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## EPYC 7702 April 2021

AMD EPYC 7702 64-Core testing with a ASRockRack EPYCD8 (P2.40 BIOS) and ASPEED on Ubuntu 20.04 via the Phoronix Test Suite.

### Automated Executive Summary

*1 had the most wins, coming in first place for 48% of the tests.*

*Based on the geometric mean of all complete results, the fastest (3) was 1.001x the speed of the slowest (1). 2 was 1x the speed of 3 and 1 was 0.999x the speed of 2.*

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

*SVT-VP9 (Tuning: VMAF Optimized - Input: Bosphorus 1080p) at 1.516x*

*Timed Linux Kernel Compilation (Time To Compile) at 1.077x*

*AOM AV1 (Encoder Mode: Speed 8 Realtime - Input: Bosphorus 1080p) at 1.075x*

*Xcompact3d Incompact3d (Input: input.i3d 129 Cells Per Direction) at 1.074x*

*ViennaCL (Test: CPU BLAS - dGEMV-T) at 1.053x*

*Zstd Compression (Compression Level: 8 - Compression Speed) at 1.052x*

*toyBrot Fractal Generator (Implementation: TBB) at 1.049x*

*oneDNN (Harness: Deconvolution Batch shapes\_1d - Data Type: u8s8f32 - Engine: CPU) at 1.045x*

*AOM AV1 (Encoder Mode: Speed 6 Two-Pass - Input: Bosphorus 4K) at 1.039x*

oneDNN (Harness: Matrix Multiply Batch Shapes Transformer - Data Type: f32 - Engine: CPU) at 1.038x.

## Test Systems:

**1**

**2**

**3**

Processor: AMD EPYC 7702 64-Core @ 2.00GHz (64 Cores / 128 Threads), Motherboard: ASRockRack EPYCD8 (P2.40 BIOS), Chipset: AMD Starship/Matisse, Memory: 126GB, Disk: 3841GB Micron\_9300\_MTFDHAL3T8TDP, Graphics: ASPEED, Monitor: VE228, Network: 2 x Intel I350

OS: Ubuntu 20.04, Kernel: 5.9.0-050900rc6daily20200921-generic (x86\_64) 20200920, Desktop: GNOME Shell 3.36.4, Display Server: X Server 1.20.8, Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 1920x1080

Kernel Notes: Transparent Huge Pages: madvise

Compiler Notes: --build=x86\_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,gm2 --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-9-HskZEa/gcc-9-9.3.0/debian/tmp-nvptx/usr,hsa --enable-plugin --enable-shared --enable-threads=posix --host=x86\_64-linux-gnu --program-prefix=x86\_64-linux-gnu- --target=x86\_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic --without-cuda-driver -v

Processor Notes: Scaling Governor: acpi-cpufreq ondemand (Boost: Enabled) - CPU Microcode: 0x8301034

Python Notes: Python 3.8.2

Security Notes: itlb\_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec\_store\_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre\_v1: Mitigation of usercopy/swaps barriers and \_\_user pointer sanitization + spectre\_v2: Mitigation of Full AMD retroline IBPB: conditional IBRS\_FW STIBP: conditional RSB filling + srbds: Not affected + tsx\_async\_abort: Not affected

	1	2	3
<b>SVT-VP9 - VMAF Optimized - Bosphorus</b>	<b>238.14</b>	<b>361.00</b>	360.74
<b>1080p (FPS)</b>			
Normalized	65.97%	100%	99.93%
Standard Deviation		0.3%	0.2%
<b>Timed Linux Kernel Compilation - Time To</b>	<b>33.55</b>	<b>31.155</b>	31.162
<b>Compile (sec)</b>			
Normalized	92.86%	100%	99.98%
Standard Deviation		2.9%	2.9%
<b>AOM AV1 - Speed 8 Realtime - Bosphorus</b>	<b>58.37</b>	54.47	<b>54.32</b>
<b>1080p (FPS)</b>			
Normalized	100%	93.32%	93.06%
Standard Deviation		0.8%	1.2%
<b>Xcompact3d Incompact3d - i.i.1.C.P.D (sec)</b>	<b>5.54909182</b>	<b>5.96101077</b>	5.68558963
<b>Normalized</b>	100%	93.09%	97.6%
<b>Standard Deviation</b>		2.6%	2.6%
<b>ViennaCL - CPU BLAS - dGEMV-T (GB/s)</b>	636	<b>620</b>	<b>653</b>

Normalized	97.4%	94.95%	100%
Standard Deviation	3.9%	2.1%	
<b>Zstd Compression - 8 - Compression Speed (MB/s)</b>	<b>2510</b>	2441	<b>2386</b>
Normalized	100%	97.25%	95.06%
Standard Deviation	1.9%	0.8%	
<b>toyBrot Fractal Generator - TBB (ms)</b>	<b>7471</b>	7244	<b>7119</b>
Normalized	95.29%	98.27%	100%
Standard Deviation	0.8%	0.3%	
<b>oneDNN - D.B.s - u8s8f32 - CPU (ms)</b>	<b>0.911802</b>	<b>0.872769</b>	0.893830
Normalized	95.72%	100%	97.64%
Standard Deviation	2.7%	1.5%	
<b>AOM AV1 - Speed 6 Two-Pass - Bosphorus 4K (FPS)</b>	<b>6.72</b>	<b>6.98</b>	6.79
Normalized	96.28%	100%	97.28%
Standard Deviation	0.3%	1%	
<b>oneDNN - M.M.B.S.T - f32 - CPU (ms)</b>	<b>0.433838</b>	0.446141	<b>0.450310</b>
Normalized	100%	97.24%	96.34%
Standard Deviation	0.4%	0.6%	
<b>ViennaCL - CPU BLAS - dAXPY (GB/s)</b>	1320	<b>1283</b>	<b>1327</b>
Normalized	99.47%	96.68%	100%
Standard Deviation	5.6%	0.4%	
<b>GNU Radio - F.B.t.B.F.F (MiB/s)</b>	<b>331.7</b>	323.0	<b>322.6</b>
Normalized	100%	97.38%	97.26%
Standard Deviation	2.1%	2.1%	
<b>AOM AV1 - Speed 8 Realtime - Bosphorus 4K (FPS)</b>	<b>22.22</b>	22.18	<b>21.67</b>
Normalized	100%	99.82%	97.52%
Standard Deviation	1.6%	2.4%	
<b>AOM AV1 - Speed 9 Realtime - Bosphorus 1080p (FPS)</b>	<b>67.34</b>	<b>65.79</b>	66.10
Normalized	100%	97.7%	98.16%
Standard Deviation	1.4%	0.1%	
<b>SVT-VP9 - V.Q.O - Bosphorus 1080p (FPS)</b>	<b>279.1</b>	<b>273.59</b>	277.87
Normalized	100%	98.03%	99.56%
Standard Deviation	1.6%	2.4%	
<b>oneDNN - R.N.N.T - u8s8f32 - CPU (ms)</b>	<b>2082</b>	2085	<b>2123</b>
Normalized	100%	99.82%	98.06%
Standard Deviation	0.3%	0.9%	
<b>GNU Radio - F.D.F (MiB/s)</b>	<b>744</b>	734.1	<b>730.1</b>
Normalized	100%	98.67%	98.13%
Standard Deviation	0.6%	1.4%	
<b>oneDNN - IP Shapes 3D - u8s8f32 - CPU (ms)</b>	<b>0.998801</b>	<b>0.980323</b>	0.986806
Normalized	98.15%	100%	99.34%
Standard Deviation	0.2%	0.3%	
<b>ViennaCL - CPU BLAS - dGEMM-NN (GFLOPs/s)</b>	<b>93</b>	<b>91.4</b>	92.5
Normalized	100%	98.28%	99.46%
Standard Deviation	0.7%	0.3%	
<b>Zstd Compression - 19 - Compression Speed (MB/s)</b>	<b>83.5</b>	<b>82.1</b>	82.3
Normalized	100%	98.32%	98.56%
Standard Deviation	0.9%	2.6%	
<b>ViennaCL - CPU BLAS - dCOPY (GB/s)</b>	<b>1390</b>	<b>1367</b>	1383

Normalized	100%	98.35%	99.5%
Standard Deviation		1.8%	1.1%
<b>libavif avifenc - 10 (sec)</b>	<b>3.712</b>	3.754	<b>3.773</b>
Normalized	100%	98.88%	98.38%
Standard Deviation		0.3%	0.1%
<b>oneDNN - D.B.s - f32 - CPU (ms)</b>	<b>1.71993</b>	<b>1.74774</b>	1.73568
Normalized	100%	98.41%	99.09%
Standard Deviation		0.8%	0.1%
<b>GNU Radio - S.S.C (MiB/s)</b>	<b>2914</b>	<b>2868</b>	2879
Normalized	100%	98.44%	98.82%
Standard Deviation		0.3%	1.7%
<b>Stockfish - Total Time (Nodes/s)</b>	<b>134641813</b>	133169802	<b>132630158</b>
Normalized	100%	98.91%	98.51%
Standard Deviation		2.9%	2.8%
<b>Zstd Compression - 3, Long Mode -</b>	<b>410.5</b>	<b>404.5</b>	408.0
Compression Speed (MB/s)			
Normalized	100%	98.54%	99.39%
Standard Deviation		2.6%	1.4%
<b>ViennaCL - CPU BLAS - sCOPY (GB/s)</b>	<b>757</b>	<b>764</b>	<b>753</b>
Normalized	99.08%	100%	98.56%
Standard Deviation		2.7%	1.3%
<b>SVT-HEVC - 7 - Bosphorus 1080p (FPS)</b>	277.91	<b>276.07</b>	<b>279.74</b>
Normalized	99.35%	98.69%	100%
Standard Deviation		0.2%	1%
<b>ViennaCL - CPU BLAS - sAXPY (GB/s)</b>	<b>687</b>	<b>679</b>	<b>688</b>
Normalized	99.85%	98.69%	100%
Standard Deviation		1.8%	0.1%
<b>Xcompact3d Incompact3d - i.i.1.C.P.D (sec)</b>	<b>25.8832493</b>	<b>25.5524209</b>	25.6117503
Normalized	98.72%	100%	99.77%
Standard Deviation		1.5%	1.9%
<b>AOM AV1 - Speed 6 Realtime - Bosphorus</b>	<b>11.89</b>	<b>11.74</b>	<b>11.74</b>
4K (FPS)			
Normalized	100%	98.74%	98.74%
Standard Deviation		0.6%	0.4%
<b>toyBrot Fractal Generator - OpenMP (ms)</b>	<b>7848</b>	<b>7941</b>	7921
Normalized	100%	98.83%	99.08%
Standard Deviation		0.4%	0.3%
<b>AOM AV1 - Speed 6 Two-Pass - Bosphorus</b>	<b>16.22</b>	16.09	<b>16.04</b>
1080p (FPS)			
Normalized	100%	99.2%	98.89%
Standard Deviation		0.3%	0.3%
<b>oneDNN - IP Shapes 1D - u8s8f32 - CPU (ms)</b>	<b>1.48314</b>	1.47048	<b>1.46707</b>
Normalized	98.92%	99.77%	100%
Standard Deviation		0.7%	0.1%
<b>AOM AV1 - Speed 9 Realtime - Bosphorus</b>	25.94	<b>25.71</b>	<b>25.99</b>
4K (FPS)			
Normalized	99.81%	98.92%	100%
Standard Deviation		1.4%	0.8%
<b>toyBrot Fractal Generator - C++ Threads</b>	<b>7207</b>	<b>7278</b>	7258
Normalized	100%	99.02%	99.3%
Standard Deviation		0.3%	0.7%
<b>Zstd Compression - 19, Long Mode -</b>	<b>41.5</b>	<b>41.1</b>	41.2
Compression Speed (MB/s)			
Normalized	100%	99.04%	99.28%
Standard Deviation		0.4%	1%

<b>oneDNN - IP Shapes 1D - f32 - CPU (ms)</b>	1.27985	<b>1.27544</b>	<b>1.28764</b>
Normalized	99.66%	100%	99.05%
Standard Deviation		0.2%	1.5%
<b>ViennaCL - CPU BLAS - dDOT (GB/s)</b>	<b>896</b>	<b>904</b>	<b>904</b>
Normalized	99.12%	100%	100%
Standard Deviation			1.3%
<b>ViennaCL - CPU BLAS - dGEMM-NT (GFLOPs/s)</b>	<b>90.5</b>	<b>89.7</b>	89.8
Normalized	100%	99.12%	99.23%
Standard Deviation		0.3%	0.3%
<b>Blender - BMW27 - CPU-Only (sec)</b>	<b>38.74</b>	38.88	<b>39.04</b>
Normalized	100%	99.64%	99.23%
Standard Deviation		0.5%	1.1%
<b>Zstd Compression - 3 - Compression Speed (MB/s)</b>	<b>5279</b>	<b>5244</b>	5250
Normalized	100%	99.32%	99.45%
Standard Deviation		0.1%	0.1%
<b>libavif avifenc - 10, Lossless (sec)</b>	<b>6.767</b>	6.796	<b>6.809</b>
Normalized	100%	99.57%	99.38%
Standard Deviation		0.3%	0.4%
<b>GNU Radio - IIR Filter (MiB/s)</b>	<b>486.7</b>	<b>489.7</b>	488.3
Normalized	99.39%	100%	99.71%
Standard Deviation		0.6%	0.3%
<b>SVT-VP9 - P.S.O - Bosphorus 1080p (FPS)</b>	362.92	<b>361.43</b>	<b>363.64</b>
Normalized	99.8%	99.39%	100%
Standard Deviation		0.6%	1.7%
<b>simdjson - PartialTweets (GB/s)</b>	<b>3.55</b>	<b>3.53</b>	<b>3.53</b>
Normalized	100%	99.44%	99.44%
Standard Deviation		0.4%	0.2%
<b>simdjson - DistinctUserID (GB/s)</b>	<b>3.59</b>	<b>3.61</b>	<b>3.59</b>
Normalized	99.45%	100%	99.45%
Standard Deviation		0.2%	0.3%
<b>Blender - Classroom - CPU-Only (sec)</b>	<b>100.03</b>	<b>100.58</b>	100.08
Normalized	100%	99.45%	99.95%
Standard Deviation		1%	0.1%
<b>oneDNN - D.B.s - u8s8f32 - CPU (ms)</b>	<b>1.22494</b>	1.222224	<b>1.21841</b>
Normalized	99.47%	99.69%	100%
Standard Deviation		0.1%	0.3%
<b>oneDNN - R.N.N.T - bf16bf16bf16 - CPU (ms)</b>	<b>2083</b>	2085	<b>2094</b>
Normalized	100%	99.9%	99.47%
Standard Deviation		0.1%	0.5%
<b>Blender - Pabellon Barcelona - CPU-Only</b>	<b>116.52</b>	<b>117.14</b>	116.66
Normalized	100%	99.47%	99.88%
Standard Deviation		0.5%	0.3%
<b>ViennaCL - CPU BLAS - dGEMM-TN (GFLOPs/s)</b>	<b>95.1</b>	<b>94.6</b>	94.7
Normalized	100%	99.47%	99.58%
Standard Deviation		0.1%	0.3%
<b>GNU Radio - FIR Filter (MiB/s)</b>	<b>534.5</b>	<b>537.3</b>	535.1
Normalized	99.48%	100%	99.59%
Standard Deviation		0.3%	0.2%
<b>SVT-HEVC - 1 - Bosphorus 1080p (FPS)</b>	<b>34.41</b>	<b>34.59</b>	34.45
Normalized	99.48%	100%	99.6%
Standard Deviation		0.4%	0.3%

AOM AV1 - Speed 4 Two-Pass - Bosphorus 1080p (FPS)	<b>5.79</b>	5.77	<b>5.76</b>
Normalized	100%	99.65%	99.48%
Standard Deviation		0.4%	0.3%
simdjson - Kostya (GB/s)	<b>2.12</b>	<b>2.13</b>	<b>2.13</b>
Normalized	99.53%	100%	100%
Standard Deviation		0%	0%
SVT-HEVC - 10 - Bosphorus 1080p (FPS)	462.61	<b>460.86</b>	<b>462.91</b>
Normalized	99.94%	99.56%	100%
Standard Deviation		0.9%	1.4%
libavif avifenc - 6 (sec)	<b>10.442</b>	10.468	<b>10.488</b>
Normalized	100%	99.75%	99.56%
Standard Deviation		0.2%	0.2%
ViennaCL - CPU BLAS - dGEMM-TT (GFLOPs/s)	<b>92.9</b>	<b>92.9</b>	<b>92.5</b>
Normalized	100%	100%	99.57%
Standard Deviation		0.3%	0.6%
oneDNN - R.N.N.T - f32 - CPU (ms)	<b>2089</b>	<b>2098</b>	2095
Normalized	100%	99.57%	99.71%
Standard Deviation		1%	0.3%
Liquid-DSP - 64 - 256 - 57 (samples/s)	<b>2715700000</b>	2718266667	<b>2727266667</b>
Normalized	99.58%	99.67%	100%
Standard Deviation		0.3%	0.1%
toyBrot Fractal Generator - C++ Tasks (ms)	7599	<b>7579</b>	<b>7611</b>
Normalized	99.74%	100%	99.58%
Standard Deviation		2.5%	0.7%
Blender - Fishy Cat - CPU-Only (sec)	55	<b>54.80</b>	<b>55.02</b>
Normalized	99.64%	100%	99.6%
Standard Deviation		0.2%	0.1%
libavif avifenc - 6, Lossless (sec)	<b>29.438</b>	29.500	<b>29.556</b>
Normalized	100%	99.79%	99.6%
Standard Deviation		0%	0.1%
AOM AV1 - Speed 6 Realtime - Bosphorus 1080p (FPS)	<b>18.24</b>	18.22	<b>18.17</b>
Normalized	100%	99.89%	99.62%
Standard Deviation		0.1%	0.5%
Sysbench - RAM / Memory (MiB/sec)	<b>6128</b>	<b>6105</b>	6121
Normalized	100%	99.62%	99.89%
Standard Deviation		0.3%	0.3%
oneDNN - R.N.N.I - u8s8f32 - CPU (ms)	<b>730.784</b>	732.810	<b>733.512</b>
Normalized	100%	99.72%	99.63%
Standard Deviation		0.4%	0.3%
oneDNN - M.M.B.S.T - u8s8f32 - CPU (ms)	<b>1.14965</b>	1.15166	<b>1.15391</b>
Normalized	100%	99.83%	99.63%
Standard Deviation		0.1%	0.3%
Zstd Compression - 19 - D.S (MB/s)	2560	<b>2565</b>	<b>2556</b>
Normalized	99.79%	100%	99.65%
Standard Deviation		0.3%	0.5%
Botan - ChaCha20Poly1305 (MiB/s)	<b>633.174</b>	635.007	<b>635.338</b>
Normalized	99.66%	99.95%	100%
Standard Deviation		0.1%	0.2%
Botan - ChaCha20Poly1305 - Decrypt (MiB/s)	<b>632.656</b>	631.089	<b>630.505</b>
Normalized	100%	99.75%	99.66%
Standard Deviation		0.1%	0.1%

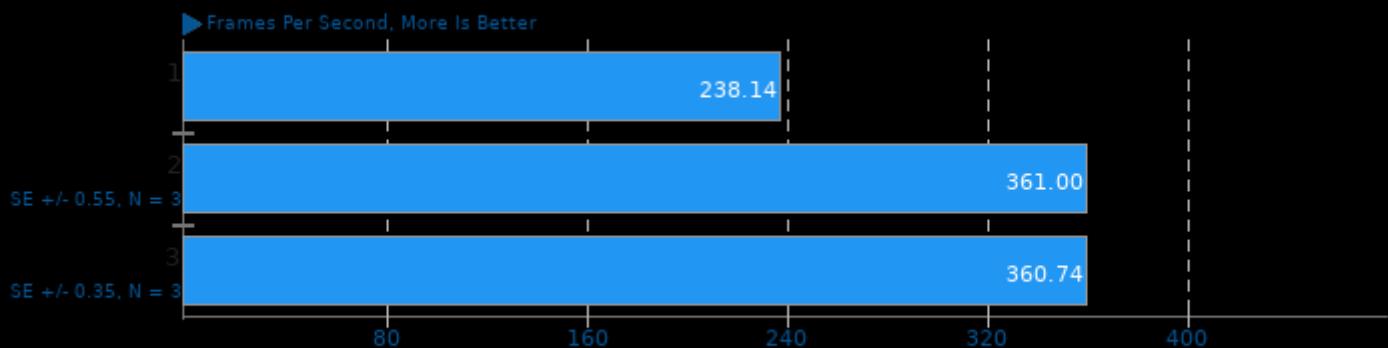
<b>Blender - Barbershop - CPU-Only (sec)</b>	142.58	<b>142.94</b>	<b>142.46</b>
Normalized	99.92%	99.66%	100%
Standard Deviation		0.1%	0.1%
<b>LuaRadio - Complex Phase (MiB/s)</b>	<b>515.5</b>	<b>513.8</b>	514.5
Normalized	100%	99.67%	99.81%
Standard Deviation		0.1%	0.2%
<b>Liquid-DSP - 128 - 256 - 57 (samples/s)</b>	<b>3129700000</b>	3124233333	<b>3119400000</b>
Normalized	100%	99.83%	99.67%
Standard Deviation		0.1%	0%
<b>Timed Mesa Compilation - Time To Compile (sec)</b>	<b>23.304</b>	<b>23.232</b>	<b>23.232</b>
Normalized	99.69%	100%	100%
Standard Deviation		0.1%	0.2%
<b>GNU Radio - Hilbert Transform (MiB/s)</b>	346.5	<b>346.1</b>	<b>347.1</b>
Normalized	99.83%	99.71%	100%
Standard Deviation		0.2%	1%
<b>Zstd Compression - 3, Long Mode - D.S</b>	<b>2892</b>	2888	<b>2885</b>
Normalized	100%	99.85%	99.73%
Standard Deviation		0%	0.2%
<b>AOM AV1 - Speed 4 Two-Pass - Bosphorus 4K (FPS)</b>	<b>3.82</b>	<b>3.82</b>	<b>3.83</b>
Normalized	99.74%	99.74%	100%
Standard Deviation		0.3%	0.5%
<b>oneDNN - R.N.N.I - bf16bf16bf16 - CPU (ms)</b>	<b>734.173</b>	<b>732.294</b>	732.483
Normalized	99.74%	100%	99.97%
Standard Deviation		0.1%	0%
<b>Zstd Compression - 8 - D.S (MB/s)</b>	<b>2764</b>	<b>2770</b>	2769
Normalized	99.76%	100%	99.94%
Standard Deviation		0.1%	0.4%
<b>Timed Erlang/OTP Compilation - Time To Compile (sec)</b>	<b>157.679</b>	157.479	<b>157.302</b>
Normalized	99.76%	99.89%	100%
Standard Deviation		0.5%	0.6%
<b>oneDNN - C.B.S.A - u8s8f32 - CPU (ms)</b>	3.454	<b>3.46141</b>	<b>3.45314</b>
Normalized	99.98%	99.76%	100%
Standard Deviation		0.2%	0.3%
<b>Liquid-DSP - 1 - 256 - 57 (samples/s)</b>	<b>59654000</b>	59569333	<b>59520333</b>
Normalized	100%	99.86%	99.78%
Standard Deviation		0.1%	0.2%
<b>LuaRadio - F.B.t.B.F.F (MiB/s)</b>	<b>451.2</b>	452.0	<b>452.2</b>
Normalized	99.78%	99.96%	100%
Standard Deviation		0.1%	0.5%
<b>Timed Node.js Compilation - Time To Compile (sec)</b>	<b>128.184</b>	<b>128.468</b>	128.378
Normalized	100%	99.78%	99.85%
Standard Deviation		0.4%	0%
<b>Zstd Compression - 8, Long Mode - D.S</b>	<b>2986</b>	<b>2993</b>	2990
Normalized	99.79%	100%	99.9%
Standard Deviation		0.3%	0.3%
<b>Xcompact3d Incompact3d - X.b.i.i (sec)</b>	<b>689.604065</b>	690.480672	<b>691.061747</b>
Normalized	100%	99.87%	99.79%
Standard Deviation		0.2%	0.2%
<b>LuaRadio - F.D.F (MiB/s)</b>	<b>339.2</b>	339.8	<b>339.9</b>
Normalized	99.79%	99.97%	100%
Standard Deviation		0.1%	0%

Liquid-DSP - 16 - 256 - 57 (samples/s)	<b>937750000</b>	9367766667	<b>936146667</b>
Normalized	100%	99.9%	99.83%
Standard Deviation		0.2%	0.2%
libavif avifenc - 0 (sec)	<b>53.306</b>	<b>53.216</b>	53.287
Normalized	99.83%	100%	99.87%
Standard Deviation		0%	0%
Liquid-DSP - 8 - 256 - 57 (samples/s)	<b>475650000</b>	4761166667	<b>476420000</b>
Normalized	99.84%	99.94%	100%
Standard Deviation		0.2%	0.1%
oneDNN - IP Shapes 3D - f32 - CPU (ms)	<b>5.04307</b>	5.04320	<b>5.05103</b>
Normalized	100%	100%	99.84%
Standard Deviation		0.1%	0.1%
Liquid-DSP - 32 - 256 - 57 (samples/s)	<b>1690600000</b>	<b>1693066667</b>	1691266667
Normalized	99.85%	100%	99.89%
Standard Deviation		0%	0%
Liquid-DSP - 2 - 256 - 57 (samples/s)	<b>118920000</b>	1190366667	<b>119086667</b>
Normalized	99.86%	99.96%	100%
Standard Deviation		0%	0.1%
Liquid-DSP - 4 - 256 - 57 (samples/s)	<b>237970000</b>	<b>2382366667</b>	2380533333
Normalized	99.89%	100%	99.92%
Standard Deviation		0.1%	0.1%
Botan - AES-256 - Decrypt (MiB/s)	<b>4560</b>	4559	<b>4555</b>
Normalized	100%	99.97%	99.89%
Standard Deviation		0%	0.2%
Botan - Blowfish - Decrypt (MiB/s)	<b>367.42</b>	367.797	<b>367.804</b>
Normalized	99.9%	100%	100%
Standard Deviation		0%	0%
Botan - AES-256 (MiB/s)	<b>4560</b>	4559	<b>4556</b>
Normalized	100%	99.96%	99.9%
Standard Deviation		0%	0.2%
GNU GMP GMPbench - Total Time (GMPbench Score)	<b>4542</b>	<b>4546</b>	4542
Normalized	99.9%	100%	99.91%
Botan - Blowfish (MiB/s)	<b>369.321</b>	369.219	<b>368.993</b>
Normalized	100%	99.97%	99.91%
Standard Deviation		0.1%	0.1%
libavif avifenc - 2 (sec)	28.412	<b>28.391</b>	<b>28.414</b>
Normalized	99.93%	100%	99.92%
Standard Deviation		0.2%	0.1%
oneDNN - R.N.N.I - f32 - CPU (ms)	<b>732.05</b>	<b>732.625</b>	732.382
Normalized	100%	99.92%	99.95%
Standard Deviation		0.3%	0.2%
Botan - Twofish (MiB/s)	302.438	<b>302.492</b>	<b>302.285</b>
Normalized	99.98%	100%	99.93%
Standard Deviation		0%	0.1%
oneDNN - D.B.s - f32 - CPU (ms)	2.67016	<b>2.67036</b>	<b>2.66877</b>
Normalized	99.95%	99.94%	100%
Standard Deviation		0.5%	0%
Zstd Compression - 19, Long Mode - D.S (MB/s)	<b>2552</b>	<b>2554</b>	2553
Normalized	99.94%	100%	99.97%
Standard Deviation		0.2%	0.1%
Botan - Twofish - Decrypt (MiB/s)	302.234	<b>302.337</b>	<b>302.180</b>
Normalized	99.97%	100%	99.95%
Standard Deviation		0%	0%

Sysbench - CPU (Events/sec)	<b>96671</b>	<b>96718</b>	96694
Normalized	99.95%	100%	99.98%
Standard Deviation	0%	0%	0%
Botan - CAST-256 - Decrypt (MiB/s)	120.066	<b>120.058</b>	<b>120.096</b>
Normalized	99.98%	99.97%	100%
Standard Deviation	0%	0%	0%
Botan - KASUMI - Decrypt (MiB/s)	<b>75.091</b>	75.101	<b>75.103</b>
Normalized	99.98%	100%	100%
Standard Deviation	0%	0%	0.1%
Botan - KASUMI (MiB/s)	<b>77.653</b>	77.661	<b>77.663</b>
Normalized	99.99%	100%	100%
Standard Deviation	0%	0%	0%
Botan - CAST-256 (MiB/s)	<b>120.055</b>	<b>120.065</b>	<b>120.055</b>
Normalized	99.99%	100%	99.99%
Standard Deviation	0%	0%	0%
oneDNN - C.B.S.A - f32 - CPU (ms)	<b>1.00901</b>	1.00899	<b>1.00894</b>
Normalized	99.99%	100%	100%
Standard Deviation	0.2%	0.2%	0.3%
LuaRadio - Hilbert Transform (MiB/s)	82.7	82.7	82.7
Standard Deviation	0.1%	0.1%	0%
simdjson - LargeRand (GB/s)	0.66	0.66	0.66
Standard Deviation	0%	0%	0%
ViennaCL - CPU BLAS - dGEMV-N (GB/s)	<b>30.9</b>	28.5	<b>27.3</b>
Normalized	100%	92.23%	88.35%
Standard Deviation	2.8%	2.8%	6.7%
ViennaCL - CPU BLAS - sDOT (GB/s)	<b>461</b>	<b>507</b>	479
Normalized	90.93%	100%	94.48%
Standard Deviation	9.3%	9.3%	4.9%
Zstd Compression - 8, Long Mode -	444.1	<b>444.0</b>	<b>473.1</b>
Compression Speed (MB/s)			
Normalized	93.87%	93.85%	100%
Standard Deviation	0.3%	0.3%	7.2%

## SVT-VP9 0.3

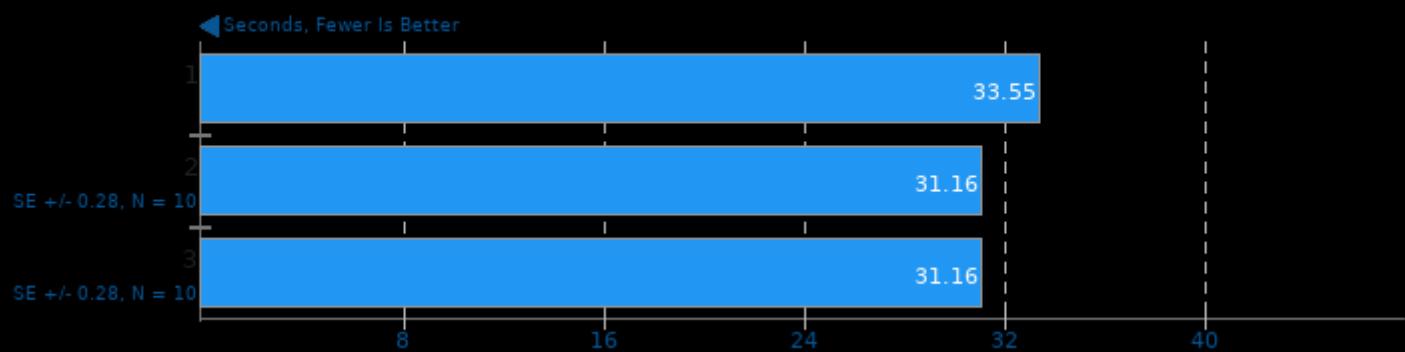
Tuning: VMAF Optimized - Input: Bosphorus 1080p



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

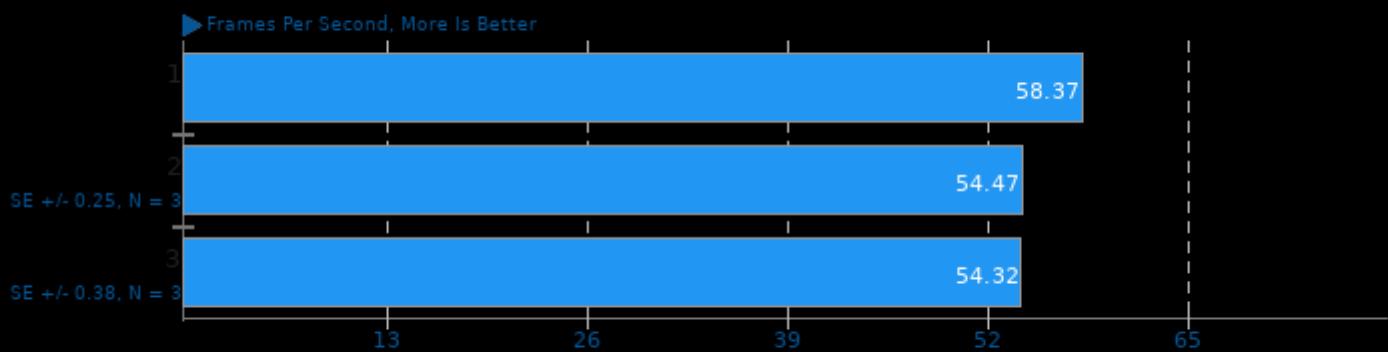
## Timed Linux Kernel Compilation 5.10.20

Time To Compile



## AOM AV1 3.0

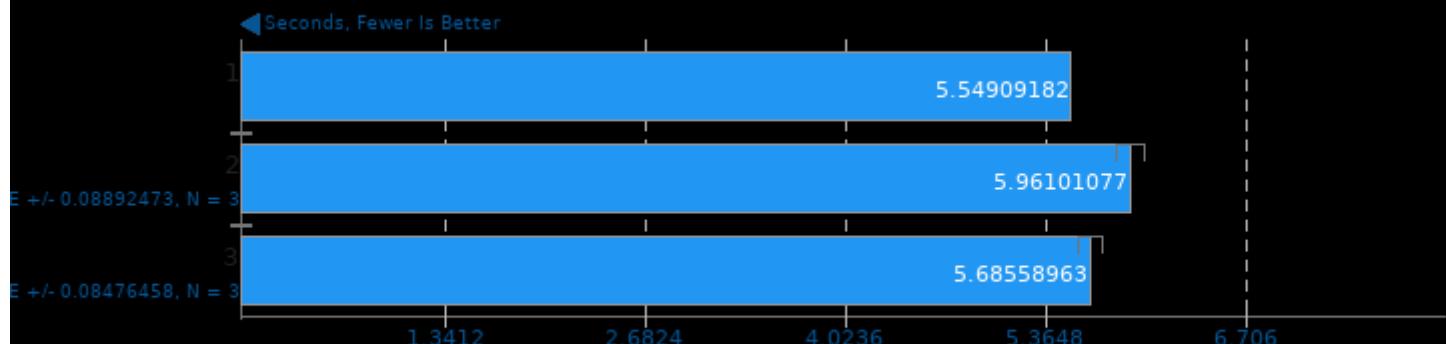
Encoder Mode: Speed 8 Realtime - Input: Bosphorus 1080p



1. (CXX) g++ options: -O3 -std=c++11 -U\_FORTIFY\_SOURCE -lm -lpthread

## Xcompact3d Incompact3d 2021-03-11

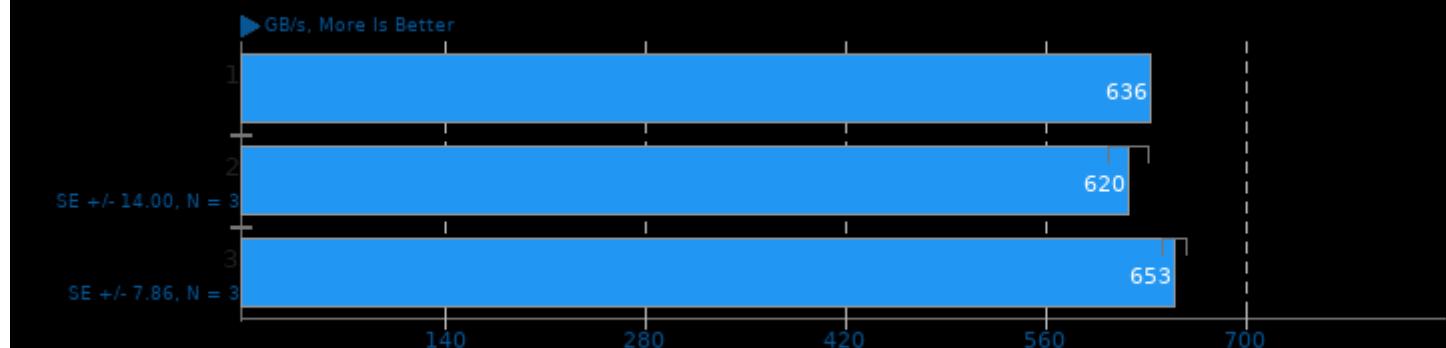
Input: input.i3d 129 Cells Per Direction



1. (F9X) gfortran options: -cpp -O2 -funroll-loops -floop-optimize -fcray-pointer -fbacktrace -pthread -lmpi\_usempif08 -lmpi\_mpifh -lmpi

## ViennaCL 1.7.1

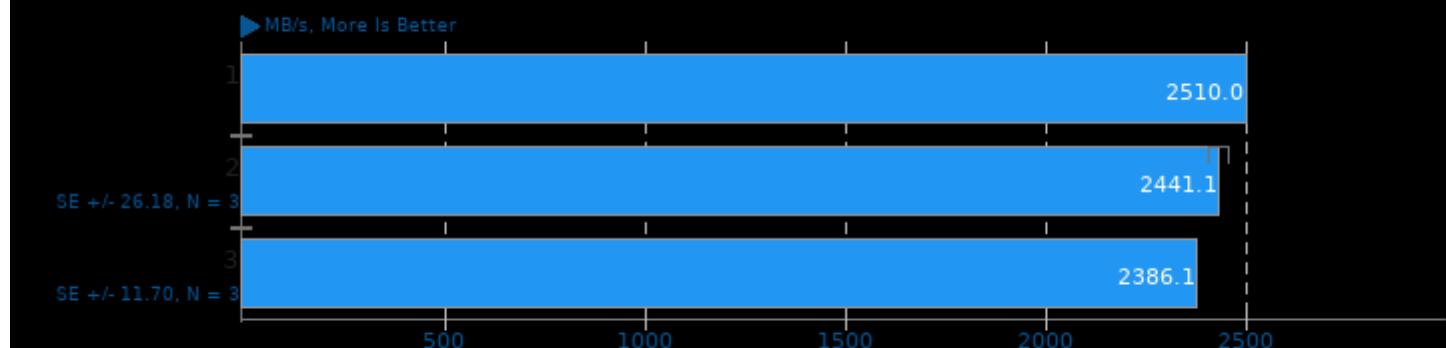
Test: CPU BLAS - dGEMV-T



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

## Zstd Compression 1.4.9

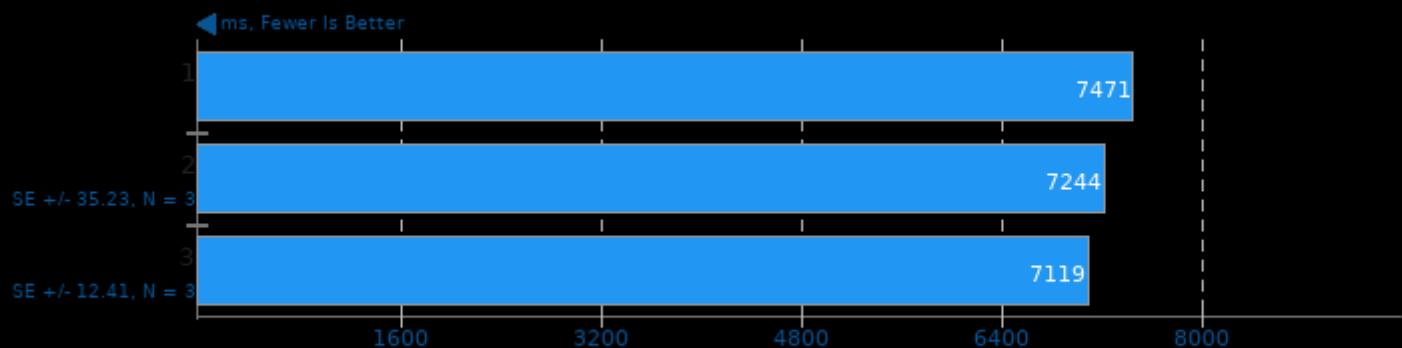
Compression Level: 8 - Compression Speed



1. (CC) gcc options: -O3 -march=native -pthread -lz -llzma

## toyBrot Fractal Generator 2020-11-18

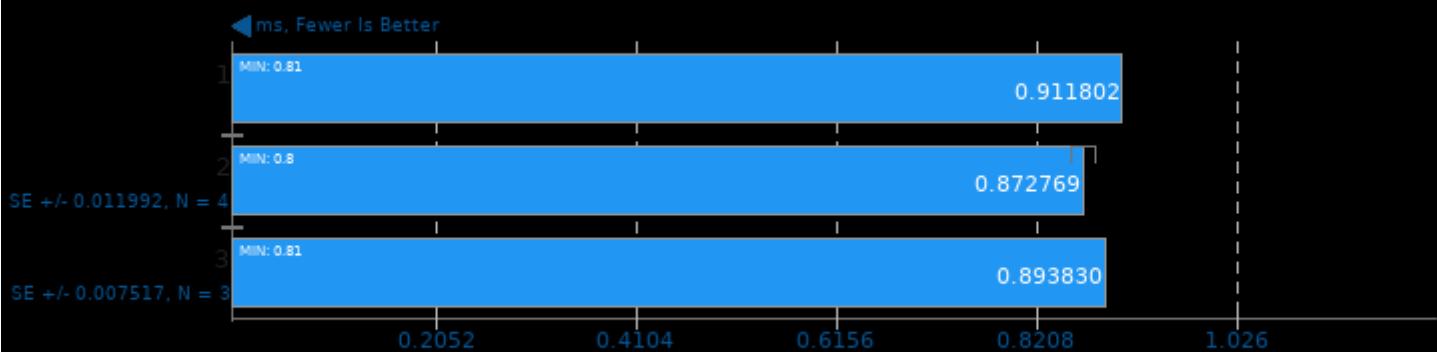
Implementation: TBB



1. (CXX) g++ options: -O3 -march=native -lpthread -lm -lgcc -lgcc\_s -lc

## oneDNN 2.1.2

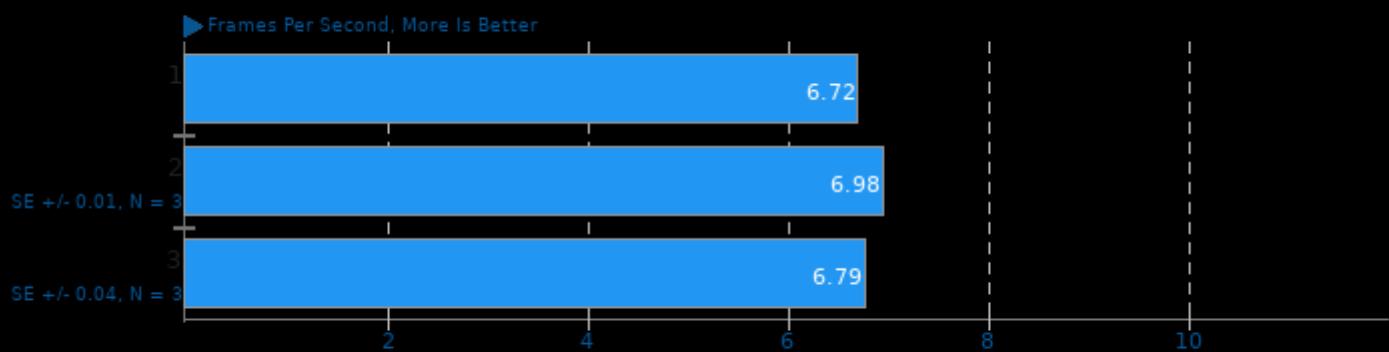
Harness: Deconvolution Batch shapes\_1d - Data Type: u8s8f32 - Engine: CPU



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

## AOM AV1 3.0

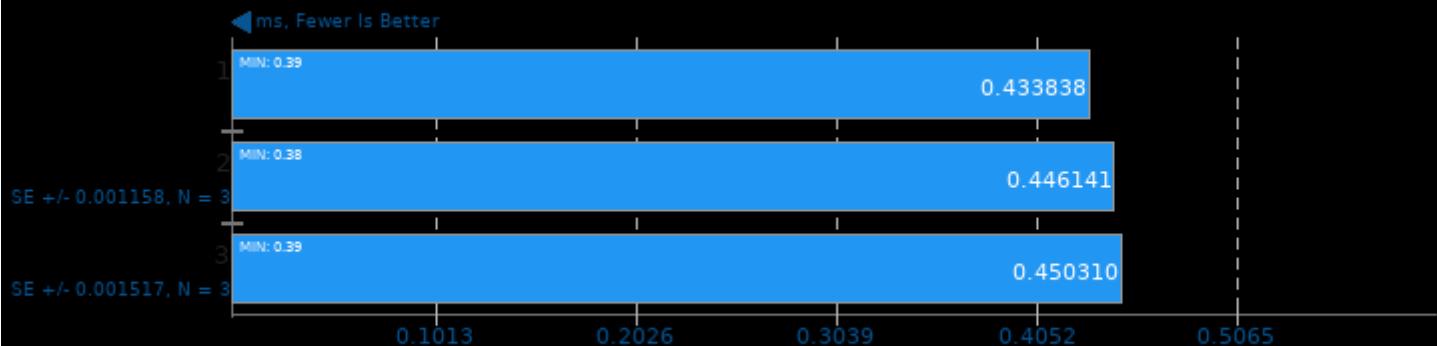
Encoder Mode: Speed 6 Two-Pass - Input: Bosphorus 4K



1. (CXX) g++ options: -O3 -std=c++11 -U\_FORTIFY\_SOURCE -lm -lpthread

## oneDNN 2.1.2

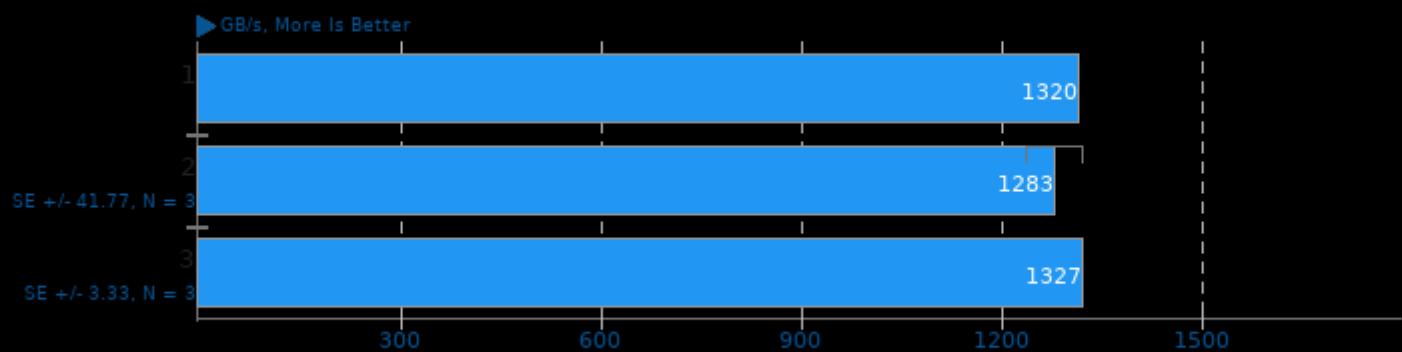
Harness: Matrix Multiply Batch Shapes Transformer - Data Type: f32 - Engine: CPU



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

## ViennaCL 1.7.1

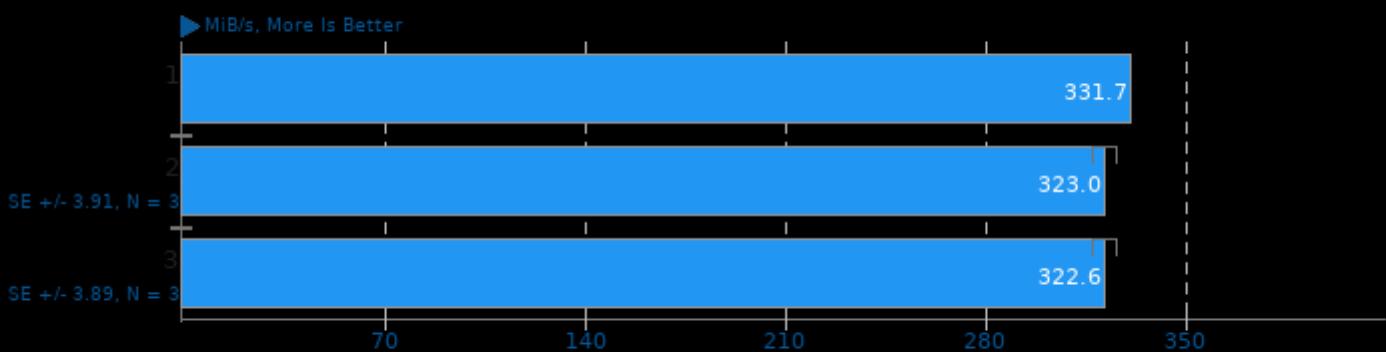
Test: CPU BLAS - dAXPY



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

## GNU Radio

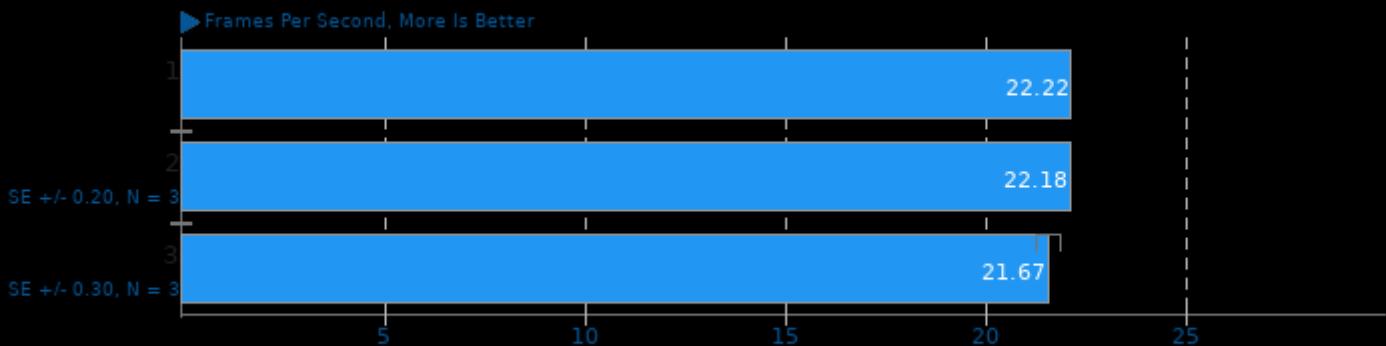
Test: Five Back to Back FIR Filters



1. 3.8.1.0

## AOM AV1 3.0

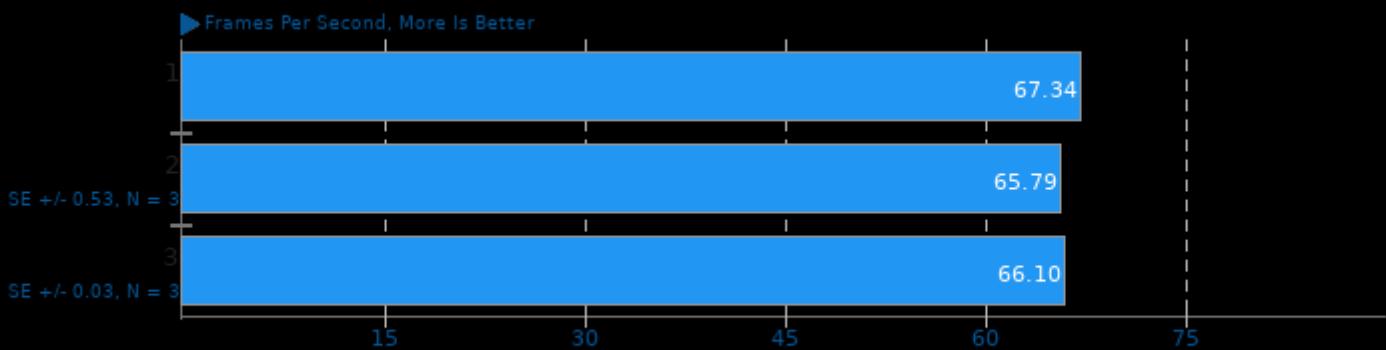
Encoder Mode: Speed 8 Realtime - Input: Bosphorus 4K



1. (CXX) g++ options: -O3 -std=c++11 -U\_FORTIFY\_SOURCE -lm -lpthread

## AOM AV1 3.0

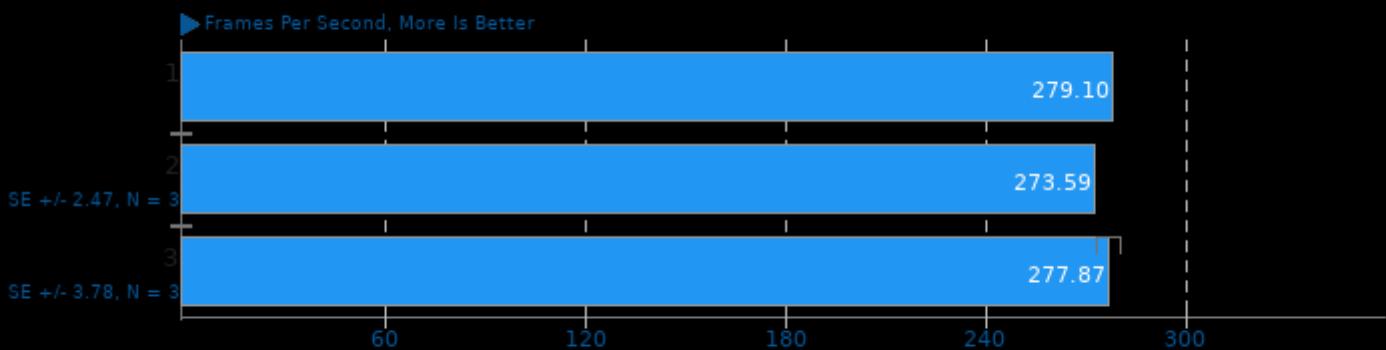
Encoder Mode: Speed 9 Realtime - Input: Bosphorus 1080p



1. (CXX) g++ options: -O3 -std=c++11 -U\_FORTIFY\_SOURCE -lm -lpthread

## SVT-VP9 0.3

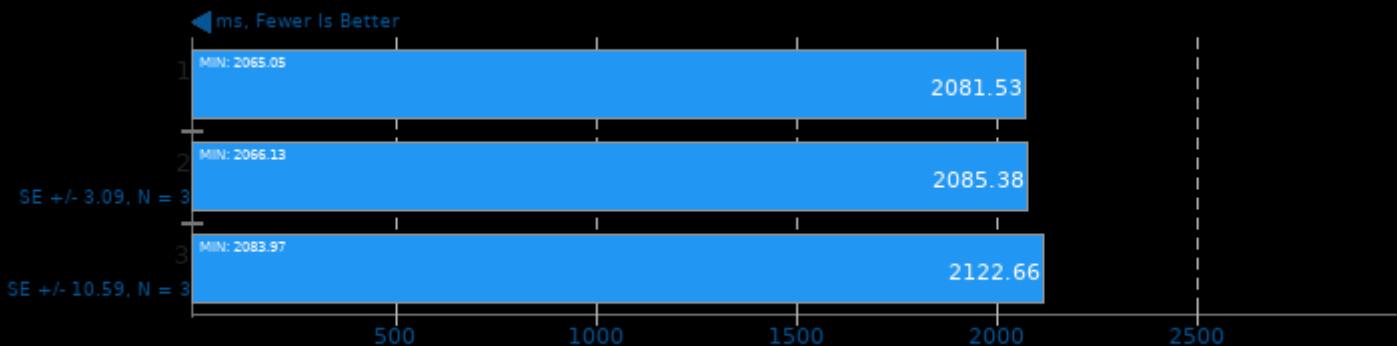
Tuning: Visual Quality Optimized - Input: Bosphorus 1080p



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

## oneDNN 2.1.2

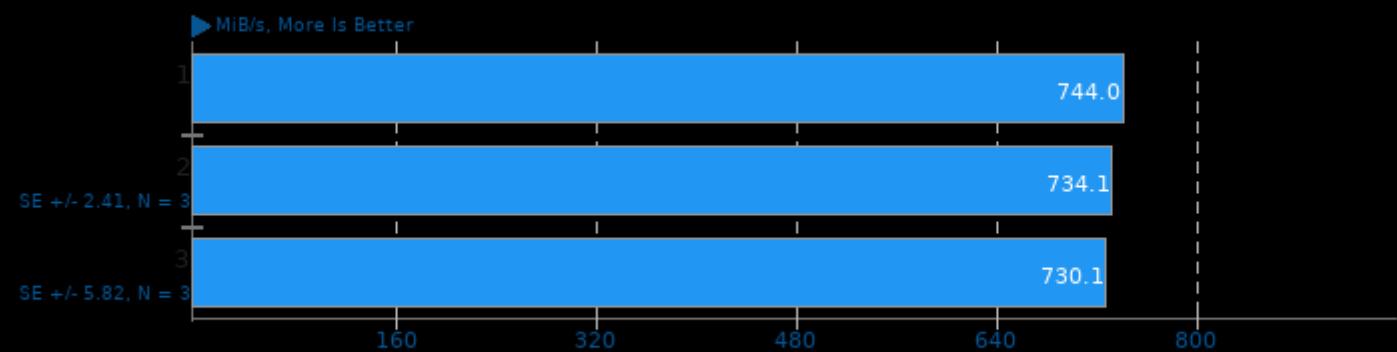
Harness: Recurrent Neural Network Training - Data Type: u8s8f32 - Engine: CPU



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

## GNU Radio

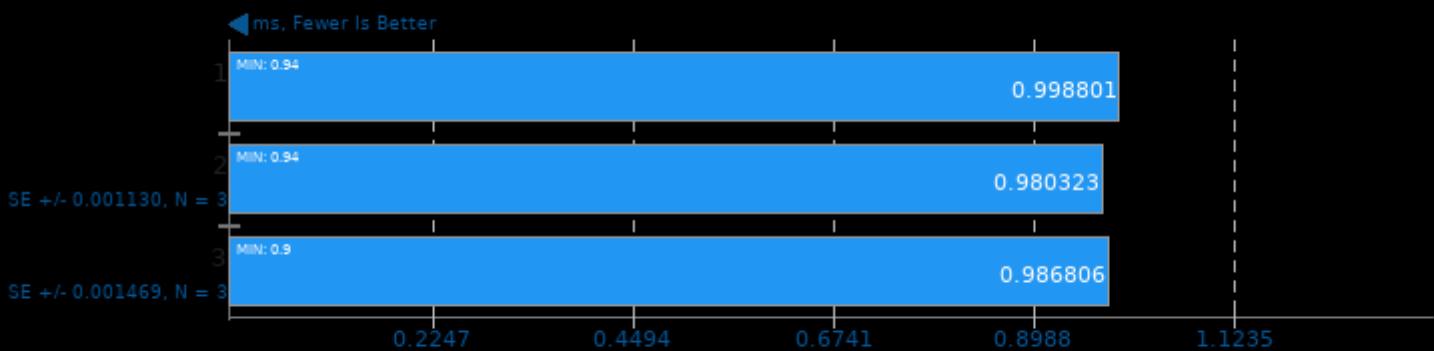
Test: FM Deemphasis Filter



1. 3.8.1.0

## oneDNN 2.1.2

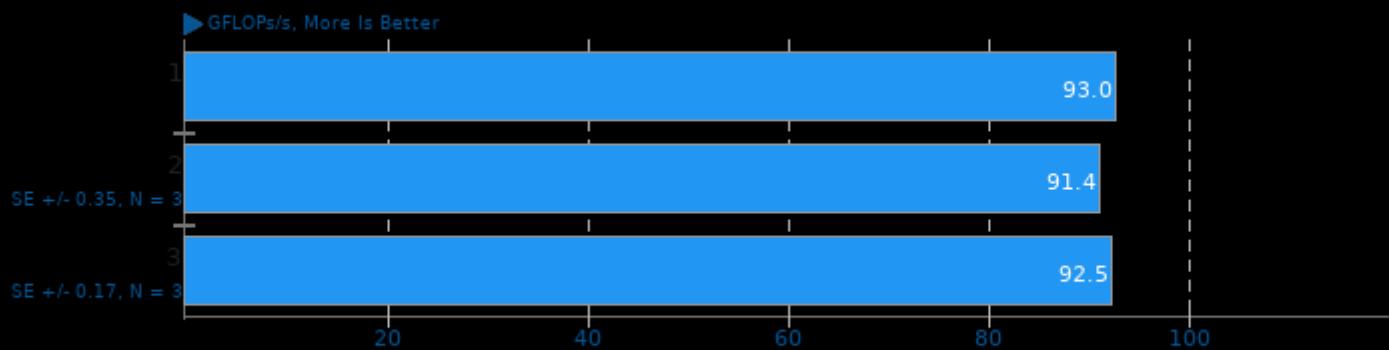
Harness: IP Shapes 3D - Data Type: u8s8f32 - Engine: CPU



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

## ViennaCL 1.7.1

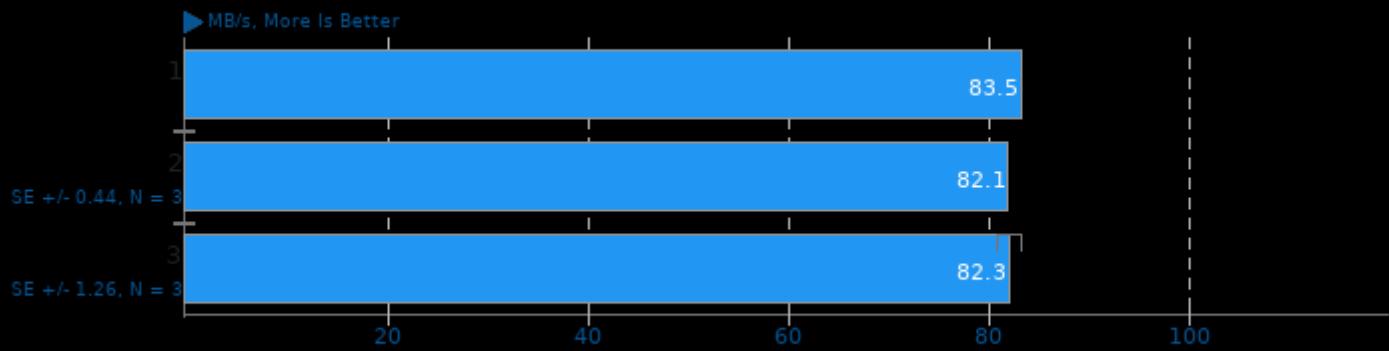
Test: CPU BLAS - dGEMM-NN



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

## Zstd Compression 1.4.9

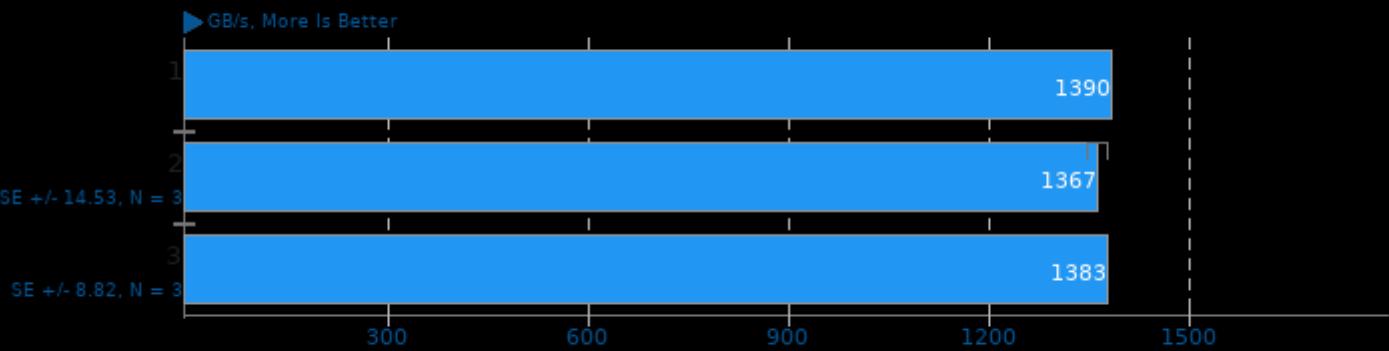
Compression Level: 19 - Compression Speed



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

## ViennaCL 1.7.1

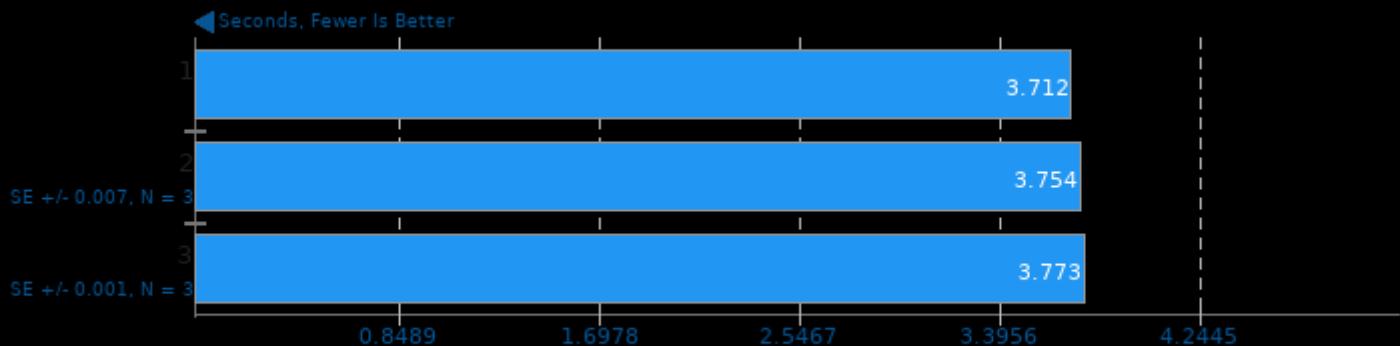
Test: CPU BLAS - dCOPY



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

## libavif avifenc 0.9.0

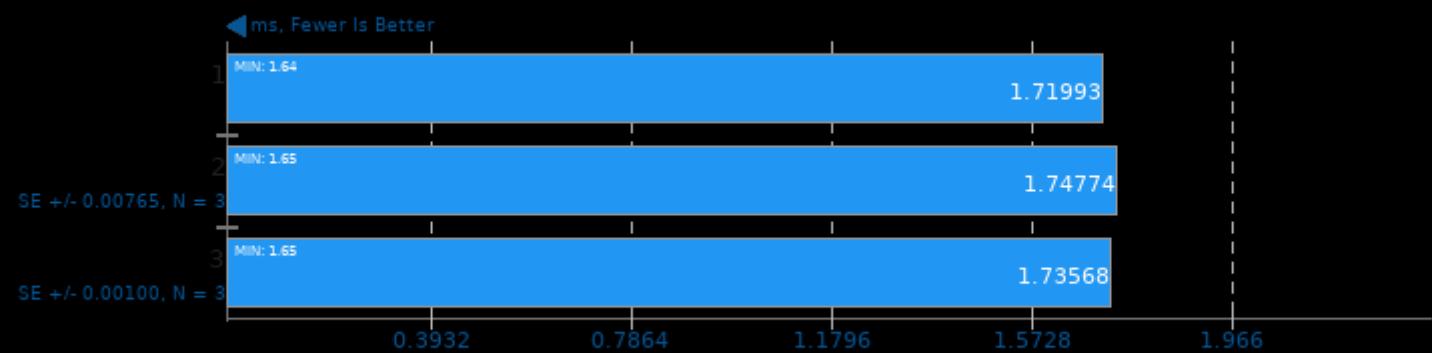
Encoder Speed: 10



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

## oneDNN 2.1.2

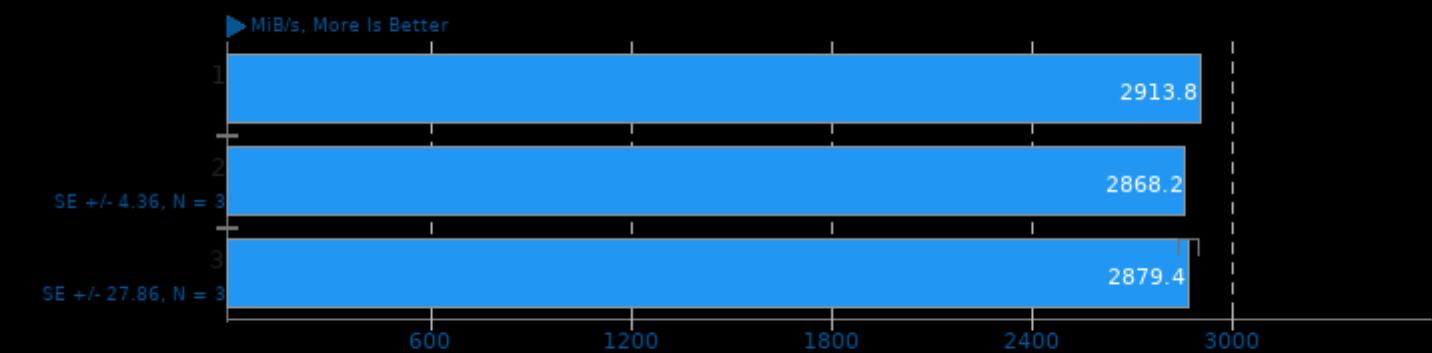
Harness: Deconvolution Batch shapes\_1d - Data Type: f32 - Engine: CPU



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

## GNU Radio

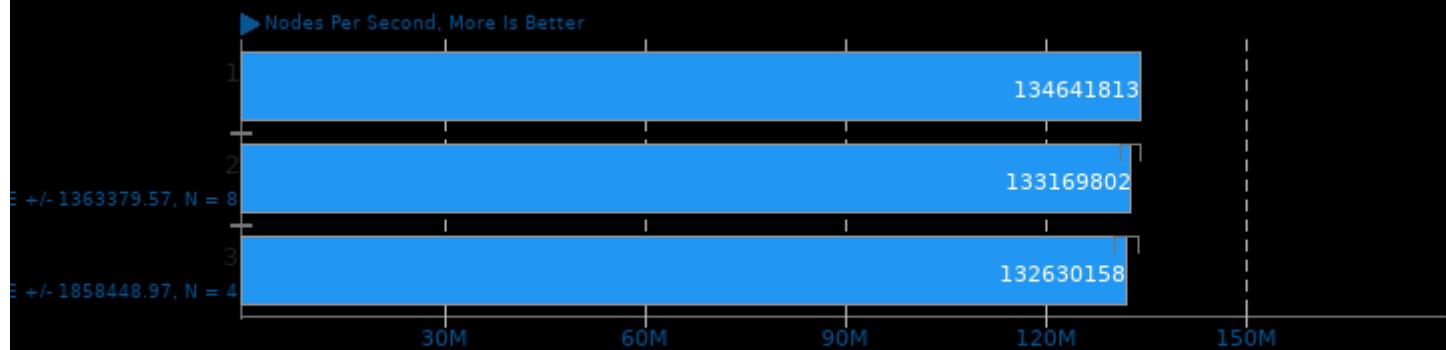
Test: Signal Source (Cosine)



1. 3.8.1.0

## Stockfish 13

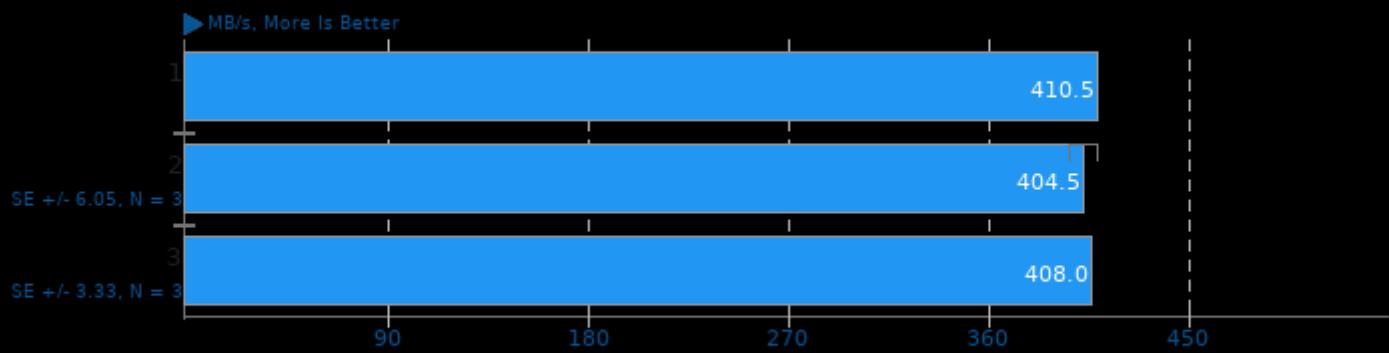
Total Time



1. (CXX) g++ options: -fprofile-use -m64 -lpthread -O3 -march=native -fno-exceptions -std=c++17 -pedantic -msse -msse3 -mpopcnt -mavx2 -msse4.1 -

## Zstd Compression 1.4.9

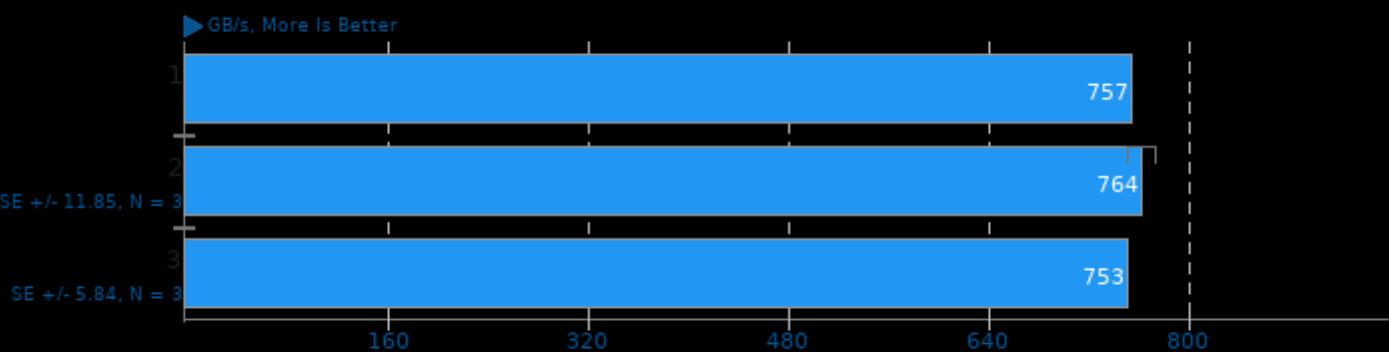
Compression Level: 3, Long Mode - Compression Speed



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

## ViennaCL 1.7.1

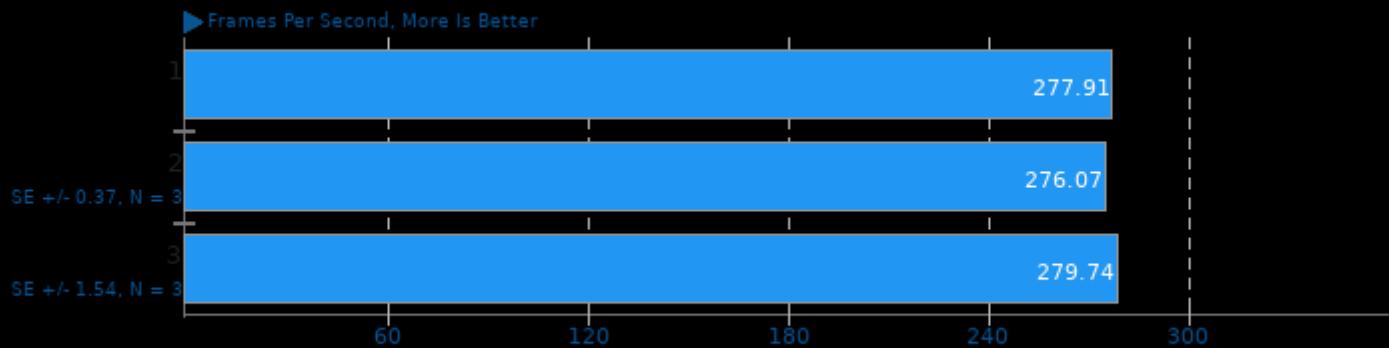
Test: CPU BLAS - sCOPY



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

## SVT-HEVC 1.5.0

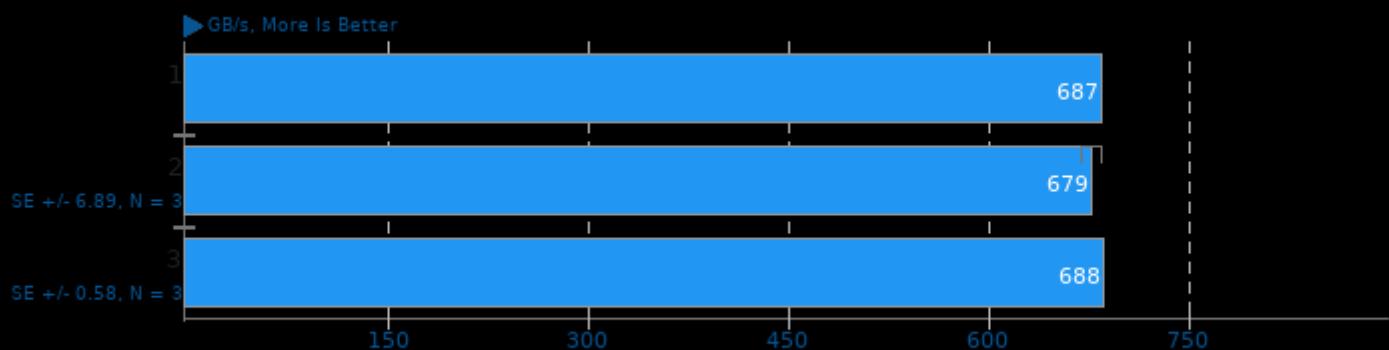
Tuning: 7 - Input: Bosphorus 1080p



1. (CC) gcc options: -O3 -march=native -fPIE -fPIC -O2 -pie -rdynamic -lpthread -lrt

## ViennaCL 1.7.1

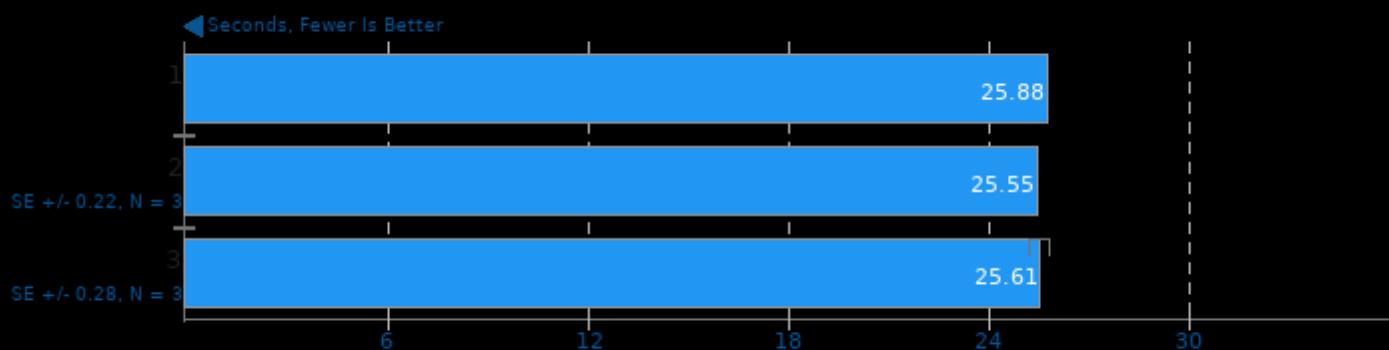
Test: CPU BLAS - sAXPY



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

## Xcompact3d Incompact3d 2021-03-11

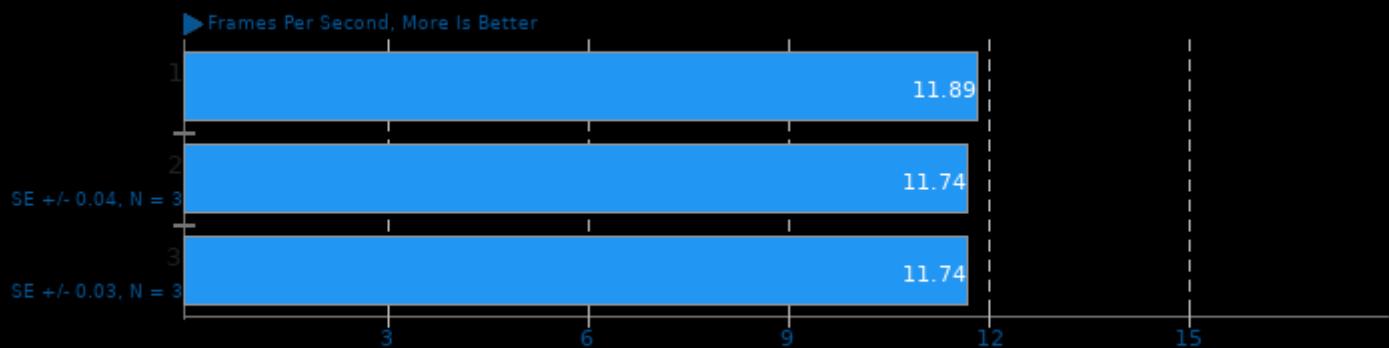
Input: input.i3d 193 Cells Per Direction



1. (F9X) gfortran options: -cpp -O2 -funroll-loops -floop-optimize -fcray-pointer -fbacktrace -pthread -lmpi\_usempif08 -lmpi\_mpifh -lmpi

## AOM AV1 3.0

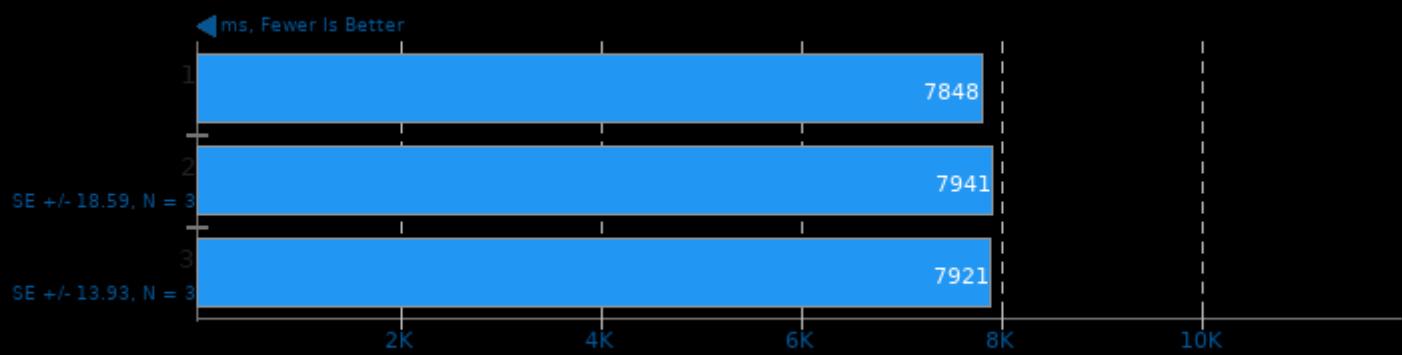
Encoder Mode: Speed 6 Realtime - Input: Bosphorus 4K



1. (CXX) g++ options: -O3 -std=c++11 -U\_FORTIFY\_SOURCE -lm -lpthread

## toyBrot Fractal Generator 2020-11-18

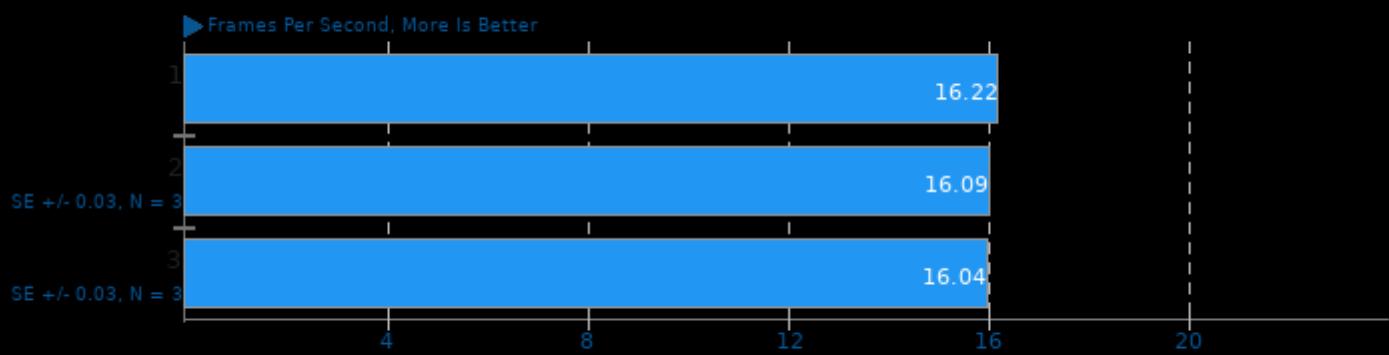
Implementation: OpenMP



1. (CXX) g++ options: -O3 -march=native -lpthread -lm -lgcc -lgcc\_s -lc

## AOM AV1 3.0

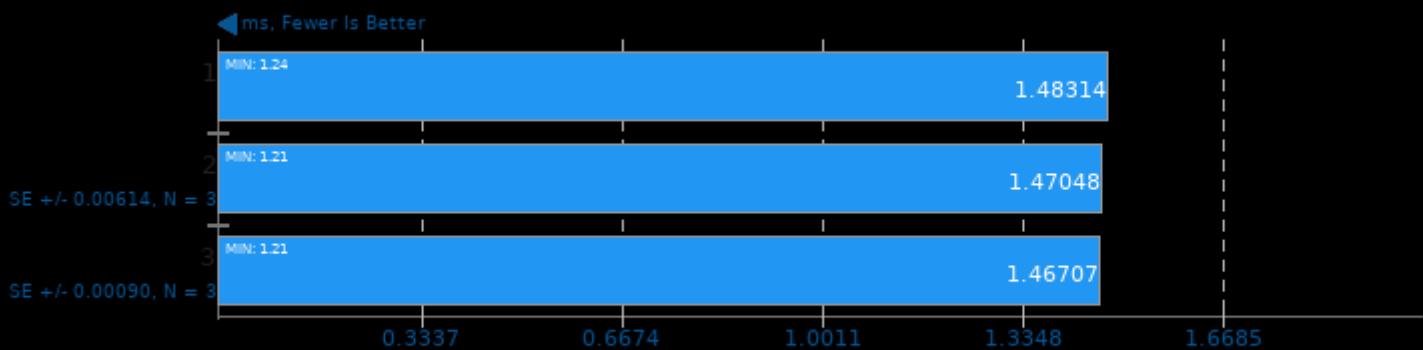
Encoder Mode: Speed 6 Two-Pass - Input: Bosphorus 1080p



1. (CXX) g++ options: -O3 -std=c++11 -U\_FORTIFY\_SOURCE -lm -lpthread

## oneDNN 2.1.2

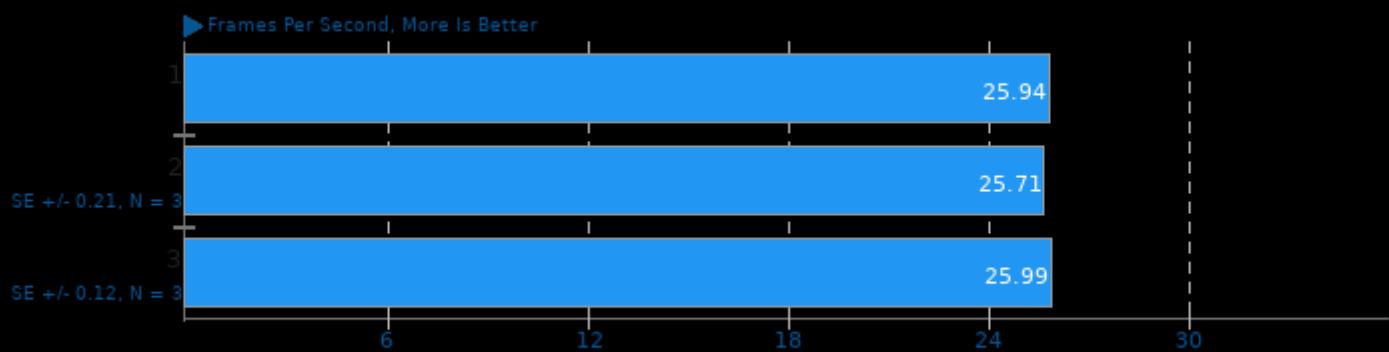
Harness: IP Shapes 1D - Data Type: u8s8f32 - Engine: CPU



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

## AOM AV1 3.0

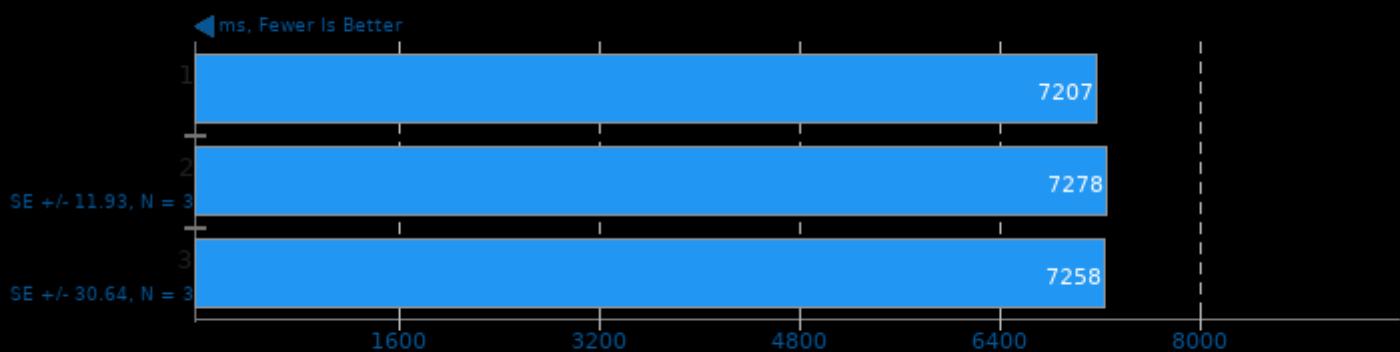
Encoder Mode: Speed 9 Realtime - Input: Bosphorus 4K



1. (CXX) g++ options: -O3 -std=c++11 -U\_FORTIFY\_SOURCE -lm -lpthread

## toyBrot Fractal Generator 2020-11-18

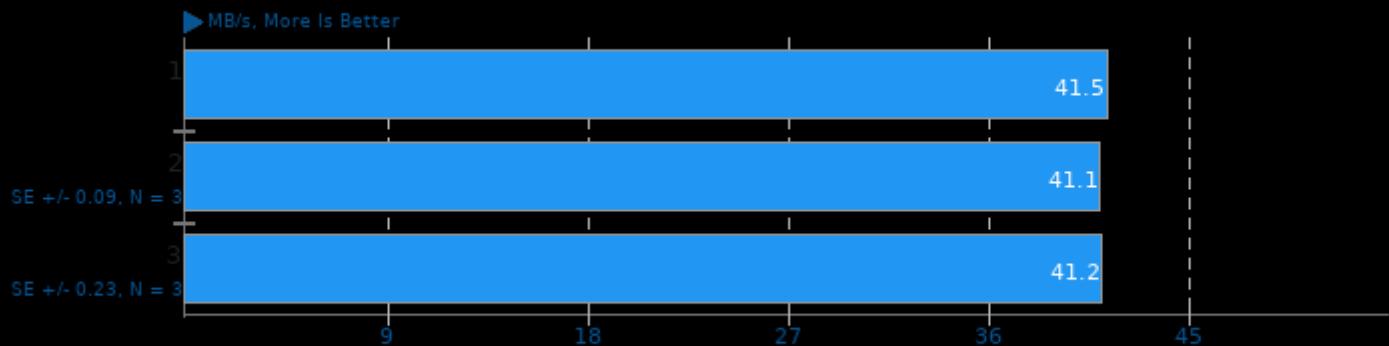
Implementation: C++ Threads



1. (CXX) g++ options: -O3 -march=native -lpthread -lm -lgcc -lgcc\_s -lc

## Zstd Compression 1.4.9

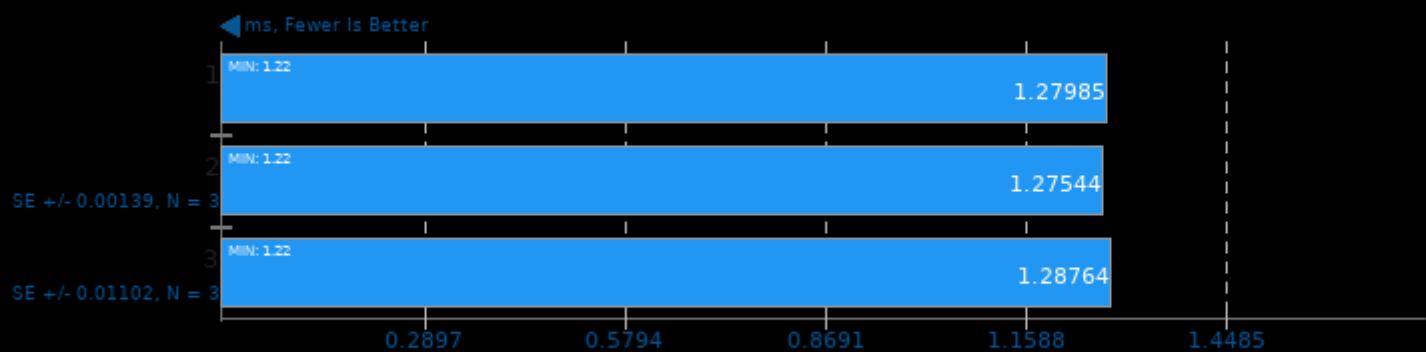
Compression Level: 19, Long Mode - Compression Speed



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

## oneDNN 2.1.2

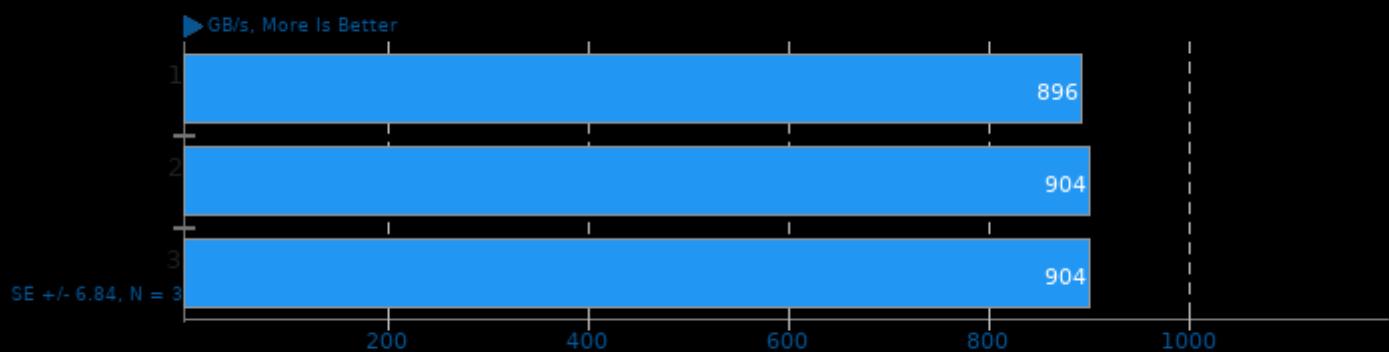
Harness: IP Shapes 1D - Data Type: f32 - Engine: CPU



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

## ViennaCL 1.7.1

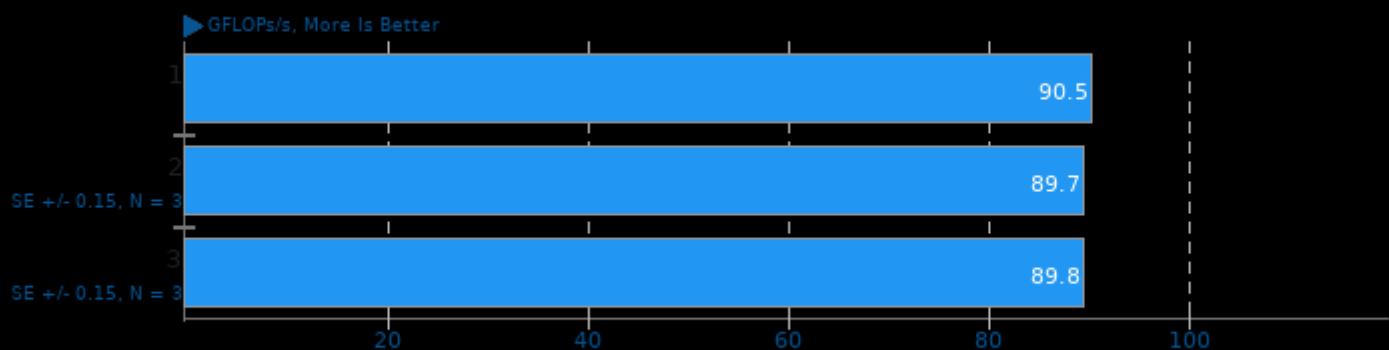
Test: CPU BLAS - dDOT



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

## ViennaCL 1.7.1

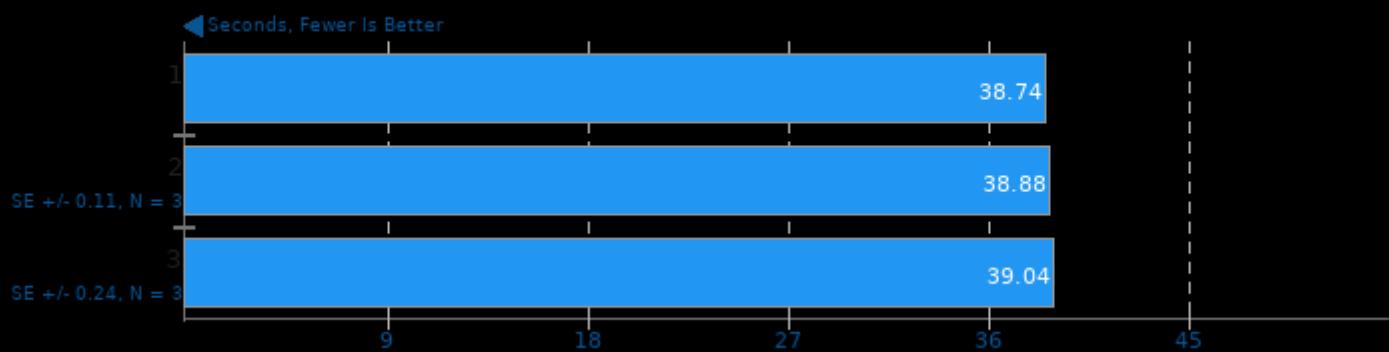
Test: CPU BLAS - dGEMM-NT



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

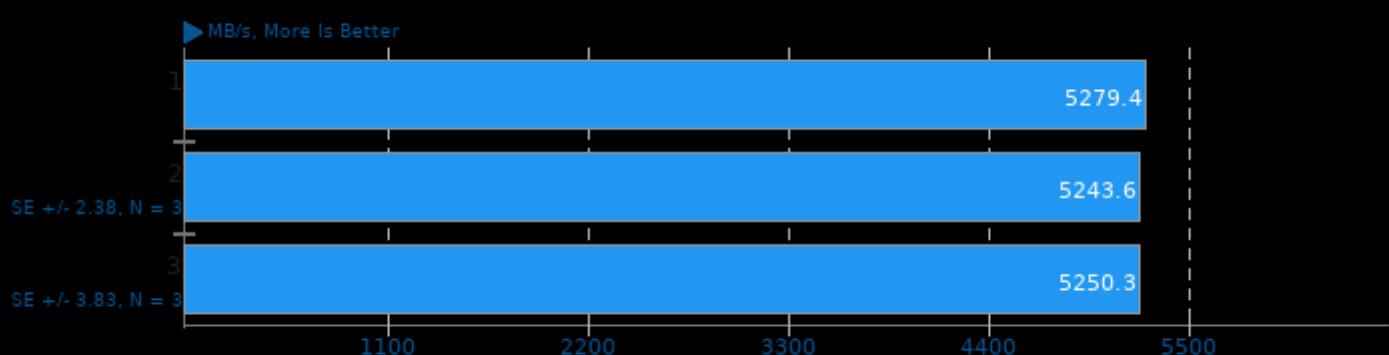
## Blender 2.92

Blend File: BMW27 - Compute: CPU-Only



## Zstd Compression 1.4.9

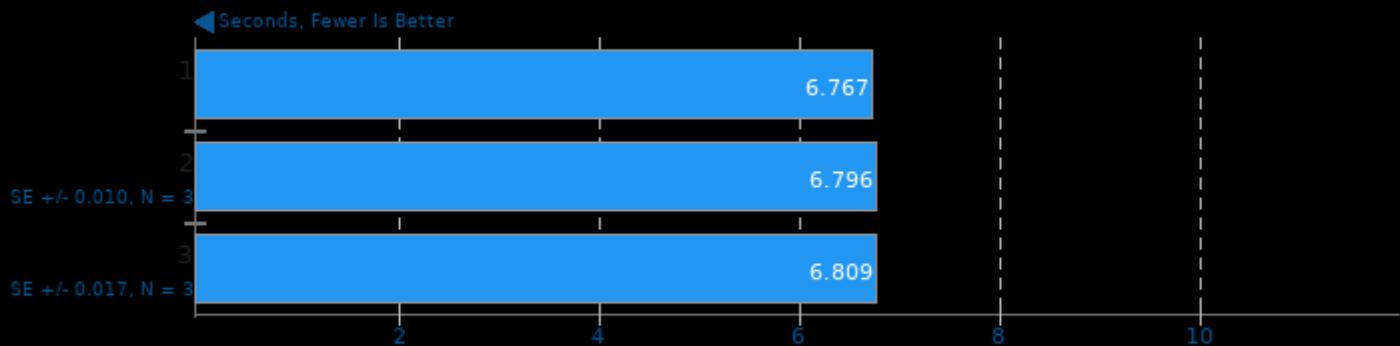
Compression Level: 3 - Compression Speed



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

## libavif avifenc 0.9.0

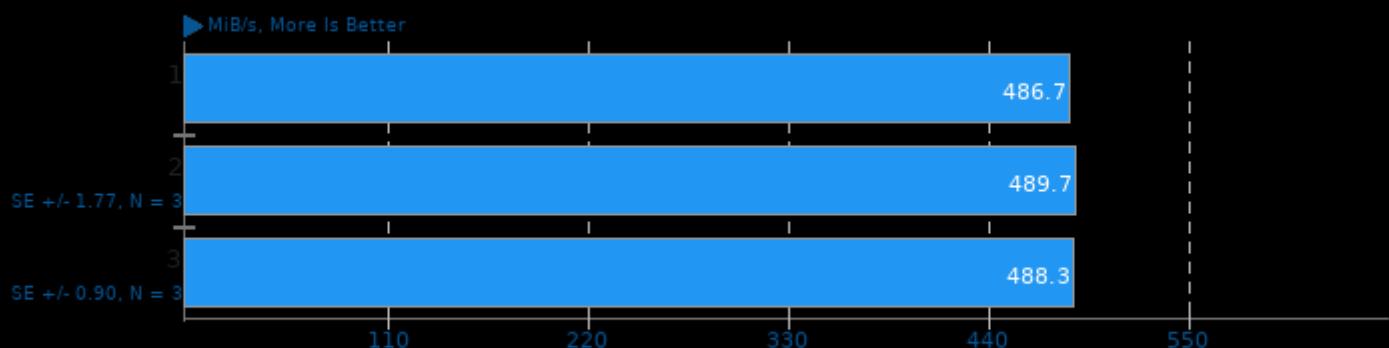
Encoder Speed: 10, Lossless



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

## GNU Radio

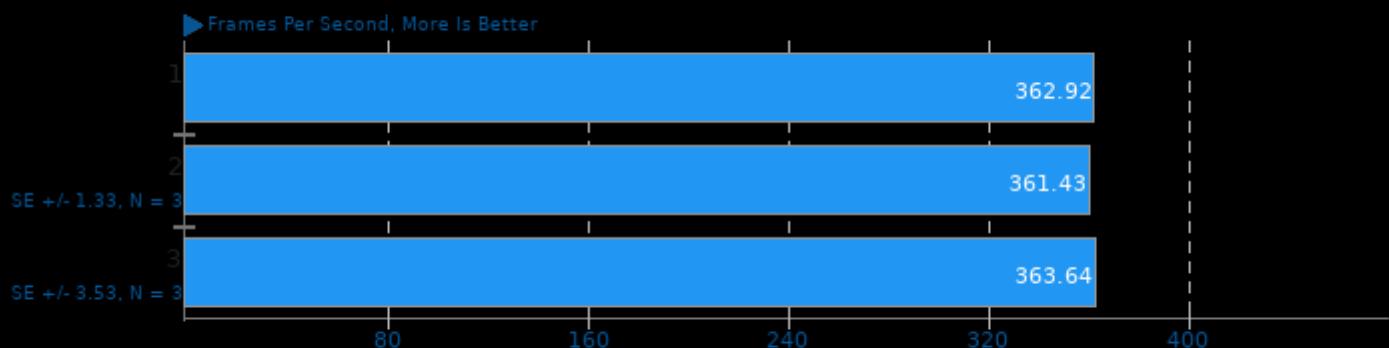
Test: IIR Filter



1. 3.8.1.0

## SVT-VP9 0.3

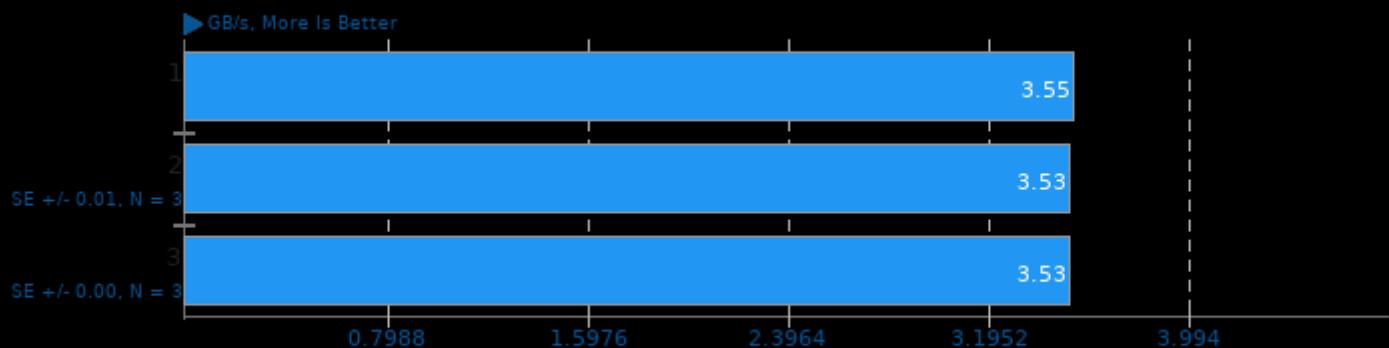
Tuning: PSNR/SSIM Optimized - Input: Bosphorus 1080p



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

## simdjson 0.8.2

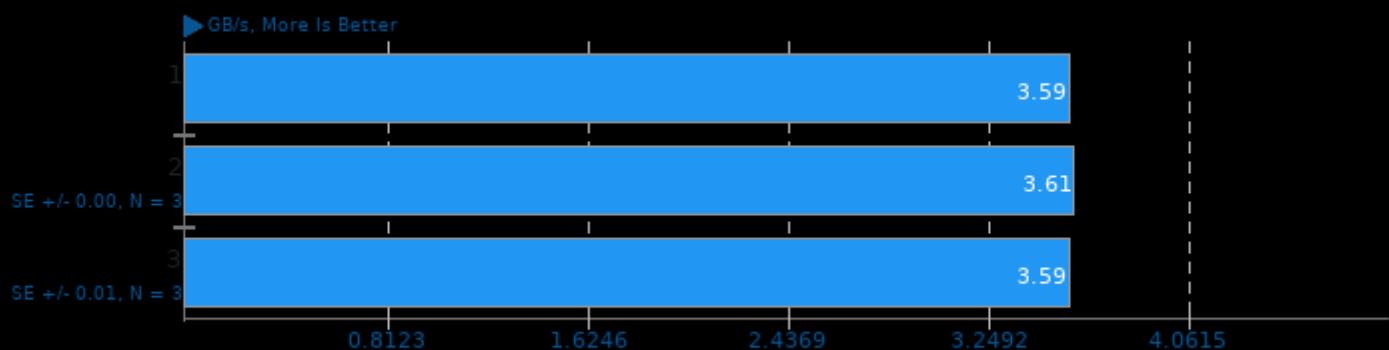
Throughput Test: PartialTweets



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

## simdjson 0.8.2

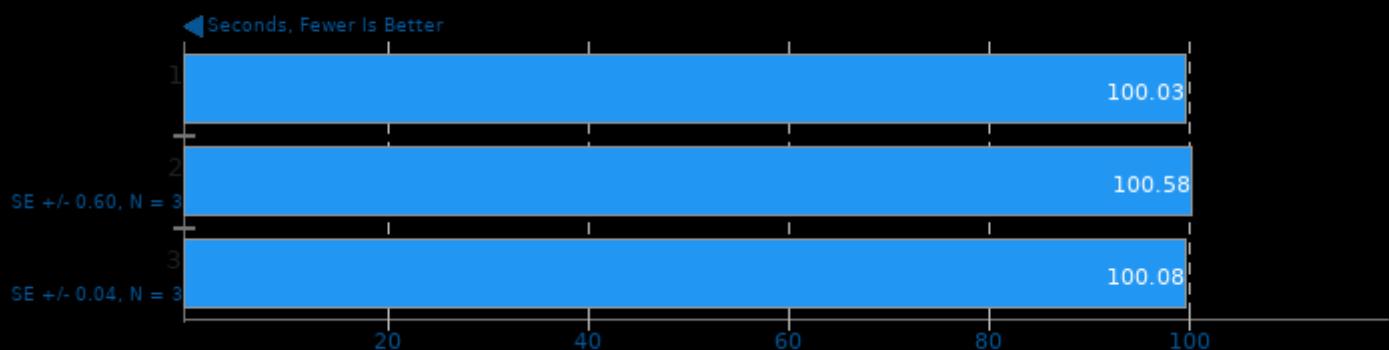
Throughput Test: DistinctUserID



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

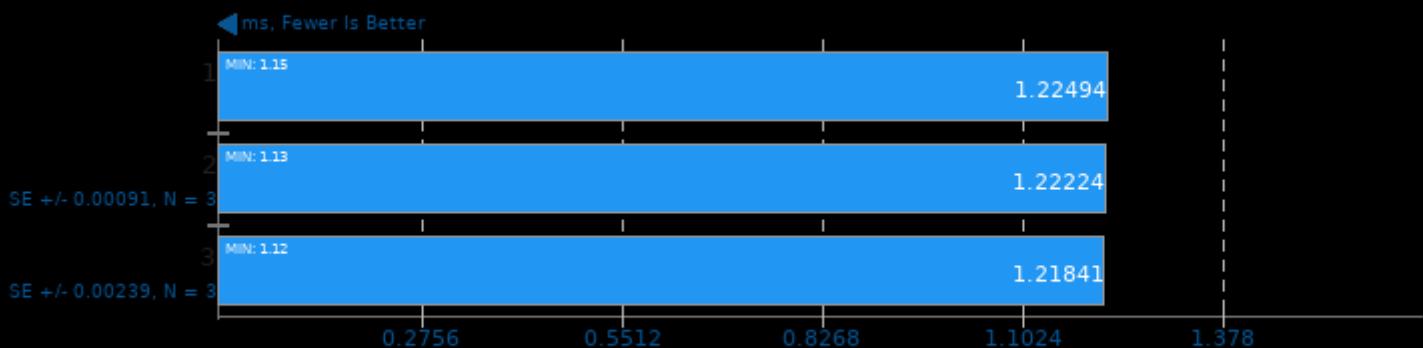
## Blender 2.92

Blend File: Classroom - Compute: CPU-Only



## oneDNN 2.1.2

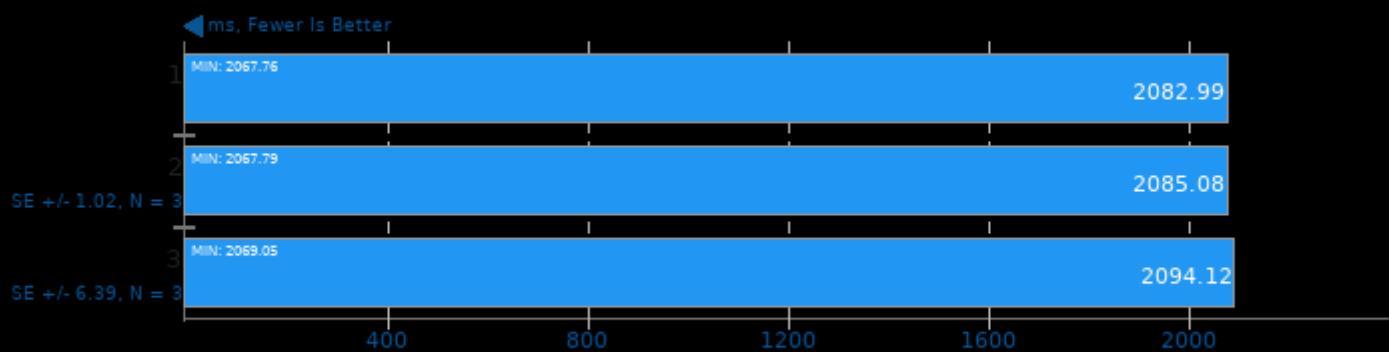
Harness: Deconvolution Batch shapes\_3d - Data Type: u8s8f32 - Engine: CPU



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

## oneDNN 2.1.2

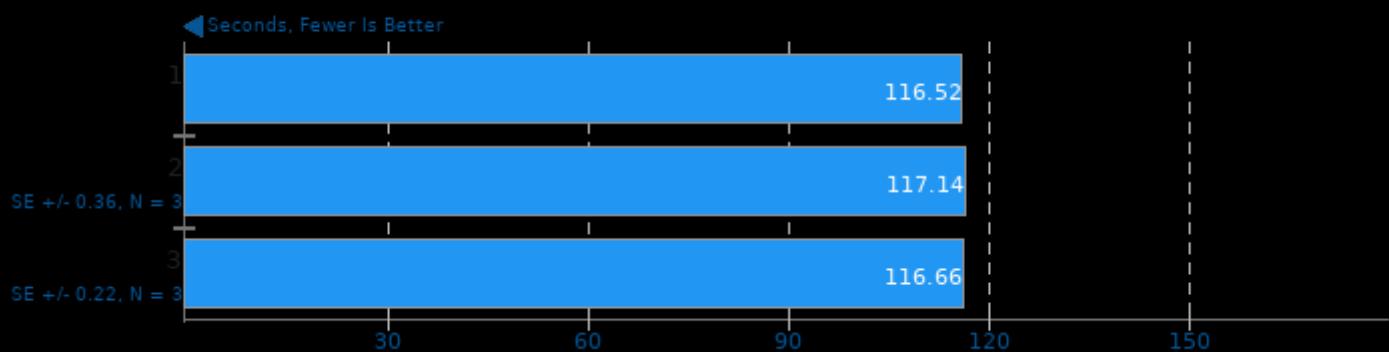
Harness: Recurrent Neural Network Training - Data Type: bf16bf16bf16 - Engine: CPU



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

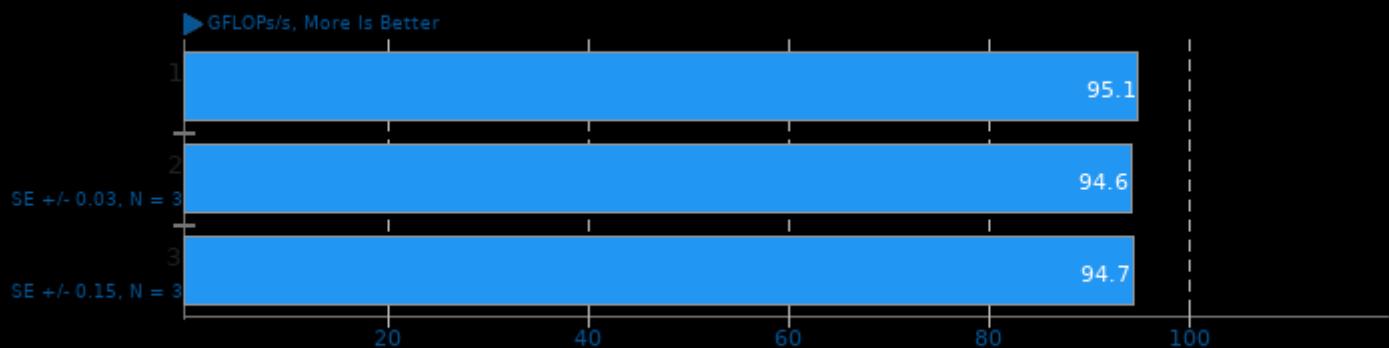
## Blender 2.92

Blend File: Pabellon Barcelona - Compute: CPU-Only



## ViennaCL 1.7.1

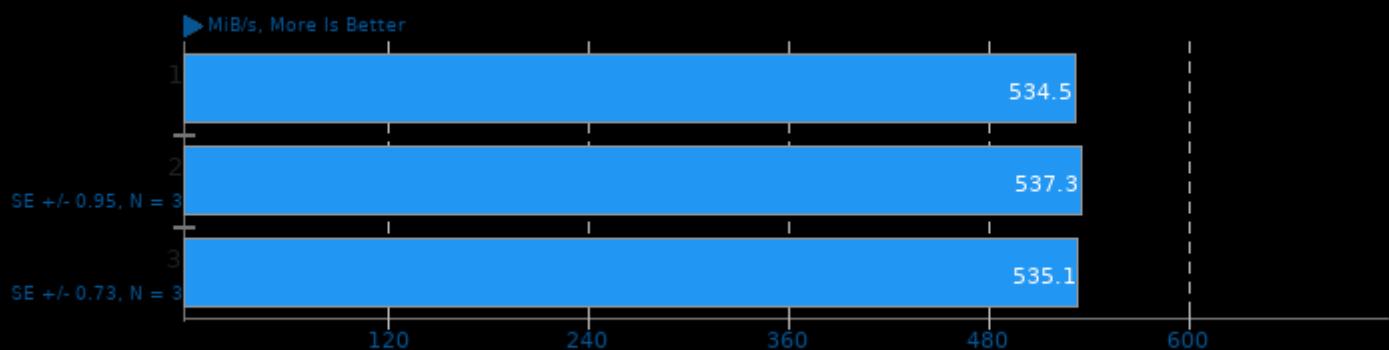
Test: CPU BLAS - dGEMM-TN



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

## GNU Radio

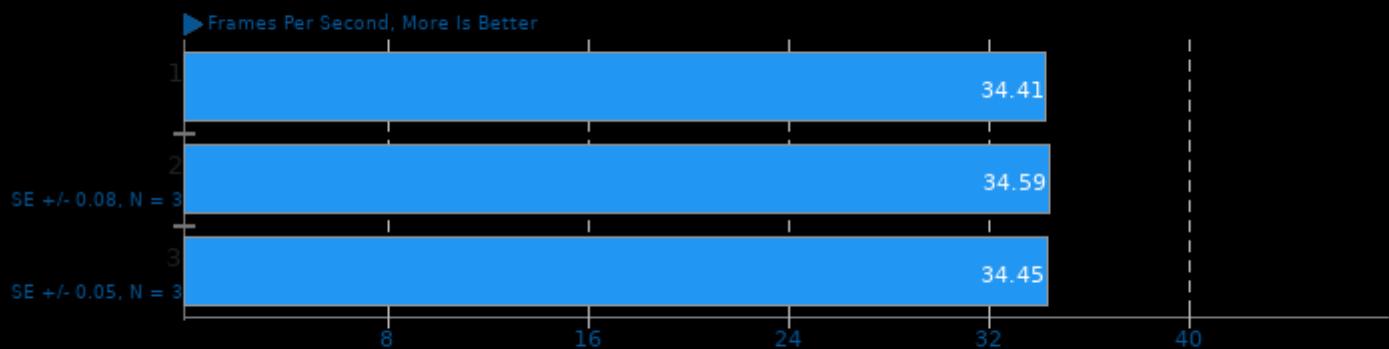
Test: FIR Filter



1. 3.8.1.0

## SVT-HEVC 1.5.0

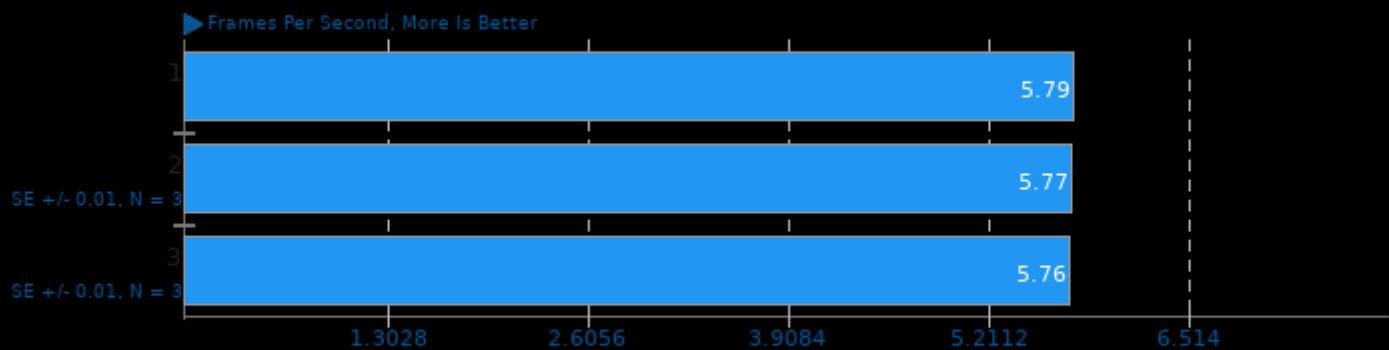
Tuning: 1 - Input: Bosphorus 1080p



1. (CC) gcc options: -O3 -march=native -fPIE -fPIC -O2 -pie -rdynamic -lpthread -lrt

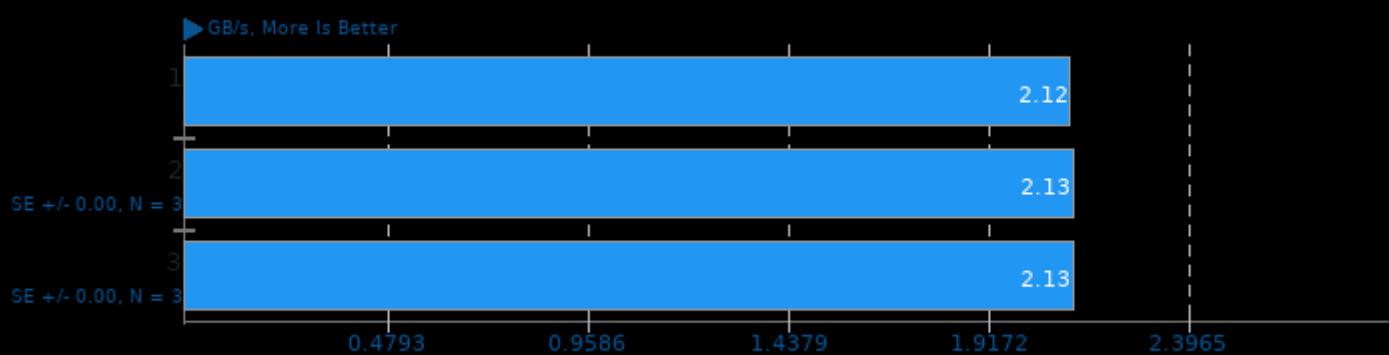
## AOM AV1 3.0

Encoder Mode: Speed 4 Two-Pass - Input: Bosphorus 1080p



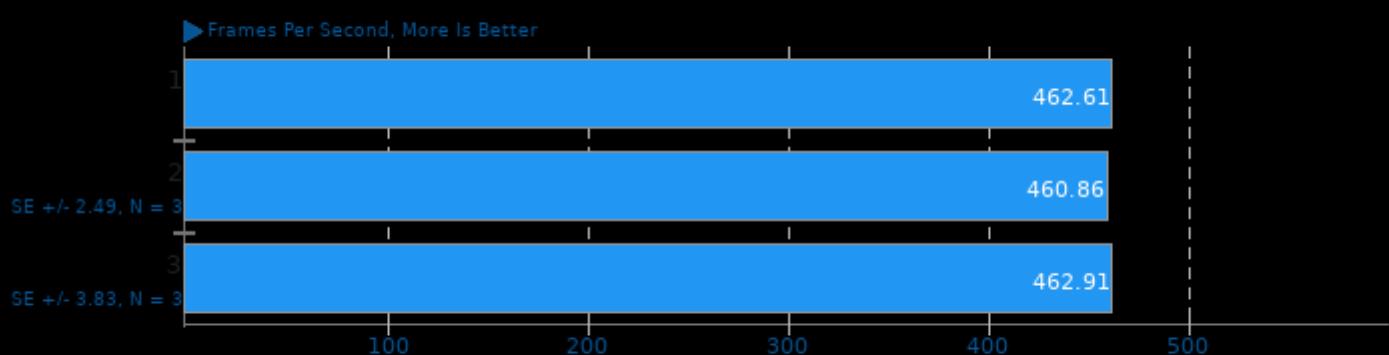
## simdjson 0.8.2

Throughput Test: Kostya



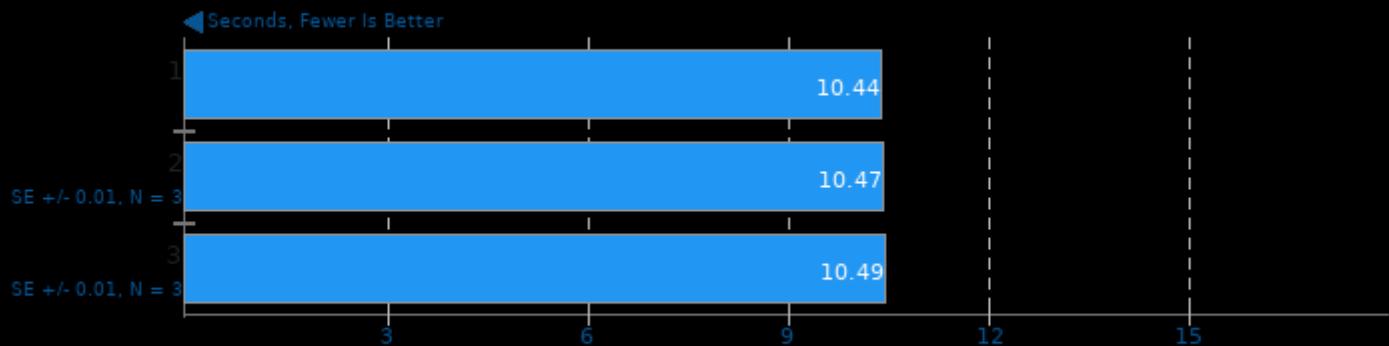
## SVT-HEVC 1.5.0

Tuning: 10 - Input: Bosphorus 1080p



## libavif avifenc 0.9.0

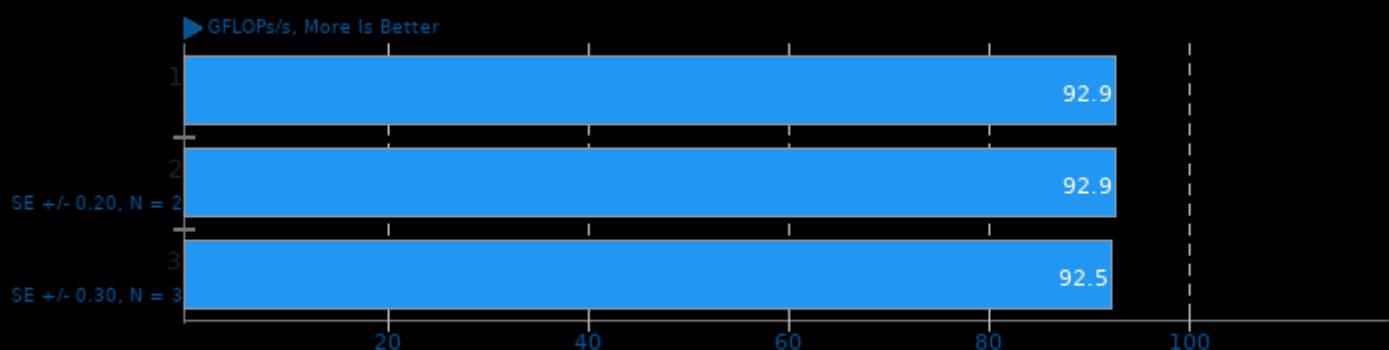
Encoder Speed: 6



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

## ViennaCL 1.7.1

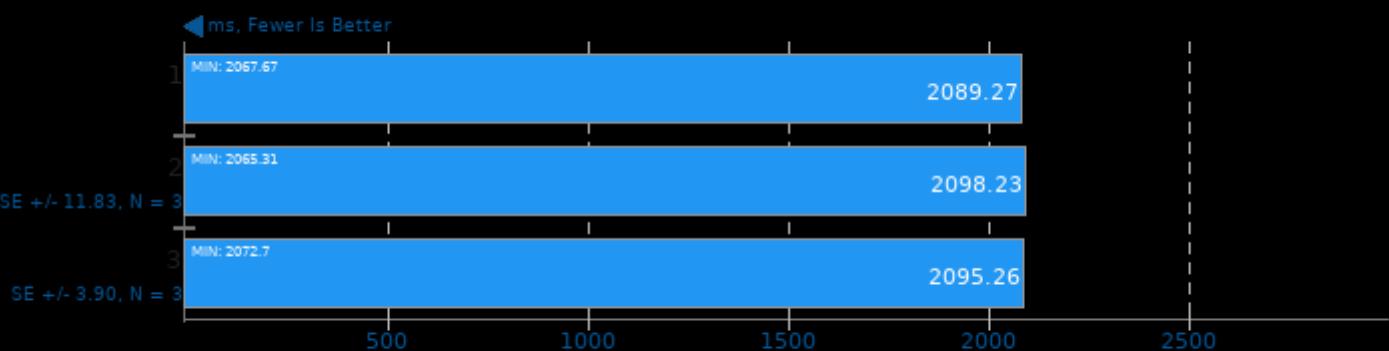
Test: CPU BLAS - dGEMM-TT



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

## oneDNN 2.1.2

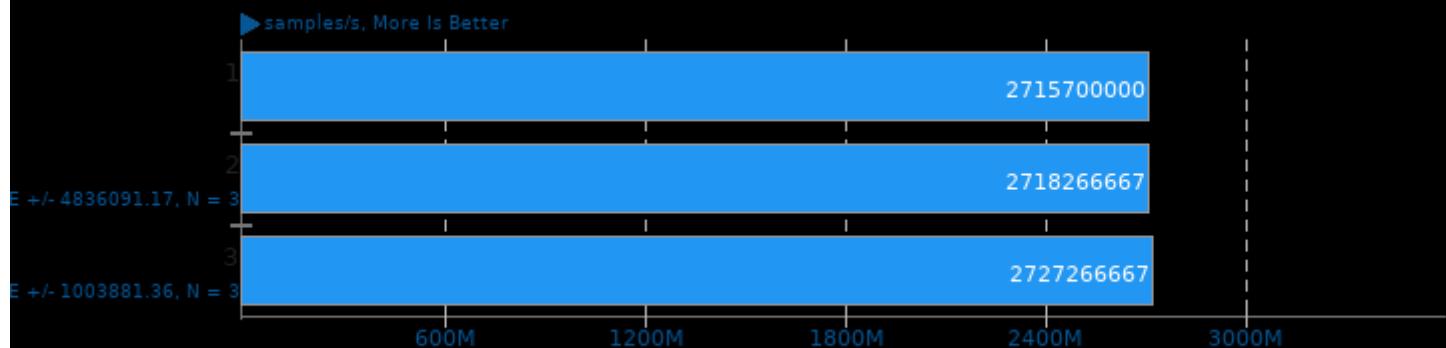
Harness: Recurrent Neural Network Training - Data Type: f32 - Engine: CPU



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

## Liquid-DSP 2021.01.31

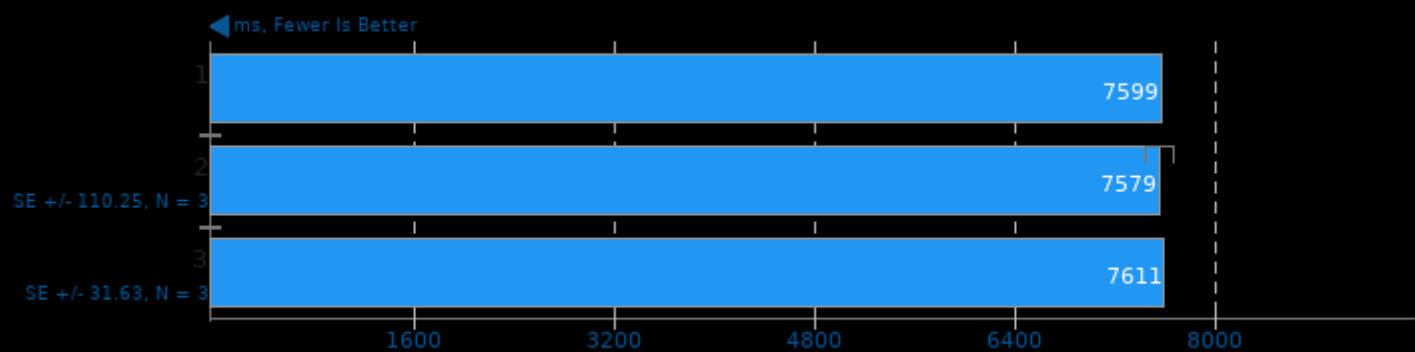
Threads: 64 - Buffer Length: 256 - Filter Length: 57



1. (CC) gcc options: -O3 -march=native -pthread -lm -lc -lliquid

## toyBrot Fractal Generator 2020-11-18

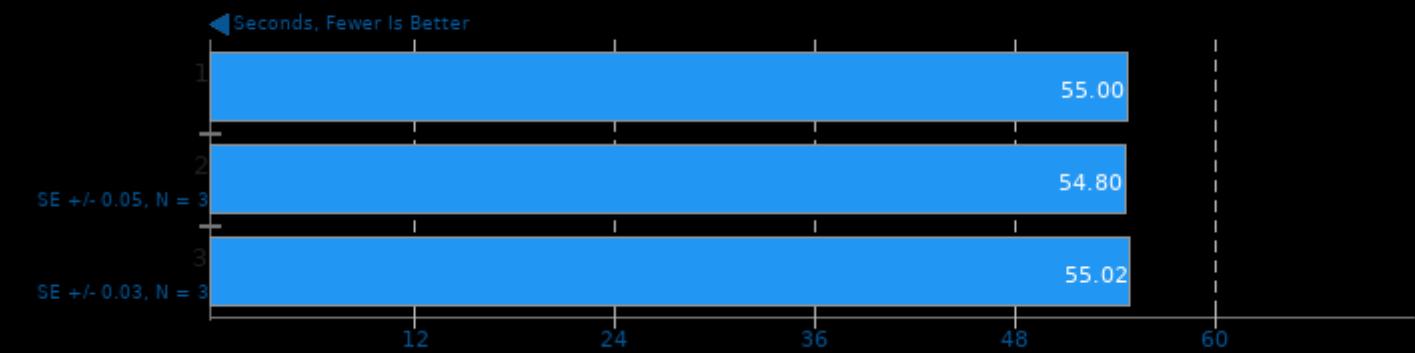
Implementation: C++ Tasks



1. (CXX) g++ options: -O3 -march=native -pthread -lm -lgcc -lgcc\_s -lc

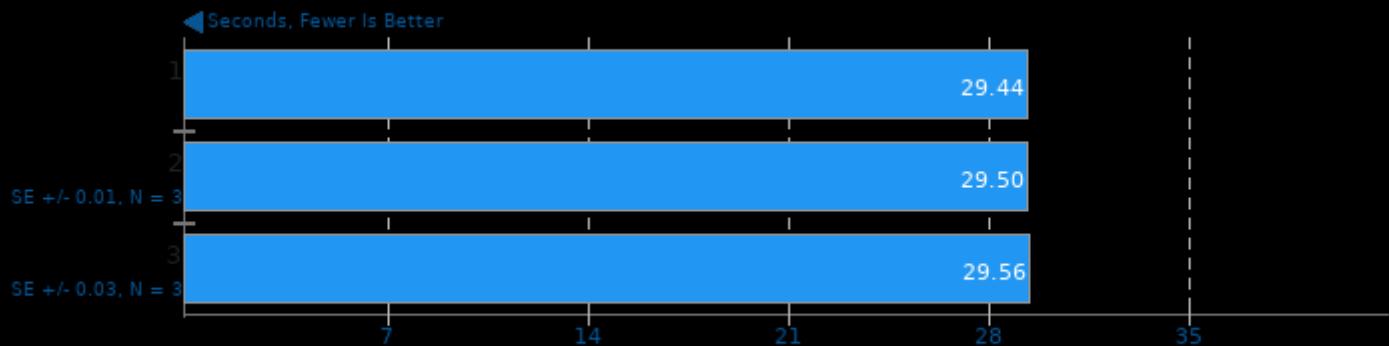
## Blender 2.92

Blend File: Fishy Cat - Compute: CPU-Only



## libavif avifenc 0.9.0

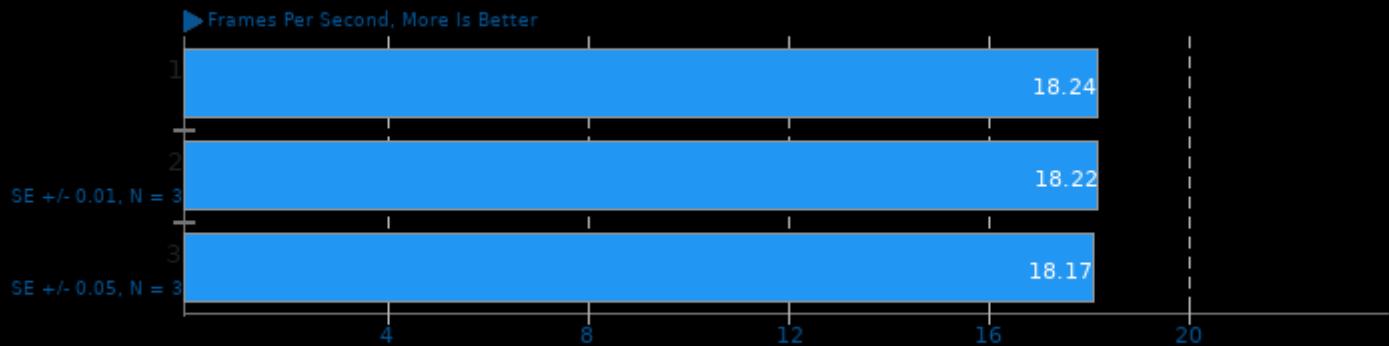
Encoder Speed: 6, Lossless



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

## AOM AV1 3.0

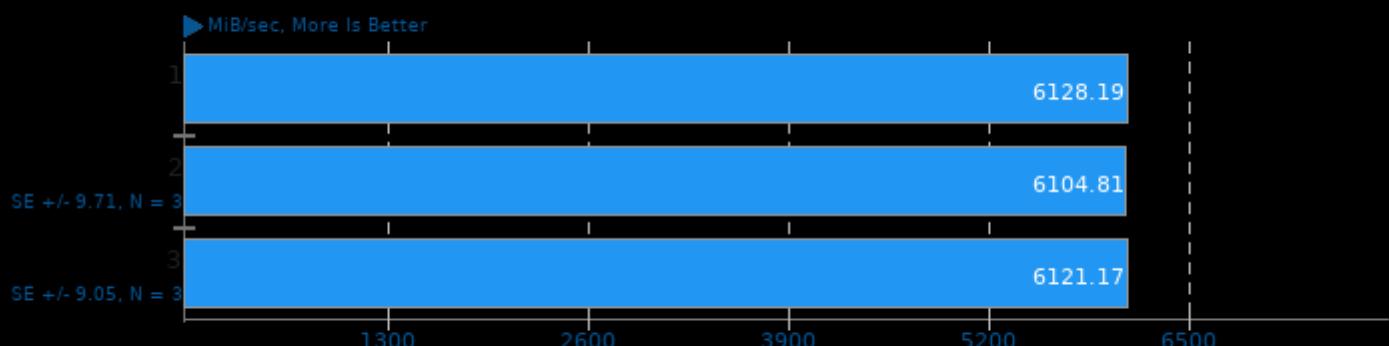
Encoder Mode: Speed 6 Realtime - Input: Bosphorus 1080p



1. (CXX) g++ options: -O3 -std=c++11 -U\_FORTIFY\_SOURCE -lm -lpthread

## Sysbench 1.0.20

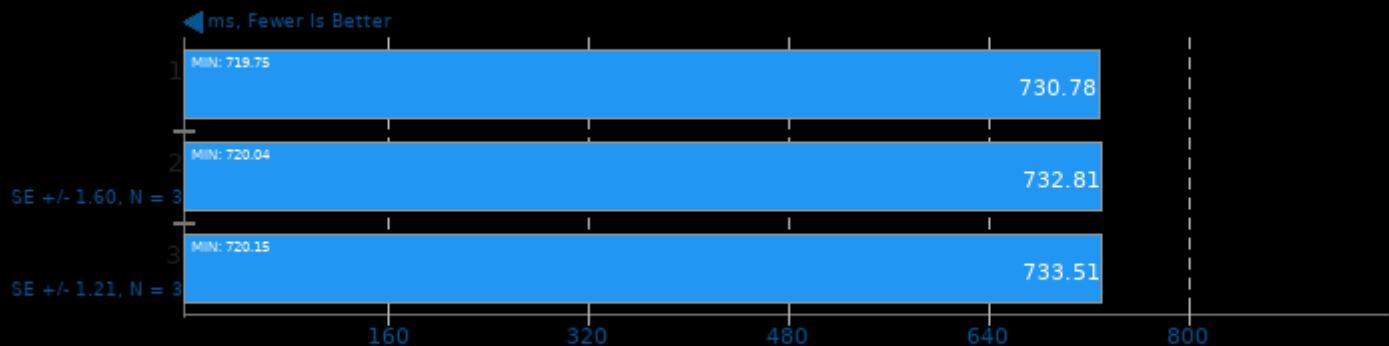
Test: RAM / Memory



1. (CC) gcc options: -pthread -O2 -funroll-loops -O3 -march=native -rdynamic -ldl -laio -lm

## oneDNN 2.1.2

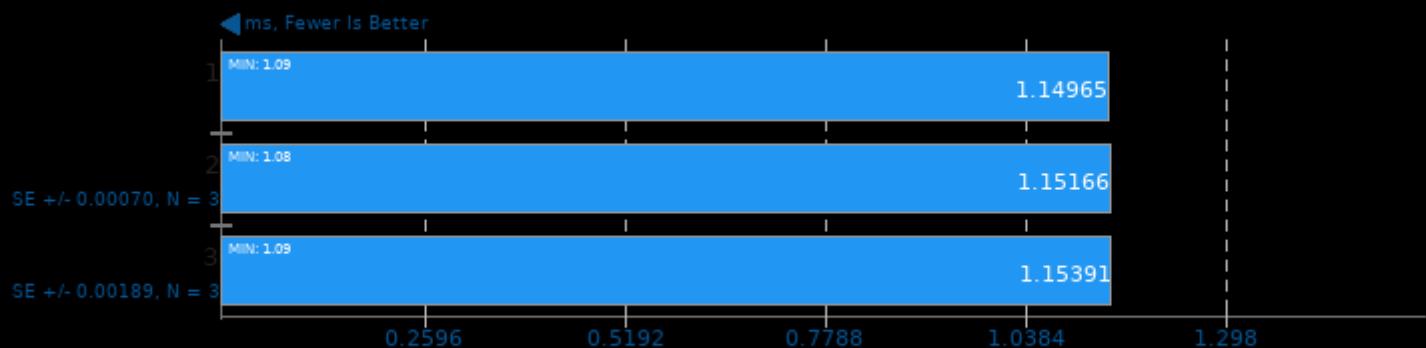
Harness: Recurrent Neural Network Inference - Data Type: u8s8f32 - Engine: CPU



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

## oneDNN 2.1.2

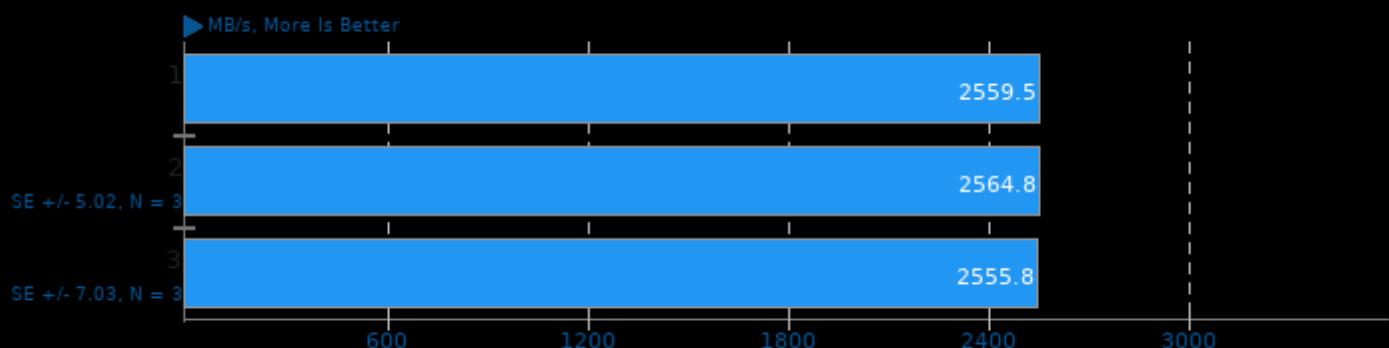
Harness: Matrix Multiply Batch Shapes Transformer - Data Type: u8s8f32 - Engine: CPU



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

## Zstd Compression 1.4.9

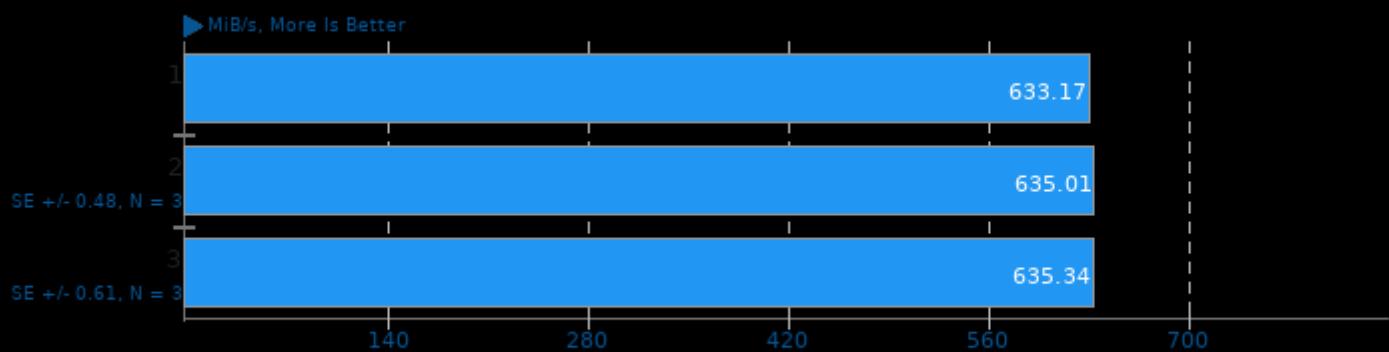
Compression Level: 19 - Decompression Speed



1. (CC) gcc options: -O3 -march=native -pthread -lz -lizma

## Botan 2.17.3

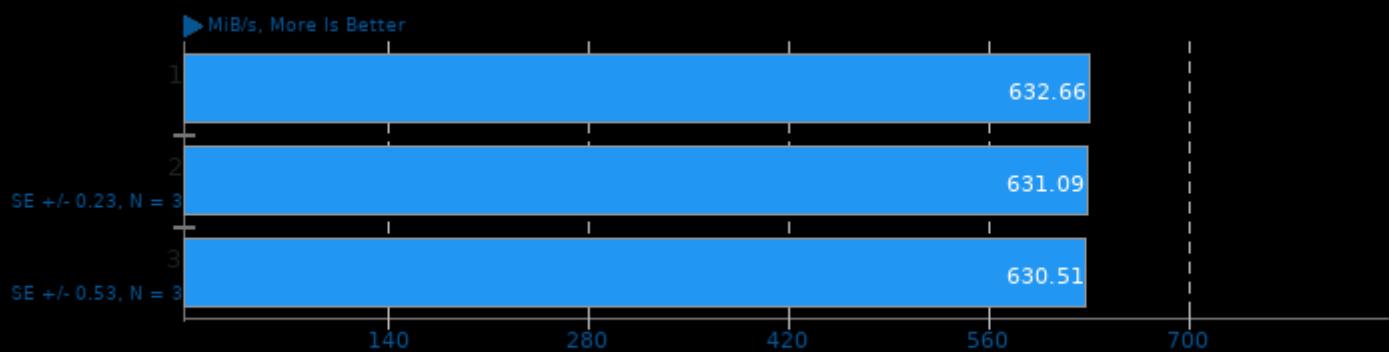
Test: ChaCha20Poly1305



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

## Botan 2.17.3

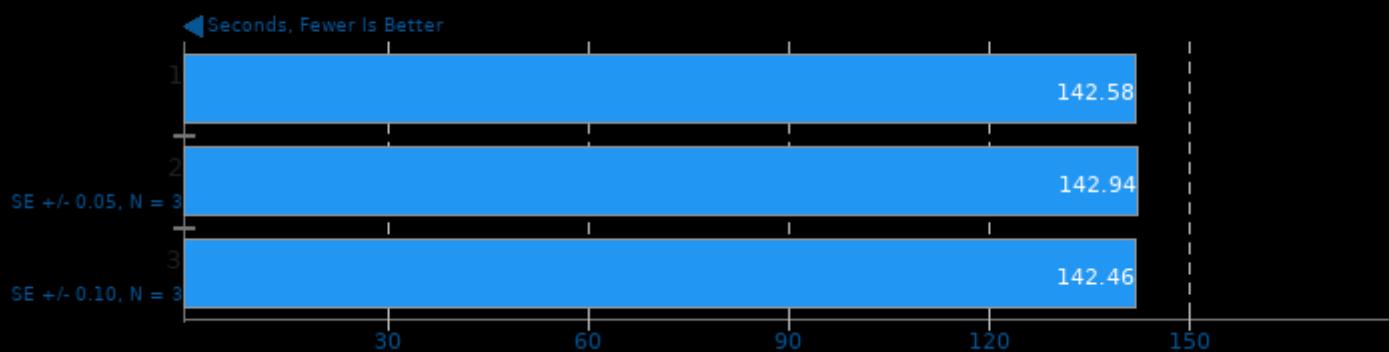
Test: ChaCha20Poly1305 - Decrypt



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

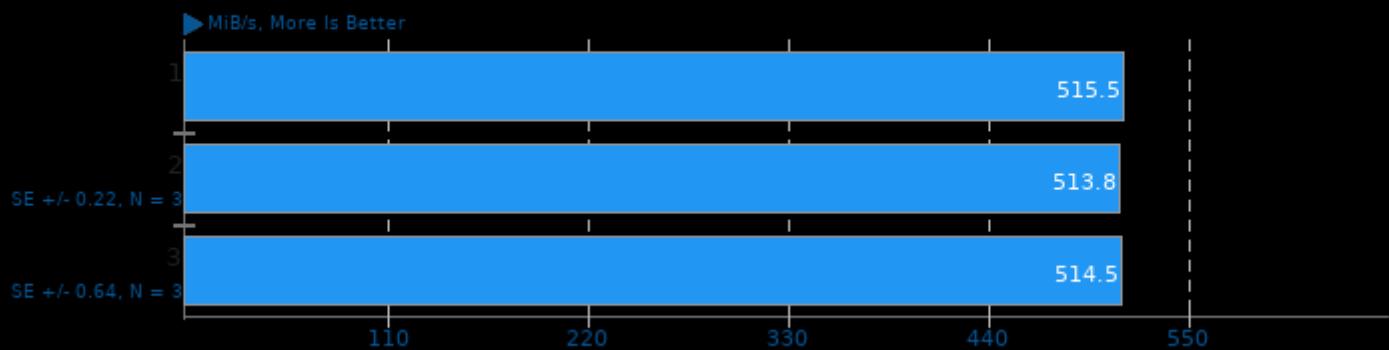
## Blender 2.92

Blend File: Barbershop - Compute: CPU-Only



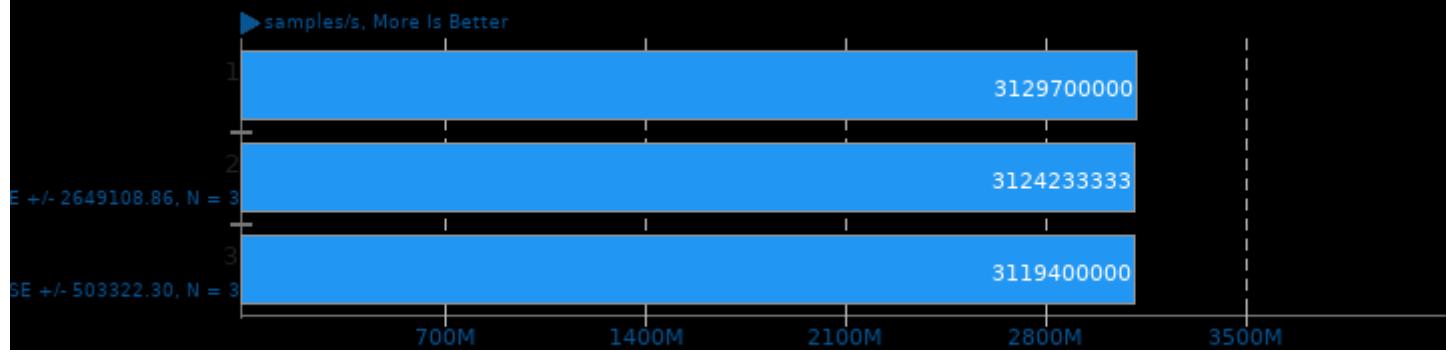
## LuaRadio 0.9.1

Test: Complex Phase



## Liquid-DSP 2021.01.31

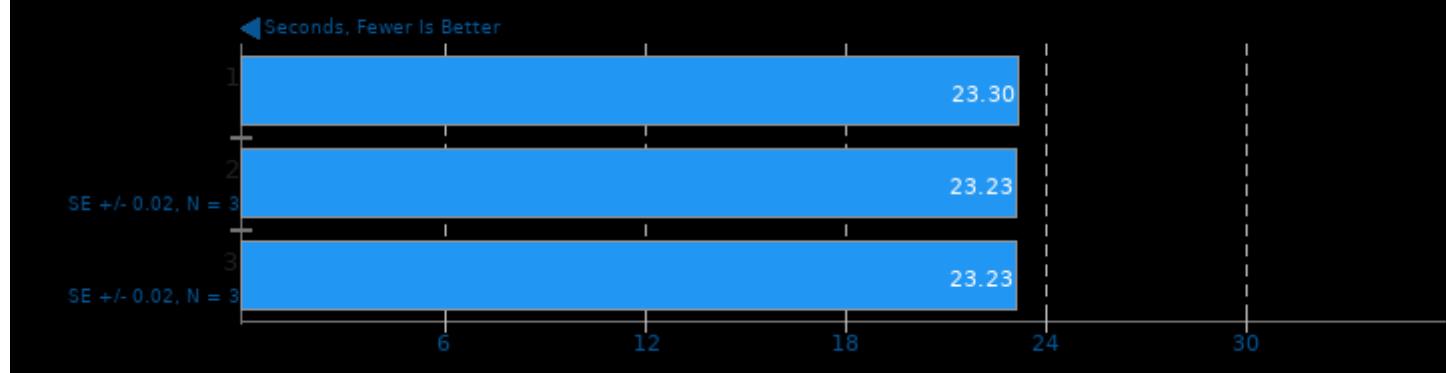
Threads: 128 - Buffer Length: 256 - Filter Length: 57



1. (CC) gcc options: -O3 -march=native -pthread -lm -lc -lliquid

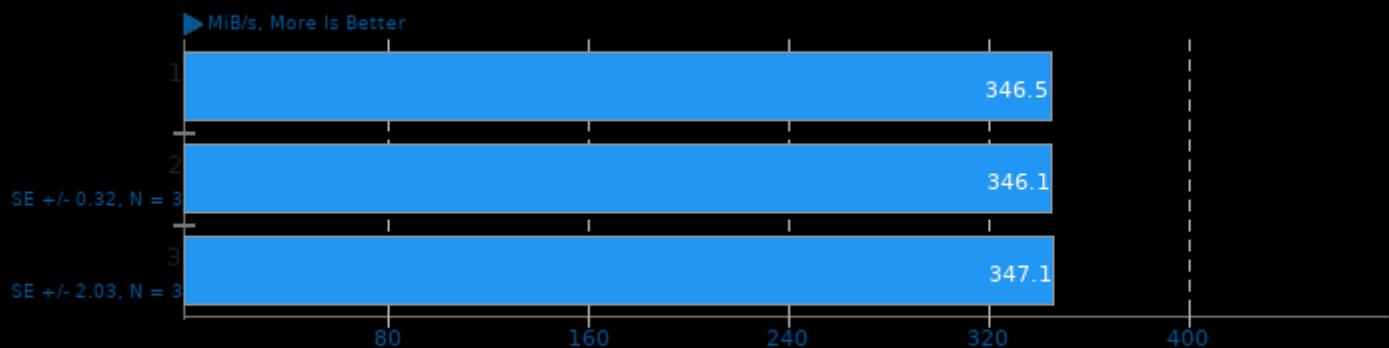
## Timed Mesa Compilation 21.0

Time To Compile



## GNU Radio

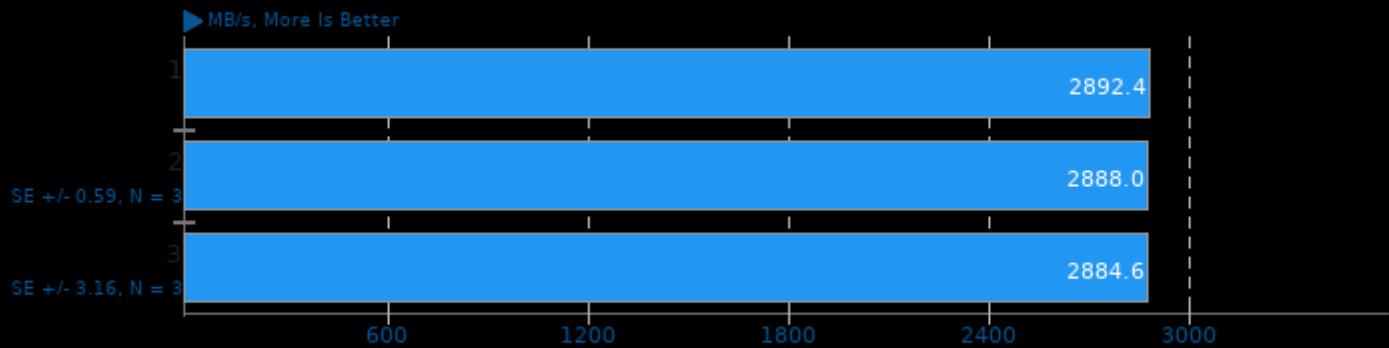
Test: Hilbert Transform



1. 3.8.1.0

## Zstd Compression 1.4.9

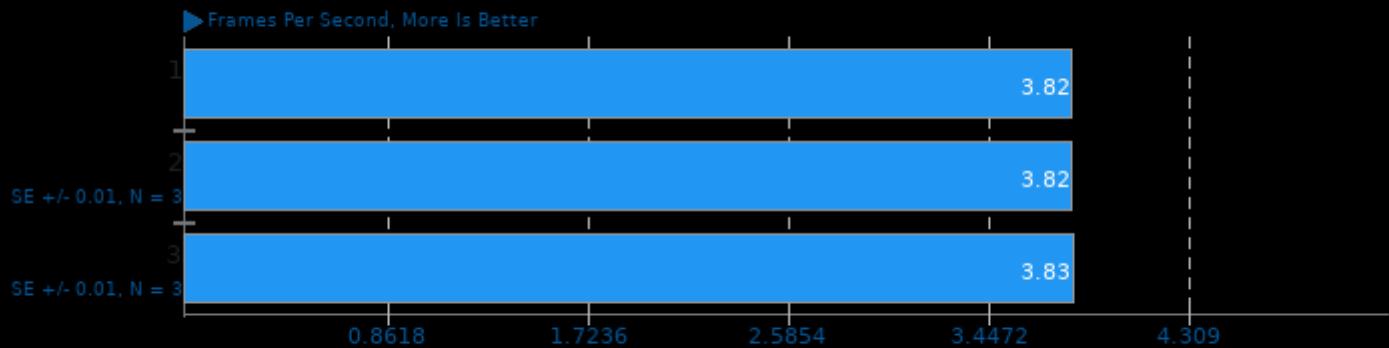
Compression Level: 3, Long Mode - Decompression Speed



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

## AOM AV1 3.0

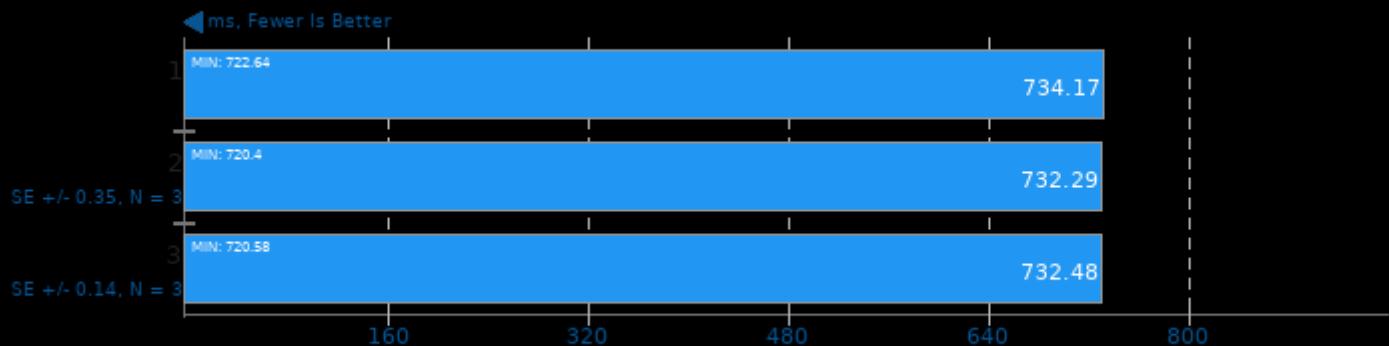
Encoder Mode: Speed 4 Two-Pass - Input: Bosphorus 4K



1. (CXX) g++ options: -O3 -std=c++11 -U\_FORTIFY\_SOURCE -fno-plt -fstack-protector-all

## oneDNN 2.1.2

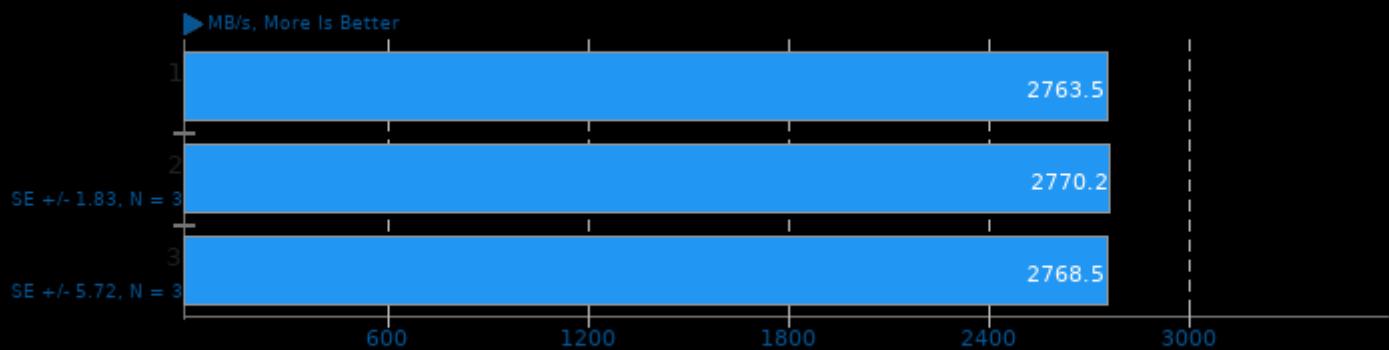
Harness: Recurrent Neural Network Inference - Data Type: bf16bf16bf16 - Engine: CPU



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

## Zstd Compression 1.4.9

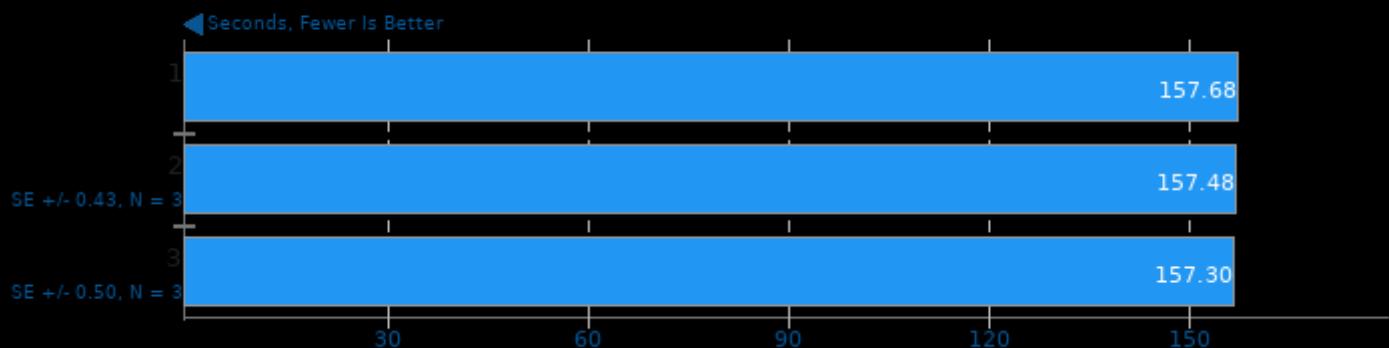
Compression Level: 8 - Decompression Speed



1. (CC) gcc options: -O3 -march=native -pthread -lz -llzma

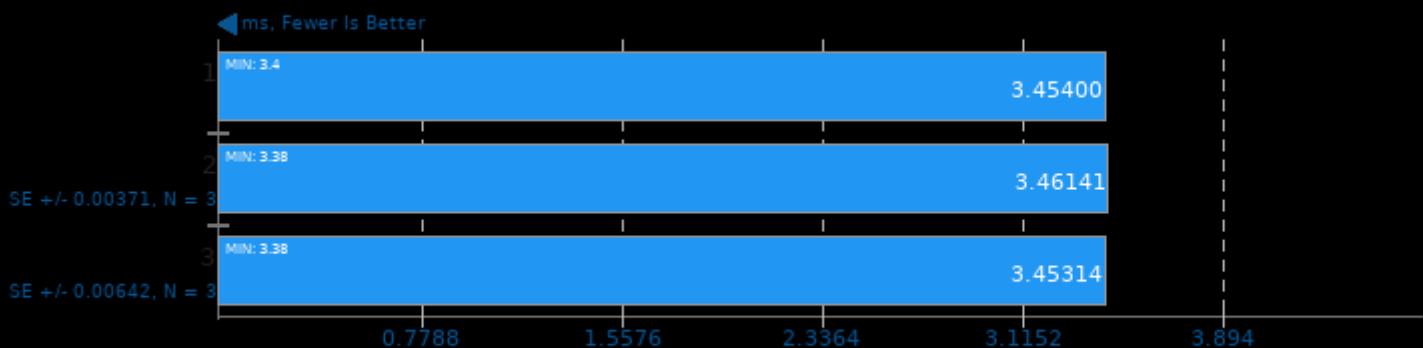
## Timed Erlang/OTP Compilation 23.2

Time To Compile



## oneDNN 2.1.2

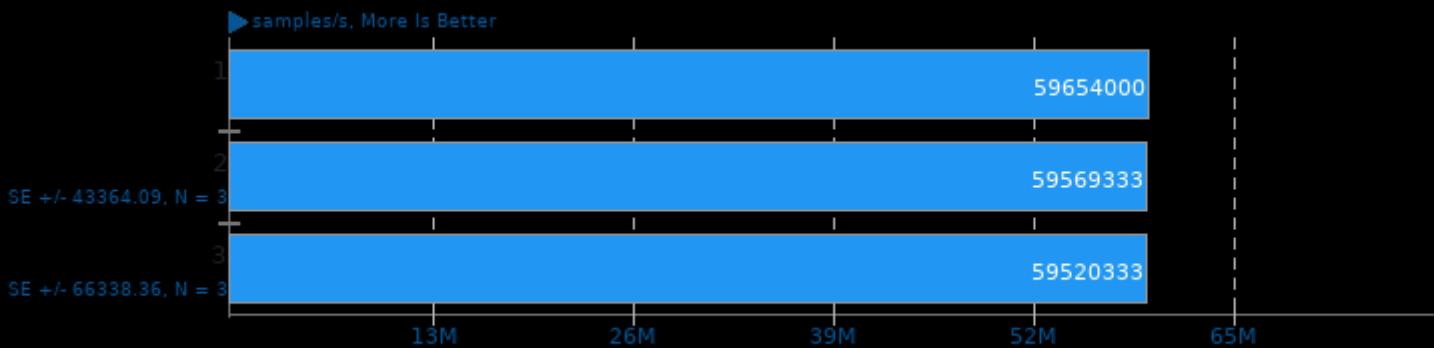
Harness: Convolution Batch Shapes Auto - Data Type: u8s8f32 - Engine: CPU



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

## Liquid-DSP 2021.01.31

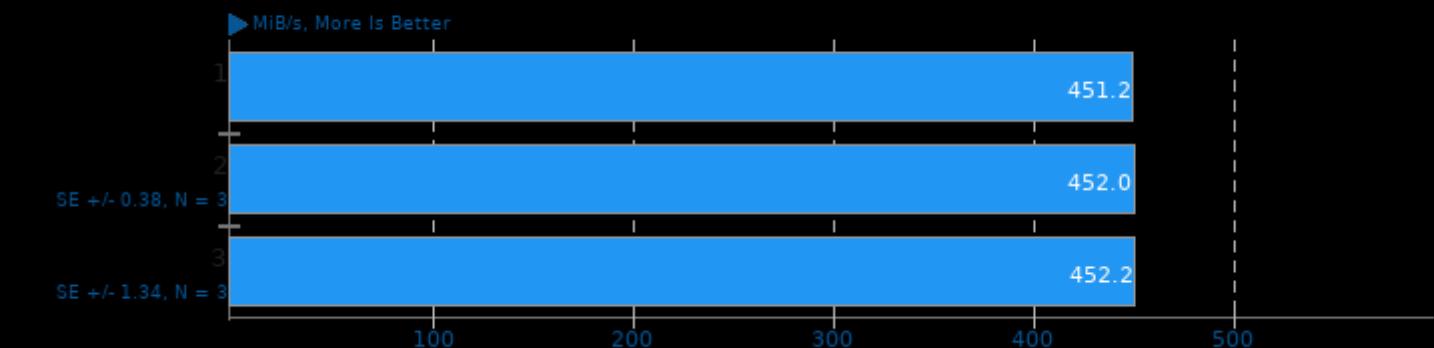
Threads: 1 - Buffer Length: 256 - Filter Length: 57



1. (CC) gcc options: -O3 -march=native -pthread -lm -lc -lliquid

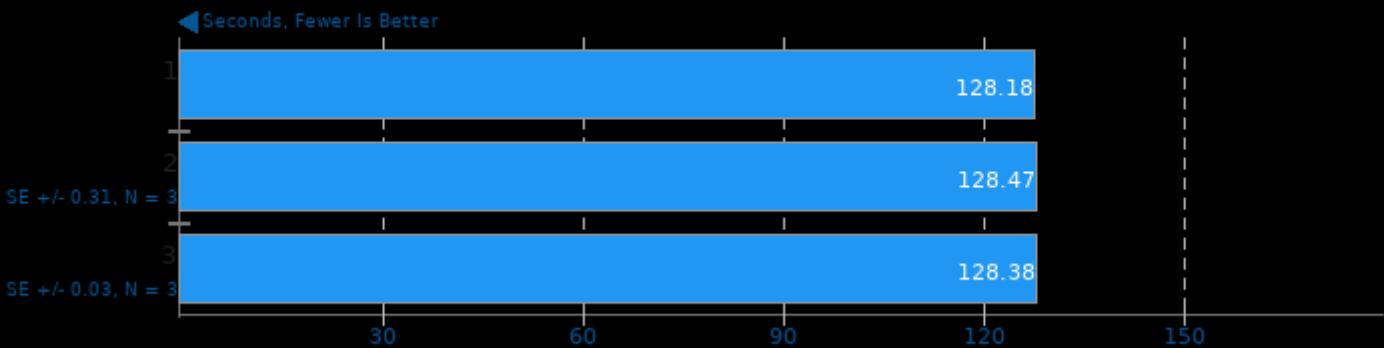
## LuaRadio 0.9.1

Test: Five Back to Back FIR Filters



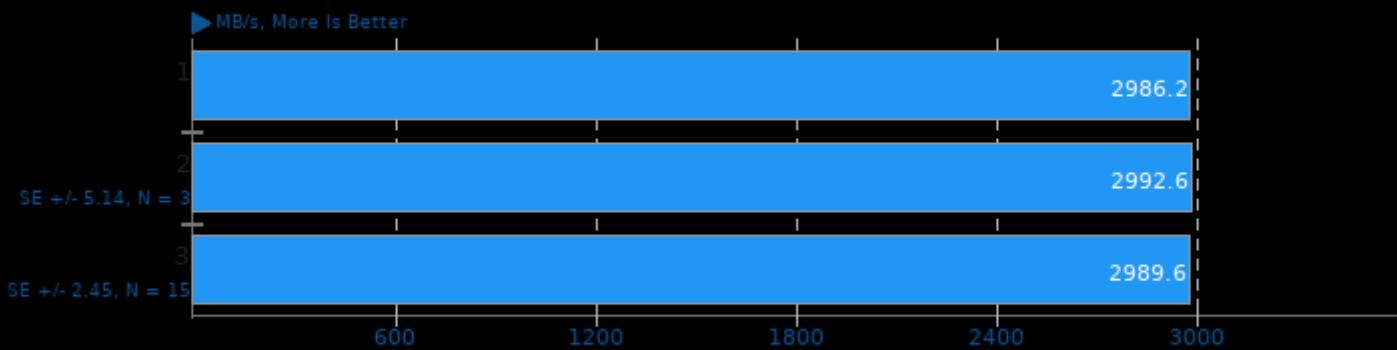
## Timed Node.js Compilation 15.11

Time To Compile



## Zstd Compression 1.4.9

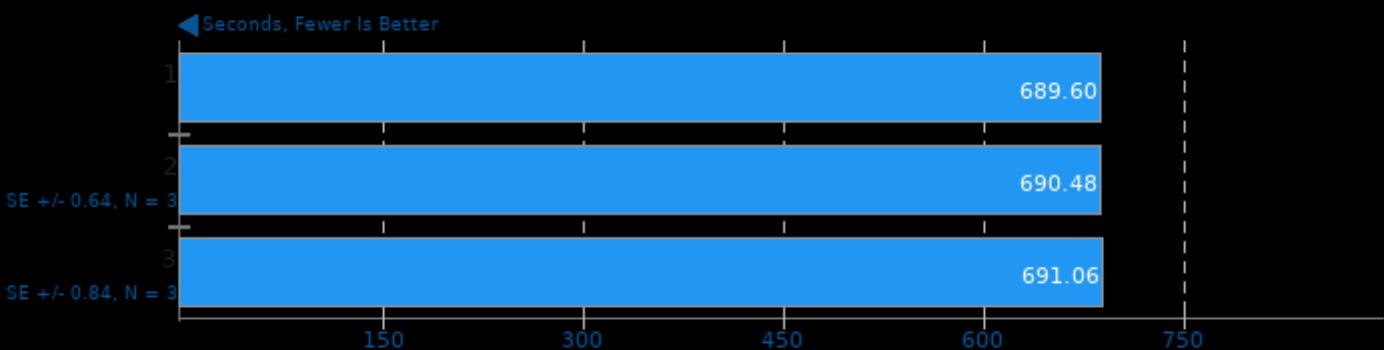
Compression Level: 8, Long Mode - Decompression Speed



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

## Xcompact3d Incompact3d 2021-03-11

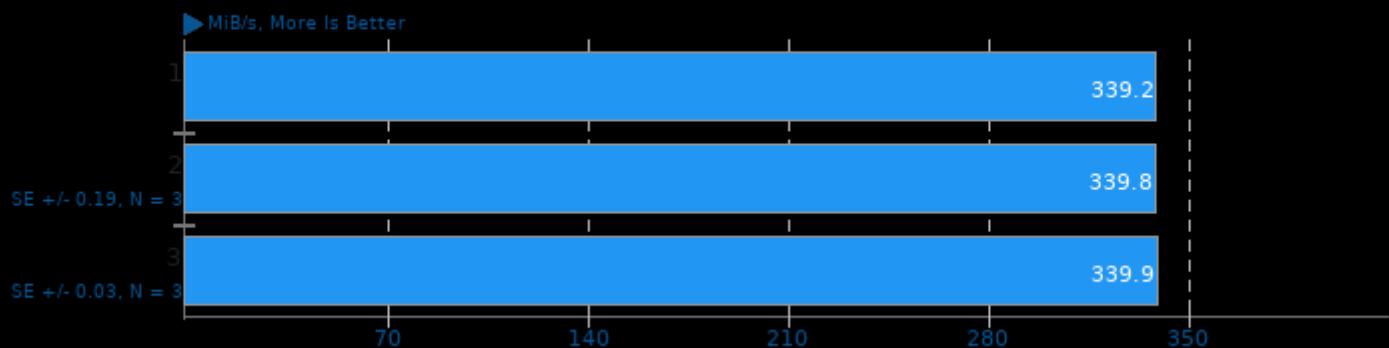
Input: X3D-benchmarking input.i3d



1. (F9X) gfortran options: -cpp -O2 -funroll-loops -floop-optimize -fcray-pointer -fbacktrace -pthread -lmpi\_usempif08 -lmpi\_mpifh -lmpi

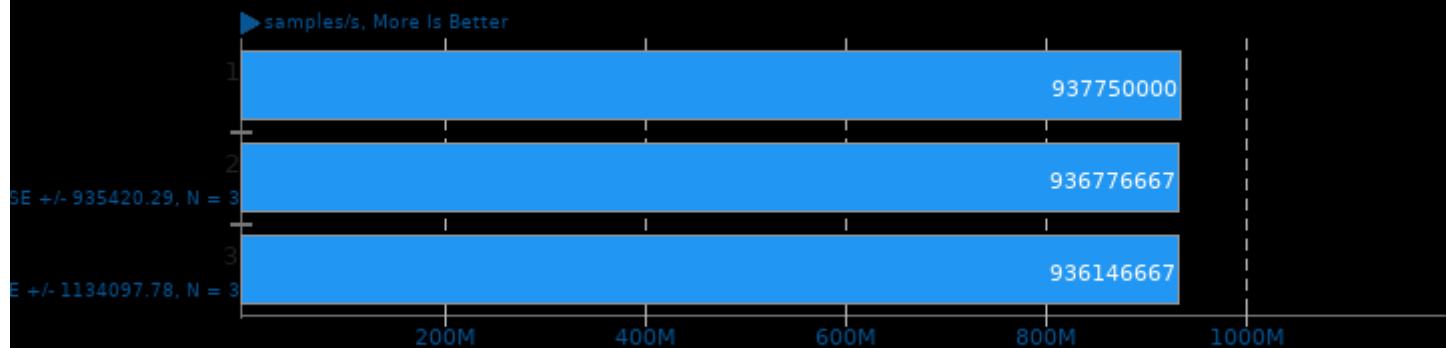
## LuaRadio 0.9.1

Test: FM Deemphasis Filter



## Liquid-DSP 2021.01.31

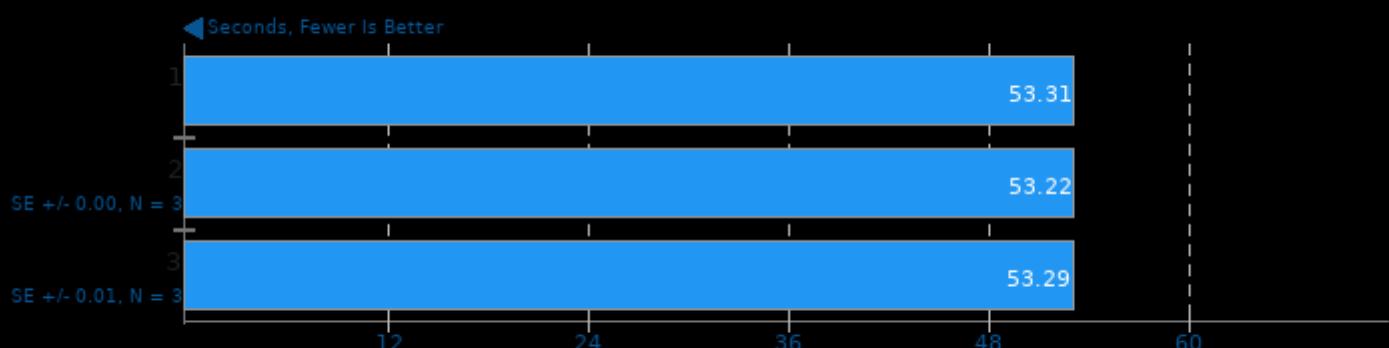
Threads: 16 - Buffer Length: 256 - Filter Length: 57



1. (CC) gcc options: -O3 -march=native -pthread -lm -lc -lliquid

## libavif avifenc 0.9.0

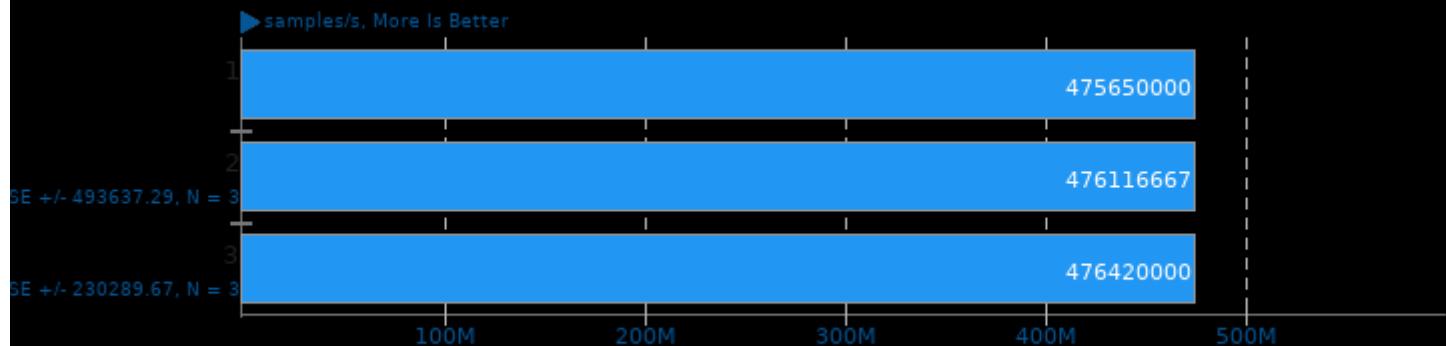
Encoder Speed: 0



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

## Liquid-DSP 2021.01.31

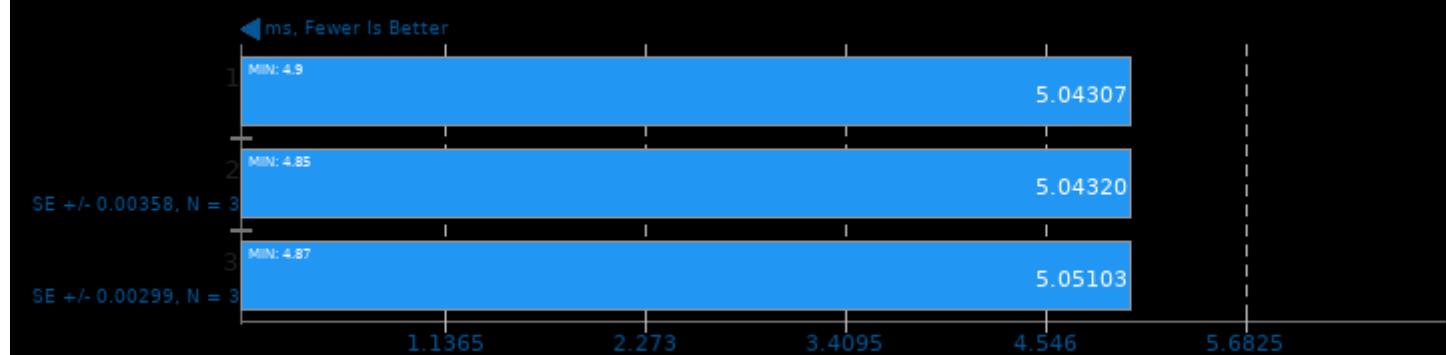
Threads: 8 - Buffer Length: 256 - Filter Length: 57



1. (CC) gcc options: -O3 -march=native -pthread -lm -lc -lliquid

## oneDNN 2.1.2

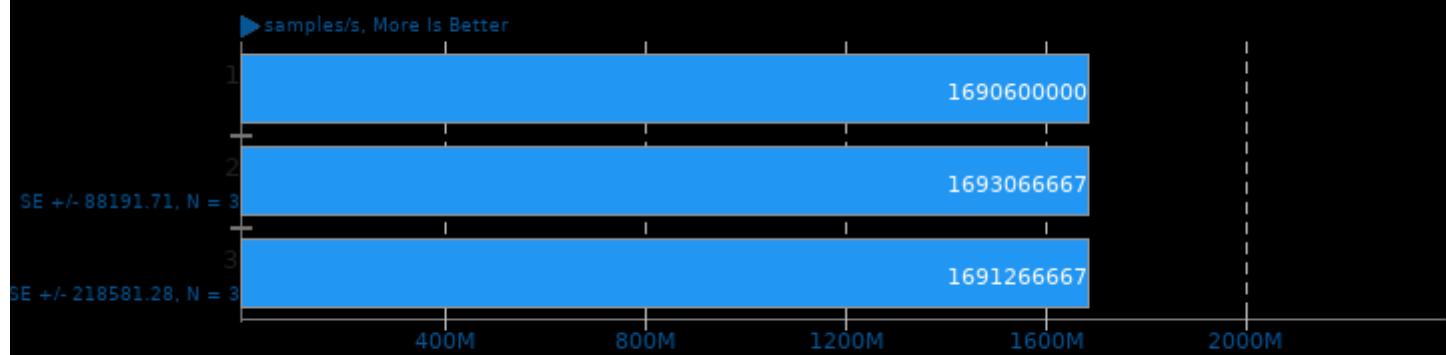
Harness: IP Shapes 3D - Data Type: f32 - Engine: CPU



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

## Liquid-DSP 2021.01.31

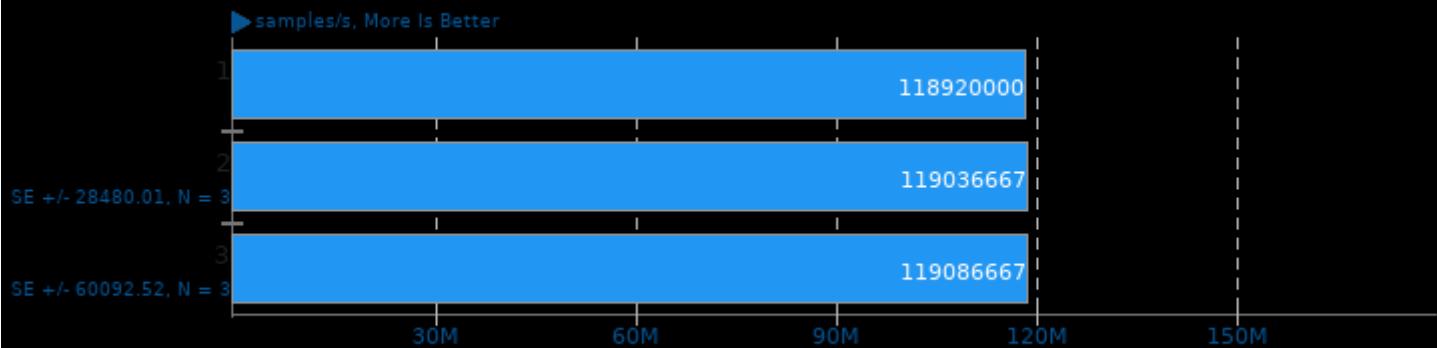
Threads: 32 - Buffer Length: 256 - Filter Length: 57



1. (CC) gcc options: -O3 -march=native -pthread -lm -lc -lliquid

## Liquid-DSP 2021.01.31

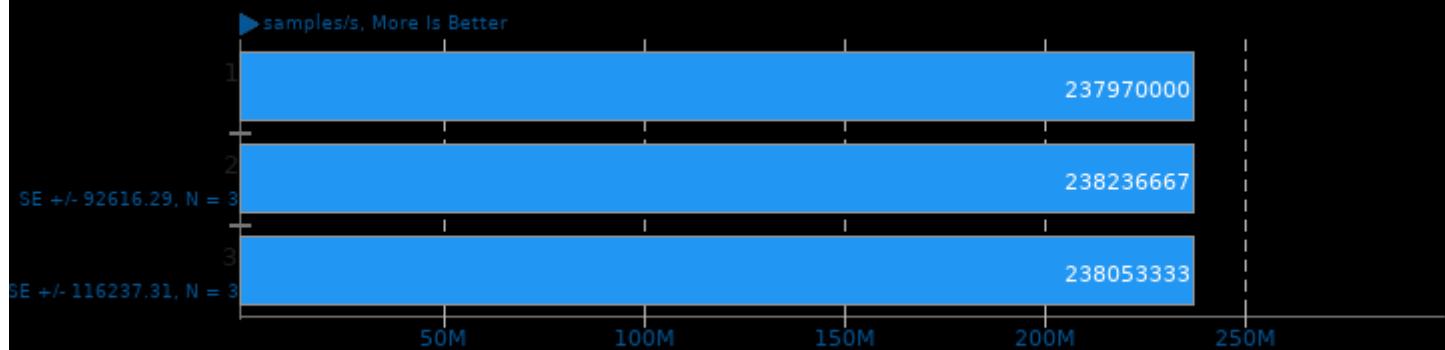
Threads: 2 - Buffer Length: 256 - Filter Length: 57



1. (CC) gcc options: -O3 -march=native -pthread -lm -lc -lliquid

## Liquid-DSP 2021.01.31

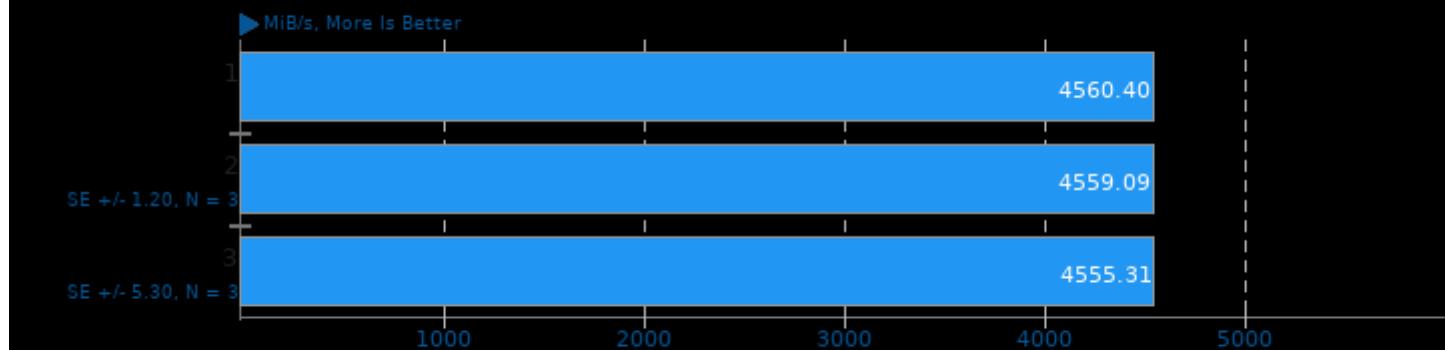
Threads: 4 - Buffer Length: 256 - Filter Length: 57



1. (CC) gcc options: -O3 -march=native -pthread -lm -lc -lliquid

## Botan 2.17.3

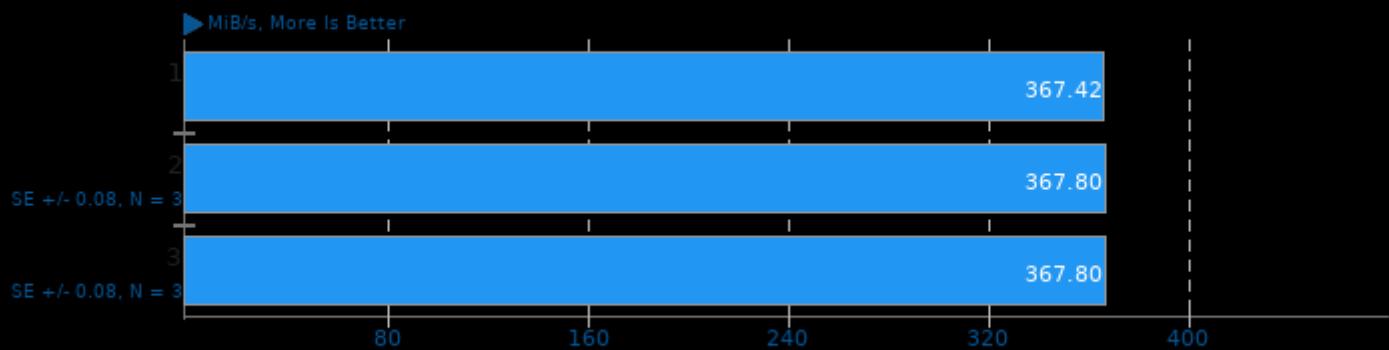
Test: AES-256 - Decrypt



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

## Botan 2.17.3

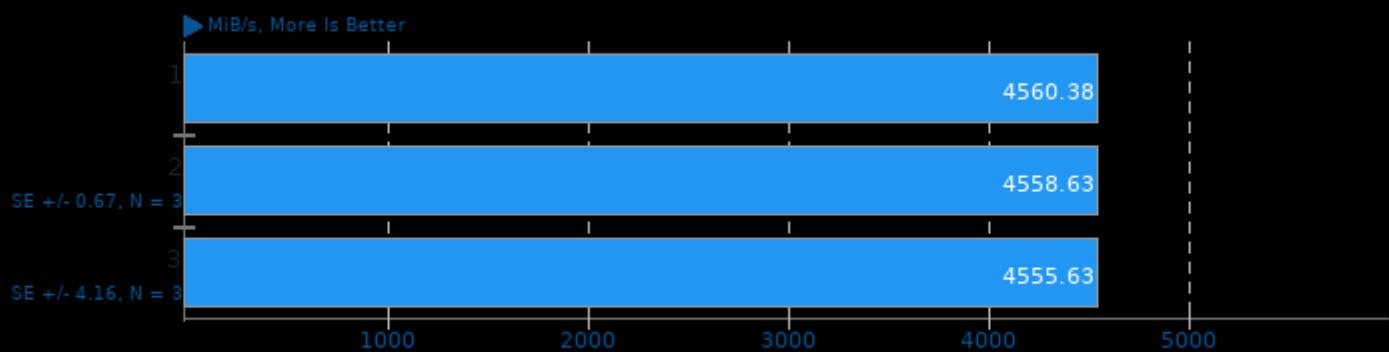
Test: Blowfish - Decrypt



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

## Botan 2.17.3

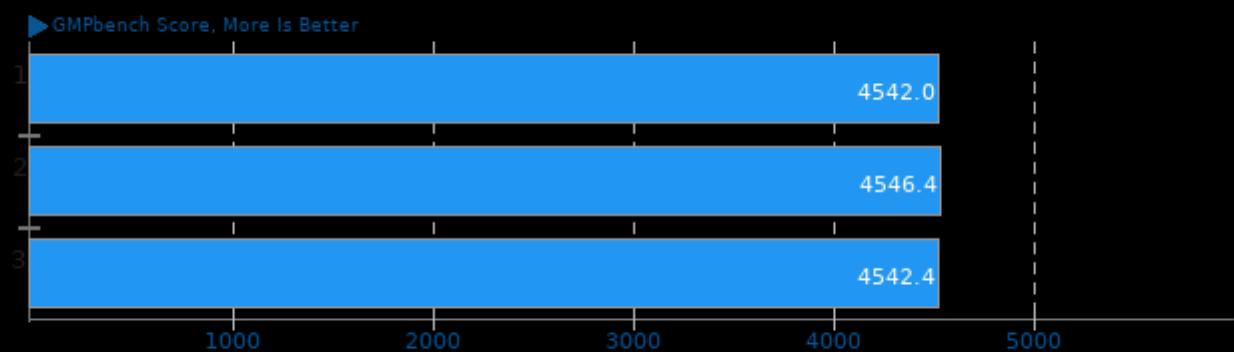
Test: AES-256



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

## GNU GMP GMPbench 6.2.1

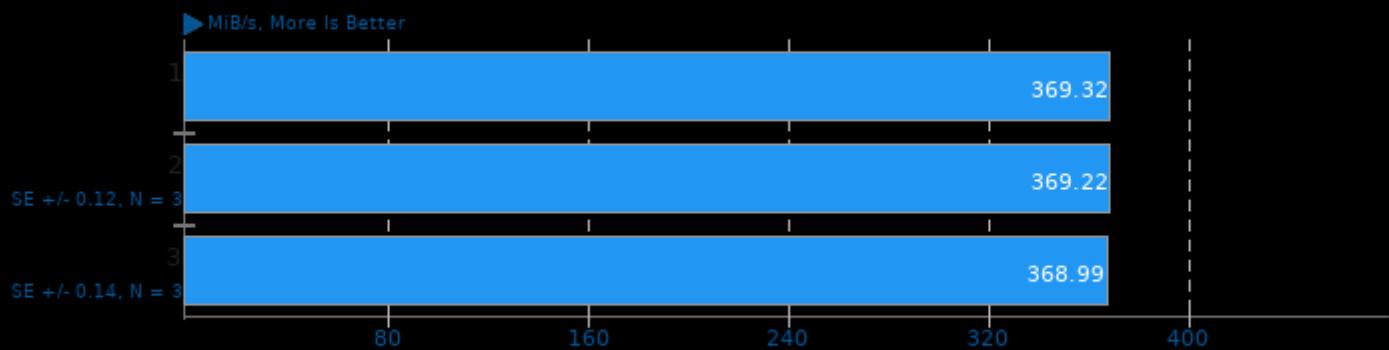
Total Time



1. (CC) gcc options: -O3 -fomit-frame-pointer -lm

## Botan 2.17.3

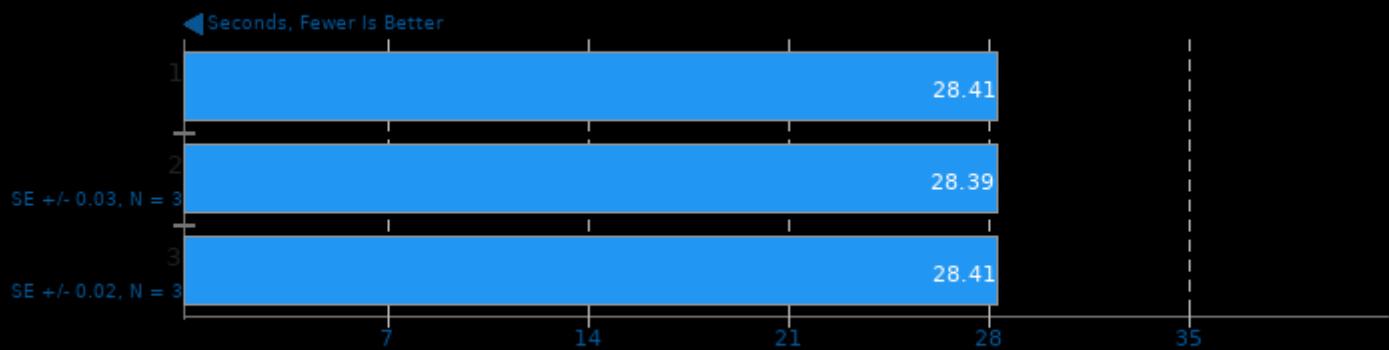
Test: Blowfish



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

## libavif avifenc 0.9.0

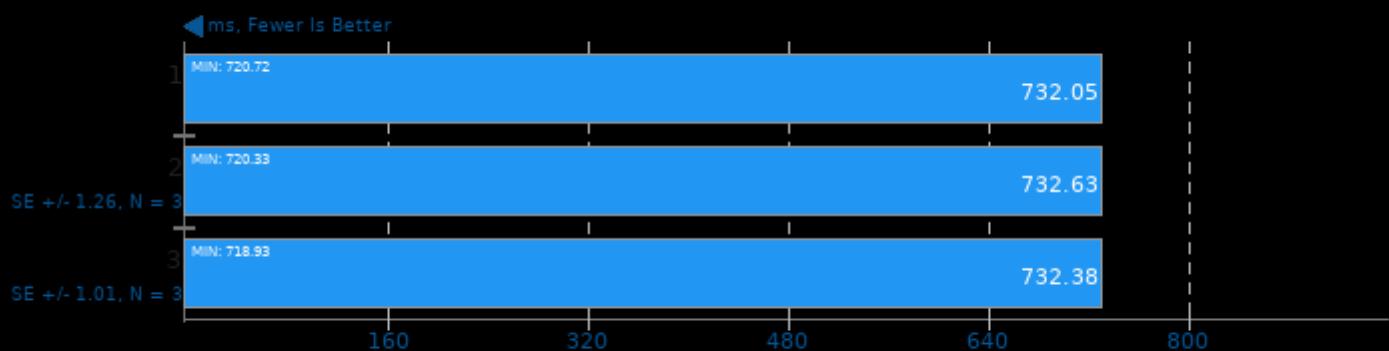
Encoder Speed: 2



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

## oneDNN 2.1.2

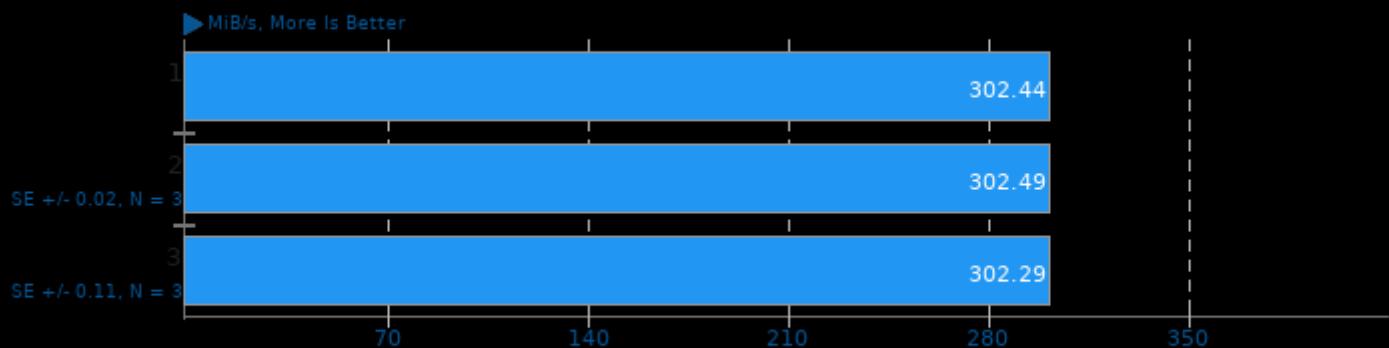
Harness: Recurrent Neural Network Inference - Data Type: f32 - Engine: CPU



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

## Botan 2.17.3

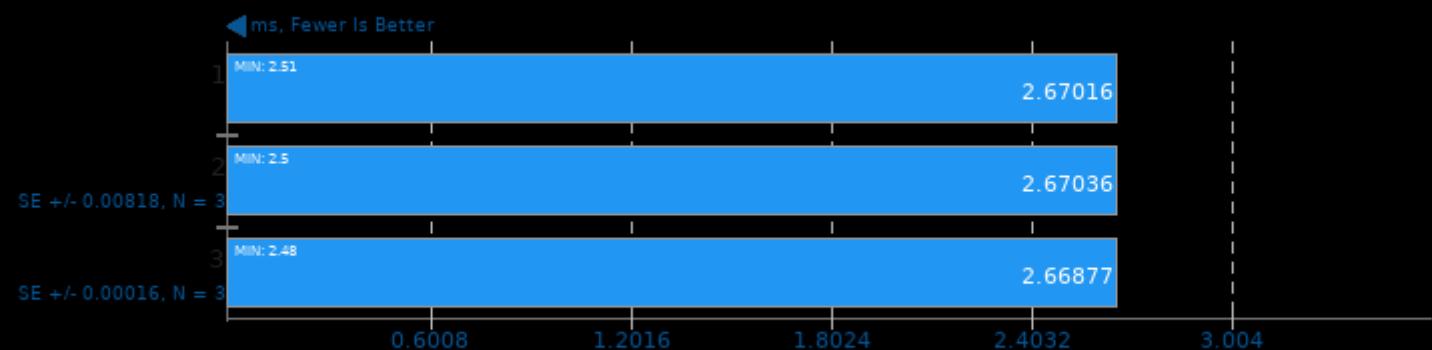
Test: Twofish



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

## oneDNN 2.1.2

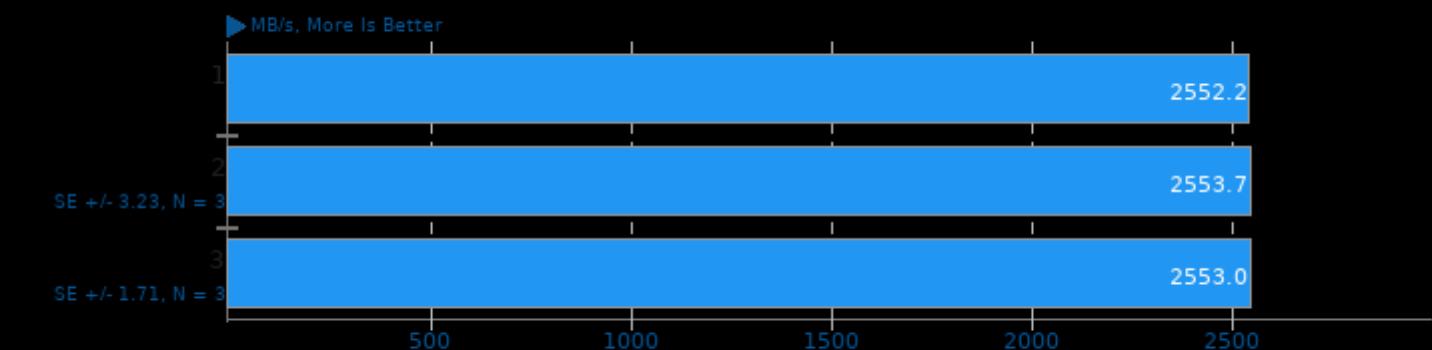
Harness: Deconvolution Batch shapes\_3d - Data Type: f32 - Engine: CPU



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

## Zstd Compression 1.4.9

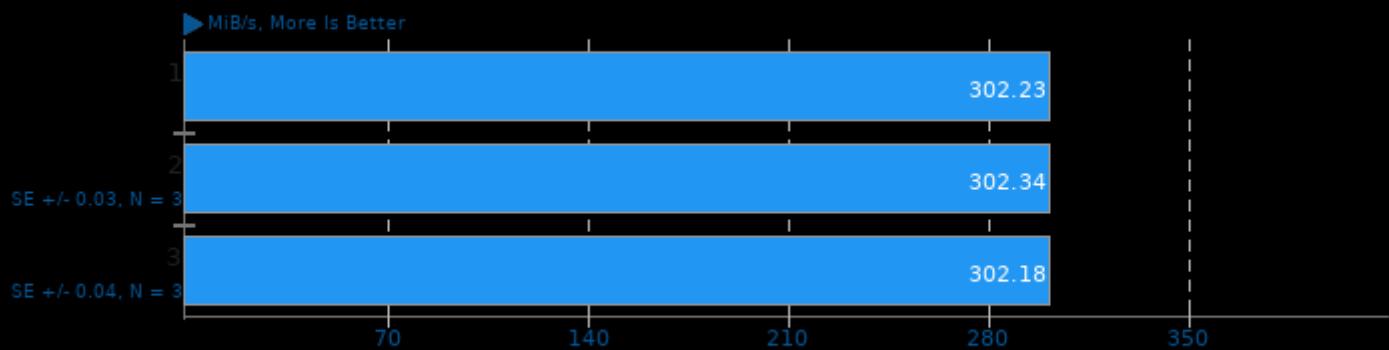
Compression Level: 19, Long Mode - Decompression Speed



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

## Botan 2.17.3

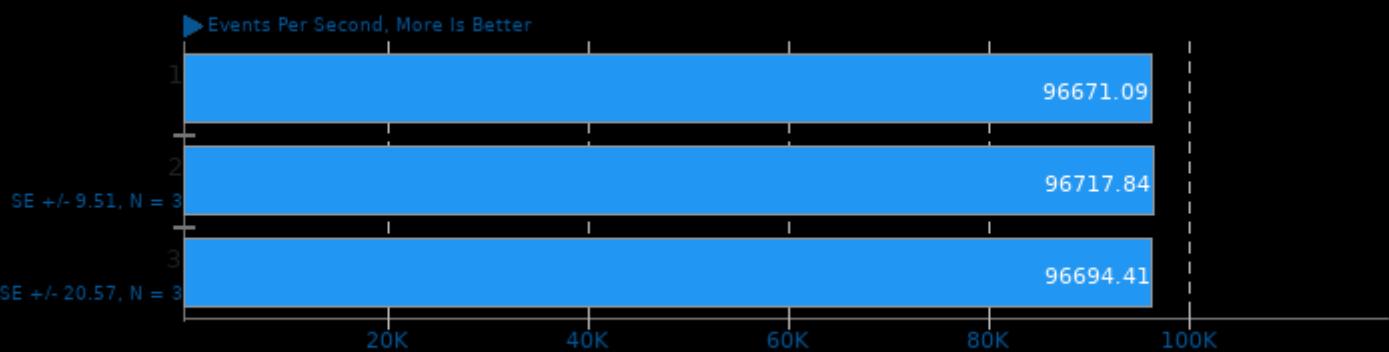
Test: Twofish - Decrypt



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

## Sysbench 1.0.20

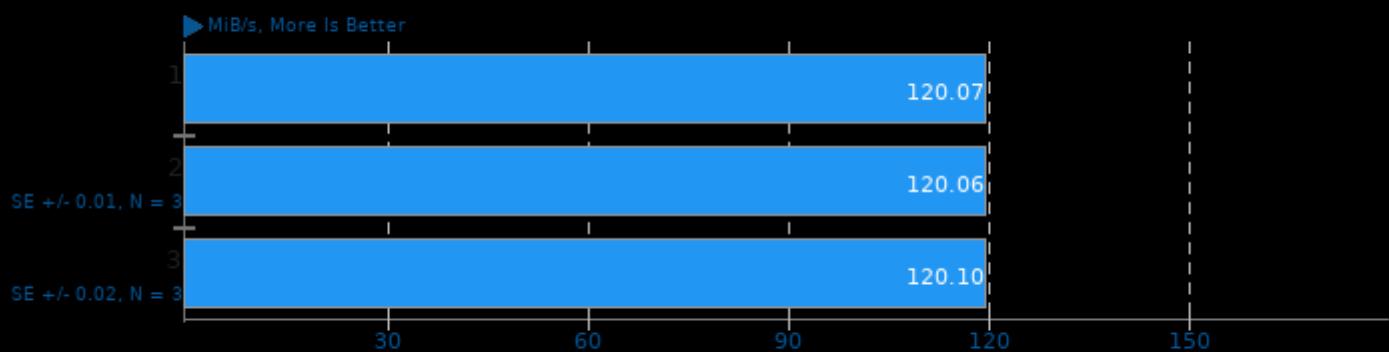
Test: CPU



1. (CC) gcc options: -pthread -O2 -funroll-loops -O3 -march=native -rdynamic -ldl -laio -lm

## Botan 2.17.3

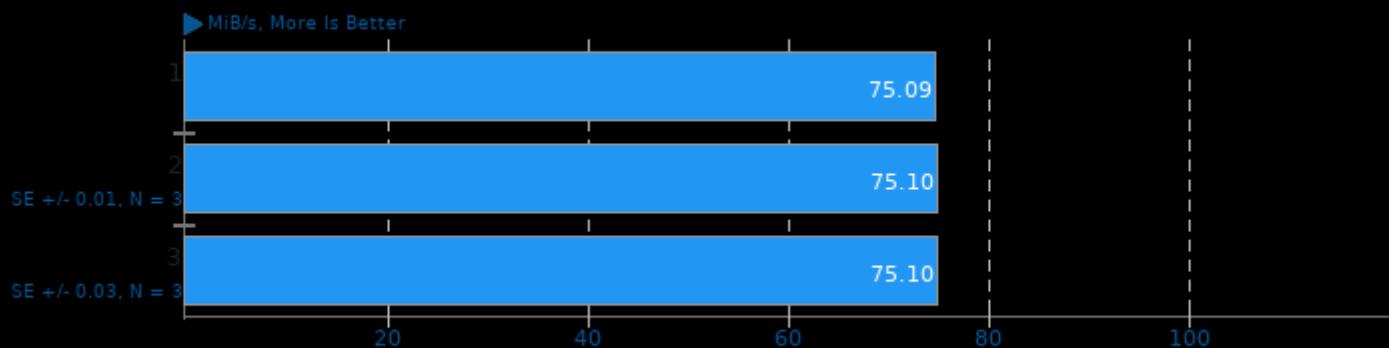
Test: CAST-256 - Decrypt



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

## Botan 2.17.3

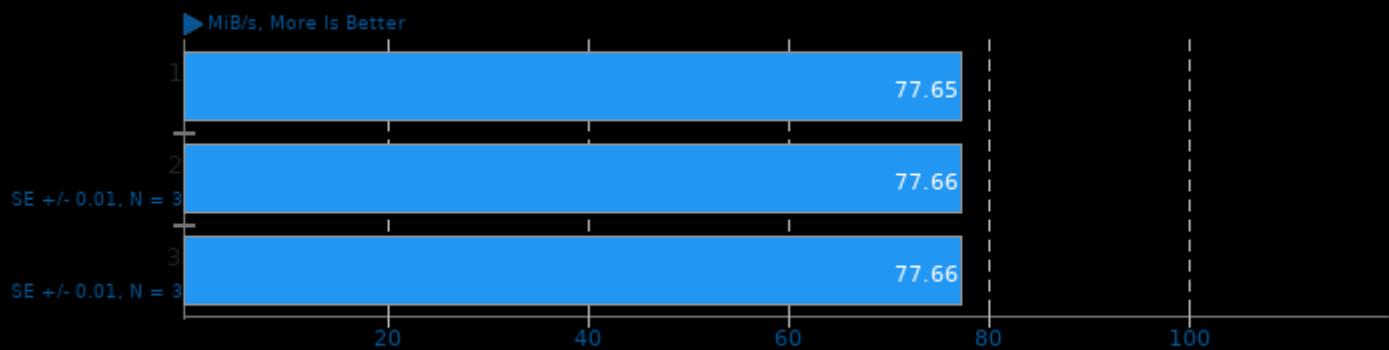
Test: KASUMI - Decrypt



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

## Botan 2.17.3

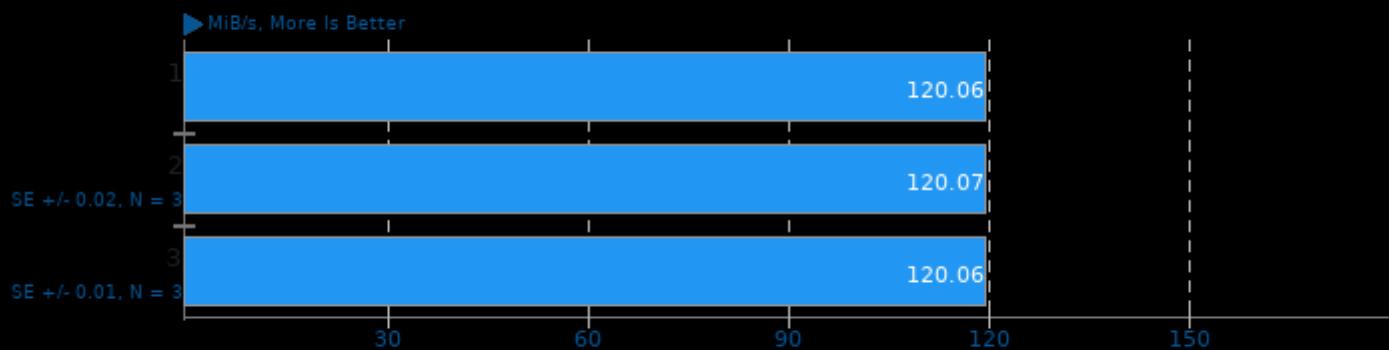
Test: KASUMI



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

## Botan 2.17.3

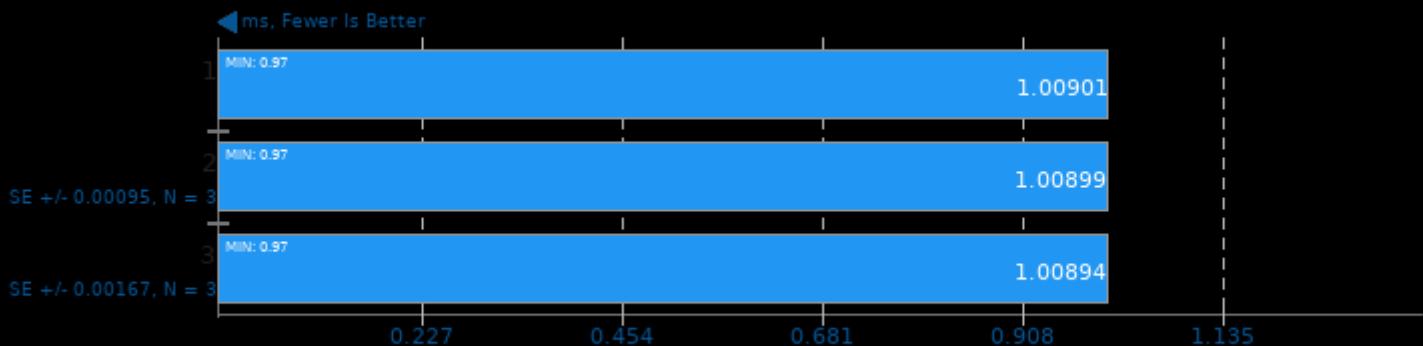
Test: CAST-256



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

## oneDNN 2.1.2

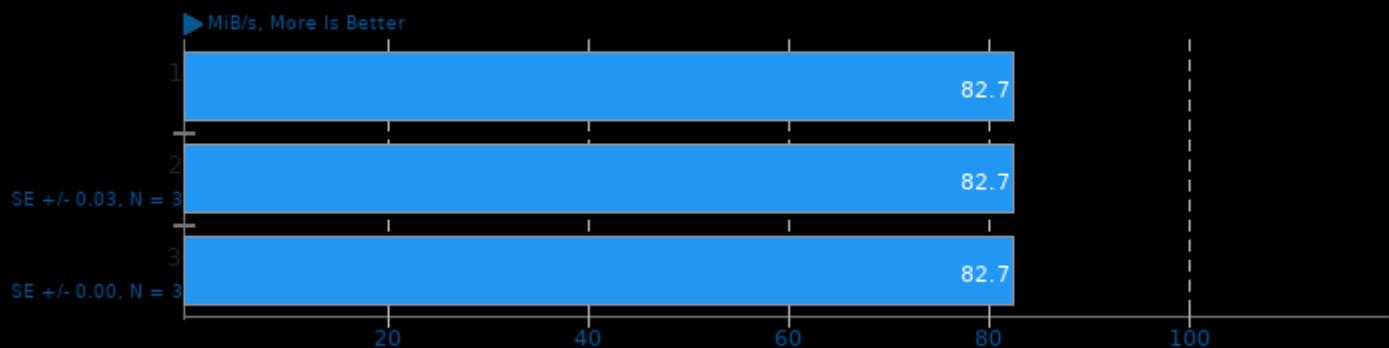
Harness: Convolution Batch Shapes Auto - Data Type: f32 - Engine: CPU



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

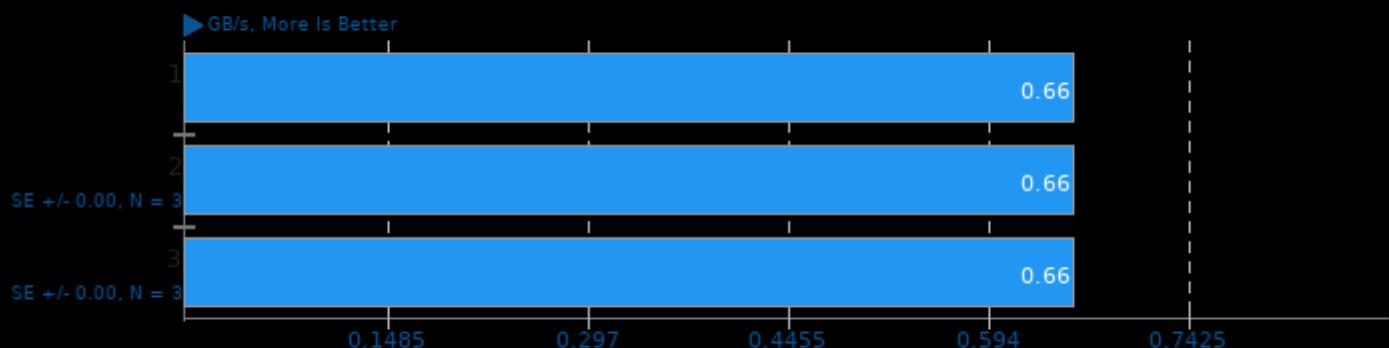
## LuaRadio 0.9.1

Test: Hilbert Transform



## simdjson 0.8.2

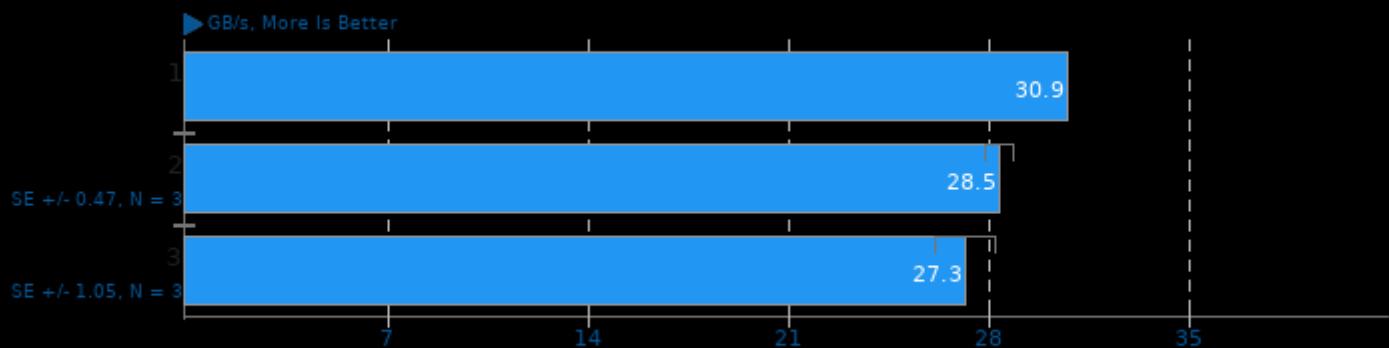
Throughput Test: LargeRandom



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

## ViennaCL 1.7.1

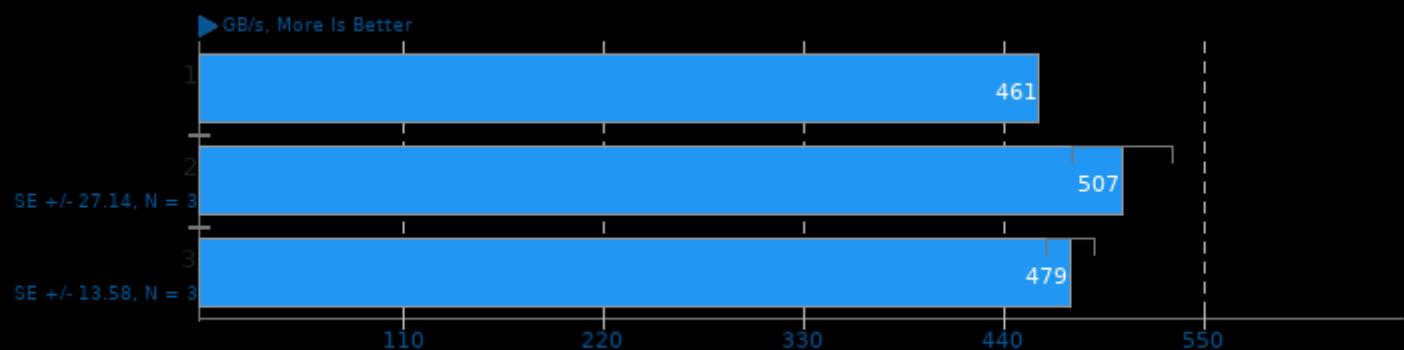
Test: CPU BLAS - dGEMV-N



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

## ViennaCL 1.7.1

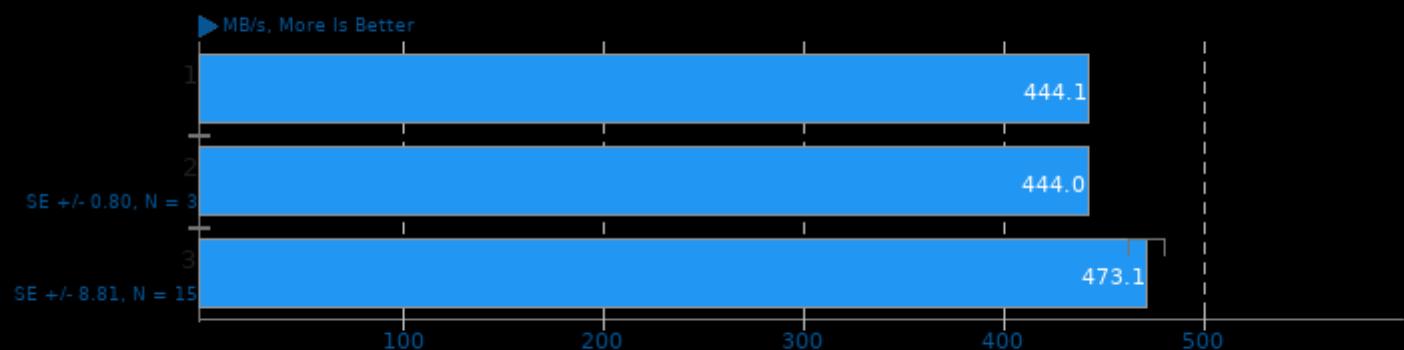
Test: CPU BLAS - sDOT



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

## Zstd Compression 1.4.9

Compression Level: 8, Long Mode - Compression Speed

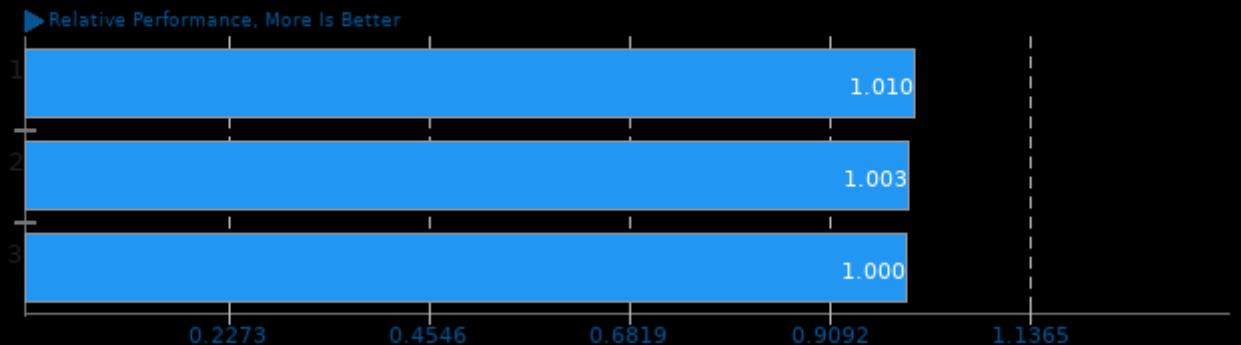


1. (CC) gcc options: -O3 -march=native -pthread -lz -lzma

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

### Geometric Mean Of AV1 Tests

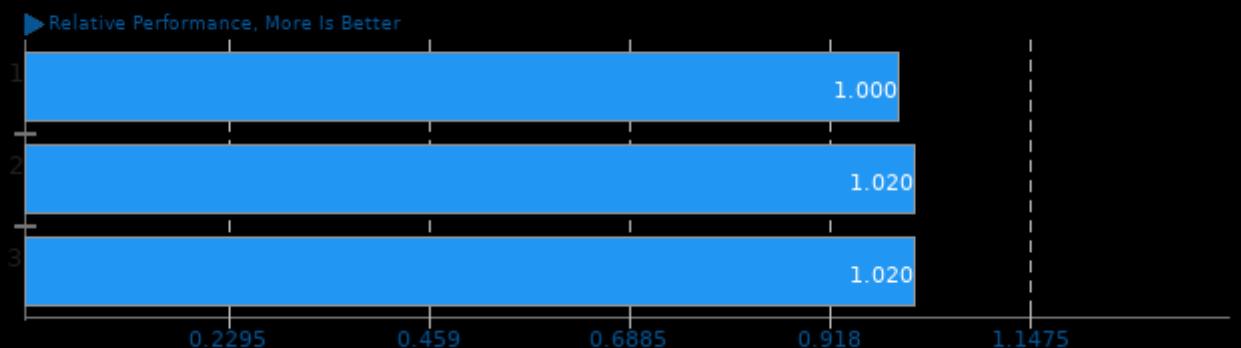
Result Composite - EPYC 7702 April 2021



Geometric mean based upon tests: pts/aom-av1 and pts/avifenc

### Geometric Mean Of Timed Code Compilation Tests

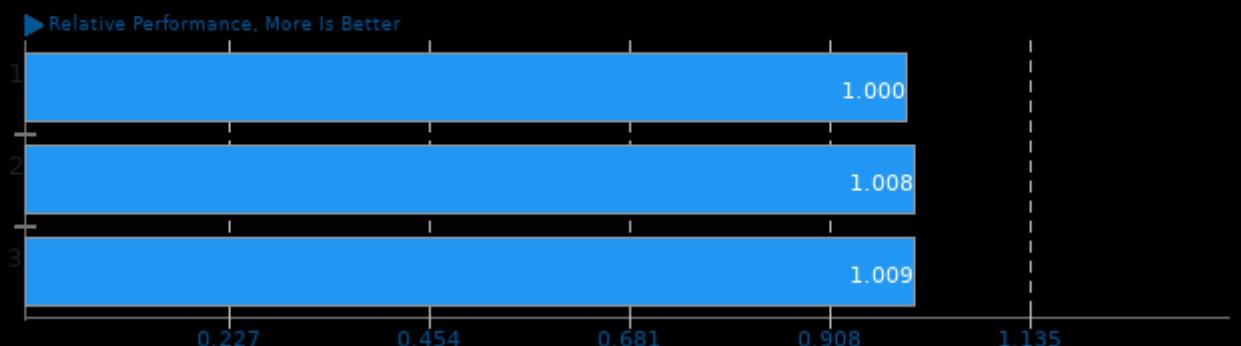
Result Composite - EPYC 7702 April 2021



Geometric mean based upon tests: pts/build-linux-kernel, pts/build-erlang, pts/build-nodejs and pts/build-mesa

### Geometric Mean Of C/C++ Compiler Tests

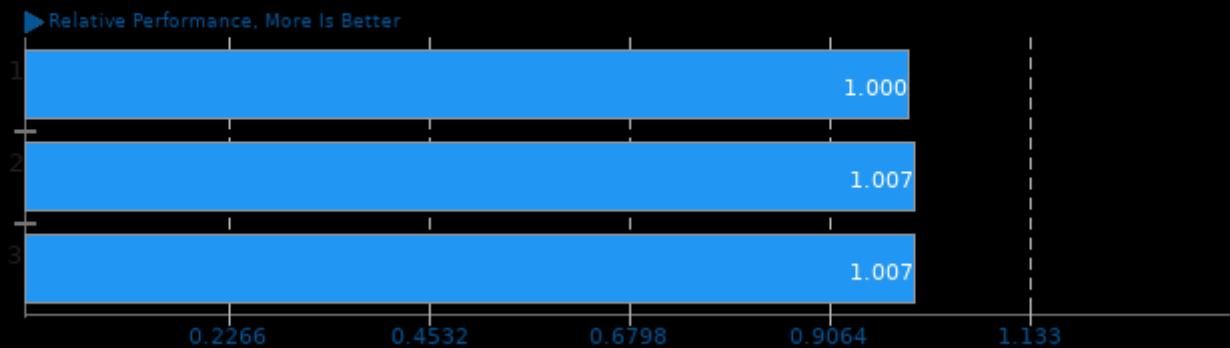
Result Composite - EPYC 7702 April 2021



Geometric mean based upon tests: pts/stockfish, pts/compress-zstd, pts/aom-av1, pts/svt-vp9 and pts/toybrot

## Geometric Mean Of CPU Massive Tests

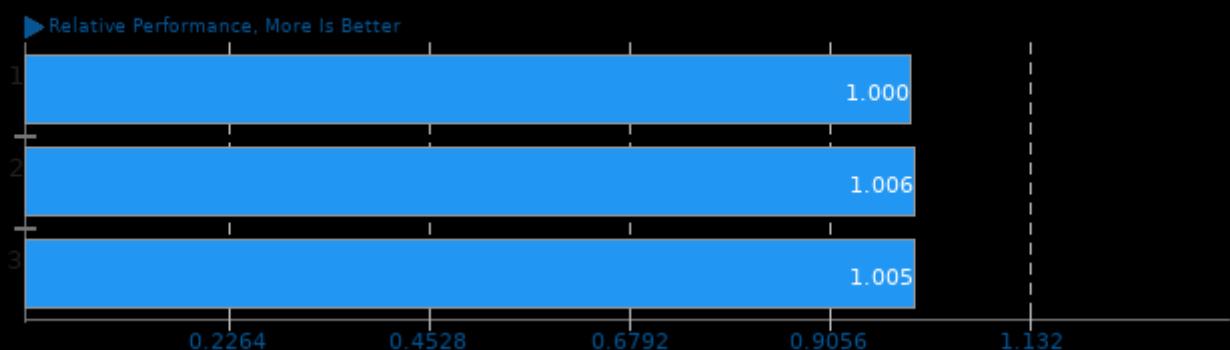
Result Composite - EPYC 7702 April 2021



Geometric mean based upon tests: pts/build-linux-kernel, pts/compress-zstd, pts/svt-hevc, pts/svt-vp9, pts/onnednn, pts/stockfish, pts/sysbench, pts/blender and pts/botan

## Geometric Mean Of Creator Workloads Tests

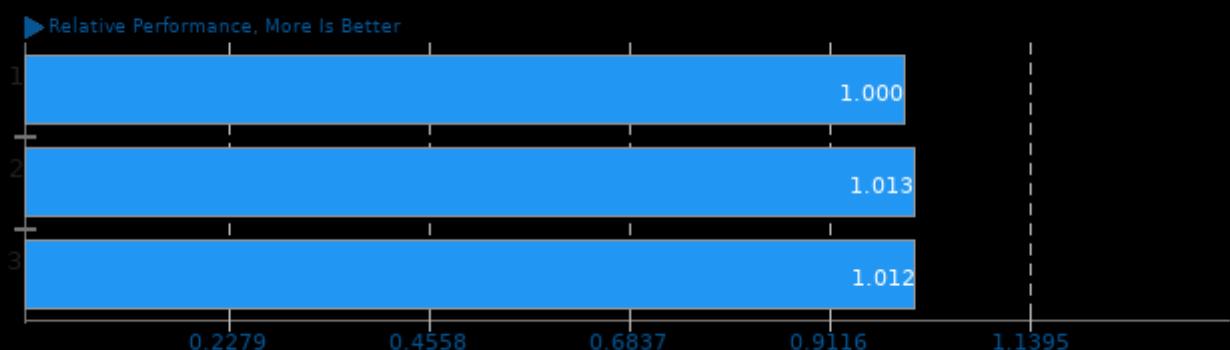
Result Composite - EPYC 7702 April 2021



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

## Geometric Mean Of Encoding Tests

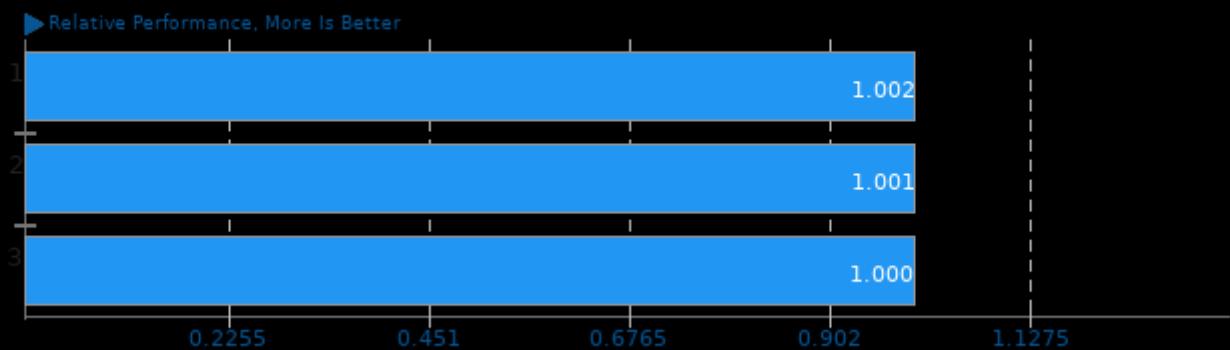
Result Composite - EPYC 7702 April 2021



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

## Geometric Mean Of HPC - High Performance Computing Tests

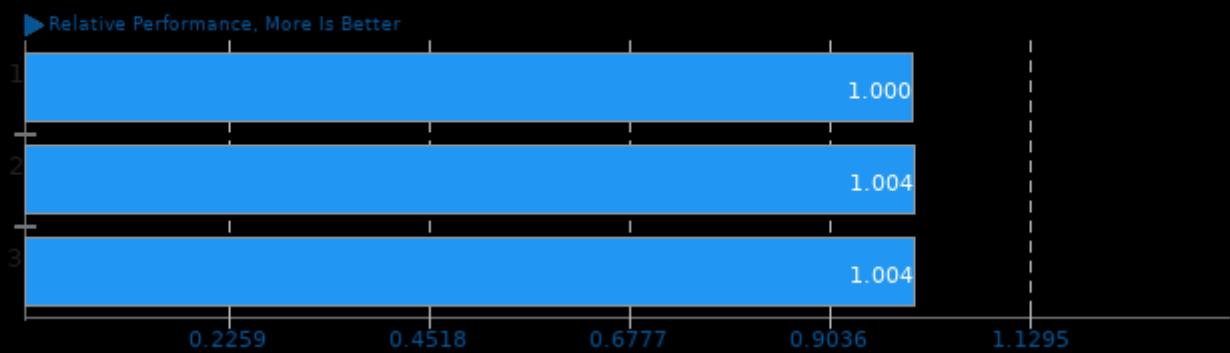
Result Composite - EPYC 7702 April 2021



Geometric mean based upon tests: pts/incompact3d and pts/onnednn

## Geometric Mean Of Multi-Core Tests

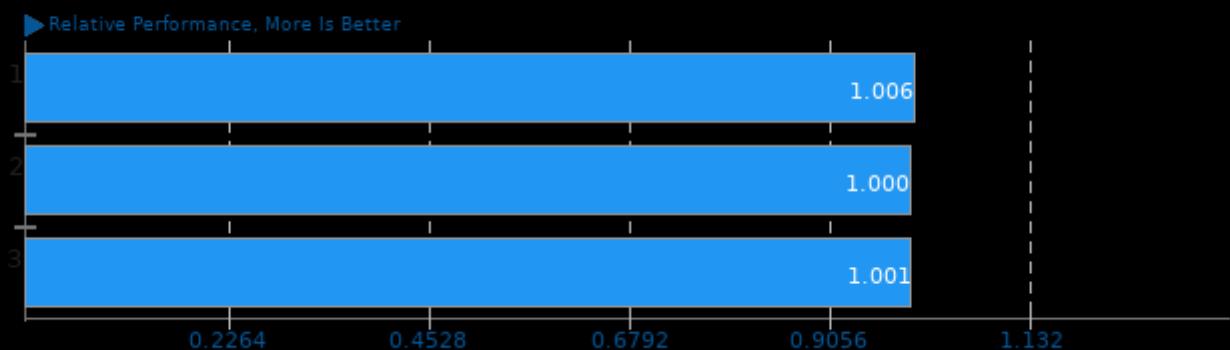
Result Composite - EPYC 7702 April 2021



Geometric mean based upon tests: pts/blender, pts/sysbench, pts/stockfish, pts/svt-vp9, pts/svt-hevc, pts/aom-av1, pts/onnednn, pts/compress-zstd, pts/build-linux-kernel, pts/build-erlang, pts/build-nodejs and pts/build-mesa

## Geometric Mean Of NVIDIA GPU Compute Tests

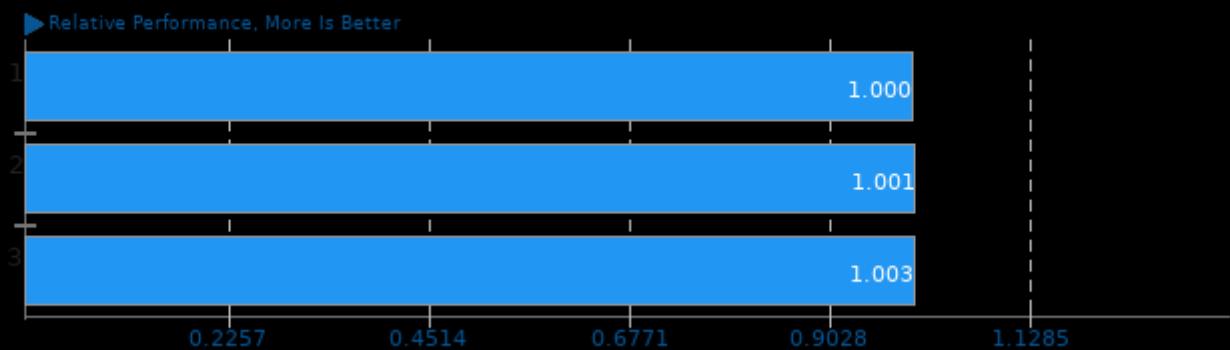
Result Composite - EPYC 7702 April 2021



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

## Geometric Mean Of Programmer / Developer System Benchmarks Tests

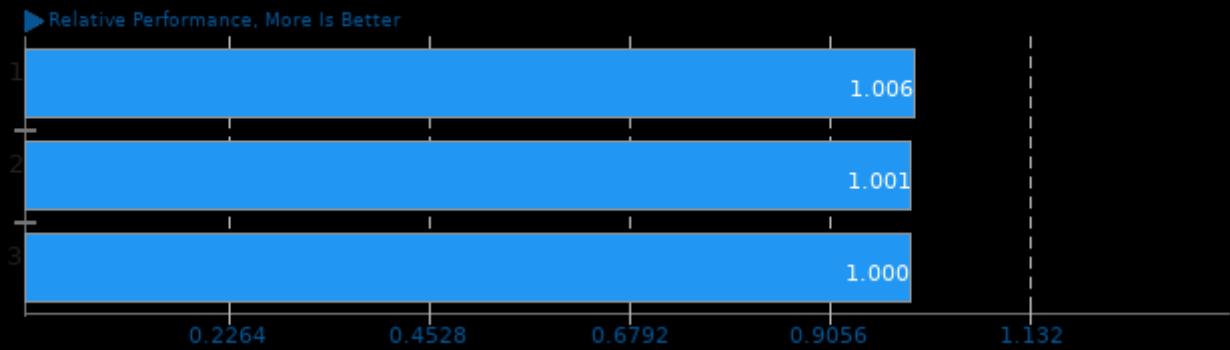
Result Composite - EPYC 7702 April 2021



Geometric mean based upon tests: pts/simdjson, pts/compress-zstd, pts/build-linux-kernel, pts/build-erlang, pts/build-nodejs and pts/build-mesa

## Geometric Mean Of Python Tests

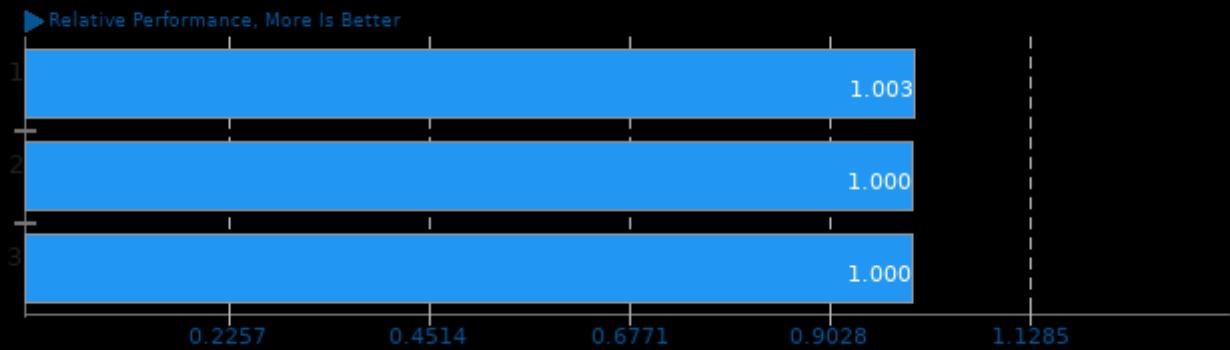
Result Composite - EPYC 7702 April 2021



Geometric mean based upon tests: system/gnuradio, pts/build-mesa and pts/build-nodejs

## Geometric Mean Of Software Defined Radio Tests

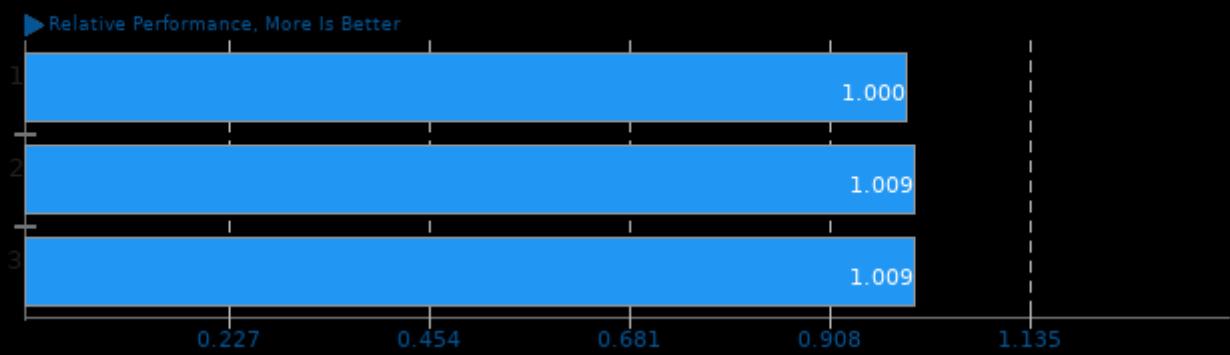
Result Composite - EPYC 7702 April 2021



Geometric mean based upon tests: pts/liquid-dsp, pts/luaradio and system/gnuradio

## Geometric Mean Of Server CPU Tests

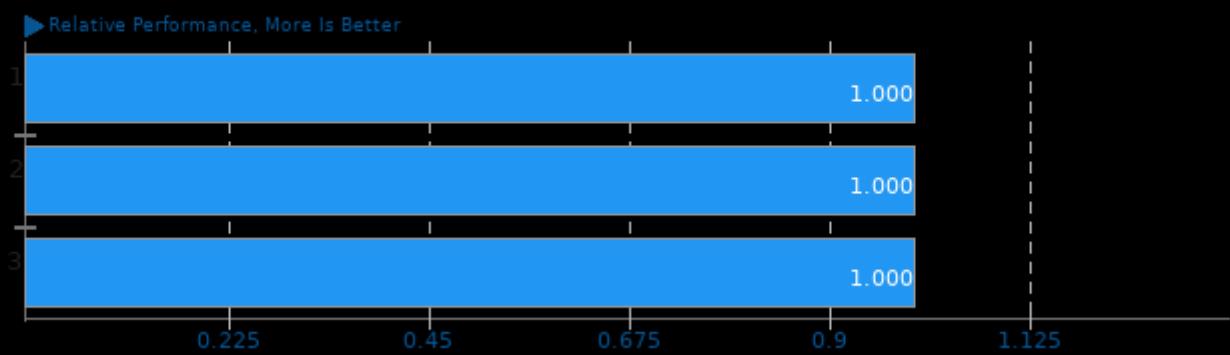
Result Composite - EPYC 7702 April 2021



Geometric mean based upon tests: pts/onnednn, pts/svt-hevc, pts/svt-vp9, pts/stockfish, pts/build-linux-kernel, pts/compress-zstd, pts/sysbench and pts/blender

## Geometric Mean Of Single-Threaded Tests

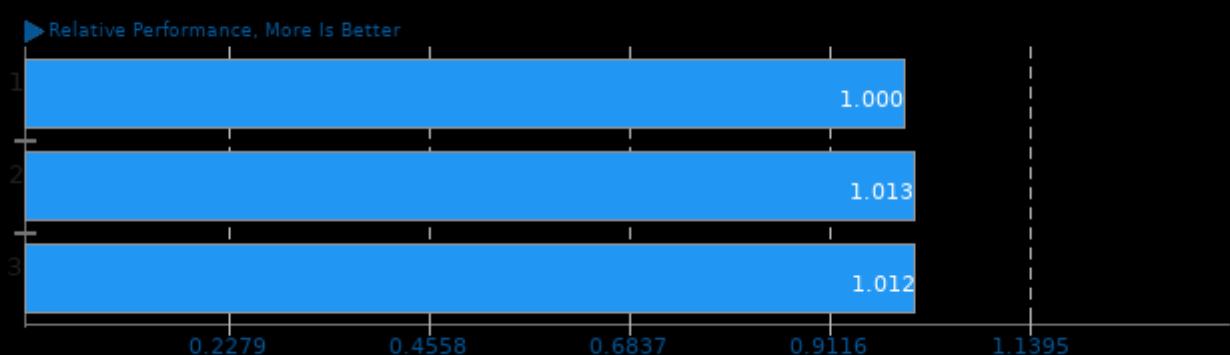
Result Composite - EPYC 7702 April 2021



Geometric mean based upon tests: pts/gmpbench and pts/botan

## Geometric Mean Of Video Encoding Tests

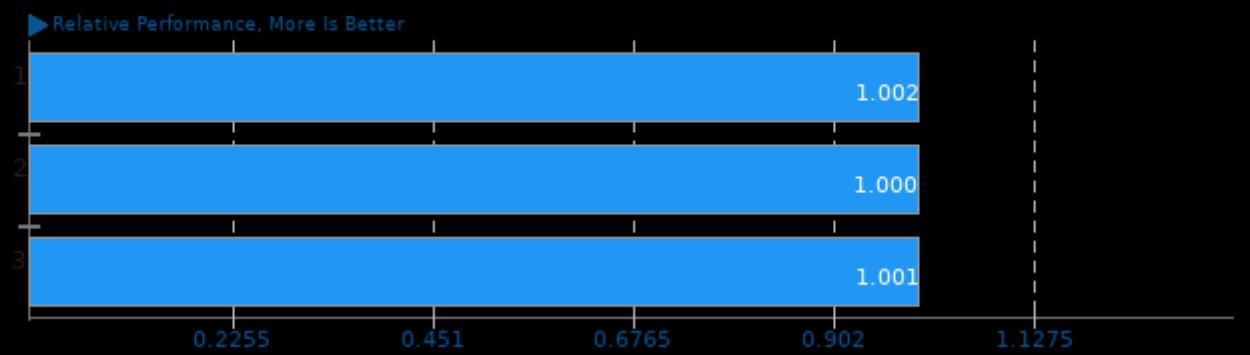
Result Composite - EPYC 7702 April 2021



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

**Geometric Mean Of Common Workstation Benchmarks Tests**

Result Composite - EPYC 7702 April 2021



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

*This file was automatically generated via the Phoronix Test Suite benchmarking software on Thursday, 28 March 2024 16:55.*