



# AMD EPYC 7601 Linux Benchmarks, Intel Xeon Gold

AMD EPYC 7601 Linux benchmarks on Ubuntu 19.04 + Linux 5.2 by Michael Larabel.

## Automated Executive Summary

*2 x Xeon Gold 6138 had the most wins, coming in first place for 55% of the tests.*

*Based on the geometric mean of all complete results, the fastest (2 x Xeon Gold 6138) was 1.195x the speed of the slowest (EPYC 7601). 2 x EPYC 7601 was 0.927x the speed of 2 x Xeon Gold 6138 and EPYC 7601 was 0.903x the speed of 2 x EPYC 7601.*

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

*MKL-DNN (Harness: Deconvolution Batch deconv\_1d - Data Type: f32) at 8.96x*

*Novabench (Test: RAM) at 4.346x*

*ctx\_clock (Context Switch Time) at 3.851x*

*MKL-DNN (Harness: Convolution Batch conv\_alexnet - Data Type: f32) at 3.516x*

*Rust Prime Benchmark (Prime Number Test To 200,000,000) at 3.508x*

*MKL-DNN (Harness: Convolution Batch conv\_googlenet\_v3 - Data Type: f32) at 3.5x*

*Stress-NG (Test: Memory Copying) at 3.131x*

*Core-Latency (Average Latency Between CPU Cores) at 3.113x*

*Sysbench (Test: Memory) at 2.855x*

MBW (Test: Memory Copy - Array Size: 1024 MiB) at 2.686x.

## Test Systems:

### EPYC 7601

Processor: AMD EPYC 7601 32-Core @ 2.20GHz (32 Cores / 64 Threads), Motherboard: TYAN B8026T70AE24HR (V1.02.B10 BIOS), Chipset: AMD 17h, Memory: 8 x 16384 MB DDR4-2666MHz Samsung, Disk: 280GB INTEL SSDPE21D280GA, Graphics: llvmpipe 126GB, Monitor: VE228, Network: 2 x Broadcom NetXtreme BCM5720 PCIe

OS: Ubuntu 19.04, Kernel: 5.2.0-050200rc7-generic (x86\_64) 20190630, Desktop: GNOME Shell 3.32.1, Display Server: X Server 1.20.4, Display Driver: modesetting 1.20.4, OpenGL: 3.3 Mesa 19.0.2 (LLVM 8.0 128 bits), Compiler: GCC 8.3.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86\_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --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++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --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 --with-tune=generic --without-cuda-driver -v

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

Processor Notes: Scaling Governor: acpi-cpufreq ondemand

Java Notes: OpenJDK Runtime Environment (build 11.0.3+7-Ubuntu-1ubuntu219.04.1)

Python Notes: Python 2.7.16 + Python 3.7.3

Security Notes: 11tf: Not affected + mds: Not affected + meltdown: Not affected + spec\_store\_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre\_v1: Mitigation of \_\_user pointer sanitization + spectre\_v2: Mitigation of Full AMD retpoline IBPB: conditional STIBP: disabled RSB filling

### 2 x EPYC 7601

Processor: 2 x AMD EPYC 7601 32-Core (64 Cores / 128 Threads), Motherboard: Dell 02MJ3T (1.2.5 BIOS), Chipset: AMD 17h, Memory: 16 x 32 GB DDR4-2400MT/s 36ASF4G72PZ-2G6D2, Disk: 280GB INTEL SSDPED1D280GA + 19 x 500GB Samsung SSD 860 + 120GB SSDSCKJB120G7R, Graphics: llvmpipe 504GB, Monitor: VE228, Network: 2 x Broadcom BCM57416 NetXtreme-E Dual-Media 10G RDMA + 2 x Broadcom NetXtreme BCM5720 PCIe

OS: Ubuntu 19.04, Kernel: 5.2.0-050200rc7-generic (x86\_64) 20190630, Desktop: GNOME Shell 3.32.1, Display Server: X Server 1.20.4, Display Driver: modesetting 1.20.4, OpenGL: 3.3 Mesa 19.0.2 (LLVM 8.0 128 bits), Compiler: GCC 8.3.0, File-System: ext4, Screen Resolution: 1920x1080

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

Java Notes: OpenJDK Runtime Environment (build 11.0.3+7-Ubuntu-1ubuntu219.04.1)

Python Notes: Python 2.7.16 + Python 3.7.3

Security Notes: 11tf: Not affected + mds: Not affected + meltdown: Not affected + spec\_store\_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre\_v1: Mitigation of \_\_user pointer sanitization + spectre\_v2: Mitigation of Full AMD retpoline IBPB: conditional STIBP: disabled RSB filling

### 2 x Xeon Gold 6138

Processor: 2 x Intel Xeon Gold 6138 @ 3.70GHz (40 Cores / 80 Threads), Motherboard: TYAN S7106 (V2.00.B20 BIOS), Chipset: Intel Sky Lake-E DMI3 Registers, Memory: 12 x 8192 MB DDR4-2666MT/s Micron 9ASF1G72PZ-2G6B1, Disk: 280GB INTEL SSDPED1D280GA, Graphics: llvmpipe 93GB, Monitor: VE228, Network: 2 x Intel I210 + 2 x QLogic cLOM8214 1/10GbE

OS: Ubuntu 19.04, Kernel: 5.2.0-050200rc7-generic (x86\_64) 20190630, Desktop: GNOME Shell 3.32.1, Display Server: X Server 1.20.4, Display Driver: modesetting 1.20.4, OpenGL: 3.3 Mesa 19.0.2 (LLVM 8.0 256 bits), Compiler: GCC 8.3.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86\_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --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++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --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 --with-tune=generic --without-cuda-driver -v  
Disk Notes: NONE / errors=remount-ro,relatime,rw

Processor Notes: Scaling Governor: intel\_pstate powersave

Java Notes: OpenJDK Runtime Environment (build 11.0.3+7-Ubuntu-1ubuntu219.04.1)

Python Notes: Python 2.7.16 + Python 3.7.3

Security Notes: I1tf: Mitigation of PTE Inversion; VMX: conditional cache flushes SMT vulnerable + mds: Mitigation of Clear buffers; SMT vulnerable + meltdown: Mitigation of PTI + spec\_store\_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre\_v1: Mitigation of \_\_user pointer sanitization + spectre\_v2: Mitigation of Full generic retpoline IBPB: conditional IBRS\_FW STIBP: conditional RSB filling

	EPYC 7601	2 x EPYC 7601	2 x Xeon Gold 6138
<b>BlogBench - Read (Final Score)</b>	1369430	<b>771846</b>	<b>1833240</b>
Normalized	74.7%	42.1%	100%
Standard Deviation	0.6%	2.8%	2.8%
<b>BlogBench - Write (Final Score)</b>	33903	<b>27851</b>	<b>39294</b>
Normalized	86.28%	70.88%	100%
Standard Deviation	6.9%	4.4%	2.2%
<b>RAMspeed SMP - Add - Integer (MB/s)</b>	<b>33298</b>	32580	<b>30295</b>
Normalized	100%	97.84%	90.98%
<b>RAMspeed SMP - Copy - Integer (MB/s)</b>	28912	<b>28291</b>	<b>29922</b>
Normalized	96.62%	94.55%	100%
<b>RAMspeed SMP - Scale - Integer (MB/s)</b>	<b>21866</b>	24748	<b>25900</b>
Normalized	84.42%	95.55%	100%
<b>RAMspeed SMP - Triad - Integer (MB/s)</b>	<b>25947</b>	28057	<b>29602</b>
Normalized	87.65%	94.78%	100%
<b>RAMspeed SMP - Average - Integer (MB/s)</b>	<b>27202</b>	<b>28929</b>	28672
Normalized	94.03%	100%	99.11%
<b>RAMspeed SMP - Add - Floating Point (MB/s)</b>	33712	<b>34281</b>	<b>26271</b>
Normalized	98.34%	100%	76.63%
<b>RAMspeed SMP - Copy - Floating Point</b>	28817	<b>28264</b>	<b>29394</b>
Normalized	98.04%	96.15%	100%
<b>RAMspeed SMP - Scale - Floating Point</b>	23876	<b>25619</b>	<b>22920</b>
Normalized	93.19%	100%	89.47%
<b>RAMspeed SMP - Triad - Floating Point</b>	28422	<b>31143</b>	<b>26284</b>
Normalized	91.26%	100%	84.4%
<b>RAMspeed SMP - Average - Floating Point (MB/s)</b>	28993	<b>29563</b>	<b>26197</b>
Normalized	98.07%	100%	88.61%
<b>Stream - Copy (MB/s)</b>	<b>82400</b>	<b>155703</b>	130546
Normalized	52.92%	100%	83.84%
Standard Deviation	2%	3.7%	1.9%
<b>Stream - Scale (MB/s)</b>	<b>82483</b>	<b>156047</b>	107986
Normalized	52.86%	100%	69.2%
Standard Deviation	2.1%	3.7%	1.7%
<b>Stream - Triad (MB/s)</b>	<b>95158</b>	<b>177809</b>	115004
Normalized	53.52%	100%	64.68%

	Standard Deviation	1.1%	2.7%	1.7%
	<b>Stream - Add (MB/s)</b>	<b>93848</b>	<b>173964</b>	115341
	Normalized	53.95%	100%	66.3%
	Standard Deviation	1.7%	4.3%	1.3%
<b>Tinymembench - Standard Memcpy (MB/s)</b>		<b>7503</b>	<b>8018</b>	<b>6109</b>
	Normalized	93.57%	100%	76.2%
	Standard Deviation	0%	0.1%	0.5%
<b>Tinymembench - Standard Memset (MB/s)</b>		<b>9943</b>	<b>11197</b>	<b>9225</b>
	Normalized	88.8%	100%	82.39%
	Standard Deviation	0.1%	0.2%	0.1%
<b>MBW - Memory Copy - 1024 MiB (MiB/s)</b>		<b>12703</b>	<b>12756</b>	<b>4748</b>
	Normalized	99.59%	100%	37.23%
	Standard Deviation	0%	0%	0.3%
<b>MBW - Memory Copy - 4096 MiB (MiB/s)</b>		<b>12644</b>	12597	<b>4712</b>
	Normalized	100%	99.63%	37.27%
	Standard Deviation	0.4%	0.1%	0.1%
<b>MBW - Memory Copy - 8192 MiB (MiB/s)</b>		<b>12487</b>	<b>12600</b>	<b>4713</b>
	Normalized	99.1%	100%	37.41%
	Standard Deviation	2.6%	0.1%	0.2%
<b>Ethr - TCP - Latency - 1 (us)</b>		<b>25.15</b>	<b>22.80</b>	22.98
	Normalized	90.66%	100%	99.22%
	Standard Deviation	6%	13.2%	8.3%
<b>Ethr - TCP - Latency - 64 (us)</b>		<b>25.21</b>	<b>22.71</b>	23.65
	Normalized	90.08%	100%	96.03%
	Standard Deviation	4.5%	13.1%	9.6%
<b>Ethr - HTTP - Bandwidth - 1 (Mbits/s)</b>		<b>449.76</b>	<b>673.50</b>	<b>401.54</b>
	Normalized	66.78%	100%	59.62%
	Standard Deviation	0.6%	0.8%	1.6%
<b>Ethr - TCP - Bandwidth - 64 (Mbits/s)</b>		<b>201464</b>	220588	<b>270903</b>
	Normalized	74.37%	81.43%	100%
	Standard Deviation	9%	7%	1.2%
<b>GNU MPC - M.P.B (Global Score)</b>		<b>6183</b>	<b>6177</b>	<b>8670</b>
	Normalized	71.31%	71.25%	100%
	Standard Deviation	0.1%	0.1%	0.1%
<b>NAS Parallel Benchmarks - BT.A (Mop/s)</b>		<b>745.31</b>	<b>752.48</b>	<b>665.29</b>
	Normalized	99.05%	100%	88.41%
	Standard Deviation	0.3%	1.3%	0.2%
<b>NAS Parallel Benchmarks - EP.C (Mop/s)</b>		<b>886.13</b>	<b>1681</b>	1479
	Normalized	52.72%	100%	87.99%
	Standard Deviation	0.9%	1.2%	0.2%
<b>NAS Parallel Benchmarks - FT.B (Mop/s)</b>		<b>4707</b>	2806	<b>2773</b>
	Normalized	100%	59.62%	58.91%
	Standard Deviation	1.3%	0.4%	1.2%
<b>NAS Parallel Benchmarks - LU.C (Mop/s)</b>		<b>15163</b>	<b>30679</b>	18233
	Normalized	49.42%	100%	59.43%
	Standard Deviation	0.4%	0.6%	0.9%
<b>NAS Parallel Benchmarks - SP.A (Mop/s)</b>		<b>349.55</b>	<b>358.04</b>	<b>303.40</b>
	Normalized	97.63%	100%	84.74%
	Standard Deviation	0.6%	1.5%	0.5%
<b>Parboil - OpenMP LBM (sec)</b>		<b>36.30</b>	<b>39.35</b>	<b>28.39</b>
	Normalized	78.21%	72.15%	100%
	Standard Deviation	3.8%	7.4%	1.3%
<b>Parboil - OpenMP CUTCP (sec)</b>		<b>1.93</b>	1.92	<b>1.82</b>
	Normalized	94.3%	94.79%	100%
	Standard Deviation	2.8%	23.4%	4.3%

Parboil - OpenMP Stencil (sec)	10.14	10.47	4.48
Normalized	44.18%	42.79%	100%
Standard Deviation	18%	13.7%	9.2%
Parboil - O.M.G (sec)	355.34	521.24	396.58
Normalized	100%	68.17%	89.6%
Standard Deviation	1.2%	0.8%	1.5%
CloverLeaf - L.E.H (sec)	1.38	1.93	0.99
Normalized	71.74%	51.3%	100%
Standard Deviation	18.3%	8.7%	14.4%
CP2K Molecular Dynamics - Fayalite-FIST	886.76	876.25	2075
Data (sec)			
Normalized	98.81%	100%	42.24%
Rodinia - OpenMP LavaMD (sec)	13.26	6.88	11.82
Normalized	51.89%	100%	58.21%
Standard Deviation	2.5%	2.9%	2.4%
Rodinia - OpenMP CFD Solver (sec)	10.61	13.89	10.67
Normalized	100%	76.39%	99.44%
Standard Deviation	1.2%	12.6%	8.3%
Rodinia - O.S (sec)	17.93	22.82	13.24
Normalized	73.84%	58.02%	100%
Standard Deviation	11.2%	11.3%	3.8%
High Performance Conjugate Gradient	0.78	0.61	0.85
(GFLOP/s)			
Normalized	91.76%	71.76%	100%
Standard Deviation	6.5%	13.2%	9.9%
NAMD - ATPase Simulation - 327,506 Atoms	0.90983	0.44954	0.66289
(days/ns)			
Normalized	49.41%	100%	67.82%
Standard Deviation	0.4%	0.3%	0.6%
Izbench - Brotli 0 - Compression (MB/s)	344	339	358
Normalized	96.09%	94.69%	100%
Standard Deviation	0.4%	0.5%	
Izbench - Brotli 0 - Decompression (MB/s)	403	400	486
Normalized	82.92%	82.3%	100%
Standard Deviation	0.9%		
FFTW - Stock - 2D FFT Size 4096 (Mflops)	4408	4448	4535
Normalized	97.21%	98.1%	100%
Standard Deviation	1.1%	1%	0.9%
FFTW - Float + SSE - 2D FFT Size 4096	12878	13332	15702
(Mflops)			
Normalized	82.02%	84.91%	100%
Standard Deviation	1.7%	0.5%	2.9%
Timed MAFFT Alignment - M.S.A (sec)	3.89	3.89	3.99
Normalized	100%	100%	97.49%
Standard Deviation	7.8%	1.5%	1.7%
BLAKE2 (Cycles/Byte)	6.86	6.86	3.13
Normalized	45.63%	45.63%	100%
Standard Deviation	0%	0.1%	3.1%
GNU GMP GMPbench - Total Time	3950	3949	4732
(GMPbench Score)			
Normalized	83.48%	83.47%	100%
Go Benchmarks - json (ns/op)	3248273	6631462	2637947
Normalized	81.21%	39.78%	100%
Standard Deviation	1.9%	17.8%	0.8%

<b>Go Benchmarks - build (ns/op)</b>	<b>22872115062</b>	22029483620	<b>21421326863</b>
Normalized	93.66%	97.24%	100%
Standard Deviation	0.3%	0.5%	0.5%
<b>Go Benchmarks - garbage (ns/op)</b>	874922	<b>1536269</b>	<b>857979</b>
Normalized	98.06%	55.85%	100%
Standard Deviation	0.3%	2.7%	1%
<b>DaCapo Benchmark - H2 (msec)</b>	7861	<b>5759</b>	<b>8690</b>
Normalized	73.26%	100%	66.27%
Standard Deviation	4.1%	6.6%	2.9%
<b>DaCapo Benchmark - Jython (msec)</b>	<b>6527</b>	6466	<b>4682</b>
Normalized	71.73%	72.41%	100%
Standard Deviation	3%	2.3%	0.8%
<b>DaCapo Benchmark - Tradesoap (msec)</b>	<b>7011</b>	<b>7295</b>	7276
Normalized	100%	96.11%	96.36%
Standard Deviation	4.4%	14.2%	2.4%
<b>DaCapo Benchmark - Tradebeans (msec)</b>	10418	<b>7293</b>	<b>12362</b>
Normalized	70%	100%	59%
Standard Deviation		8.7%	2.8%
<b>Renaissance - Scala Doty (ms)</b>	9180	<b>9580</b>	<b>7869</b>
Normalized	85.71%	82.14%	100%
Standard Deviation	4.4%	6.1%	2.9%
<b>Renaissance - Apache Spark ALS (ms)</b>	<b>20594</b>	<b>79190</b>	28973
Normalized	100%	26.01%	71.08%
Standard Deviation	5.8%	13.2%	2.9%
<b>Renaissance - Apache Spark Bayes (ms)</b>	4996	<b>6988</b>	<b>3881</b>
Normalized	77.68%	55.54%	100%
Standard Deviation	9.1%	35.6%	2.3%
<b>Renaissance - Savina Reactors.IO (ms)</b>	<b>27949</b>	<b>44535</b>	29906
Normalized	100%	62.76%	93.46%
Standard Deviation	9.3%	11.4%	11.1%
<b>Renaissance - A.S.P (ms)</b>	28570	<b>35485</b>	<b>25791</b>
Normalized	90.27%	72.68%	100%
Standard Deviation	3.7%	5.6%	2.9%
<b>Renaissance - I.M.D.S (ms)</b>	<b>15231</b>	17583	<b>18103</b>
Normalized	100%	86.62%	84.13%
Standard Deviation	1.9%	3%	2.8%
<b>Renaissance - A.U.C.T (ms)</b>	28683	<b>52477</b>	<b>25619</b>
Normalized	89.32%	48.82%	100%
Standard Deviation	16.7%	6.2%	4.4%
<b>Crafty - Elapsed Time (Nodes/s)</b>	5730607	<b>5688811</b>	<b>7388099</b>
Normalized	77.57%	77%	100%
Standard Deviation	0%	0.4%	0.3%
<b>TSCP - A.C.P (Nodes/s)</b>	858455	<b>855511</b>	<b>1184986</b>
Normalized	72.44%	72.2%	100%
Standard Deviation	0.4%	0.1%	0.3%
<b>John The Ripper - Blowfish (Real C/S)</b>	<b>34913</b>	<b>79257</b>	47493
Normalized	44.05%	100%	59.92%
Standard Deviation	7.7%	11.9%	2.2%
<b>MKL-DNN - D.B.d - f32 (ms)</b>	<b>13.53</b>	12.83	<b>1.51</b>
Normalized	11.16%	11.77%	100%
Standard Deviation	2.9%	2%	1.8%
<b>MKL-DNN - C.B.c - f32 (ms)</b>	<b>307.06</b>	155.25	<b>87.33</b>
Normalized	28.44%	56.25%	100%
Standard Deviation	0.3%	1.7%	2.1%
<b>MKL-DNN - C.B.c - f32 (ms)</b>	<b>130.33</b>	70.35	<b>37.24</b>

	Normalized	28.57%	52.94%	100%
	Standard Deviation	1.1%	1.9%	1.1%
<b>TTSIOD 3D Renderer - P.R.W.S.S.M (FPS)</b>		442.44	<b>359.55</b>	<b>681.98</b>
	Normalized	64.88%	52.72%	100%
	Standard Deviation	0.8%	6.5%	6.7%
<b>SVT-AV1 - 1.8.b.Y.T.A.V.E (FPS)</b>		<b>36.50</b>	38.46	<b>49.87</b>
	Normalized	73.19%	77.12%	100%
	Standard Deviation	1%	2.2%	2.7%
<b>SVT-HEVC - 1.8.b.Y.T.H.V.E (FPS)</b>		183.86	<b>169.39</b>	<b>242.17</b>
	Normalized	75.92%	69.95%	100%
	Standard Deviation	7.5%	11.5%	2.6%
<b>SVT-VP9 - 1.8.b.Y.T.V.V.E (FPS)</b>		<b>84.82</b>	119.19	<b>256.77</b>
	Normalized	33.03%	46.42%	100%
	Standard Deviation	2.9%	9.9%	2.4%
<b>x264 - H.2.V.E (FPS)</b>		<b>106.67</b>	<b>144.18</b>	110.48
	Normalized	73.98%	100%	76.63%
	Standard Deviation	0.9%	1.8%	3.1%
<b>x265 - H.2.1.V.E (FPS)</b>		<b>28.94</b>	<b>35.35</b>	32.23
	Normalized	81.87%	100%	91.17%
	Standard Deviation	0.3%	2.7%	0.5%
<b>dav1d - Summer Nature 4K (sec)</b>		24.87	<b>18.93</b>	<b>25.08</b>
	Normalized	76.12%	100%	75.48%
	Standard Deviation	0.5%	0.5%	0.7%
<b>dav1d - S.N.1 (sec)</b>		10.46	<b>6.51</b>	<b>11.87</b>
	Normalized	62.24%	100%	54.84%
	Standard Deviation	0.3%	1.5%	1%
<b>FLAC Audio Encoding - WAV To FLAC (sec)</b>		11.98	<b>12.04</b>	<b>10.26</b>
	Normalized	85.64%	85.22%	100%
	Standard Deviation	0.1%	0.5%	1.1%
<b>LAME MP3 Encoding - WAV To MP3 (sec)</b>		<b>42.60</b>	42.57	<b>32.11</b>
	Normalized	75.38%	75.43%	100%
	Standard Deviation	0%	0.1%	0%
<b>GraphicsMagick - Rotate (Iterations/min)</b>		194	<b>193</b>	<b>210</b>
	Normalized	92.38%	91.9%	100%
	Standard Deviation			0.6%
<b>GraphicsMagick - Sharpen (Iterations/min)</b>		<b>169</b>	<b>185</b>	176
	Normalized	91.35%	100%	95.14%
	Standard Deviation		1.1%	1.6%
<b>GraphicsMagick - Resizing (Iterations/min)</b>		175	<b>105</b>	<b>190</b>
	Normalized	92.11%	55.26%	100%
	Standard Deviation	0.6%	2.9%	
<b>Himeno Benchmark - P.P.S (MFLOPS)</b>		<b>1006</b>	1007	<b>2608</b>
	Normalized	38.58%	38.59%	100%
	Standard Deviation	0.8%	0.8%	0.6%
<b>7-Zip Compression - C.S.T (MIPS)</b>		<b>92383</b>	127249	<b>141041</b>
	Normalized	65.5%	90.22%	100%
	Standard Deviation	2.9%	2.8%	2.8%
<b>Stockfish - Total Time (Nodes/s)</b>		<b>57936541</b>	<b>102301133</b>	68022563
	Normalized	56.63%	100%	66.49%
	Standard Deviation	1%	1.2%	1.8%
<b>asmFish - 1.H.M.2.D (Nodes/s)</b>		<b>60634974</b>	<b>113855728</b>	75582903
	Normalized	53.26%	100%	66.38%
	Standard Deviation	0.3%	1.7%	0.7%
<b>Swet - Average (Operations/sec)</b>		<b>526861900</b>	529091501	<b>629008824</b>
	Normalized	83.76%	84.12%	100%

	Standard Deviation	3%	2.9%	1.1%
	<b>ebizzy (Records/s)</b>	1148798	<b>1726967</b>	<b>982979</b>
	Normalized	66.52%	100%	56.92%
	Standard Deviation	2.9%	5.6%	4.2%
<b>Timed GCC Compilation - Time To Compile (sec)</b>		1002	<b>793.83</b>	<b>1040</b>
	Normalized	79.22%	100%	76.35%
	Standard Deviation	0.1%	0%	0.2%
<b>Timed Linux Kernel Compilation - Time To Compile (sec)</b>		<b>36.93</b>	<b>23.60</b>	32.03
	Normalized	63.9%	100%	73.68%
	Standard Deviation	3.2%	3.4%	4.3%
<b>Timed PHP Compilation - Time To Compile (sec)</b>		<b>62.21</b>	59.42	<b>53.70</b>
	Normalized	86.32%	90.37%	100%
	Standard Deviation	0.5%	0.4%	0.9%
<b>Timed LLVM Compilation - Time To Compile (sec)</b>		<b>194.56</b>	<b>134.26</b>	154.44
	Normalized	69.01%	100%	86.93%
<b>C-Ray - Total Time - 4.1.R.P.P (sec)</b>		24.43	<b>12.36</b>	<b>27.16</b>
	Normalized	50.59%	100%	45.51%
	Standard Deviation	0.7%	0.4%	7.8%
<b>Primesieve - 1.P.N.G (sec)</b>		<b>10.47</b>	<b>5.28</b>	8.41
	Normalized	50.43%	100%	62.78%
	Standard Deviation	0.2%	1.2%	0.8%
<b>Rust Mandelbrot - T.T.C.S.P.M (sec)</b>		<b>48.79</b>	<b>47.09</b>	48.13
	Normalized	96.52%	100%	97.84%
	Standard Deviation	0.1%	0.4%	0.4%
<b>Rust Prime Benchmark - P.N.T.T.2.0.0 (sec)</b>		<b>15.68</b>	8.23	<b>4.47</b>
	Normalized	28.51%	54.31%	100%
	Standard Deviation	0.6%	2.8%	0.7%
<b>XZ Compression - C.u.1.0.3.s.i.i.C.L.9 (sec)</b>		<b>26.89</b>	25.37	<b>23.31</b>
	Normalized	86.69%	91.88%	100%
	Standard Deviation	1.8%	1.2%	2.9%
<b>Zstd Compression - C.u.1.0.3.s.i.i.C.L.1 (sec)</b>		14.21	<b>14.43</b>	<b>10.96</b>
	Normalized	77.13%	75.95%	100%
	Standard Deviation	6.5%	4.5%	2.1%
<b>Cython benchmark (sec)</b>		<b>32.96</b>	<b>33.04</b>	
	Normalized	100%	99.76%	
	Standard Deviation	1.4%	0.6%	
<b>Hackbench - 32 - Process (sec)</b>		50.19	<b>43.29</b>	<b>57.62</b>
	Normalized	86.25%	100%	75.13%
	Standard Deviation	0.3%	2.2%	4.7%
<b>m-queens - Time To Solve (sec)</b>		27.61	<b>13.61</b>	<b>28.15</b>
	Normalized	49.29%	100%	48.35%
	Standard Deviation	1.8%	0.5%	0.2%
<b>Radiance Benchmark - Serial (sec)</b>		<b>962.67</b>	959.18	<b>764.17</b>
	Normalized	79.38%	79.67%	100%
<b>Radiance Benchmark - SMP Parallel (sec)</b>		<b>296.88</b>	290.80	<b>234.41</b>
	Normalized	78.96%	80.61%	100%
<b>R Benchmark (sec)</b>		<b>0.4225</b>	<b>0.4327</b>	
	Normalized	100%	97.64%	
	Standard Deviation	0.5%	2.8%	
<b>Tachyon - Total Time (sec)</b>		<b>2.42</b>	<b>1.45</b>	2.15

	Normalized	59.92%	100%	67.44%
	Standard Deviation	0.4%	5.2%	2.4%
<b>OpenSSL - R.4.b.P (Signs/sec)</b>		<b>4568</b>	<b>9202</b>	7815
	Normalized	49.64%	100%	84.94%
	Standard Deviation	0.6%	0.3%	0.7%
<b>glibc bench - cos (nanoseconds)</b>		62.63	<b>62.70</b>	<b>53.27</b>
	Normalized	85.06%	84.96%	100%
	Standard Deviation	0%	0.2%	0.1%
<b>glibc bench - sin (nanoseconds)</b>		<b>62.06</b>	<b>62.06</b>	<b>53.14</b>
	Normalized	85.63%	85.63%	100%
	Standard Deviation	0%	0%	0.3%
<b>glibc bench - sqrt (nanoseconds)</b>		2.74	<b>2.86</b>	<b>2.33</b>
	Normalized	85.04%	81.47%	100%
	Standard Deviation	0.1%	5.6%	0.2%
<b>glibc bench - pthread_once (nanoseconds)</b>		<b>2.42</b>	<b>2.42</b>	<b>2.09</b>
	Normalized	86.36%	86.36%	100%
	Standard Deviation	0%	0.1%	0.2%
<b>Core-Latency - A.L.B.C.C (ns)</b>		690.39	<b>961.19</b>	<b>308.77</b>
	Normalized	44.72%	32.12%	100%
<b>Multichase Pointer Chaser - 2.A.2.B.S (ns)</b>		80.72	<b>87.73</b>	<b>72.13</b>
	Normalized	89.36%	82.22%	100%
	Standard Deviation	0.1%	0.1%	0.8%
<b>Multichase Pointer Chaser - 1.A.2.B.S.4.T</b>		90.98	<b>180.13</b>	<b>85.09</b>
	Normalized	93.53%	47.24%	100%
	Standard Deviation	0.1%	0.3%	0.1%
<b>libjpeg-turbo tjbench - D.T (Megapixels/sec)</b>		135.13	<b>134.35</b>	<b>175.35</b>
	Normalized	77.06%	76.62%	100%
	Standard Deviation	0.1%	0.7%	0.7%
<b>GROMACS - Water Benchmark (Ns/Day)</b>		2.19		
	Standard Deviation	0.7%		
<b>MariaDB - 64 (Queries/sec)</b>		630	<b>525</b>	<b>928</b>
	Normalized	67.89%	56.57%	100%
	Standard Deviation	0.3%	2%	0.3%
<b>MariaDB - 128 (Queries/sec)</b>		262	<b>195</b>	<b>336</b>
	Normalized	77.98%	58.04%	100%
	Standard Deviation	0.1%	0.7%	0.2%
<b>MariaDB - 256 (Queries/sec)</b>		213	<b>156</b>	<b>272</b>
	Normalized	78.31%	57.35%	100%
	Standard Deviation	0.3%	1.5%	0.3%
<b>Tensorflow - Cifar10 (sec)</b>		35.62	<b>49.71</b>	<b>33.36</b>
	Normalized	93.66%	67.11%	100%
	Standard Deviation	2.9%	7.1%	2.3%
<b>PostgreSQL pgbench - Buffer Test - Normal</b>		<b>392286</b>	528142	<b>534530</b>
<b>Load - Read Only (TPS)</b>				
	Normalized	73.39%	98.8%	100%
	Standard Deviation	1%	2.8%	0.6%
<b>PostgreSQL pgbench - Buffer Test - Normal</b>		34809	<b>17722</b>	<b>40829</b>
<b>Load - Read Write (TPS)</b>				
	Normalized	85.25%	43.41%	100%
	Standard Deviation	0.3%	10.6%	1.8%
<b>CppPerformanceBenchmarks - Math Library</b>		<b>403.93</b>	402.51	<b>356.52</b>
<b>(sec)</b>				
	Normalized	88.26%	88.57%	100%
	Standard Deviation	0.4%	0.1%	0.1%

<b>CppPerformanceBenchmarks - Rand Numbers (sec)</b>	1761	<b>1769</b>	<b>1340</b>
Normalized	76.12%	75.77%	100%
Standard Deviation	0.8%	0.8%	0.1%
<b>CppPerformanceBenchmarks - Function Objects (sec)</b>	20.17	<b>20.19</b>	<b>15.84</b>
Normalized	78.53%	78.45%	100%
Standard Deviation	0.1%	0.2%	0%
<b>Darktable - Boat - CPU-only (sec)</b>	8.46	<b>9.52</b>	<b>4.98</b>
Normalized	58.87%	52.31%	100%
Standard Deviation	23.1%	33.8%	0.2%
<b>Darktable - Masskrug - CPU-only (sec)</b>	5.65	<b>6.81</b>	<b>4.90</b>
Normalized	86.73%	71.95%	100%
Standard Deviation	1.8%	2.8%	11%
<b>Darktable - Server Rack - CPU-only (sec)</b>	0.14	<b>0.15</b>	<b>0.11</b>
Normalized	78.57%	73.33%	100%
Standard Deviation	9.1%	4.8%	2.4%
<b>Darktable - Server Room - CPU-only (sec)</b>	2.55	<b>4.57</b>	<b>2.22</b>
Normalized	87.06%	48.58%	100%
Standard Deviation	10%	26.5%	2.3%
<b>GIMP - resize (sec)</b>	13.71	<b>13.07</b>	<b>13.76</b>
Normalized	95.33%	100%	94.99%
Standard Deviation	0.7%	3.1%	1%
<b>GIMP - rotate (sec)</b>	19.26	<b>18.00</b>	<b>20.15</b>
Normalized	93.46%	100%	89.33%
Standard Deviation	0.5%	1%	0.2%
<b>GIMP - auto-levels (sec)</b>	27.99	<b>30.64</b>	<b>27.78</b>
Normalized	99.25%	90.67%	100%
Standard Deviation	0.6%	2.5%	1.6%
<b>GIMP - unsharp-mask (sec)</b>	33.83	<b>39.76</b>	<b>33.31</b>
Normalized	98.46%	83.78%	100%
Standard Deviation	0.1%	1%	0.2%
<b>Redis - GET (Reqs/sec)</b>	<b>1889306</b>	1914070	<b>2246579</b>
Normalized	84.1%	85.2%	100%
Standard Deviation	1%	2.5%	7.2%
<b>Redis - SET (Reqs/sec)</b>	<b>1315814</b>	1323946	<b>1656603</b>
Normalized	79.43%	79.92%	100%
Standard Deviation	0.5%	0.5%	9%
<b>Stress-NG - Crypto (Bogo Ops/s)</b>	<b>5878</b>	<b>11949</b>	6177
Normalized	49.19%	100%	51.7%
Standard Deviation	1%	0.2%	2.4%
<b>Stress-NG - CPU Stress (Bogo Ops/s)</b>	<b>7695</b>	<b>15557</b>	12902
Normalized	49.46%	100%	82.93%
Standard Deviation	0.3%	0.3%	0.9%
<b>Stress-NG - Memory Copying (Bogo Ops/s)</b>	3897	<b>2290</b>	<b>7169</b>
Normalized	54.35%	31.94%	100%
Standard Deviation	2.4%	5.2%	1.4%
<b>Stress-NG - Socket Activity (Bogo Ops/s)</b>	18893	<b>29609</b>	<b>18440</b>
Normalized	63.81%	100%	62.28%
Standard Deviation	1.8%	1.5%	4%
<b>Stress-NG - Context Switching (Bogo Ops/s)</b>	<b>14026177</b>	<b>34894438</b>	20269094
Normalized	40.2%	100%	58.09%
Standard Deviation	11.9%	7.4%	10.8%
<b>ctx_clock - C.S.T (Clocks)</b>	<b>154</b>	<b>154</b>	<b>593</b>
Normalized	100%	100%	25.97%

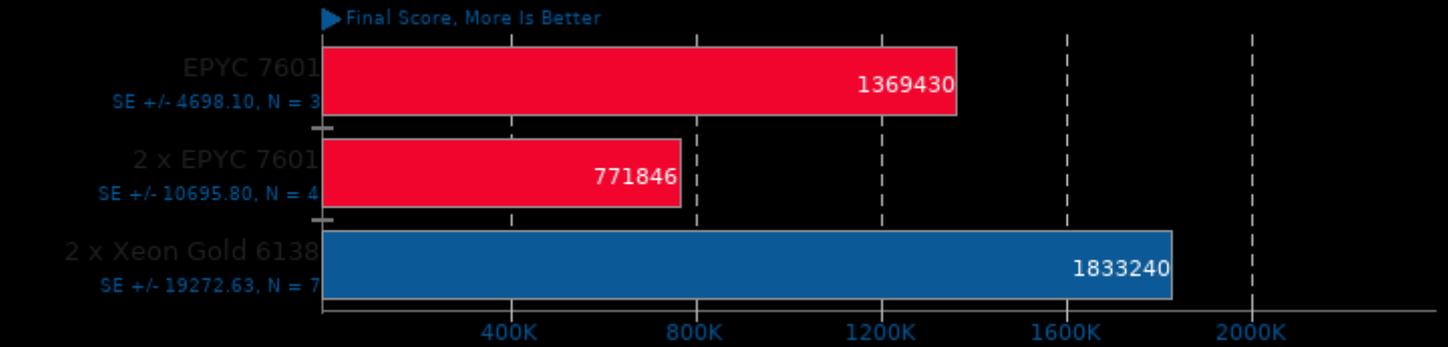
	Standard Deviation		1.1%
<b>Sysbench - Memory (Events/sec)</b>	5964329	<b>4190370</b>	<b>11962821</b>
	Normalized	49.86%	35.03%
	Standard Deviation	0%	1.1%
<b>Sysbench - CPU (Events/sec)</b>	<b>44743</b>	<b>88739</b>	53920
	Normalized	50.42%	100%
	Standard Deviation	0.4%	0.1%
<b>Chaos Group V-RAY - CPU (Ksamples)</b>	<b>24444</b>	<b>40823</b>	38944
	Normalized	59.88%	100%
	Standard Deviation	3.8%	0.8%
<b>Blender - BMW27 - CPU-Only (sec)</b>	<b>101.55</b>	<b>58.16</b>	78.79
	Normalized	57.27%	100%
<b>Blender - Classroom - CPU-Only (sec)</b>	<b>201.69</b>	<b>99.07</b>	164.28
	Normalized	49.12%	100%
<b>Blender - Fishy Cat - CPU-Only (sec)</b>	<b>140.15</b>	<b>82.78</b>	118.31
	Normalized	59.07%	100%
<b>Blender - Barbershop - CPU-Only (sec)</b>	<b>504.82</b>	<b>303.65</b>	377.94
	Normalized	60.15%	100%
<b>Blender - Pabellon Barcelona - CPU-Only</b>	<b>263.79</b>	<b>140.83</b>	204.85
	Normalized	53.39%	100%
<b>Appleseed - Emily (sec)</b>	232.70	<b>238.78</b>	<b>193.99</b>
	Normalized	83.36%	81.24%
<b>Appleseed - Disney Material (sec)</b>	<b>107.25</b>	<b>69.87</b>	98.71
	Normalized	65.15%	100%
<b>Appleseed - Material Tester (sec)</b>	254.46	<b>422.10</b>	<b>222.49</b>
	Normalized	87.44%	52.71%
<b>Sunflow Rendering System - G.I.I.S (sec)</b>	1.03	<b>1.27</b>	<b>0.98</b>
	Normalized	95.15%	77.17%
<b>Memcached mcperf - Get (Operations/sec)</b>	<b>47686</b>	58297	<b>94266</b>
	Normalized	50.59%	61.84%
<b>Memcached mcperf - Set (Operations/sec)</b>	<b>24710</b>	29379	<b>51191</b>
	Normalized	48.27%	57.39%
<b>PyBench - T.F.A.T.T (Milliseconds)</b>	1468	<b>1476</b>	<b>1087</b>
	Normalized	74.05%	73.64%
<b>Numenta Anomaly Benchmark - Time To Completion (sec)</b>	<b>179.59</b>	158.15	<b>142.47</b>
	Normalized	79.33%	90.09%
<b>Hierarchical INTegration - FLOAT (QUIPs)</b>	<b>261826549</b>	261914011	<b>366058356</b>
	Normalized	71.53%	71.55%
<b>Hierarchical INTegration - DOUBLE (QUIPs)</b>	655020033	<b>641155931</b>	<b>830288962</b>
	Normalized	78.89%	77.22%
<b>Apache Benchmark - S.W.P.S (Reqs/sec)</b>	16320	<b>15363</b>	<b>20124</b>
	Normalized	81.1%	76.34%
<b>Apache Siege - 200 (Transactions/sec)</b>	24772		
	Standard Deviation	2.1%	4%
<b>Apache Siege - 250 (Transactions/sec)</b>	24522	<b>22645</b>	<b>29047</b>
	Standard Deviation	3%	

	Normalized	84.42%	77.96%	100%
	Standard Deviation	2.9%	0.7%	1.3%
<b>Geekbench - Multi Core (Score)</b>		<b>62198</b>		<b>77051</b>
	Normalized	80.72%		100%
	Standard Deviation	1.4%		2.2%
<b>Geekbench - Single Core (Score)</b>		<b>4072</b>		<b>4774</b>
	Normalized	85.3%		100%
	Standard Deviation	0.1%		0.2%
<b>Novabench - CPU (CPU Score)</b>		3131		3131
	Standard Deviation	0.4%		0.4%
<b>Novabench - RAM (RAM Score)</b>		<b>403</b>		<b>306</b>
	Normalized	100%		75.93%
	Standard Deviation	0.3%		
<b>Novabench - RAM (MB/s)</b>		<b>29178</b>		<b>6714</b>
	Normalized	100%		23.01%
	Standard Deviation	1.1%		1.8%
<b>PHPBench - P.B.S (Score)</b>		<b>395885</b>	398029	<b>598152</b>
	Normalized	66.18%	66.54%	100%
	Standard Deviation	0.4%	0.4%	0.5%
<b>Scikit-Learn (sec)</b>		12.46	<b>12.72</b>	<b>12.30</b>
	Normalized	98.72%	96.7%	100%
	Standard Deviation	0.4%	1.5%	0.7%
<b>Tesseract OCR - T.T.O.7.I (sec)</b>		42.35	<b>43.87</b>	<b>33.94</b>
	Normalized	80.14%	77.36%	100%
	Standard Deviation	0.3%	1.7%	0.4%
<b>BRL-CAD - V.P.M (VGR Performance Metric)</b>		240531	<b>439883</b>	<b>235190</b>
	Normalized	54.68%	100%	53.47%
<b>SPECjbb 2015 - S.C.m.j (jOPS)</b>		<b>44883</b>	<b>66011</b>	60333
	Normalized	67.99%	100%	91.4%
<b>SPECjbb 2015 - S.C.c.j (jOPS)</b>		<b>22827</b>	27884	<b>33914</b>
	Normalized	67.31%	82.22%	100%
<b>LeelaChessZero - BLAS (Nodes/s)</b>		143.43		
	Standard Deviation	4.8%		
<b>Numpy Benchmark (Nanoseconds)</b>		<b>8538380</b>	8438360	<b>5641839</b>
	Normalized	66.08%	66.86%	100%
<b>POV-Ray - Trace Time (sec)</b>		<b>22.33</b>	<b>12.74</b>	19.60
	Normalized	57.05%	100%	65%
	Standard Deviation	0.2%	0.8%	1.1%
<b>Smallpt - G.I.R.1.S (sec)</b>		<b>4.70</b>	<b>2.52</b>	4.03
	Normalized	53.62%	100%	62.53%
	Standard Deviation	0.4%	2.6%	1.2%
<b>Node.js Octane Benchmark (Score)</b>		31047	<b>30184</b>	<b>39327</b>
	Normalized	78.95%	76.75%	100%
	Standard Deviation	0.3%	1.6%	1.5%
<b>Minion - Graceful (sec)</b>		<b>56.78</b>	56.77	<b>55.68</b>
	Normalized	98.06%	98.08%	100%
	Standard Deviation	0.1%	0%	1.4%
<b>Minion - Solitaire (sec)</b>		<b>93.39</b>	92.30	<b>77.37</b>
	Normalized	82.85%	83.82%	100%
	Standard Deviation	0.3%	0.9%	0.6%
<b>Minion - Quasigroup (sec)</b>		<b>145.62</b>	145.22	<b>119.16</b>
	Normalized	81.83%	82.05%	100%
	Standard Deviation	0.7%	0.9%	0.3%
<b>OpenCV Benchmark (sec)</b>		110.84	<b>120.08</b>	<b>107.19</b>
	Normalized	96.71%	89.27%	100%

	Standard Deviation	0.1%	0.5%	1.5%
<b>Cpuminer-Opt - m7m (kH/s - Hash Speed)</b>		865.60	<b>1869</b>	<b>853.64</b>
	Normalized	46.32%	100%	45.68%
	Standard Deviation	0.8%	2.4%	1.4%
<b>Cpuminer-Opt - deep (kH/s - Hash Speed)</b>		<b>13250</b>	<b>26480</b>	19313
	Normalized	50.04%	100%	72.93%
	Standard Deviation			9.7%
<b>Cpuminer-Opt - lbry (kH/s - Hash Speed)</b>		<b>32187</b>	64547	<b>78557</b>
	Normalized	40.97%	82.17%	100%
	Standard Deviation	0%	0.4%	0.6%
<b>Cpuminer-Opt - skein (kH/s - Hash Speed)</b>		<b>54229</b>	<b>105070</b>	92540
	Normalized	51.61%	100%	88.07%
	Standard Deviation	6.6%	0.8%	0.5%
<b>Cpuminer-Opt - myr-gr (kH/s - Hash Speed)</b>		<b>7987</b>	6321	<b>5632</b>
	Normalized	100%	79.14%	70.51%
	Standard Deviation	1.2%	0.3%	96.7%
<b>Cpuminer-Opt - sha256t (kH/s - Hash Speed)</b>		<b>79757</b>	152823	<b>181077</b>
	Normalized	44.05%	84.4%	100%
	Standard Deviation	0.1%	23.4%	0.1%

## BlogBench 1.1

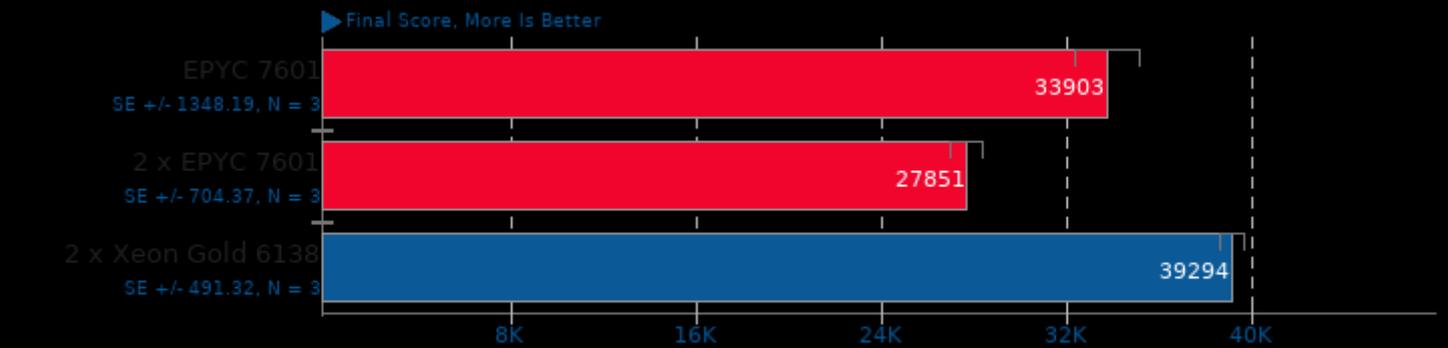
Test: Read



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

## BlogBench 1.1

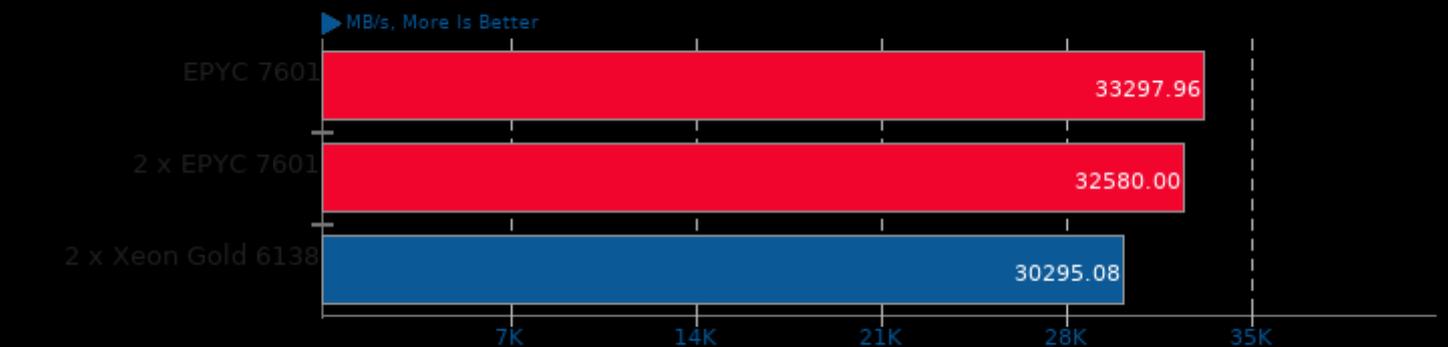
Test: Write



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

## RAMspeed SMP 3.5.0

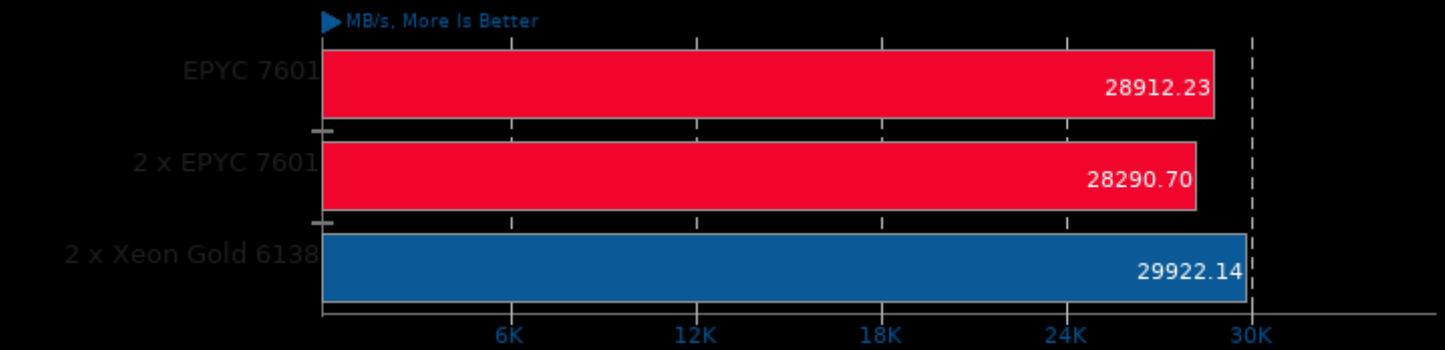
Type: Add - Benchmark: Integer



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

## RAMspeed SMP 3.5.0

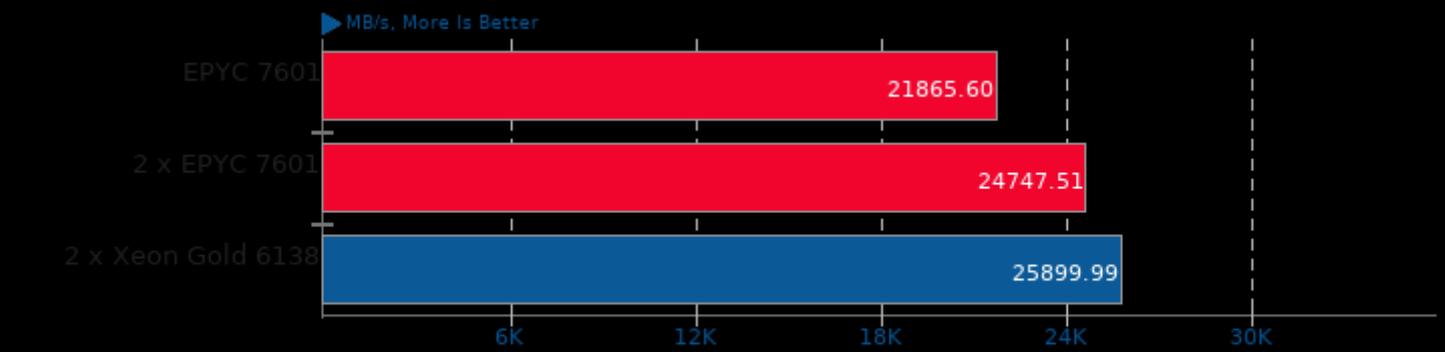
Type: Copy - Benchmark: Integer



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

## RAMspeed SMP 3.5.0

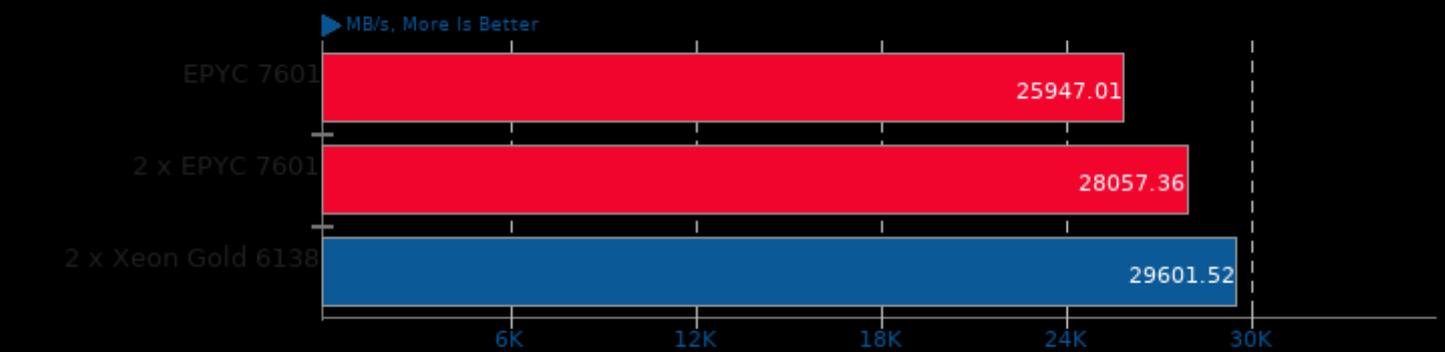
Type: Scale - Benchmark: Integer



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

## RAMspeed SMP 3.5.0

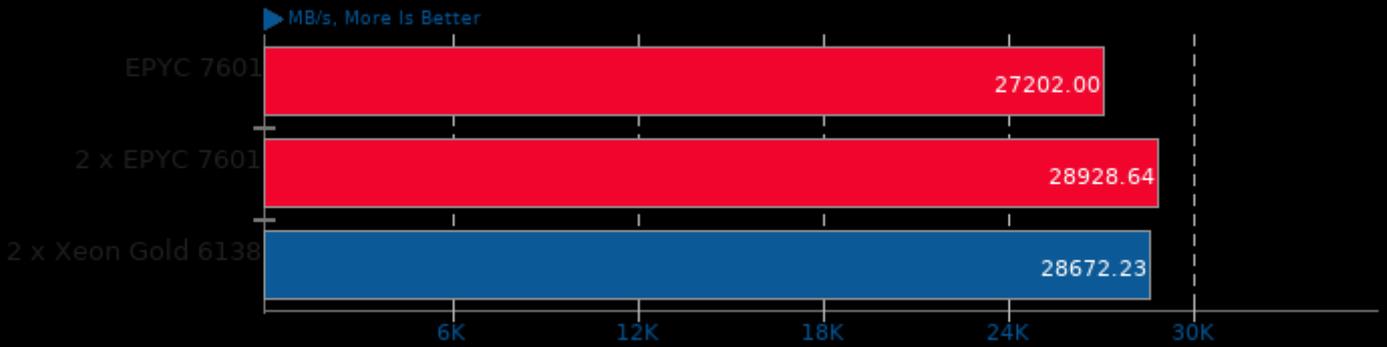
Type: Triad - Benchmark: Integer



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

## RAMspeed SMP 3.5.0

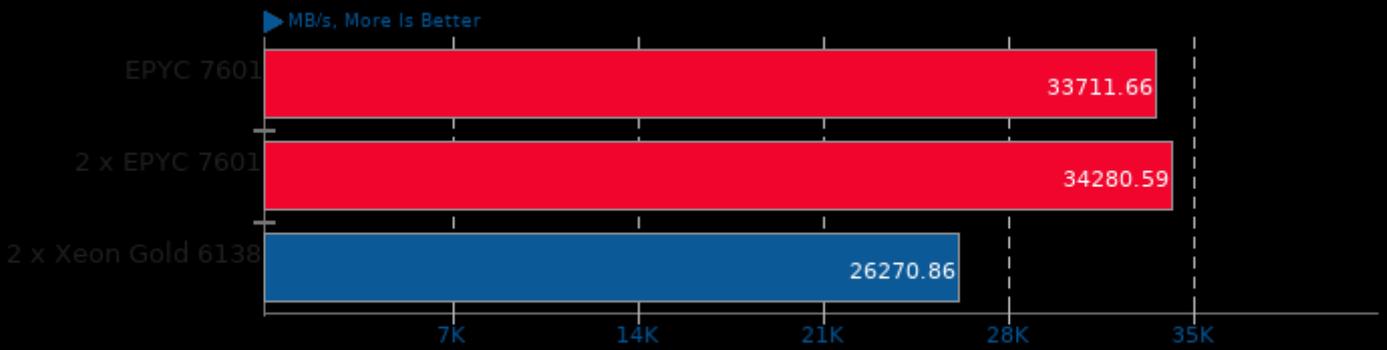
Type: Average - Benchmark: Integer



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

## RAMspeed SMP 3.5.0

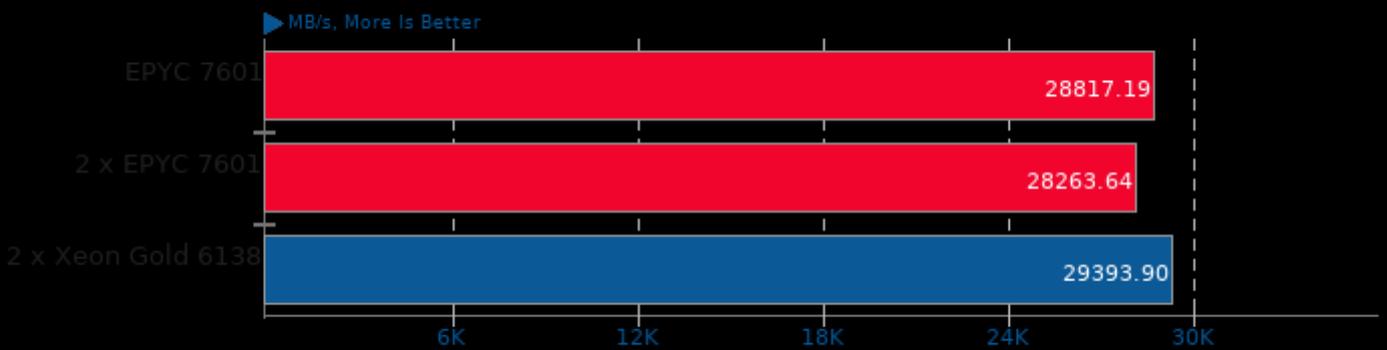
Type: Add - Benchmark: Floating Point



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

## RAMspeed SMP 3.5.0

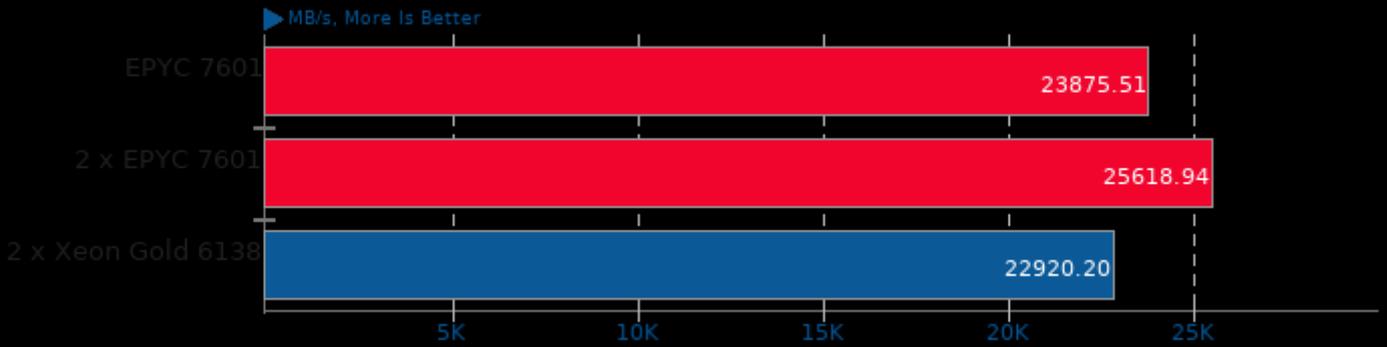
Type: Copy - Benchmark: Floating Point



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

## RAMspeed SMP 3.5.0

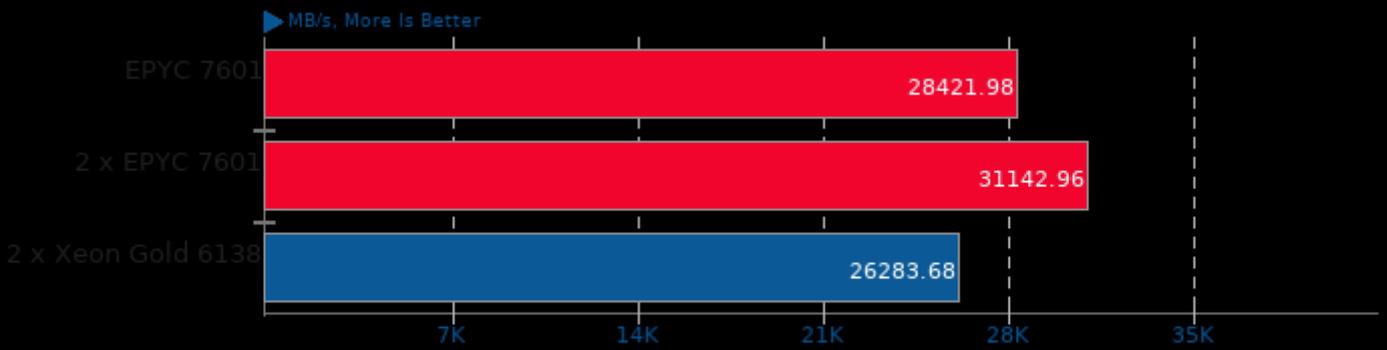
Type: Scale - Benchmark: Floating Point



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

## RAMspeed SMP 3.5.0

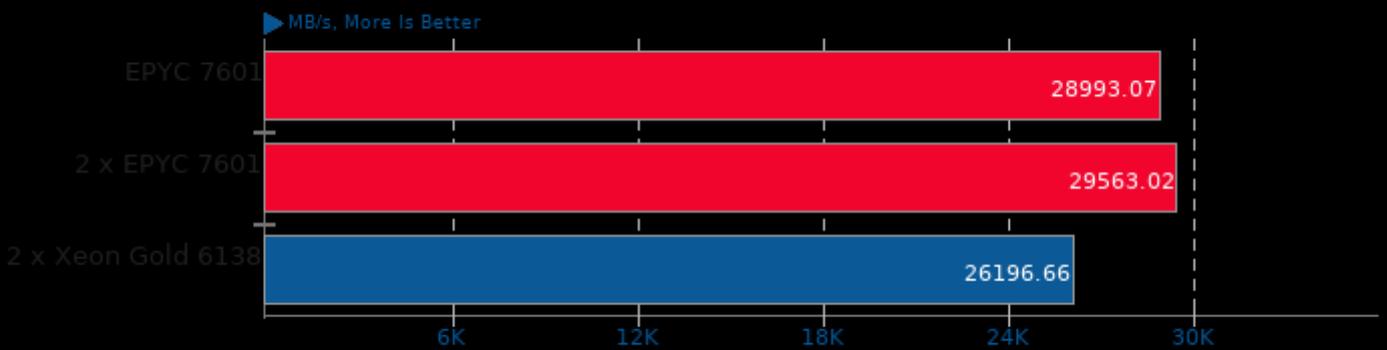
Type: Triad - Benchmark: Floating Point



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

## RAMspeed SMP 3.5.0

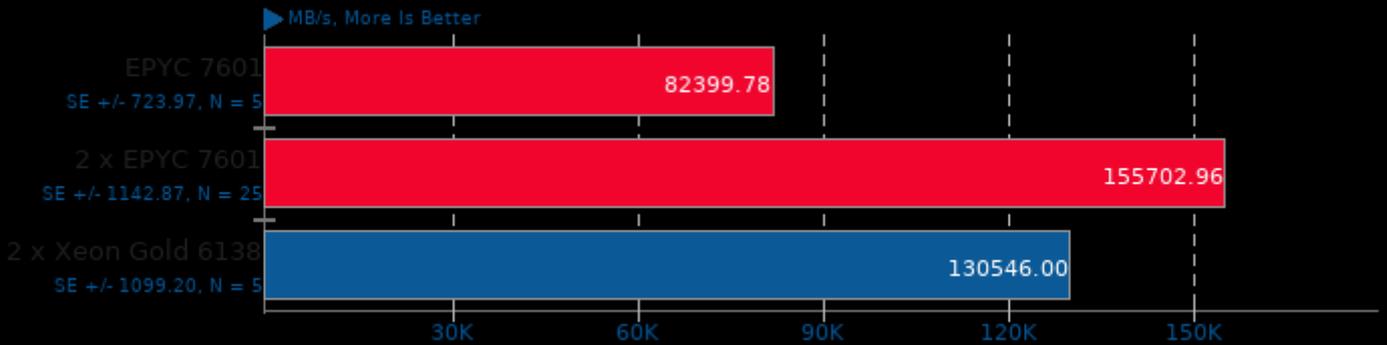
Type: Average - Benchmark: Floating Point



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

## Stream 2013-01-17

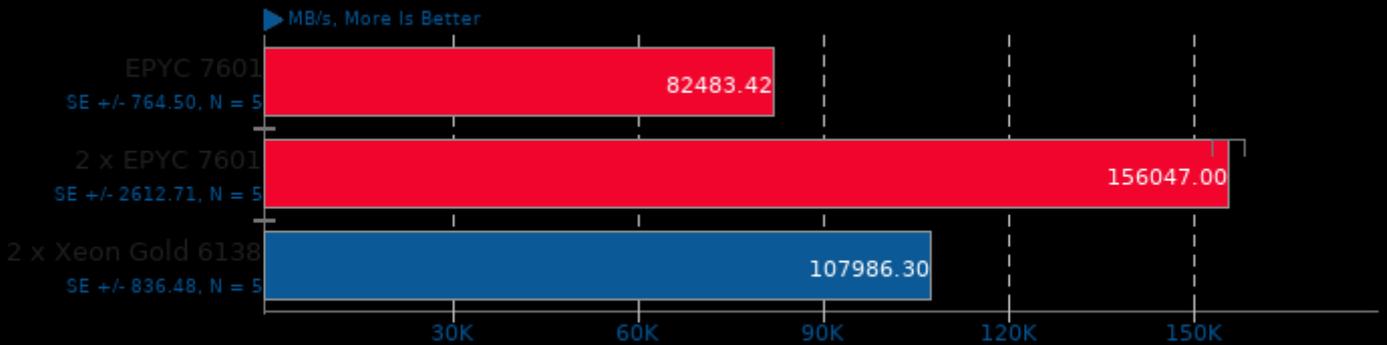
Type: Copy



1. (CC) gcc options: -O3 -march=native -fopenmp

## Stream 2013-01-17

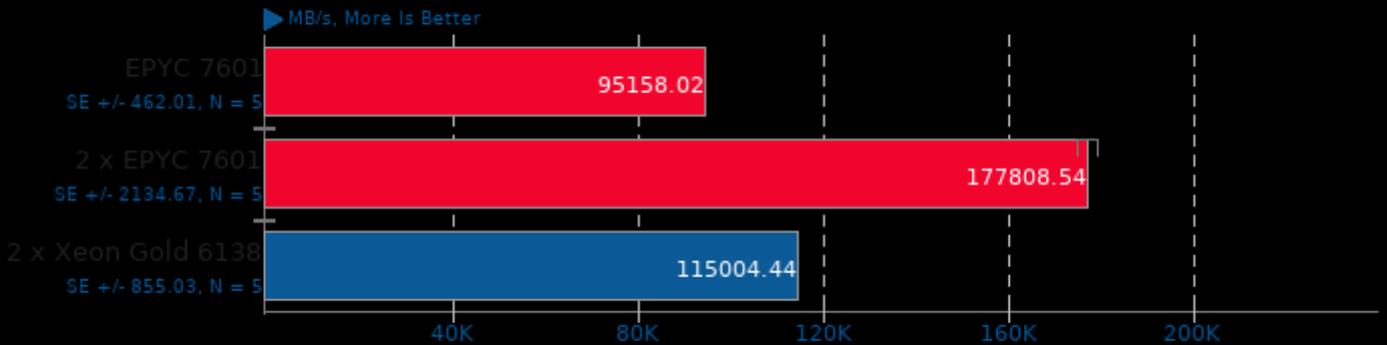
Type: Scale



1. (CC) gcc options: -O3 -march=native -fopenmp

## Stream 2013-01-17

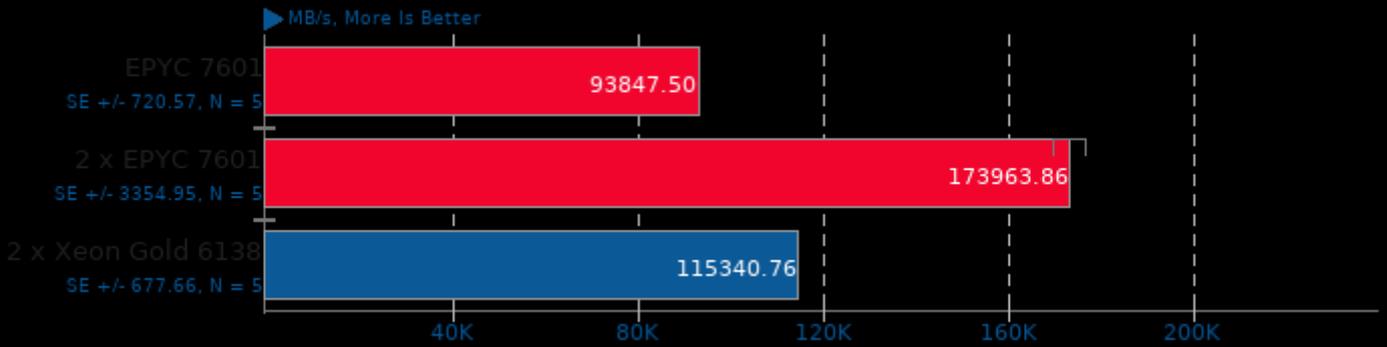
Type: Triad



1. (CC) gcc options: -O3 -march=native -fopenmp

### Stream 2013-01-17

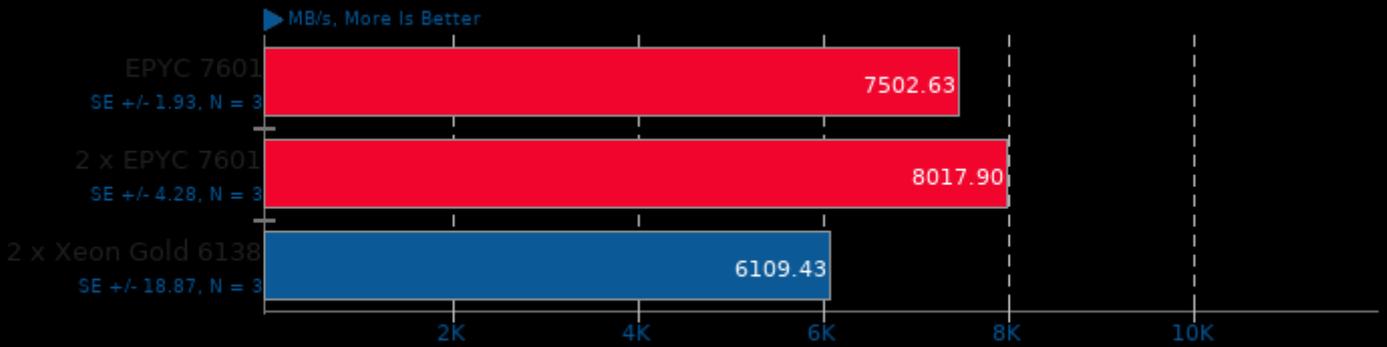
Type: Add



1. (CC) gcc options: -O3 -march=native -fopenmp

### Tinymembench 2018-05-28

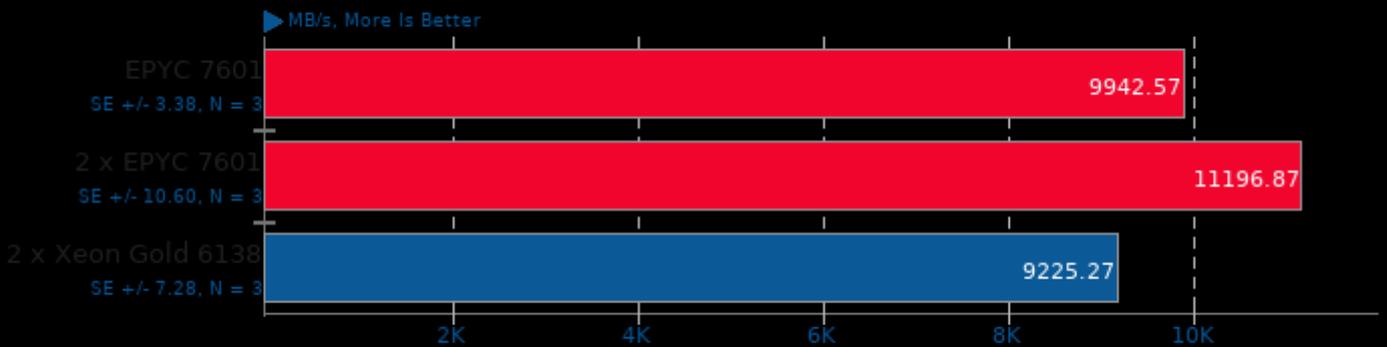
Standard Memcpy



1. (CC) gcc options: -O2 -lm

### Tinymembench 2018-05-28

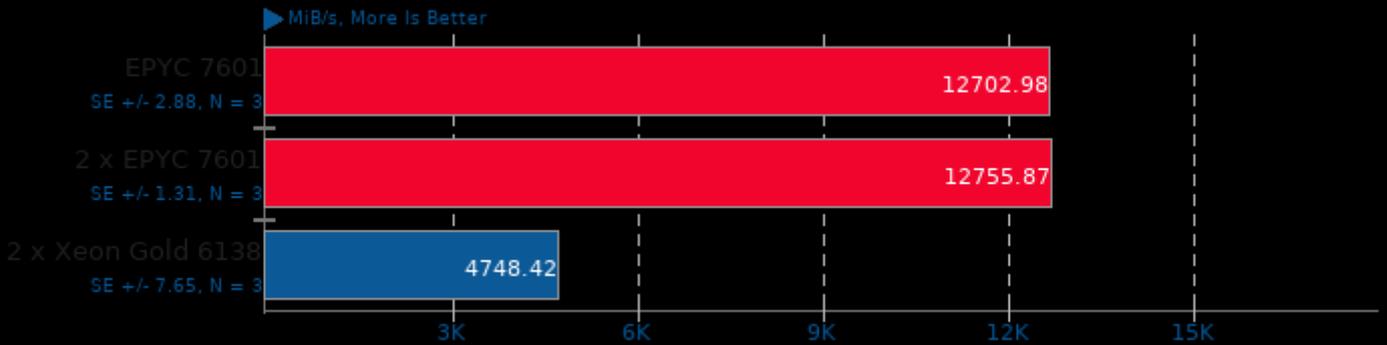
Standard Memset



1. (CC) gcc options: -O2 -lm

## MBW 2018-09-08

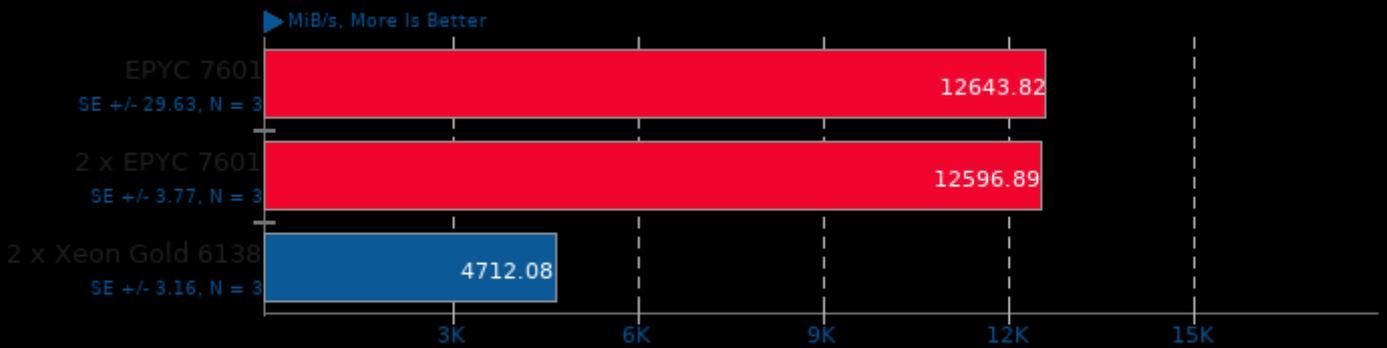
Test: Memory Copy - Array Size: 1024 MiB



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

## MBW 2018-09-08

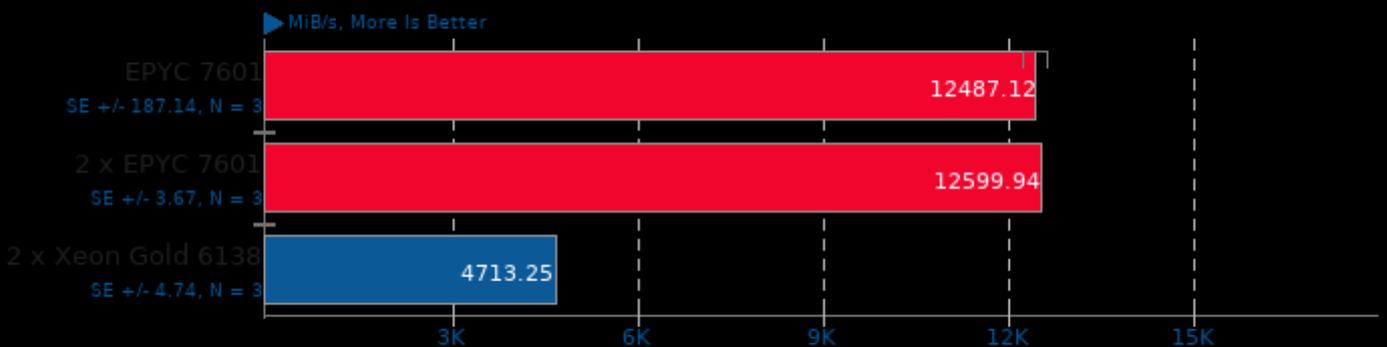
Test: Memory Copy - Array Size: 4096 MiB



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

## MBW 2018-09-08

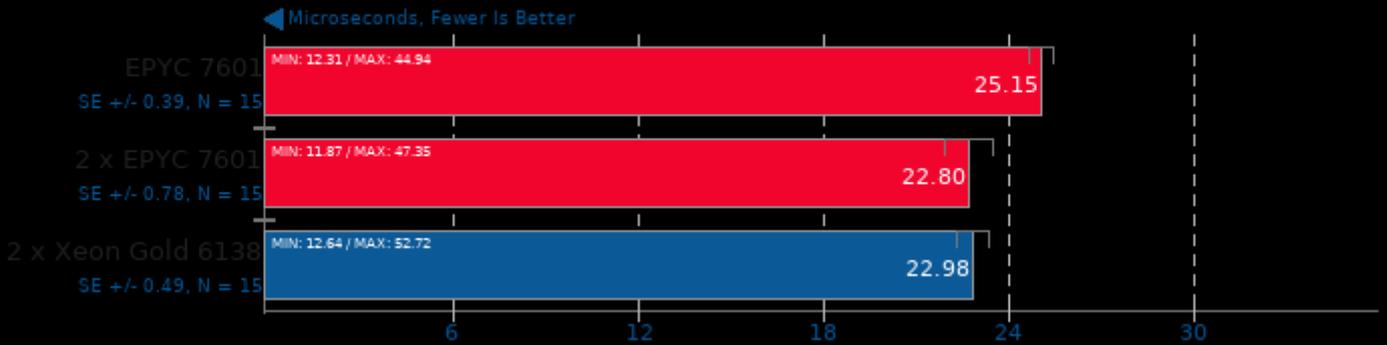
Test: Memory Copy - Array Size: 8192 MiB



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

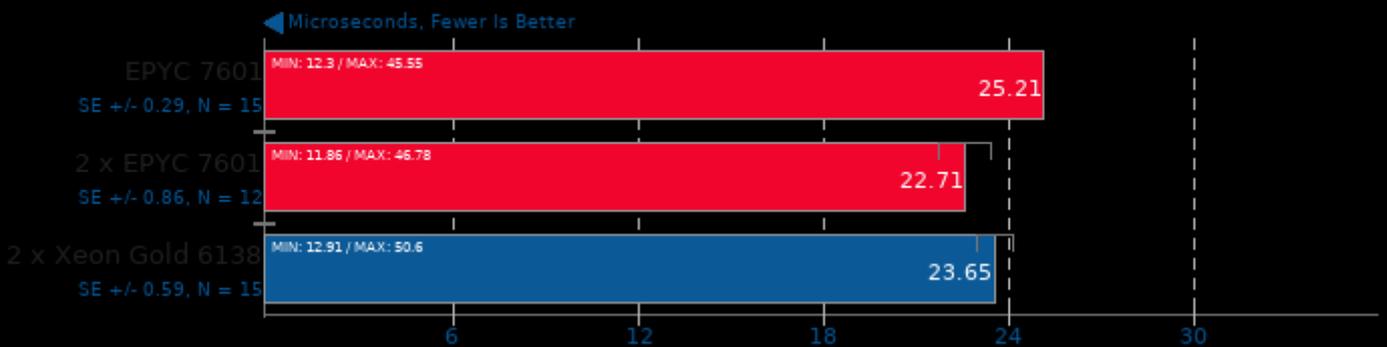
Ethr 2019-01-02

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



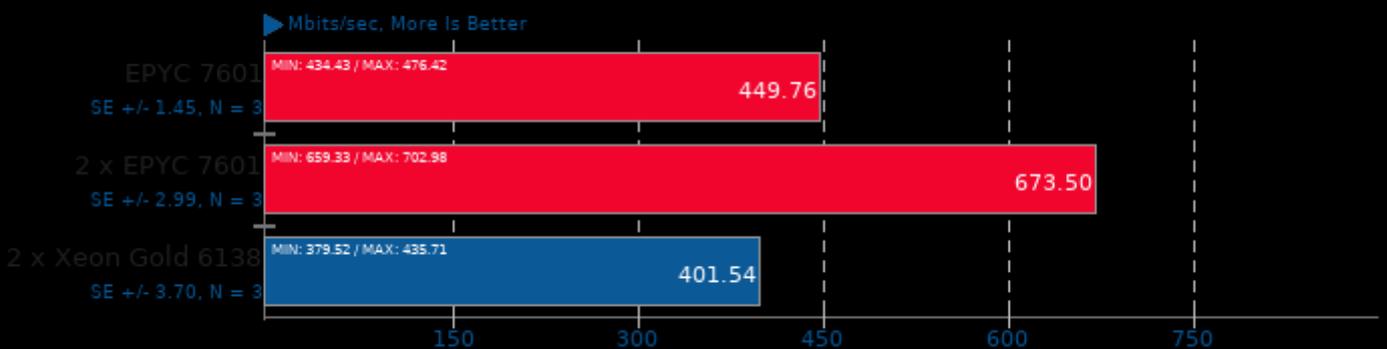
Ethr 2019-01-02

Server Address: localhost - Protocol: TCP - Test: Latency - Threads: 64



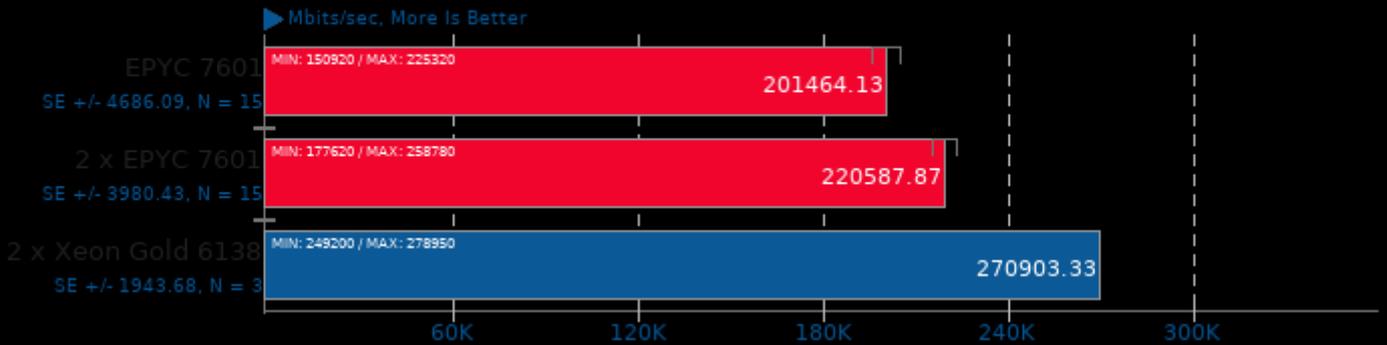
Ethr 2019-01-02

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



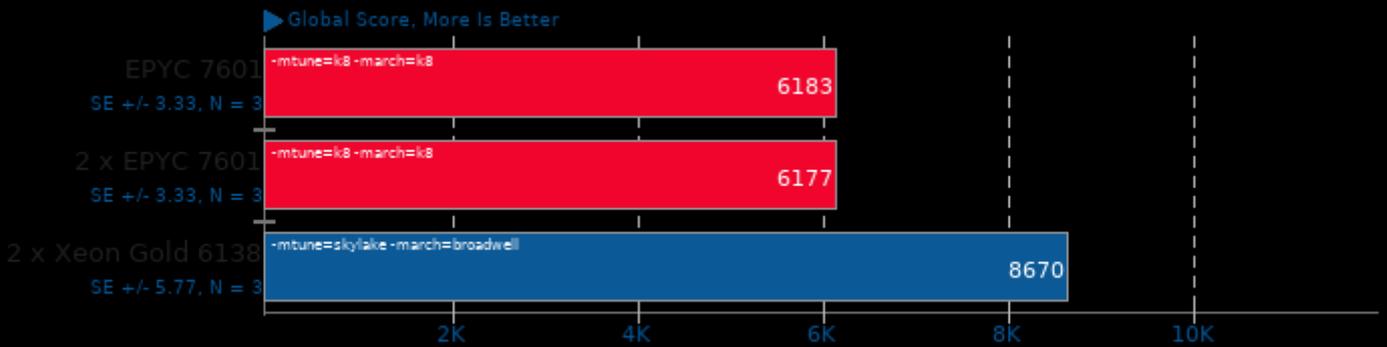
### Ethr 2019-01-02

Server Address: localhost - Protocol: TCP - Test: Bandwidth - Threads: 64



### GNU MPC 1.1.0

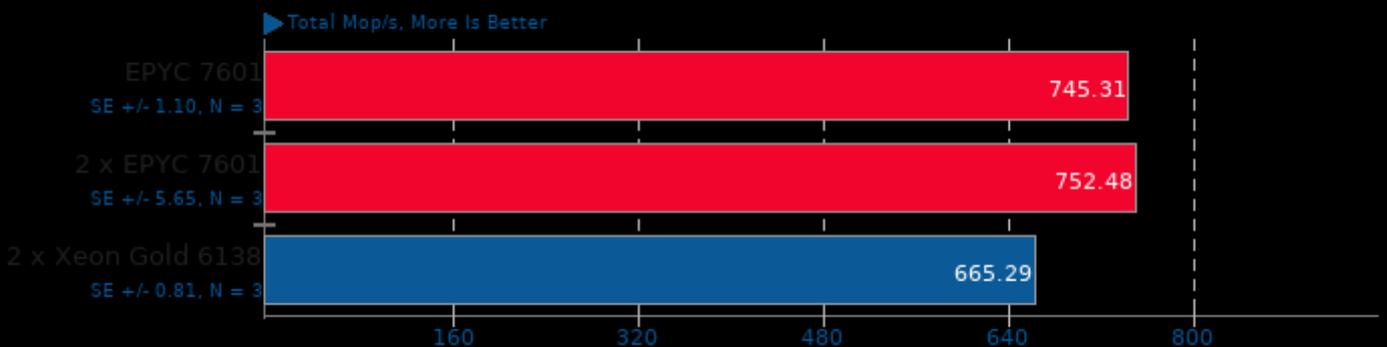
Multi-Precision Benchmark



1. (C) gcc options: -lm -O2 -pedantic -fomit-frame-pointer -m64 -MT -MD -MP -MF

### NAS Parallel Benchmarks 3.3.1

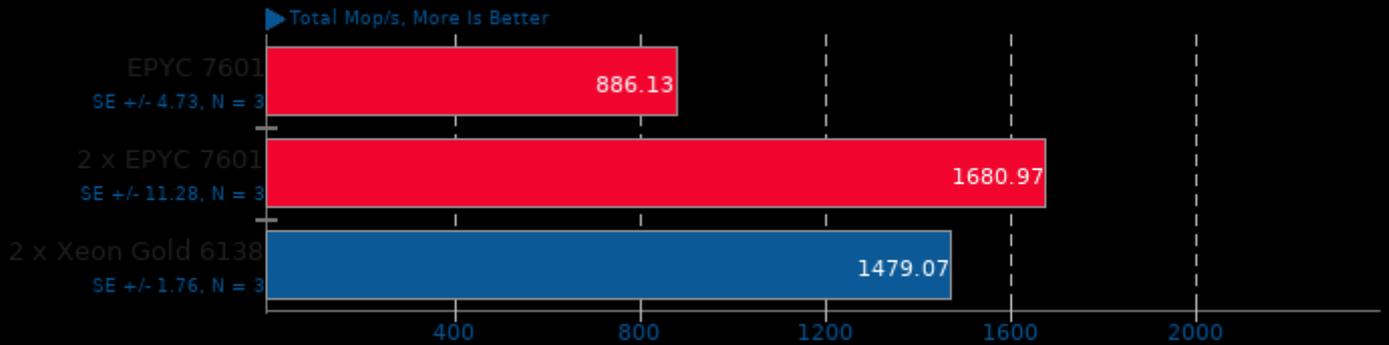
Test / Class: BT.A



1. (F9X) gfortran options: -O3 -march=native -pthread -Impi\_usempif08 -Impi\_mpifh -Impi

### NAS Parallel Benchmarks 3.3.1

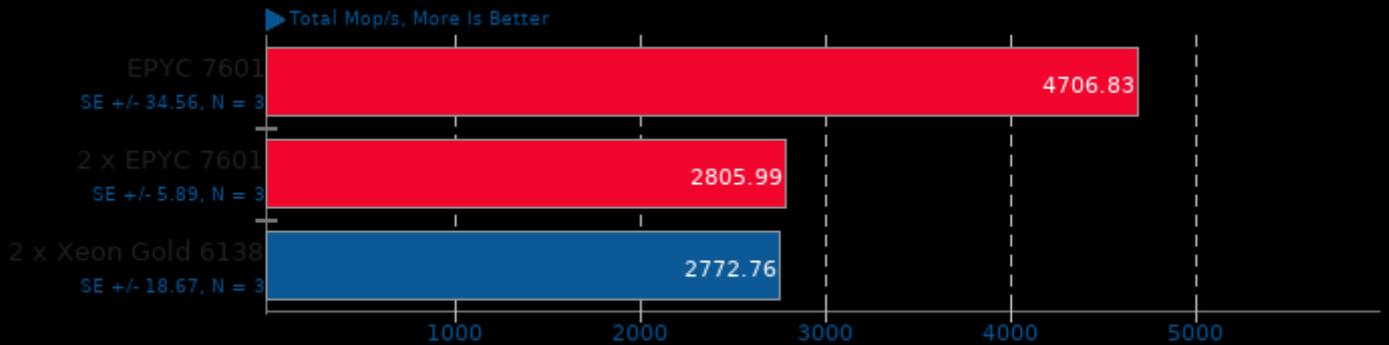
Test / Class: EP.C



1. (F9X) gfortran options: -O3 -march=native -pthread -lmpi\_usempif08 -lmpi\_mpifh -lmpi

### NAS Parallel Benchmarks 3.3.1

Test / Class: FT.B



1. (F9X) gfortran options: -O3 -march=native -pthread -lmpi\_usempif08 -lmpi\_mpifh -lmpi

### NAS Parallel Benchmarks 3.3.1

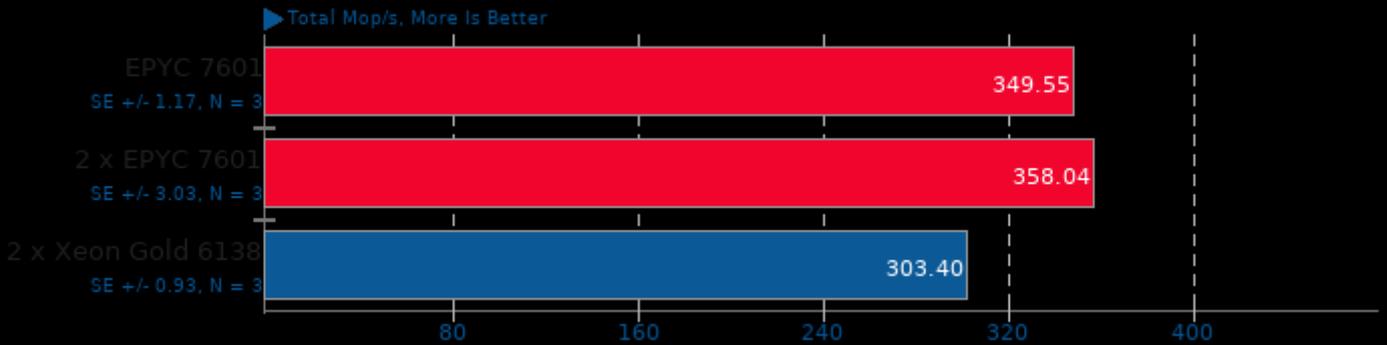
Test / Class: LU.C



1. (F9X) gfortran options: -O3 -march=native -pthread -lmpi\_usempif08 -lmpi\_mpifh -lmpi

### NAS Parallel Benchmarks 3.3.1

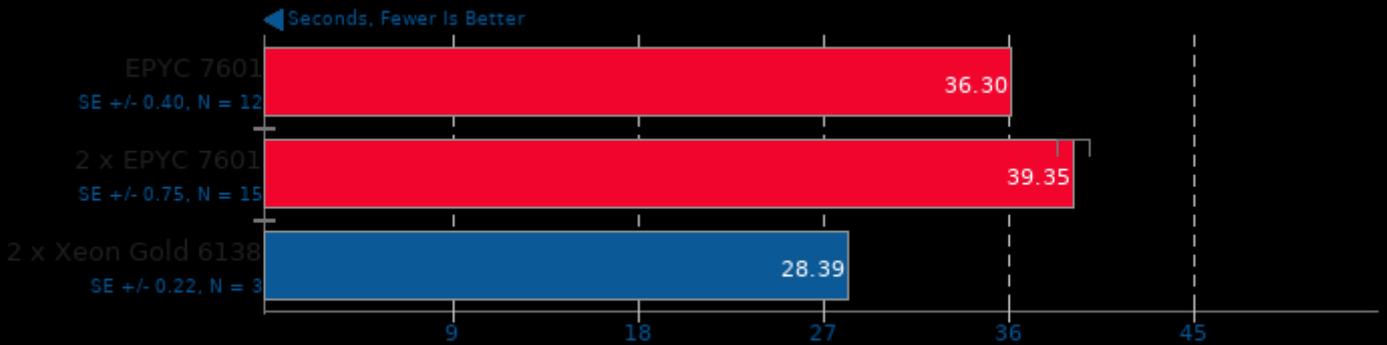
Test / Class: SP.A



1. (F9X) gfortran options: -O3 -march=native -pthread -lmpi\_usempif08 -lmpi\_mpifh -lmpi

### Parboil 2.5

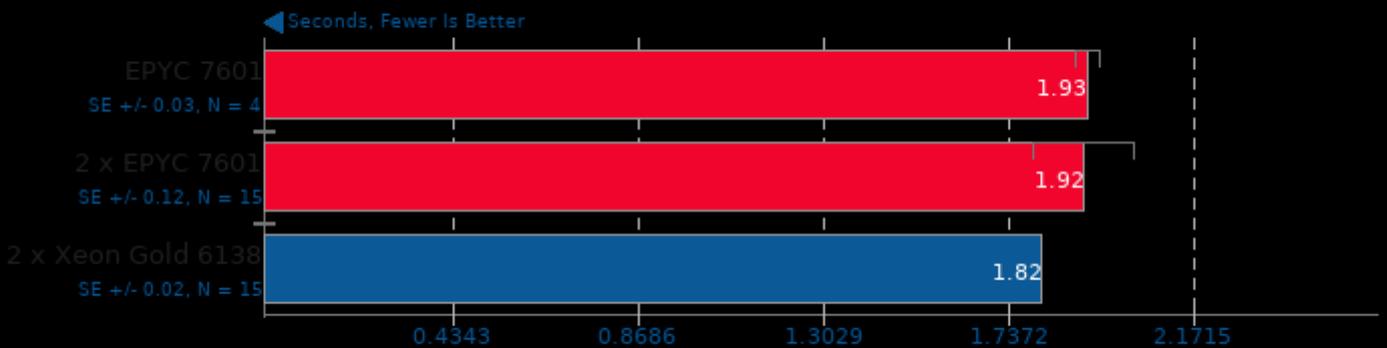
Test: OpenMP LBM



1. (CXX) g++ options: -lm -pthread -lgomp -O3 -ffast-math -fopenmp

### Parboil 2.5

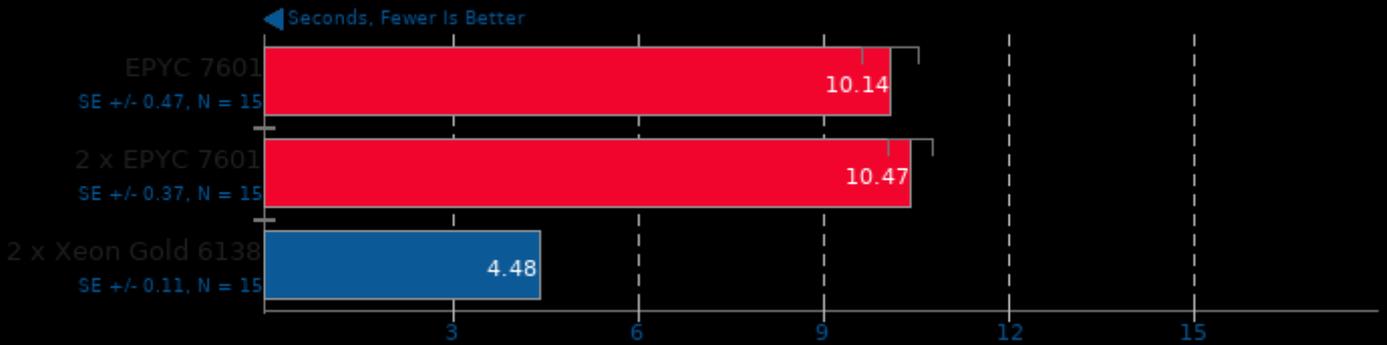
Test: OpenMP CUTCP



1. (CXX) g++ options: -lm -pthread -lgomp -O3 -ffast-math -fopenmp

### Parboil 2.5

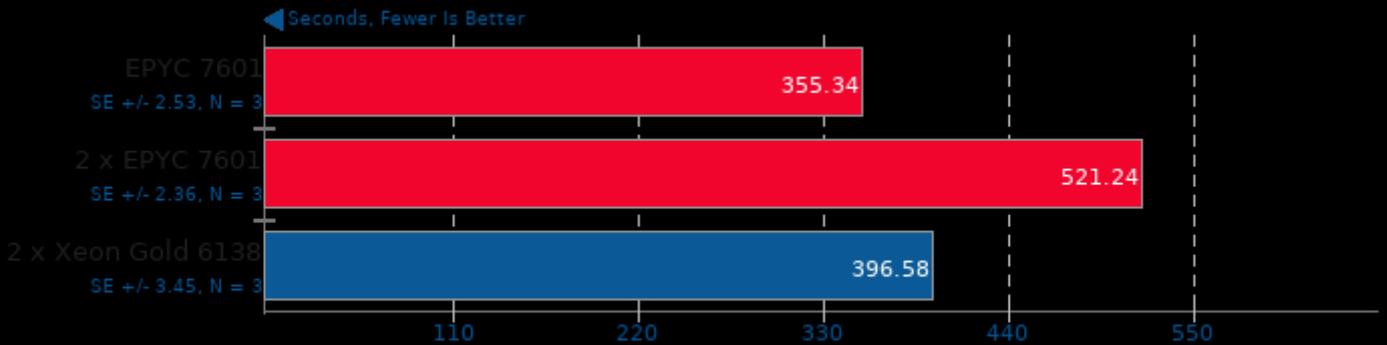
Test: OpenMP Stencil



1. (CXX) g++ options: -lm -lthread -lgomp -O3 -ffast-math -fopenmp

### Parboil 2.5

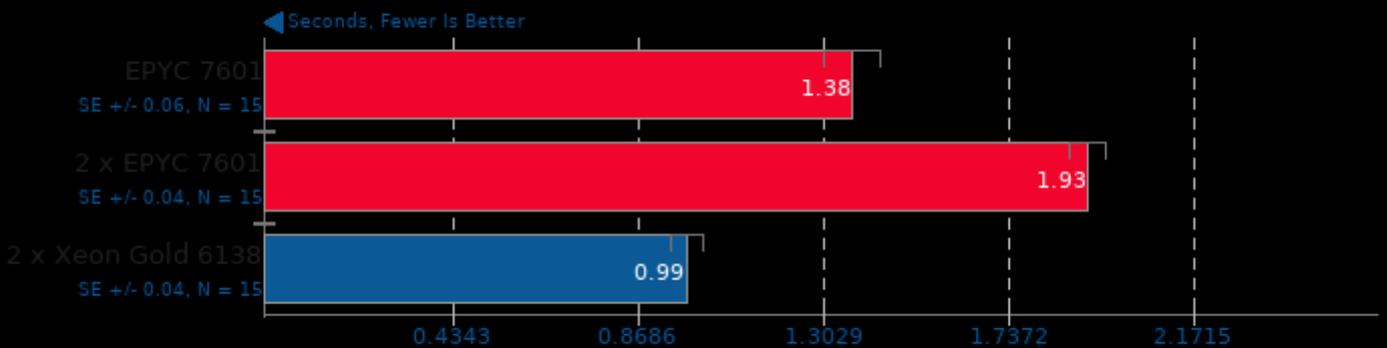
Test: OpenMP MRI Gridding



1. (CXX) g++ options: -lm -lthread -lgomp -O3 -ffast-math -fopenmp

### CloverLeaf

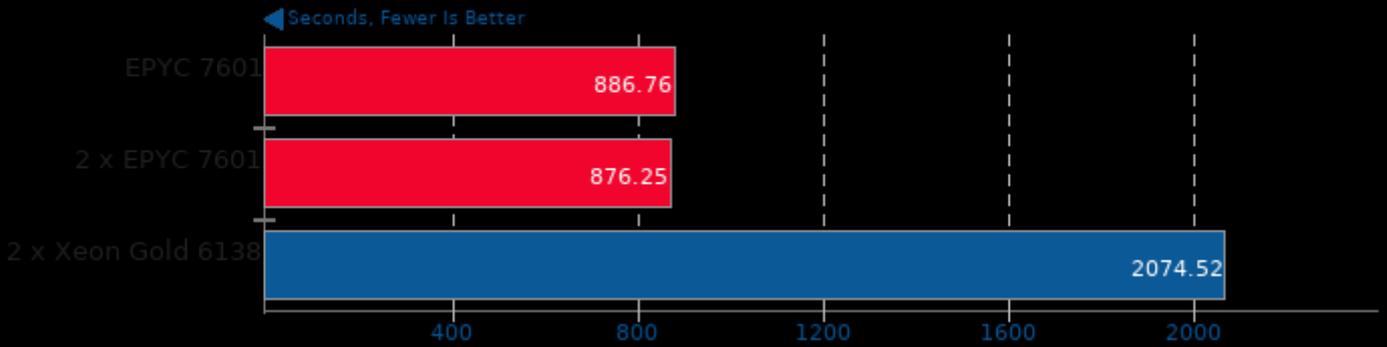
Test: Lagrangian-Eulerian Hydrodynamics



1. (F9X) gfortran options: -O3 -march=native -funroll-loops -fopenmp

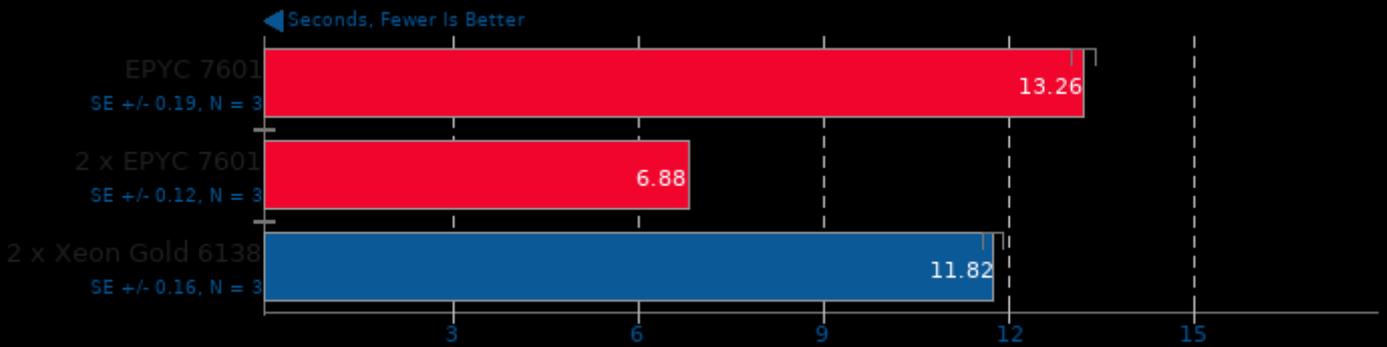
### CP2K Molecular Dynamics 6.1

Fayalite-FIST Data



### Rodinia 2.4

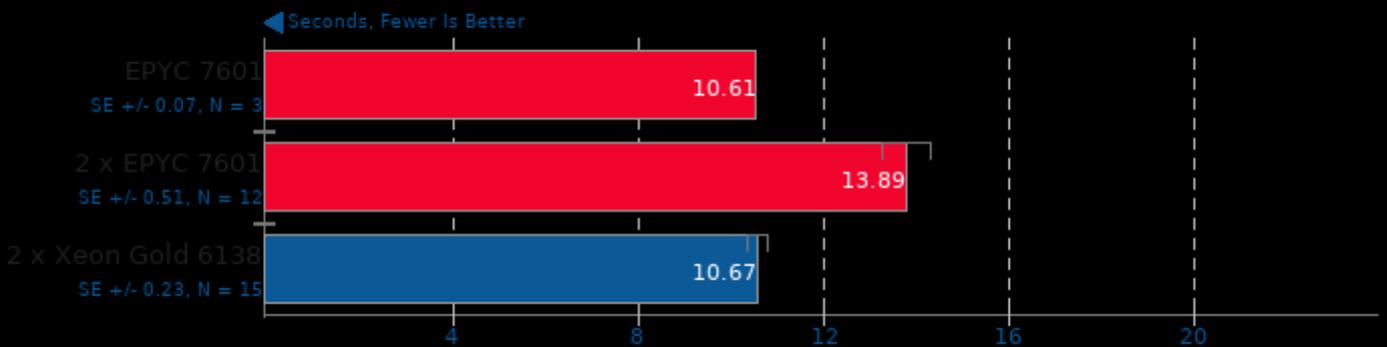
Test: OpenMP LavaMD



1. (CXX) g++ options: -O2 -fOpenCL

### Rodinia 2.4

Test: OpenMP CFD Solver

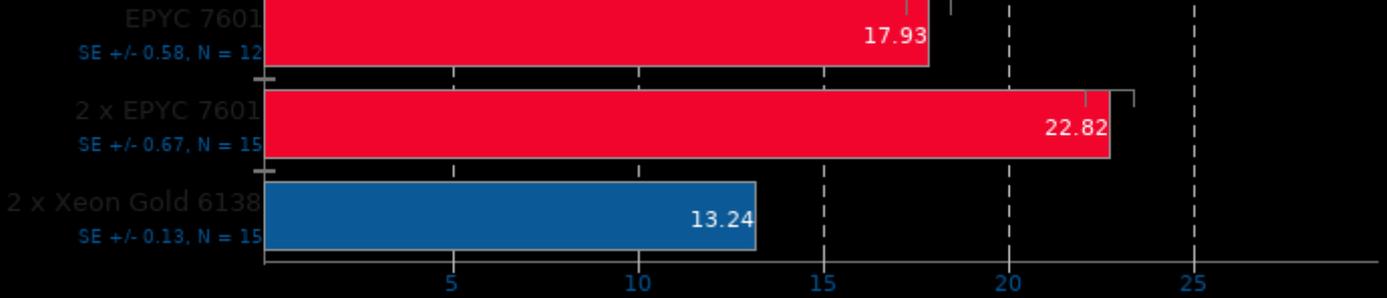


1. (CXX) g++ options: -O2 -fOpenCL

### Rodinia 2.4

Test: OpenMP Streamcluster

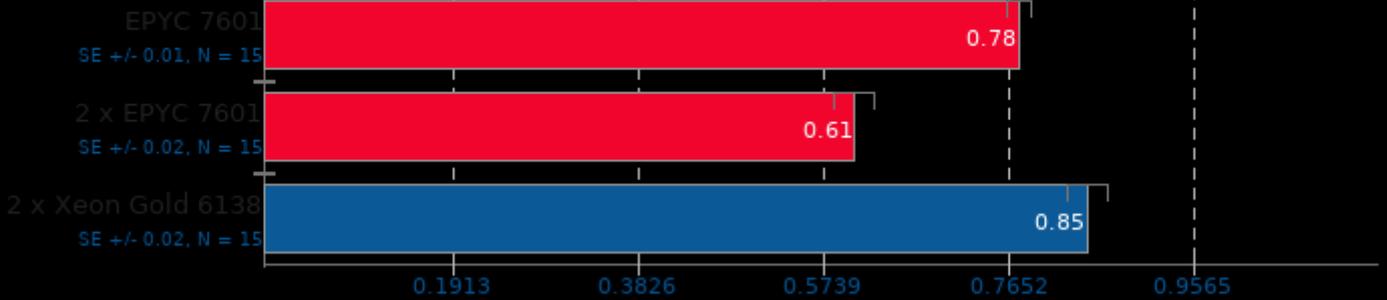
← Seconds, Fewer Is Better



1. (CXX) g++ options: -O2 -fOpenCL

### High Performance Conjugate Gradient 3.0

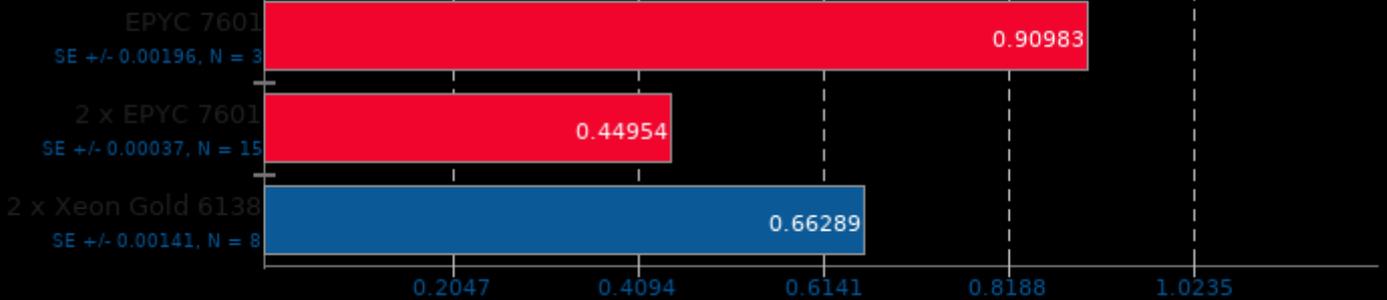
▶ GFLOP/s, More Is Better



### NAMD 2.13b1

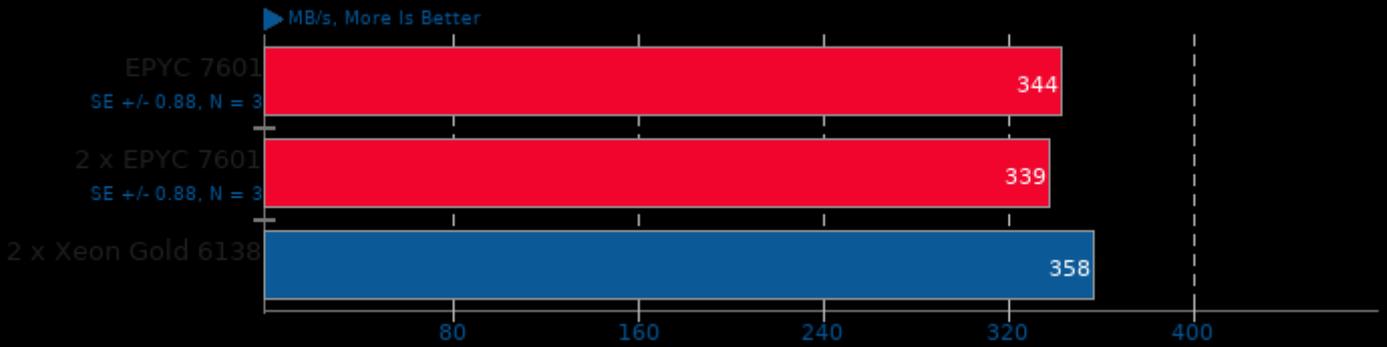
ATPase Simulation - 327,506 Atoms

← days/ns, Fewer Is Better



## Izbench 2017-08-08

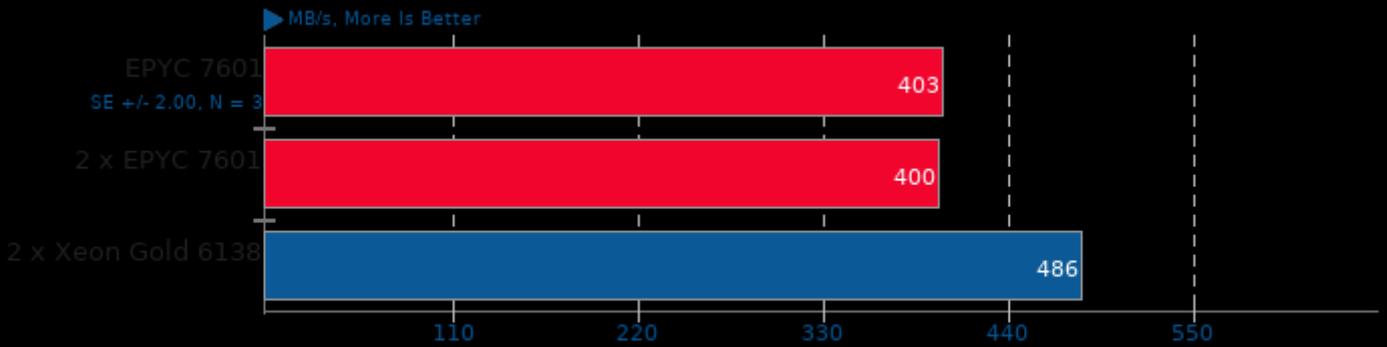
Test: Brotli 0 - Process: Compression



1. (CXX) g++ options: -lrt -static -lthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

## Izbench 2017-08-08

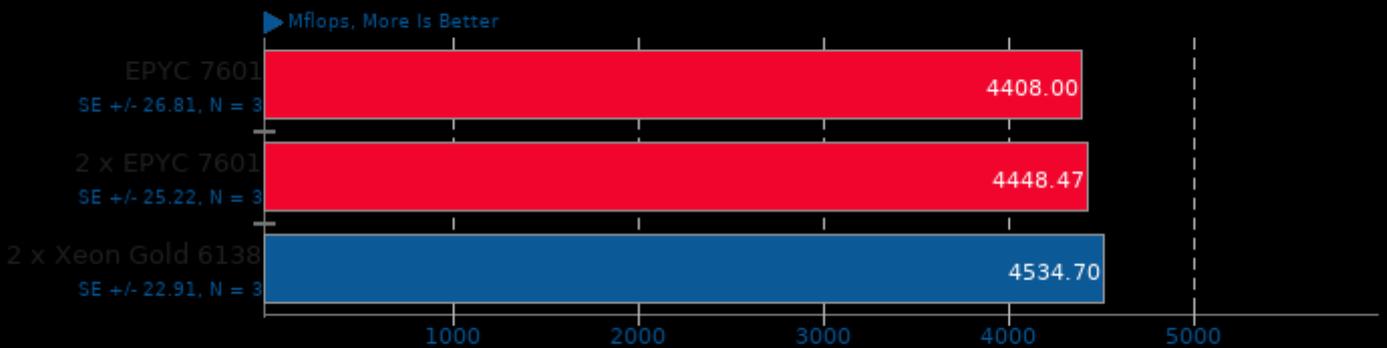
Test: Brotli 0 - Process: Decompression



1. (CXX) g++ options: -lrt -static -lthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

## FFTW 3.3.6

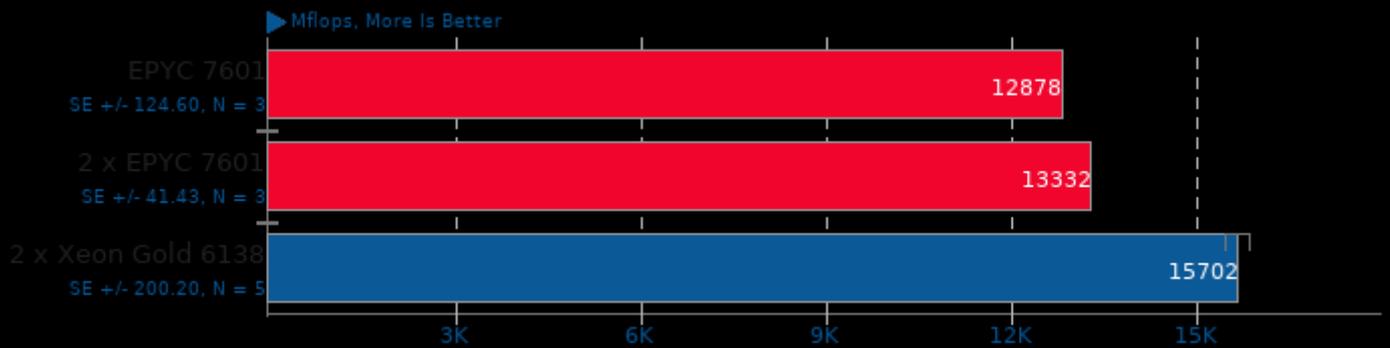
Build: Stock - Size: 2D FFT Size 4096



1. (C) gcc options: -pthread -O3 -fomit-frame-pointer -mtune=native -malign-double -fstrict-aliasing -fno-schedule-insns -ffast-math -lm

### FFTW 3.3.6

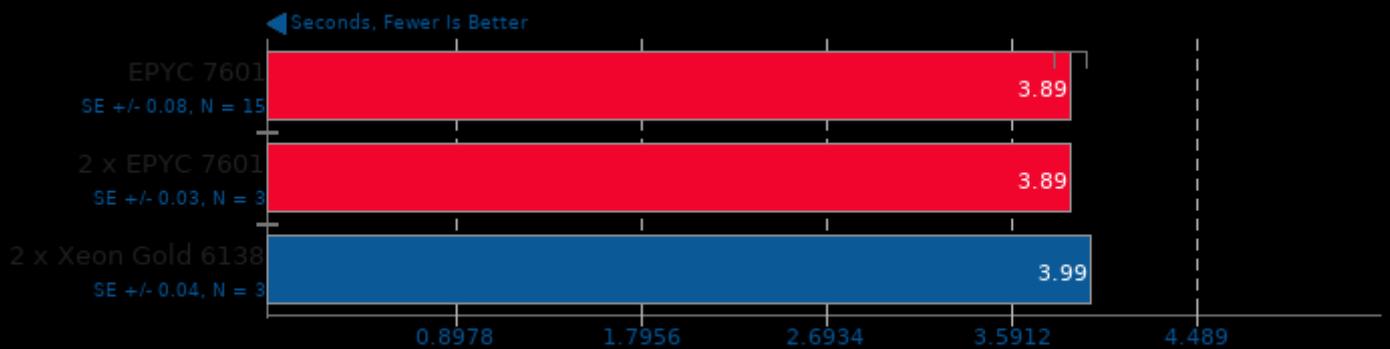
Build: Float + SSE - Size: 2D FFT Size 4096



1. (CC) gcc options: -pthread -O3 -fomit-frame-pointer -mtune=native -malign-double -fstrict-aliasing -fno-schedule-insns -ffast-math -lm

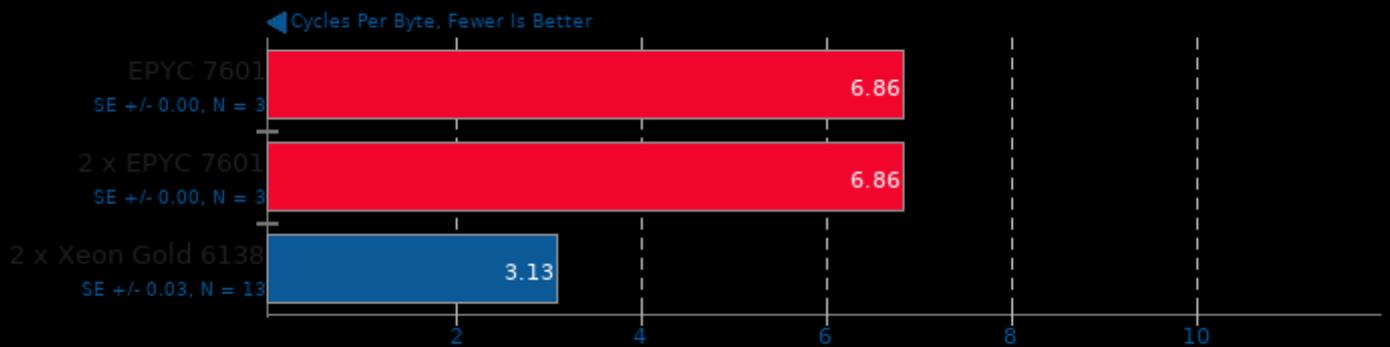
### Timed MAFFT Alignment 7.392

Multiple Sequence Alignment



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

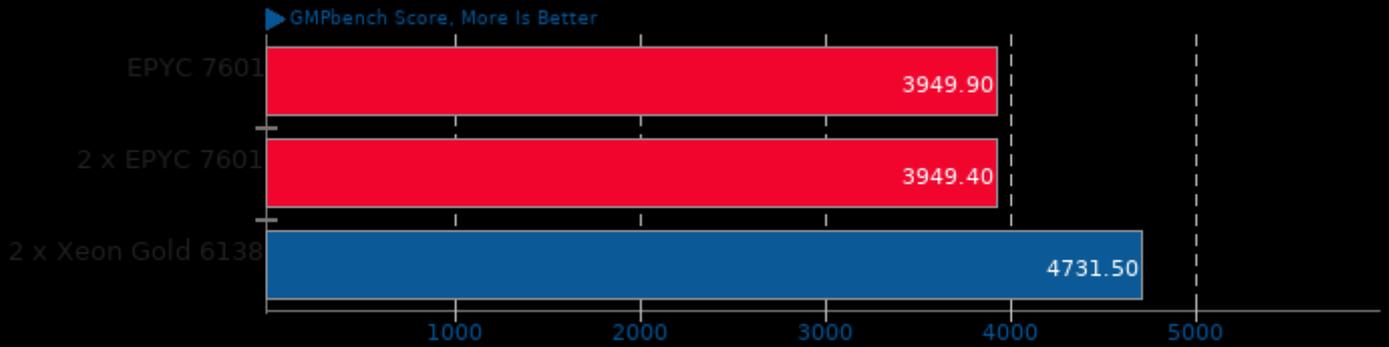
### BLAKE2 20170307



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

### GNU GMP GMPbench 6.1.2

Total Time



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

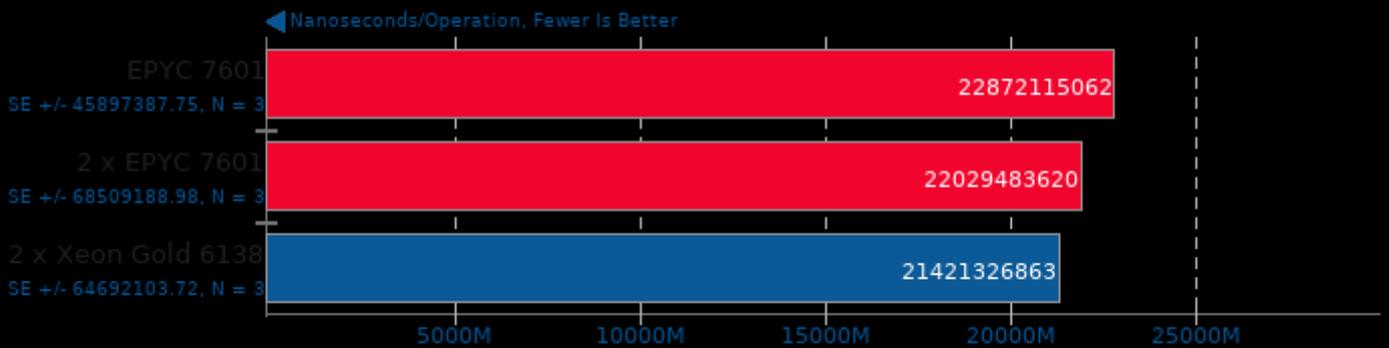
### Go Benchmarks

Test: json



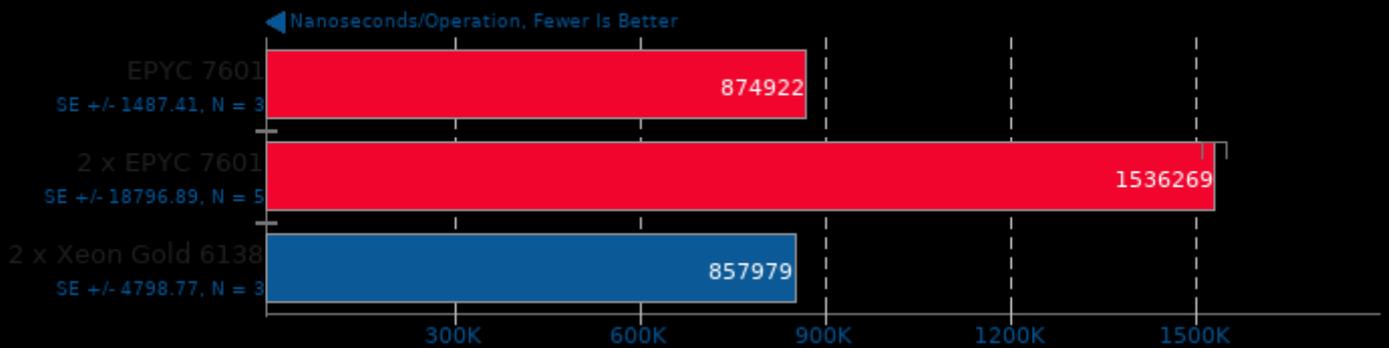
### Go Benchmarks

Test: build



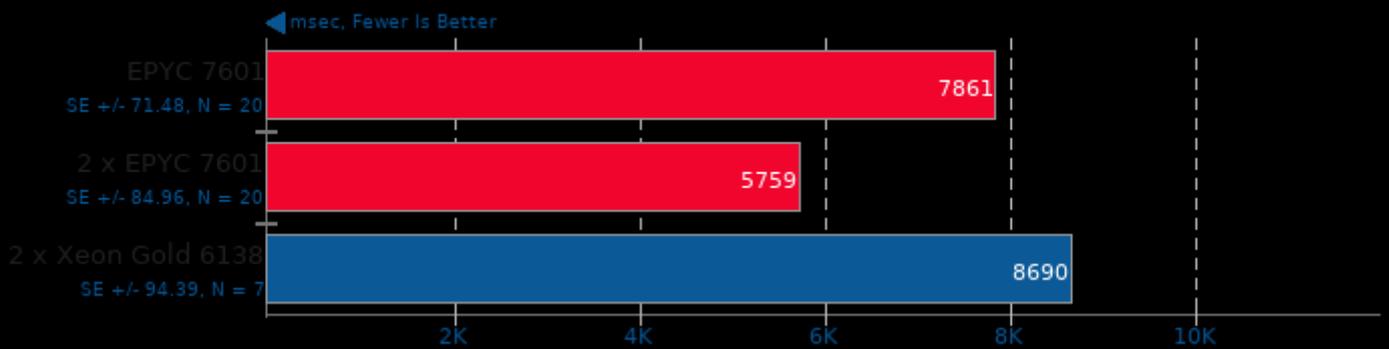
### Go Benchmarks

Test: garbage



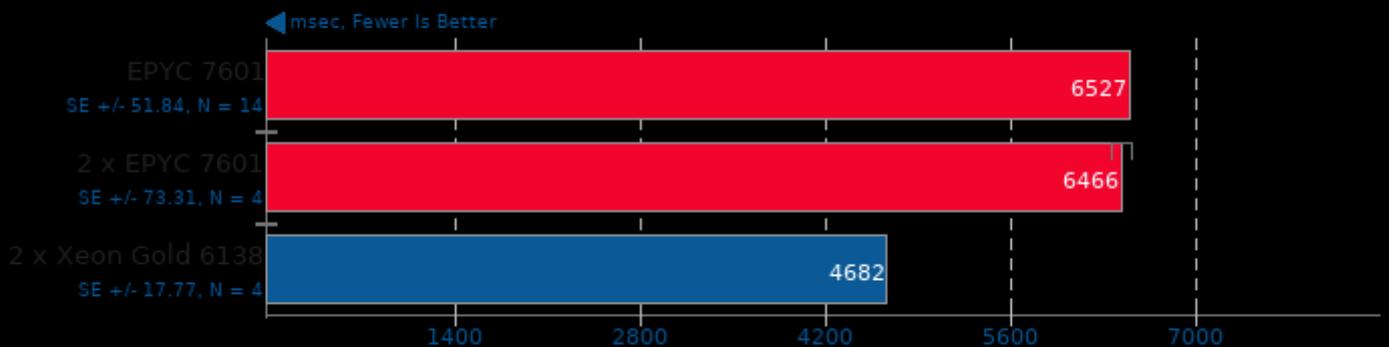
### DaCapo Benchmark 9.12-MR1

Java Test: H2



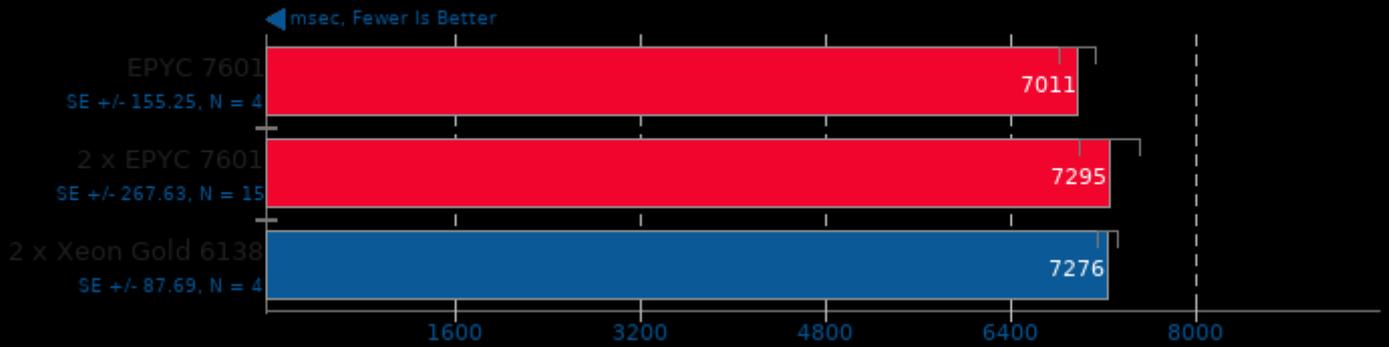
### DaCapo Benchmark 9.12-MR1

Java Test: jython



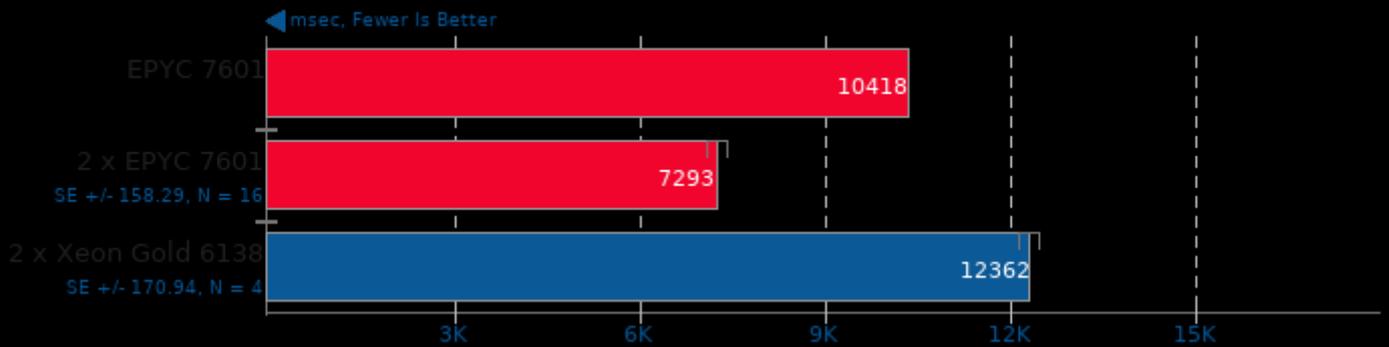
## DaCapo Benchmark 9.12-MR1

Java Test: Tradesoap



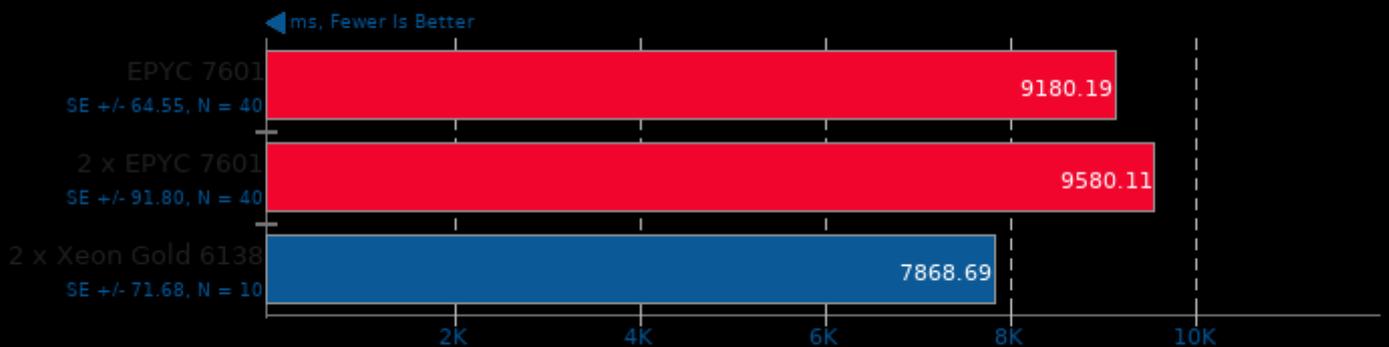
## DaCapo Benchmark 9.12-MR1

Java Test: Tradebeans



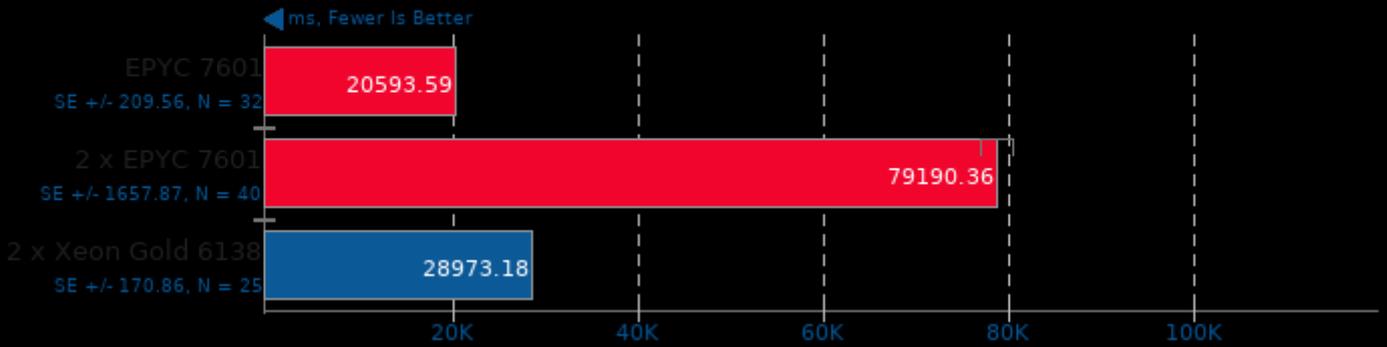
## Renaissance 0.9.0

Test: Scala Dotty



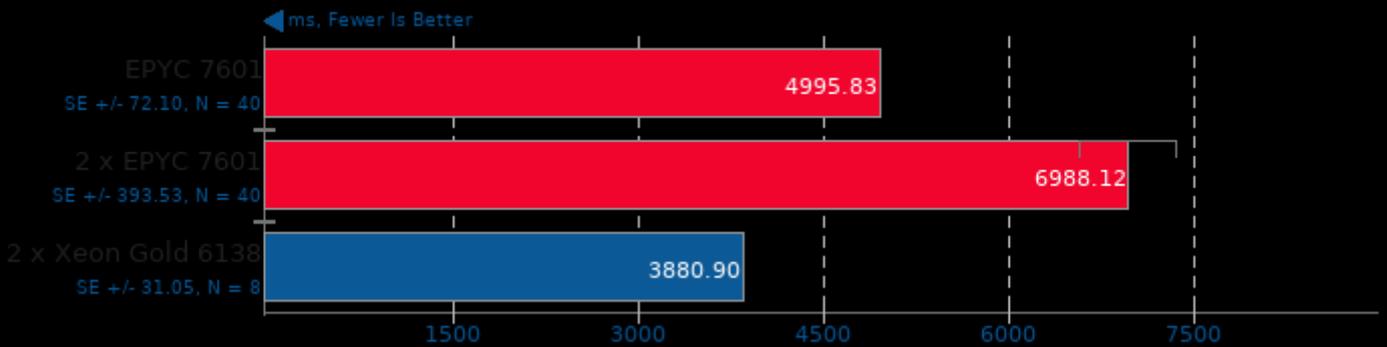
Renaissance 0.9.0

Test: Apache Spark ALS



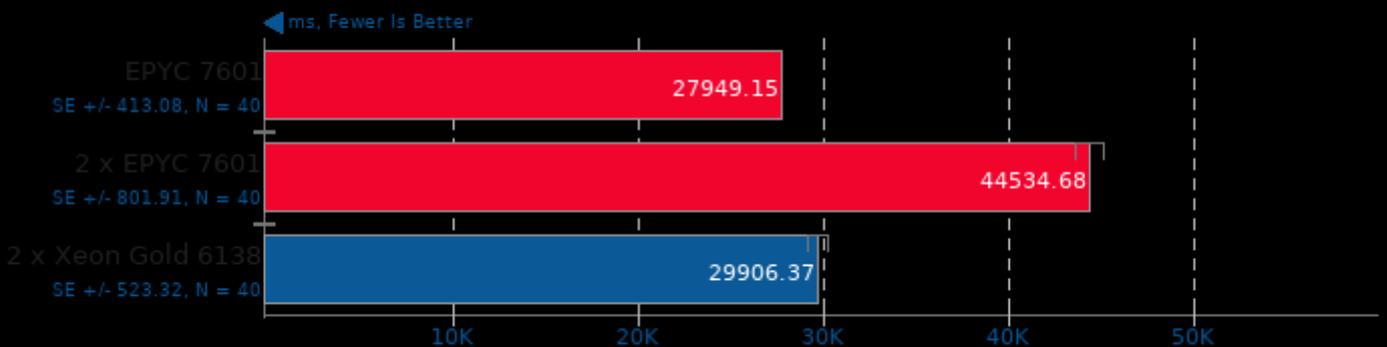
Renaissance 0.9.0

Test: Apache Spark Bayes



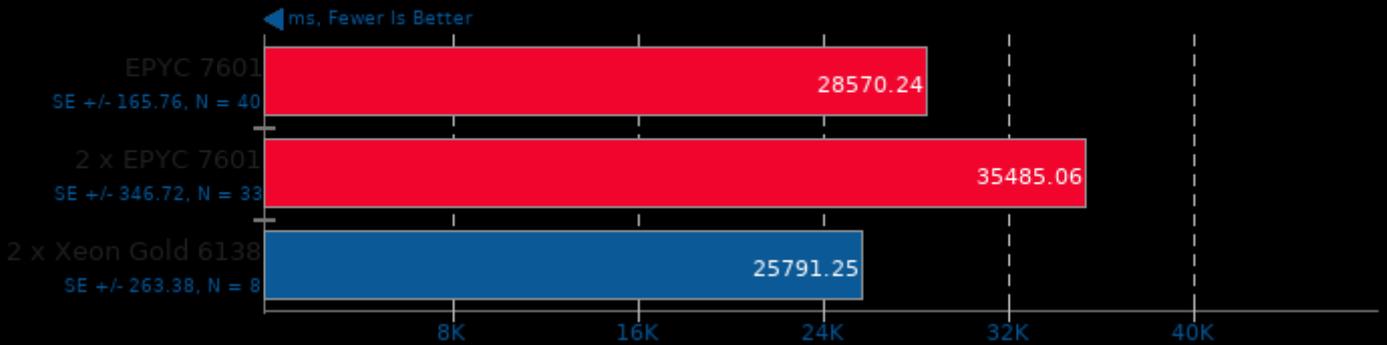
Renaissance 0.9.0

Test: Savina Reactors.IO



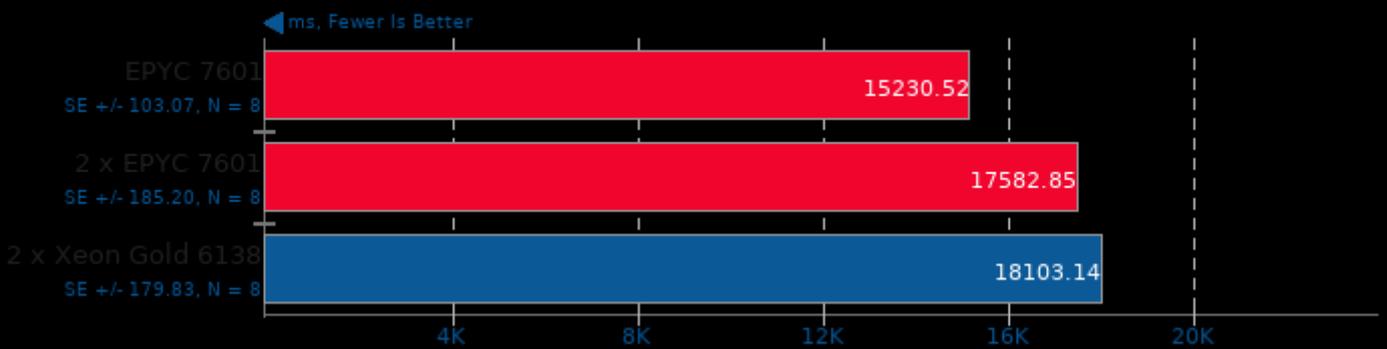
Renaissance 0.9.0

Test: Apache Spark PageRank



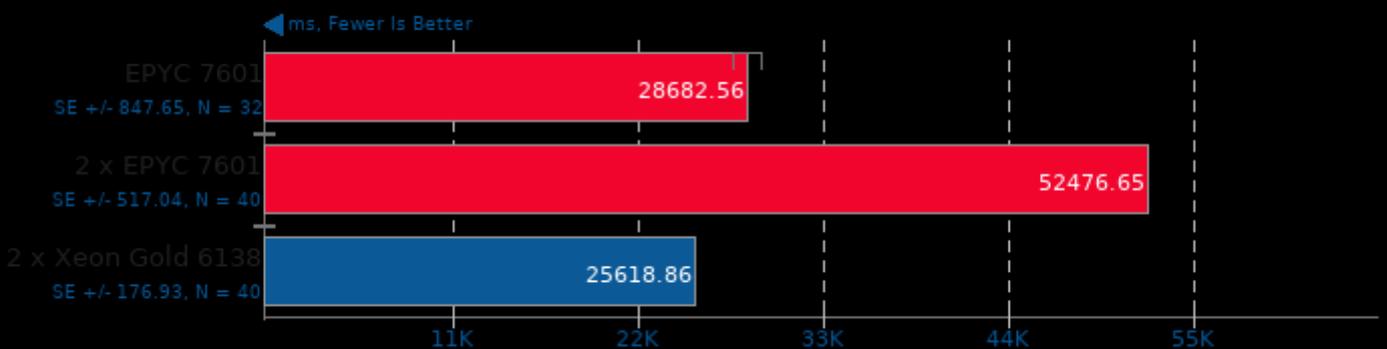
Renaissance 0.9.0

Test: In-Memory Database Shootout



Renaissance 0.9.0

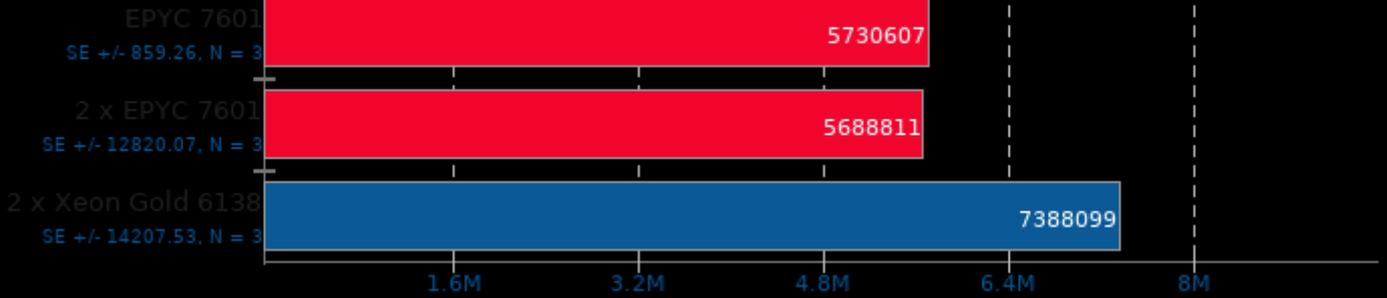
Test: Akka Unbalanced Cobwebbed Tree



### Crafty 25.2

Elapsed Time

► Nodes Per Second, More Is Better

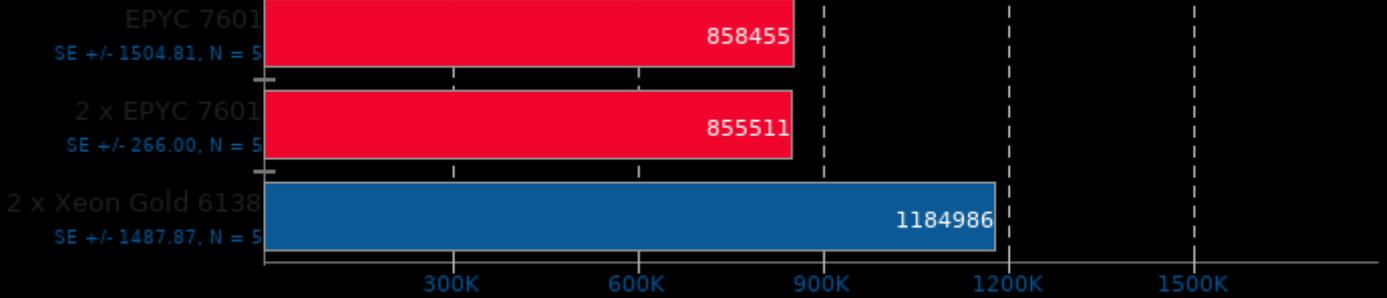


1. (CC) gcc options: -pthread -lstdc++ -fprofile-use -lm

### TSCP 1.81

AI Chess Performance

► Nodes Per Second, More Is Better

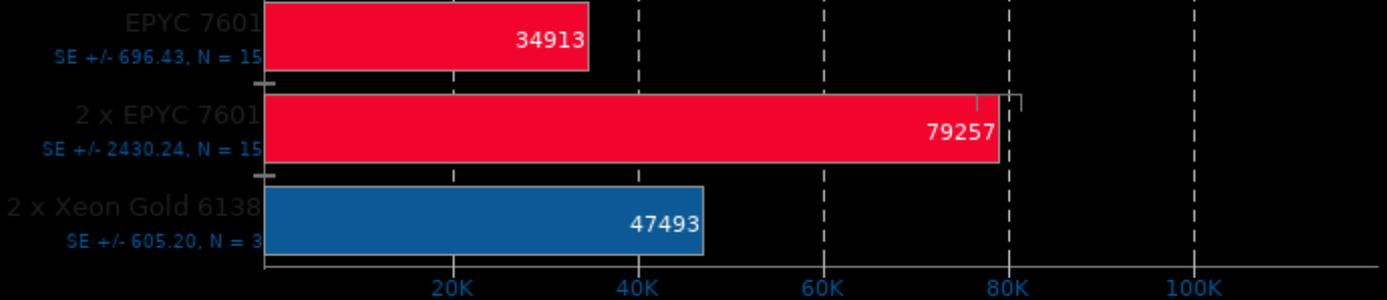


1. (CC) gcc options: -O3 -march=native

### John The Ripper 1.9.0-jumbo-1

Test: Blowfish

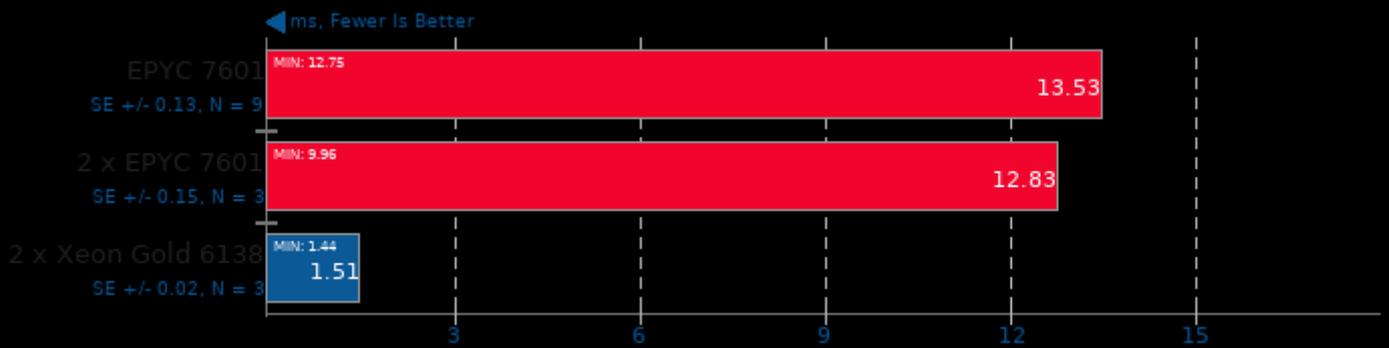
► Real C/S, More Is Better



1. (CC) gcc options: -m64 -lssl -lcrypto -fopenmp -lgmp -pthread -lm -lz -ldl -lcrypt -lbz2

### MKL-DNN 2019-04-16

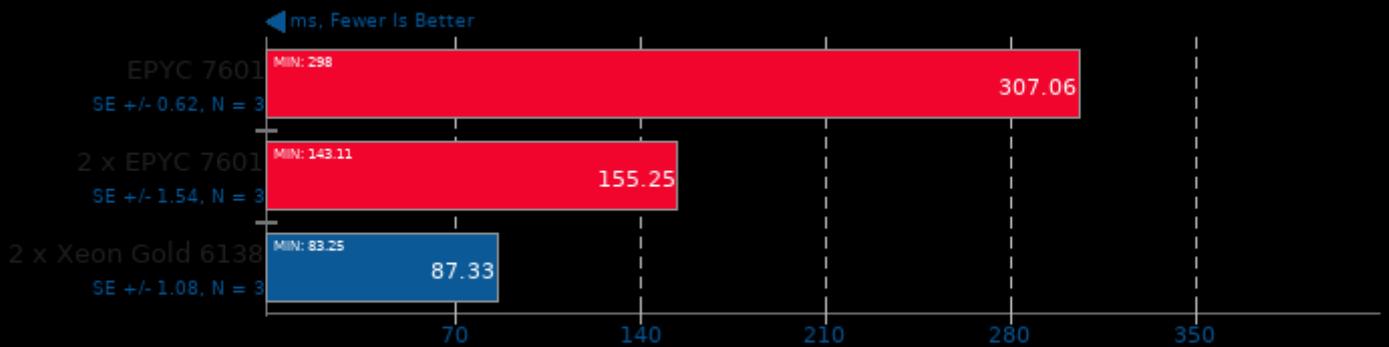
Harness: Deconvolution Batch deconv\_1d - Data Type: f32



1. (CXX) g++ options: -std=c++11 -march=native -mtune=native -fPIC -fopenmp -O3 -pie -lmklml\_intel -ldl

### MKL-DNN 2019-04-16

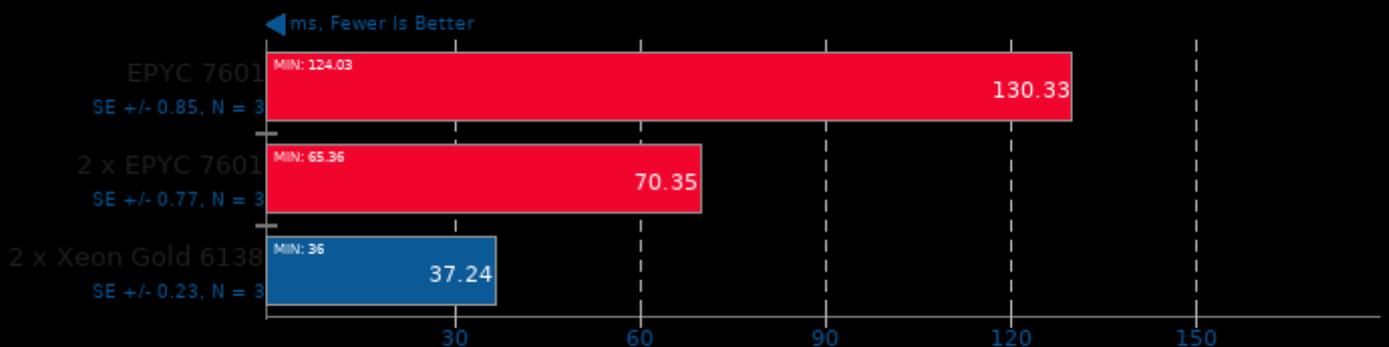
Harness: Convolution Batch conv\_alexnet - Data Type: f32



1. (CXX) g++ options: -std=c++11 -march=native -mtune=native -fPIC -fopenmp -O3 -pie -lmklml\_intel -ldl

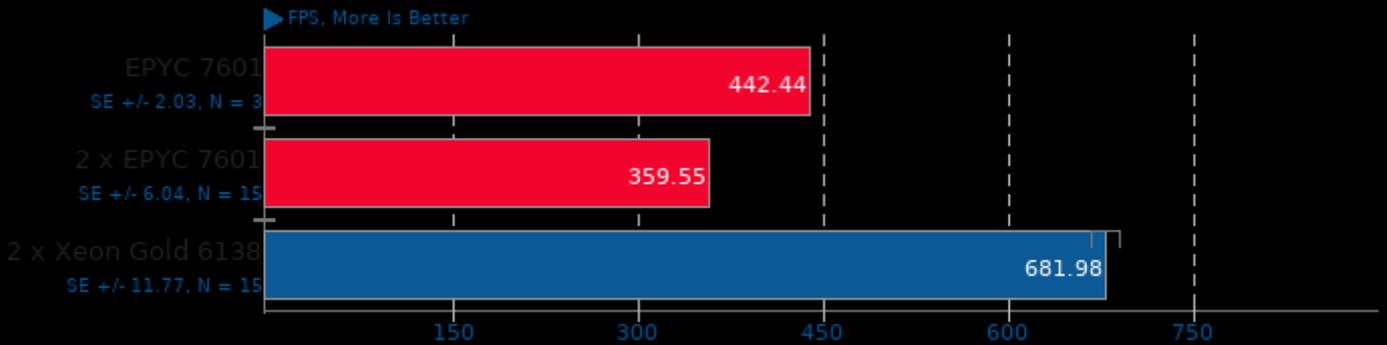
### MKL-DNN 2019-04-16

Harness: Convolution Batch conv\_googlenet\_v3 - Data Type: f32



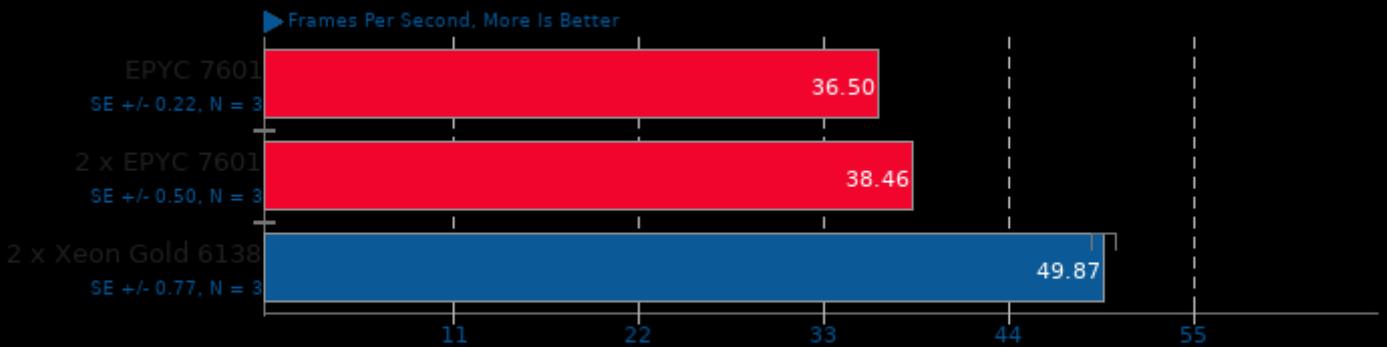
1. (CXX) g++ options: -std=c++11 -march=native -mtune=native -fPIC -fopenmp -O3 -pie -lmklml\_intel -ldl

TTSIOD 3D Renderer 2.3b  
Phong Rendering With Soft-Shadow Mapping



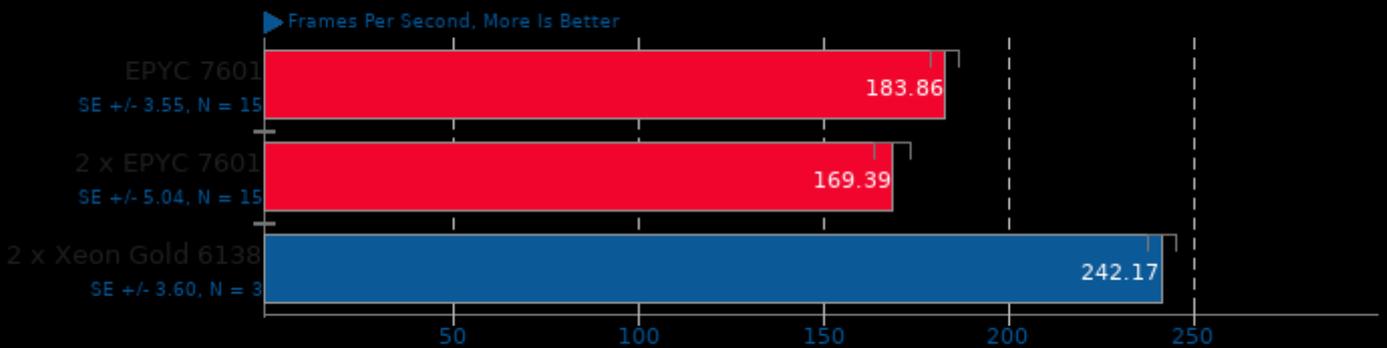
1. (CXX) g++ options: -O3 -fomit-frame-pointer -ffast-math -mtune=native -flto -msse -mrecip -mfpmath=sse -msse2 -mssse3 -ISDL -fopenmp -fwhole-program

SVT-AV1 0.5  
1080p 8-bit YUV To AV1 Video Encode



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

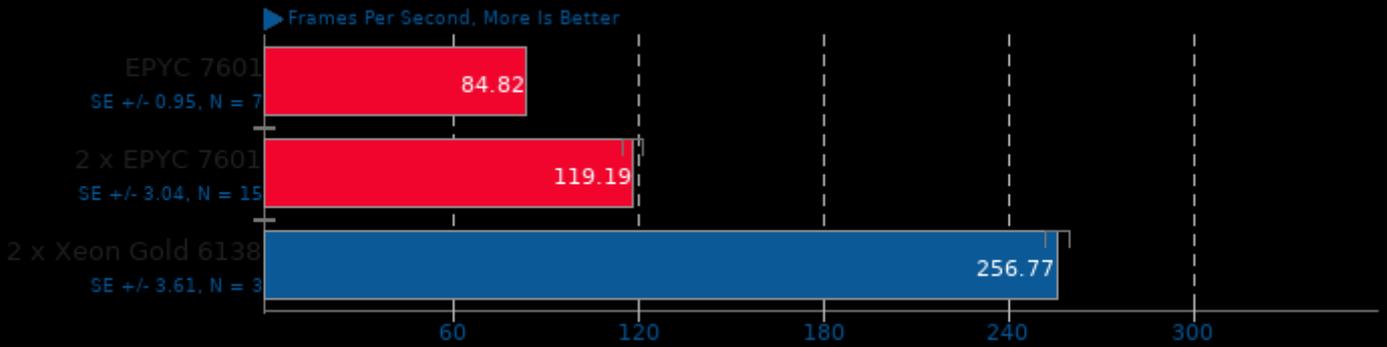
SVT-HEVC 2019-02-03  
1080p 8-bit YUV To HEVC Video Encode



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

### SVT-VP9 2019-02-17

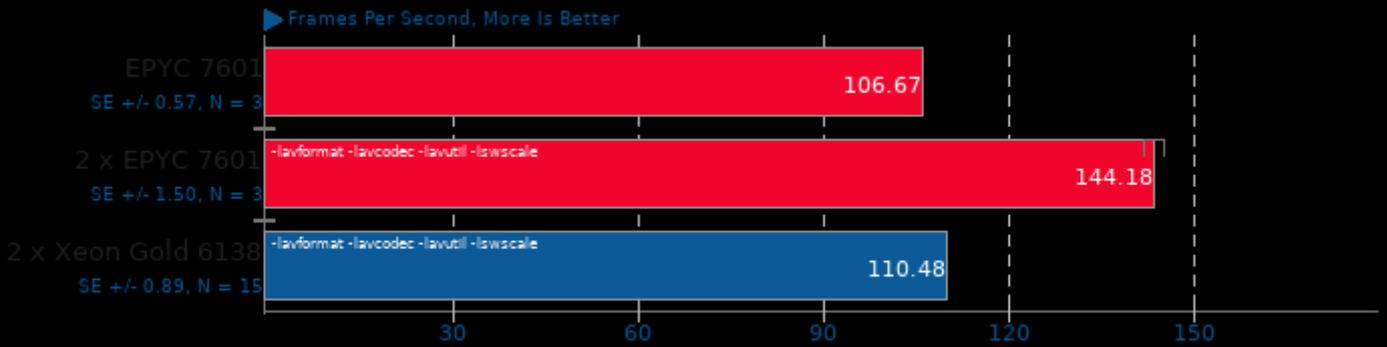
1080p 8-bit YUV To VP9 Video Encode



1. (GCC) gcc options: -fPIE -fPIC -O2 -fno -fvisibility=hidden -mavx -pie -rdynamic -lpthread -lrt -lm

### x264 2018-09-25

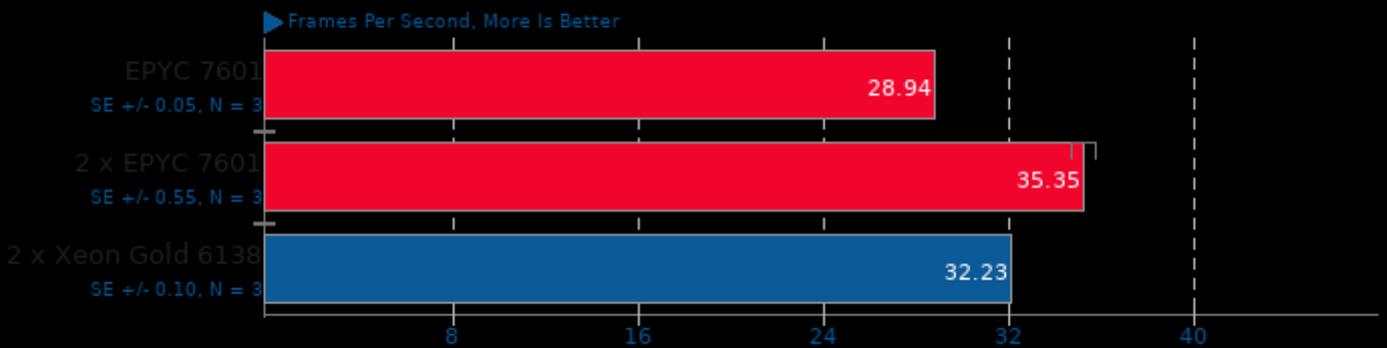
H.264 Video Encoding



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

### x265 3.0

H.265 1080p Video Encoding

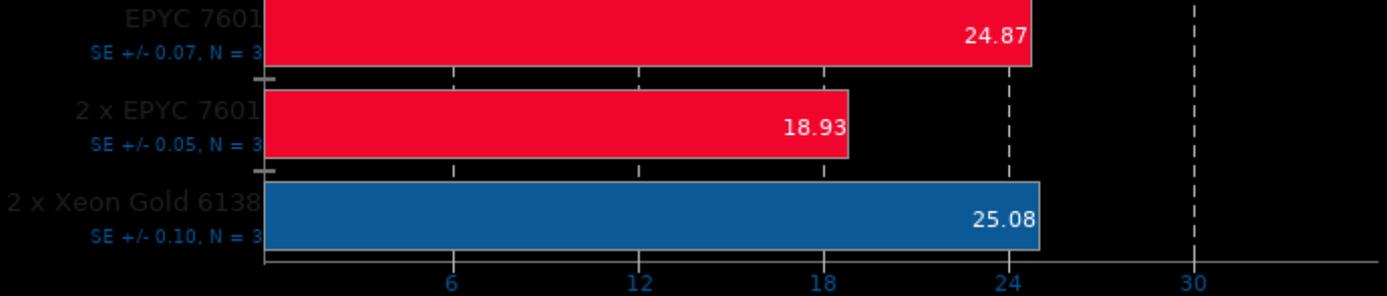


1. (CXX) g++ options: -O3 -rdynamic -lpthread -lrt -ldl -lnuma

## dav1d 0.3

Video Input: Summer Nature 4K

← Seconds, Fewer Is Better

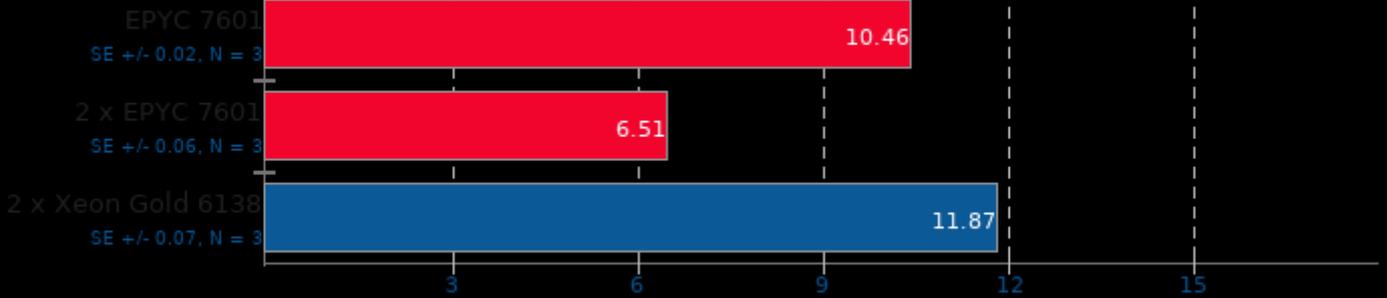


1. (CC) gcc options: -pthread

## dav1d 0.3

Video Input: Summer Nature 1080p

← Seconds, Fewer Is Better

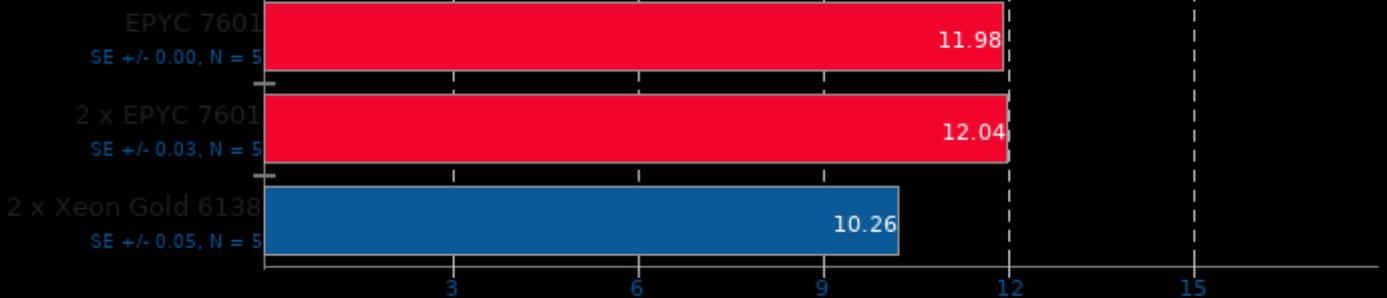


1. (CC) gcc options: -pthread

## FLAC Audio Encoding 1.3.2

WAV To FLAC

← Seconds, Fewer Is Better

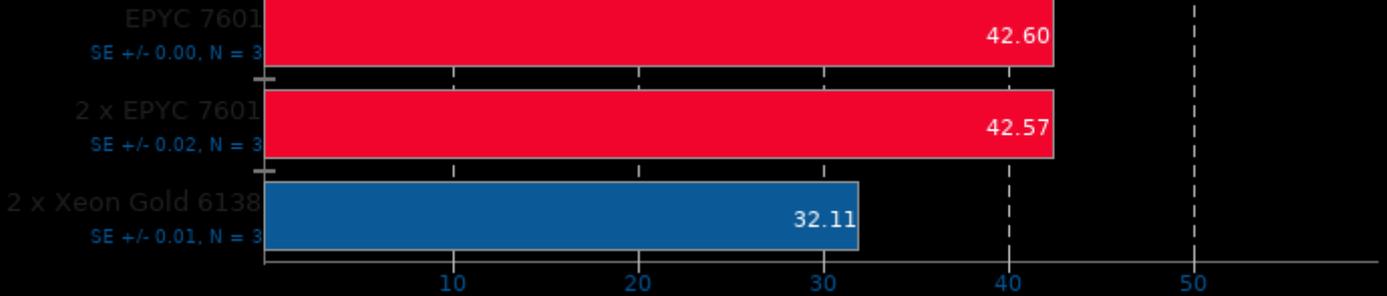


1. (CXX) g++ options: -O2 -fvisibility=hidden -logg -lm

### LAME MP3 Encoding 3.100

WAV To MP3

← Seconds, Fewer Is Better

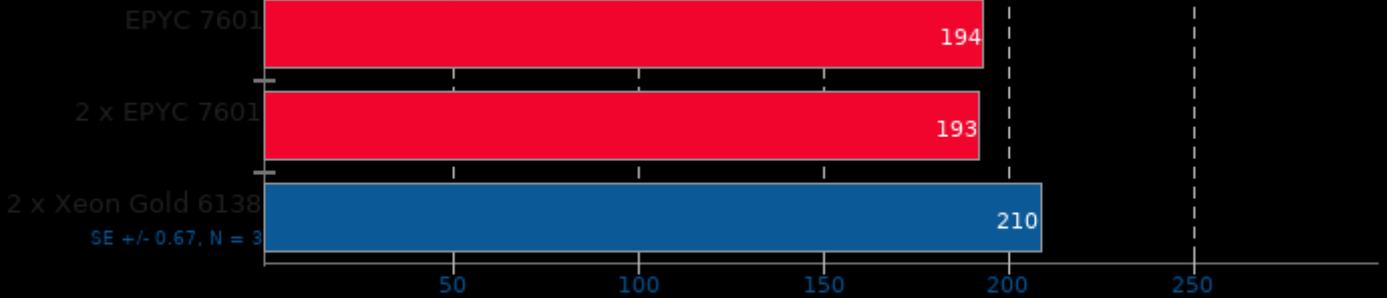


1. (CC) gcc options: -Incurse -Im

### GraphicsMagick 1.3.30

Operation: Rotate

▶ Iterations Per Minute, More Is Better

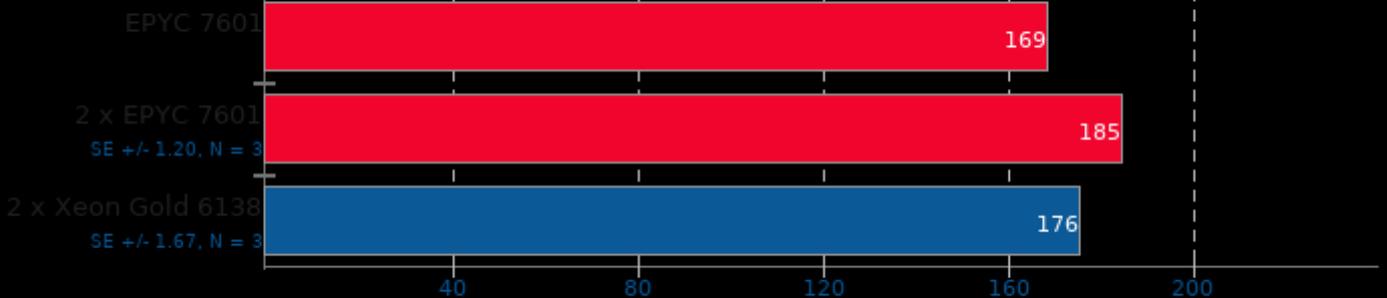


1. (CC) gcc options: -fopenmp -O2 -pthread -ljpeg -lwebp -lwebpmux -ltiff -ljpeg -lXext -lSM -lICE -lX11 -llzma -lbz2 -lz -lm -lgomp -lpthread

### GraphicsMagick 1.3.30

Operation: Sharpen

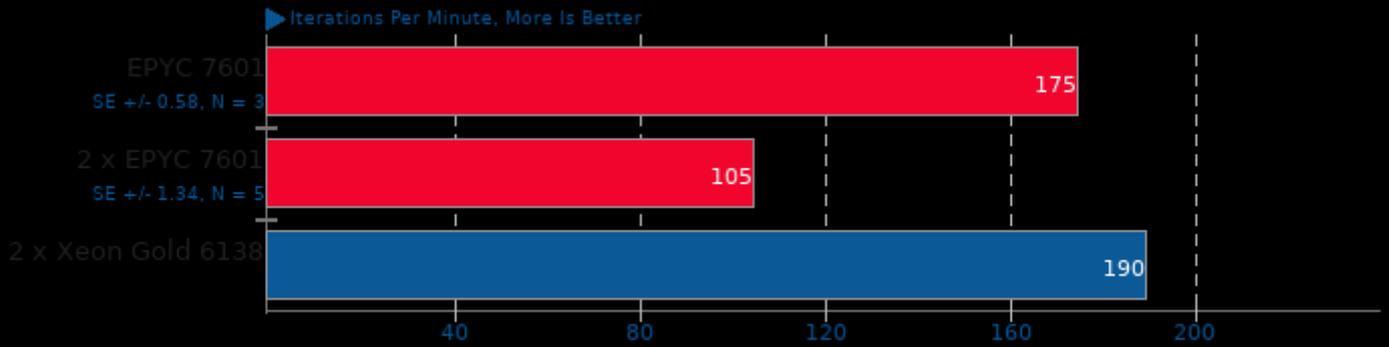
▶ Iterations Per Minute, More Is Better



1. (CC) gcc options: -fopenmp -O2 -pthread -ljpeg -lwebp -lwebpmux -ltiff -ljpeg -lXext -lSM -lICE -lX11 -llzma -lbz2 -lz -lm -lgomp -lpthread

## GraphicsMagick 1.3.30

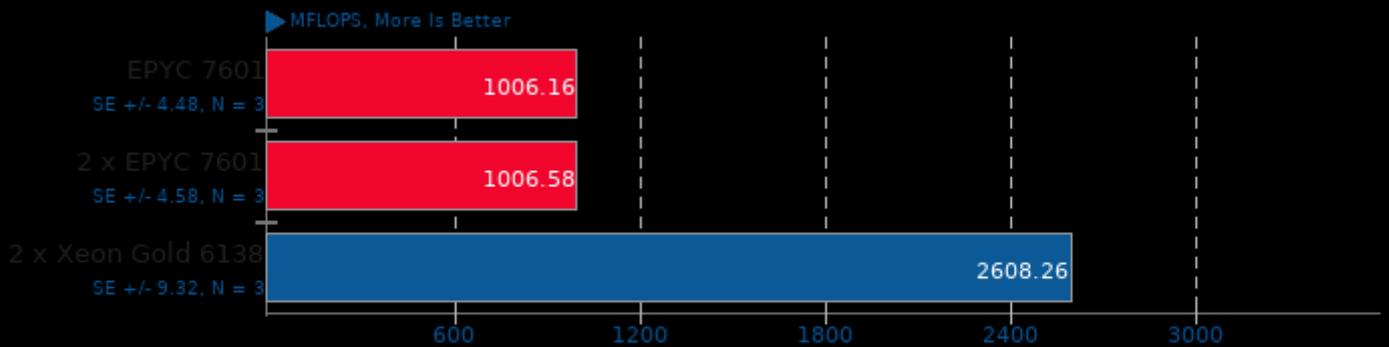
Operation: Resizing



1. (CC) gcc options: -fopenmp -O2 -pthread -ljpeg -lwebp -lwebpmux -ltiff -ljpeg -lXext -lSM -lICE -lX11 -lZma -lbz2 -lz -lm -lgomp -lpthread

## Himeno Benchmark 3.0

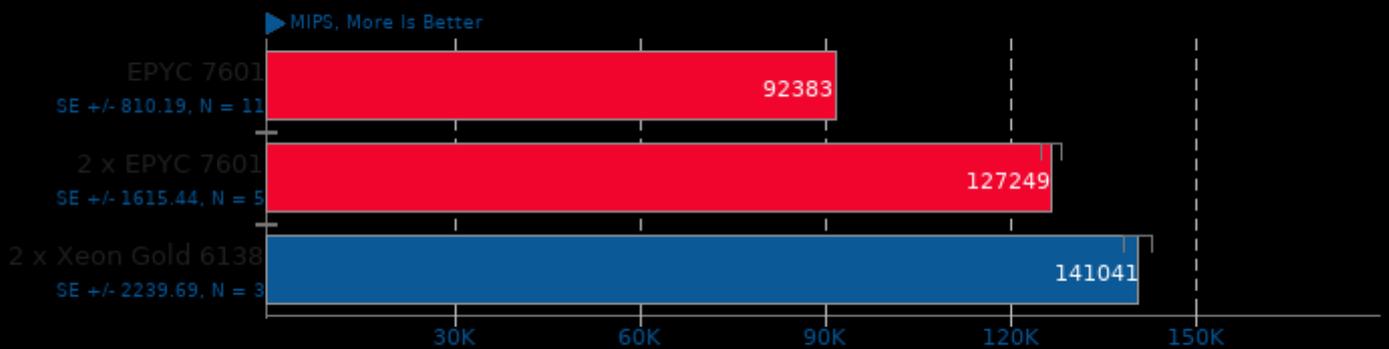
Poisson Pressure Solver



1. (CC) gcc options: -O3 -mavx2

## 7-Zip Compression 16.02

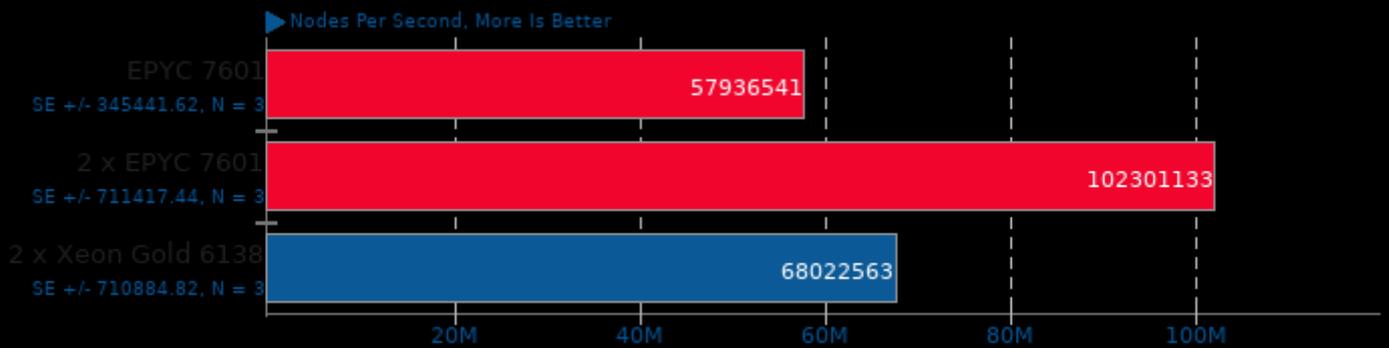
Compress Speed Test



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

### Stockfish 9

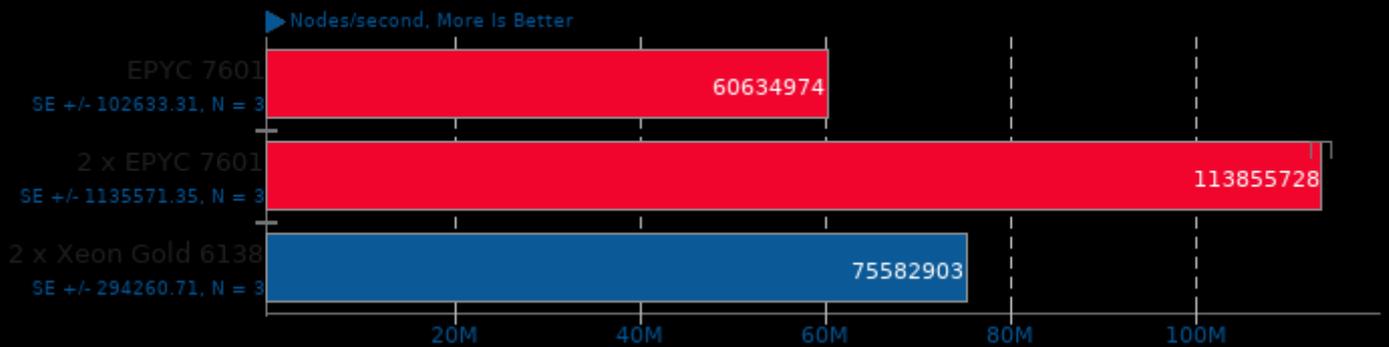
Total Time



1. (CXX) g++ options: -m64 -lthread -fno-exceptions -std=c++11 -pedantic -O3 -msse -msse3 -mpopcnt -fno

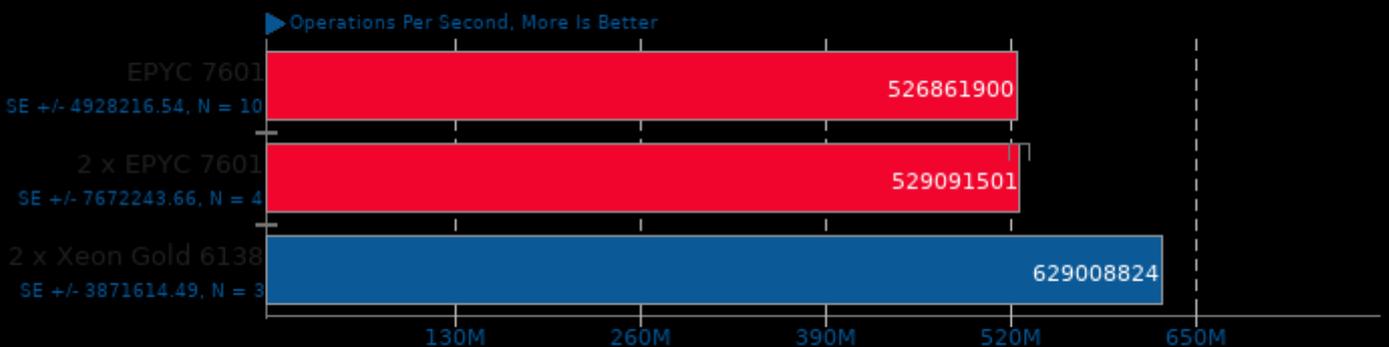
### asmFish 2018-07-23

1024 Hash Memory, 26 Depth



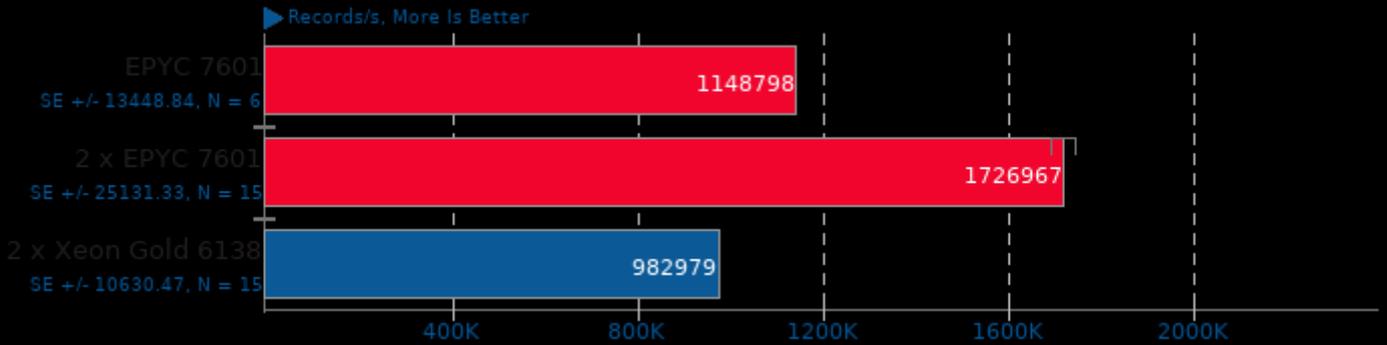
### Swet 1.5.16

Average



1. (C) gcc options: -lm -lthread -lcurses -lrt

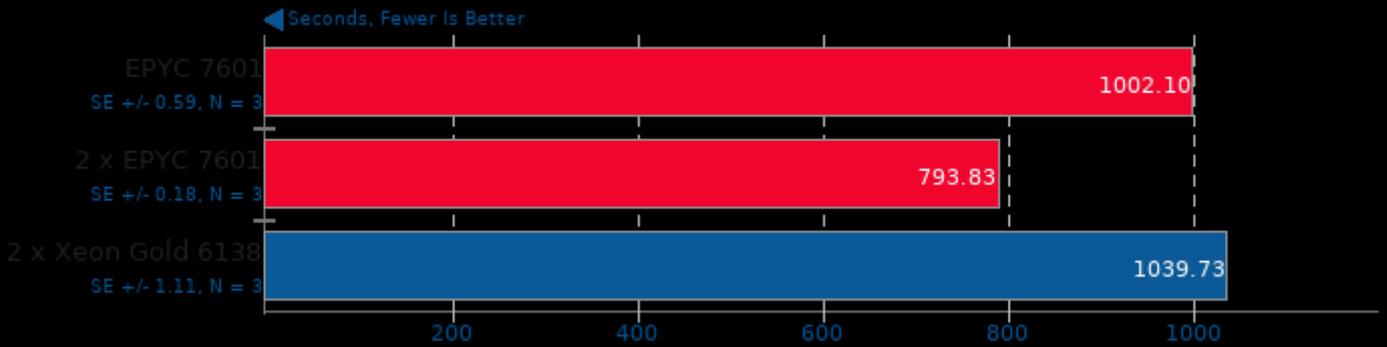
ebizzy 0.3



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

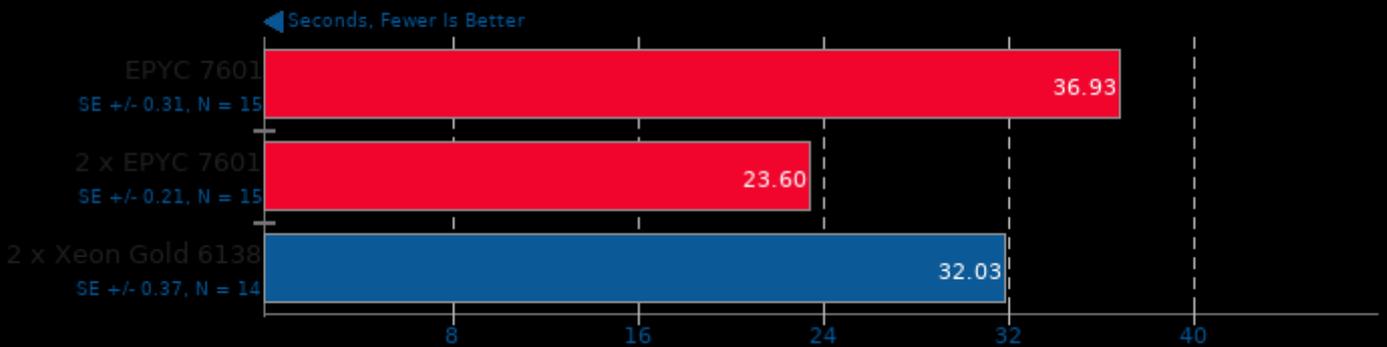
Timed GCC Compilation 8.2

Time To Compile



Timed Linux Kernel Compilation 4.18

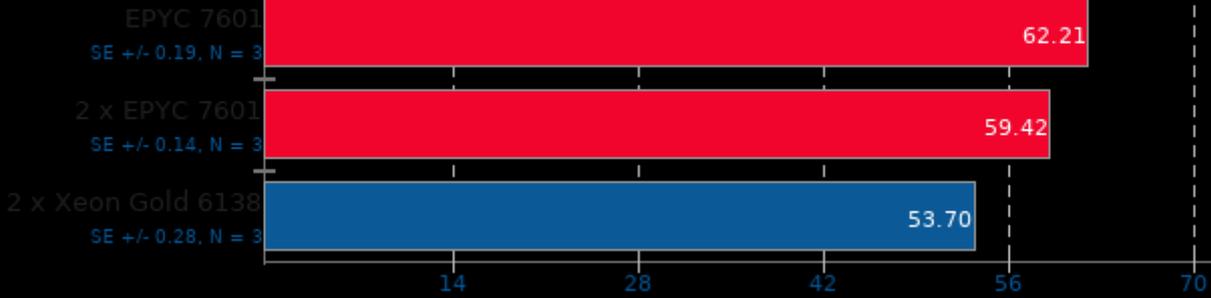
Time To Compile



## Timed PHP Compilation 7.1.9

Time To Compile

← Seconds, Fewer Is Better

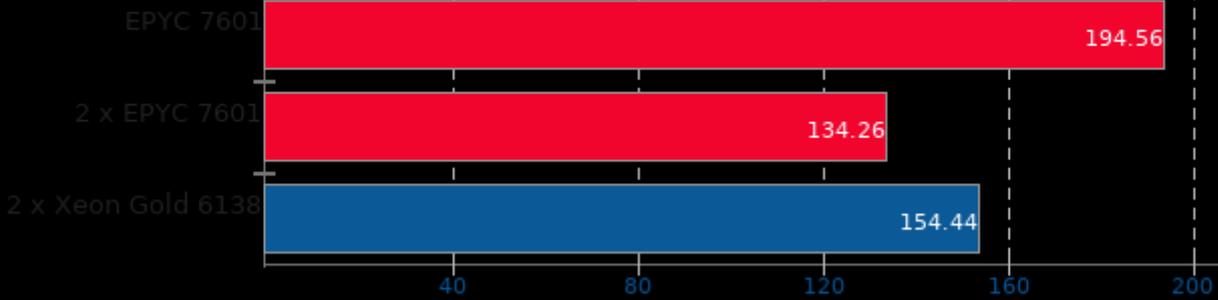


1. (CC) gcc options: -O2 -pedantic -ldl -lz -lm

## Timed LLVM Compilation 6.0.1

Time To Compile

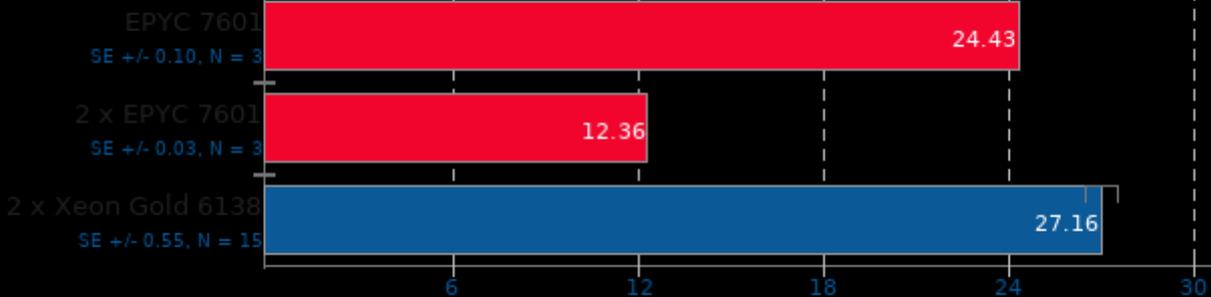
← Seconds, Fewer Is Better



## C-Ray 1.1

Total Time - 4K, 16 Rays Per Pixel

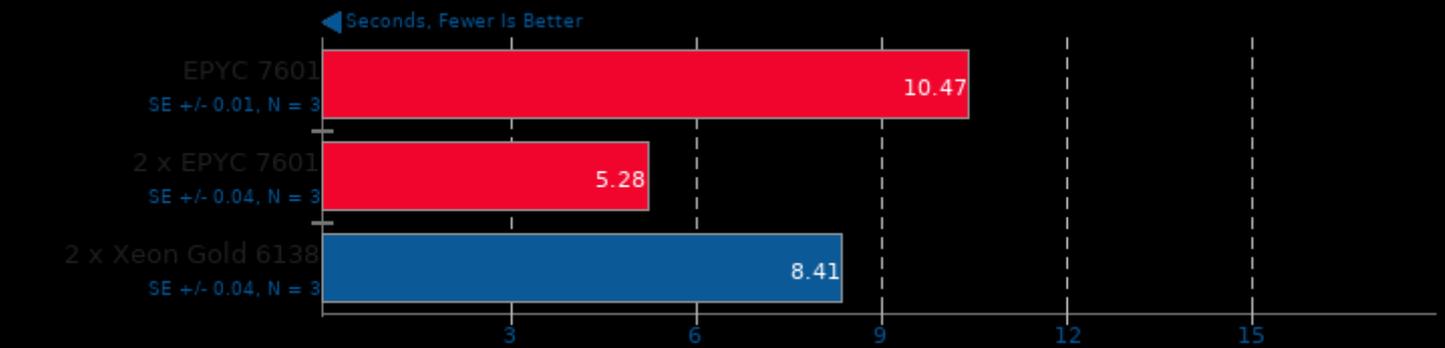
← Seconds, Fewer Is Better



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

## Primesieve 7.4

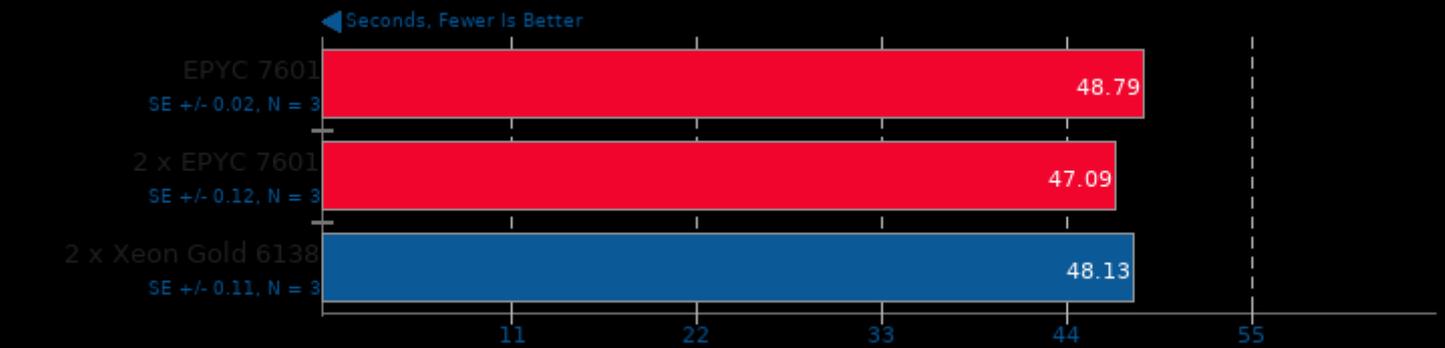
1e12 Prime Number Generation



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

## Rust Mandelbrot

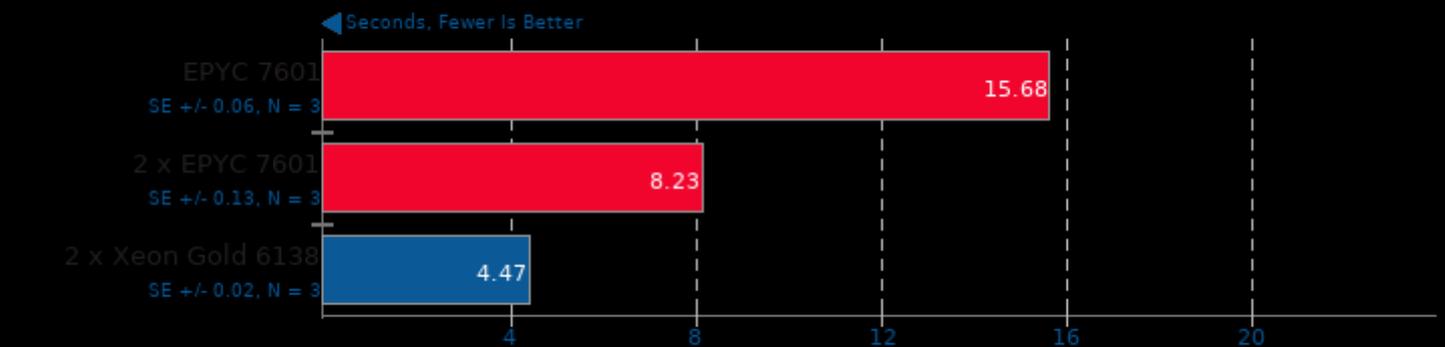
Time To Complete Serial/Parallel Mandelbrot



1. (CC) gcc options: -m64 -pie -nodefaultlibs -lutil -ldl -lrt -lpthread -lgcc\_s -lc -lm

## Rust Prime Benchmark

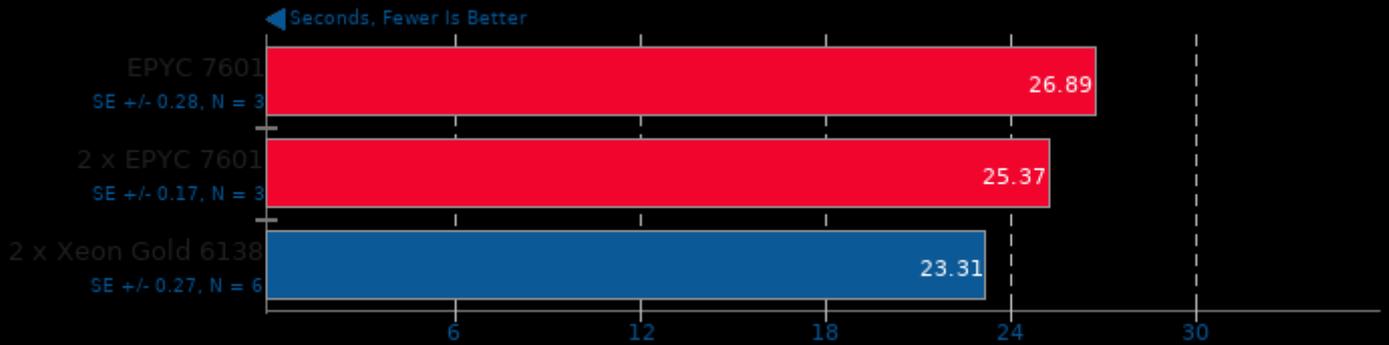
Prime Number Test To 200,000,000



1. (CC) gcc options: -m64 -pie -nodefaultlibs -ldl -lrt -lpthread -lgcc\_s -lc -lm -lutil

## XZ Compression 5.2.4

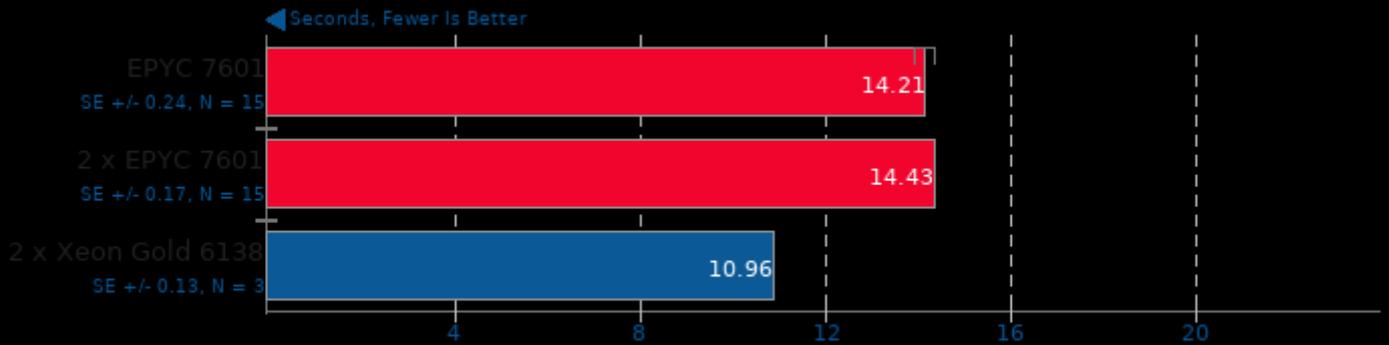
Compressing ubuntu-16.04.3-server-i386.img, Compression Level 9



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

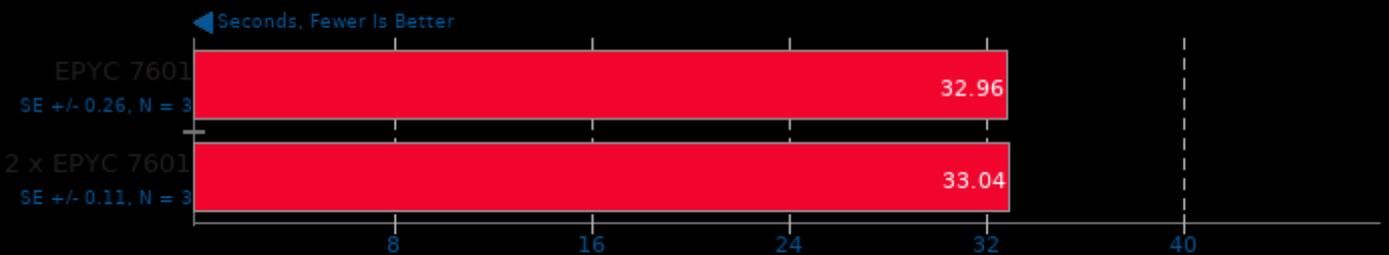
## Zstd Compression 1.3.4

Compressing ubuntu-16.04.3-server-i386.img, Compression Level 19



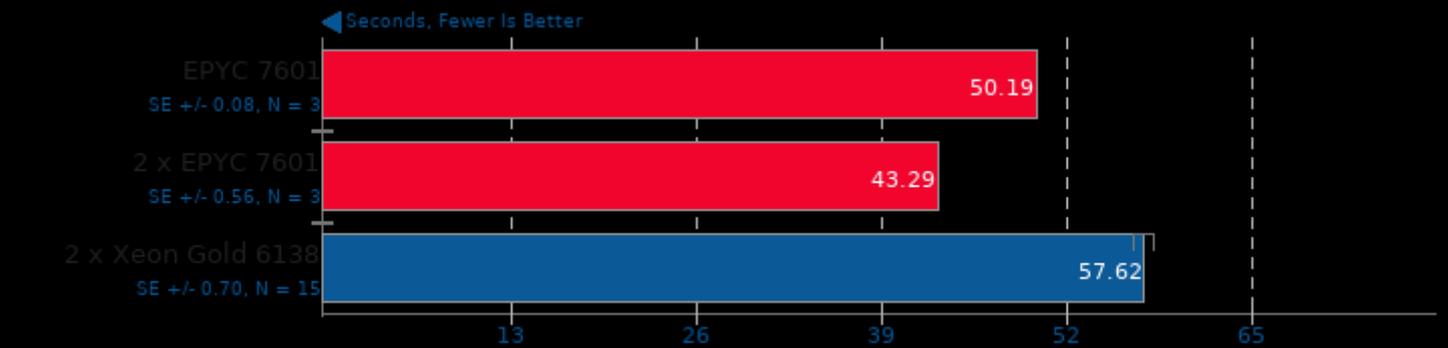
1. (CC) gcc options: -O3 -pthread -lz -llzma

## Cython benchmark 0.27



## Hackbench

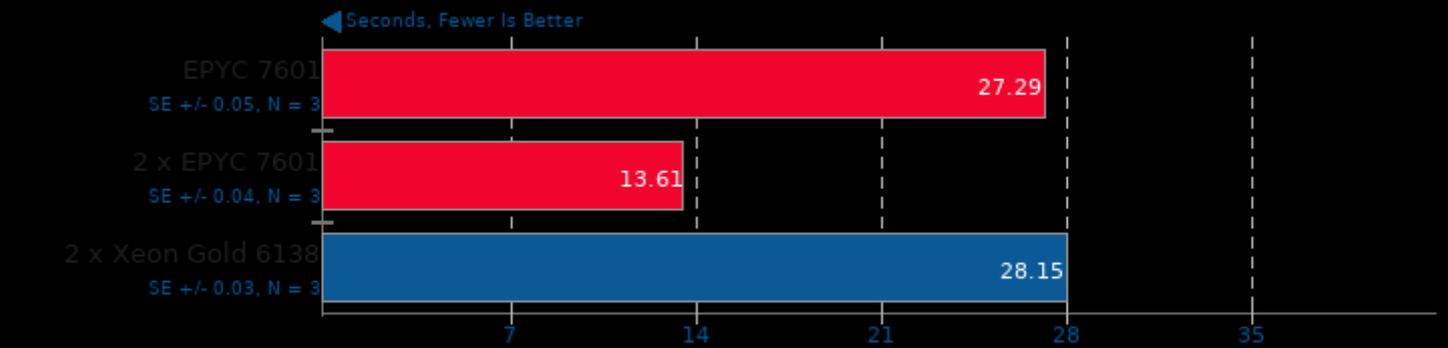
Count: 32 - Type: Process



1. (CC) gcc options: -lthread

## m-queens 1.2

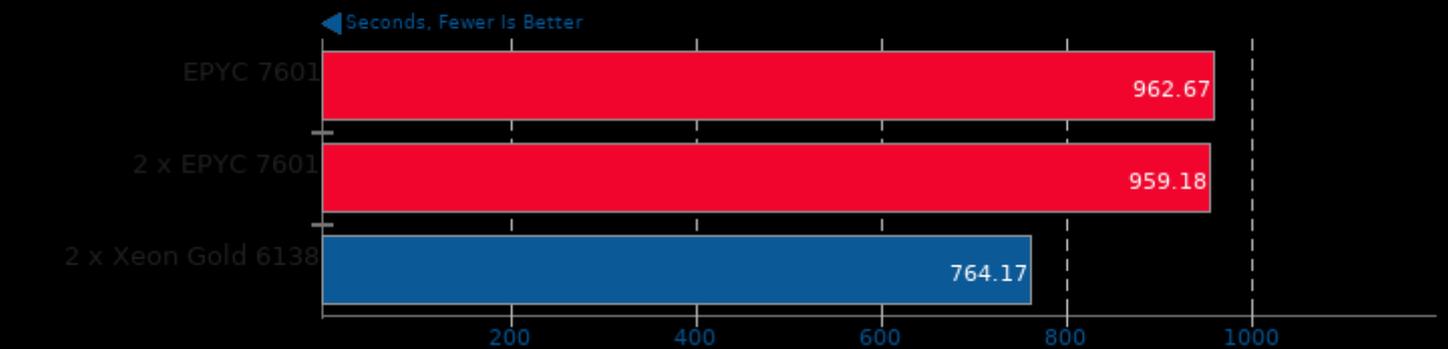
Time To Solve



1. (CXX) g++ options: -fopenmp -O2 -march=native

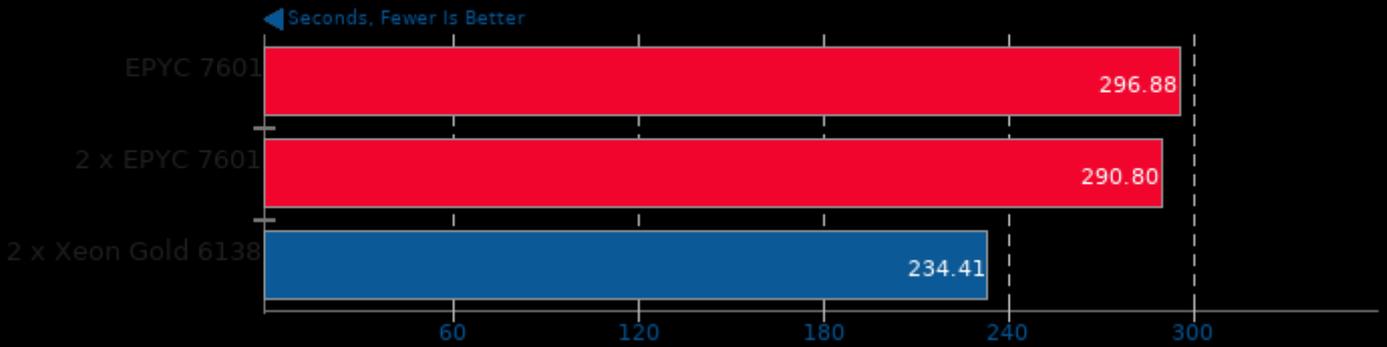
## Radiance Benchmark 5.0

Test: Serial

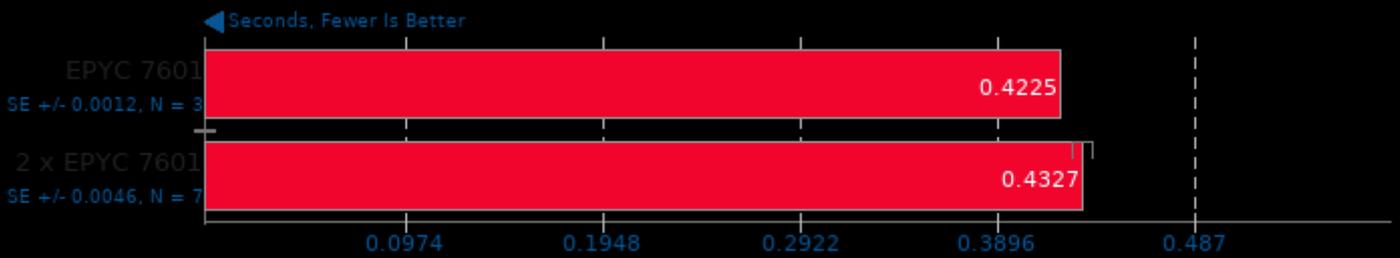


### Radiance Benchmark 5.0

Test: SMP Parallel



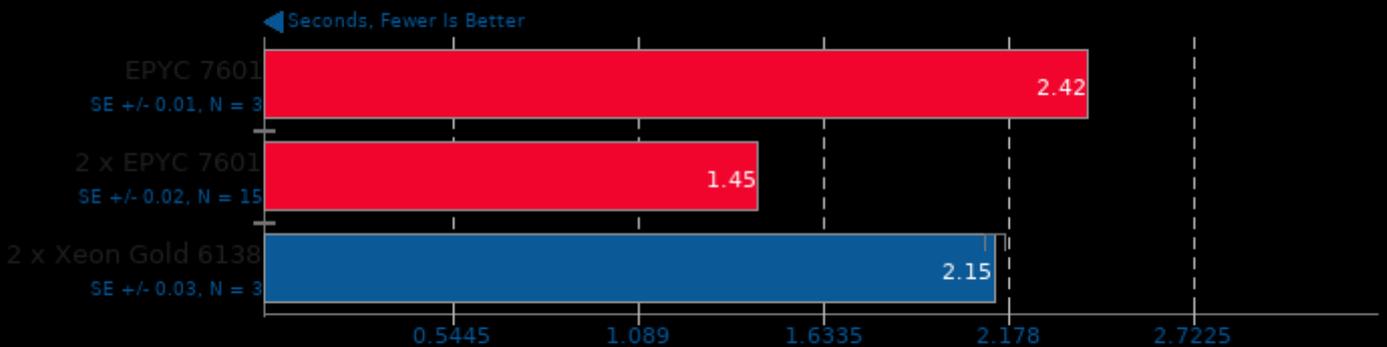
### R Benchmark



1. R scripting front-end version 3.5.2 (2018-12-20)

### Tachyon 0.98.9

Total Time

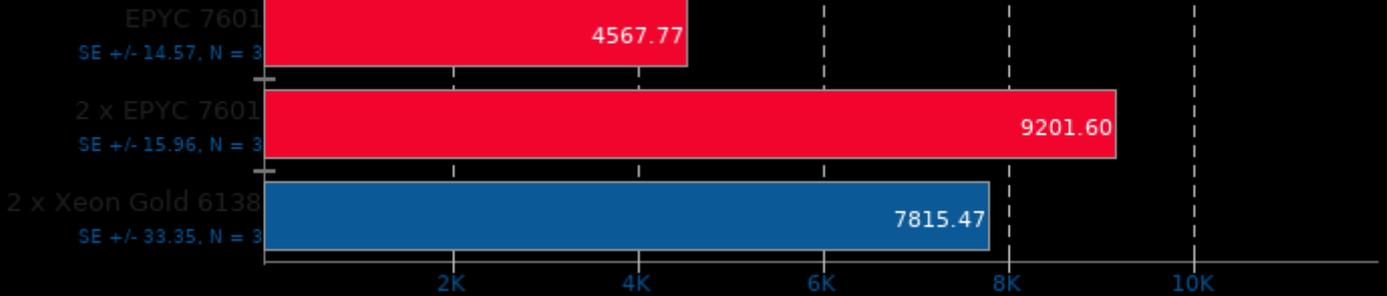


1. (CC) gcc options: -m32 -O3 -fomit-frame-pointer -ffast-math -ltachyon -lm -lpthread

## OpenSSL 1.1.1

RSA 4096-bit Performance

Signs Per Second, More Is Better

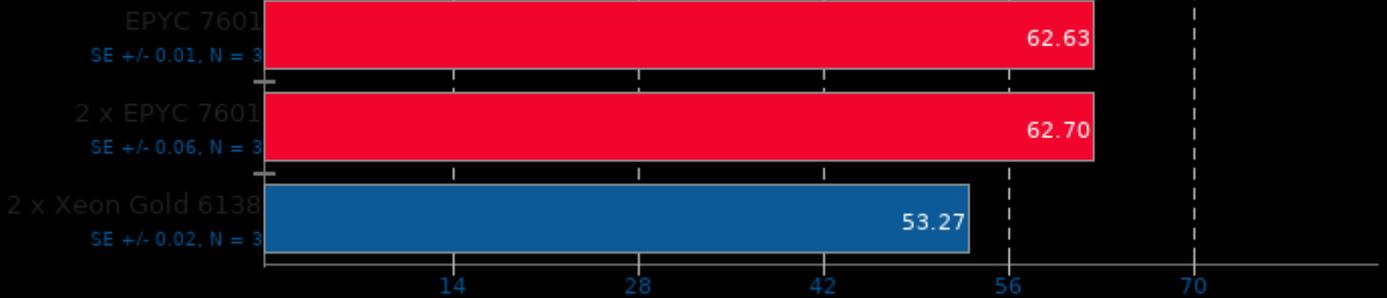


1. (CC) gcc options: -pthread -m64 -O3 -lssl -lcrypto -ldl

## glibc bench 1.0

Benchmark: cos

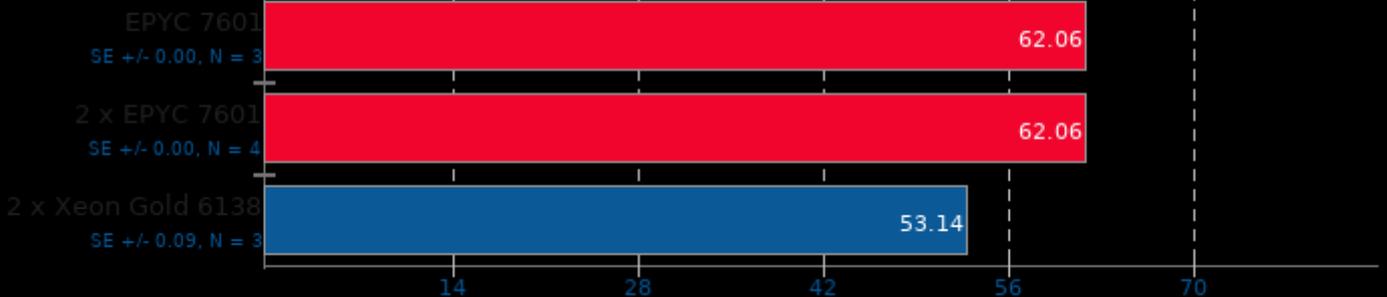
nanoseconds, Fewer Is Better



## glibc bench 1.0

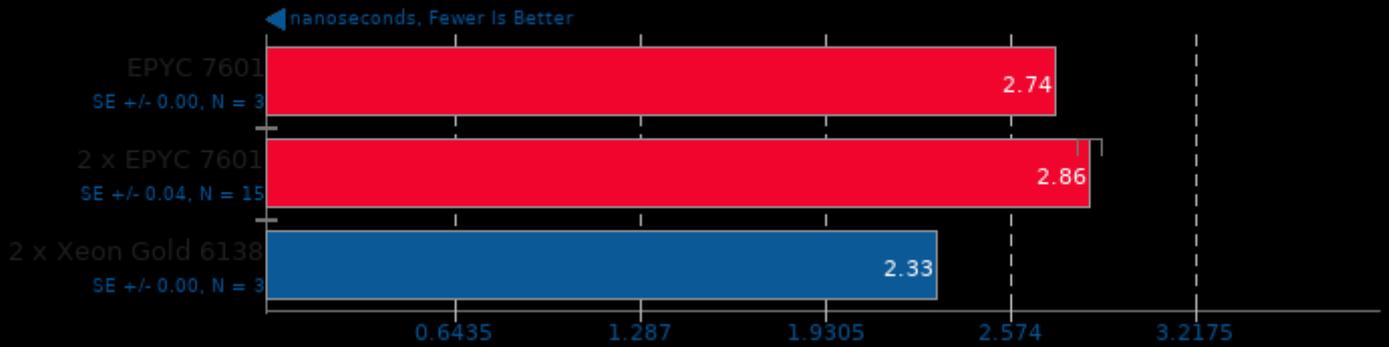
Benchmark: sin

nanoseconds, Fewer Is Better



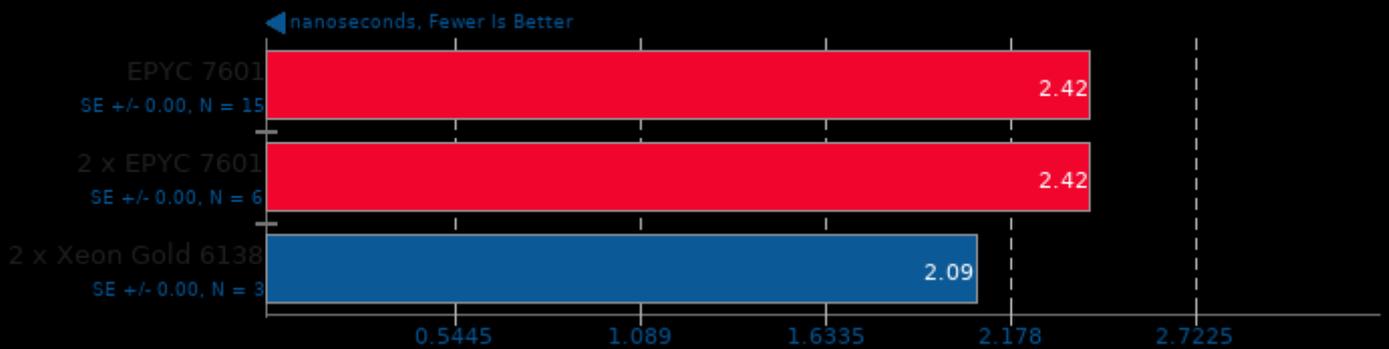
### glibc bench 1.0

Benchmark: sqrt



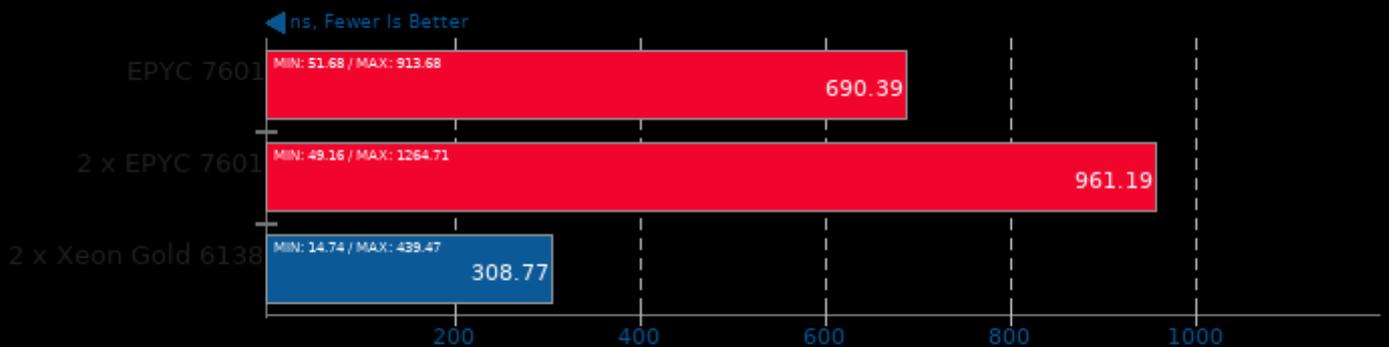
### glibc bench 1.0

Benchmark: pthread\_once



### Core-Latency

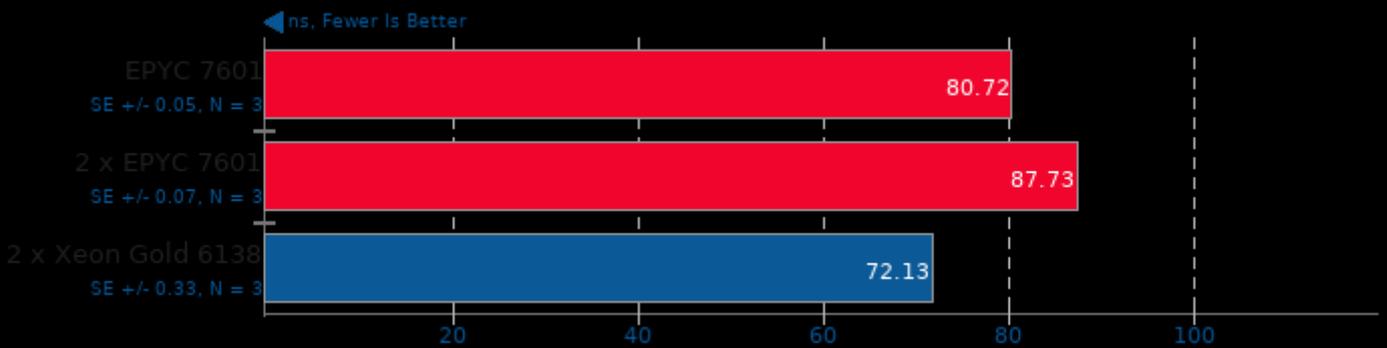
Average Latency Between CPU Cores



1. (CXX) g++ options: -std=c++11 -pthread -O3

## Multichase Pointer Chaser

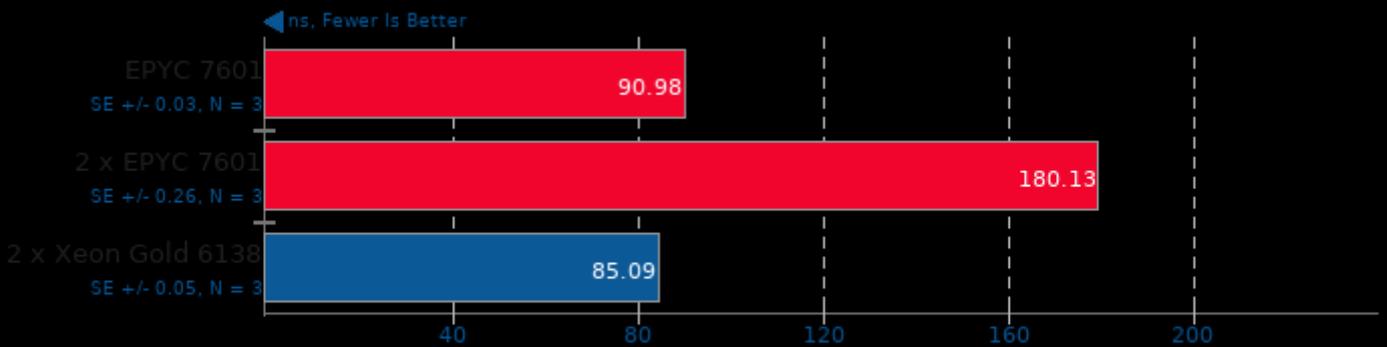
Test: 256MB Array, 256 Byte Stride



1. (CC) gcc options: -O2 -static -pthread -lrt

## Multichase Pointer Chaser

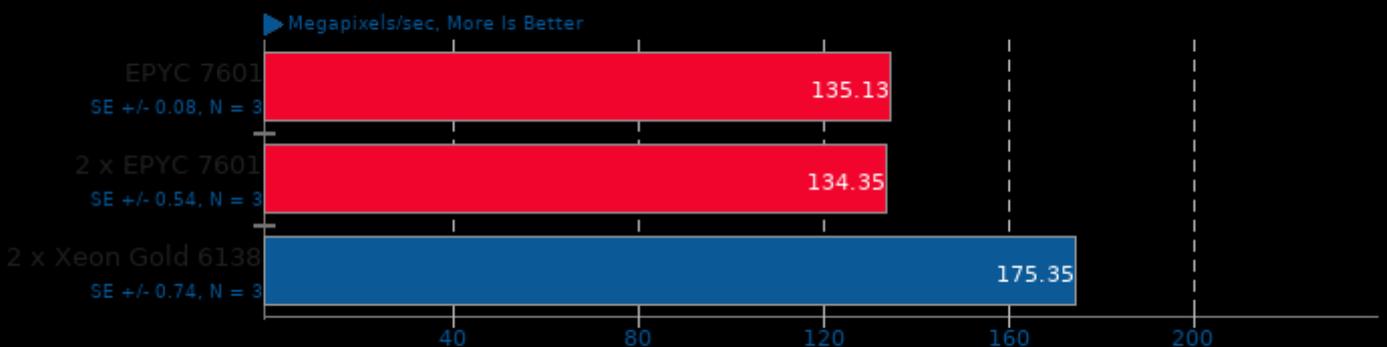
Test: 1GB Array, 256 Byte Stride, 4 Threads



1. (CC) gcc options: -O2 -static -pthread -lrt

## libjpeg-turbo tjbench 2.0.2

Test: Decompression Throughput



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

## GROMACS 2018.3

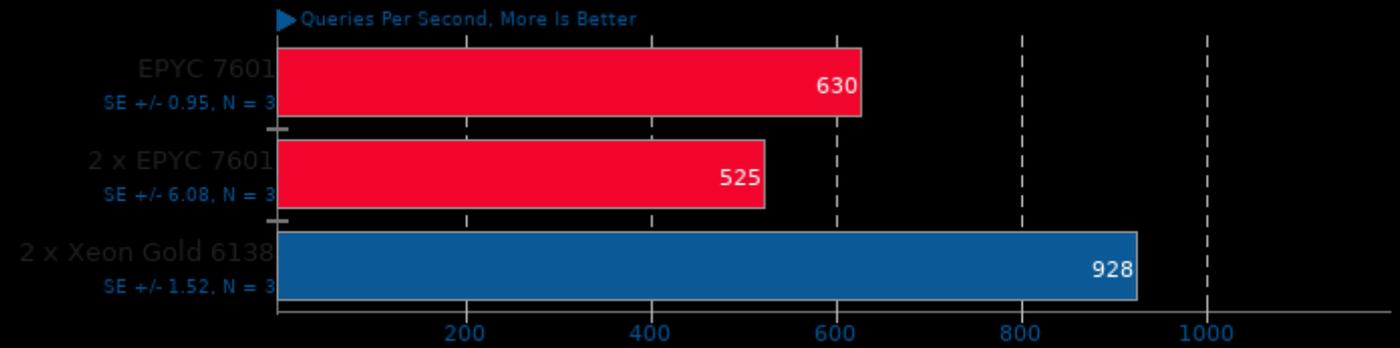
Water Benchmark



1. (CXX) g++ options: -march=core-avx2 -std=c++11 -O3 -funroll-all-loops -fopenmp -lrt -lthread -lm

## MariaDB 10.3.8

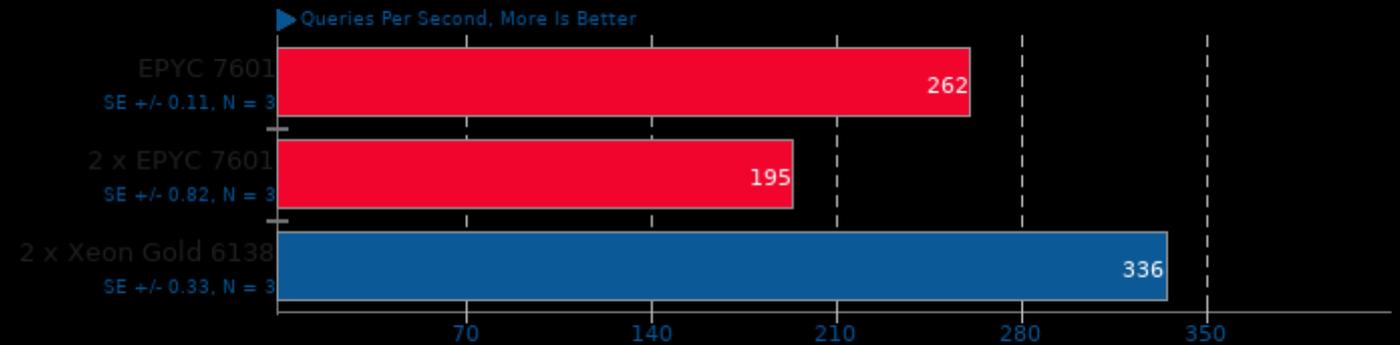
Clients: 64



1. (CXX) g++ options: -pie -fPIC -fstack-protector -fno-rtti -O2 -lthread -llzma -lbz2 -laio -lnuma -lz -lm -lpcre -lcrypt -lssl -lcrypto -ldl

## MariaDB 10.3.8

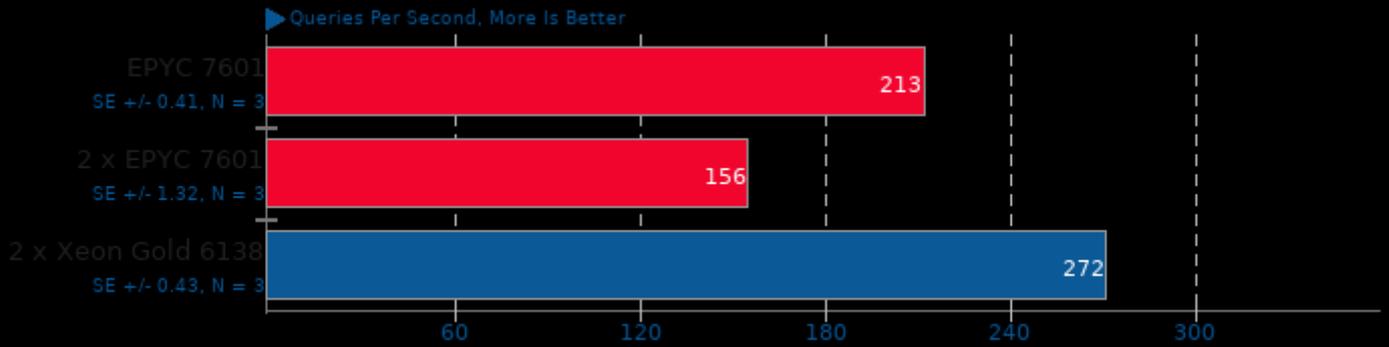
Clients: 128



1. (CXX) g++ options: -pie -fPIC -fstack-protector -fno-rtti -O2 -lthread -llzma -lbz2 -laio -lnuma -lz -lm -lpcre -lcrypt -lssl -lcrypto -ldl

### MariaDB 10.3.8

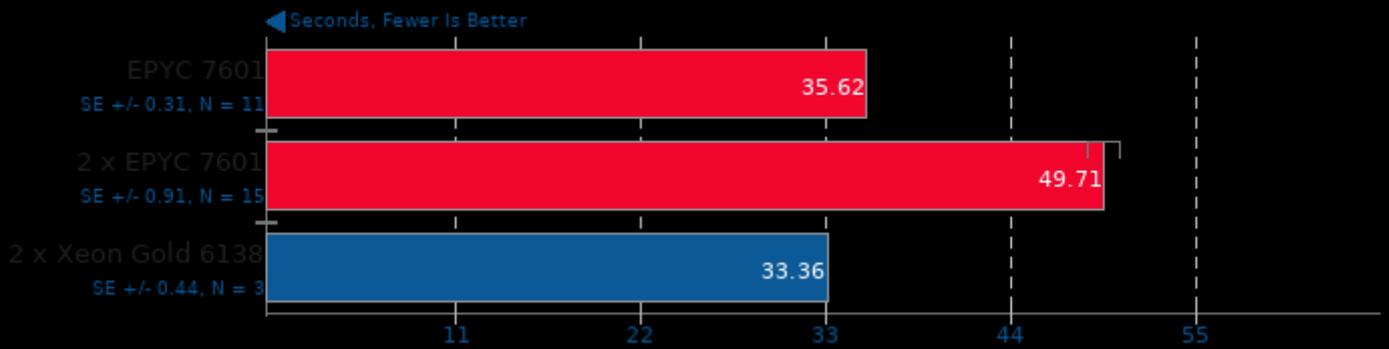
Clients: 256



1. (CXX) g++ options: -pie -fPIC -fstack-protector -fno-rtti -O2 -lpthread -lzip -lbz2 -laio -lnuma -lz -lm -lpcrc -lcrypt -lssl -lcrypto -ldl

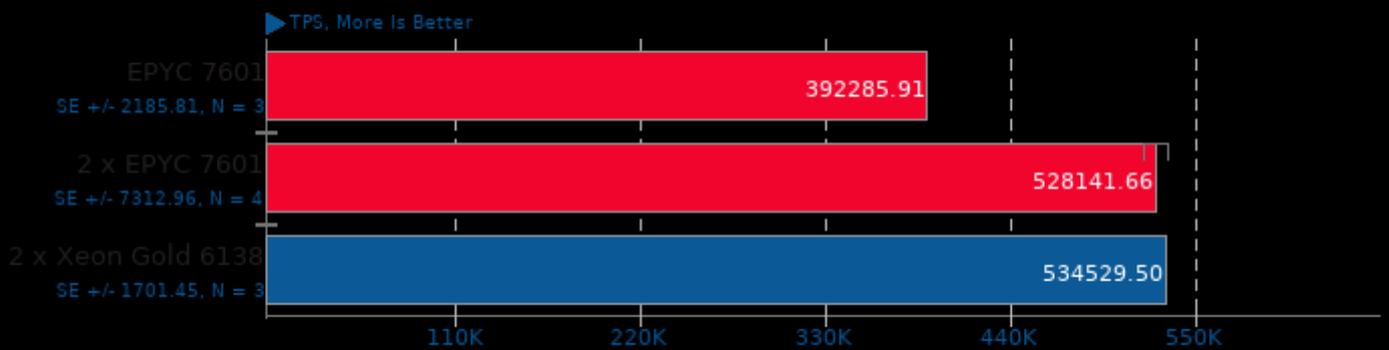
### Tensorflow 2017-02-03

Build: Cifar10



### PostgreSQL pgbench 10.3

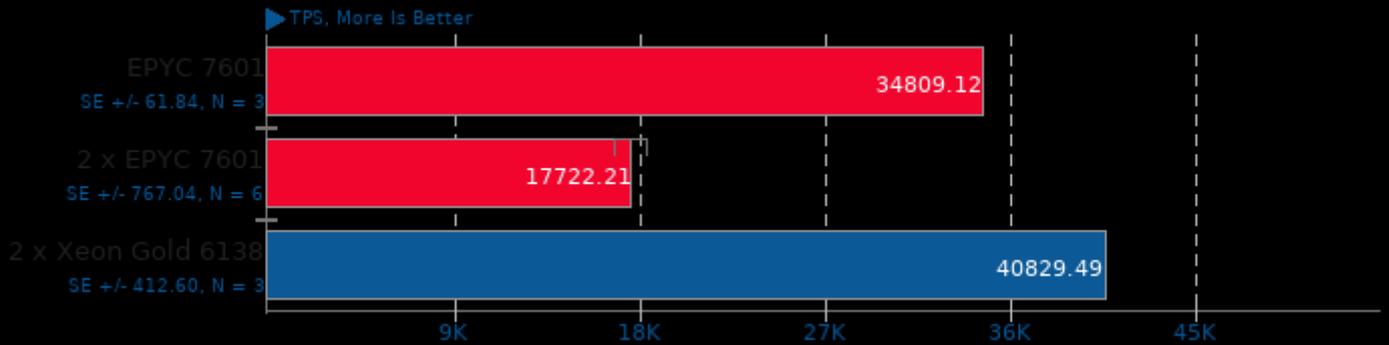
Scaling: Buffer Test - Test: Normal Load - Mode: Read Only



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

## PostgreSQL pgbench 10.3

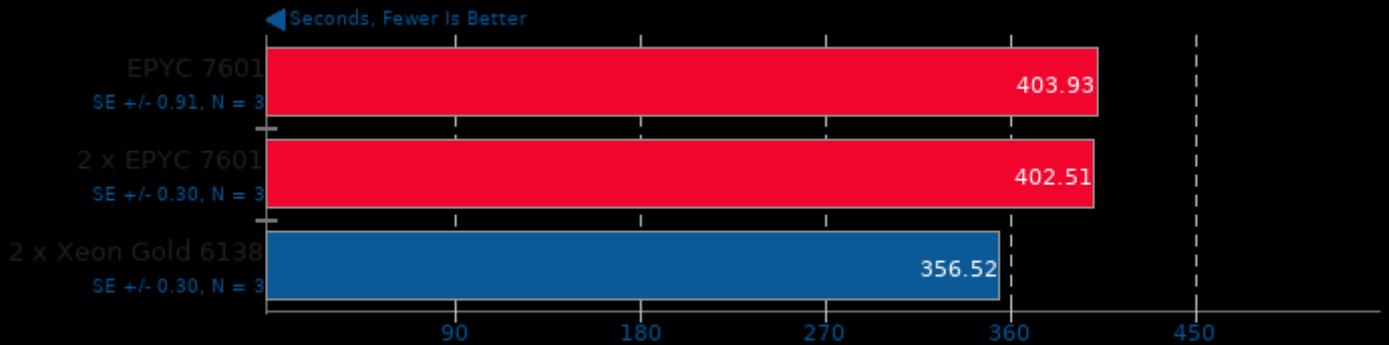
Scaling: Buffer Test - Test: Normal Load - Mode: Read Write



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

## CppPerformanceBenchmarks 9

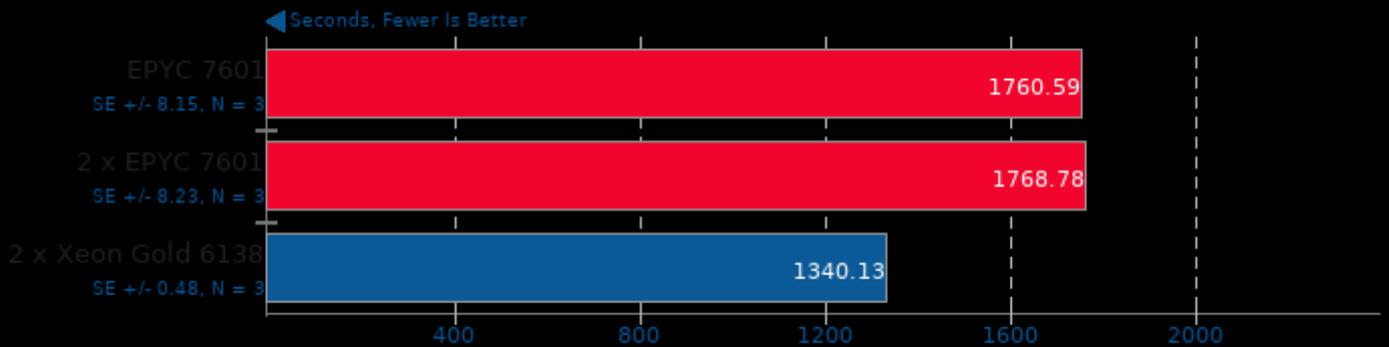
Test: Math Library



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

## CppPerformanceBenchmarks 9

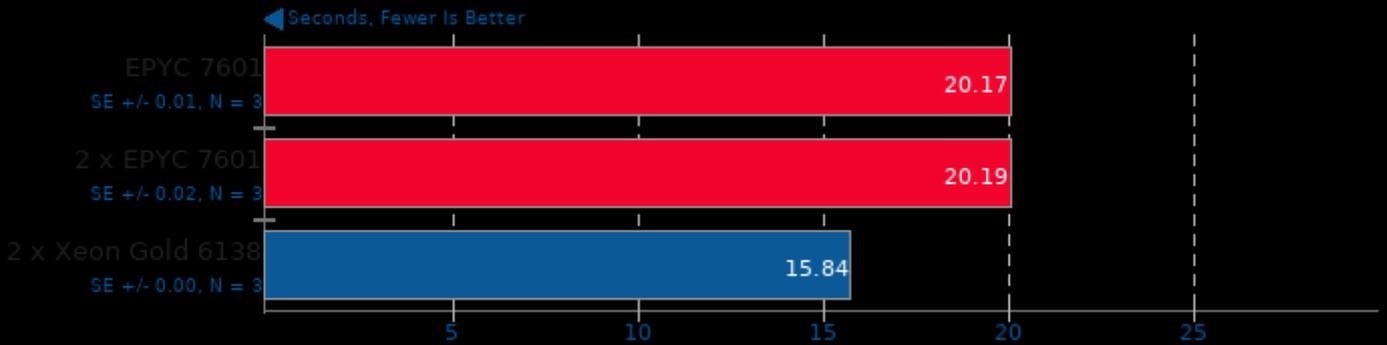
Test: Random Numbers



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

## CppPerformanceBenchmarks 9

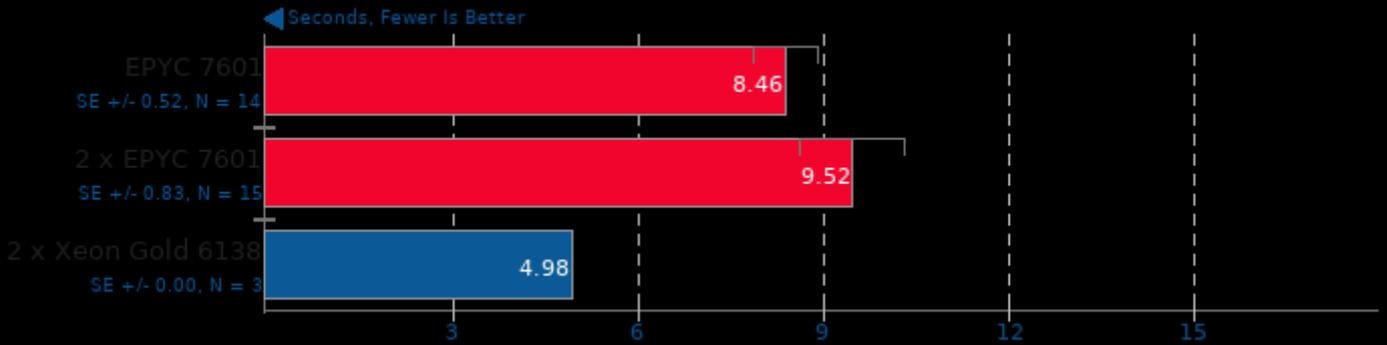
Test: Function Objects



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

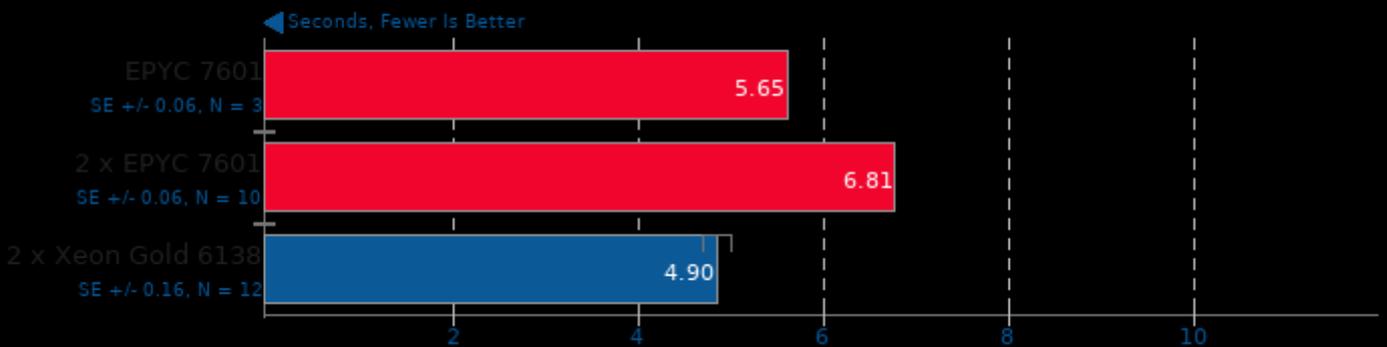
## Darktable 2.6.0

Test: Boat - Acceleration: CPU-only



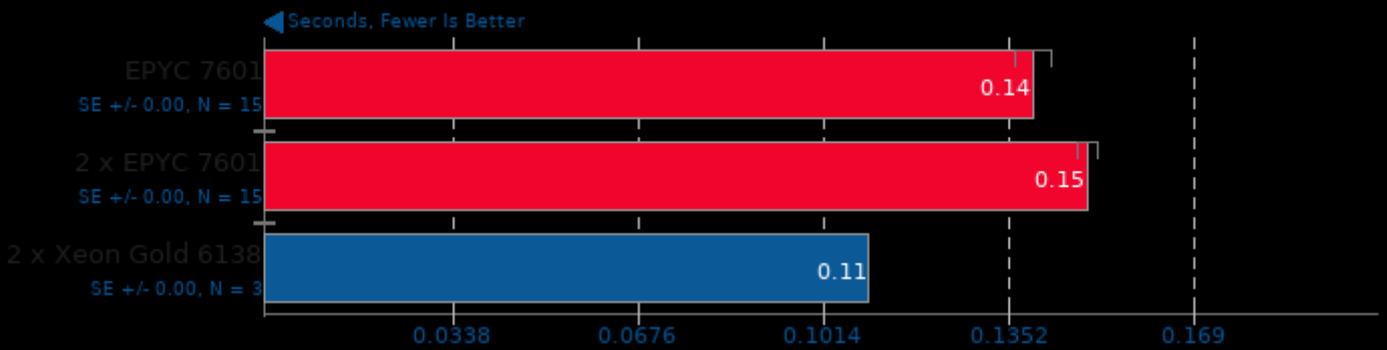
## Darktable 2.6.0

Test: Masskrug - Acceleration: CPU-only



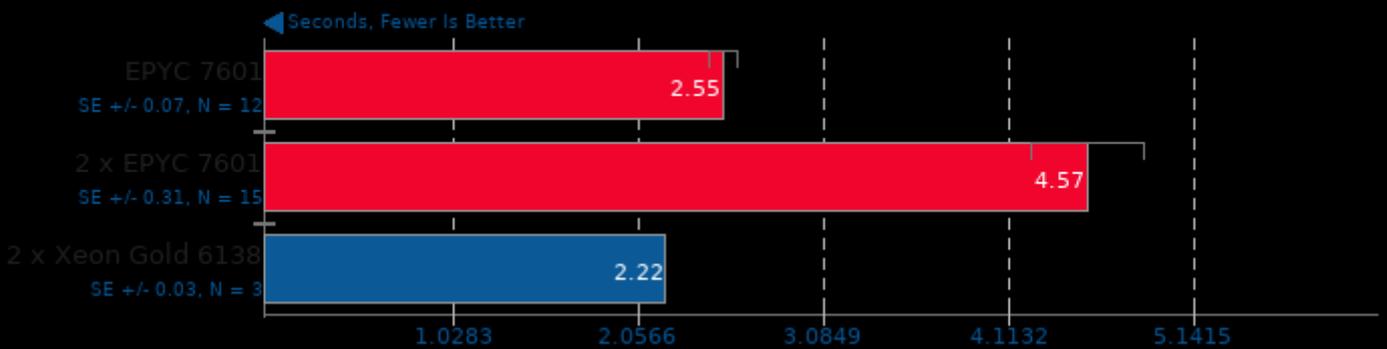
## Darktable 2.6.0

Test: Server Rack - Acceleration: CPU-only



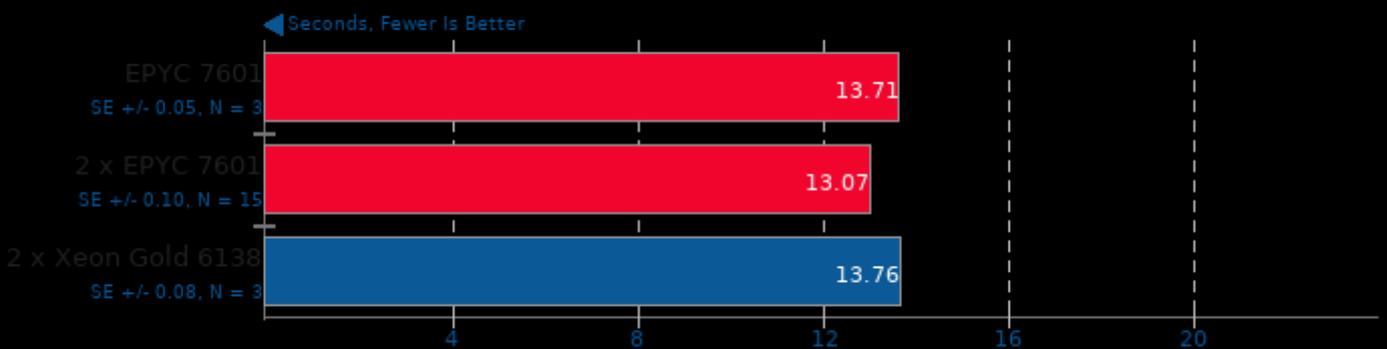
## Darktable 2.6.0

Test: Server Room - Acceleration: CPU-only



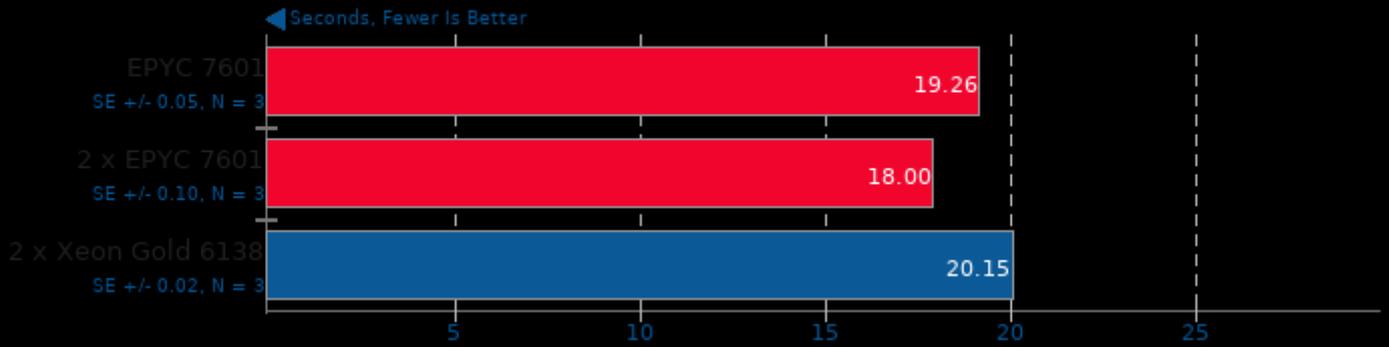
## GIMP 2.10.8

Test: resize



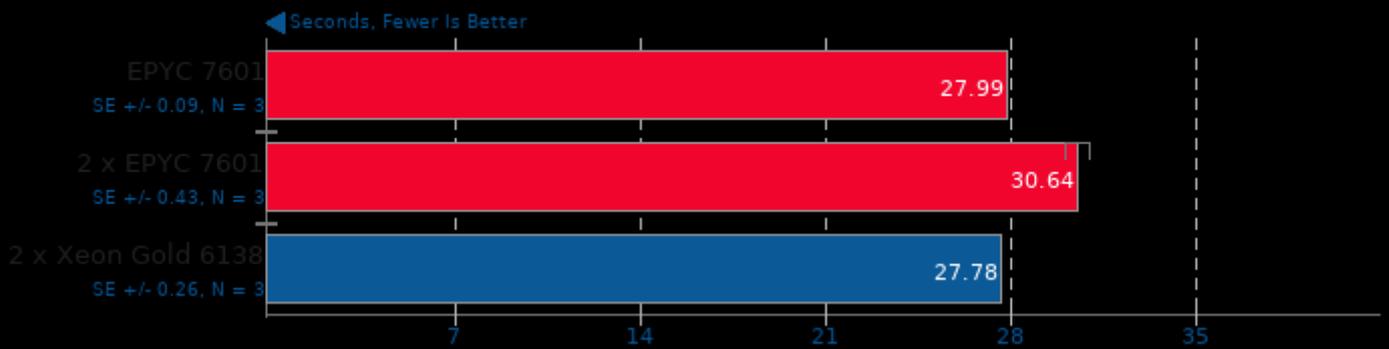
## GIMP 2.10.8

Test: rotate



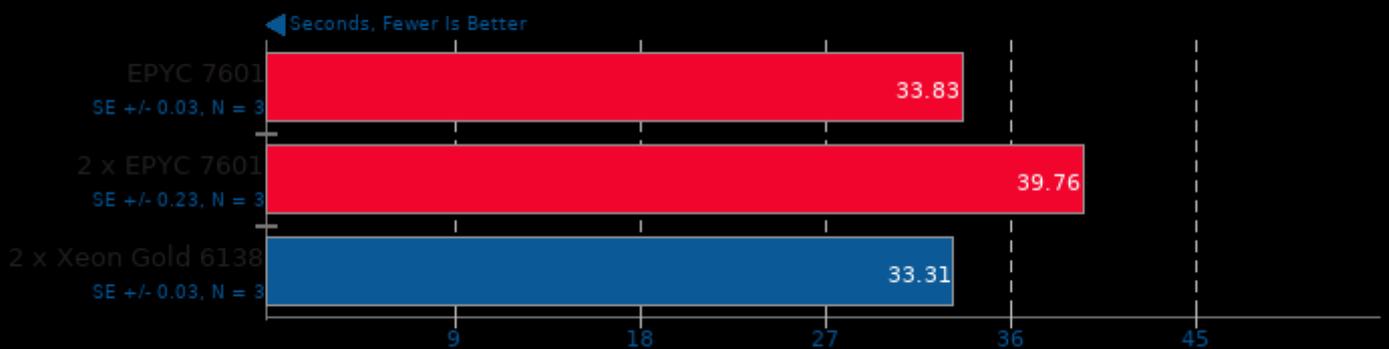
## GIMP 2.10.8

Test: auto-levels



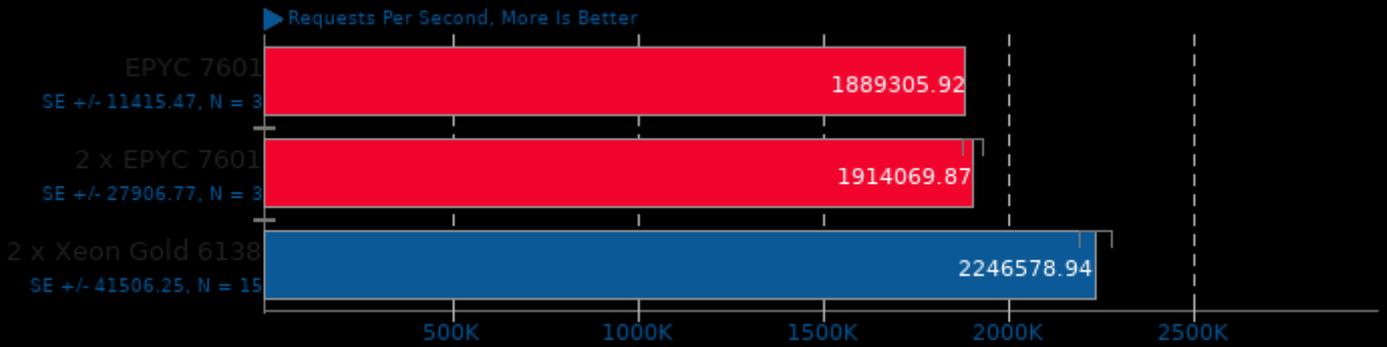
## GIMP 2.10.8

Test: unsharp-mask



### Redis 4.0.8

Test: GET



1. (CC) gcc options: -ggdb -rdynamic -lm -ldl -pthread

### Redis 4.0.8

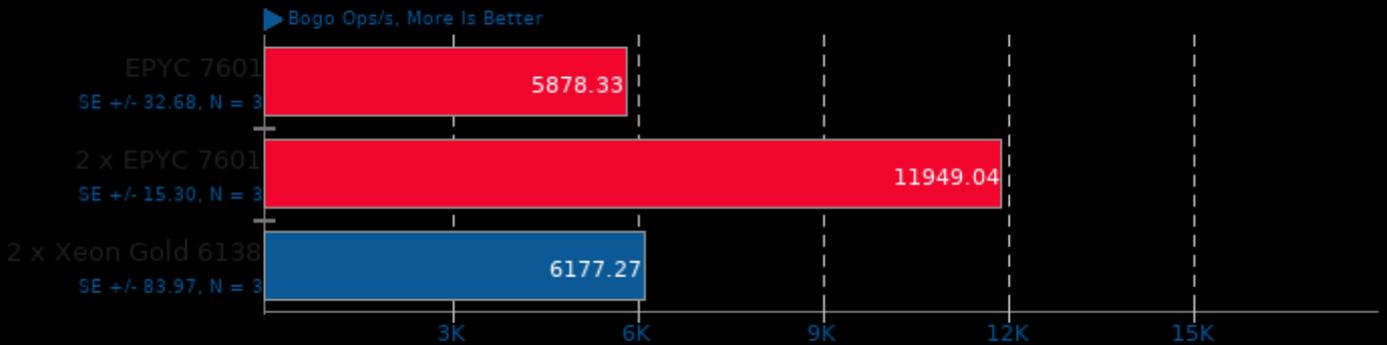
Test: SET



1. (CC) gcc options: -ggdb -rdynamic -lm -ldl -pthread

### Stress-NG 0.07.26

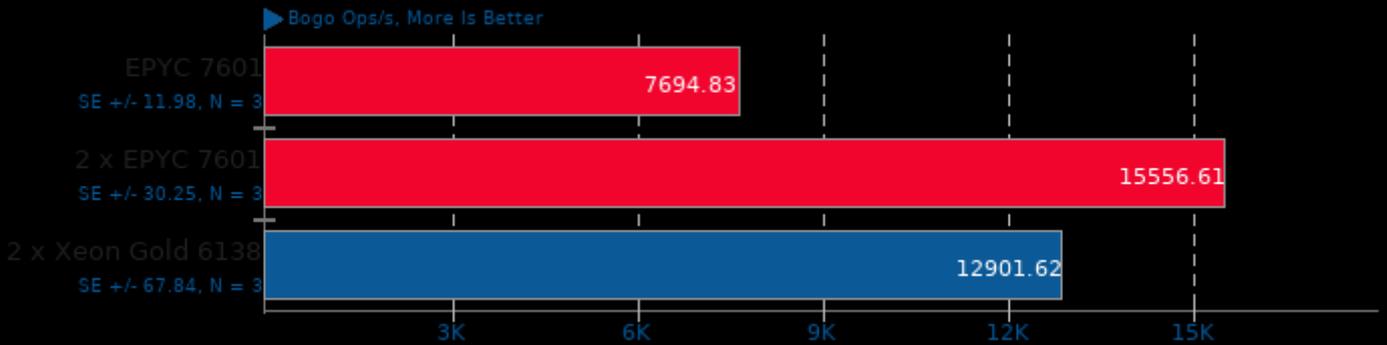
Test: Crypto



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

### Stress-NG 0.07.26

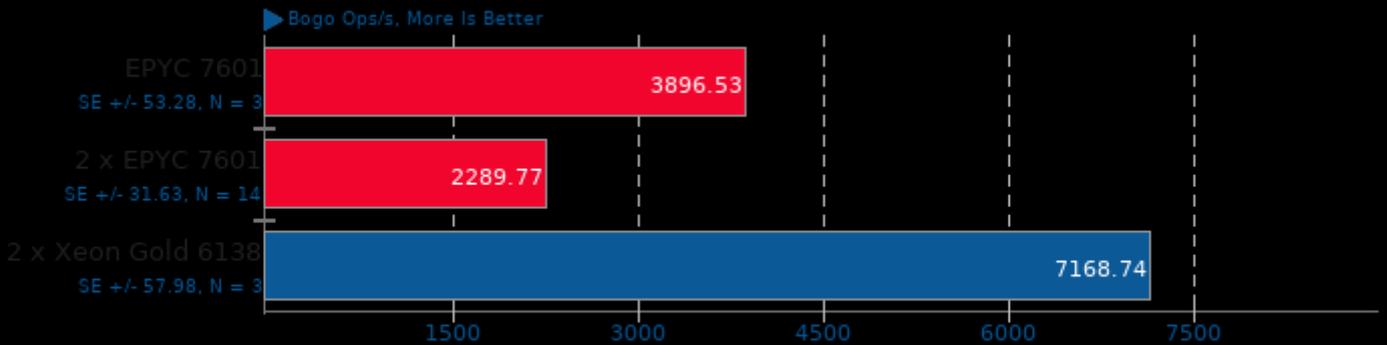
Test: CPU Stress



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

### Stress-NG 0.07.26

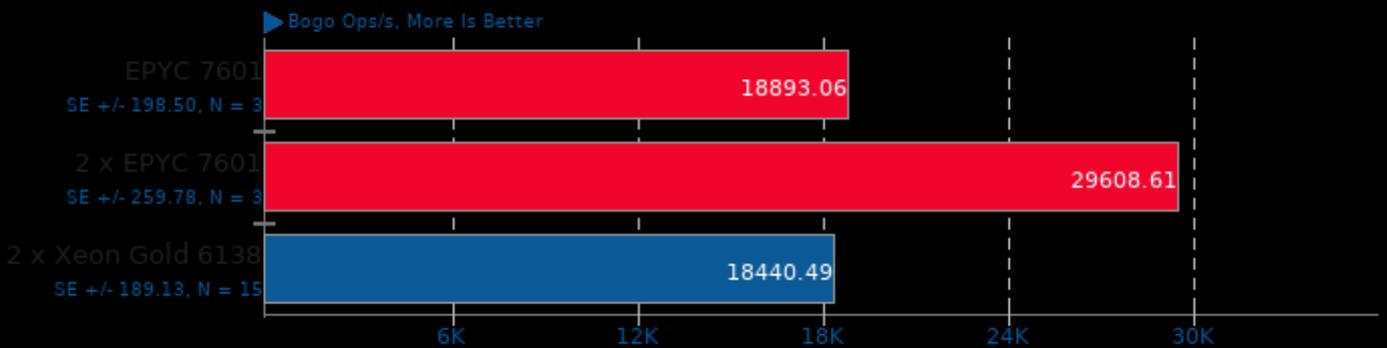
Test: Memory Copying



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

### Stress-NG 0.07.26

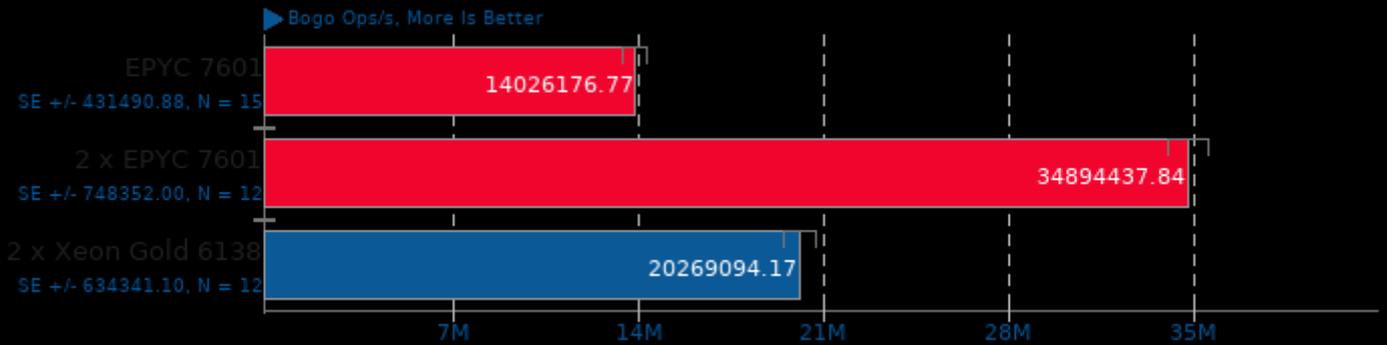
Test: Socket Activity



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

### Stress-NG 0.07.26

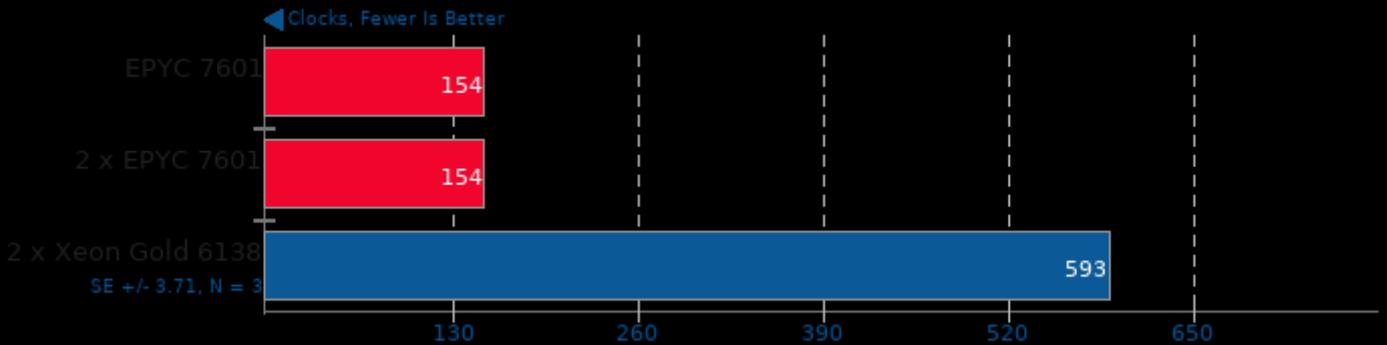
Test: Context Switching



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

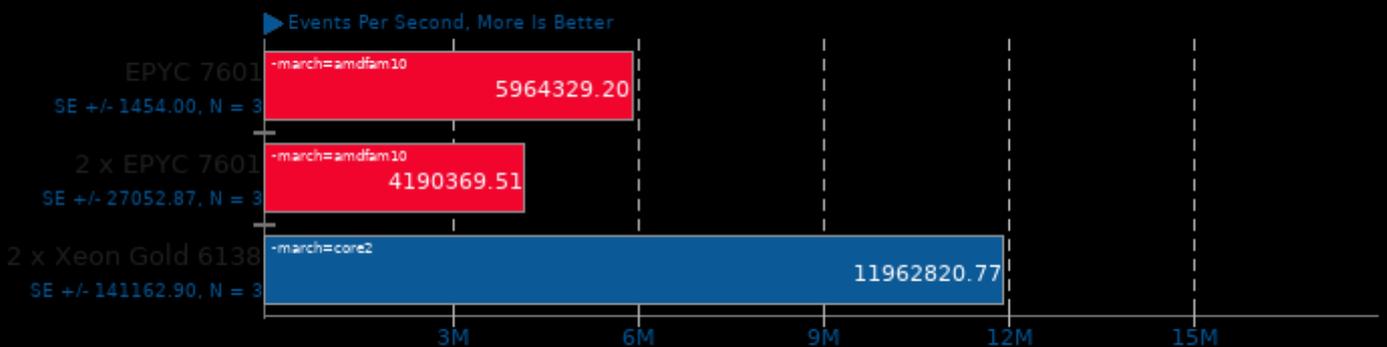
### ctx\_clock

Context Switch Time



### Sysbench 2018-07-28

Test: Memory

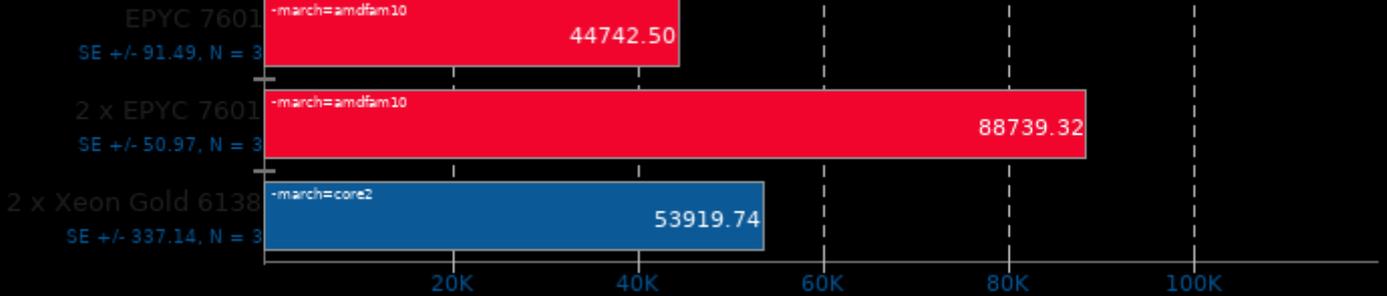


1. (CC) gcc options: -pthread -O3 -funroll-loops -ggdb3 -rdynamic -ldl -laio -lm

## Sysbench 2018-07-28

Test: CPU

▶ Events Per Second, More Is Better

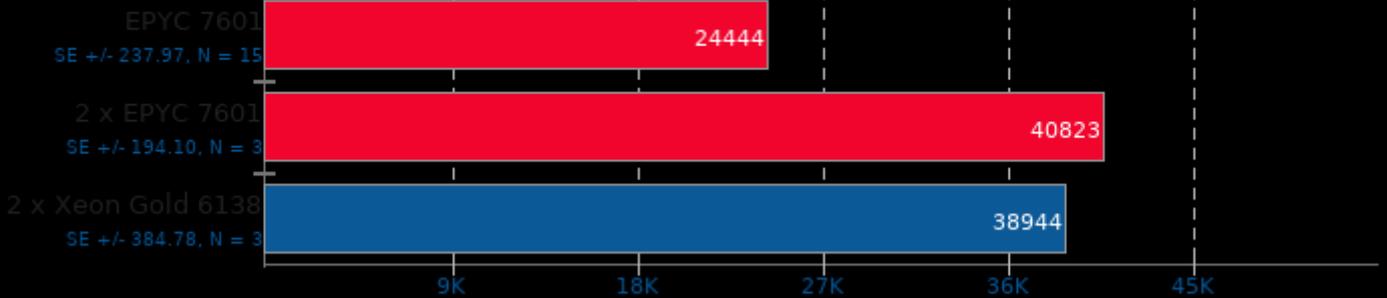


1. (CC) gcc options: -pthread -O3 -funroll-loops -ggdb3 -rdynamic -ldl -laio -lm

## Chaos Group V-RAY 4.10.03

Mode: CPU

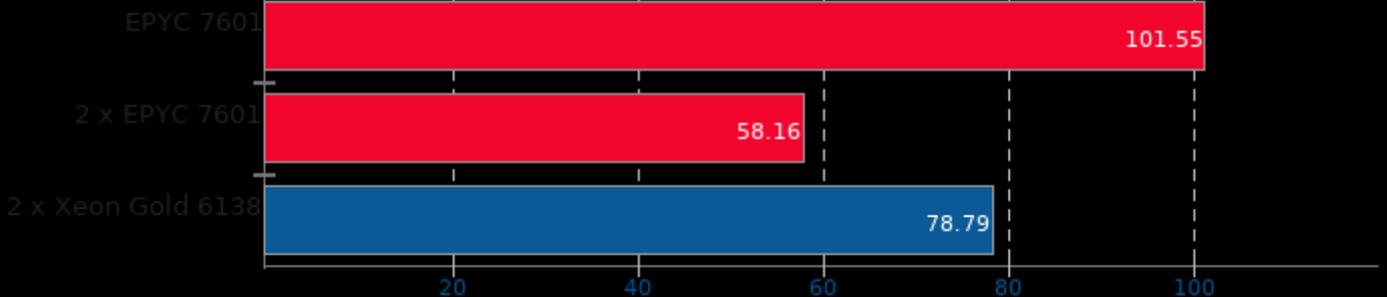
▶ Ksamples, More Is Better



## Blender 2.79a

Blend File: BMW27 - Compute: CPU-Only

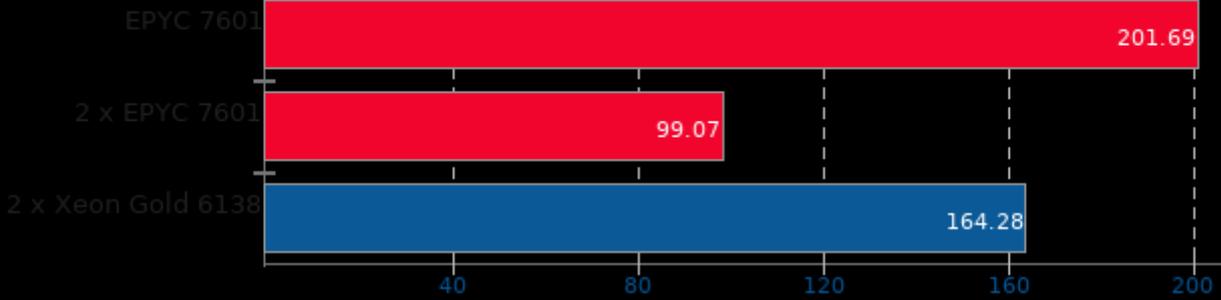
◀ Seconds, Fewer Is Better



## Blender 2.79a

Blend File: Classroom - Compute: CPU-Only

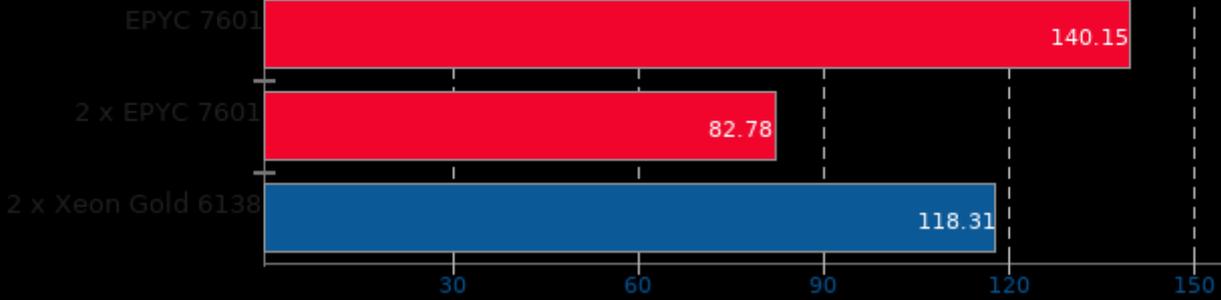
← Seconds, Fewer Is Better



## Blender 2.79a

Blend File: Fishy Cat - Compute: CPU-Only

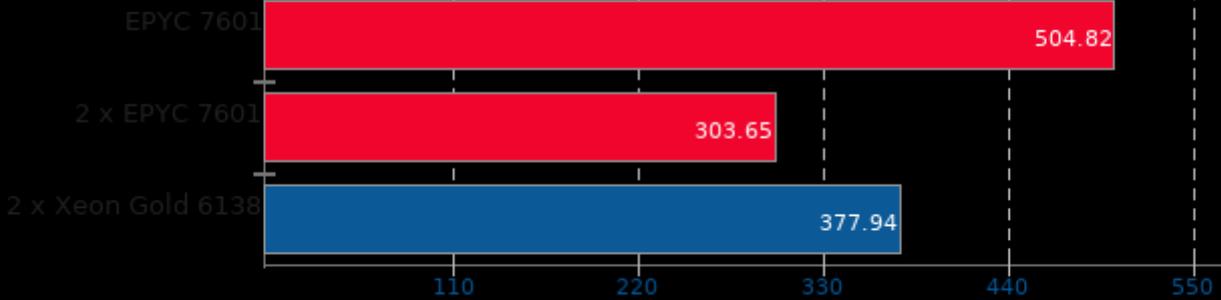
← Seconds, Fewer Is Better



## Blender 2.79a

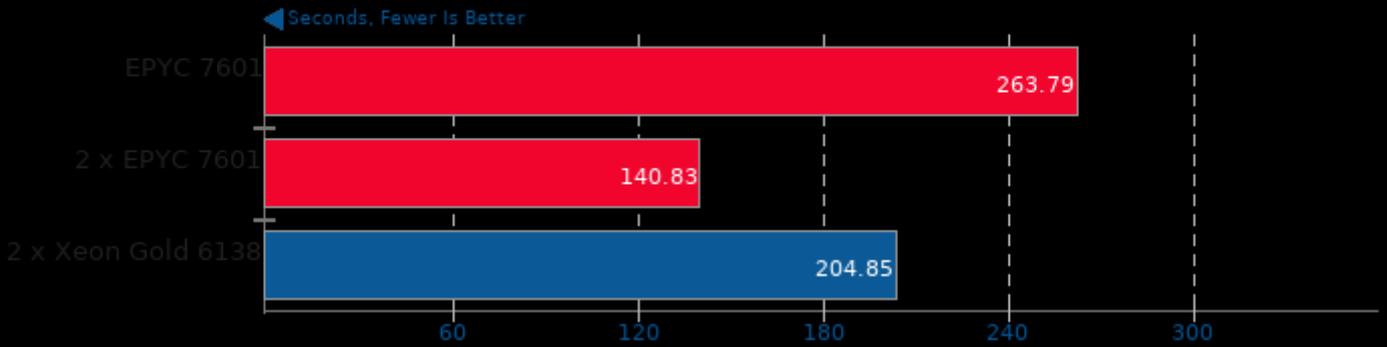
Blend File: Barbershop - Compute: CPU-Only

← Seconds, Fewer Is Better



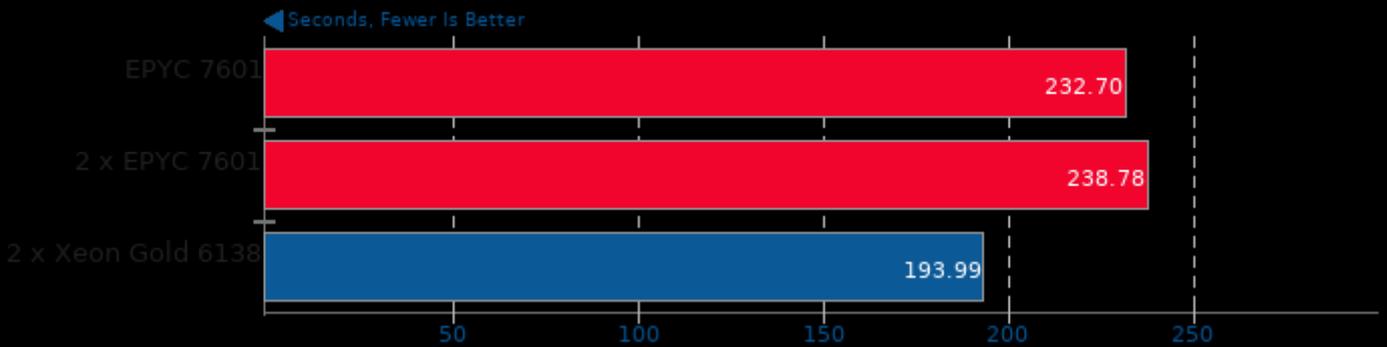
## Blender 2.79a

Blend File: Pabellon Barcelona - Compute: CPU-Only



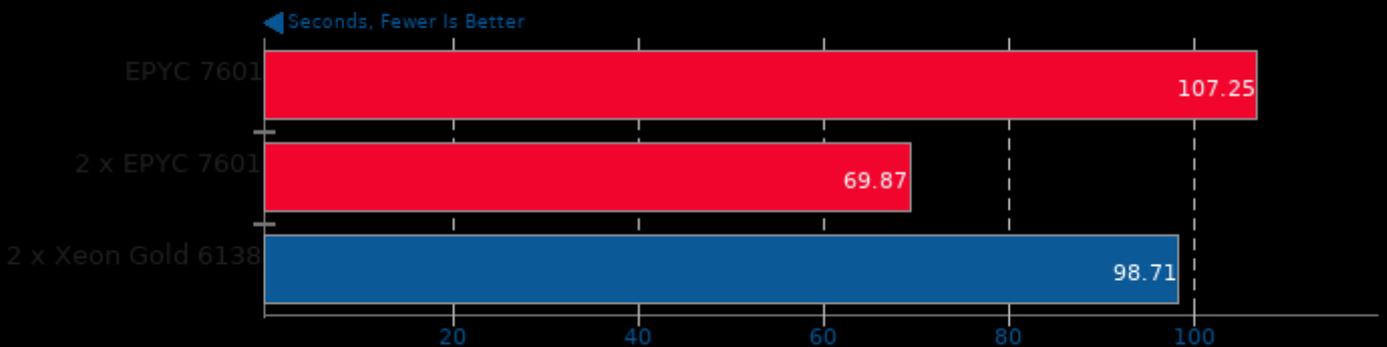
## Appleseed 2.0 Beta

Scene: Emily



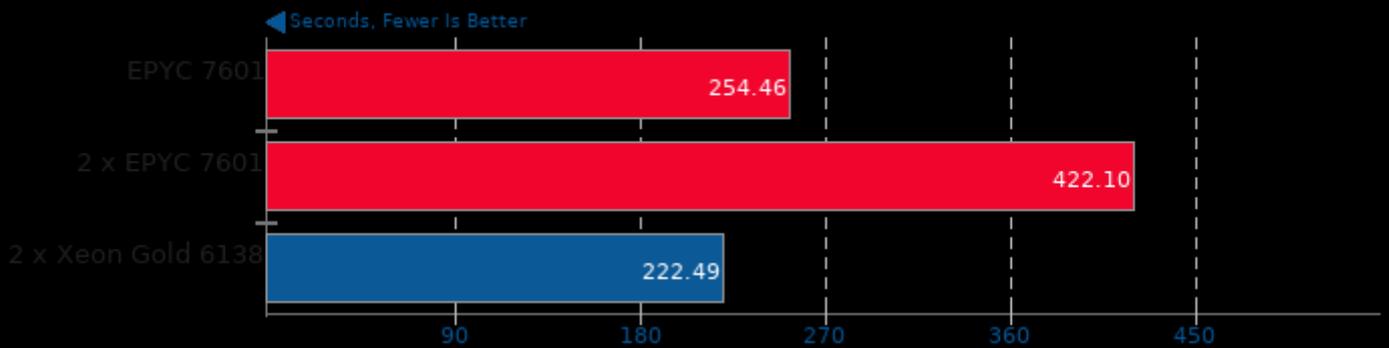
## Appleseed 2.0 Beta

Scene: Disney Material



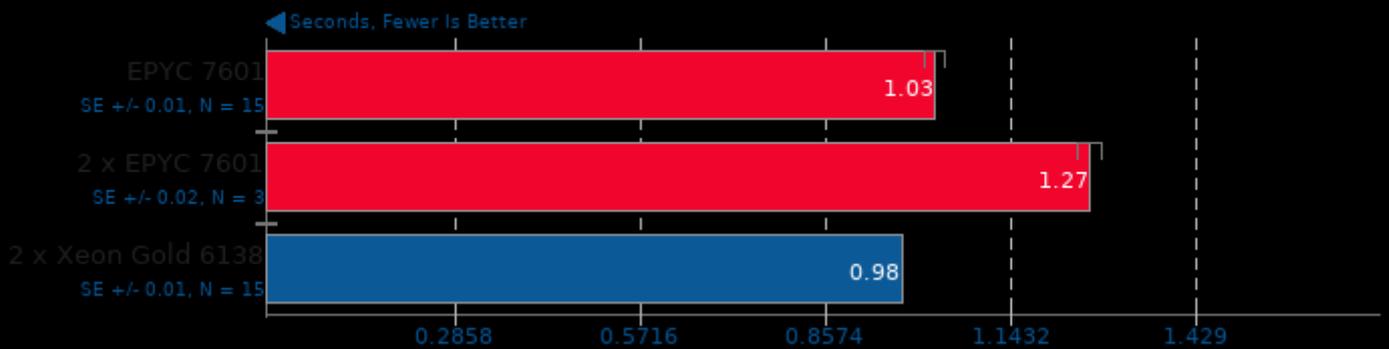
### Appleseed 2.0 Beta

Scene: Material Tester



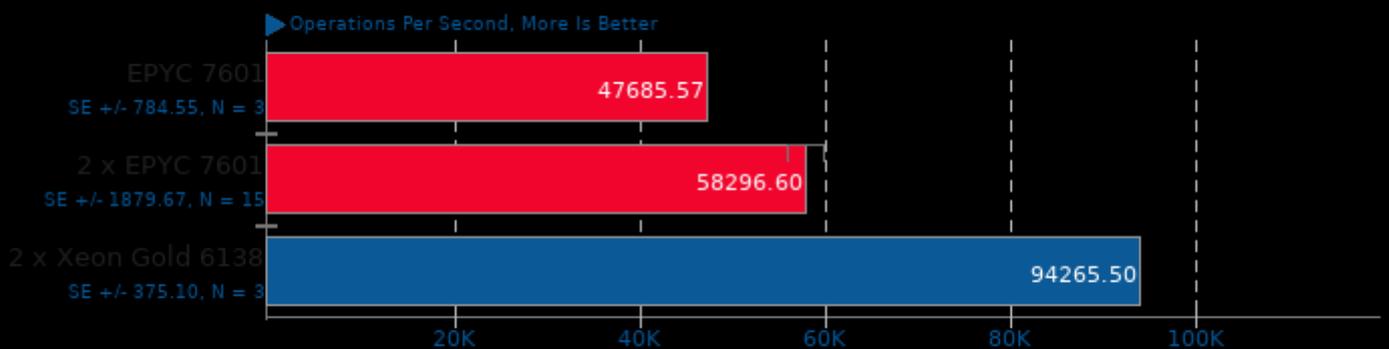
### Sunflow Rendering System 0.07.2

Global Illumination + Image Synthesis



### Memcached mcperf 1.5.10

Method: Get



1. (CC) gcc options: -O2 -lm -rdynamic

### Memcached mcperf 1.5.10

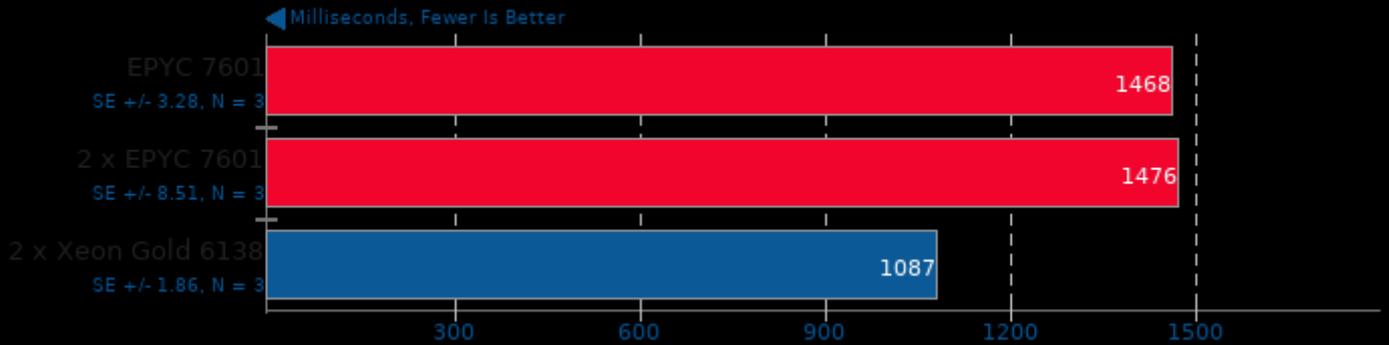
Method: Set



1. (CC) gcc options: -O2 -lm -rdynamic

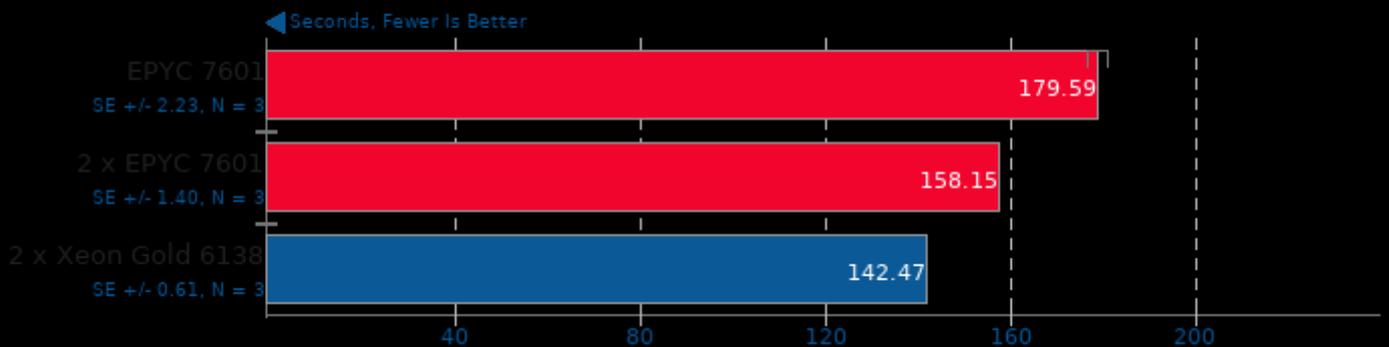
### PyBench 2018-02-16

Total For Average Test Times



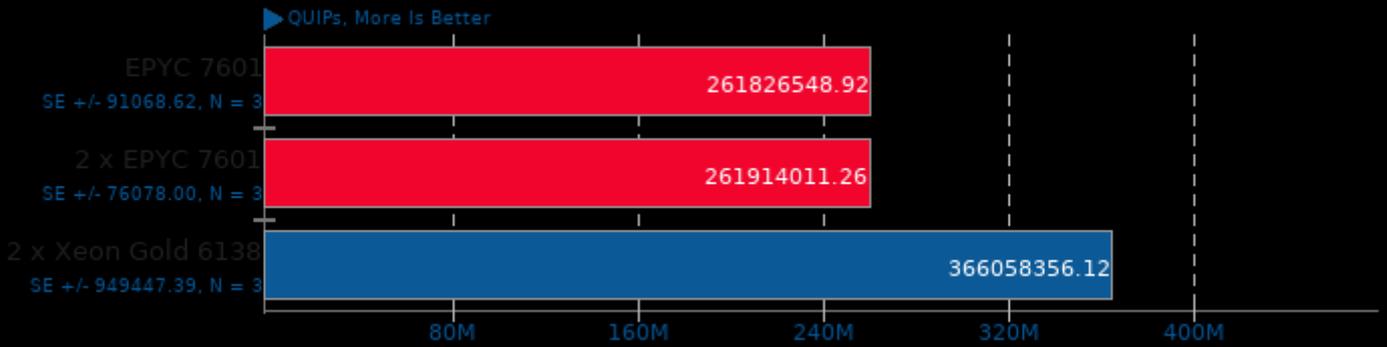
### Numenta Anomaly Benchmark 2018-11-09

Time To Completion



### Hierarchical INTegration 1.0

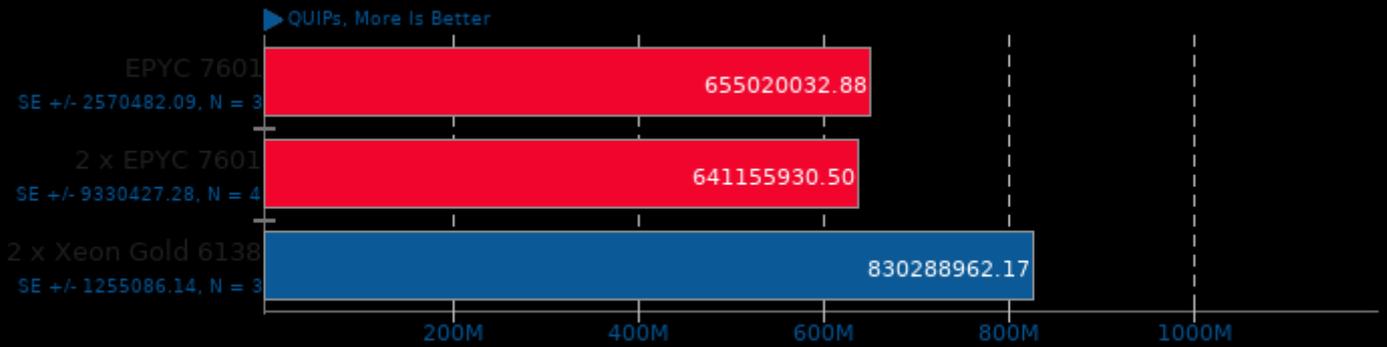
Test: FLOAT



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

### Hierarchical INTegration 1.0

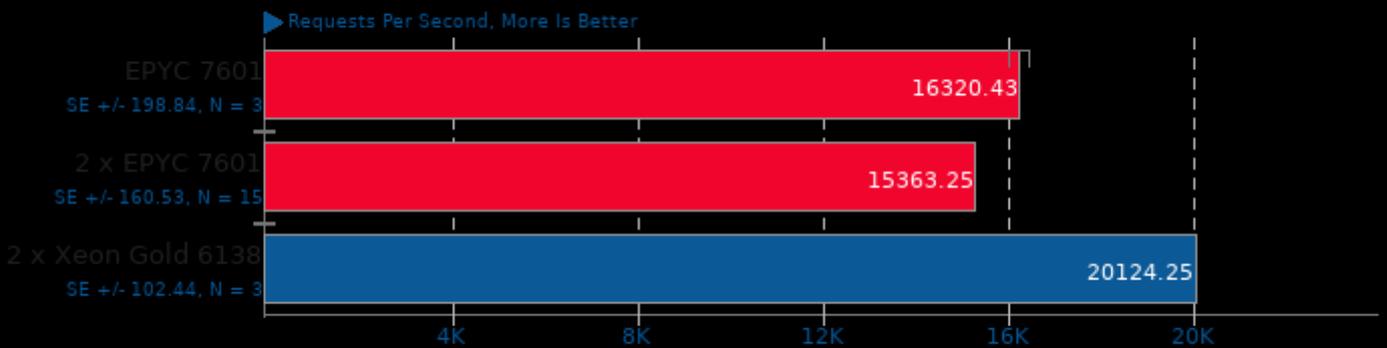
Test: DOUBLE



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

### Apache Benchmark 2.4.29

Static Web Page Serving



1. (CC) gcc options: -shared -fPIC -O2 -pthread

### Apache Siege 2.4.29

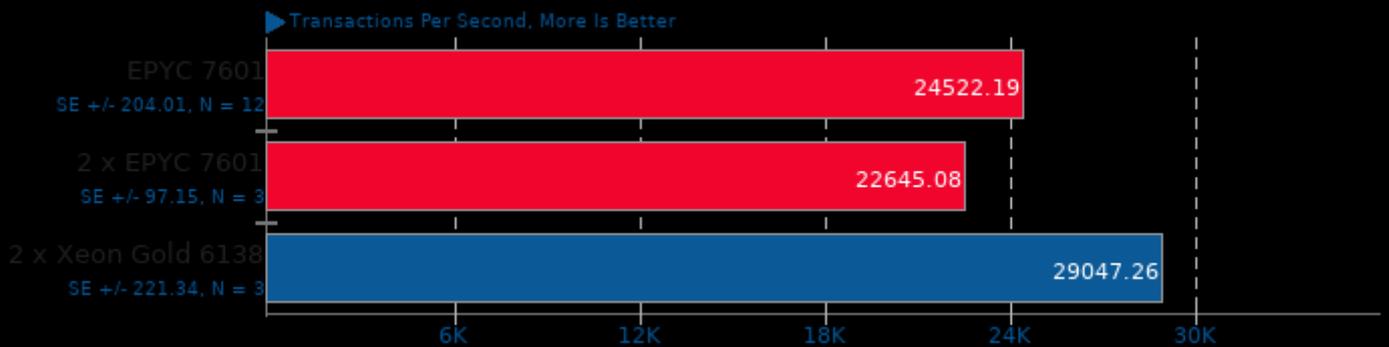
Concurrent Users: 200



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

### Apache Siege 2.4.29

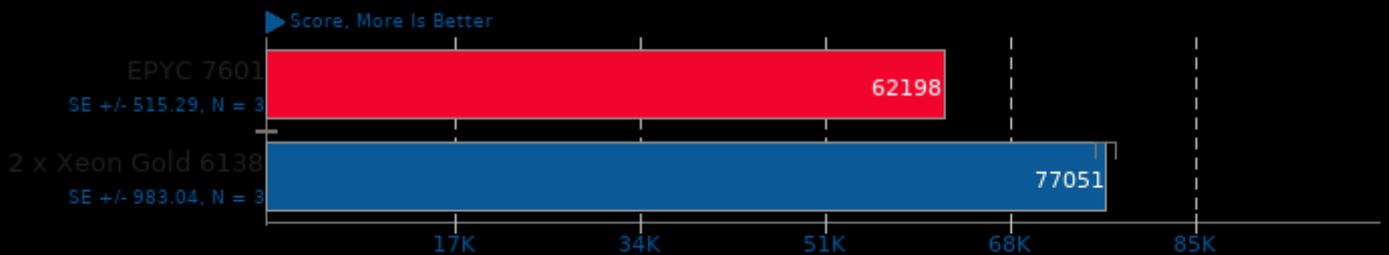
Concurrent Users: 250



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

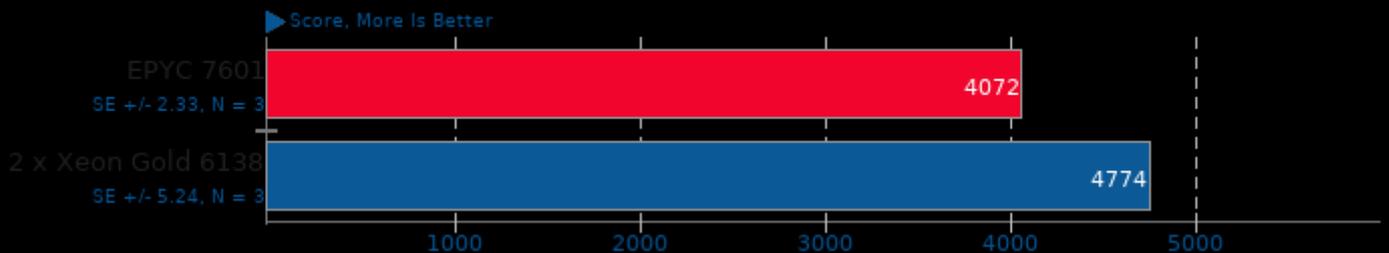
### Geekbench 4.3.3

Test: Multi Core



### Geekbench 4.3.3

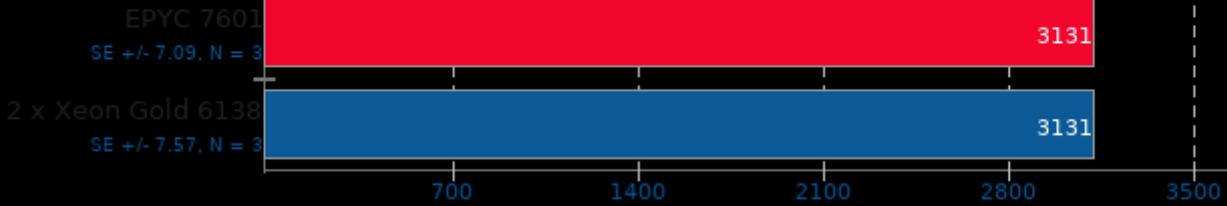
Test: Single Core



### Novabench

Test: CPU

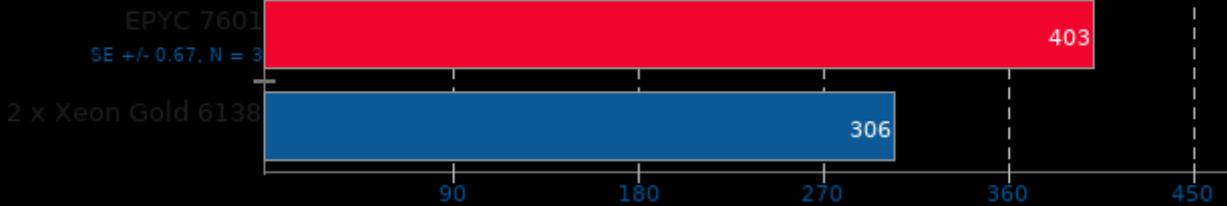
CPU Score, More Is Better



### Novabench

Test: RAM

RAM Score, More Is Better



### Novabench

Test: RAM

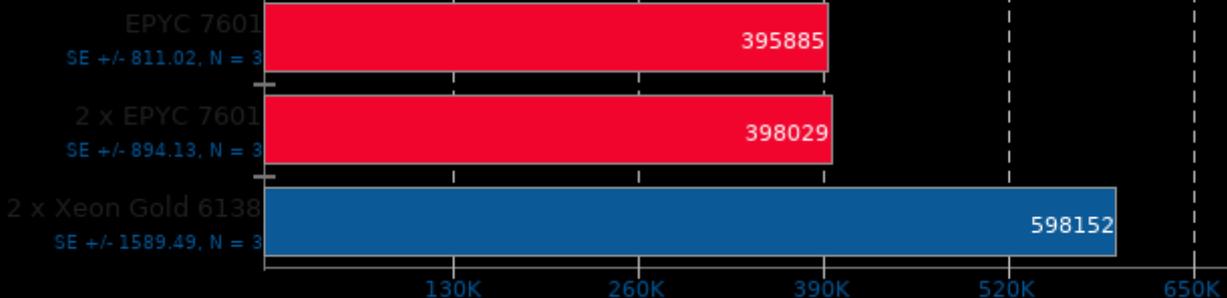
MB/s, More Is Better



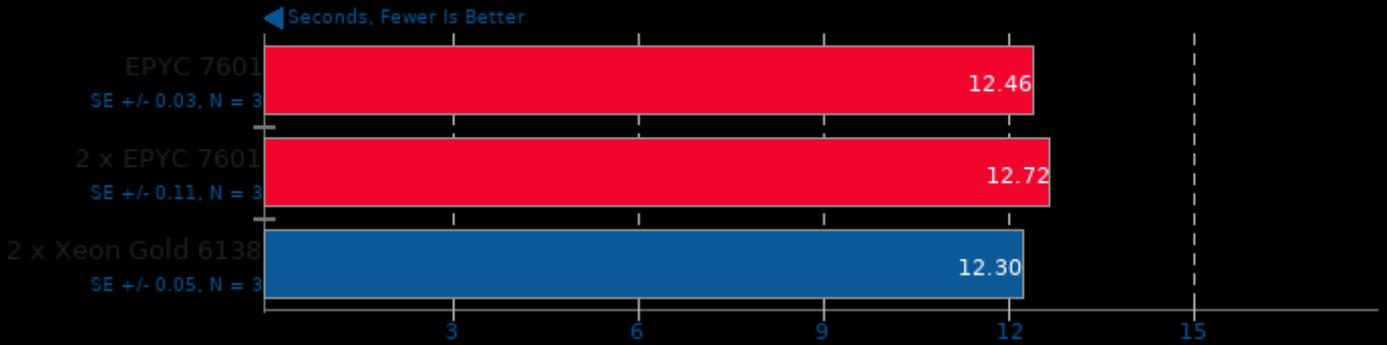
### PHPBench 0.8.1

PHP Benchmark Suite

Score, More Is Better

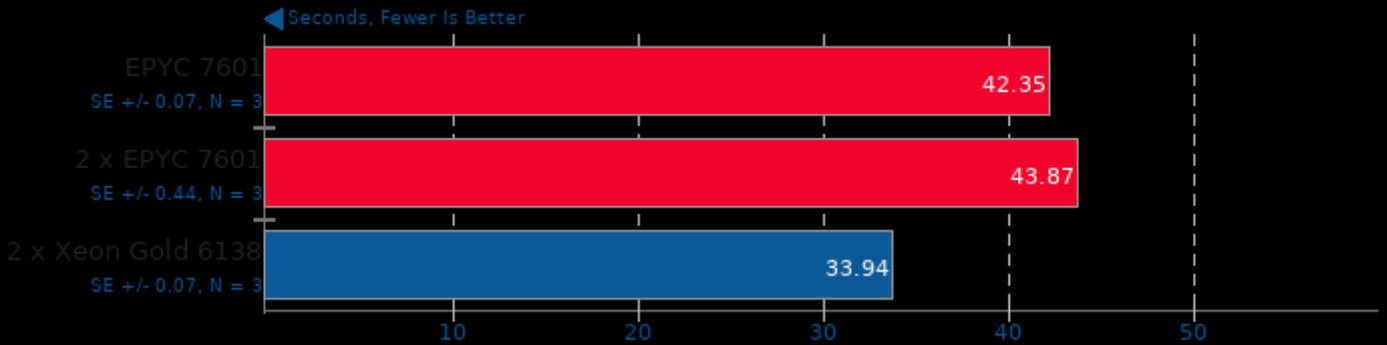


## Scikit-Learn 0.17.1



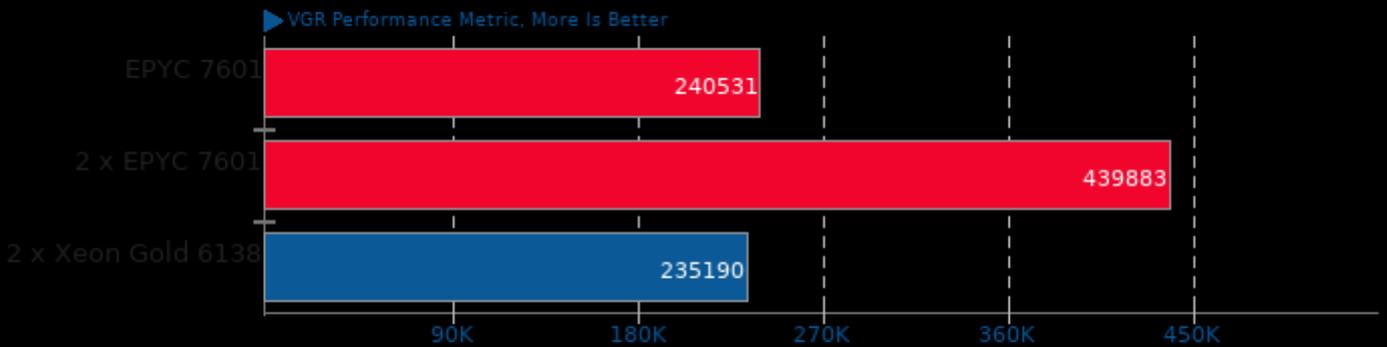
## Tesseract OCR 4.0.0

Time To OCR 7 Images



## BRL-CAD 7.28.0

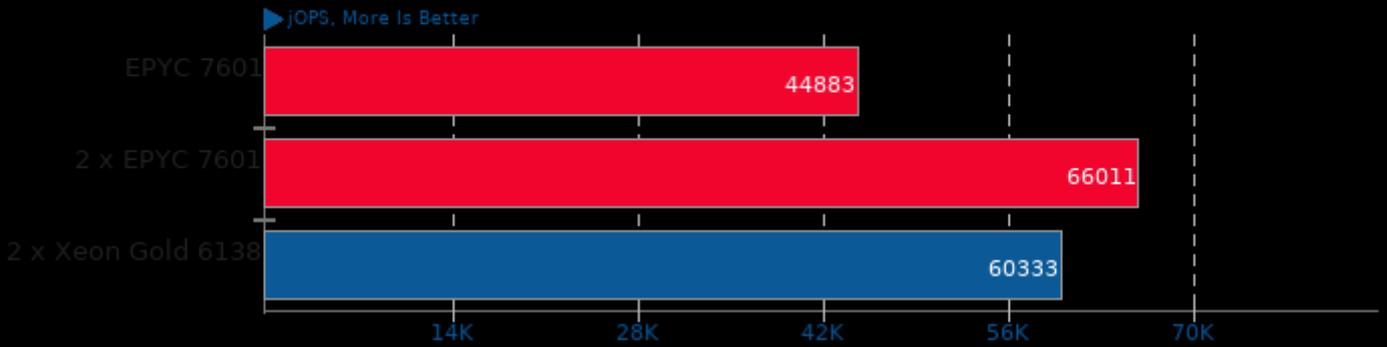
VGR Performance Metric



1. (CXX) g++ options: -std=c++98 -pipe -fno-strict-aliasing -fno-common -fexceptions -ftemplate-depth-128 -m64 -ggdb3 -O3 -fipa-pta -fstrength-reduce

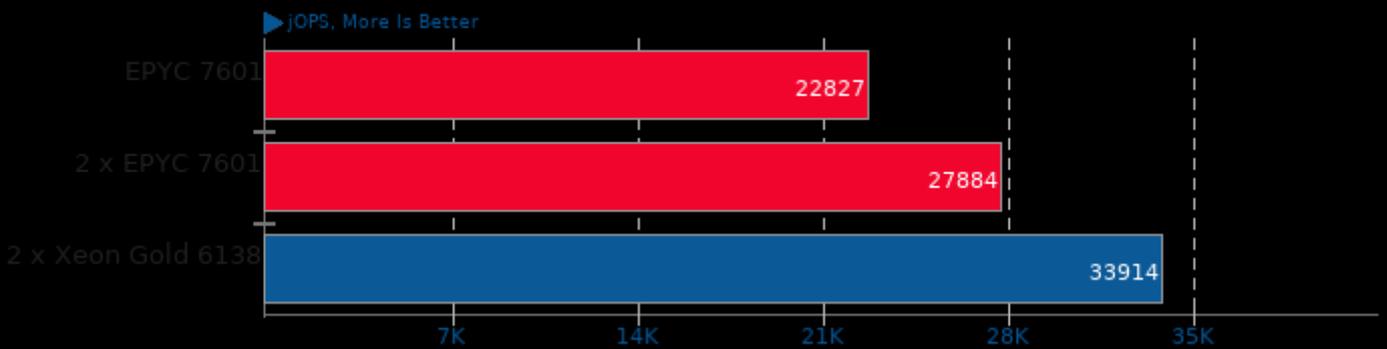
SPECjbb 2015

SPECjbb2015-Composite max-jOPS



SPECjbb 2015

SPECjbb2015-Composite critical-jOPS



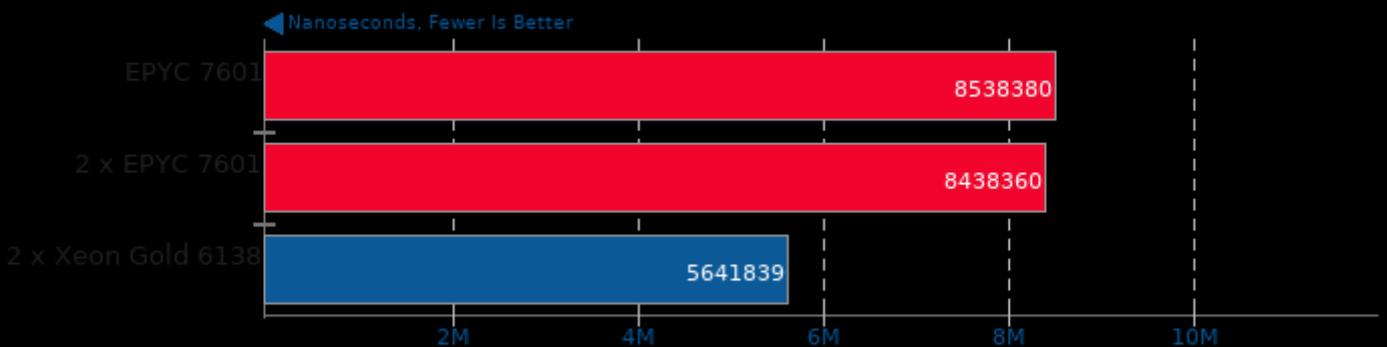
LeelaChessZero 0.20.1

Backend: BLAS



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

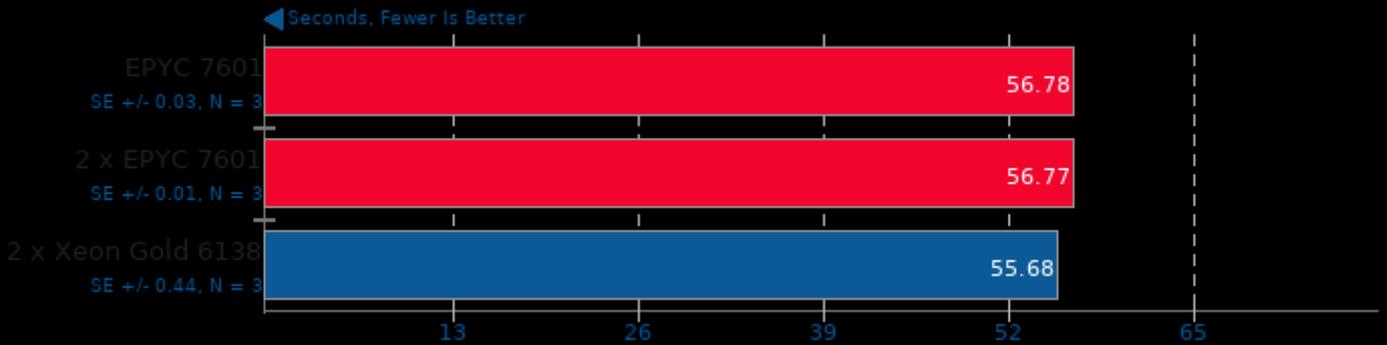
Numpy Benchmark





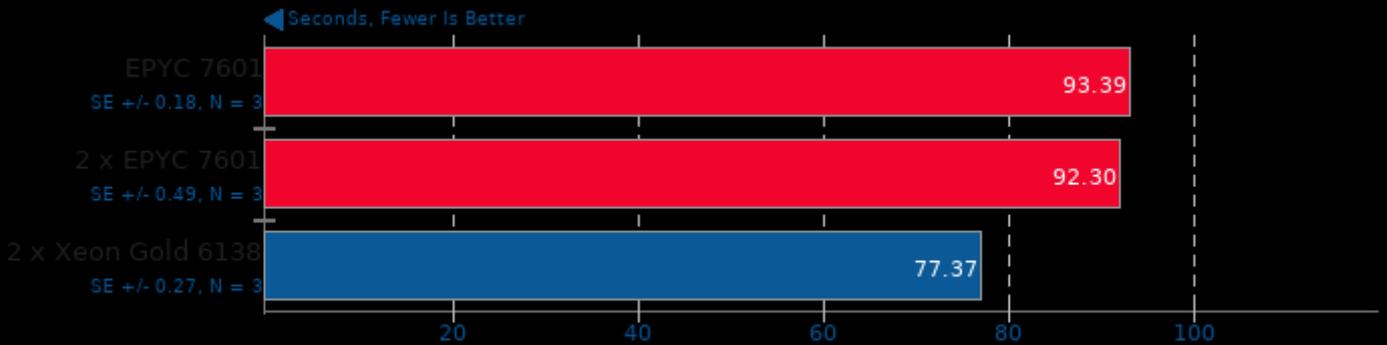
## Minion 1.8

Benchmark: Graceful



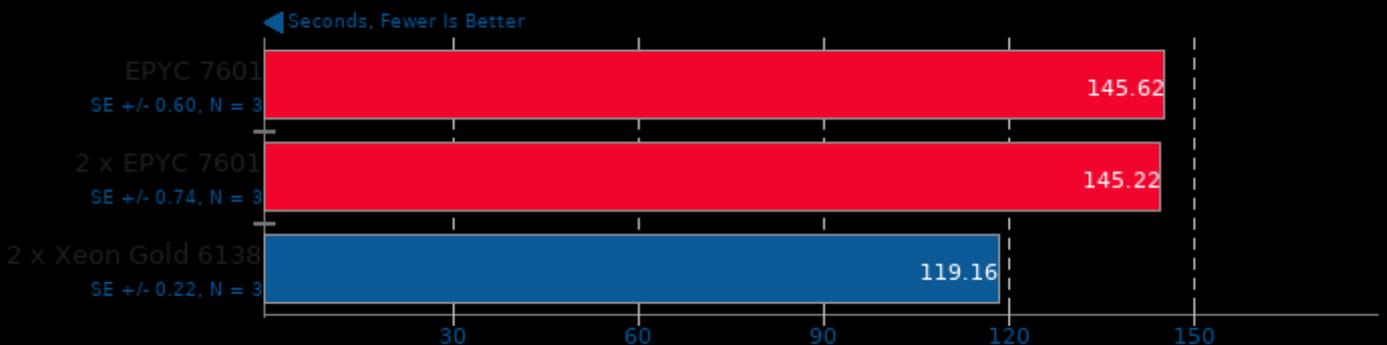
## Minion 1.8

Benchmark: Solitaire



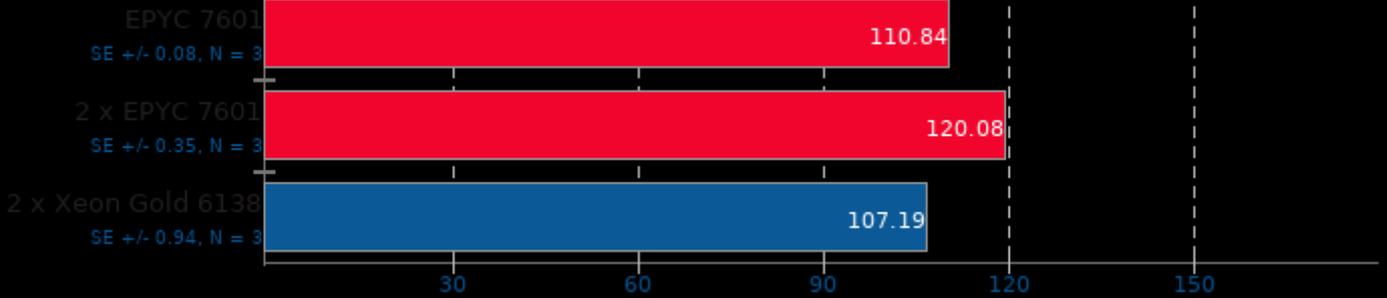
## Minion 1.8

Benchmark: Quasigroup



### OpenCV Benchmark 3.3.0

Seconds, Fewer Is Better

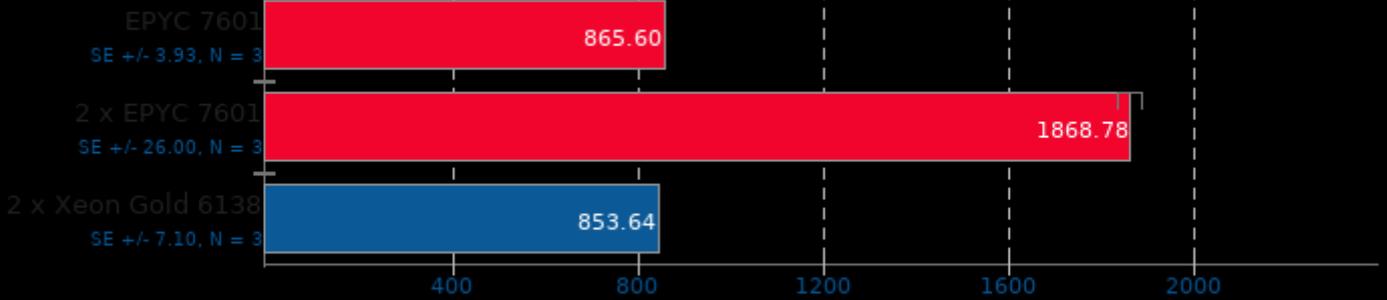


1. (CXX) g++ options: -std=c++11 -rdynamic

### Cpuminer-Opt 3.8.8.1

Algorithm: m7m

kH/s - Hash Speed, More Is Better

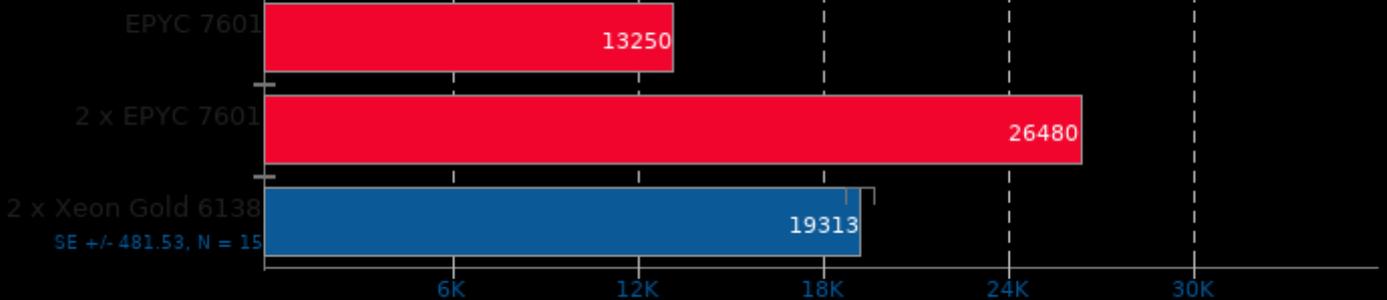


1. (CXX) g++ options: -O2 -lcurl -lz -lpthread -lssl -lcrypto -lgmp

### Cpuminer-Opt 3.8.8.1

Algorithm: deep

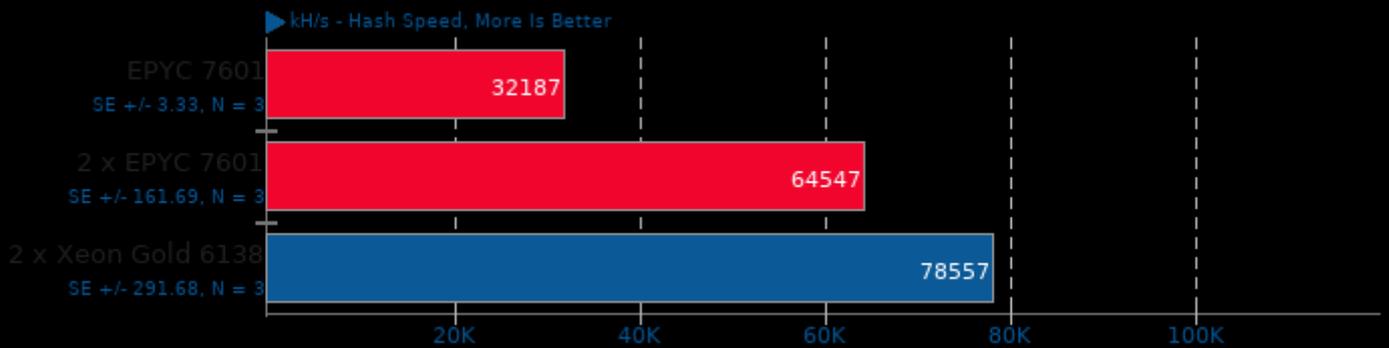
kH/s - Hash Speed, More Is Better



1. (CXX) g++ options: -O2 -lcurl -lz -lpthread -lssl -lcrypto -lgmp

### Cpuminer-Opt 3.8.8.1

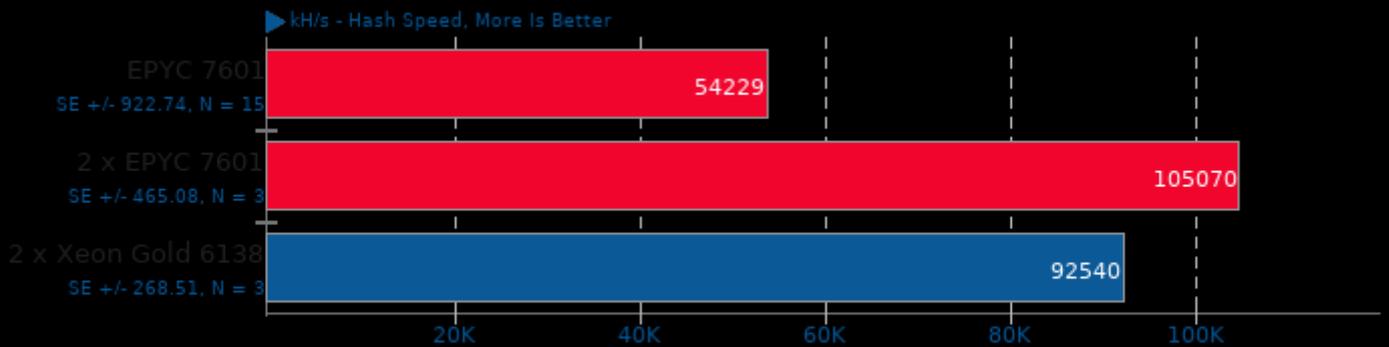
Algorithm: lbry



1. (CXX) g++ options: -O2 -lcurl -lz -lpthread -lssl -lcrypto -lgmp

### Cpuminer-Opt 3.8.8.1

Algorithm: skein



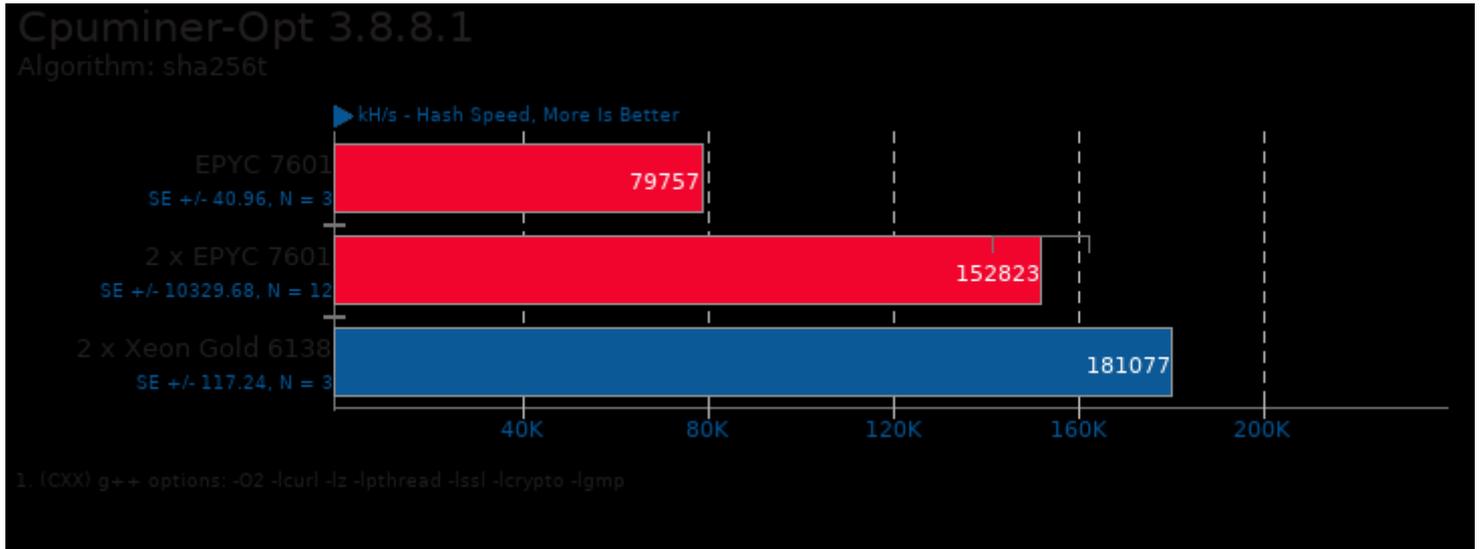
1. (CXX) g++ options: -O2 -lcurl -lz -lpthread -lssl -lcrypto -lgmp

### Cpuminer-Opt 3.8.8.1

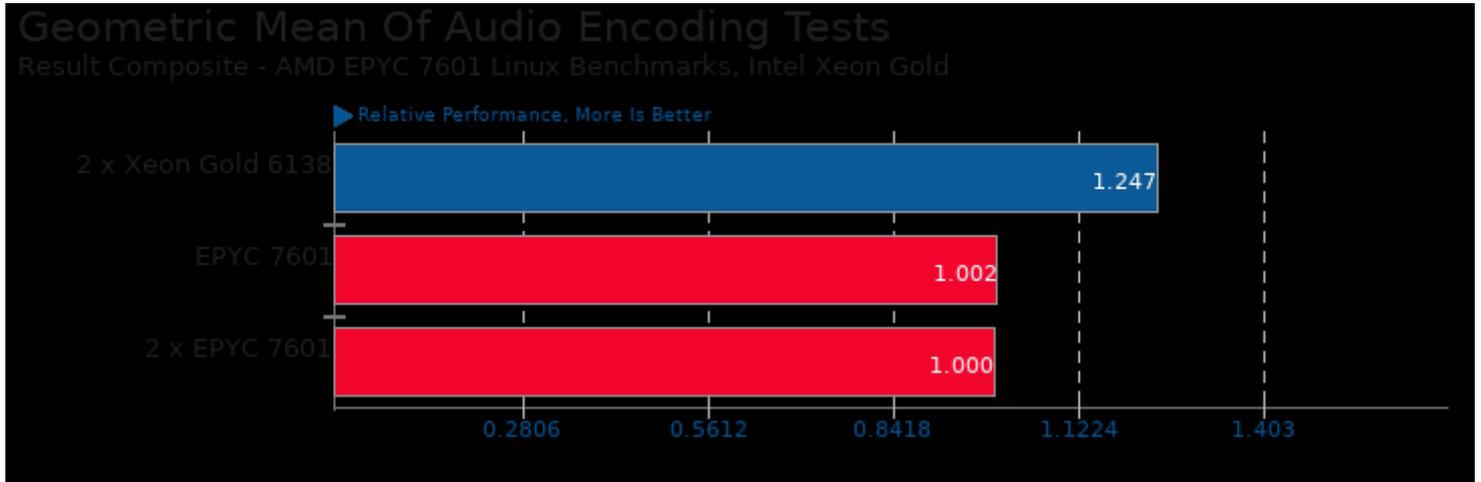
Algorithm: myr-gr



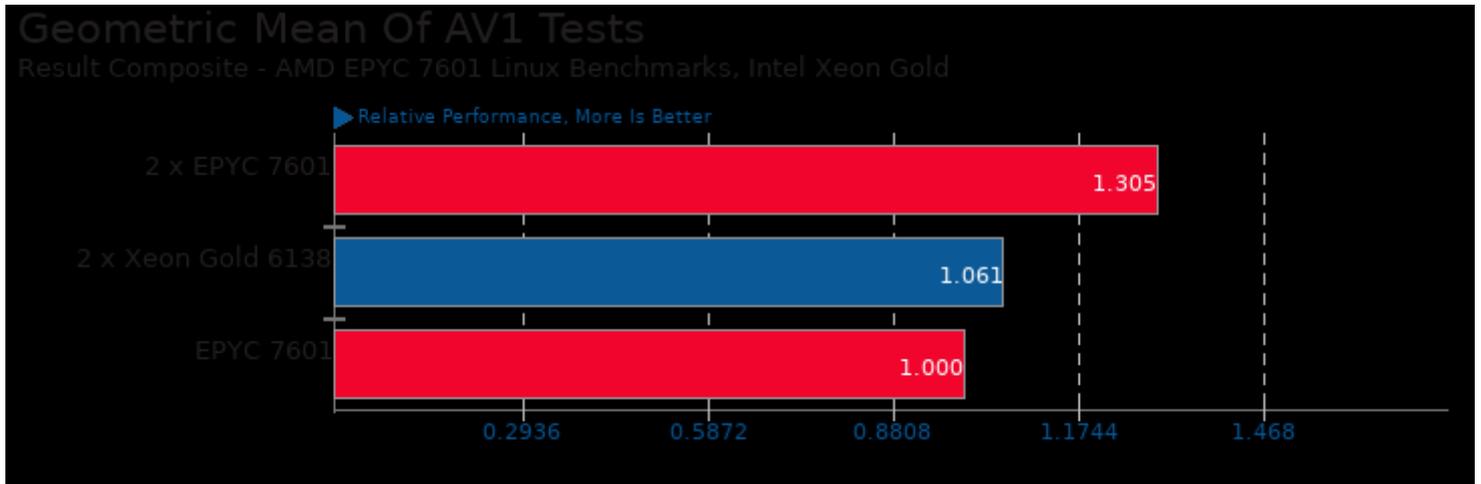
1. (CXX) g++ options: -O2 -lcurl -lz -lpthread -lssl -lcrypto -lgmp



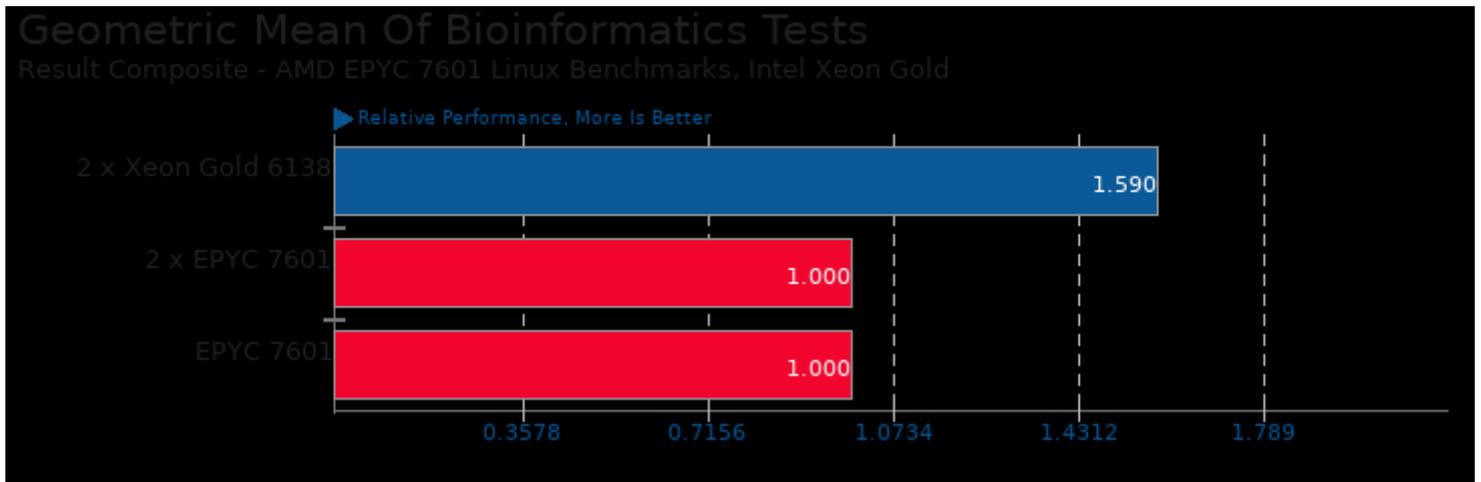
These geometric means are based upon test groupings / test suites for this result file.



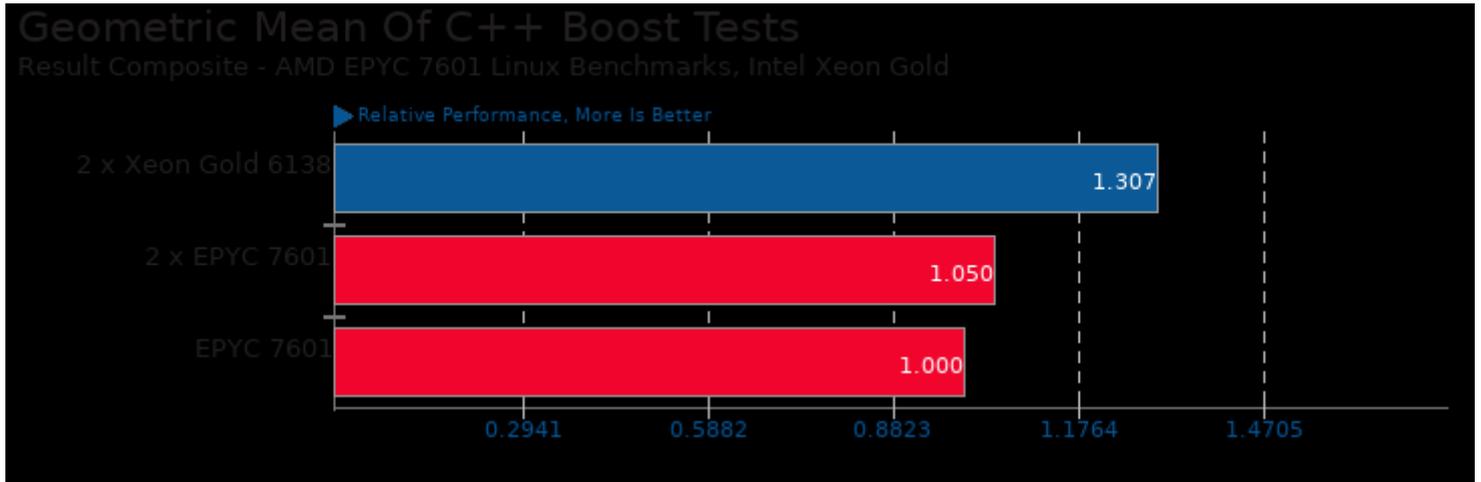
Geometric mean based upon tests: pts/encode-mp3 and pts/encode-flac



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



Geometric mean based upon tests: pts/himeno and pts/mafft



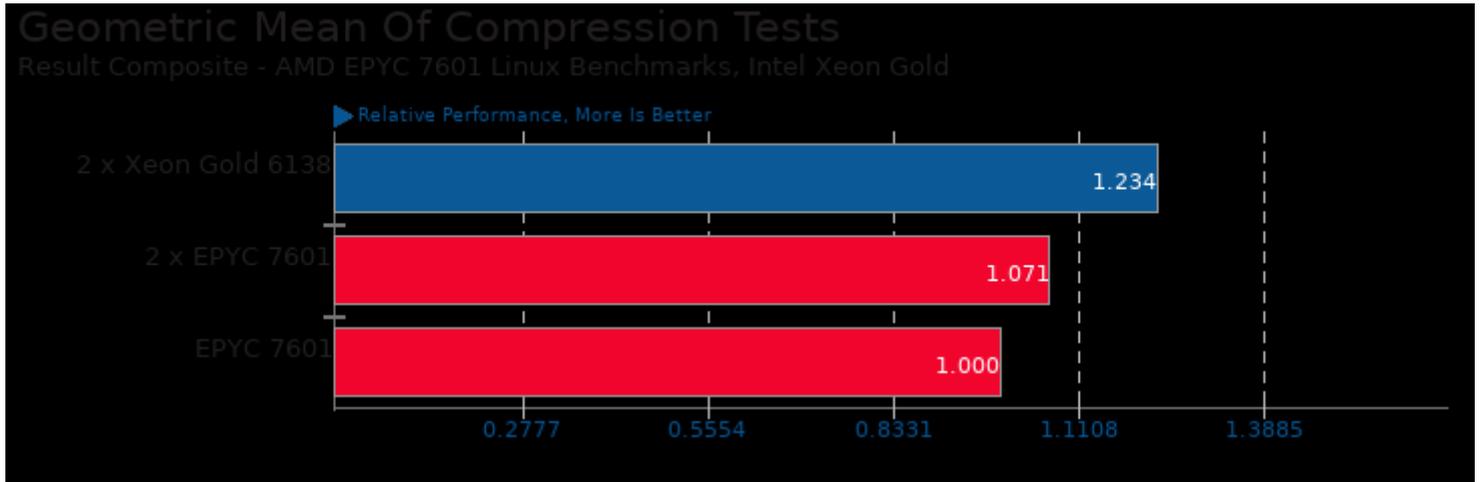
Geometric mean based upon tests: pts/core-latency, pts/povray and pts/minion



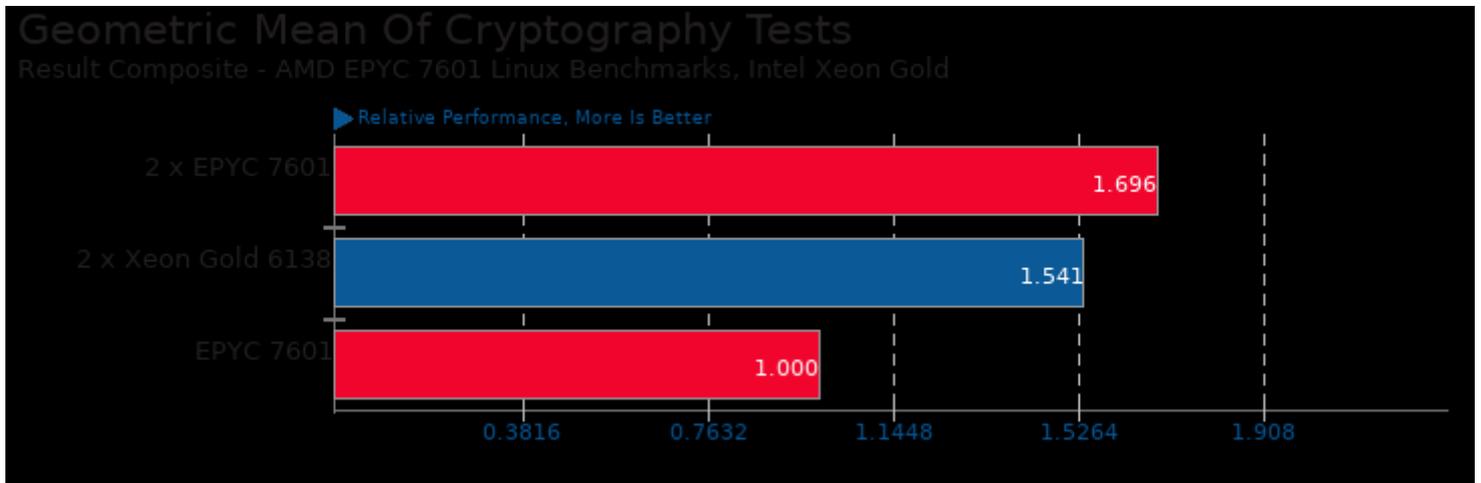
Geometric mean based upon tests: pts/crafty, pts/tscp, pts/lczero, pts/stockfish, pts/asmfish and pts/m-queens



Geometric mean based upon tests: pts/build-php, pts/build-linux-kernel, pts/build-gcc and pts/build-llvm



Geometric mean based upon tests: pts/compress-7zip, pts/compress-zstd, pts/compress-xz and pts/lzbench



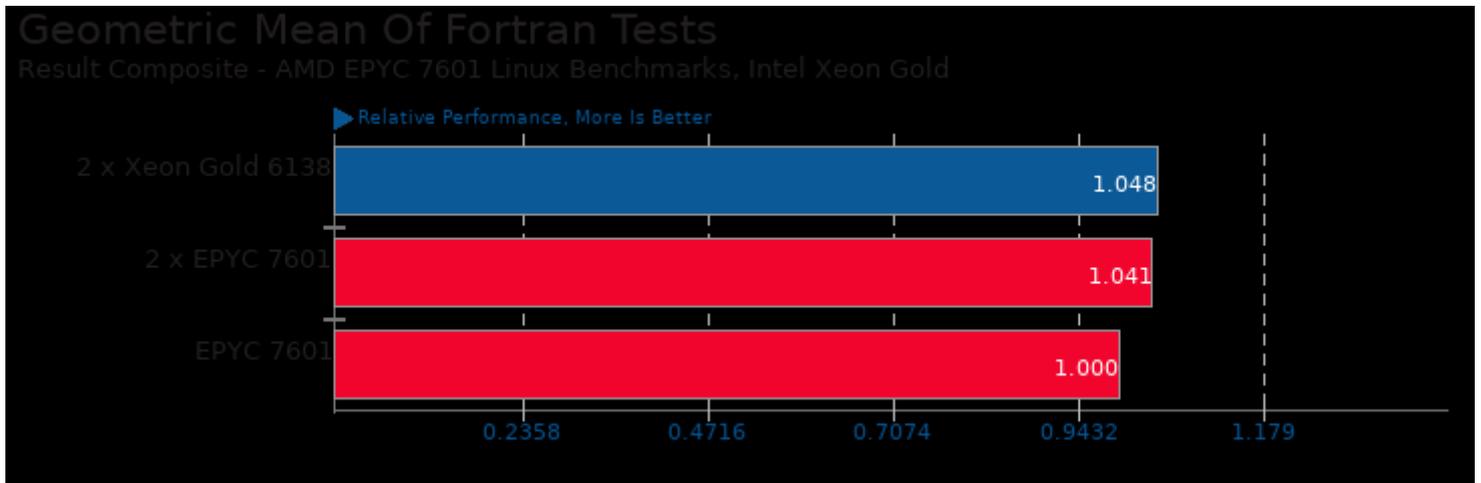
Geometric mean based upon tests: pts/openssl, pts/blake2, pts/john-the-ripper and pts/cpuminer-opt



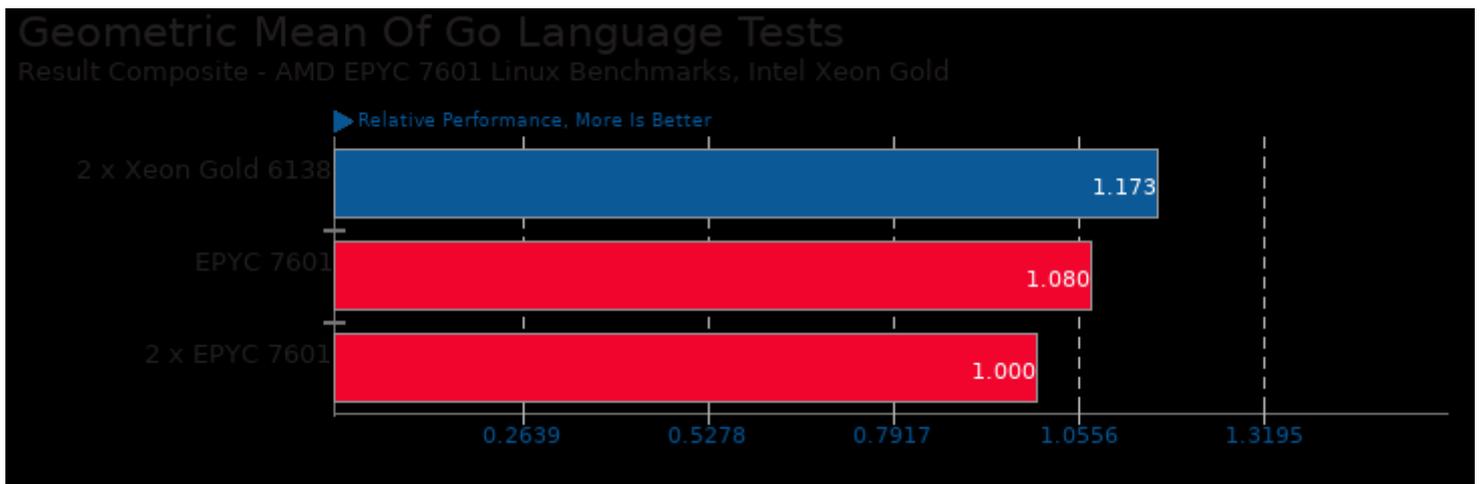
Geometric mean based upon tests: pts/redis, pts/pgbench and pts/mysqslap



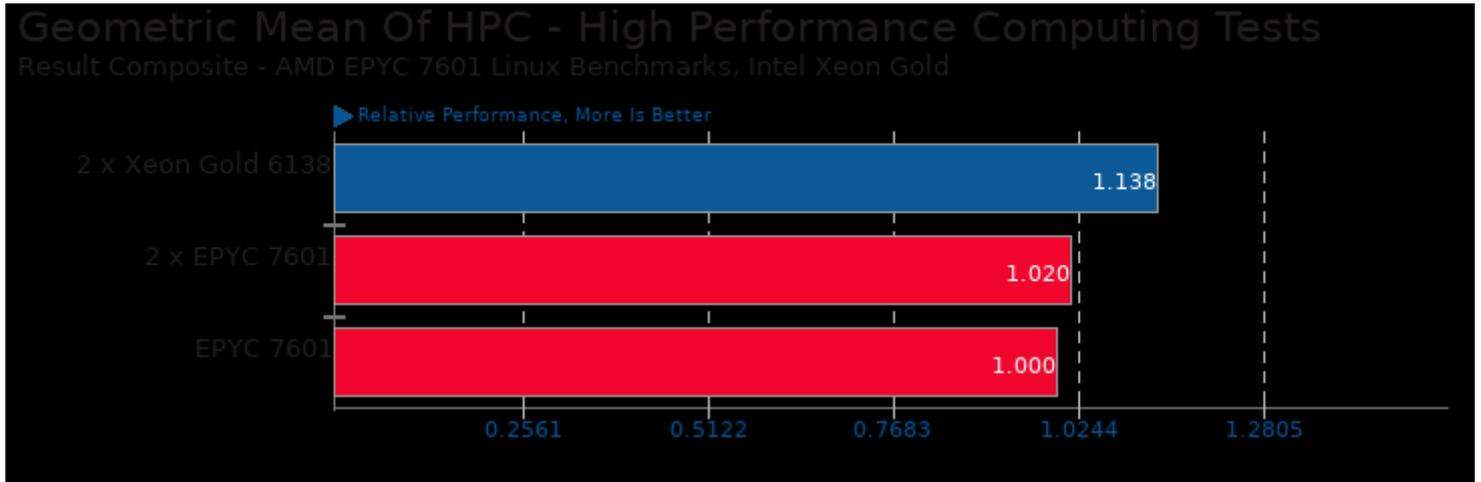
Geometric mean based upon tests: pts/encode-mp3, pts/encode-flac, pts/svt-vp9, pts/svt-hevc, pts/x264, pts/x265, pts/dav1d and pts/svt-av1



Geometric mean based upon tests: pts/npb, pts/cloverleaf and pts/hpcg



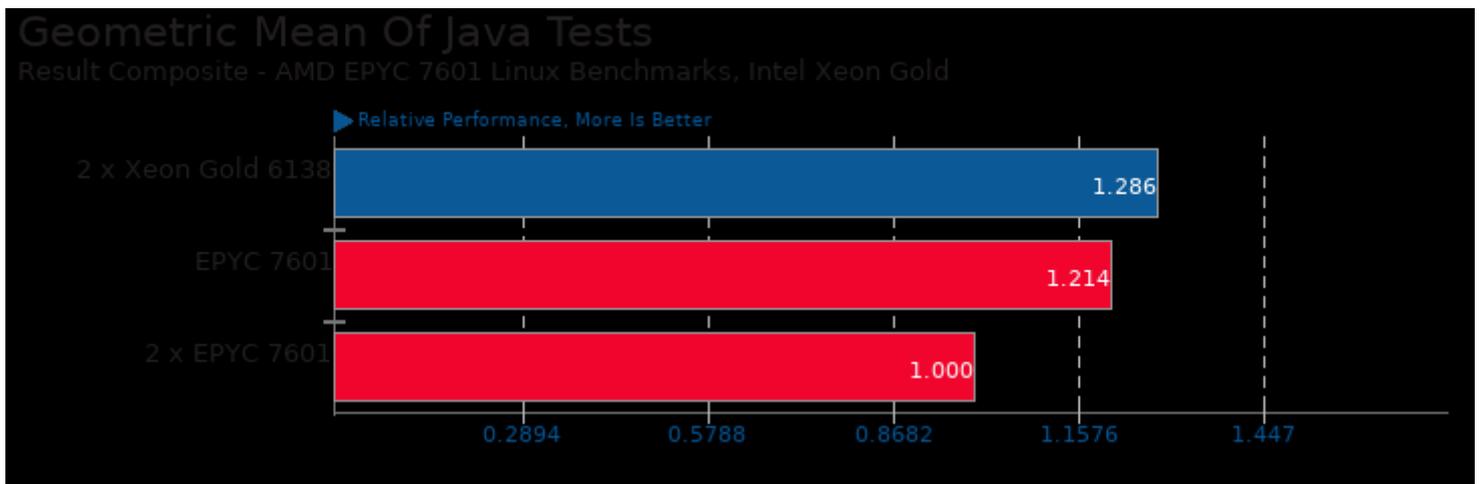
Geometric mean based upon tests: pts/ethr and pts/go-benchmark



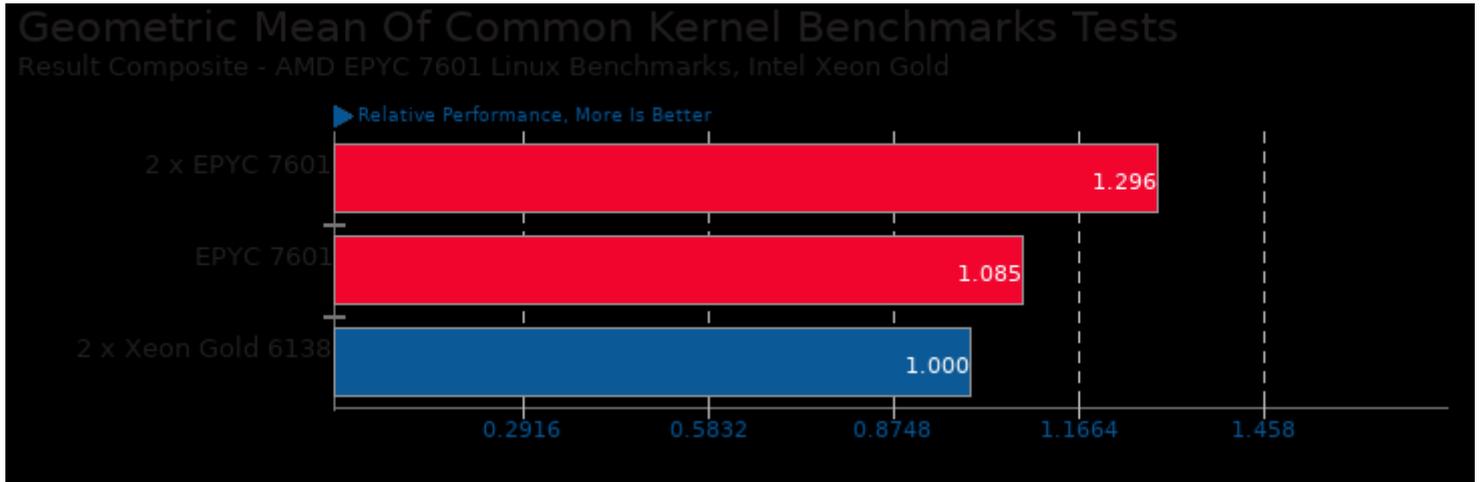
Geometric mean based upon tests: pts/npb, pts/rodinia, pts/parboil, pts/hpcg, pts/fftw, pts/namd, pts/gromacs, pts/cp2k, pts/cloverleaf, pts/himeno, pts/mafft, pts/rbenchmark, pts/numpy, pts/scikit-learn, pts/numenta-nab, pts/tensorflow and pts/lczero



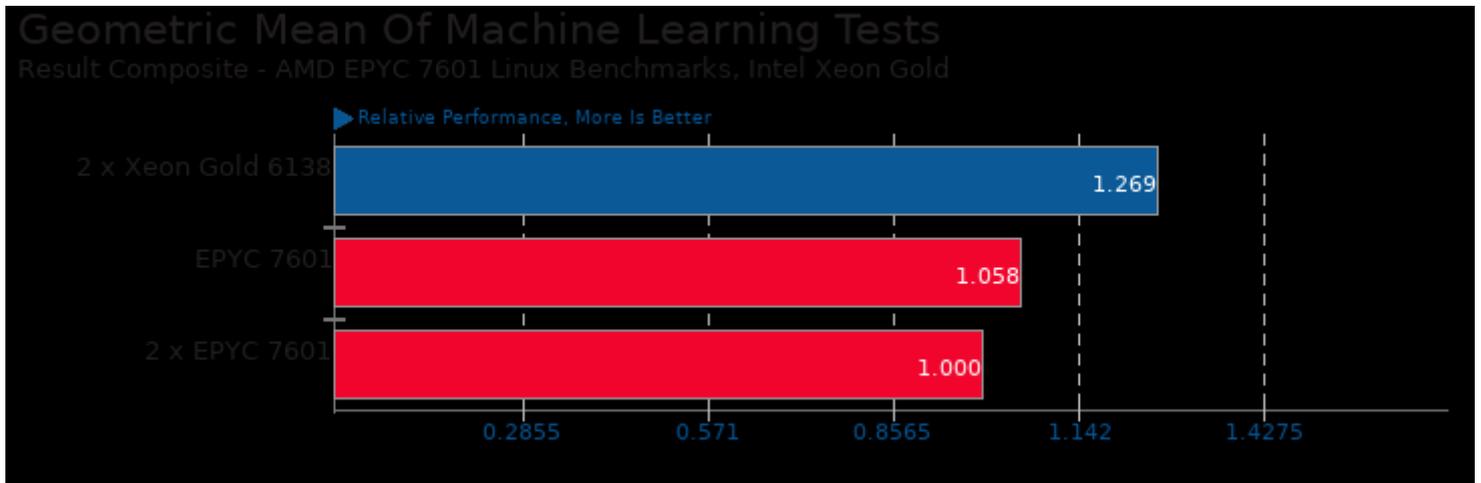
Geometric mean based upon tests: pts/graphics-magick, pts/tjbench, system/gimp and system/darktable



Geometric mean based upon tests: pts/sunflow, pts/dacapobench and pts/renaissance



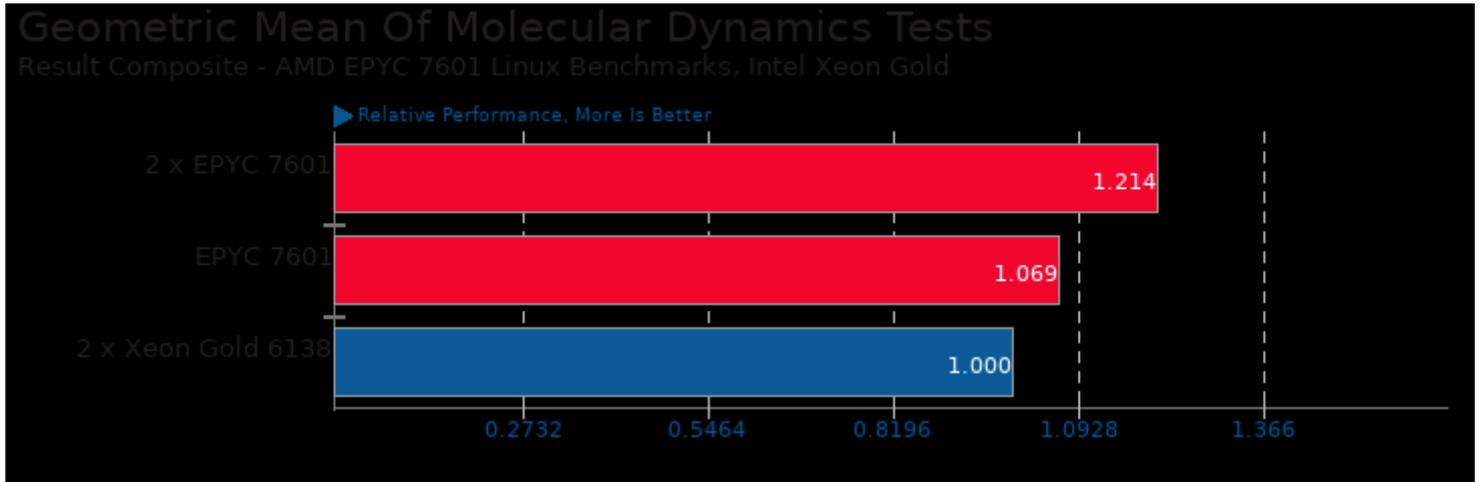
Geometric mean based upon tests: pts/apache, pts/pgbench, pts/tinymembench, pts/mbw, pts/openssl, pts/ctx-clock, pts/hackbench, pts/stress-ng and pts/ethr



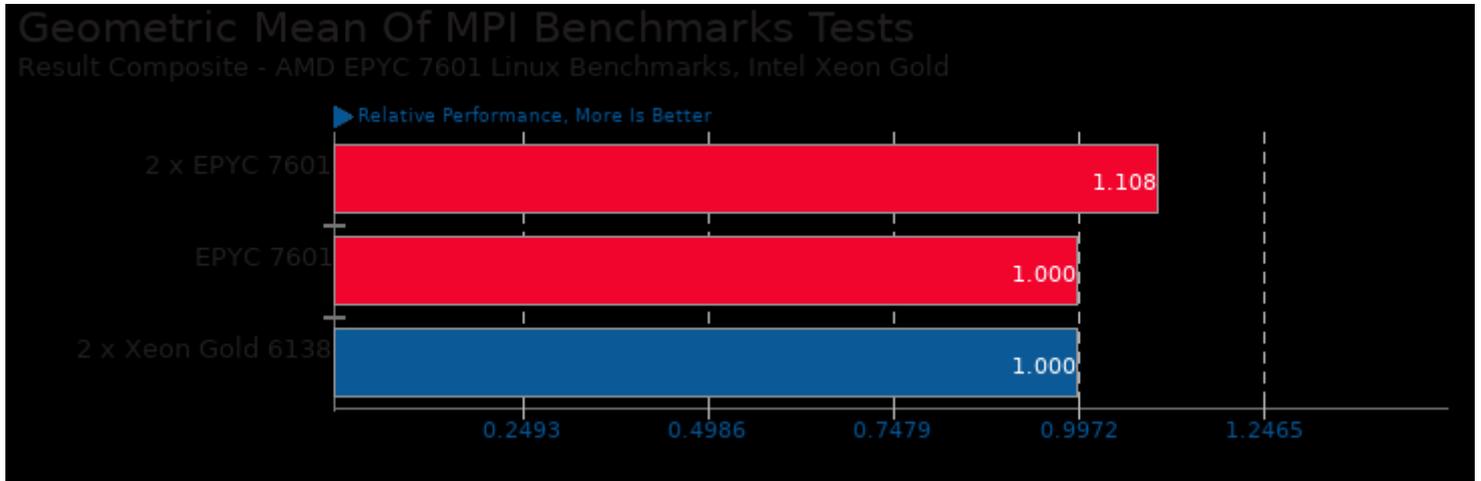
Geometric mean based upon tests: pts/rbenchmark, pts/numpy, pts/scikit-learn, pts/numenta-nab, pts/tensorflow and pts/lczero



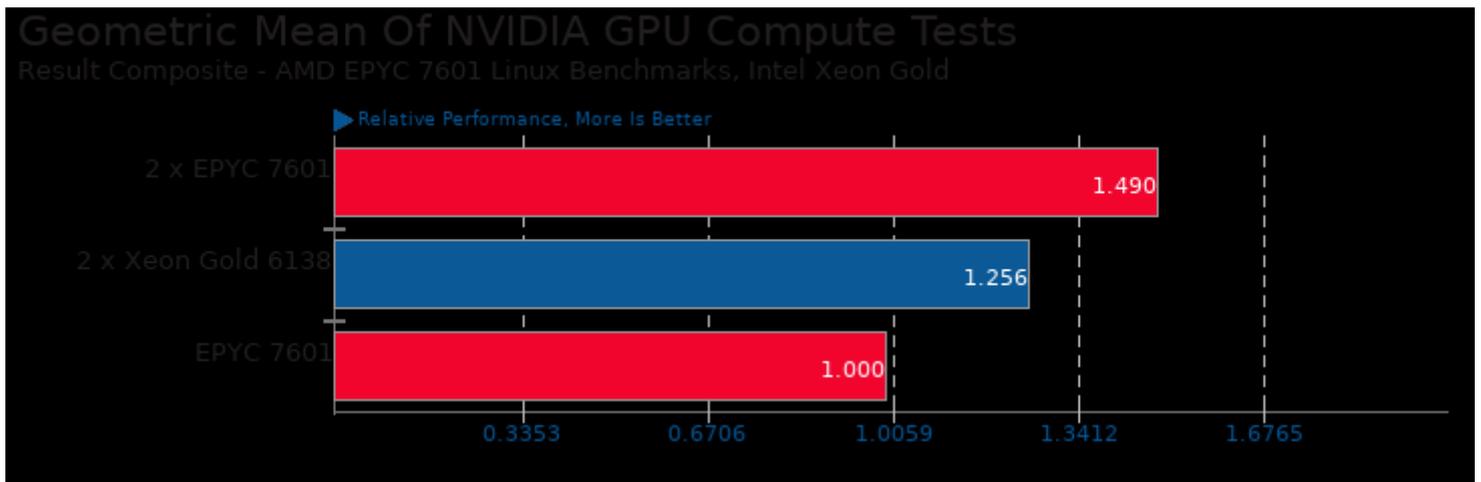
Geometric mean based upon tests: pts/ramspeed, pts/stream, pts/tinymembench and pts/mbw



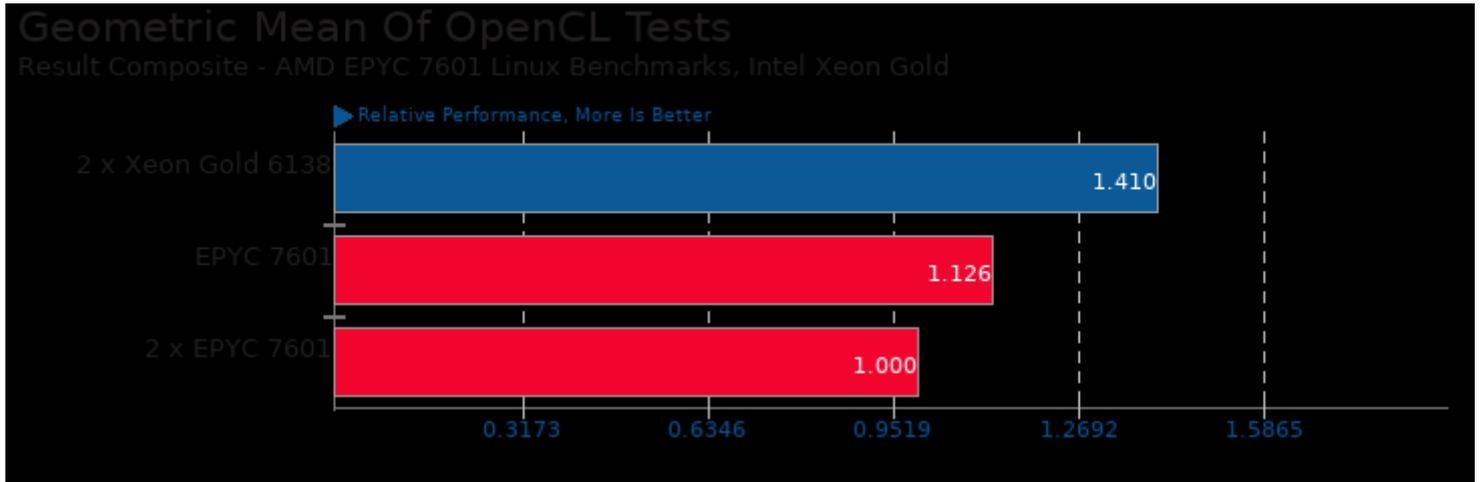
Geometric mean based upon tests: pts/namd, pts/gromacs, pts/cp2k and pts/cloverleaf



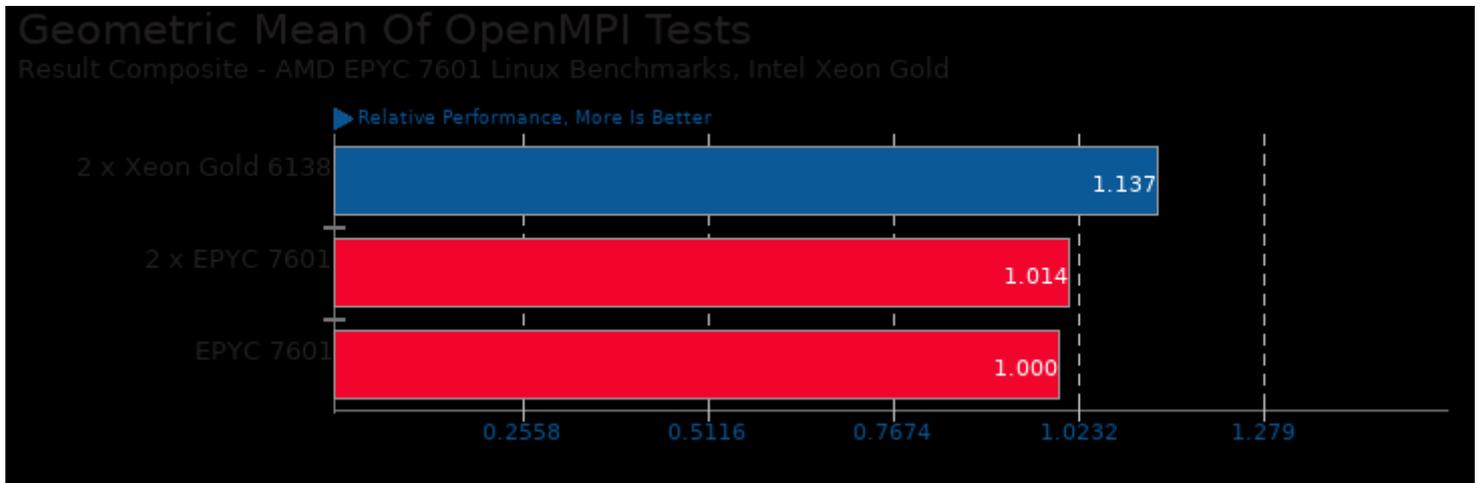
Geometric mean based upon tests: pts/gromacs, pts/hpcg and pts/npb



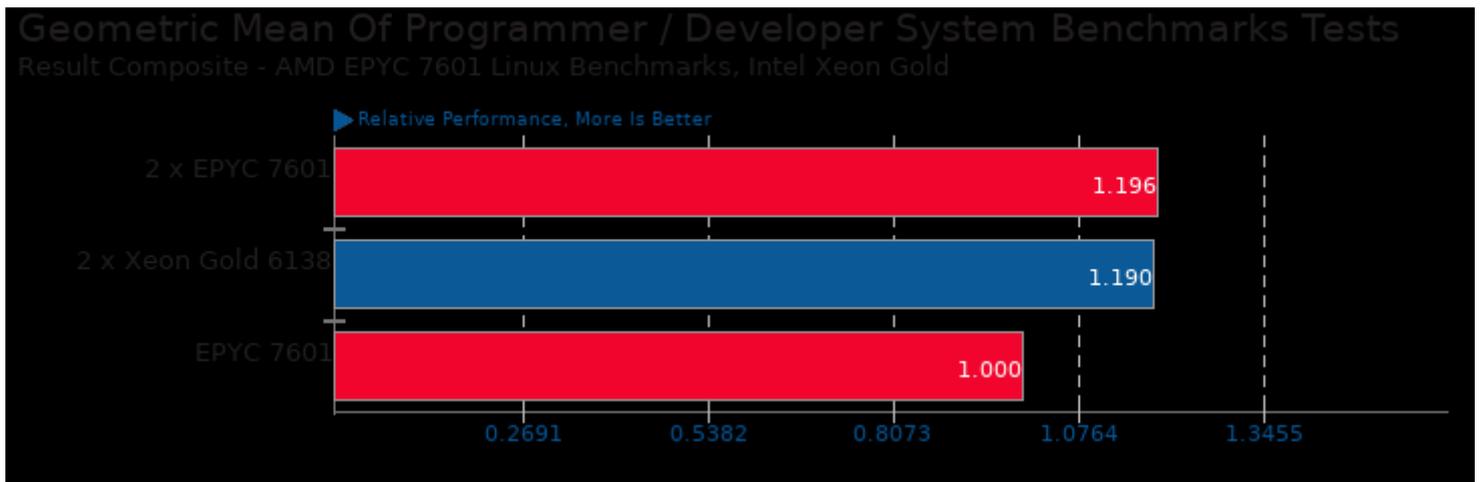
Geometric mean based upon tests: pts/gromacs, pts/rodinia, pts/lczero, pts/v-ray and pts/blender



Geometric mean based upon tests: pts/rodinia, pts/parboil and system/darktable



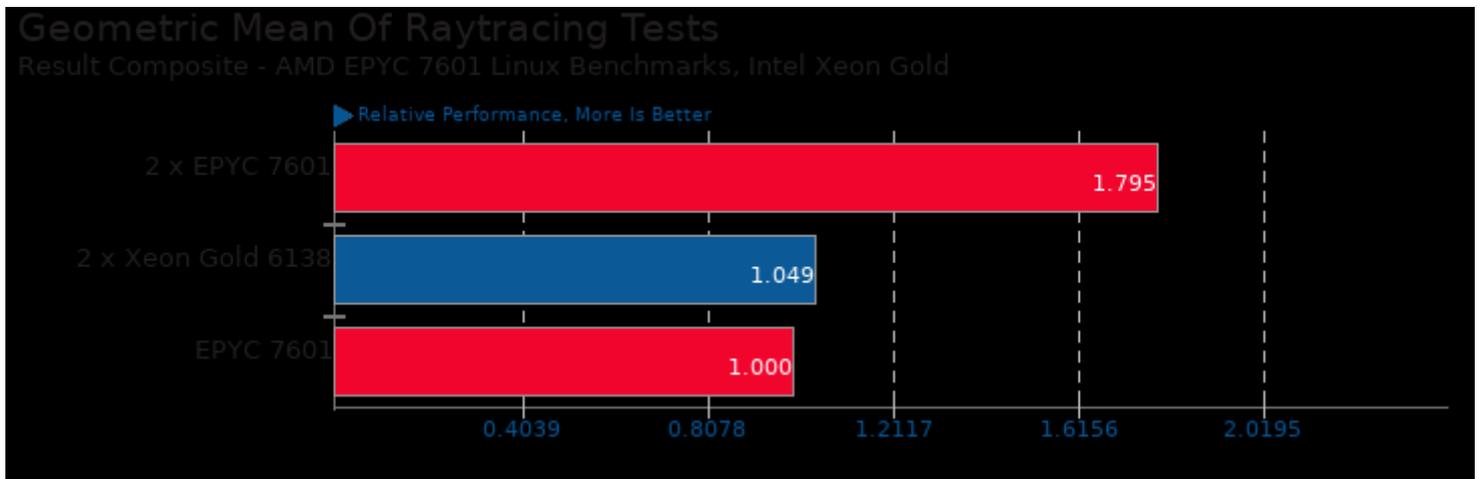
Geometric mean based upon tests: pts/npb, pts/parboil, pts/cloverleaf and pts/rodinia



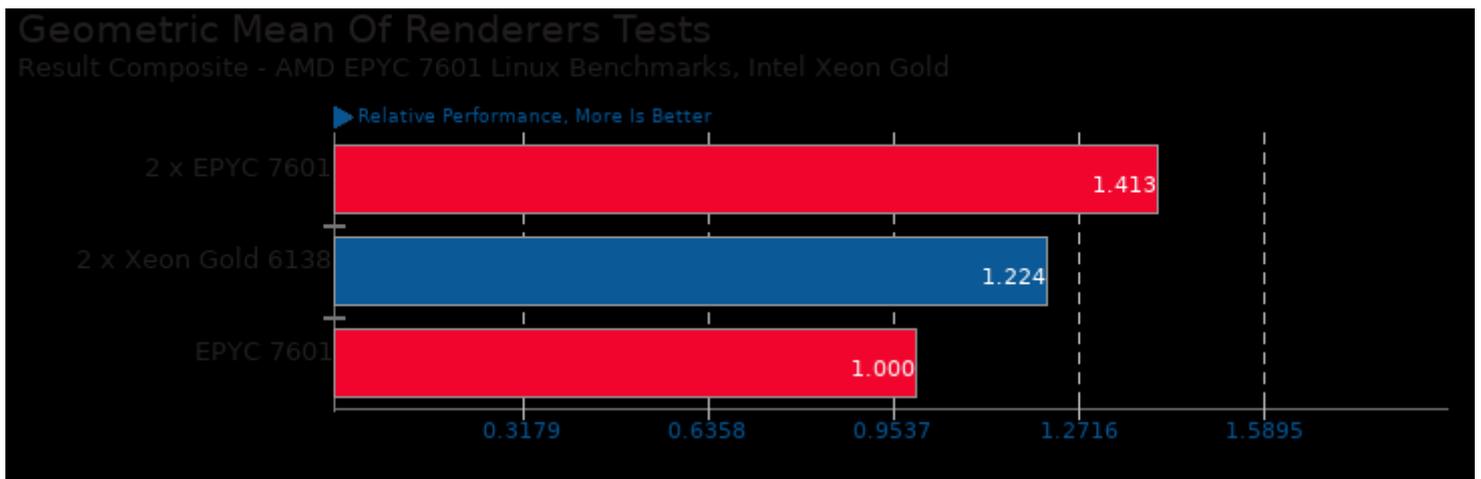
Geometric mean based upon tests: pts/compress-zstd, pts/pybench, pts/build-php, pts/build-linux-kernel, pts/build-gcc and pts/build-llvm



Geometric mean based upon tests: pts/pybench, pts/numenta-nab, pts/cython-bench, pts/numpy and pts/scikit-learn



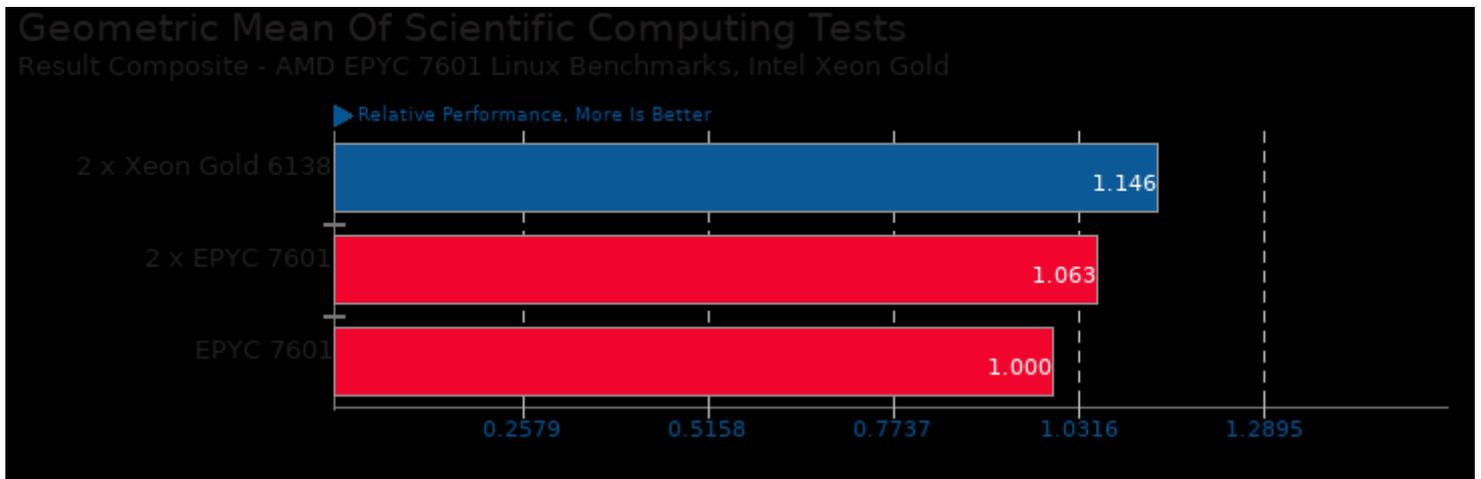
Geometric mean based upon tests: pts/c-ray, pts/tachyon and pts/povray



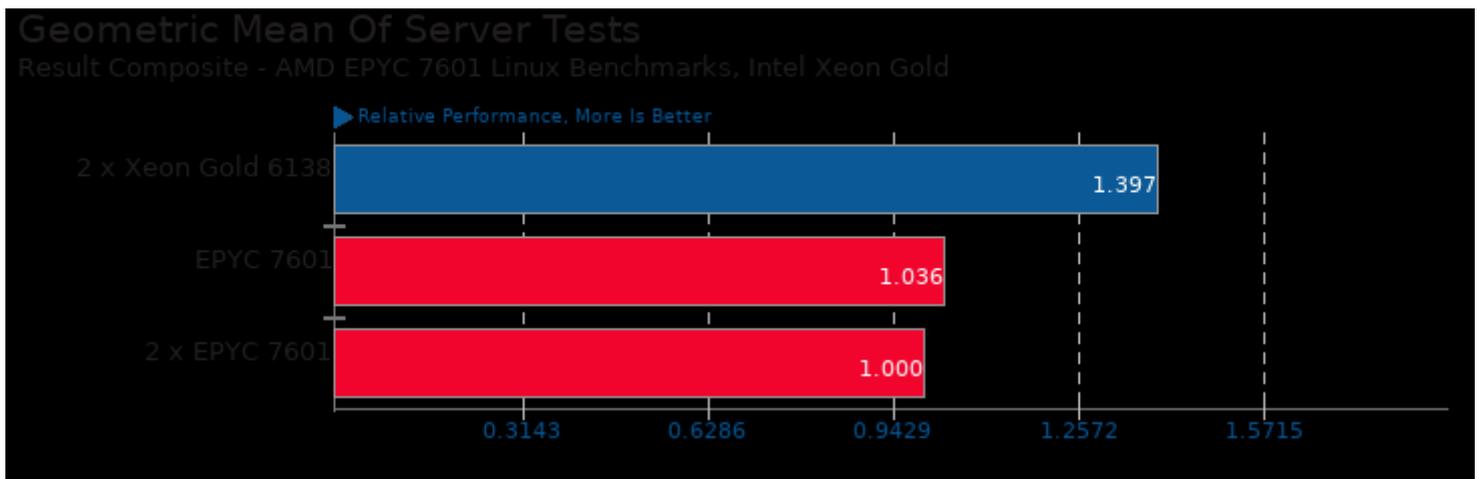
Geometric mean based upon tests: pts/c-ray, pts/tachyon, pts/povray, pts/blender, pts/appleseed, pts/radiance, pts/smallpt, pts/ttsiod-renderer and pts/v-ray



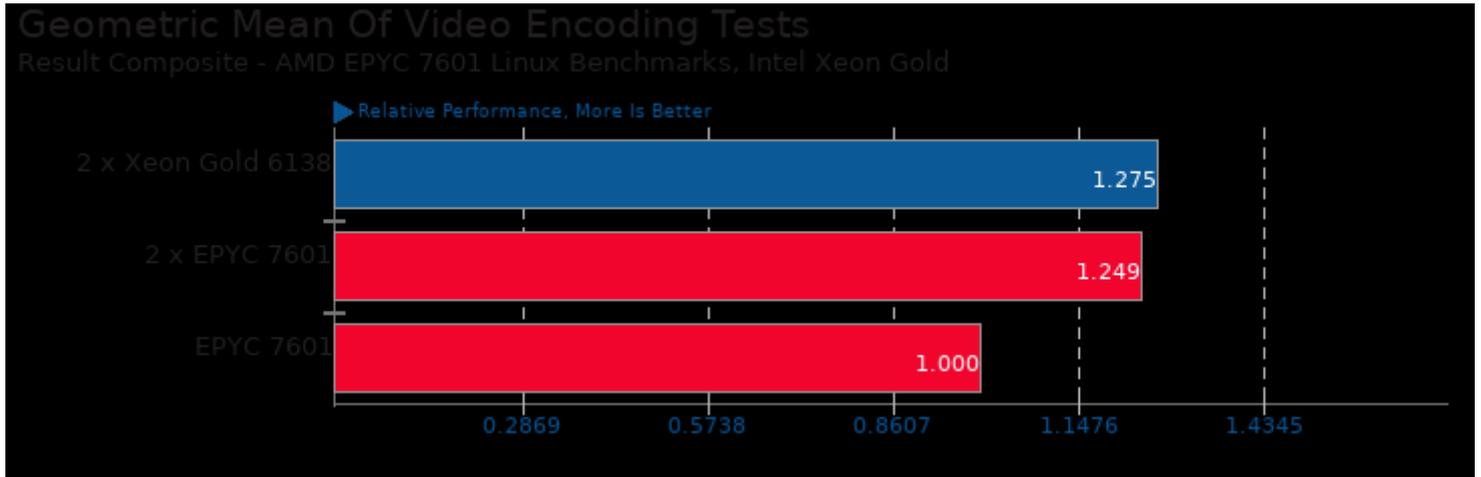
Geometric mean based upon tests: pts/rust-mandel and pts/rust-prime



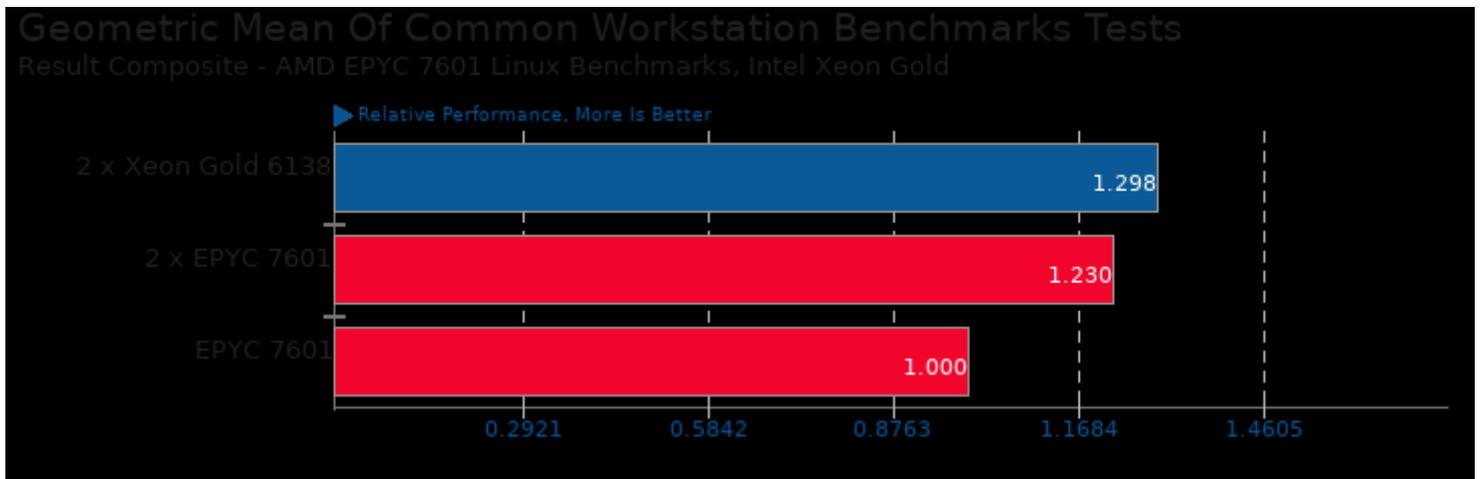
Geometric mean based upon tests: pts/fftw, pts/namd, pts/gromacs, pts/cp2k, pts/cloverleaf, pts/himeno and pts/mafft



Geometric mean based upon tests: pts/apache, pts/blogbench, pts/ebizzy, pts/apache-siege, pts/mysqslap, pts/pgbench, pts/mcperf, pts/redis, pts/phpbench and pts/openssl



Geometric mean based upon tests: pts/svt-vp9, pts/svt-hevc, pts/x264, pts/x265, pts/dav1d and pts/svt-av1



Geometric mean based upon tests: pts/blender, pts/rodinia, pts/parboil, pts/himeno, pts/brl-cad, pts/x265, pts/swet and pts/sysbench

*This file was automatically generated via the Phoronix Test Suite benchmarking software on Friday, 29 March 2024 09:34.*