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june

Intel Core i7-8700K testing with a ASUS TUF Z370-PLUS GAMING (2001 BIOS) and ASUS Intel UHD 630 CFL GT2 3GB on Ubuntu 20.04 via the Phoronix Test Suite.

Automated Executive Summary

A had the most wins, coming in first place for 46% of the tests.

Based on the geometric mean of all complete results, the fastest (A) was 1.007x the speed of the slowest (B). C was 0.998x the speed of A and B was 0.995x the speed of C.

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

Stress-NG (Test: Memory Copying) at 1.517x
Stress-NG (Test: Futex) at 1.124x
Renaissance (Test: Scala Dotty) at 1.122x
Stress-NG (Test: MMAP) at 1.113x
Stockfish (Total Time) at 1.082x
AOM AV1 (Encoder Mode: Speed 9 Realtime - Input: Bosphorus 4K) at 1.071x
Glibc Benchmarks (Benchmark: exp) at 1.061x
Renaissance (Test: Apache Spark PageRank) at 1.058x
SVT-VP9 (Tuning: PSNR/SSIM Optimized - Input: Bosphorus 4K) at 1.055x

Stress-NG (Test: Socket Activity) at 1.049x.

Test Systems:

A

B

C

Processor: Intel Core i7-8700K @ 4.70GHz (6 Cores / 12 Threads), Motherboard: ASUS TUF Z370-PLUS GAMING (2001 BIOS), Chipset: Intel 8th Gen Core, Memory: 16GB, Disk: 128GB Toshiba THNSN5128GPU7, Graphics: ASUS Intel UHD 630 CFL GT2 3GB (1200MHz), Audio: Realtek ALC887-VD, Monitor: DELL S2409W, Network: Intel I219-V

OS: Ubuntu 20.04, Kernel: 5.9.0-050900rc6daily20200923-generic (x86_64) 20200922, Desktop: GNOME Shell 3.36.4, Display Server: X Server 1.20.13, OpenGL: 4.6 Mesa 21.2.6, OpenCL: OpenCL 2.1, Compiler: GCC 9.4.0, File-System: ext4, Screen Resolution: 1920x1080

Kernel Notes: Transparent Huge Pages: madvise
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=/build/gcc-9-Av3uEd/gcc-9-9.4.0/debian/tmp-nvptx/usr,hsa --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: intel_pstate powersave (EPP: balance_performance) - CPU Microcode: 0xea - Thermald 1.9.1
Java Notes: OpenJDK Runtime Environment (build 11.0.15+10-Ubuntu-0ubuntu0.20.04.1)
Python Notes: Python 2.7.18 + Python 3.8.10
Security Notes: itlb_multihit: KVM: Mitigation of VMX disabled + l1tf: Mitigation of PTE Inversion; VMX: conditional cache flushes SMT vulnerable + mds: Mitigation of Clear buffers; SMT vulnerable + meltdown: Mitigation of PTI + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Full generic retpoline IBPB: conditional IBRS_FW STIBP: conditional RSB filling + srbds: Mitigation of Microcode + tsx_async_abort: Mitigation of Clear buffers; SMT vulnerable

	A	B	C
OpenFOAM - d.M.M.S - Execution Time (sec)	4892		
OpenFOAM - d.M.M.S - Mesh Time (sec)	455.94		
Blender - Barbershop - CPU-Only (sec)	**2342**	**2339**	2339
Normalized	99.89%	100%	100%
Standard Deviation	0.3%		
OpenFOAM - d.S.M.S - Execution Time (sec)	4892		
OpenFOAM - d.S.M.S - Mesh Time (sec)	455.63		
WebP2 Image Encode - Q.1.L.C (sec)	**1404**	**1403**	1403
Normalized	99.88%	100%	99.99%
Standard Deviation	0.1%		
Blender - Pabellon Barcelona - CPU-Only	**774.70**	776	**776.12**
Normalized	100%	99.83%	99.82%
Standard Deviation	0.1%		

WebP2 Image Encode - Q.9.C.E.7 (sec)	652.661	**653.513**	**651.144**
Normalized	99.77%	99.64%	100%
Standard Deviation	0.3%		
Blender - Classroom - CPU-Only (sec)	**605.06**	**608.23**	607.26
Normalized	100%	99.48%	99.64%
Standard Deviation	0.3%		
Renaissance - Apache Spark ALS (ms)	**24216**	**25163**	
Normalized	100%	96.24%	
Standard Deviation	0.6%		
SVT-HEVC - 1 - Bosphorus 4K (FPS)	**1.32**	**1.31**	**1.31**
Normalized	100%	99.24%	99.24%
Standard Deviation	2%		
OSPRay Studio - 3 - 4K - 32 - Path Tracer	**606410**		**605544**
Normalized	99.86%		100%
OSPRay - particle_volume/scivis/real_time (Items/sec)	3.53952	**3.53569**	**3.5533**
Normalized	99.61%	99.5%	100%
Standard Deviation	0.6%		
OSPRay Studio - 2 - 4K - 32 - Path Tracer	**514579**		**515969**
Normalized	100%		99.73%
WebP2 Image Encode - Q.7.C.E.7 (sec)	304.897	**304.287**	**305.495**
Normalized	99.8%	100%	99.6%
Standard Deviation	0.1%		
OSPRay Studio - 1 - 4K - 32 - Path Tracer	**495857**		**497570**
Normalized	100%		99.66%
Blender - Fishy Cat - CPU-Only (sec)	**298.57**	**299.24**	299.19
Normalized	100%	99.78%	99.79%
Standard Deviation	0.1%		
Renaissance - ALS Movie Lens (ms)	**16751**	**16810**	
Normalized	100%	99.65%	
Standard Deviation	0.5%		
OSPRay - particle_volume/pathtracer/real_time	**103.034**	**103.445**	103.126
Normalized	99.6%	100%	99.69%
Standard Deviation	0.3%		
Renaissance - Scala Dotty (ms)	922.6	**873.4**	**979.9**
Normalized	94.67%	100%	89.13%
Standard Deviation	6%		
Renaissance - A.U.C.T (ms)	11767	**11721**	**11783**
Normalized	99.61%	100%	99.48%
Standard Deviation	1.5%		
GROMACS - MPI CPU - water_GMX50_bare (Ns/Day)	**0.766**	**0.78**	0.777
Normalized	98.21%	100%	99.62%
Standard Deviation	1.6%		
OSPRay - particle_volume/ao/real_time (Items/sec)	3.56649	**3.55379**	**3.58904**
Normalized	99.37%	99.02%	100%
Standard Deviation	0.7%		
Blender - BMW27 - CPU-Only (sec)	**214.97**	214.76	**214.74**
Normalized	99.89%	99.99%	100%
Standard Deviation	0.5%		
Renaissance - Apache Spark Bayes (ms)	**2045**	**2108**	
Normalized	100%	97%	

Standard Deviation	4.8%		
AOM AV1 - Speed 0 Two-Pass - Bosphorus 4K (FPS)	0.1	0.1	0.1
Standard Deviation	0%		
OSPRay Studio - 3 - 4K - 16 - Path Tracer	306225		306602
Normalized	100%		99.88%
AOM AV1 - Speed 4 Two-Pass - Bosphorus 4K (FPS)	4.04	4.04	4.03
Normalized	100%	100%	99.75%
Standard Deviation	0.2%		
OSPRay Studio - 2 - 4K - 16 - Path Tracer	259223		260147
Normalized	100%		99.64%
OSPRay - gravity_spheres_volume/dim_512/ao/real_time (Items/sec)	1.68606	1.7009	1.69785
Normalized	99.13%	100%	99.82%
Standard Deviation	1.9%		
OSPRay Studio - 1 - 4K - 16 - Path Tracer	250654		251423
Normalized	100%		99.69%
Renaissance - Savina Reactors.IO (ms)	10243	10312	10518
Normalized	100%	99.33%	97.38%
Standard Deviation	0.3%		
OSPRay - gravity_spheres_volume/dim_512/pathtracer/real_time (Items/sec)	2.41111	2.41672	2.42077
Normalized	99.6%	99.83%	100%
Standard Deviation	0.5%		
Chaos Group V-RAY - CPU (vsamples)	7333		
Standard Deviation	0.5%		
VKMark - 1920 x 1080 - Mailbox (VKMark Score)	799	801	800
Normalized	99.75%	100%	99.88%
Standard Deviation	0.1%		
OpenFOAM - motorBike - Execution Time	202.81	203.35	
Normalized	100%	99.73%	
OpenFOAM - motorBike - Mesh Time (sec)	51.77	51.91	
Normalized	100%	99.73%	
Stockfish - Total Time (Nodes/s)	17273718	16413868	15958502
Normalized	100%	95.02%	92.39%
Standard Deviation	1.1%		
ParaView - Many Spheres - 1920 x 1080 (MiPolys / Sec)	641.874	640.835	641.001
Normalized	100%	99.84%	99.86%
Standard Deviation	0.1%		
ParaView - Many Spheres - 1920 x 1080 (Frames / Sec)	6.40	6.39	6.39
Normalized	100%	99.84%	99.84%
Standard Deviation	0.1%		
OSPRay Studio - 3 - 4K - 1 - Path Tracer (ms)	18657		18661
Normalized	100%		99.98%
OSPRay Studio - 1 - 4K - 1 - Path Tracer (ms)	15174		15236
Normalized	100%		99.59%

OSPRay - gravity_spheres_volume/dim_512/scivis/real_time (Items/sec)	1.64053	**1.62726**	**1.64401**
Normalized	99.79%	98.98%	100%
Standard Deviation	0.9%		
Stress-NG - MMAP (Bogo Ops/s)	**58.83**	53.04	**52.84**
Normalized	100%	90.16%	89.82%
Standard Deviation	5.5%		
Stress-NG - Atomic (Bogo Ops/s)	201426	**183704**	**224570**
Normalized	89.69%	81.8%	100%
Standard Deviation	7.2%		
Stress-NG - Futex (Bogo Ops/s)	**1448464**	**1628616**	1495576
Normalized	88.94%	100%	91.83%
Standard Deviation	5.9%		
OSPRay Studio - 3 - 1080p - 32 - Path Tracer (ms)	**157454**		**156947**
Normalized	99.68%		100%
AOM AV1 - Speed 6 Two-Pass - Bosphorus 4K (FPS)	7.38	7.38	7.38
Standard Deviation	0.1%		
Renaissance - A.S.P (ms)	**3322**	**3515**	
Normalized	100%	94.51%	
Standard Deviation	2.4%		
Renaissance - G.A.U.J.F (ms)	**1715**	**1758**	1735
Normalized	100%	97.53%	98.85%
Standard Deviation	1.2%		
OSPRay Studio - 2 - 1080p - 32 - Path Tracer (ms)	**133212**		**133331**
Normalized	100%		99.91%
Stress-NG - CPU Cache (Bogo Ops/s)	150.66	**135.46**	**163.43**
Normalized	92.19%	82.89%	100%
Standard Deviation	6.8%		
Timed Linux Kernel Compilation - defconfig (sec)	139.853		
Standard Deviation	0.8%		
OSPRay Studio - 1 - 1080p - 32 - Path Tracer (ms)	**129129**		**129456**
Normalized	100%		99.75%
OSPRay Studio - 2 - 1080p - 1 - Path Tracer (ms)	**3955**		**3960**
Normalized	100%		99.87%
OSPRay Studio - 3 - 1080p - 1 - Path Tracer (ms)	**4692**		**4685**
Normalized	99.85%		100%
OSPRay Studio - 1 - 1080p - 1 - Path Tracer (ms)	**3825**		**3836**
Normalized	100%		99.71%
AOM AV1 - Speed 4 Two-Pass - Bosphorus 1080p (FPS)	**9.06**	9.03	**9.02**
Normalized	100%	99.67%	99.56%
Standard Deviation	0.3%		
TensorFlow Lite - Mobilenet Quant (us)	5442	**5492**	**5383**
Normalized	98.9%	98.01%	100%

Standard Deviation	2.2%		
simdjson - PartialTweets (GB/s)	3.94	3.95	3.94
Normalized	99.75%	100%	99.75%
Standard Deviation	0.1%		
simdjson - DistinctUserID (GB/s)	4.47	4.47	4.46
Normalized	100%	100%	99.78%
Standard Deviation	0.3%		
simdjson - TopTweet (GB/s)	4.64	4.6	4.63
Normalized	100%	99.14%	99.78%
Standard Deviation	0.1%		
AOM AV1 - Speed 0 Two-Pass - Bosphorus 1080p (FPS)	0.32	0.32	0.32
Standard Deviation	0%		
Chia Blockchain VDF - Square Plain C++	144367	145100	144900
Normalized	99.49%	100%	99.86%
Standard Deviation	0.3%		
TensorFlow Lite - Inception V4 (us)	55733	55411	55649
Normalized	99.42%	100%	99.57%
Standard Deviation	0.8%		
TensorFlow Lite - I.R.V (us)	51102	50582	50750
Normalized	98.98%	100%	99.67%
Standard Deviation	0.7%		
TensorFlow Lite - NASNet Mobile (us)	10889	10889	10906
Normalized	99.99%	100%	99.84%
Standard Deviation	0.1%		
TensorFlow Lite - Mobilenet Float (us)	2802	2781	2781
Normalized	99.24%	100%	99.98%
Standard Deviation	0.6%		
TensorFlow Lite - SqueezeNet (us)	3988	3957	3965
Normalized	99.23%	100%	99.81%
Standard Deviation	0.9%		
simdjson - Kostya (GB/s)	2.85	2.86	2.85
Normalized	99.65%	100%	99.65%
Standard Deviation	0.2%		
Etcpak - Single-Threaded - ETC2 (Mpx/s)	240.931	241.078	241.081
Normalized	99.94%	100%	100%
Standard Deviation	0.2%		
OSPRay Studio - 2 - 4K - 1 - Path Tracer (ms)	15573		15577
Normalized	100%		99.97%
OSPRay Studio - 3 - 1080p - 16 - Path Tracer (ms)	81623		81207
Normalized	99.49%		100%
simdjson - LargeRand (GB/s)	1.00	1	0.99
Normalized	100%	100%	99%
Standard Deviation	0.6%		
Stress-NG - G.C.S.F (Bogo Ops/s)	849797	853057	866014
Normalized	98.13%	98.5%	100%
Standard Deviation	2.4%		
Renaissance - F.H.R (ms)	3692	3759	3777
Normalized	100%	98.23%	97.74%
Standard Deviation	1%		
OSPRay Studio - 2 - 1080p - 16 - Path Tracer (ms)	69591		69887
Normalized	100%		99.58%

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OSPRay Studio - 1 - 1080p - 16 - Path Tracer (ms)	**67203**		**67446**
Normalized	100%		99.64%
Renaissance - I.M.D.S (ms)	3098		
Standard Deviation	0.8%		
Chia Blockchain VDF - S.A.O (IPS)	**220533**	**219100**	220100
Normalized	100%	99.35%	99.8%
Standard Deviation	0.2%		
Stress-NG - x86_64 RdRand (Bogo Ops/s)	**5748**	5764	**5779**
Normalized	99.46%	99.74%	100%
Standard Deviation	0.5%		
AOM AV1 - Speed 6 Two-Pass - Bosphorus 1080p (FPS)	**21.87**	**21.82**	21.86
Normalized	100%	99.77%	99.95%
Standard Deviation	0.1%		
ParaView - Wavelet Volume - 1920 x 1080 (MiVoxels / Sec)	**380.682**	**381.927**	381.622
Normalized	99.67%	100%	99.92%
Standard Deviation	0%		
ParaView - Wavelet Volume - 1920 x 1080 (Frames / Sec)	**23.79**	**23.87**	23.85
Normalized	99.66%	100%	99.92%
Standard Deviation	0%		
x264 - Bosphorus 4K (FPS)	**19.25**	**19.08**	**19.08**
Normalized	100%	99.12%	99.12%
Standard Deviation	1.6%		
7-Zip Compression - D.R (MIPS)	**39018**	**39123**	39112
Normalized	99.73%	100%	99.97%
Standard Deviation	0.4%		
7-Zip Compression - Compression Rating (MIPS)	50250	**50635**	**50110**
Normalized	99.24%	100%	98.96%
Standard Deviation	0.3%		
Stress-NG - NUMA (Bogo Ops/s)	**136.79**	136.64	**135.42**
Normalized	100%	99.89%	99%
Standard Deviation	0.3%		
Stress-NG - Malloc (Bogo Ops/s)	**2064287**	**2076375**	2069129
Normalized	99.42%	100%	99.65%
Standard Deviation	2.1%		
Stress-NG - S.V.M.P (Bogo Ops/s)	4806533	**4810674**	**4758460**
Normalized	99.91%	100%	98.91%
Standard Deviation	0.4%		
Stress-NG - Context Switching (Bogo Ops/s)	**2386788**	**2404534**	2387886
Normalized	99.26%	100%	99.31%
Standard Deviation	2.1%		
Stress-NG - Socket Activity (Bogo Ops/s)	**6197**	6124	**5907**
Normalized	100%	98.81%	95.31%
Standard Deviation	0.5%		
Stress-NG - Memory Copying (Bogo Ops/s)	2933	**1937**	**2939**
Normalized	99.8%	65.9%	100%
Standard Deviation	1.9%		
Stress-NG - CPU Stress (Bogo Ops/s)	**13507**	13437	**13413**
Normalized	100%	99.48%	99.3%
Standard Deviation	0.3%		

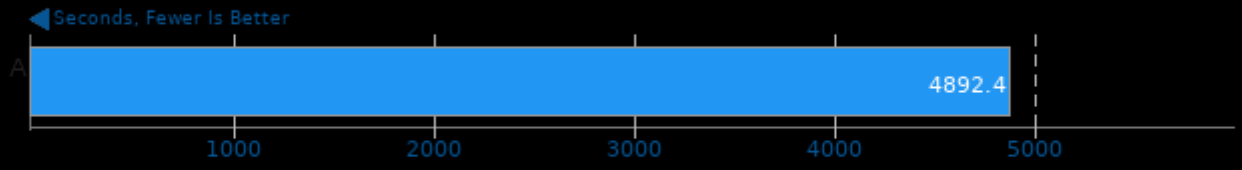
Stress-NG - MEMFD (Bogo Ops/s)	**580.02**	**583.01**	582.28
Normalized	99.49%	100%	99.87%
Standard Deviation	0.2%		
Stress-NG - Semaphores (Bogo Ops/s)	**834619**	**850829**	835171
Normalized	98.09%	100%	98.16%
Standard Deviation	0.1%		
Stress-NG - SENDFILE (Bogo Ops/s)	**89486**	**88243**	88440
Normalized	100%	98.61%	98.83%
Standard Deviation	0.1%		
Stress-NG - Matrix Math (Bogo Ops/s)	34621	**33721**	**34624**
Normalized	99.99%	97.39%	100%
Standard Deviation	1.4%		
Stress-NG - Forking (Bogo Ops/s)	**38717**	**39226**	38860
Normalized	98.7%	100%	99.07%
Standard Deviation	0.6%		
Stress-NG - Crypto (Bogo Ops/s)	**8414**	8420	**8424**
Normalized	99.89%	99.96%	100%
Standard Deviation	0.2%		
Stress-NG - G.Q.D.S (Bogo Ops/s)	104.11	**104.37**	**103.83**
Normalized	99.75%	100%	99.48%
Standard Deviation	0.3%		
Stress-NG - Vector Math (Bogo Ops/s)	**25217**	25224	**25237**
Normalized	99.92%	99.95%	100%
Standard Deviation	0.1%		
AOM AV1 - Speed 6 Realtime - Bosphorus 4K (FPS)	20.70	**20.74**	**20.67**
Normalized	99.81%	100%	99.66%
Standard Deviation	0.6%		
Renaissance - Rand Forest (ms)	**658.1**	**637.1**	
Normalized	96.81%	100%	
Standard Deviation	1.6%		
ParaView - Wavelet Contour - 1920 x 1080 (MiPolys / Sec)	401.160	**403.66**	**401.149**
Normalized	99.38%	100%	99.38%
Standard Deviation	0.1%		
ParaView - Wavelet Contour - 1920 x 1080 (Frames / Sec)	38.50	**38.73**	**38.49**
Normalized	99.41%	100%	99.38%
Standard Deviation	0.1%		
SVT-HEVC - 7 - Bosphorus 4K (FPS)	**26.87**	**26.42**	26.45
Normalized	100%	98.33%	98.44%
Standard Deviation	0.2%		
AOM AV1 - Speed 8 Realtime - Bosphorus 4K (FPS)	**32.25**	32.17	**31.95**
Normalized	100%	99.75%	99.07%
Standard Deviation	0.1%		
SVT-VP9 - V.Q.O - Bosphorus 4K (FPS)	**32.95**	**33.02**	32.97
Normalized	99.79%	100%	99.85%
Standard Deviation	0.1%		
SVT-VP9 - VMAF Optimized - Bosphorus 4K (FPS)	**40.99**	**40.22**	40.26
Normalized	100%	98.12%	98.22%
Standard Deviation	2.5%		
SVT-VP9 - P.S.O - Bosphorus 4K (FPS)	**43.97**	41.87	**41.67**

Normalized	100%	95.22%	94.77%
Standard Deviation	0.3%		
AOM AV1 - Speed 10 Realtime - Bosphorus 1080p (FPS)	**150.91**	156.67	**157.33**
Normalized	95.92%	99.58%	100%
Standard Deviation	7.7%		
AOM AV1 - Speed 6 Realtime - Bosphorus 1080p (FPS)	42.59	**43.84**	**42.33**
Normalized	97.15%	100%	96.56%
Standard Deviation	2.2%		
AOM AV1 - Speed 10 Realtime - Bosphorus 4K (FPS)	**48.61**	**48.23**	48.51
Normalized	100%	99.22%	99.79%
Standard Deviation	0.4%		
AOM AV1 - Speed 9 Realtime - Bosphorus 4K (FPS)	50.20	**47.4**	**50.75**
Normalized	98.92%	93.4%	100%
Standard Deviation	2%		
SVT-HEVC - 10 - Bosphorus 4K (FPS)	53.25	**53.2**	**53.32**
Normalized	99.87%	99.77%	100%
Standard Deviation	0%		
Etcpak - Multi-Threaded - ETC2 (Mpx/s)	**1535**	**1548**	1537
Normalized	99.15%	100%	99.28%
Standard Deviation	0%		
WebP2 Image Encode - Q.1.C.E.5 (sec)	9.274	**9.288**	**9.202**
Normalized	99.22%	99.07%	100%
Standard Deviation	0.2%		
x264 - Bosphorus 1080p (FPS)	**79.64**	78.36	**78.3**
Normalized	100%	98.39%	98.32%
Standard Deviation	1%		
WebP2 Image Encode - Default (sec)	**5.411**	5.443	**5.454**
Normalized	100%	99.41%	99.21%
Standard Deviation	1.4%		
AOM AV1 - Speed 8 Realtime - Bosphorus 1080p (FPS)	113.90	**113.69**	**114.39**
Normalized	99.57%	99.39%	100%
Standard Deviation	0.1%		
AOM AV1 - Speed 9 Realtime - Bosphorus 1080p (FPS)	**122.64**	123.35	**125.04**
Normalized	98.08%	98.65%	100%
Standard Deviation	0.1%		
Nettle - aes256 (Mbyte/s)	**7450**	7448	**7442**
Normalized	100%	99.97%	99.9%
Standard Deviation	0%		
Glibc Benchmarks - exp (ns)	**18.6064**	18.7134	**19.743**
Normalized	100%	99.43%	94.24%
Standard Deviation	0.6%		
Glibc Benchmarks - sin (ns)	**69.5076**	**69.9319**	69.6256
Normalized	100%	99.39%	99.83%
Standard Deviation	0.2%		
Glibc Benchmarks - sincos (ns)	46.0131	**46.0819**	**45.9794**
Normalized	99.93%	99.78%	100%
Standard Deviation	0.1%		
Nettle - sha512 (Mbyte/s)	**589.26**	**589.85**	589.69

Normalized	99.9%	100%	99.97%
Standard Deviation	0.1%		
Glibc Benchmarks - cos (ns)	80.4545	**81.215**	**80.3238**
Normalized	99.84%	98.9%	100%
Standard Deviation	0.3%		
Glibc Benchmarks - ffsll (ns)	5.52084	**5.52008**	**5.52164**
Normalized	99.99%	100%	99.97%
Standard Deviation	0%		
Glibc Benchmarks - atanh (ns)	**37.4374**	**37.4054**	37.4242
Normalized	99.91%	100%	99.95%
Standard Deviation	0%		
Glibc Benchmarks - asinh (ns)	31.8524	**31.8745**	**31.845**
Normalized	99.98%	99.91%	100%
Standard Deviation	0%		
Glibc Benchmarks - tanh (ns)	**40.7214**	40.6991	**40.6689**
Normalized	99.87%	99.93%	100%
Standard Deviation	0.1%		
Glibc Benchmarks - sinh (ns)	**28.3941**	28.3904	**28.3745**
Normalized	99.93%	99.94%	100%
Standard Deviation	0%		
Glibc Benchmarks - log2 (ns)	**22.9810**	**23.0767**	23.0238
Normalized	100%	99.59%	99.81%
Standard Deviation	0.8%		
Glibc Benchmarks - pthread_once (ns)	**5.51969**	**5.5167**	5.5173
Normalized	99.95%	100%	99.99%
Standard Deviation	0%		
Glibc Benchmarks - sqrt (ns)	**5.53654**	**5.53226**	5.53372
Normalized	99.92%	100%	99.97%
Standard Deviation	0%		
Glibc Benchmarks - ffs (ns)	**5.52140**	5.52327	**5.52438**
Normalized	100%	99.97%	99.95%
Standard Deviation	0%		
Glibc Benchmarks - modf (ns)	7.12049	**7.1289**	**7.12008**
Normalized	99.99%	99.88%	100%
Standard Deviation	0.1%		
Nettle - chacha (Mbyte/s)	1454	**1454**	**1454**
Normalized	99.97%	100%	99.95%
Standard Deviation	0.1%		
Nettle - poly1305-aes (Mbyte/s)	**4412**	**4417**	4414
Normalized	99.9%	100%	99.94%
Standard Deviation	0.1%		

OpenFOAM 9

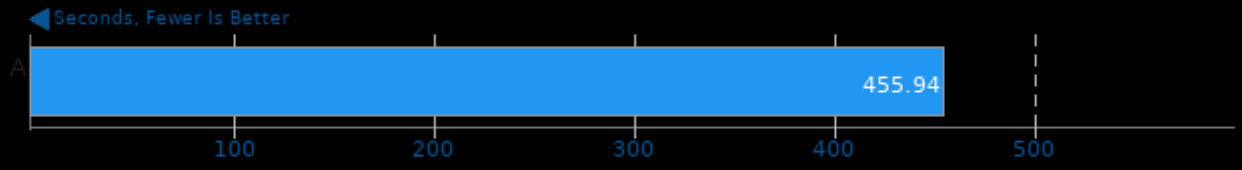
Input: drivaerFastback, Medium Mesh Size - Execution Time



1. (CXX) g++ options: -std=c++14 -m64 -O3 -ftemplate-depth-100 -fPIC -fuse-ld=bfd -Xlinker --add-needed --no-as-needed -lfiniteVolume -lgenericPatch

OpenFOAM 9

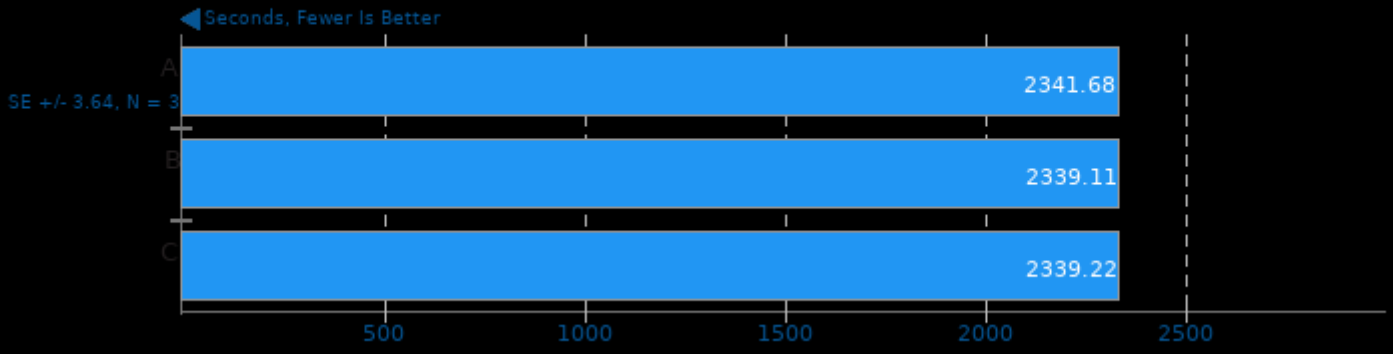
Input: drivaerFastback, Medium Mesh Size - Mesh Time



1. (CXX) g++ options: -std=c++14 -m64 -O3 -ftemplate-depth-100 -fPIC -fuse-ld=bfd -Xlinker --add-needed --no-as-needed -lfiniteVolume -lgenericPatch

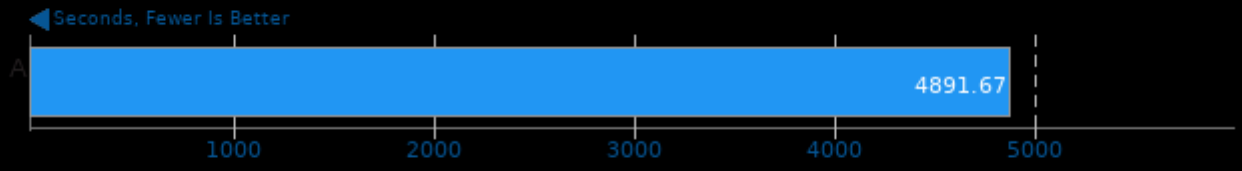
Blender 3.2

Blend File: Barbershop - Compute: CPU-Only



OpenFOAM 9

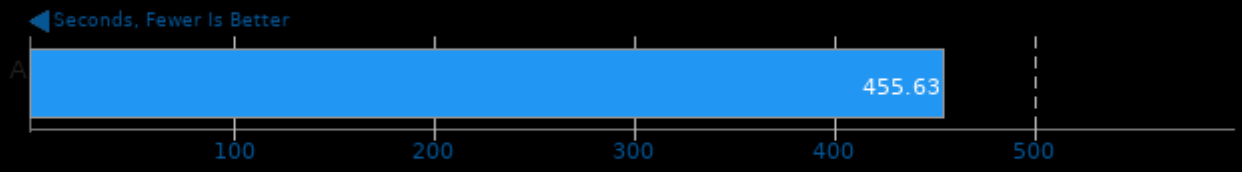
Input: drivaerFastback, Small Mesh Size - Execution Time



1. (CXX) g++ options: -std=c++14 -m64 -O3 -ftemplate-depth-100 -fPIC -fuse-ld=bfd -Xlinker --add-needed --no-as-needed -lfiniteVolume -lgenericPatch

OpenFOAM 9

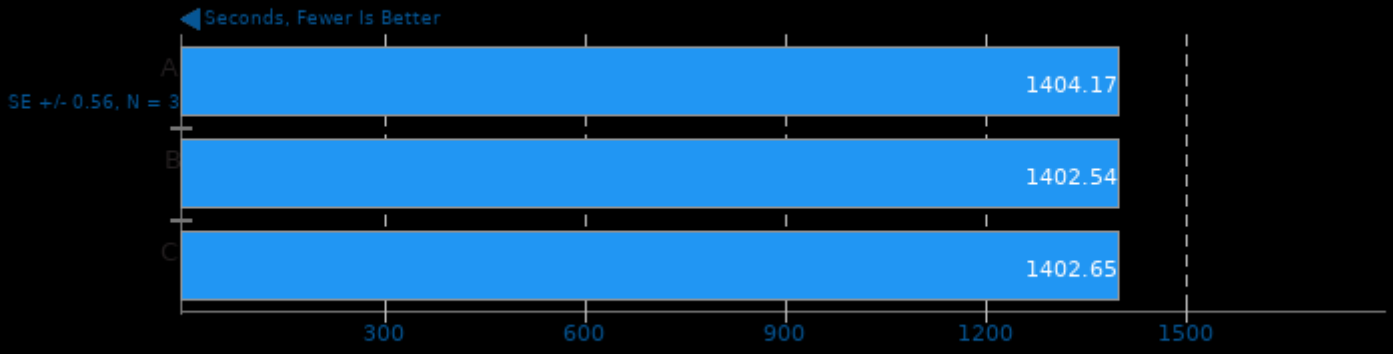
Input: drivaerFastback, Small Mesh Size - Mesh Time



1. (CXX) g++ options: -std=c++14 -m64 -O3 -ftemplate-depth-100 -fPIC -fuse-ld=bfd -Xlinker --add-needed --no-as-needed -lfiniteVolume -lgenericPatch

WebP2 Image Encode 20220422

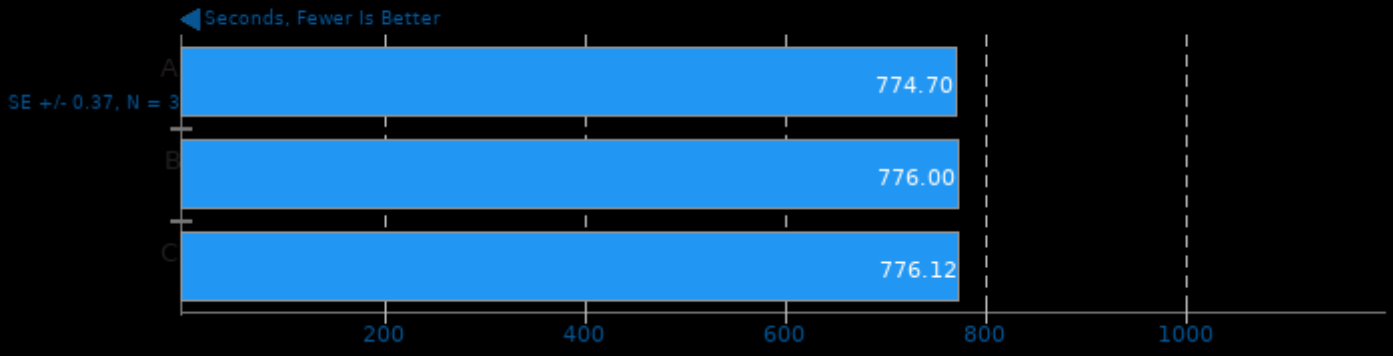
Encode Settings: Quality 100, Lossless Compression

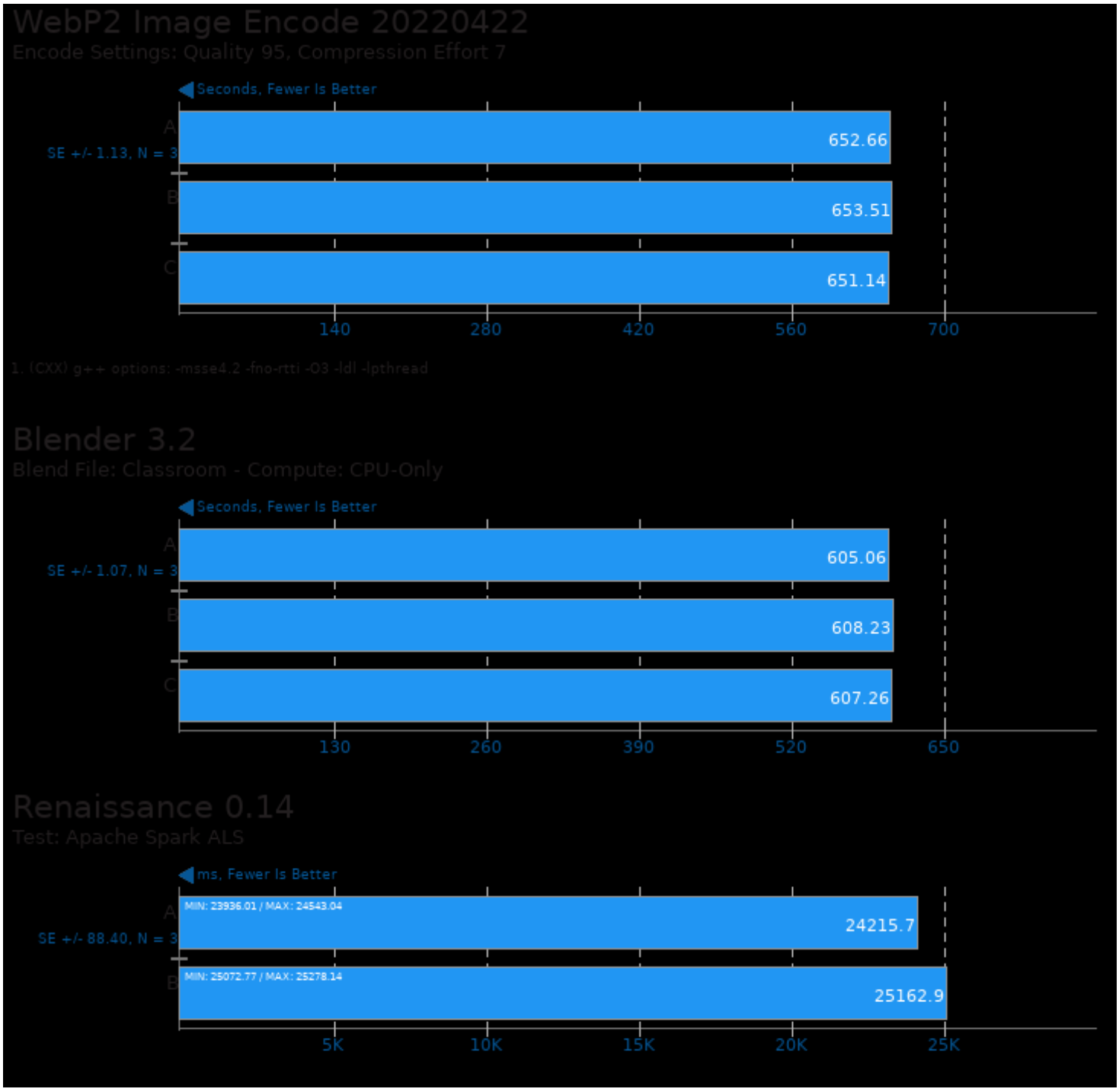


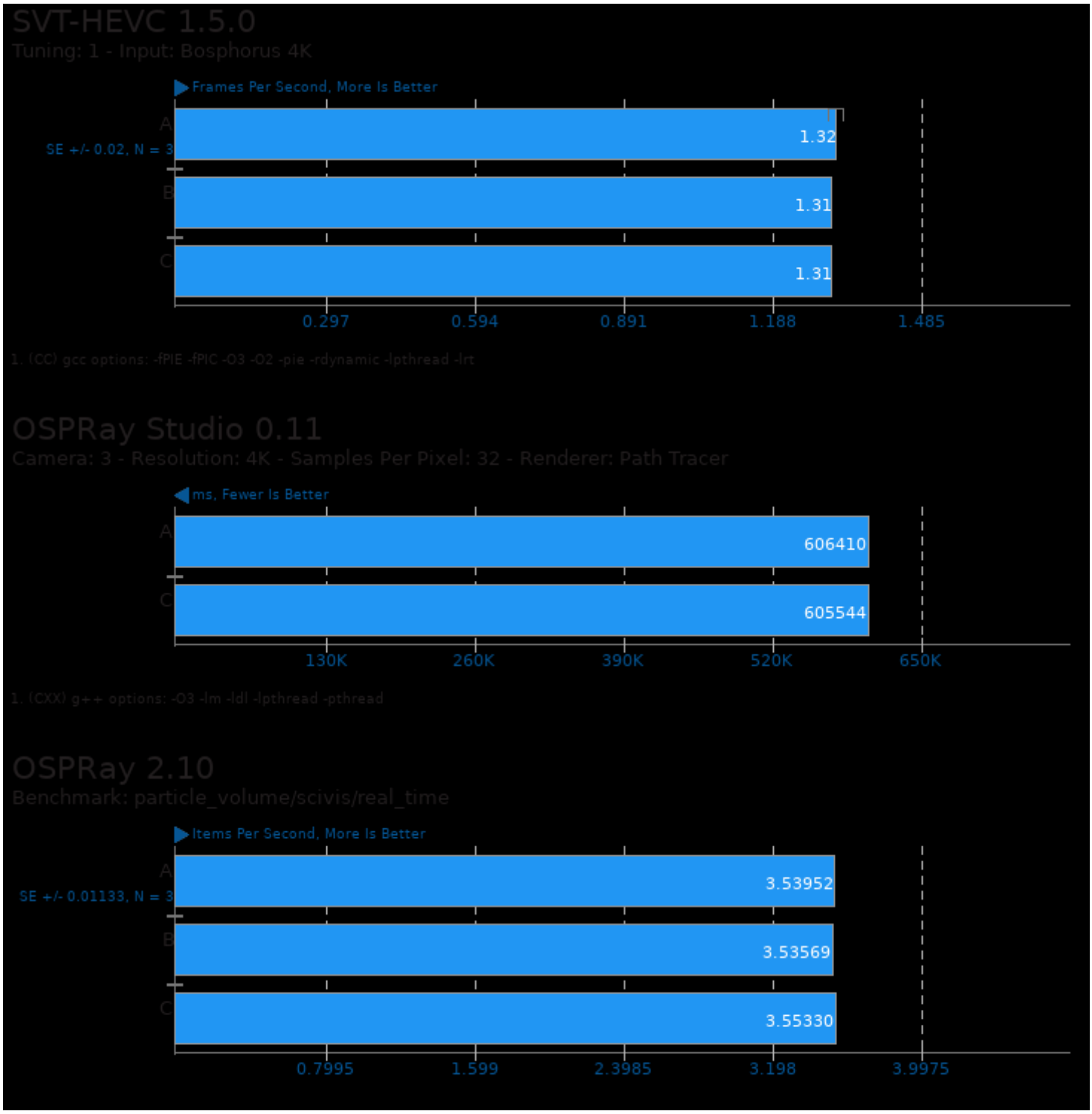
1. (CXX) g++ options: -msse4.2 -fno-rtti -O3 -ldl -lpthread

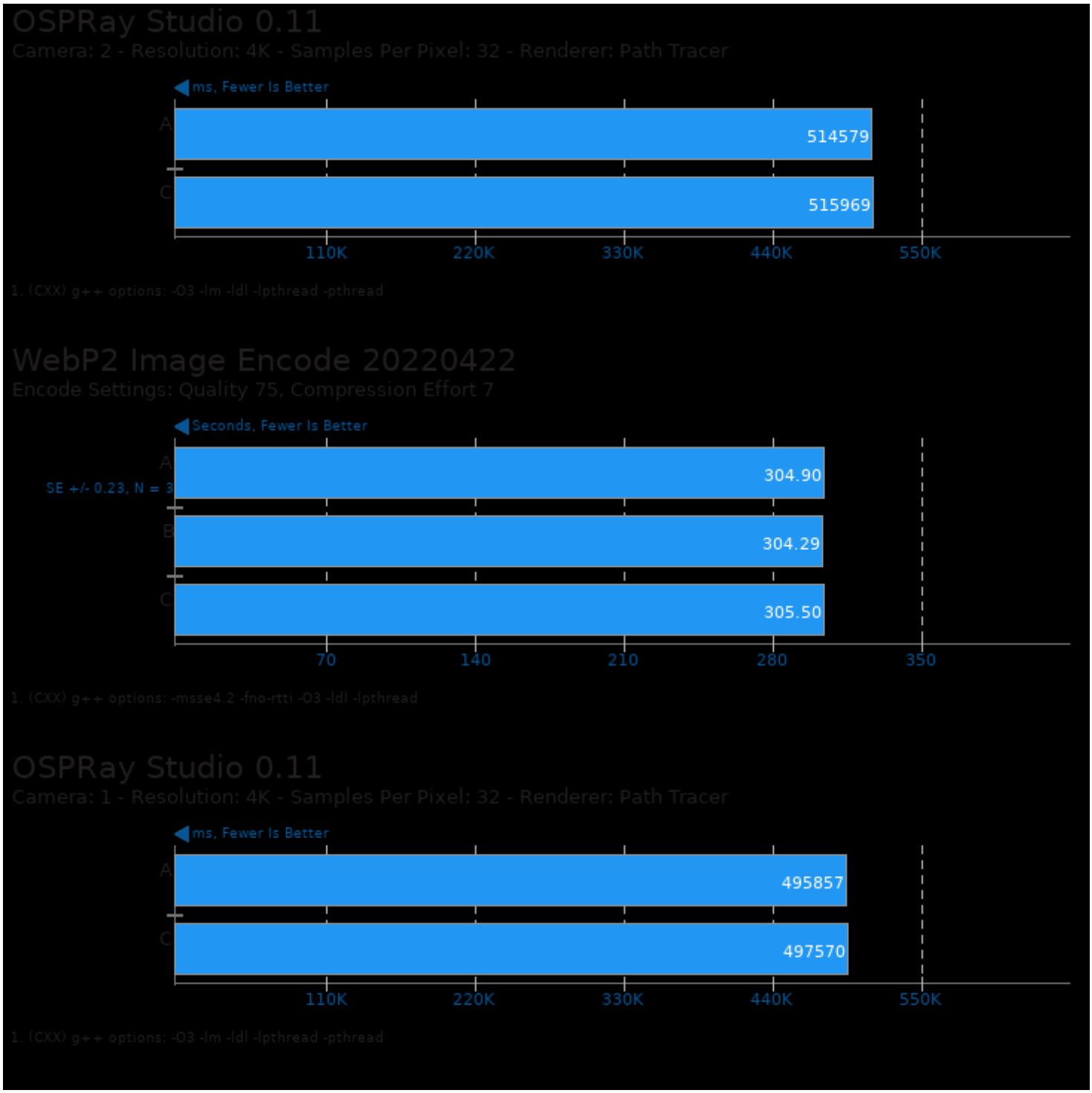
Blender 3.2

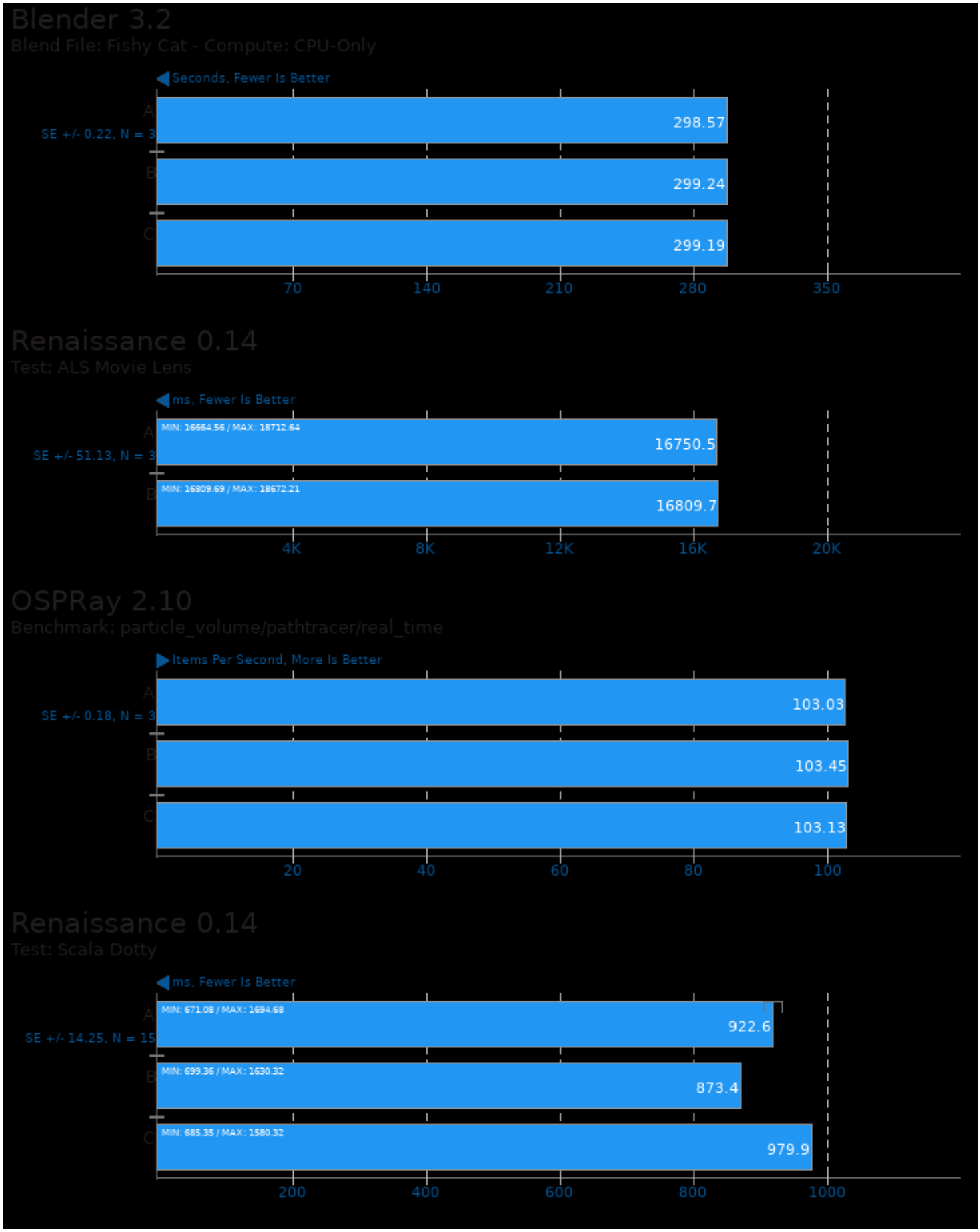
Blend File: Pabellon Barcelona - Compute: CPU-Only

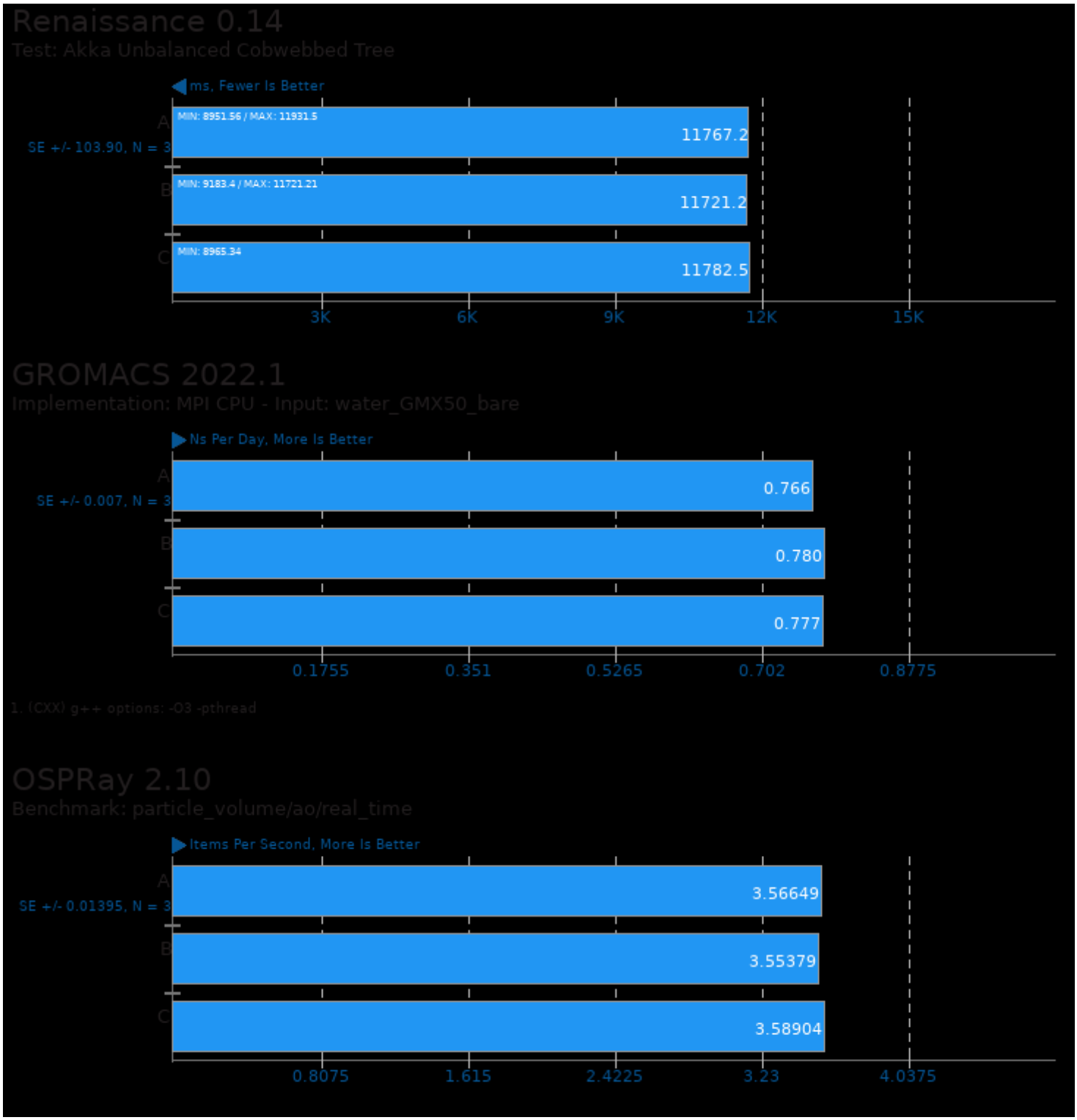


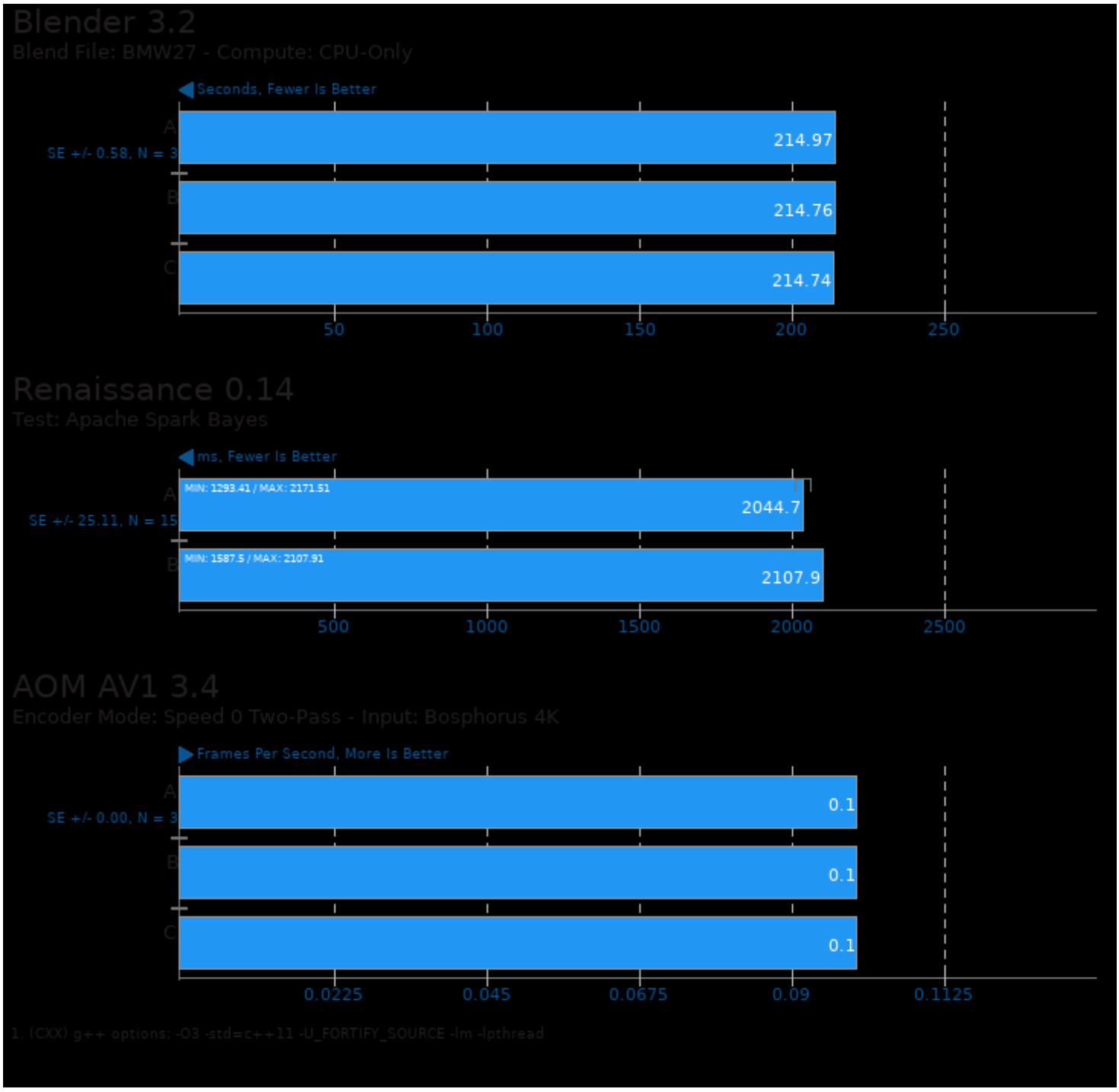

WebP2 Image Encode 20220422
Encode Settings: Quality 95, Compression Effort 7
Seconds, Fewer Is Better
A
B
C
652.66
653.51
651.14
SE +/- 1.13, N = 3
140
280
420
560
700
1. (CXX) g++ options: -msse4.2 -fno-rtti -O3 -ldl -lpthread
Blender 3.2
Blend File: Classroom - Compute: CPU-Only
Seconds, Fewer Is Better
A
B
C
605.06
608.23
607.26
SE +/- 1.07, N = 3
130
260
390
520
650
Renaissance 0.14
Test: Apache Spark ALS
ms, Fewer Is Better
A
B
MIN: 23936.01 / MAX: 24543.04
24215.7
MIN: 25072.77 / MAX: 25278.14
25162.9
SE +/- 88.40, N = 3
5K
10K
15K
20K
25K

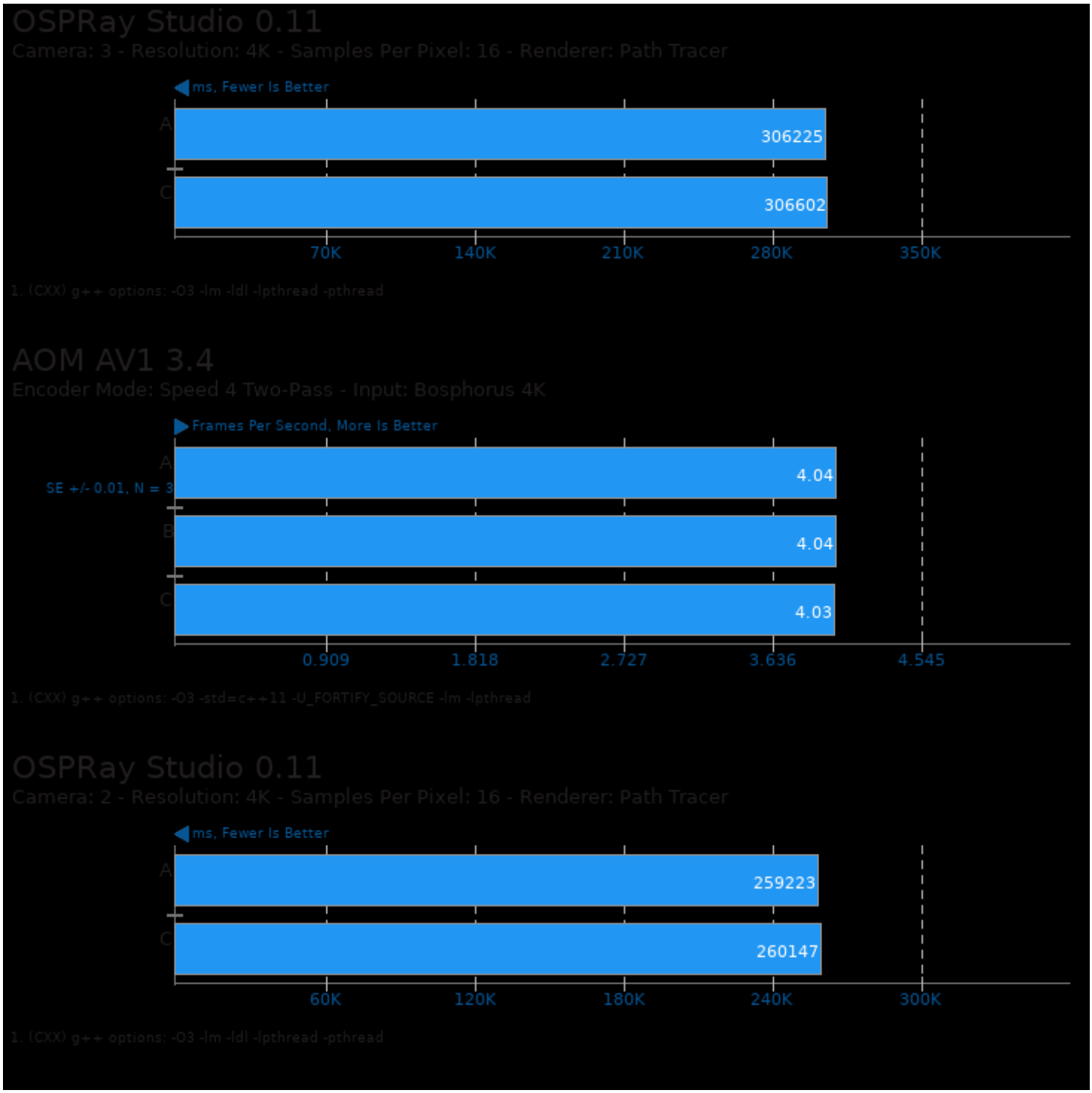

SVT-HEVC 1.5.0
Tuning: 1 - Input: Bosphorus 4K
Frames Per Second, More Is Better
A
B
C
SE +/- 0.02, N = 3
1.32
1.31
1.31
0.297
0.594
0.891
1.188
1.485
1. (CC) gcc options: -fPIE -fPIC -O3 -O2 -pie -rdynamic -lpthread -lrt
OSPRay Studio 0.11
Camera: 3 - Resolution: 4K - Samples Per Pixel: 32 - Renderer: Path Tracer
ms, Fewer Is Better
A
C
606410
605544
130K
260K
390K
520K
650K
1. (CXX) g++ options: -O3 -lm -ldl -lpthread -pthread
OSPRay 2.10
Benchmark: particle_volume/scivis/real_time
Items Per Second, More Is Better
A
B
C
SE +/- 0.01133, N = 3
3.53952
3.53569
3.55330
0.7995
1.599
2.3985
3.198
3.9975

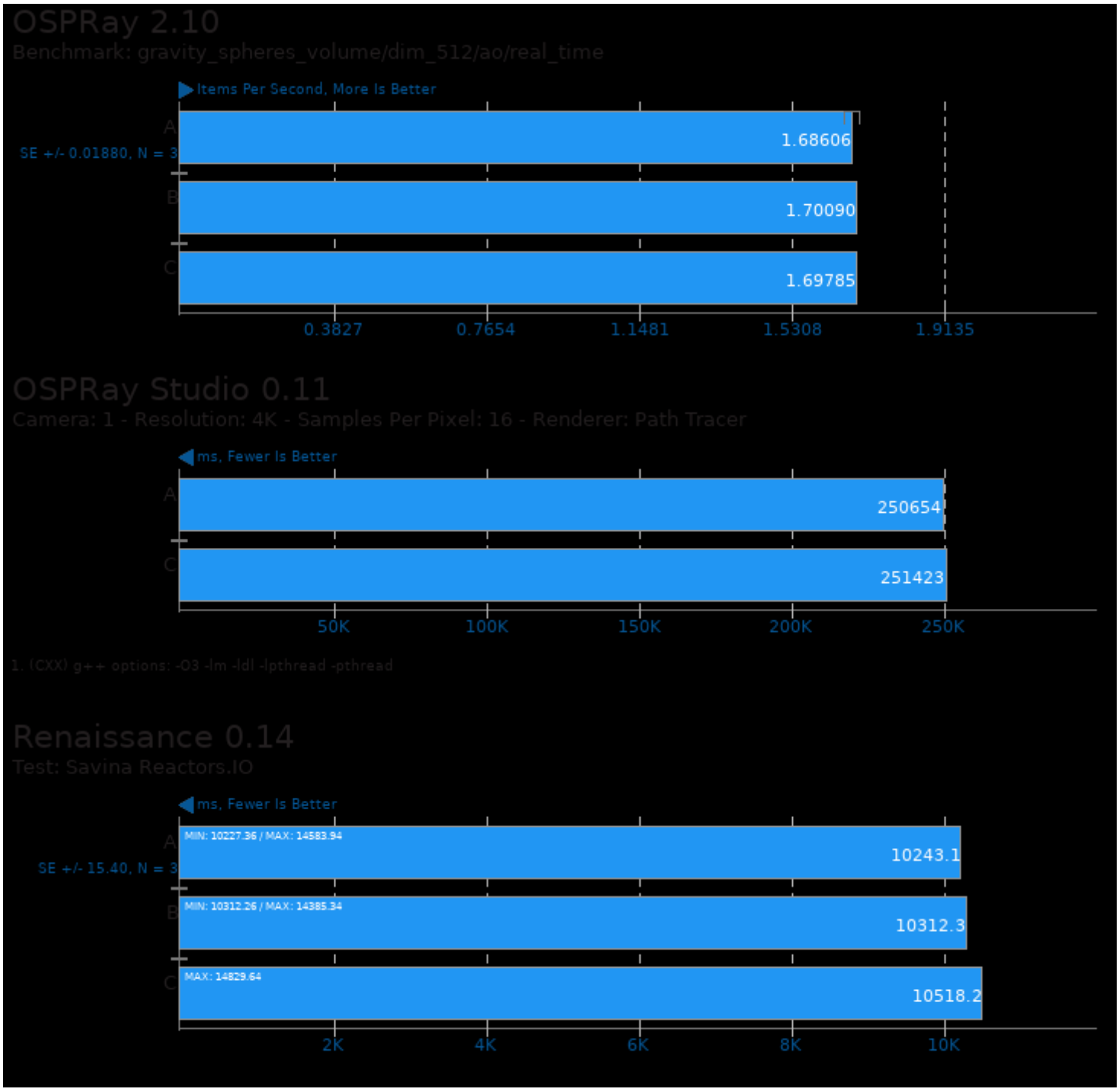

OSPRay Studio 0.11
Camera: 2 - Resolution: 4K - Samples Per Pixel: 32 - Renderer: Path Tracer
ms, Fewer Is Better
A
514579
C
515969
110K
220K
330K
440K
550K
1. (CXX) g++ options: -O3 -lm -ldl -lpthread -pthread
WebP2 Image Encode 20220422
Encode Settings: Quality 75, Compression Effort 7
Seconds, Fewer Is Better
SE +/- 0.23, N = 3
A
304.90
B
304.29
C
305.50
70
140
210
280
350
1. (CXX) g++ options: -msse4.2 -fno-rtti -O3 -ldl -lpthread
OSPRay Studio 0.11
Camera: 1 - Resolution: 4K - Samples Per Pixel: 32 - Renderer: Path Tracer
ms, Fewer Is Better
A
495857
C
497570
110K
220K
330K
440K
550K
1. (CXX) g++ options: -O3 -lm -ldl -lpthread -pthread


Blender 3.2
Blend File: Fishy Cat - Compute: CPU-Only
Seconds, Fewer Is Better
SE +/- 0.22, N = 3
298.57
299.24
299.19
70
140
210
280
350
Renaissance 0.14
Test: ALS Movie Lens
ms, Fewer Is Better
SE +/- 51.13, N = 3
MIN: 16664.56 / MAX: 18712.64
16750.5
MIN: 16809.69 / MAX: 18672.21
16809.7
4K
8K
12K
16K
20K
OSPRay 2.10
Benchmark: particle_volume/pathtracer/real_time
Items Per Second, More Is Better
SE +/- 0.18, N = 3
103.03
103.45
103.13
20
40
60
80
100
Renaissance 0.14
Test: Scala Dotty
ms, Fewer Is Better
SE +/- 14.25, N = 15
MIN: 671.08 / MAX: 1694.68
922.6
MIN: 699.36 / MAX: 1630.32
873.4
MIN: 685.35 / MAX: 1580.32
979.9
200
400
600
800
1000


Renaissance 0.14
Test: Akka Unbalanced Cobwebbed Tree
ms, Fewer Is Better
SE +/- 103.90, N = 3
A
MIN: 8951.56 / MAX: 11931.5
11767.2
B
MIN: 9183.4 / MAX: 11721.21
11721.2
C
MIN: 8965.34
11782.5
3K
6K
9K
12K
15K
GROMACS 2022.1
Implementation: MPI CPU - Input: water_GMX50_bare
Ns Per Day, More Is Better
SE +/- 0.007, N = 3
A
0.766
B
0.780
C
0.777
0.1755
0.351
0.5265
0.702
0.8775
1. (CXX) g++ options: -O3 -pthread
OSPRay 2.10
Benchmark: particle_volume/ao/real_time
Items Per Second, More Is Better
SE +/- 0.01395, N = 3
A
3.56649
B
3.55379
C
3.58904
0.8075
1.615
2.4225
3.23
4.0375

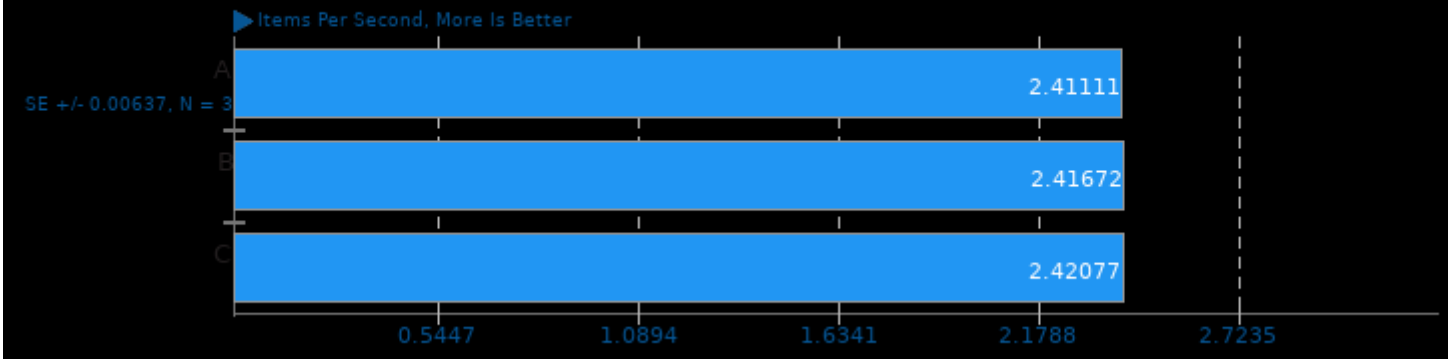

Blender 3.2
Blend File: BMW27 - Compute: CPU-Only
Seconds, Fewer Is Better
A
B
C
214.97
214.76
214.74
SE +/- 0.58, N = 3
50
100
150
200
250
Renaissance 0.14
Test: Apache Spark Bayes
ms, Fewer Is Better
MIN: 1293.41 / MAX: 2171.51
2044.7
MIN: 1587.5 / MAX: 2107.91
2107.9
SE +/- 25.11, N = 15
500
1000
1500
2000
2500
AOM AV1 3.4
Encoder Mode: Speed 0 Two-Pass - Input: Bosphorus 4K
Frames Per Second, More Is Better
0.1
0.1
0.1
SE +/- 0.00, N = 3
0.0225
0.045
0.0675
0.09
0.1125
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm -lpthread


OSPRay Studio 0.11
Camera: 3 - Resolution: 4K - Samples Per Pixel: 16 - Renderer: Path Tracer
ms, Fewer Is Better
A
306225
C
306602
70K
140K
210K
280K
350K
1. (CXX) g++ options: -O3 -lm -ldl -lpthread -pthread
AOM AV1 3.4
Encoder Mode: Speed 4 Two-Pass - Input: Bosphorus 4K
Frames Per Second, More Is Better
SE +/- 0.01, N = 3
A
4.04
B
4.04
C
4.03
0.909
1.818
2.727
3.636
4.545
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm -lpthread
OSPRay Studio 0.11
Camera: 2 - Resolution: 4K - Samples Per Pixel: 16 - Renderer: Path Tracer
ms, Fewer Is Better
A
259223
C
260147
60K
120K
180K
240K
300K
1. (CXX) g++ options: -O3 -lm -ldl -lpthread -pthread


OSPRay 2.10
Benchmark: gravity_spheres_volume/dim_512/ao/real_time
Items Per Second, More Is Better
SE +/- 0.01880, N = 3
A
1.68606
B
1.70090
C
1.69785
0.3827
0.7654
1.1481
1.5308
1.9135
OSPRay Studio 0.11
Camera: 1 - Resolution: 4K - Samples Per Pixel: 16 - Renderer: Path Tracer
ms, Fewer Is Better
A
250654
C
251423
50K
100K
150K
200K
250K
1. (CXX) g++ options: -O3 -lm -ldl -lpthread -pthread
Renaissance 0.14
Test: Savina Reactors.IO
ms, Fewer Is Better
SE +/- 15.40, N = 3
A
MIN: 10227.36 / MAX: 14583.94
10243.1
B
MIN: 10312.26 / MAX: 14385.34
10312.3
C
MAX: 14829.64
10518.2
2K
4K
6K
8K
10K

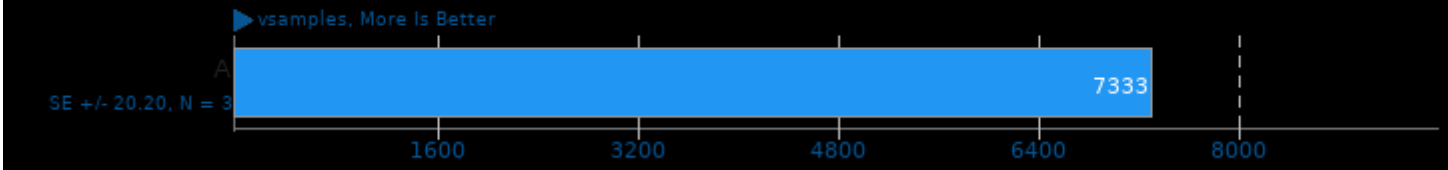
OSPRay 2.10

Benchmark: gravity_spheres_volume/dim_512/pathtracer/real_time



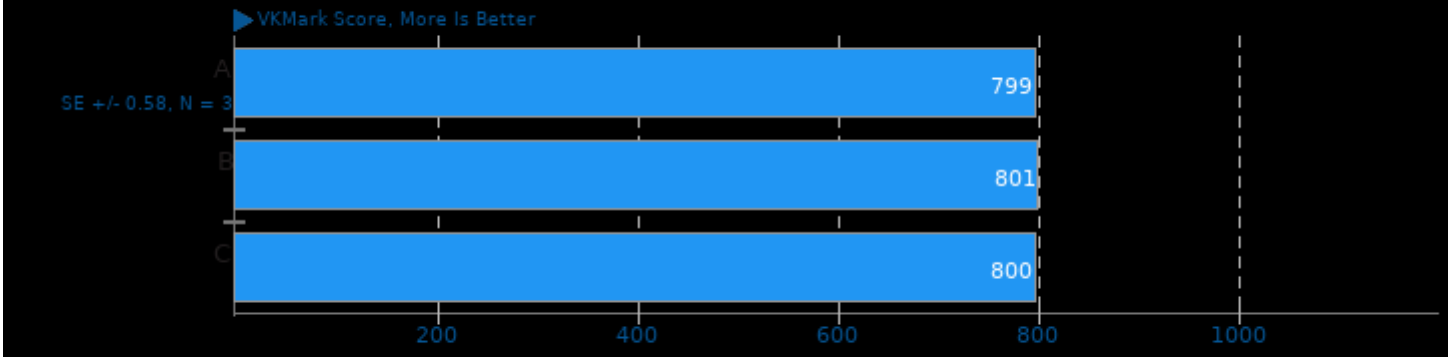
Chaos Group V-RAY 5.02

Mode: CPU



VKMark 2022-05-16

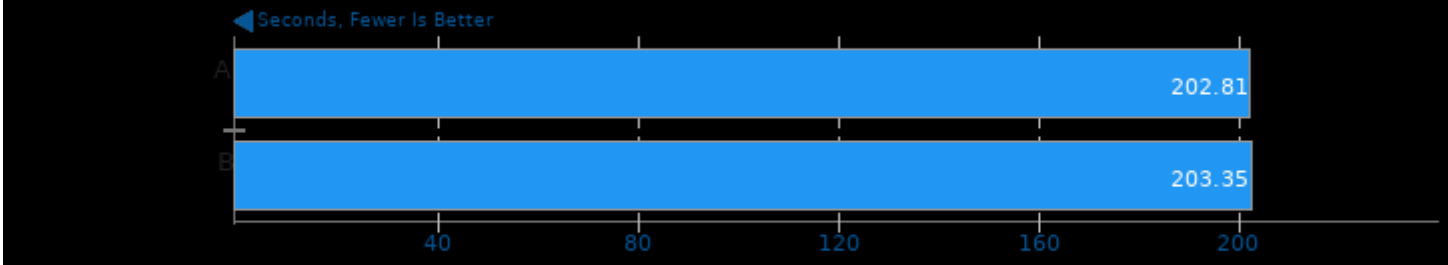
Resolution: 1920 x 1080 - Present Mode: Mailbox



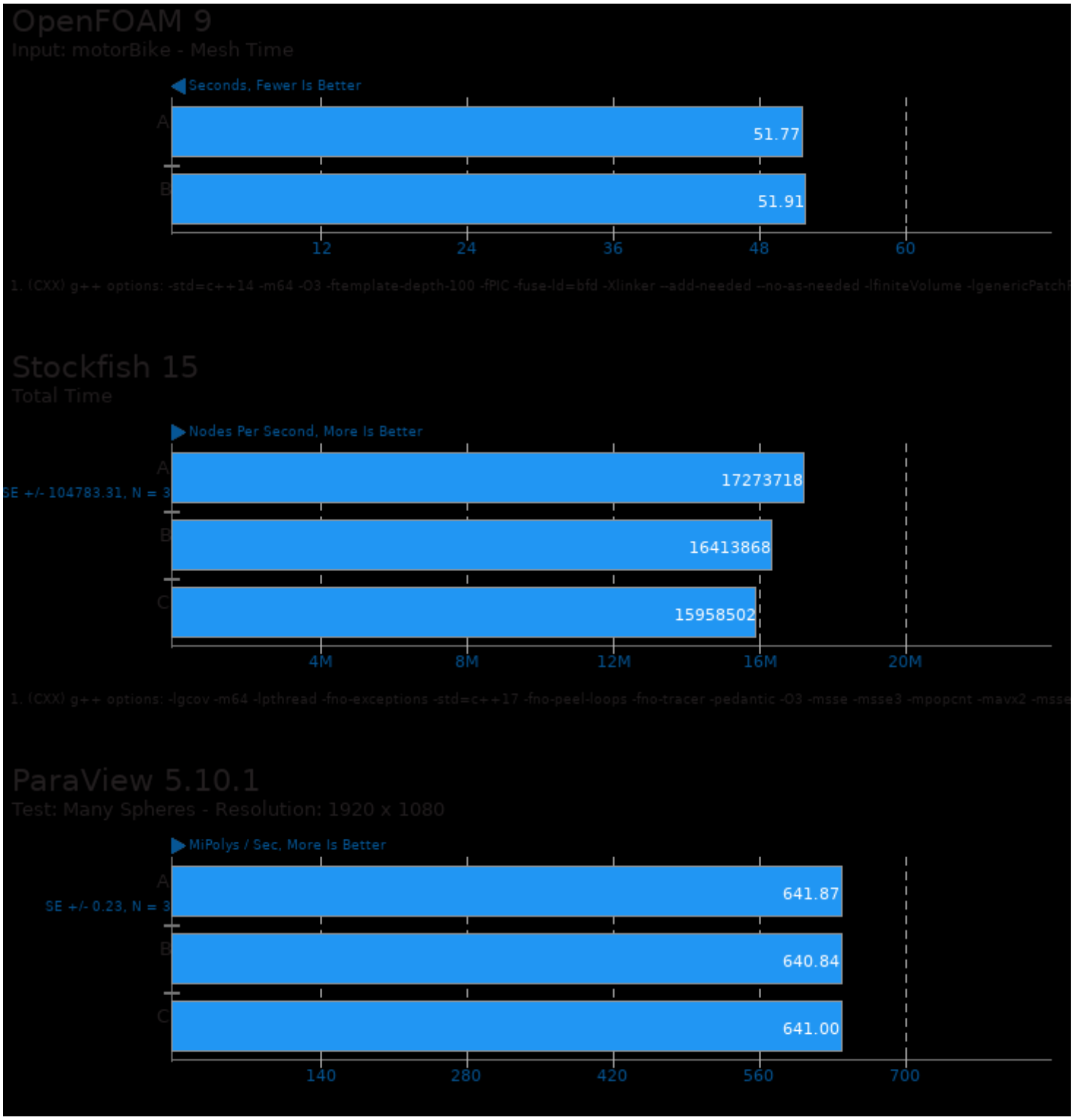
1. (CXX) g++ options: -pthread -ldl -pipe -std=c++14 -MD -MQ -MF

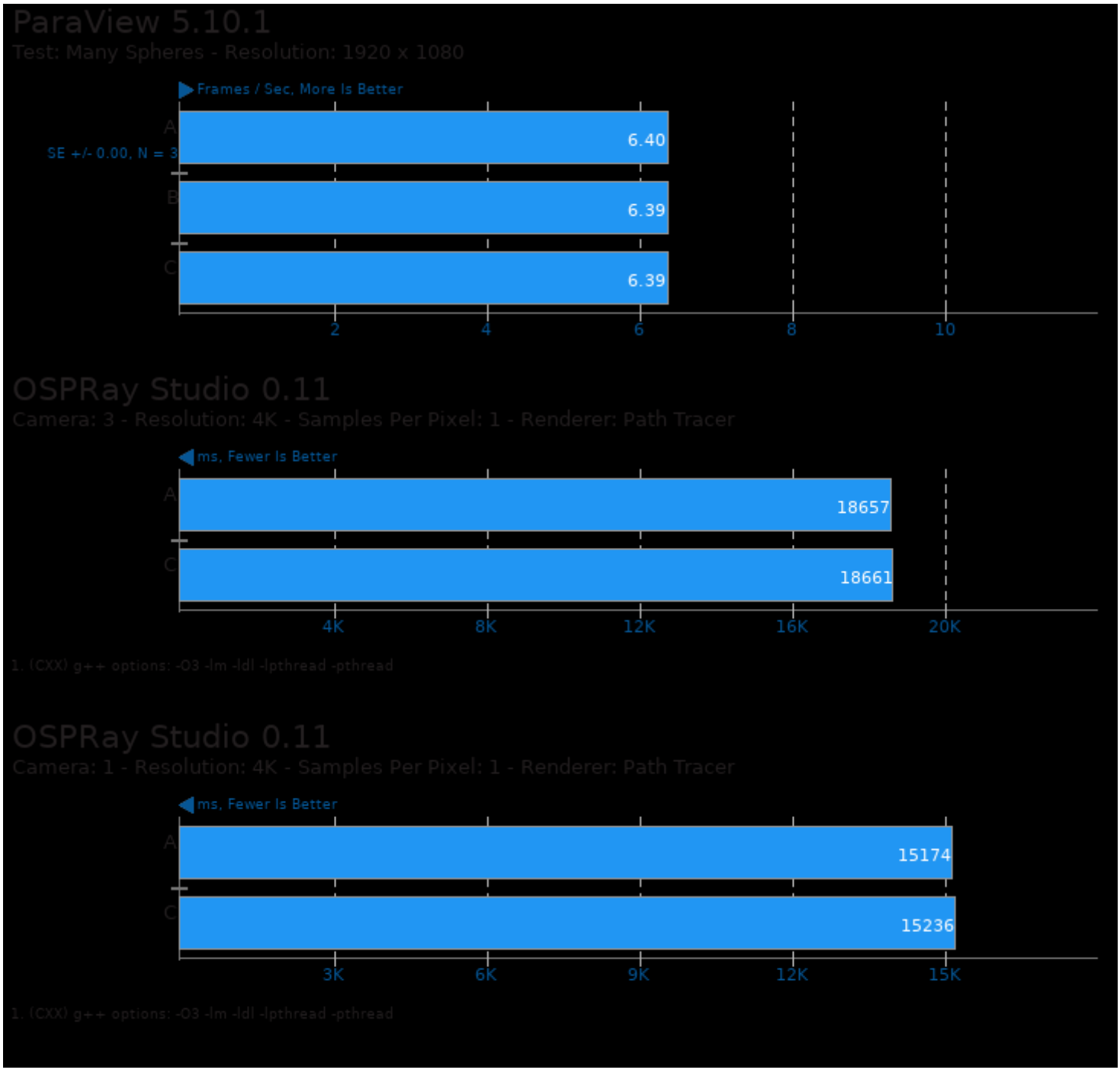
OpenFOAM 9

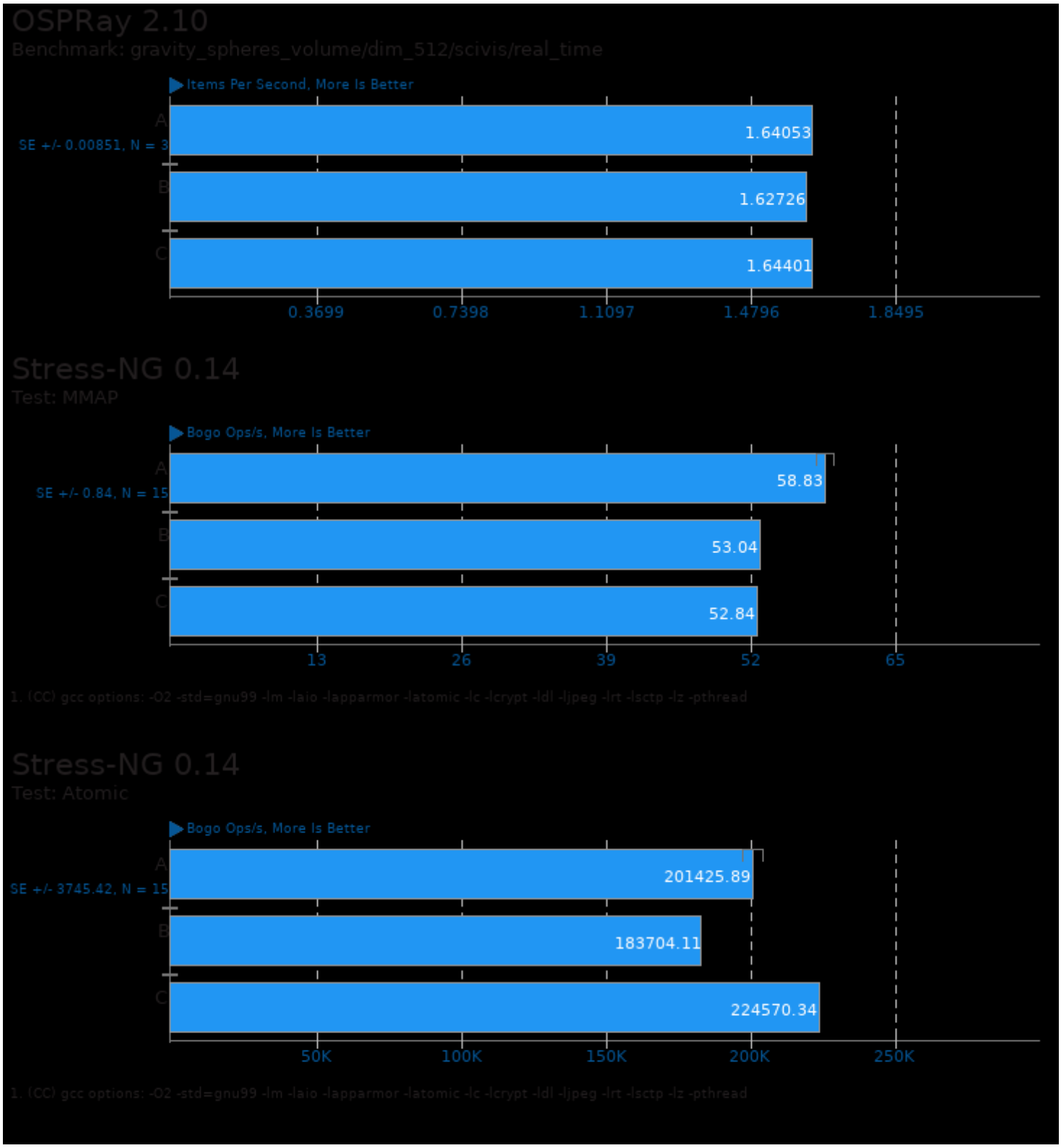
Input: motorBike - Execution Time



1. (CXX) g++ options: -std=c++14 -m64 -O3 -ftemplate-depth-100 -fPIC -fuse-ld=bfd -Xlinker --add-needed --no-as-needed -lfiniteVolume -lgenericPatch

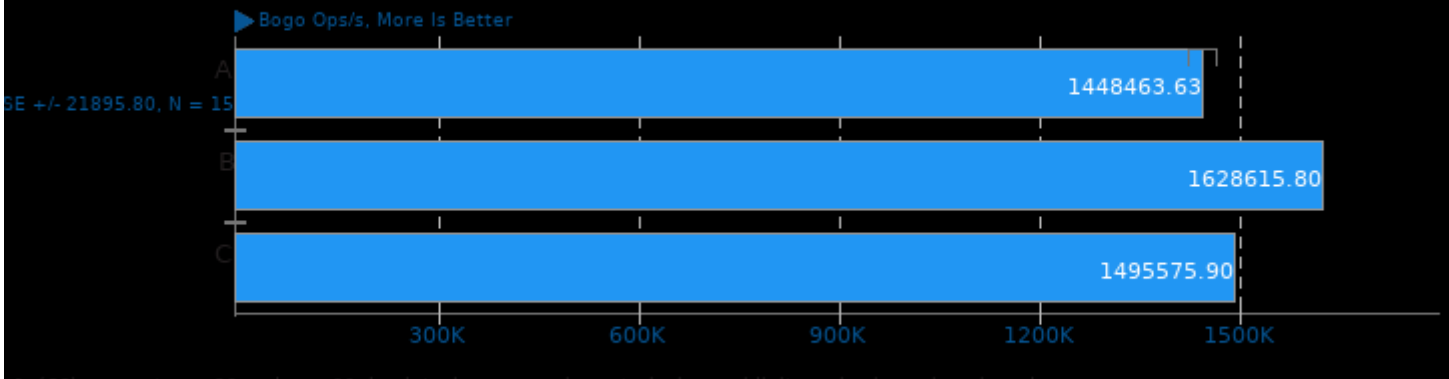

OpenFOAM 9
Input: motorBike - Mesh Time
Seconds, Fewer Is Better
A
51.77
B
51.91
12
24
36
48
60
1. (CXX) g++ options: -std=c++14 -m64 -O3 -ftemplate-depth-100 -fPIC -fuse-ld=bfd -Xlinker --add-needed --no-as-needed -lfiniteVolume -lgenericPatch
Stockfish 15
Total Time
Nodes Per Second, More Is Better
SE +/- 104783.31, N = 3
A
17273718
B
16413868
C
15958502
4M
8M
12M
16M
20M
1. (CXX) g++ options: -lgcov -m64 -lpthread -fno-exceptions -std=c++17 -fno-peel-loops -fno-tracer -pedantic -O3 -msse -msse3 -mpopcnt -mavx2 -msse
ParaView 5.10.1
Test: Many Spheres - Resolution: 1920 x 1080
MiPolys / Sec, More Is Better
SE +/- 0.23, N = 3
A
641.87
B
640.84
C
641.00
140
280
420
560
700


ParaView 5.10.1
Test: Many Spheres - Resolution: 1920 x 1080
Frames / Sec, More Is Better
A
B
C
SE +/- 0.00, N = 3
6.40
6.39
6.39
2
4
6
8
10
OSPRay Studio 0.11
Camera: 3 - Resolution: 4K - Samples Per Pixel: 1 - Renderer: Path Tracer
ms, Fewer Is Better
A
C
18657
18661
4K
8K
12K
16K
20K
1. (CXX) g++ options: -O3 -lm -ldl -lpthread -pthread
OSPRay Studio 0.11
Camera: 1 - Resolution: 4K - Samples Per Pixel: 1 - Renderer: Path Tracer
ms, Fewer Is Better
A
C
15174
15236
3K
6K
9K
12K
15K
1. (CXX) g++ options: -O3 -lm -ldl -lpthread -pthread


OSPRay 2.10
Benchmark: gravity_spheres_volume/dim_512/scivis/real_time
Items Per Second, More Is Better
SE +/- 0.00851, N = 3
A
B
C
1.64053
1.62726
1.64401
0.3699
0.7398
1.1097
1.4796
1.8495
Stress-NG 0.14
Test: MMAP
Bogo Ops/s, More Is Better
SE +/- 0.84, N = 15
A
B
C
58.83
53.04
52.84
13
26
39
52
65
1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lapparmor -latomic -lc -lcrypt -ldl -ljpeg -lrt -lsctp -lz -pthread
Stress-NG 0.14
Test: Atomic
Bogo Ops/s, More Is Better
SE +/- 3745.42, N = 15
A
B
C
201425.89
183704.11
224570.34
50K
100K
150K
200K
250K
1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lapparmor -latomic -lc -lcrypt -ldl -ljpeg -lrt -lsctp -lz -pthread

Stress-NG 0.14

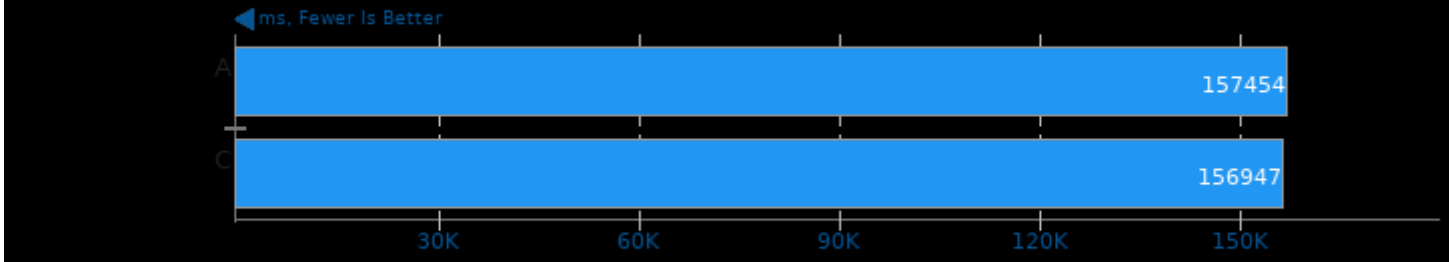
Test: Futex



1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lapparmor -latomic -lc -lcrypt -ldl -ljpeg -lrt -lsctp -lz -pthread

OSPRay Studio 0.11

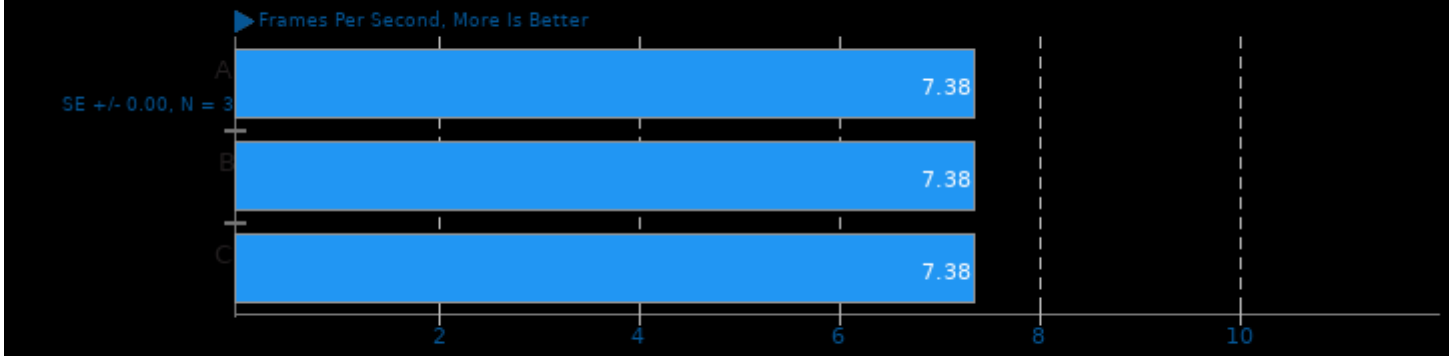
Camera: 3 - Resolution: 1080p - Samples Per Pixel: 32 - Renderer: Path Tracer



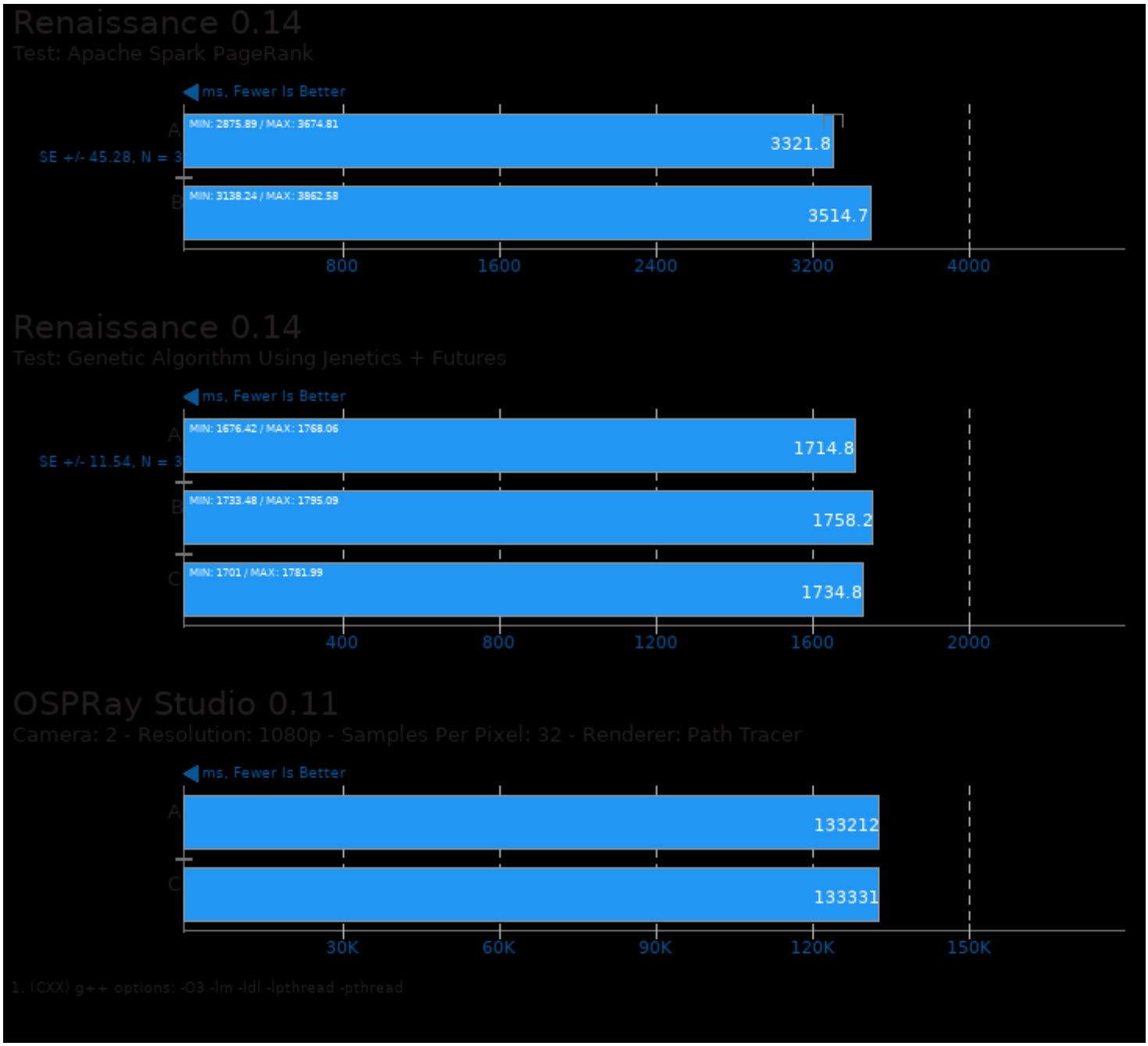
1. (CXX) g++ options: -O3 -lm -ldl -lpthread -pthread

AOM AV1 3.4

Encoder Mode: Speed 6 Two-Pass - Input: Bosphorus 4K

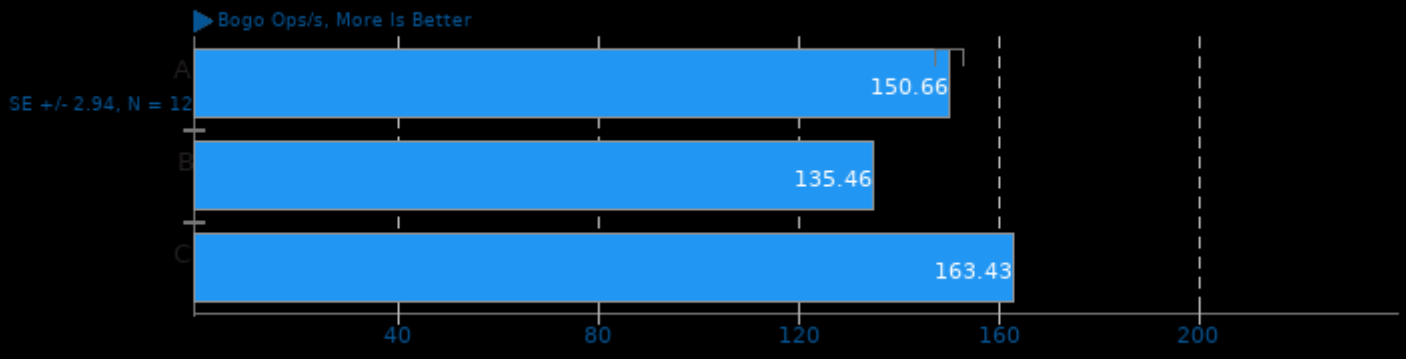


1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm -lpthread


Renaissance 0.14
Test: Apache Spark PageRank
ms, Fewer Is Better
SE +/- 45.28, N = 3
A
MIN: 2875.89 / MAX: 3674.81
3321.8
B
MIN: 3138.24 / MAX: 3862.58
3514.7
800
1600
2400
3200
4000
Renaissance 0.14
Test: Genetic Algorithm Using Jenetics + Futures
ms, Fewer Is Better
SE +/- 11.54, N = 3
A
MIN: 1676.42 / MAX: 1768.06
1714.8
B
MIN: 1733.48 / MAX: 1795.09
1758.2
C
MIN: 1701 / MAX: 1781.99
1734.8
400
800
1200
1600
2000
OSPRay Studio 0.11
Camera: 2 - Resolution: 1080p - Samples Per Pixel: 32 - Renderer: Path Tracer
ms, Fewer Is Better
A
133212
C
133331
30K
60K
90K
120K
150K
1. (CXX) g++ options: -O3 -lm -ldl -lpthread -pthread

Stress-NG 0.14

Test: CPU Cache



1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lapparmor -latomic -lc -lcrypt -ldl -ljpeg -lrt -lsctp -lz -pthread

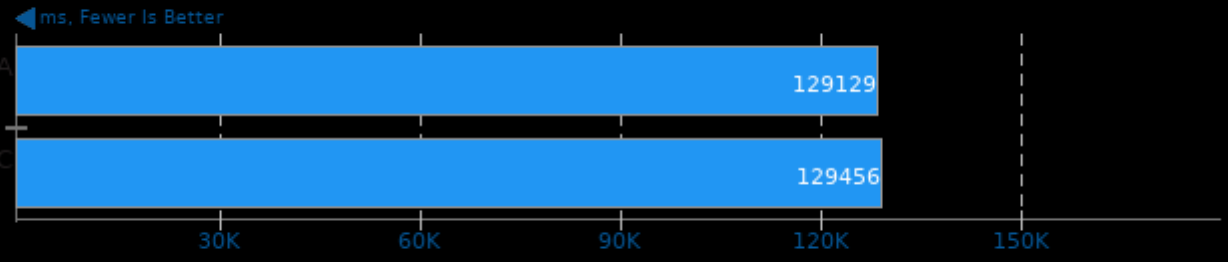
Timed Linux Kernel Compilation 5.18

Build: defconfig



OSPRay Studio 0.11

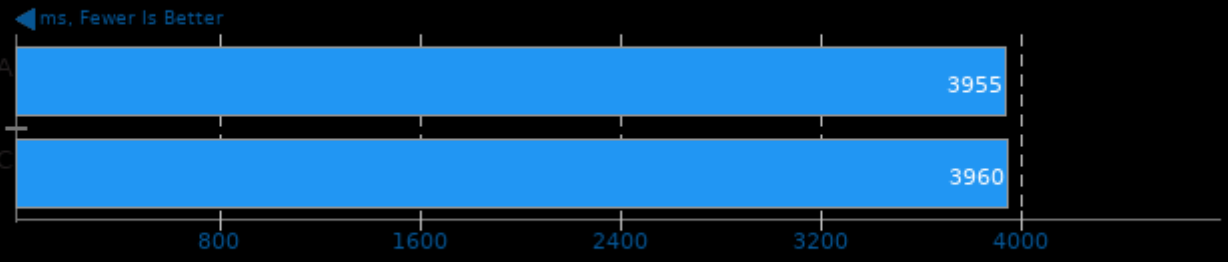
Camera: 1 - Resolution: 1080p - Samples Per Pixel: 32 - Renderer: Path Tracer



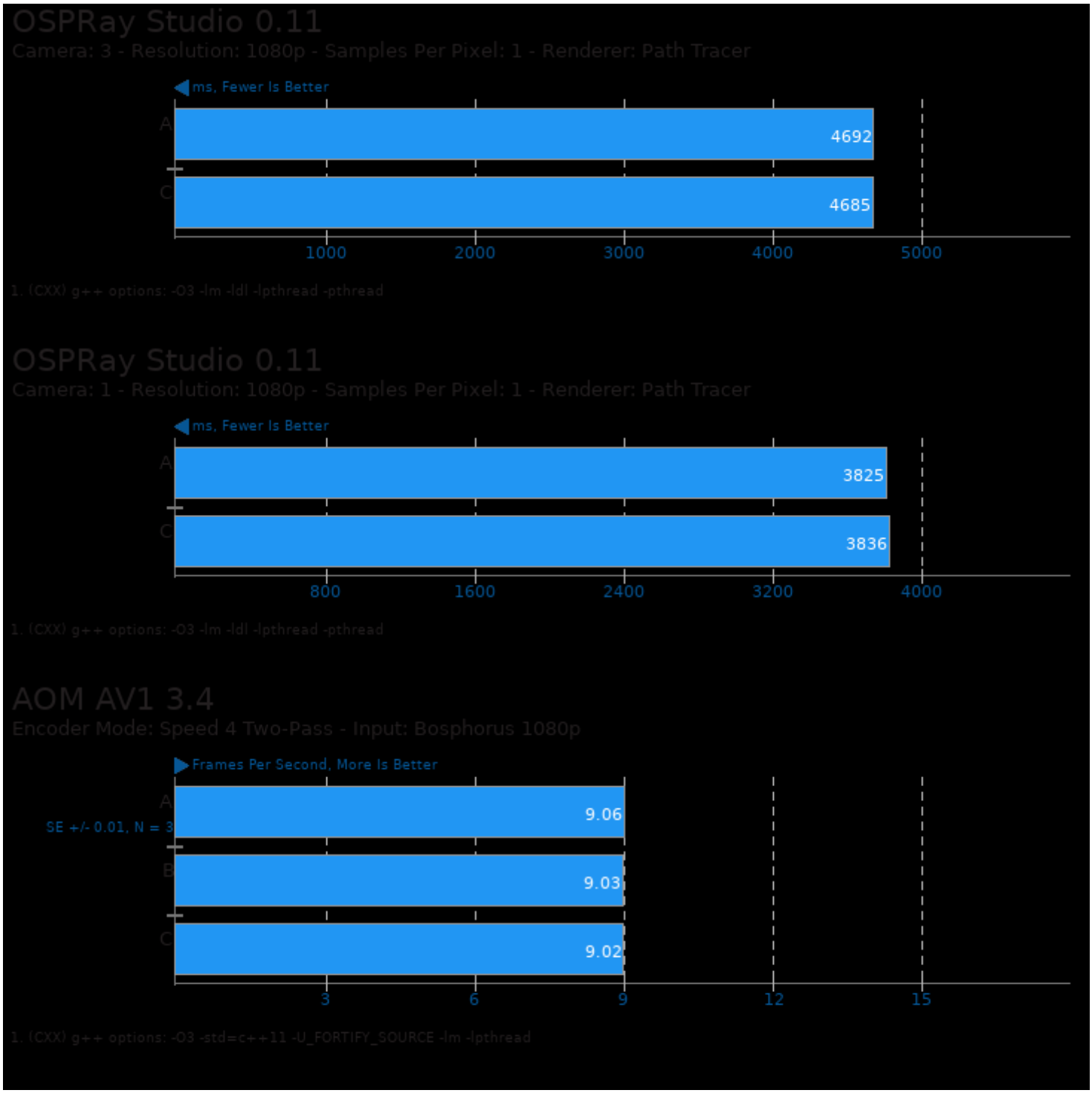
1. (CXX) g++ options: -O3 -lm -ldl -lpthread -pthread

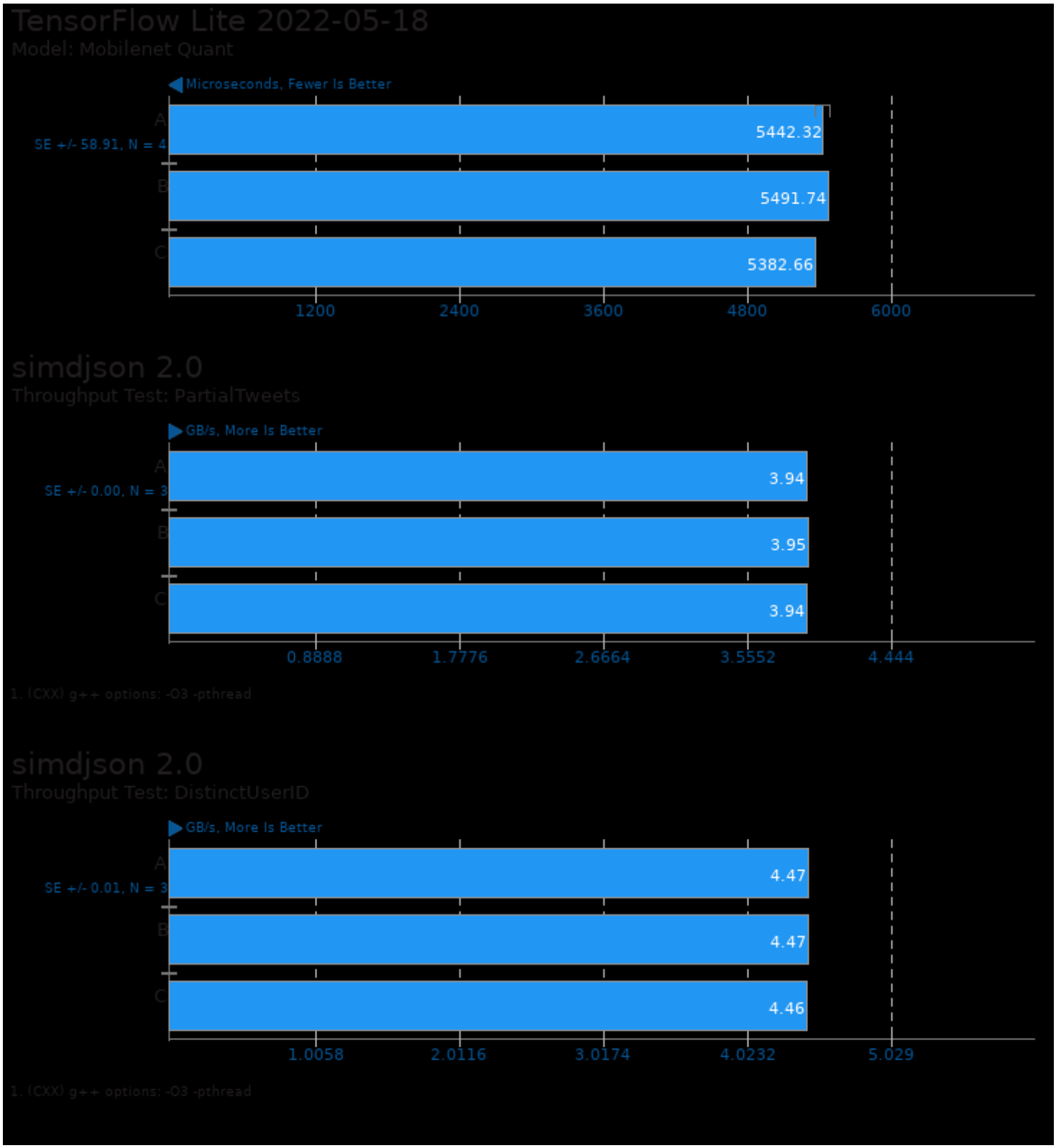
OSPRay Studio 0.11

Camera: 2 - Resolution: 1080p - Samples Per Pixel: 1 - Renderer: Path Tracer



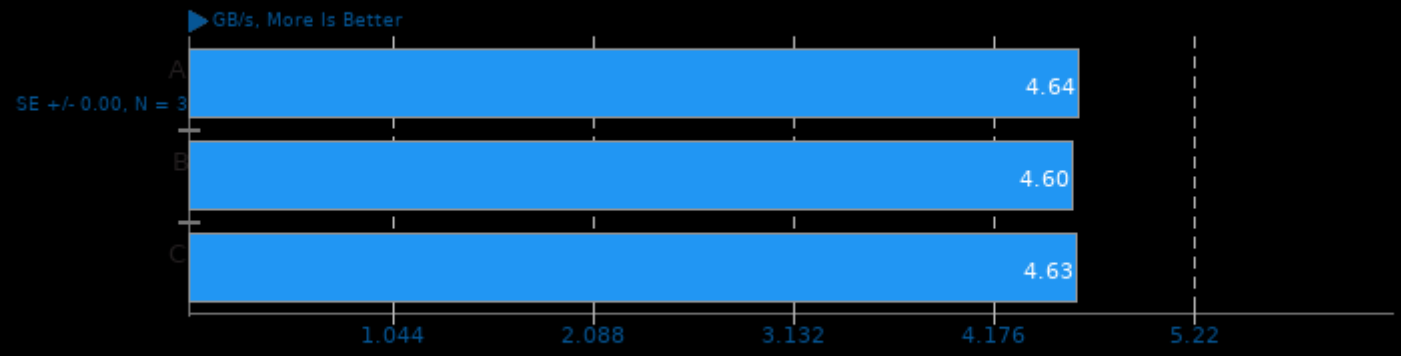
1. (CXX) g++ options: -O3 -lm -ldl -lpthread -pthread


OSPRay Studio 0.11
Camera: 3 - Resolution: 1080p - Samples Per Pixel: 1 - Renderer: Path Tracer
ms, Fewer Is Better
A
C
4692
4685
1000
2000
3000
4000
5000
1. (CXX) g++ options: -O3 -lm -ldl -lpthread -pthread
OSPRay Studio 0.11
Camera: 1 - Resolution: 1080p - Samples Per Pixel: 1 - Renderer: Path Tracer
ms, Fewer Is Better
A
C
3825
3836
800
1600
2400
3200
4000
1. (CXX) g++ options: -O3 -lm -ldl -lpthread -pthread
AOM AV1 3.4
Encoder Mode: Speed 4 Two-Pass - Input: Bosphorus 1080p
Frames Per Second, More Is Better
SE +/- 0.01, N = 3
A
B
C
9.06
9.03
9.02
3
6
9
12
15
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm -lpthread


TensorFlow Lite 2022-05-18
Model: Mobilenet Quant
Microseconds, Fewer Is Better
A
B
C
SE +/- 58.91, N = 4
5442.32
5491.74
5382.66
1200
2400
3600
4800
6000
simdjson 2.0
Throughput Test: PartialTweets
GB/s, More Is Better
A
B
C
SE +/- 0.00, N = 3
3.94
3.95
3.94
0.8888
1.7776
2.6664
3.5552
4.444
1. (CXX) g++ options: -O3 -pthread
simdjson 2.0
Throughput Test: DistinctUserID
GB/s, More Is Better
A
B
C
SE +/- 0.01, N = 3
4.47
4.47
4.46
1.0058
2.0116
3.0174
4.0232
5.029
1. (CXX) g++ options: -O3 -pthread

simdjson 2.0

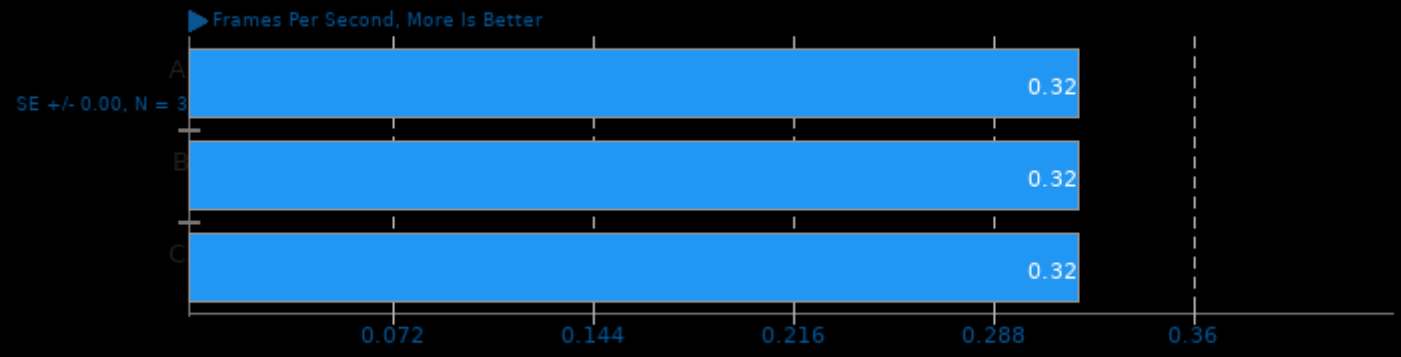
Throughput Test: TopTweet



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

AOM AV1 3.4

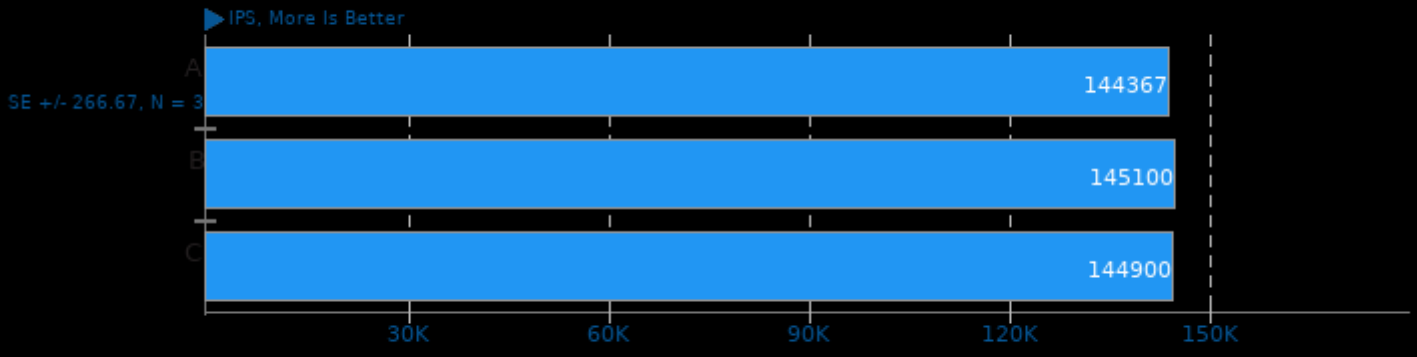
Encoder Mode: Speed 0 Two-Pass - Input: Bosphorus 1080p



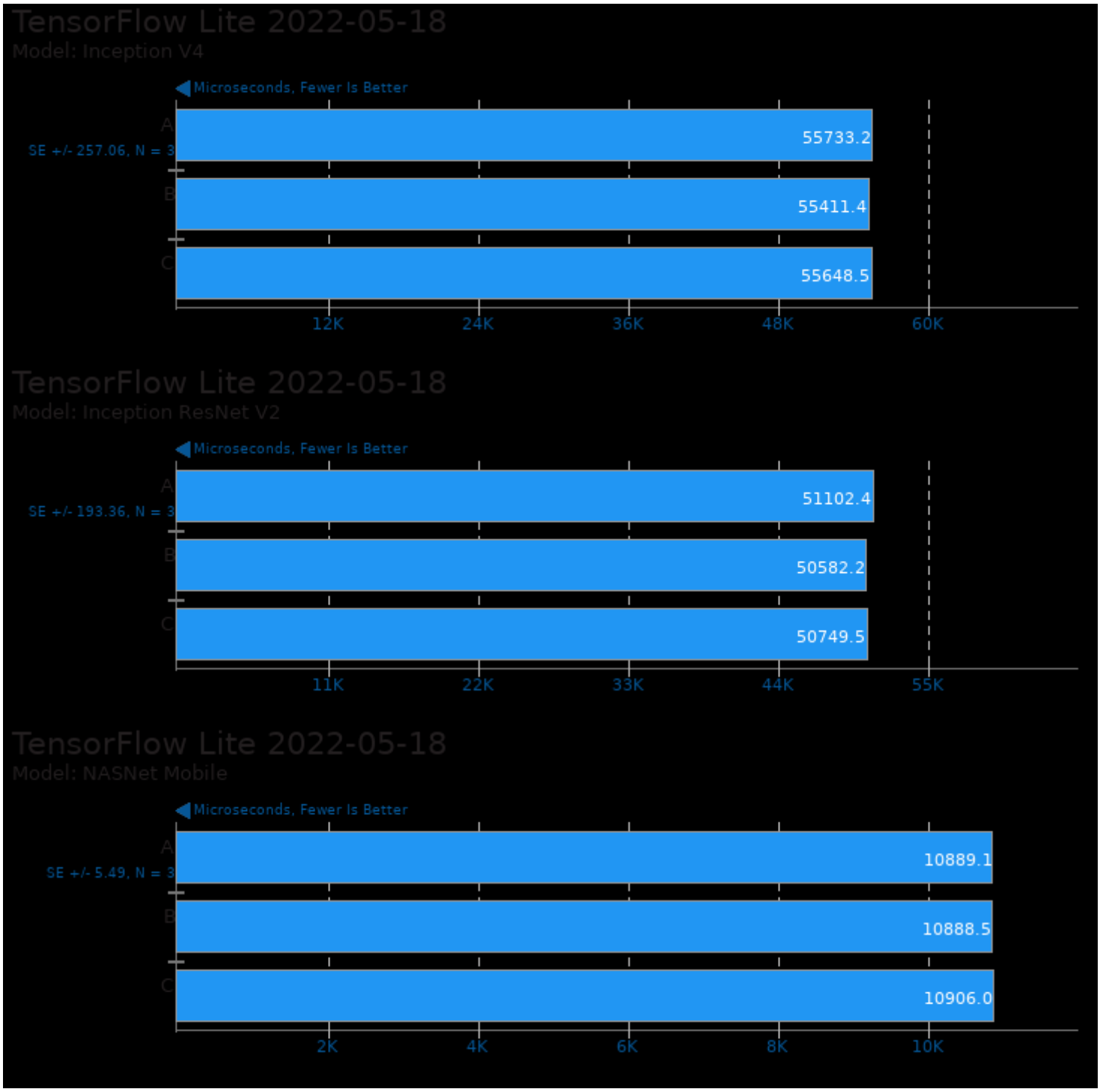
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm -lpthread

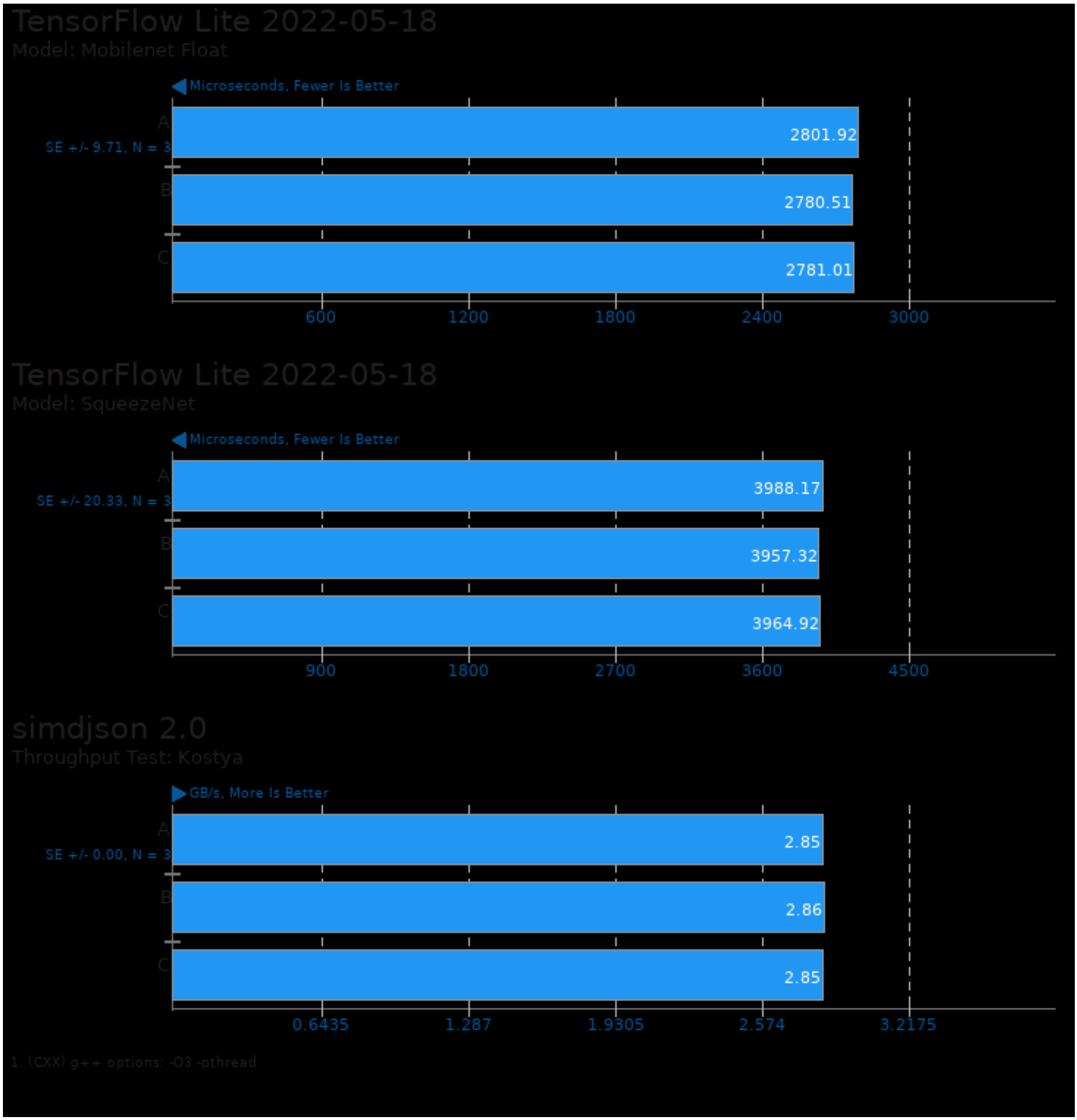
Chia Blockchain VDF 1.0.7

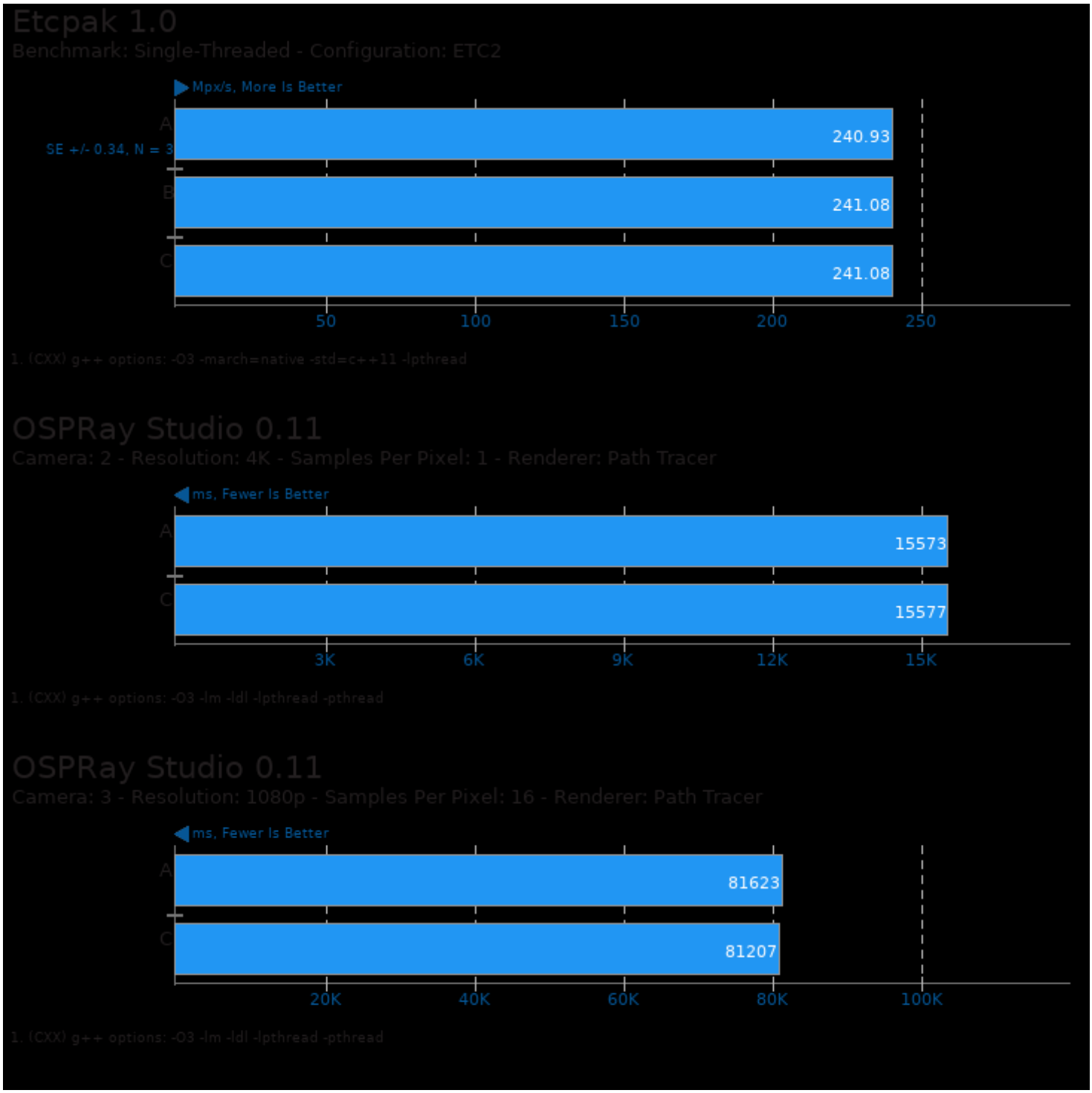
Test: Square Plain C++



1. (CXX) g++ options: -flto -no-pie -lgmpxx -lgmp -lboost_system -pthread

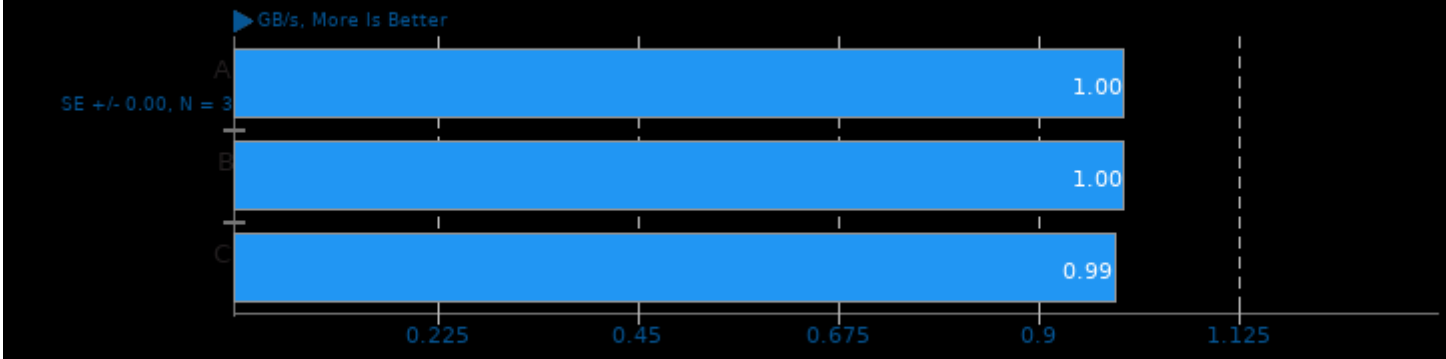

TensorFlow Lite 2022-05-18
Model: Inception V4
Microseconds, Fewer Is Better
SE +/- 257.06, N = 3
A
55733.2
B
55411.4
C
55648.5
12K
24K
36K
48K
60K
TensorFlow Lite 2022-05-18
Model: Inception ResNet V2
Microseconds, Fewer Is Better
SE +/- 193.36, N = 3
A
51102.4
B
50582.2
C
50749.5
11K
22K
33K
44K
55K
TensorFlow Lite 2022-05-18
Model: NASNet Mobile
Microseconds, Fewer Is Better
SE +/- 5.49, N = 3
A
10889.1
B
10888.5
C
10906.0
2K
4K
6K
8K
10K


TensorFlow Lite 2022-05-18
Model: Mobilenet Float
Microseconds, Fewer Is Better
SE +/- 9.71, N = 3
A
2801.92
B
2780.51
C
2781.01
600
1200
1800
2400
3000
TensorFlow Lite 2022-05-18
Model: SqueezeNet
Microseconds, Fewer Is Better
SE +/- 20.33, N = 3
A
3988.17
B
3957.32
C
3964.92
900
1800
2700
3600
4500
simdjson 2.0
Throughput Test: Kostya
GB/s, More Is Better
SE +/- 0.00, N = 3
A
2.85
B
2.86
C
2.85
0.6435
1.287
1.9305
2.574
3.2175
1. (CXX) g++ options: -O3 -pthread


Etcpak 1.0
Benchmark: Single-Threaded - Configuration: ETC2
Mpx/s, More Is Better
SE +/- 0.34, N = 3
A
B
C
240.93
241.08
241.08
50
100
150
200
250
1. (CXX) g++ options: -O3 -march=native -std=c++11 -lpthread
OSPRay Studio 0.11
Camera: 2 - Resolution: 4K - Samples Per Pixel: 1 - Renderer: Path Tracer
ms, Fewer Is Better
A
C
15573
15577
3K
6K
9K
12K
15K
1. (CXX) g++ options: -O3 -lm -ldl -lpthread -pthread
OSPRay Studio 0.11
Camera: 3 - Resolution: 1080p - Samples Per Pixel: 16 - Renderer: Path Tracer
ms, Fewer Is Better
A
C
81623
81207
20K
40K
60K
80K
100K
1. (CXX) g++ options: -O3 -lm -ldl -lpthread -pthread

simdjson 2.0

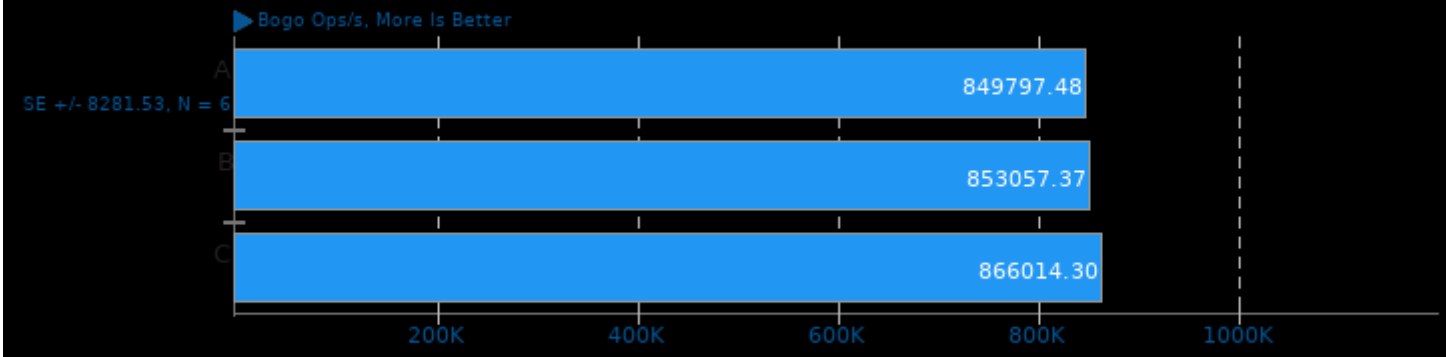
Throughput Test: LargeRandom



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

Stress-NG 0.14

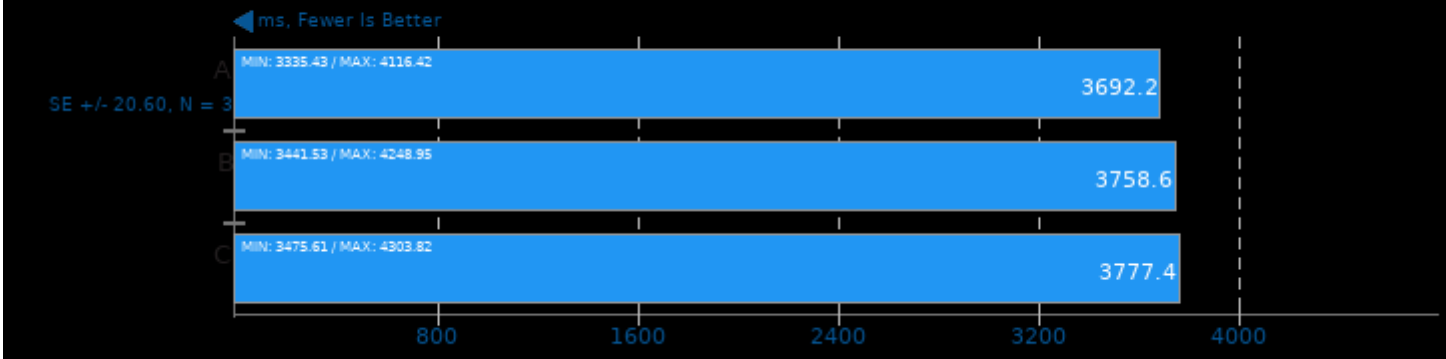
Test: Glibc C String Functions



1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lapparmor -latomic -lc -lcrypt -ldl -ljpeg -lrt -lsctp -lz -pthread

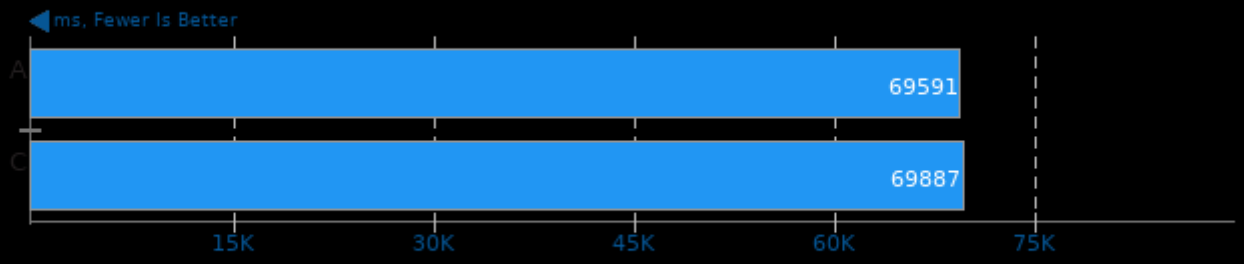
Renaissance 0.14

Test: Finagle HTTP Requests



OSPRay Studio 0.11

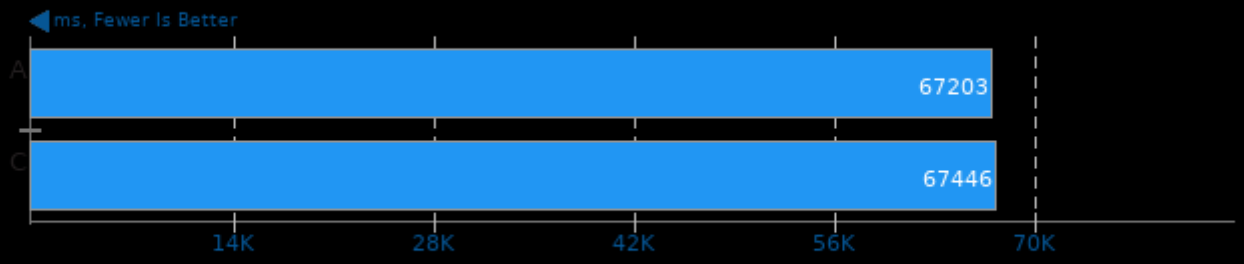
Camera: 2 - Resolution: 1080p - Samples Per Pixel: 16 - Renderer: Path Tracer



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

OSPRay Studio 0.11

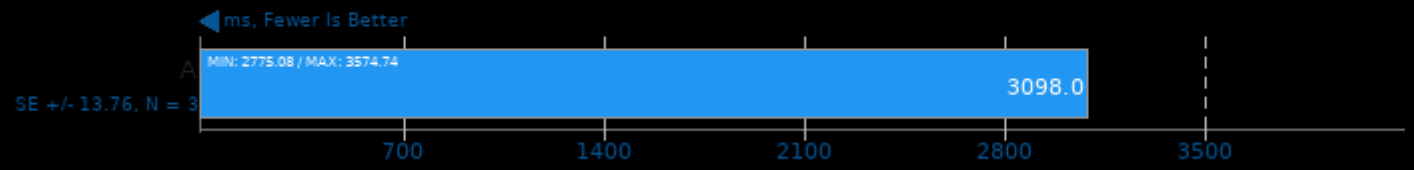
Camera: 1 - Resolution: 1080p - Samples Per Pixel: 16 - Renderer: Path Tracer



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

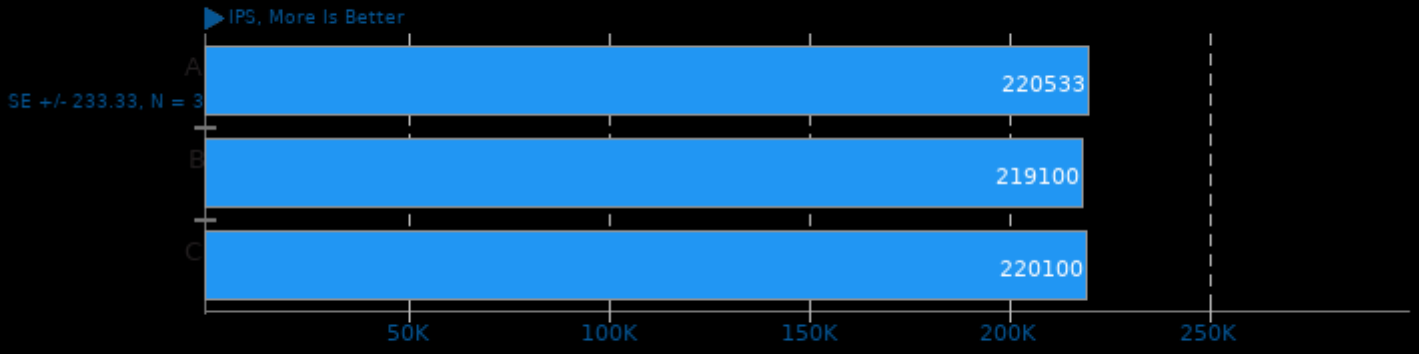
Renaissance 0.14

Test: In-Memory Database Shootout



Chia Blockchain VDF 1.0.7

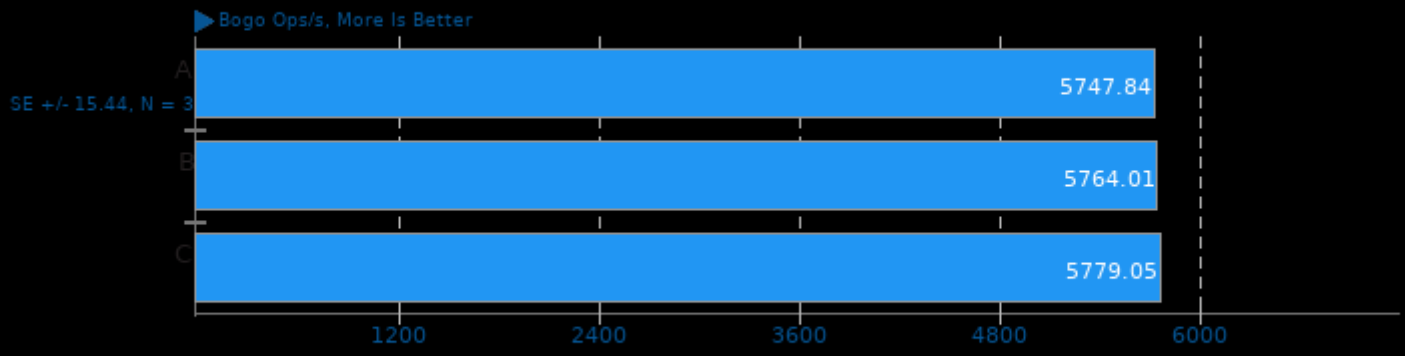
Test: Square Assembly Optimized



1. (CXX) g++ options: -flto -no-pie -lgmpxx -lgmp -lboost_system -pthread

Stress-NG 0.14

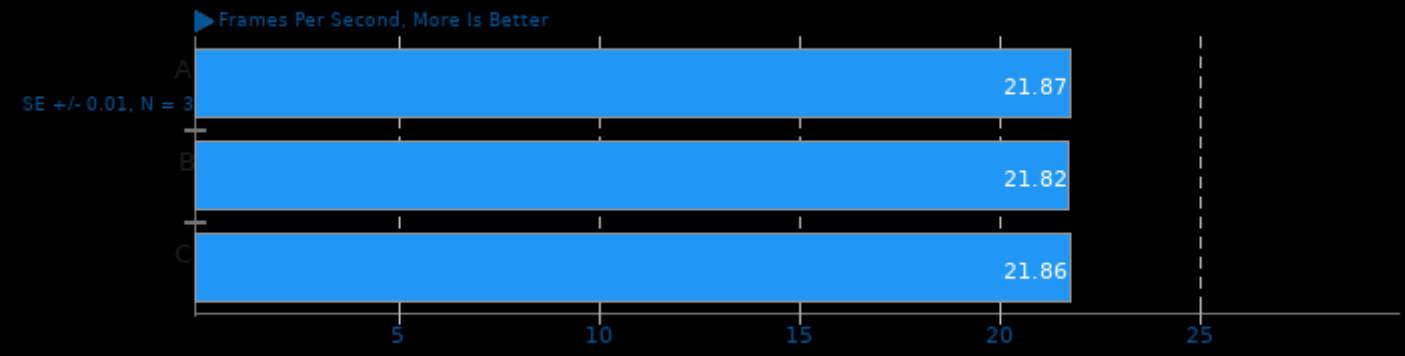
Test: x86_64 RdRand



1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lapparmor -latomic -lc -lcrypt -ldl -ljpeg -lrt -lsctp -lz -pthread

AOM AV1 3.4

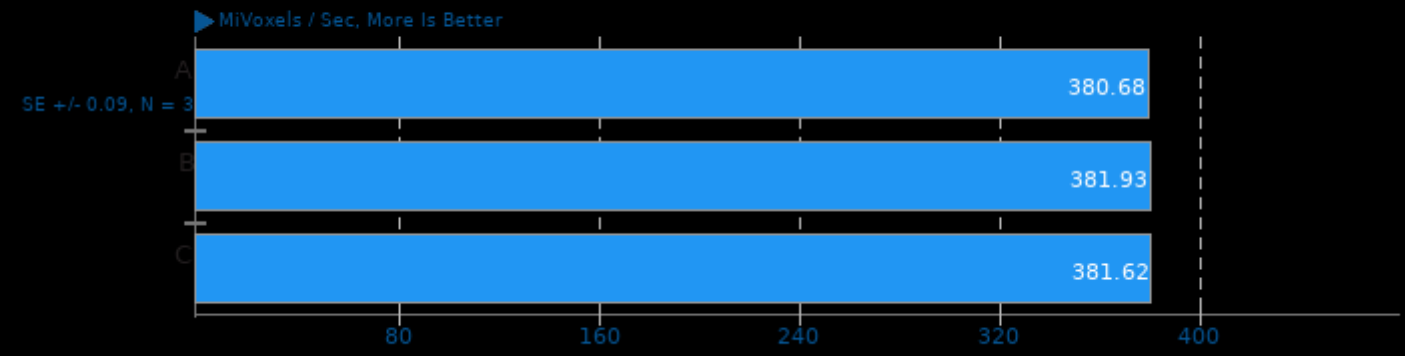
Encoder Mode: Speed 6 Two-Pass - Input: Bosphorus 1080p

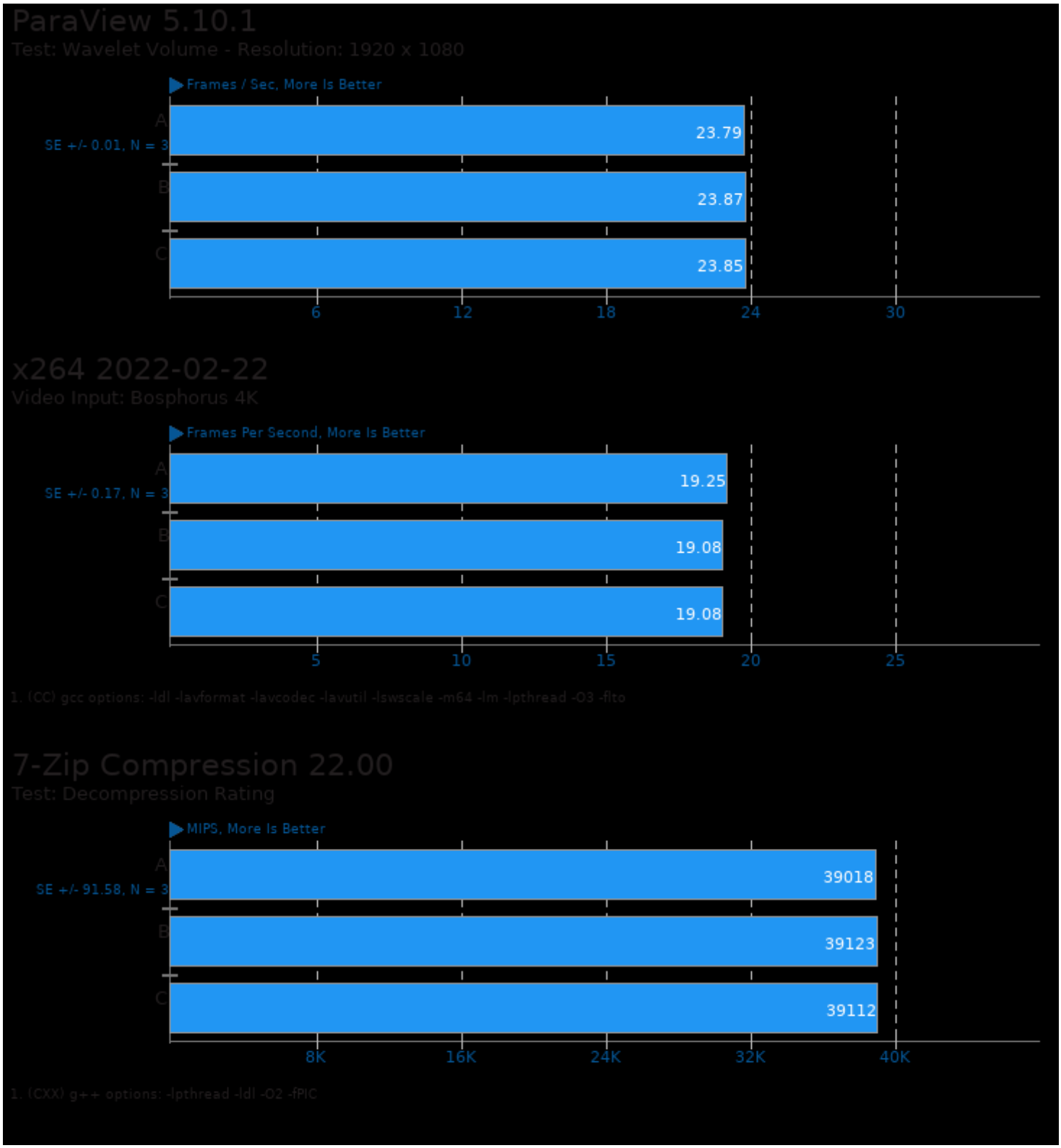


1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm -lpthread

ParaView 5.10.1

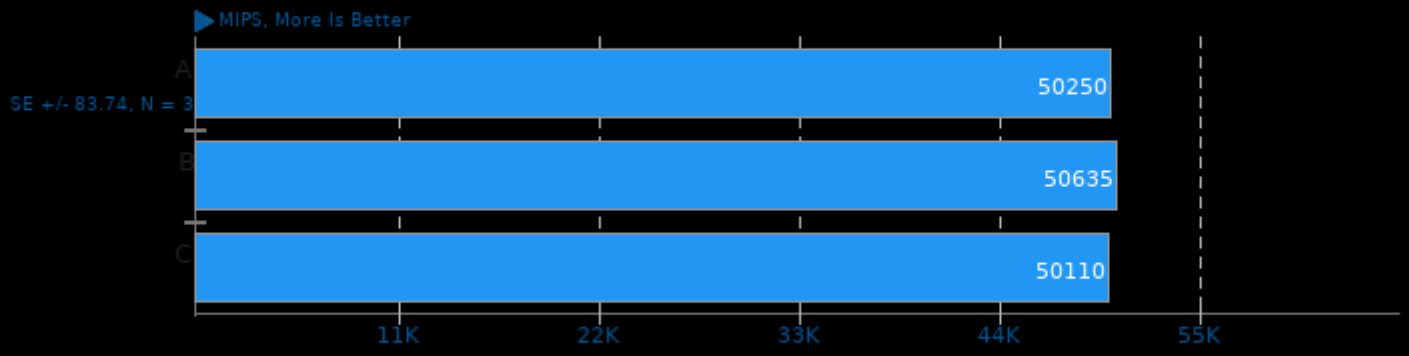
Test: Wavelet Volume - Resolution: 1920 x 1080




ParaView 5.10.1
Test: Wavelet Volume - Resolution: 1920 x 1080
Frames / Sec, More Is Better
A
B
C
SE +/- 0.01, N = 3
23.79
23.87
23.85
6
12
18
24
30
x264 2022-02-22
Video Input: Bosphorus 4K
Frames Per Second, More Is Better
A
B
C
SE +/- 0.17, N = 3
19.25
19.08
19.08
5
10
15
20
25
1. (CC) gcc options: -ldl -lavformat -lavcodec -lavutil -lswscale -m64 -lm -lpthread -O3 -flto
7-Zip Compression 22.00
Test: Decompression Rating
MIPS, More Is Better
A
B
C
SE +/- 91.58, N = 3
39018
39123
39112
8K
16K
24K
32K
40K
1. (CXX) g++ options: -lpthread -ldl -O2 -fPIC

7-Zip Compression 22.00

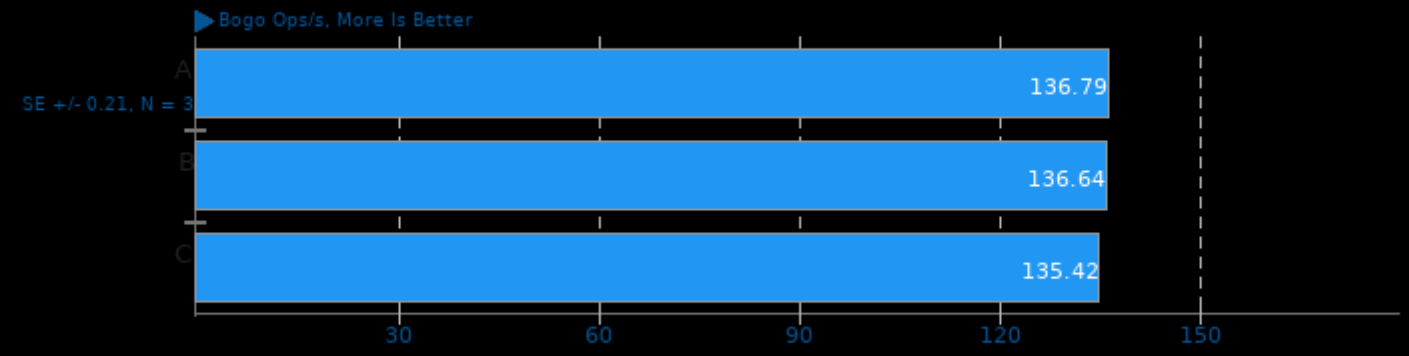
Test: Compression Rating



1. (CXX) g++ options: -lpthread -ldl -O2 -fPIC

Stress-NG 0.14

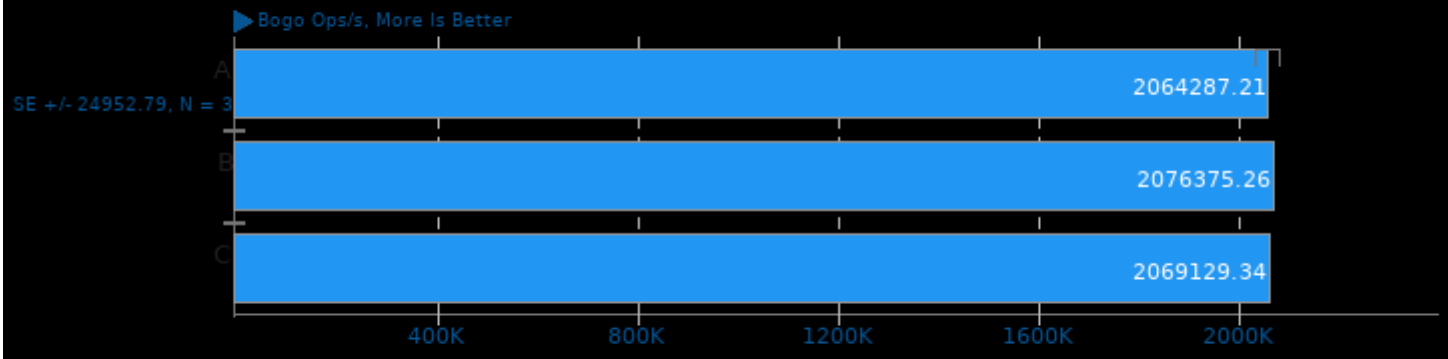
Test: NUMA



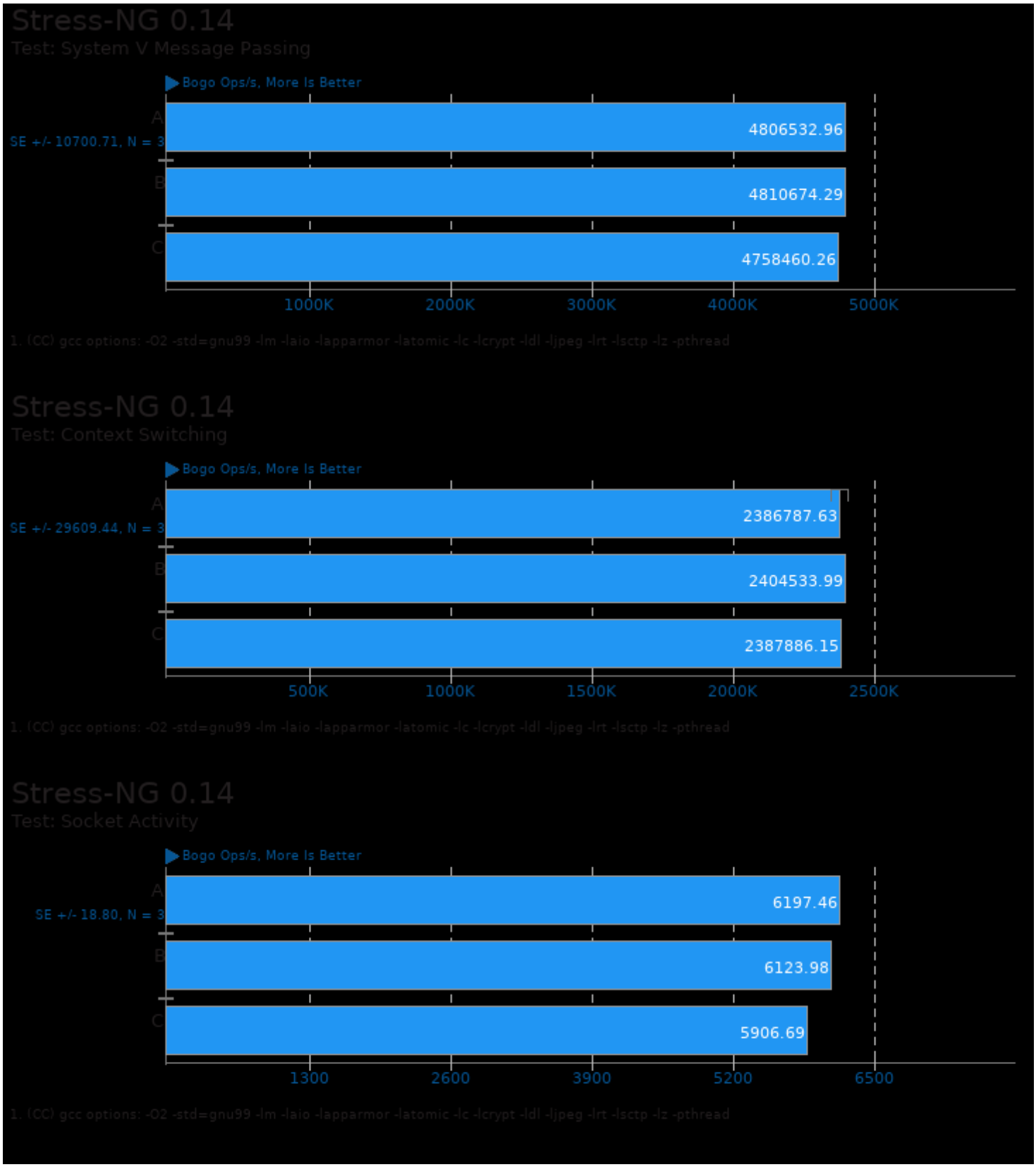
1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lapparmor -latomic -lc -lcrypt -ldl -ljpeg -lrt -lsctp -lz -pthread

Stress-NG 0.14

Test: Malloc

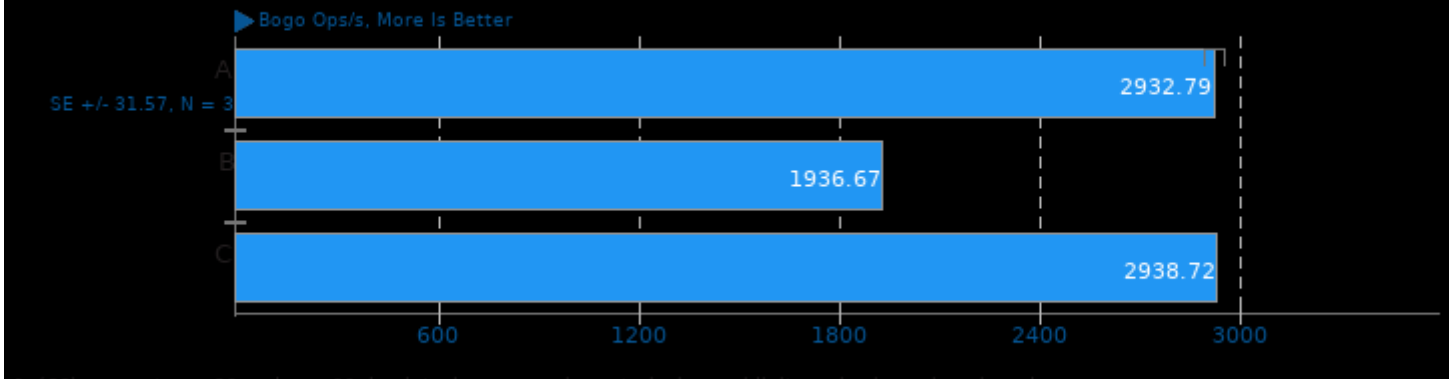


1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lapparmor -latomic -lc -lcrypt -ldl -ljpeg -lrt -lsctp -lz -pthread


Stress-NG 0.14
Test: System V Message Passing
Bogo Ops/s, More Is Better
SE +/- 10700.71, N = 3
A
4806532.96
B
4810674.29
C
4758460.26
1000K
2000K
3000K
4000K
5000K
1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lapparmor -latomic -lc -lcrypt -ldl -ljpeg -lrt -lsctp -lz -pthread
Stress-NG 0.14
Test: Context Switching
Bogo Ops/s, More Is Better
SE +/- 29609.44, N = 3
A
2386787.63
B
2404533.99
C
2387886.15
500K
1000K
1500K
2000K
2500K
1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lapparmor -latomic -lc -lcrypt -ldl -ljpeg -lrt -lsctp -lz -pthread
Stress-NG 0.14
Test: Socket Activity
Bogo Ops/s, More Is Better
SE +/- 18.80, N = 3
A
6197.46
B
6123.98
C
5906.69
1300
2600
3900
5200
6500
1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lapparmor -latomic -lc -lcrypt -ldl -ljpeg -lrt -lsctp -lz -pthread

Stress-NG 0.14

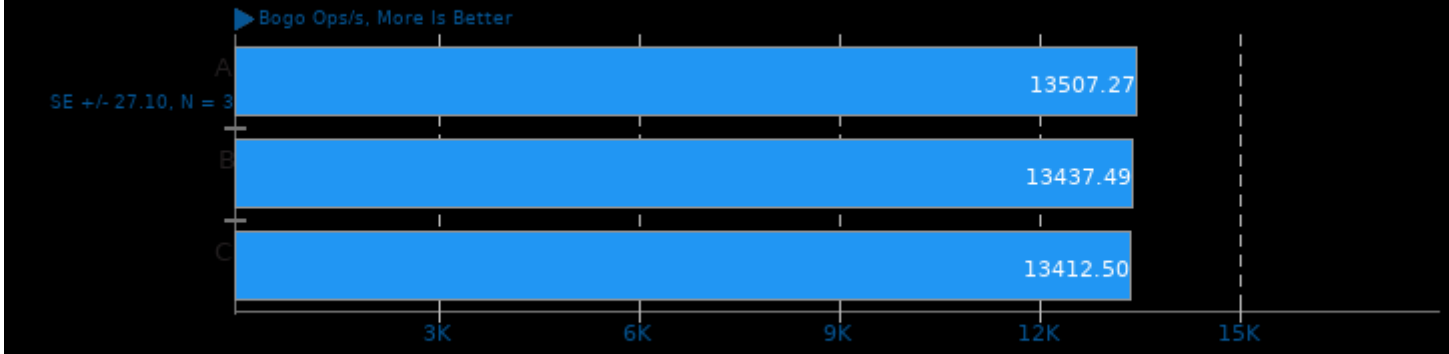
Test: Memory Copying



1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lapparmor -latomic -lc -lcrypt -ldl -ljpeg -lrt -lsctp -lz -pthread

Stress-NG 0.14

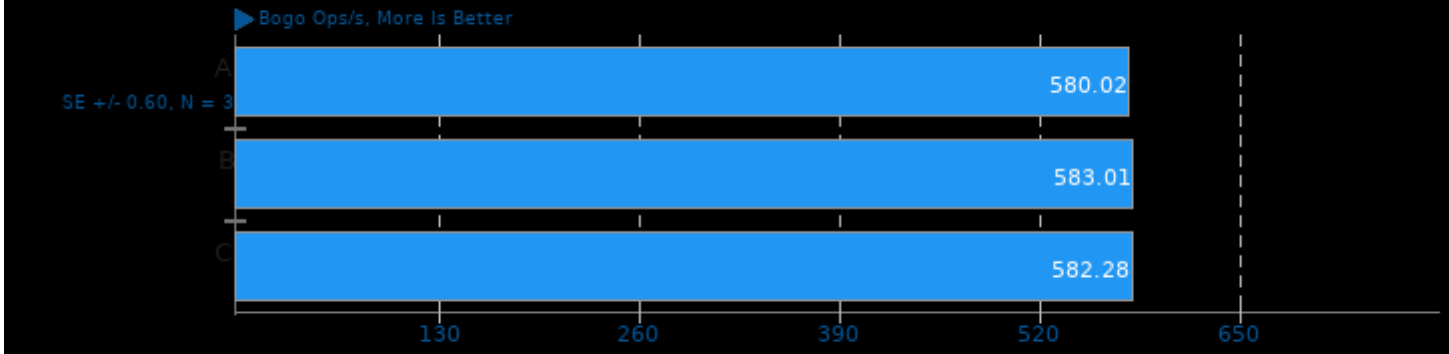
Test: CPU Stress



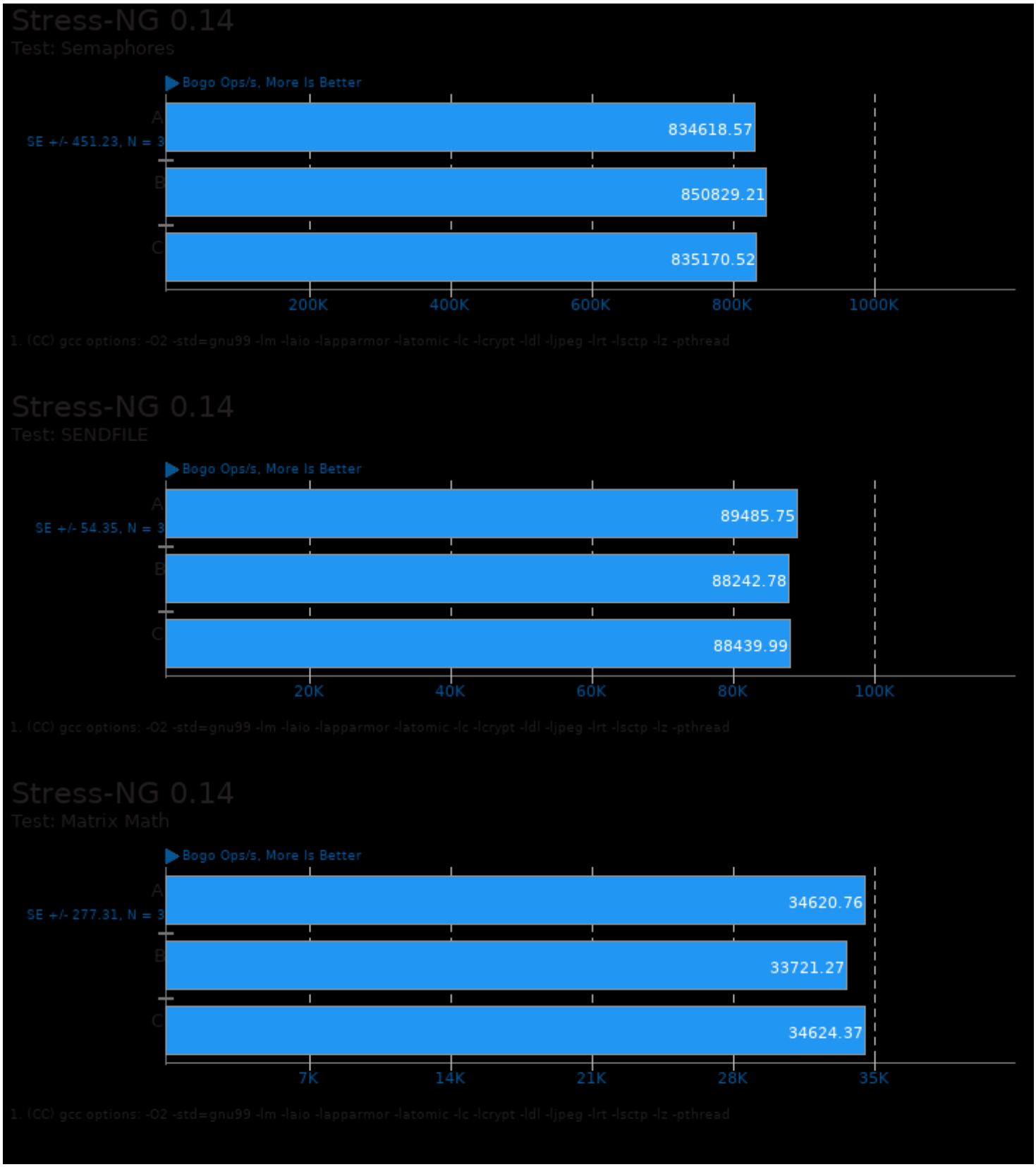
1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lapparmor -latomic -lc -lcrypt -ldl -ljpeg -lrt -lsctp -lz -pthread

Stress-NG 0.14

Test: MEMFD

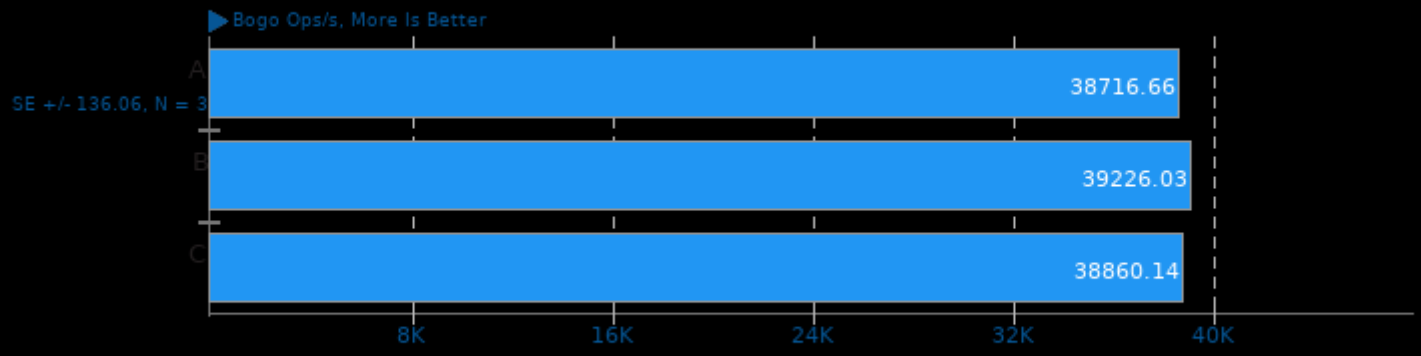


1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lapparmor -latomic -lc -lcrypt -ldl -ljpeg -lrt -lsctp -lz -pthread


Stress-NG 0.14
Test: Semaphores
Bogo Ops/s, More Is Better
SE +/- 451.23, N = 3
A
B
C
834618.57
850829.21
835170.52
200K
400K
600K
800K
1000K
1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lapparmor -latomic -lc -lcrypt -ldl -ljpeg -lrt -lsctp -lz -pthread
Stress-NG 0.14
Test: SENDFILE
Bogo Ops/s, More Is Better
SE +/- 54.35, N = 3
A
B
C
89485.75
88242.78
88439.99
20K
40K
60K
80K
100K
1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lapparmor -latomic -lc -lcrypt -ldl -ljpeg -lrt -lsctp -lz -pthread
Stress-NG 0.14
Test: Matrix Math
Bogo Ops/s, More Is Better
SE +/- 277.31, N = 3
A
B
C
34620.76
33721.27
34624.37
7K
14K
21K
28K
35K
1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lapparmor -latomic -lc -lcrypt -ldl -ljpeg -lrt -lsctp -lz -pthread

Stress-NG 0.14

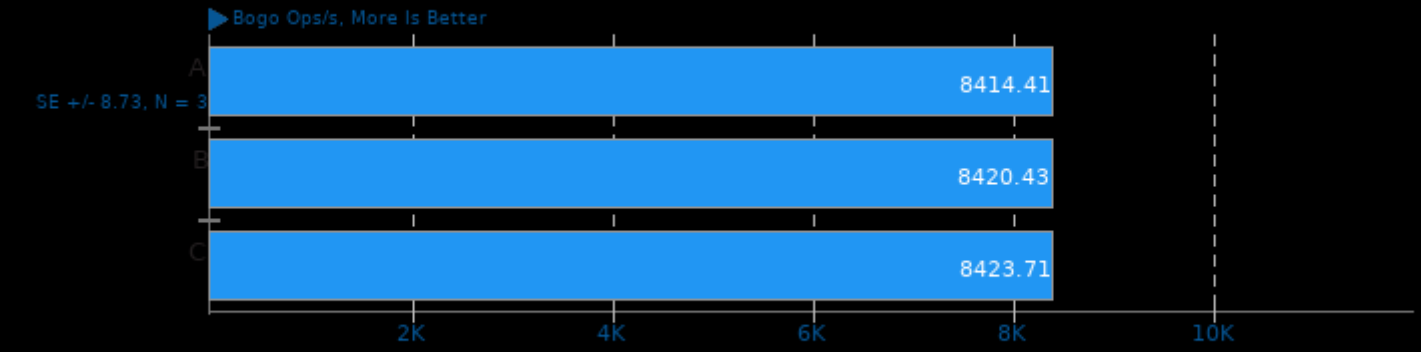
Test: Forking



1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lapparmor -latomic -lc -lcrypt -ldl -ljpeg -lrt -lsctp -lz -pthread

Stress-NG 0.14

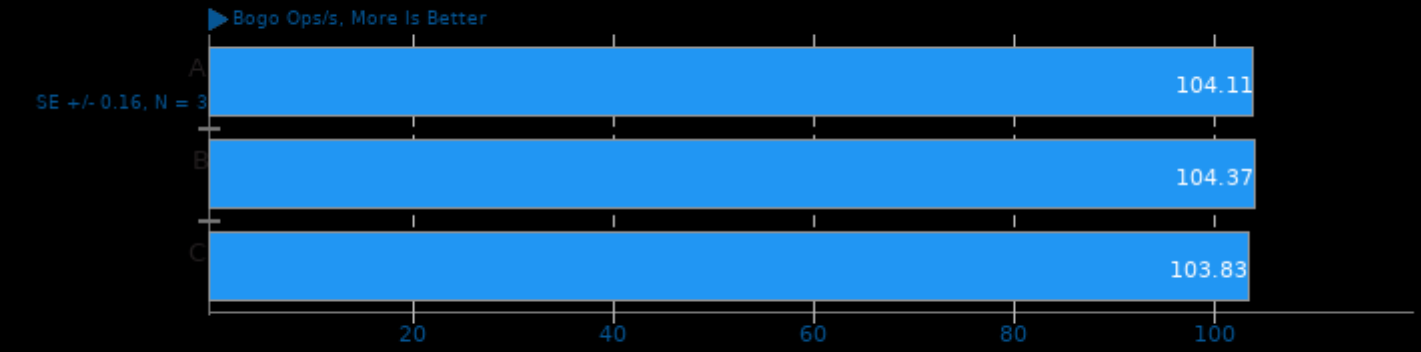
Test: Crypto



1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lapparmor -latomic -lc -lcrypt -ldl -ljpeg -lrt -lsctp -lz -pthread

Stress-NG 0.14

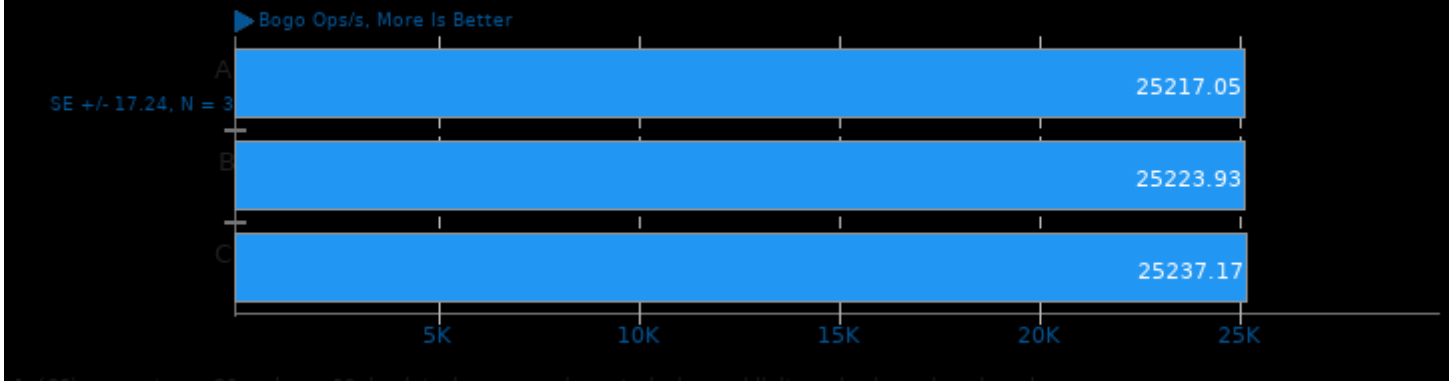
Test: Glibc Qsort Data Sorting



1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lapparmor -latomic -lc -lcrypt -ldl -ljpeg -lrt -lsctp -lz -pthread

Stress-NG 0.14

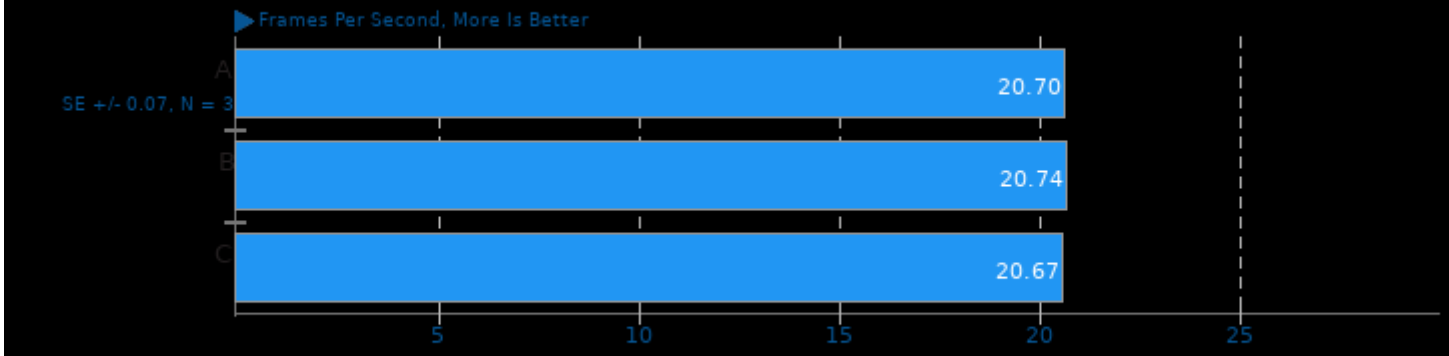
Test: Vector Math



1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lapparmor -latomic -lc -lcrypt -ldl -ljpeg -lrt -lsctp -lz -pthread

AOM AV1 3.4

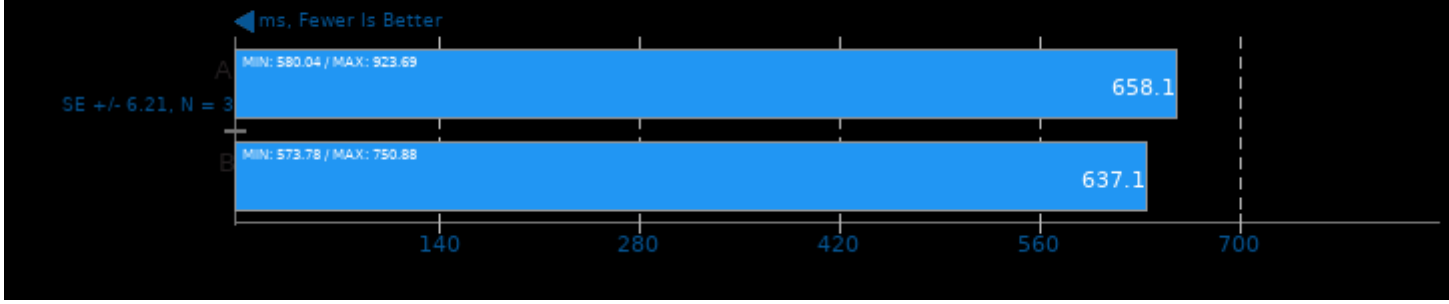
Encoder Mode: Speed 6 Realtime - Input: Bosphorus 4K

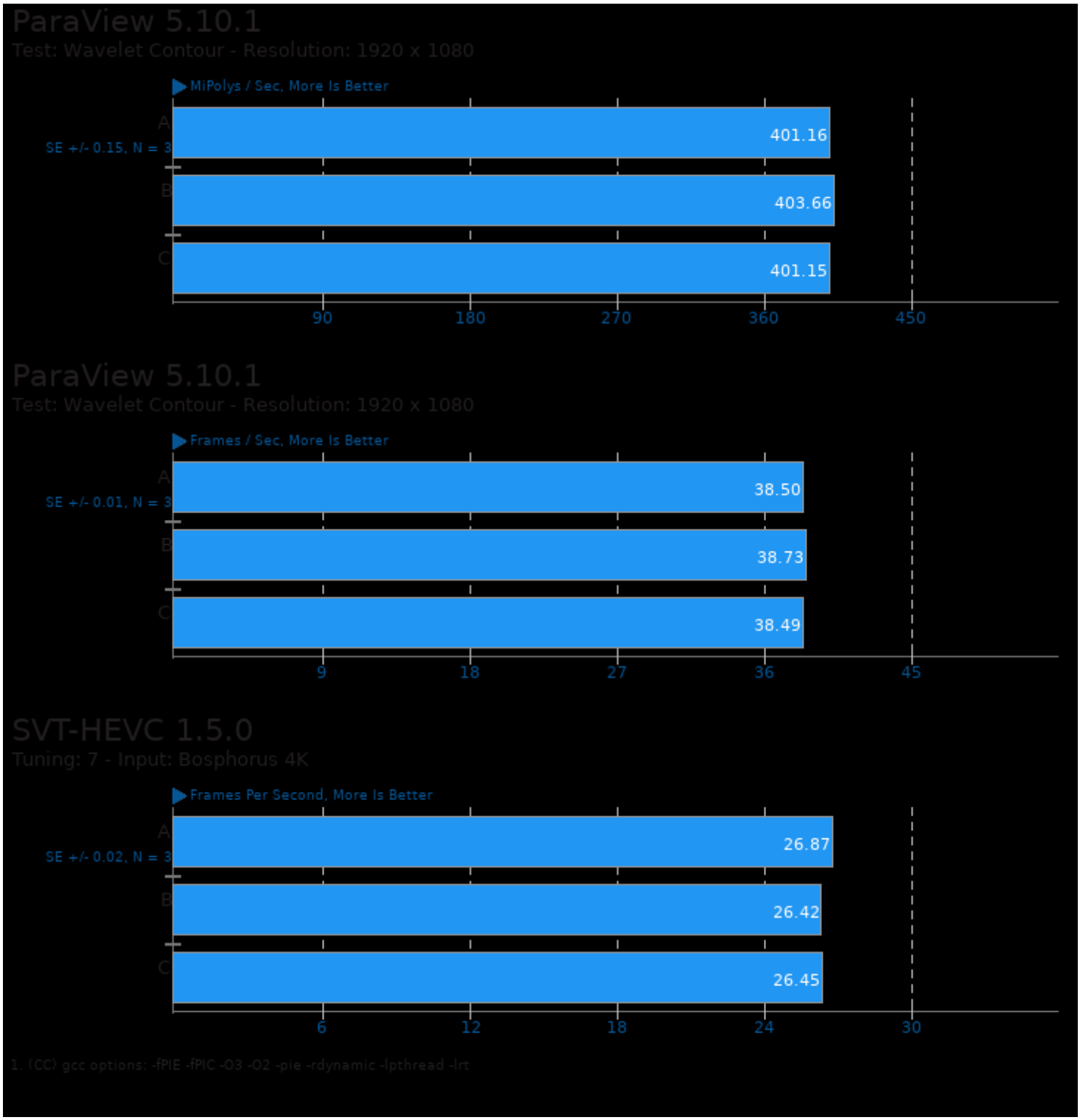


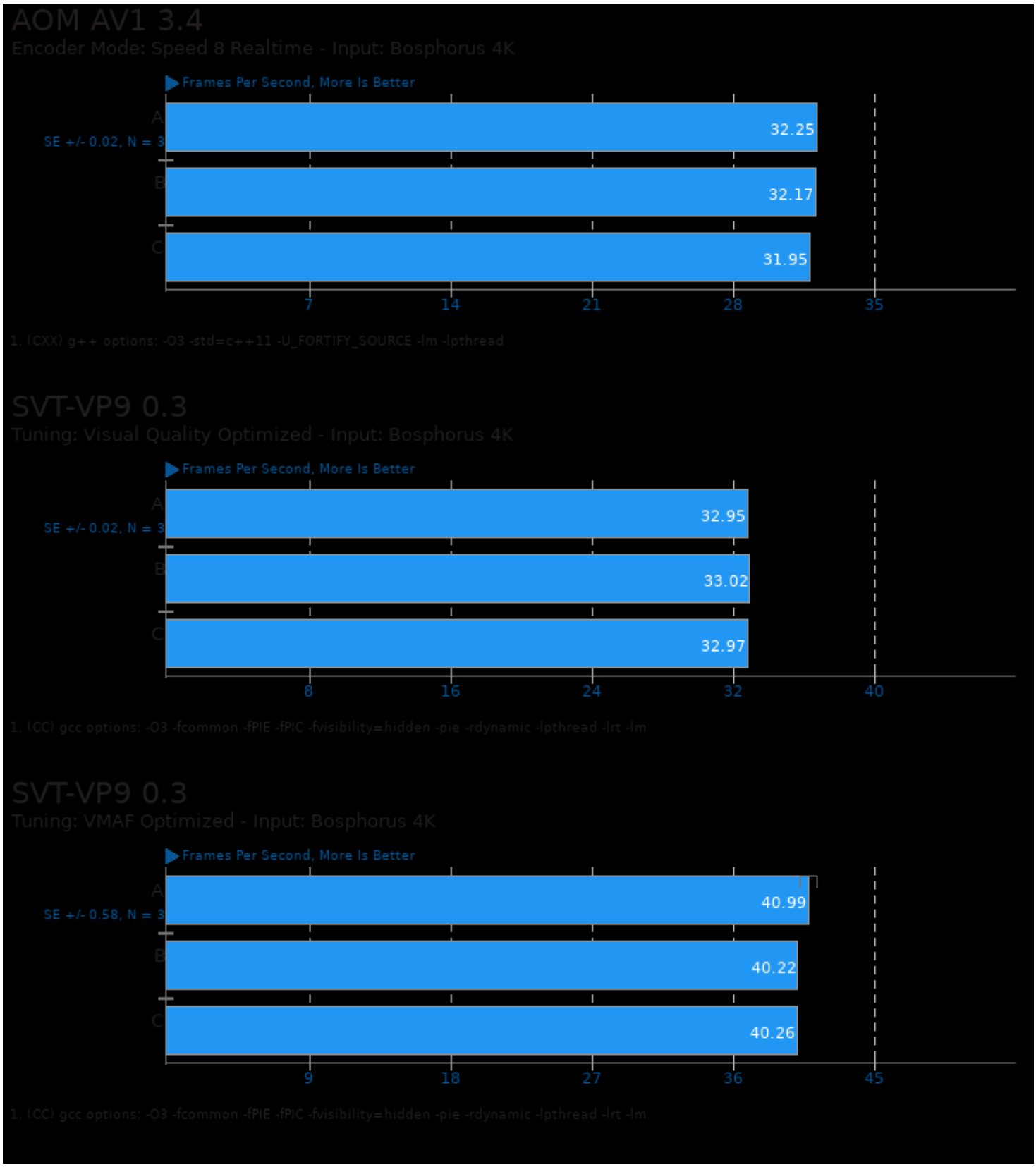
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm -lpthread

Renaissance 0.14

Test: Random Forest

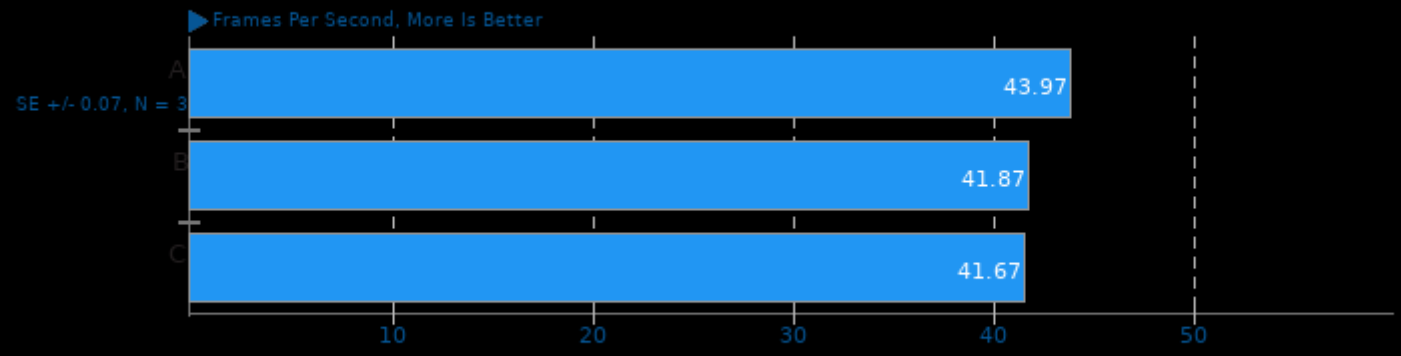



ParaView 5.10.1
Test: Wavelet Contour - Resolution: 1920 x 1080
MiPolys / Sec, More Is Better
A
B
C
SE +/- 0.15, N = 3
401.16
403.66
401.15
90
180
270
360
450
ParaView 5.10.1
Test: Wavelet Contour - Resolution: 1920 x 1080
Frames / Sec, More Is Better
A
B
C
SE +/- 0.01, N = 3
38.50
38.73
38.49
9
18
27
36
45
SVT-HEVC 1.5.0
Tuning: 7 - Input: Bosphorus 4K
Frames Per Second, More Is Better
A
B
C
SE +/- 0.02, N = 3
26.87
26.42
26.45
6
12
18
24
30
1. (CC) gcc options: -fPIE -fPIC -O3 -O2 -pie -rdynamic -lpthread -lrt


AOM AV1 3.4
Encoder Mode: Speed 8 Realtime - Input: Bosphorus 4K
Frames Per Second, More Is Better
A
B
C
SE +/- 0.02, N = 3
32.25
32.17
31.95
7
14
21
28
35
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm -lpthread
SVT-VP9 0.3
Tuning: Visual Quality Optimized - Input: Bosphorus 4K
Frames Per Second, More Is Better
A
B
C
SE +/- 0.02, N = 3
32.95
33.02
32.97
8
16
24
32
40
1. (CC) gcc options: -O3 -fcommon -fPIE -fPIC -fvisibility=hidden -pie -rdynamic -lpthread -lrt -lm
SVT-VP9 0.3
Tuning: VMAF Optimized - Input: Bosphorus 4K
Frames Per Second, More Is Better
A
B
C
SE +/- 0.58, N = 3
40.99
40.22
40.26
9
18
27
36
45
1. (CC) gcc options: -O3 -fcommon -fPIE -fPIC -fvisibility=hidden -pie -rdynamic -lpthread -lrt -lm

SVT-VP9 0.3

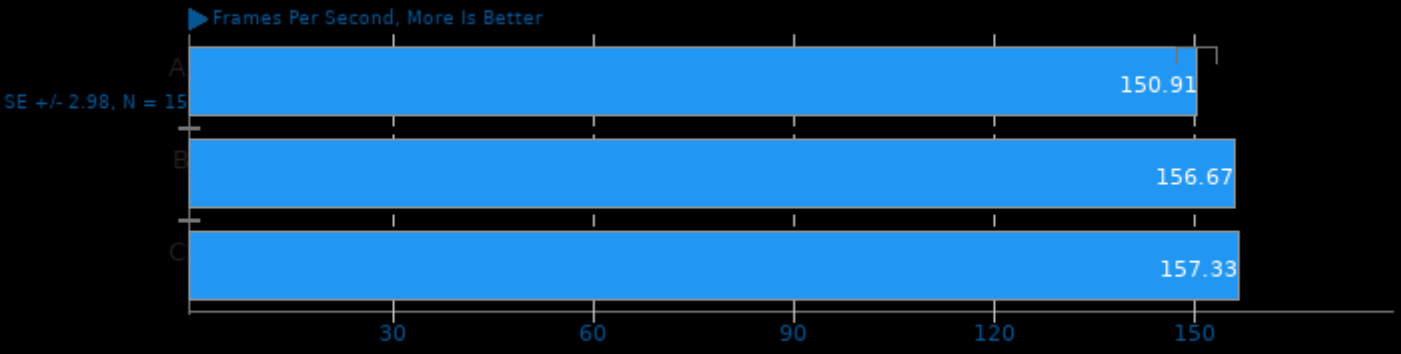
Tuning: PSNR/SSIM Optimized - Input: Bosphorus 4K



1. (CC) gcc options: -O3 -fcommon -fPIE -fPIC -fvisibility=hidden -pie -rdynamic -lpthread -lrt -lm

AOM AV1 3.4

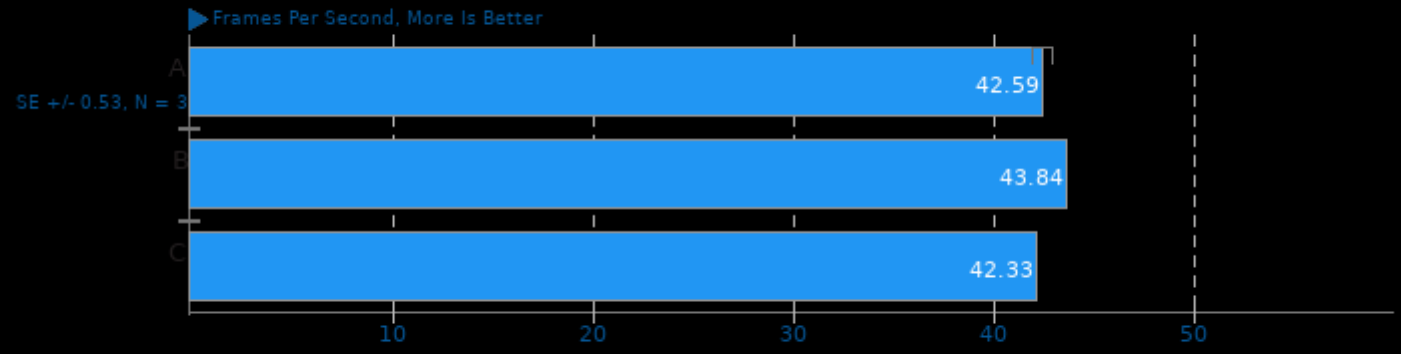
Encoder Mode: Speed 10 Realtime - Input: Bosphorus 1080p



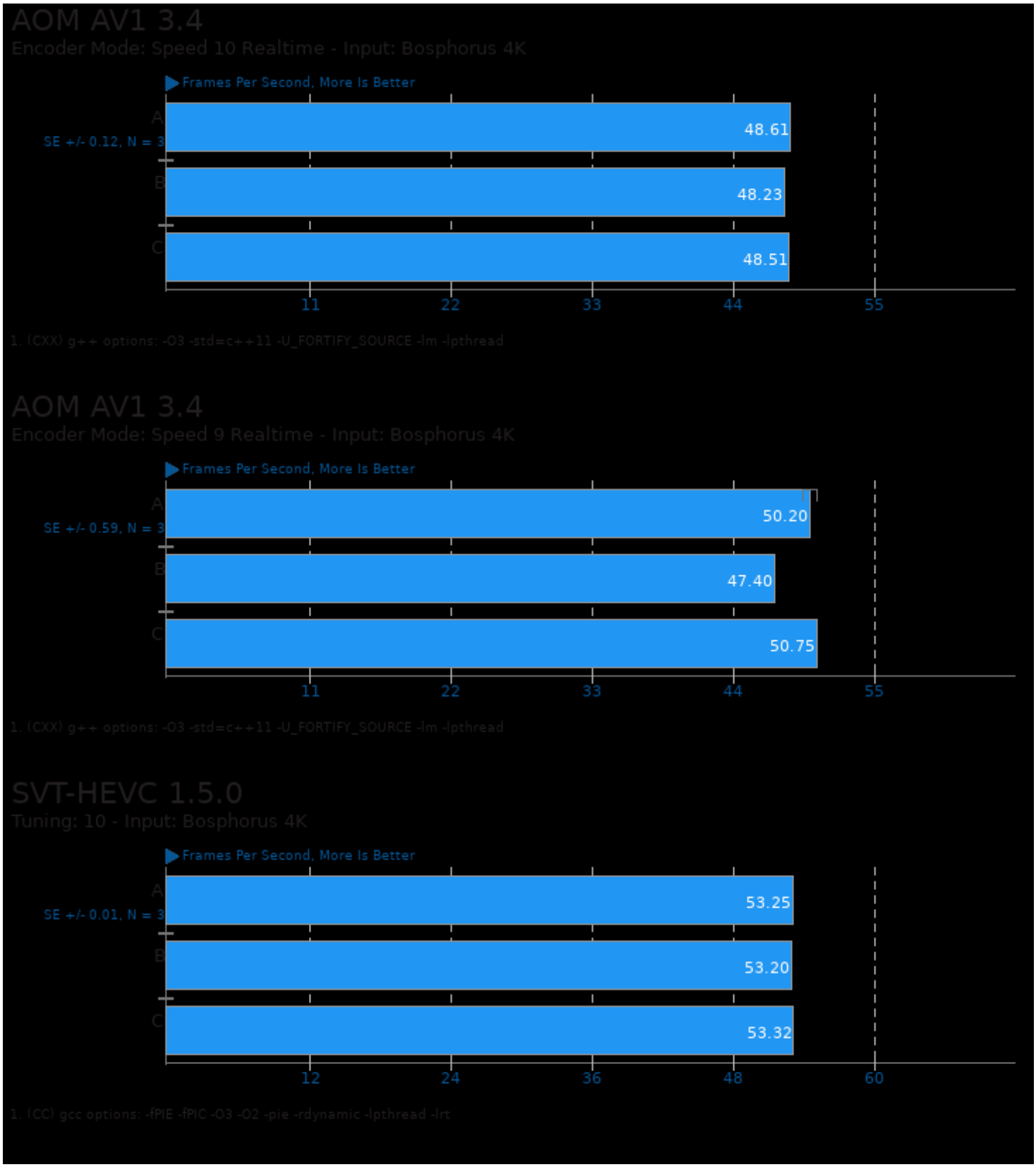
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm -lpthread

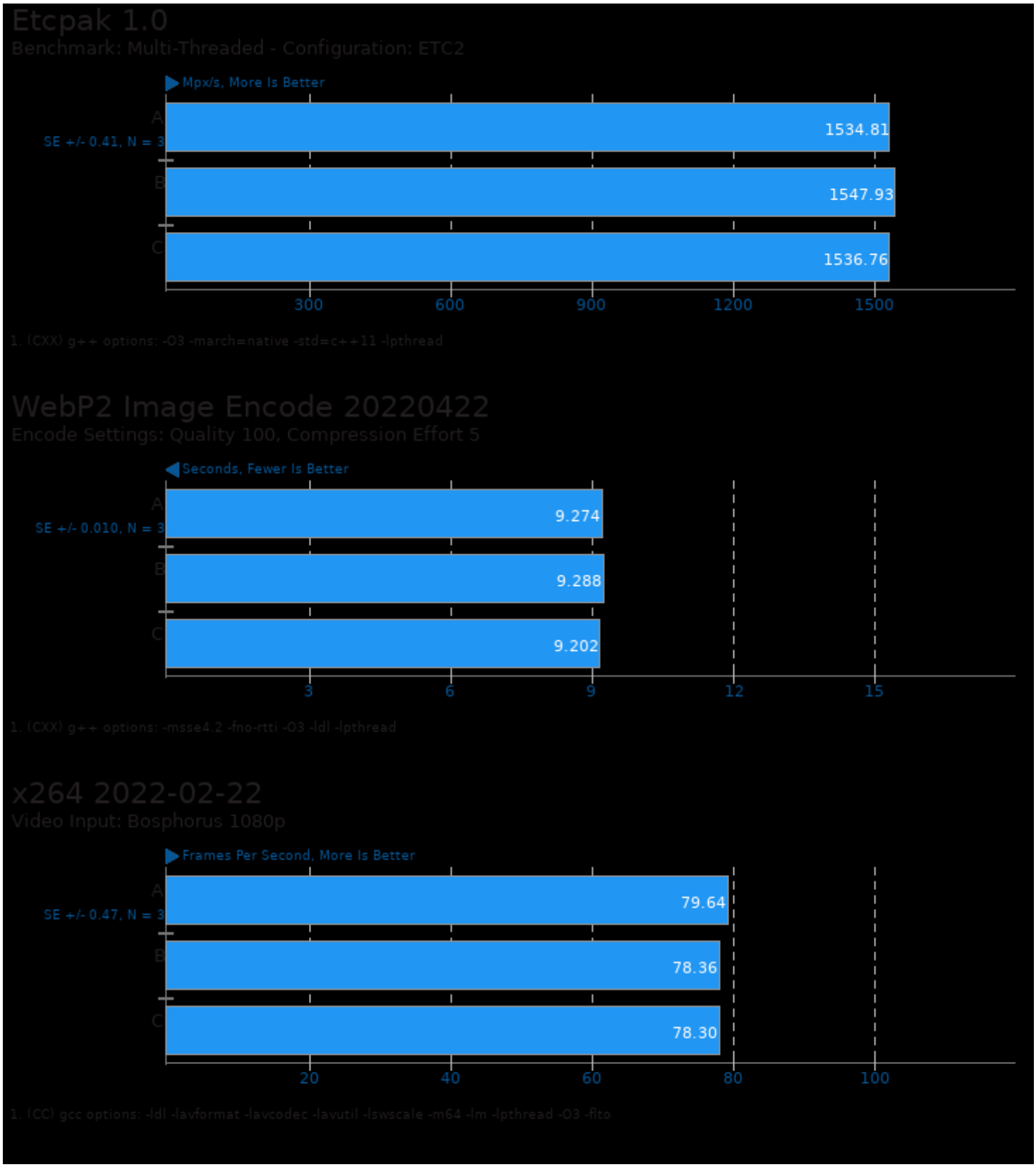
AOM AV1 3.4

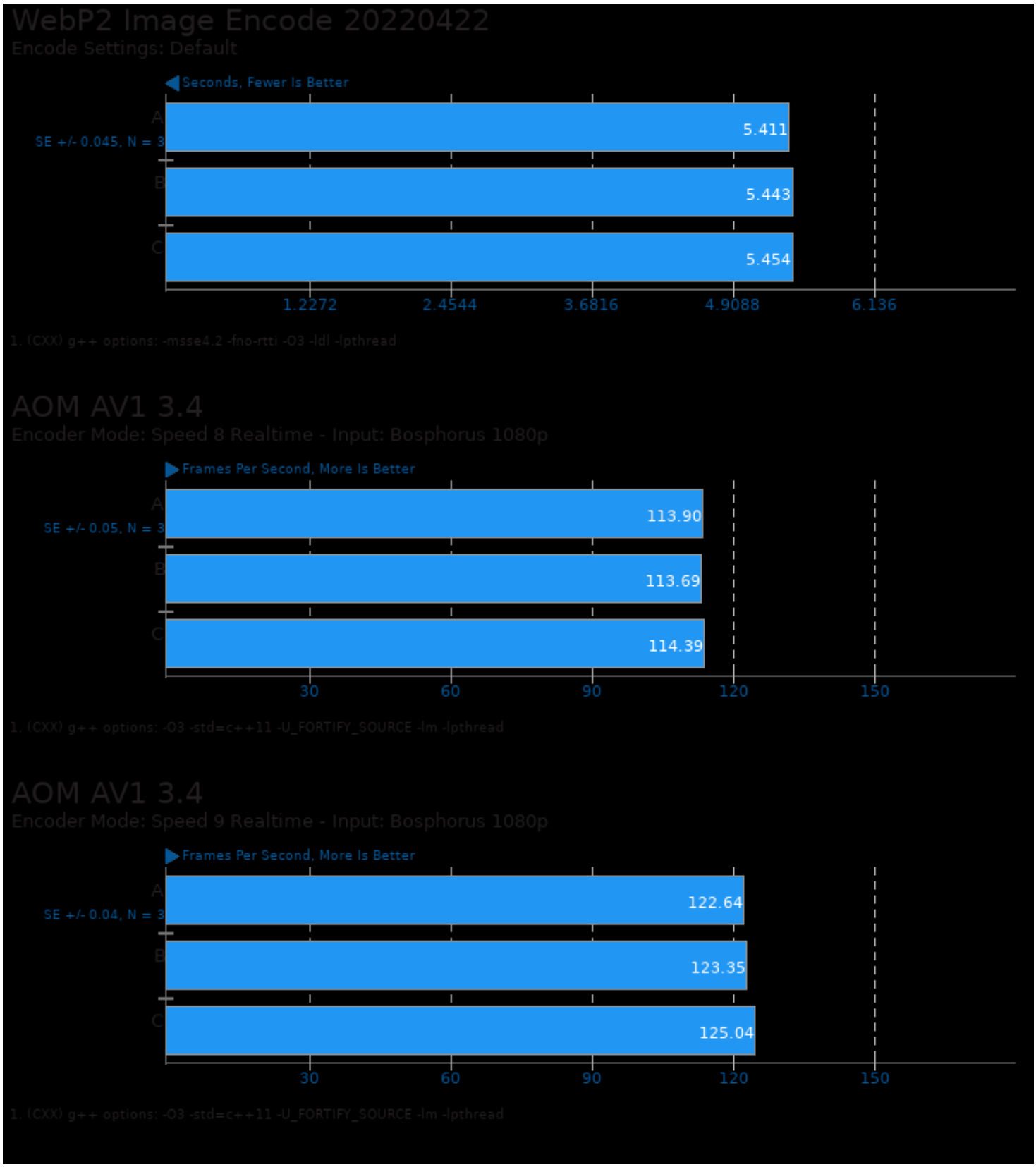
Encoder Mode: Speed 6 Realtime - Input: Bosphorus 1080p

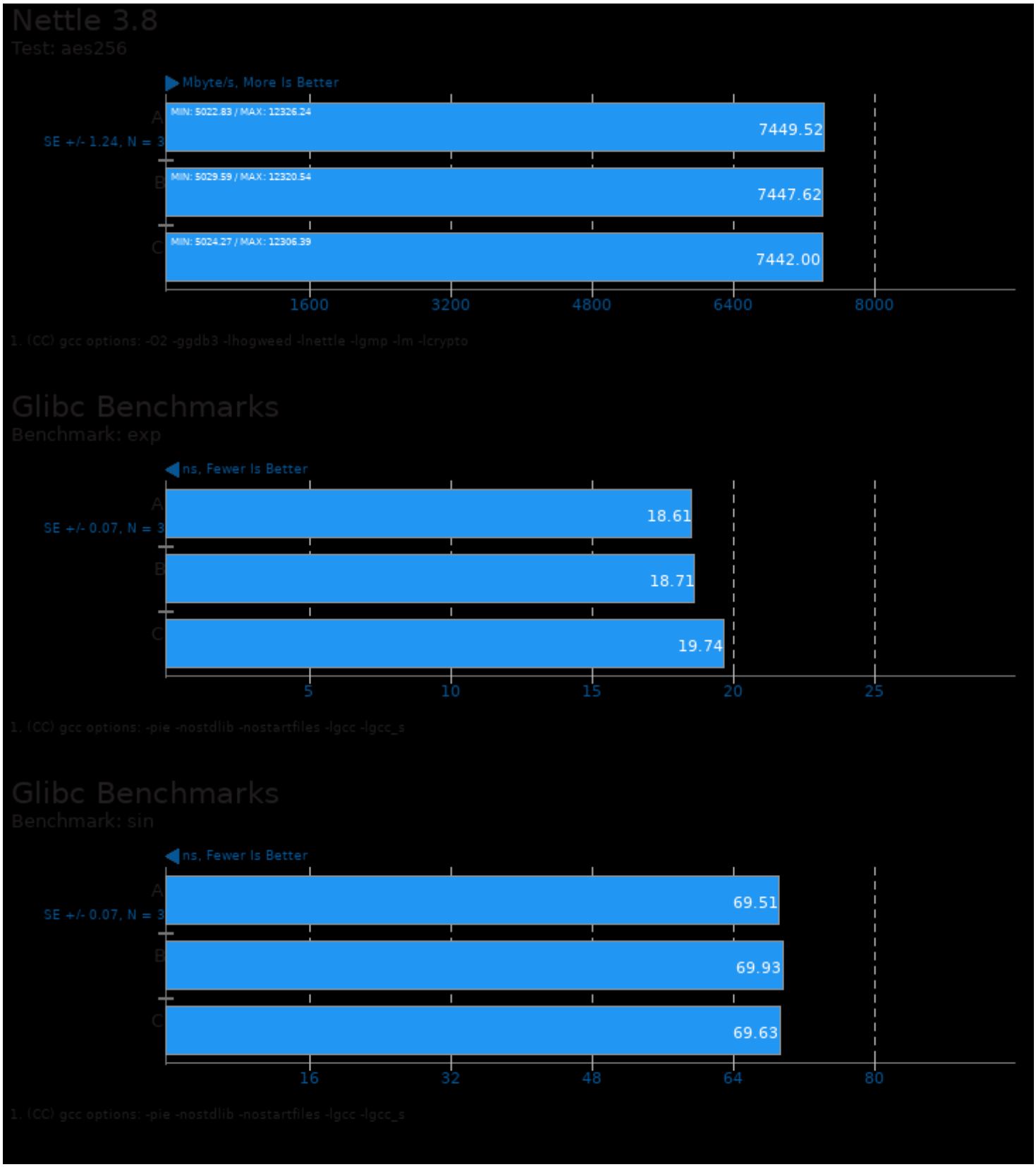


1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm -lpthread


AOM AV1 3.4
Encoder Mode: Speed 10 Realtime - Input: Bosphorus 4K
Frames Per Second, More Is Better
A
B
C
SE +/- 0.12, N = 3
48.61
48.23
48.51
11
22
33
44
55
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm -lpthread
AOM AV1 3.4
Encoder Mode: Speed 9 Realtime - Input: Bosphorus 4K
Frames Per Second, More Is Better
A
B
C
SE +/- 0.59, N = 3
50.20
47.40
50.75
11
22
33
44
55
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm -lpthread
SVT-HEVC 1.5.0
Tuning: 10 - Input: Bosphorus 4K
Frames Per Second, More Is Better
A
B
C
SE +/- 0.01, N = 3
53.25
53.20
53.32
12
24
36
48
60
1. (CC) gcc options: -fPIE -fPIC -O3 -O2 -pie -rdynamic -lpthread -lrt

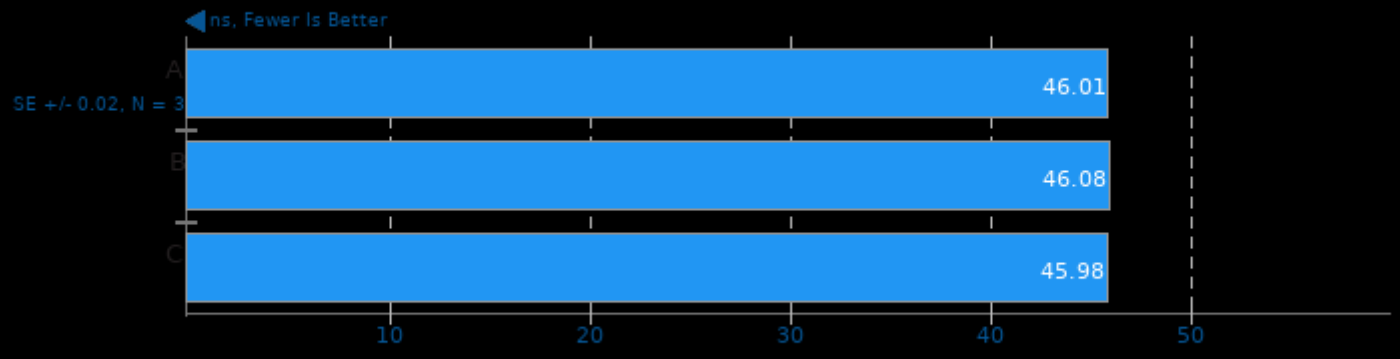

Etcpak 1.0
Benchmark: Multi-Threaded - Configuration: ETC2
Mpx/s, More Is Better
A
B
C
SE +/- 0.41, N = 3
1534.81
1547.93
1536.76
300
600
900
1200
1500
1. (CXX) g++ options: -O3 -march=native -std=c++11 -lpthread
WebP2 Image Encode 20220422
Encode Settings: Quality 100, Compression Effort 5
Seconds, Fewer Is Better
A
B
C
SE +/- 0.010, N = 3
9.274
9.288
9.202
3
6
9
12
15
1. (CXX) g++ options: -msse4.2 -fno-rtti -O3 -ldl -lpthread
x264 2022-02-22
Video Input: Bosphorus 1080p
Frames Per Second, More Is Better
A
B
C
SE +/- 0.47, N = 3
79.64
78.36
78.30
20
40
60
80
100
1. (CC) gcc options: -ldl -lavformat -lavcodec -lavutil -lswscale -m64 -lm -lpthread -O3 -flto


WebP2 Image Encode 20220422
Encode Settings: Default
Seconds, Fewer Is Better
SE +/- 0.045, N = 3
A
B
C
5.411
5.443
5.454
1.2272
2.4544
3.6816
4.9088
6.136
1. (CXX) g++ options: -msse4.2 -fno-rtti -O3 -ldl -lpthread
AOM AV1 3.4
Encoder Mode: Speed 8 Realtime - Input: Bosphorus 1080p
Frames Per Second, More Is Better
SE +/- 0.05, N = 3
A
B
C
113.90
113.69
114.39
30
60
90
120
150
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm -lpthread
AOM AV1 3.4
Encoder Mode: Speed 9 Realtime - Input: Bosphorus 1080p
Frames Per Second, More Is Better
SE +/- 0.04, N = 3
A
B
C
122.64
123.35
125.04
30
60
90
120
150
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm -lpthread


Nettle 3.8
Test: aes256
Mbyte/s, More Is Better
SE +/- 1.24, N = 3
A
MIN: 5022.83 / MAX: 12326.24
7449.52
B
MIN: 5029.59 / MAX: 12320.54
7447.62
C
MIN: 5024.27 / MAX: 12306.39
7442.00
1600
3200
4800
6400
8000
1. (CC) gcc options: -O2 -ggdb3 -lhogweed -lnettle -lgmp -lm -lcrypto
Glibc Benchmarks
Benchmark: exp
ns, Fewer Is Better
SE +/- 0.07, N = 3
A
18.61
B
18.71
C
19.74
5
10
15
20
25
1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s
Glibc Benchmarks
Benchmark: sin
ns, Fewer Is Better
SE +/- 0.07, N = 3
A
69.51
B
69.93
C
69.63
16
32
48
64
80
1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s

Glibc Benchmarks

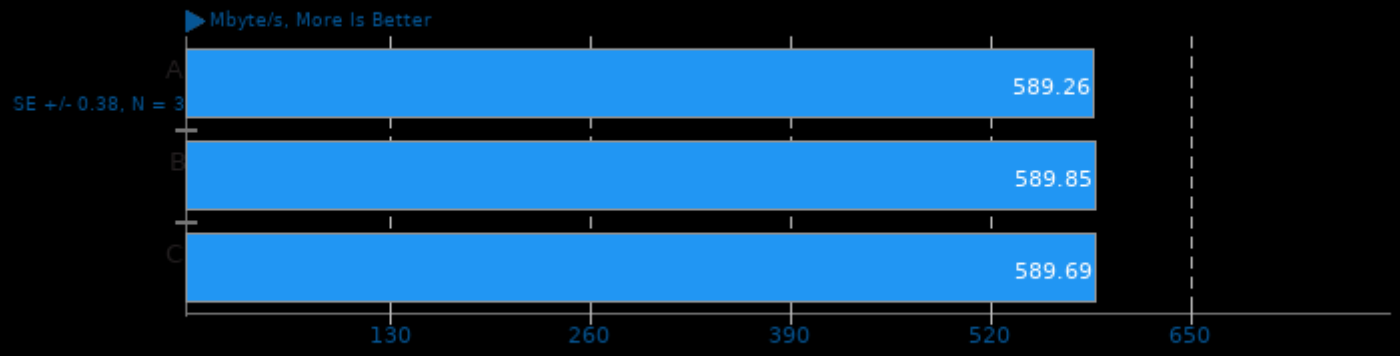
Benchmark: sincos



1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s

Nettle 3.8

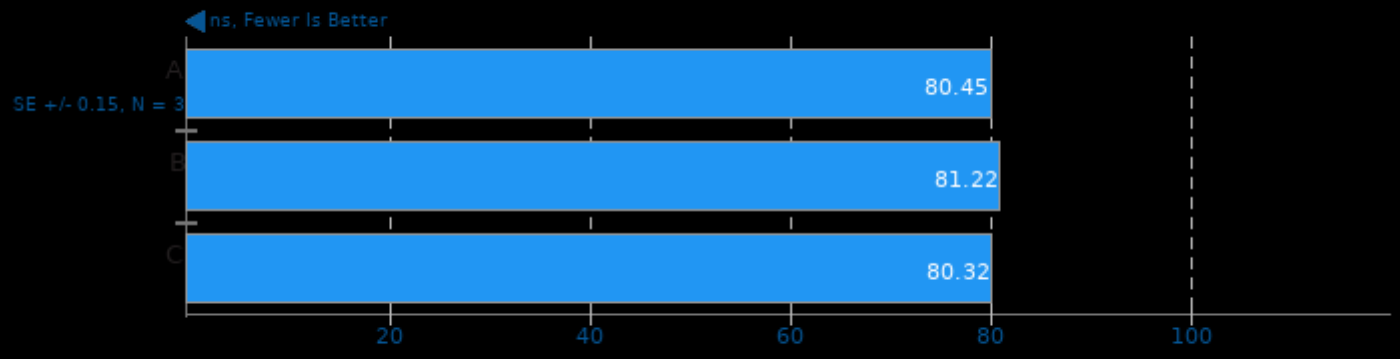
Test: sha512



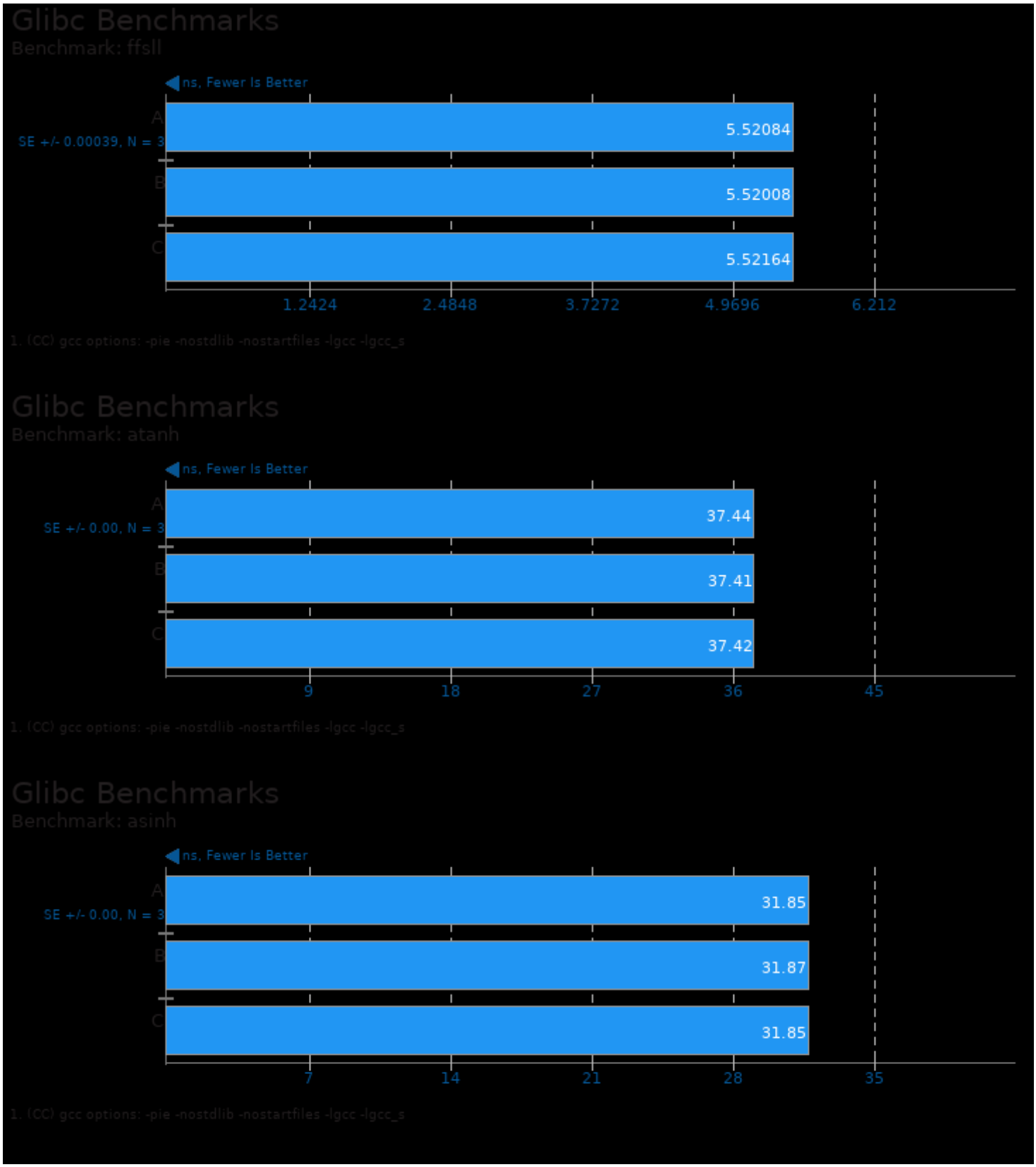
1. (CC) gcc options: -O2 -ggdb3 -lhogweed -lnettle -lgmp -lm -lcrypto

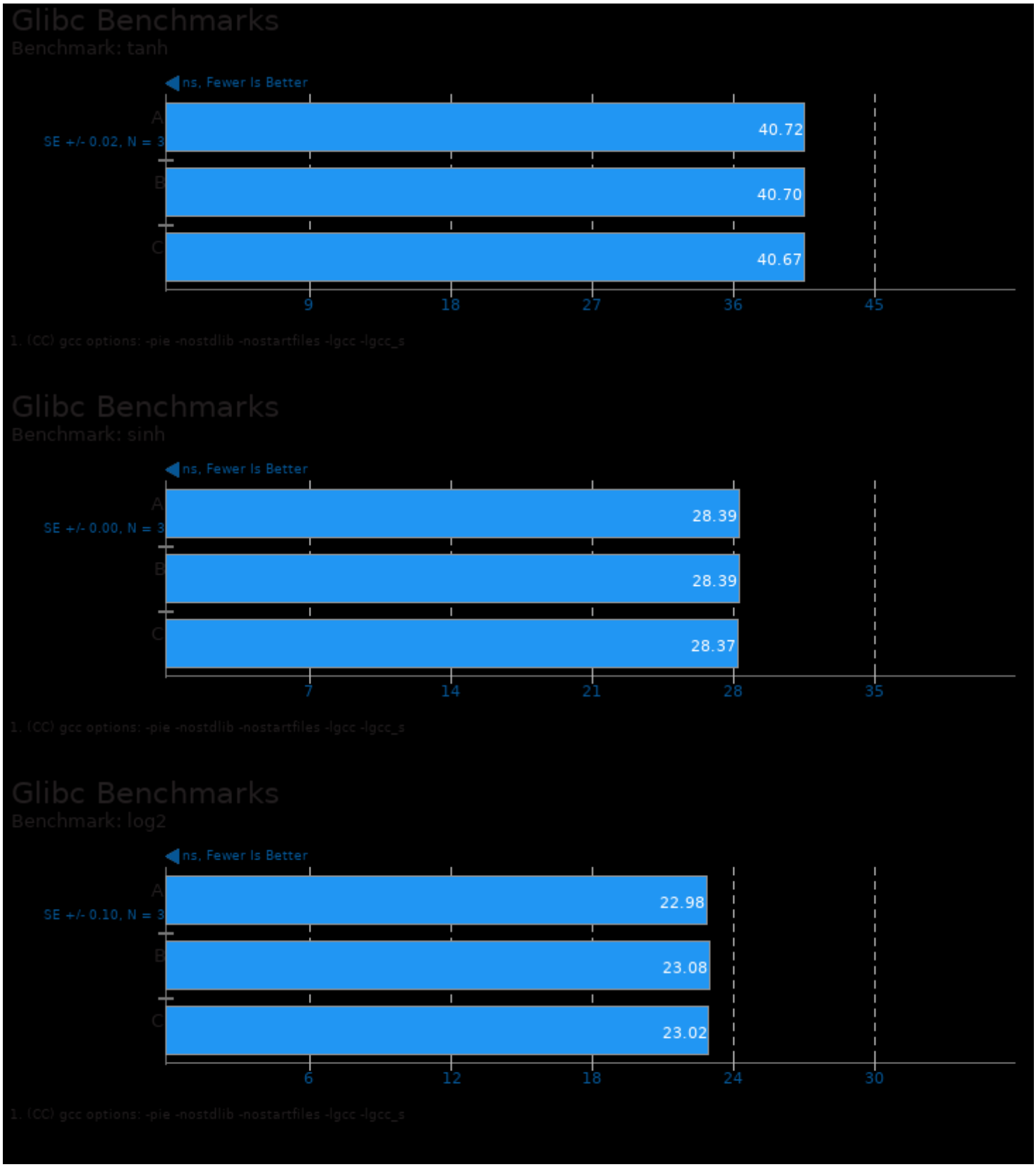
Glibc Benchmarks

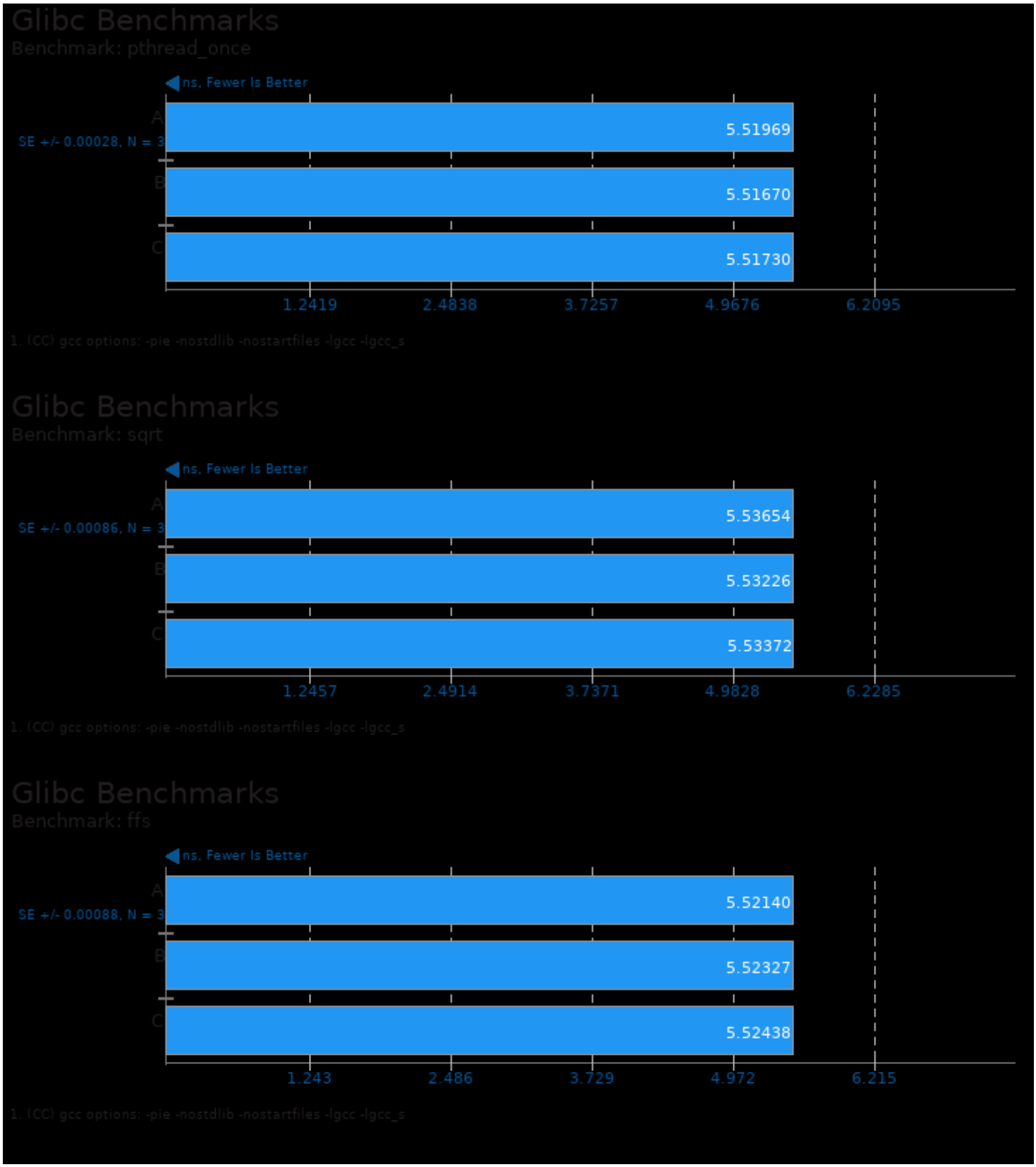
Benchmark: cos



1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s

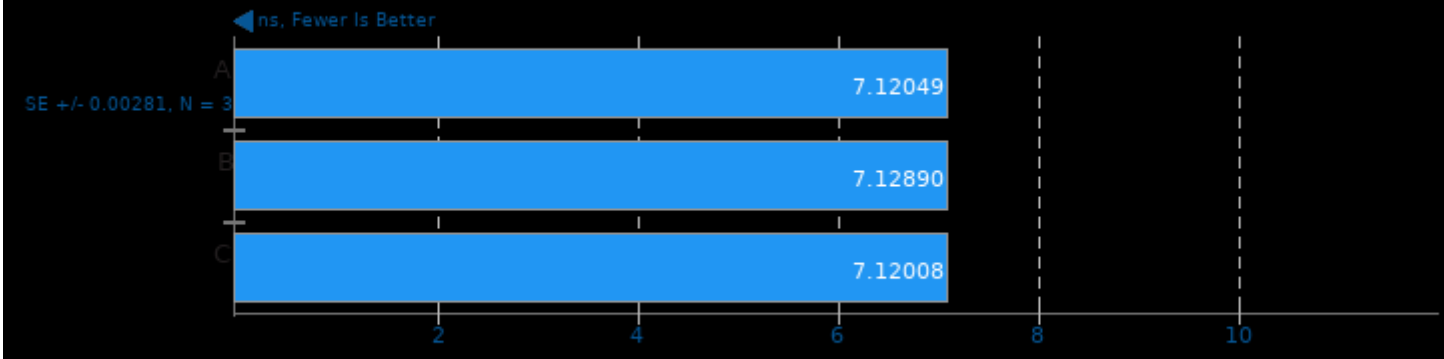

Glibc Benchmarks
Benchmark: ffsll
ns, Fewer Is Better
SE +/- 0.00039, N = 3
A
B
C
5.52084
5.52008
5.52164
1.2424
2.4848
3.7272
4.9696
6.212
1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s
Glibc Benchmarks
Benchmark: atanh
ns, Fewer Is Better
SE +/- 0.00, N = 3
A
B
C
37.44
37.41
37.42
9
18
27
36
45
1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s
Glibc Benchmarks
Benchmark: asinh
ns, Fewer Is Better
SE +/- 0.00, N = 3
A
B
C
31.85
31.87
31.85
7
14
21
28
35
1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s


Glibc Benchmarks
Benchmark: tanh
ns, Fewer Is Better
SE +/- 0.02, N = 3
A
B
C
40.72
40.70
40.67
9
18
27
36
45
1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s
Glibc Benchmarks
Benchmark: sinh
ns, Fewer Is Better
SE +/- 0.00, N = 3
A
B
C
28.39
28.39
28.37
7
14
21
28
35
1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s
Glibc Benchmarks
Benchmark: log2
ns, Fewer Is Better
SE +/- 0.10, N = 3
A
B
C
22.98
23.08
23.02
6
12
18
24
30
1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s


Glibc Benchmarks
Benchmark: pthread_once
ns, Fewer Is Better
SE +/- 0.00028, N = 3
A
B
C
5.51969
5.51670
5.51730
1.2419
2.4838
3.7257
4.9676
6.2095
1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s
Glibc Benchmarks
Benchmark: sqrt
ns, Fewer Is Better
SE +/- 0.00086, N = 3
A
B
C
5.53654
5.53226
5.53372
1.2457
2.4914
3.7371
4.9828
6.2285
1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s
Glibc Benchmarks
Benchmark: ffs
ns, Fewer Is Better
SE +/- 0.00088, N = 3
A
B
C
5.52140
5.52327
5.52438
1.243
2.486
3.729
4.972
6.215
1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s

Glibc Benchmarks

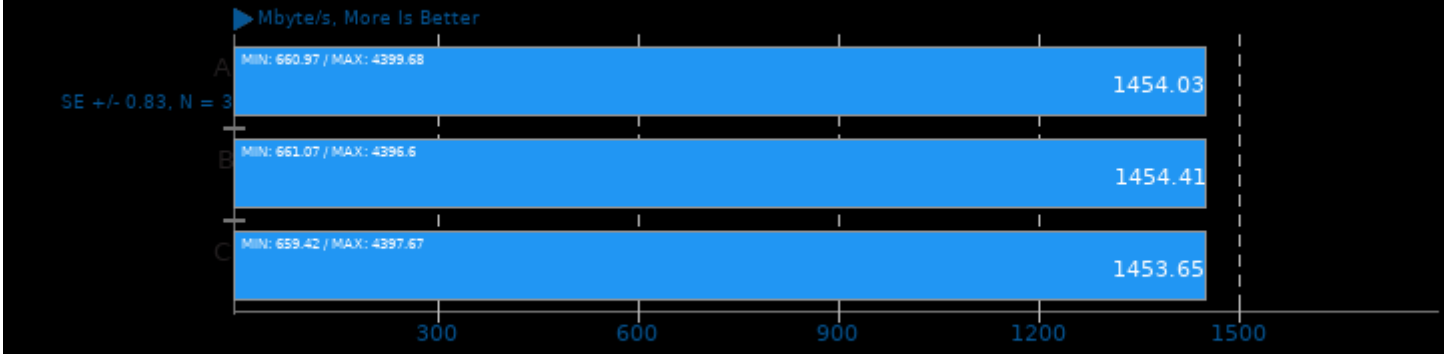
Benchmark: modf



1. (CC) gcc options: -pie -nostdlib -nostartfiles -lgcc -lgcc_s

Nettle 3.8

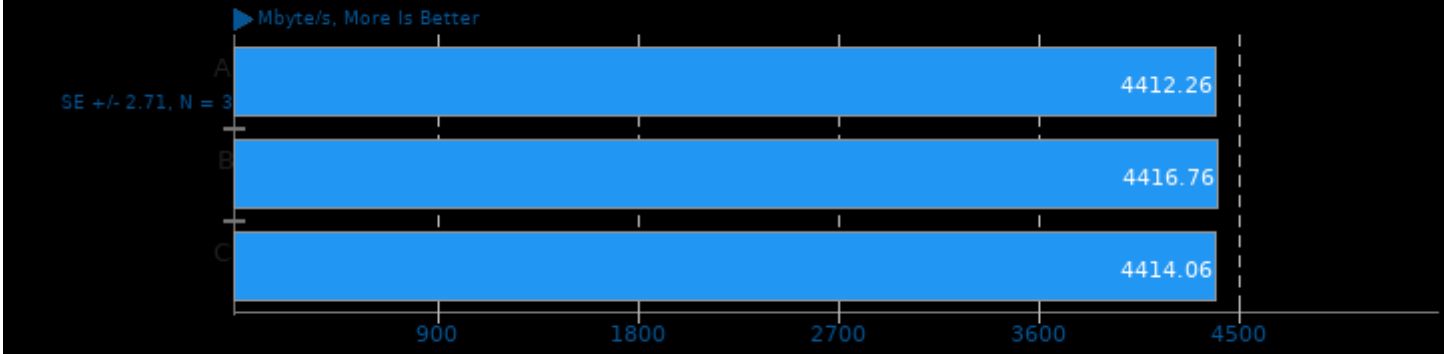
Test: chacha



1. (CC) gcc options: -O2 -ggdb3 -lhogweed -lnettle -lgmp -lm -lcrypto

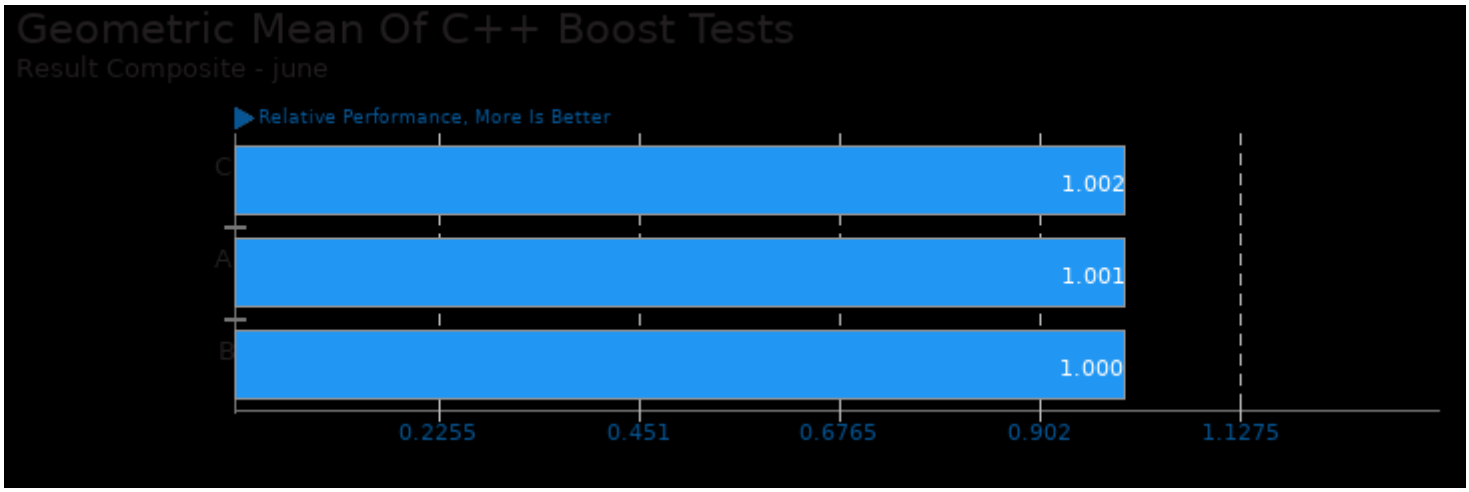
Nettle 3.8

Test: poly1305-aes

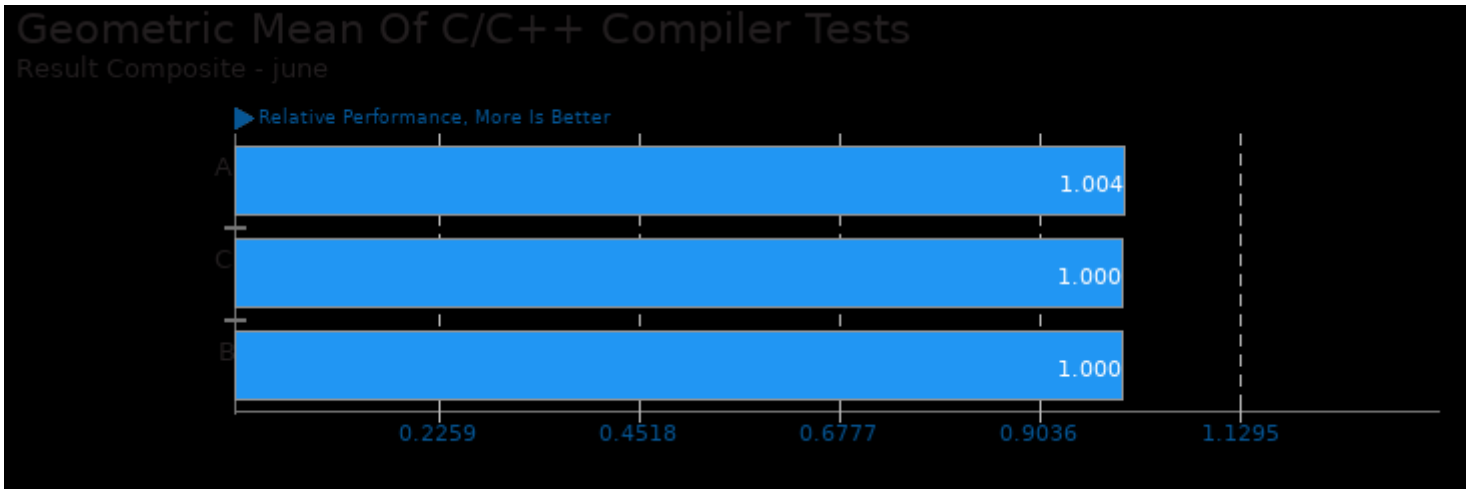


1. (CC) gcc options: -O2 -ggdb3 -lhogweed -lnettle -lgmp -lm -lcrypto

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



Geometric mean based upon tests: pts/openfoam and pts/chia-vdf



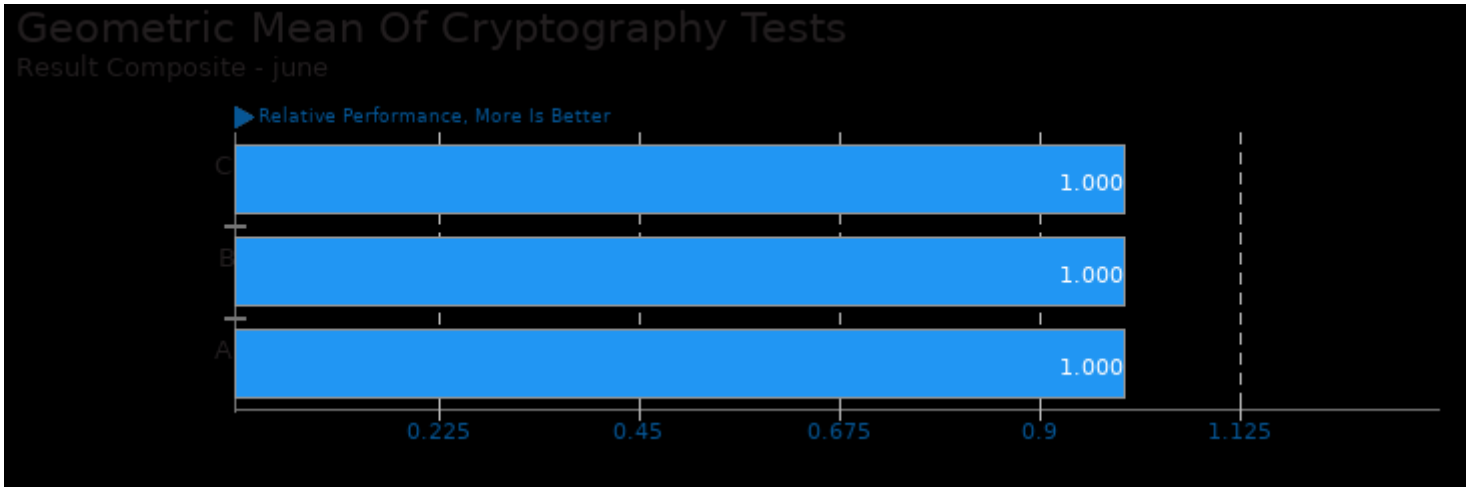
Geometric mean based upon tests: pts/stockfish, pts/compress-7zip, pts/x264, pts/aom-av1, pts/svt-vp9, pts/gromacs and pts/nettle



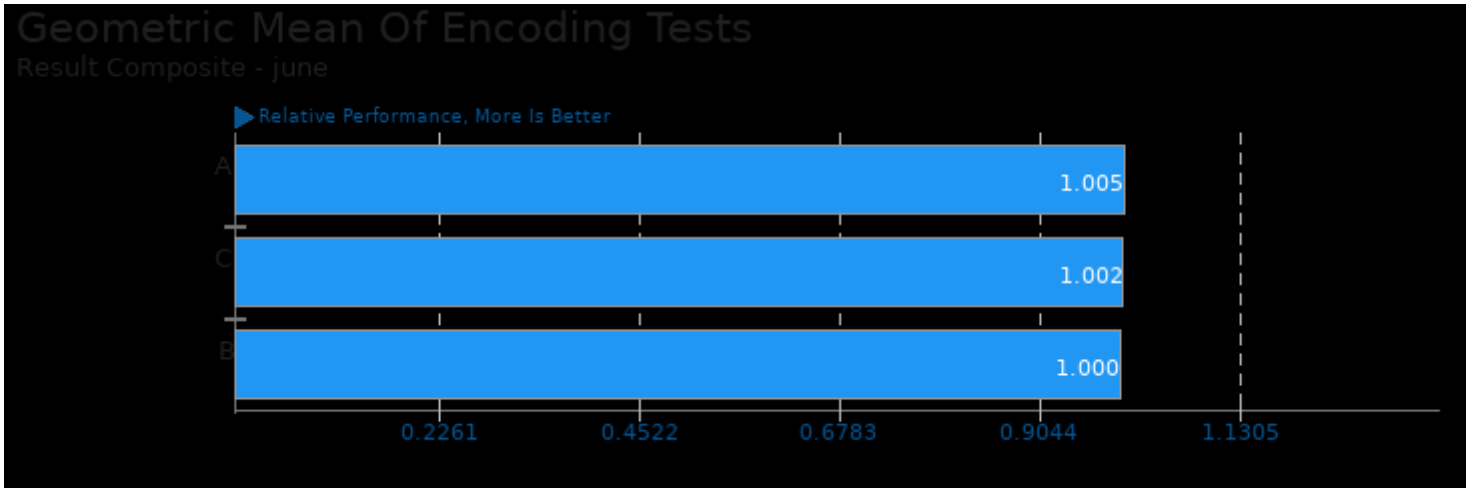
Geometric mean based upon tests: pts/build-linux-kernel, pts/compress-7zip, pts/svt-hevc, pts/svt-vp9, pts/x264, pts/glibc-bench, pts/stockfish, pts/stress-ng, pts/v-ray, pts/blender and pts/renaissance



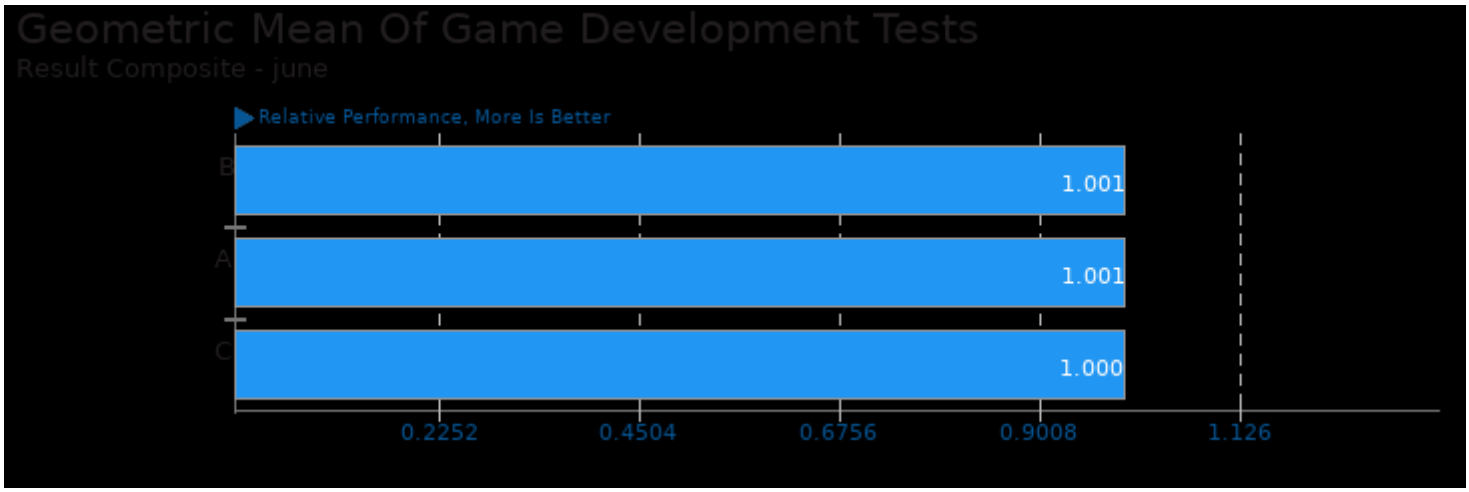
Geometric mean based upon tests: pts/ospray, pts/ospray-studio, pts/blender, pts/v-ray, pts/svt-vp9, pts/svt-hevc, pts/x264, pts/aom-av1, pts/webp2 and pts/etcpak



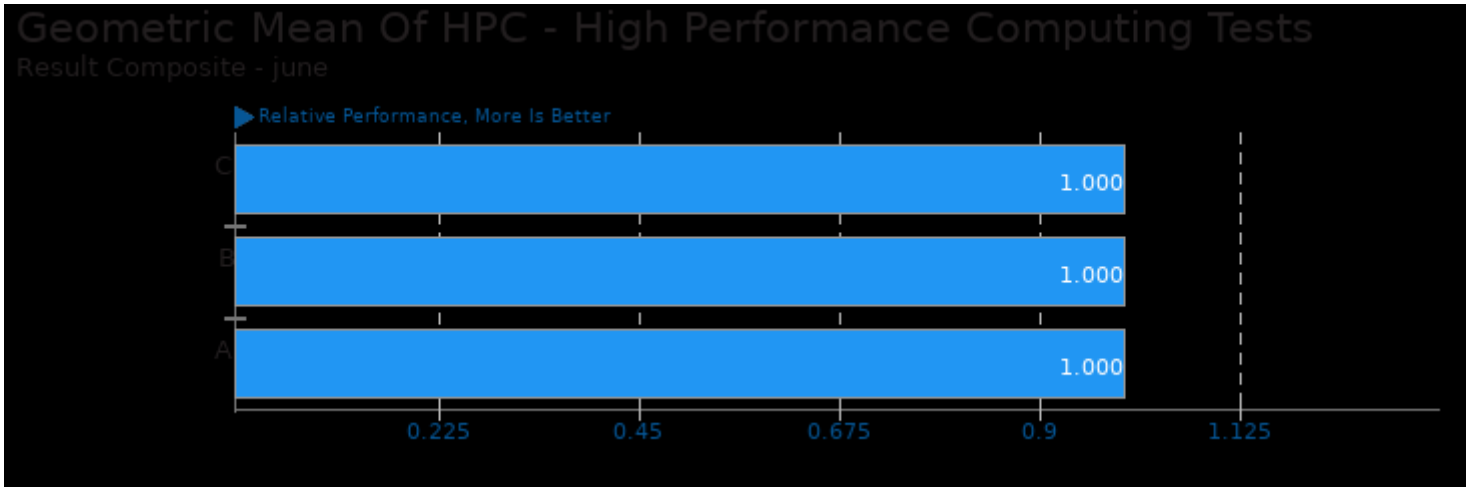
Geometric mean based upon tests: pts/nettle and pts/chia-vdf



Geometric mean based upon tests: pts/svt-vp9, pts/svt-hevc, pts/x264 and pts/aom-av1



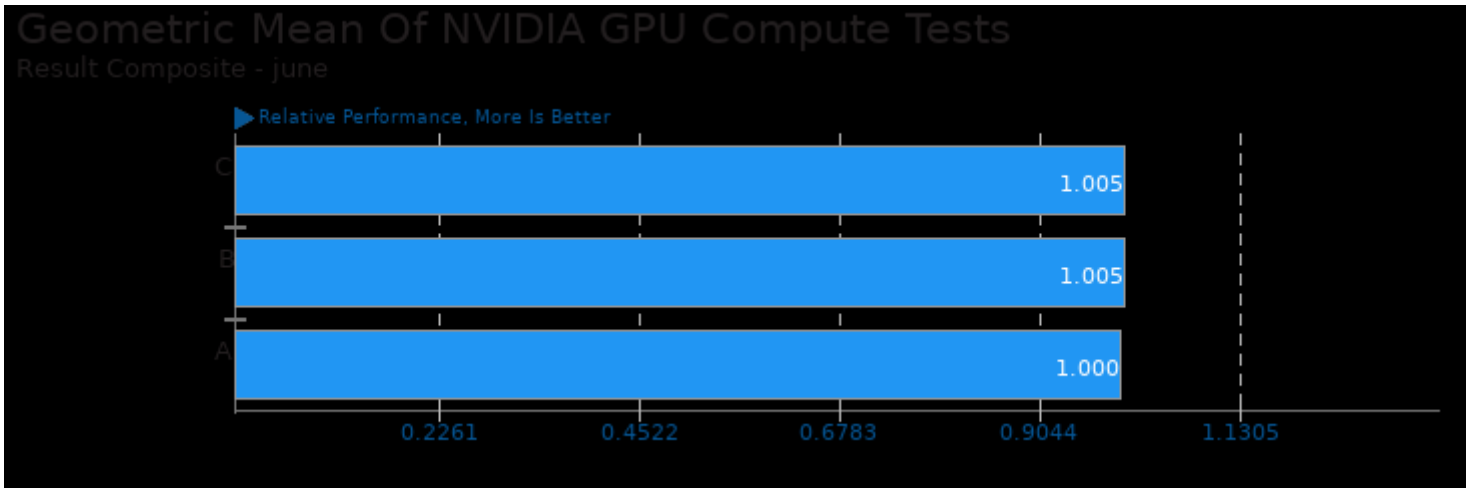
Geometric mean based upon tests: pts/etcpak and pts/blender



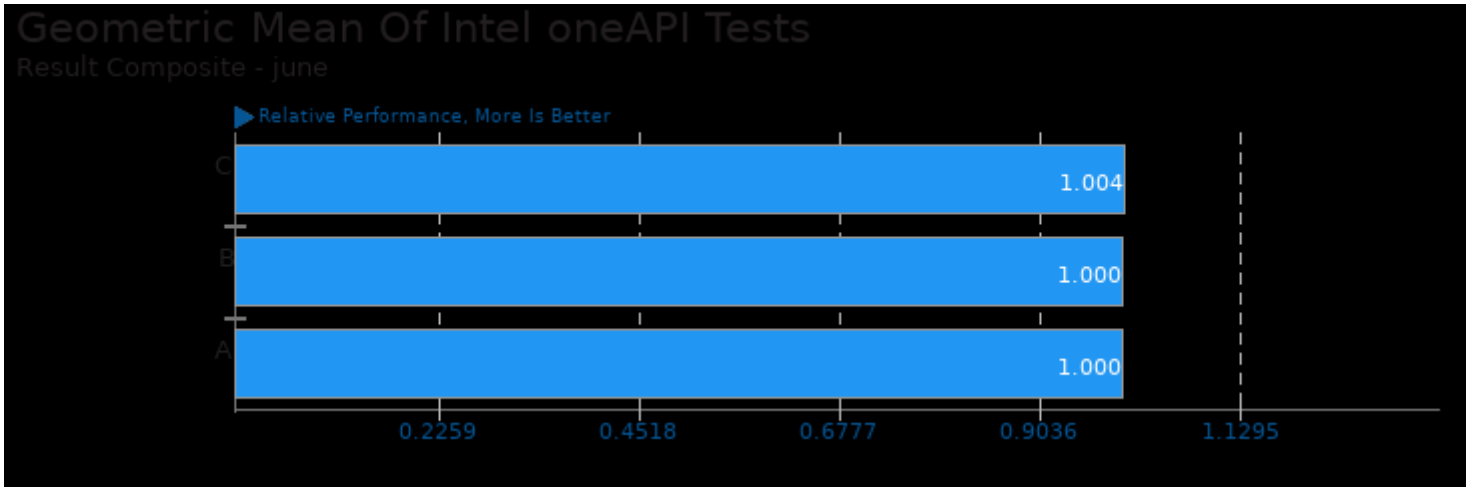
Geometric mean based upon tests: pts/gromacs, pts/openfoam and pts/tensorflow-lite



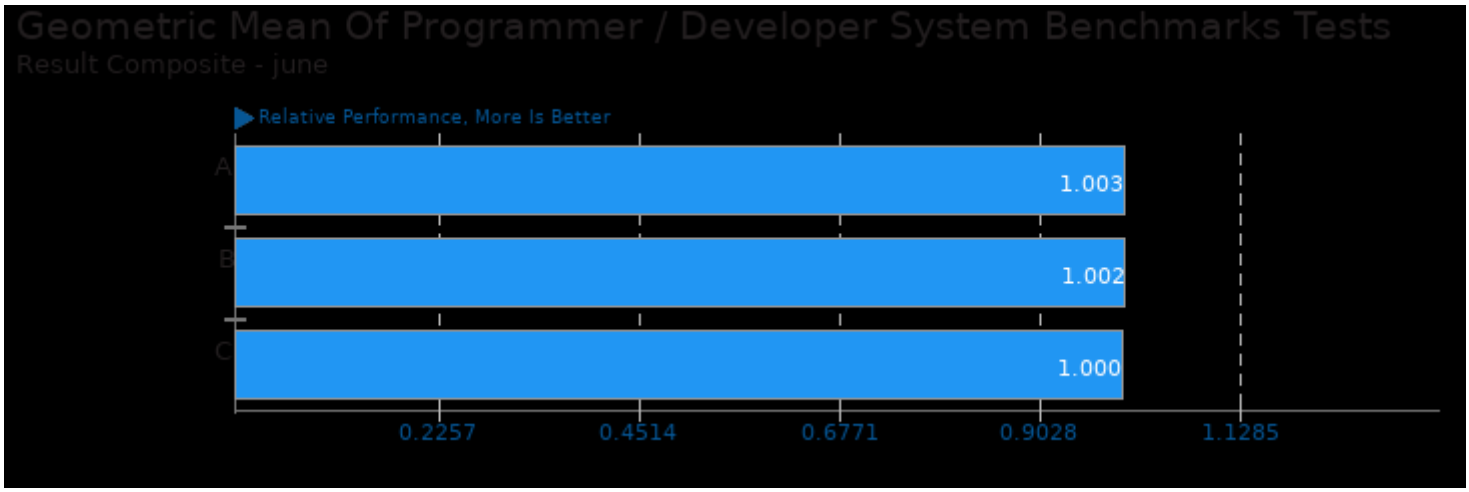
Geometric mean based upon tests: pts/blender, pts/ospray, pts/ospray-studio, pts/stockfish, pts/svt-vp9, pts/svt-hevc, pts/x264, pts/aom-av1, pts/gromacs, pts/compress-7zip, pts/build-linux-kernel and pts/v-ray



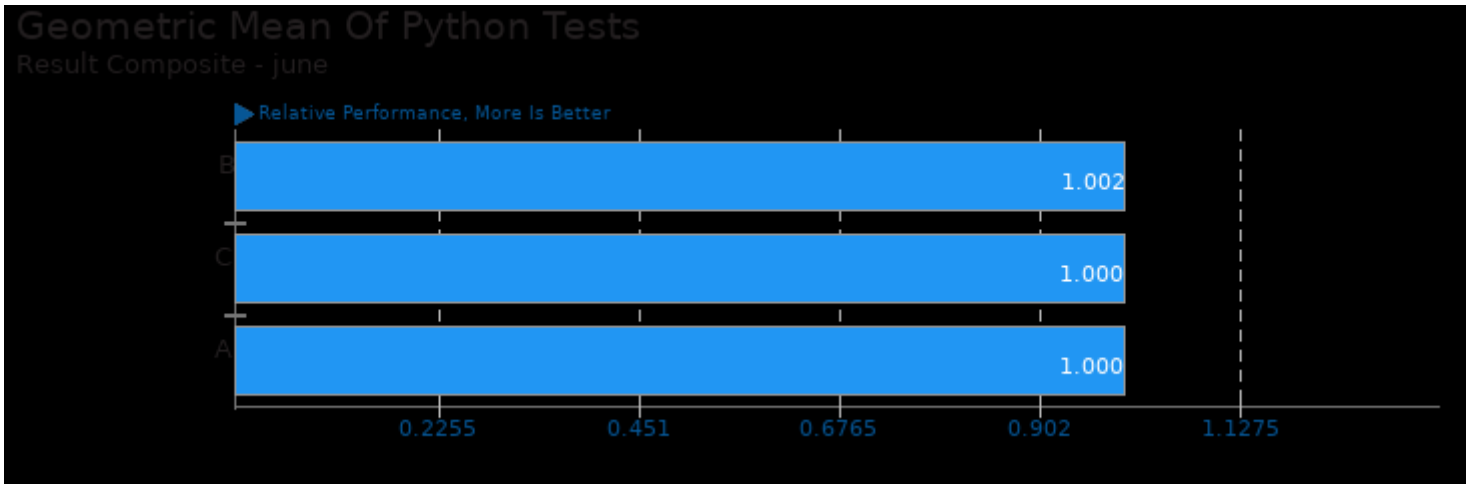
Geometric mean based upon tests: pts/gromacs, pts/v-ray and pts/blender



Geometric mean based upon tests: pts/ospray and pts/ospray-studio



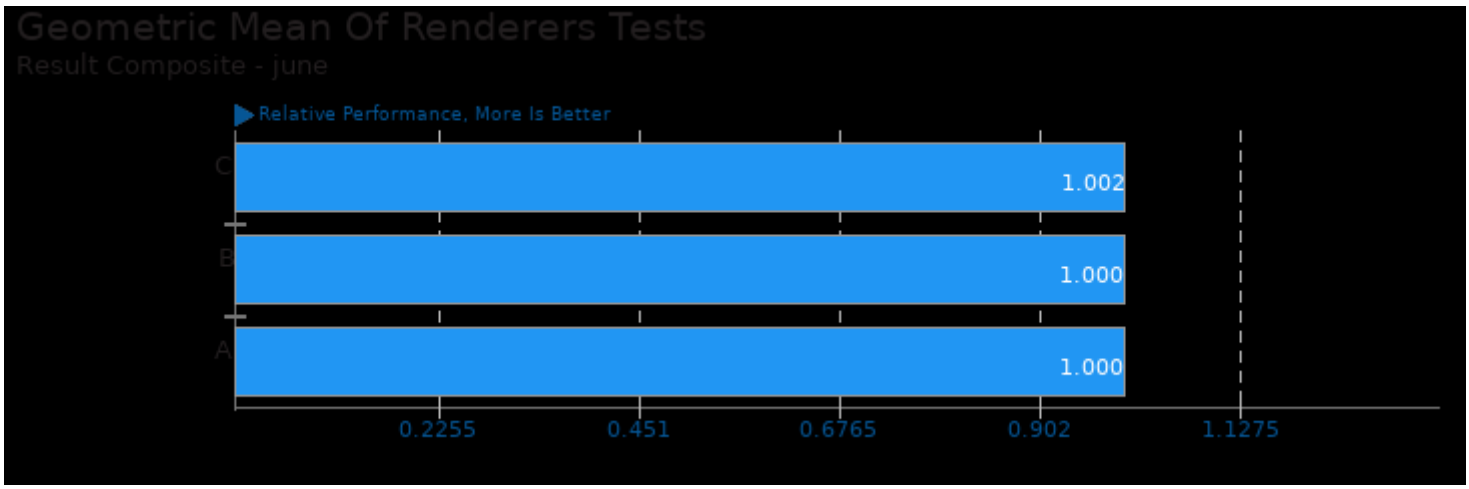
Geometric mean based upon tests: pts/simdjson and pts/build-linux-kernel



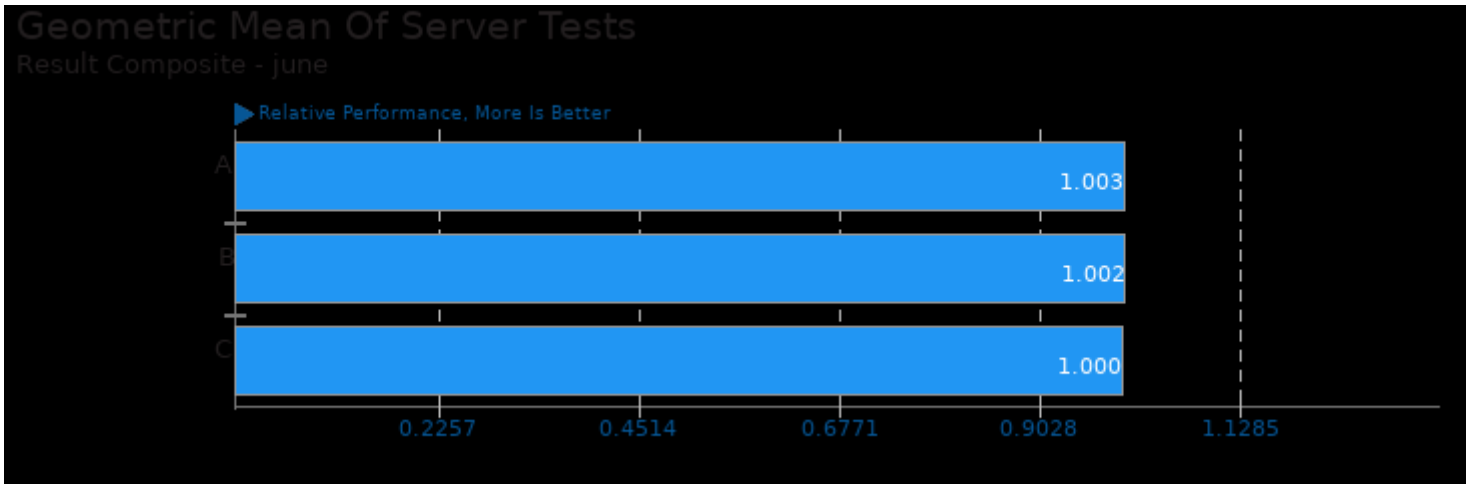
Geometric mean based upon tests: pts/paraview and pts/chia-vdf



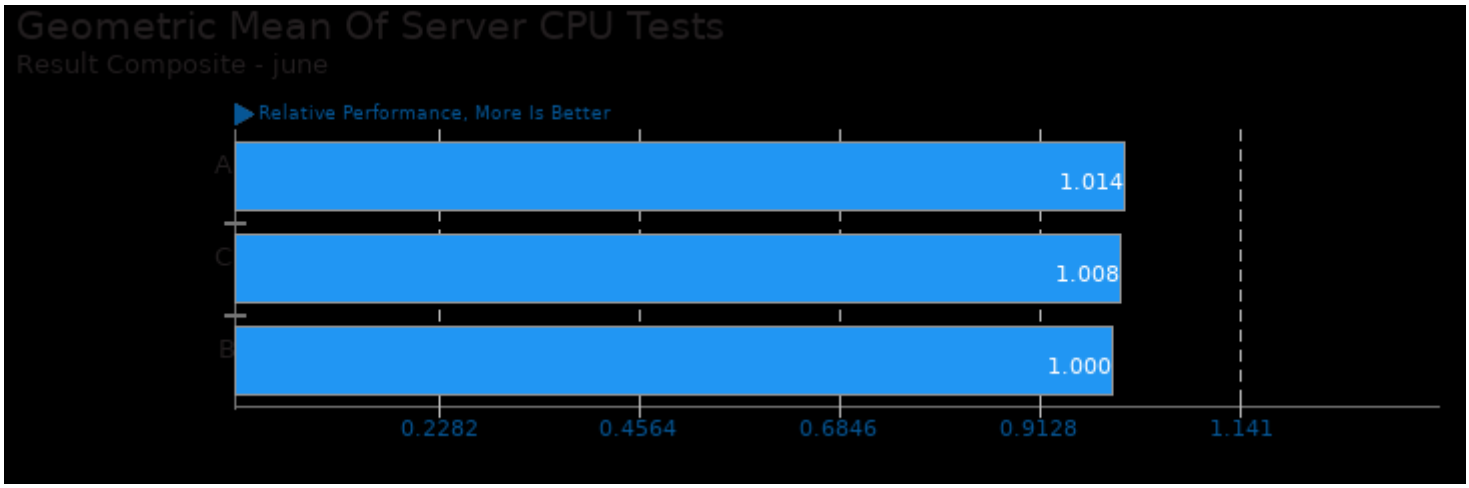
Geometric mean based upon tests: pts/ospray and pts/ospray-studio



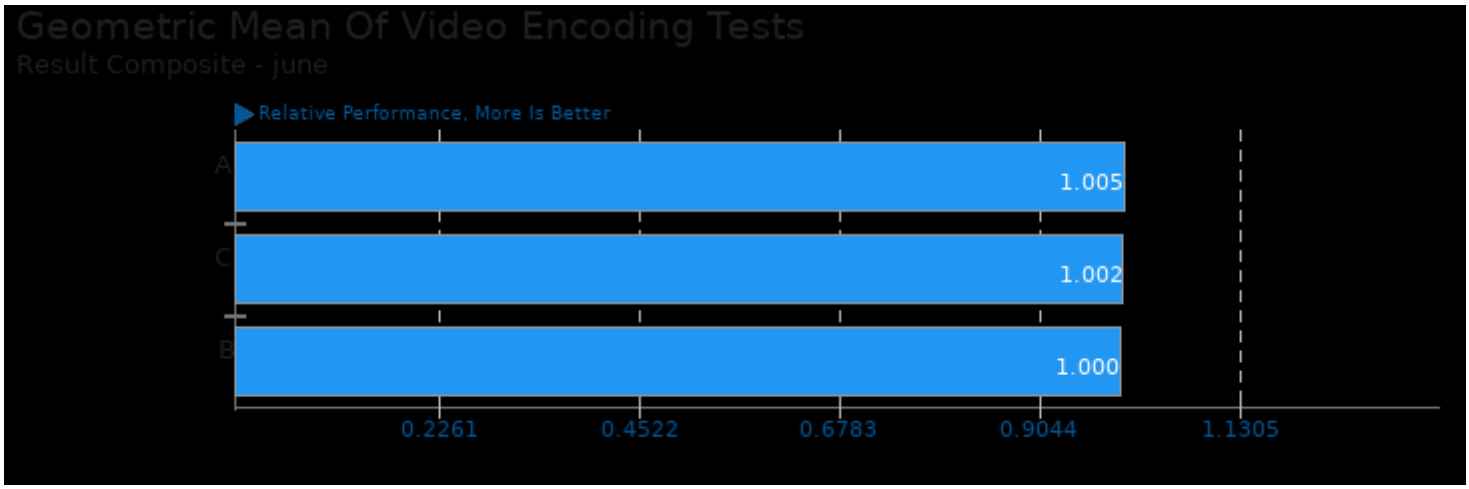
Geometric mean based upon tests: pts/ospray, pts/ospray-studio, pts/blender and pts/v-ray



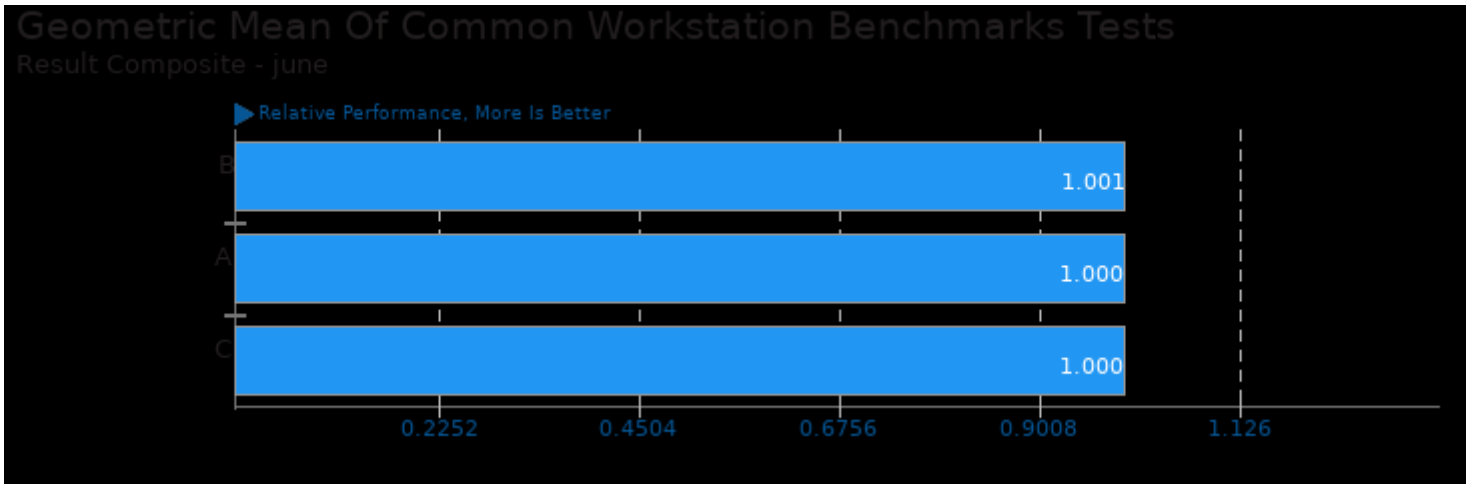
Geometric mean based upon tests: pts/simdjson and pts/clickhouse



Geometric mean based upon tests: pts/renaissance, pts/svt-hevc, pts/svt-vp9, pts/x264, pts/compress-7zip, pts/stockfish, pts/build-linux-kernel, pts/glibc-bench, pts/stress-ng and pts/blender



Geometric mean based upon tests: pts/svt-vp9, pts/svt-hevc, pts/x264 and pts/aom-av1



Geometric mean based upon tests: pts/blender and pts/paraview

This file was automatically generated via the Phoronix Test Suite benchmarking software on Thursday, 28 March 2024 04:06.