90.2%
Standard Deviation	0.5%	0.6%
Timed ImageMagick Compilation - Time To Compile	30.121	31.206
Normalized	100%	96.52%
Standard Deviation	0.4%	0.6%
Timed Linux Kernel Compilation - Time To Compile	84.622	89.135
Normalized	100%	94.94%
Standard Deviation	0.9%	1.8%
Timed LLVM Compilation - Time To Compile (sec)	435.829	434.97
Normalized	99.8%	100%
Timed MPlayer Compilation - Time To Compile (sec)	39.034	40.671
Normalized	100%	95.98%
Standard Deviation	0.1%	0.1%
Timed PHP Compilation - Time To Compile (sec)	57.133	60.866
Normalized	100%	93.87%
Standard Deviation	0.3%	0.2%
Build2 - Time To Compile (sec)	109.643	114.977
Normalized	100%	95.36%
Standard Deviation	0.9%	0.2%
DeepSpeech - CPU (sec)	72.33269	72.28385
Normalized	99.93%	100%
Standard Deviation	0.9%	1%
Tachyon - Total Time (sec)	93.7215	93.8932
Normalized	100%	99.82%
Standard Deviation	0.1%	0.1%
SQLite Speedtest - Timed Time - Size 1,000 (sec)	48.061	48.816
Normalized	100%	98.45%
Standard Deviation	0.3%	0.4%
Inkscape - SVG Files To PNG (sec)	20.810	23.100
Normalized	100%	90.09%
Standard Deviation	1.5%	1.2%
LibreOffice - 2.D.T.P (sec)	6.613	6.652
Normalized	100%	99.41%
Standard Deviation	3.5%	2.5%
RawTherapee - T.B.T (sec)	59.348	59.629
Normalized	100%	99.53%
Standard Deviation	0.2%	0.1%
Blender - BMW27 - CPU-Only (sec)	169.16	169.09
Normalized	99.96%	100%
Standard Deviation	0.3%	0.5%
Selenium - Maze Solver - Firefox (sec)	5.4	5.4

	Standard Deviation	1.1%	2.8%
Selenium - Maze Solver - Google Chrome (sec)	Normalized	4.9	4.8
	Standard Deviation	97.96%	100%
Milpack Benchmark - scikit_ica (sec)	Normalized	1.2%	2.9%
	Standard Deviation	97.1%	100%
Milpack Benchmark - scikit_qda (sec)	Normalized	2.9%	0.5%
	Standard Deviation	1.5%	0.6%
Milpack Benchmark - scikit_svm (sec)	Normalized	13.30	13.32
	Standard Deviation	100%	99.85%
Milpack Benchmark - scikit_linearridge_regression	Normalized	0.2%	0.3%
	Standard Deviation	2.45	2.42
	Normalized	98.78%	100%
	Standard Deviation	5%	5.5%
Sunflow Rendering System - G.I.I.S (sec)	Normalized	1.129	1.140
	Standard Deviation	100%	99.04%
pmbench - 1 - 100% Reads (us - Page Latency)	Standard Deviation	1.7%	1.6%
	Normalized	0.0241	0.0241
pmbench - 1 - 100% Writes (us - Page Latency)	Normalized	0.0267	0.0270
	Standard Deviation	1.2%	0.6%
pmbench - 16 - 100% Reads (us - Page Latency)	Normalized	0.0358	0.0379
	Standard Deviation	2.1%	0.6%
pmbench - 16 - 100% Writes (us - Page Latency)	Normalized	0.0806	0.0837
	Standard Deviation	4.9%	1.2%
pmbench - 1 - 8.R.2.W (us - Page Latency)	Normalized	0.0666	0.0664
	Standard Deviation	99.7%	100%
pmbench - 16 - 8.R.2.W (us - Page Latency)	Normalized	0.0866	0.0879
	Standard Deviation	0.2%	0.6%
Sockperf - Latency Ping Pong (usec)	Normalized	100%	98.52%
	Standard Deviation	0.8%	0.6%
Sockperf - Latency Under Load (usec)	Normalized	2.653	2.710
	Standard Deviation	1.1%	1.9%
	Normalized	19.569	18.289
	Standard Deviation	93.46%	100%
	Normalized	12.8%	30.1%

Stress-NG 0.07.26

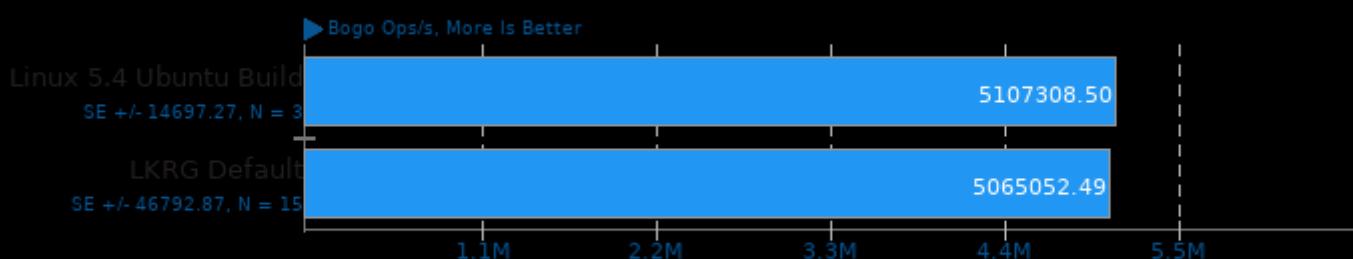
Test: Forking



1. (CC) gcc options: -O2 -std=gnu99 -lm -lz -lcrypt -lrt -lpthread -laio -lc

Stress-NG 0.07.26

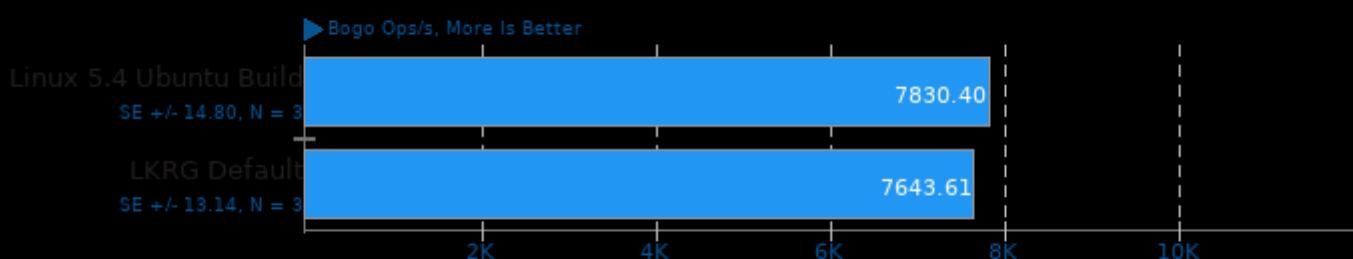
Test: Semaphores



1. (CC) gcc options: -O2 -std=gnu99 -lm -lz -lcrypt -lrt -lpthread -laio -lc

Stress-NG 0.07.26

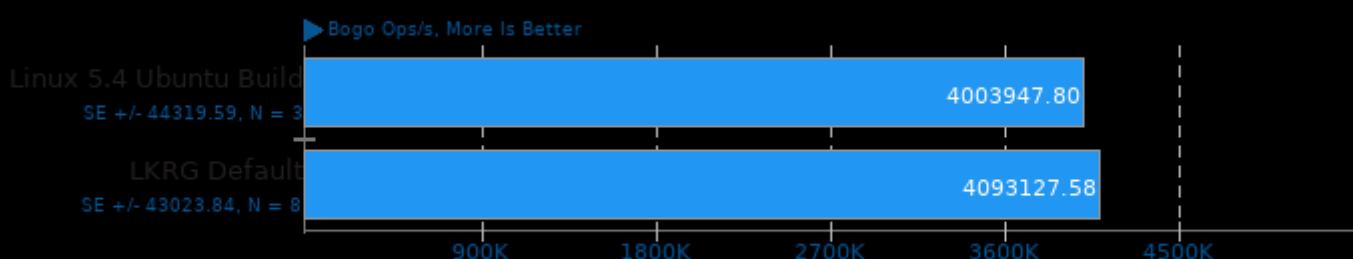
Test: Socket Activity



1. (CC) gcc options: -O2 -std=gnu99 -lm -lz -lcrypt -lrt -lpthread -laio -lc

Stress-NG 0.07.26

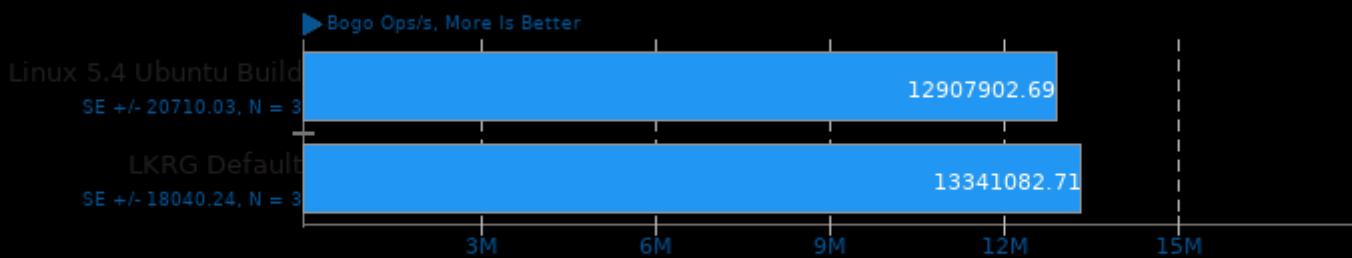
Test: Context Switching



1. (CC) gcc options: -O2 -std=gnu99 -lm -lz -lcrypt -lrt -lpthread -laio -lc

Stress-NG 0.07.26

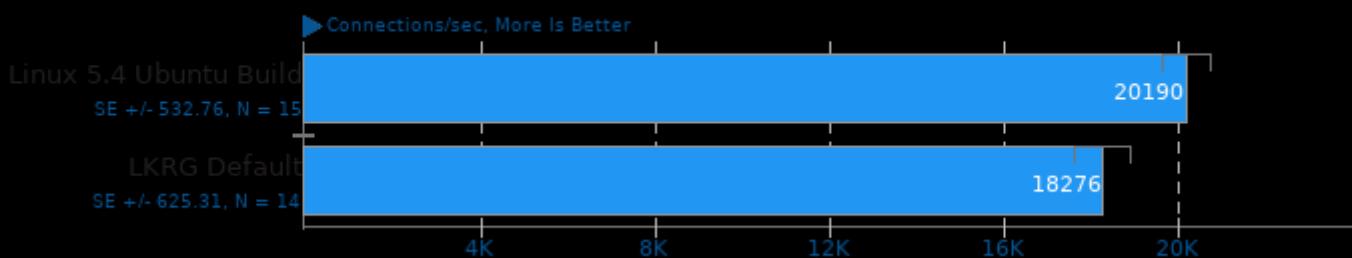
Test: System V Message Passing



1. (CC) gcc options: -O2 -std=gnu99 -lm -lz -lcrypt -lrt -lpthread -laio -lc

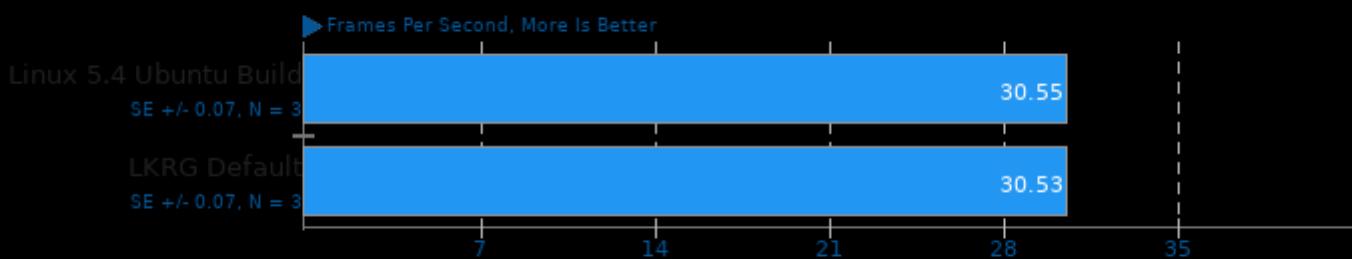
Ethr 2019-01-02

Server Address: localhost - Protocol: TCP - Test: Connections/s - Threads: 1



SVT-AV1 0.8

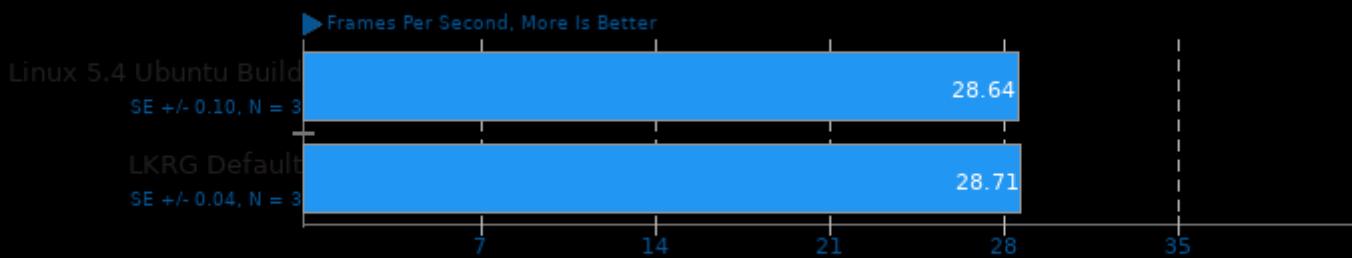
Encoder Mode: Enc Mode 8 - Input: 1080p



1. (CXX) g++ options: -fPIE -fPIC -pie

VP9 libvpx Encoding 1.8.2

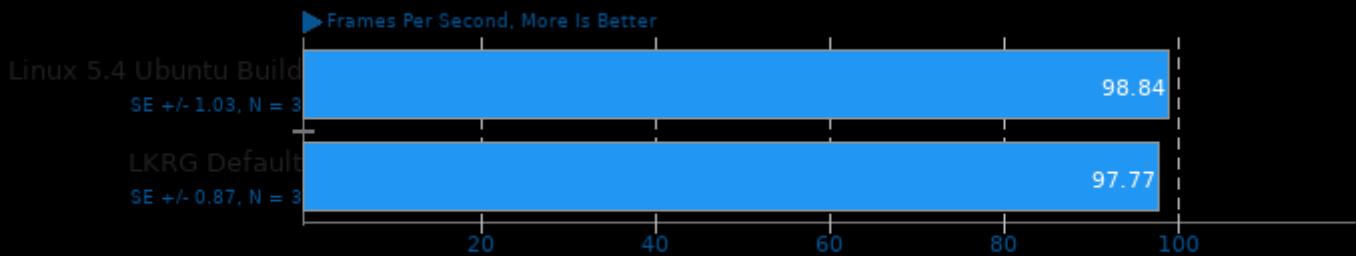
Speed: Speed 5



1. (CXX) g++ options: -m64 -lm -lpthread -O3 -fPIC -U_FORTIFY_SOURCE -std=c++11

x264 2019-12-17

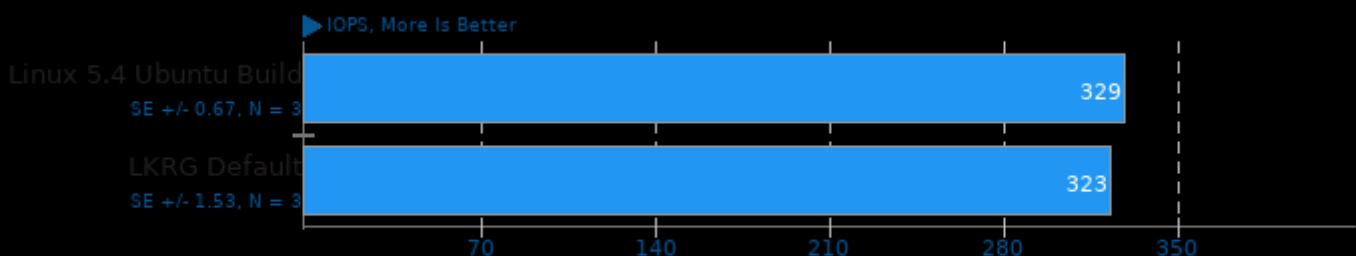
H.264 Video Encoding



1. (CC) gcc options: -ldl -lavformat -lavcodec -lavutil -lswscale -m64 -lm -lpthread -O3 -ffast-math -std=gnu99 -fPIC -fomit-frame-pointer -fno-tree-vectorize

Flexible IO Tester 3.18

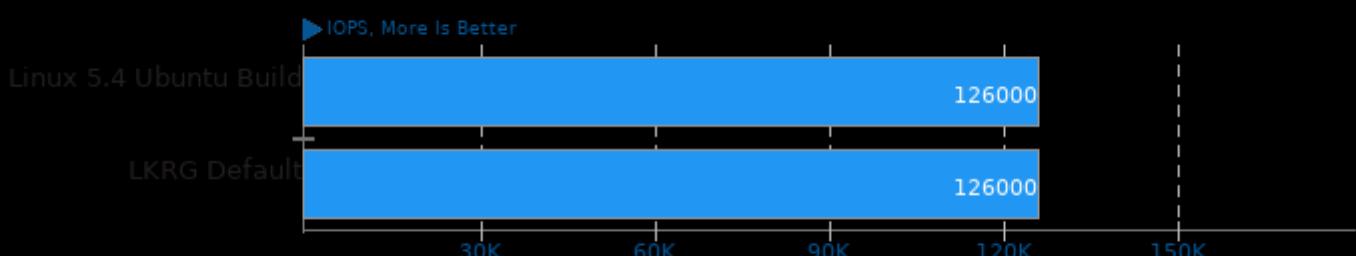
Type: Random Read - Engine: IO_uring - Buffered: Yes - Direct: No - Block Size: 2MB - Disk Target: Default Test Directory



1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -U_FORTIFY_SOURCE -march=native -ll -lcurl -lssl -lcrypto -lnuma -libverbs -lrt -laio -lz

Flexible IO Tester 3.18

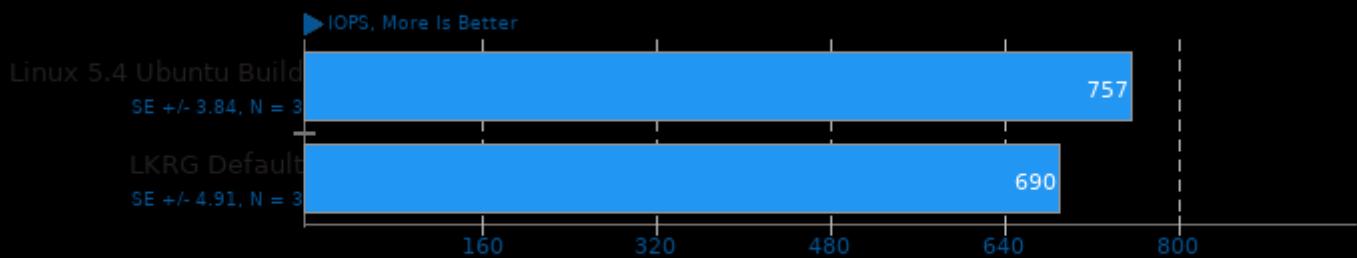
Type: Random Read - Engine: IO_uring - Buffered: Yes - Direct: No - Block Size: 4KB - Disk Target: Default Test Directory



1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -U_FORTIFY_SOURCE -march=native -ll -lcurl -lssl -lcrypto -lnuma -libverbs -lrt -laio -lz

Flexible IO Tester 3.18

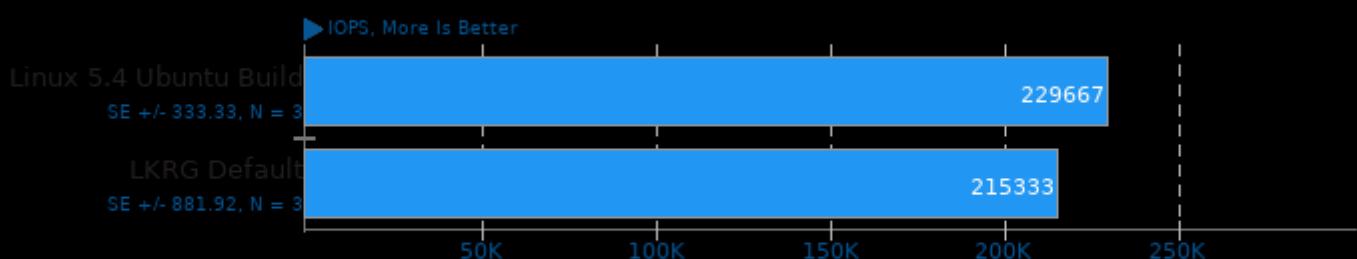
Type: Random Write - Engine: IO_uring - Buffered: Yes - Direct: No - Block Size: 2MB - Disk Target: Default Test Directory



1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -U_FORTIFY_SOURCE -march=native -Icurl -Issl -Icrypto -Inuma -libverbs -Irt -laio -Iz

Flexible IO Tester 3.18

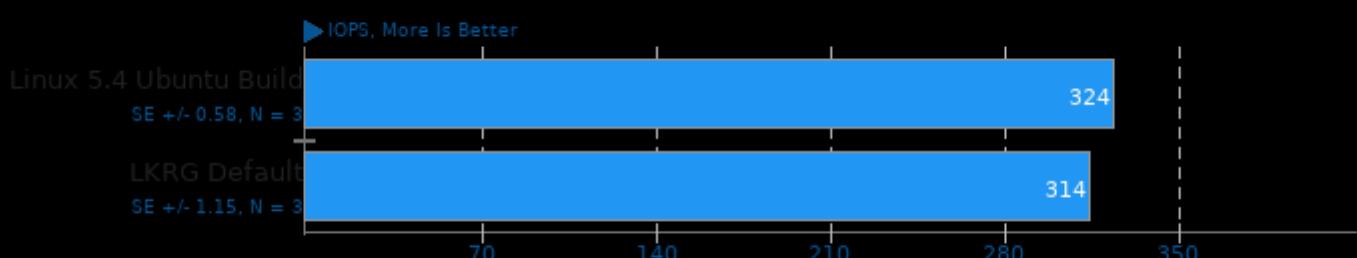
Type: Random Write - Engine: IO_uring - Buffered: Yes - Direct: No - Block Size: 4KB - Disk Target: Default Test Directory



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Flexible IO Tester 3.18

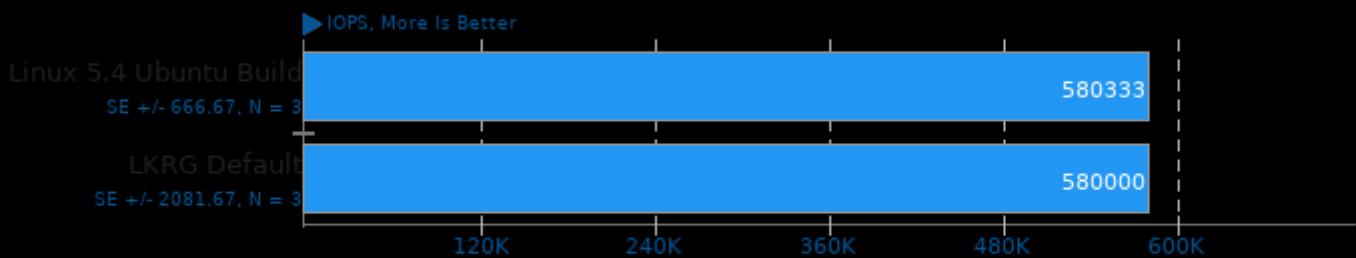
Type: Sequential Read - Engine: IO_uring - Buffered: Yes - Direct: No - Block Size: 2MB - Disk Target: Default Test Directory



1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -U_FORTIFY_SOURCE -march=native -Icurl -Issl -Icrypto -Inuma -libverbs -Irt -laio -Iz

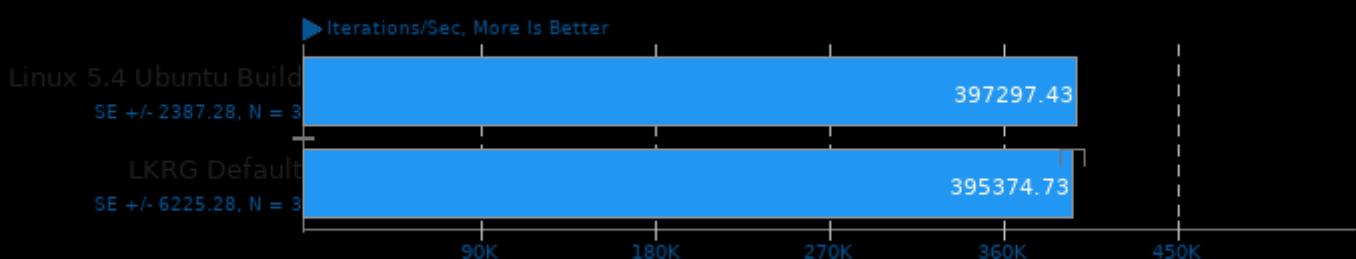
Flexible IO Tester 3.18

Type: Sequential Read - Engine: IO_uring - Buffered: Yes - Direct: No - Block Size: 4KB - Disk Target: Default Test Directory



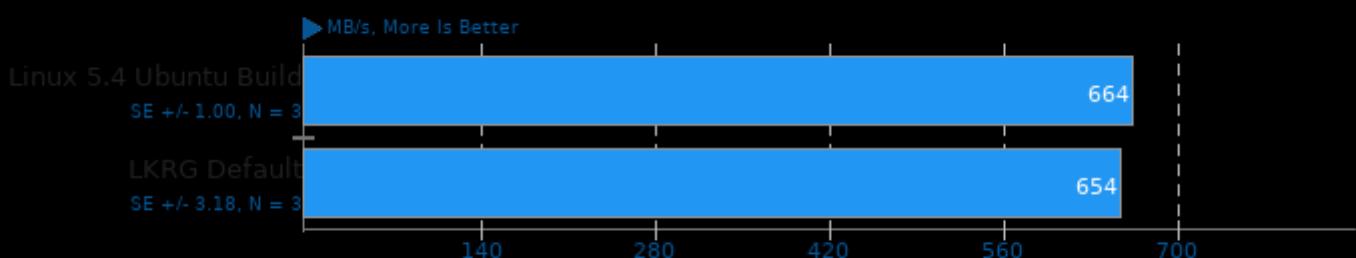
Coremark 1.0

CoreMark Size 666 - Iterations Per Second



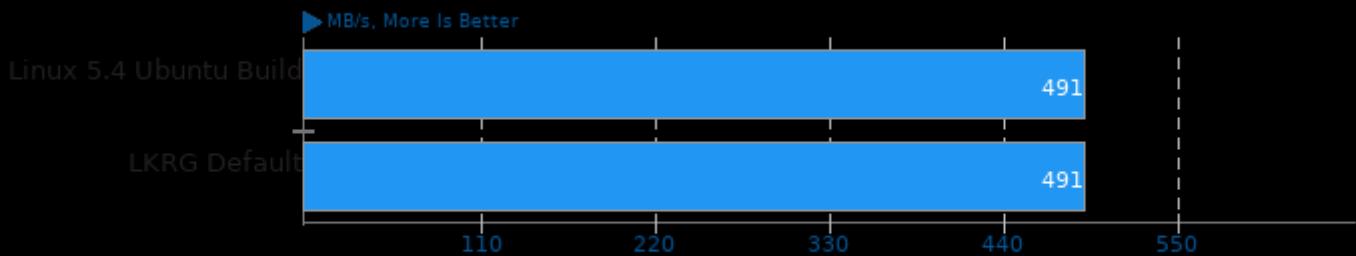
Flexible IO Tester 3.18

Type: Random Read - Engine: IO_uring - Buffered: Yes - Direct: No - Block Size: 2MB - Disk Target: Default Test Directory



Flexible IO Tester 3.18

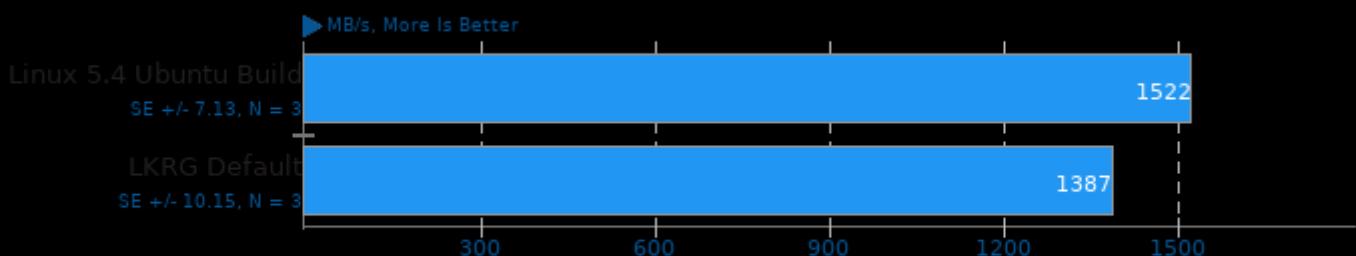
Type: Random Read - Engine: IO_uring - Buffered: Yes - Direct: No - Block Size: 4KB - Disk Target: Default Test Directory



1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -U_FORTIFY_SOURCE -march=native -Icurl -lssl -lcrypto -lnuma -libverbs -lrt -laio -lz

Flexible IO Tester 3.18

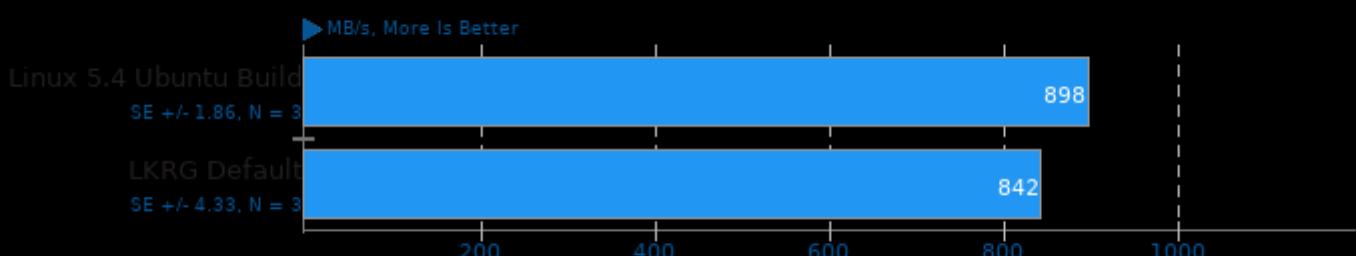
Type: Random Write - Engine: IO_uring - Buffered: Yes - Direct: No - Block Size: 2MB - Disk Target: Default Test Directory



1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -U_FORTIFY_SOURCE -march=native -Icurl -lssl -lcrypto -lnuma -libverbs -lrt -laio -lz

Flexible IO Tester 3.18

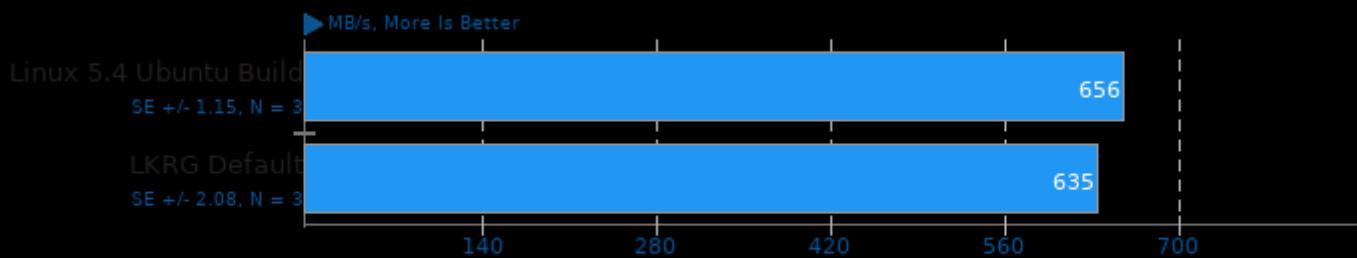
Type: Random Write - Engine: IO_uring - Buffered: Yes - Direct: No - Block Size: 4KB - Disk Target: Default Test Directory



1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -U_FORTIFY_SOURCE -march=native -Icurl -lssl -lcrypto -lnuma -libverbs -lrt -laio -lz

Flexible IO Tester 3.18

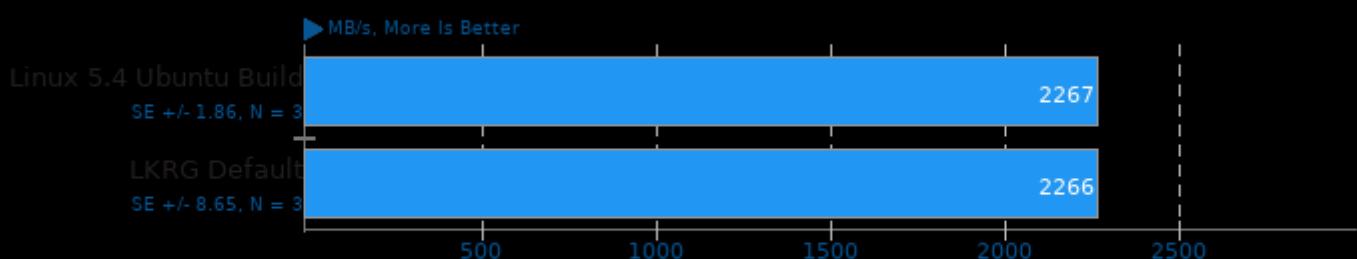
Type: Sequential Read - Engine: IO_uring - Buffered: Yes - Direct: No - Block Size: 2MB - Disk Target: Default Test Directory



1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -U_FORTIFY_SOURCE -march=native -Icurl -Issl -Icrypto -Inuma -libverbs -Irt -laio -lz

Flexible IO Tester 3.18

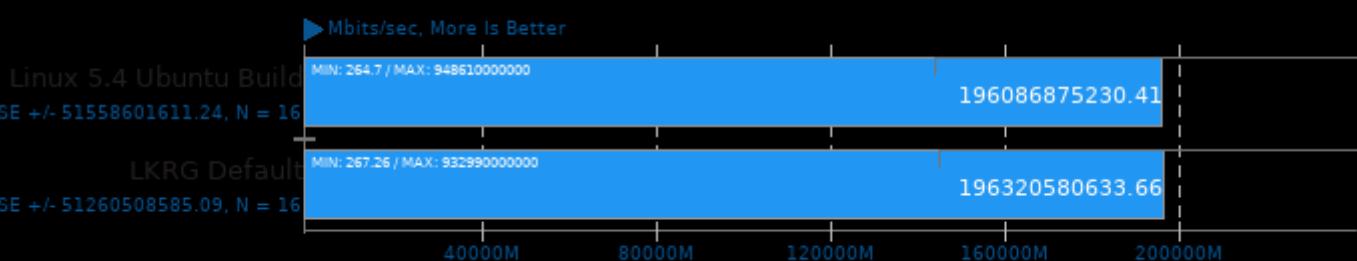
Type: Sequential Read - Engine: IO_uring - Buffered: Yes - Direct: No - Block Size: 4KB - Disk Target: Default Test Directory



1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -U_FORTIFY_SOURCE -march=native -Icurl -Issl -Icrypto -Inuma -libverbs -Irt -laio -lz

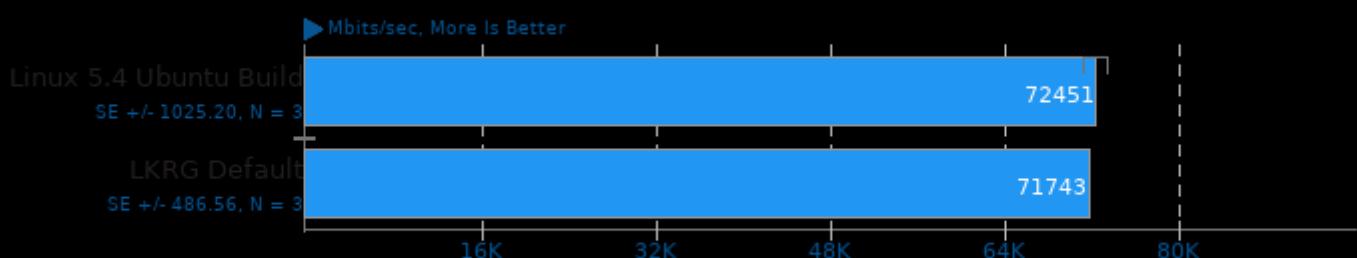
Ethr 2019-01-02

Server Address: localhost - Protocol: HTTP - Test: Bandwidth - Threads: 1



iPerf 3.7

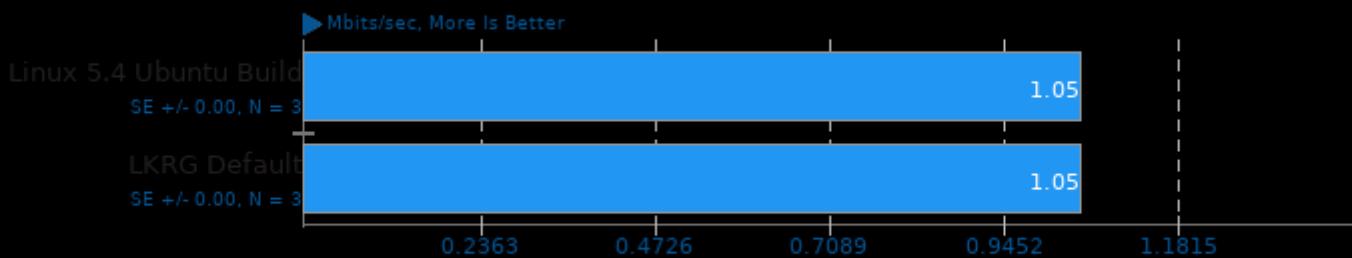
Server Address: localhost - Server Port: 5201 - Duration: 10 Seconds - Test: TCP - Parallel: 1



1. (CC) gcc options: -O3 -march=native -Issl -Icrypto -Im

iPerf 3.7

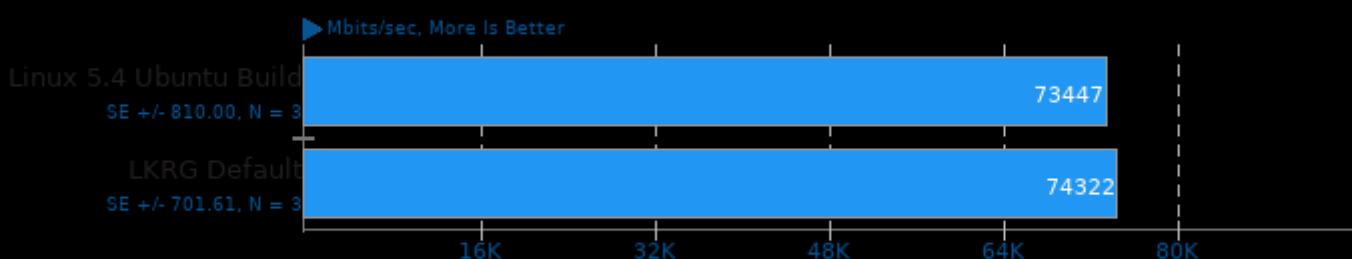
Server Address: localhost - Server Port: 5201 - Duration: 10 Seconds - Test: UDP - Parallel: 1



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

iPerf 3.7

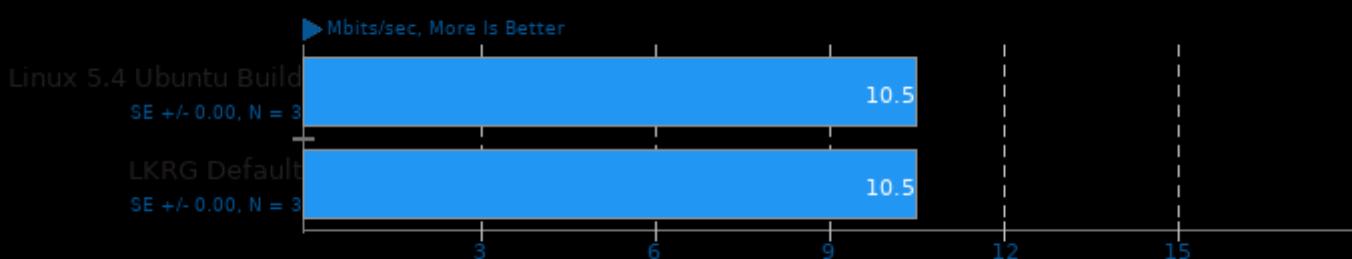
Server Address: localhost - Server Port: 5201 - Duration: 10 Seconds - Test: TCP - Parallel: 10



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

iPerf 3.7

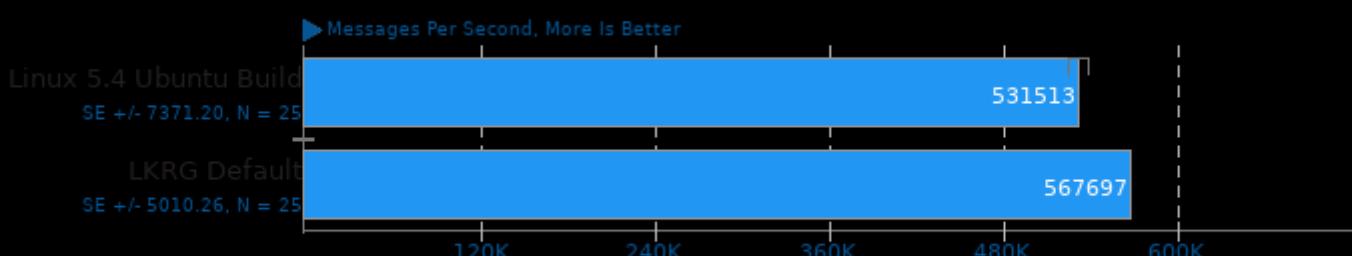
Server Address: localhost - Server Port: 5201 - Duration: 10 Seconds - Test: UDP - Parallel: 10



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

Sockperf 3.4

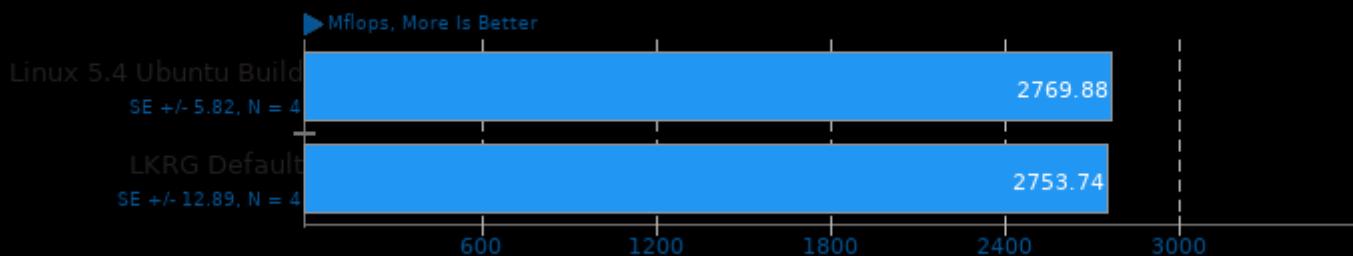
Test: Throughput



1. (CXX) g++ options: -param -O3 -rdynamic -ldl -lpthread

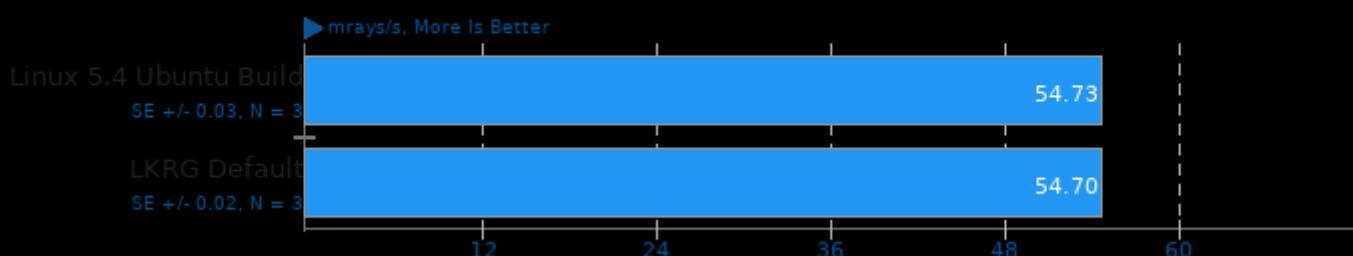
Java SciMark 2.0

Computational Test: Composite



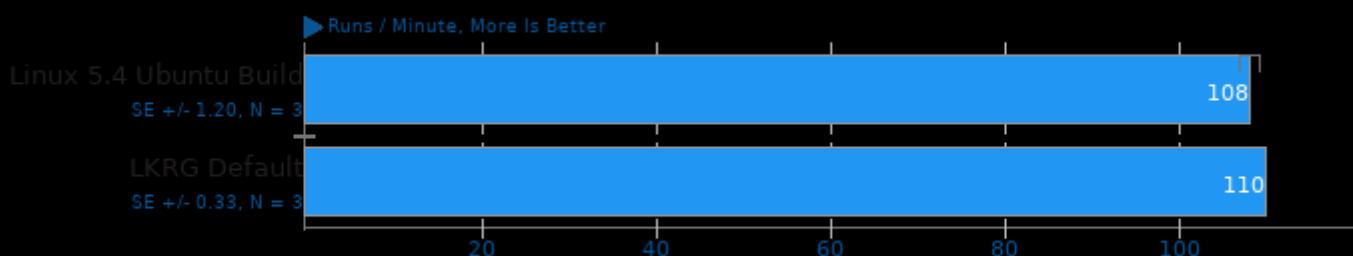
rays1bench 2020-01-09

Large Scene



Selenium

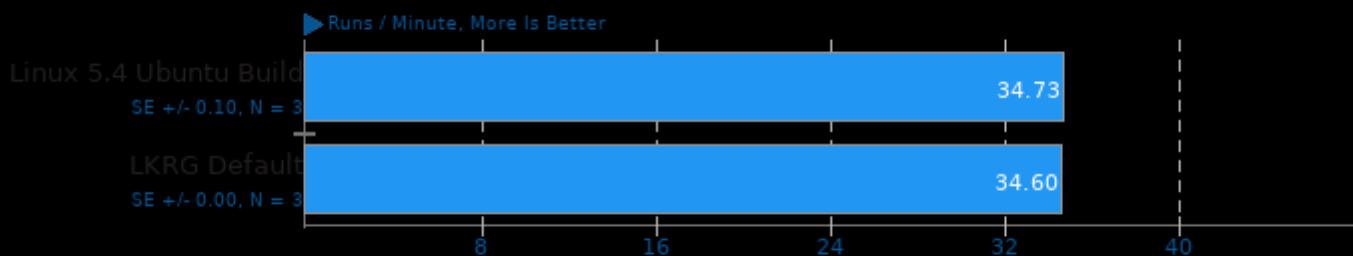
Benchmark: StyleBench - Browser: Firefox



1. firefox 73.0.1

Selenium

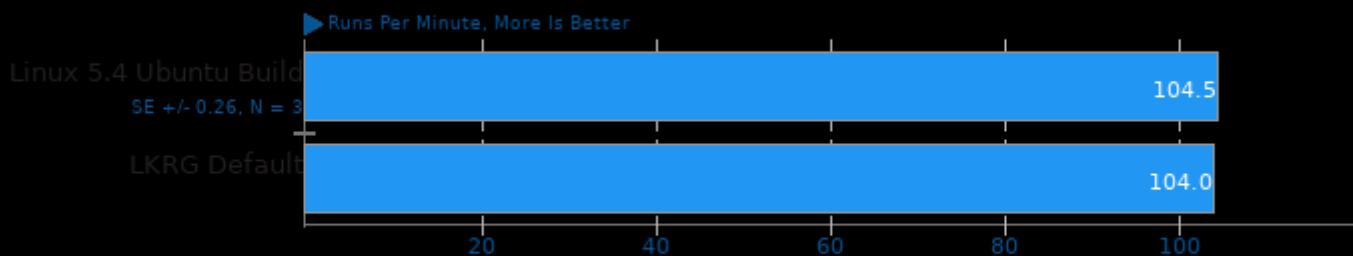
Benchmark: StyleBench - Browser: Google Chrome



1. chrome 80.0.3987.122

Selenium

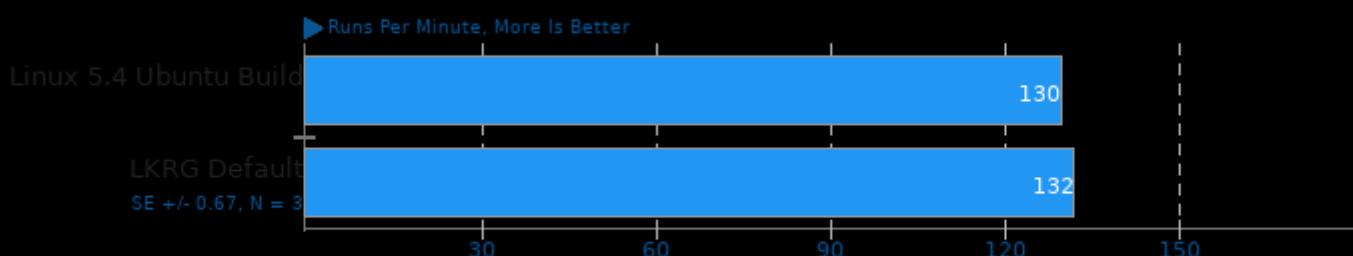
Benchmark: Speedometer - Browser: Firefox



1. firefox 73.0.1

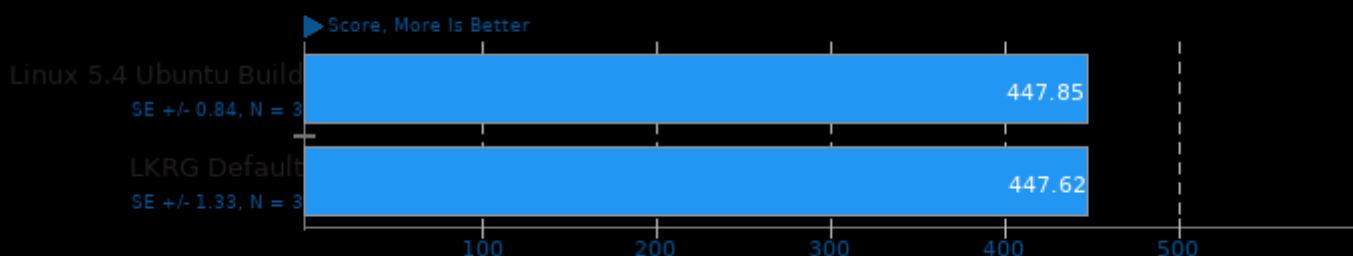
Selenium

Benchmark: Speedometer - Browser: Google Chrome



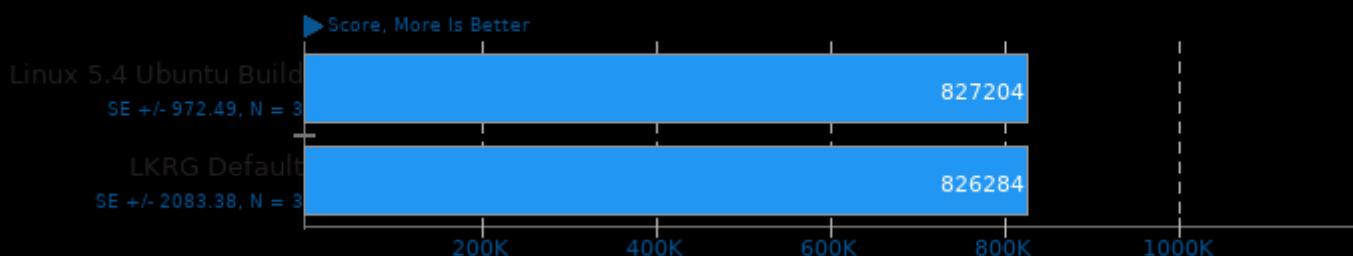
1. chrome 80.0.3987.122

Numpy Benchmark



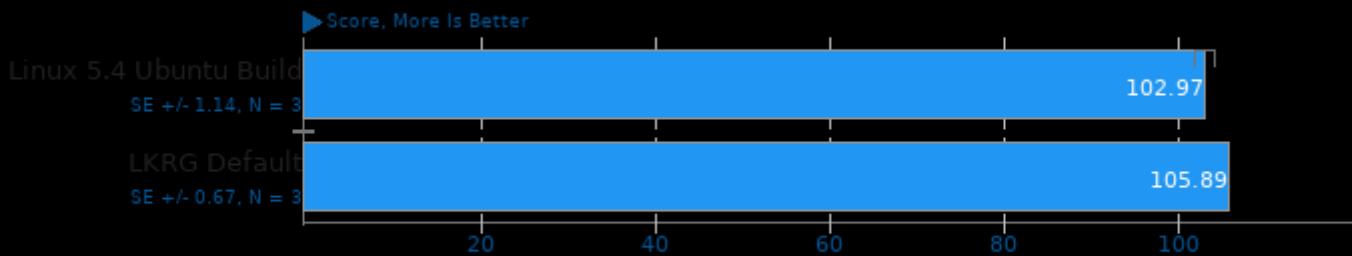
PHPBench 0.8.1

PHP Benchmark Suite



Selenium

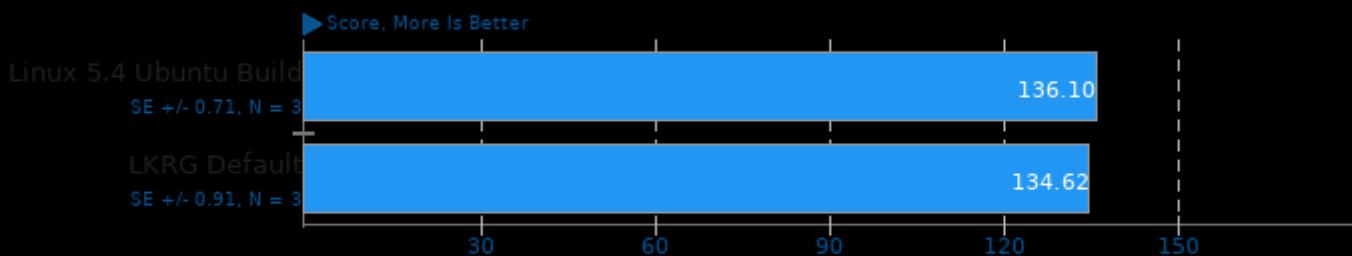
Benchmark: Jetstream 2 - Browser: Firefox



1. firefox 73.0.1

Selenium

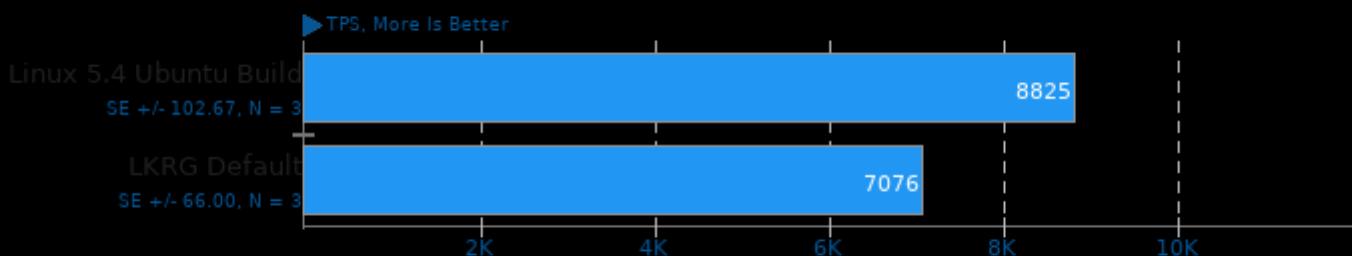
Benchmark: Jetstream 2 - Browser: Google Chrome



1. chrome 80.0.3987.122

PostMark 1.51

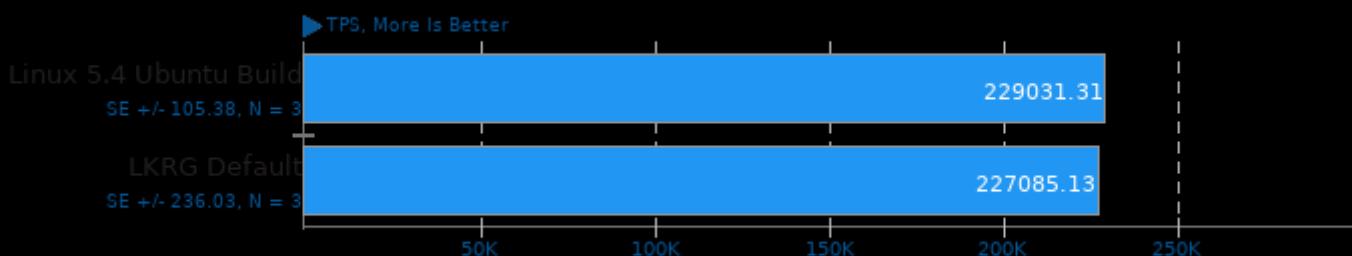
Disk Transaction Performance



1. (CC) gcc options: -O3

PostgreSQL pgbench 12.0

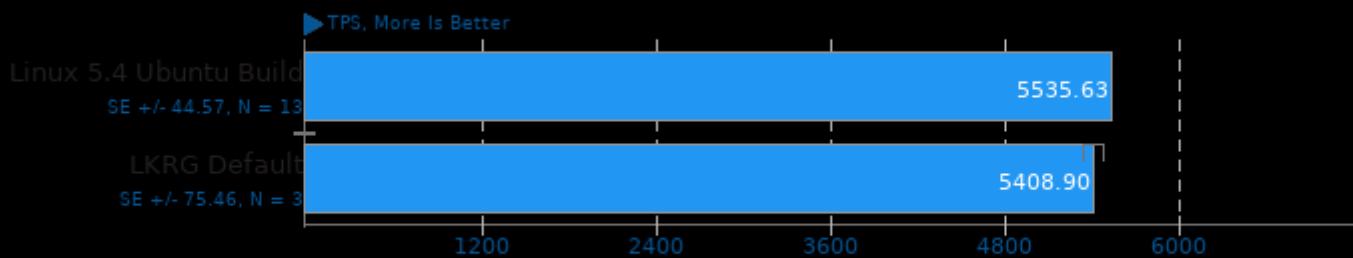
Scaling: Buffer Test - Test: Normal Load - Mode: Read Only



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -pthread -lrt -lcrypt -ldl -lm

PostgreSQL pgbench 12.0

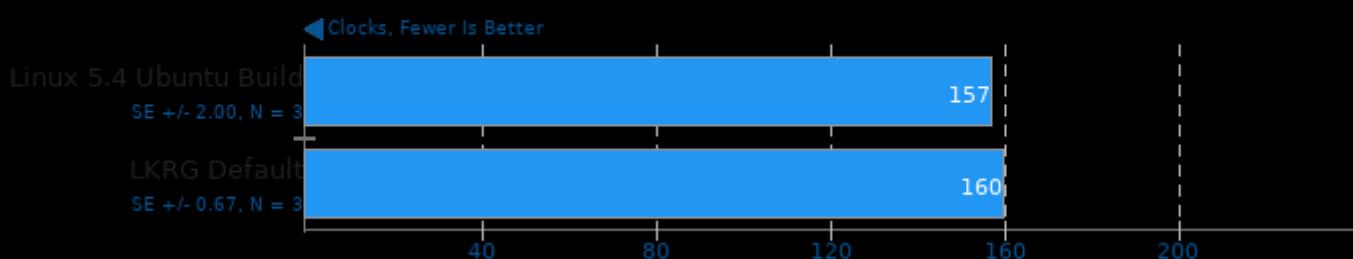
Scaling: Buffer Test - Test: Normal Load - Mode: Read Write



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lpthread -lrt -lcrypt -ldl -lm

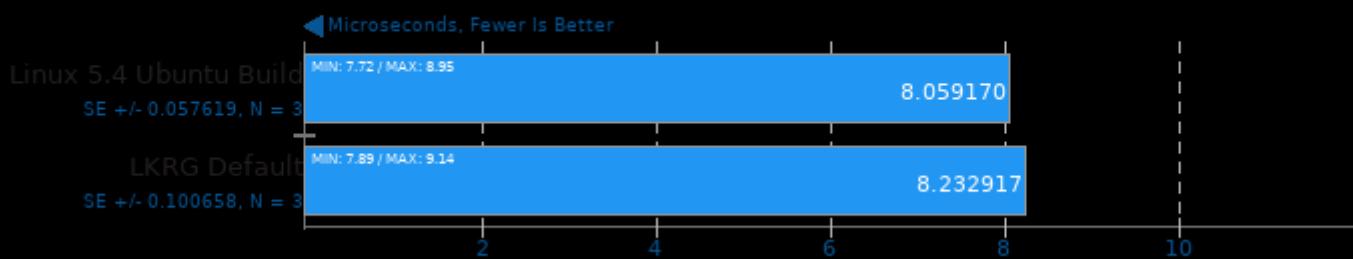
ctx_clock

Context Switch Time



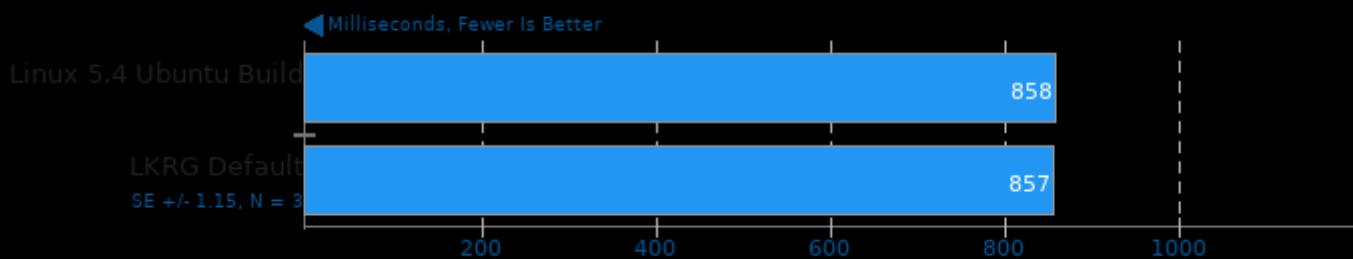
Ethr 2019-01-02

Server Address: localhost - Protocol: TCP - Test: Latency - Threads: 1



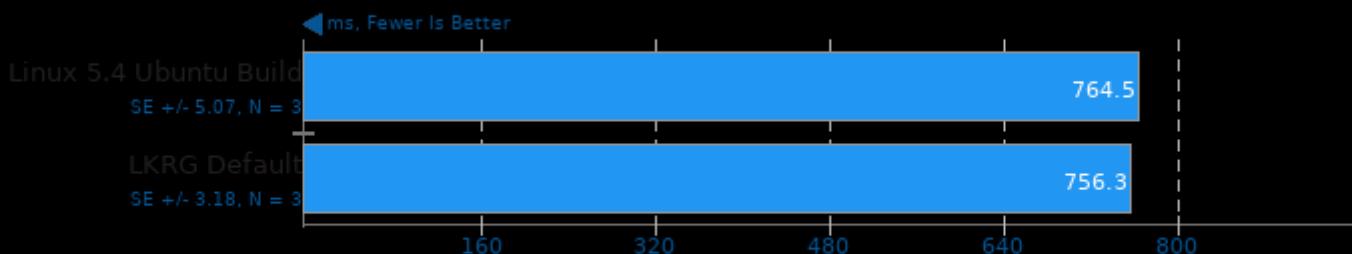
PyBench 2018-02-16

Total For Average Test Times



Selenium

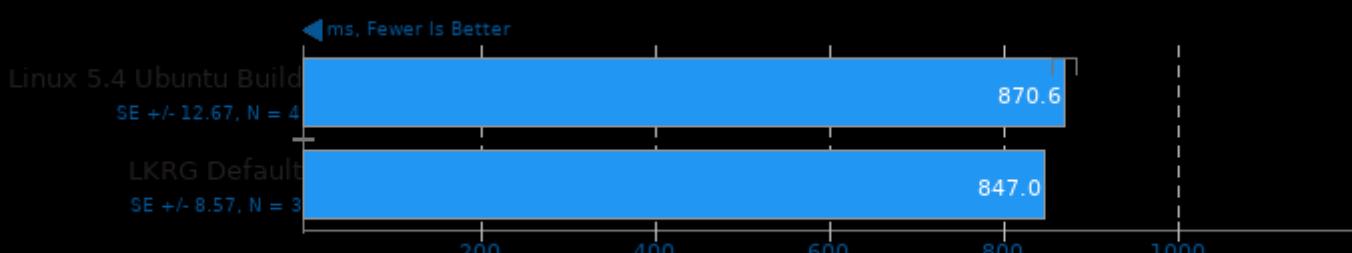
Benchmark: Kraken - Browser: Firefox



1. firefox 73.0.1

Selenium

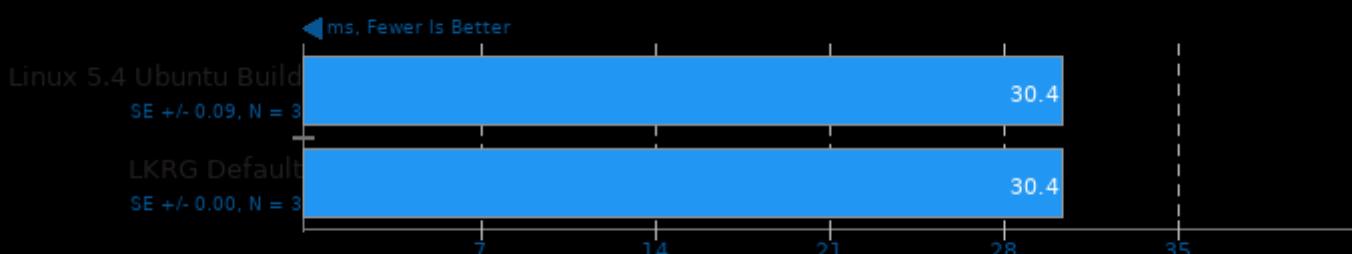
Benchmark: Kraken - Browser: Google Chrome



1. chrome 80.0.3987.122

Selenium

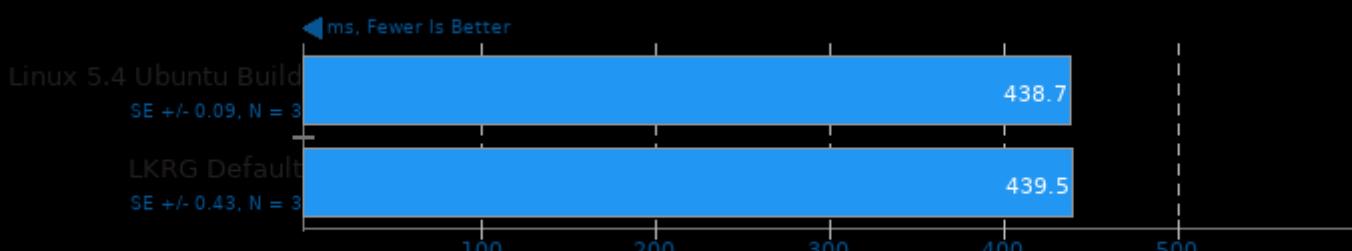
Benchmark: WASM imageConvolute - Browser: Firefox



1. firefox 73.0.1

Selenium

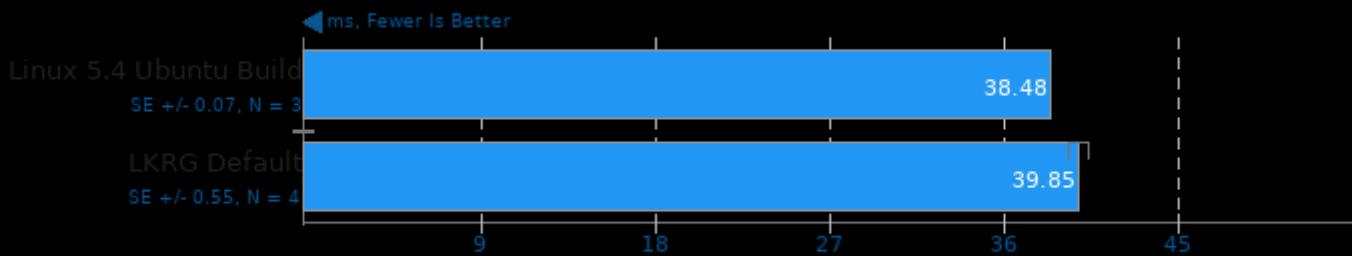
Benchmark: WASM collisionDetection - Browser: Firefox



1. firefox 73.0.1

Selenium

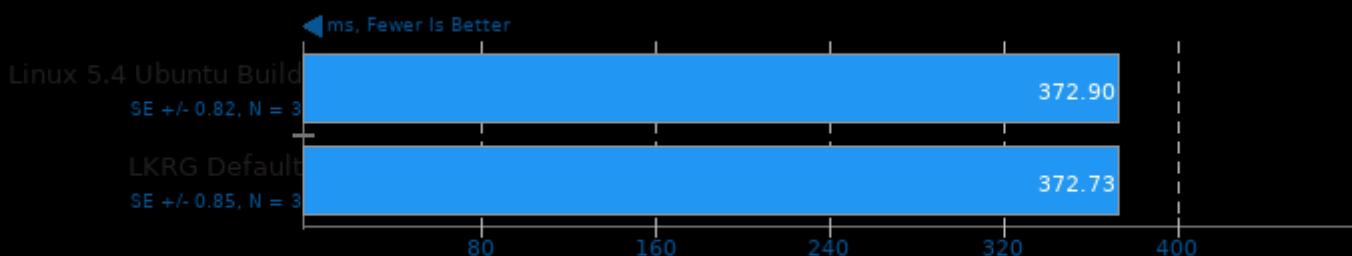
Benchmark: WASM imageConvolute - Browser: Google Chrome



1. chrome 80.0.3987.122

Selenium

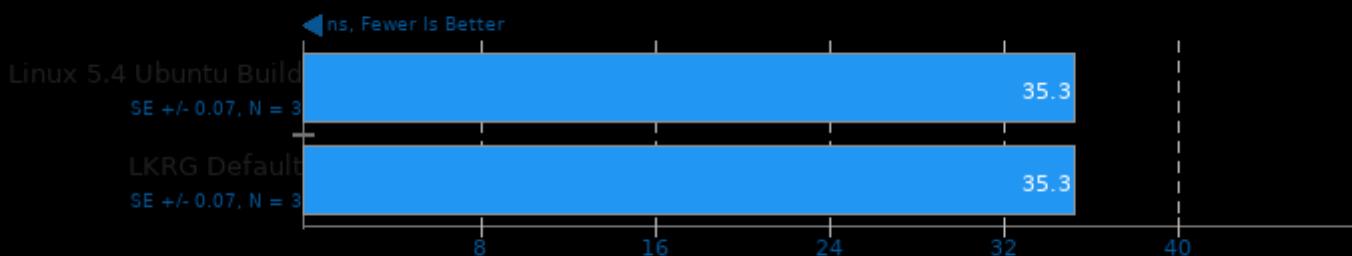
Benchmark: WASM collisionDetection - Browser: Google Chrome



1. chrome 80.0.3987.122

BenchmarkMutex

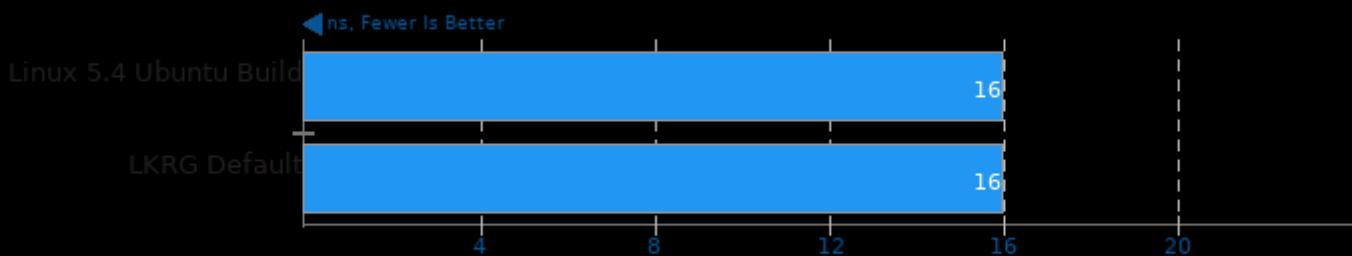
Benchmark: Mutex Lock Unlock spinlock



1. (CXX) g++ options: -std=c++17 -lbenchmark -pthread

BenchmarkMutex

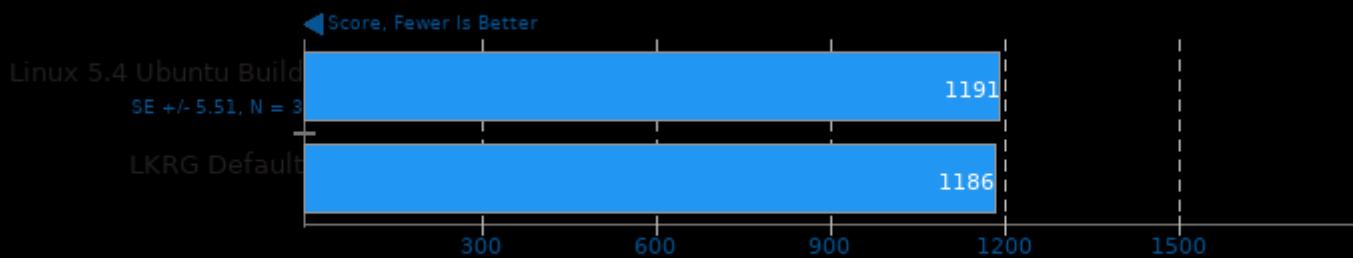
Benchmark: Mutex Lock Unlock std::mutex



1. (CXX) g++ options: -std=c++17 -lbenchmark -pthread

Selenium

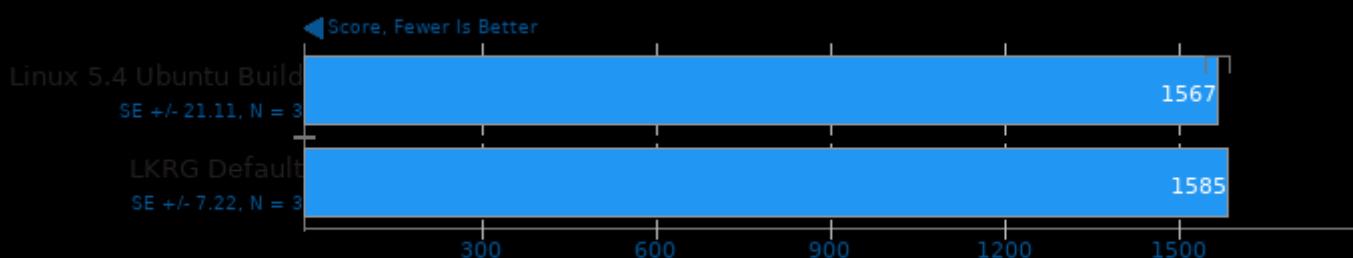
Benchmark: PSPDFKit WASM - Browser: Firefox



1. firefox 73.0.1

Selenium

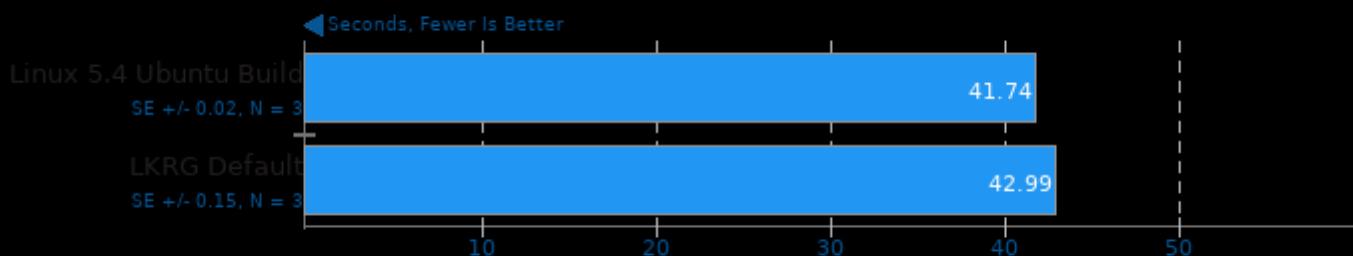
Benchmark: PSPDFKit WASM - Browser: Google Chrome



1. chrome 80.0.3987.122

SQLite 3.30.1

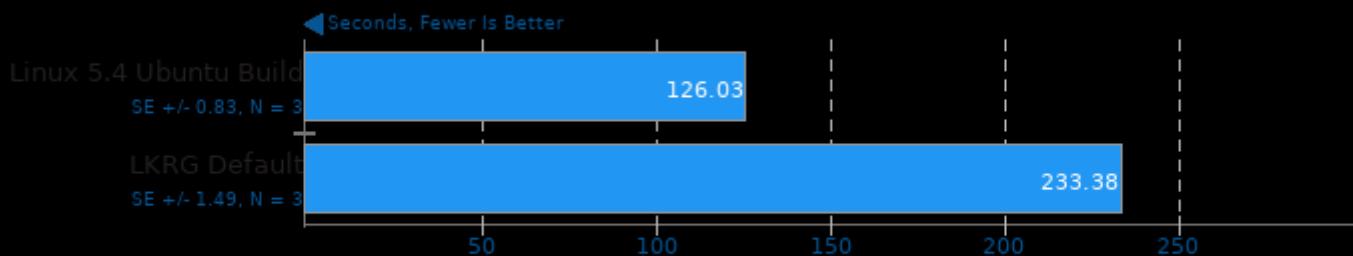
Threads / Copies: 1



1. (CC) gcc options: -O2 -freadline -ftermcap -lz -lm -ldl -lpthread

SQLite 3.30.1

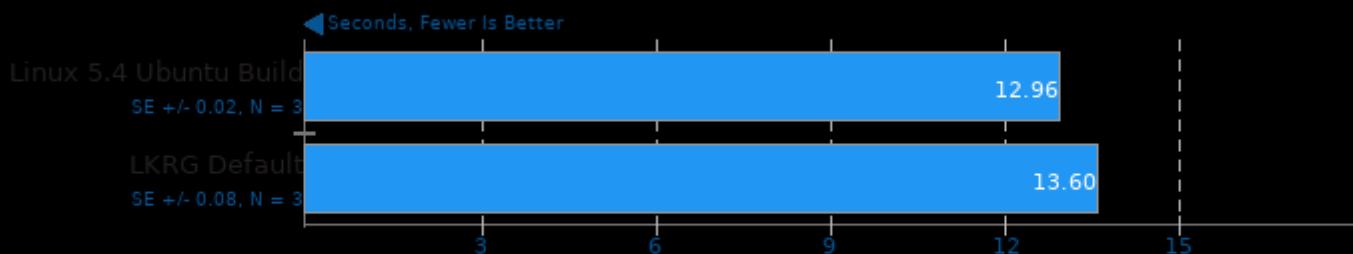
Threads / Copies: 8



1. (CC) gcc options: -O2 -freadline -ftermcap -lz -lm -ldl -lpthread

t-test1 2017-01-13

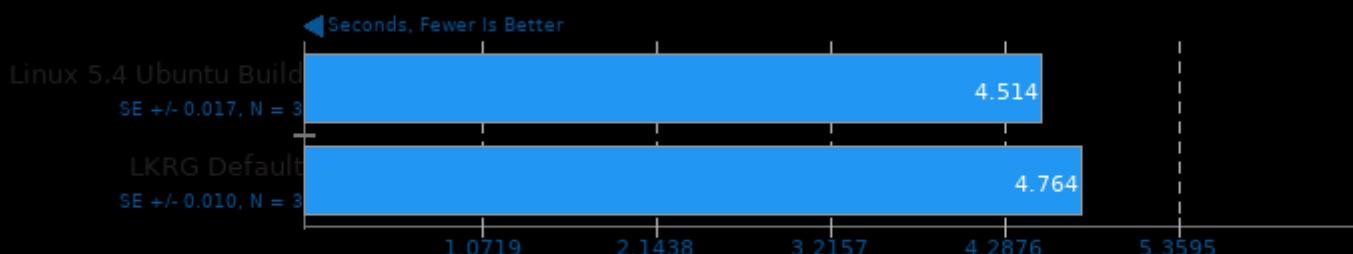
Threads: 1



1. (CC) gcc options: -pthread

t-test1 2017-01-13

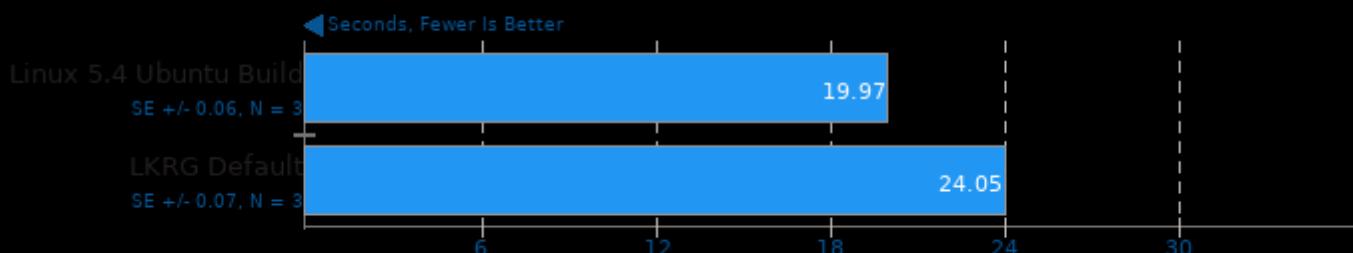
Threads: 2



1. (CC) gcc options: -pthread

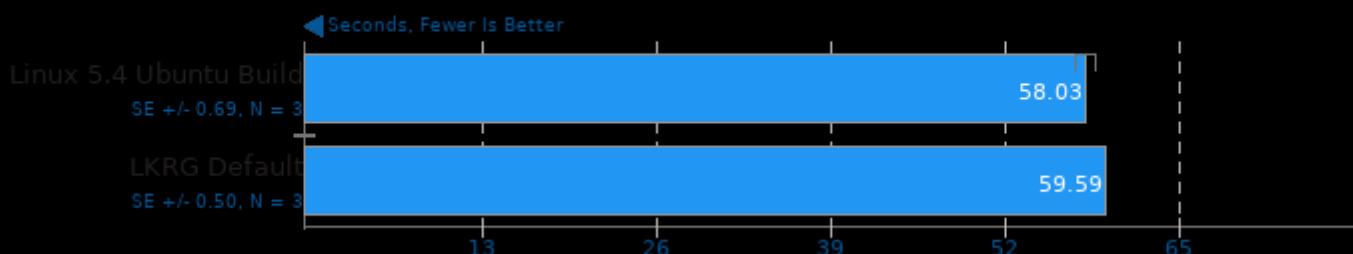
Timed Apache Compilation 2.4.41

Time To Compile



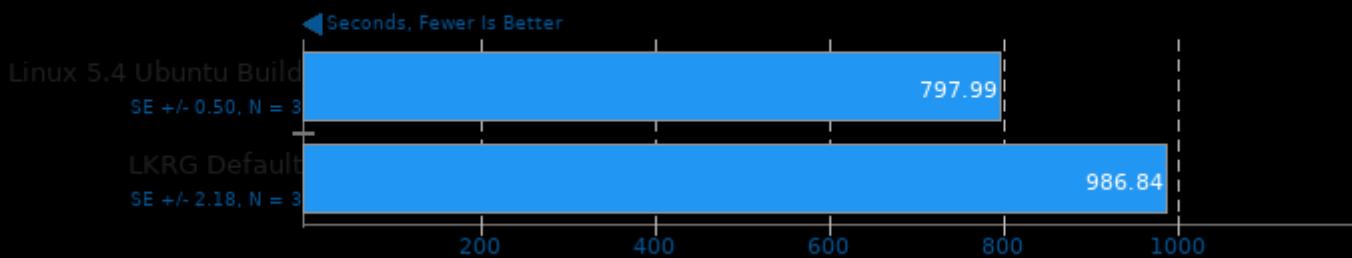
Timed FFmpeg Compilation 4.2.2

Time To Compile



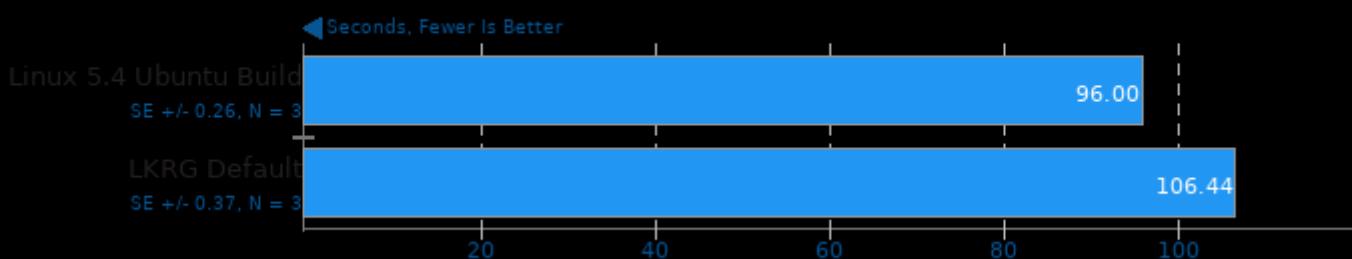
Timed GCC Compilation 8.2

Time To Compile



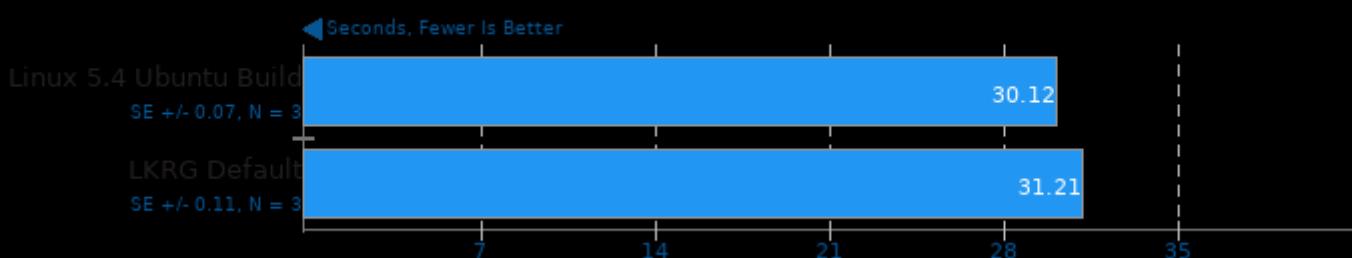
Timed GDB GNU Debugger Compilation 9.1

Time To Compile



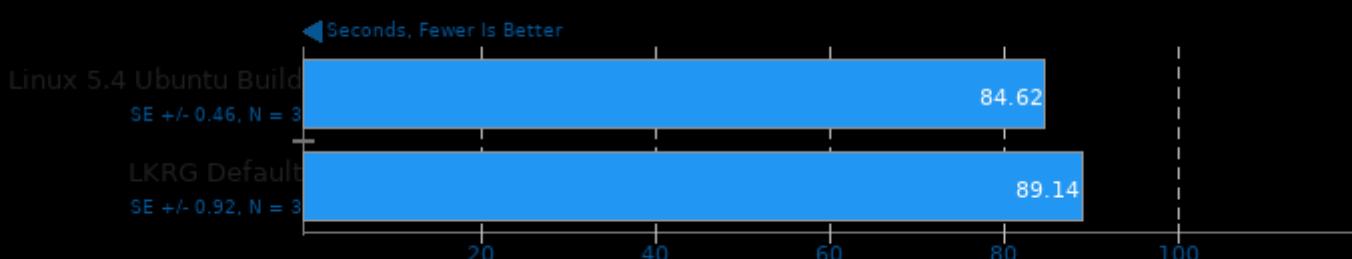
Timed ImageMagick Compilation 6.9.0

Time To Compile



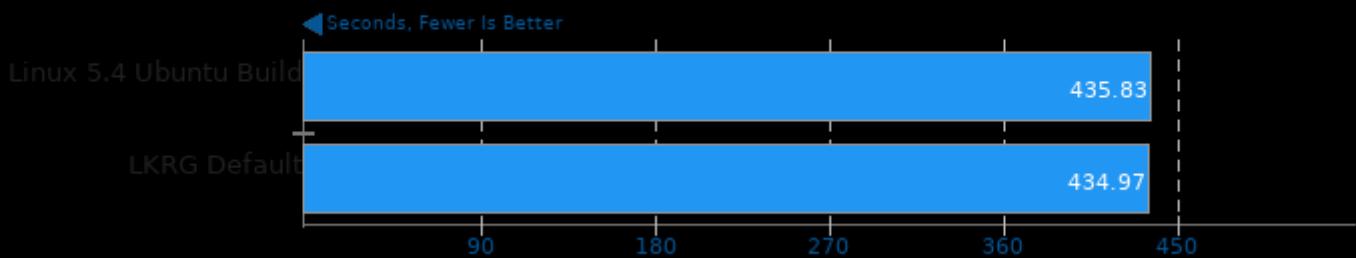
Timed Linux Kernel Compilation 5.4

Time To Compile



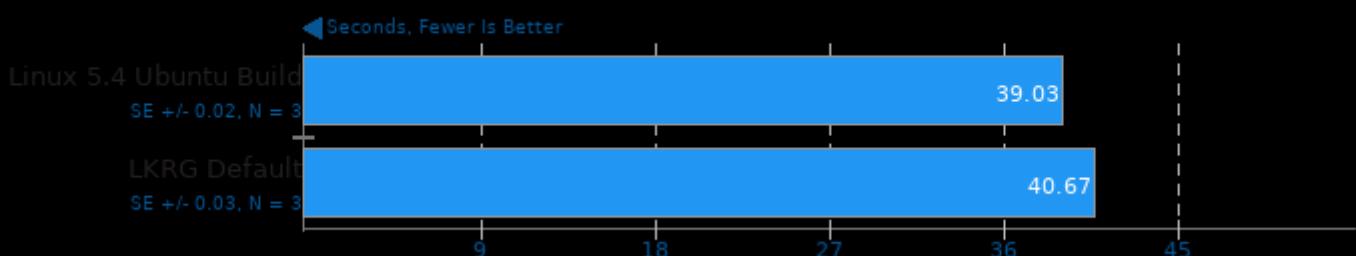
Timed LLVM Compilation 6.0.1

Time To Compile



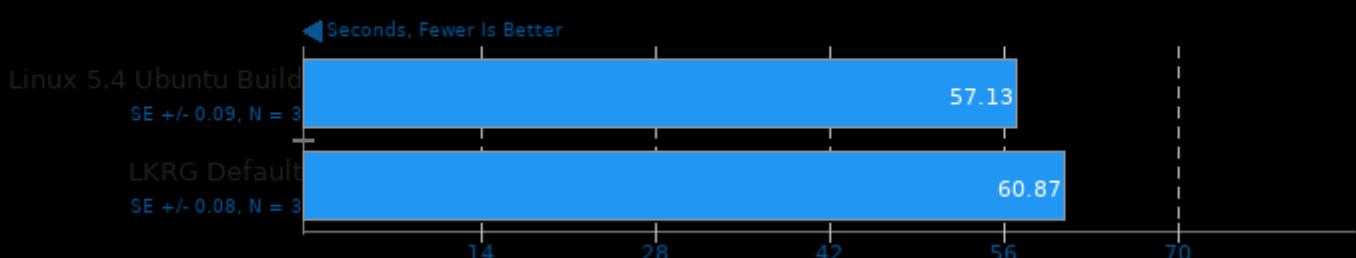
Timed MPlayer Compilation 1.4

Time To Compile



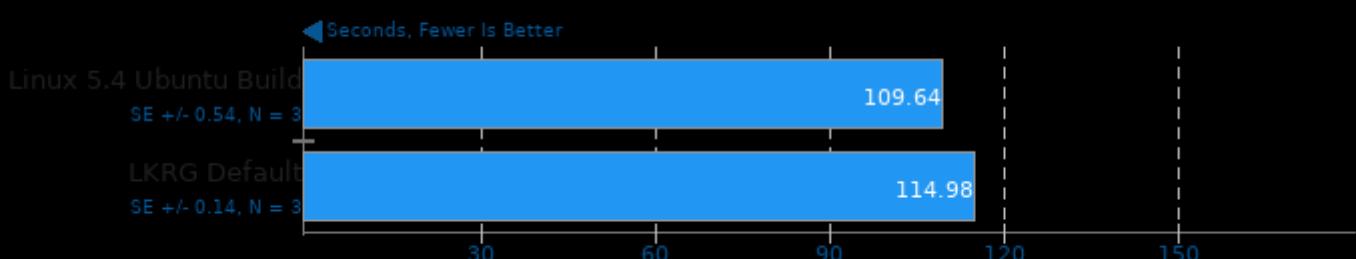
Timed PHP Compilation 7.4.2

Time To Compile



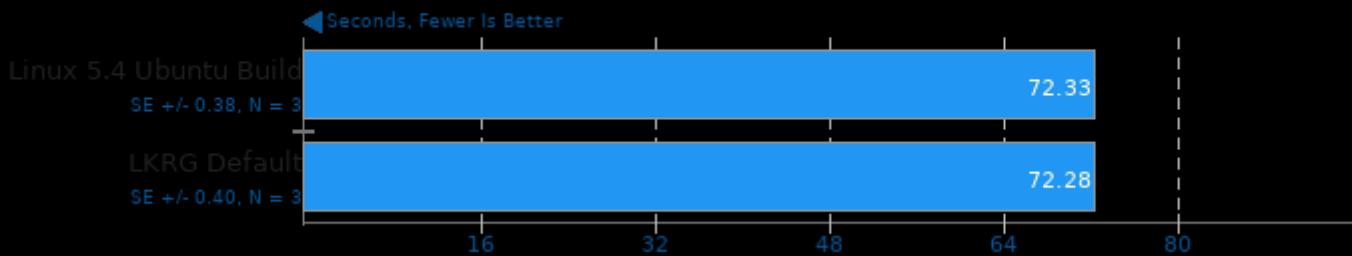
Build2 0.12

Time To Compile



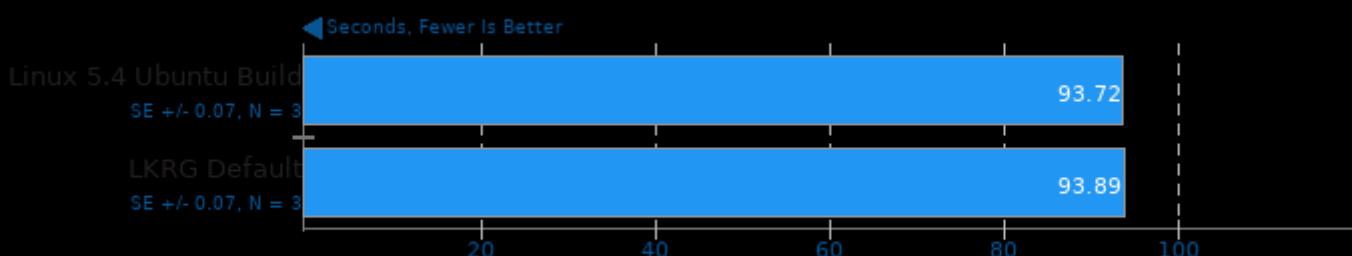
DeepSpeech 0.6

Acceleration: CPU



Tachyon 0.99b6

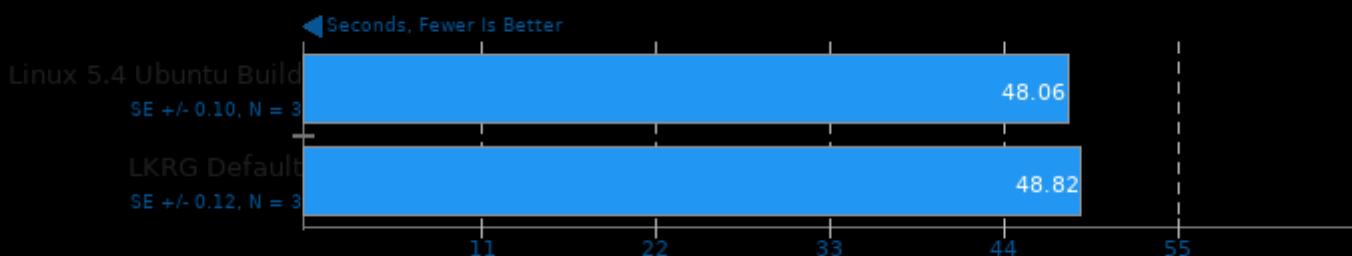
Total Time



1. (CC) gcc options: -m64 -O3 -fomit-frame-pointer -ffast-math -ltachyon -lm -lpthread

SQLite Speedtest 3.30

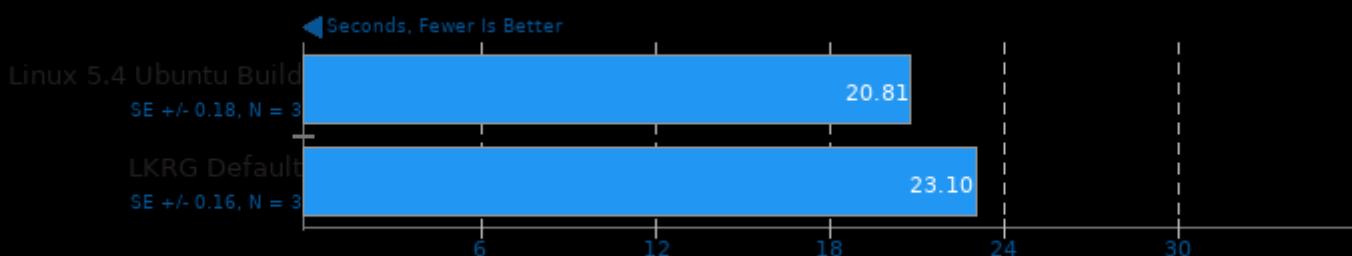
Timed Time - Size 1,000



1. (CC) gcc options: -O2 -ldl -lz -lpthread

Inkscape

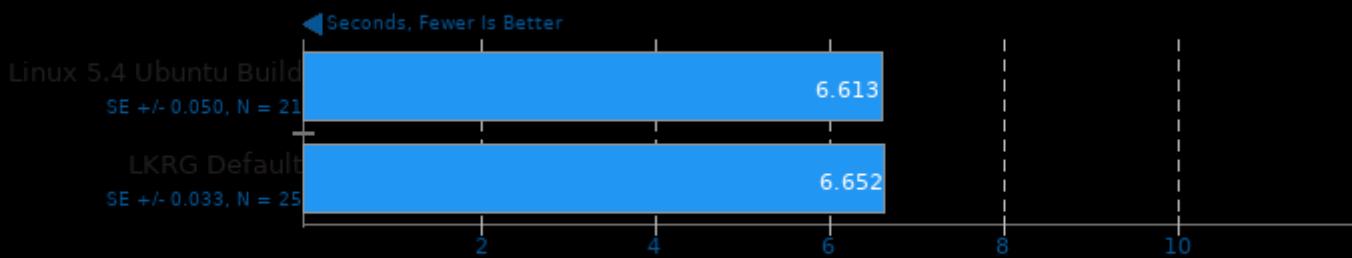
Operation: SVG Files To PNG



1. Inkscape 0.92.4 (5da689c313, 2019-01-14)

LibreOffice

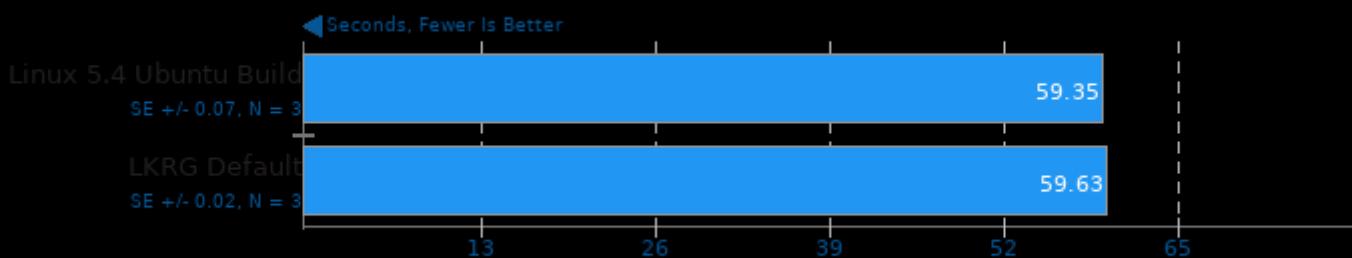
Test: 20 Documents To PDF



1. LibreOffice 6.4.0.3 40(Build:3)

RawTherapee

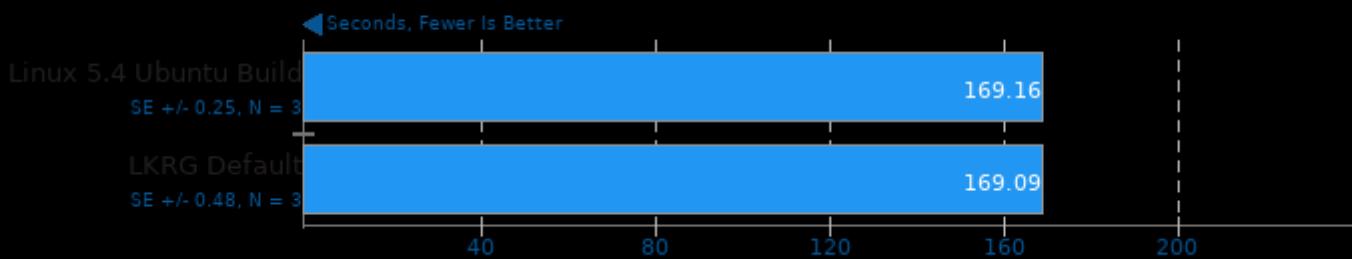
Total Benchmark Time



1. RawTherapee, version 5.8, command line.

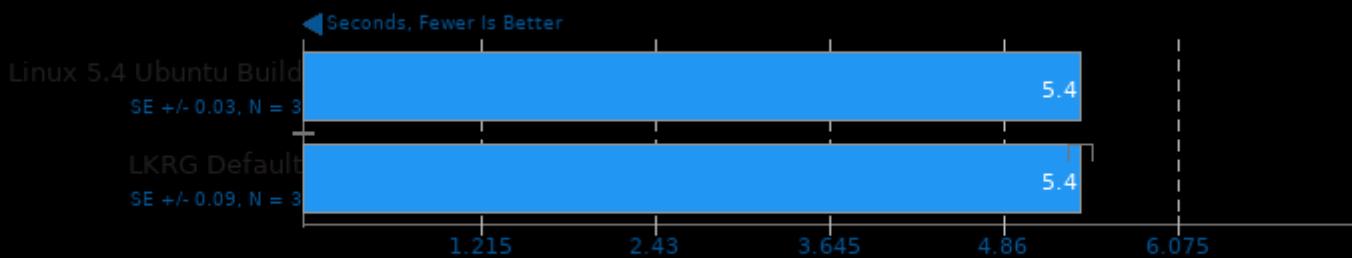
Blender 2.82

Blend File: BMW27 - Compute: CPU-Only



Selenium

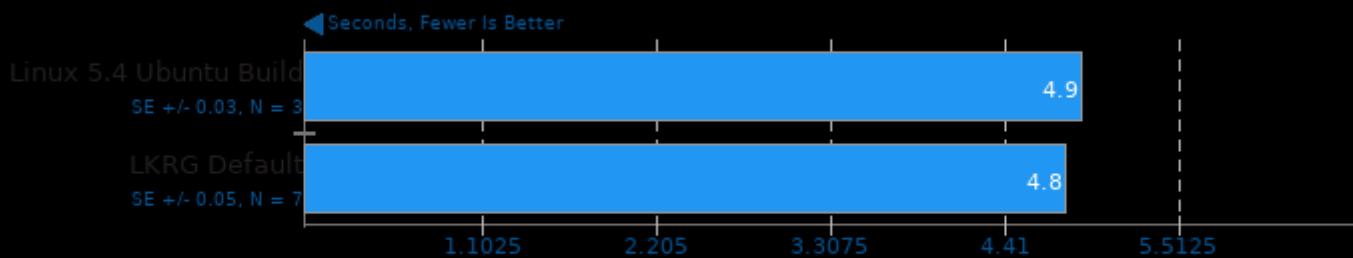
Benchmark: Maze Solver - Browser: Firefox



1. firefox 73.0.1

Selenium

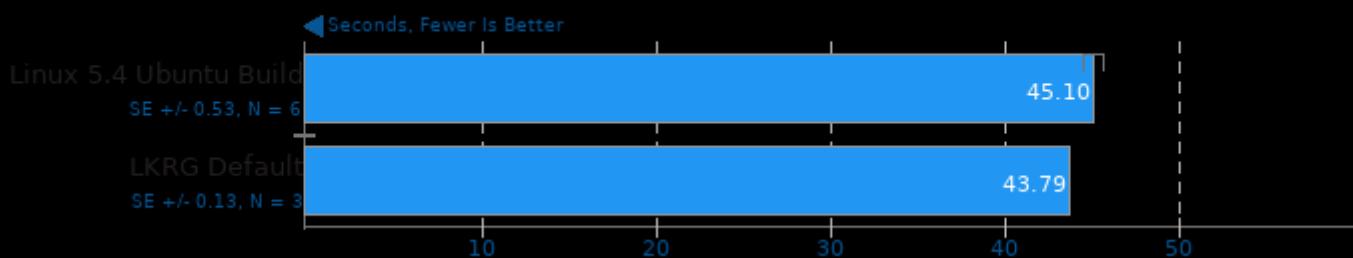
Benchmark: Maze Solver - Browser: Google Chrome



1. chrome 80.0.3987.122

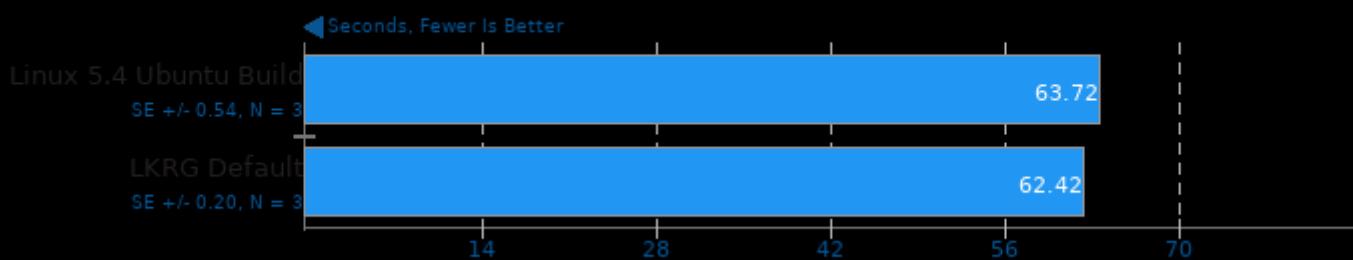
Milpack Benchmark

Benchmark: scikit_ica



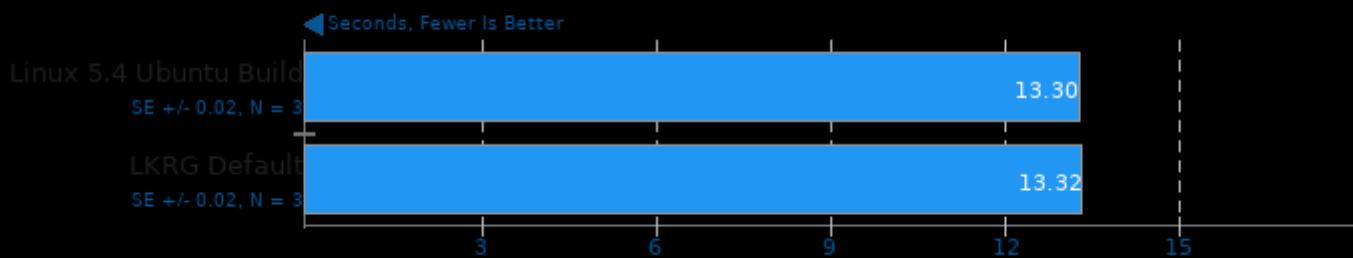
Milpack Benchmark

Benchmark: scikit_qda



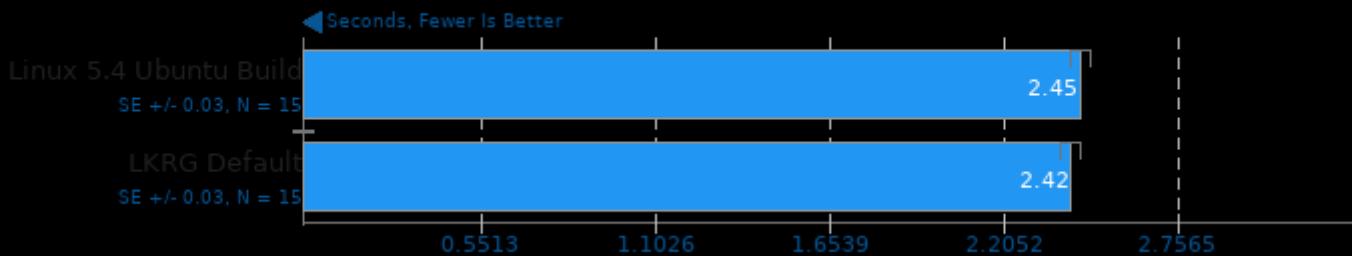
Milpack Benchmark

Benchmark: scikit_svm



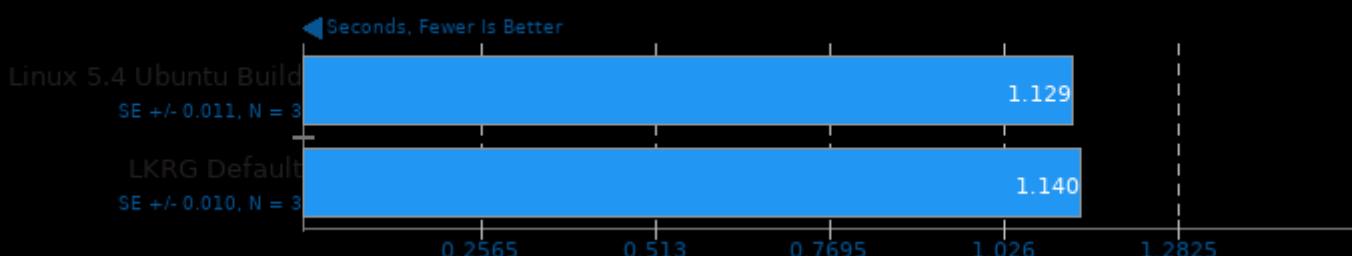
Mlpack Benchmark

Benchmark: scikit_linearridge_regression



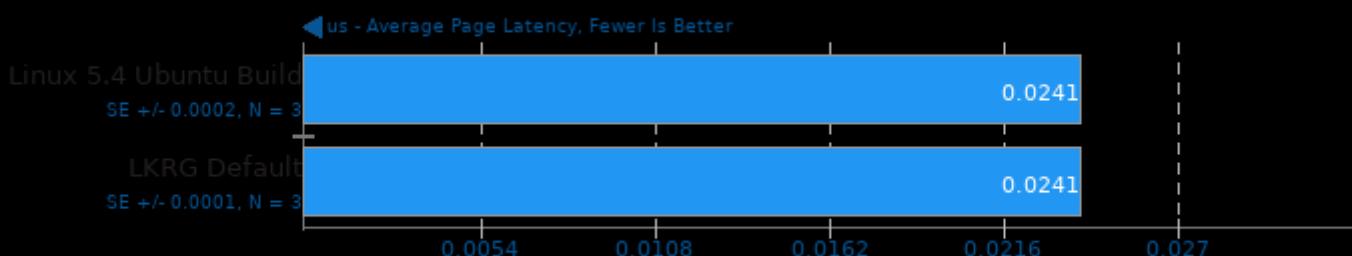
Sunflow Rendering System 0.07.2

Global Illumination + Image Synthesis



pmbench

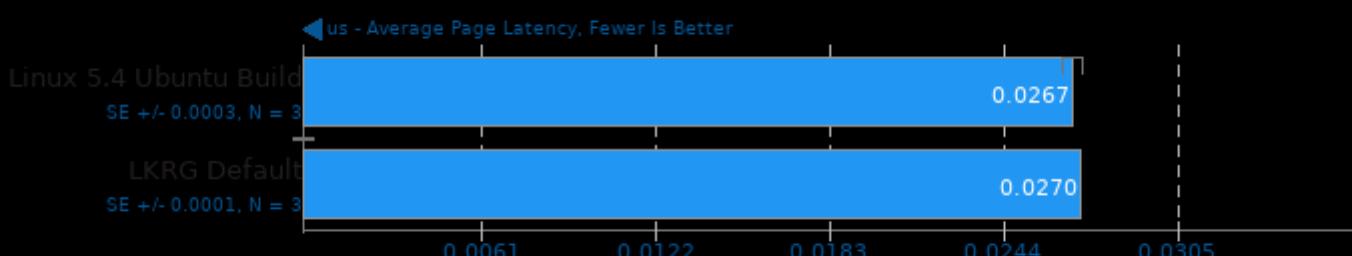
Concurrent Worker Threads: 1 - Read-Write Ratio: 100% Reads



1. (CC) gcc options: -lm -luuid -lxml2 -m64 -pthread

pmbench

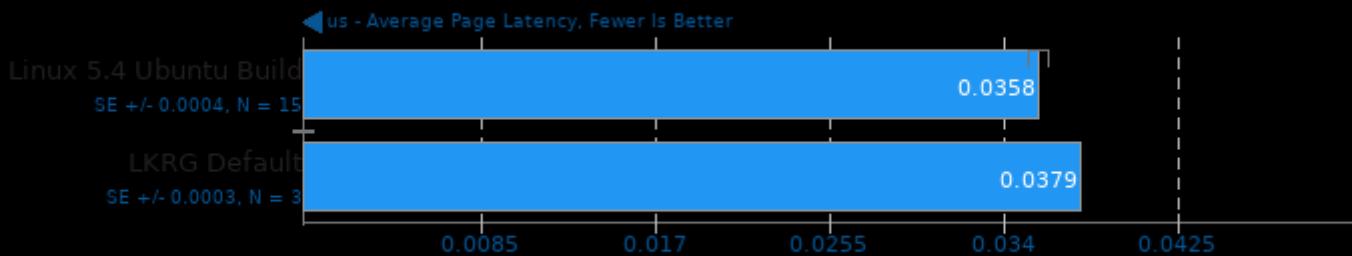
Concurrent Worker Threads: 1 - Read-Write Ratio: 100% Writes



1. (CC) gcc options: -lm -luuid -lxml2 -m64 -pthread

pmbench

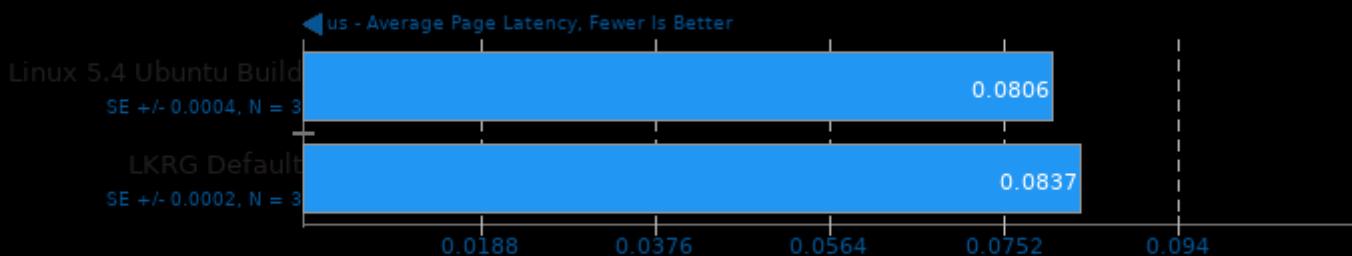
Concurrent Worker Threads: 16 - Read-Write Ratio: 100% Reads



1. (CC) gcc options: -lm -luuid -lxml2 -m64 -pthread

pmbench

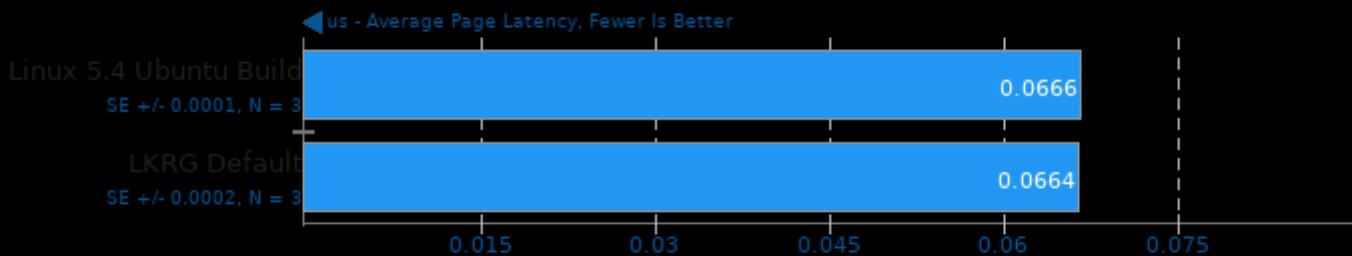
Concurrent Worker Threads: 16 - Read-Write Ratio: 100% Writes



1. (CC) gcc options: -lm -luuid -lxml2 -m64 -pthread

pmbench

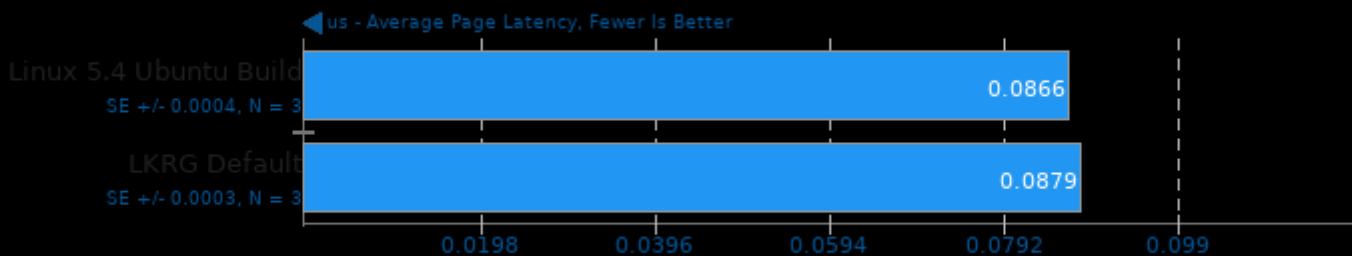
Concurrent Worker Threads: 1 - Read-Write Ratio: 80% Reads 20% Writes



1. (CC) gcc options: -lm -luuid -lxml2 -m64 -pthread

pmbench

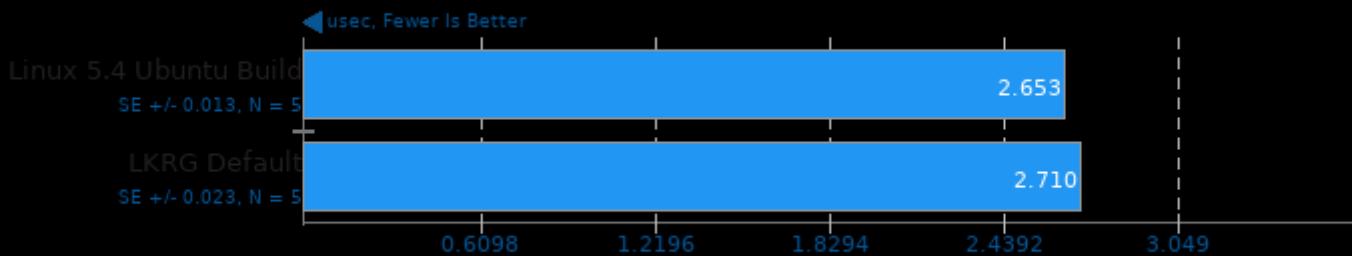
Concurrent Worker Threads: 16 - Read-Write Ratio: 80% Reads 20% Writes



1. (CC) gcc options: -lm -luuid -lxml2 -m64 -pthread

Sockperf 3.4

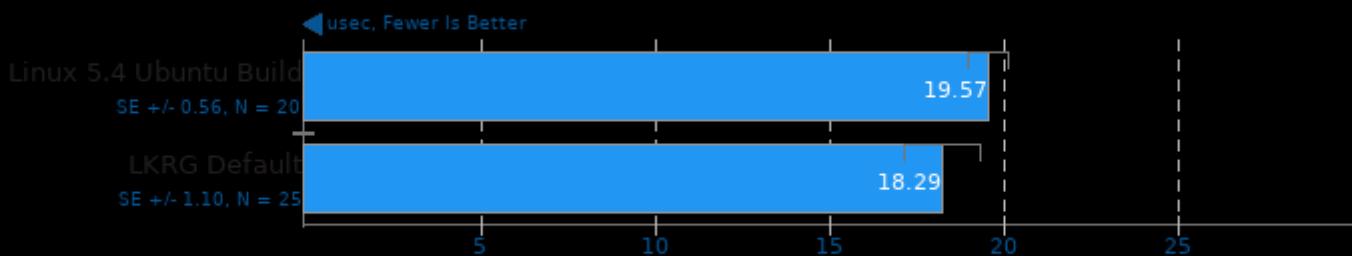
Test: Latency Ping Pong



1. (CXX) g++ options: -param -O3 -rdynamic -ldl -lpthread

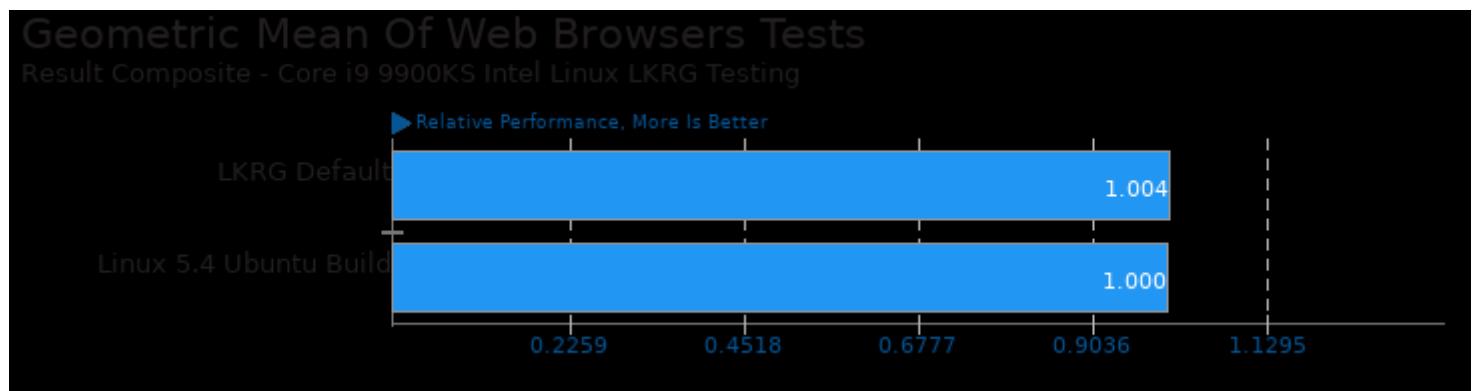
Sockperf 3.4

Test: Latency Under Load

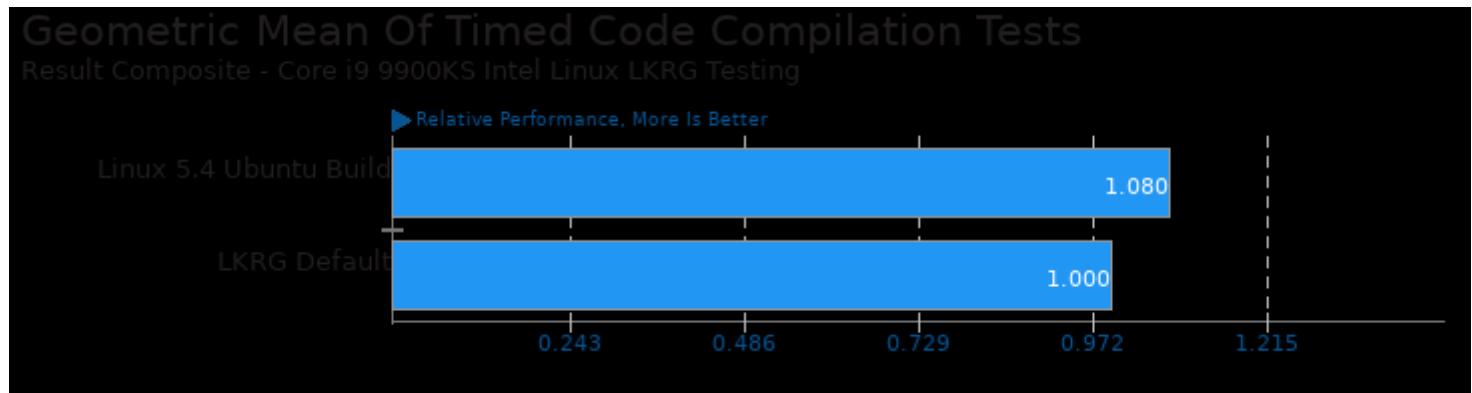


1. (CXX) g++ options: -param -O3 -rdynamic -ldl -lpthread

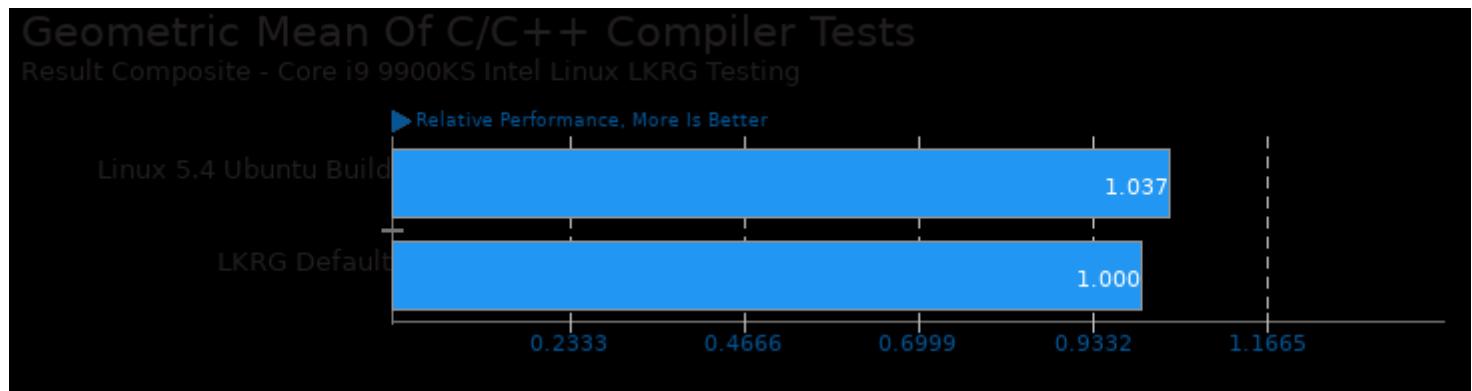
These geometric means are based upon test groupings / test suites for this result file.



Geometric mean based upon tests: system/selenium



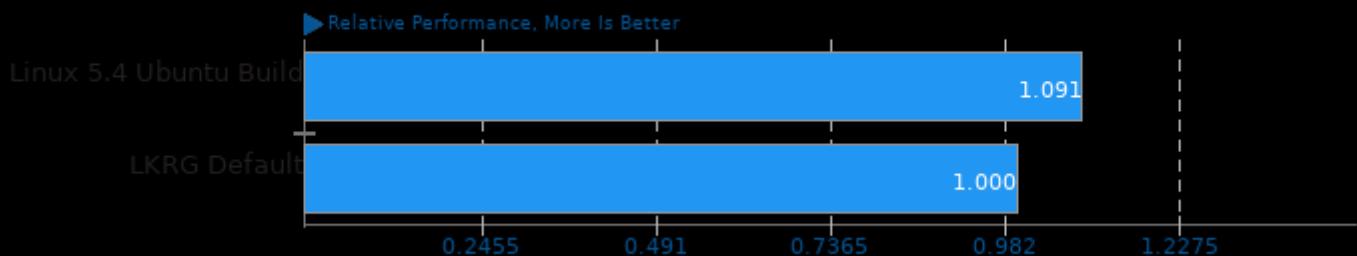
Geometric mean based upon tests: pts/build-apache, pts/build-php, pts/build-linux-kernel, pts/build-imagemagick, pts/build-gcc, pts/build-gdb, pts/build-llvm, pts/build-ffmpeg, pts/build-mplayer and pts/build2



Geometric mean based upon tests: pts/vpxenc, pts/build-php, pts/build-imagemagick, pts/build-llvm, pts/pgbench, pts/sqlite-speedtest, pts/x264, pts/svt-av1, pts/build-gdb, pts/build-ffmpeg, pts/build-apache, pts/build-mplayer and pts/tachyon

Geometric Mean Of CPU Massive Tests

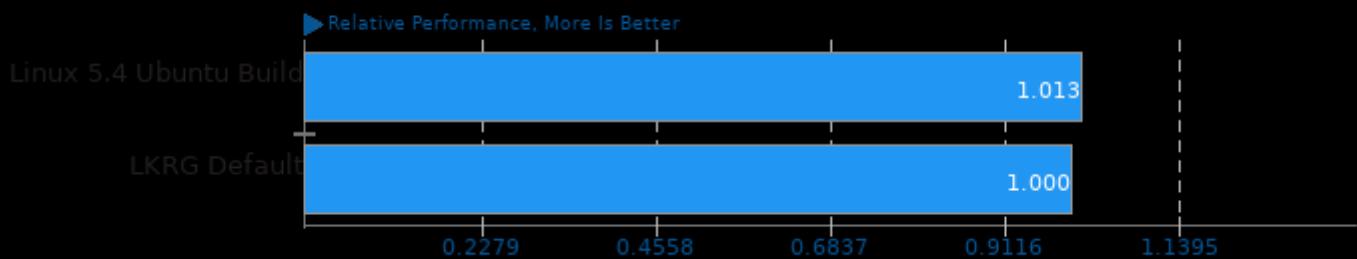
Result Composite - Core i9 9900KS Intel Linux LKRG Testing



Geometric mean based upon tests: pts/build-apache, pts/build-gcc, pts/build-llvm, pts/build-linux-kernel, pts/build-php, pts/ctx-clock, pts/svt-av1, pts/vpxenc, pts/x264, pts/java-scimark2, pts(numpy, pts/pgbench, pts/phpbench, pts/sockperf, pts/stress-ng, pts/t-test1, pts/tachyon and pts/blender

Geometric Mean Of Creator Workloads Tests

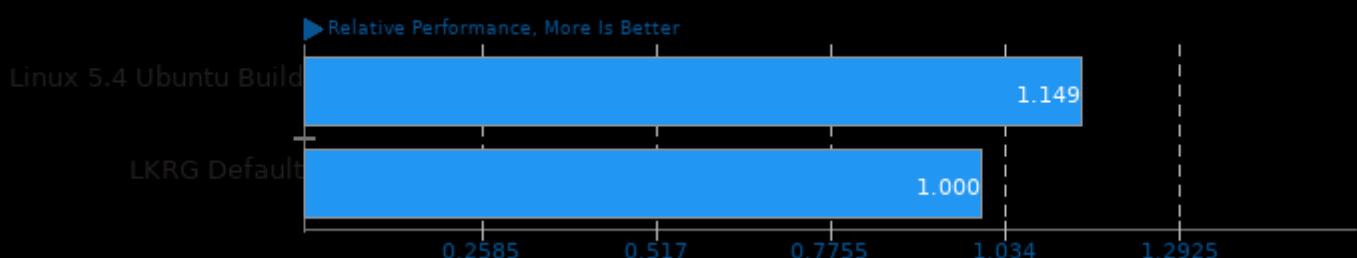
Result Composite - Core i9 9900KS Intel Linux LKRG Testing



Geometric mean based upon tests: pts/tachyon, pts/rays1bench, pts/blender, pts/x264, pts/vpxenc, pts/svt-av1, system/inkscape, system/rawtherapee and pts/deepspeech

Geometric Mean Of Database Test Suite

Result Composite - Core i9 9900KS Intel Linux LKRG Testing

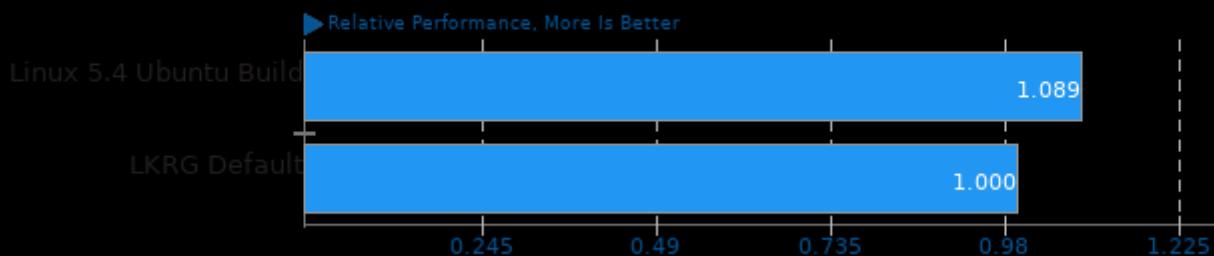


Geometric mean based upon tests: pts/sqlite, pts/sqlite-speedtest and pts/pgbench

Core i9 9900KS Intel Linux LKRG Testing

Geometric Mean Of Disk Test Suite

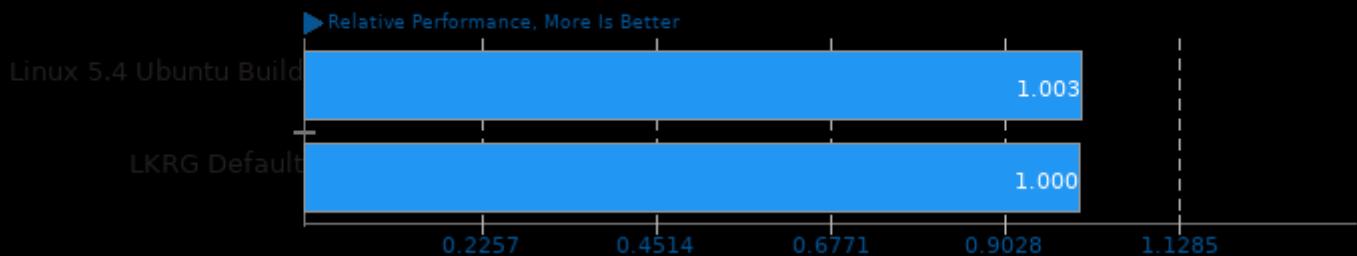
Result Composite - Core i9 9900KS Intel Linux LKRG Testing



Geometric mean based upon tests: pts/sqlite, pts/postmark and pts/fio

Geometric Mean Of Encoding Tests

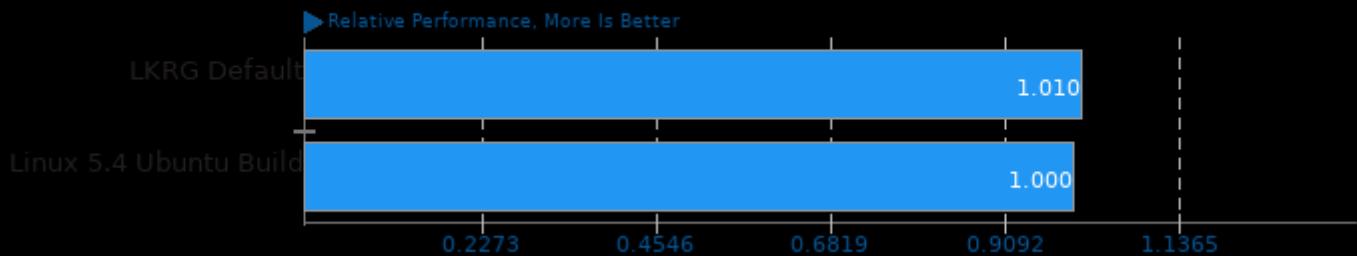
Result Composite - Core i9 9900KS Intel Linux LKRG Testing



Geometric mean based upon tests: pts/x264, pts/vpxenc and pts/svt-av1

Geometric Mean Of HPC - High Performance Computing Tests

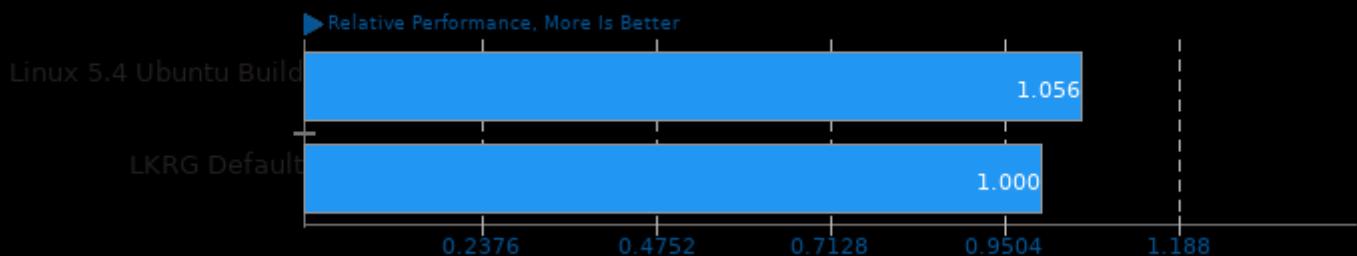
Result Composite - Core i9 9900KS Intel Linux LKRG Testing



Geometric mean based upon tests: pts/numpy, pts/deepspeech and pts/mlpack

Geometric Mean Of Imaging Tests

Result Composite - Core i9 9900KS Intel Linux LKRG Testing

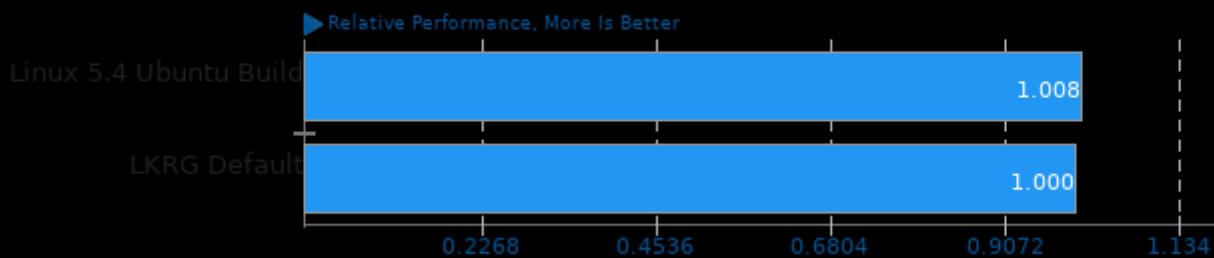


Geometric mean based upon tests: system/inkscape and system/rawtherapee

Core i9 9900KS Intel Linux LKRG Testing

Geometric Mean Of Java Tests

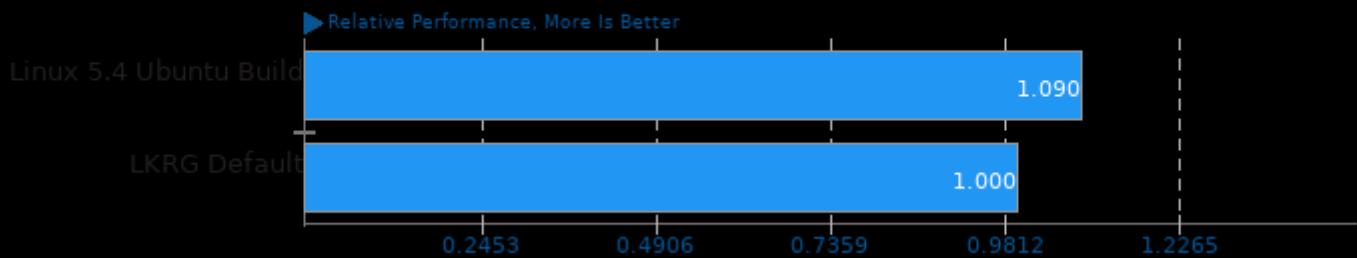
Result Composite - Core i9 9900KS Intel Linux LKRG Testing



Geometric mean based upon tests: pts/sunflow and pts/java-scimark2

Geometric Mean Of Common Kernel Benchmarks Tests

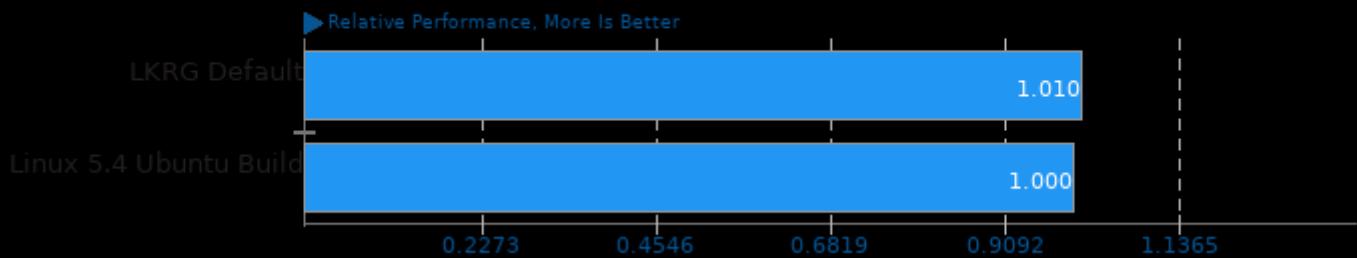
Result Composite - Core i9 9900KS Intel Linux LKRG Testing



Geometric mean based upon tests: pts/postmark, pts/sqlite-speedtest, pts/pgbench, pts/pmbench, pts/t-test1, pts/ctx-clock, pts/mutex, pts/stress-ng, pts/ethr and pts/iperf

Geometric Mean Of Machine Learning Tests

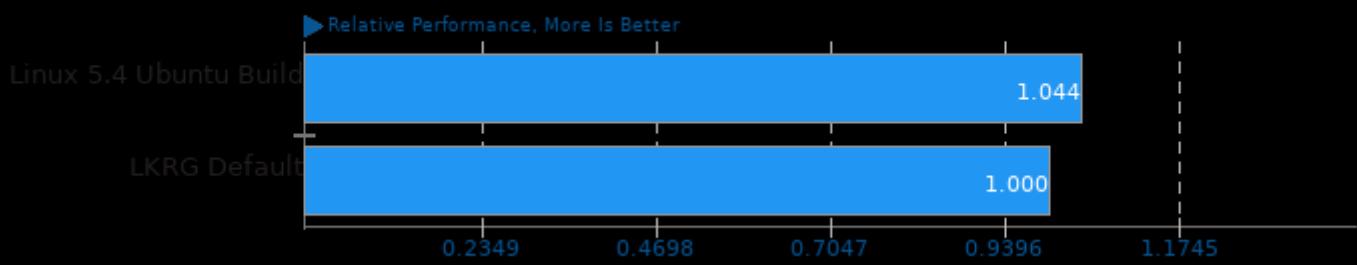
Result Composite - Core i9 9900KS Intel Linux LKRG Testing



Geometric mean based upon tests: pts/numpy, pts/deepspeech and pts/mlpack

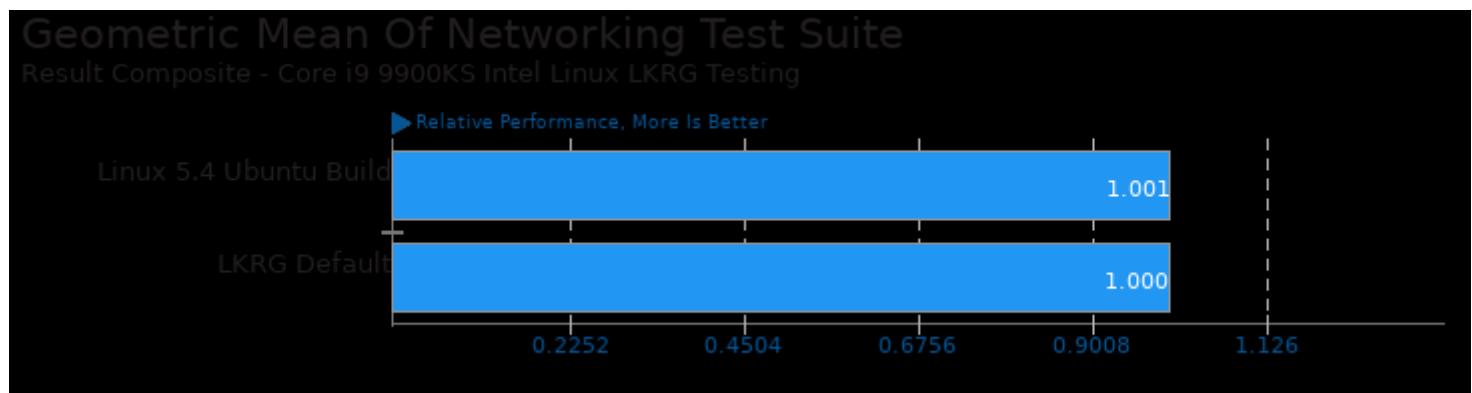
Geometric Mean Of Multi-Core Tests

Result Composite - Core i9 9900KS Intel Linux LKRG Testing

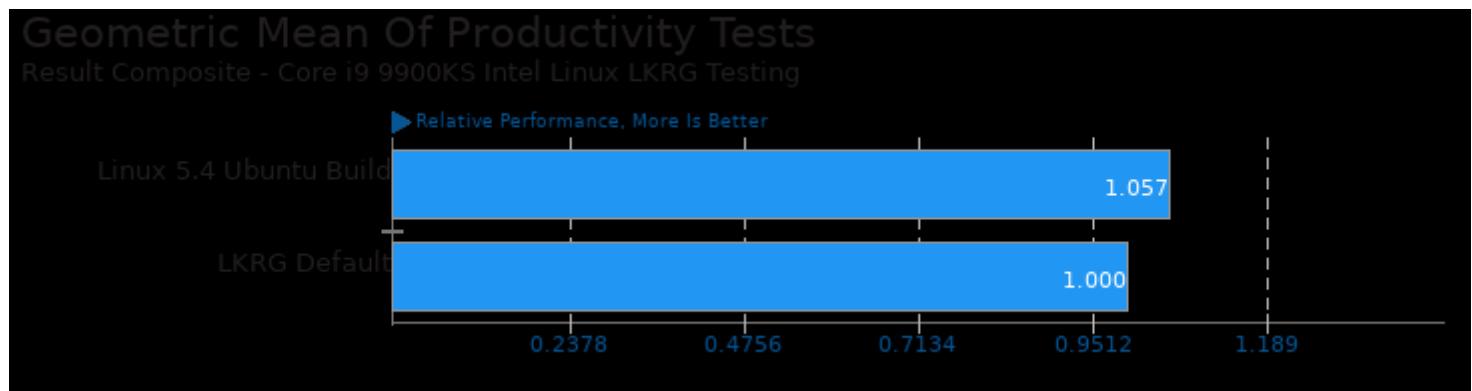


Core i9 9900KS Intel Linux LKRG Testing

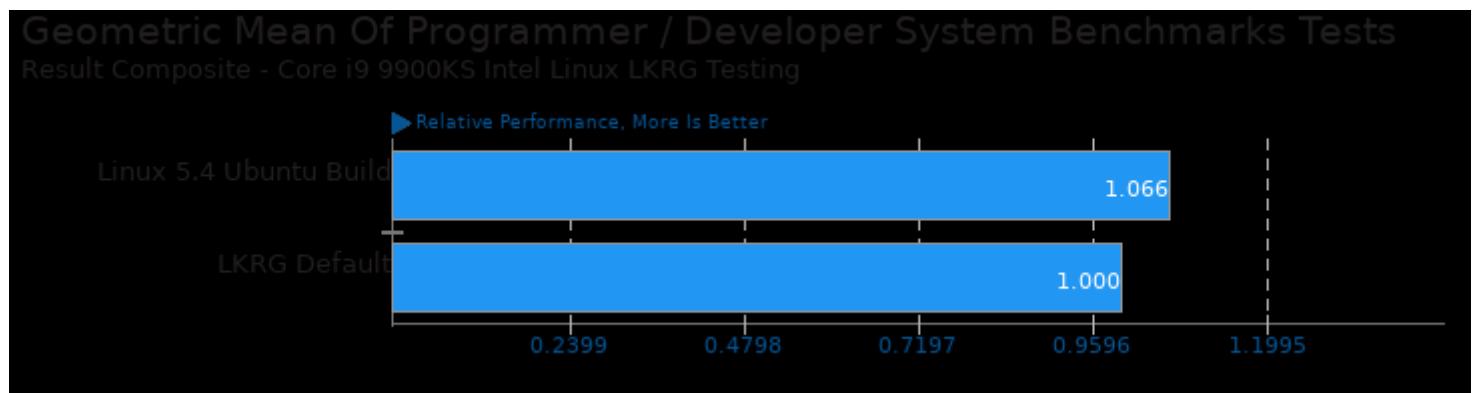
Geometric mean based upon tests: pts/blender, pts/tachyon, pts/rays1bench, pts/coremark, pts/x264, pts/vpxenc, pts/svt-av1, pts/build-apache, pts/build-php, pts/build-linux-kernel, pts/build-imagemagick, pts/build-gcc, pts/build-gdb, pts/build-llvm, pts/build-ffmpeg, pts/build-mplayer, pts/build2 and pts/pgbench



Geometric mean based upon tests: pts/sockperf, pts/ethr and pts/iperf



Geometric mean based upon tests: system/libreoffice and system/inkscape

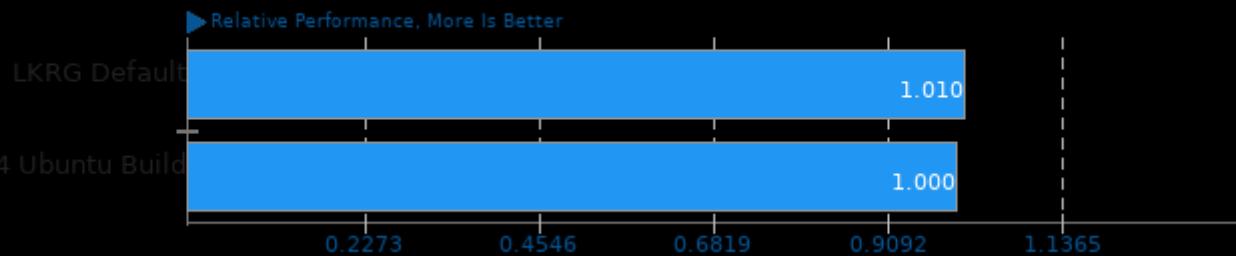


Geometric mean based upon tests: pts/sqlite-speedtest, pts/pybench, pts/build-apache, pts/build-php, pts/build-linux-kernel, pts/build-imagemagick, pts/build-gcc, pts/build-gdb, pts/build-llvm, pts/build-ffmpeg, pts/build-mplayer and pts/build2

Core i9 9900KS Intel Linux LKRG Testing

Geometric Mean Of Python Tests

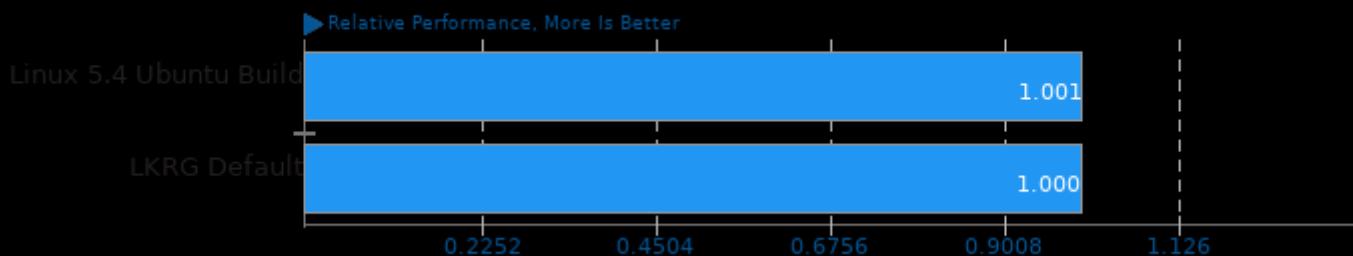
Result Composite - Core i9 9900KS Intel Linux LKRG Testing



Geometric mean based upon tests: pts/pybench, pts/numpy and pts/mlpack

Geometric Mean Of Raytracing Tests

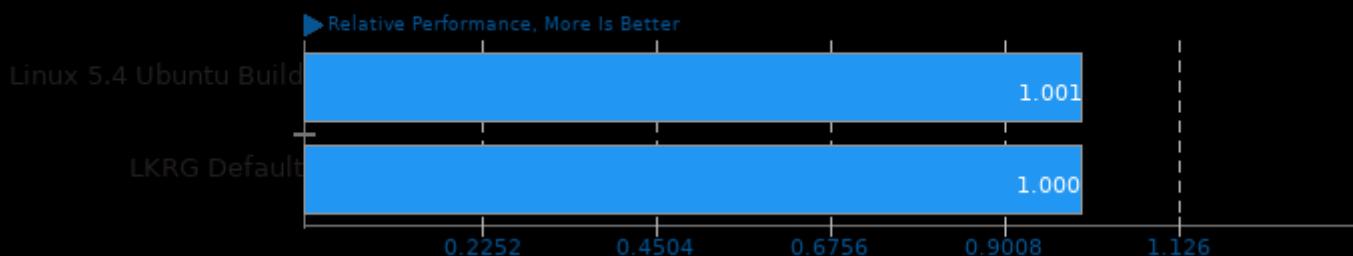
Result Composite - Core i9 9900KS Intel Linux LKRG Testing



Geometric mean based upon tests: pts/tachyon and pts/rays1bench

Geometric Mean Of Renderers Tests

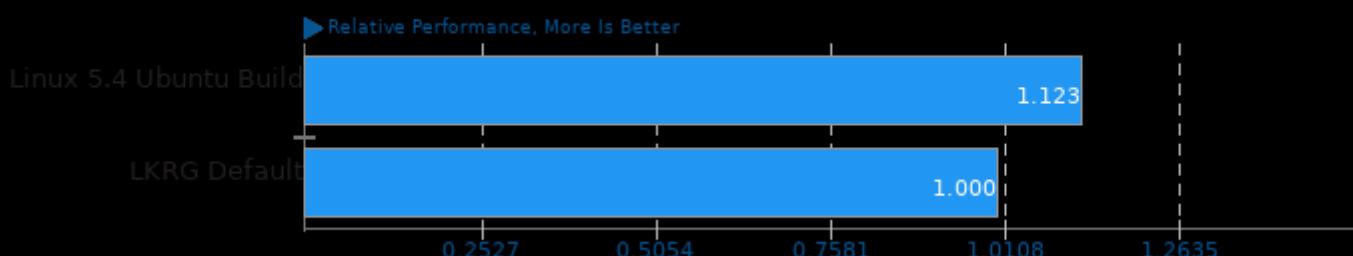
Result Composite - Core i9 9900KS Intel Linux LKRG Testing



Geometric mean based upon tests: pts/tachyon, pts/rays1bench and pts/blender

Geometric Mean Of Server Tests

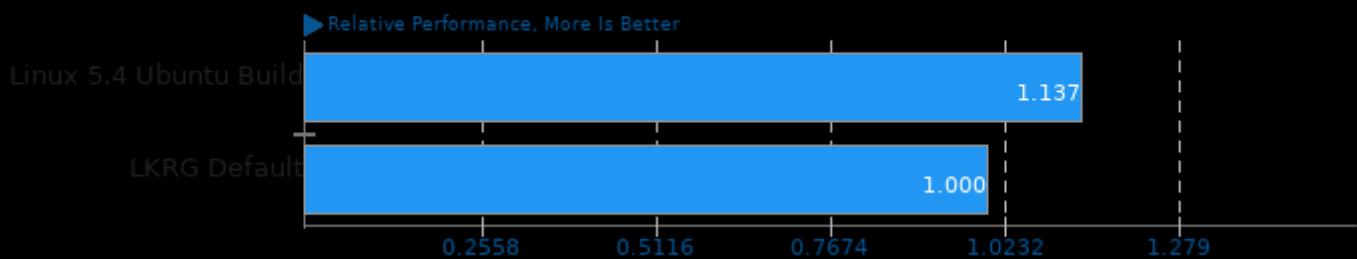
Result Composite - Core i9 9900KS Intel Linux LKRG Testing



Geometric mean based upon tests: pts/pgbench, pts/phpbench, pts/sqlite and pts/sqlite-speedtest

Geometric Mean Of Server CPU Tests

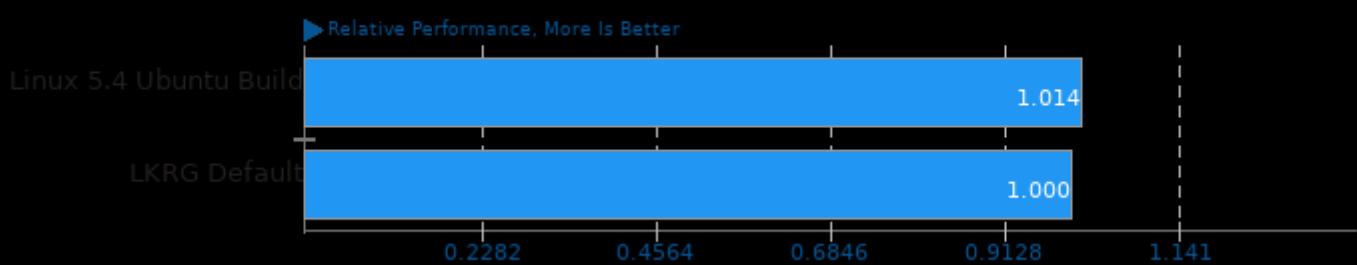
Result Composite - Core i9 9900KS Intel Linux LKRG Testing



Geometric mean based upon tests: pts/svt-av1, pts/x264, pts/build-gcc, pts/build-linux-kernel, pts/build-php, pts/build-llvm, pts/stress-ng, pts/ctx-clock, pts/blender, pts/pybench, pts/numpy and pts/phpbench

Geometric Mean Of Single-Threaded Tests

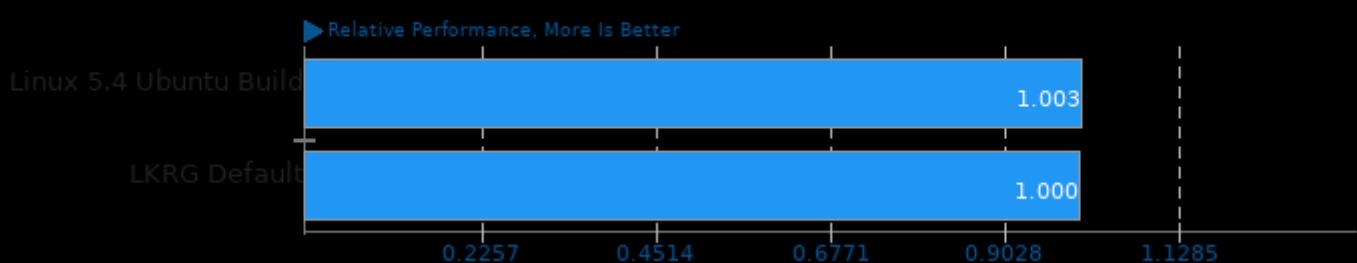
Result Composite - Core i9 9900KS Intel Linux LKRG Testing



Geometric mean based upon tests: pts/java-scimark2, pts/numpy, pts/deepspeech, system/inkscape, pts/mutex, pts/pybench and pts/phpbench

Geometric Mean Of Video Encoding Tests

Result Composite - Core i9 9900KS Intel Linux LKRG Testing



Geometric mean based upon tests: pts/x264, pts/vpxenc and pts/svt-av1

This file was automatically generated via the Phoronix Test Suite benchmarking software on Thursday, 28 March 2024 16:51.