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POWER9 44c 176t 2021

POWER9 testing with a PowerNV T2P9D01 REV 1.01 and ASPEED on Ubuntu 20.10 via the Phoronix Test Suite.

Automated Executive Summary

Run 1 had the most wins, coming in first place for 45% of the tests.

Based on the geometric mean of all complete results, the fastest (Run 2) was 5.342x the speed of the slowest (Run 4). Run 3 was 1x the speed of Run 2, Run 1 was 0.481x the speed of Run 3, Run 4 was 0.389x the speed of Run 1.

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

High Performance Conjugate Gradient at 1.281x

Zstd Compression (Compression Level: 3) at 1.158x

System GZIP Decompression at 1.132x

LAMMPS Molecular Dynamics Simulator (Model: 20k Atoms) at 1.1x

Redis (Test: SET) at 1.1x

GraphicsMagick (Operation: Noise-Gaussian) at 1.063x

System ZLIB Decompression at 1.06x

Stockfish (Total Time) at 1.058x

Milpack Benchmark (Benchmark: scikit_qda) at 1.049x

x265 (Video Input: Bosphorus 1080p) at 1.047x.

Test Systems:

Run 1

Run 2

Run 3

Run 4

Processor: POWER9 @ 3.80GHz (44 Cores / 176 Threads), Motherboard: PowerNV T2P9D01 REV 1.01, Memory: 64GB, Disk: 500GB Samsung SSD 860, Graphics: ASPEED, Monitor: VE228, Network: 2 x Broadcom NetXtreme BCM5719 PCIe

OS: Ubuntu 20.10, Kernel: 5.9.10-050910-generic (ppc64le), Display Server: X Server, Compiler: GCC 10.2.0, File-System: ext4, Screen Resolution: 1920x1080

```
Compiler Notes: --build=powerpc64le-linux-gnu --disable-multilib --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie
--enable-gnu-unique-object --enable-languages=c,ada,c++,go,d,fortran,objc,obj-c++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug
--enable-libstdcxx-time=yes --enable-multarch --enable-nls --enable-objc-gc=auto
--enable-offload-targets=nvptx-none=/build/gcc-10-xyKMT0/gcc-10-10.2.0/debian/tmp-nvptx/usr --enable-plugin --enable-secureplt --enable-shared
--enable-targets=powerpc64le-linux --enable-threads=posix --host=powerpc64le-linux-gnu --program-prefix=powerpc64le-linux-gnu- --target=powerpc64le-linux-gnu
--with-cpu=power8 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-long-double-128 --with-target-system-zlib=auto --without-cuda-driver -v
Processor Notes: SMT (threads per core): 4
Python Notes: Python 3.8.6
```

Security Notes: itlb_multihit: Not affected + l1tf: Mitigation of RFI Flush L1D private per thread + mds: Not affected + meltdown: Mitigation of RFI Flush L1D private per thread + spec_store_bypass: Mitigation of Kernel entry/exit barrier (eieio) + spectre_v1: Mitigation of __user pointer sanitization ori31 speculation barrier enabled + spectre_v2: Mitigation of Indirect branch cache disabled Software link stack flush + srbds: Not affected + tsx_async_abort: Not affected

	Run 1	Run 2	Run 3	Run 4
7-Zip Compression - C.S.T (MIPS)	168456	170626	170105	
Normalized	98.73%	100%	99.69%	
Standard Deviation	3.2%			
Algebraic Multi-Grid Benchmark (Figure Of Merit)	3472681	3486278	3504642	
Normalized	99.09%	99.48%	100%	
Standard Deviation	0.7%			
AOBench - 2048 x 2048 - Total Time (sec)	63.882	62.834	62.594	
Normalized	97.98%	99.62%	100%	
Standard Deviation	2.4%			
AOM AV1 - Speed 0 Two-Pass (FPS)	0.02	0.02	0.02	
Standard Deviation	0%			
AOM AV1 - Speed 4 Two-Pass (FPS)	0.17	0.17	0.17	
Standard Deviation	0%			
AOM AV1 - Speed 6 Realtime (FPS)	2.32	2.33	2.31	
Normalized	99.57%	100%	99.14%	
Standard Deviation	0.2%			
AOM AV1 - Speed 6 Two-Pass (FPS)	0.25	0.25	0.25	
Standard Deviation	0%			
AOM AV1 - Speed 8 Realtime (FPS)	5.10	5.1	5.1	

	Standard Deviation	0.1%
Basis Universal - ETC1S (sec)	78.746	79.289
Normalized	100%	99.32%
Standard Deviation	0.4%	99.7%
Basis Universal - UASTC Level 0 (sec)	11.269	11.259
Normalized	99.7%	99.79%
Standard Deviation	0.1%	100%
Basis Universal - UASTC Level 2 (sec)	18.539	18.438
Normalized	99.46%	100%
Standard Deviation	0.8%	99.44%
Basis Universal - UASTC Level 3 (sec)	26.553	26.553
Normalized	100%	100%
Standard Deviation	0.6%	99.94%
Basis Universal - U.L.2.R.P.P (sec)	1081	1078
Normalized	99.7%	99.96%
Standard Deviation	0.3%	100%
Blender - BMW27 - CPU-Only (sec)	123.91	125.57
Normalized	98.99%	97.68%
Standard Deviation	0.7%	100%
Blender - Classroom - CPU-Only (sec)	264.29	264.31
Normalized	100%	99.99%
Standard Deviation	0.2%	99.92%
Blender - Fishy Cat - CPU-Only (sec)	233.85	229.33
Normalized	96.64%	98.54%
Standard Deviation	0.9%	100%
Blender - Barbershop - CPU-Only	424.42	426.94
Normalized	100%	99.41%
Standard Deviation	0.2%	99.34%
Blender - Pabellon Barcelona - CPU-Only (sec)	356.47	358.1
Normalized	99.89%	99.43%
Standard Deviation	0.2%	100%
Build2 - Time To Compile (sec)	135.397	135.598
Normalized	100%	99.85%
Standard Deviation	0.4%	99.06%
BYTE Unix Benchmark - Dhrystone 2 (LPS)	27089795	27261722
Normalized	99.32%	99.95%
Standard Deviation	0.6%	100%
C-Blosc - blosclz (MB/s)	2983	2969
Normalized	98.97%	98.51%
Standard Deviation	0.2%	98.9%
100%		
C-Ray - Total Time - 4.1.R.P.P (sec)	18.531	18.64
Normalized	100%	99.42%
Standard Deviation	0.2%	98.93%
Caffe - AlexNet - CPU - 100 (ms)	70400	
Standard Deviation	12.3%	
Caffe - AlexNet - CPU - 200 (ms)	125007	
Standard Deviation	12.2%	
Caffe - AlexNet - CPU - 1000 (ms)	654412	
Standard Deviation	7.4%	
Caffe - GoogleNet - CPU - 100 (ms)	186059	
Standard Deviation	12.6%	
Caffe - GoogleNet - CPU - 200 (ms)	364395	
Standard Deviation	10.9%	

Caffe - GoogleNet - CPU - 1000 (ms)	1968783		
Standard Deviation	6.4%		
CLOMP - Static OMP Speedup (Speedup)	5.8	6	6
Normalized	96.67%	100%	100%
Standard Deviation	1.7%		
Cryptsetup - PBKDF2-sha512 (Iterations/sec)	1091132	1091130	1092266
Normalized	99.9%	99.9%	100%
Standard Deviation	0.2%		
Cryptsetup - PBKDF2-whirlpool (Iterations/sec)	343870	344020	344020
Normalized	99.96%	100%	100%
Standard Deviation	0.1%		
Cryptsetup - A.X.2.E (MiB/s)	2473	2494	2492
Normalized	99.14%	100%	99.92%
Standard Deviation	1.5%		
Cryptsetup - A.X.2.D (MiB/s)	2496	2496	2494
Normalized	99.96%	99.95%	99.89%
Standard Deviation	0.1%		
Cryptsetup - S.X.2.E (MiB/s)	62.2	62.7	62.7
Normalized	99.2%	100%	100%
Standard Deviation	1.5%		
Cryptsetup - S.X.2.D (MiB/s)	75.1	75.1	75.1
Standard Deviation	0%		
Cryptsetup - T.X.2.E (MiB/s)	132.6	133.9	133.8
Normalized	99.03%	100%	99.93%
Standard Deviation	1.7%		
Cryptsetup - T.X.2.D (MiB/s)	133	133	132.9
Normalized	100%	100%	99.92%
Cryptsetup - A.X.5.E (MiB/s)	2098	2100	2098
Normalized	99.9%	100%	99.88%
Standard Deviation	0%		
Cryptsetup - A.X.5.D (MiB/s)	2100	2101	2099
Normalized	99.96%	99.98%	99.92%
Standard Deviation	0.1%		
Cryptsetup - S.X.5.E (MiB/s)	62.7		
Cryptsetup - T.X.5.E (MiB/s)	133.9		
Cryptsetup - T.X.5.D (MiB/s)	132.7	132.9	132.9
Normalized	99.85%	100%	100%
Standard Deviation	0.3%		
Cryptsetup - PBKDF2-sha512 (MiB/s)		1092266	1092266
Normalized	99.9%	99.9%	99.9%
Cryptsetup - PBKDF2-whirlpool		344020	344020
Normalized	100%	100%	100%
dav1d - Chimera 1080p (FPS)	173.02	172.06	174.53
Normalized	99.13%	98.58%	100%
Standard Deviation	0.5%		
dav1d - Summer Nature 4K (FPS)	89.15	89.47	89.69
Normalized	99.4%	99.75%	100%
Standard Deviation	0.3%		
dav1d - S.N.1 (FPS)	261.55	262.22	253.46
Normalized	99.74%	100%	96.66%
Standard Deviation	2.3%		

dav1d - C.1.1.b (FPS)	109.32	109.23	108.70
Normalized	100%	99.92%	99.43%
Standard Deviation	1.7%		
ddraw - R.T.P.I.C (sec)	113.306	113.308	113.589
Normalized	100%	100%	99.75%
Standard Deviation	0.1%		
Dolfyn - C.F.D (sec)	38.066	38.09	38.149
Normalized	100%	99.94%	99.78%
Standard Deviation	0.2%		
eSpeak-NG Speech Engine - T.T.S.S (sec)	54.410	54.916	54.791
Normalized	100%	99.08%	99.3%
Standard Deviation	0.8%		
FLAC Audio Encoding - WAV To FLAC (sec)	40.182	40.182	40.275
Normalized	100%	100%	99.77%
Standard Deviation	0.1%		
G'MIC - 2.F.P.1.T (sec)	2960	2943	2976
Normalized	99.43%	100%	98.9%
Standard Deviation	0.1%		
G'MIC - P.I.O.A.3.V.1.T (sec)	45.118	45.13	45.1
Normalized	99.96%	99.93%	100%
Standard Deviation	0.1%		
G'MIC - 3.E.F.I.R.C.1.T (sec)	86.904	87.389	87.162
Normalized	100%	99.45%	99.7%
Standard Deviation	0.2%		
GEGL - Crop (sec)	15.928	16.235	16.25
Normalized	100%	98.11%	98.02%
Standard Deviation	1.3%		
GEGL - Scale (sec)	12.639	12.542	12.518
Normalized	99.04%	99.81%	100%
Standard Deviation	0.1%		
GEGL - Cartoon (sec)	205.815	208.285	207.468
Normalized	100%	98.81%	99.2%
Standard Deviation	0.2%		
GEGL - Reflect (sec)	51.935	52.04	52.106
Normalized	100%	99.8%	99.67%
Standard Deviation	0.1%		
GEGL - Antialias (sec)	70.745	70.982	70.839
Normalized	100%	99.67%	99.87%
Standard Deviation	0.1%		
GEGL - Tile Glass (sec)	59.862	59.867	60.168
Normalized	100%	99.99%	99.49%
Standard Deviation	0.1%		
GEGL - Wavelet Blur (sec)	106.159	106.635	106.696
Normalized	100%	99.55%	99.5%
Standard Deviation	0.3%		
GEGL - Color Enhance (sec)	106.514	106.829	106.807
Normalized	100%	99.71%	99.73%
Standard Deviation	0.1%		
GEGL - Rotate 90 Degrees (sec)	77.412	77.587	77.826
Normalized	100%	99.77%	99.47%
Standard Deviation	0.4%		
GIMP - resize (sec)	20.621	22.238	21.835
Normalized	100%	92.73%	94.44%

Standard Deviation	6.4%		
GIMP - rotate (sec)	28.239	28.265	28.326
Normalized	100%	99.91%	99.69%
Standard Deviation	0.2%		
GIMP - auto-levels (sec)	39.529	39.381	40.538
Normalized	99.63%	100%	97.15%
Standard Deviation	2.1%		
GIMP - unsharp-mask (sec)	51.214	51.903	51.229
Normalized	100%	98.67%	99.97%
Standard Deviation	2.5%		
Git - T.T.C.C.G.C (sec)	92.517	92.174	92.249
Normalized	99.63%	100%	99.92%
Standard Deviation	0.4%		
GNU Octave Benchmark (sec)	8.337	8.496	8.496
Normalized	100%	98.13%	98.13%
Standard Deviation	1.2%		
GraphicsMagick - Swirl	1203	1205	1201
Normalized	99.83%	100%	99.67%
Standard Deviation	0.8%		
GraphicsMagick - Rotate	638	640	633
Normalized	99.69%	100%	98.91%
Standard Deviation	0.8%		
GraphicsMagick - Sharpen	417	417	414
(Iterations/min)			
Normalized	100%	100%	99.28%
Standard Deviation	0.2%		
GraphicsMagick - Enhanced	534	534	535
(Iterations/min)			
Normalized	99.81%	99.81%	100%
Standard Deviation	0.5%		
GraphicsMagick - Resizing	1821	1818	1820
(Iterations/min)			
Normalized	100%	99.84%	99.95%
GraphicsMagick - Noise-Gaussian	414	421	396
(Iterations/min)			
Normalized	98.34%	100%	94.06%
Standard Deviation	2.8%		
GraphicsMagick - HWB Color Space	1423	1479	1489
(Iterations/min)			
Normalized	95.57%	99.33%	100%
Standard Deviation	8.9%		
Gzip Compression - L.S.T.A.T.t.g (sec)	49.929	50.469	50.232
Normalized	100%	98.93%	99.4%
Standard Deviation	0.7%		
High Performance Conjugate Gradient	15.0525	19.2851	19.2758
(GFLOP/s)			19.2364
Normalized	78.05%	100%	99.95%
Standard Deviation	2.9%		99.75%
Hugin - P.P.A.S.T (sec)	104.452	107.327	108.532
Normalized	100%	97.32%	96.24%
Standard Deviation	2.7%		
Kvazaar - Bosphorus 4K - Slow (FPS)	1.89	1.89	1.89
Standard Deviation	0.3%		
Kvazaar - Bosphorus 4K - Medium	1.87	1.87	1.87
(FPS)			

	Standard Deviation	0.5%
Kvazaar - Bosphorus 1080p - Slow	7.05	6.97
(FPS)		
Normalized	100%	98.87%
Standard Deviation	0.8%	99.86%
Kvazaar - Bosphorus 1080p - Medium	7.07	7.03
(FPS)		
Normalized	100%	99.43%
Standard Deviation	0.4%	99.72%
Kvazaar - Bosphorus 4K - Very Fast	5.65	5.66
(FPS)		
Normalized	99.82%	100%
Standard Deviation	0.4%	100%
Kvazaar - Bosphorus 4K - Ultra Fast	14.04	14.04
(FPS)		
Normalized	100%	100%
Standard Deviation	0.1%	99.72%
Kvazaar - Bosphorus 1080p - Very Fast (FPS)	18.41	18.27
Normalized	100%	99.24%
Standard Deviation	0.9%	99.78%
Kvazaar - Bosphorus 1080p - Ultra Fast (FPS)	43.25	42.96
Normalized	100%	99.33%
Standard Deviation	0.2%	99.84%
LAME MP3 Encoding - WAV To MP3 (sec)	14.397	14.403
Normalized	100%	99.96%
Standard Deviation	0%	99.99%
LAMMPS Molecular Dynamics Simulator - 20k Atoms (ns/day)	15.332	14.441
		15.892
Normalized	96.48%	90.87%
Standard Deviation	5.4%	100%
LAMMPS Molecular Dynamics Simulator - Rhodopsin Protein	13.864	14.852
		15.071
Normalized	91.99%	98.55%
Standard Deviation	10.7%	100%
LeelaChessZero - BLAS (Nodes/s)	946	942
		984
Normalized	96.14%	95.73%
Standard Deviation	3.8%	100%
libgav1 - Chimera 1080p (FPS)	27.70	27.63
		27.94
Normalized	99.14%	98.89%
Standard Deviation	1%	100%
libgav1 - Summer Nature 4K (FPS)	13.56	13.42
		13.72
Normalized	98.83%	97.81%
Standard Deviation	0.7%	100%
libgav1 - S.N.1 (FPS)	42.27	42.66
		42.43
Normalized	99.09%	100%
Standard Deviation	0.3%	99.46%
libgav1 - C.1.1.b (FPS)	13.76	13.42
		13.78
Normalized	99.85%	97.39%
Standard Deviation	0.3%	100%
libjpeg-turbo tjbench (Megapixels/sec)	101.751578	101.807647
		101.806761
Normalized	99.94%	100%
Standard Deviation	0.5%	100%

Standard Deviation	0%		
LibRaw - P.P.B (Mpix/sec)	18.82	18.76	18.91
Normalized	99.52%	99.21%	100%
Standard Deviation	0.4%		
librsvg - SVG Files To PNG (sec)	32.529	31.951	32.498
Normalized	98.22%	100%	98.32%
Standard Deviation	1.4%		
LZ4 Compression - 1 - Compression	9088	9062	9062
Speed (MB/s)			
Normalized	100%	99.72%	99.72%
Standard Deviation	0.7%		
LZ4 Compression - 1 - D.S (MB/s)	10342	10338	10334
Normalized	100%	99.96%	99.91%
Standard Deviation	0.8%		
LZ4 Compression - 3 - Compression	39.71	39.66	39.66
Speed (MB/s)			
Normalized	100%	99.87%	99.87%
Standard Deviation	0%		
LZ4 Compression - 3 - D.S (MB/s)	9241	9300	9183
Normalized	99.37%	100%	98.75%
Standard Deviation	0%		
LZ4 Compression - 9 - Compression	38.06	38.05	38.03
Speed (MB/s)			
Normalized	100%	99.97%	99.92%
Standard Deviation	0.1%		
LZ4 Compression - 9 - D.S (MB/s)	9251	9243	9225
Normalized	100%	99.91%	99.72%
Standard Deviation	0%		
Milpack Benchmark - scikit_ica (sec)	89.89	89.38	88.72
Normalized	98.7%	99.26%	100%
Standard Deviation	0.1%		
Milpack Benchmark - scikit_qda (sec)	45.63	46.12	43.96
Normalized	96.34%	95.32%	100%
Standard Deviation	2.9%		
Milpack Benchmark - scikit_svm (sec)	44.76	44.72	44.68
Normalized	99.82%	99.91%	100%
Standard Deviation	0.1%		
Milpack Benchmark - scikit_linearridge (sec)	3.75	3.85	3.75
Normalized	100%	97.4%	100%
Standard Deviation	0.7%		
Mobile Neural Network - SqueezeNetV1.0 (ms)	91.849	93.448	91.879
Normalized	100%	98.29%	99.97%
Standard Deviation	0.8%		
Mobile Neural Network - resnet-v2-50 (ms)	654.280	654.388	663.972
Normalized	100%	99.98%	98.54%
Standard Deviation	0.6%		
Mobile Neural Network - MobileNetV2_224 (ms)	56.505	56.148	56.959
Normalized	99.37%	100%	98.58%
Standard Deviation	0.3%		

Mobile Neural Network - mobilenet-v1-1.0 (ms)	116.431	114.129	116.29
Normalized	98.02%	100%	98.14%
Standard Deviation	1.9%		
Mobile Neural Network - inception-v3 (ms)	471.076	470.655	474.535
Normalized	99.91%	100%	99.18%
Standard Deviation	0.1%		
Monkey Audio Encoding - WAV To APE (sec)	21.670	21.795	21.83
Normalized	100%	99.43%	99.27%
Standard Deviation	0.6%		
Node.js V8 Web Tooling Benchmark (runs/s)	4.01	4.05	4.06
Normalized	98.77%	99.75%	100%
Standard Deviation	1.1%		
Numenta Anomaly Benchmark - EXPoSE (sec)	1410	1440	1438
Normalized	100%	97.92%	98.07%
Standard Deviation	2.4%		
Numenta Anomaly Benchmark - Relative Entropy (sec)	34.694	34.54	34.057
Normalized	98.16%	98.6%	100%
Standard Deviation	0.9%		
Numenta Anomaly Benchmark - Windowed Gaussian (sec)	18.093	18.173	17.895
Normalized	98.91%	98.47%	100%
Standard Deviation	0.8%		
Numenta Anomaly Benchmark - Earthgecko Skyline (sec)	228.372	228.687	231.401
Normalized	100%	99.86%	98.69%
Standard Deviation	0.8%		
Numenta Anomaly Benchmark - B.C (sec)	70.328	69.867	71.751
Normalized	99.34%	100%	97.37%
Standard Deviation	2.7%		
Numpy Benchmark (Score)	167.76	168.59	168.52
Normalized	99.51%	100%	99.96%
Standard Deviation	0.3%		
OCRMyPDF - P.6.P.P.D (sec)	37.704	38.985	38.53
Normalized	100%	96.71%	97.86%
Standard Deviation	2.2%		
oneDNN - IP Shapes 1D - f32 - CPU (ms)	29.7698	30.2592	29.8171
Normalized	100%	98.38%	99.84%
Standard Deviation	0.9%		
oneDNN - IP Shapes 3D - f32 - CPU (ms)	13.5635	13.4069	13.6765
Normalized	98.85%	100%	98.03%
Standard Deviation	0.7%		
oneDNN - IP Shapes 1D - u8s8f32 - CPU (ms)	40.8276	40.6528	41.0755
Normalized	99.57%	100%	98.97%

Standard Deviation 0.2%		
oneDNN - IP Shapes 3D - u8s8f32 - CPU (ms)	33.1977	
CPU (ms)	33.4242	33.1091
Normalized 99.73%	99.06%	100%
Standard Deviation 1.1%		
oneDNN - C.B.S.A - f32 - CPU (ms)	25.6088	
CPU (ms)	25.5176	25.5774
Normalized 99.64%	100%	99.77%
Standard Deviation 0.7%		
oneDNN - D.B.s - f32 - CPU (ms)	103.621	
CPU (ms)	103.388	103.748
Normalized 99.78%	100%	99.65%
Standard Deviation 0.5%		
oneDNN - D.B.s - f32 - CPU (ms)	10.3496	
CPU (ms)	10.3217	10.3883
Normalized 99.73%	100%	99.36%
Standard Deviation 0.2%		
oneDNN - C.B.S.A - u8s8f32 - CPU	55.2950	
CPU (ms)	55.2362	55.7995
Normalized 99.89%	100%	98.99%
Standard Deviation 0.1%		
oneDNN - D.B.s - u8s8f32 - CPU (ms)	42.8257	
CPU (ms)	42.8246	42.9411
Normalized 100%	100%	99.73%
Standard Deviation 0.1%		
oneDNN - D.B.s - u8s8f32 - CPU (ms)	26.8026	
CPU (ms)	26.0454	26.8142
Normalized 97.17%	100%	97.13%
Standard Deviation 0.7%		
oneDNN - R.N.N.T - f32 - CPU (ms)	13101	
CPU (ms)	13012	13147
Normalized 99.32%	100%	98.97%
Standard Deviation 0.6%		
oneDNN - R.N.N.I - f32 - CPU (ms)	7532	
CPU (ms)	7671	7680
Normalized 100%	98.19%	98.08%
Standard Deviation 0.3%		
oneDNN - R.N.N.T - u8s8f32 - CPU	13142	
CPU (ms)	13133	13255
Normalized 99.93%	100%	99.08%
Standard Deviation 0.2%		
oneDNN - R.N.N.I - u8s8f32 - CPU (ms)	7569	
CPU (ms)	7677	7535
Normalized 99.55%	98.15%	100%
Standard Deviation 1.3%		
oneDNN - M.M.B.S.T - f32 - CPU (ms)	4.77018	
CPU (ms)	4.77039	4.76997
Normalized 100%	99.99%	100%
Standard Deviation 0.1%		
oneDNN - R.N.N.T - bf16bf16bf16 - CPU	13161	
CPU (ms)	13188	13157
Normalized 99.97%	99.76%	100%
Standard Deviation 0.3%		
oneDNN - R.N.N.I - bf16bf16bf16 - CPU	7566	
CPU (ms)	7667	7693
Normalized 100%	98.69%	98.35%
Standard Deviation 0.7%		
oneDNN - M.M.B.S.T - u8s8f32 - CPU	9.16733	
CPU (ms)	9.07736	9.16306
Normalized 99.02%	100%	99.06%
Standard Deviation 0.1%		
OpenCV - DNN - D.N.N (ms)	25792	
CPU (ms)	25951	26397
Normalized 100%	99.39%	97.71%
Standard Deviation 4.4%		

Opus Codec Encoding - WAV To Opus Encode (sec)	43.180	43.203	43.207
Normalized	100%	99.95%	99.94%
Standard Deviation	0.1%		
Parallel BZIP2 Compression - 2.F.C (sec)	2.078	2.051	2.026
Normalized	97.5%	98.78%	100%
POV-Ray - Trace Time (sec)	25.970	26.045	25.293
Normalized	97.39%	97.11%	100%
Standard Deviation	0.5%		
PyBench - T.F.A.T.T (Milliseconds)	3600	3605	3597
Normalized	99.92%	99.78%	100%
Standard Deviation	0%		
PyPerformance - go (Milliseconds)	714	714	715
Normalized	100%	100%	99.86%
Standard Deviation	0.2%		
PyPerformance - 2to3 (Milliseconds)	798	798	798
PyPerformance - chaos (Milliseconds)	314	314	314
PyPerformance - float (Milliseconds)	384	384	383
Normalized	99.74%	99.74%	100%
PyPerformance - nbody (Milliseconds)	476	475	476
Normalized	99.79%	100%	99.79%
Standard Deviation	0.1%		
PyPerformance - pathlib	51.9	51.6	51.8
Normalized	99.42%	100%	99.61%
Standard Deviation	0%		
PyPerformance - raytrace	1.39	1.38	1.39
Normalized	99.28%	100%	99.28%
Standard Deviation	0%		
PyPerformance - json.loads (Milliseconds)	65.1	65.2	65.1
Normalized	100%	99.85%	100%
Standard Deviation	0.2%		
PyPerformance - crypto_pyaes (Milliseconds)	327	326	328
Normalized	99.69%	100%	99.39%
PyPerformance - regex_compile (Milliseconds)	453	453	453
PyPerformance - python_startup (Milliseconds)	14.5	14.9	14.5
Normalized	100%	97.32%	100%
Standard Deviation	0.4%		
PyPerformance - django_template (Milliseconds)	150	150	150
PyPerformance - pickle_pure_python (Milliseconds)	1.34	1.33	1.33
Normalized	99.25%	100%	100%
Standard Deviation	0.4%		
rav1e - 1 (FPS)	0.084	0.084	0.084
Standard Deviation	0.7%		
rav1e - 5 (FPS)	0.179	0.179	0.179
Standard Deviation	0.3%		
rav1e - 6 (FPS)	0.209	0.208	0.209

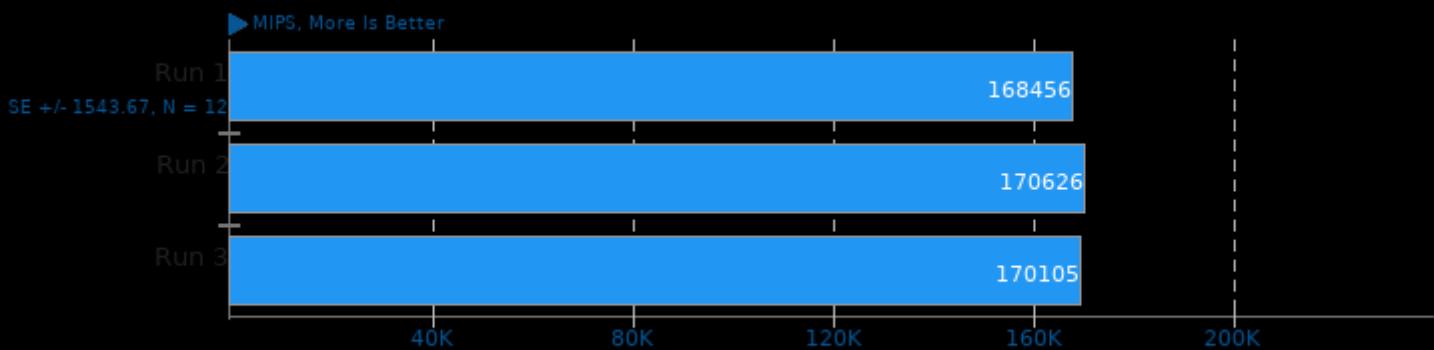
	Normalized	100%	99.52%	100%
	Standard Deviation	0.3%		
rav1e - 10 (FPS)	0.401	0.402	0.401	
	Normalized	99.75%	100%	99.75%
	Standard Deviation	0.2%		
RawTherapee - T.B.T (sec)	83.596	83.676	83.358	
	Normalized	99.72%	99.62%	100%
	Standard Deviation	0.2%		
Redis - LPOP (Req/sec)	519607	500314	521050	
	Normalized	99.72%	96.02%	100%
	Standard Deviation	1%		
Redis - SADD (Req/sec)	682251	689655	693378	
	Normalized	98.4%	99.46%	100%
	Standard Deviation	3.8%		
Redis - LPUSH (Req/sec)	509296	501002	510286	
	Normalized	99.81%	98.18%	100%
	Standard Deviation	1.4%		
Redis - GET (Req/sec)	800111	811922	791994	
	Normalized	98.55%	100%	97.55%
	Standard Deviation	1%		
Redis - SET (Req/sec)	584775	562275	531520	
	Normalized	100%	96.15%	90.89%
	Standard Deviation	1%		
RNNoise (sec)	38.309	38.109	38.081	
	Normalized	99.4%	99.93%	100%
	Standard Deviation	0.5%		
Scikit-Learn (sec)	17.526	17.497	17.498	
	Normalized	99.83%	100%	99.99%
	Standard Deviation	0.1%		
simdjson - Kostya (GB/s)	1.06	1.06	1.06	
	Standard Deviation	0%		
simdjson - LargeRand (GB/s)	0.48	0.48	0.48	
	Standard Deviation	0%		
simdjson - PartialTweets (GB/s)	1.19	1.19	1.19	
	Standard Deviation	0.5%		
simdjson - DistinctUserID (GB/s)	1.23	1.24	1.24	
	Normalized	99.19%	100%	100%
	Standard Deviation	0.5%		
Smallpt - G.I.R.1.S (sec)	4.417	4.421	4.451	
	Normalized	100%	99.91%	99.24%
	Standard Deviation	2%		
SQLite Speedtest - Timed Time - Size 1,000 (sec)	170.616	170.851	171.612	
	Normalized	100%	99.86%	99.42%
	Standard Deviation	0.2%		
Stockfish - Total Time (Nodes/s)	31660332	31552898	29938062	
	Normalized	100%	99.66%	94.56%
	Standard Deviation	1.3%		
System GZIP Decompression (sec)	4.935	5.58	5.587	
	Normalized	100%	88.44%	88.33%
	Standard Deviation	3.8%		
System XZ Decompression (sec)	5.555	5.561	5.563	
	Normalized	100%	99.89%	99.86%
	Standard Deviation	0.1%		
System ZLIB Decompression (ms)	2724	2886	2875	

	Normalized	100%	
	Standard Deviation	2.1%	
Tachyon - Total Time (sec)	43.4265	43.2359	42.9742
	Normalized	98.96%	
	Standard Deviation	0.4%	
Tesseract OCR - T.T.O.7.I (sec)	46.531	46.641	46.325
	Normalized	99.56%	
	Standard Deviation	1.6%	
Timed Apache Compilation - Time To Compile (sec)	44.886	44.719	44.965
	Normalized	99.63%	
	Standard Deviation	0.1%	
Timed Eigen Compilation - Time To Compile (sec)	129.903	129.73	129.664
	Normalized	99.82%	
	Standard Deviation	0.1%	
Timed FFmpeg Compilation - Time To Compile (sec)	55.539	55.274	55.665
	Normalized	99.52%	
	Standard Deviation	0.5%	
Timed GCC Compilation - Time To Compile (sec)	1432	1435	1434
	Normalized	100%	
	Standard Deviation	0.2%	
Timed ImageMagick Compilation - Time To Compile (sec)	29.041	28.953	29.104
	Normalized	99.7%	
	Standard Deviation	0.1%	
Timed Linux Kernel Compilation - Time To Compile (sec)	67.857	69.432	69.144
	Normalized	100%	
	Standard Deviation	1.4%	
Timed LLVM Compilation - Time To Compile (sec)	536.167	568.008	562.208
	Normalized	100%	
	Standard Deviation	12%	
Timed MAFFT Alignment - M.S.A - LSU RNA (sec)	11.267	11.363	11.212
	Normalized	99.51%	
	Standard Deviation	0.4%	
Timed PHP Compilation - Time To Compile (sec)	86.394	86.047	86.347
	Normalized	99.6%	
	Standard Deviation	0.3%	
TNN - CPU - MobileNet v2 (ms)	637.131	637.092	637.081
	Normalized	99.99%	
	Standard Deviation	0.1%	
TNN - CPU - SqueezeNet v1.1 (ms)	611.706	612.031	611.766
	Normalized	100%	
	Standard Deviation	0%	
TTSIOD 3D Renderer - P.R.W.S.S.M (FPS)	782.068	776.94	777.726
	Normalized	100%	
	Standard Deviation	0.3%	

Unpacking Firefox - firefox-84.0.source.tar.xz (sec)	30.909	30.006	30.821
Normalized	97.08%	100%	97.36%
Standard Deviation	2%		
VP9 libvpx Encoding - Speed 0 (FPS)	0.58	0.58	0.58
Standard Deviation	0%		
VP9 libvpx Encoding - Speed 5 (FPS)	2.71	2.69	2.71
Normalized	100%	99.26%	100%
Standard Deviation	0.7%		
WavPack Audio Encoding - WAV To WavPack (sec)	128.759	129.063	129.185
Normalized	100%	99.76%	99.67%
Standard Deviation	0.2%		
WebP Image Encode - Default (Encode Time - sec)	7.868	7.869	7.865
Normalized	99.96%	99.95%	100%
Standard Deviation	0.1%		
WebP Image Encode - Quality 100 (Encode Time - sec)	10.964	10.959	10.961
Normalized	99.95%	100%	99.98%
Standard Deviation	0%		
WebP Image Encode - Q.1.L (Encode Time - sec)	29.966	29.928	29.99
Normalized	99.87%	100%	99.79%
Standard Deviation	0.1%		
WebP Image Encode - Q.1.H.C (Encode Time - sec)	17.662	17.663	17.662
Normalized	100%	99.99%	100%
Standard Deviation	0%		
WebP Image Encode - Q.1.L.H.C (Encode Time - sec)	62.105	62.095	62.07
Normalized	99.94%	99.96%	100%
Standard Deviation	0.1%		
x264 - H.2.V.E (FPS)	53.85	36.66	35.53
Normalized	100%	68.08%	65.98%
Standard Deviation	11.6%		
x265 - Bosphorus 4K (FPS)	6.24	6.17	6.23
Normalized	100%	98.88%	99.84%
Standard Deviation	0.6%		
x265 - Bosphorus 1080p (FPS)	12.90	12.7	12.32
Normalized	100%	98.45%	95.5%
Standard Deviation	1.7%		
XZ Compression - C.u.1.0.3.s.i.C.L.9 (sec)	27.963	25.042	27.649
Normalized	89.55%	100%	90.57%
Standard Deviation	6.1%		
Zstd Compression - 3 (MB/s)	4023	4658	4229
Normalized	86.36%	100%	90.79%
Standard Deviation	1.6%		
Zstd Compression - 19 (MB/s)	77.6	79.5	79.6
Normalized	97.49%	99.87%	100%
Standard Deviation	5.9%		

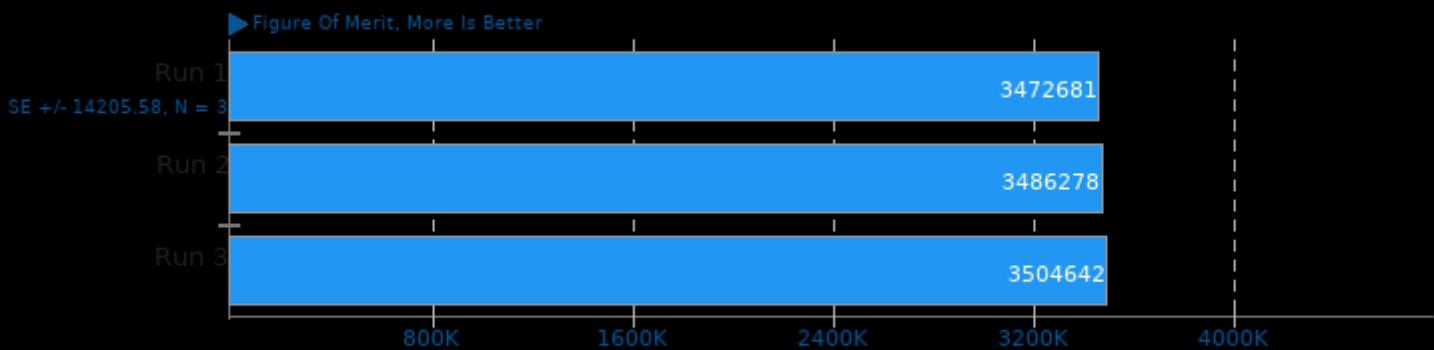
7-Zip Compression 16.02

Compress Speed Test



1. (CXX) g++ options: -pipe -lpthread

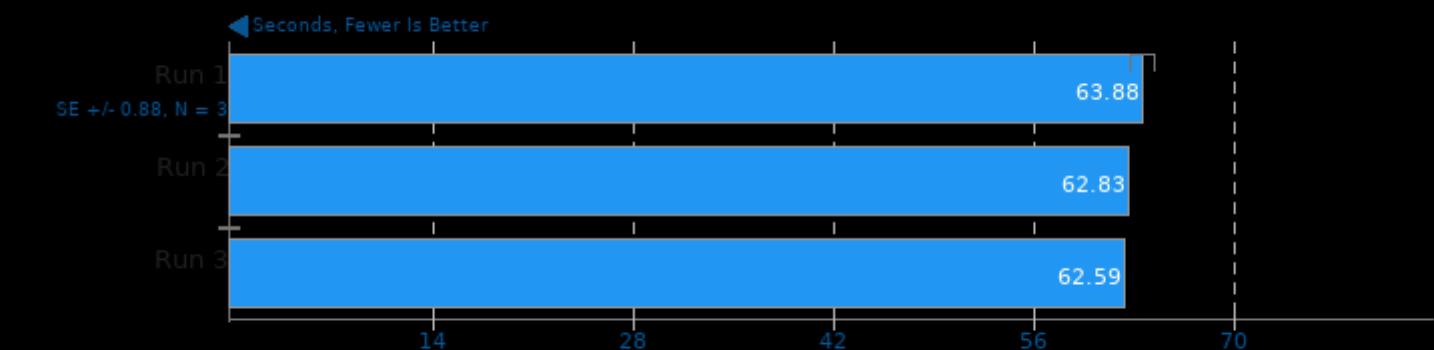
Algebraic Multi-Grid Benchmark



1. (CC) gcc options: -lparcsr_ls -lparcsr_mv -lseq_mv -lIJ_mv -lkrylov -lHYPRE_utilities -lm -fopenmp -pthread -lmpi

AOBench

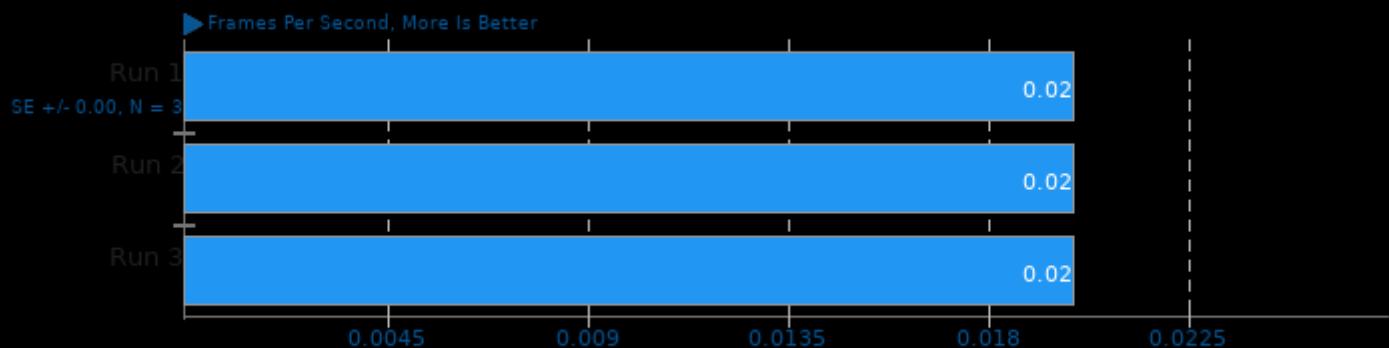
Size: 2048 x 2048 - Total Time



1. (CC) gcc options: -lm -O3

AOM AV1 2.0

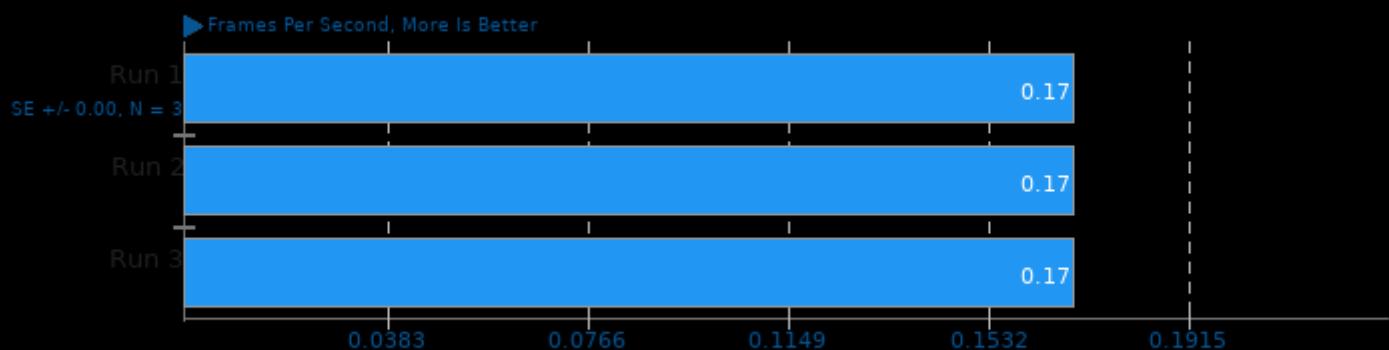
Encoder Mode: Speed 0 Two-Pass



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

AOM AV1 2.0

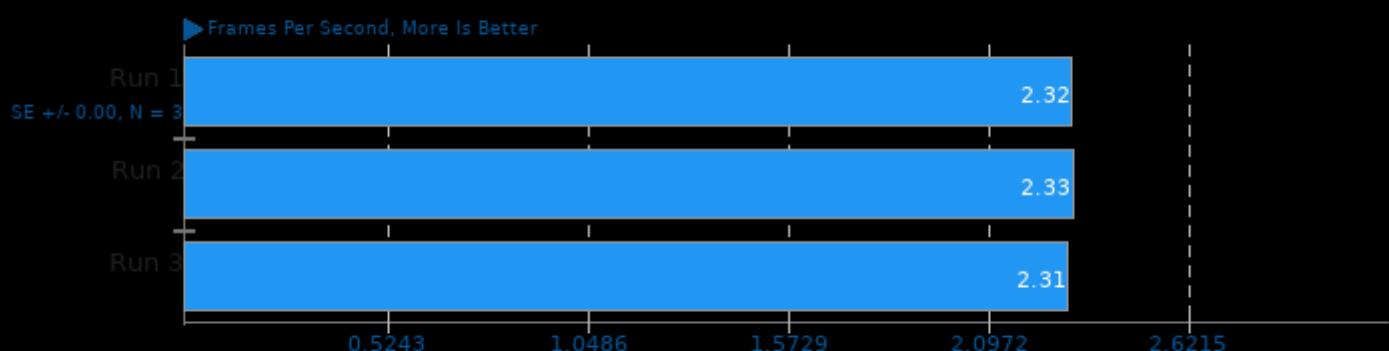
Encoder Mode: Speed 4 Two-Pass



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

AOM AV1 2.0

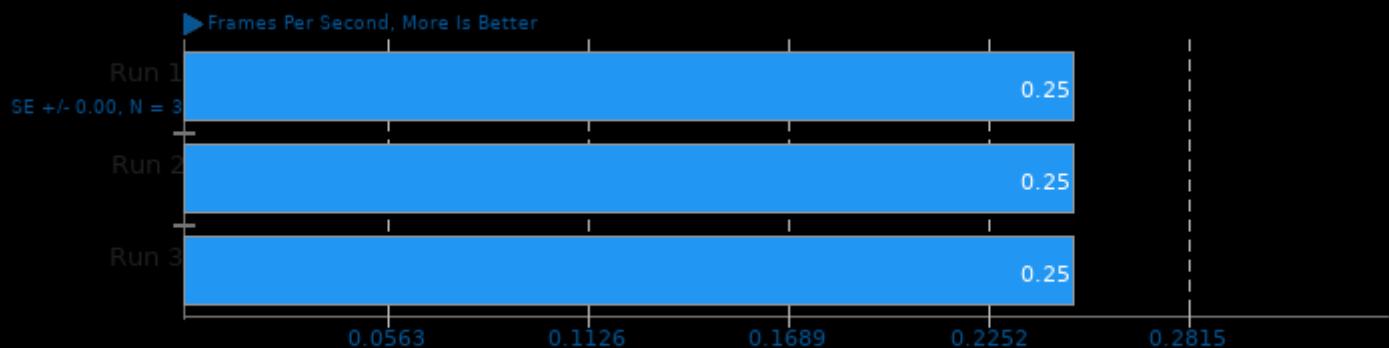
Encoder Mode: Speed 6 Realtime



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

AOM AV1 2.0

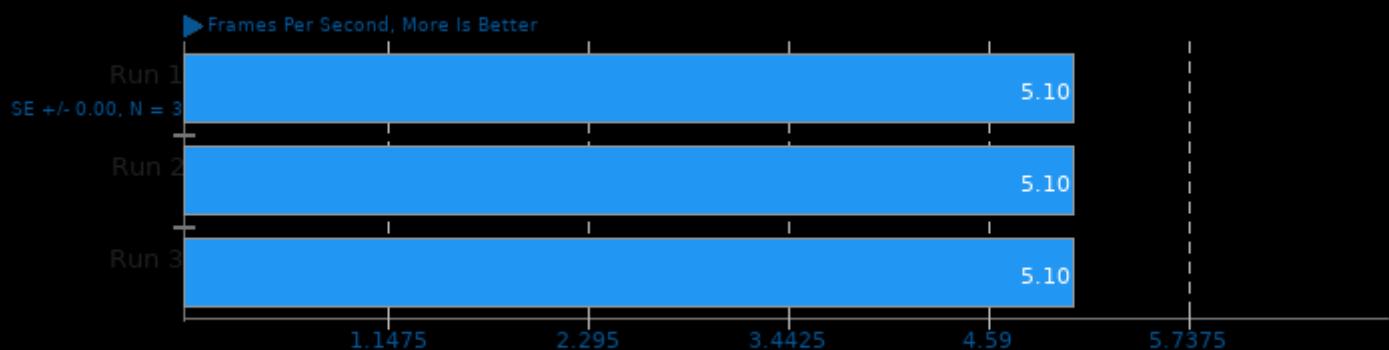
Encoder Mode: Speed 6 Two-Pass



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

AOM AV1 2.0

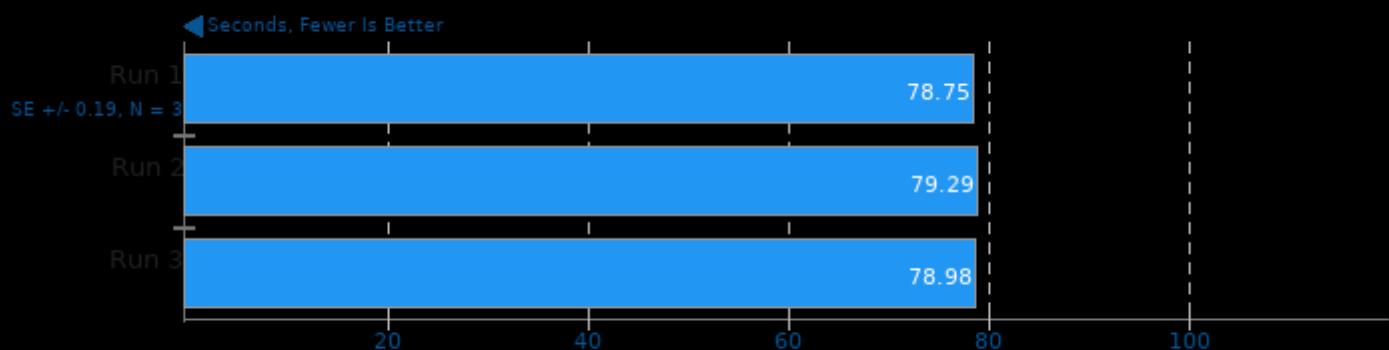
Encoder Mode: Speed 8 Realtime



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

Basis Universal 1.12

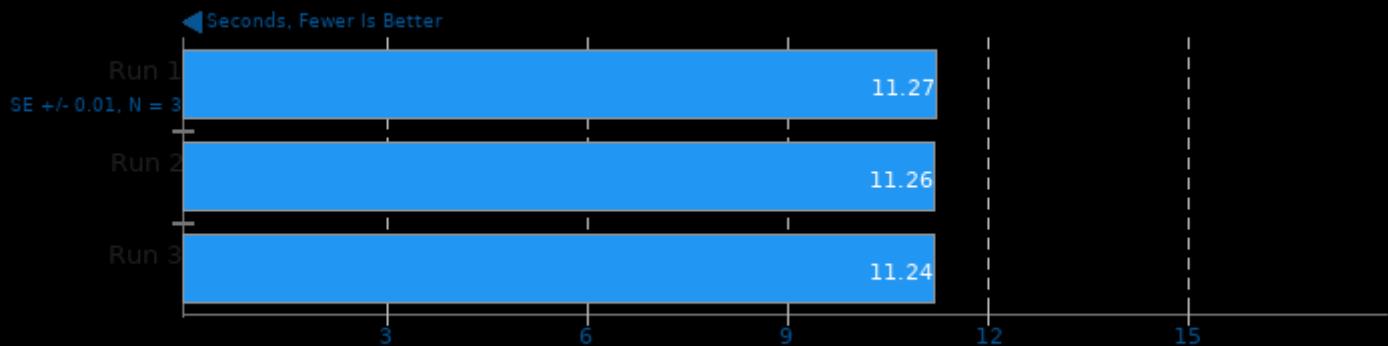
Settings: ETC1S



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

Basis Universal 1.12

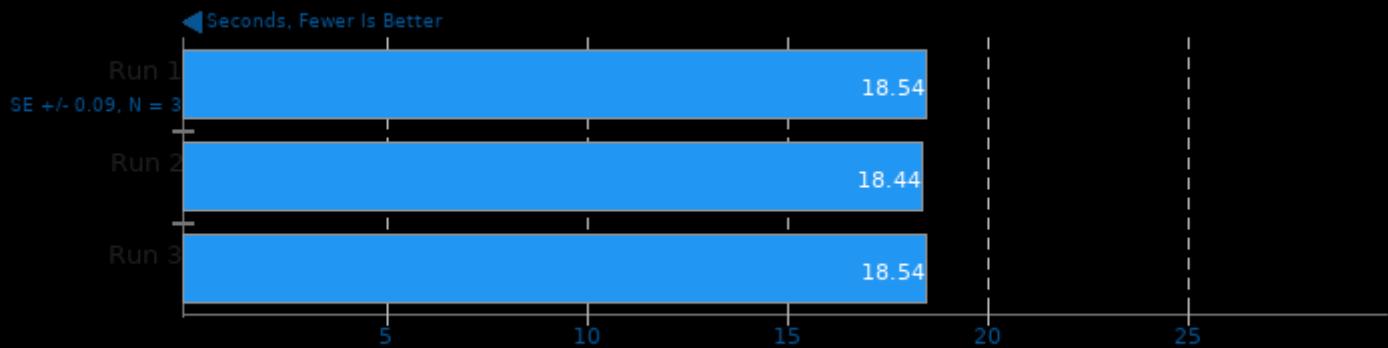
Settings: UASTC Level 0



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

Basis Universal 1.12

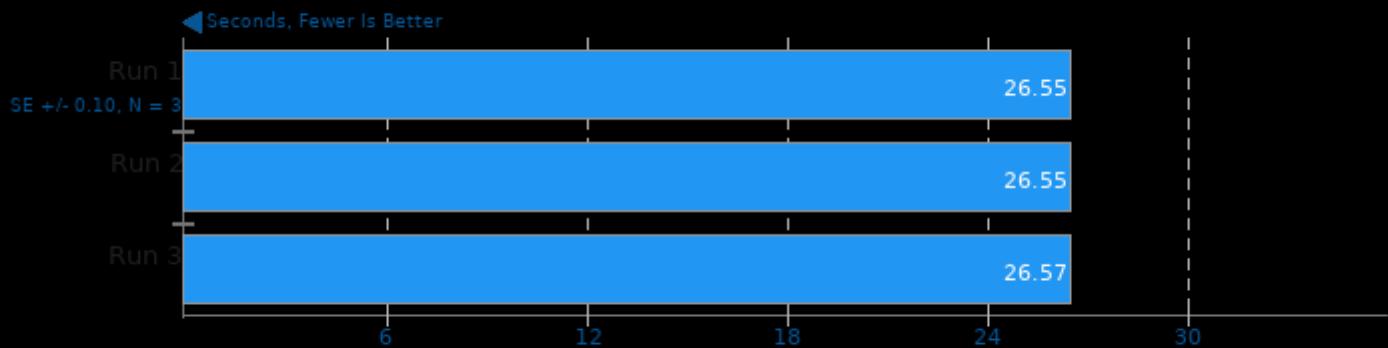
Settings: UASTC Level 2



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

Basis Universal 1.12

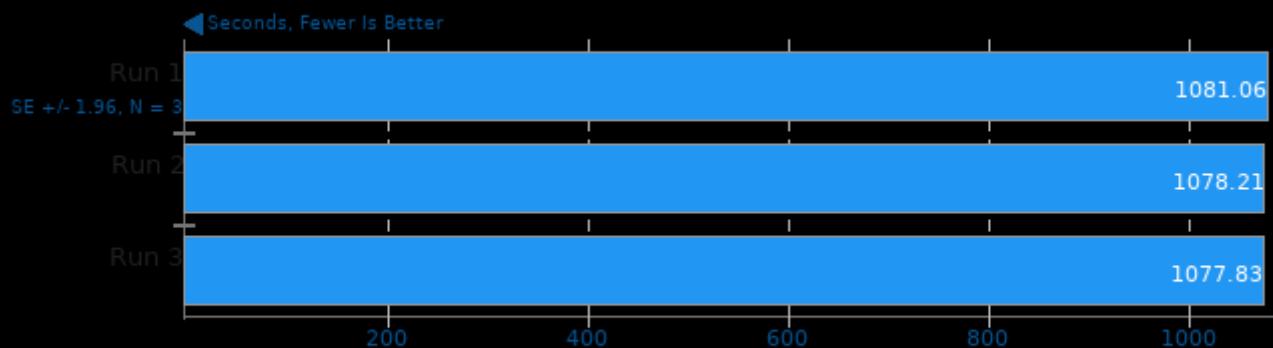
Settings: UASTC Level 3



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

Basis Universal 1.12

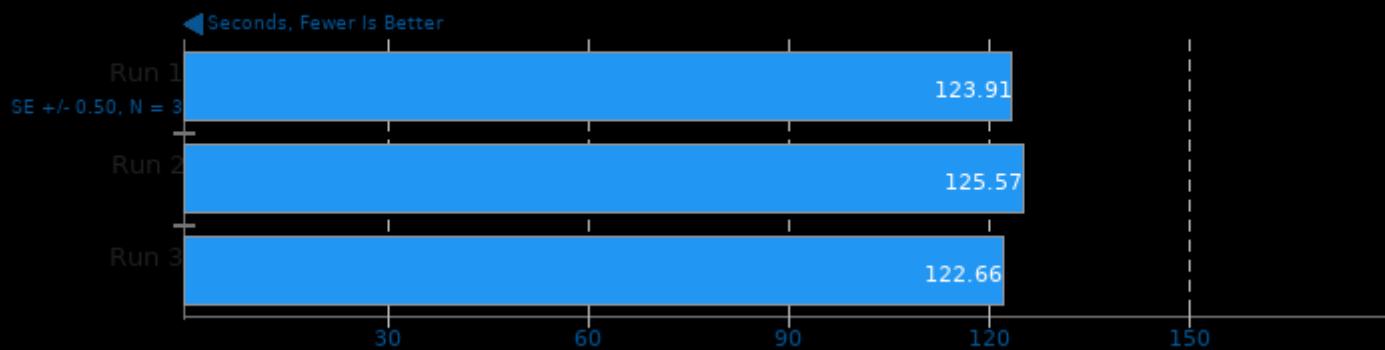
Settings: UASTC Level 2 + RDO Post-Processing



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

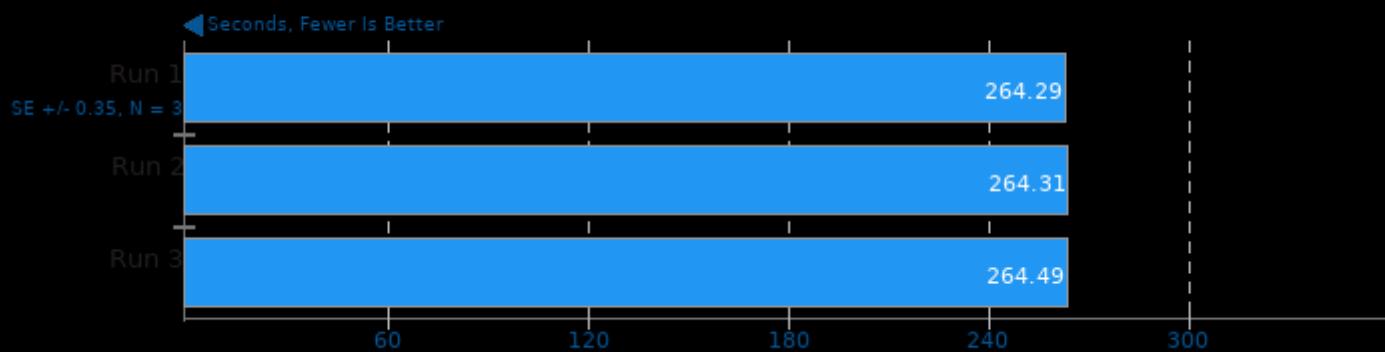
Blender 2.83.5

Blend File: BMW27 - Compute: CPU-Only



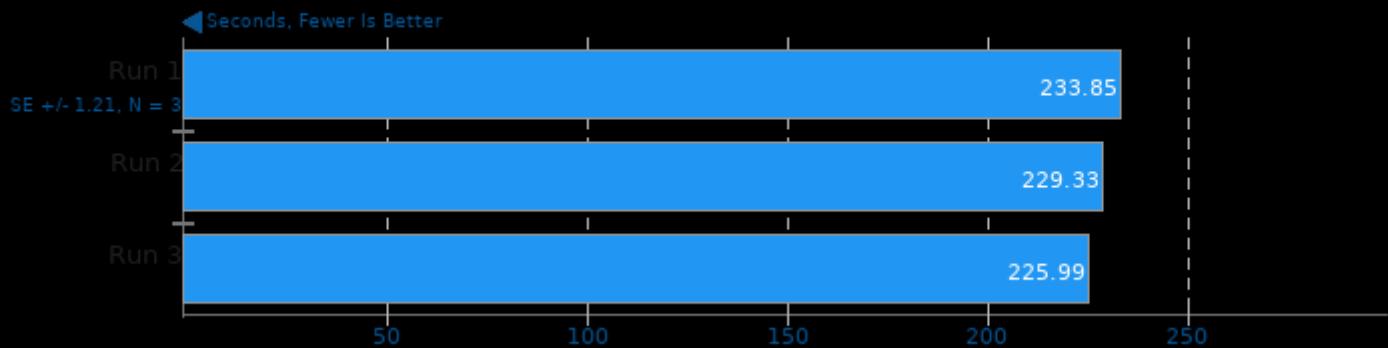
Blender 2.83.5

Blend File: Classroom - Compute: CPU-Only



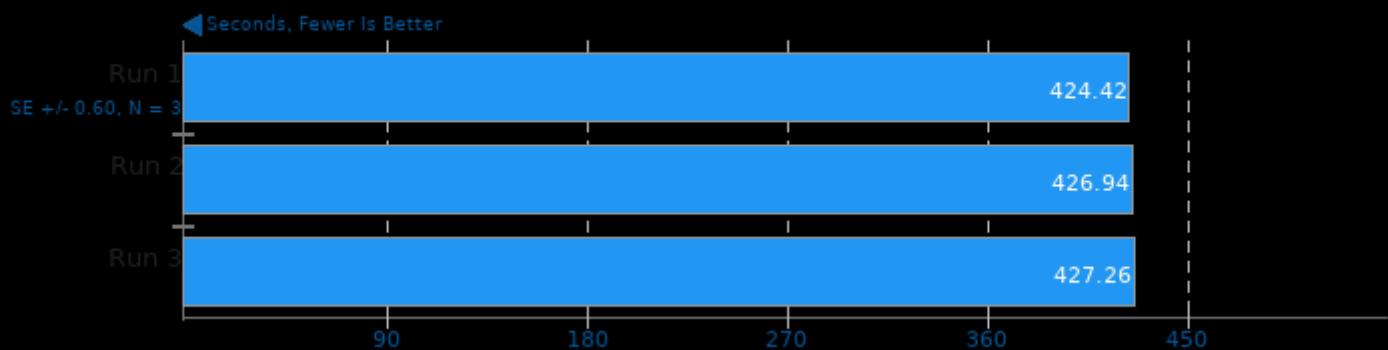
Blender 2.83.5

Blend File: Fishy Cat - Compute: CPU-Only



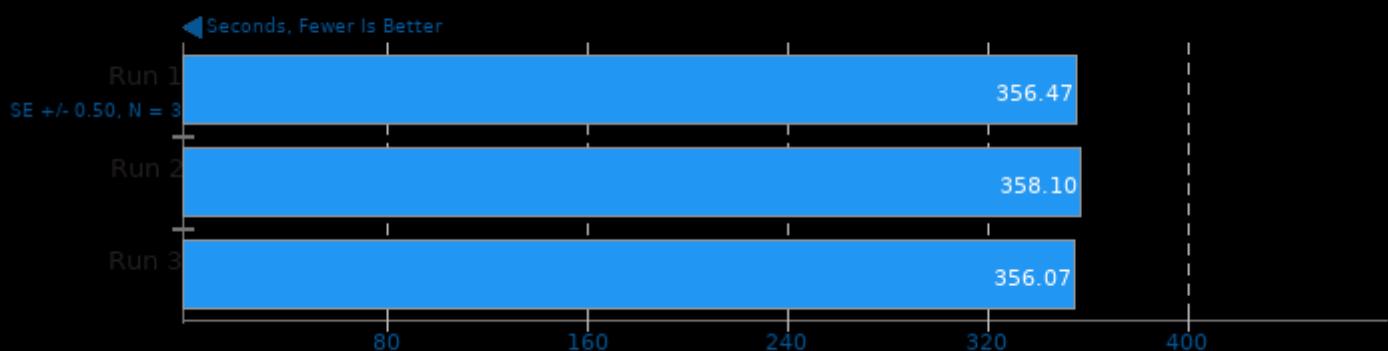
Blender 2.83.5

Blend File: Barbershop - Compute: CPU-Only



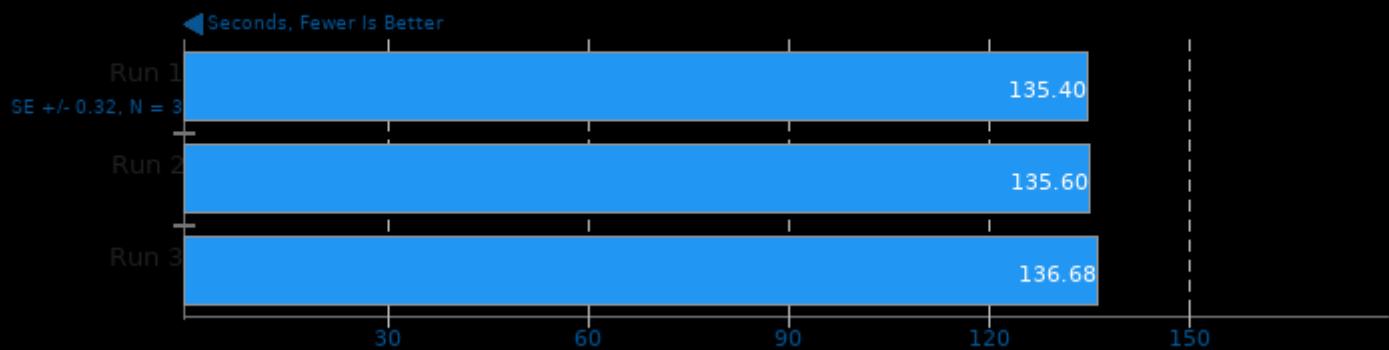
Blender 2.83.5

Blend File: Pabellon Barcelona - Compute: CPU-Only

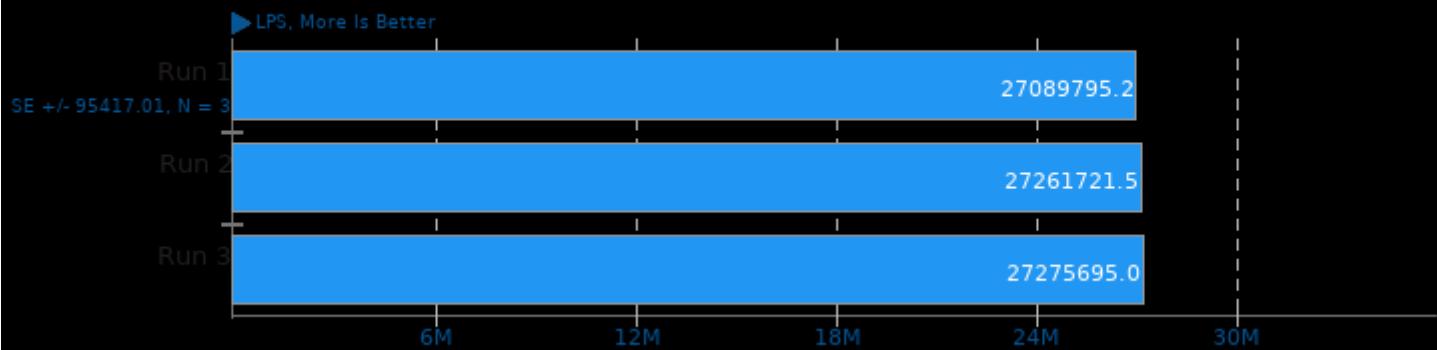


Build2 0.13

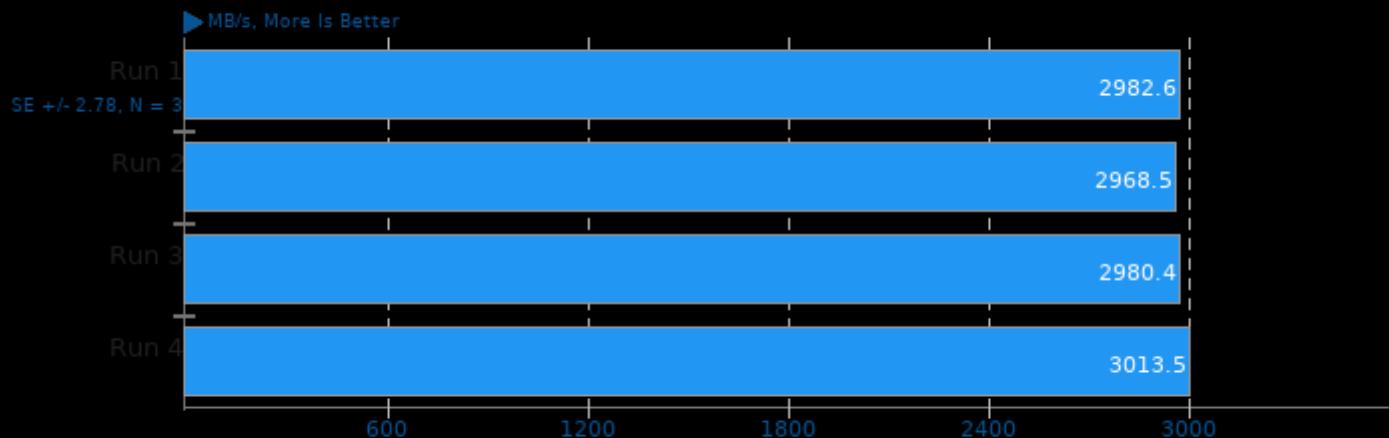
Time To Compile

**BYTE Unix Benchmark 3.6**

Computational Test: Dhrystone 2

**C-Blosc 2.0 Beta 5**

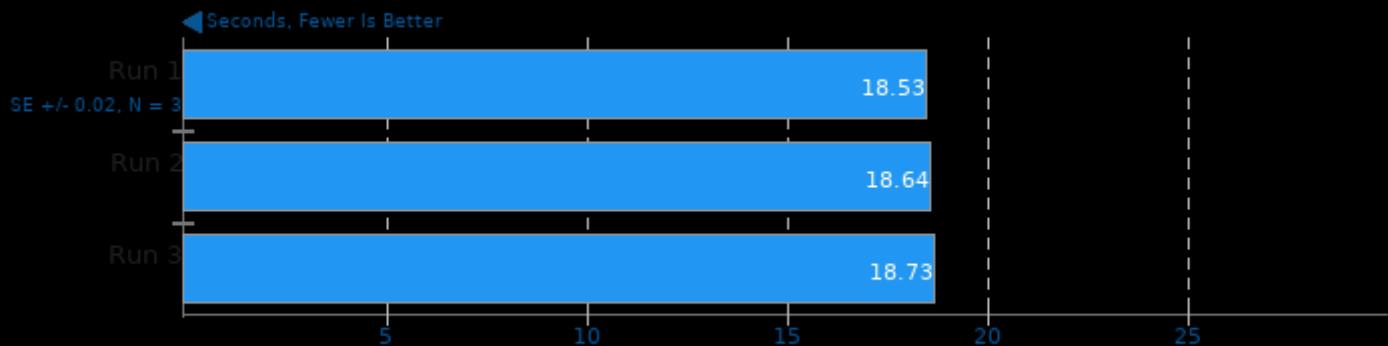
Compressor: blosclz



1. (CXX) g++ options: -rdynamic

C-Ray 1.1

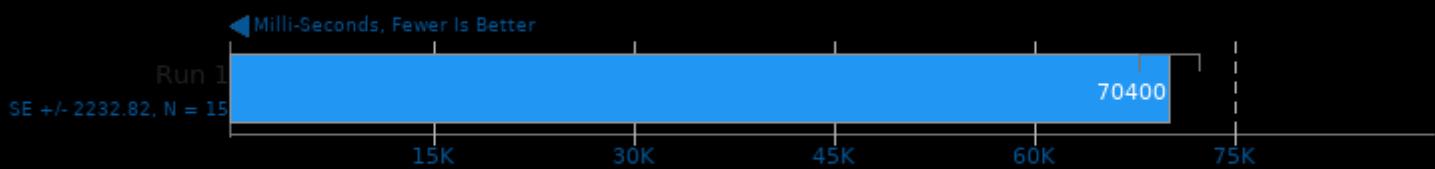
Total Time - 4K, 16 Rays Per Pixel



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

Caffe 2020-02-13

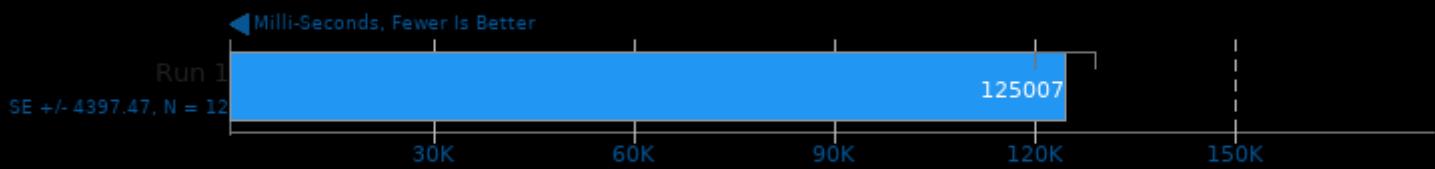
Model: AlexNet - Acceleration: CPU - Iterations: 100



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

Caffe 2020-02-13

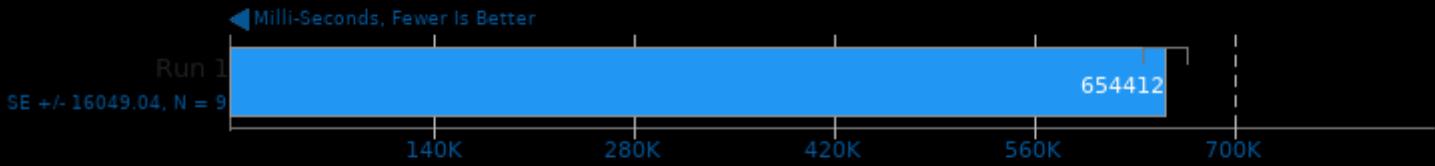
Model: AlexNet - Acceleration: CPU - Iterations: 200



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

Caffe 2020-02-13

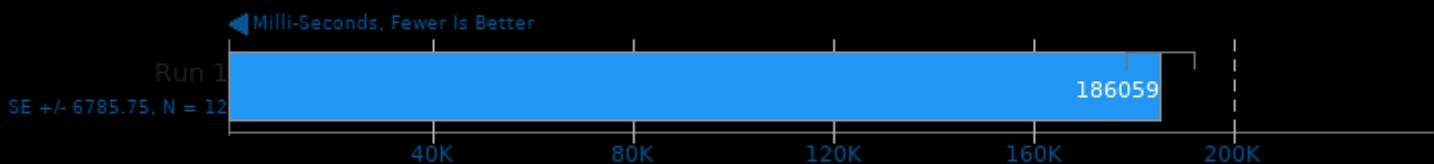
Model: AlexNet - Acceleration: CPU - Iterations: 1000



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

Caffe 2020-02-13

Model: GoogleNet - Acceleration: CPU - Iterations: 100



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

Caffe 2020-02-13

Model: GoogleNet - Acceleration: CPU - Iterations: 200



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

Caffe 2020-02-13

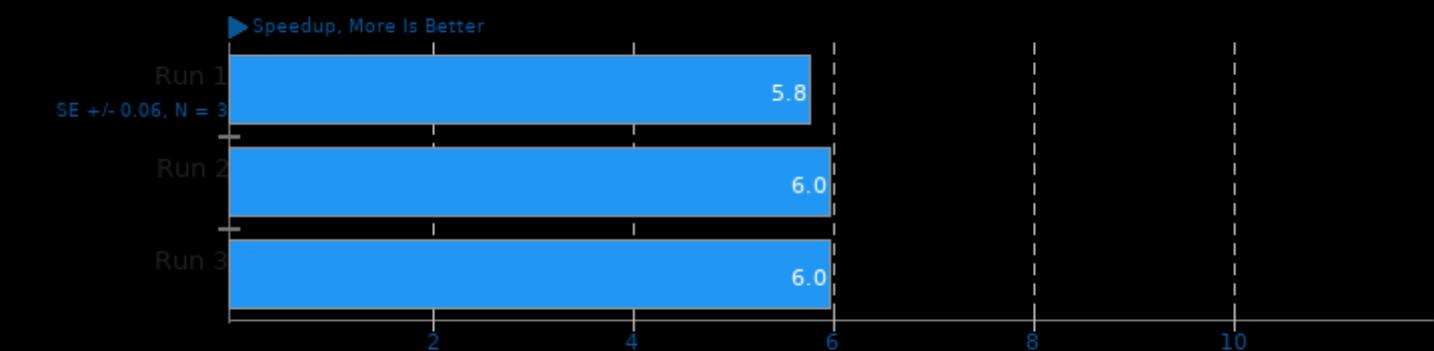
Model: GoogleNet - Acceleration: CPU - Iterations: 1000



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

CLOMP 1.2

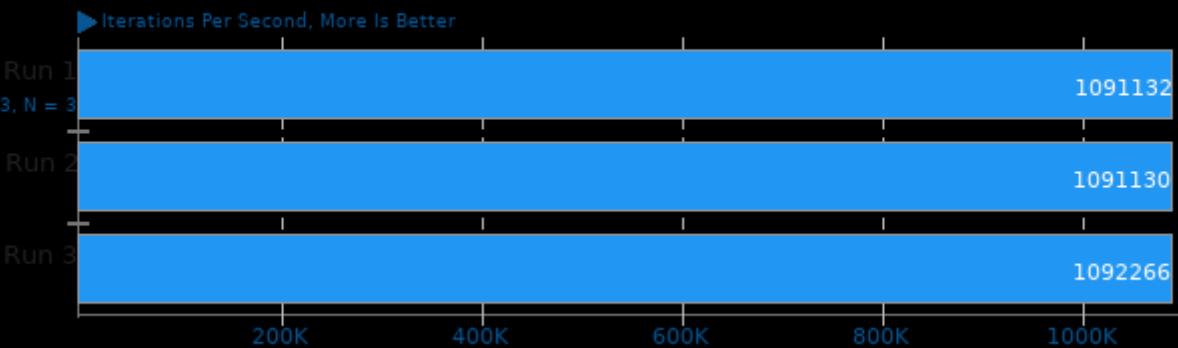
Static OMP Speedup



1. (CC) gcc options: -fopenmp -O3 -lm

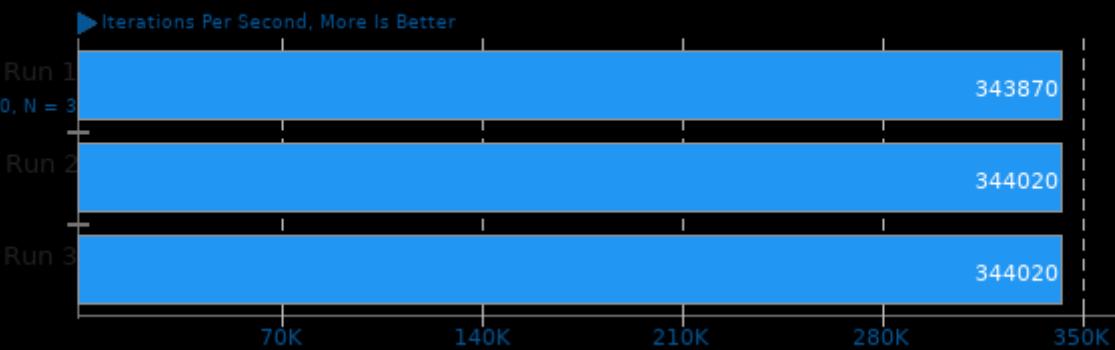
Cryptsetup

PBKDF2-sha512



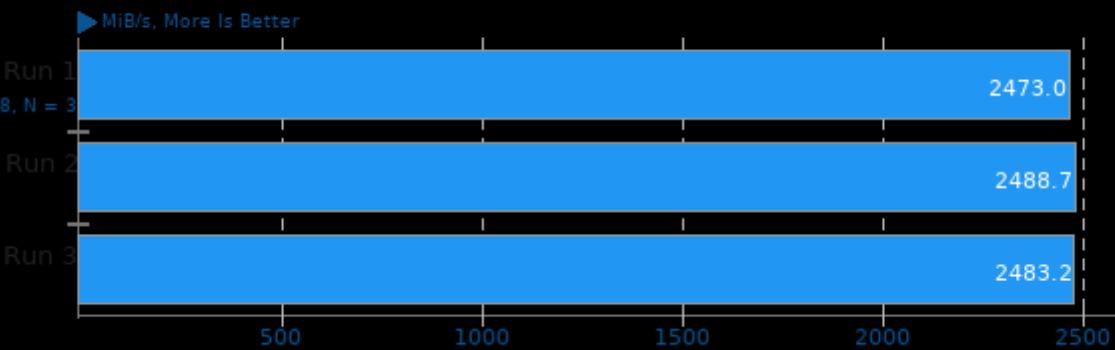
Cryptsetup

PBKDF2-whirlpool



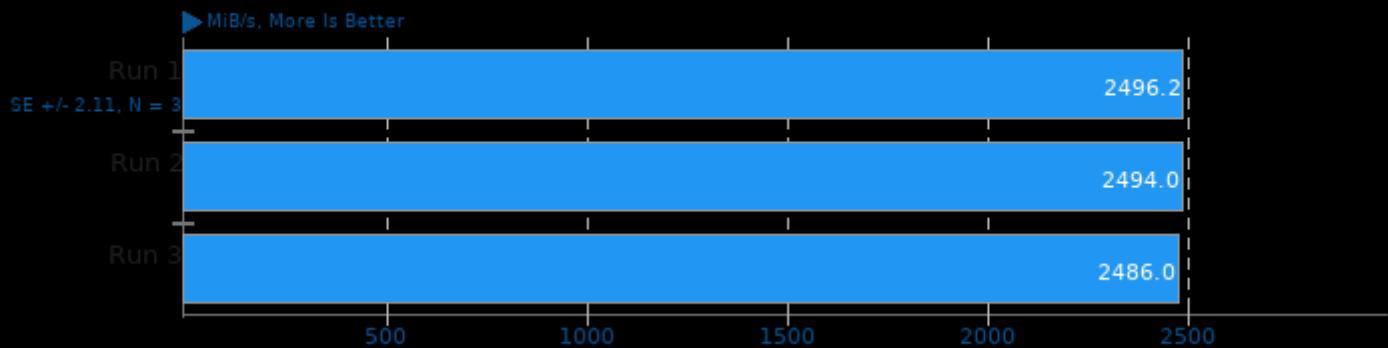
Cryptsetup

AES-XTS 256b Encryption



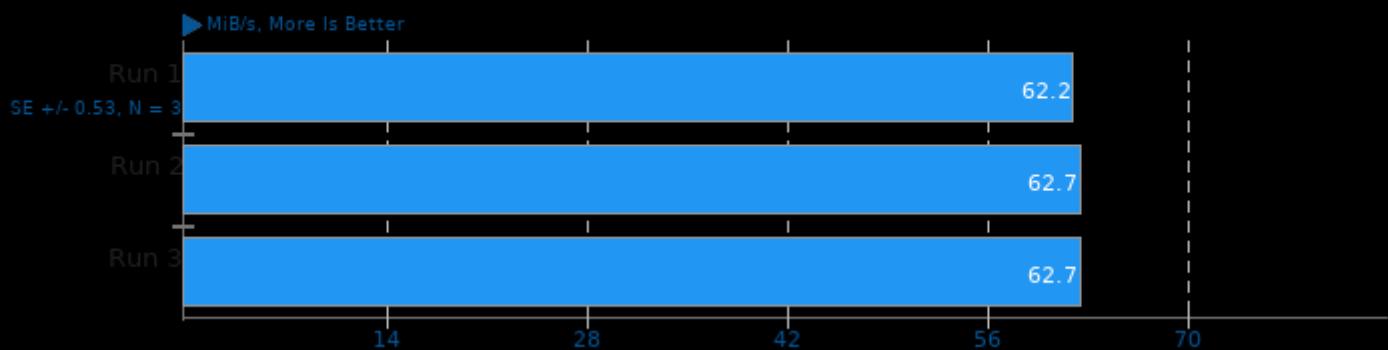
Cryptsetup

AES-XTS 256b Decryption



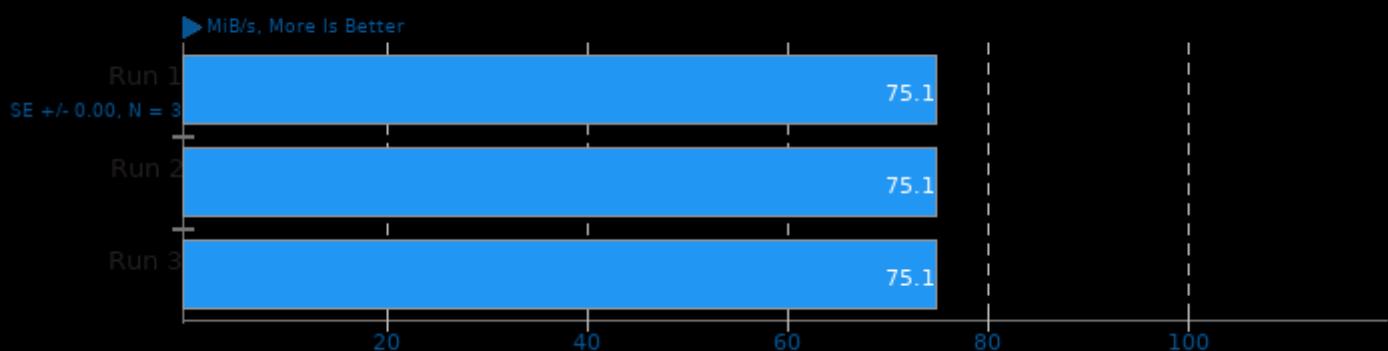
Cryptsetup

Serpent-XTS 256b Encryption



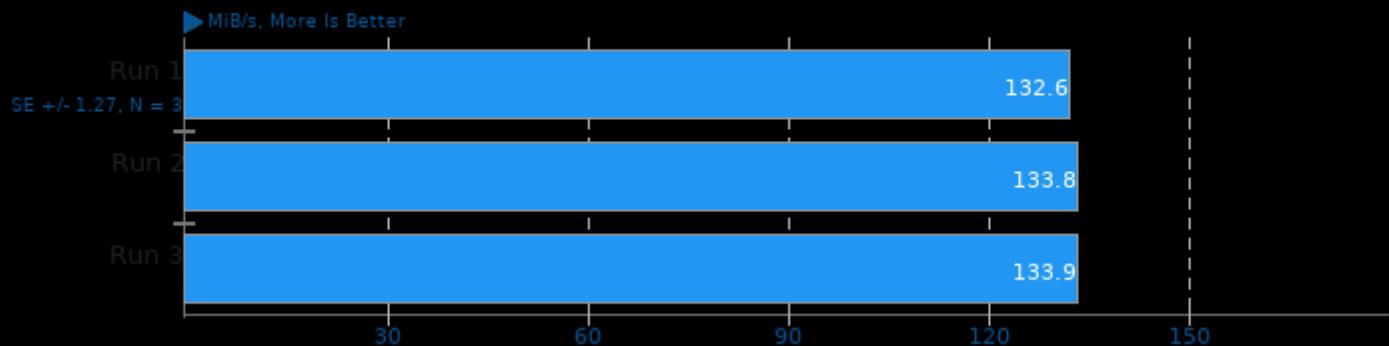
Cryptsetup

Serpent-XTS 256b Decryption



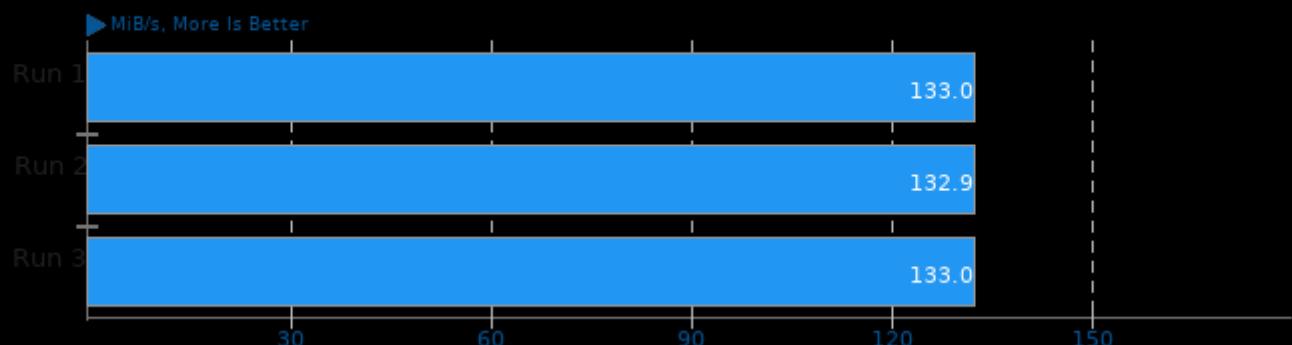
Cryptsetup

Twofish-XTS 256b Encryption



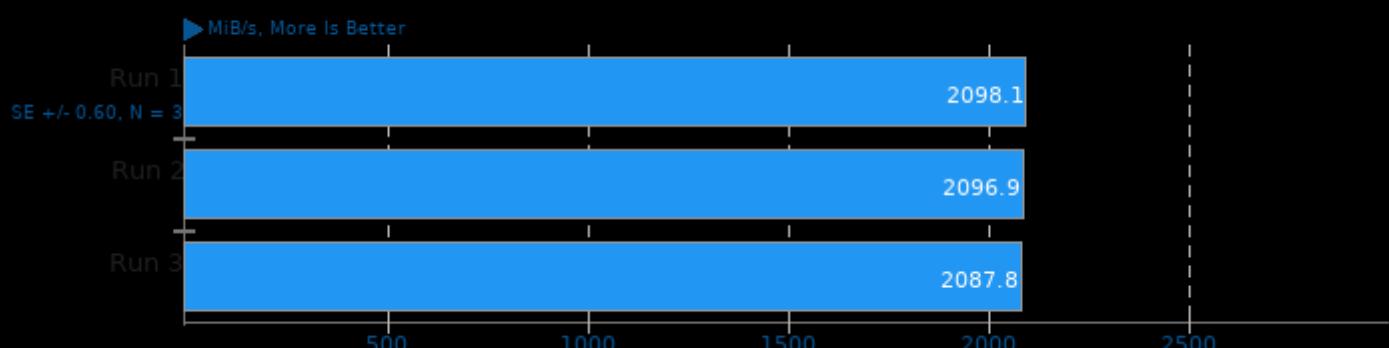
Cryptsetup

Twofish-XTS 256b Decryption



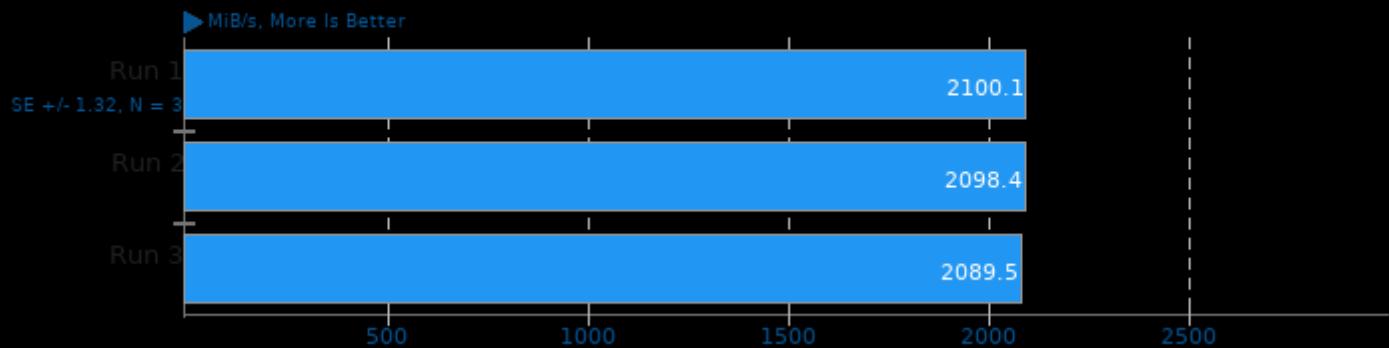
Cryptsetup

AES-XTS 512b Encryption



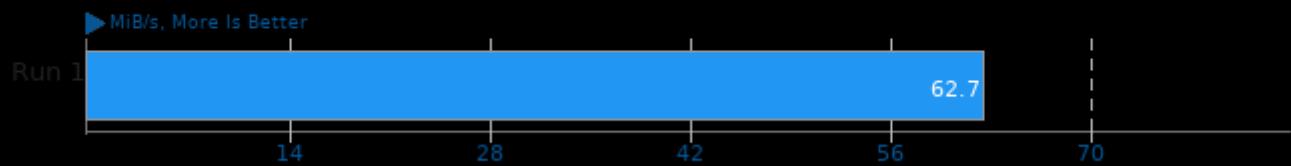
Cryptsetup

AES-XTS 512b Decryption



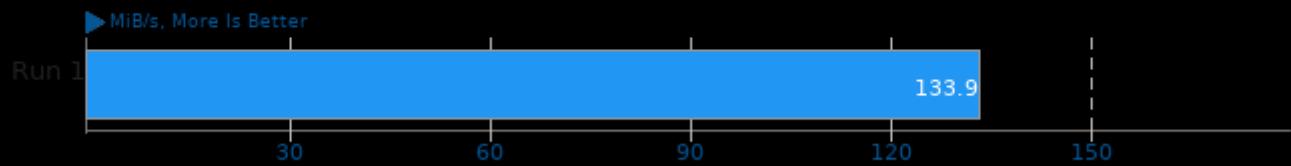
Cryptsetup

Serpent-XTS 512b Encryption



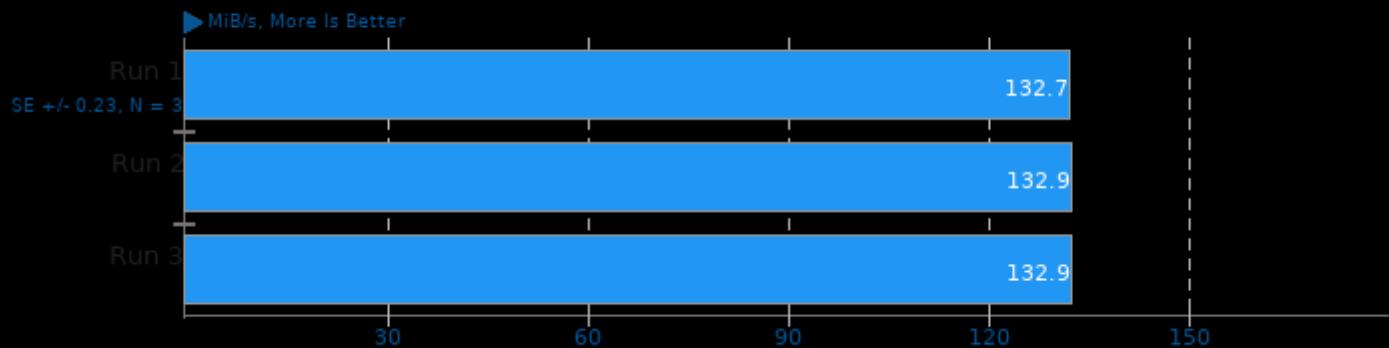
Cryptsetup

Twofish-XTS 512b Encryption



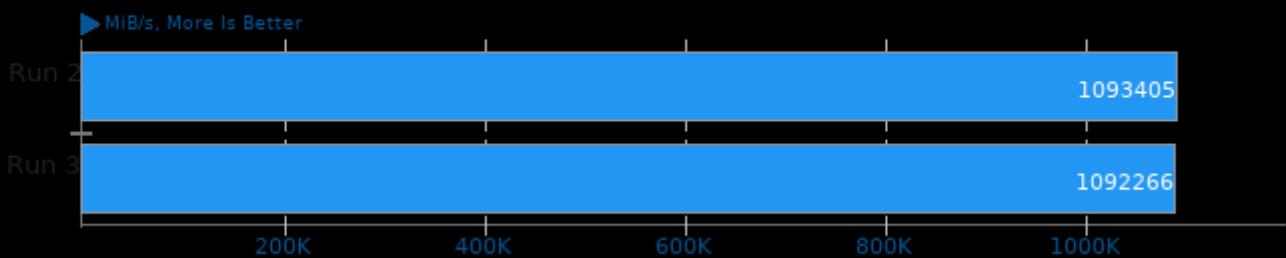
Cryptsetup

Twofish-XTS 512b Decryption



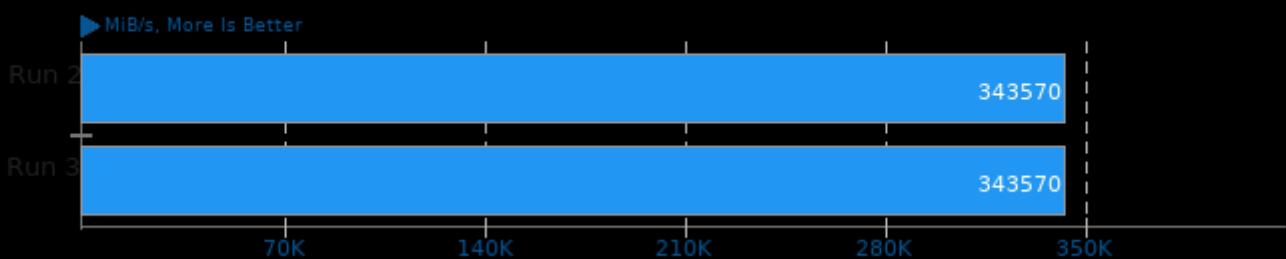
Cryptsetup

PBKDF2-sha512



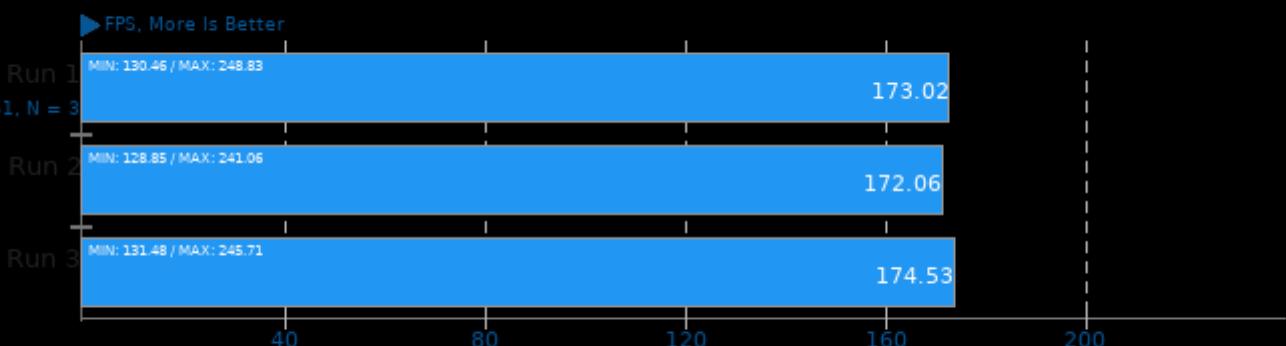
Cryptsetup

PBKDF2-whirlpool



dav1d 0.7.0

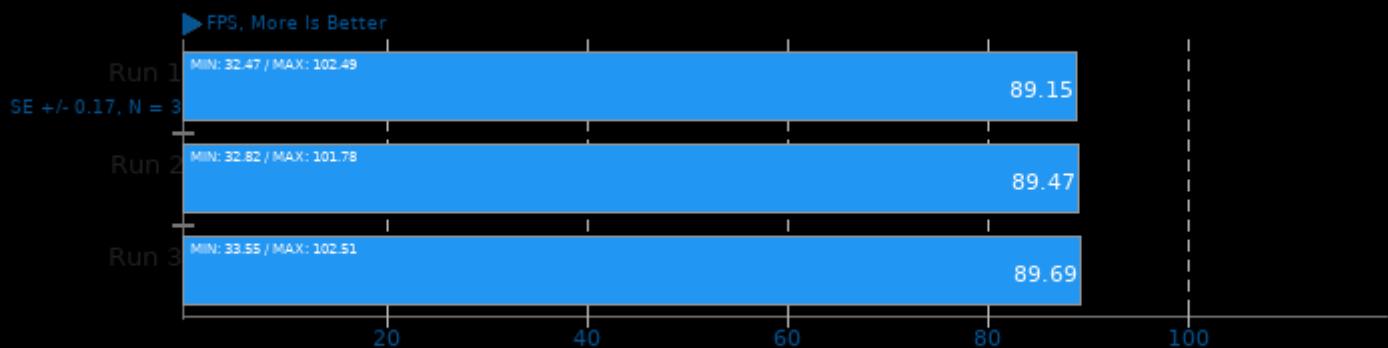
Video Input: Chimera 1080p



1. (CC) gcc options: -pthread

dav1d 0.7.0

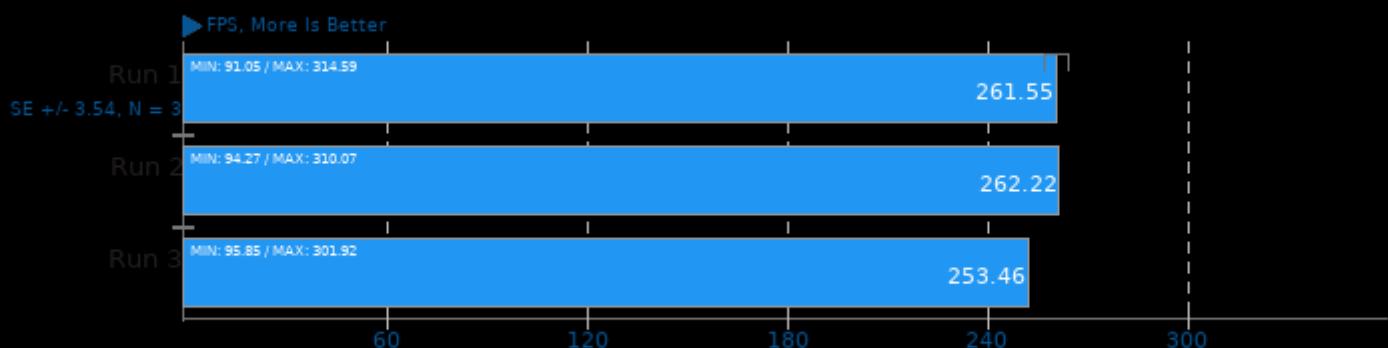
Video Input: Summer Nature 4K



1. (CC) gcc options: -pthread

dav1d 0.7.0

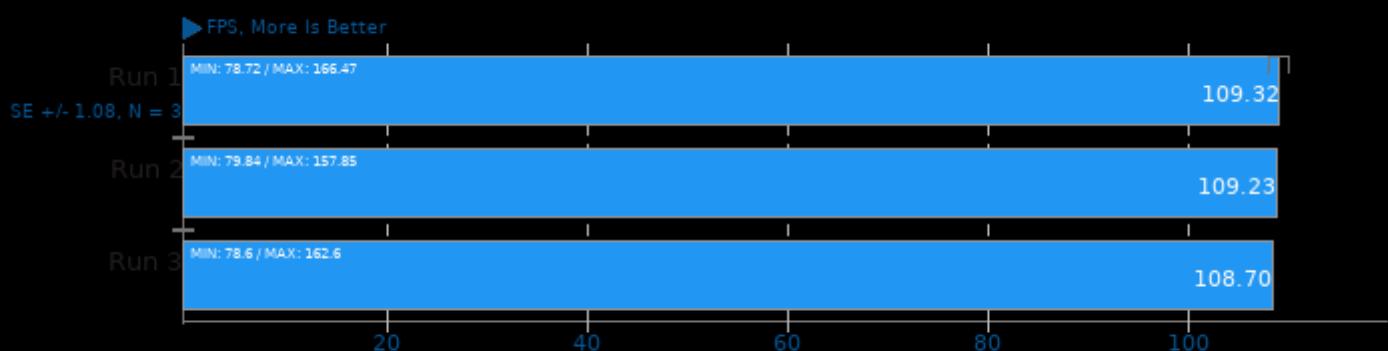
Video Input: Summer Nature 1080p



1. (CC) gcc options: -pthread

dav1d 0.7.0

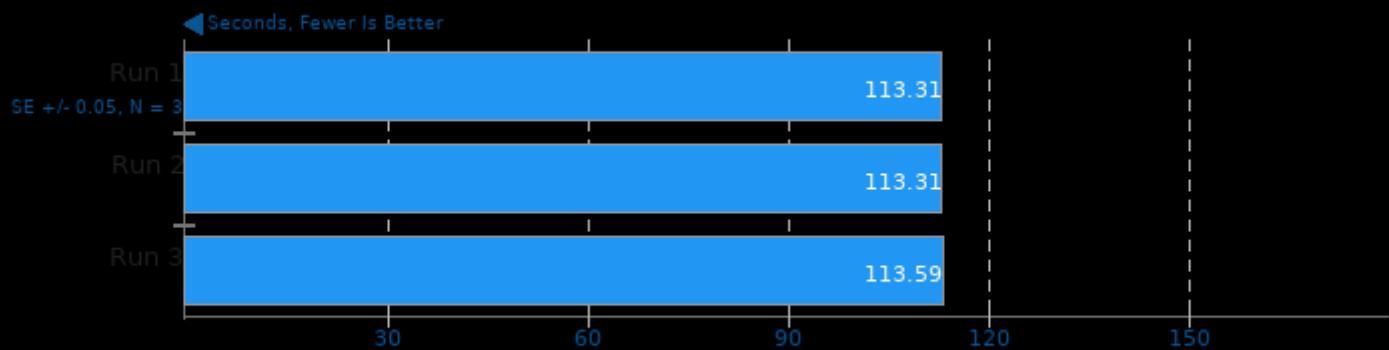
Video Input: Chimera 1080p 10-bit



1. (CC) gcc options: -pthread

dcraw

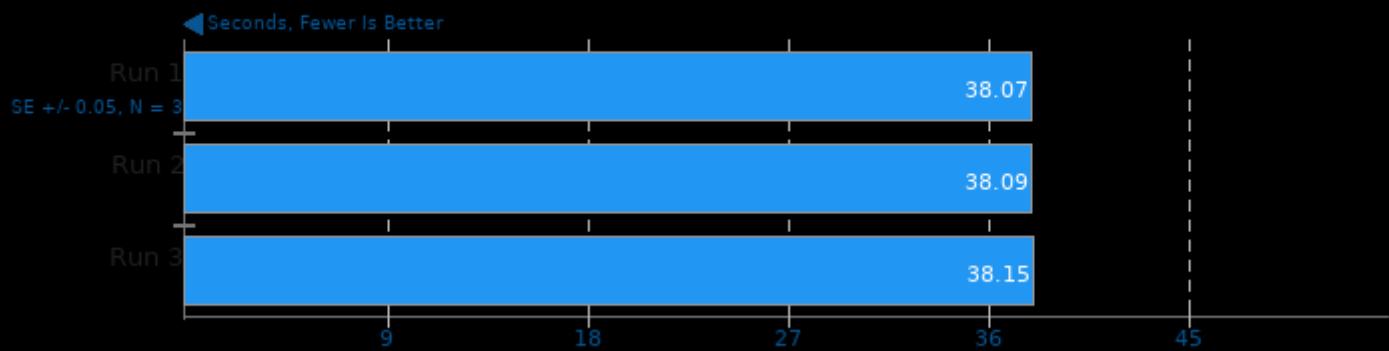
RAW To PPM Image Conversion



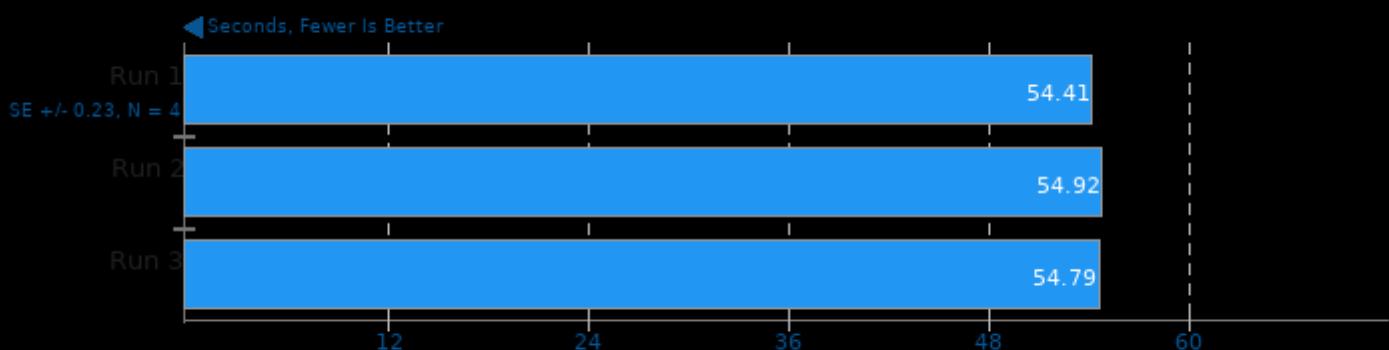
1. (CC) gcc options: -lm

Dolfyn 0.527

Computational Fluid Dynamics

**eSpeak-NG Speech Engine 20200907**

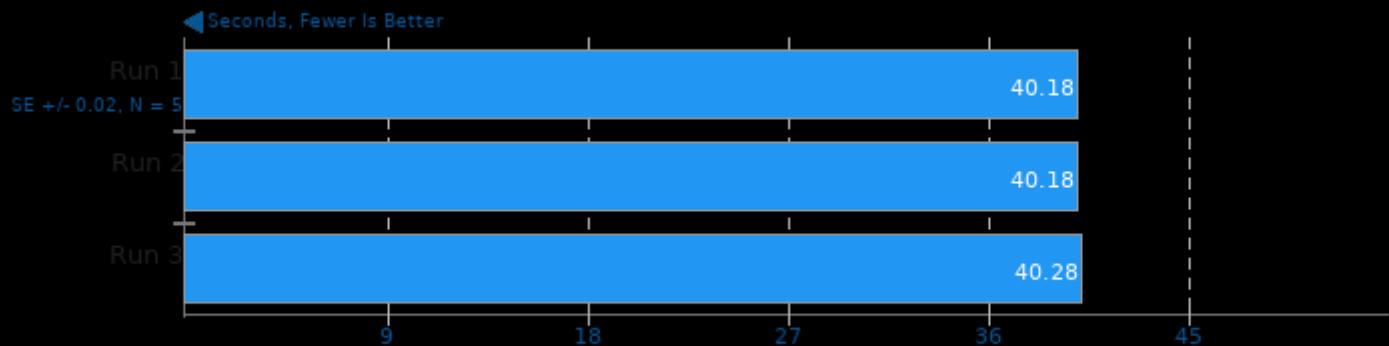
Text-To-Speech Synthesis



1. (CC) gcc options: -O2 -std=c99

FLAC Audio Encoding 1.3.2

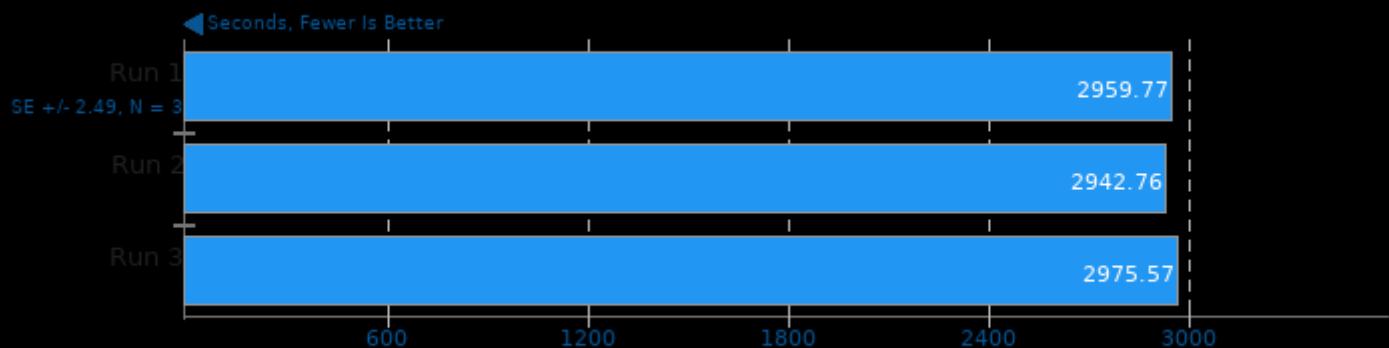
WAV To FLAC



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

G'MIC

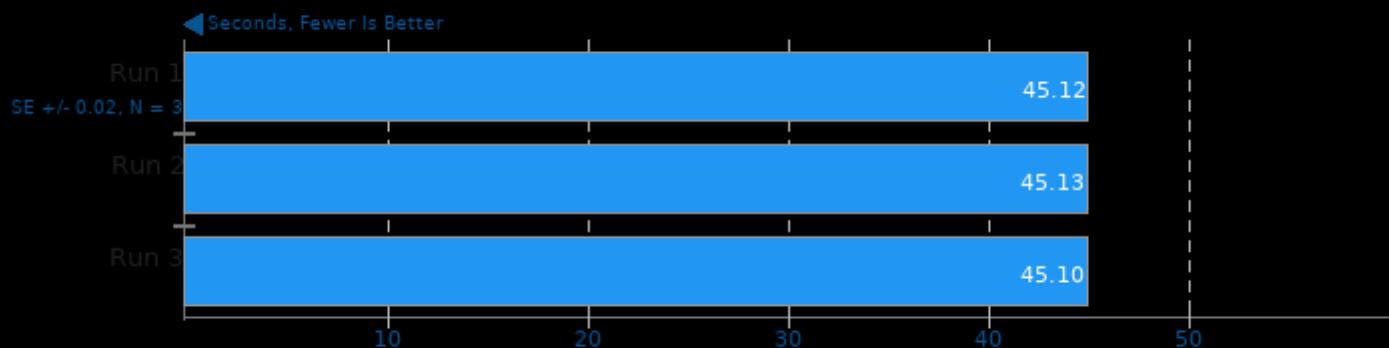
Test: 2D Function Plotting, 1000 Times



1. Version 2.4.5, Copyright (c) 2008-2019, David Tschumperle.

G'MIC

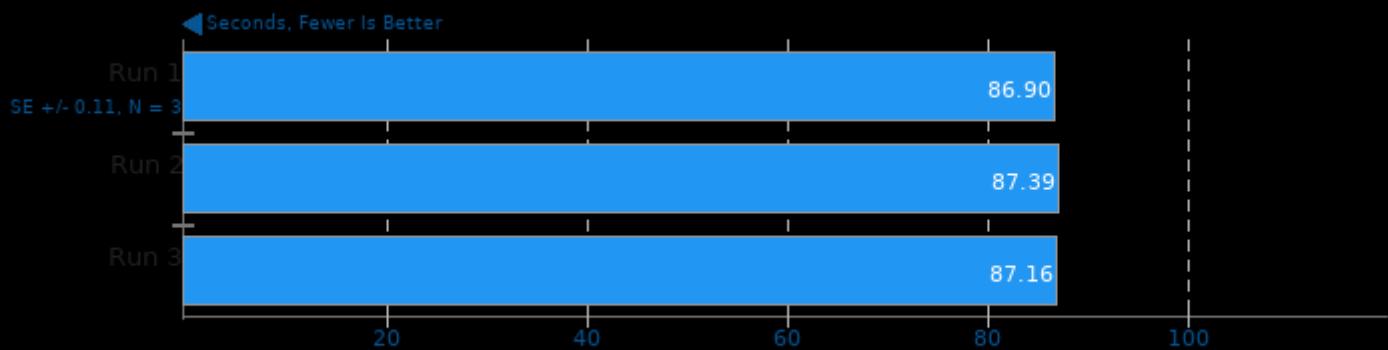
Test: Plotting Isosurface Of A 3D Volume, 1000 Times



1. Version 2.4.5, Copyright (c) 2008-2019, David Tschumperle.

G'MIC

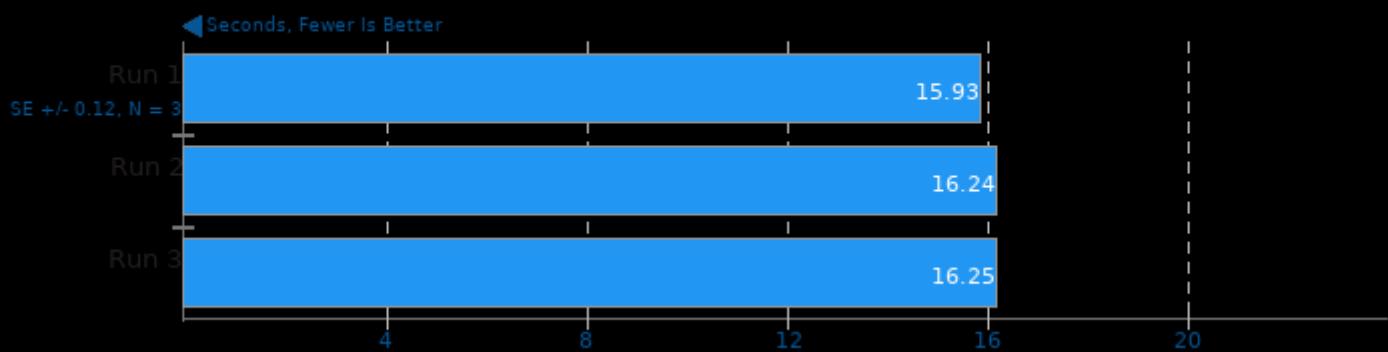
Test: 3D Elevated Function In Random Colors, 100 Times



1. Version 2.4.5, Copyright (c) 2008-2019, David Tschumperle.

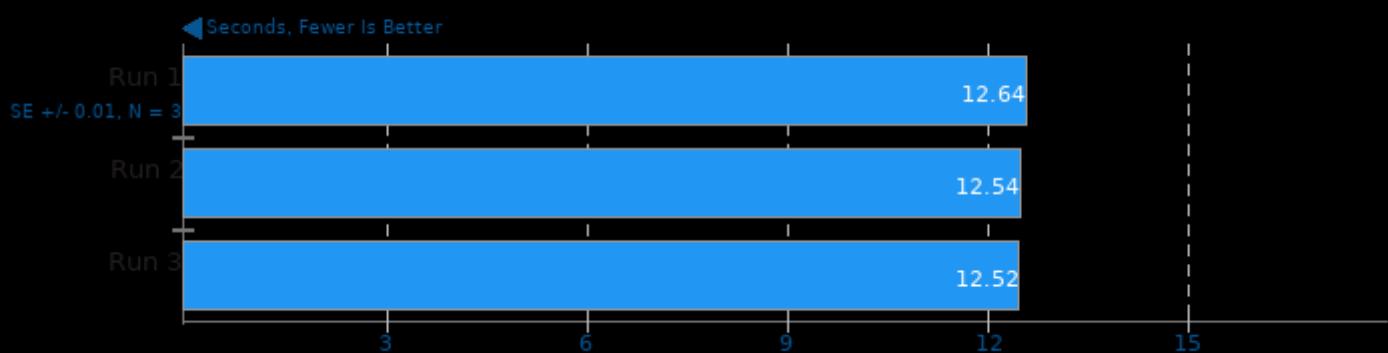
GEGL

Operation: Crop



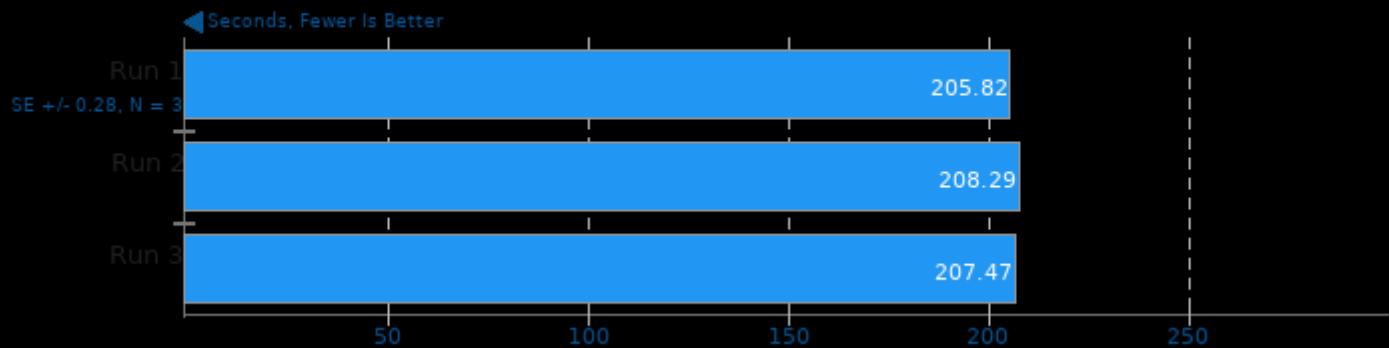
GEGL

Operation: Scale

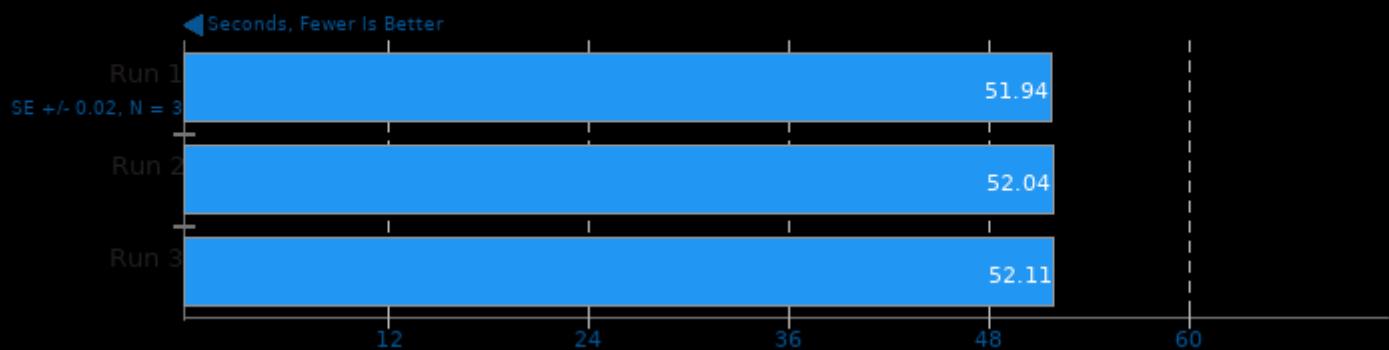


GEGL

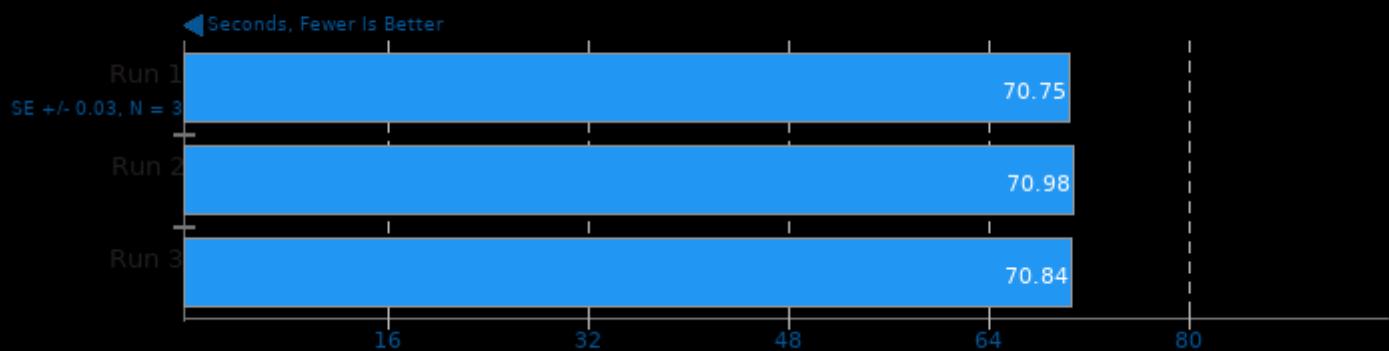
Operation: Cartoon

**GEGL**

Operation: Reflect

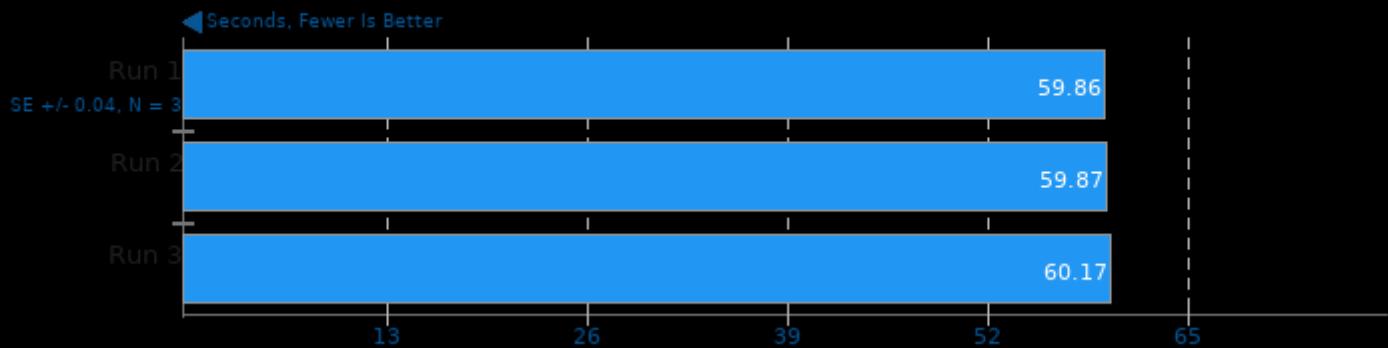
**GEGL**

Operation: Antialias

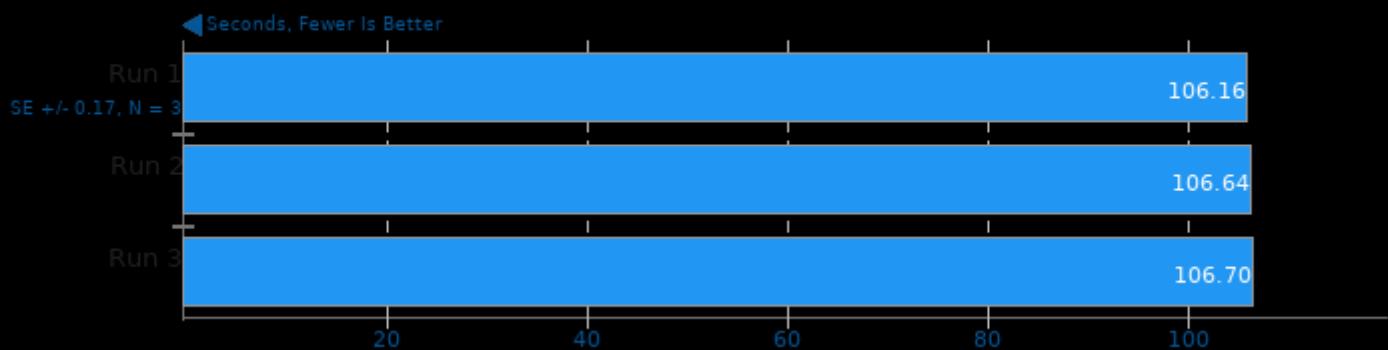


GEGL

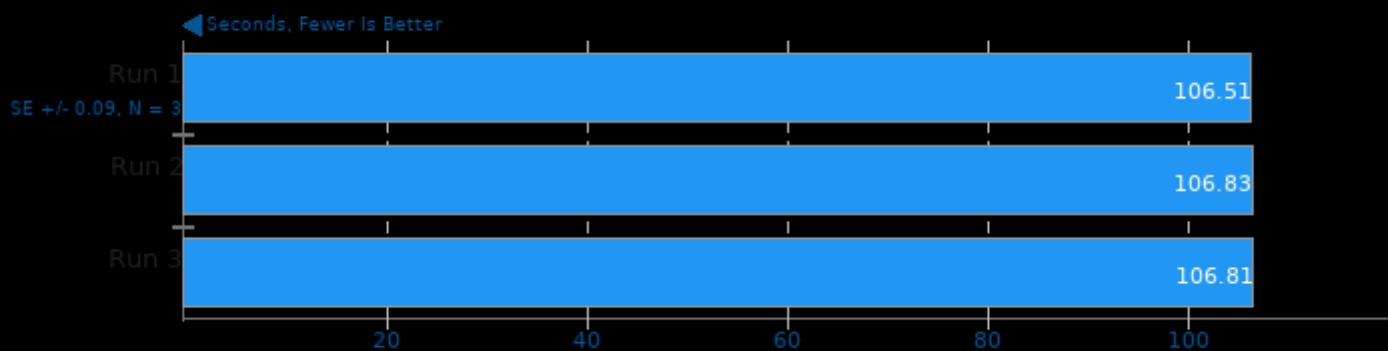
Operation: Tile Glass

**GEGL**

Operation: Wavelet Blur

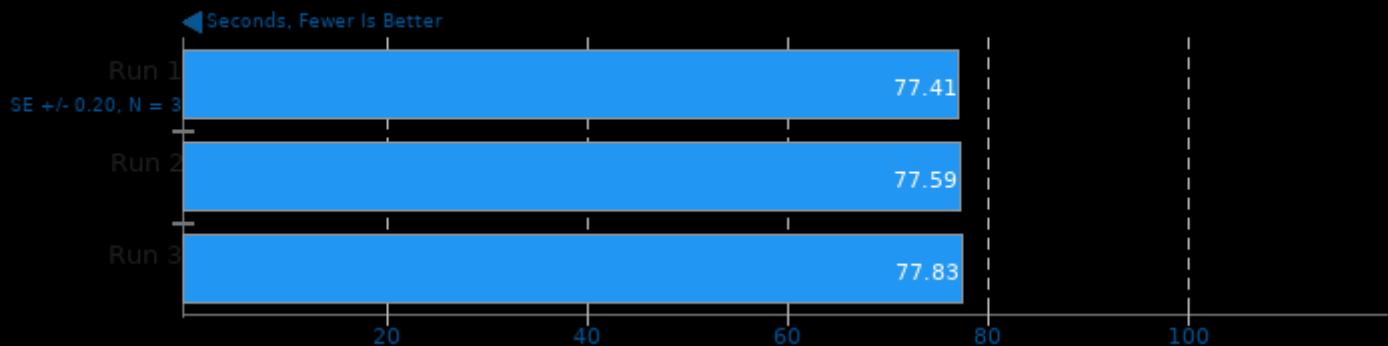
**GEGL**

Operation: Color Enhance



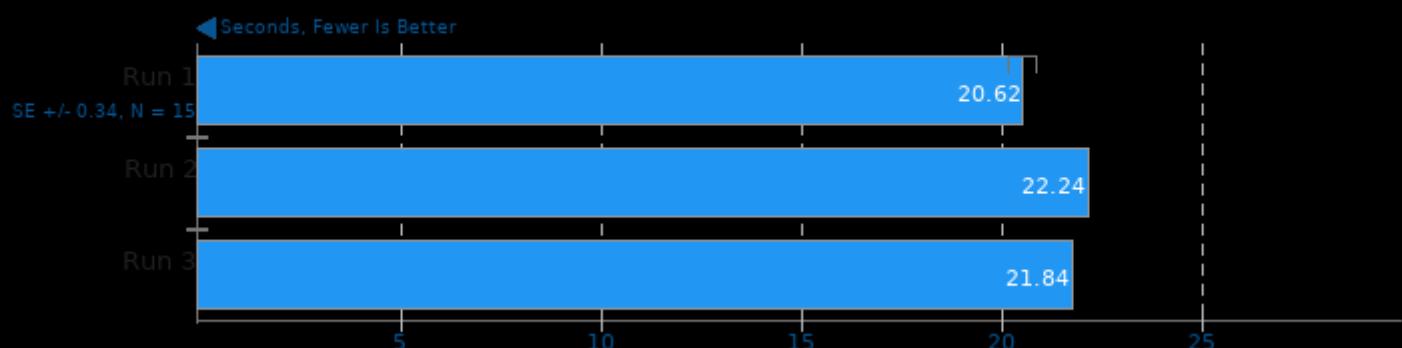
GEGL

Operation: Rotate 90 Degrees



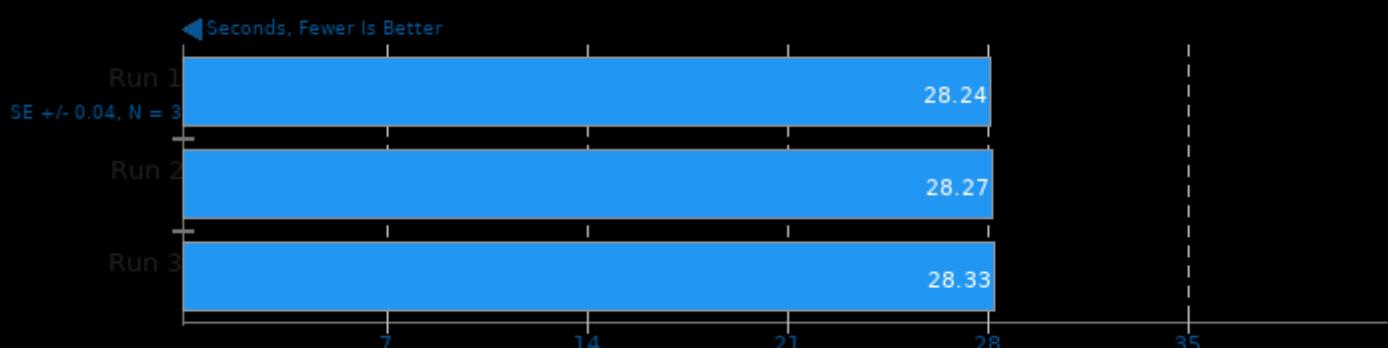
GIMP 2.10.18

Test: resize



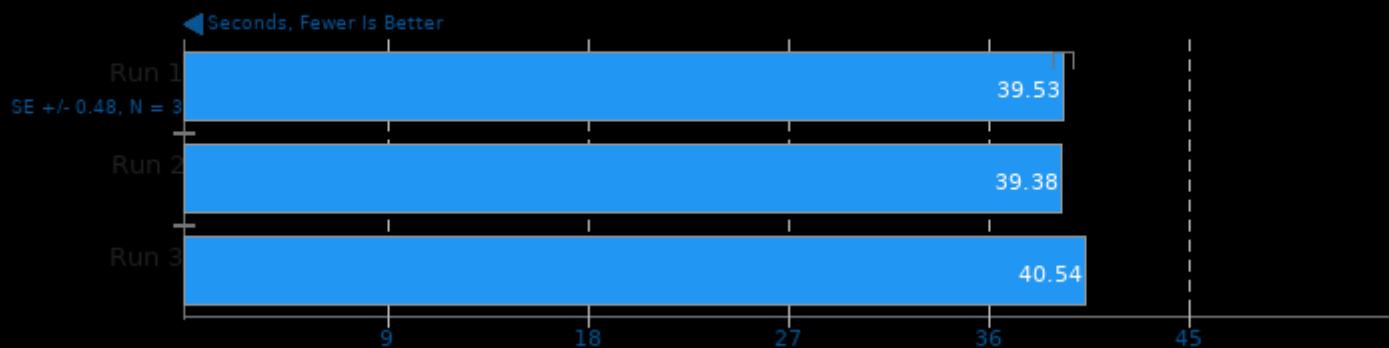
GIMP 2.10.18

Test: rotate



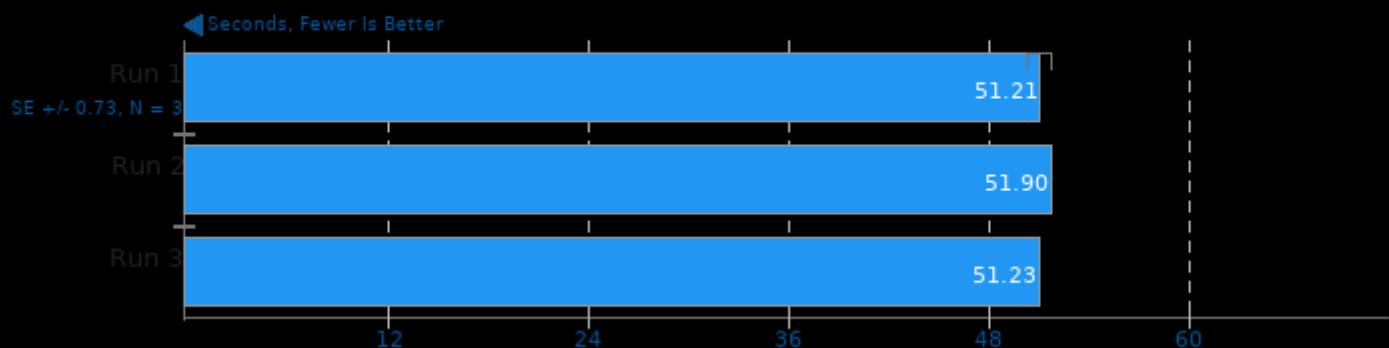
GIMP 2.10.18

Test: auto-levels



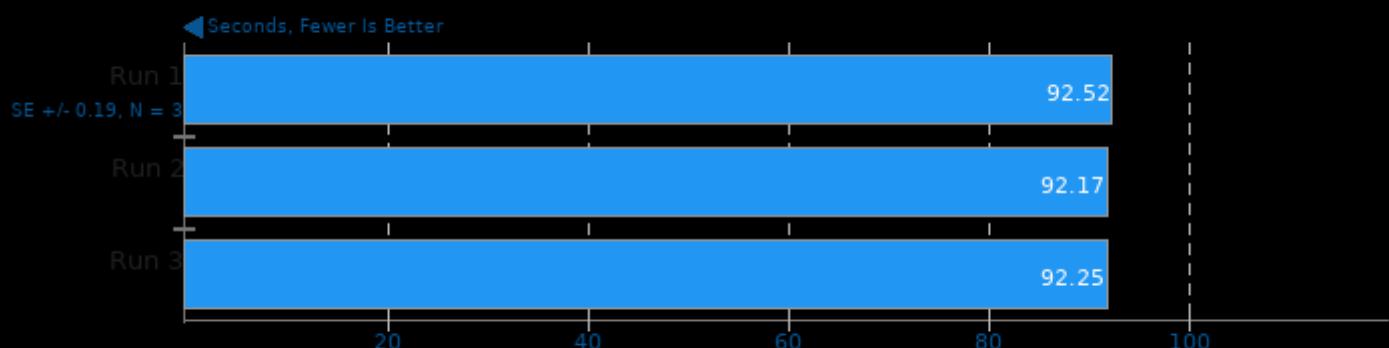
GIMP 2.10.18

Test: unsharp-mask



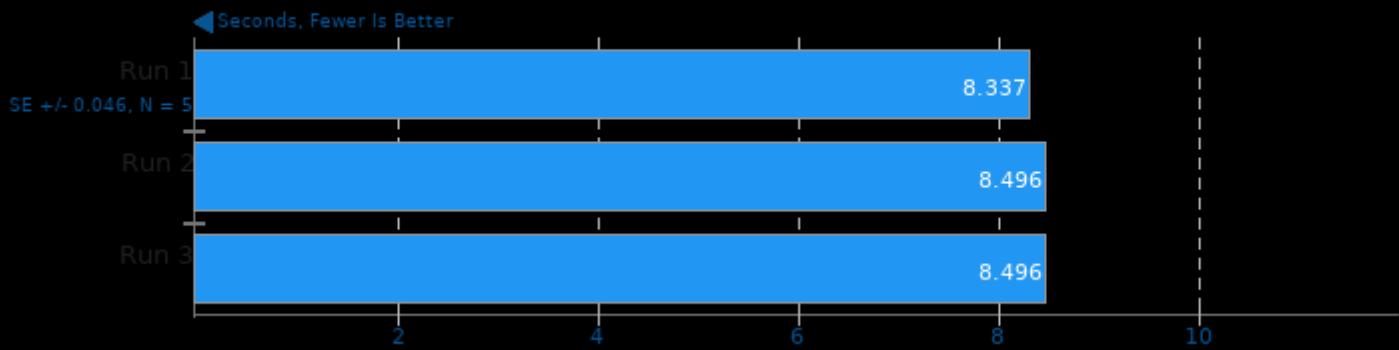
Git

Time To Complete Common Git Commands



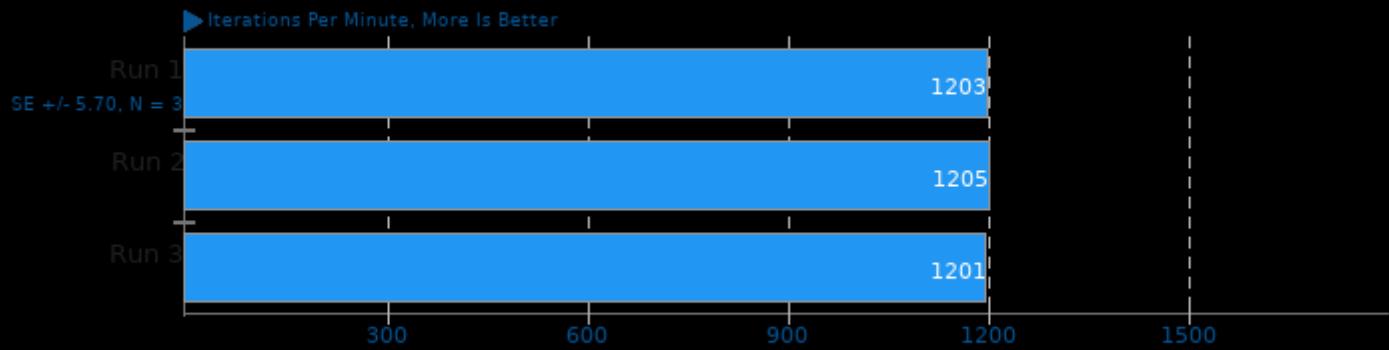
1. git version 2.27.0

GNU Octave Benchmark 5.2.0



GraphicsMagick 1.3.33

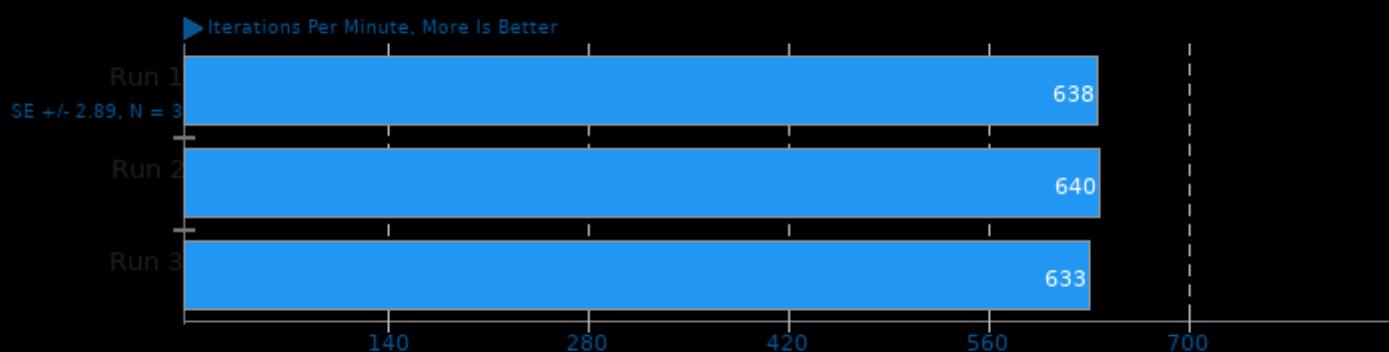
Operation: Swirl



1. (CC) gcc options: -fopenmp -O2 -pthread -ljpeg -lxml2 -lz -lm -lpthread

GraphicsMagick 1.3.33

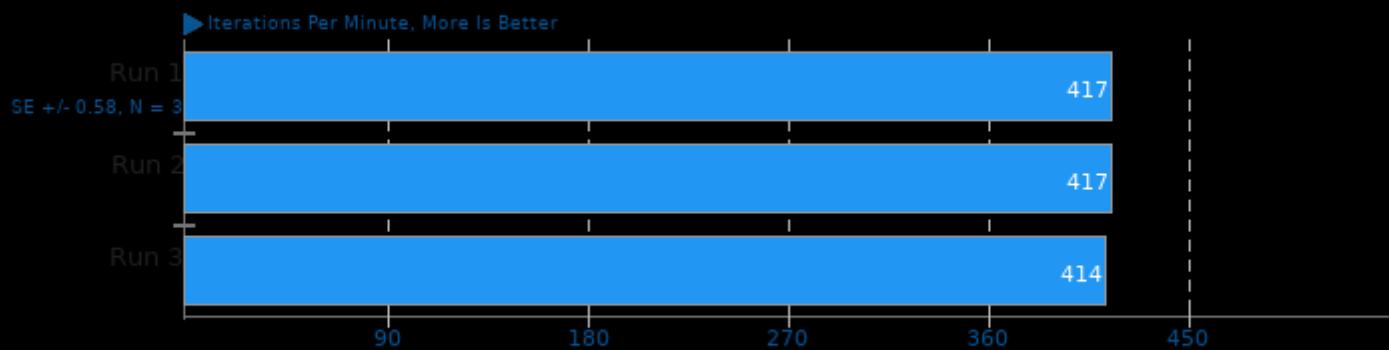
Operation: Rotate



1. (CC) gcc options: -fopenmp -O2 -pthread -ljpeg -lxml2 -lz -lm -lpthread

GraphicsMagick 1.3.33

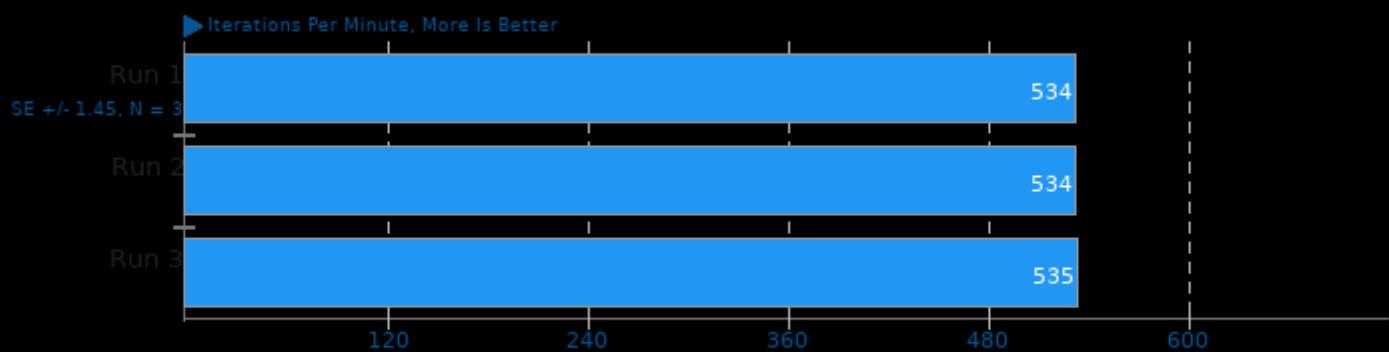
Operation: Sharpen



1. (CC) gcc options: -fopenmp -O2 -pthread -ljpeg -lxml2 -lz -lm -lpthread

GraphicsMagick 1.3.33

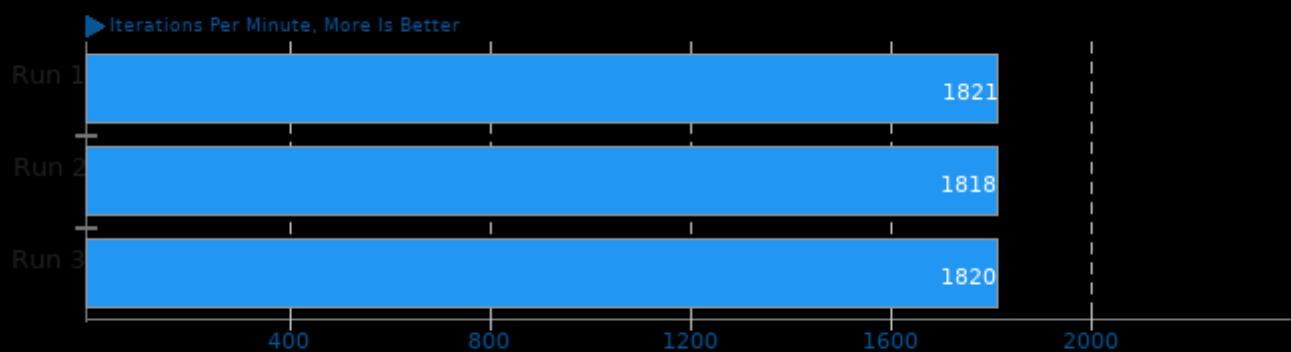
Operation: Enhanced



1. (CC) gcc options: -fopenmp -O2 -pthread -ljpeg -lxml2 -lz -lm -lpthread

GraphicsMagick 1.3.33

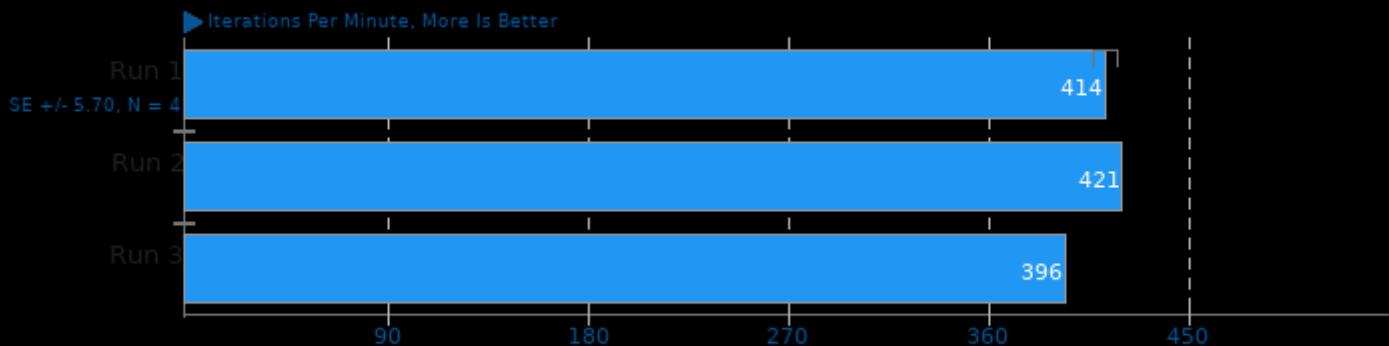
Operation: Resizing



1. (CC) gcc options: -fopenmp -O2 -pthread -ljpeg -lxml2 -lz -lm -lpthread

GraphicsMagick 1.3.33

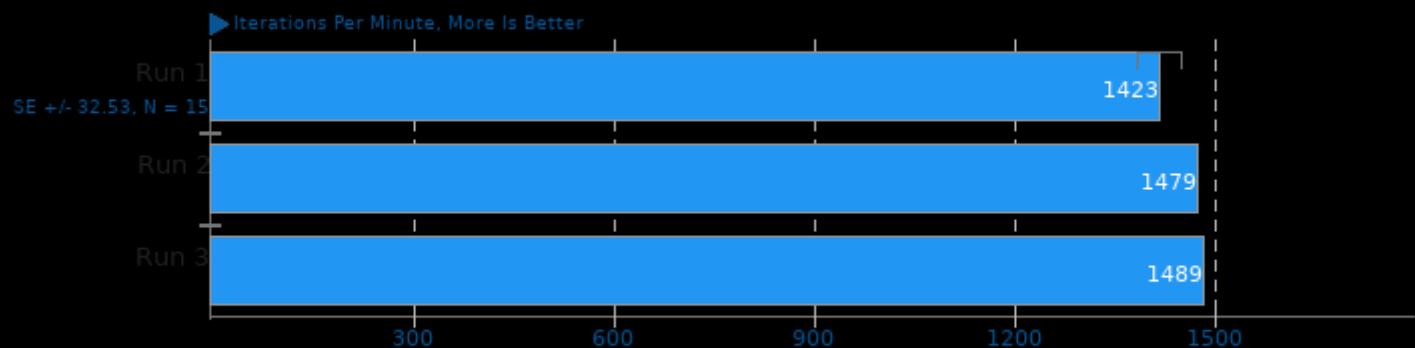
Operation: Noise-Gaussian



1. (CC) gcc options: -fopenmp -O2 -pthread -ljpeg -lxml2 -lz -lm -lpthread

GraphicsMagick 1.3.33

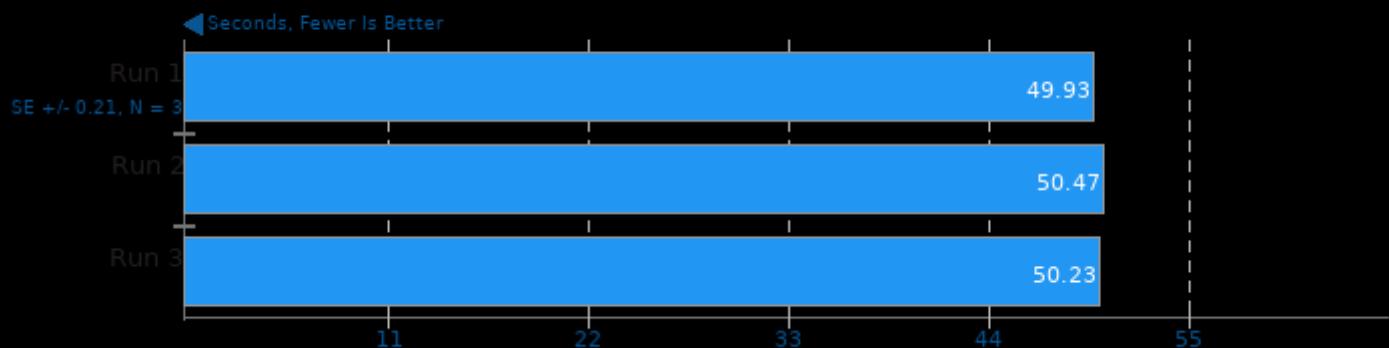
Operation: HWB Color Space



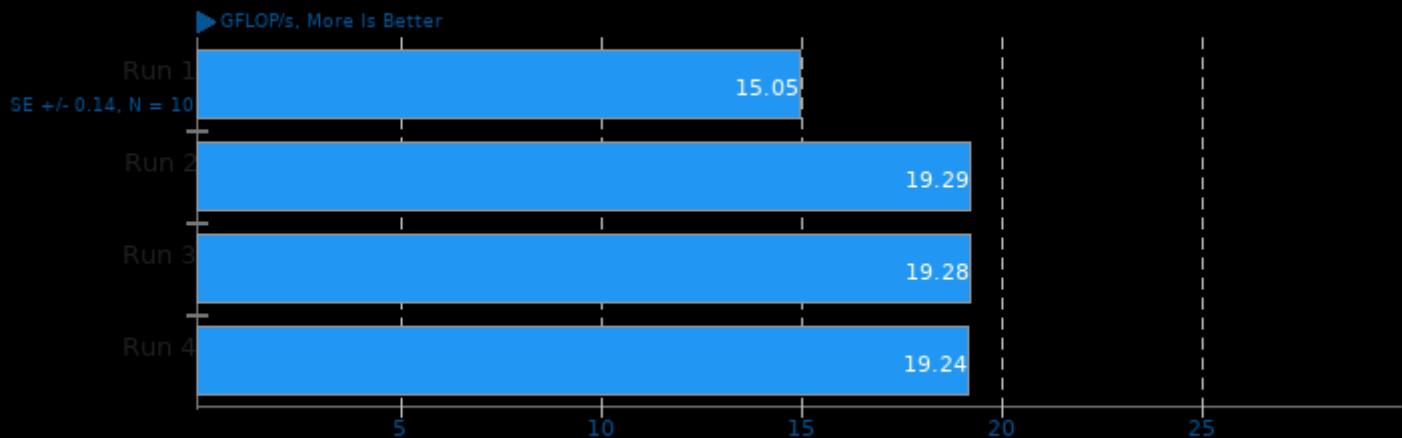
1. (CC) gcc options: -fopenmp -O2 -pthread -ljpeg -lxml2 -lz -lm -lpthread

Gzip Compression

Linux Source Tree Archiving To .tar.gz



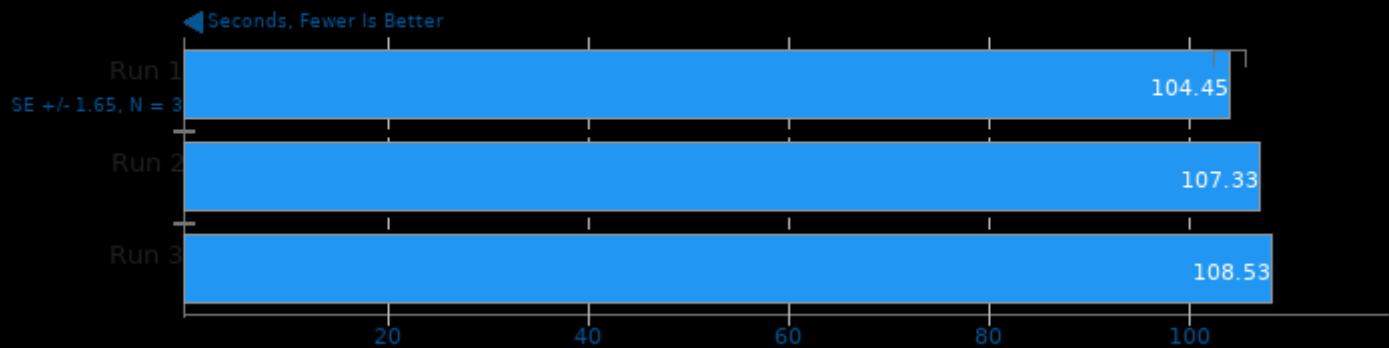
High Performance Conjugate Gradient 3.1



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

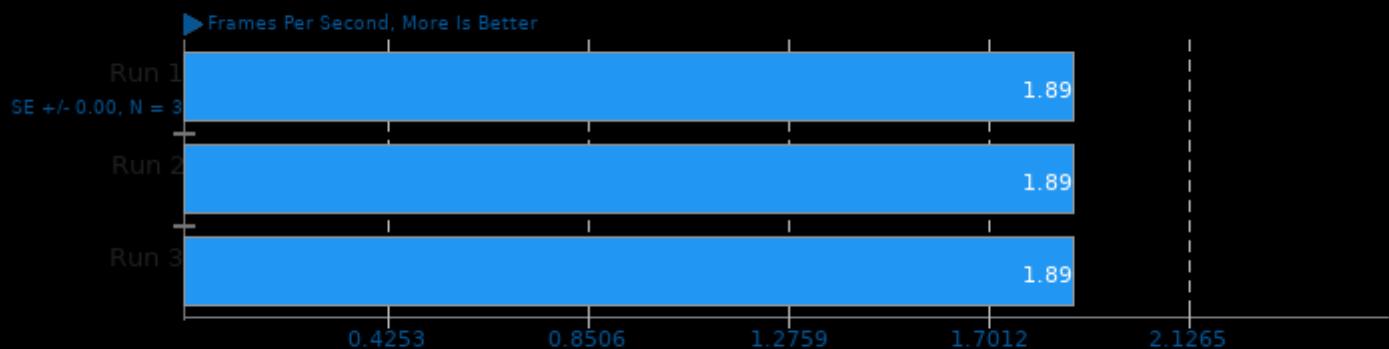
Hugin

Panorama Photo Assistant + Stitching Time



Kvazaar 2.0

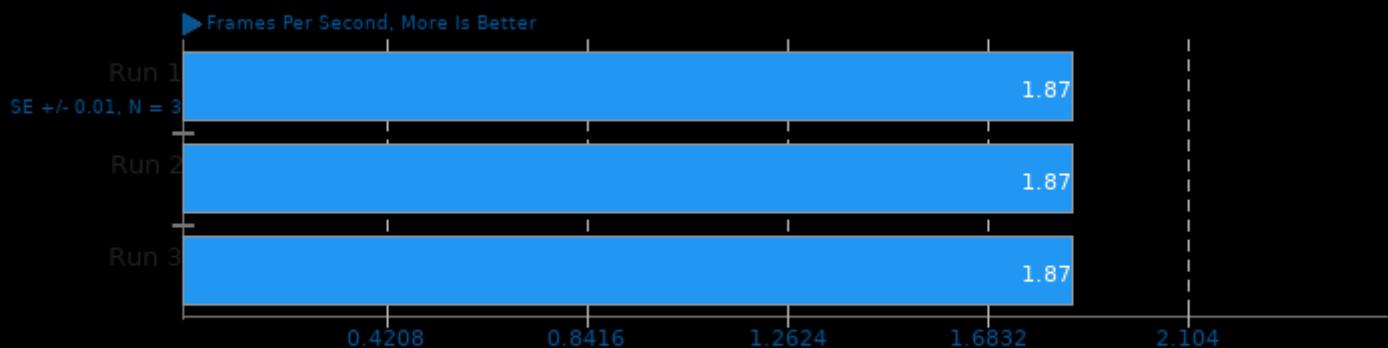
Video Input: Bosphorus 4K - Video Preset: Slow



1. (CC) gcc options: -pthread -fno-tree-vectorize -fvisibility=hidden -O2 -lpthread -lm -lrt

Kvazaar 2.0

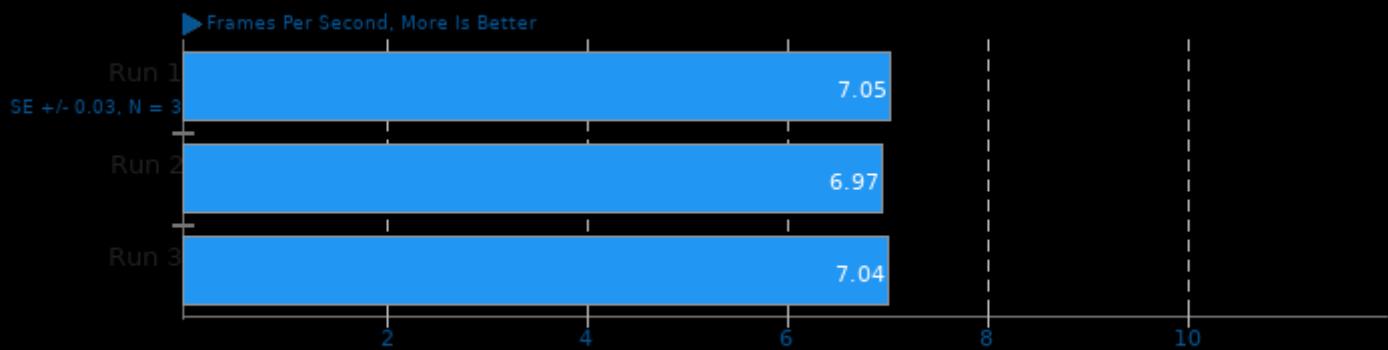
Video Input: Bosphorus 4K - Video Preset: Medium



1. (CC) gcc options: -pthread -fthread-vectorize -visibility=hidden -O2 -lpthread -lm -lrt

Kvazaar 2.0

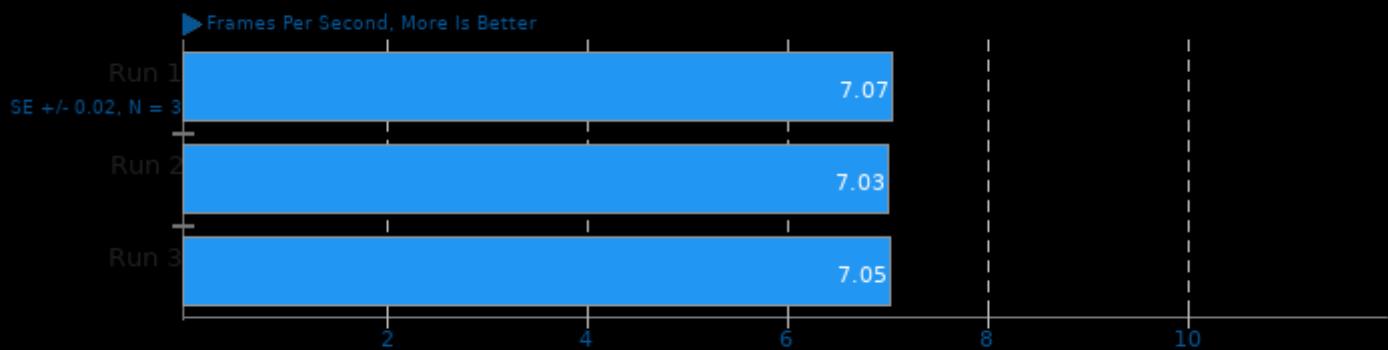
Video Input: Bosphorus 1080p - Video Preset: Slow



1. (CC) gcc options: -pthread -fthread-vectorize -visibility=hidden -O2 -lpthread -lm -lrt

Kvazaar 2.0

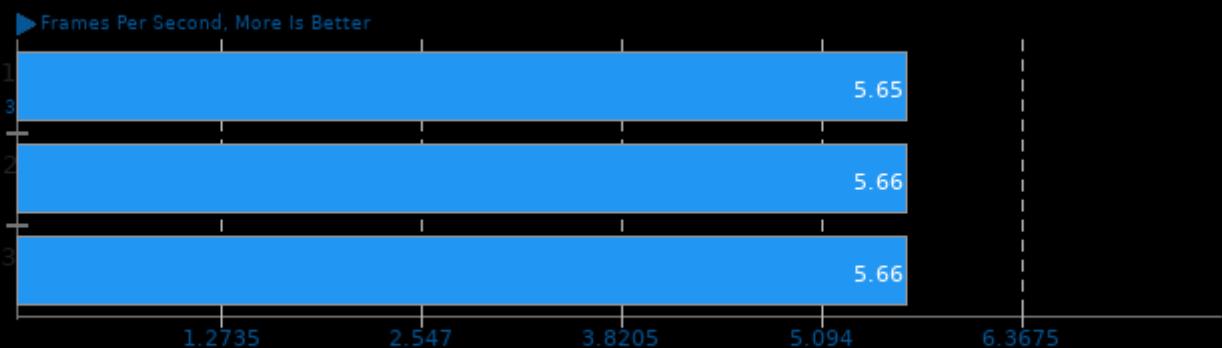
Video Input: Bosphorus 1080p - Video Preset: Medium



1. (CC) gcc options: -pthread -fthread-vectorize -visibility=hidden -O2 -lpthread -lm -lrt

Kvazaar 2.0

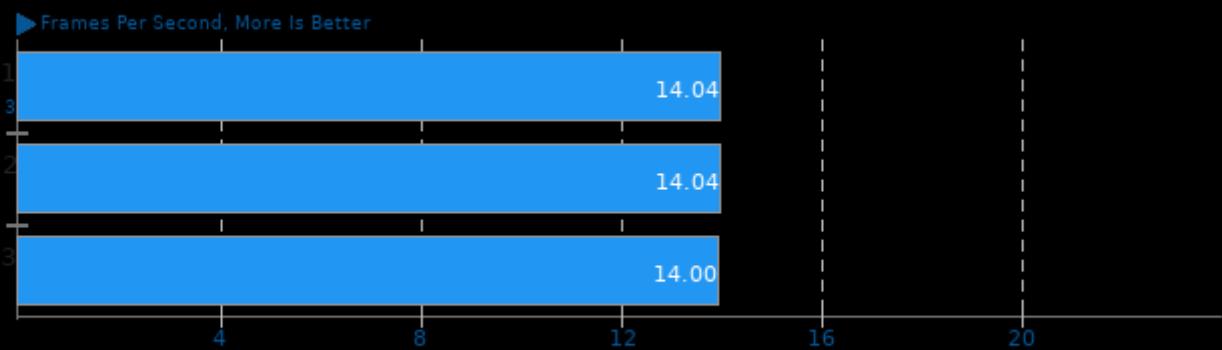
Video Input: Bosphorus 4K - Video Preset: Very Fast



1. (CC) gcc options: -pthread -fthread-vectorize -visibility=hidden -O2 -lpthread -lm -lrt

Kvazaar 2.0

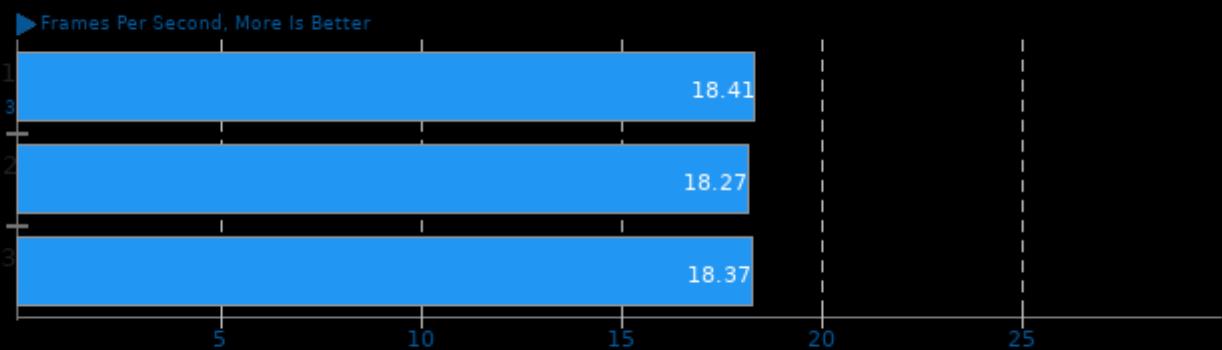
Video Input: Bosphorus 4K - Video Preset: Ultra Fast



1. (CC) gcc options: -pthread -fthread-vectorize -visibility=hidden -O2 -lpthread -lm -lrt

Kvazaar 2.0

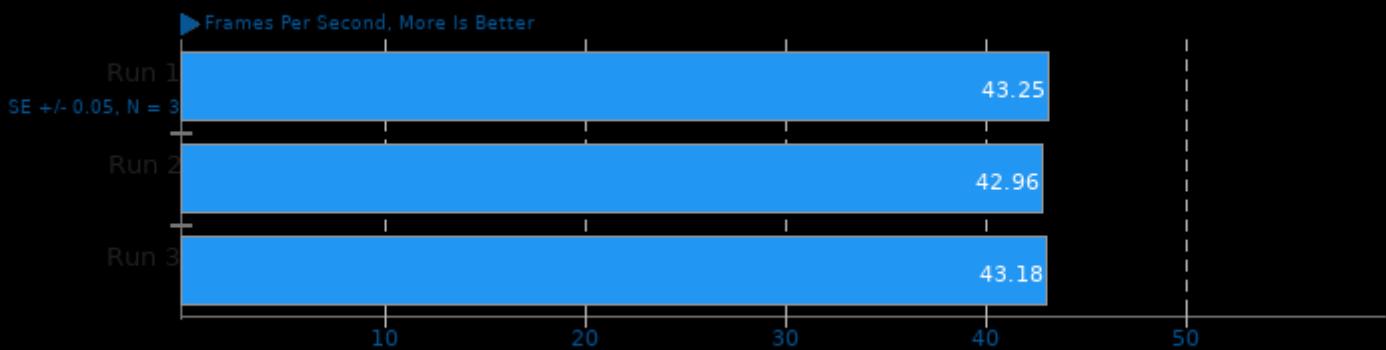
Video Input: Bosphorus 1080p - Video Preset: Very Fast



1. (CC) gcc options: -pthread -fthread-vectorize -visibility=hidden -O2 -lpthread -lm -lrt

Kvazaar 2.0

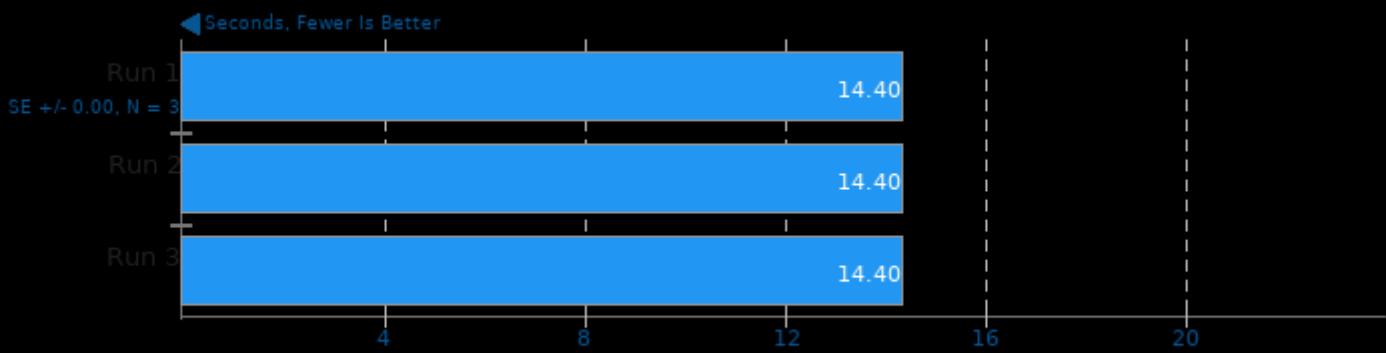
Video Input: Bosphorus 1080p - Video Preset: Ultra Fast



1. (CC) gcc options: -pthread -fno-tree-vectorize -fvisibility=hidden -O2 -lpthread -lm -lrt

LAME MP3 Encoding 3.100

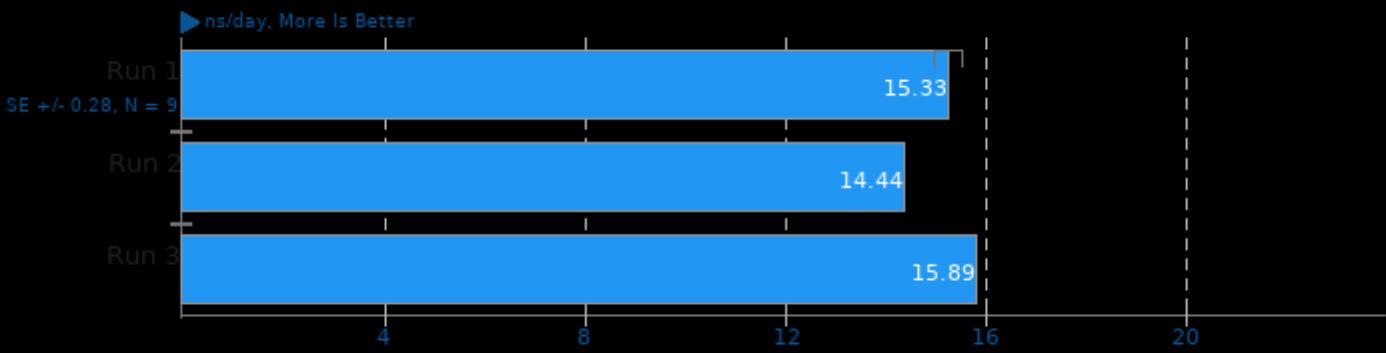
WAV To MP3



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

LAMMPS Molecular Dynamics Simulator 29Oct2020

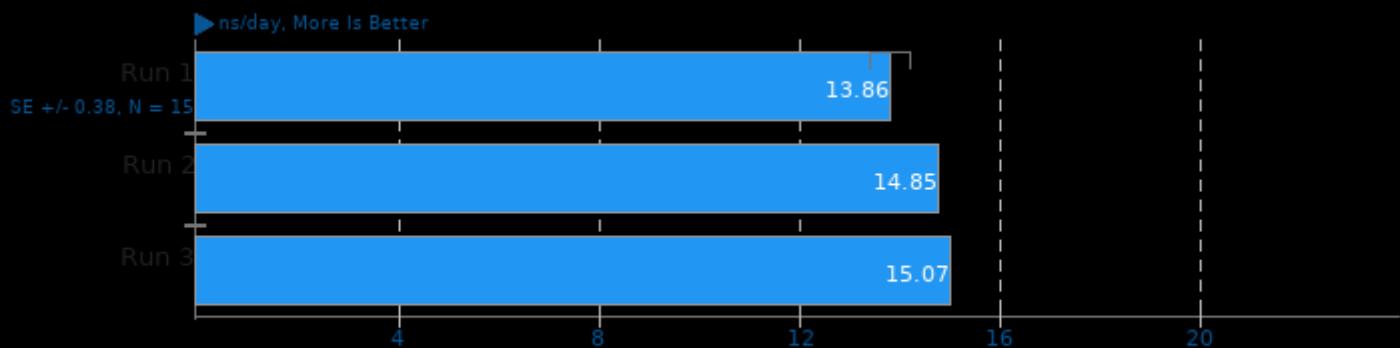
Model: 20k Atoms



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

LAMMPS Molecular Dynamics Simulator 29Oct2020

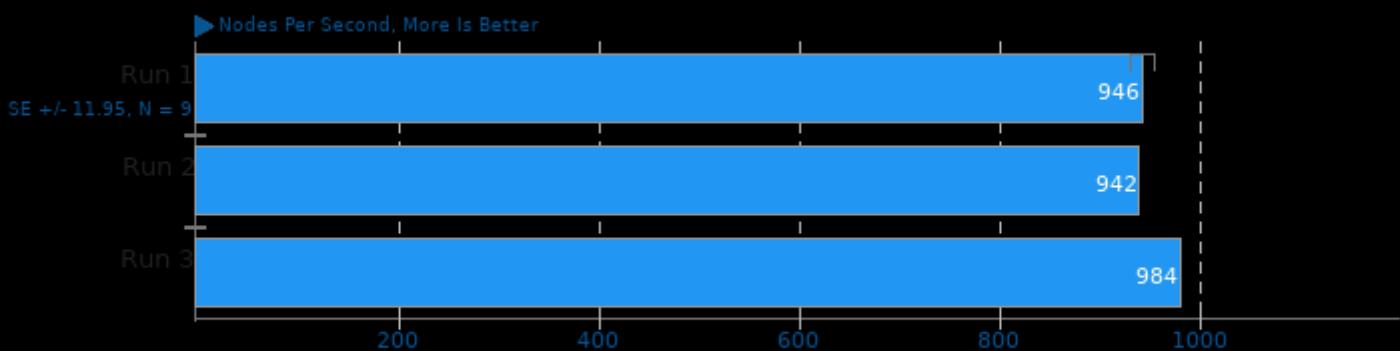
Model: Rhodopsin Protein



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

LeelaChessZero 0.26

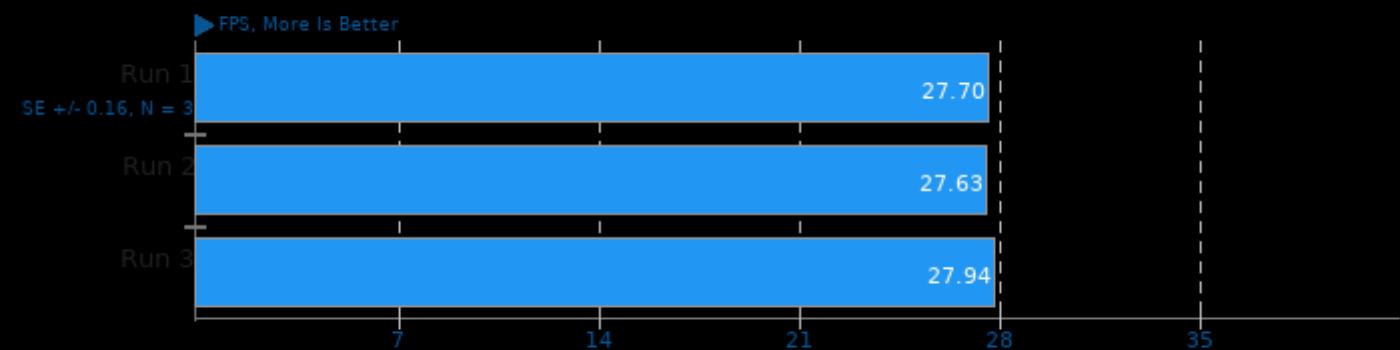
Backend: BLAS



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

libgav1 2019-10-05

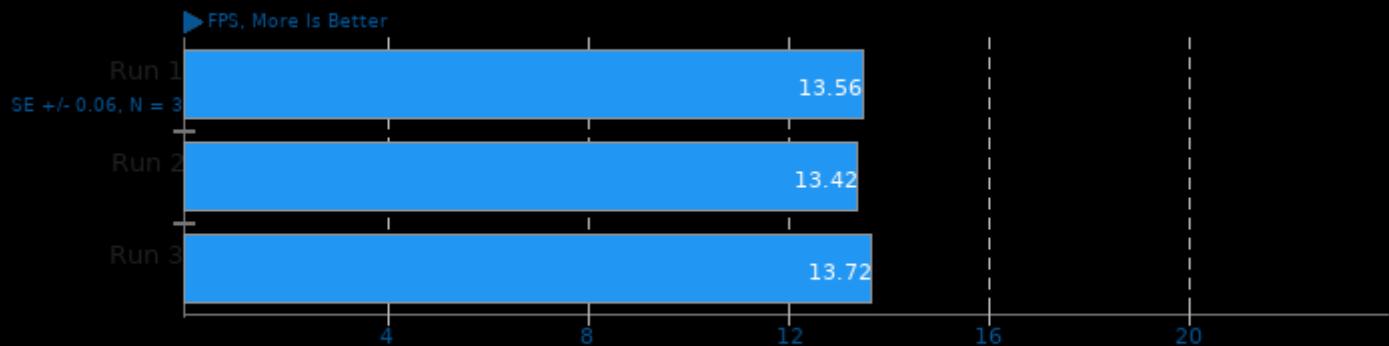
Video Input: Chimera 1080p



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

libgavl 2019-10-05

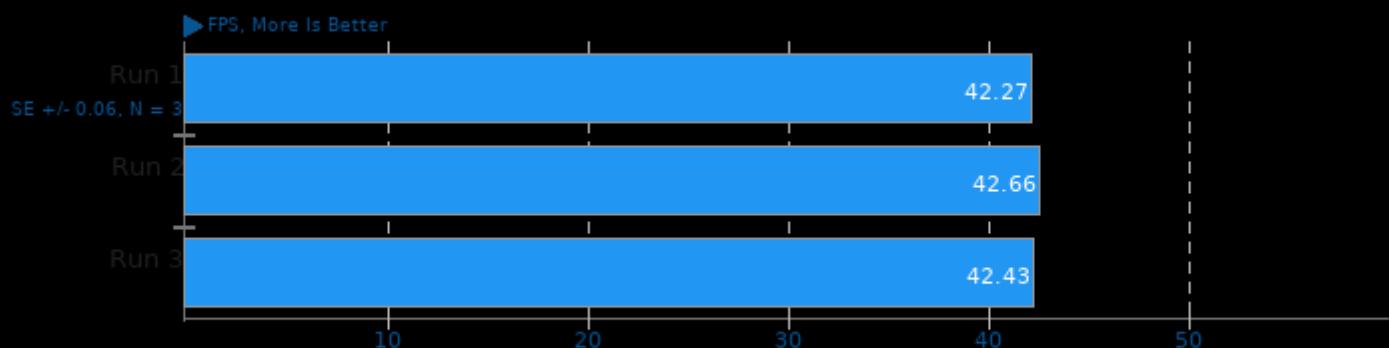
Video Input: Summer Nature 4K



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

libgavl 2019-10-05

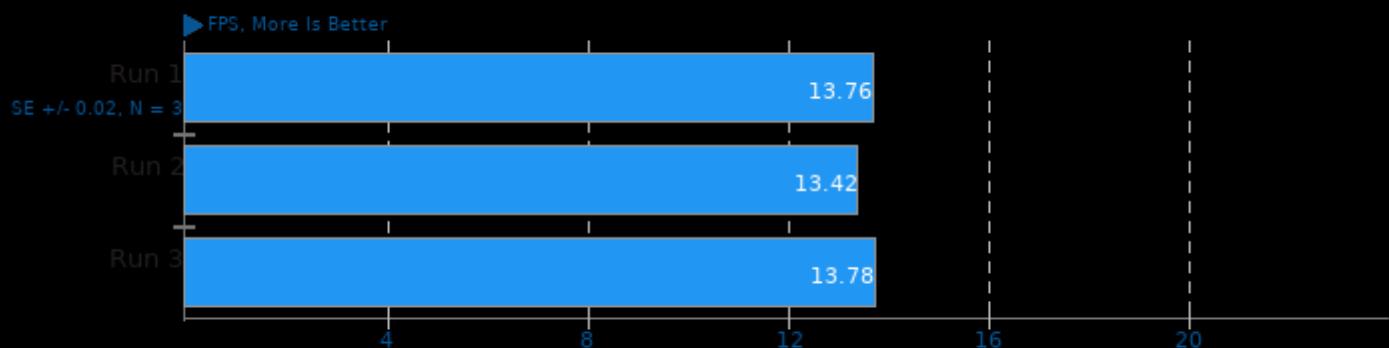
Video Input: Summer Nature 1080p



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

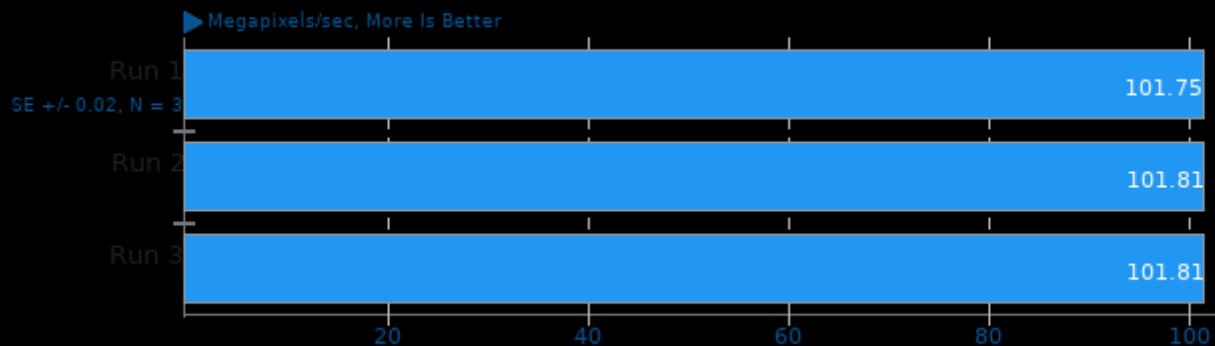
libgavl 2019-10-05

Video Input: Chimera 1080p 10-bit



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

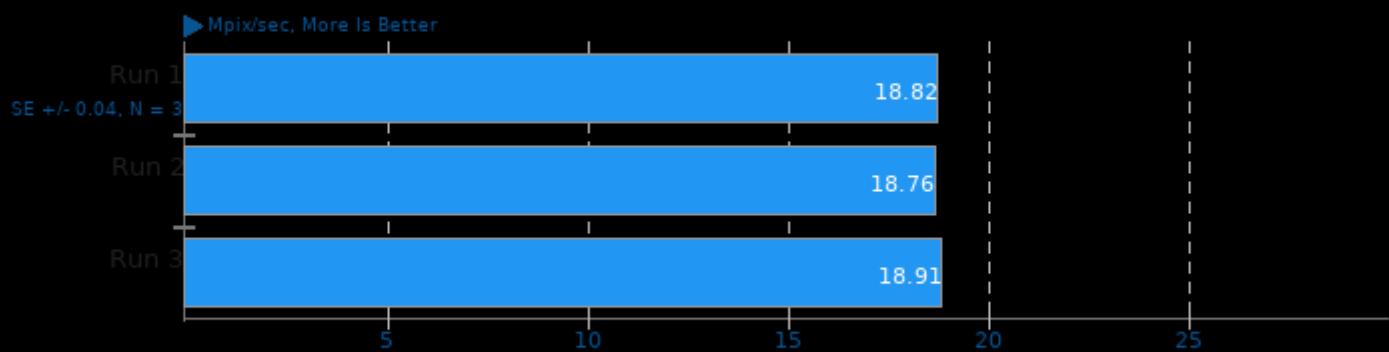
libjpeg-turbo tjbench 2.0.2



1. (CC) gcc options: -O3 -rdynamic

LibRaw 0.20

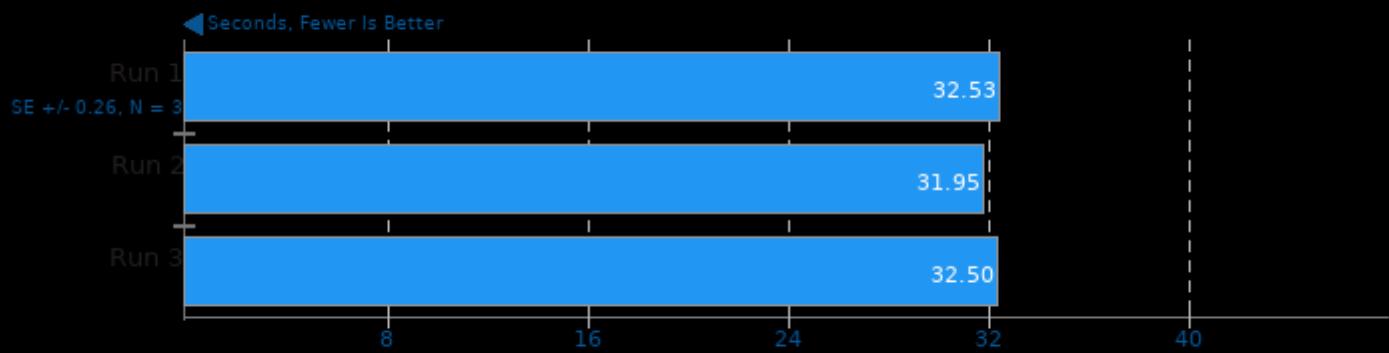
Post-Processing Benchmark



1. (CXX) g++ options: -O2 -fopenmp -ljpeg -lz -lm

librsvg

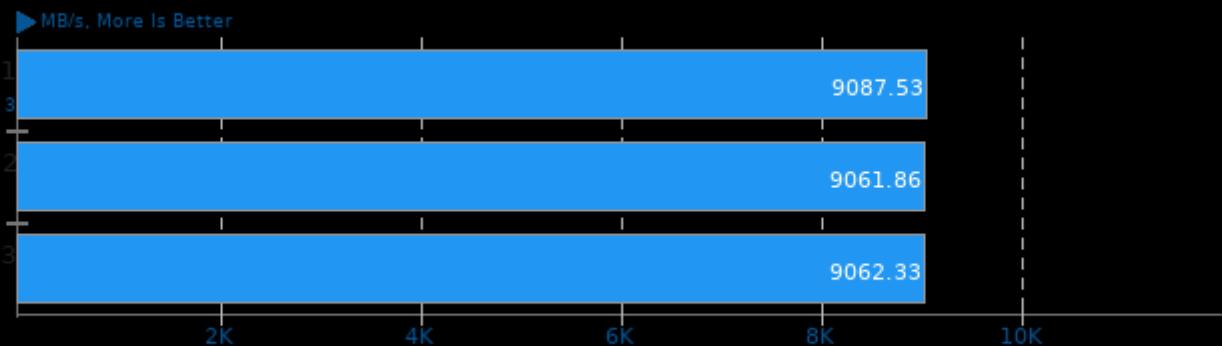
Operation: SVG Files To PNG



1. rsvg-convert version 2.50.1

LZ4 Compression 1.9.3

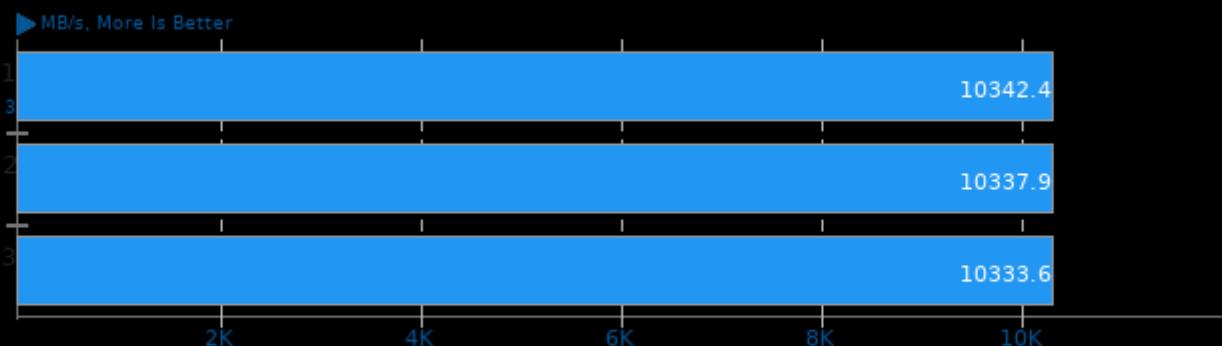
Compression Level: 1 - Compression Speed



1. (CC) gcc options: -O3

LZ4 Compression 1.9.3

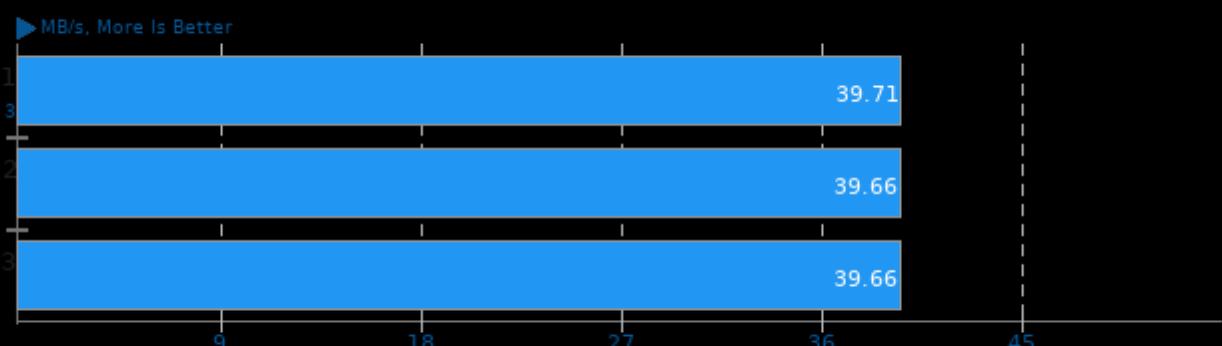
Compression Level: 1 - Decompression Speed



1. (CC) gcc options: -O3

LZ4 Compression 1.9.3

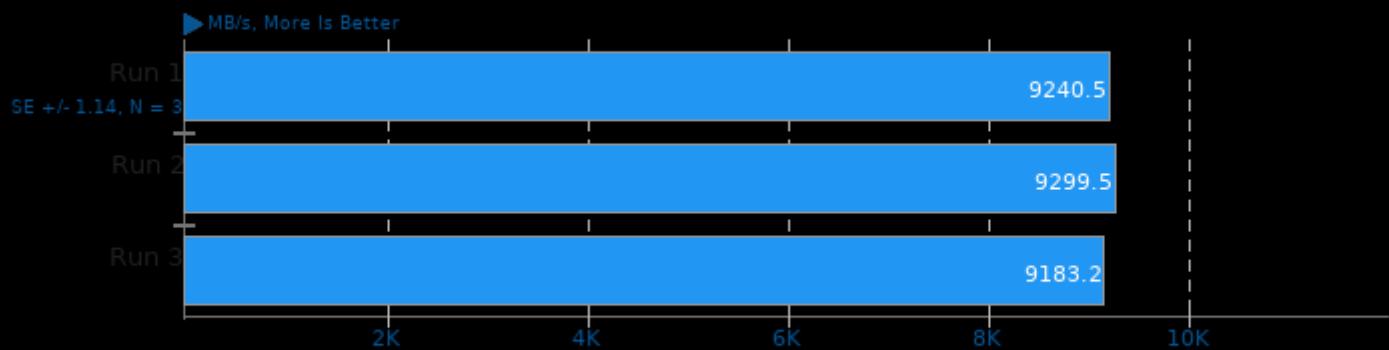
Compression Level: 3 - Compression Speed



1. (CC) gcc options: -O3

LZ4 Compression 1.9.3

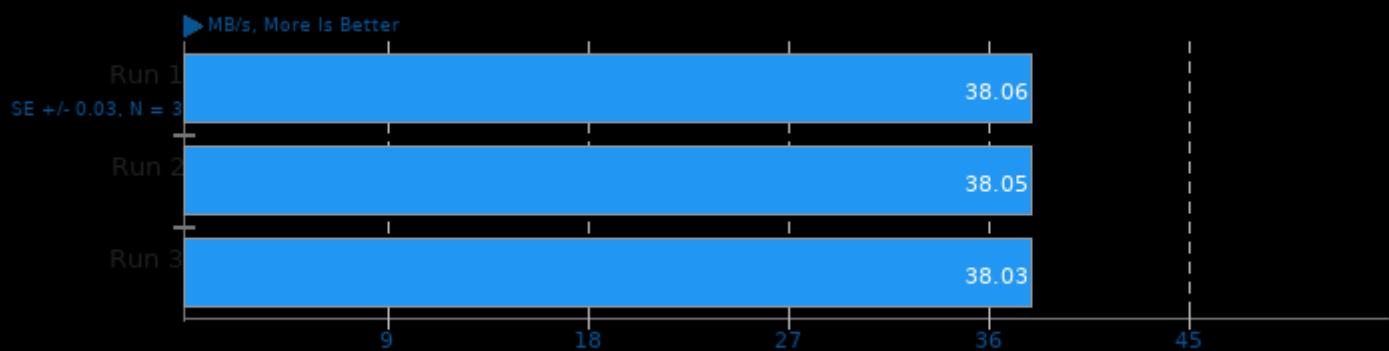
Compression Level: 3 - Decompression Speed



1. (CC) gcc options: -O3

LZ4 Compression 1.9.3

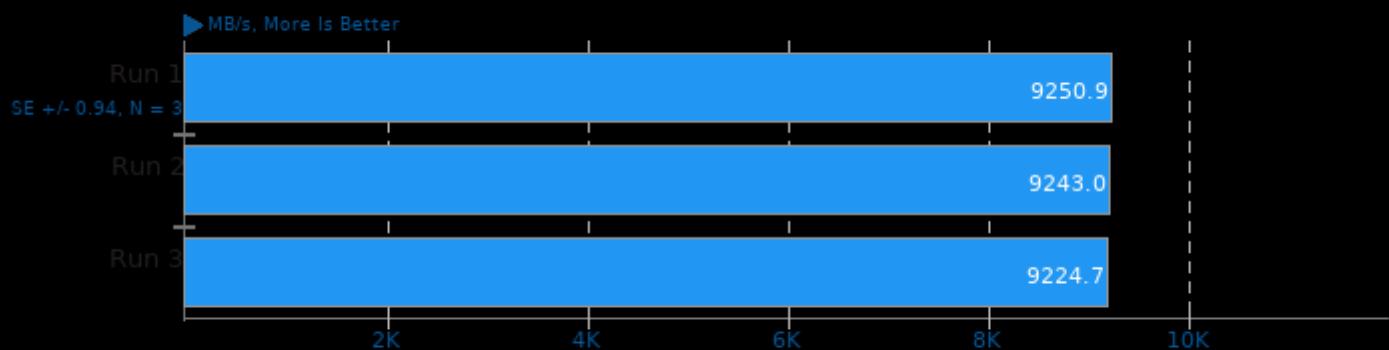
Compression Level: 9 - Compression Speed



1. (CC) gcc options: -O3

LZ4 Compression 1.9.3

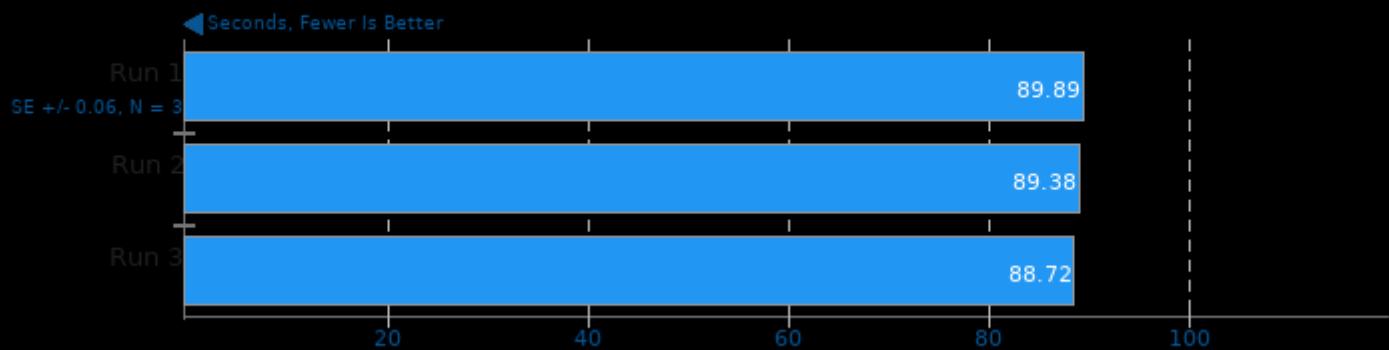
Compression Level: 9 - Decompression Speed



1. (CC) gcc options: -O3

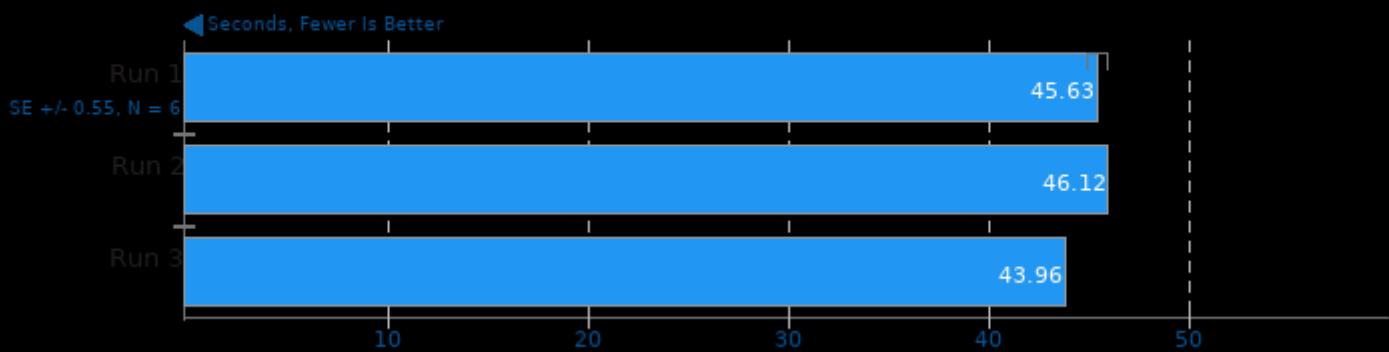
Milpack Benchmark

Benchmark: scikit_ica



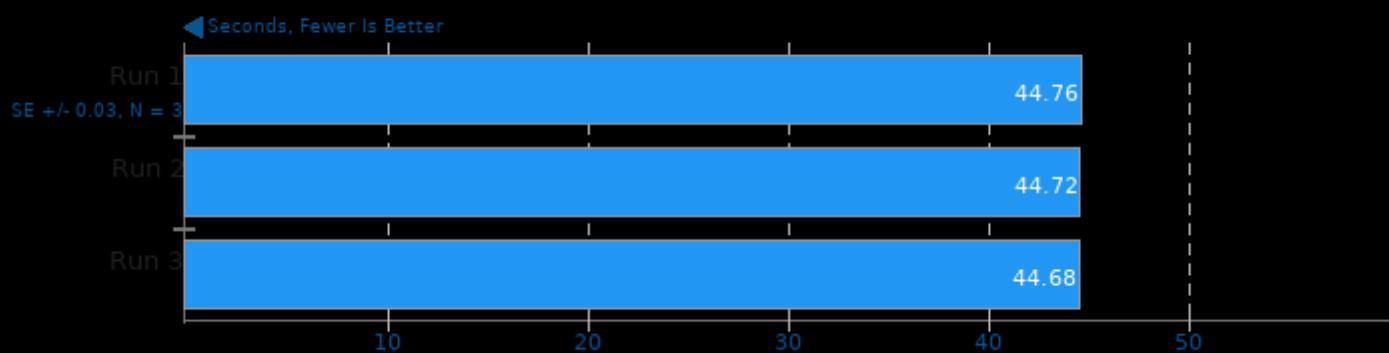
Milpack Benchmark

Benchmark: scikit_qda



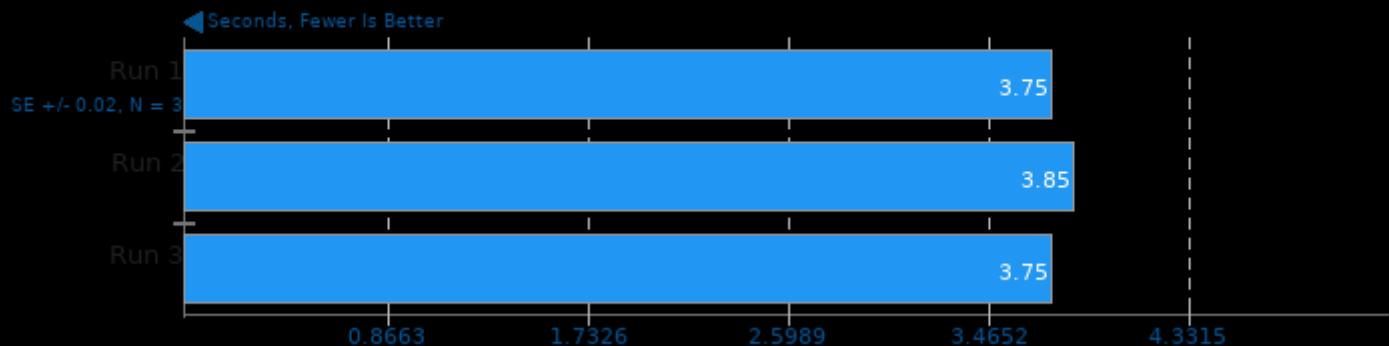
Milpack Benchmark

Benchmark: scikit_svm



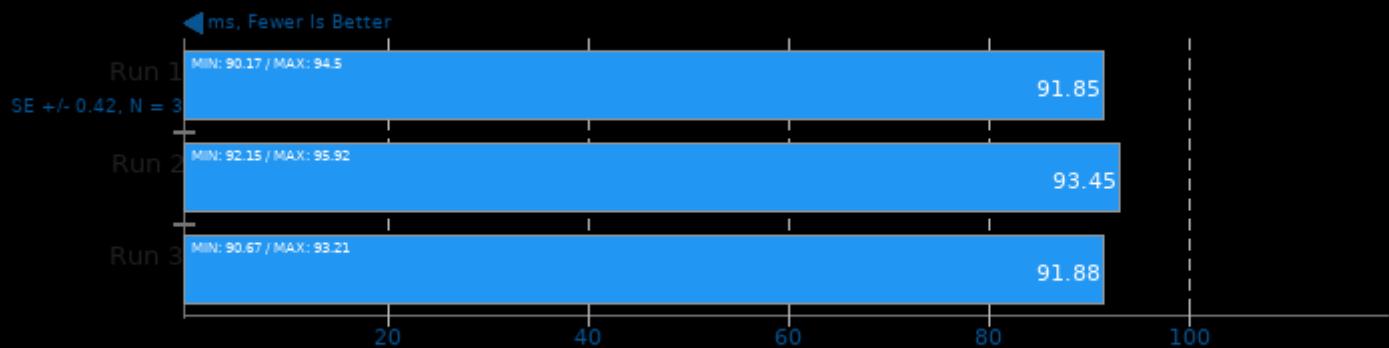
Mlpack Benchmark

Benchmark: scikit_linearridge_regression



Mobile Neural Network 2020-09-17

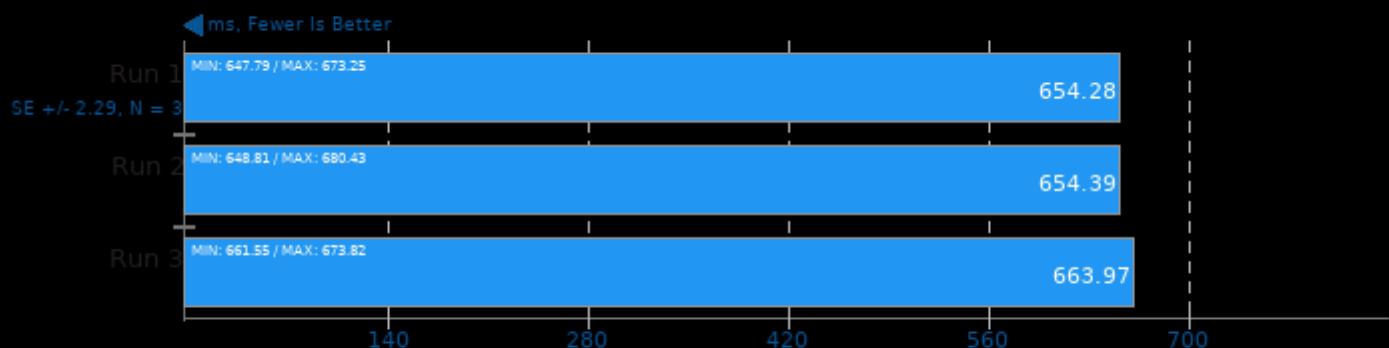
Model: SqueezeNetV1.0



1. (CXX) g++ options: -std=c++11 -O3 -fvisibility=hidden -fomit-frame-pointer -fstrict-aliasing -ffunction-sections -fdata-sections -ffast-math -fno-rtti -fno-threadsafe-statics

Mobile Neural Network 2020-09-17

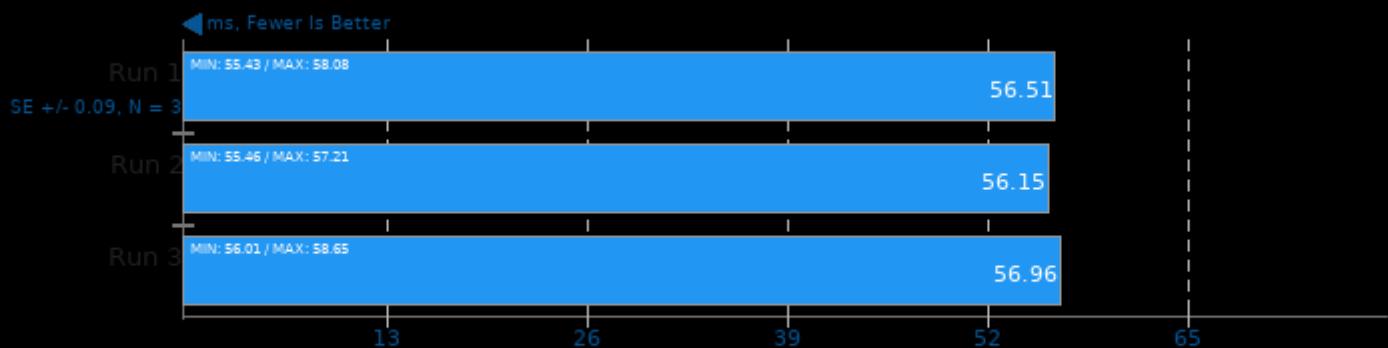
Model: resnet-v2-50



1. (CXX) g++ options: -std=c++11 -O3 -fvisibility=hidden -fomit-frame-pointer -fstrict-aliasing -ffunction-sections -fdata-sections -ffast-math -fno-rtti -fno-threadsafe-statics

Mobile Neural Network 2020-09-17

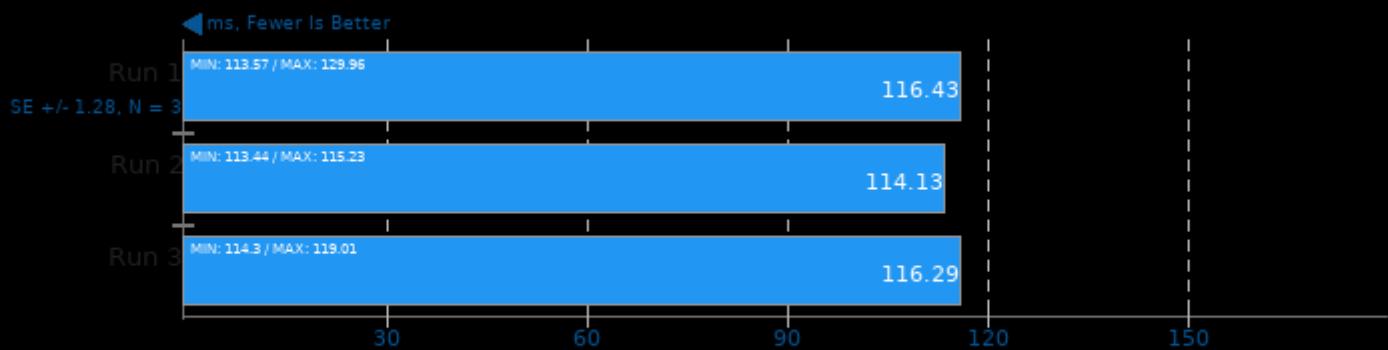
Model: MobileNetV2_224



1. (CXX) g++ options: -std=c++11 -O3 -fvisibility=hidden -fomit-frame-pointer -fstrict-aliasing -ffunction-sections -fdata-sections -ffast-math -fno-rtti -fr

Mobile Neural Network 2020-09-17

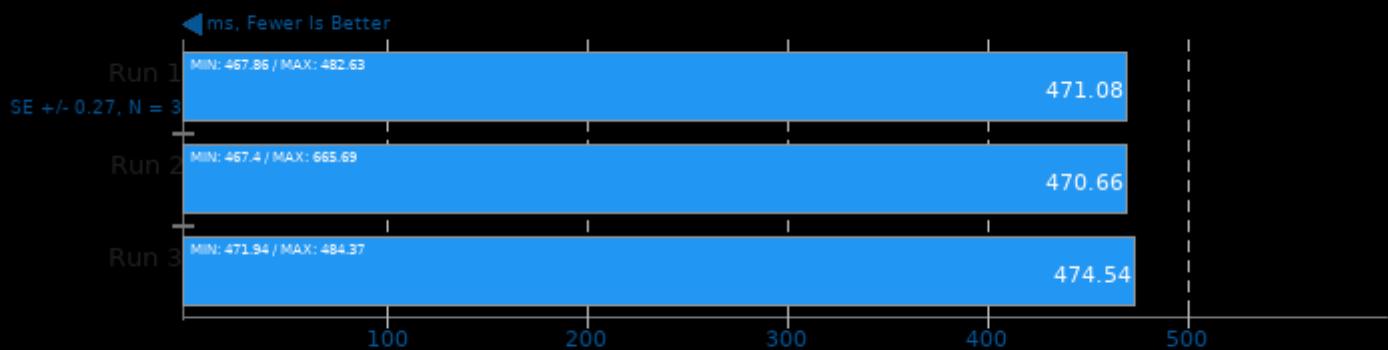
Model: mobilenet-v1-1.0



1. (CXX) g++ options: -std=c++11 -O3 -fvisibility=hidden -fomit-frame-pointer -fstrict-aliasing -ffunction-sections -fdata-sections -ffast-math -fno-rtti -fr

Mobile Neural Network 2020-09-17

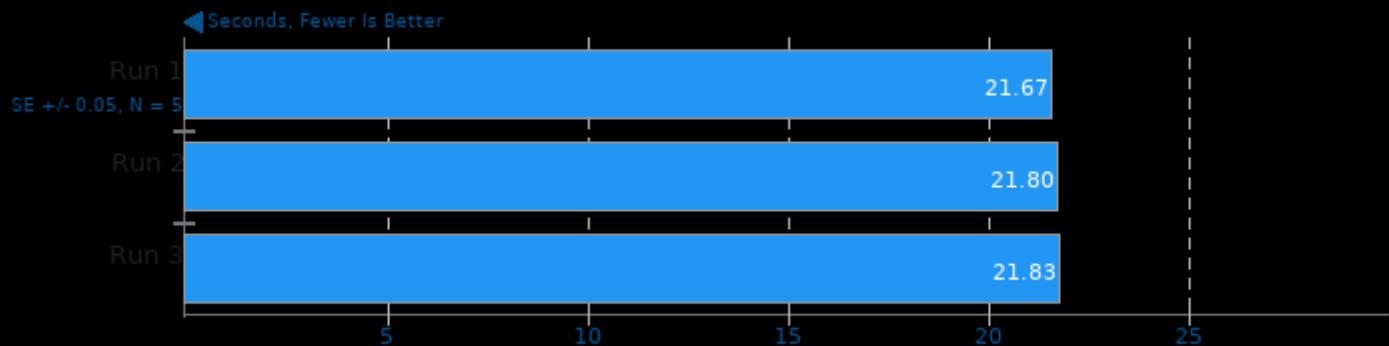
Model: inception-v3



1. (CXX) g++ options: -std=c++11 -O3 -fvisibility=hidden -fomit-frame-pointer -fstrict-aliasing -ffunction-sections -fdata-sections -ffast-math -fno-rtti -fr

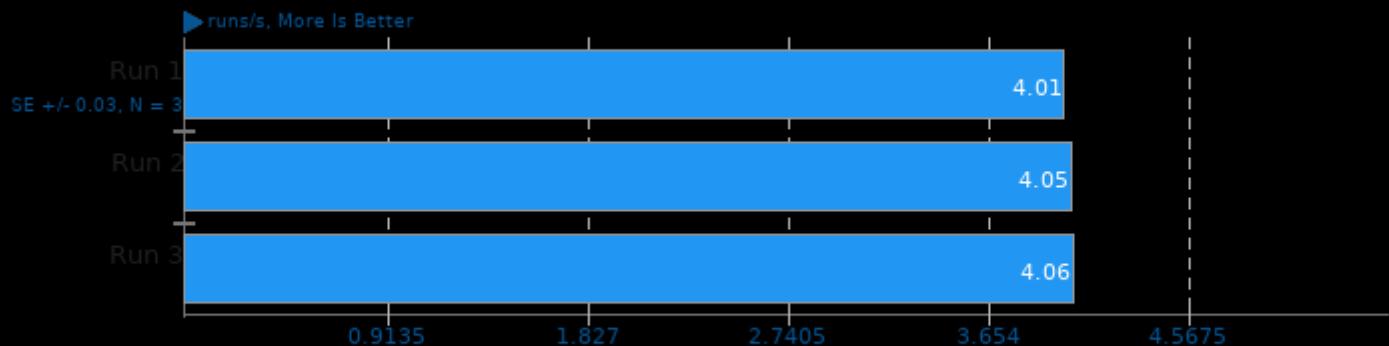
Monkey Audio Encoding 3.99.6

WAV To APE



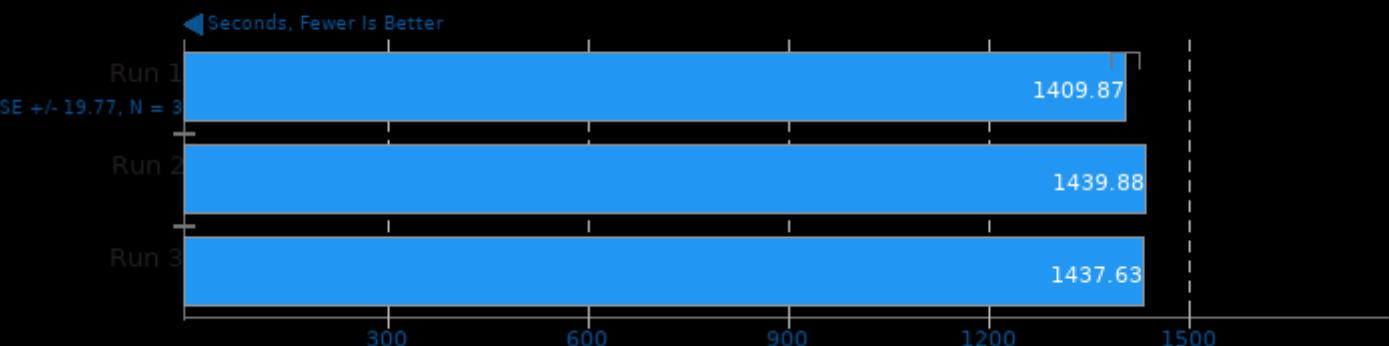
1. (CXX) g++ options: -O3 -pedantic -rdynamic -lrt

Node.js V8 Web Tooling Benchmark

1. Nodejs
v12.18.2

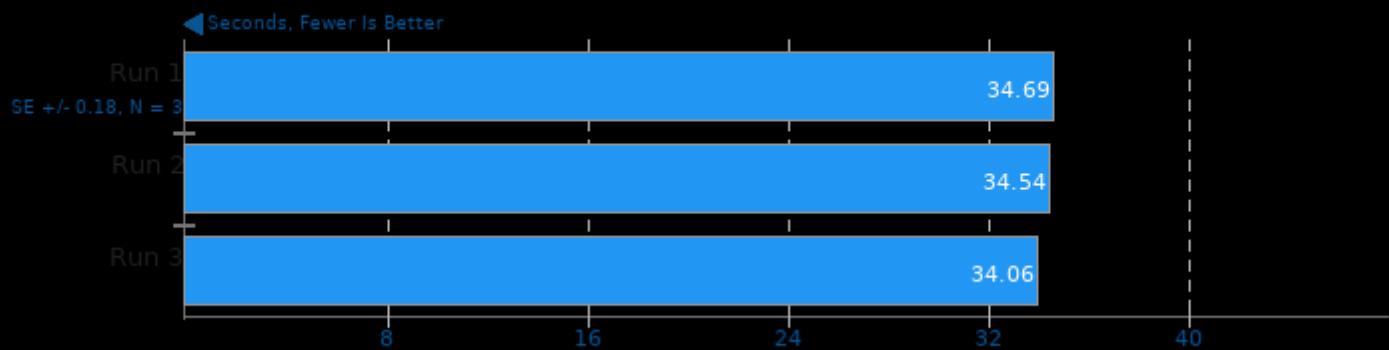
Numenta Anomaly Benchmark 1.1

Detector: EXPoSE



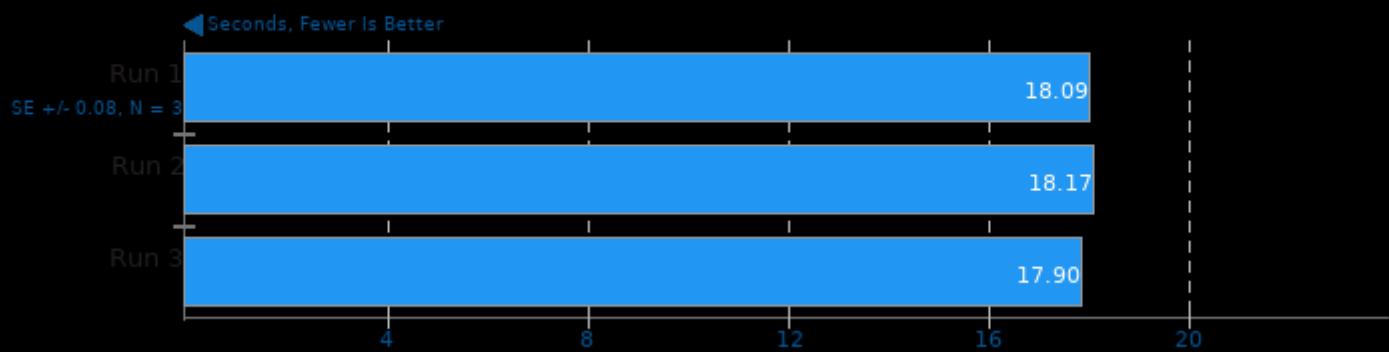
Numenta Anomaly Benchmark 1.1

Detector: Relative Entropy



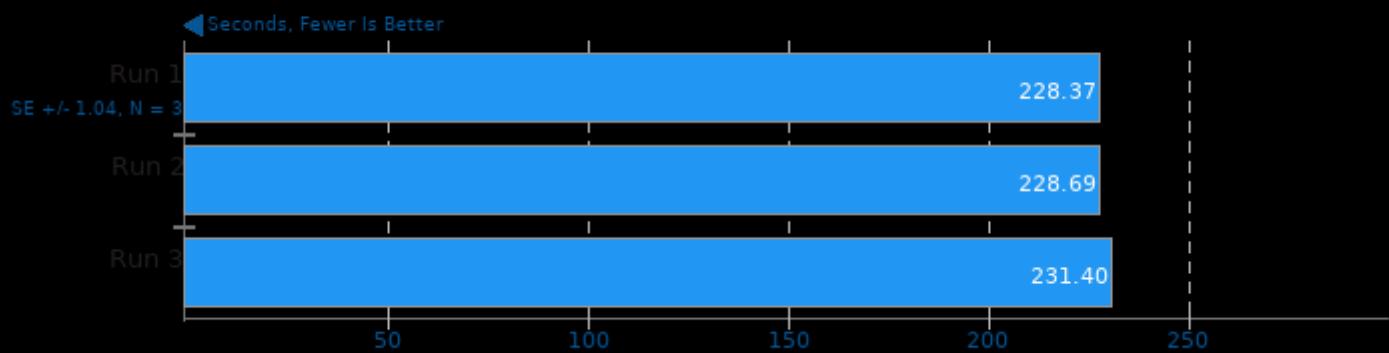
Numenta Anomaly Benchmark 1.1

Detector: Windowed Gaussian



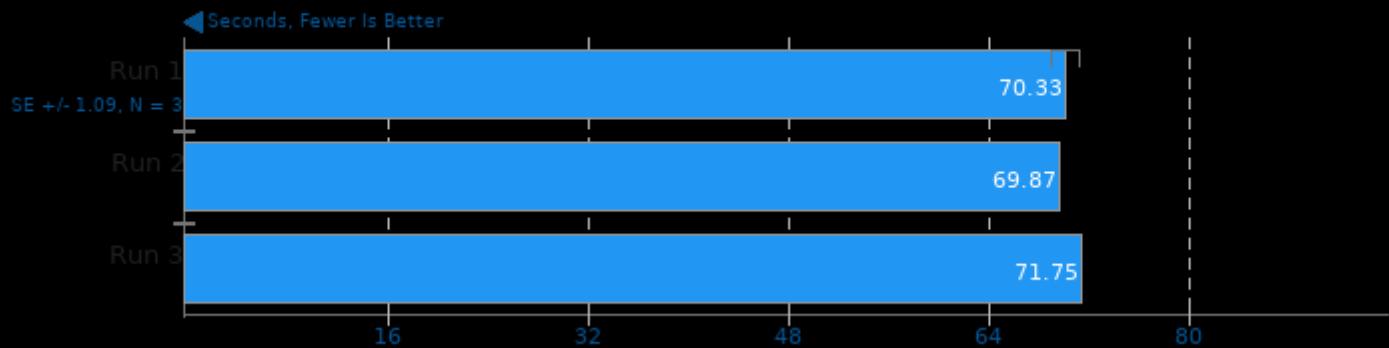
Numenta Anomaly Benchmark 1.1

Detector: Earthgecko Skyline

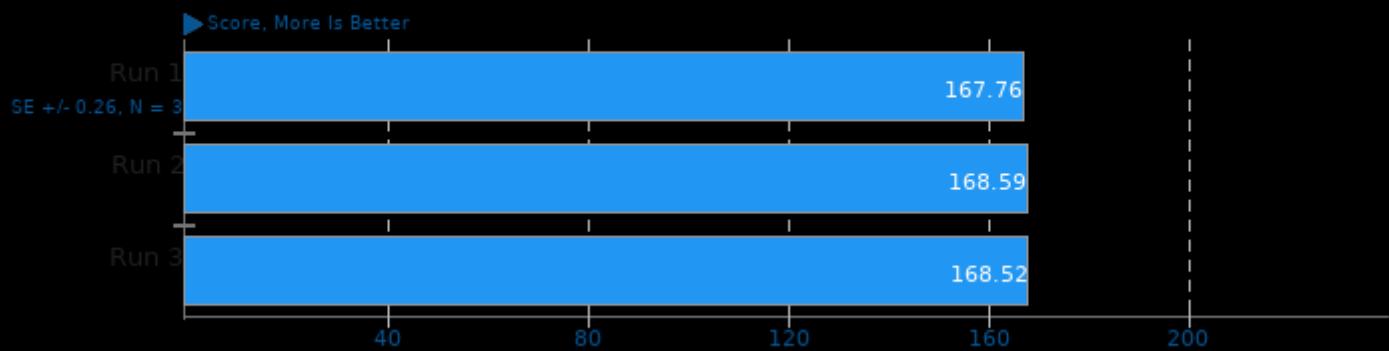


Numenta Anomaly Benchmark 1.1

Detector: Bayesian Changepoint

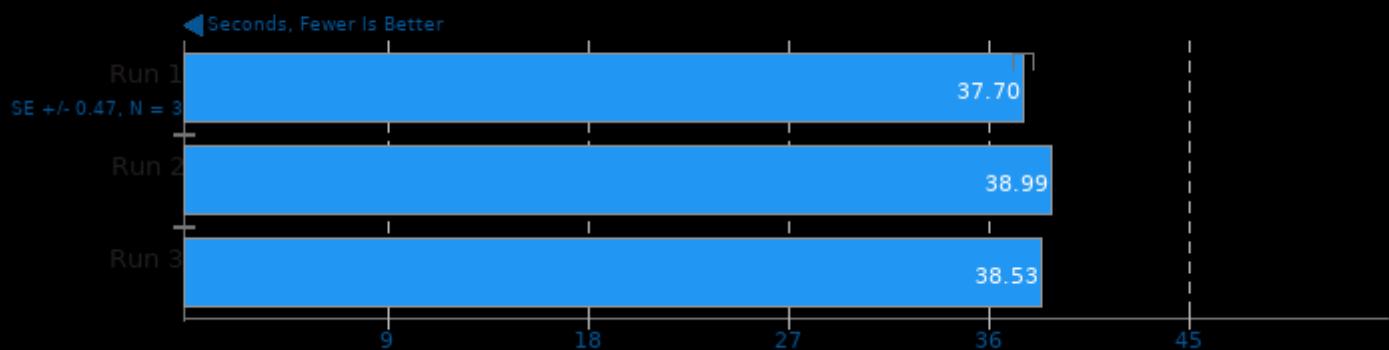


Numpy Benchmark



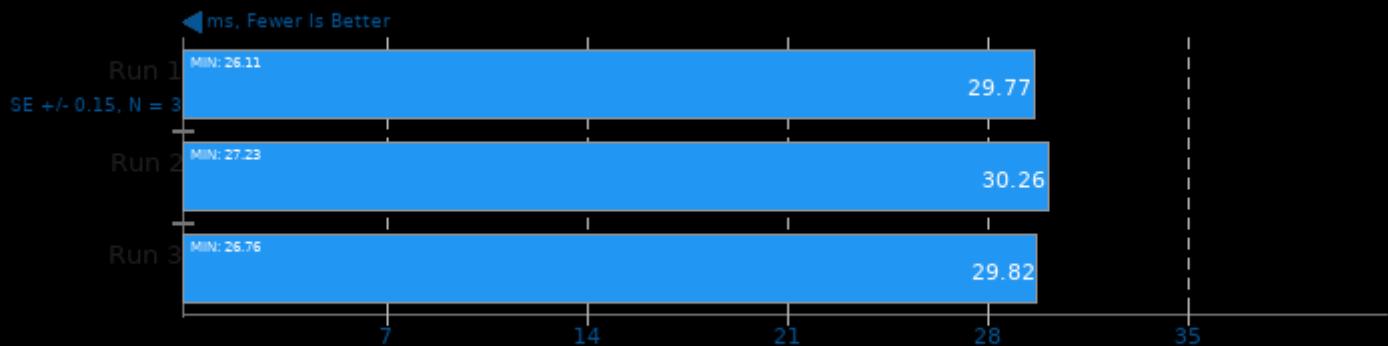
OCRMyPDF 10.3.1+dfsg

Processing 60 Page PDF Document



oneDNN 2.0

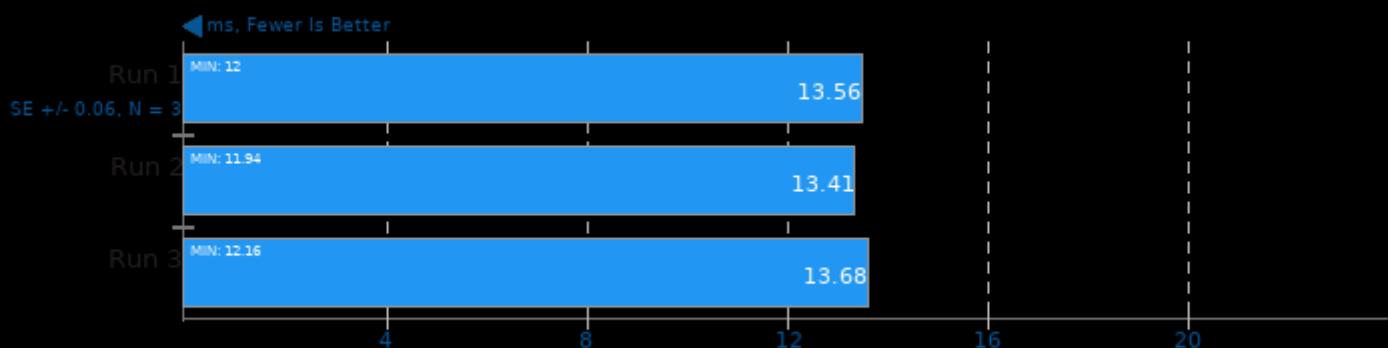
Harness: IP Shapes 1D - Data Type: f32 - Engine: CPU



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

oneDNN 2.0

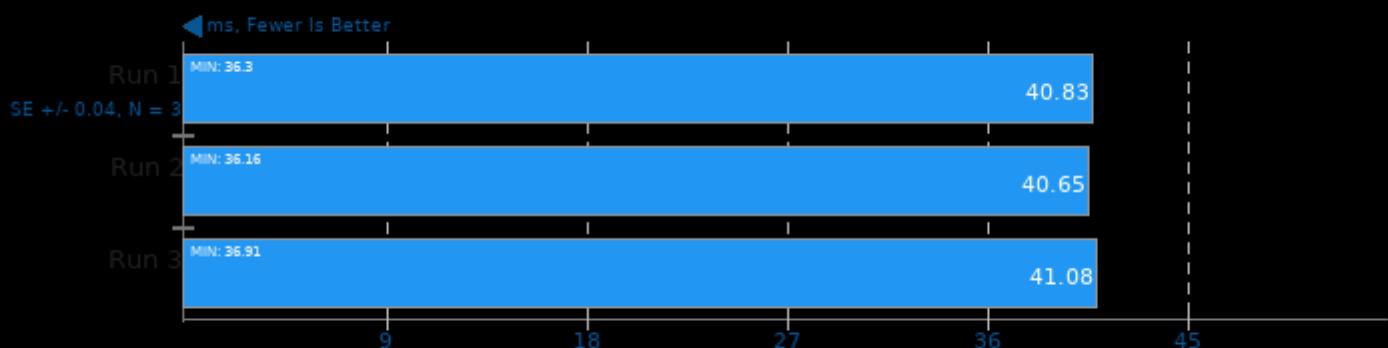
Harness: IP Shapes 3D - Data Type: f32 - Engine: CPU



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

oneDNN 2.0

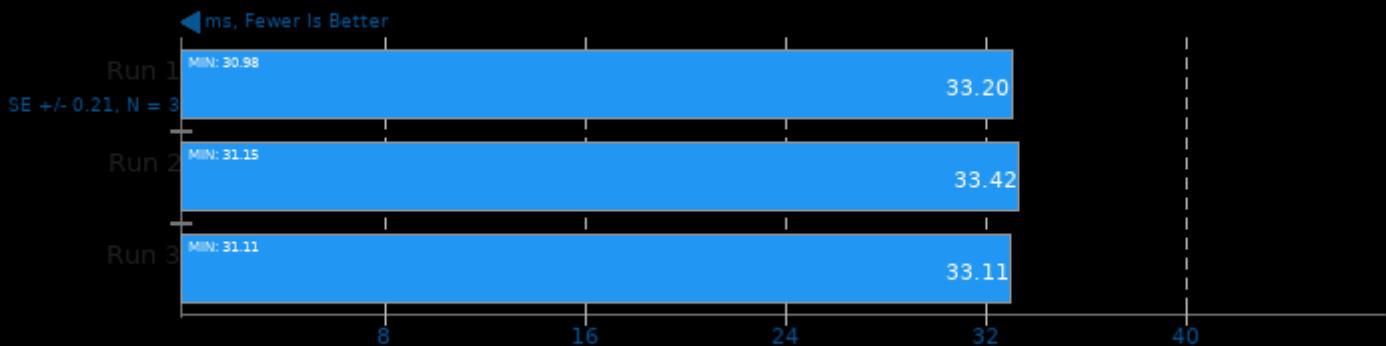
Harness: IP Shapes 1D - Data Type: u8s8f32 - Engine: CPU



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

oneDNN 2.0

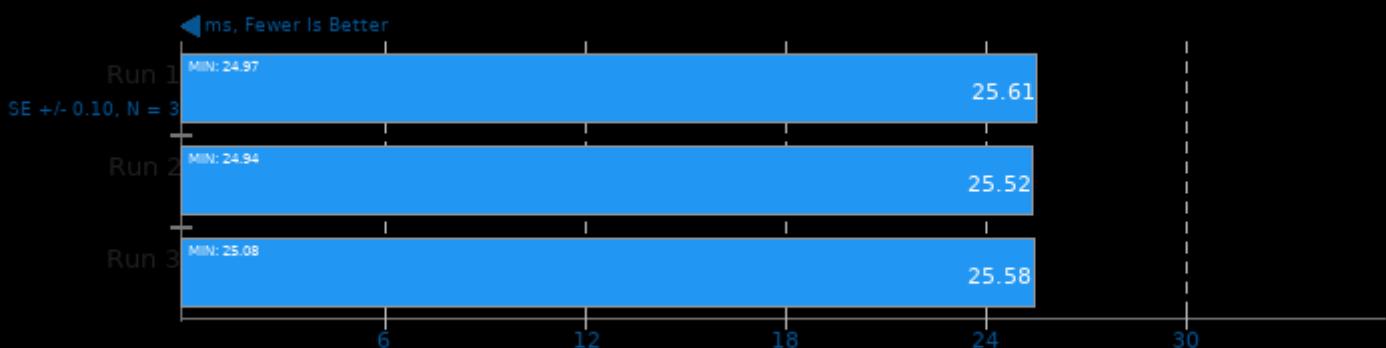
Harness: IP Shapes 3D - Data Type: u8s8f32 - Engine: CPU



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

oneDNN 2.0

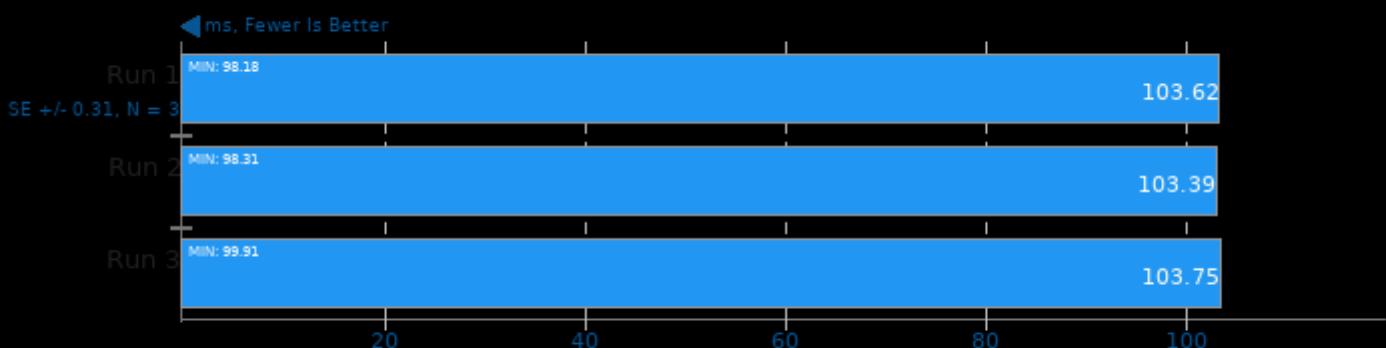
Harness: Convolution Batch Shapes Auto - Data Type: f32 - Engine: CPU



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

oneDNN 2.0

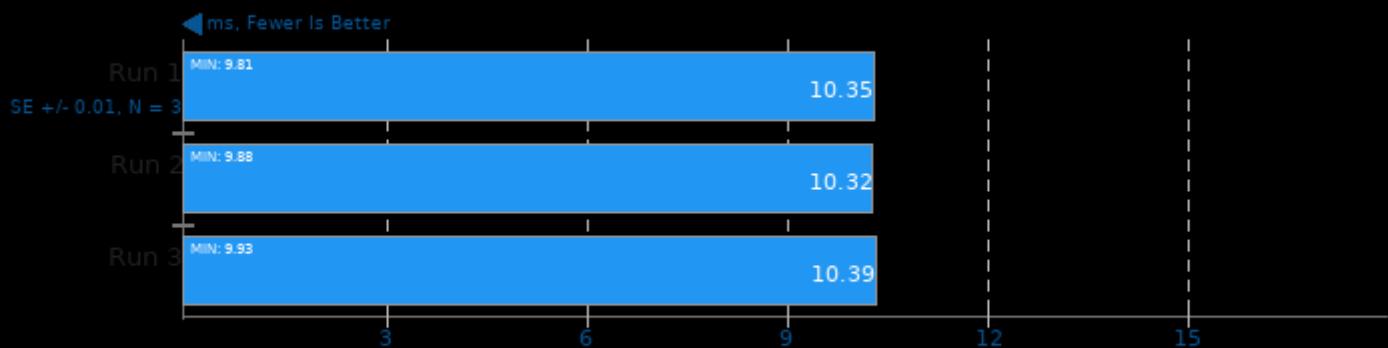
Harness: Deconvolution Batch shapes_1d - Data Type: f32 - Engine: CPU



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

oneDNN 2.0

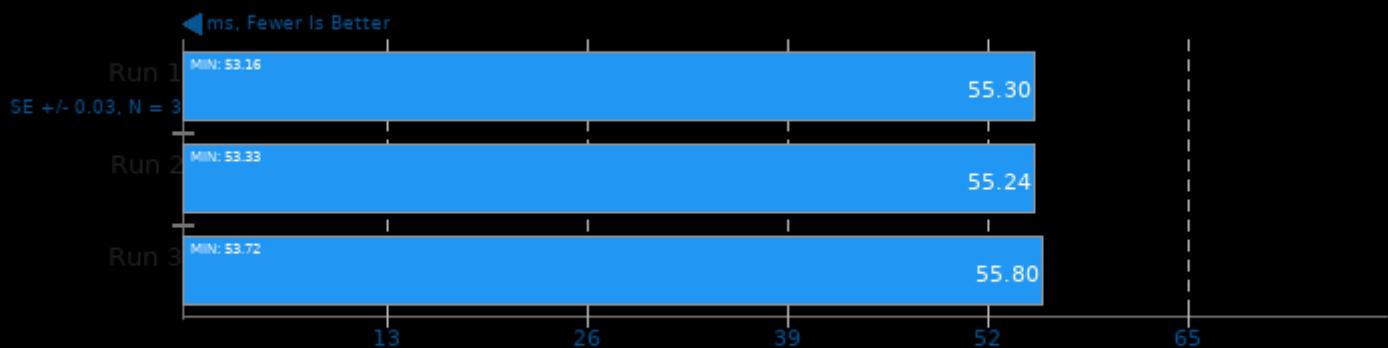
Harness: Deconvolution Batch shapes_3d - Data Type: f32 - Engine: CPU



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

oneDNN 2.0

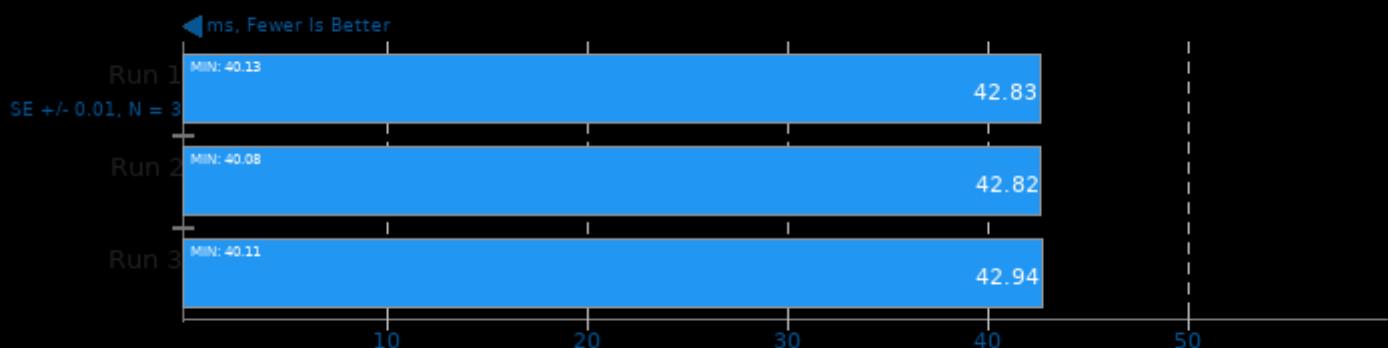
Harness: Convolution Batch Shapes Auto - Data Type: u8s8f32 - Engine: CPU



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

oneDNN 2.0

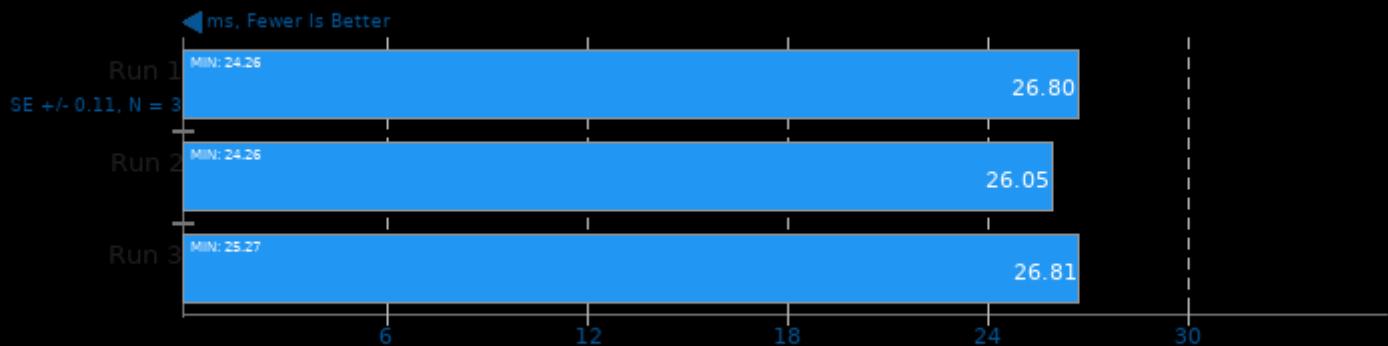
Harness: Deconvolution Batch shapes_1d - Data Type: u8s8f32 - Engine: CPU



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

oneDNN 2.0

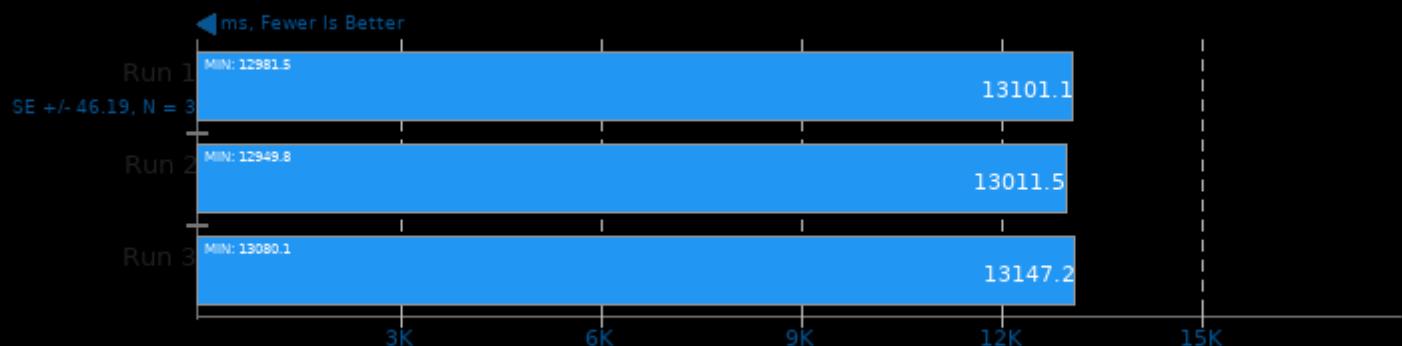
Harness: Deconvolution Batch shapes_3d - Data Type: u8s8f32 - Engine: CPU



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

oneDNN 2.0

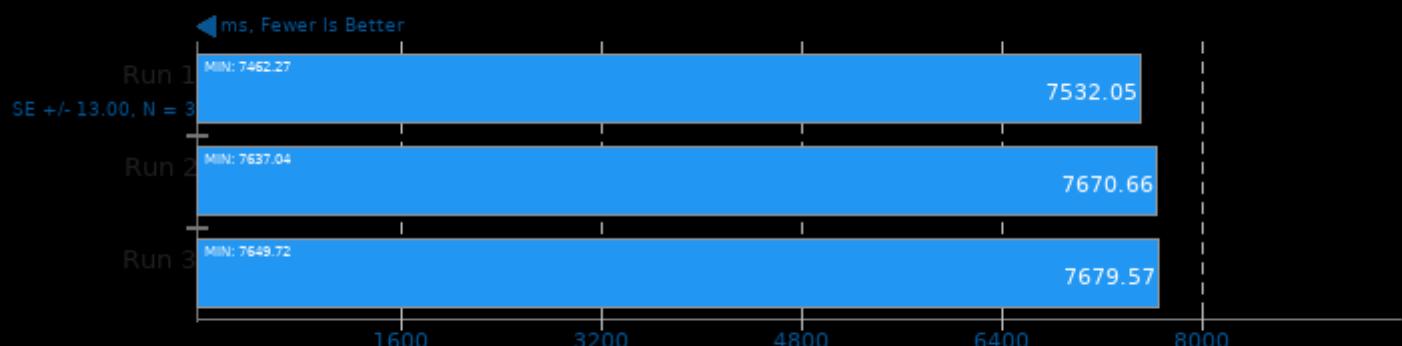
Harness: Recurrent Neural Network Training - Data Type: f32 - Engine: CPU



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

oneDNN 2.0

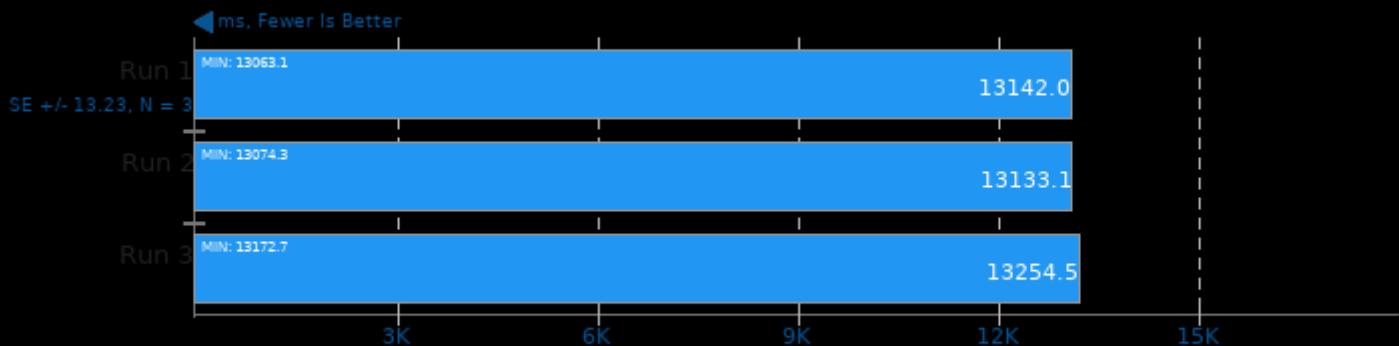
Harness: Recurrent Neural Network Inference - Data Type: f32 - Engine: CPU



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

oneDNN 2.0

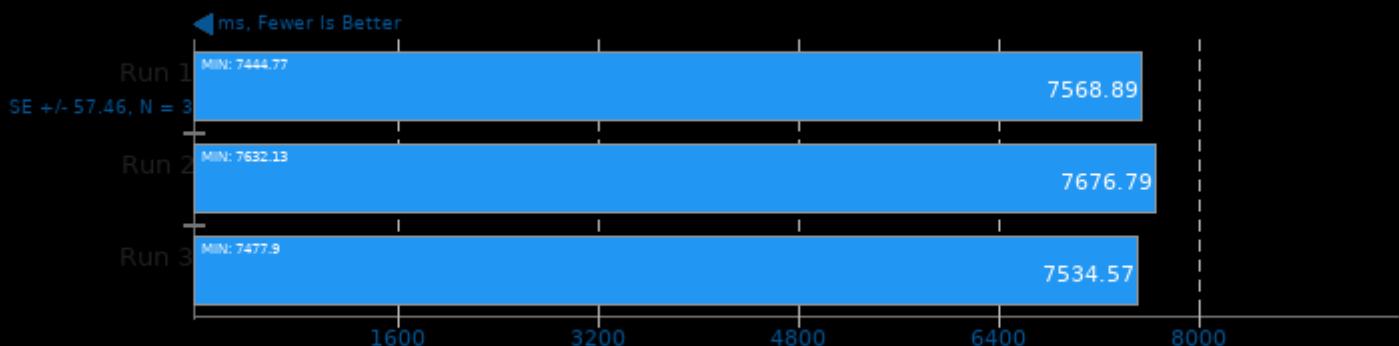
Harness: Recurrent Neural Network Training - Data Type: u8s8f32 - Engine: CPU



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

oneDNN 2.0

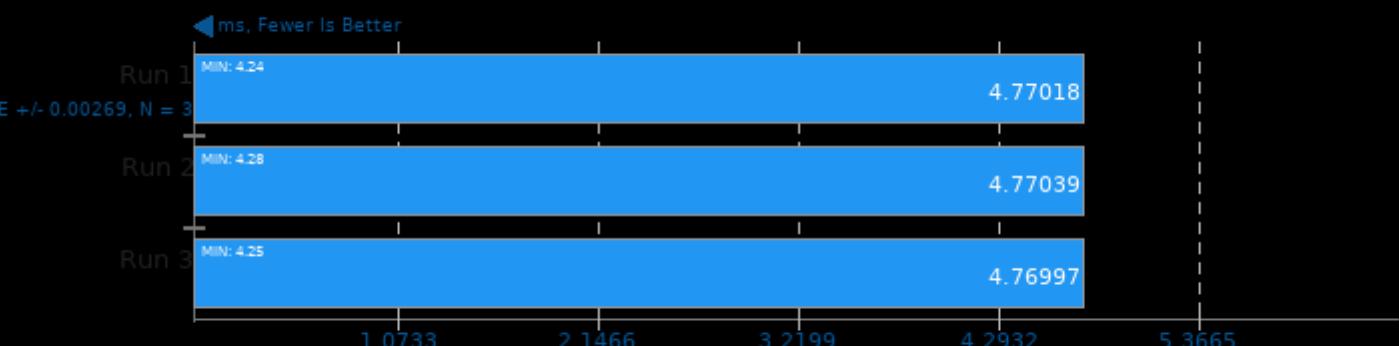
Harness: Recurrent Neural Network Inference - Data Type: u8s8f32 - Engine: CPU



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

oneDNN 2.0

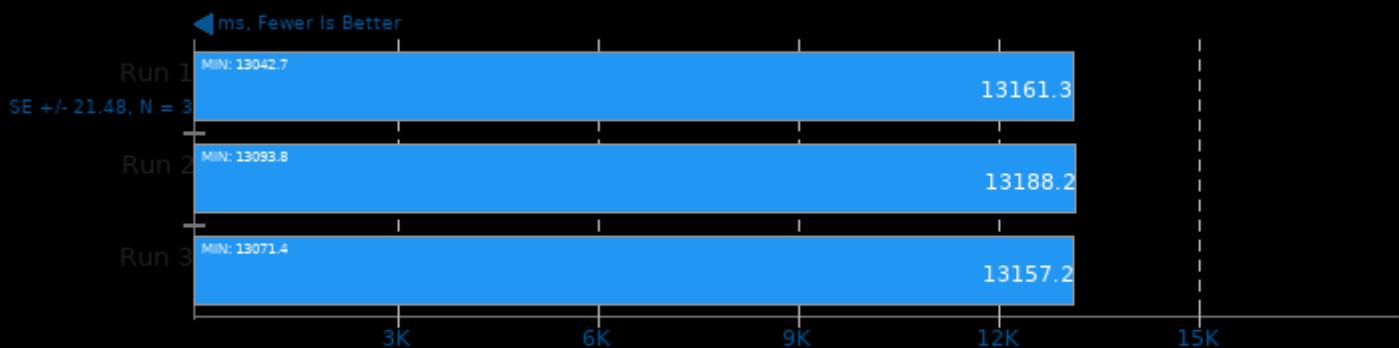
Harness: Matrix Multiply Batch Shapes Transformer - Data Type: f32 - Engine: CPU



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

oneDNN 2.0

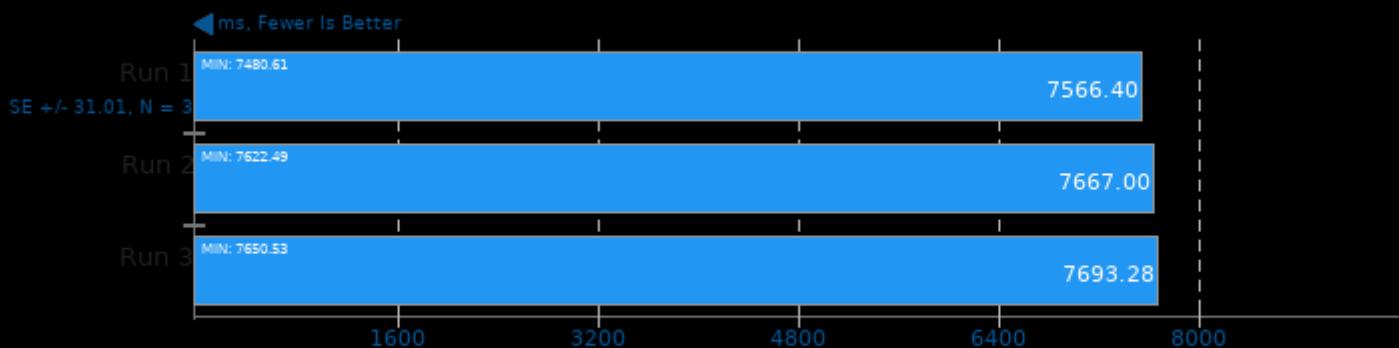
Harness: Recurrent Neural Network Training - Data Type: bf16bf16bf16 - Engine: CPU



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

oneDNN 2.0

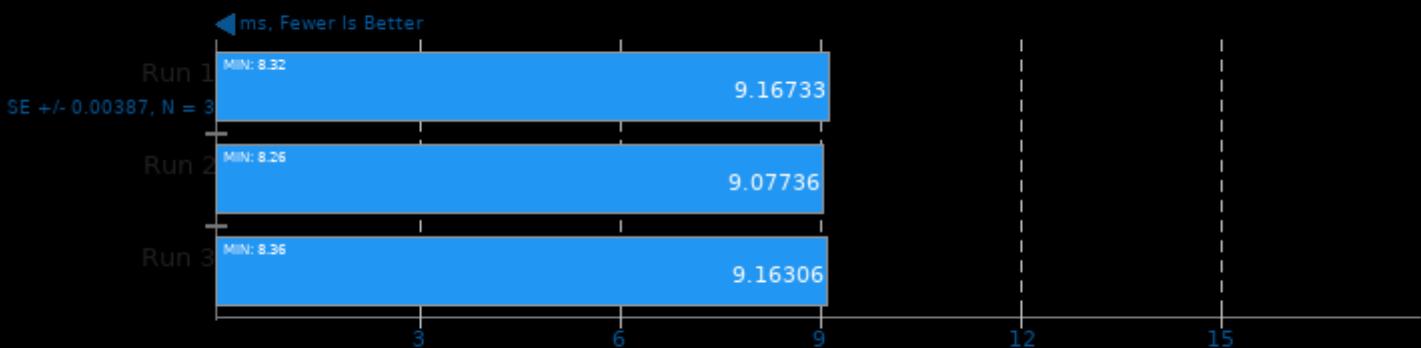
Harness: Recurrent Neural Network Inference - Data Type: bf16bf16bf16 - Engine: CPU



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

oneDNN 2.0

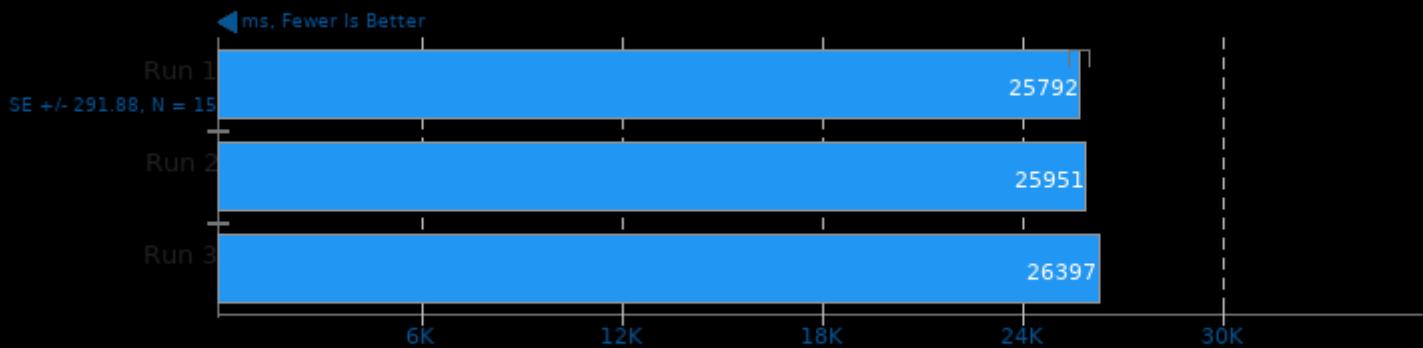
Harness: Matrix Multiply Batch Shapes Transformer - Data Type: u8s8f32 - Engine: CPU



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

OpenCV 4.4

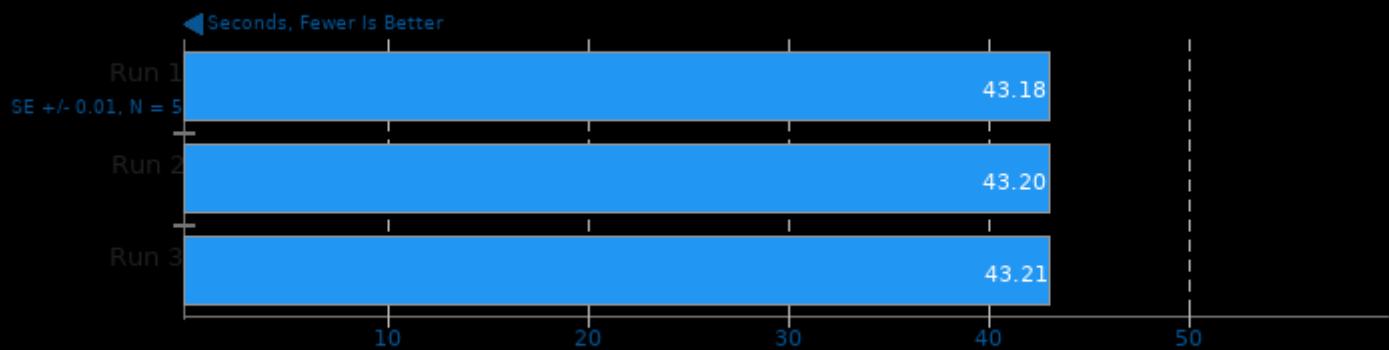
Test: DNN - Deep Neural Network



1. (CXX) g++ options: -fPIC -fsigned-char -pthread -fomit-frame-pointer -ffunction-sections -fdata-sections -mcpu=power8 -fvisibility=hidden -O3 -shared

Opus Codec Encoding 1.3.1

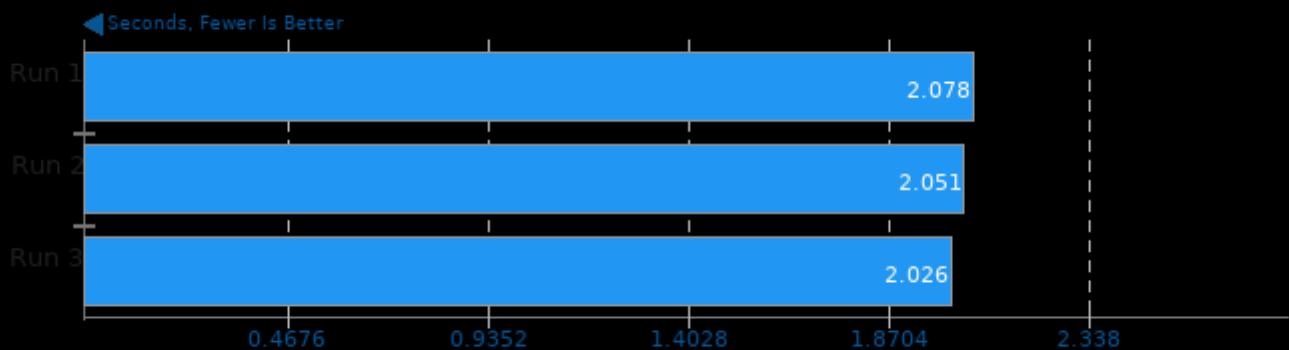
WAV To Opus Encode



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

Parallel BZIP2 Compression 1.1.12

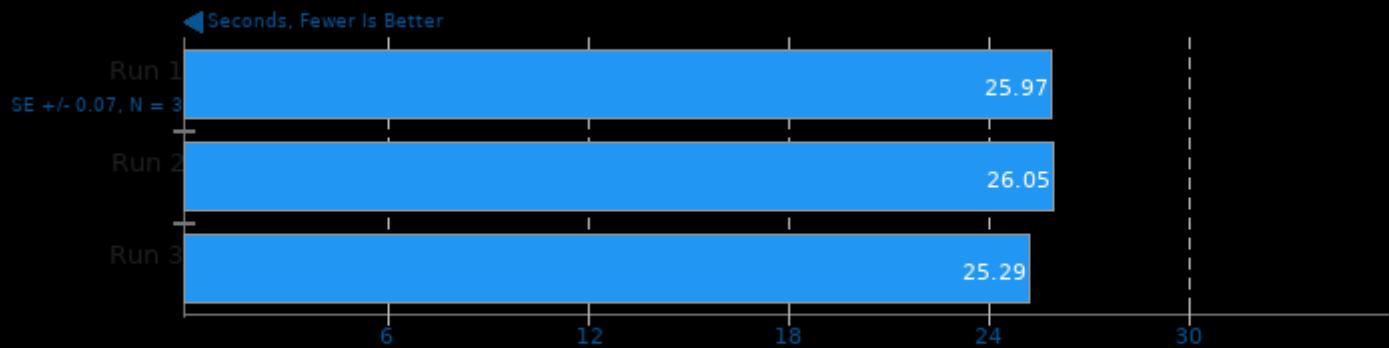
256MB File Compression



1. (CXX) g++ options: -O2 -pthread -lbz2 -lpthread

POV-Ray 3.7.0.7

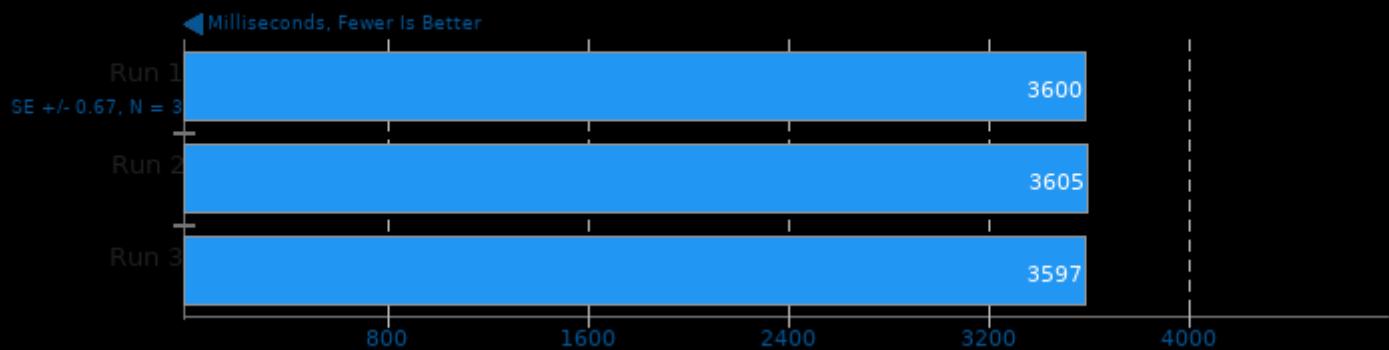
Trace Time



1. (CXX) g++ options: -pipe -O3 -ffast-math -pthread -R/usr/lib -lSDL -lX11 -lImImf -lImImf-2_5 -lImath-2_5 -lHalf-2_5 -lIex-2_5 -lIexMath-2_5 -lImThread-

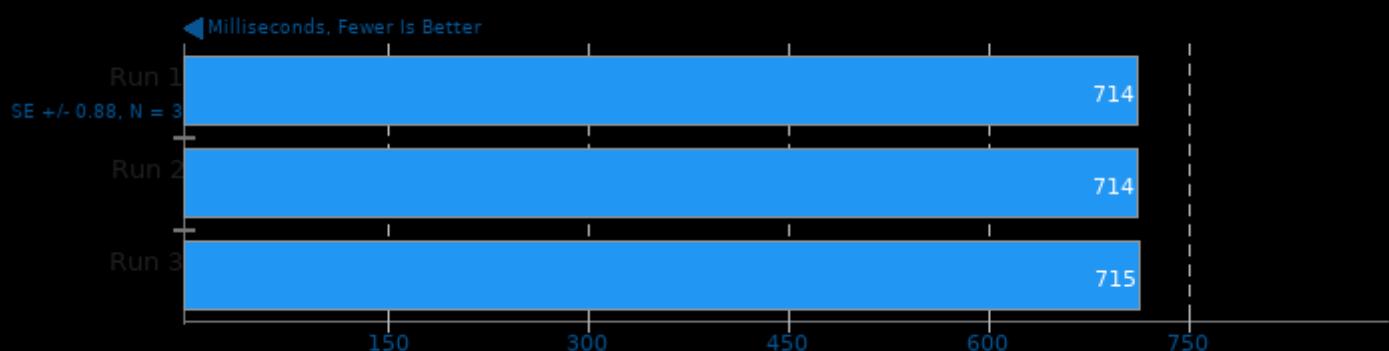
PyBench 2018-02-16

Total For Average Test Times



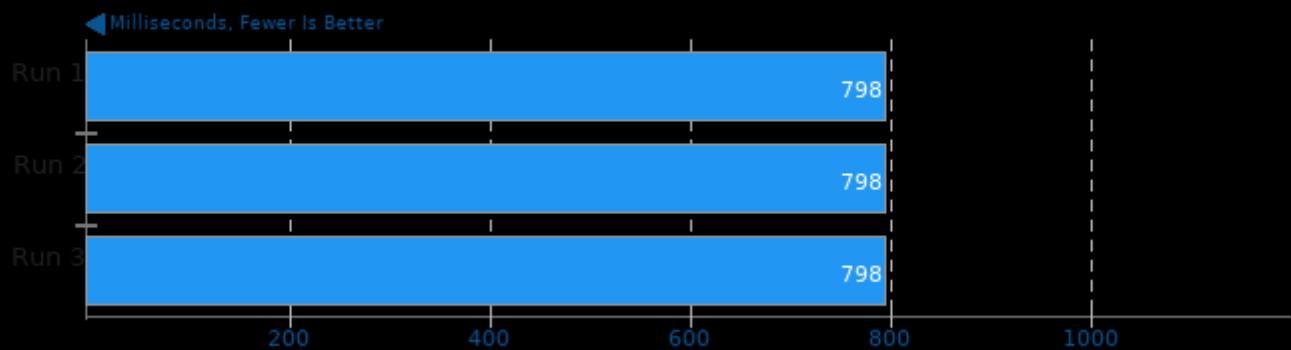
PyPerformance 1.0.0

Benchmark: go



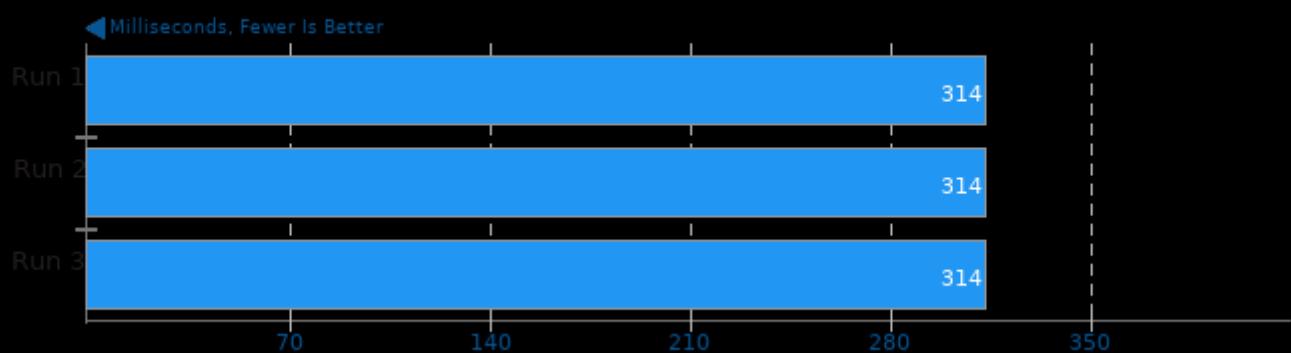
PyPerformance 1.0.0

Benchmark: 2to3



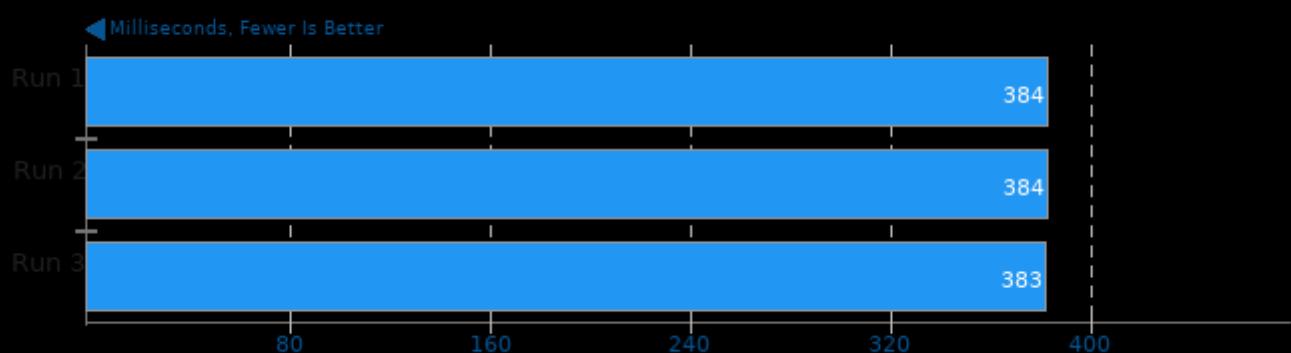
PyPerformance 1.0.0

Benchmark: chaos



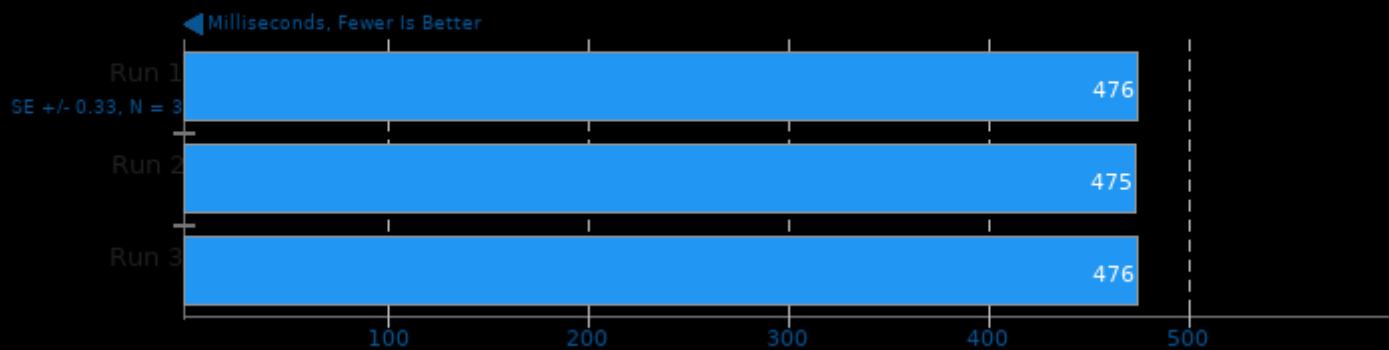
PyPerformance 1.0.0

Benchmark: float



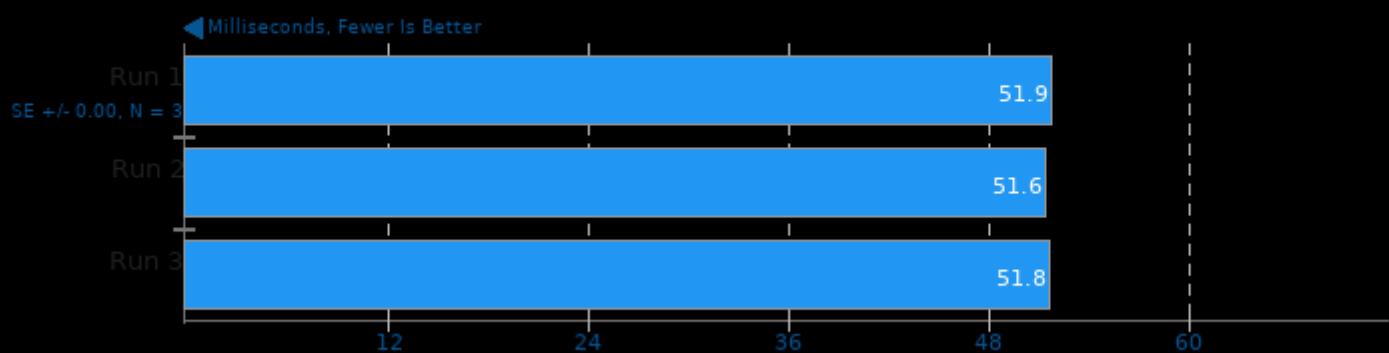
PyPerformance 1.0.0

Benchmark: nbody



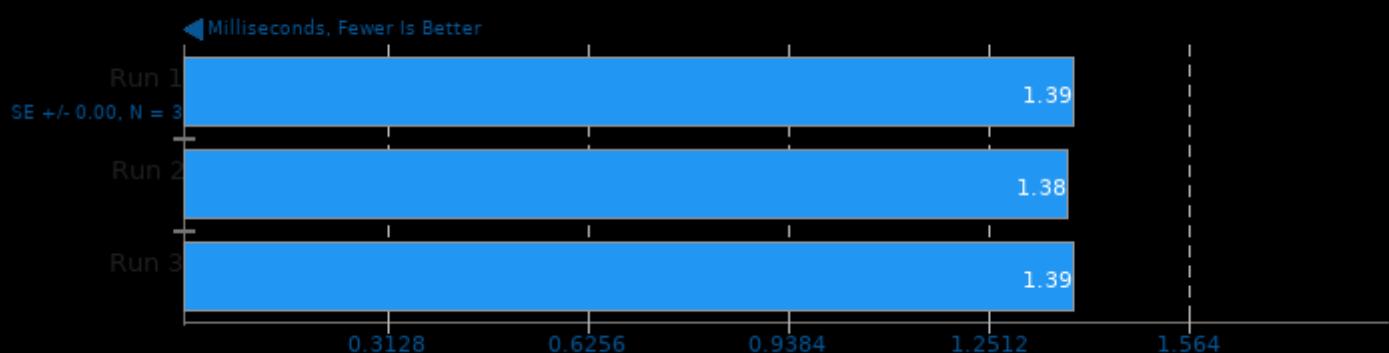
PyPerformance 1.0.0

Benchmark: pathlib



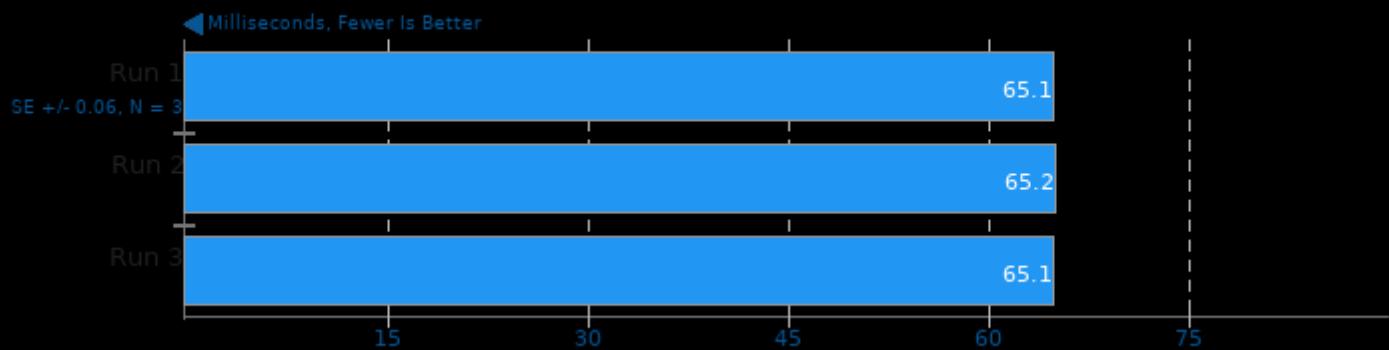
PyPerformance 1.0.0

Benchmark: raytrace



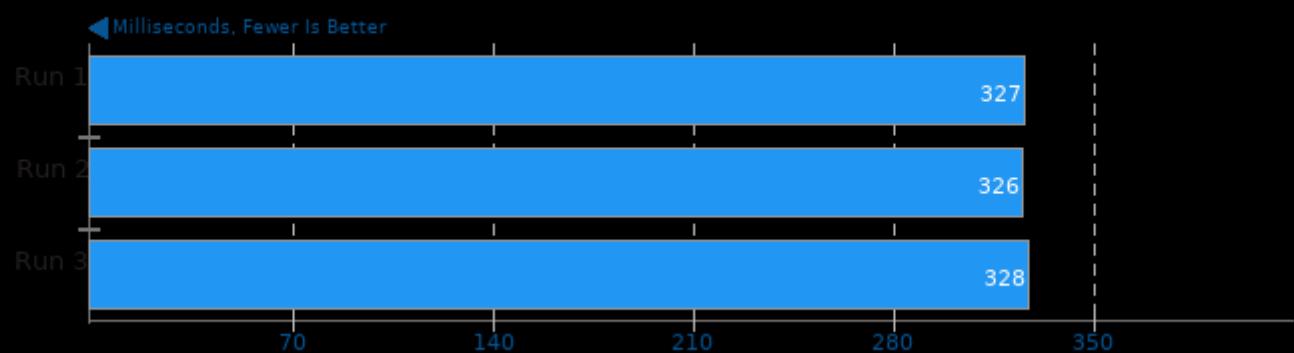
PyPerformance 1.0.0

Benchmark: json.loads



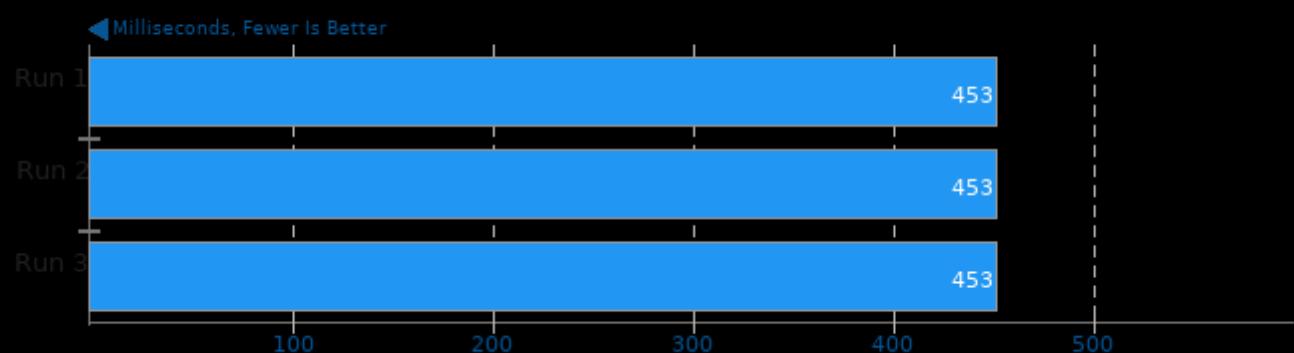
PyPerformance 1.0.0

Benchmark: crypto_pyaes



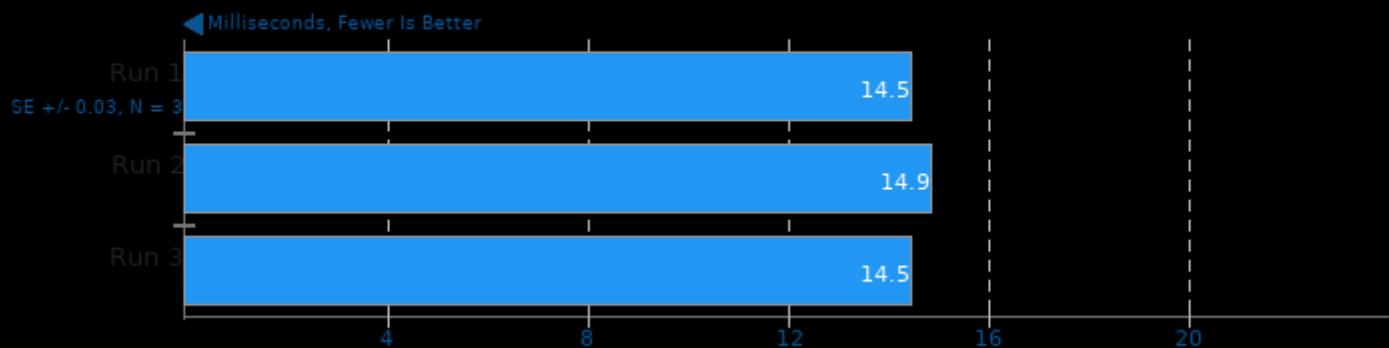
PyPerformance 1.0.0

Benchmark: regex_compile



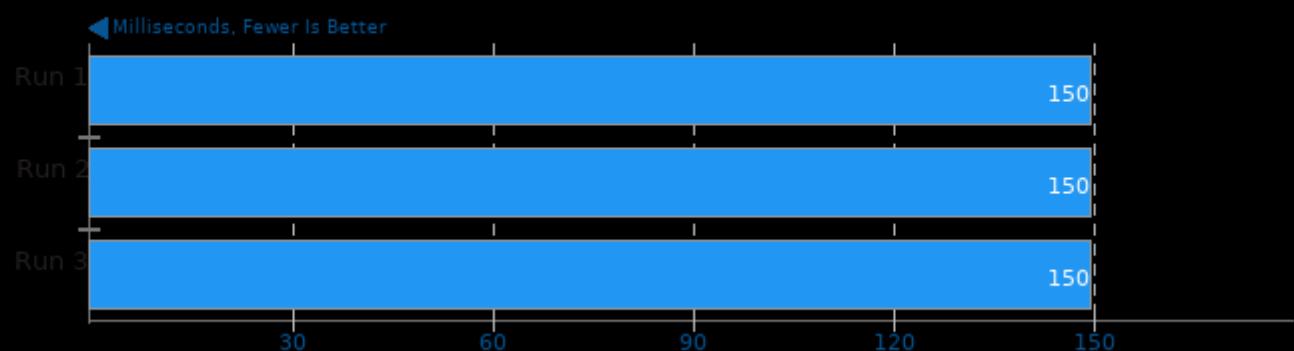
PyPerformance 1.0.0

Benchmark: python_startup



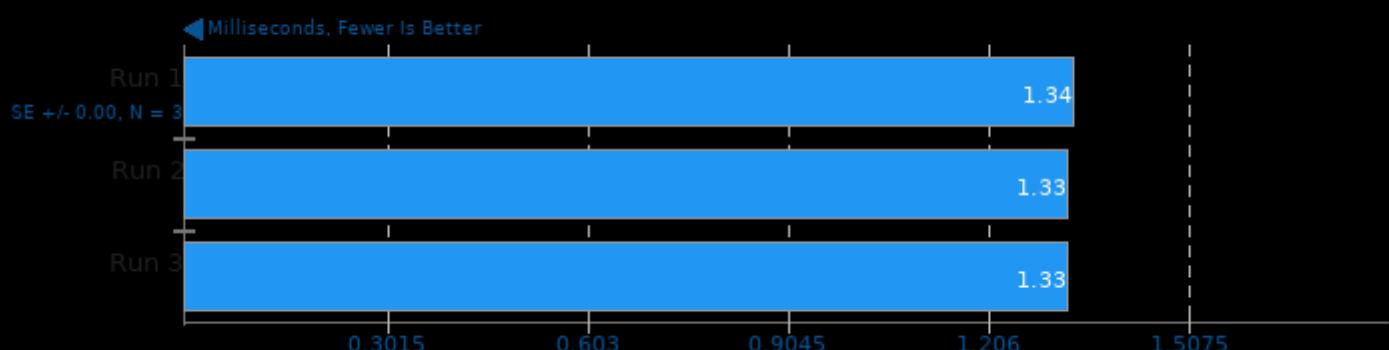
PyPerformance 1.0.0

Benchmark: django_template



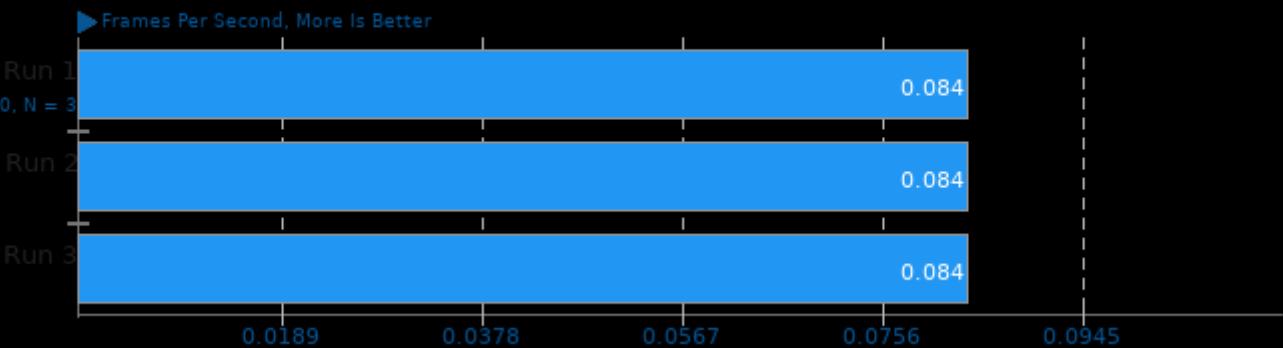
PyPerformance 1.0.0

Benchmark: pickle_pure_python

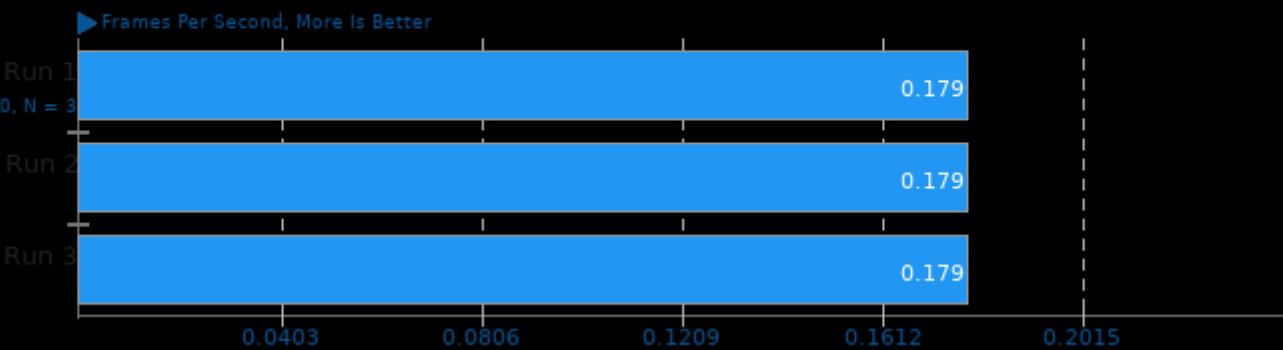


rav1e 0.4 Alpha

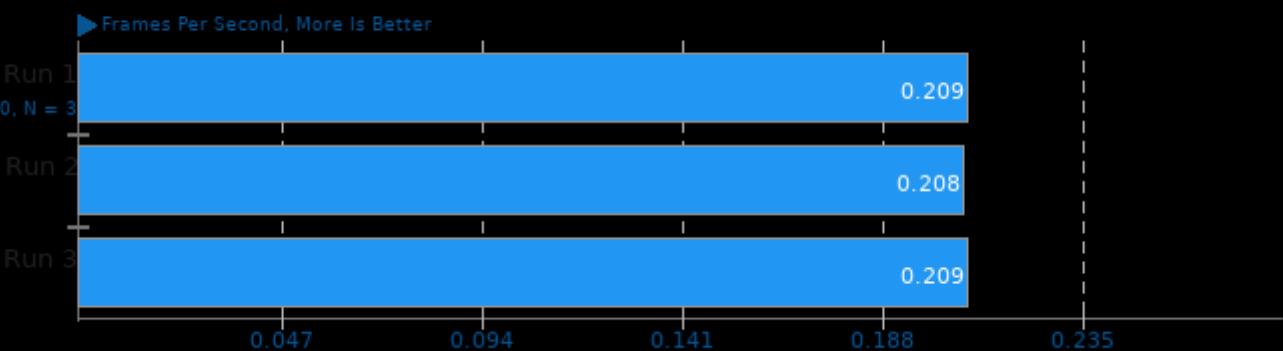
Speed: 1

**rav1e 0.4 Alpha**

Speed: 5

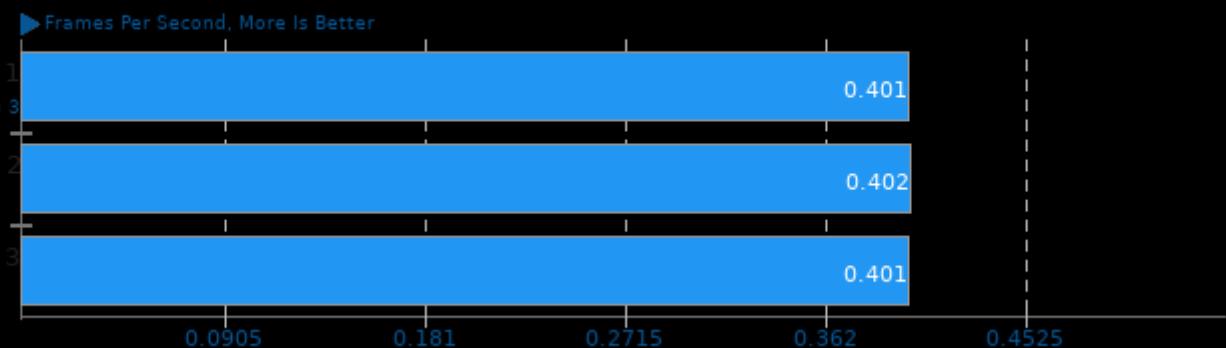
**rav1e 0.4 Alpha**

Speed: 6



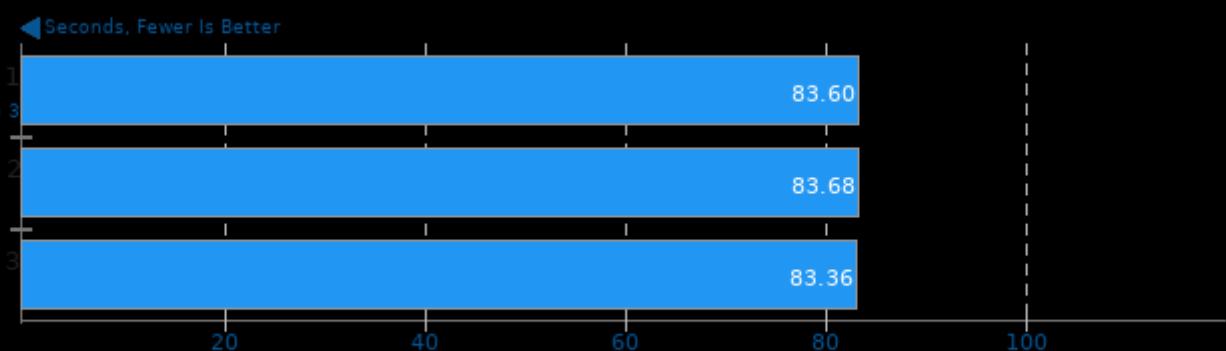
rav1e 0.4 Alpha

Speed: 10



RawTherapee

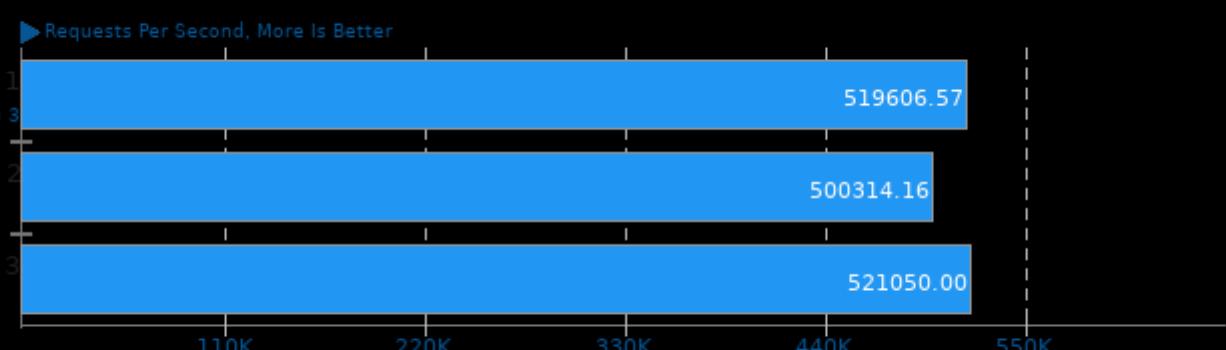
Total Benchmark Time



1. RawTherapee, version 5.8, command line.

Redis 6.0.9

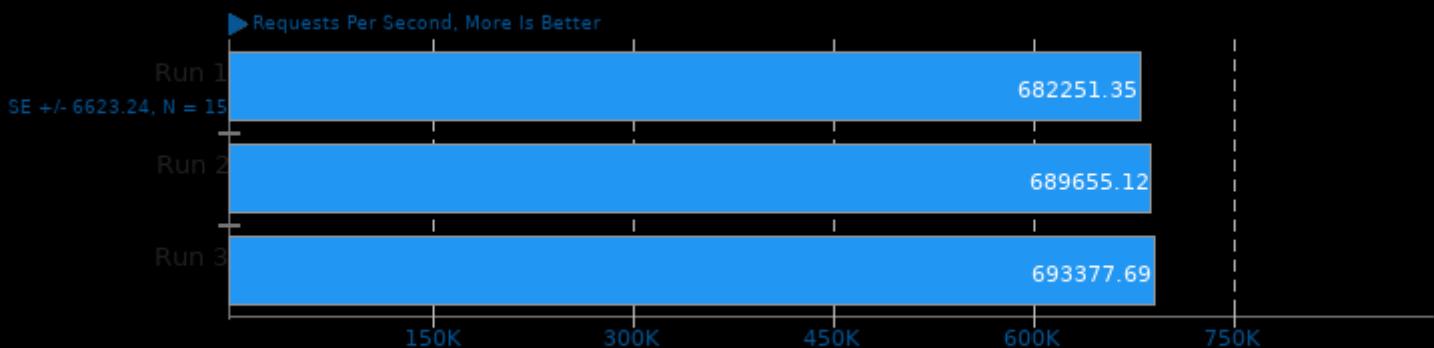
Test: LPOP



1. (CXX) g++ options: -MM -MT -g3 -fvisibility=hidden -O3

Redis 6.0.9

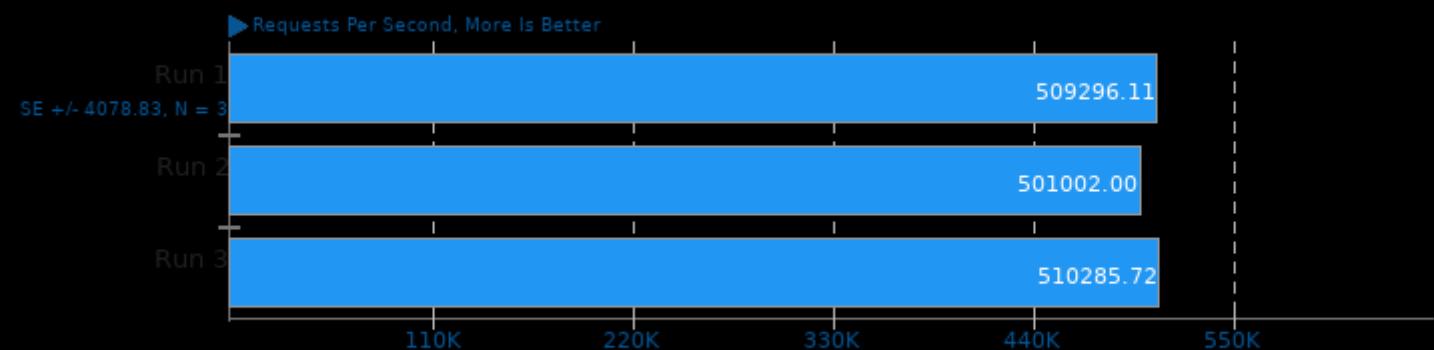
Test: SADD



1. (CXX) g++ options: -MM -MT -g3 -fvisibility=hidden -O3

Redis 6.0.9

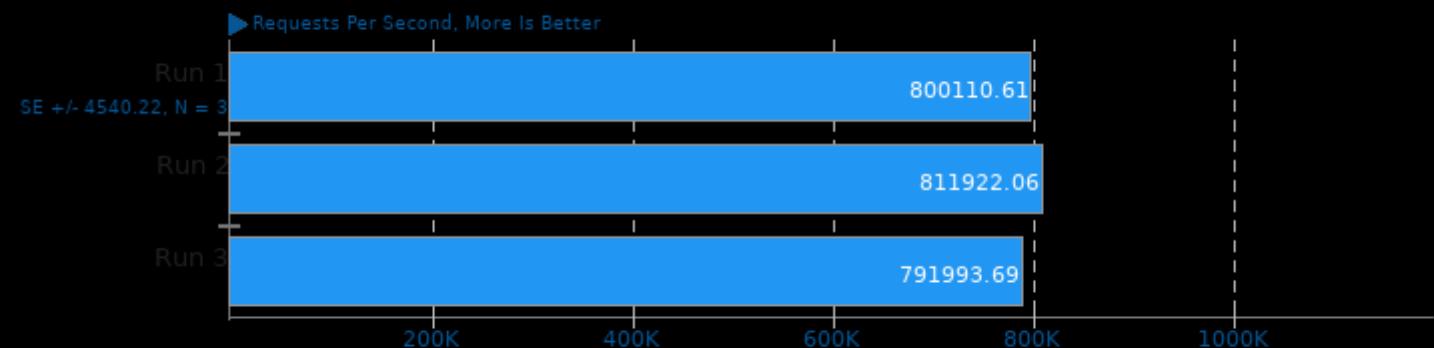
Test: LPUSH



1. (CXX) g++ options: -MM -MT -g3 -fvisibility=hidden -O3

Redis 6.0.9

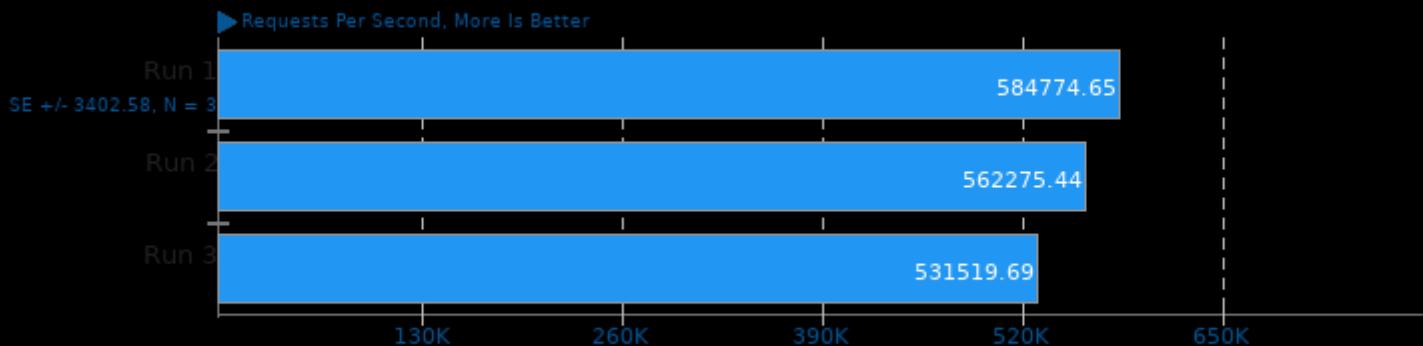
Test: GET



1. (CXX) g++ options: -MM -MT -g3 -fvisibility=hidden -O3

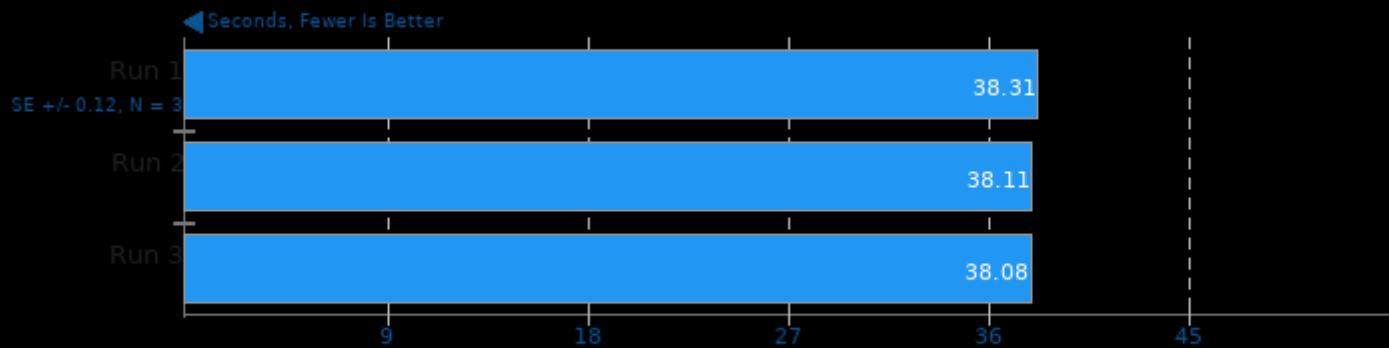
Redis 6.0.9

Test: SET



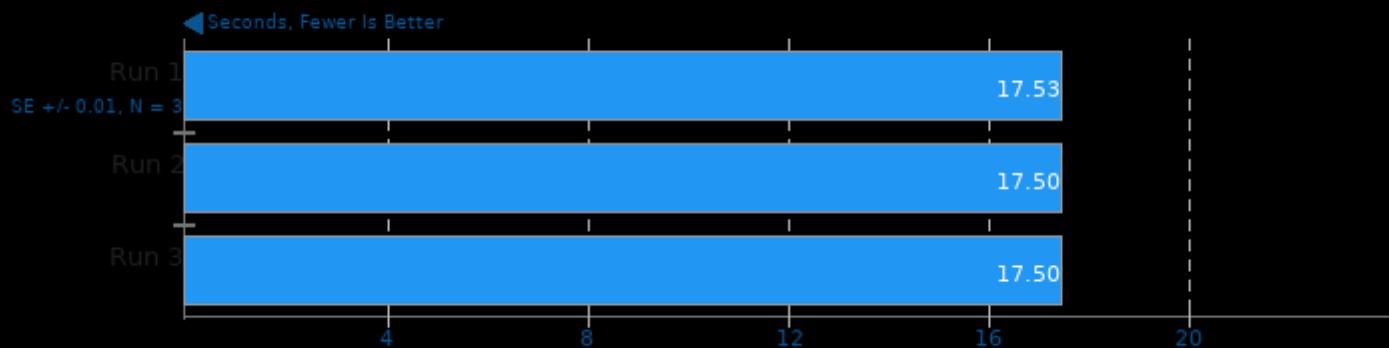
1. (CXX) g++ options: -MM -MT -g3 -fvisibility=hidden -O3

RNNoise 2020-06-28



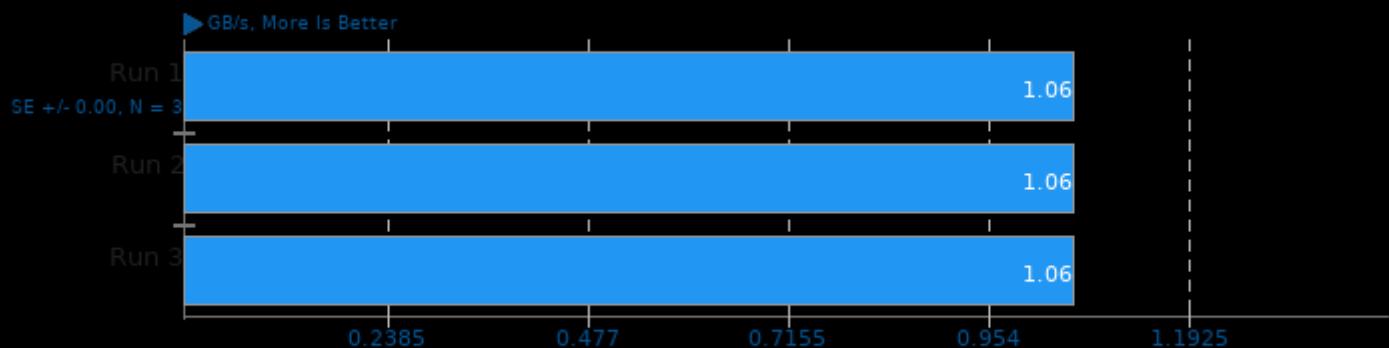
1. (CC) gcc options: -O2 -pedantic -fvisibility=hidden

Scikit-Learn 0.22.1



simdjson 0.7.1

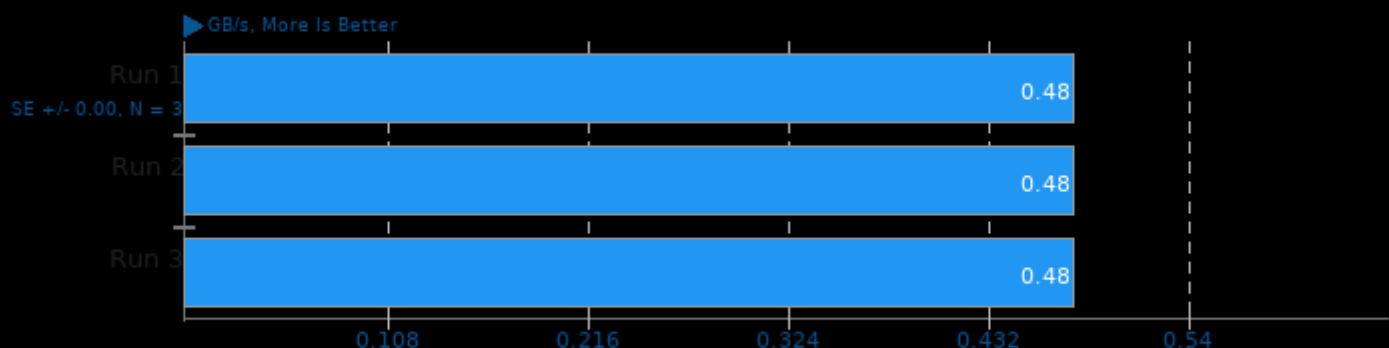
Throughput Test: Kostya



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

simdjson 0.7.1

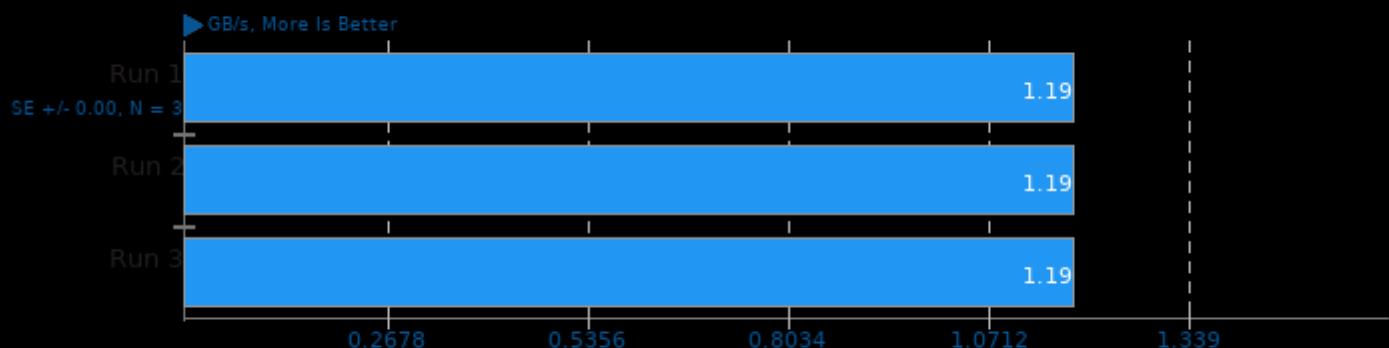
Throughput Test: LargeRandom



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

simdjson 0.7.1

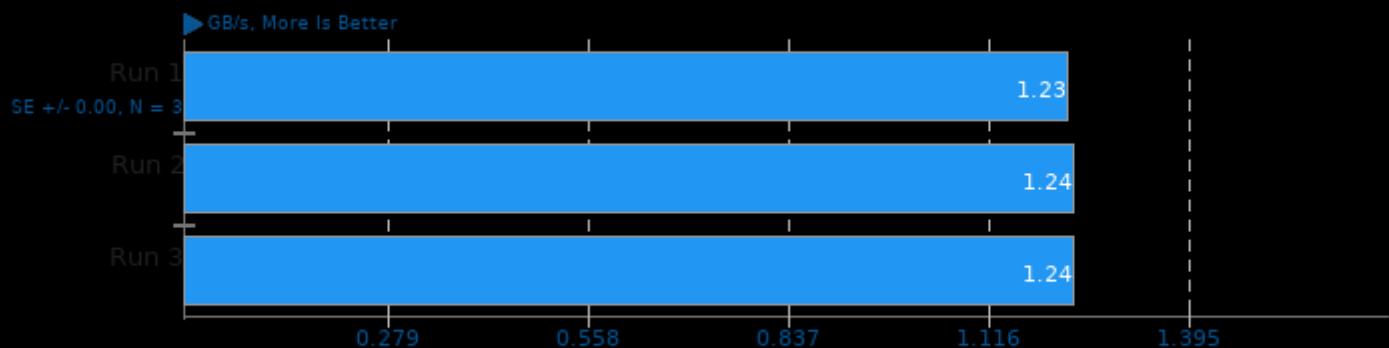
Throughput Test: PartialTweets



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

simdjson 0.7.1

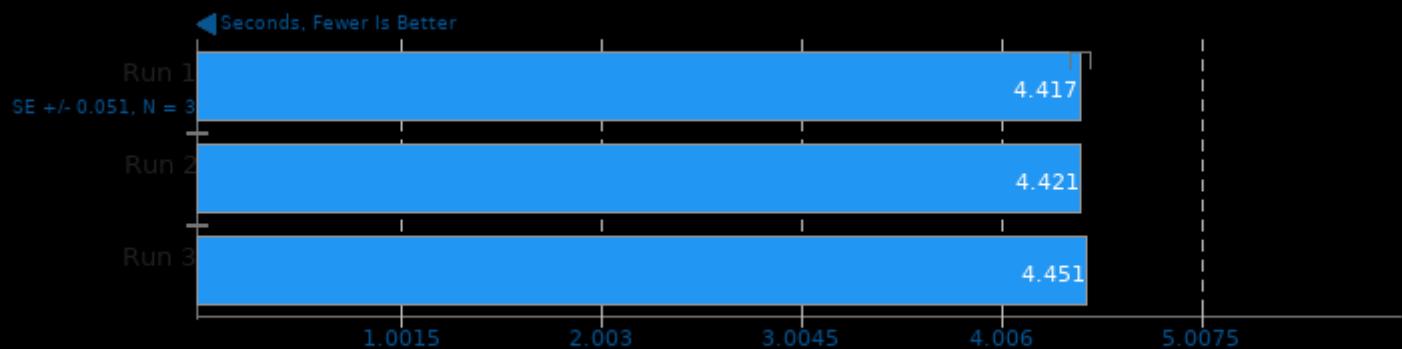
Throughput Test: DistinctUserID



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

Smallpt 1.0

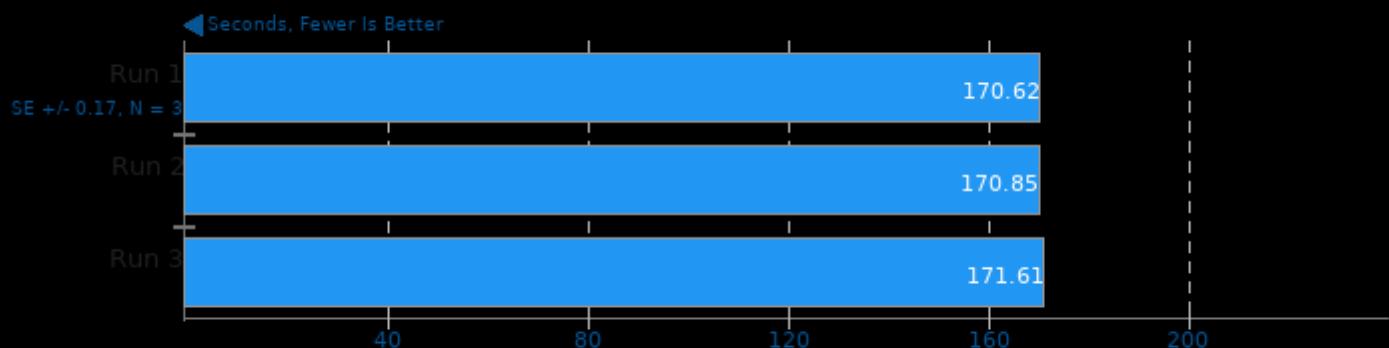
Global Illumination Renderer; 128 Samples



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

SQLite Speedtest 3.30

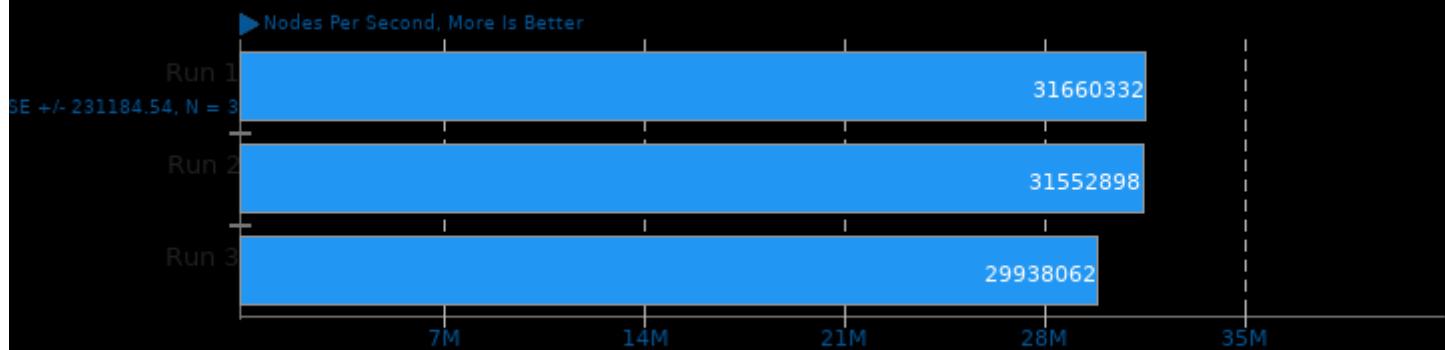
Timed Time - Size 1,000



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

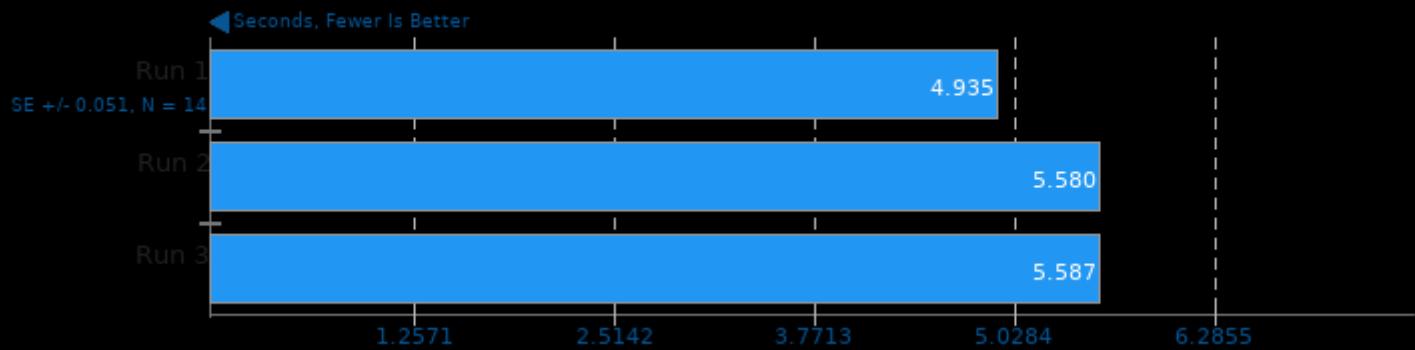
Stockfish 12

Total Time

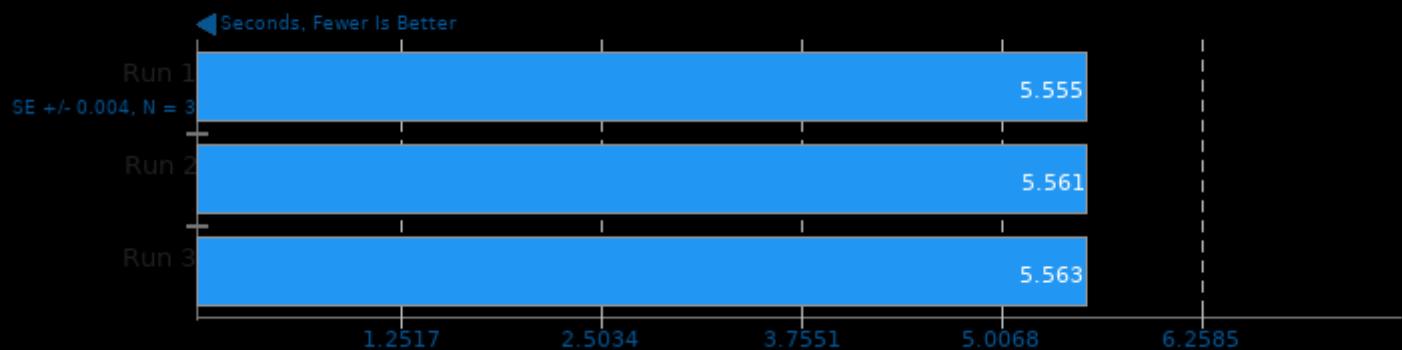


1. (CXX) g++ options: -m64 -lpthread -fno-exceptions -std=c++17 -pedantic -O3 -fno-rtti -fno-observer

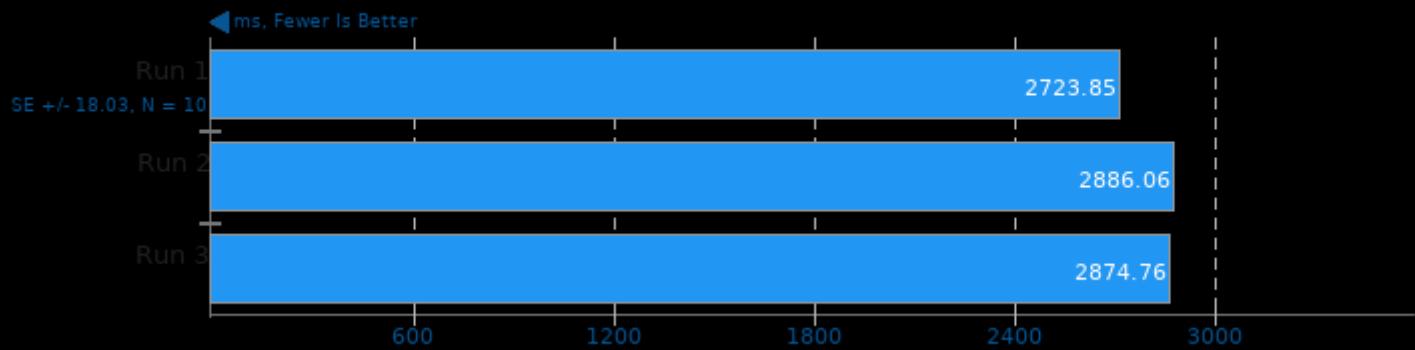
System GZIP Decompression



System XZ Decompression

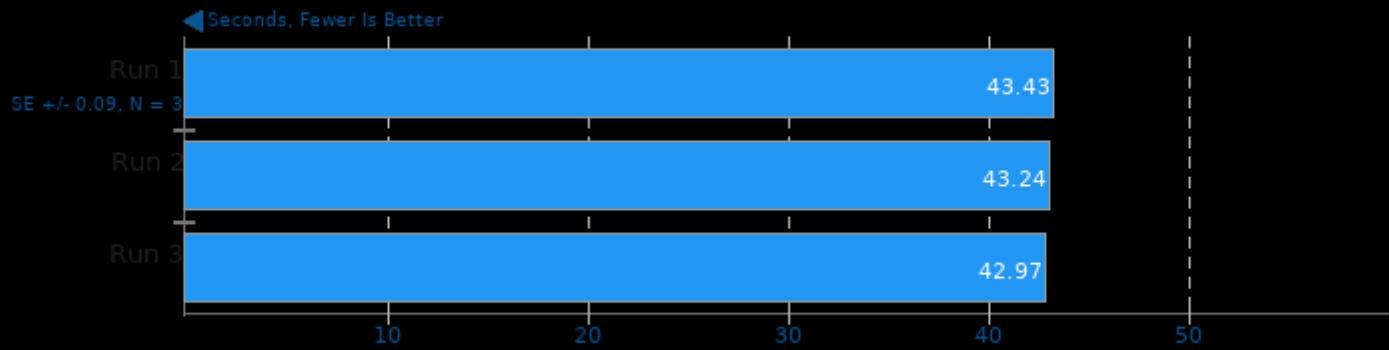


System ZLIB Decompression 1.2.7



Tachyon 0.99b6

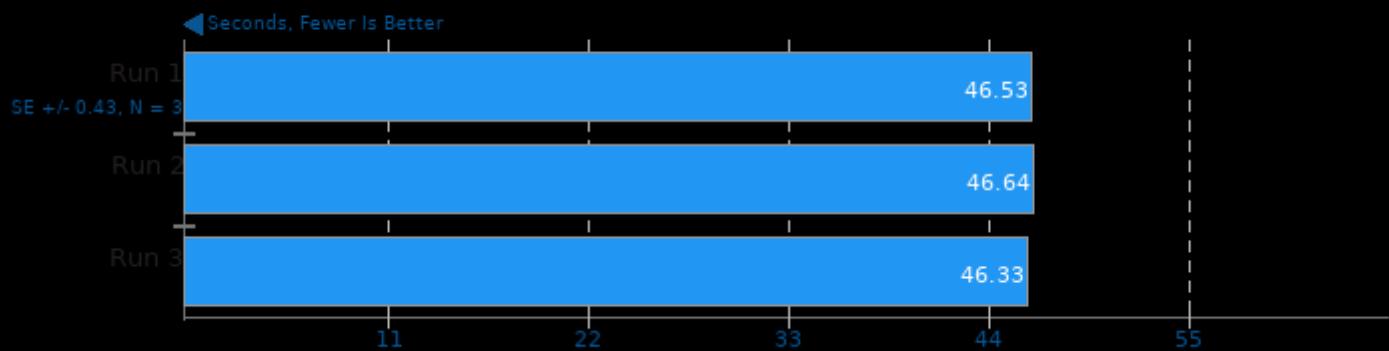
Total Time



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

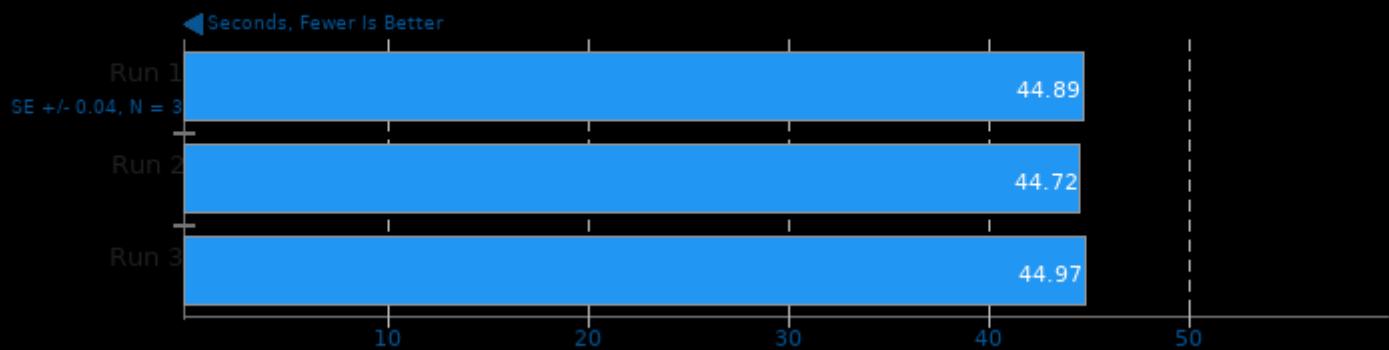
Tesseract OCR 4.1.1

Time To OCR 7 Images



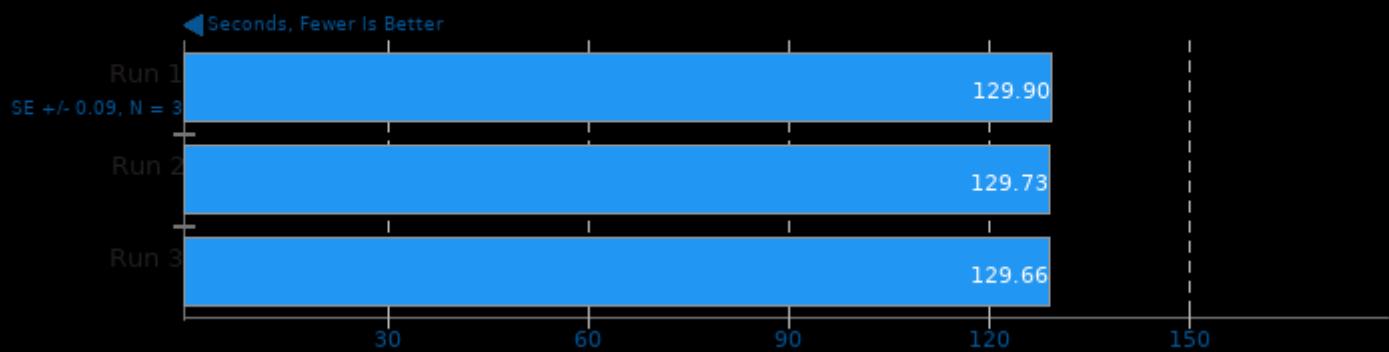
Timed Apache Compilation 2.4.41

Time To Compile



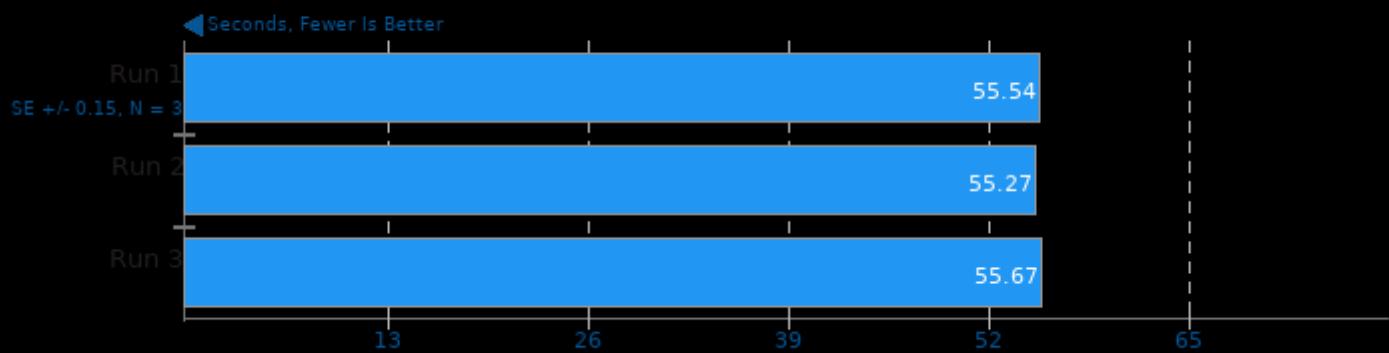
Timed Eigen Compilation 3.3.9

Time To Compile



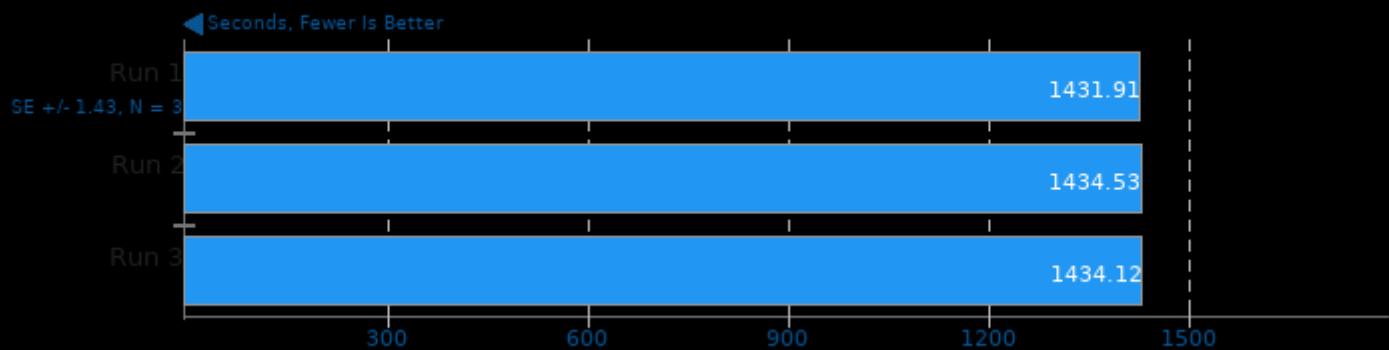
Timed FFmpeg Compilation 4.2.2

Time To Compile



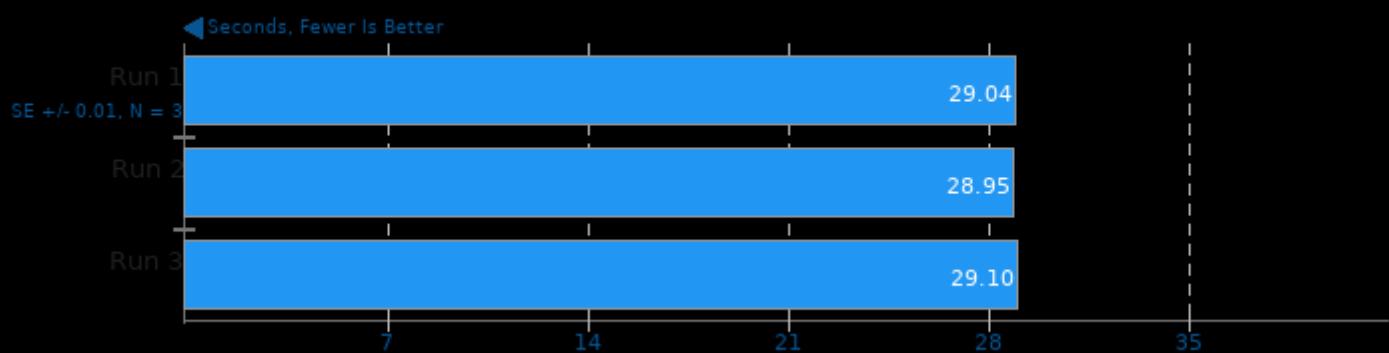
Timed GCC Compilation 9.3.0

Time To Compile



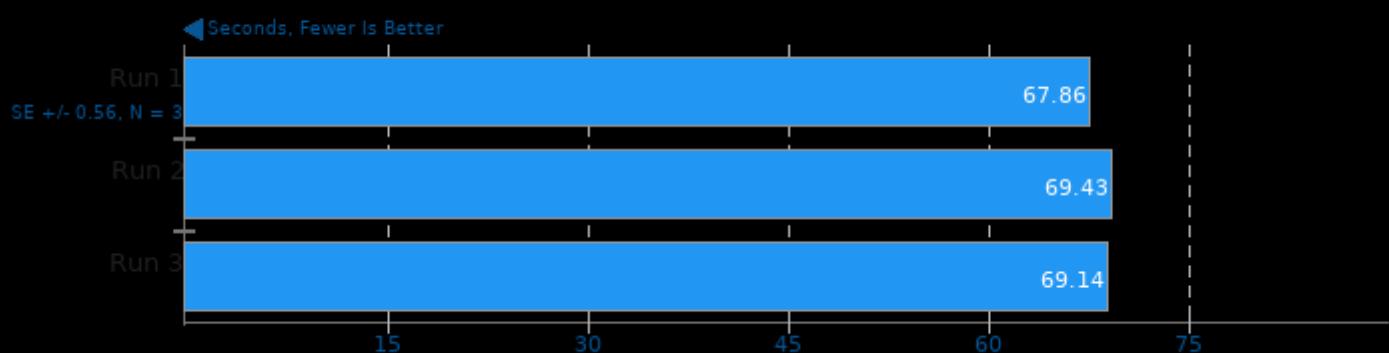
Timed ImageMagick Compilation 6.9.0

Time To Compile



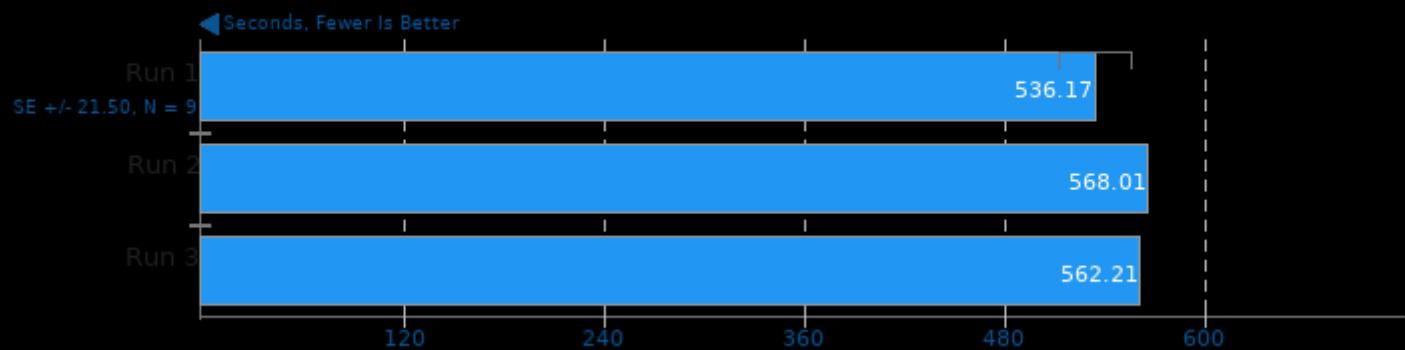
Timed Linux Kernel Compilation 5.4

Time To Compile



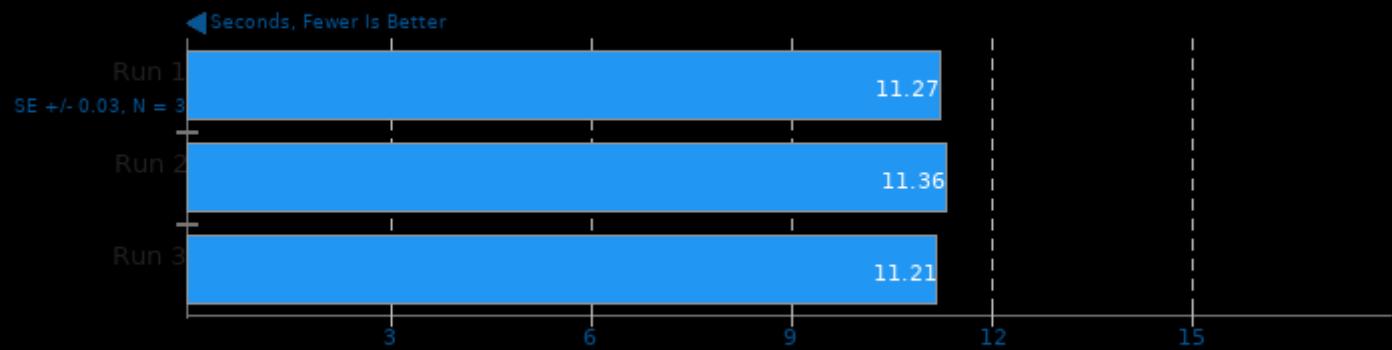
Timed LLVM Compilation 10.0

Time To Compile



Timed MAFFT Alignment 7.471

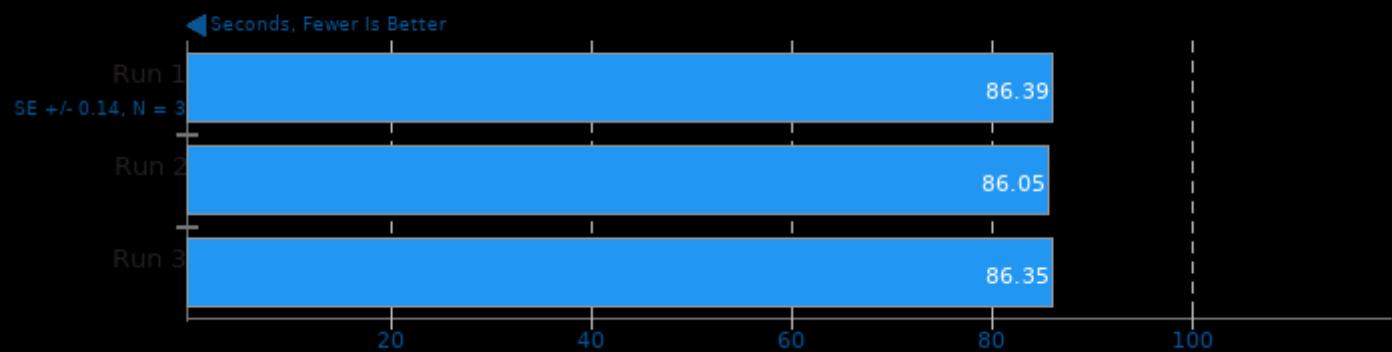
Multiple Sequence Alignment - LSU RNA



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

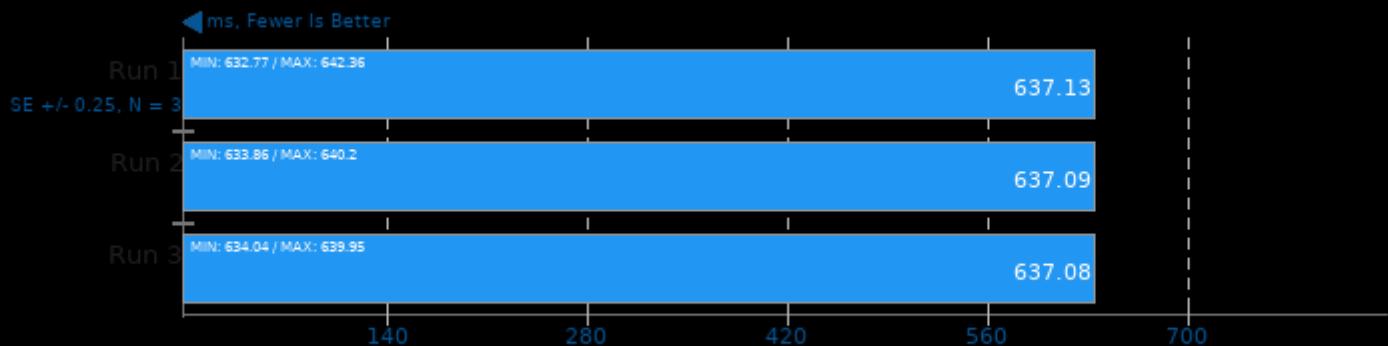
Timed PHP Compilation 7.4.2

Time To Compile



TNN 0.2.3

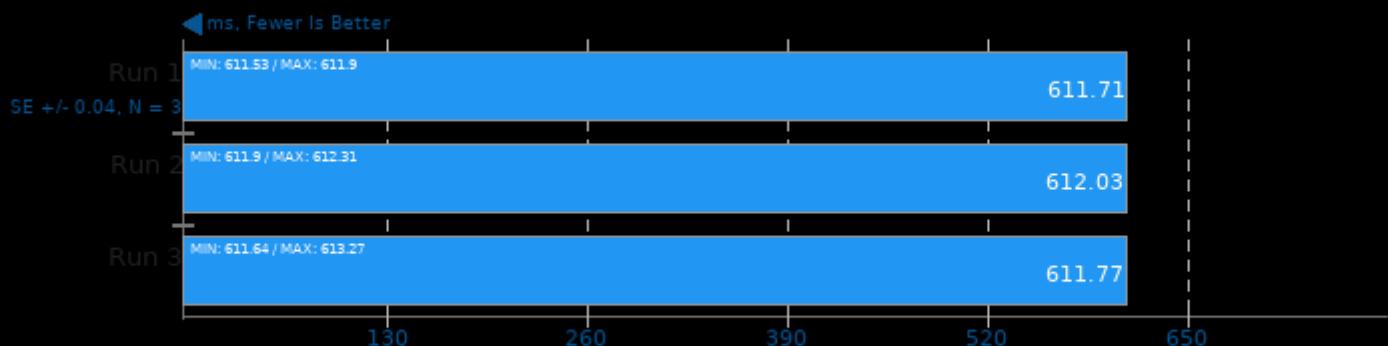
Target: CPU - Model: MobileNet v2



1. (CXX) g++ options: -fopenmp -pthread -fvisibility=hidden -O3 -rdynamic -ldl

TNN 0.2.3

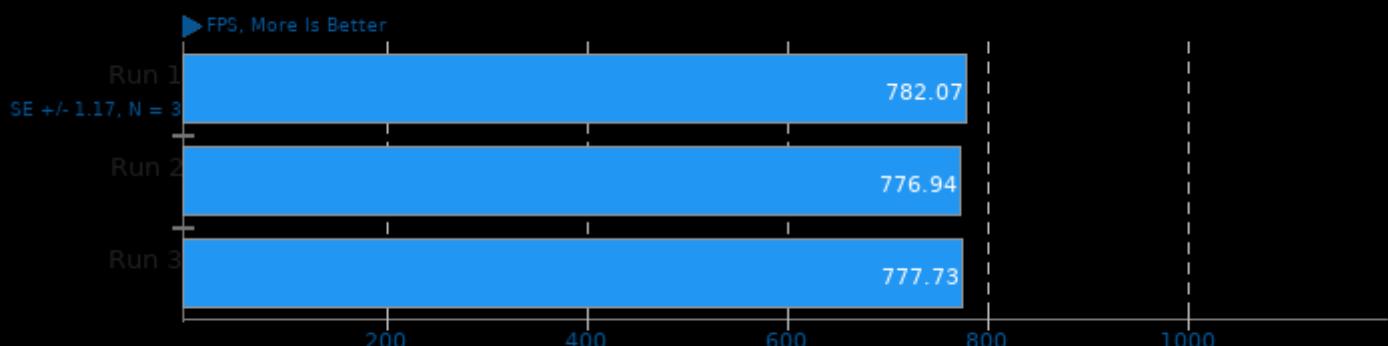
Target: CPU - Model: SqueezeNet v1.1



1. (CXX) g++ options: -fopenmp -pthread -fvisibility=hidden -O3 -rdynamic -ldl

TTSIOD 3D Renderer 2.3b

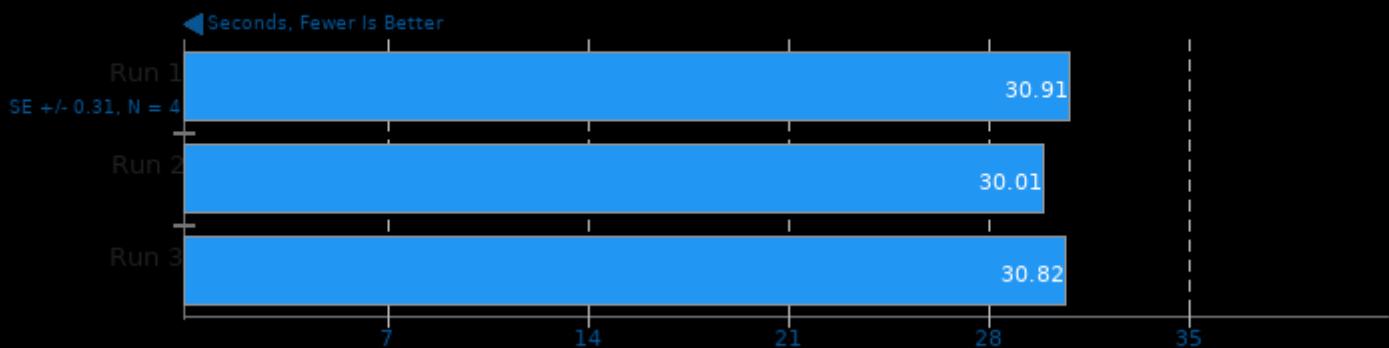
Phong Rendering With Soft-Shadow Mapping



1. (CXX) g++ options: -O3 -fomit-frame-pointer -ffast-math -mtune=native -fno-DSLD -fopenmp -fwhole-program -std=c++

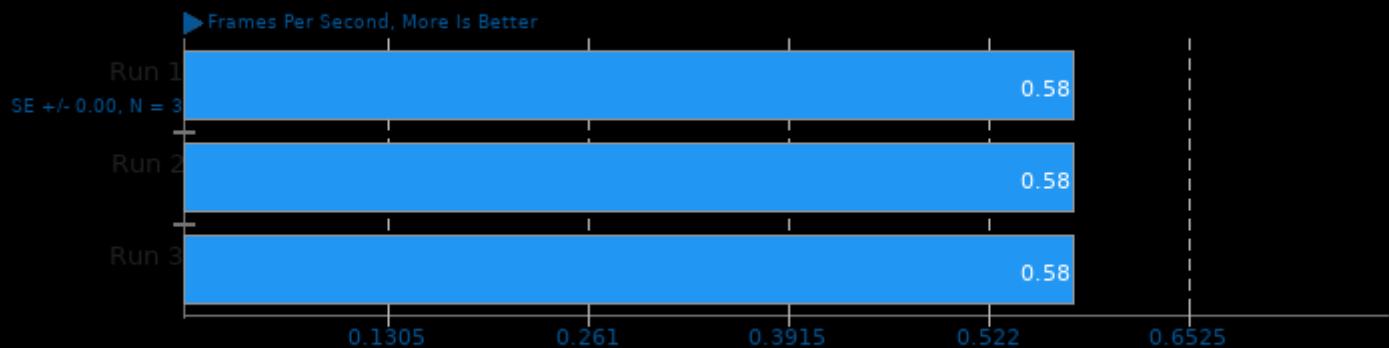
Unpacking Firefox 84.0

Extracting: firefox-84.0.source.tar.xz



VP9 libvpx Encoding 1.8.2

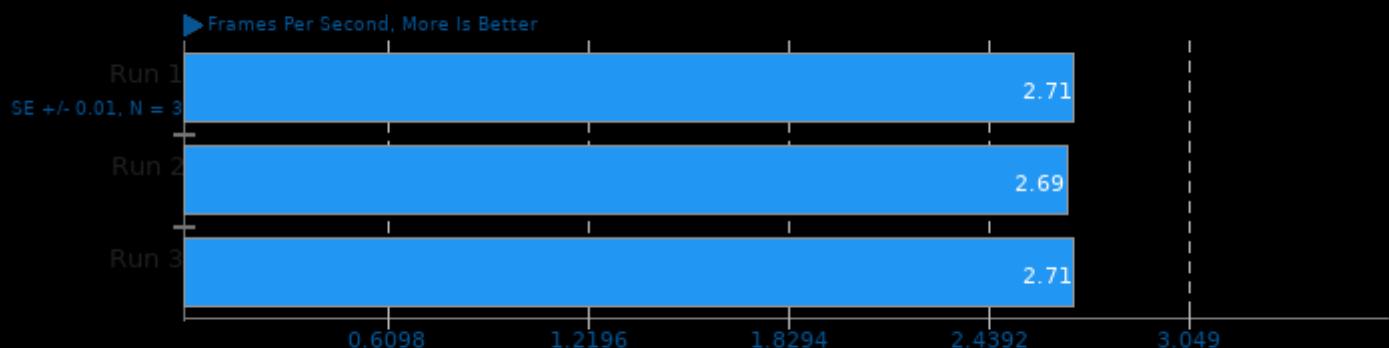
Speed: Speed 0



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

VP9 libvpx Encoding 1.8.2

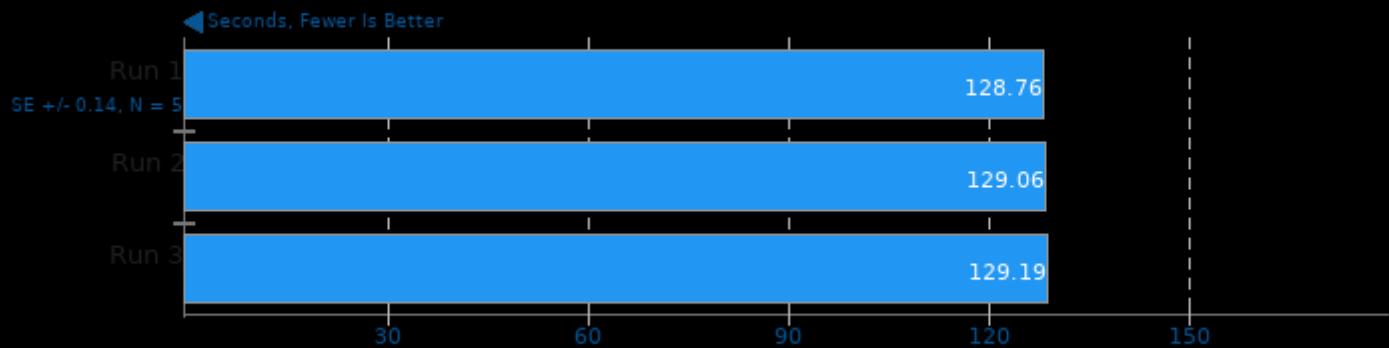
Speed: Speed 5



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

WavPack Audio Encoding 5.3

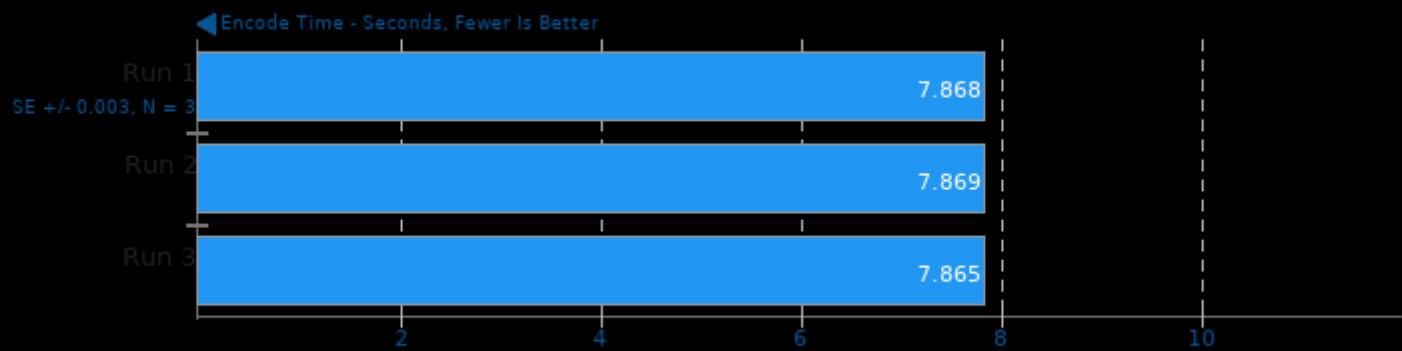
WAV To WavPack



1. (CXX) g++ options: -rdynamic

WebP Image Encode 1.1

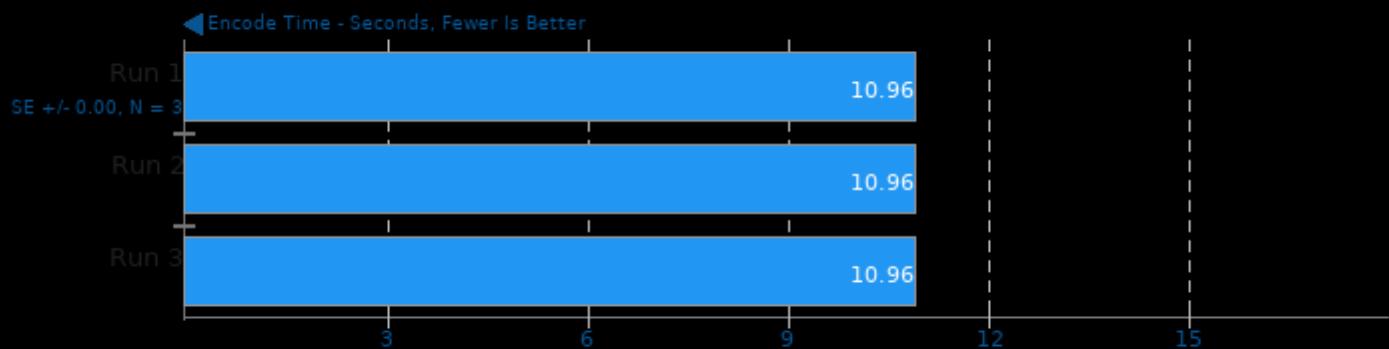
Encode Settings: Default



1. (CC) gcc options: -fvisibility=hidden -O2 -pthread -lm -ljpeg -lpng16 -ltiff

WebP Image Encode 1.1

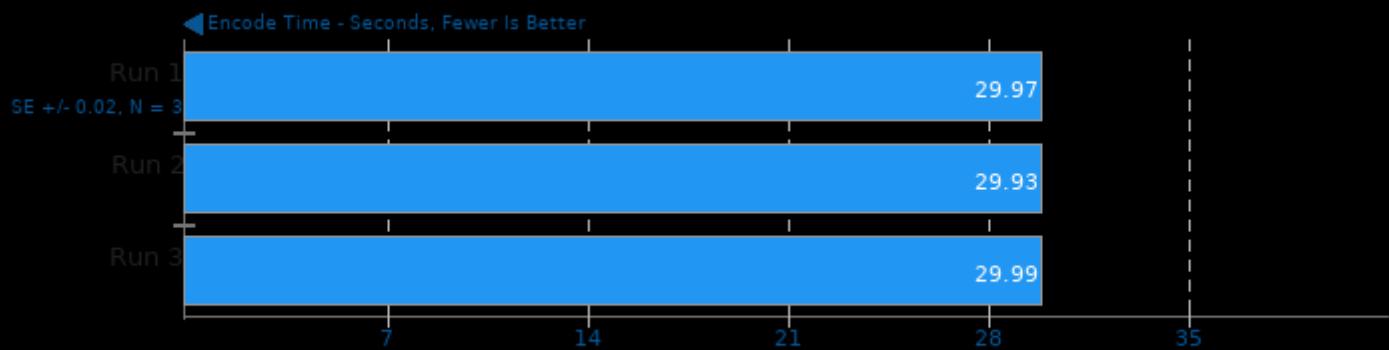
Encode Settings: Quality 100



1. (CC) gcc options: -fvisibility=hidden -O2 -pthread -lm -ljpeg -lpng16 -ltiff

WebP Image Encode 1.1

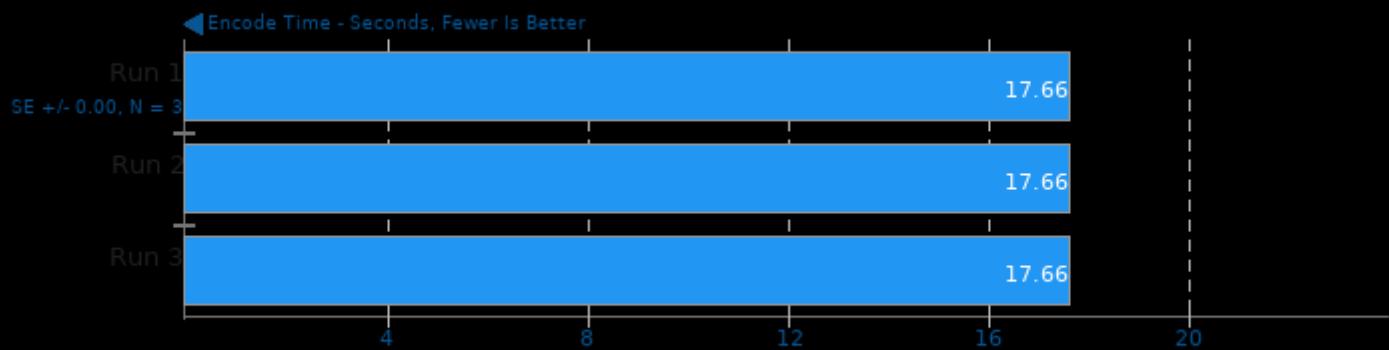
Encode Settings: Quality 100, Lossless



1. (CC) gcc options: -fvisibility=hidden -O2 -pthread -lm -ljpeg -lpng16 -ltiff

WebP Image Encode 1.1

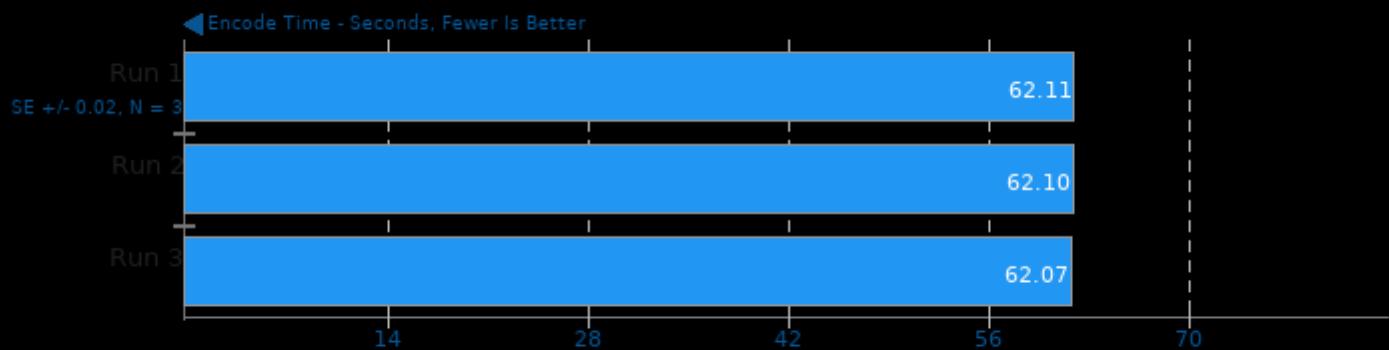
Encode Settings: Quality 100, Highest Compression



1. (CC) gcc options: -fvisibility=hidden -O2 -pthread -lm -ljpeg -lpng16 -ltiff

WebP Image Encode 1.1

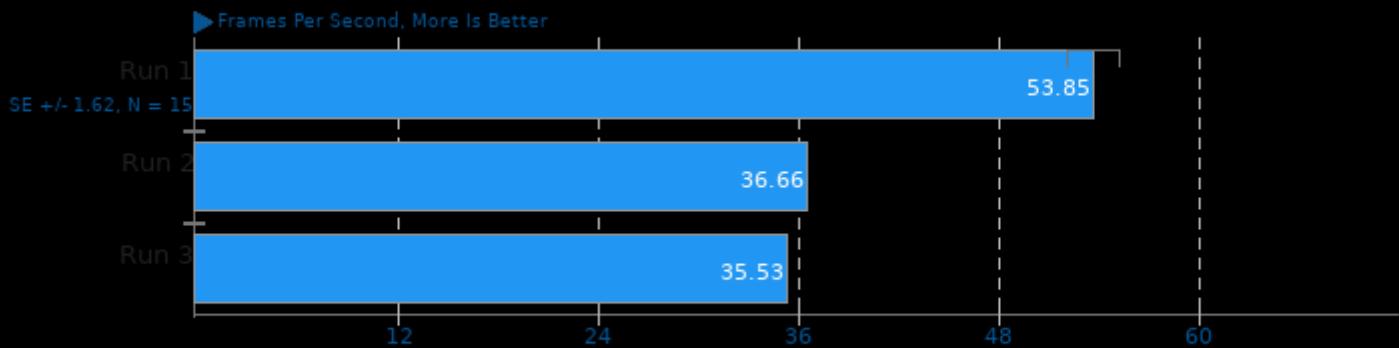
Encode Settings: Quality 100, Lossless, Highest Compression



1. (CC) gcc options: -fvisibility=hidden -O2 -pthread -lm -ljpeg -lpng16 -ltiff

x264 2019-12-17

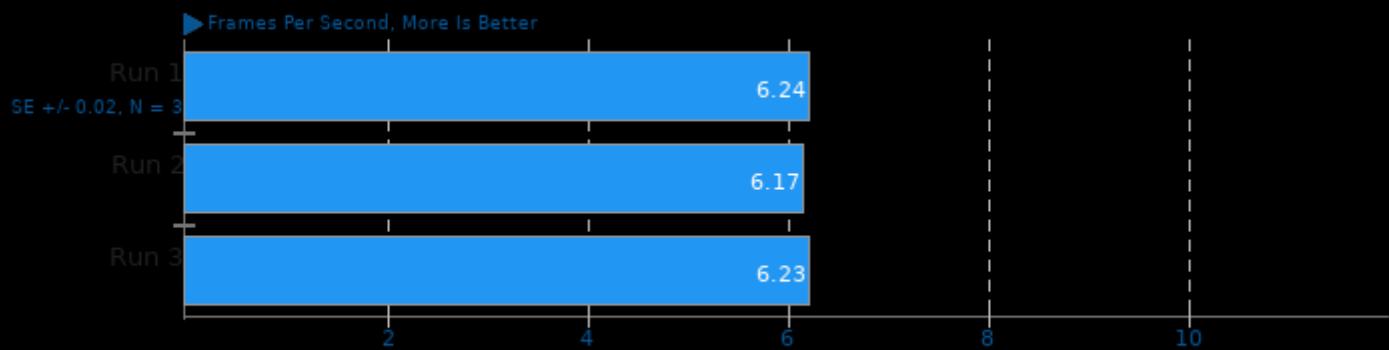
H.264 Video Encoding



1. (CC) gcc options: -ldl -lm -lpthread -O3 -ffast-math -maltivec -mabi=altivec -mvsx -std=gnu99 -fPIC -fomit-frame-pointer -fno-tree-vectorize

x265 3.4

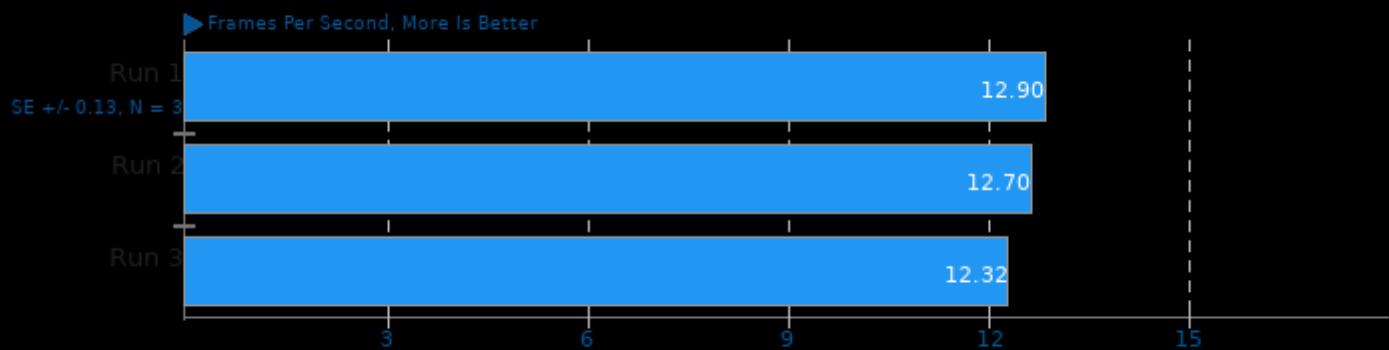
Video Input: Bosphorus 4K



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

x265 3.4

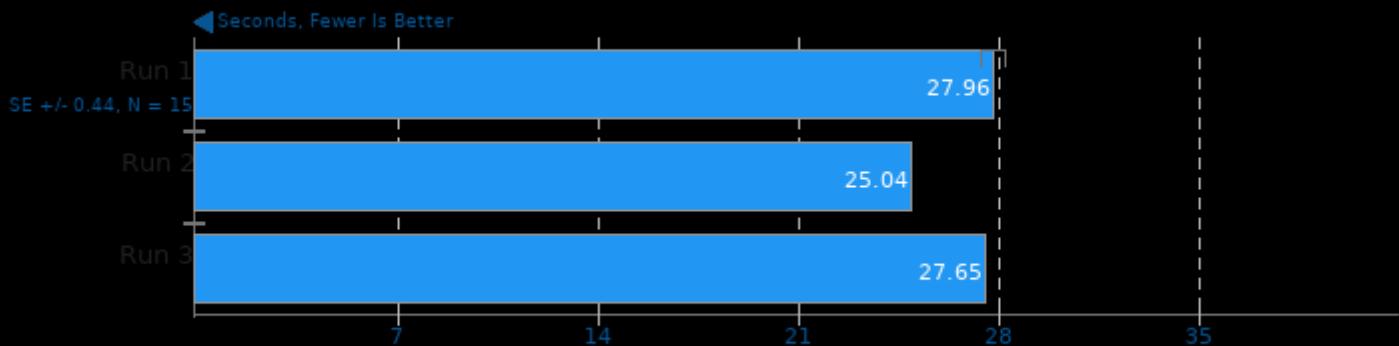
Video Input: Bosphorus 1080p



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

XZ Compression 5.2.4

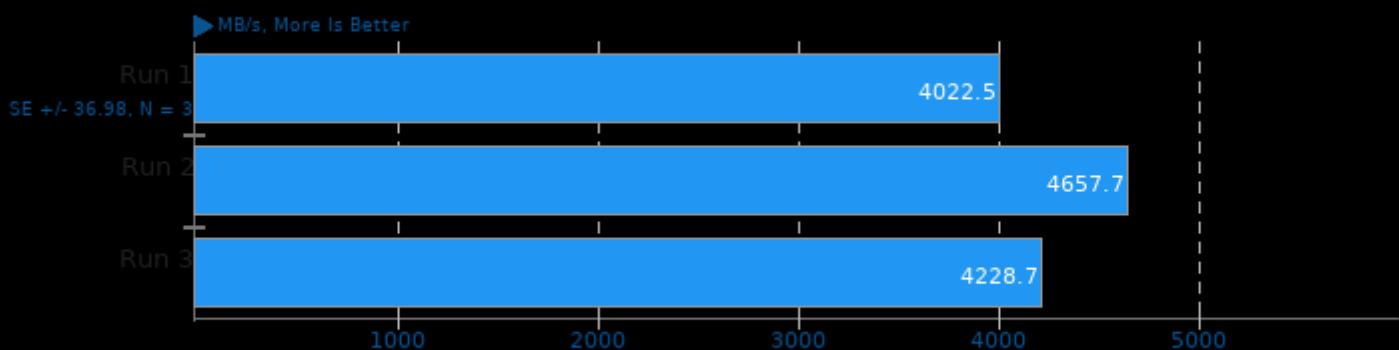
Compressing ubuntu-16.04.3-server-i386.img, Compression Level 9



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

Zstd Compression 1.4.5

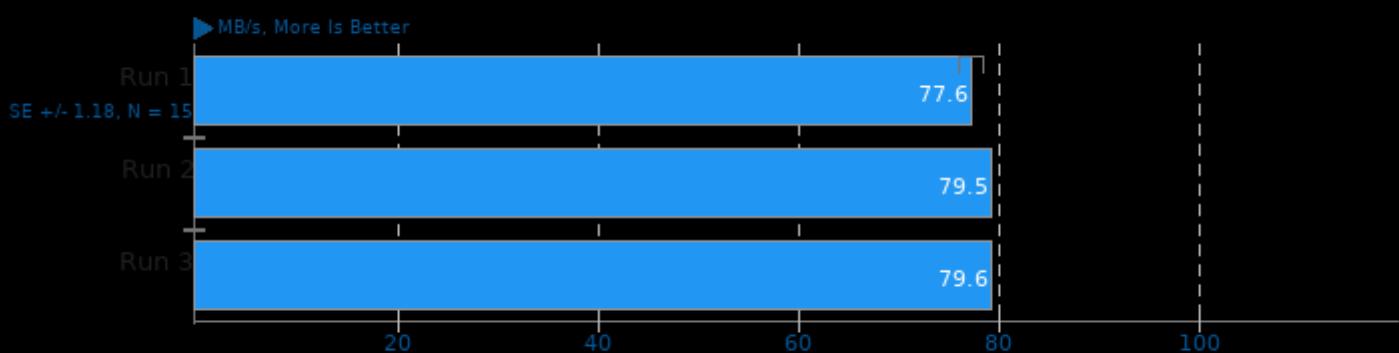
Compression Level: 3



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

Zstd Compression 1.4.5

Compression Level: 19



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

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