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LKRG 0.8 Benchmarking

LKRG 0.8 tests by Michael Larabel for a future article.

Automated Executive Summary

Ubuntu Stock Kernel had the most wins, coming in first place for 64% of the tests.

Based on the geometric mean of all complete results, the fastest (Ubuntu Stock Kernel) was 1.029x the speed of the slowest (LKRG 0.8).

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

OSBench (Test: Launch Programs) at 2.084x

OSBench (Test: Create Files) at 1.322x

WireGuard + Linux Networking Stack Stress Test at 1.271x

LevelDB (Benchmark: Random Delete) at 1.246x

LevelDB (Benchmark: Sequential Fill) at 1.214x

LevelDB (Benchmark: Sequential Fill) at 1.211x

LevelDB (Benchmark: Overwrite) at 1.184x

LevelDB (Benchmark: Overwrite) at 1.183x

LevelDB (Benchmark: Random Fill) at 1.171x

LevelDB (Benchmark: Random Fill) at 1.167x.

Test Systems:

Ubuntu Stock Kernel

LKRG 0.8

Processor: Intel Core i9-9900K @ 5.00GHz (8 Cores / 16 Threads), Motherboard: ASRock Z390M Pro4 (P4.20 BIOS), Chipset: Intel Cannon Lake PCH, Memory: 16GB, Disk: 240GB Force MP510, Graphics: Intel UHD 630 3GB (1200MHz), Audio: Realtek ALC892, Monitor: G237HL, Network: Intel I219-V

OS: Ubuntu 20.04, Kernel: 5.4.0-39-generic (x86_64), Desktop: GNOME Shell 3.36.2, 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

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

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: Not affected + mds: Mitigation of Clear buffers; SMT vulnerable + meltdown: Not affected + 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 IPBP: conditional IBRS_FW STIBP: conditional RSB filling + srbs: Mitigation of Microcode + tsx_async_abort: Mitigation of Clear buffers; SMT vulnerable

	Ubuntu Stock Kernel	LKRG 0.8
Tesseract - 1920 x 1080 (FPS)	59.08150	58.76975
Normalized	100%	99.47%
Standard Deviation	3.9%	0.2%
Xonotic - 1920 x 1080 - Low (FPS)	180.0647637	181.9330479
Normalized	98.97%	100%
Standard Deviation	1.1%	0.4%
Xonotic - 1920 x 1080 - High (FPS)	126.1299604	125.3836801
Normalized	100%	99.41%
Standard Deviation	0.4%	1.5%
Xonotic - 1920 x 1080 - Ultra (FPS)	110.4580600	112.3316477
Normalized	98.33%	100%
Standard Deviation	0.8%	1.3%
Xonotic - 1920 x 1080 - Ultimate (FPS)	82.2872276	81.6659084
Normalized	100%	99.24%
Standard Deviation	0.5%	0.8%
ParaView - Many Spheres - 1920 x 1080 (Frames / Sec)	6.94	6.92
Normalized	100%	99.71%
Standard Deviation	0.2%	0.5%
ParaView - Many Spheres - 1920 x 1080 (MiPolys / Sec)	696.124	693.816
Normalized	100%	99.67%
Standard Deviation	0.2%	0.5%
ParaView - Wavelet Contour - 1920 x 1080 (Frames / Sec)	20.48	20.42
Normalized	100%	99.71%

	Standard Deviation	0.3%	0.4%
ParaView - Wavelet Contour - 1920 x 1080 (MiPolys / Sec)	213.465	212.841	
	Normalized	100%	99.71%
	Standard Deviation	0.3%	0.4%
WireGuard + Linux Networking Stack Stress Test	147.978	188.141	
	Normalized	100%	78.65%
	Standard Deviation	1.6%	0.4%
High Performance Conjugate Gradient (GFLOP/s)	4.65841	4.66303	
	Normalized	99.9%	100%
	Standard Deviation	0.1%	0%
Zstd Compression - 3 (MB/s)	2822	2871	
	Normalized	98.27%	100%
	Standard Deviation	1%	2.8%
Zstd Compression - 19 (MB/s)	26.5	26.4	
	Normalized	100%	99.62%
	Standard Deviation	0.2%	0.2%
Botan - KASUMI (MiB/s)	112.842	112.728	
	Normalized	100%	99.9%
	Standard Deviation	0.1%	0.1%
Botan - AES-256 (MiB/s)	4802	4810	
	Normalized	99.83%	100%
	Standard Deviation	0.3%	0.1%
Botan - Twofish (MiB/s)	434.920	433.748	
	Normalized	100%	99.73%
	Standard Deviation	0.2%	0.4%
Botan - Blowfish (MiB/s)	542.201	542.343	
	Normalized	99.97%	100%
	Standard Deviation	0.2%	0.1%
Botan - CAST-256 (MiB/s)	171.302	171.767	
	Normalized	99.73%	100%
	Standard Deviation	0.4%	0.1%
oneDNN - IP Batch 1D - u8s8f32 - CPU (ms)	1.70948	1.76052	
	Normalized	100%	97.1%
	Standard Deviation	3.5%	3.1%
oneDNN - IP Batch All - u8s8f32 - CPU (ms)	26.8881	27.4401	
	Normalized	100%	97.99%
	Standard Deviation	0.1%	0.7%
oneDNN - C.B.S.A - u8s8f32 - CPU (ms)	17.6523	17.5423	
	Normalized	99.38%	100%
	Standard Deviation	0.4%	0.4%
oneDNN - D.B.d - u8s8f32 - CPU (ms)	5.08133	5.06349	
	Normalized	99.65%	100%
	Standard Deviation	3.8%	2.8%
oneDNN - D.B.d - u8s8f32 - CPU (ms)	3.06560	3.27896	
	Normalized	100%	93.49%
	Standard Deviation	0.3%	3.4%
oneDNN - M.M.B.S.T - u8s8f32 - CPU (ms)	3.29696	3.35696	
	Normalized	100%	98.21%
	Standard Deviation	5.2%	4.3%
dav1d - Summer Nature 4K (FPS)	165.09	168.12	
	Normalized	98.2%	100%
	Standard Deviation	0.3%	0.6%
dav1d - S.N.1 (FPS)	608.03	603.20	
	Normalized	100%	99.21%

	Standard Deviation	0.3%	1.3%
Embree - Pathtracer - Asian Dragon Obj (FPS)	Normalized	11.7085	11.6731
	Standard Deviation	1.5%	2.3%
Embree - Pathtracer ISPC - Asian Dragon Obj (FPS)	Normalized	12.9532	12.9889
	Standard Deviation	0.6%	0.6%
SVT-AV1 - Enc Mode 4 - 1080p (FPS)	Normalized	3.167	3.193
	Standard Deviation	0.8%	1.1%
x265 - H.2.1.V.E (FPS)	Normalized	61.78	62.05
	Standard Deviation	2.8%	2.8%
Intel Open Image Denoise - Memorial (Images / Sec)	Normalized	7.89	7.90
	Standard Deviation	1.7%	1.7%
OpenVKL - vkIBenchmark (Items / Sec)	Normalized	147.31	146.64
	Standard Deviation	0.5%	1%
Coremark - CoreMark Size 666 - I.P.S (Iterations/Sec)	Normalized	372126	374823
	Standard Deviation	2.9%	2.7%
LuxCoreRender - DLSC (M samples/sec)	Normalized	1.49	1.51
	Standard Deviation	1.9%	0.8%
LuxCoreRender - R.C.a.P (M samples/sec)	Normalized	1.61	1.61
	Standard Deviation	0.8%	0.9%
libavif avifenc - 0 (sec)	Normalized	95.190	94.770
	Standard Deviation	0.5%	0.1%
libavif avifenc - 10 (sec)	Normalized	4.706	4.727
	Standard Deviation	0.3%	0.5%
Timed Apache Compilation - Time To Compile (sec)	Normalized	20.091	22.714
	Standard Deviation	0.1%	0.3%
Timed GDB GNU Debugger Compilation - Time To	Normalized	97.428	102.415
Compile (sec)			
	Standard Deviation	0.6%	0.3%
Timed Linux Kernel Compilation - Time To Compile	Normalized	92.002	94.314
	Standard Deviation	0.4%	0.8%
Build2 - Time To Compile (sec)	Normalized	114.569	118.083
	Standard Deviation	0.6%	0.8%
YafaRay - T.T.F.S.S (sec)	Normalized	168.678	168.563
	Standard Deviation	0.4%	0.3%
FLAC Audio Encoding - WAV To FLAC (sec)	Normalized	7.557	7.639
	Standard Deviation	0.5%	1%
LAME MP3 Encoding - WAV To MP3 (sec)	Normalized	7.228	7.227
	Standard Deviation	0.999%	0.1%

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OpenSSL - R.4.b.P (Signs/sec)	2675	2673
Normalized	100%	99.95%
Standard Deviation	3%	2.9%
Cryptsetup - PBKDF2-sha512 (Iterations/sec)	1977203	1966232
Normalized	100%	99.45%
Standard Deviation	0.1%	1.1%
Cryptsetup - PBKDF2-whirlpool (Iterations/sec)	857614	857146
Normalized	100%	99.95%
Standard Deviation	0.1%	0.1%
LevelDB - Fill Sync (MB/s)	0.4	0.4
Standard Deviation	0%	0%
LevelDB - Fill Sync (us(Op))	4049	4175
Normalized	100%	96.98%
Standard Deviation	1%	0.7%
LevelDB - Overwrite (MB/s)	41.3	34.9
Normalized	100%	84.5%
Standard Deviation	3%	3.9%
LevelDB - Overwrite (us(Op))	42.828	50.719
Normalized	100%	84.44%
Standard Deviation	3.1%	4.3%
LevelDB - Rand Fill (MB/s)	41.1	35.1
Normalized	100%	85.4%
Standard Deviation	3.9%	2.1%
LevelDB - Rand Fill (us(Op))	43.061	50.247
Normalized	100%	85.7%
Standard Deviation	4.2%	2.1%
LevelDB - Rand Read (us(Op))	7.930	8.025
Normalized	100%	98.82%
Standard Deviation	3%	0.7%
LevelDB - Seek Rand (us(Op))	10.123	10.322
Normalized	100%	98.07%
Standard Deviation	2.6%	1.6%
LevelDB - Rand Delete (us(Op))	40.441	50.370
Normalized	100%	80.29%
Standard Deviation	0.1%	0.4%
LevelDB - Seq Fill (MB/s)	43.1	35.5
Normalized	100%	82.37%
Standard Deviation	1%	0.6%
LevelDB - Seq Fill (us(Op))	41.047	49.696
Normalized	100%	82.6%
Standard Deviation	1%	0.5%
Intel MPI Benchmarks - IMB-P2P PingPong (Msg/sec)	7544632	7579253
Normalized	99.54%	100%
Standard Deviation	0.7%	0.5%
Intel MPI Benchmarks - IMB-MPI1 Exchange (Mbytes/sec)	2410	2410
Normalized	100%	99.99%
Standard Deviation	0.7%	1%
Intel MPI Benchmarks - IMB-MPI1 Exchange (usec)	294.85	289.94
Normalized	98.33%	100%
Standard Deviation	0.3%	1%
Intel MPI Benchmarks - IMB-MPI1 PingPong	1549	1549
Normalized	99.98%	100%
Standard Deviation	2%	1.5%
Intel MPI Benchmarks - IMB-MPI1 Sendrecv (Mbytes/sec)	1840	1829

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	Normalized	100%	99.36%
	Standard Deviation	1.7%	1.3%
Intel MPI Benchmarks - IMB-MPI1 Sendrecv (usec)	202.71	204.66	
	Normalized	100%	99.05%
	Standard Deviation	1.1%	1.2%
Basis Universal - ETC1S (sec)	46.712	46.317	
	Normalized	99.15%	100%
	Standard Deviation	1.2%	0.3%
Basis Universal - UASTC Level 3 (sec)	67.471	67.374	
	Normalized	99.86%	100%
	Standard Deviation	1.5%	1.5%
SQLite Speedtest - Timed Time - Size 1,000 (sec)	52.023	53.188	
	Normalized	100%	97.81%
	Standard Deviation	0.3%	0.8%
GIMP - resize (sec)	7.249	7.347	
	Normalized	100%	98.67%
	Standard Deviation	2.7%	2.8%
GIMP - rotate (sec)	10.899	10.909	
	Normalized	100%	99.91%
	Standard Deviation	2.8%	0.3%
GIMP - auto-levels (sec)	10.945	11.112	
	Normalized	100%	98.5%
	Standard Deviation	0.1%	0.2%
GIMP - unsharp-mask (sec)	13.443	13.632	
	Normalized	100%	98.61%
	Standard Deviation	0.2%	0.6%
Inkscape - SVG Files To PNG (sec)	20.872	23.949	
	Normalized	100%	87.15%
	Standard Deviation	0.7%	0.3%
LibreOffice - 2.D.T.P (sec)	6.227	6.317	
	Normalized	100%	98.58%
	Standard Deviation	3.1%	4.6%
GNU Octave Benchmark (sec)	6.322	6.272	
	Normalized	99.21%	100%
	Standard Deviation	0.8%	1%
RawTherapee - T.B.T (sec)	59.107	59.149	
	Normalized	100%	99.93%
	Standard Deviation	0.5%	0.2%
Stress-NG - MMAP (Bogo Ops/s)	141.11	140.64	
	Normalized	100%	99.67%
	Standard Deviation	2.7%	3.1%
Stress-NG - NUMA (Bogo Ops/s)	222.22	223.23	
	Normalized	99.55%	100%
	Standard Deviation	0.9%	0.9%
Stress-NG - MEMFD (Bogo Ops/s)	874.43	862.32	
	Normalized	100%	98.62%
	Standard Deviation	0.6%	0.8%
Stress-NG - Atomic (Bogo Ops/s)	235052	222419	
	Normalized	100%	94.63%
	Standard Deviation	10.3%	10.2%
Stress-NG - Crypto (Bogo Ops/s)	1832	1837	
	Normalized	99.68%	100%
	Standard Deviation	2.7%	2.9%
Stress-NG - Malloc (Bogo Ops/s)	52557345	52520395	
	Normalized	100%	99.93%

LKRG 0.8 Benchmarking

	Standard Deviation	0.2%	0.3%
Stress-NG - RdRand (Bogo Ops/s)	5602	5604	
Normalized	99.96%	100%	
	Standard Deviation	0.1%	0.1%
Stress-NG - Forking (Bogo Ops/s)	72627	70780	
Normalized	100%	97.46%	
	Standard Deviation	1.1%	1.1%
Stress-NG - SENDFILE (Bogo Ops/s)	110544	110975	
Normalized	99.61%	100%	
	Standard Deviation	1.1%	1.5%
Stress-NG - CPU Cache (Bogo Ops/s)	17.60	17.86	
Normalized	98.54%	100%	
	Standard Deviation	1.3%	2.9%
Stress-NG - CPU Stress (Bogo Ops/s)	4364	4349	
Normalized	100%	99.65%	
	Standard Deviation	2.7%	3%
Stress-NG - Semaphores (Bogo Ops/s)	1623978	1580599	
Normalized	100%	97.33%	
	Standard Deviation	0%	0.6%
Stress-NG - Matrix Math (Bogo Ops/s)	42833	42993	
Normalized	99.63%	100%	
	Standard Deviation	3%	3%
Stress-NG - Vector Math (Bogo Ops/s)	67691	67824	
Normalized	99.8%	100%	
	Standard Deviation	1.4%	1.3%
Stress-NG - Socket Activity (Bogo Ops/s)	7873	7684	
Normalized	100%	97.6%	
	Standard Deviation	0.3%	0.9%
Stress-NG - G.C.S.F (Bogo Ops/s)	517549	520149	
Normalized	99.5%	100%	
	Standard Deviation	0.7%	0.8%
Stress-NG - G.Q.D.S (Bogo Ops/s)	121.63	122.34	
Normalized	99.42%	100%	
	Standard Deviation	1%	0.9%
Stress-NG - S.V.M.P (Bogo Ops/s)	9758083	9792424	
Normalized	99.65%	100%	
	Standard Deviation	0.2%	2.2%
ctx_clock - C.S.T (Clocks)	506	499	
Normalized	98.62%	100%	
	Standard Deviation		0.9%
PyBench - T.F.A.T.T (Milliseconds)	846	848	
Normalized	100%	99.76%	
	Standard Deviation	0.2%	0.2%
PyPerformance - raytrace (Milliseconds)	363	363	
Standard Deviation	0.3%	0.3%	
PyPerformance - json.loads (Milliseconds)	19.4	19.3	
Normalized	99.48%	100%	
	Standard Deviation	0.3%	0%
PyPerformance - regex_compile (Milliseconds)	137	138	
Normalized	100%	99.28%	
PyPerformance - python_startup (Milliseconds)	6.62	6.95	
Normalized	100%	95.25%	
	Standard Deviation	0.9%	0.2%
PyPerformance - django_template (Milliseconds)	37.0	37.3	
Normalized	100%	99.2%	

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	Standard Deviation	0.4%	0.6%
NeatBench - CPU (FPS)	16.1	15.7	
	Normalized	100%	97.52%
	Standard Deviation	1.1%	0.7%
PHPBench - P.B.S (Score)	816294	816375	
	Normalized	99.99%	100%
	Standard Deviation	0.2%	0.1%
Selenium - ARES-6 - Firefox (ms)	42.91	42.90	
	Normalized	99.98%	100%
	Standard Deviation	1%	0.8%
Selenium - Kraken - Firefox (ms)	820.6	824.2	
	Normalized	100%	99.56%
	Standard Deviation	1.1%	1.3%
Selenium - StyleBench - Firefox (Runs / Minute)	104	105	
	Normalized	99.05%	100%
	Standard Deviation		0.5%
Selenium - Jetstream 2 - Firefox (Score)	95.725	93.941	
	Normalized	100%	98.14%
	Standard Deviation	0.6%	0.9%
Selenium - ARES-6 - Google Chrome (ms)	25.13	25.36	
	Normalized	100%	99.09%
	Standard Deviation	0.6%	0.2%
Selenium - Kraken - Google Chrome (ms)	946.7	965.3	
	Normalized	100%	98.07%
	Standard Deviation	1.9%	1.7%
Selenium - PSPDFKit WASM - Firefox (Score)	1263	1268	
	Normalized	100%	99.61%
	Standard Deviation	0.6%	0.6%
Selenium - StyleBench - Google Chrome (Runs /	34.6	34.55	
	Normalized	100%	99.86%
	Standard Deviation	0%	0.5%
Selenium - Jetstream 2 - Google Chrome (Score)	113.498	112.749	
	Normalized	100%	99.34%
	Standard Deviation	0.6%	0.8%
Selenium - PSPDFKit WASM - Google Chrome (Score)	1874	1890	
	Normalized	100%	99.15%
	Standard Deviation	0.4%	0.9%
Git - T.T.C.C.G.C (sec)	43.855	44.011	
	Normalized	100%	99.65%
	Standard Deviation	0.4%	0.3%
BRL-CAD - V.P.M (VGR Performance Metric)	106706	106285	
	Normalized	100%	99.61%
OSBench - Create Files (us/Event)	11.383588	15.053533	
	Normalized	100%	75.62%
	Standard Deviation	2.4%	1.4%
OSBench - Create Threads (us/Event)	9.844303	10.503928	
	Normalized	100%	93.72%
	Standard Deviation	0.8%	1.7%
OSBench - Launch Programs (us/Event)	26.449362	55.116018	
	Normalized	100%	47.99%
	Standard Deviation	0.7%	0.4%
OSBench - Create Processes (us/Event)	17.790000	17.753442	
	Normalized	99.79%	100%
	Standard Deviation	1%	1.6%
OSBench - Memory Allocations (Ns/Event)	60.458024	60.173750	

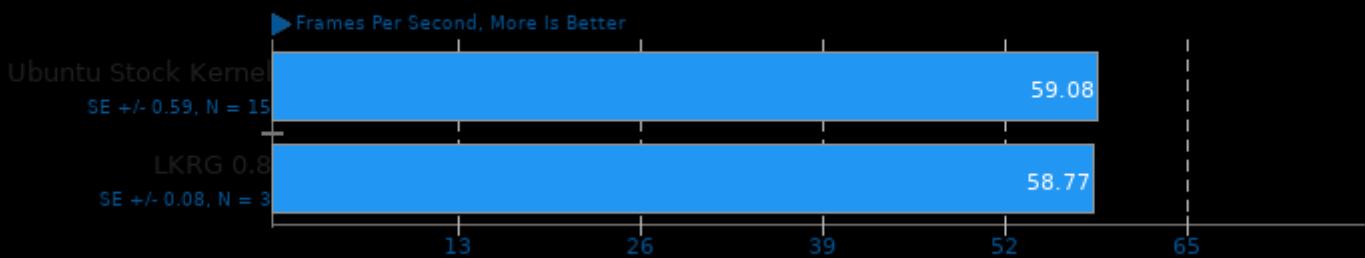
Normalized	99.53%	100%
Standard Deviation	0.7%	0.1%
Cryptsetup - PBKDF2-whirlpool (Iterations/sec)	857148	

Standard Deviation

0.2%

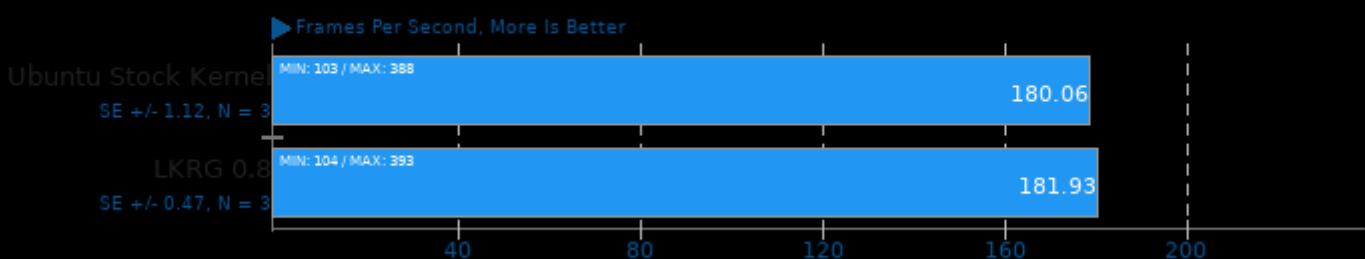
Tesseract 2014-05-12

Resolution: 1920 x 1080



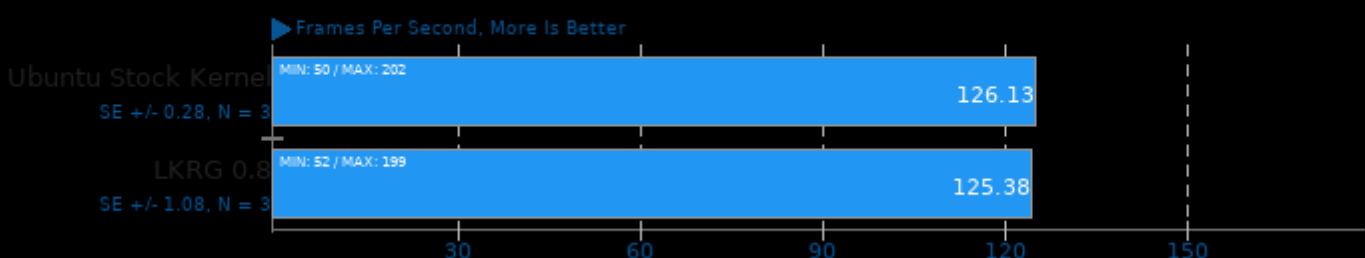
Xonotic 0.8.2

Resolution: 1920 x 1080 - Effects Quality: Low



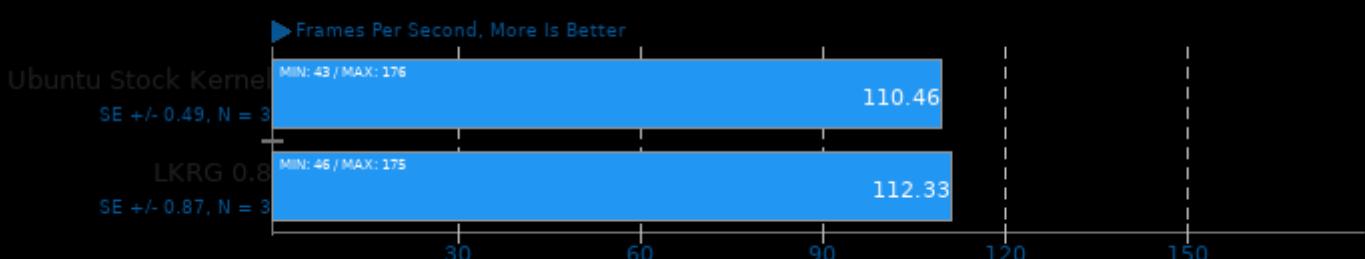
Xonotic 0.8.2

Resolution: 1920 x 1080 - Effects Quality: High



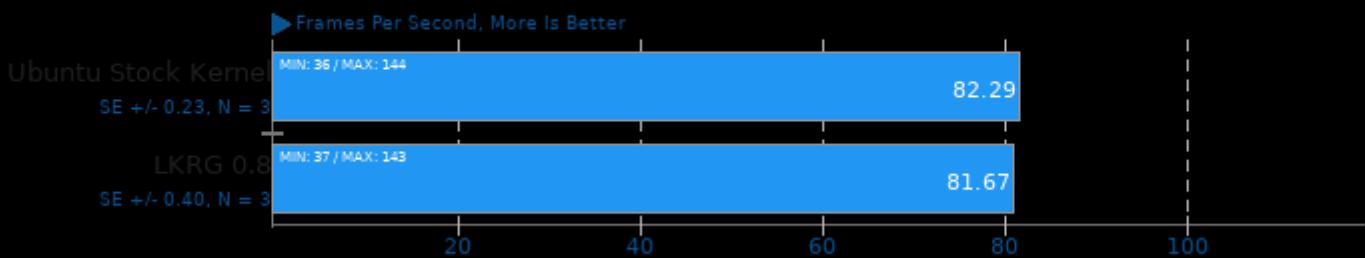
Xonotic 0.8.2

Resolution: 1920 x 1080 - Effects Quality: Ultra



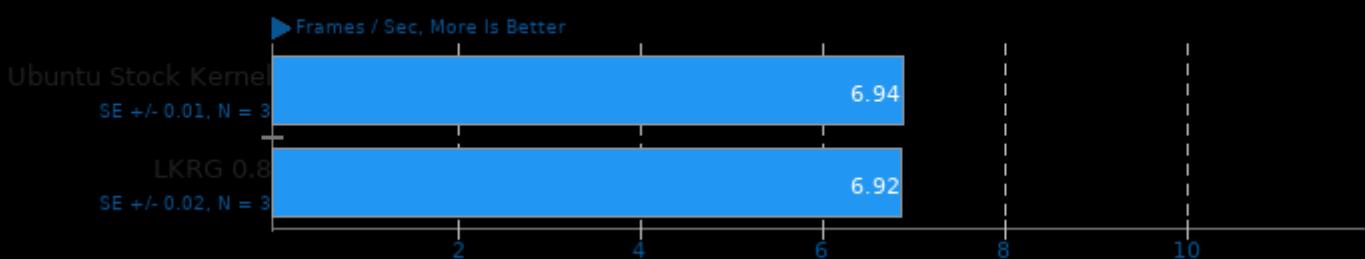
Xonotic 0.8.2

Resolution: 1920 x 1080 - Effects Quality: Ultimate



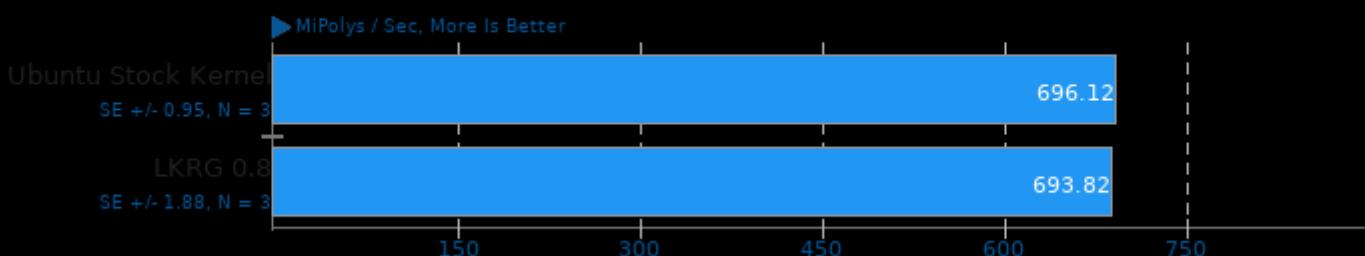
ParaView 5.4.1

Test: Many Spheres - Resolution: 1920 x 1080



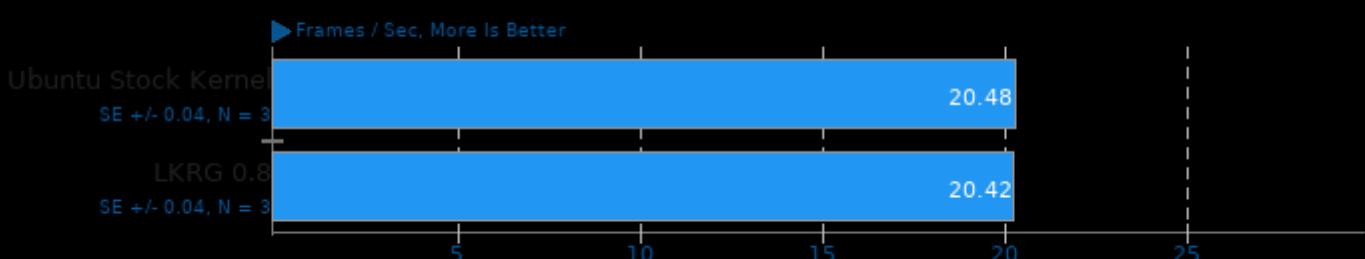
ParaView 5.4.1

Test: Many Spheres - Resolution: 1920 x 1080



ParaView 5.4.1

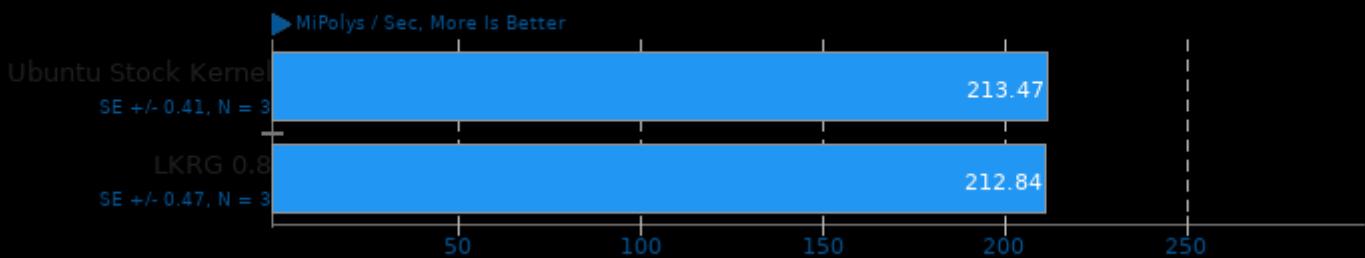
Test: Wavelet Contour - Resolution: 1920 x 1080



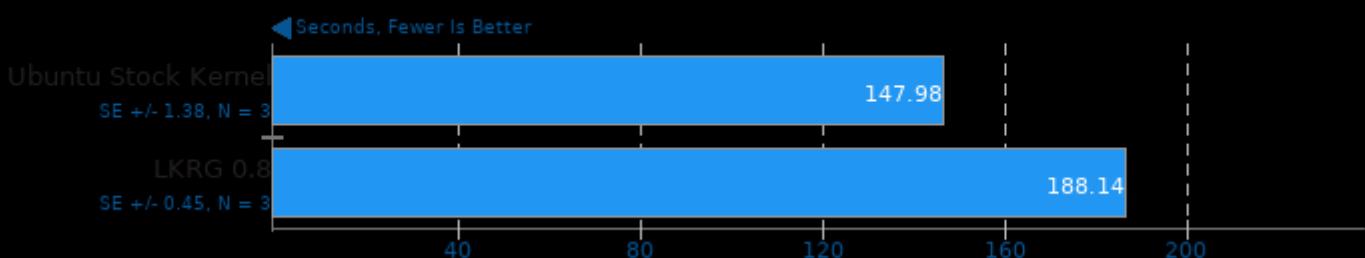
LKRG 0.8 Benchmarking

ParaView 5.4.1

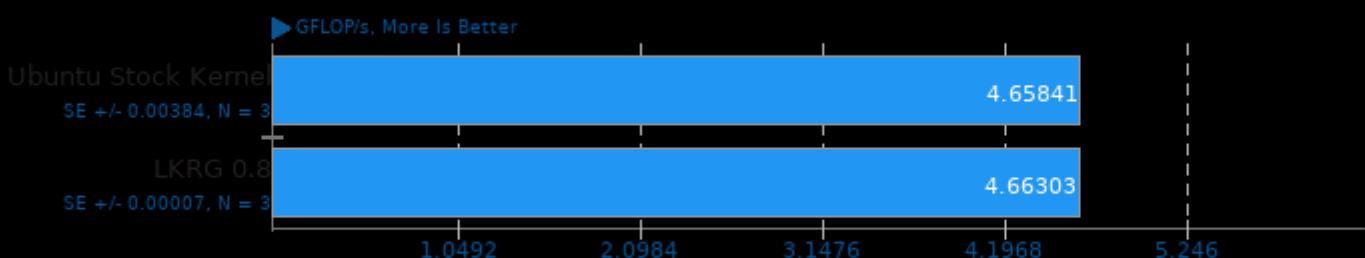
Test: Wavelet Contour - Resolution: 1920 x 1080



WireGuard + Linux Networking Stack Stress Test



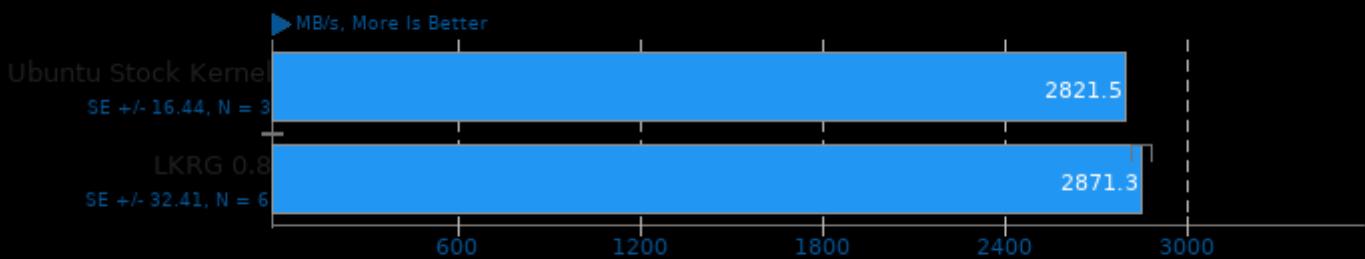
High Performance Conjugate Gradient 3.1



1. (CXX) g++ options: -O3 -ffast-math -ftree-vectorize -pthread -lmpi_cxx -lmpi

Zstd Compression 1.4.5

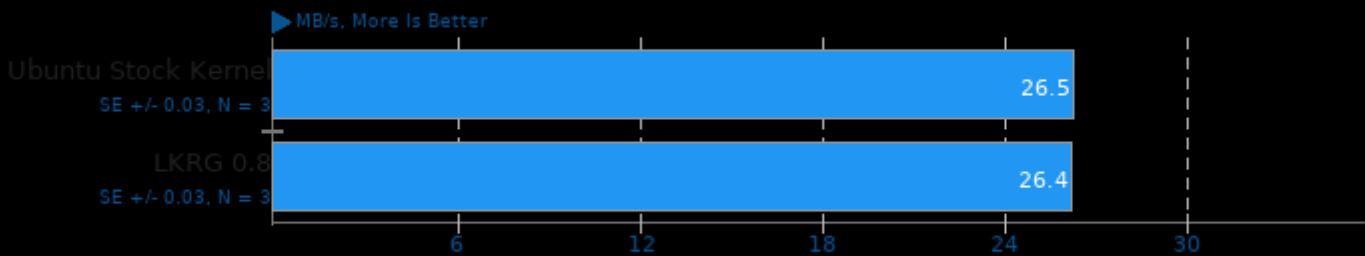
Compression Level: 3



1. (CC) gcc options: -O3 -pthread -lz -lzma

Zstd Compression 1.4.5

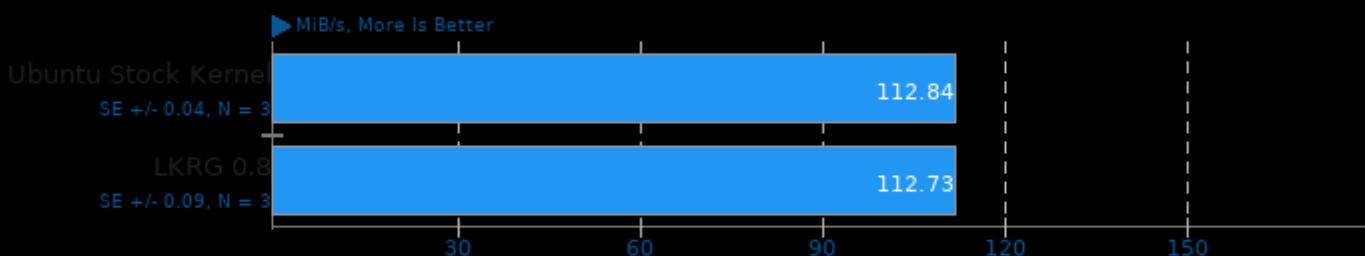
Compression Level: 19



1. (CC) gcc options: -O3 -pthread -lz -lzma

Botan 2.13.0

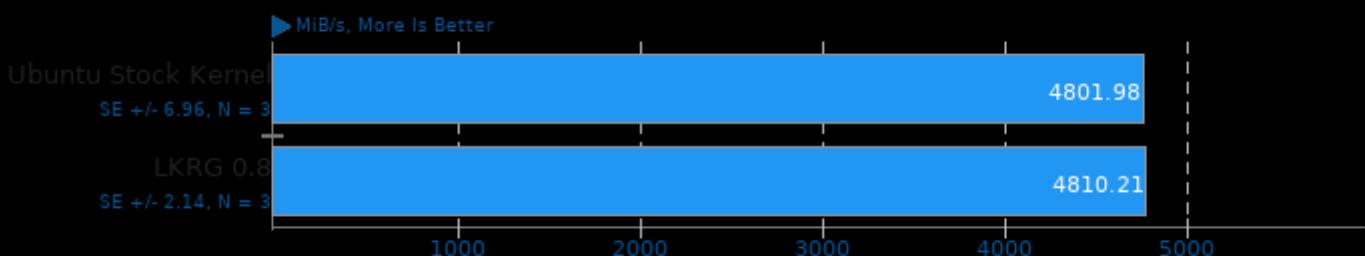
Test: KASUMI



1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt

Botan 2.13.0

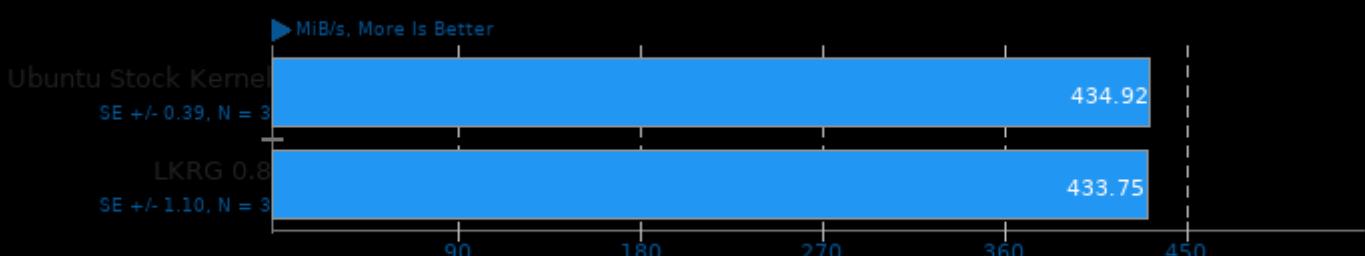
Test: AES-256



1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt

Botan 2.13.0

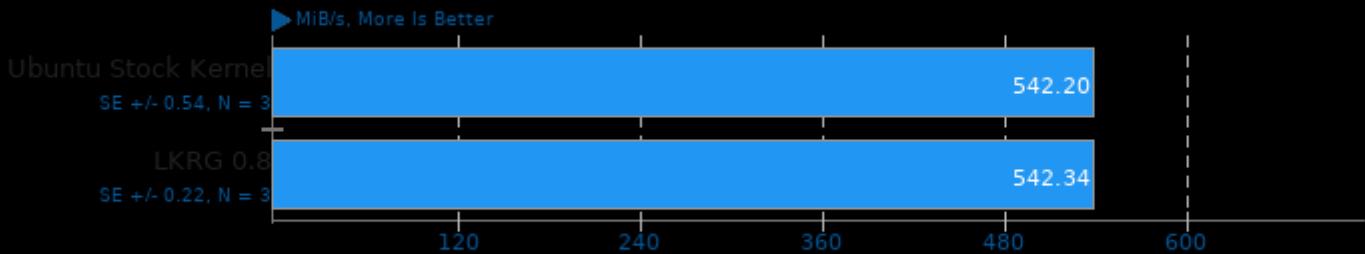
Test: Twofish



1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt

Botan 2.13.0

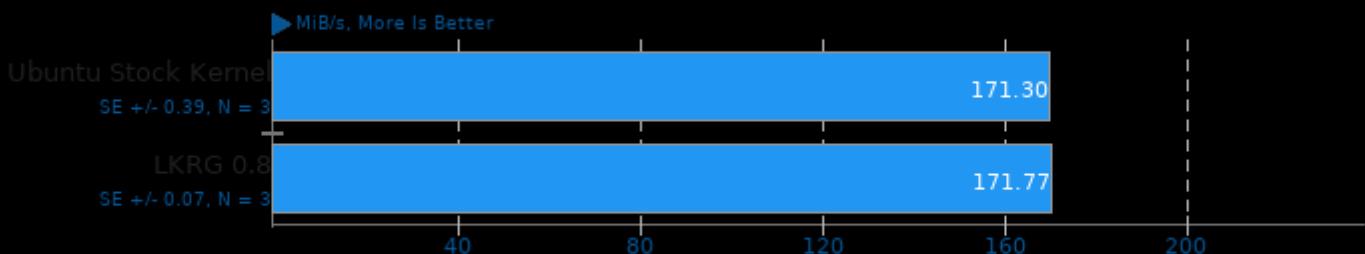
Test: Blowfish



1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt

Botan 2.13.0

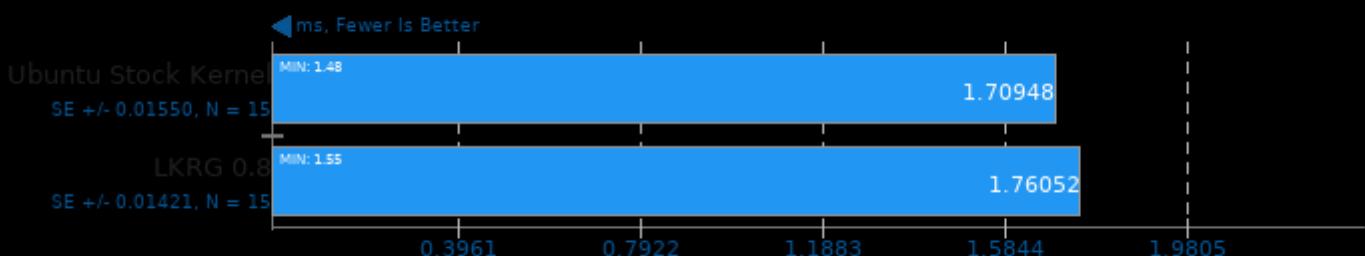
Test: CAST-256



1. (CXX) g++ options: -fstack-protector -m64 -pthread -lbotan-2 -ldl -lrt

oneDNN 1.5

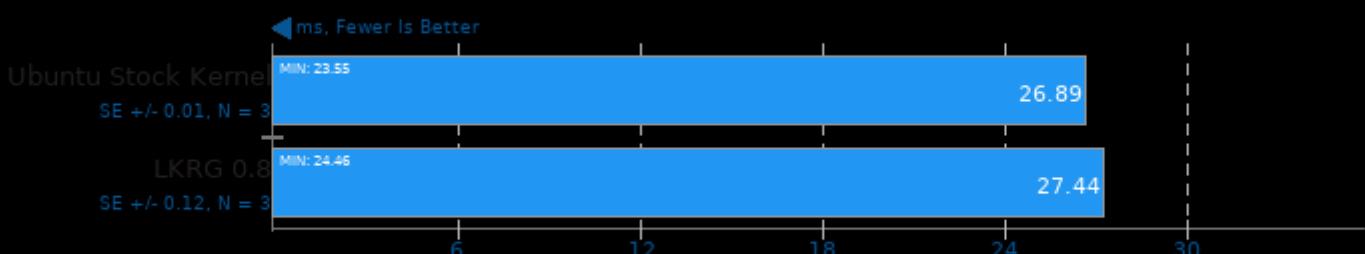
Harness: IP Batch 1D - Data Type: u8s8f32 - Engine: CPU



1. (CXX) g++ options: -O3 -march=native -std=c++11 -fopenmp -msse4.1 -fPIC -pie -pthread -ldl

oneDNN 1.5

Harness: IP Batch All - Data Type: u8s8f32 - Engine: CPU

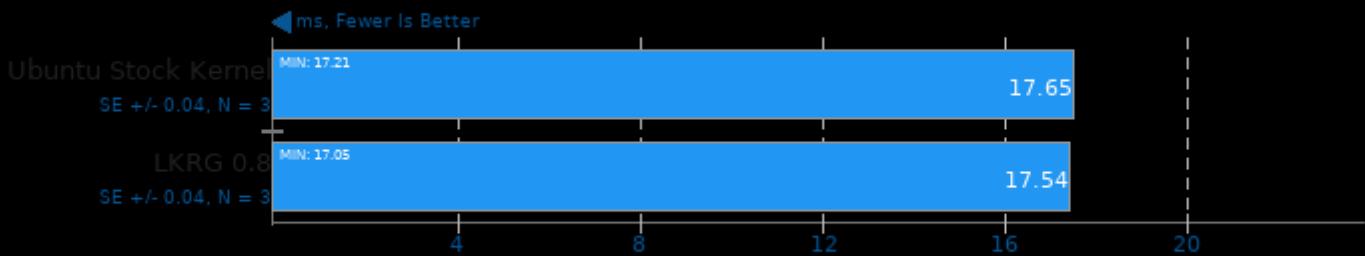


1. (CXX) g++ options: -O3 -march=native -std=c++11 -fopenmp -msse4.1 -fPIC -pie -pthread -ldl

LKRG 0.8 Benchmarking

oneDNN 1.5

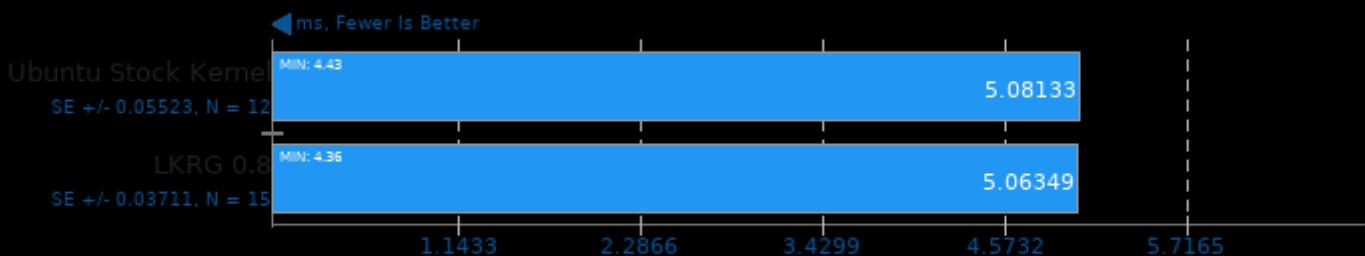
Harness: Convolution Batch Shapes Auto - Data Type: u8s8f32 - Engine: CPU



1. (CXX) g++ options: -O3 -march=native -std=c++11 -fopenmp -msse4.1 -fPIC -pie -lpthread -ldl

oneDNN 1.5

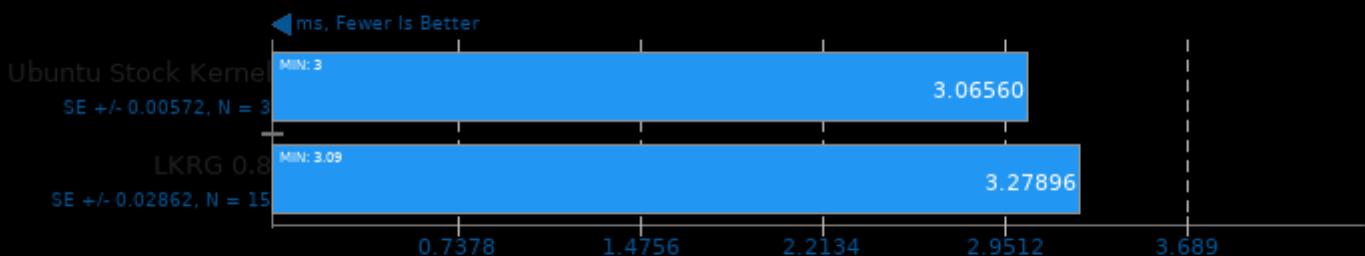
Harness: Deconvolution Batch deconv_1d - Data Type: u8s8f32 - Engine: CPU



1. (CXX) g++ options: -O3 -march=native -std=c++11 -fopenmp -msse4.1 -fPIC -pie -lpthread -ldl

oneDNN 1.5

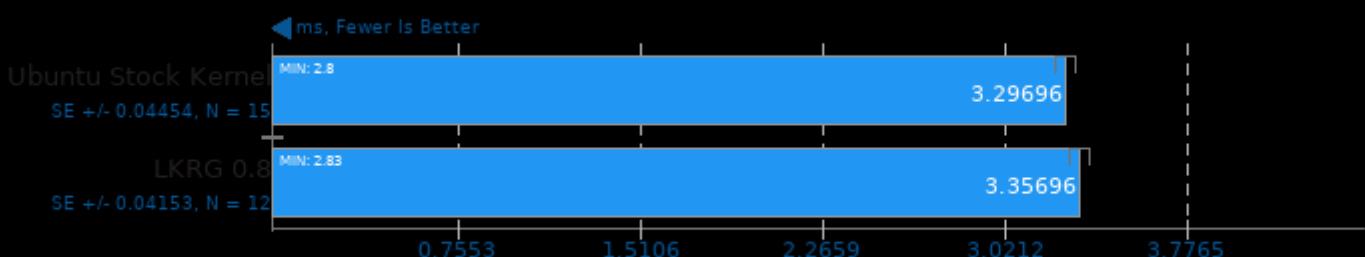
Harness: Deconvolution Batch deconv_3d - Data Type: u8s8f32 - Engine: CPU



1. (CXX) g++ options: -O3 -march=native -std=c++11 -fopenmp -msse4.1 -fPIC -pie -lpthread -ldl

oneDNN 1.5

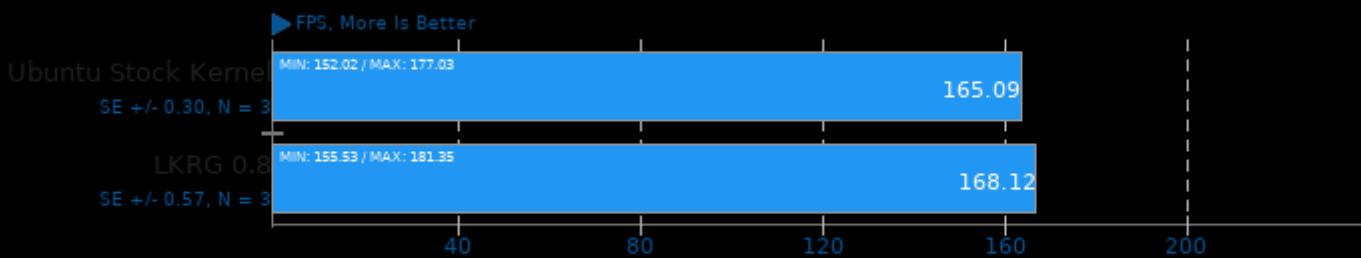
Harness: Matrix Multiply Batch Shapes Transformer - Data Type: u8s8f32 - Engine: CPU



1. (CXX) g++ options: -O3 -march=native -std=c++11 -fopenmp -msse4.1 -fPIC -pie -lpthread -ldl

dav1d 0.7.0

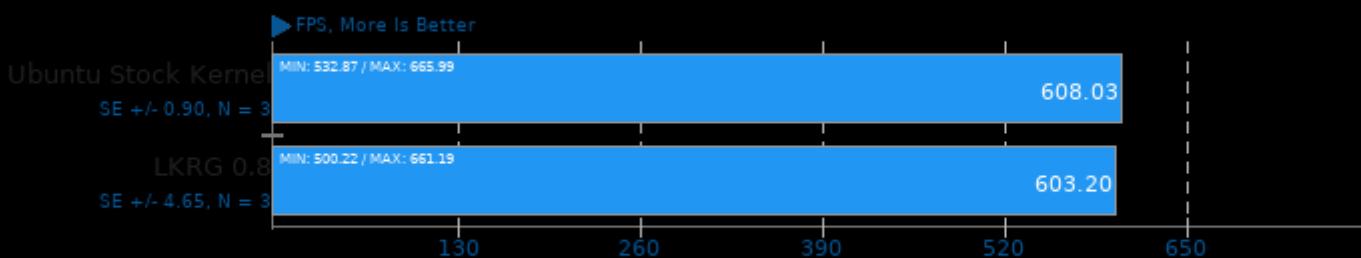
Video Input: Summer Nature 4K



1. (CC) gcc options: -pthread

dav1d 0.7.0

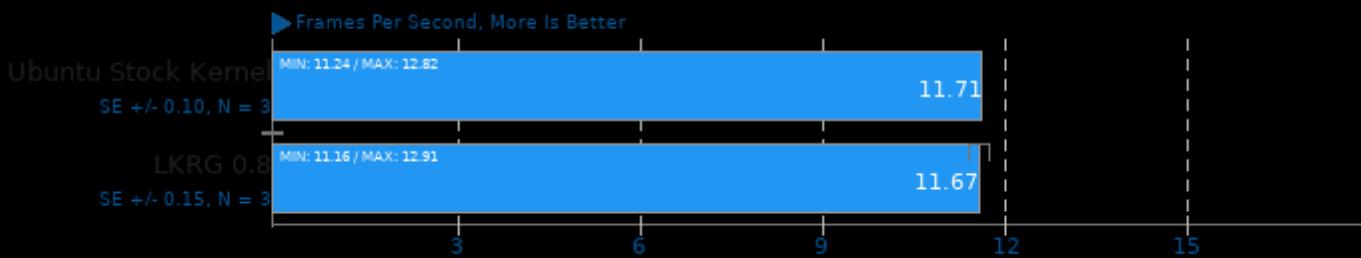
Video Input: Summer Nature 1080p



1. (CC) gcc options: -pthread

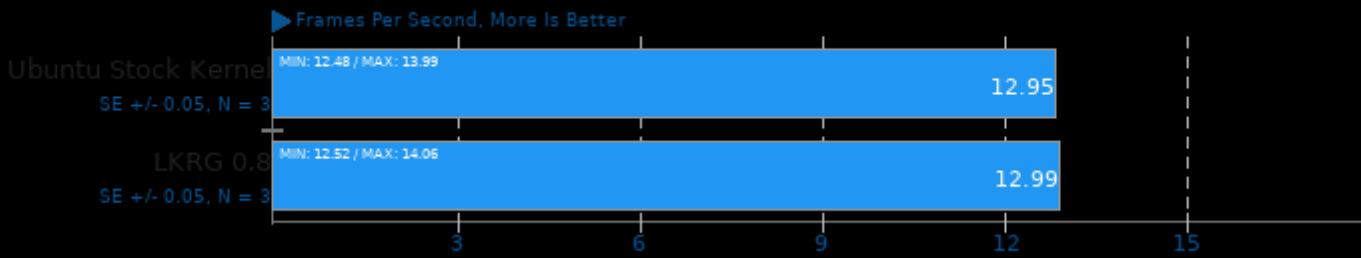
Embree 3.9.0

Binary: Pathtracer - Model: Asian Dragon Obj



Embree 3.9.0

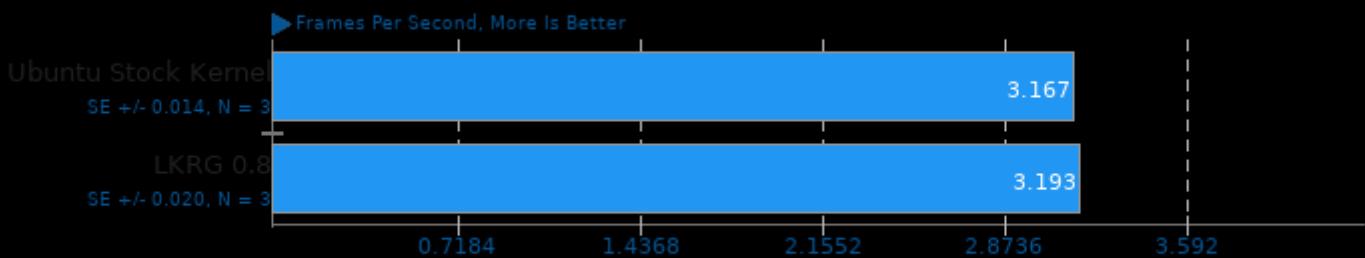
Binary: Pathtracer ISPC - Model: Asian Dragon Obj



LKRG 0.8 Benchmarking

SVT-AV1 0.8

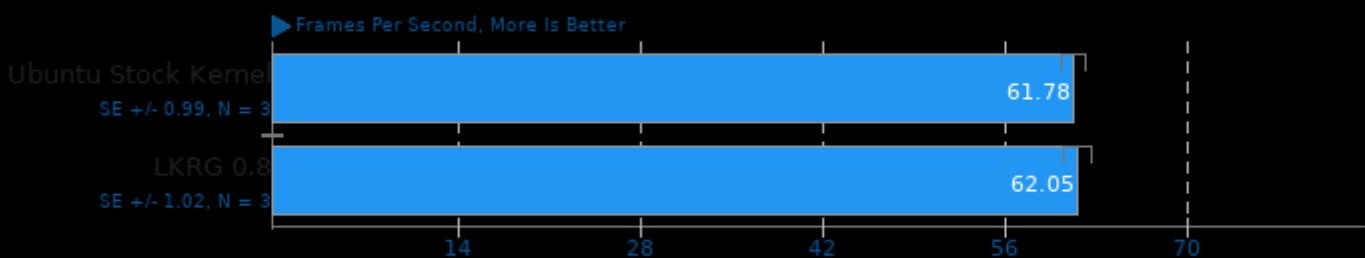
Encoder Mode: Enc Mode 4 - Input: 1080p



1. (CXX) g++ options: -O3 -fcommon -fPIE -fPIC -pie

x265 3.1.2

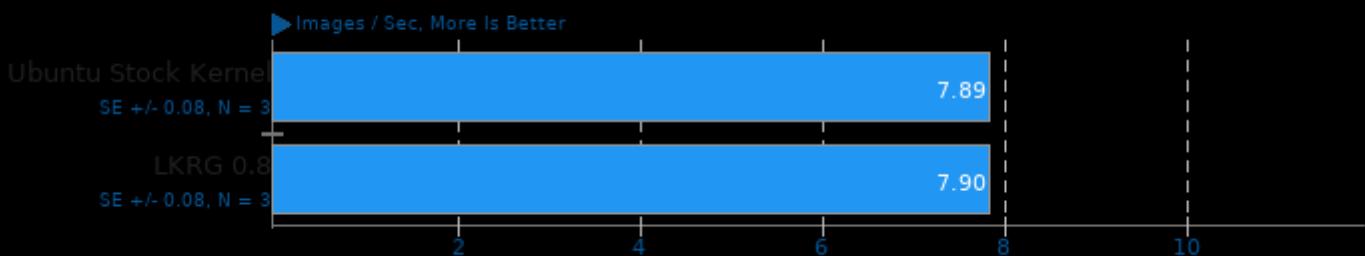
H.265 1080p Video Encoding



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

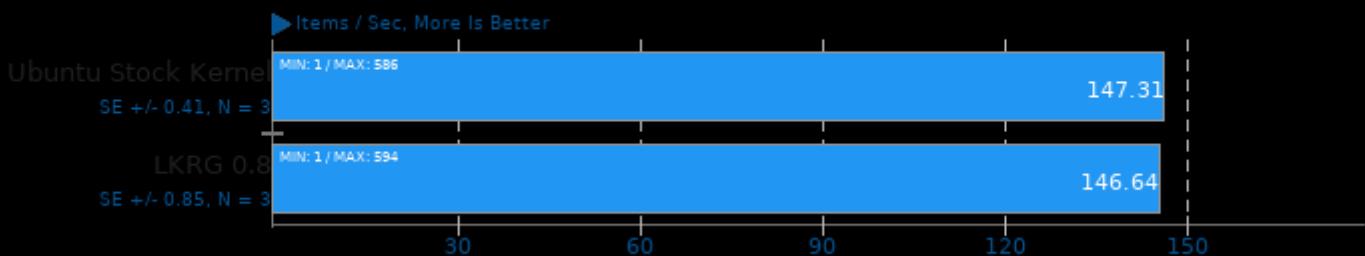
Intel Open Image Denoise 1.2.0

Scene: Memorial



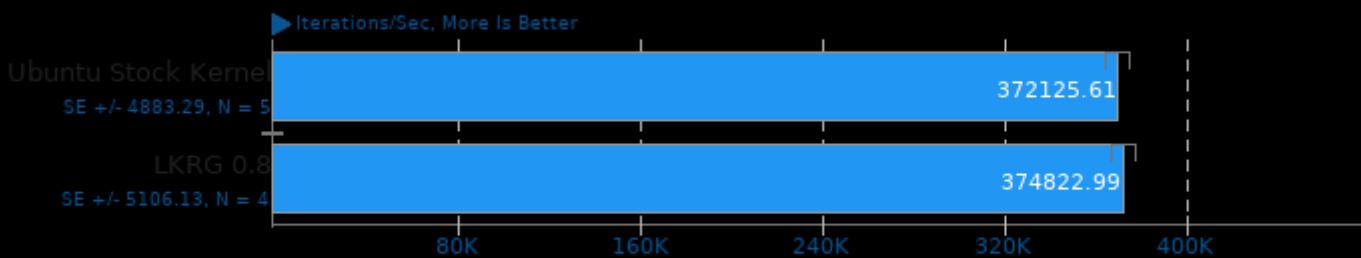
OpenVKL 0.9

Benchmark: vklBenchmark



Coremark 1.0

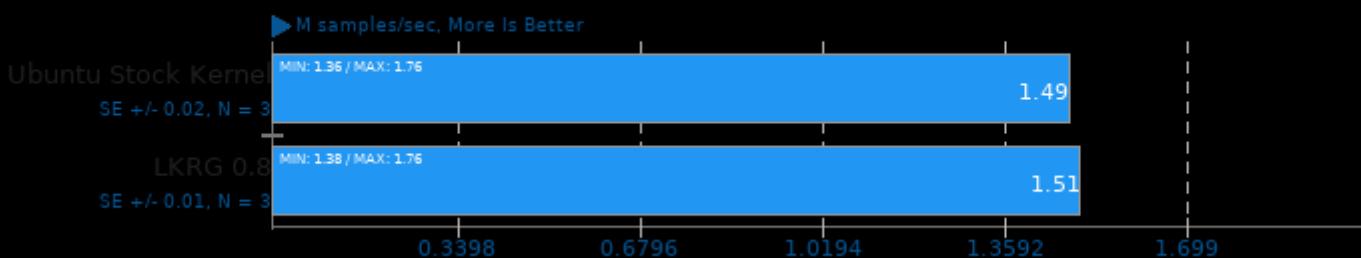
CoreMark Size 666 - Iterations Per Second



1. (CC) gcc options: -O2 -fintc -fipa

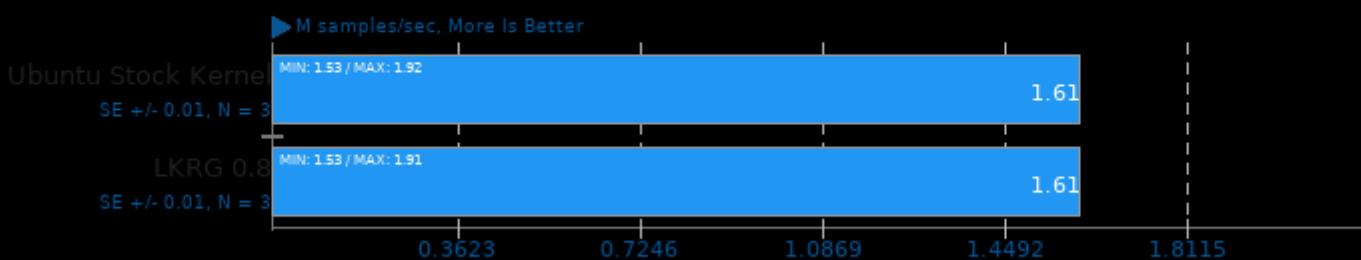
LuxCoreRender 2.3

Scene: DLSC



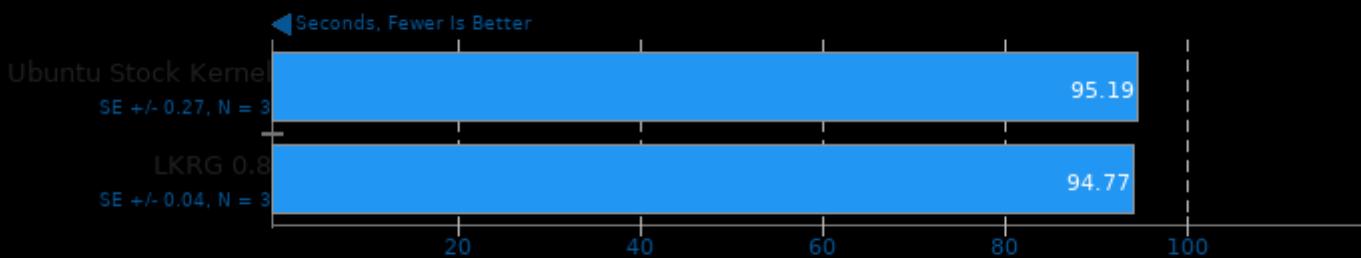
LuxCoreRender 2.3

Scene: Rainbow Colors and Prism



libavif avifenc 0.7.3

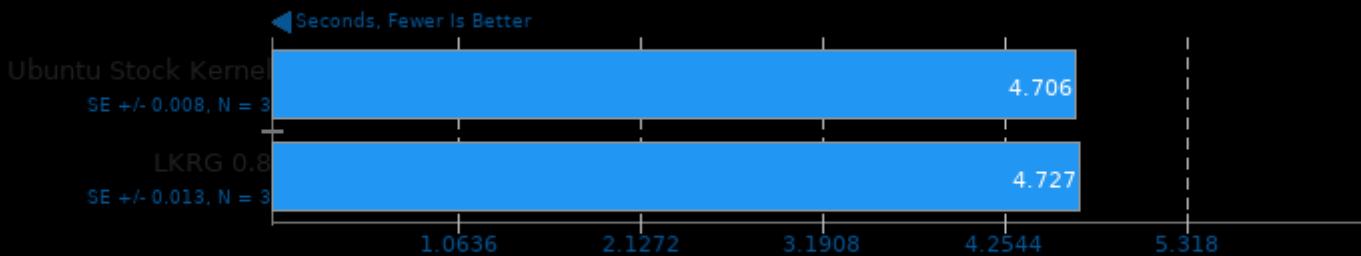
Encoder Speed: 0



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

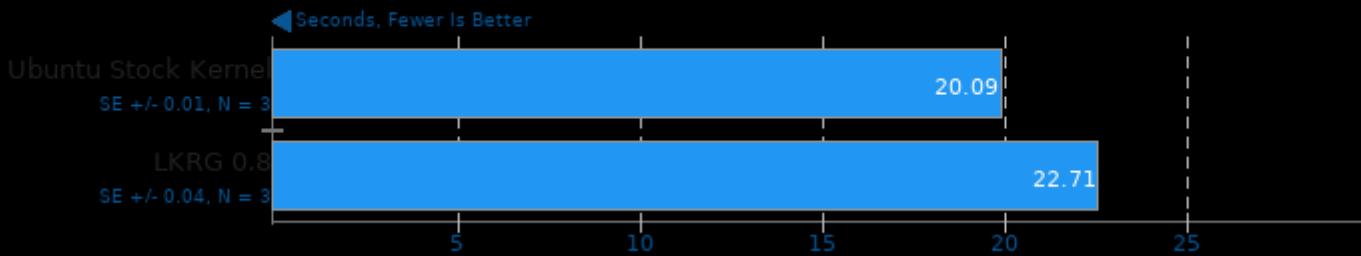
libavif avifenc 0.7.3

Encoder Speed: 10



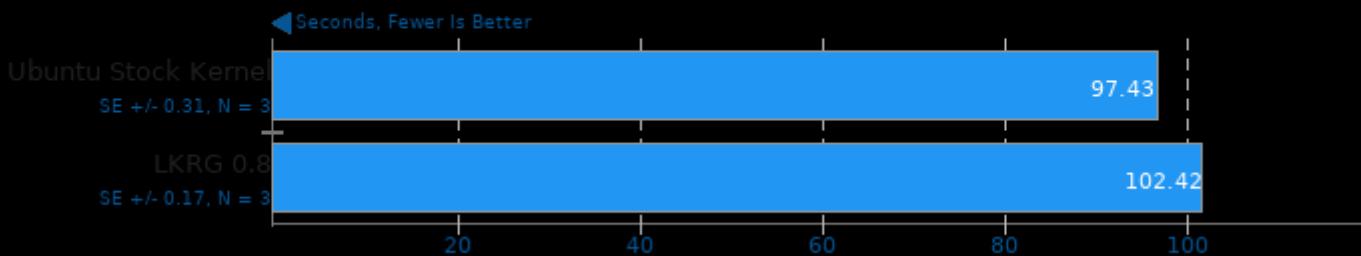
Timed Apache Compilation 2.4.41

Time To Compile



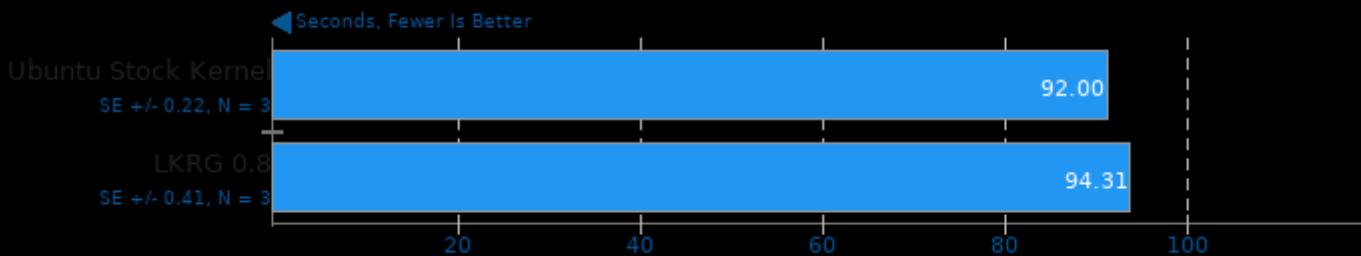
Timed GDB GNU Debugger Compilation 9.1

Time To Compile



Timed Linux Kernel Compilation 5.4

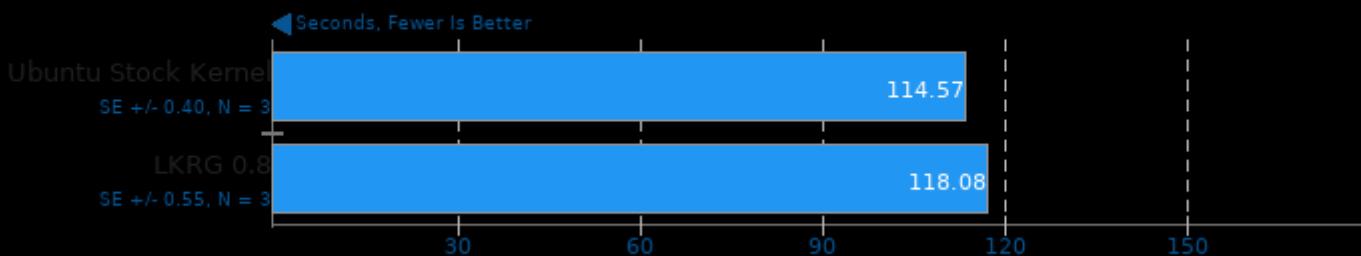
Time To Compile



LKRG 0.8 Benchmarking

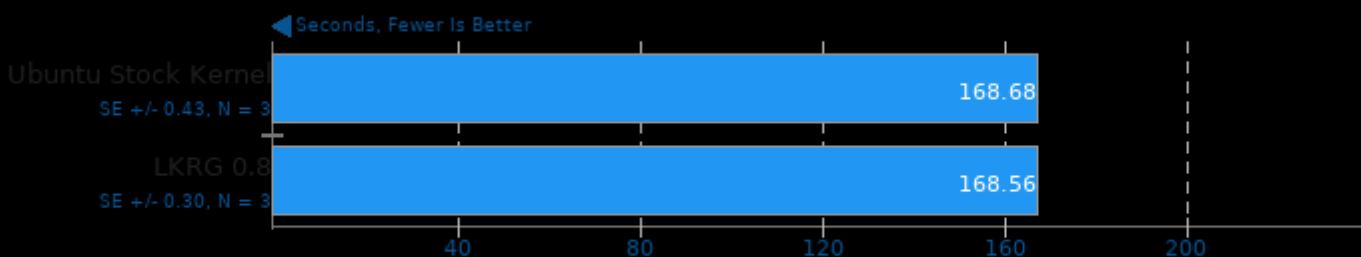
Build2 0.12

Time To Compile



YafaRay 3.4.1

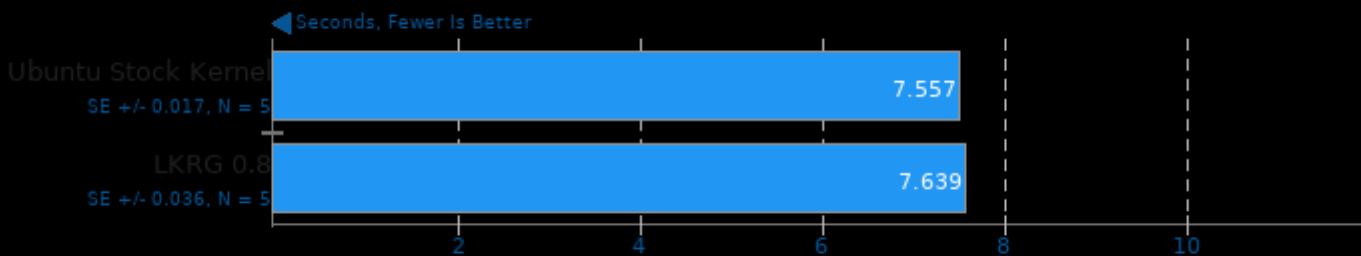
Total Time For Sample Scene



1. (CXX) g++ options: -std=c++11 -O3 -ffast-math -rdynamic -ldl -lmath -lxml -lex -lHalf -lz -lImThread -lxml2 -freetype -lpthread

FLAC Audio Encoding 1.3.2

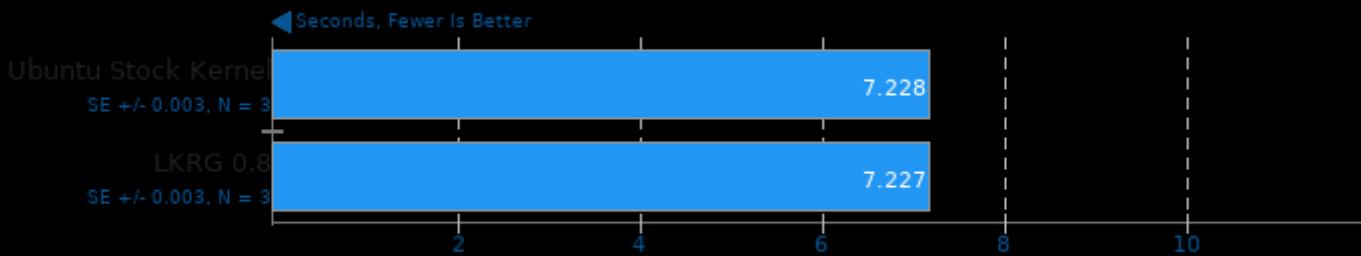
WAV To FLAC



1. (CXX) g++ options: -O2 -fvisibility=hidden -lm

LAME MP3 Encoding 3.100

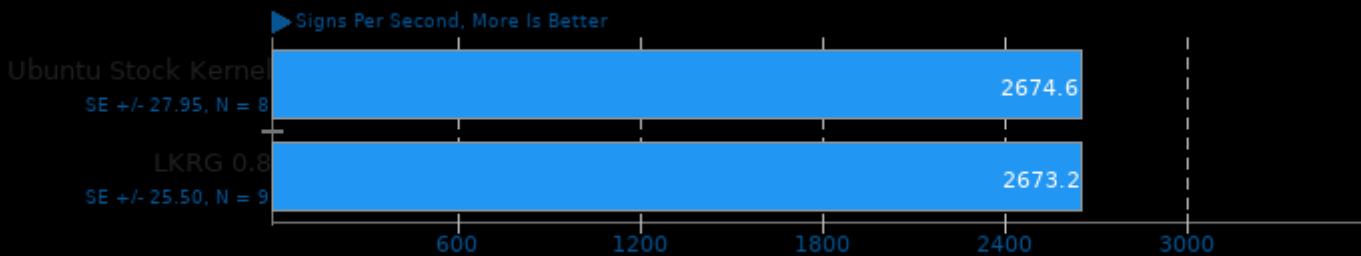
WAV To MP3



1. (CC) gcc options: -O3 -ffast-math -funroll-loops -fschedule-insns2 -fbranch-count-reg -fforce-addr -pipe -Incurse -lm

OpenSSL 1.1.1

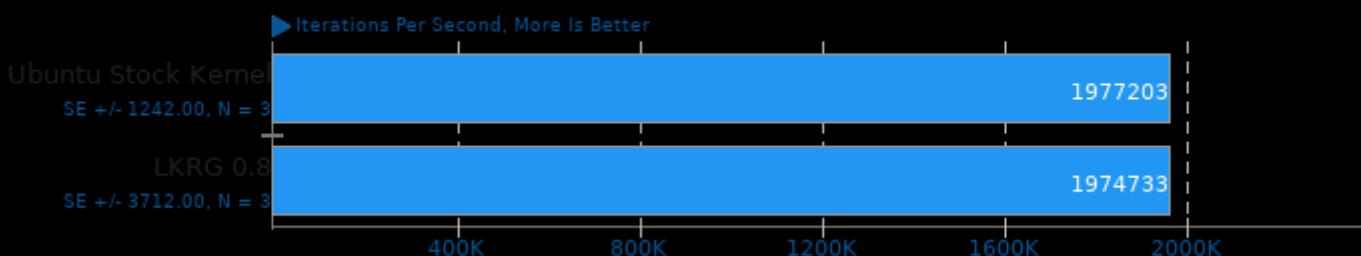
RSA 4096-bit Performance



1. (CC) gcc options: -pthread -m64 -O3 -lssl -lcrypto -ldl

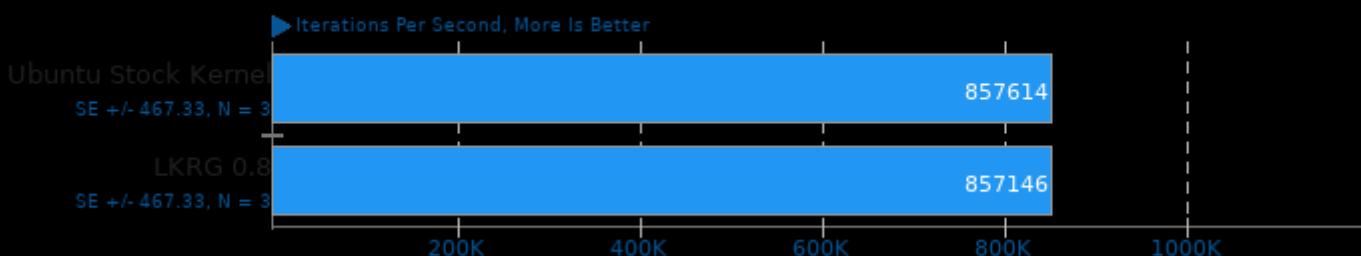
Cryptsetup 2.2.2

PBKDF2-sha512



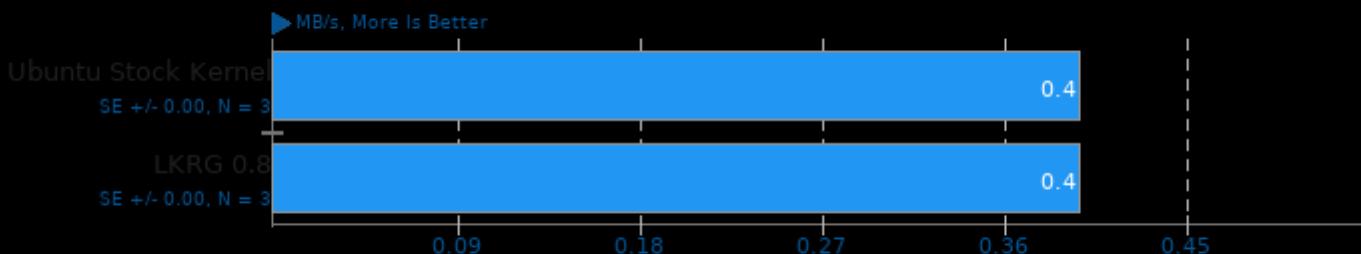
Cryptsetup

PBKDF2-whirlpool



LevelDB 1.22

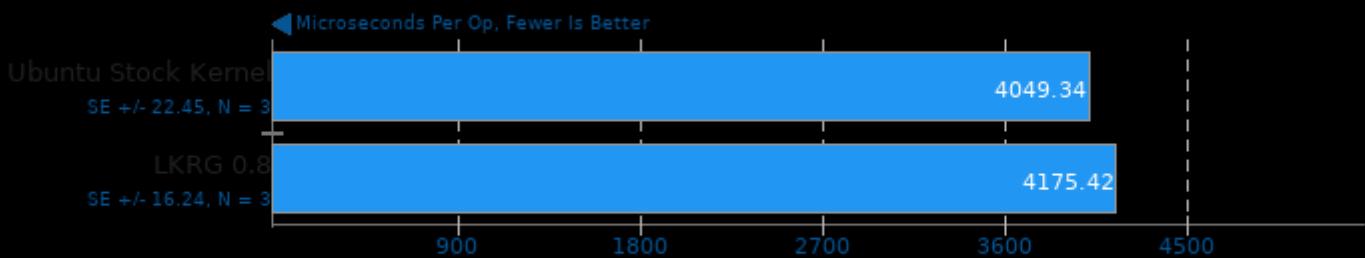
Benchmark: Fill Sync



1. (CXX) g++ options: -O3 -lsnappy -lpthread

LevelDB 1.22

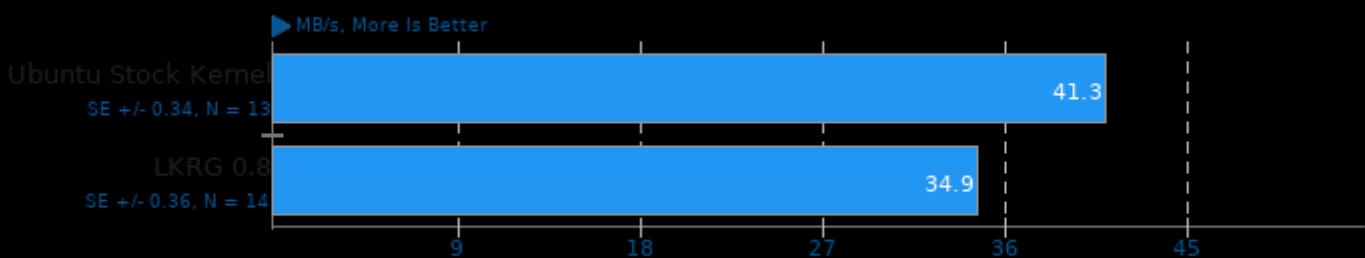
Benchmark: Fill Sync



1. (CXX) g++ options: -O3 -lsnappy -lpthread

LevelDB 1.22

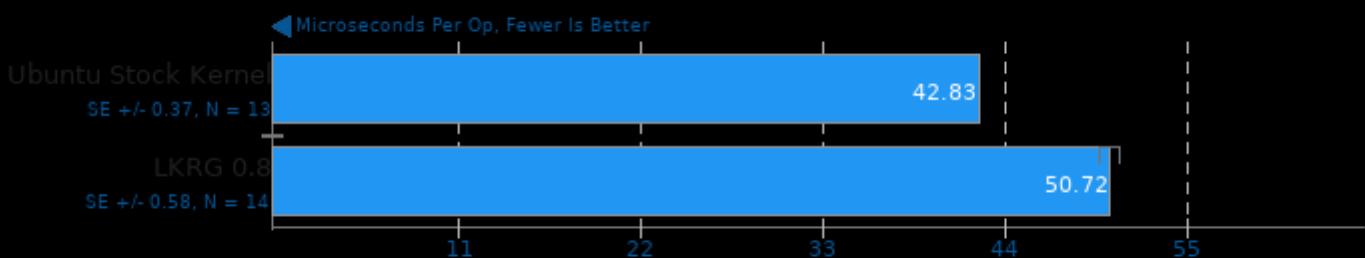
Benchmark: Overwrite



1. (CXX) g++ options: -O3 -lsnappy -lpthread

LevelDB 1.22

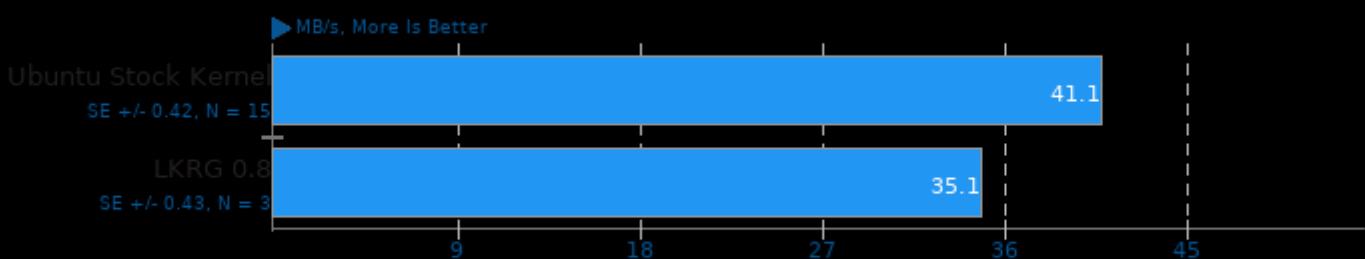
Benchmark: Overwrite



1. (CXX) g++ options: -O3 -lsnappy -lpthread

LevelDB 1.22

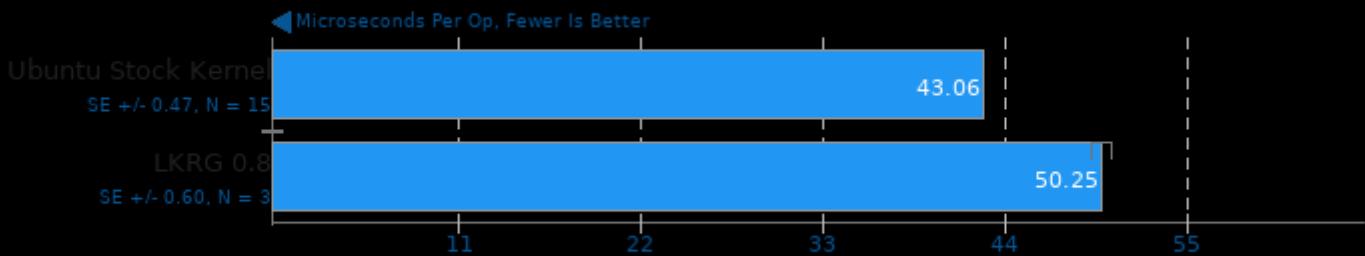
Benchmark: Random Fill



1. (CXX) g++ options: -O3 -lsnappy -lpthread

LevelDB 1.22

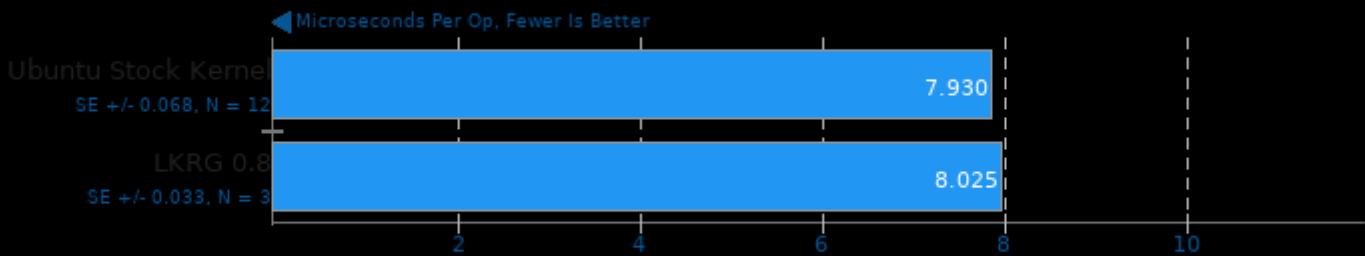
Benchmark: Random Fill



1. (CXX) g++ options: -O3 -lsnappy -lpthread

LevelDB 1.22

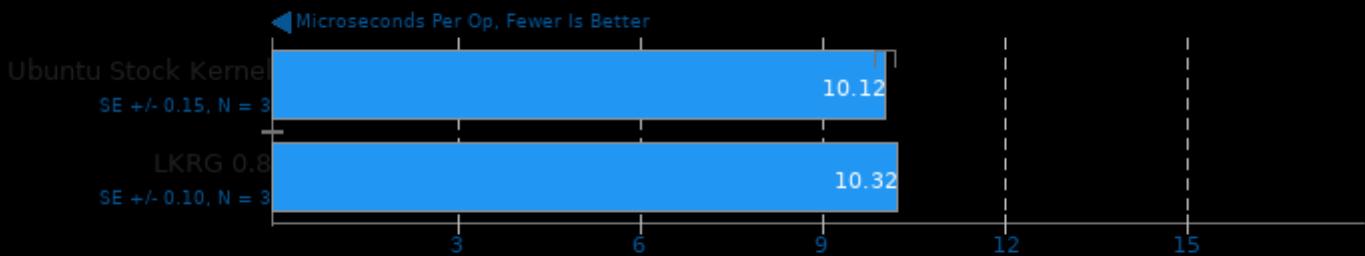
Benchmark: Random Read



1. (CXX) g++ options: -O3 -lsnappy -lpthread

LevelDB 1.22

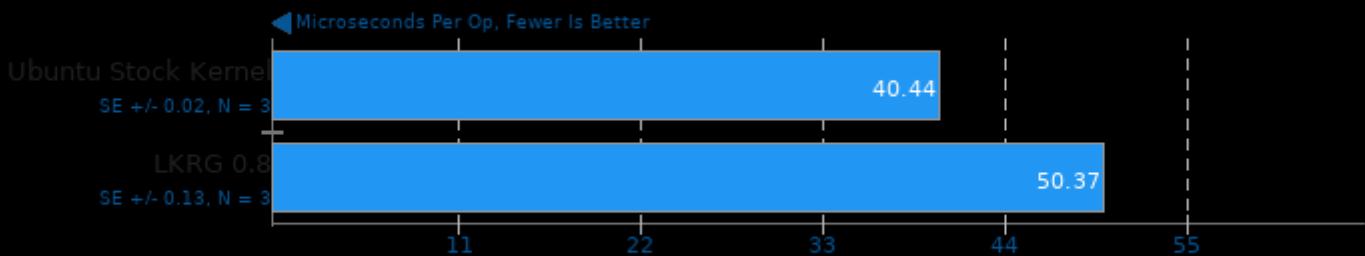
Benchmark: Seek Random



1. (CXX) g++ options: -O3 -lsnappy -lpthread

LevelDB 1.22

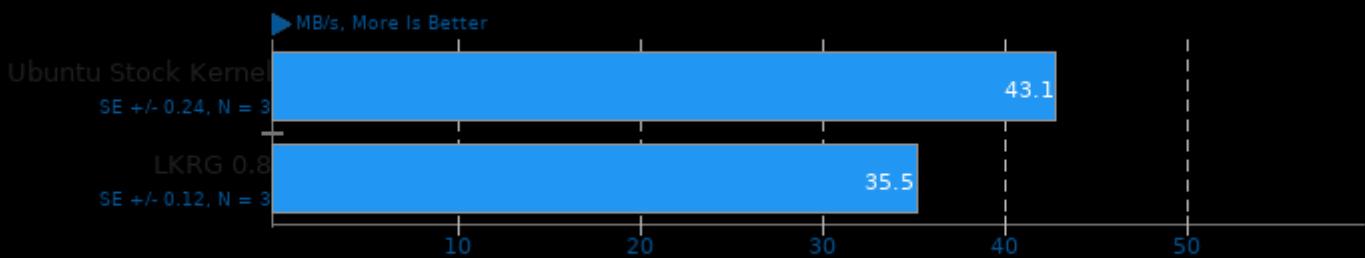
Benchmark: Random Delete



1. (CXX) g++ options: -O3 -lsnappy -lpthread

LevelDB 1.22

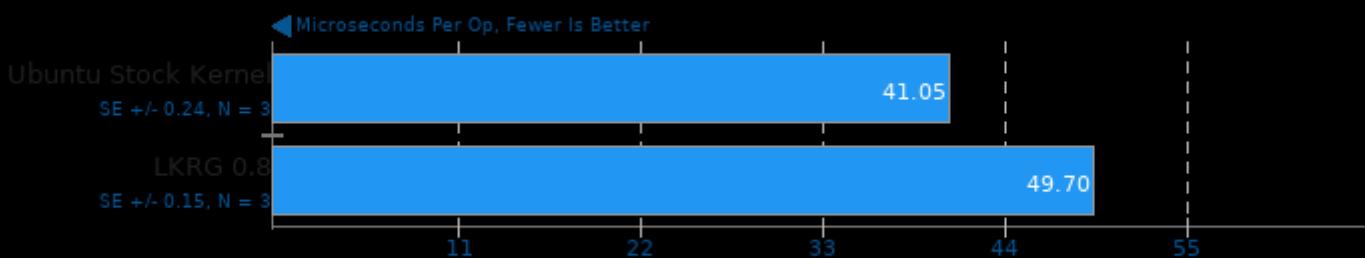
Benchmark: Sequential Fill



1. (CXX) g++ options: -O3 -lsnappy -lpthread

LevelDB 1.22

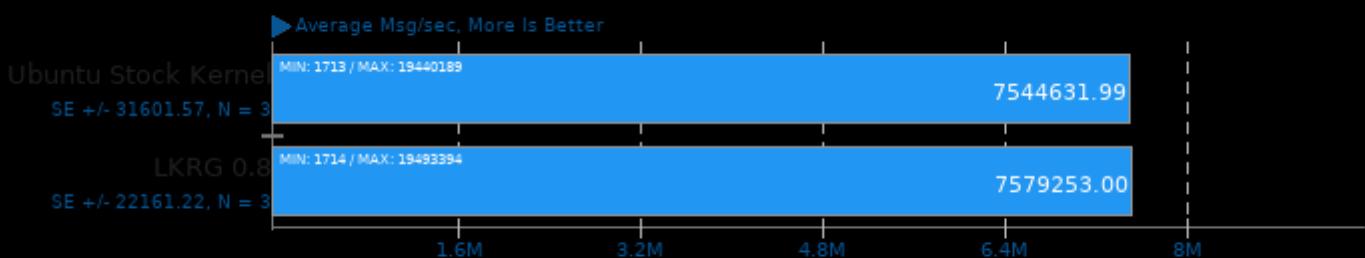
Benchmark: Sequential Fill



1. (CXX) g++ options: -O3 -lsnappy -lpthread

Intel MPI Benchmarks 2019.3

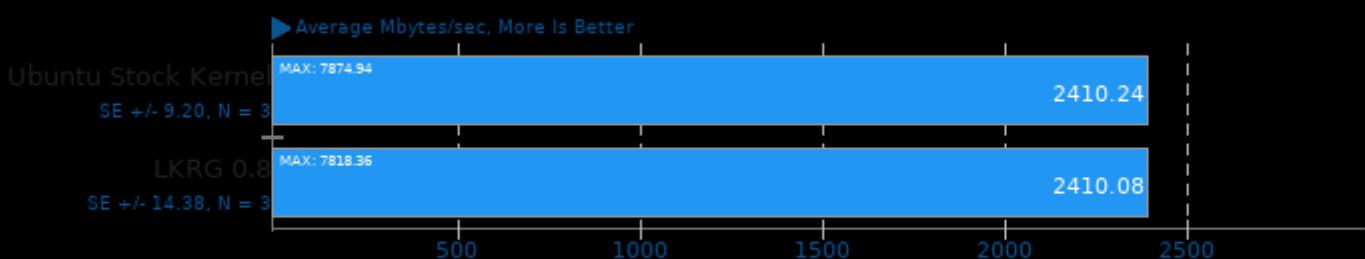
Test: IMB-P2P PingPong



1. (CXX) g++ options: -O0 -pedantic -fopenmp -pthread -lmpi_cxx -lmpi

Intel MPI Benchmarks 2019.3

Test: IMB-MPII Exchange

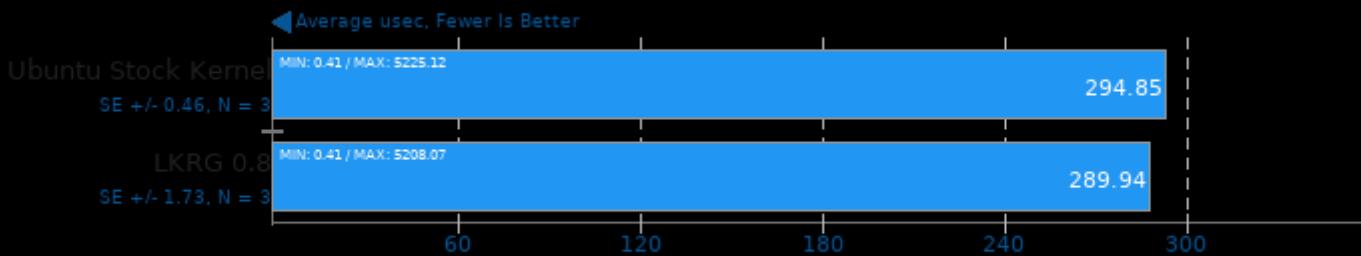


1. (CXX) g++ options: -O0 -pedantic -fopenmp -pthread -lmpi_cxx -lmpi

LKRG 0.8 Benchmarking

Intel MPI Benchmarks 2019.3

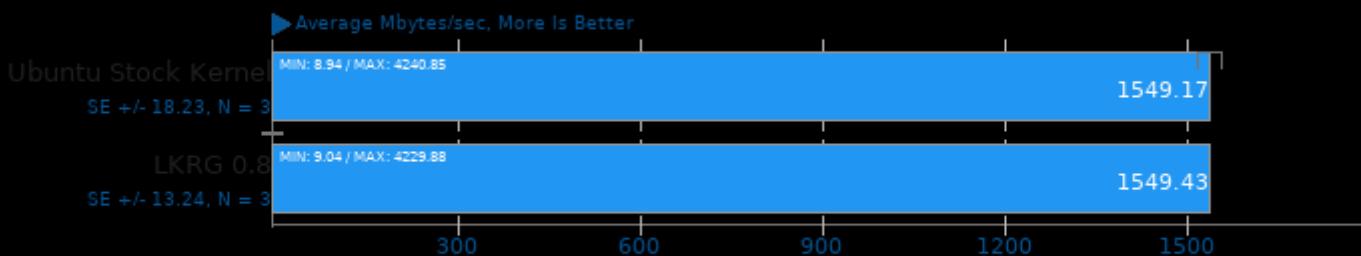
Test: IMB-MPI1 Exchange



1. (CXX) g++ options: -O0 -pedantic -fopenmp -pthread -lmpi_cxx -lmpi

Intel MPI Benchmarks 2019.3

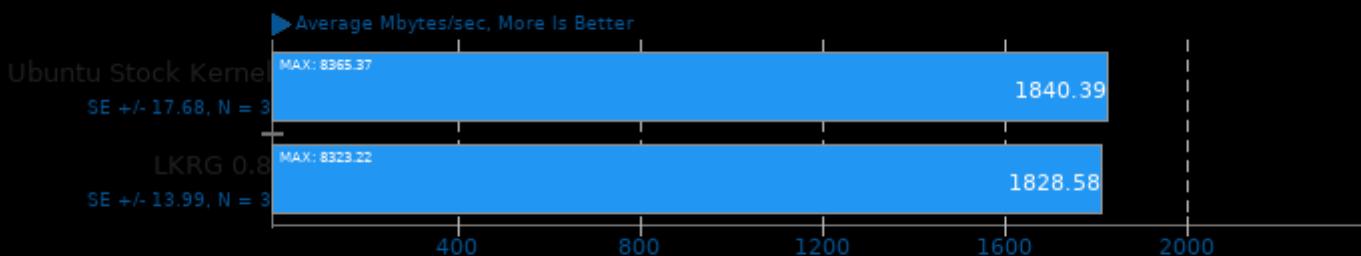
Test: IMB-MPI1 PingPong



1. (CXX) g++ options: -O0 -pedantic -fopenmp -pthread -lmpi_cxx -lmpi

Intel MPI Benchmarks 2019.3

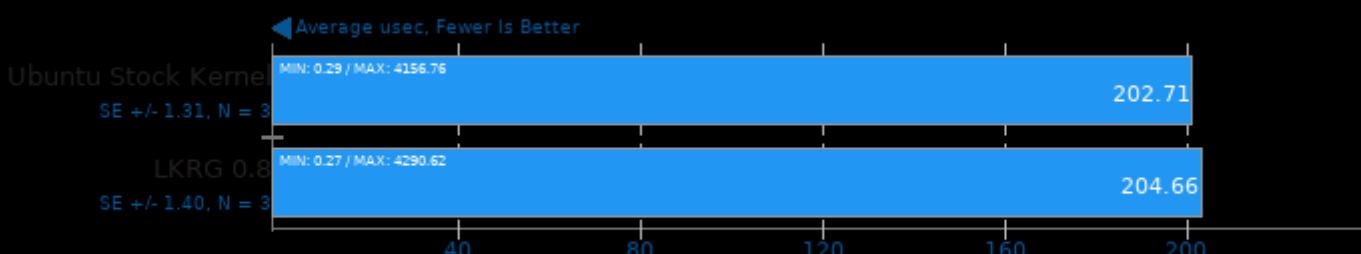
Test: IMB-MPI1 Sendrecv



1. (CXX) g++ options: -O0 -pedantic -fopenmp -pthread -lmpi_cxx -lmpi

Intel MPI Benchmarks 2019.3

Test: IMB-MPI1 Sendrecv

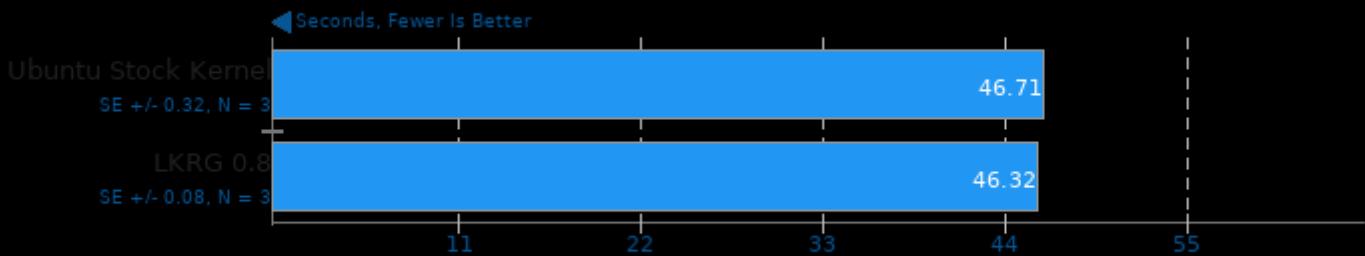


1. (CXX) g++ options: -O0 -pedantic -fopenmp -pthread -lmpi_cxx -lmpi

LKRG 0.8 Benchmarking

Basis Universal 1.12

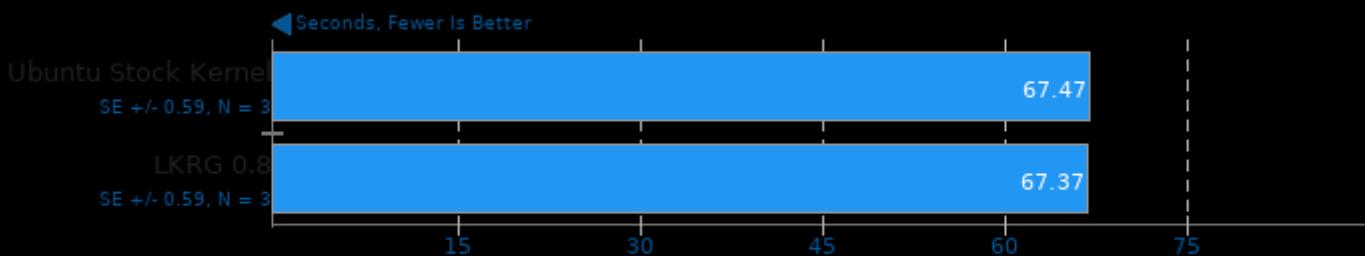
Settings: ETC1S



1. (CXX) g++ options: -std=c++11 -fvisibility=hidden -fPIC -fno-strict-aliasing -O3 -rdynamic -lm -lpthread

Basis Universal 1.12

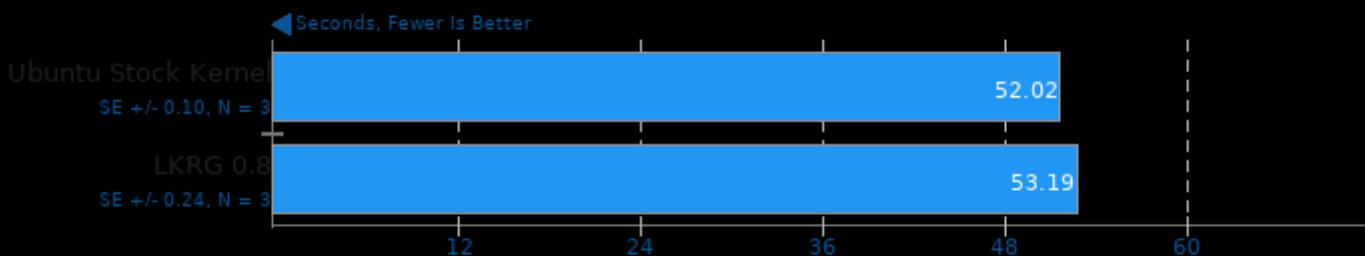
Settings: UASTC Level 3



1. (CXX) g++ options: -std=c++11 -fvisibility=hidden -fPIC -fno-strict-aliasing -O3 -rdynamic -lm -lpthread

SQLite Speedtest 3.30

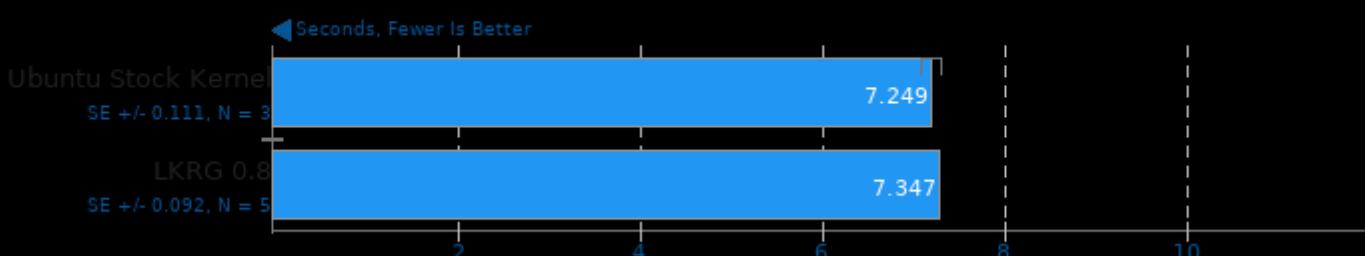
Timed Time - Size 1,000



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

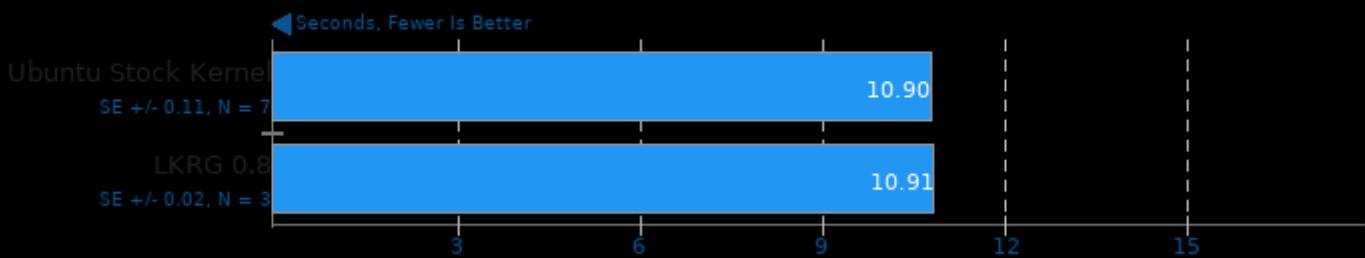
GIMP 2.10.18

Test: resize

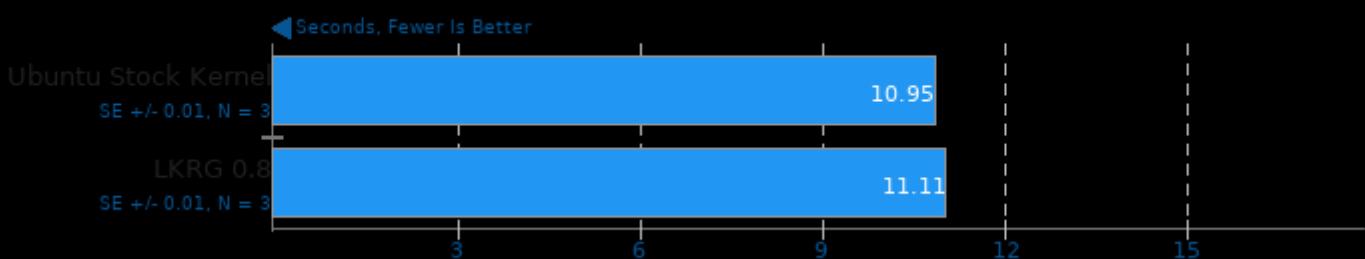


GIMP 2.10.18

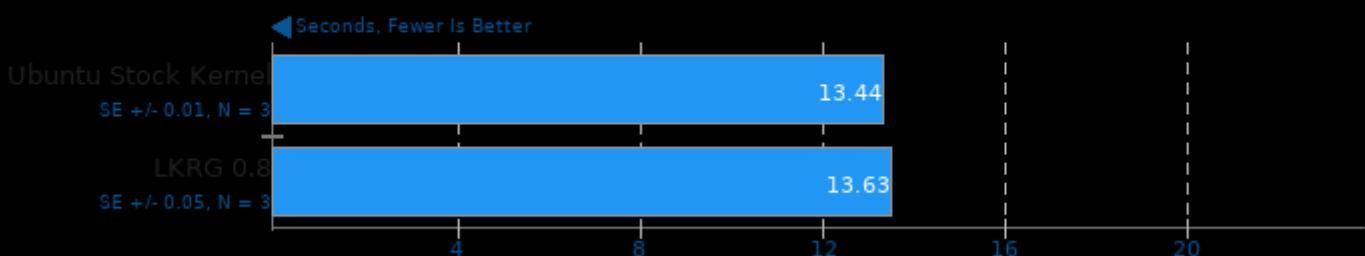
Test: rotate

**GIMP 2.10.18**

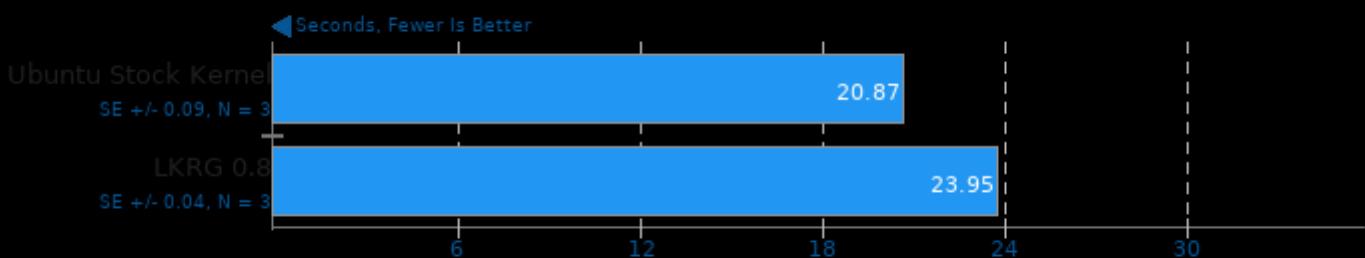
Test: auto-levels

**GIMP 2.10.18**

Test: unsharp-mask

**Inkscape**

Operation: SVG Files To PNG

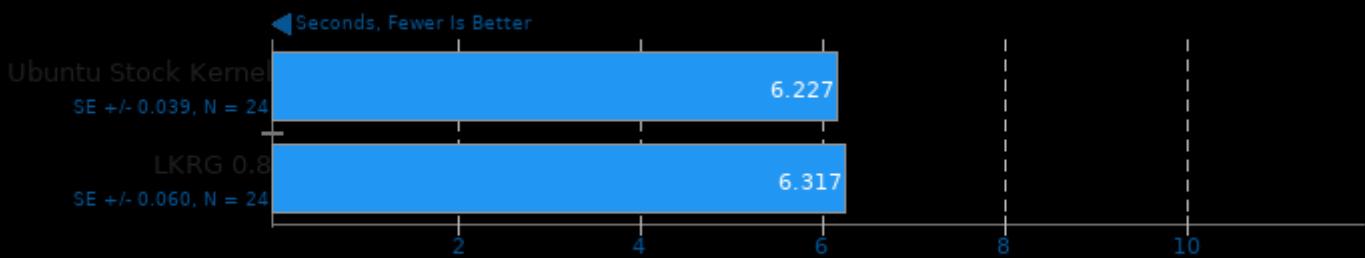


1. Inkscape 0.92.5 (2060ec1f9f, 2020-04-08)

LKRG 0.8 Benchmarking

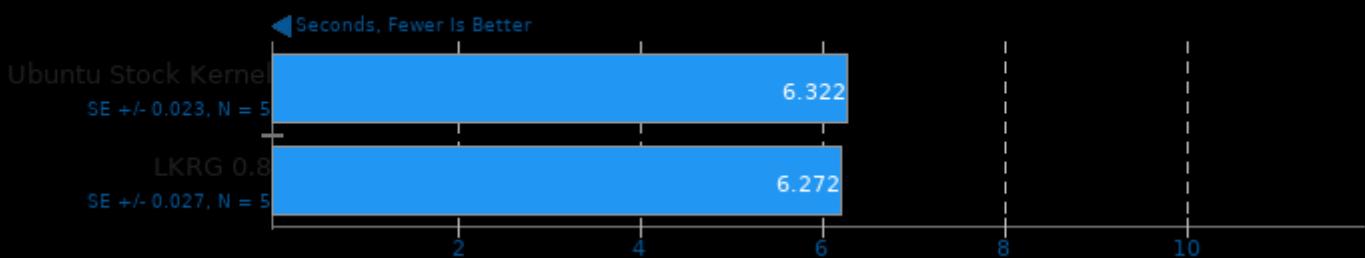
LibreOffice

Test: 20 Documents To PDF



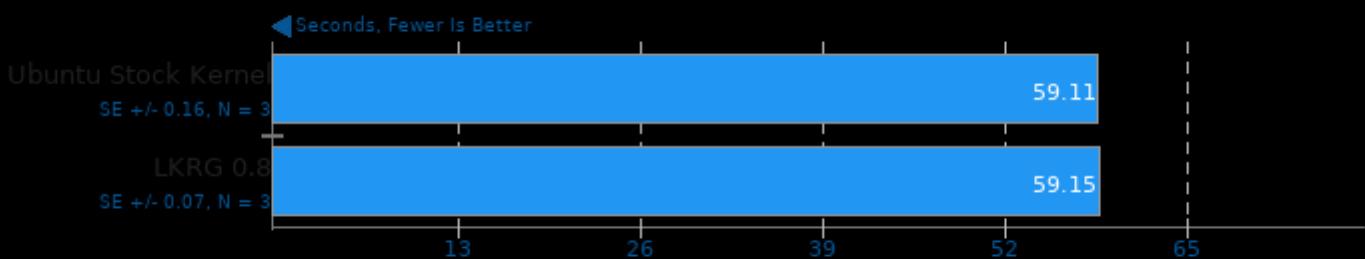
1. LibreOffice 6.4.3.2 40(Build:2)

GNU Octave Benchmark 5.2.0



RawTherapee

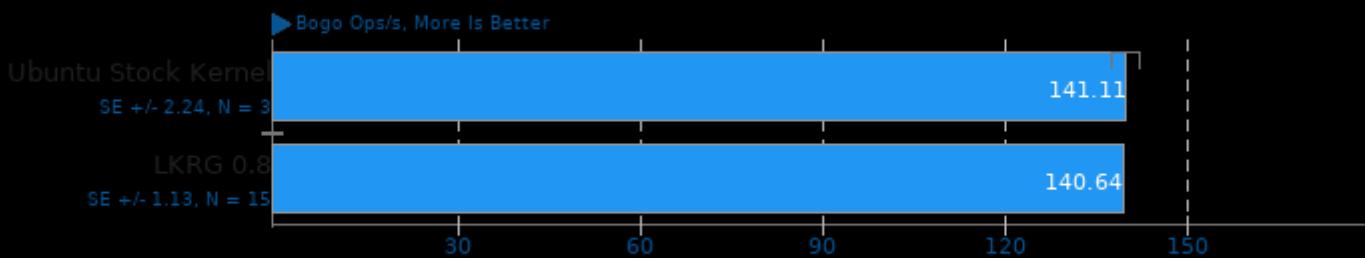
Total Benchmark Time



1. RawTherapee, version 5.8, command line.

Stress-NG 0.11.07

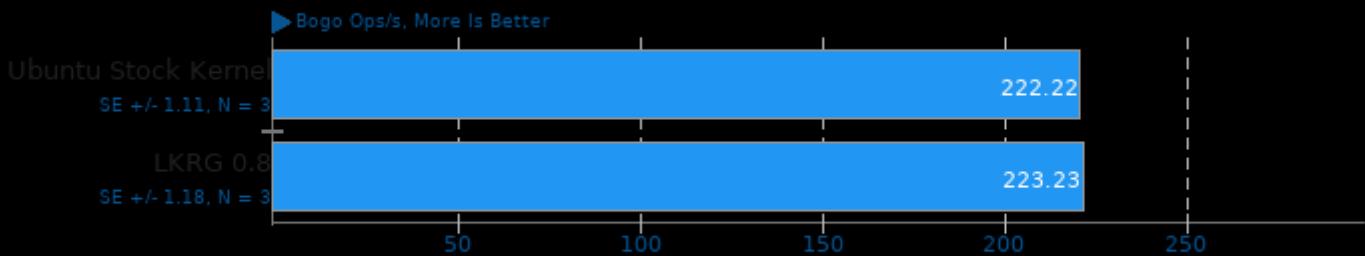
Test: MMAP



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

Stress-NG 0.11.07

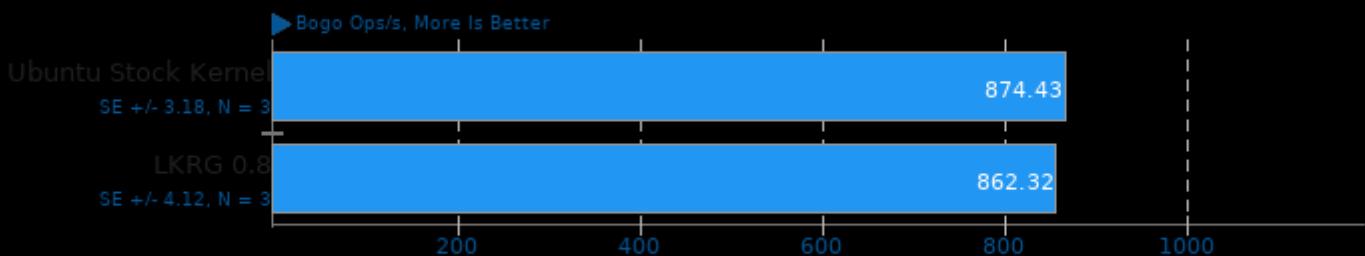
Test: NUMA



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

Stress-NG 0.11.07

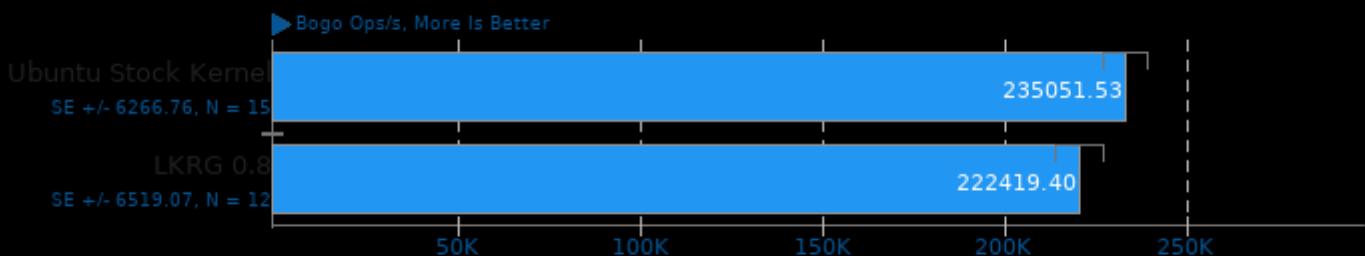
Test: MEMFD



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

Stress-NG 0.11.07

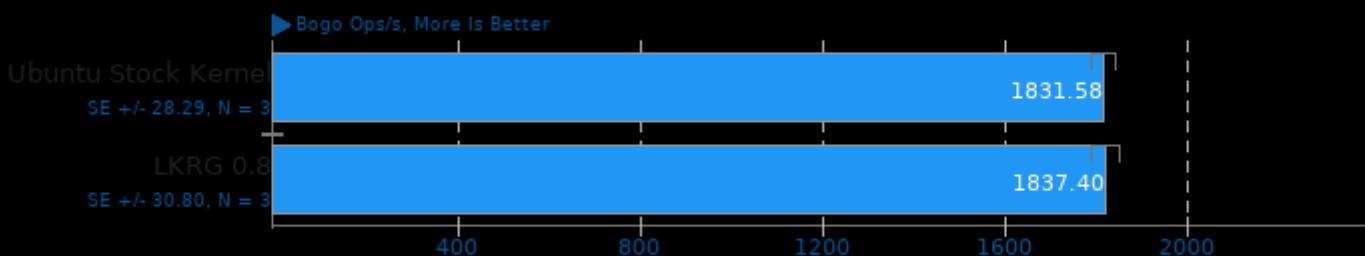
Test: Atomic



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

Stress-NG 0.11.07

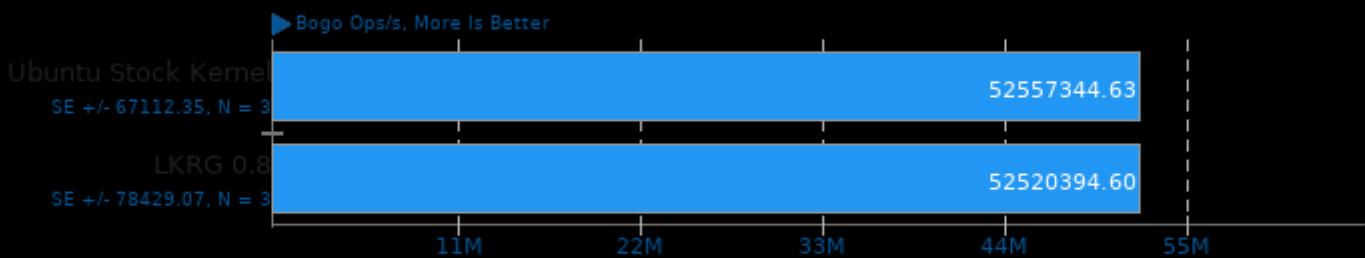
Test: Crypto



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

Stress-NG 0.11.07

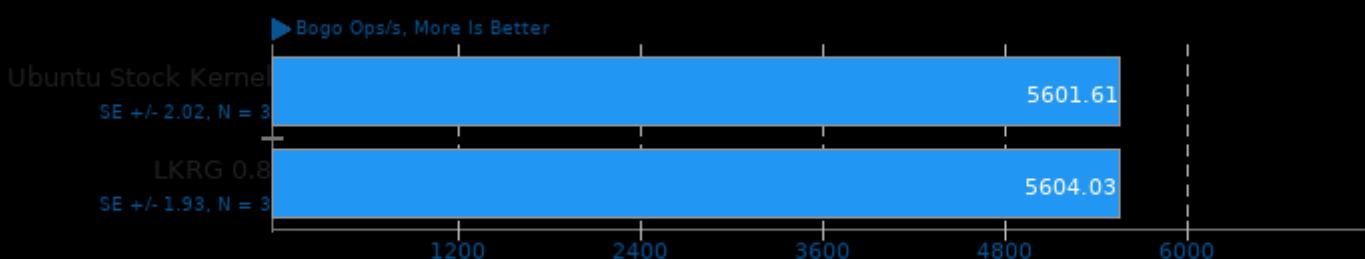
Test: Malloc



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

Stress-NG 0.11.07

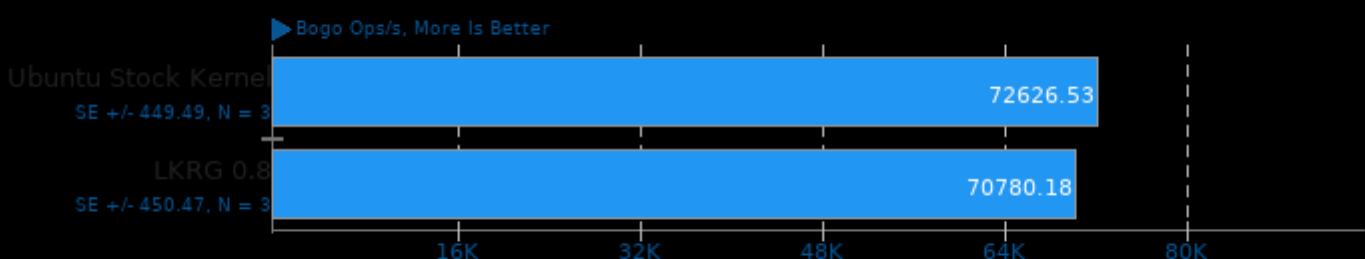
Test: RdRand



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

Stress-NG 0.11.07

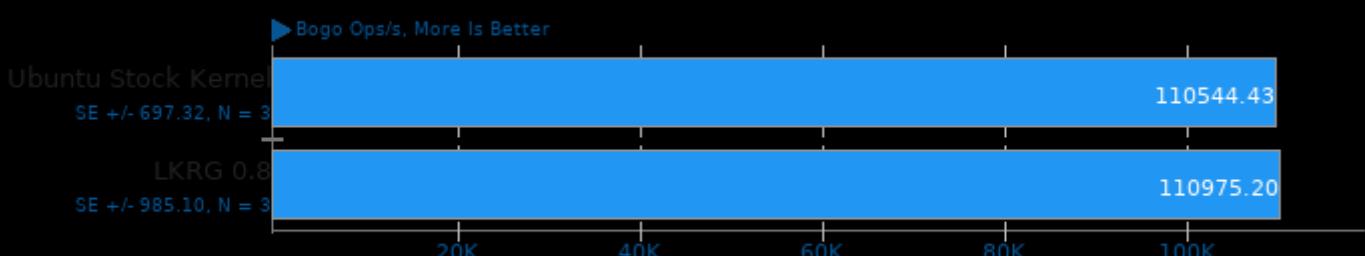
Test: Forking



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

Stress-NG 0.11.07

Test: SENDFILE

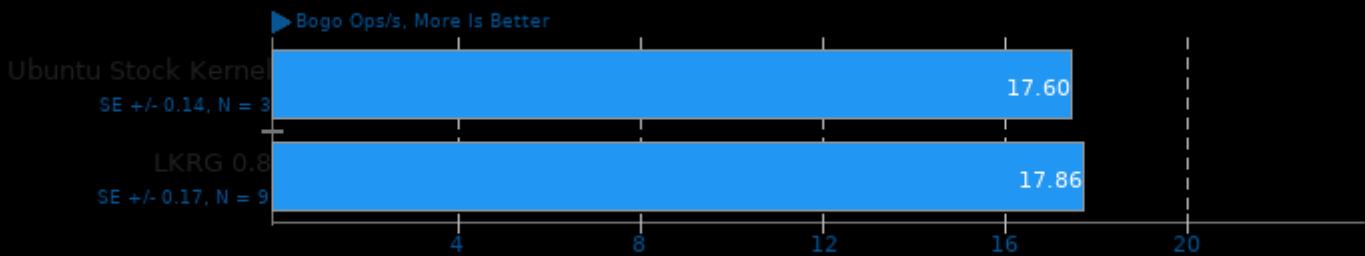


1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lbsd -lcrypt -lrt -lz -ldl -lpthread -lc

LKRG 0.8 Benchmarking

Stress-NG 0.11.07

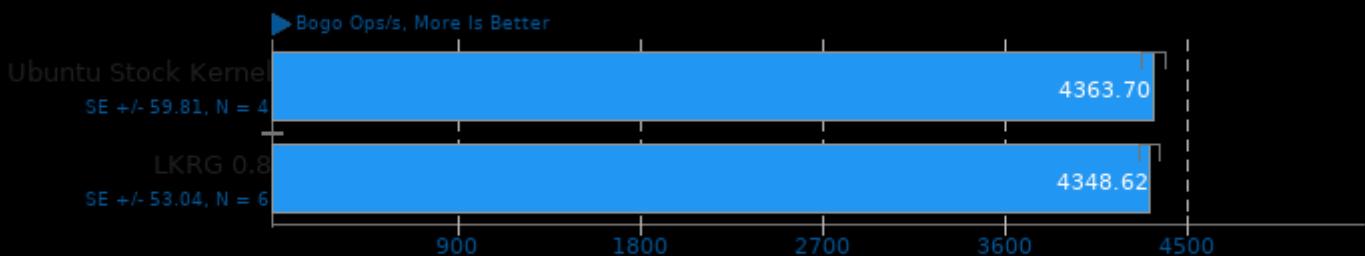
Test: CPU Cache



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

Stress-NG 0.11.07

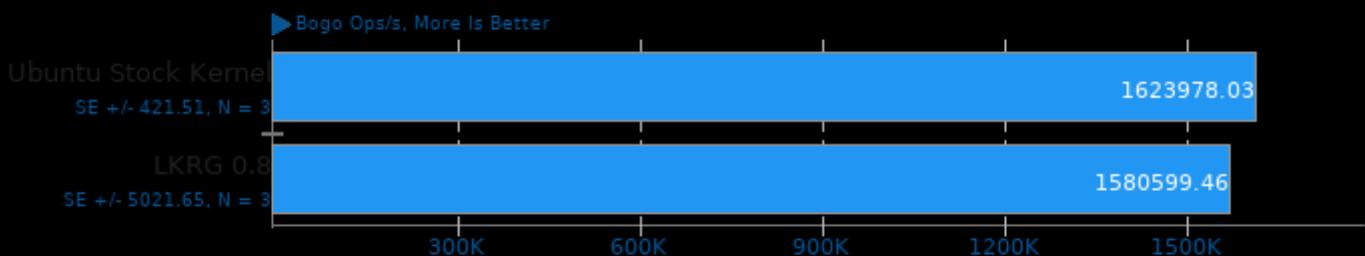
Test: CPU Stress



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

Stress-NG 0.11.07

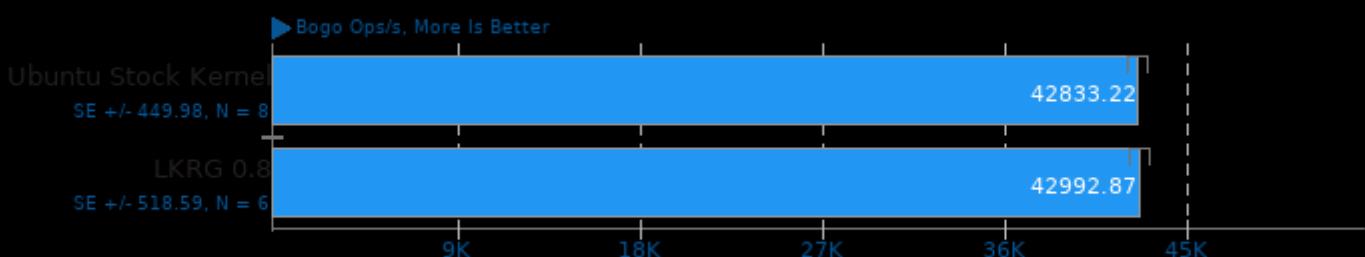
Test: Semaphores



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

Stress-NG 0.11.07

Test: Matrix Math

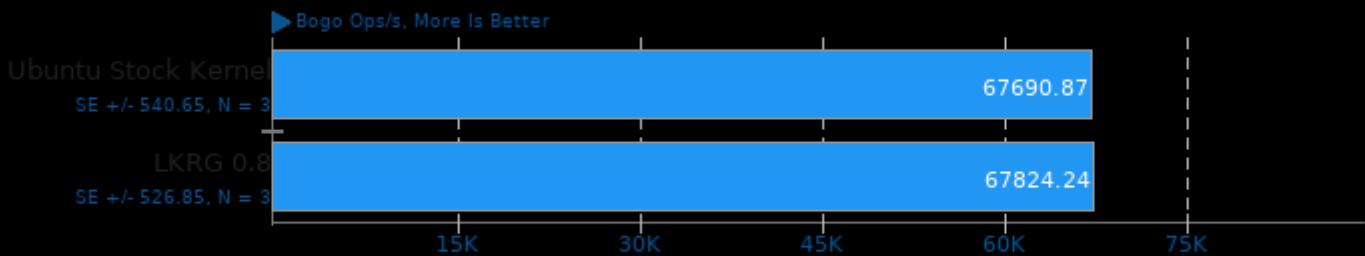


1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lbsd -lcrypt -lrt -lz -ldl -lpthread -lc

LKRG 0.8 Benchmarking

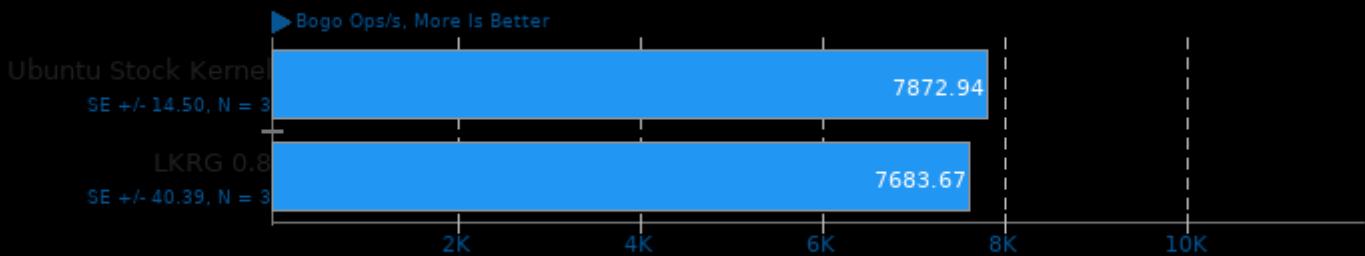
Stress-NG 0.11.07

Test: Vector Math



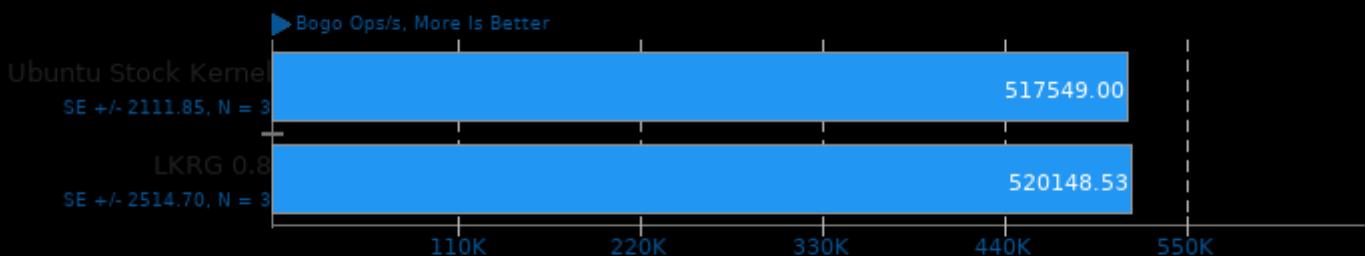
Stress-NG 0.11.07

Test: Socket Activity



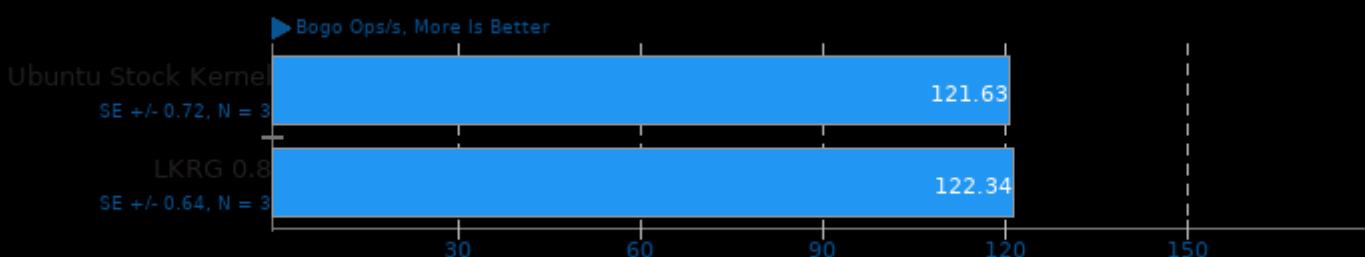
Stress-NG 0.11.07

Test: Glibc C String Functions



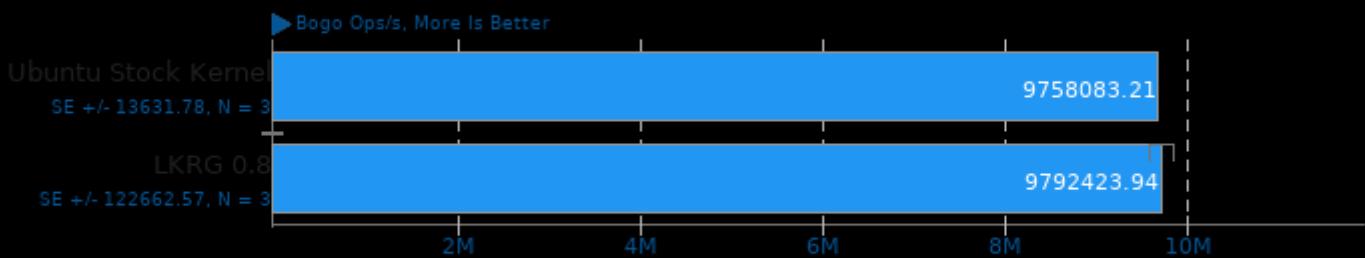
Stress-NG 0.11.07

Test: Glibc Qsort Data Sorting



Stress-NG 0.11.07

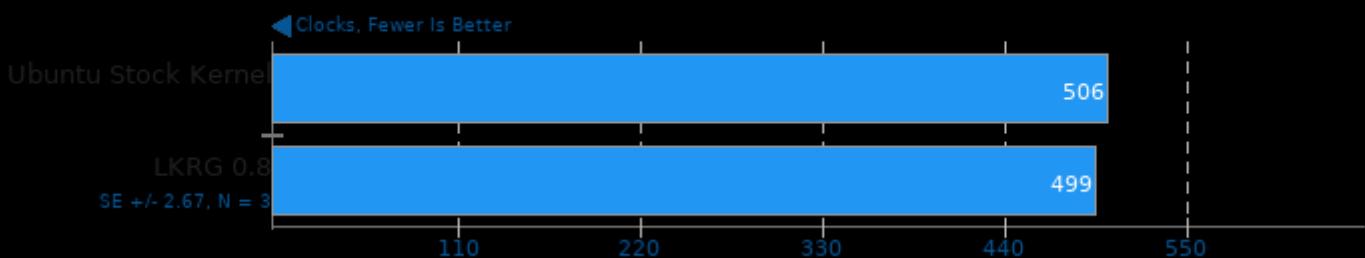
Test: System V Message Passing



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

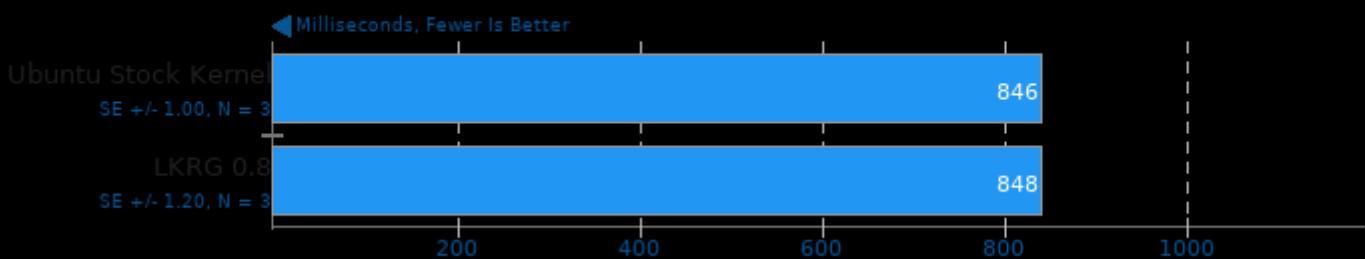
ctx_clock

Context Switch Time



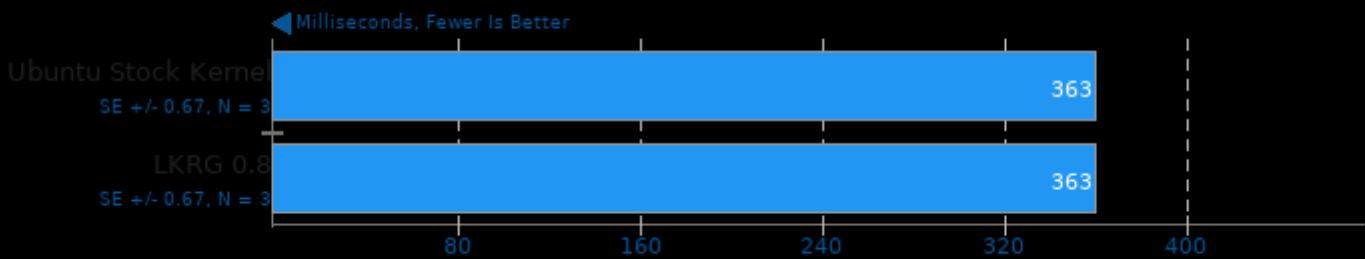
PyBench 2018-02-16

Total For Average Test Times



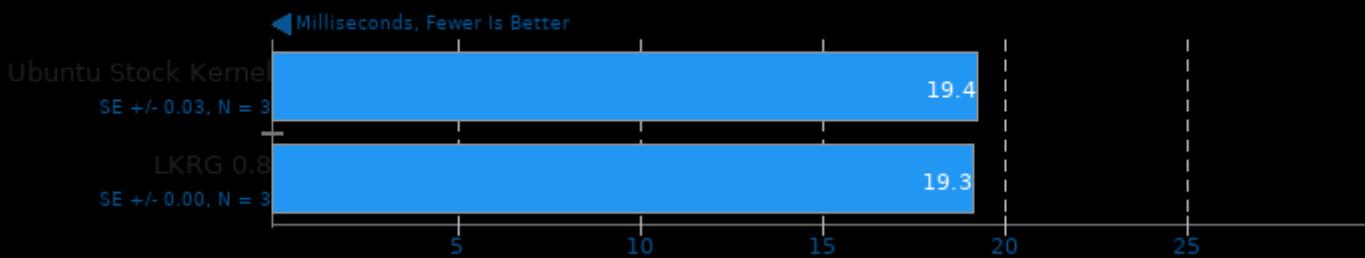
PyPerformance 1.0.0

Benchmark: raytrace



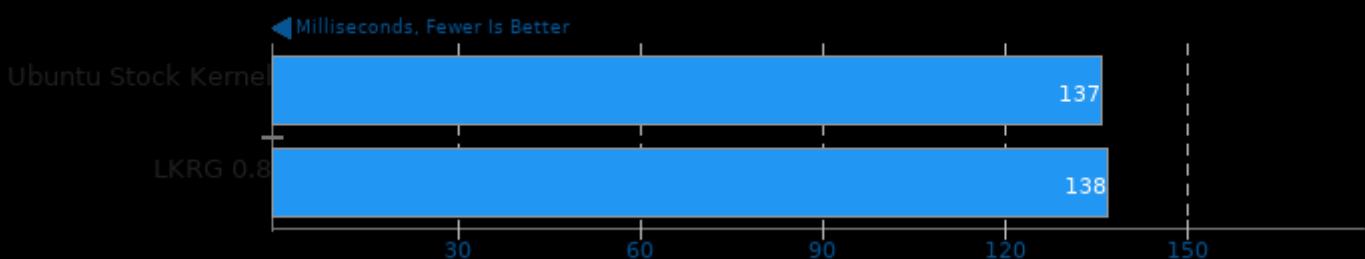
PyPerformance 1.0.0

Benchmark: json_loads



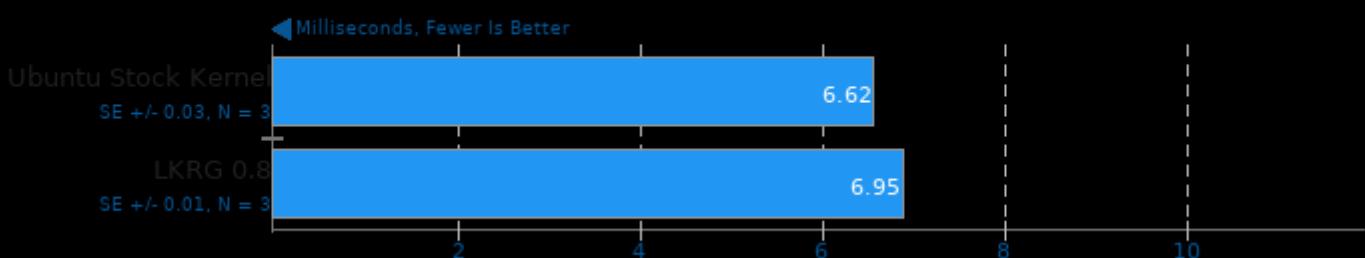
PyPerformance 1.0.0

Benchmark: regex_compile



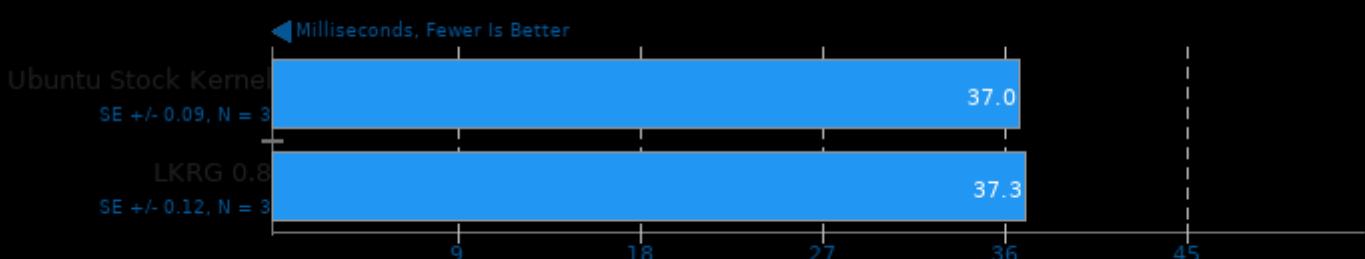
PyPerformance 1.0.0

Benchmark: python_startup



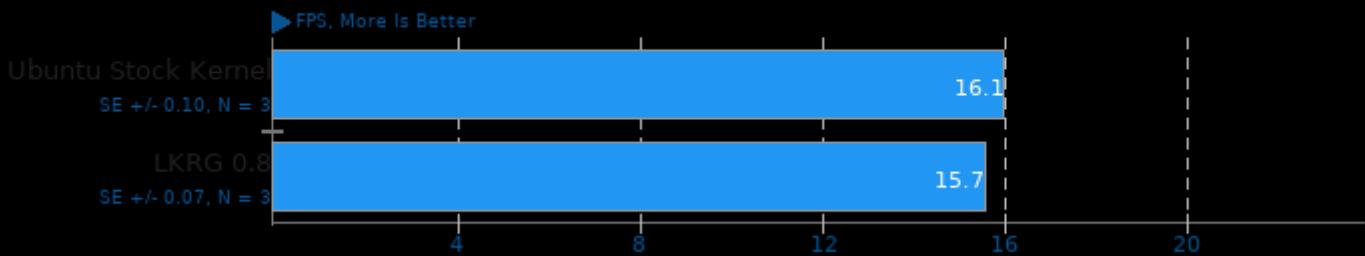
PyPerformance 1.0.0

Benchmark: django_template



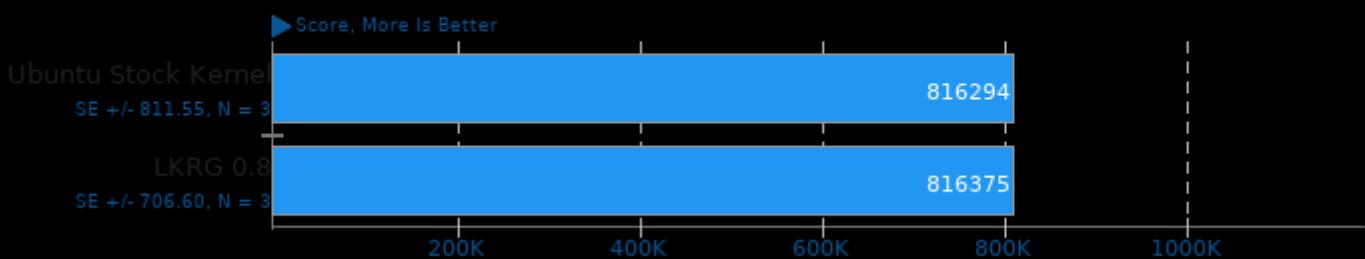
NeatBench 5

Acceleration: CPU



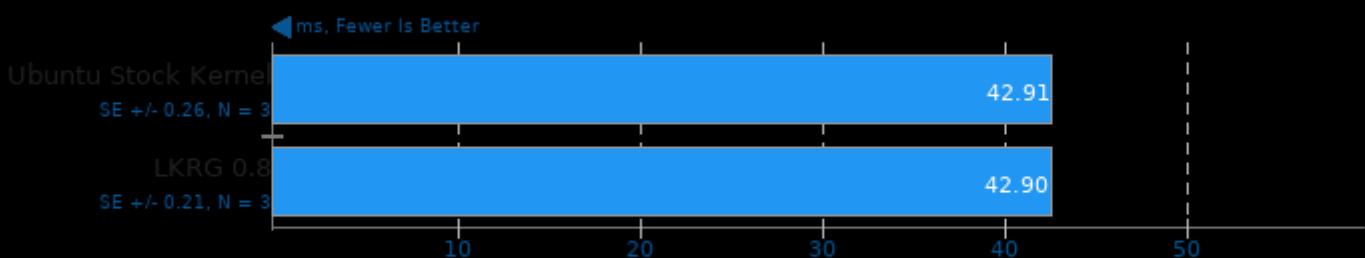
PHPBench 0.8.1

PHP Benchmark Suite



Selenium

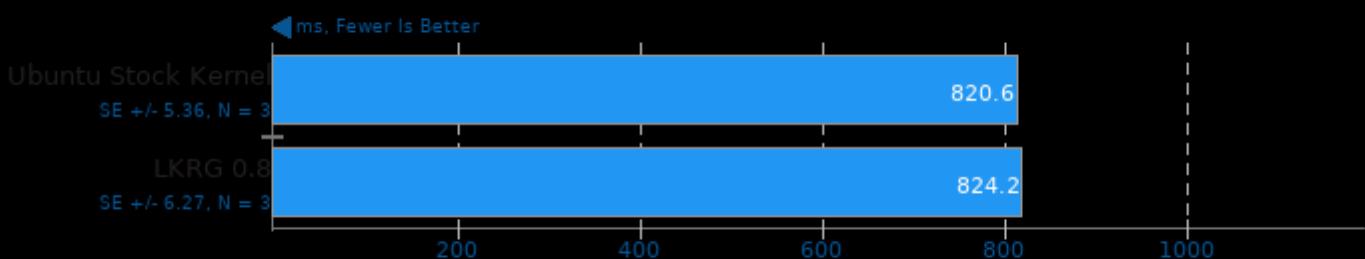
Benchmark: ARES-6 - Browser: Firefox



1. firefox 77.0.1

Selenium

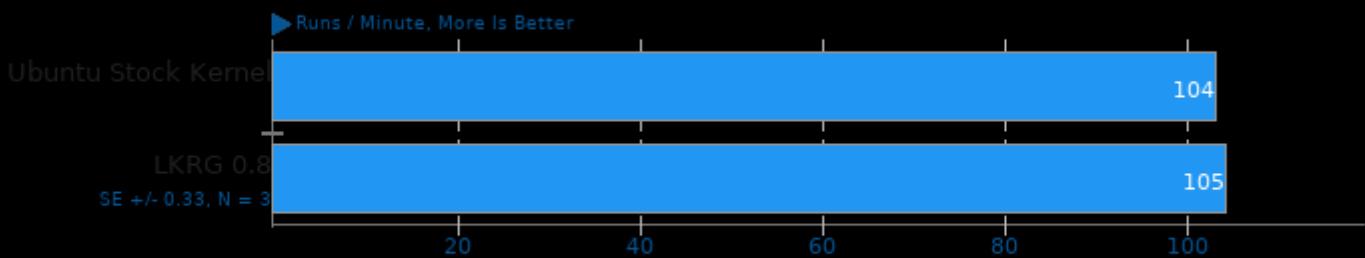
Benchmark: Kraken - Browser: Firefox



1. firefox 77.0.1

Selenium

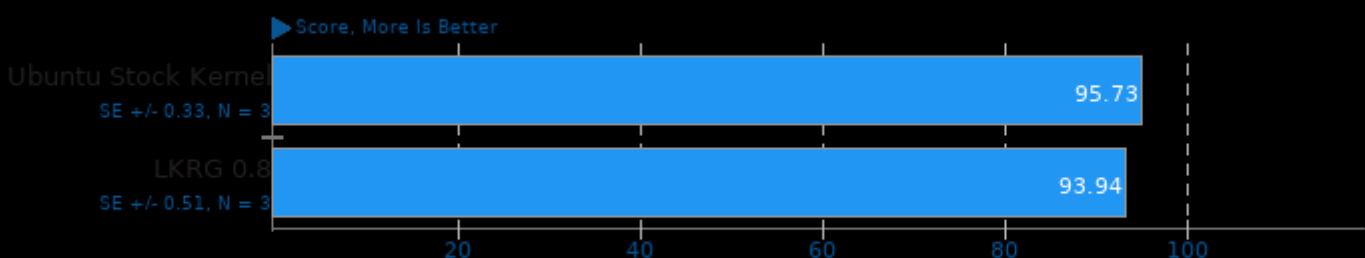
Benchmark: StyleBench - Browser: Firefox



1. firefox 77.0.1

Selenium

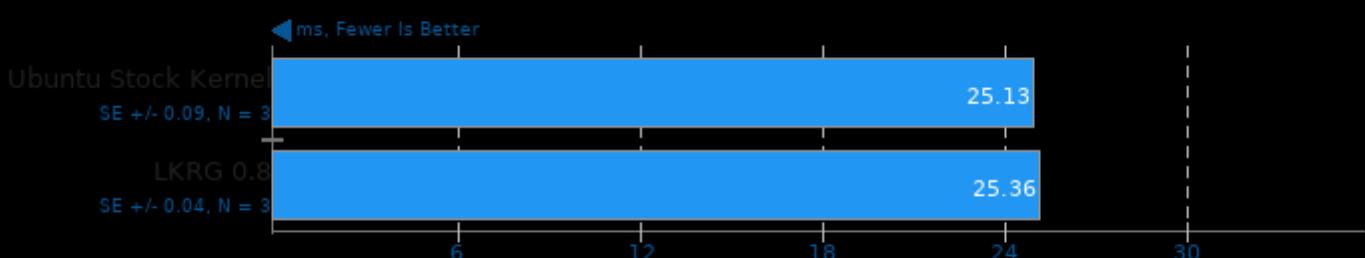
Benchmark: Jetstream 2 - Browser: Firefox



1. firefox 77.0.1

Selenium

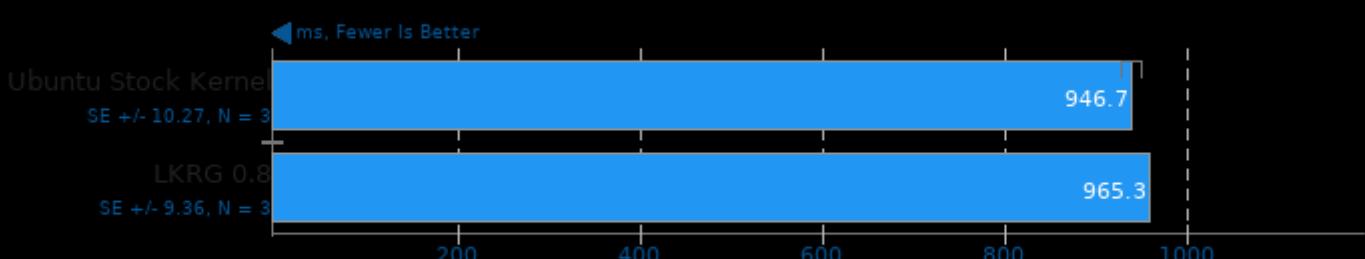
Benchmark: ARES-6 - Browser: Google Chrome



1. chrome 83.0.4103.116

Selenium

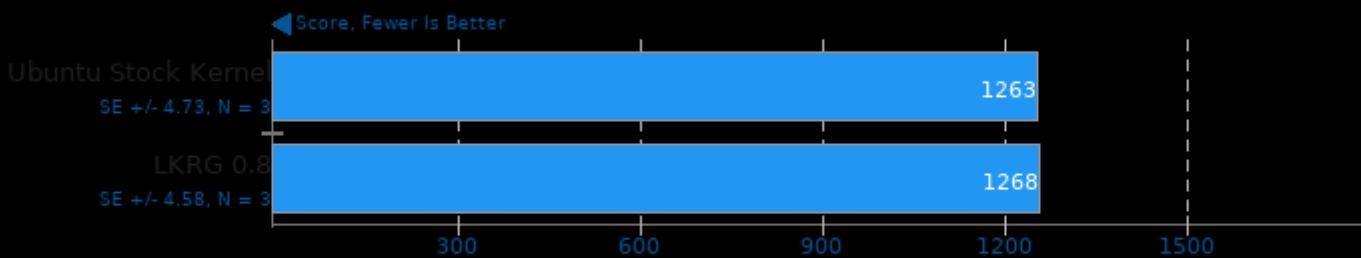
Benchmark: Kraken - Browser: Google Chrome



1. chrome 83.0.4103.116

Selenium

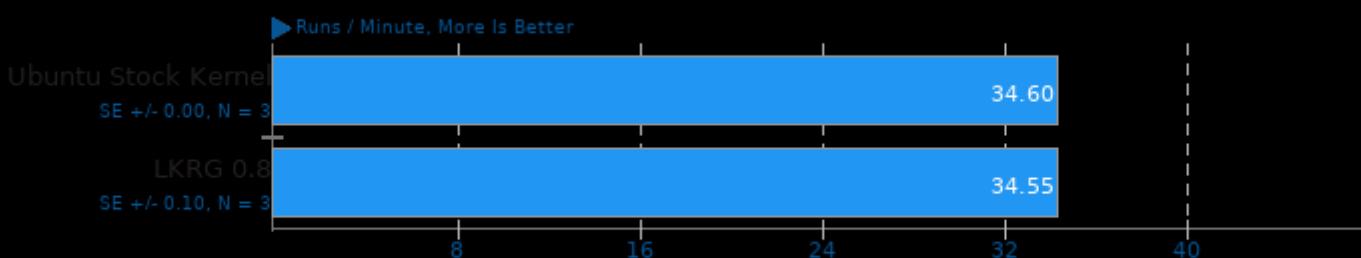
Benchmark: PSPDFKit WASM - Browser: Firefox



1. firefox 77.0.1

Selenium

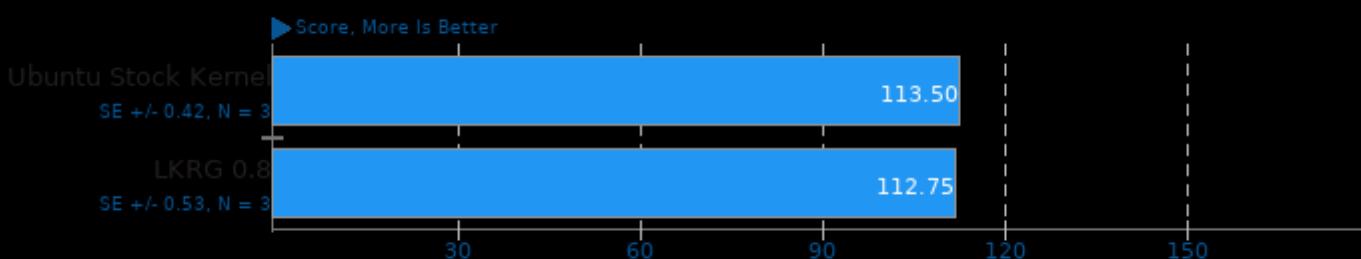
Benchmark: StyleBench - Browser: Google Chrome



1. chrome 83.0.4103.116

Selenium

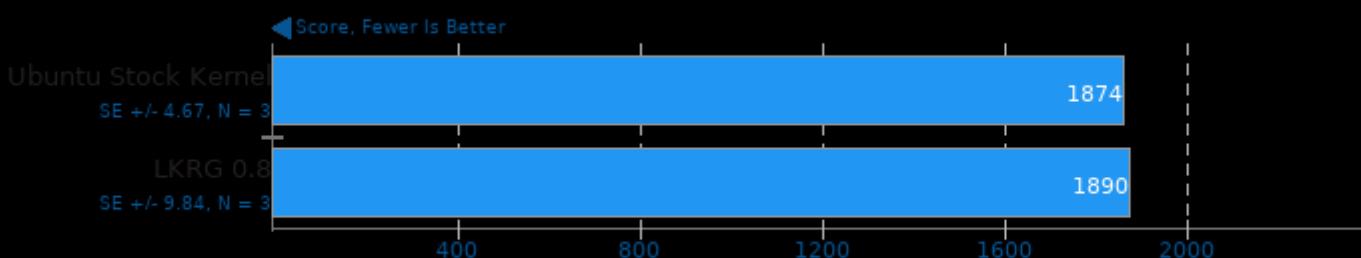
Benchmark: Jetstream 2 - Browser: Google Chrome



1. chrome 83.0.4103.116

Selenium

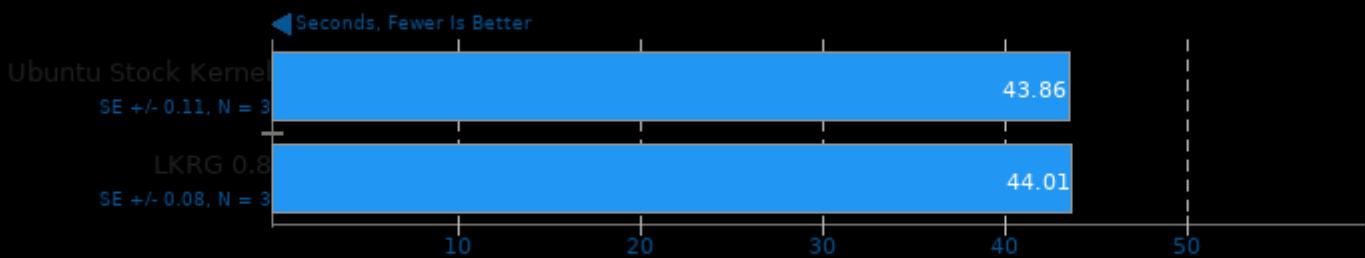
Benchmark: PSPDFKit WASM - Browser: Google Chrome



1. chrome 83.0.4103.116

Git

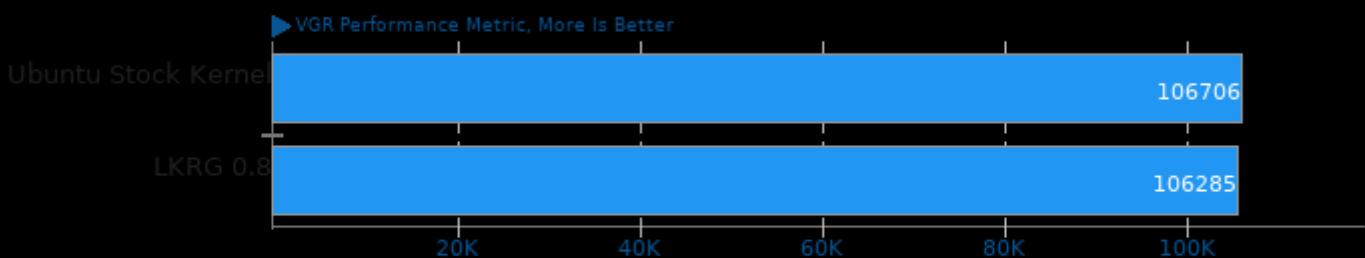
Time To Complete Common Git Commands



1. git version 2.25.1

BRL-CAD 7.30.8

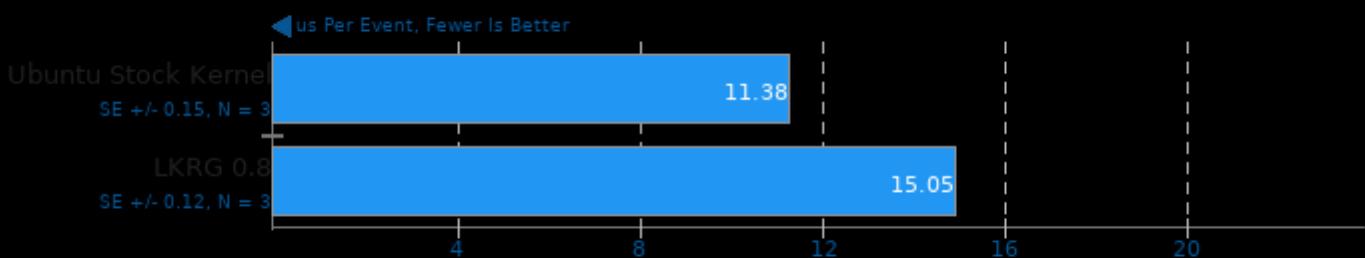
VGR Performance Metric



1. (CXX) g++ options: -std=c++11 -pipe -fno-strict-aliasing -fno-common -fexceptions -ftemplate-depth=128 -m64 -ggdb3 -O3 -fipa-pta -fstrength-reduce

OSBench

Test: Create Files

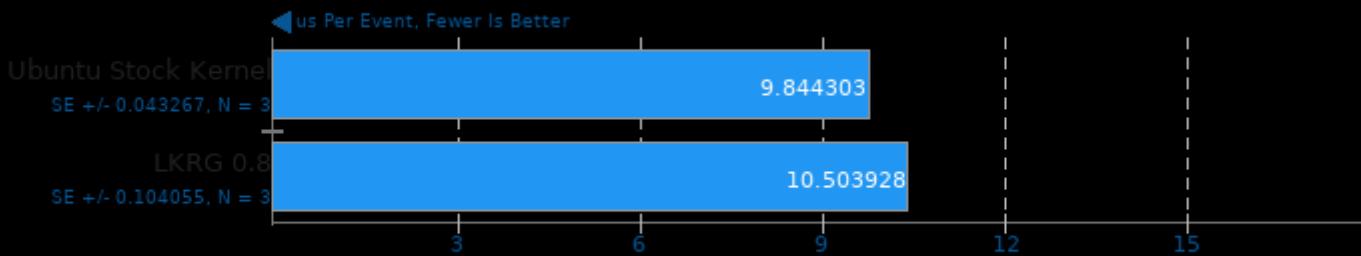


1. (CC) gcc options: -lm

LKRG 0.8 Benchmarking

OSBench

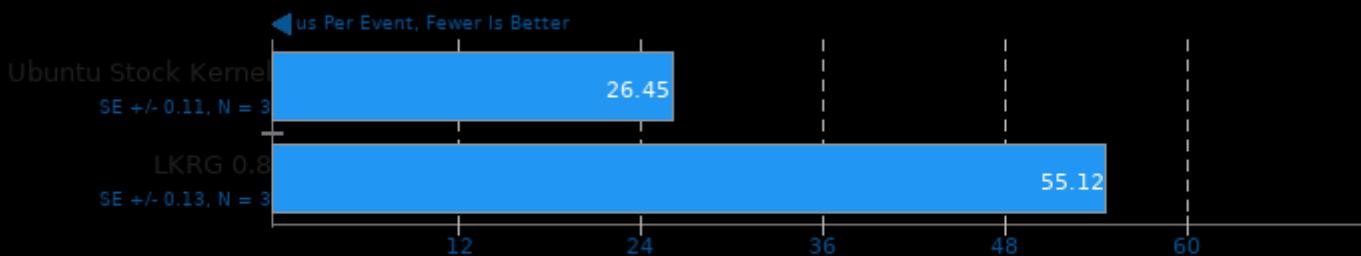
Test: Create Threads



1. (CC) gcc options: -lm

OSBench

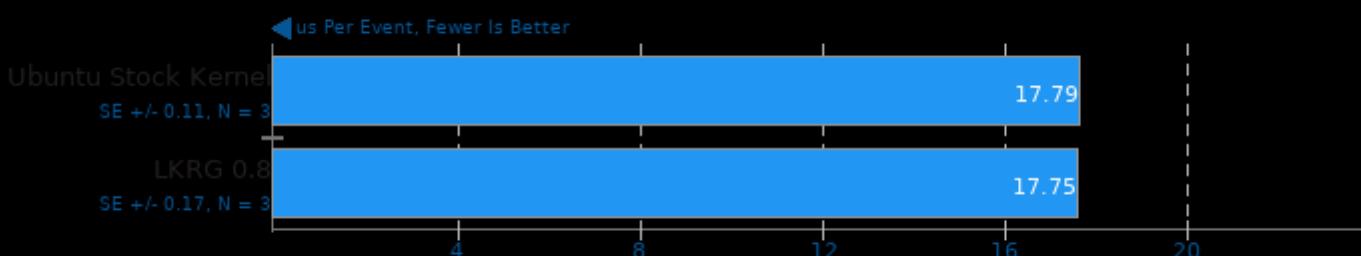
Test: Launch Programs



1. (CC) gcc options: -lm

OSBench

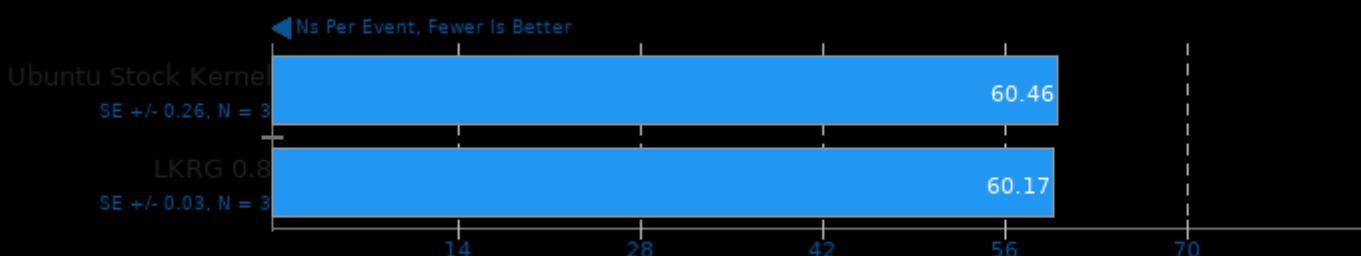
Test: Create Processes



1. (CC) gcc options: -lm

OSBench

Test: Memory Allocations



1. (CC) gcc options: -lm

Cryptsetup 2.2.2

PBKDF2-whirlpool

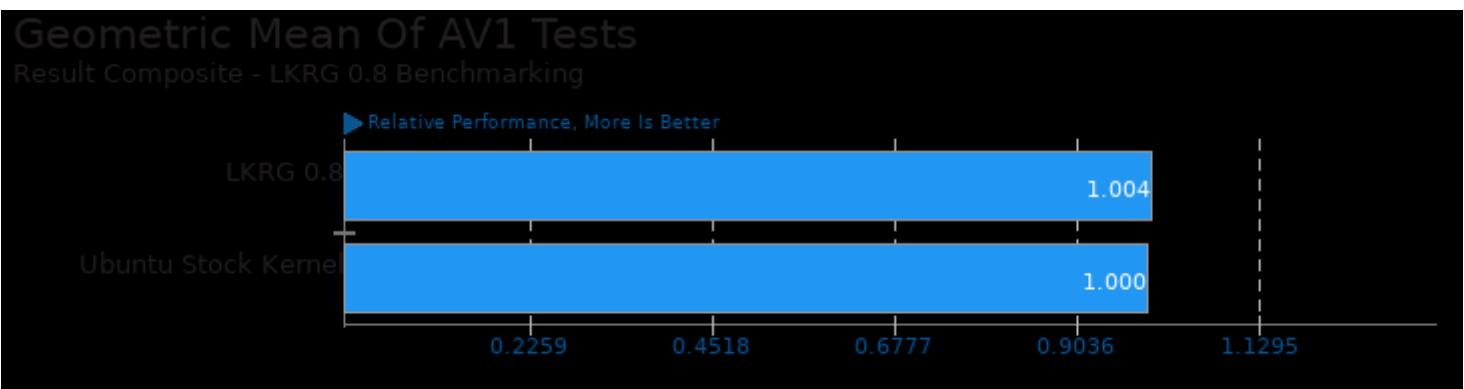


LKRG 0.8 Benchmarking

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/dav1d, pts/svt-av1 and pts/avifenc

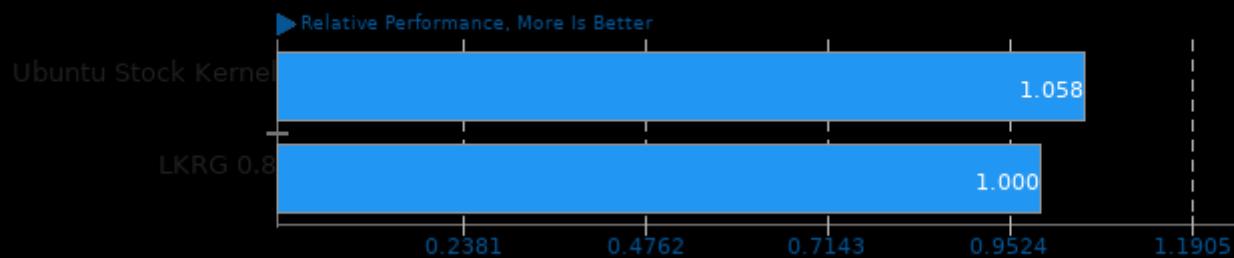


Geometric mean based upon tests: system/selenium

LKRG 0.8 Benchmarking

Geometric Mean Of Timed Code Compilation Tests

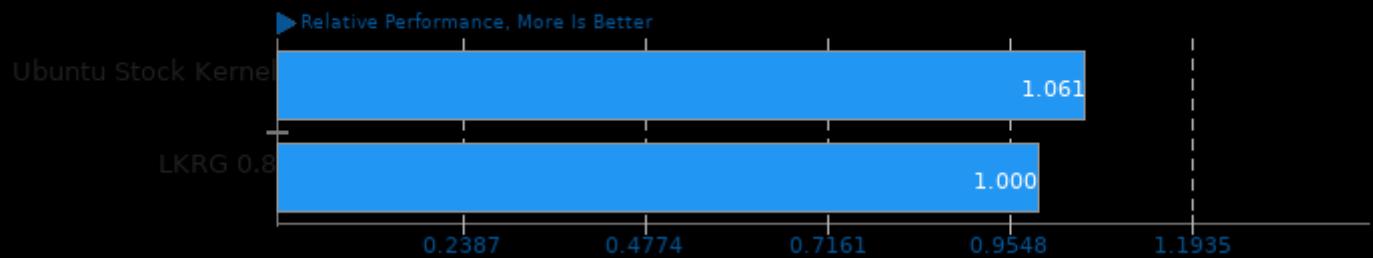
Result Composite - LKRG 0.8 Benchmarking



Geometric mean based upon tests: pts/build-apache, pts/build-linux-kernel, pts/build-gdb and pts/build2

Geometric Mean Of C/C++ Compiler Tests

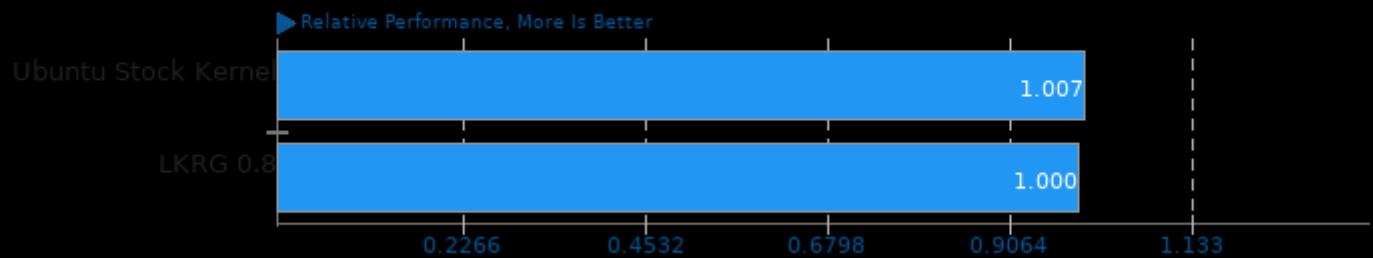
Result Composite - LKRG 0.8 Benchmarking



Geometric mean based upon tests: pts/encode-mp3, pts/encode-flac, pts/sqlite-speedtest, pts/dav1d, pts/x265, pts/compress-zstd, pts/openssl, pts/svt-av1, pts/build-gdb, pts/build-apache, pts/leveldb and pts/basis

Geometric Mean Of CPU Massive Tests

Result Composite - LKRG 0.8 Benchmarking

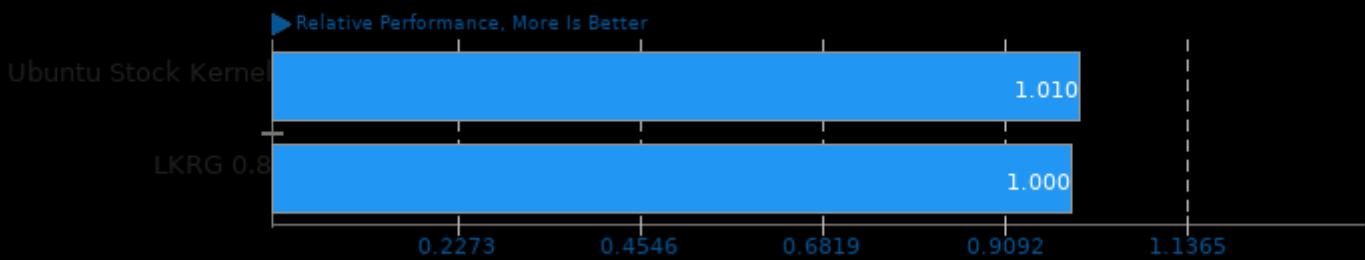


Geometric mean based upon tests: pts/brl-cad, pts/build-apache, pts/build-linux-kernel, pts/compress-zstd, pts/ctx-clock, pts/dav1d, pts/svt-av1, pts/x265, pts/encode-flac, pts/encode-mp3, pts/hpcg, pts/openssl, pts/oneden, pts/phpbench, pts/stress-ng, system/cryptsetup, system/octave-benchmark and pts/botan

LKRG 0.8 Benchmarking

Geometric Mean Of Creator Workloads Tests

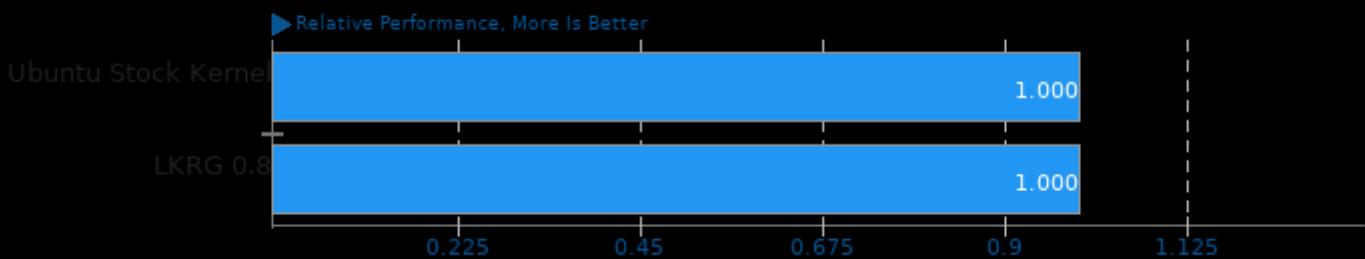
Result Composite - LKRG 0.8 Benchmarking



Geometric mean based upon tests: pts/yafaray, pts/luxcorerender, pts/x265, pts/dav1d, pts/svt-av1, pts/avifenc, pts/encode-mp3, pts/encode-flac, system/inkscape, system/rawtherapee, system/gimp, pts/embree, pts/onnednn, pts/oidn, pts/openvkl, pts/neatbench, pts/basis and pts/brl-cad

Geometric Mean Of Cryptography Tests

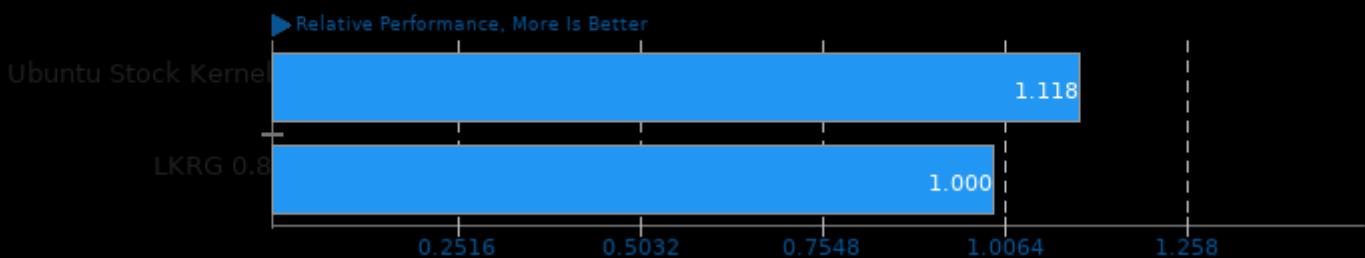
Result Composite - LKRG 0.8 Benchmarking



Geometric mean based upon tests: pts/openssl, pts/botan and system/cryptsetup

Geometric Mean Of Database Test Suite

Result Composite - LKRG 0.8 Benchmarking

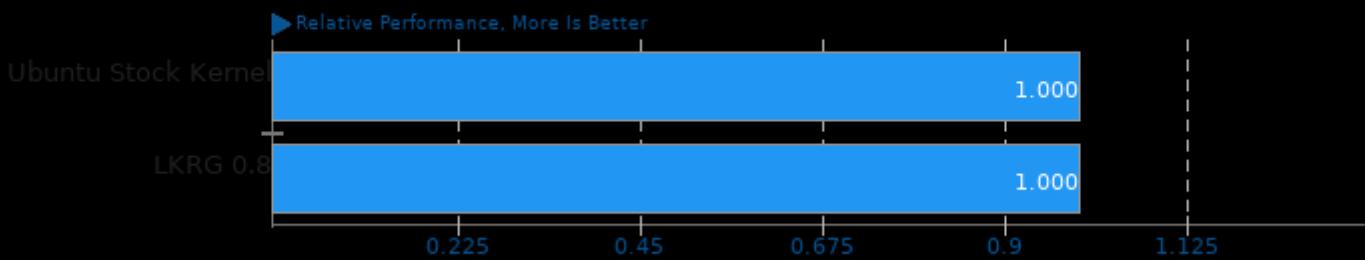


Geometric mean based upon tests: pts/sqlite-speedtest and pts/leveldb

LKRG 0.8 Benchmarking

Geometric Mean Of Desktop Graphics Tests

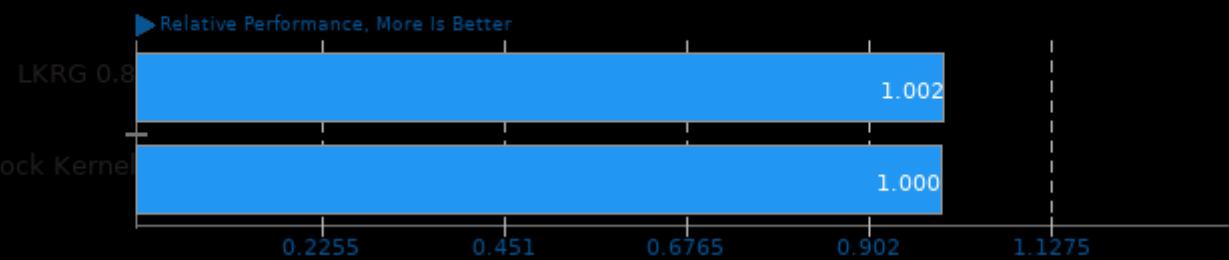
Result Composite - LKRG 0.8 Benchmarking



Geometric mean based upon tests: pts/xonotic, pts/tesseract and pts/paraview

Geometric Mean Of Encoding Tests

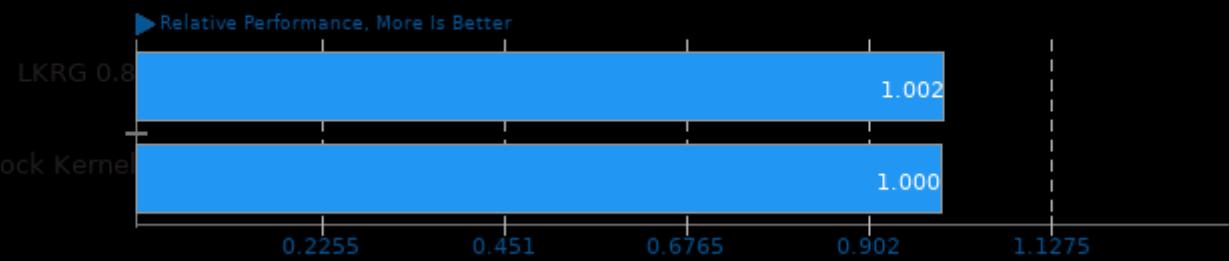
Result Composite - LKRG 0.8 Benchmarking



Geometric mean based upon tests: pts/encode-mp3, pts/encode-flac, pts/x265, pts/dav1d, pts/svt-av1 and pts/avifenc

Geometric Mean Of Game Development Tests

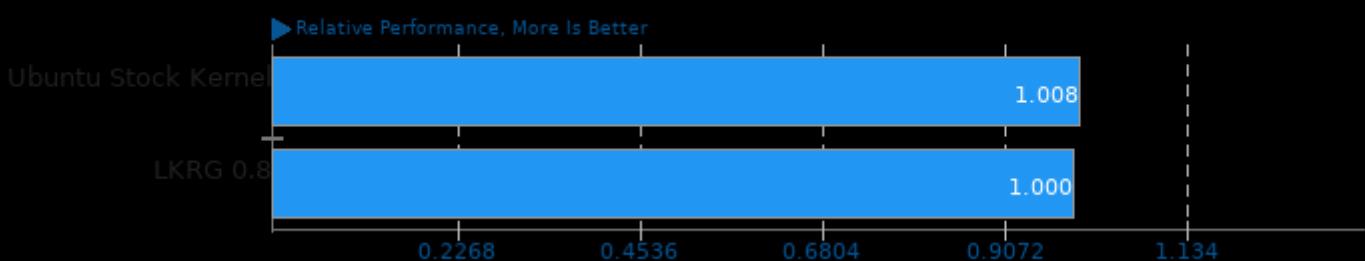
Result Composite - LKRG 0.8 Benchmarking



Geometric mean based upon tests: pts/basis, pts/oidn and pts/openvkl

Geometric Mean Of HPC - High Performance Computing Tests

Result Composite - LKRG 0.8 Benchmarking

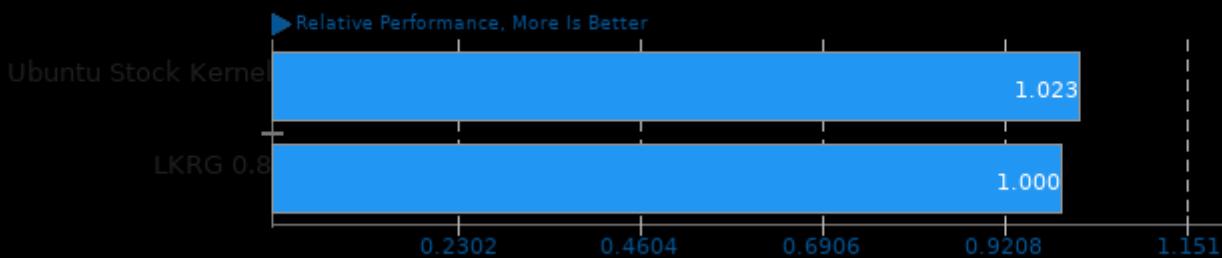


Geometric mean based upon tests: pts/hpcg, pts/intel-mpi, system/octave-benchmark and pts/onnednn

LKRG 0.8 Benchmarking

Geometric Mean Of Imaging Tests

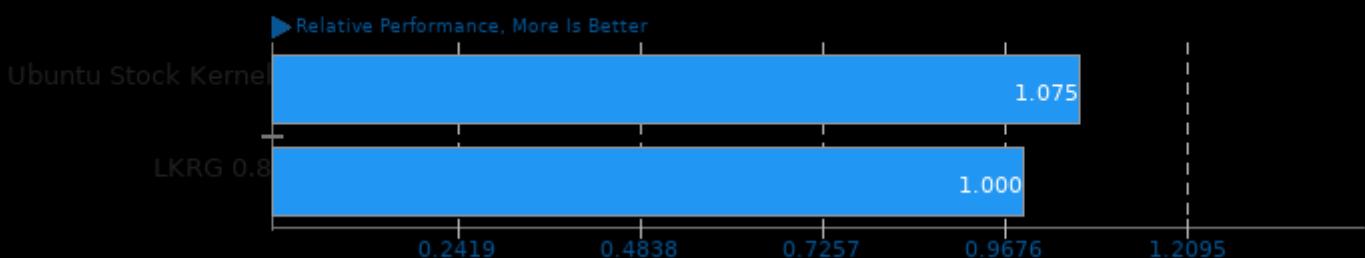
Result Composite - LKRG 0.8 Benchmarking



Geometric mean based upon tests: system/inkscape, system/rawtherapee, system/gimp and pts/avifenc

Geometric Mean Of Common Kernel Benchmarks Tests

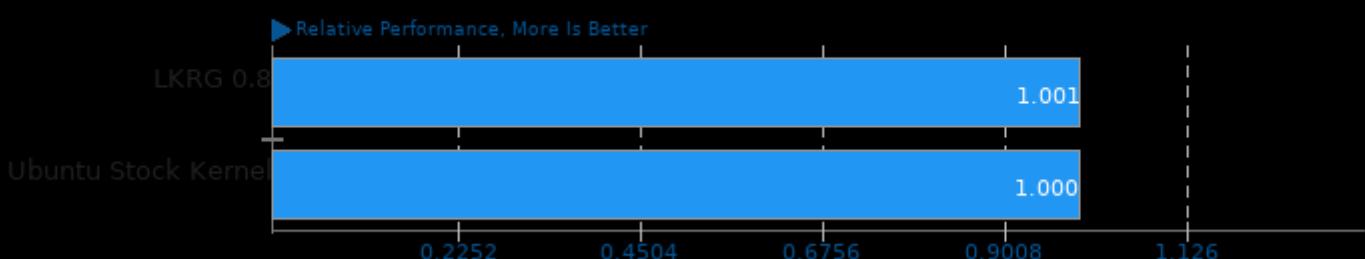
Result Composite - LKRG 0.8 Benchmarking



Geometric mean based upon tests: system/wireguard, pts/sqlite-speedtest, pts/openssl, pts/ctx-clock, pts/stress-ng, pts/osbench and pts/leveldb

Geometric Mean Of MPI Benchmarks Tests

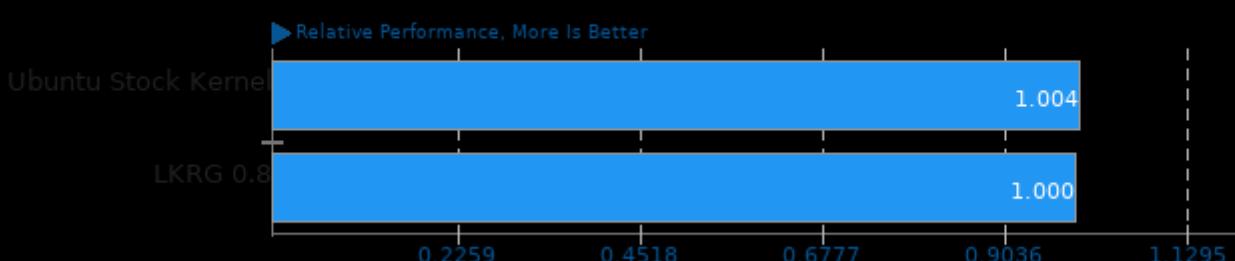
Result Composite - LKRG 0.8 Benchmarking



Geometric mean based upon tests: pts/intel-mpi and pts/hpcg

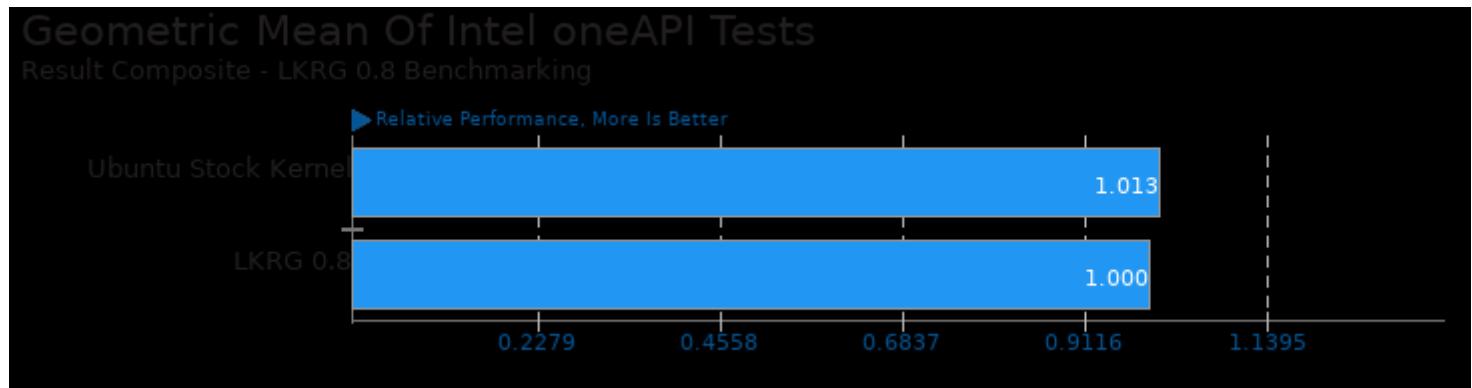
Geometric Mean Of NVIDIA GPU Compute Tests

Result Composite - LKRG 0.8 Benchmarking



LKRG 0.8 Benchmarking

Geometric mean based upon tests: pts/luxcorerender and pts/neatbench



Geometric mean based upon tests: pts/embree, pts/onednn, pts/oidn and pts/openvkl



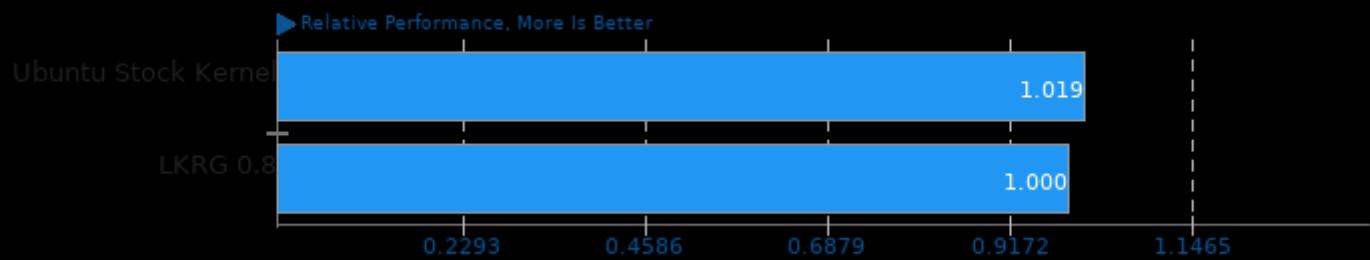
Geometric mean based upon tests: pts/hpcg and pts/intel-mpi



Geometric mean based upon tests: system/libreoffice, system/octave-benchmark, system/inkscape and system/gimp

LKRG 0.8 Benchmarking

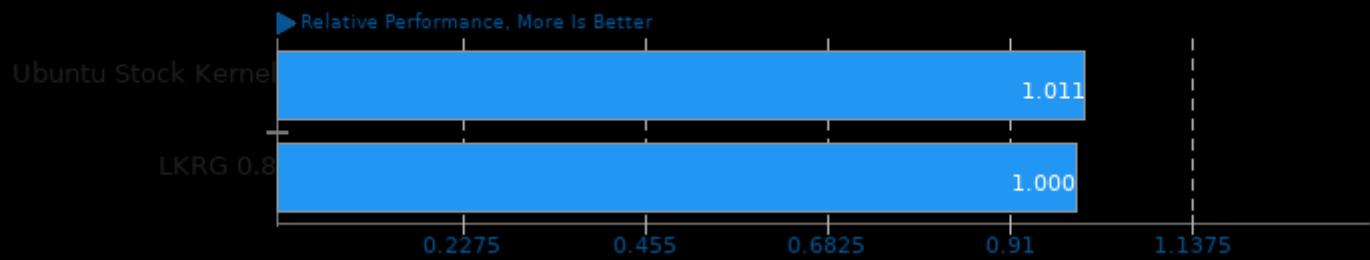
Geometric Mean Of Programmer / Developer System Benchmarks Tests Result Composite - LKRG 0.8 Benchmarking



Geometric mean based upon tests: pts/sqlite-speedtest, pts/git, pts/compress-zstd, pts/pyperformance, pts/pybench, system/cryptsetup, pts/build-apache, pts/build-linux-kernel, pts/build-gdb and pts/build2

Geometric Mean Of Python Tests

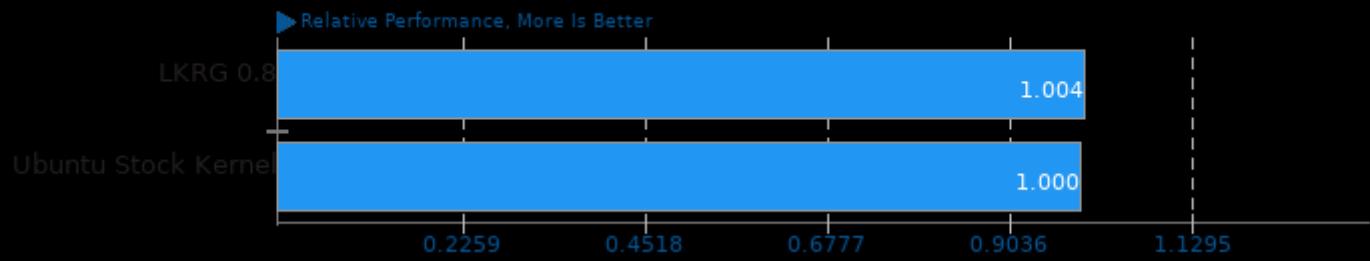
Result Composite - LKRG 0.8 Benchmarking



Geometric mean based upon tests: pts/pybench and pts/pyperformance

Geometric Mean Of Renderers Tests

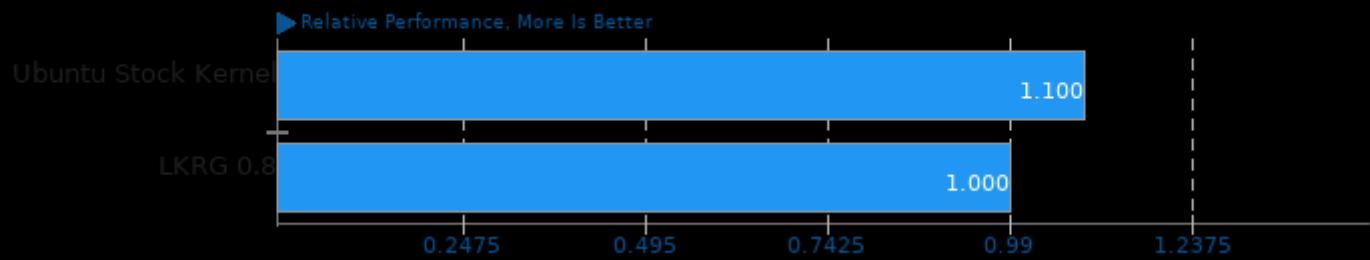
Result Composite - LKRG 0.8 Benchmarking



Geometric mean based upon tests: pts/yafaray and pts/luxcorerender

Geometric Mean Of Server Tests

Result Composite - LKRG 0.8 Benchmarking

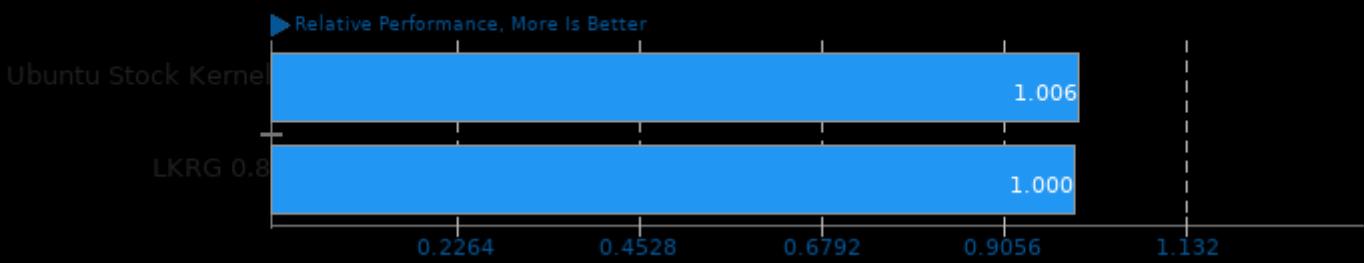


Geometric mean based upon tests: pts/phpbench, pts/openssl, pts/sqlite-speedtest and pts/leveldb

LKRG 0.8 Benchmarking

Geometric Mean Of Server CPU Tests

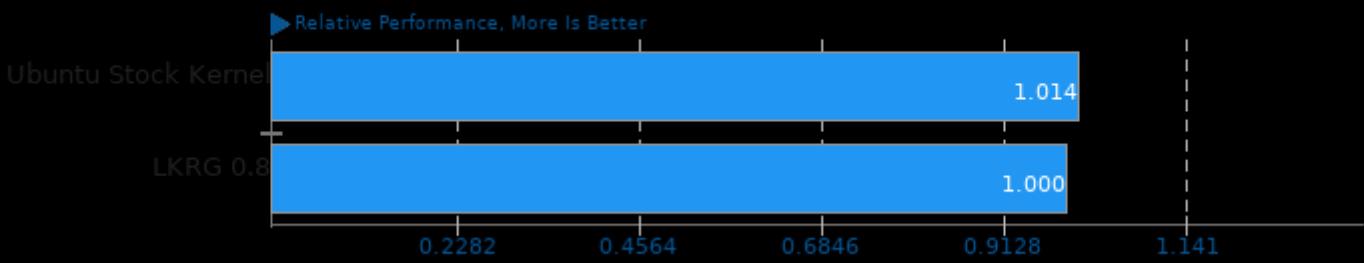
Result Composite - LKRG 0.8 Benchmarking



Geometric mean based upon tests: pts/onednn, pts/svt-av1, pts/x265, pts/dav1d, pts/build-linux-kernel, pts/compress-zstd, pts/openssl, system/gimp, pts/stress-ng, pts/ctx-clock, pts/pybench and pts/phpbench

Geometric Mean Of Single-Threaded Tests

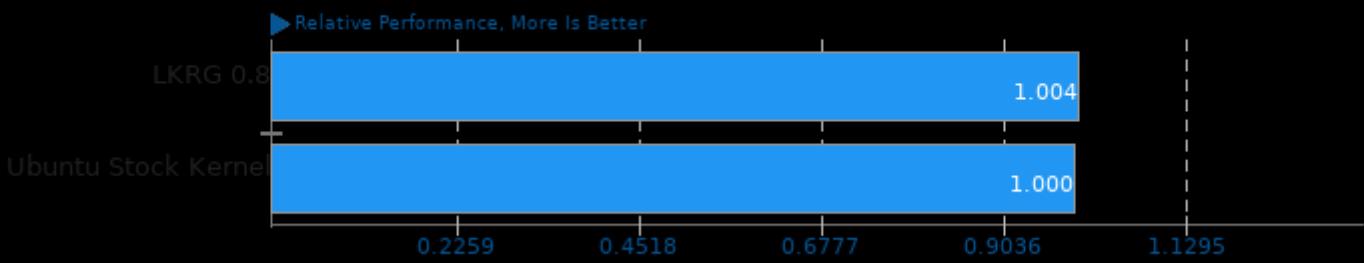
Result Composite - LKRG 0.8 Benchmarking



Geometric mean based upon tests: pts/botan, pts/encode-flac, pts/encode-mp3, system/inkscape, pts/pybench, pts/phpbench and pts/git

Geometric Mean Of Video Encoding Tests

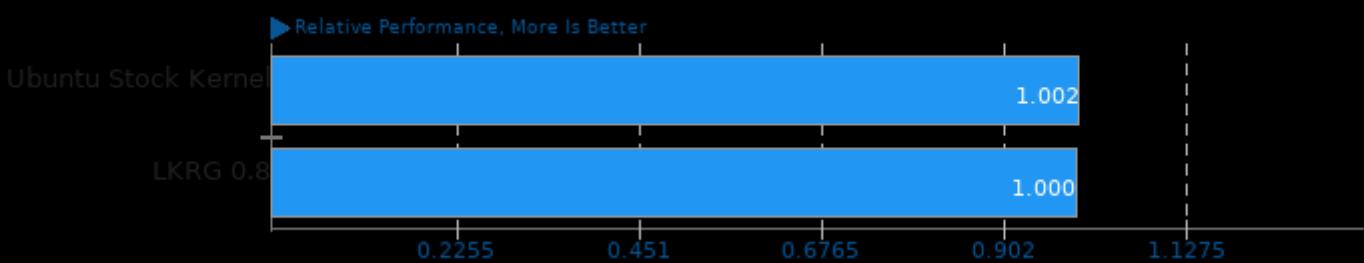
Result Composite - LKRG 0.8 Benchmarking



Geometric mean based upon tests: pts/x265, pts/dav1d, pts/svt-av1 and pts/avifenc

Geometric Mean Of Common Workstation Benchmarks Tests

Result Composite - LKRG 0.8 Benchmarking



Geometric mean based upon tests: pts/brl-cad, pts/x265, pts/paraview and pts/git

This file was automatically generated via the Phoronix Test Suite benchmarking software on Thursday, 28 March 2024 14:36.