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Ubuntu 17.10 vs. Antergos vs. Clear Linux - Threadripper vs. Core i9 7900X

AMD Ryzen Threadripper 1950X tests versus Core i9 7900X with Antergos, Clear Linux, Ubuntu. Tests by Michael Larabel for a future article on Phoronix.

Automated Executive Summary

Core i9 7900X: Clear Linux 17650 had the most wins, coming in first place for 55% of the tests.

Based on the geometric mean of all complete results, the fastest (Core i9 7900X: Clear Linux 17650) was 1.586x the speed of the slowest (Threadripper: Ubuntu 17.10). Threadripper: Antergos 17.9 was 1.025x the speed of Threadripper: Ubuntu 17.10, Threadripper: Clear Linux 17650 was 1.327x the speed of Threadripper: Antergos 17.9, Core i9 7900X: Ubuntu 17.10 was 0.894x the speed of Threadripper: Clear Linux 17650, Core i9 7900X: Antergos 17.9 was 1.044x the speed of Core i9 7900X: Ubuntu 17.10, Core i9 7900X: Clear Linux 17650 was 1.249x the speed of Core i9 7900X: Antergos 17.9.

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

Rodinia (Test: OpenMP CFD Solver) at 6.197x
PostgreSQL pgbench (Scaling: Buffer Test - Test: Single Thread - Mode: Read Write) at 4.961x
Rodinia (Test: OpenMP LavaMD) at 2.769x
FFmpeg (H.264 HD To NTSC DV) at 2.724x
Himeno Benchmark (Poisson Pressure Solver) at 2.406x

Parboil (Test: OpenMP MRI Gridding) at 1.986x
Redis (Test: SET) at 1.827x
CacheBench (Test: Read / Modify / Write) at 1.823x
C-Ray (Total Time) at 1.807x
Parboil (Test: OpenMP CUTCP) at 1.775x.

Test Systems:

Threadripper: Ubuntu 17.10

Processor: AMD Ryzen Threadripper 1950X 16-Core @ 3.40GHz (32 Cores), Motherboard: Gigabyte X399 AORUS Gaming 7, Chipset: AMD Device 1450, Memory: 32768MB, Disk: 120GB Force MP500, Graphics: XFX AMD Radeon R9 290/390 4096MB, Audio: Realtek ALC1220, Monitor: Acer B286HK, Network: Qualcomm Atheros Device e0b1 + Intel Wireless 8265 / 8275

OS: Ubuntu 17.10, Kernel: 4.12.0-12-generic (x86_64), Desktop: GNOME Shell 3.25.91, Display Driver: modesetting 1.19.3, OpenGL: 4.5 Mesa 17.2.0-rc4 (LLVM 4.0.1), Compiler: GCC 7.2.0, File-System: ext4, Screen Resolution: 3840x2160

Environment Notes: GJS_DEBUG_TOPICS=JS ERROR;JS LOG GJS_DEBUG_OUTPUT=stderr
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --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
Processor Notes: Scaling Governor: acpi-cpufreq ondemand

Threadripper: Antergos 17.9

Processor: AMD Ryzen Threadripper 1950X 16-Core @ 3.40GHz (32 Cores), Motherboard: Gigabyte X399 AORUS Gaming 7, Chipset: AMD Device 1450, Memory: 32768MB, Disk: 120GB Force MP500, Graphics: XFX AMD Radeon R9 290/390 4096MB, Audio: Realtek ALC1220, Monitor: Acer B286HK, Network: Qualcomm Atheros Device e0b1 + Intel Wireless 8265 / 8275

OS: Antergos Linux 17.9-ISO-Rolling, Kernel: 4.12.12-1-ARCH (x86_64), Desktop: GNOME Shell 3.24.3, Display Driver: modesetting 1.19.3, Compiler: GCC 7.2.0, File-System: ext4, Screen Resolution: 3840x2160

Environment Notes: GJS_DEBUG_OUTPUT=stderr GJS_DEBUG_TOPICS=JS ERROR;JS LOG
Compiler Notes: --disable-libssp --disable-libstdcxx-pch --disable-libunwind-exceptions --disable-multilib --disable-werror --enable-__cxa_atexit --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-default-ssp --enable-gnu-indirect-function --enable-gnu-unique-object --enable-install-libiberty --enable-languages=c,c++,ada,fortran,go,lto,objc,obj-c++ --enable-libmpx --enable-lto --enable-plugin --enable-shared --enable-threads=posix --mandir=/usr/share/man --with-isl --with-linker-hash-style=gnu
Processor Notes: Scaling Governor: acpi-cpufreq schedutil

Threadripper: Clear Linux 17650

Processor: AMD Ryzen Threadripper 1950X 16-Core @ 3.40GHz (32 Cores), Motherboard: Gigabyte X399 AORUS Gaming 7, Chipset: AMD Device 1450, Memory: 4 x 8192 MB DDR4-3200MT/s, Disk: 120GB Force MP500, Graphics: XFX AMD Radeon R9 290/390, Audio: Realtek ALC1220, Network: Qualcomm Atheros Device e0b1 + Intel Wireless 8265 / 8275

OS: Clear Linux OS 17650, Kernel: 4.13.0-387.native (x86_64), Vulkan: 1.0.39, Compiler: GCC 7.2.0 + Clang 4.0.1 + LLVM 4.0.1, File-System: ext4, Screen Resolution: 1024x768

Compiler Notes: --build=x86_64-generic-linux --disable-libunwind-exceptions --disable-multiarch --disable-vtable-verify --enable-__cxa_atexit --enable-bootstrap --enable-clocale=gnu --enable-gnu-indirect-function --enable-languages=c,c++,fortran,go --enable-ld=default --enable-libmpx --enable-libstdcxx-pch --enable-lto --enable-multilib --enable-plugin --enable-shared --enable-threads=posix --exec-prefix=/usr --includedir=/usr/include --target=x86_64-generic-linux --with-arch=westmere --with-glibc-version=2.19 --with-gnu-ld --with-isl --with-ppl=yes --with-tune=haswell
Processor Notes: Scaling Governor: acpi-cpufreq performance

Core i9 7900X: Ubuntu 17.10

Processor: Intel Core i7-7900X @ 4.50GHz (20 Cores), Motherboard: MSI X299 SLI PLUS (MS-7A93) v1.0, Chipset: Intel Device 2020, Memory: 16384MB, Disk: 240GB Force MP500, Graphics: NVE4 2048MB, Audio: Realtek ALC1220, Monitor: DELL P2415Q, Network: Intel Connection

OS: Ubuntu 17.10, Kernel: 4.12.0-12-generic (x86_64), Desktop: GNOME Shell 3.25.91, Display Driver: modesetting 1.19.3, OpenGL: 4.3 Mesa 17.2.0-rc4, Compiler: GCC 7.2.0, File-System: ext4, Screen Resolution: 3840x2160

Environment Notes: GJS_DEBUG_TOPICS=JS ERROR;JS LOG GJS_DEBUG_OUTPUT=stderr
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --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
Processor Notes: Scaling Governor: intel_pstate powersave

Core i9 7900X: Antergos 17.9

Processor: Intel Core i7-7900X @ 4.50GHz (20 Cores), Motherboard: MSI X299 SLI PLUS (MS-7A93) v1.0, Chipset: Intel Device 2020, Memory: 16384MB, Disk: 240GB Force MP500, Graphics: NVIDIA GeForce GTX 760 2048MB, Audio: Realtek ALC1220, Monitor: DELL P2415Q, Network: Intel Connection

OS: Antergos Linux 17.9-ISO-Rolling, Kernel: 4.12.12-1-ARCH (x86_64), Desktop: GNOME Shell 3.24.3, Display Driver: nouveau 1.0.15, Compiler: GCC 7.2.0, File-System: ext4, Screen Resolution: 3840x2160

Environment Notes: GJS_DEBUG_OUTPUT=stderr GJS_DEBUG_TOPICS=JS ERROR;JS LOG
Compiler Notes: --disable-libssp --disable-libstdcxx-pch --disable-libunwind-exceptions --disable-multilib --disable-werror --enable-__cxa_atexit --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-default-ssp --enable-gnu-indirect-function --enable-gnu-unique-object --enable-install-libiberty --enable-languages=c,c++,ada,fortran,go,lto,objc,obj-c++ --enable-libmpx --enable-lto --enable-plugin --enable-shared --enable-threads=posix --mandir=/usr/share/man --with-isl --with-linker-hash-style=gnu
Processor Notes: Scaling Governor: intel_pstate powersave

Core i9 7900X: Clear Linux 17650

Processor: Intel Core i7-7900X @ 4.50GHz (20 Cores), Motherboard: MSI X299 SLI PLUS (MS-7A93) v1.0, Chipset: Intel Device 2020, Memory: 4 x 4096 MB DDR4-2800MT/s, Disk: 240GB Force MP500, Graphics: NVIDIA GeForce GTX 760, Audio: Realtek ALC1220, Network: Intel Connection

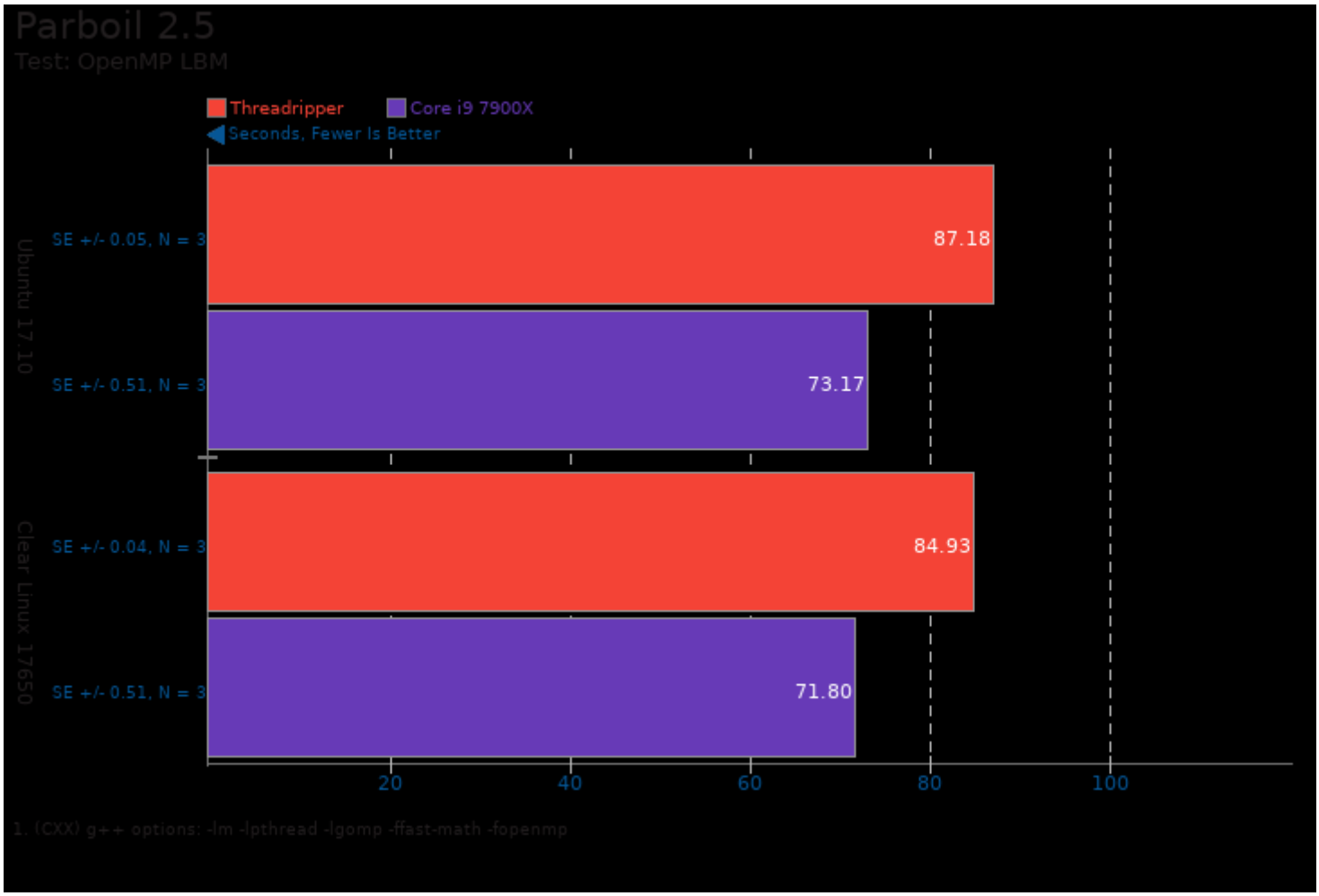
OS: Clear Linux OS 17650, Kernel: 4.13.0-387.native (x86_64), Vulkan: 1.0.39, Compiler: GCC 7.2.0 + Clang 4.0.1 + LLVM 4.0.1, File-System: ext4, Screen Resolution: 1024x768

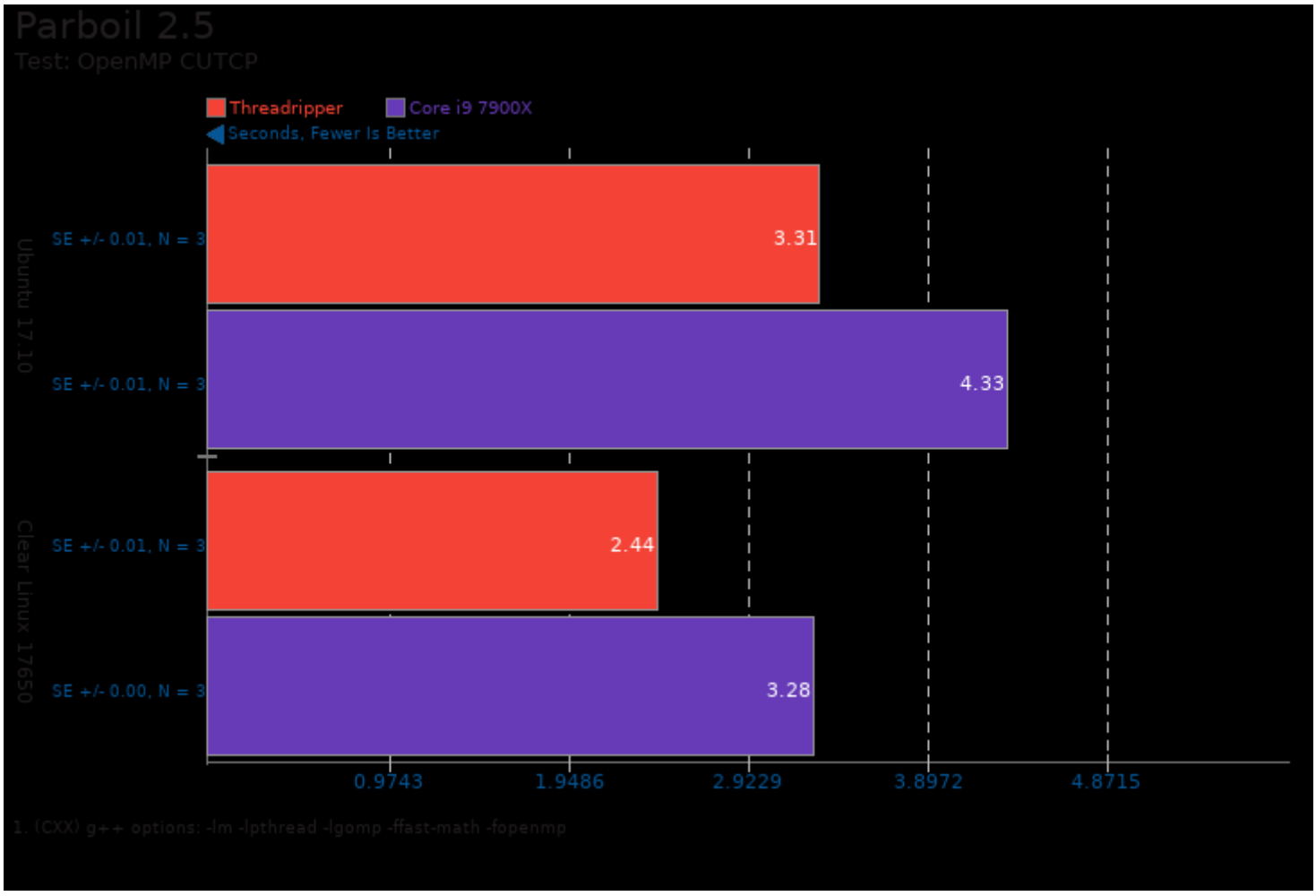
Compiler Notes: --build=x86_64-generic-linux --disable-libunwind-exceptions --disable-multiarch --disable-vtable-verify --enable-__cxa_atexit --enable-bootstrap --enable-clocale=gnu --enable-gnu-indirect-function --enable-languages=c,c++,fortran,go --enable-ld=default --enable-libmpx --enable-libstdcxx-pch --enable-lto --enable-multilib --enable-plugin --enable-shared --enable-threads=posix --exec-prefix=/usr --includedir=/usr/include --target=x86_64-generic-linux --with-arch=westmere --with-glibc-version=2.19 --with-gnu-ld --with-isl --with-ppl=yes --with-tune=haswell
Processor Notes: Scaling Governor: intel_pstate performance

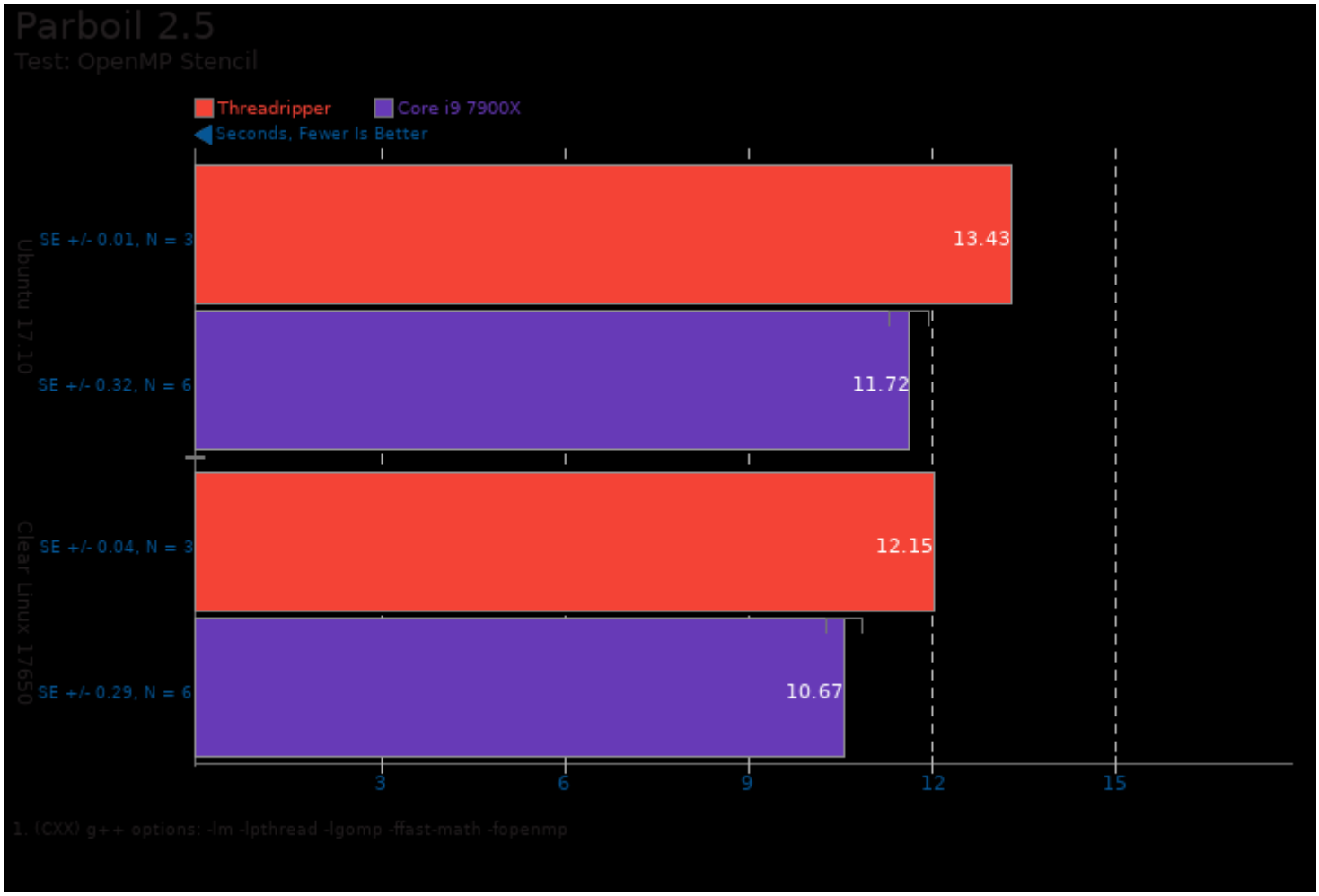
Ubuntu 17.10 vs. Antergos vs. Clear Linux - Threadripper vs. Core i9 7900X

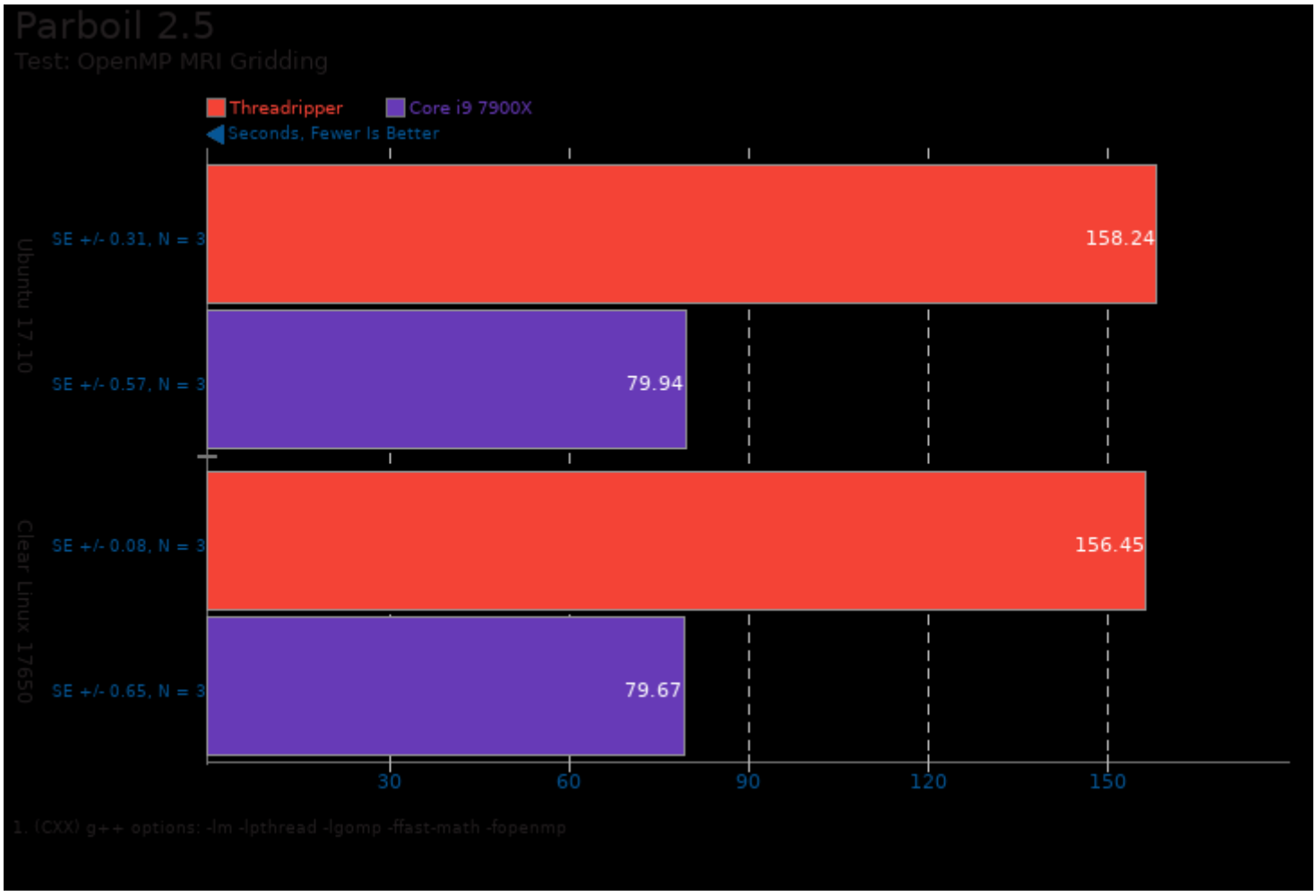
	Threadripper: Ubuntu 17.10	Threadripper: Antergos 17.9	Threadripper: Clear Linux 17650	Core i9 7900X: Ubuntu 17.10	Core i9 7900X: Antergos 17.9	Core i9 7900X: Clear Linux 17650
Parboil - OpenMP LBM (sec)	87.18		84.93	73.17		71.80
Normalized	82.36%		84.54%	98.13%		100%
Standard Deviation	0.1%		0.1%	1.2%		1.2%
Parboil - OpenMP CUTCP (sec)	3.31		2.44	4.33		3.28
Normalized	73.72%		100%	56.35%		74.39%
Standard Deviation	0.4%		0.4%	0.3%		0.2%
Parboil - OpenMP Stencil	13.43		12.15	11.72		10.67
Normalized	79.45%		87.82%	91.04%		100%
Standard Deviation	0.1%		0.6%	6.7%		6.7%
Parboil - O.M.G (sec)	158.24		156.45	79.94		79.67
Normalized	50.35%		50.92%	99.66%		100%
Standard Deviation	0.3%		0.1%	1.2%		1.4%
Rodinia - OpenMP LavaMD (sec)	43.87	46.73	23.62	60.08	65.41	33.26
Normalized	53.84%	50.55%	100%	39.31%	36.11%	71.02%
Standard Deviation	0.2%	0.5%	0.3%	1.3%	0.2%	0.7%
Rodinia - OpenMP CFD Solver (sec)	80.50	62.07	12.99	17.90	17.99	17.58
Normalized	16.14%	20.93%	100%	72.57%	72.21%	73.89%
Standard Deviation	0.5%	1%	0.5%	4.4%	3.2%	4.4%
Rodinia - O.S (sec)	51.37	35.64	17.34	13.97	14.39	14.08
Normalized	27.19%	39.2%	80.57%	100%	97.08%	99.22%
Standard Deviation	0.5%	14.6%	0.2%	8.6%	10.4%	6%
FFTW - Float + SSE - 2D FFT Size 1024 (Mflops)	26347	21963	23766	25341	26332	26982
Normalized	97.65%	81.4%	88.08%	93.92%	97.59%	100%
Standard Deviation	0.3%	0.8%	0.1%	0.4%	1.9%	2.4%
FFTW - Float + SSE - 2D FFT Size 4096 (Mflops)	16200	13701	16573	18592	17938	17486
Normalized	87.13%	73.69%	89.14%	100%	96.48%	94.05%
Standard Deviation	1.5%	0.7%	0.9%	2.6%	1.5%	0.8%
Timed HMMer Search - P.D.S (sec)	7.91	8.37		14.52	8.20	
Normalized	100%	94.5%		54.48%	96.46%	
Standard Deviation	1.5%	1.2%		5%	8.9%	
CacheBench - R.M.W (MB/s)	29374	51568	53552	33776	51728	51791
Normalized	54.85%	96.3%	100%	63.07%	96.59%	96.71%
Standard Deviation	0%	1%	0%	1.1%	0%	0%
GraphicsMagick - Resizing (Iterations/min)	228	224	216	250	257	271
Normalized	84.13%	82.66%	79.7%	92.25%	94.83%	100%
Standard Deviation	0.5%	0.3%			1%	
Himeno Benchmark - P.P.S (MFLOPS)	1304	1252	1315	2942	2968	3013
Normalized	43.27%	41.57%	43.64%	97.66%	98.5%	100%
Standard Deviation	0.2%	1.6%	0.5%	2%	0.3%	1.6%
Timed LLVM Compilation - Time To Compile (sec)	253.39	261.27	354.58	261.30	262.51	
Normalized	100%	96.98%	71.46%	96.97%	96.53%	

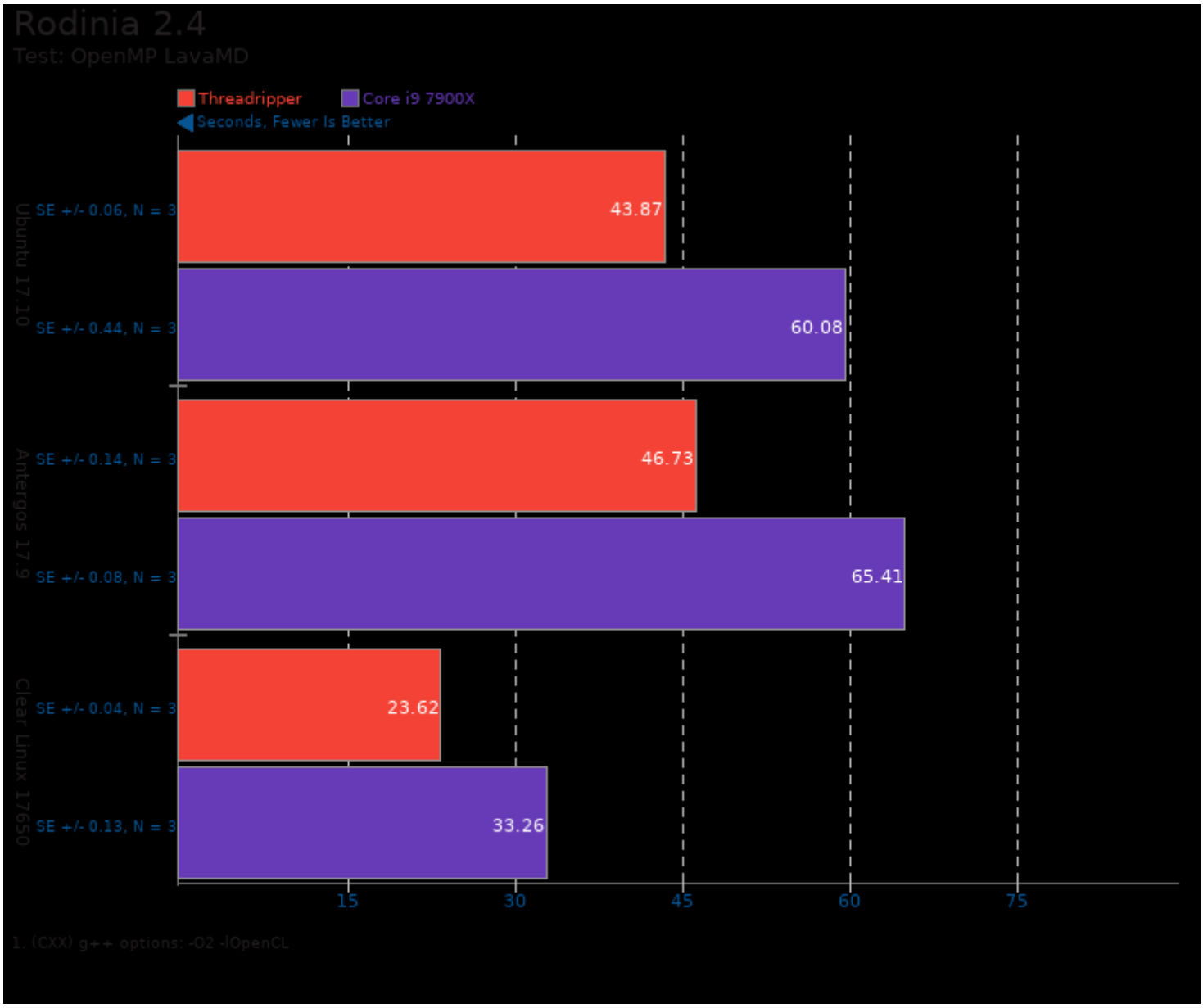
Standard Deviation	0%	1.7%	4%	0.5%	0.5%	
C-Ray - Total Time (sec)	5.17	5.28	4.09	7.38	7.39	6.29
Normalized	79.11%	77.46%	100%	55.42%	55.35%	65.02%
Standard Deviation	0.3%	0.2%	0.4%	0.1%	0.2%	0.1%
Stockfish - Total Time (ms)	3638	3661	3450	2844	2840	2613
Normalized	71.83%	71.37%	75.74%	91.88%	92.01%	100%
Standard Deviation	1%	1.4%	0.1%	1.2%		0.1%
FLAC Audio Encoding - WAV To FLAC (sec)	5.47	5.59	5.22	4.92	4.68	4.36
Normalized	79.71%	78%	83.52%	88.62%	93.16%	100%
Standard Deviation	1%	0.6%	0.3%	11.6%	0.4%	0.4%
LAME MP3 Encoding - WAV To MP3 (sec)	8.93	9.25	8.85	8.32	8.51	8.11
Normalized	90.82%	87.68%	91.64%	97.48%	95.3%	100%
Standard Deviation	0.9%	1.2%	0.1%	7%	7.8%	7.3%
FFmpeg - H.2.H.T.N.D (sec)	7.81	8.93	6.19	13.89	13.76	5.10
Normalized	65.3%	57.11%	82.39%	36.72%	37.06%	100%
Standard Deviation	2.2%	0.3%	1.8%	5.5%	5.6%	10.5%
OpenSSL - R.4.b.P	2183	2155	2184	2112	2108	2113
Normalized	99.94%	98.66%	100%	96.7%	96.52%	96.76%
Standard Deviation	0.2%	0.3%	0.2%	0%	0%	0%
PostgreSQL pgbench - Buffer Test - Normal Load - Read Write (TPS)	9947	11150	12566	14118	14085	22233
Normalized	44.74%	50.15%	56.52%	63.5%	63.35%	100%
Standard Deviation	43.9%	41.3%	13.7%	4.5%	3.5%	4.2%
PostgreSQL pgbench - Buffer Test - Single Thread - Read Write (TPS)	1105	1189	2546	724.21	725.92	3593
Normalized	30.74%	33.08%	70.85%	20.16%	20.2%	100%
Standard Deviation	0.1%	2.7%	3.3%	9.7%	8.7%	1%
Redis - GET (Reqs/sec)	2191834	2091779	2767869	2650329	3109016	3681125
Normalized	59.54%	56.82%	75.19%	72%	84.46%	100%
Standard Deviation	3.4%	8.2%	1.4%	0.9%	1%	0.8%
Redis - SET (Reqs/sec)	1549736	1453112	1932086	1955802	2356711	2654983
Normalized	58.37%	54.73%	72.77%	73.67%	88.77%	100%
Standard Deviation	1.2%	5.1%	1.6%	1%	0.7%	0.8%
Blender - BMW27 - CPU-Only (sec)	527.43	531.10	522.30	412.97	398.45	409.58
Normalized	75.55%	75.02%	76.29%	96.48%	100%	97.28%
Xsbench (Lookups/s)	2728244	2572500	2851137	3394205	3754089	3694296
Normalized	72.67%	68.53%	75.95%	90.41%	100%	98.41%
Standard Deviation	0.2%	0.3%	0%	0.3%	0%	0.1%
Apache Benchmark - S.W.P.S (Reqs/sec)	27533		29662	44342		48034
Normalized	57.32%		61.75%	92.31%		100%
Standard Deviation	2.1%		1.1%	4.3%		4%

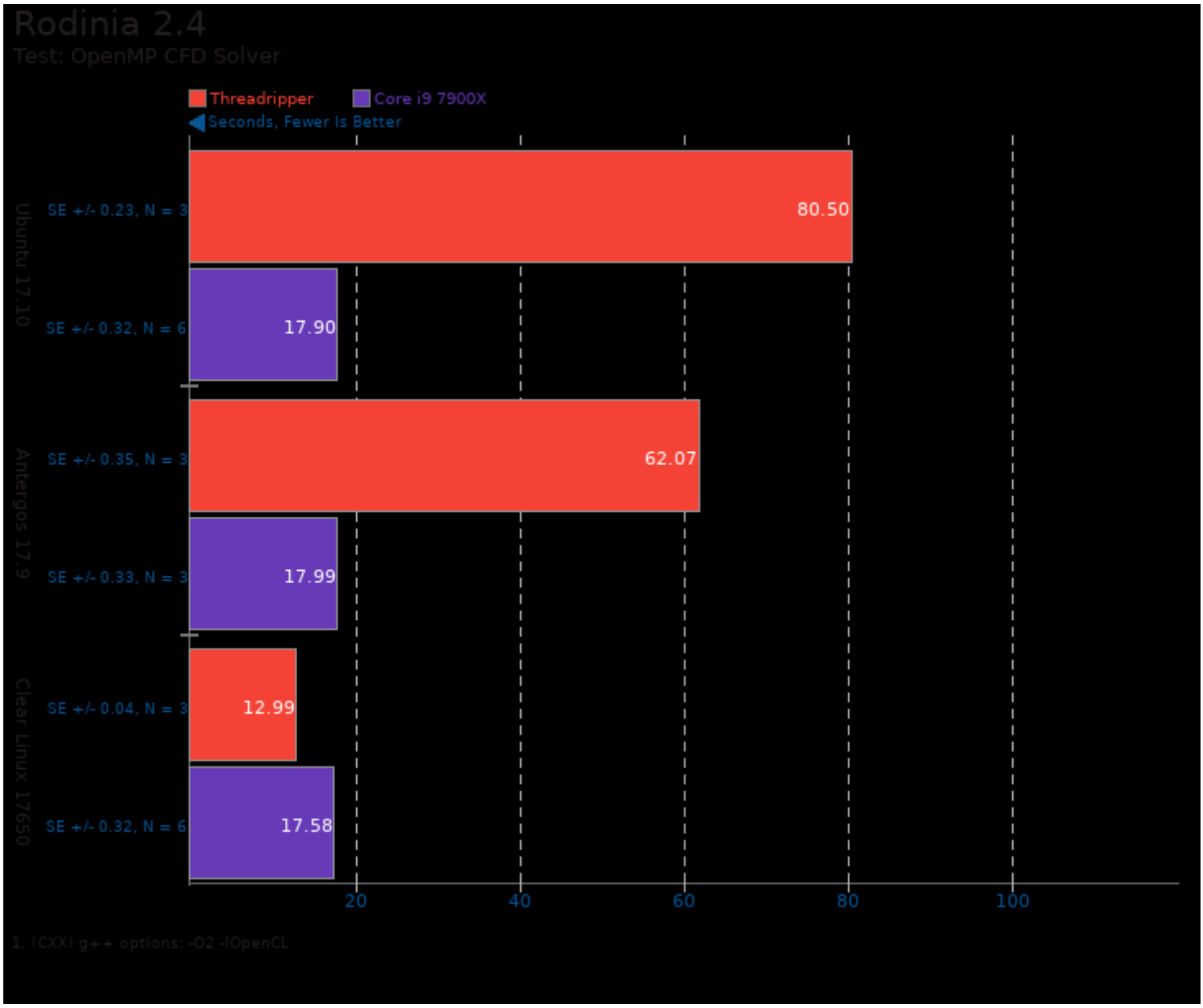

Parboil 2.5
Test: OpenMP LBM
Threadripper
Core i9 7900X
Seconds, Fewer Is Better
Ubuntu 17.10
SE +/- 0.05, N = 3
87.18
SE +/- 0.51, N = 3
73.17
Clear Linux 17650
SE +/- 0.04, N = 3
84.93
SE +/- 0.51, N = 3
71.80
20
40
60
80
100
1. (CXX) g++ options: -lm -lpthread -lgomp -ffast-math -fopenmp

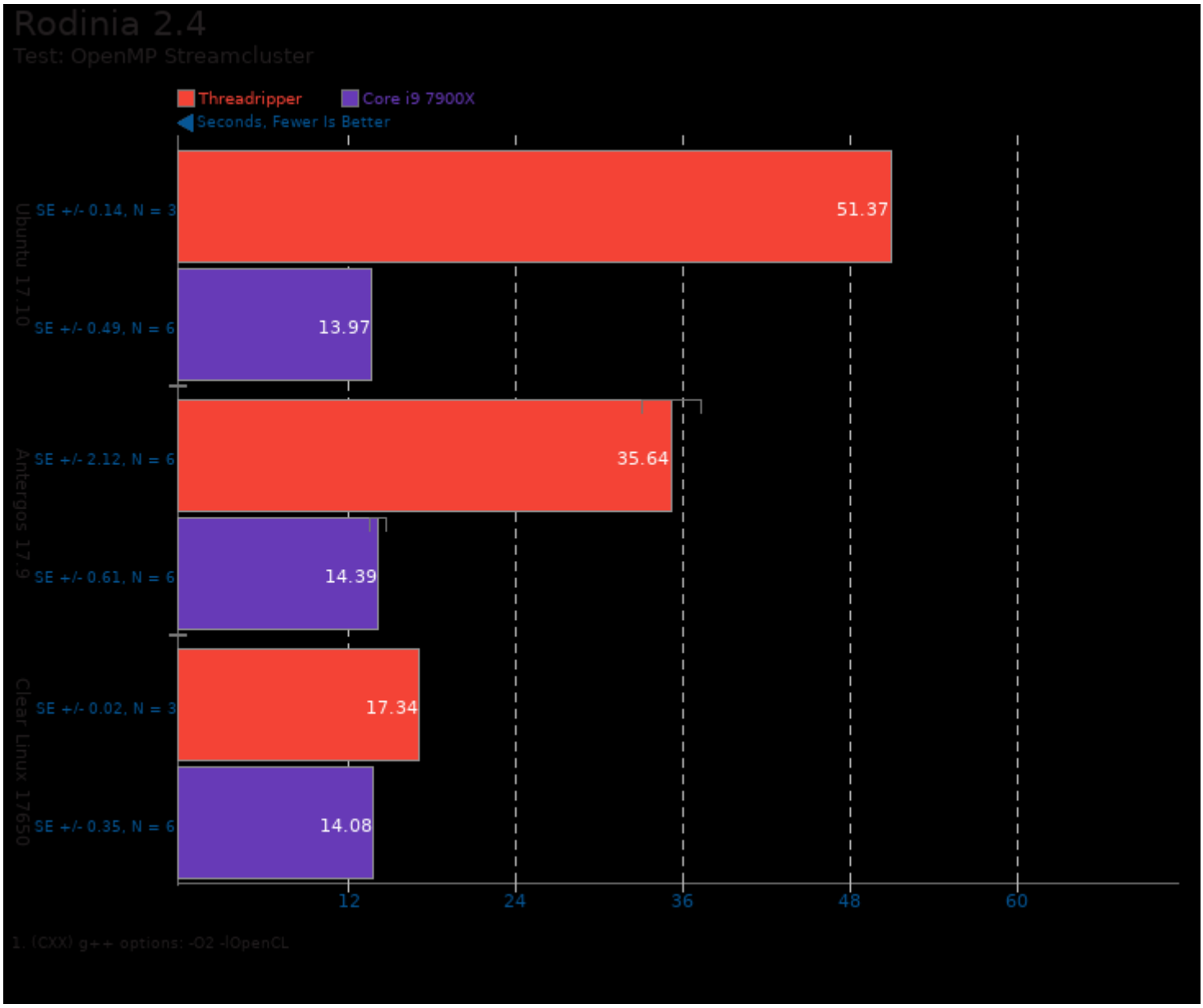

Parboil 2.5
Test: OpenMP CUTCP
Threadripper
Core i9 7900X
Seconds, Fewer Is Better
Ubuntu 17.10
Clear Linux 17650
SE +/- 0.01, N = 3
3.31
SE +/- 0.01, N = 3
4.33
SE +/- 0.01, N = 3
2.44
SE +/- 0.00, N = 3
3.28
0.9743
1.9486
2.9229
3.8972
4.8715
1. (CXX) g++ options: -lm -lpthread -lgomp -ffast-math -fopenmp

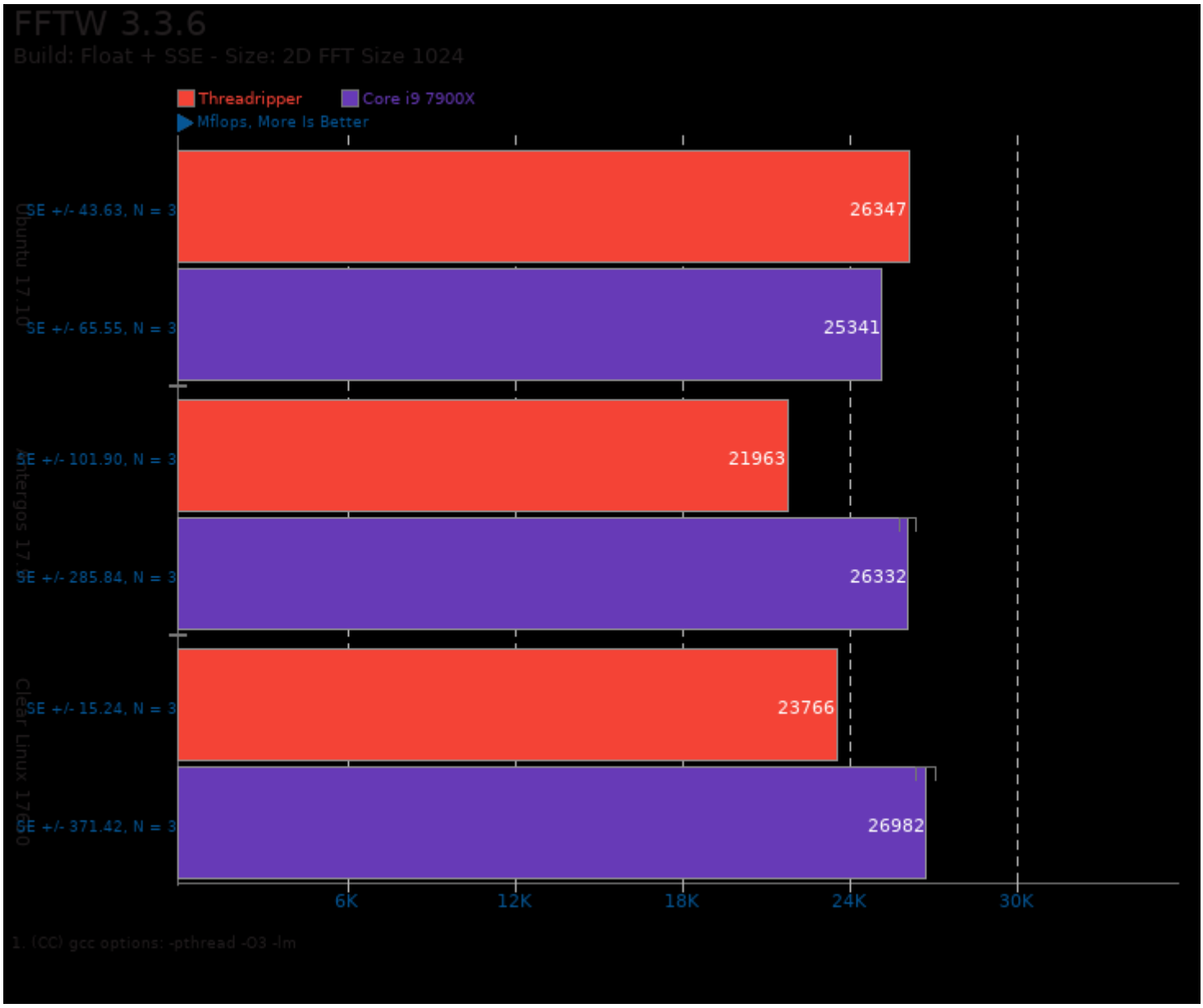

Parboil 2.5
Test: OpenMP Stencil
Threadripper
Core i9 7900X
Seconds, Fewer Is Better
Ubuntu 17.10
SE +/- 0.01, N = 3
13.43
SE +/- 0.32, N = 6
11.72
Clear Linux 17650
SE +/- 0.04, N = 3
12.15
SE +/- 0.29, N = 6
10.67
3
6
9
12
15
1. (CXX) g++ options: -lm -lpthread -lgomp -ffast-math -fopenmp

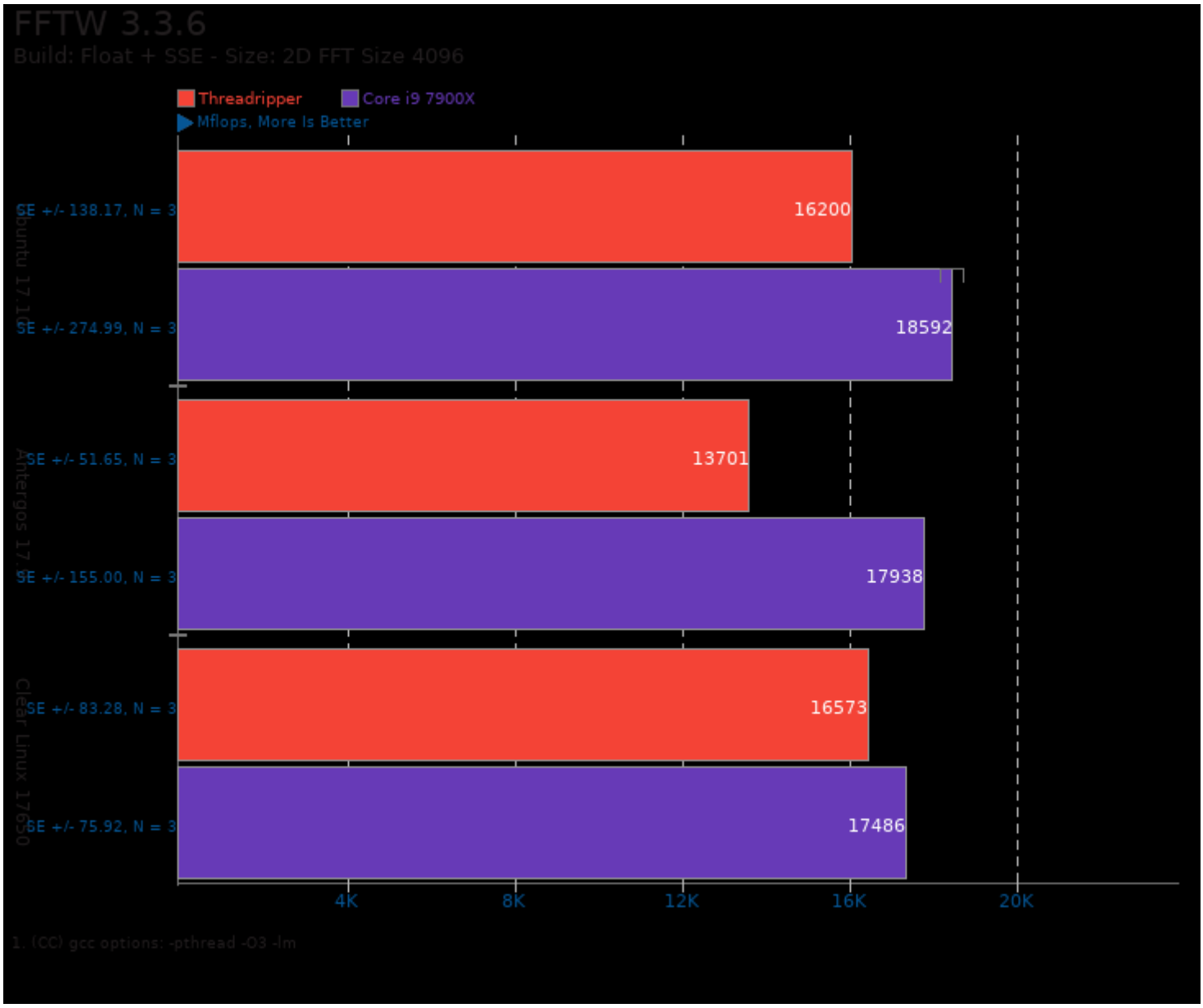

Parboil 2.5
Test: OpenMP MRI Gridding
Threadripper
Core i9 7900X
Seconds, Fewer Is Better
Ubuntu 17.10
SE +/- 0.31, N = 3
158.24
SE +/- 0.57, N = 3
79.94
Clear Linux 17650
SE +/- 0.08, N = 3
156.45
SE +/- 0.65, N = 3
79.67
30
60
90
120
150
1. (CXX) g++ options: -lm -lpthread -lgomp -ffast-math -fopenmp

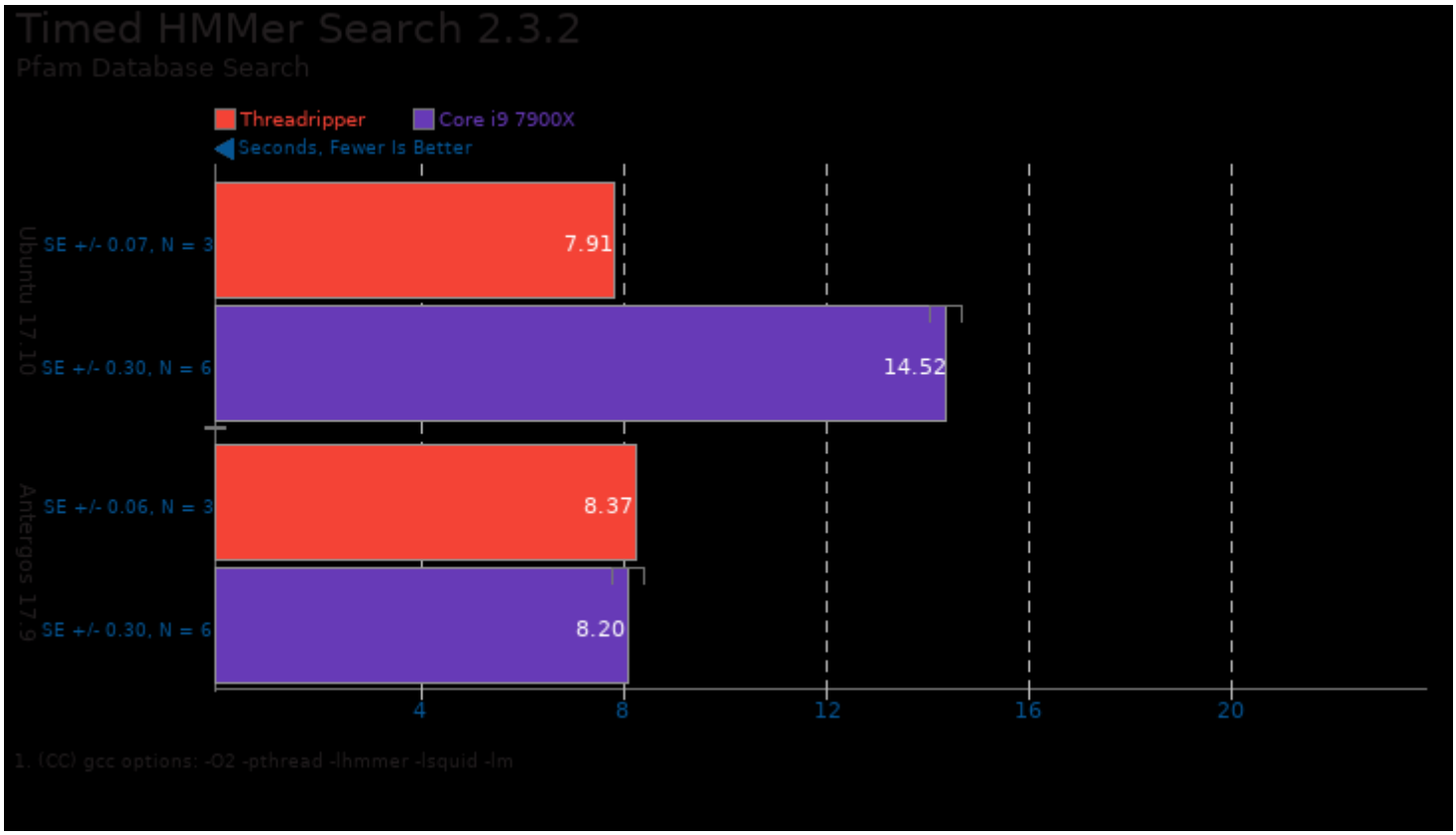

Rodinia 2.4
Test: OpenMP LavaMD
Threadripper
Core i9 7900X
Seconds, Fewer Is Better
Ubuntu 17.10
Antergos 17.9
Clear Linux 17650
SE +/- 0.06, N = 3
43.87
SE +/- 0.44, N = 3
60.08
SE +/- 0.14, N = 3
46.73
SE +/- 0.08, N = 3
65.41
SE +/- 0.04, N = 3
23.62
SE +/- 0.13, N = 3
33.26
15
30
45
60
75
1. (CXX) g++ options: -O2 -lOpenCL

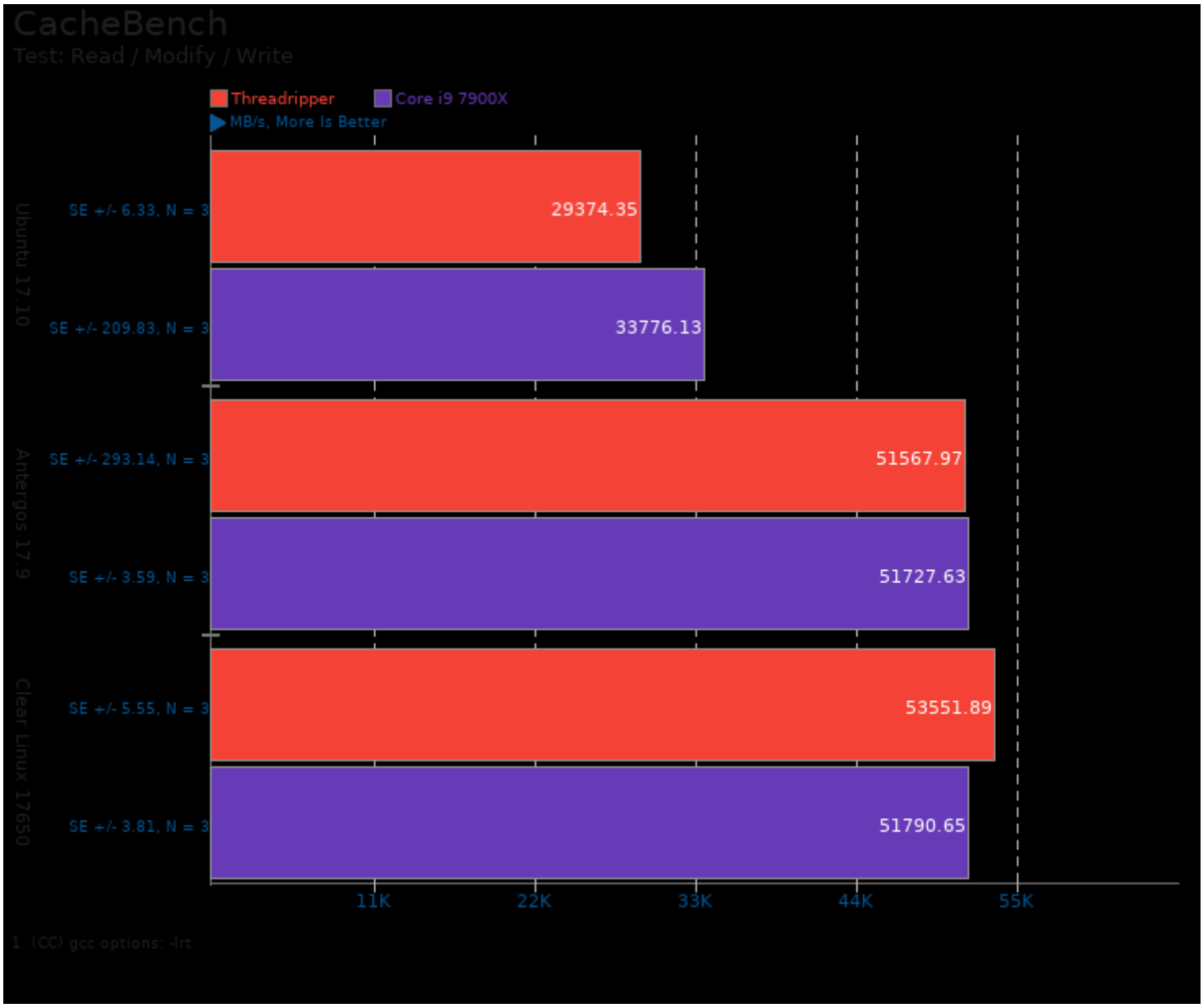

Rodinia 2.4
Test: OpenMP CFD Solver
Threadripper
Core i9 7900X
Seconds, Fewer Is Better
Ubuntu 17.10
SE +/- 0.23, N = 3
80.50
SE +/- 0.32, N = 6
17.90
Antergos 17.9
SE +/- 0.35, N = 3
62.07
SE +/- 0.33, N = 3
17.99
Clear Linux 17650
SE +/- 0.04, N = 3
12.99
SE +/- 0.32, N = 6
17.58
20
40
60
80
100
1. (CXX) g++ options: -O2 -lOpenCL

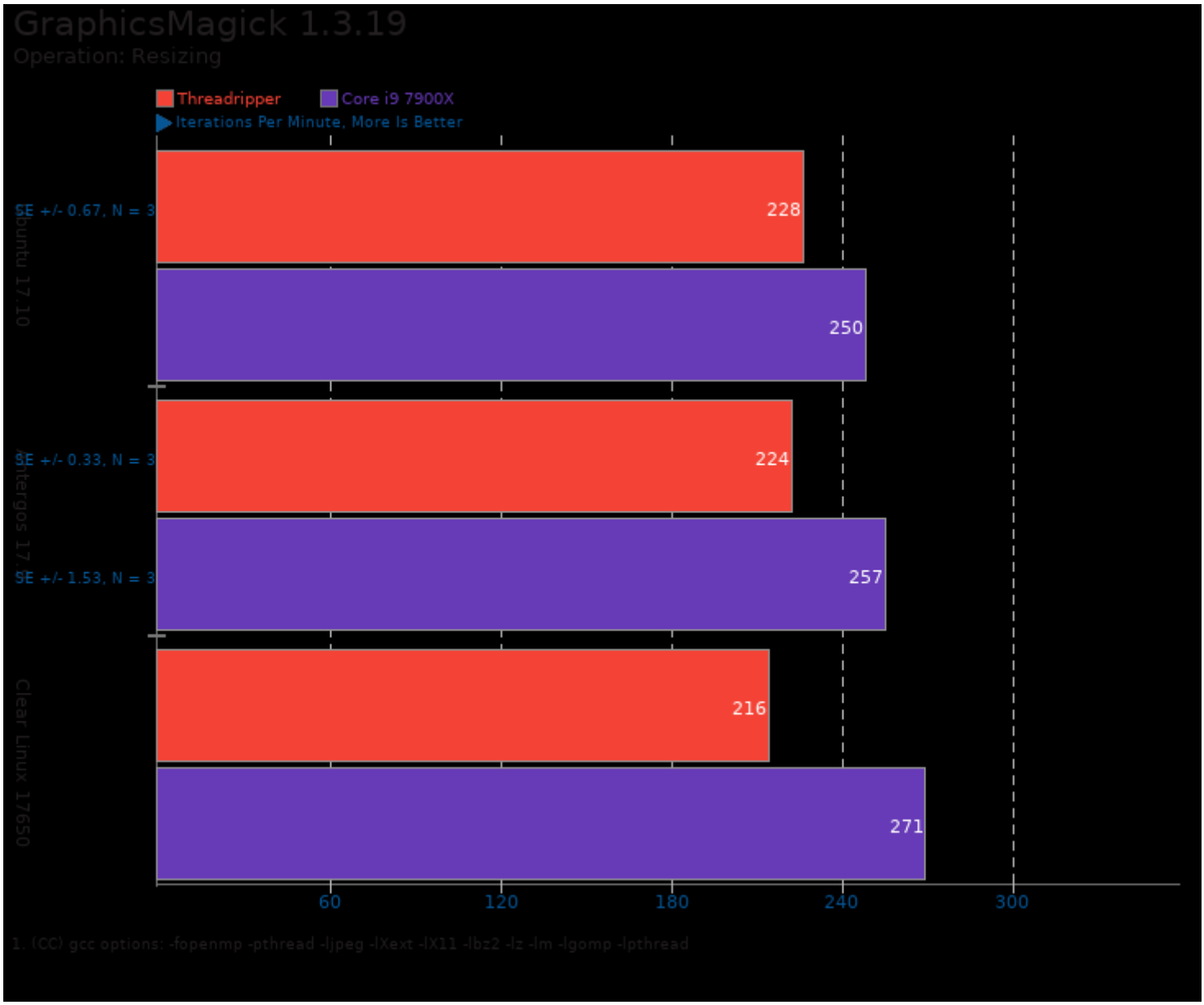

Rodinia 2.4
Test: OpenMP Streamcluster
Threadripper
Core i9 7900X
Seconds, Fewer Is Better
Ubuntu 17.10
SE +/- 0.14, N = 3
51.37
SE +/- 0.49, N = 6
13.97
Antergos 17.9
SE +/- 2.12, N = 6
35.64
SE +/- 0.61, N = 6
14.39
Clear Linux 17650
SE +/- 0.02, N = 3
17.34
SE +/- 0.35, N = 6
14.08
12
24
36
48
60
1. (CXX) g++ options: -O2 -lOpenCL

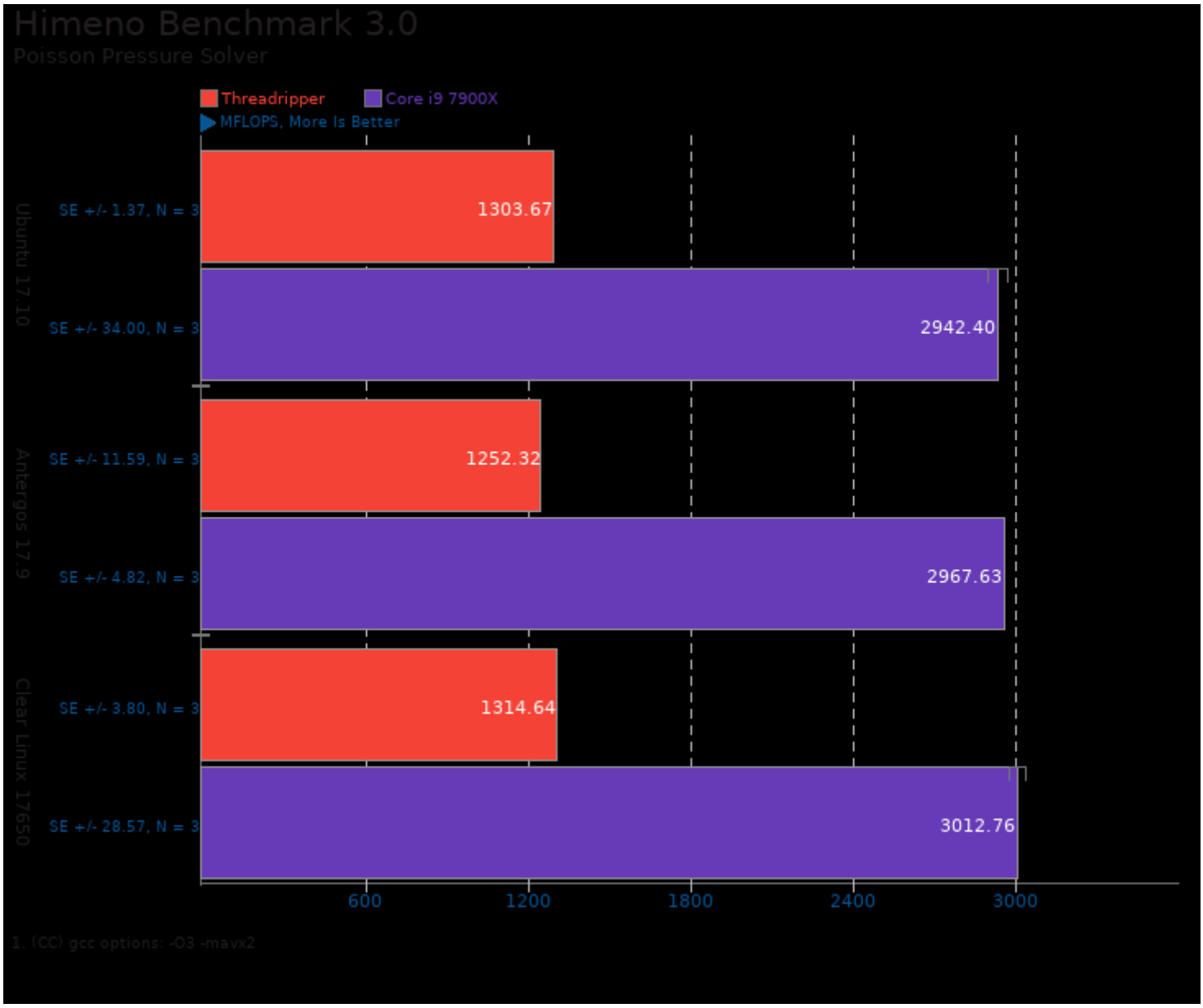

FFTW 3.3.6
Build: Float + SSE - Size: 2D FFT Size 1024
Threadripper
Core i9 7900X
Mflops, More Is Better
SE +/- 43.63, N = 3
26347
SE +/- 65.55, N = 3
25341
SE +/- 101.90, N = 3
21963
SE +/- 285.84, N = 3
26332
SE +/- 15.24, N = 3
23766
SE +/- 371.42, N = 3
26982
6K
12K
18K
24K
30K
1. (CC) gcc options: -pthread -O3 -lm

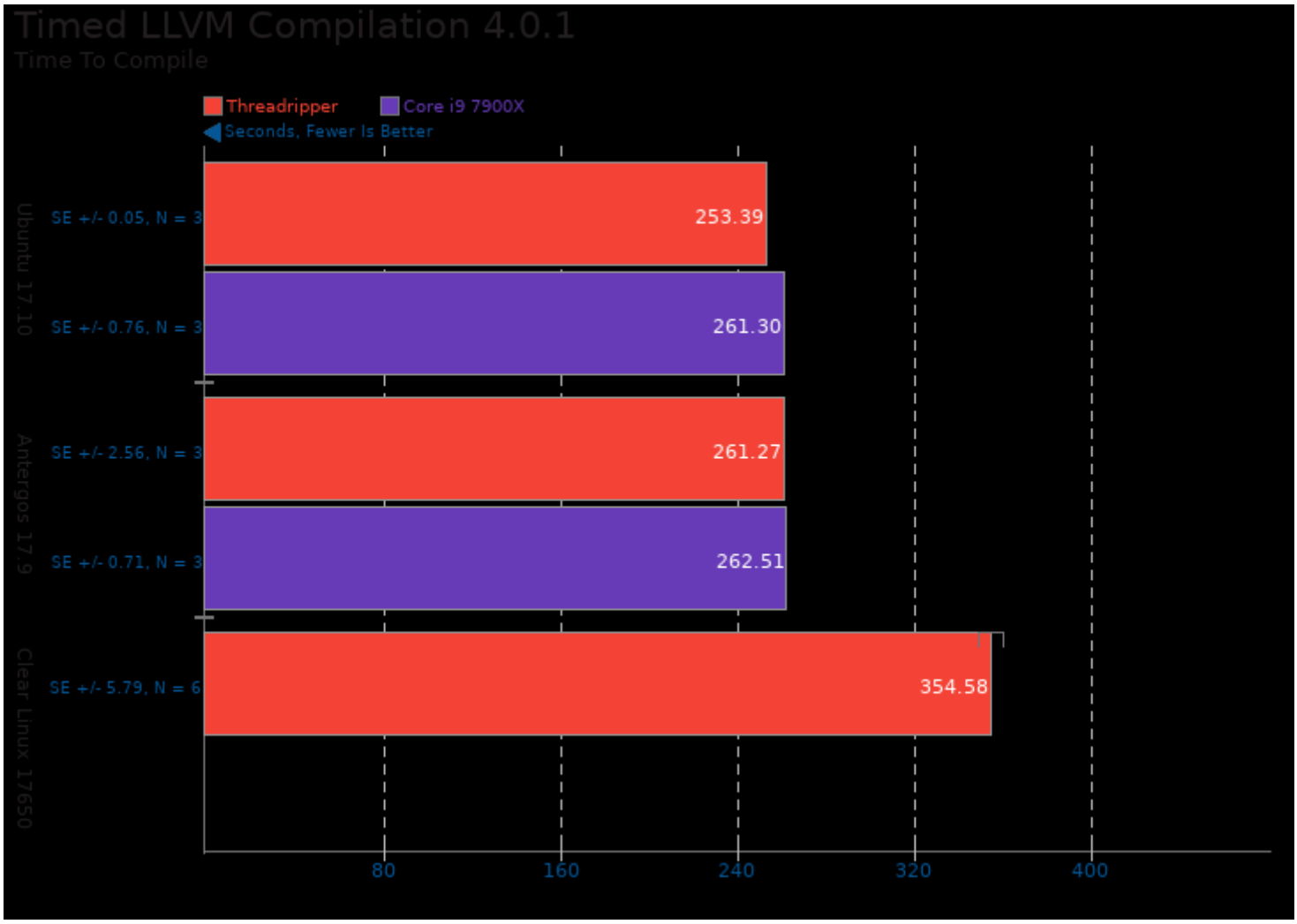

FFTW 3.3.6
Build: Float + SSE - Size: 2D FFT Size 4096
Threadripper
Core i9 7900X
Mflops, More Is Better
SE +/- 138.17, N = 3
16200
SE +/- 274.99, N = 3
18592
SE +/- 51.65, N = 3
13701
SE +/- 155.00, N = 3
17938
SE +/- 83.28, N = 3
16573
SE +/- 75.92, N = 3
17486
4K
8K
12K
16K
20K
1. (CC) gcc options: -pthread -O3 -lm

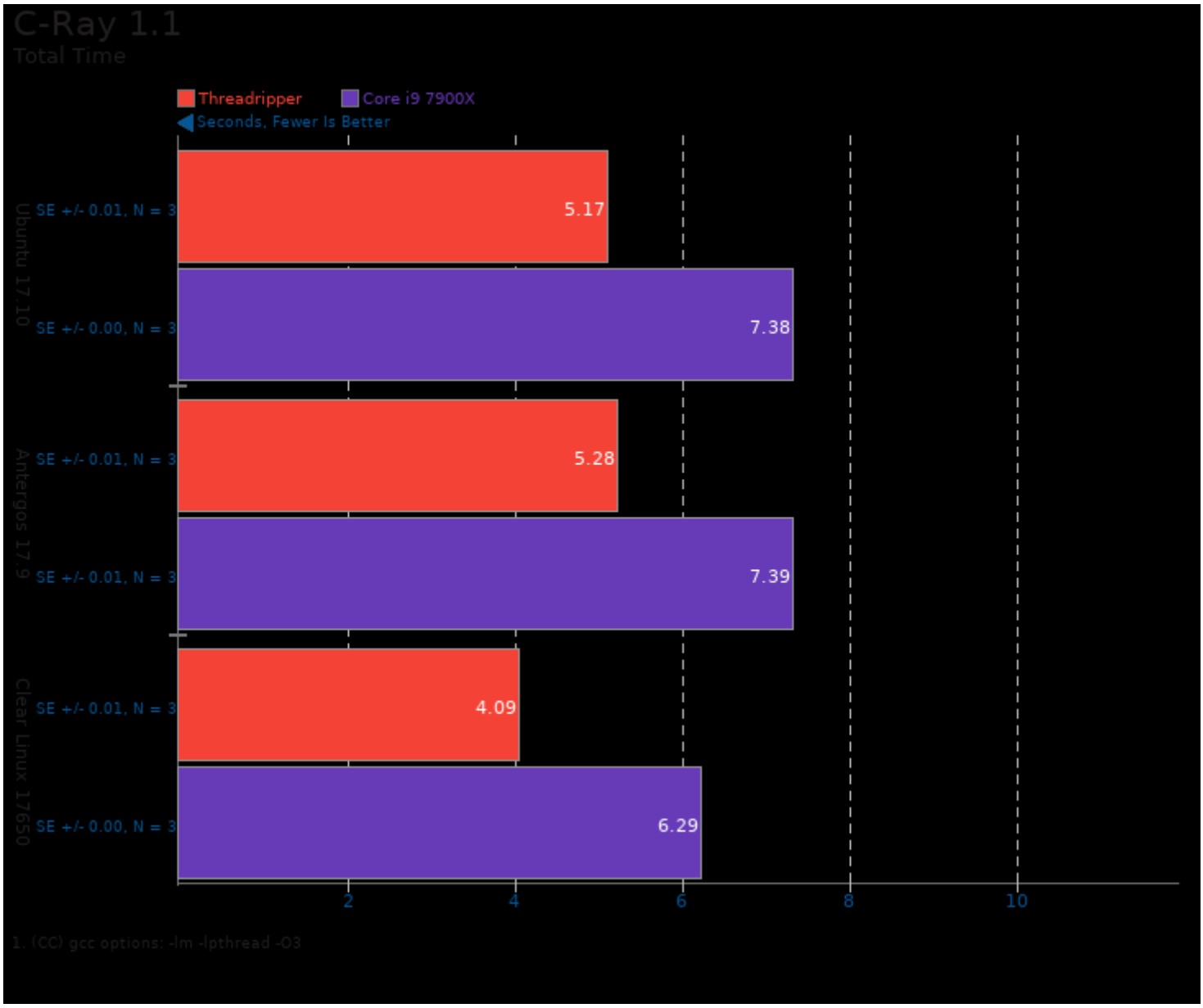

Timed HMMer Search 2.3.2
Pfam Database Search
Threadripper
Core i9 7900X
Seconds, Fewer Is Better
Ubuntu 17.10
SE +/- 0.07, N = 3
7.91
SE +/- 0.30, N = 6
14.52
Antergos 17.9
SE +/- 0.06, N = 3
8.37
SE +/- 0.30, N = 6
8.20
4
8
12
16
20
1. (CC) gcc options: -O2 -pthread -lhmmer -lsquid -lm

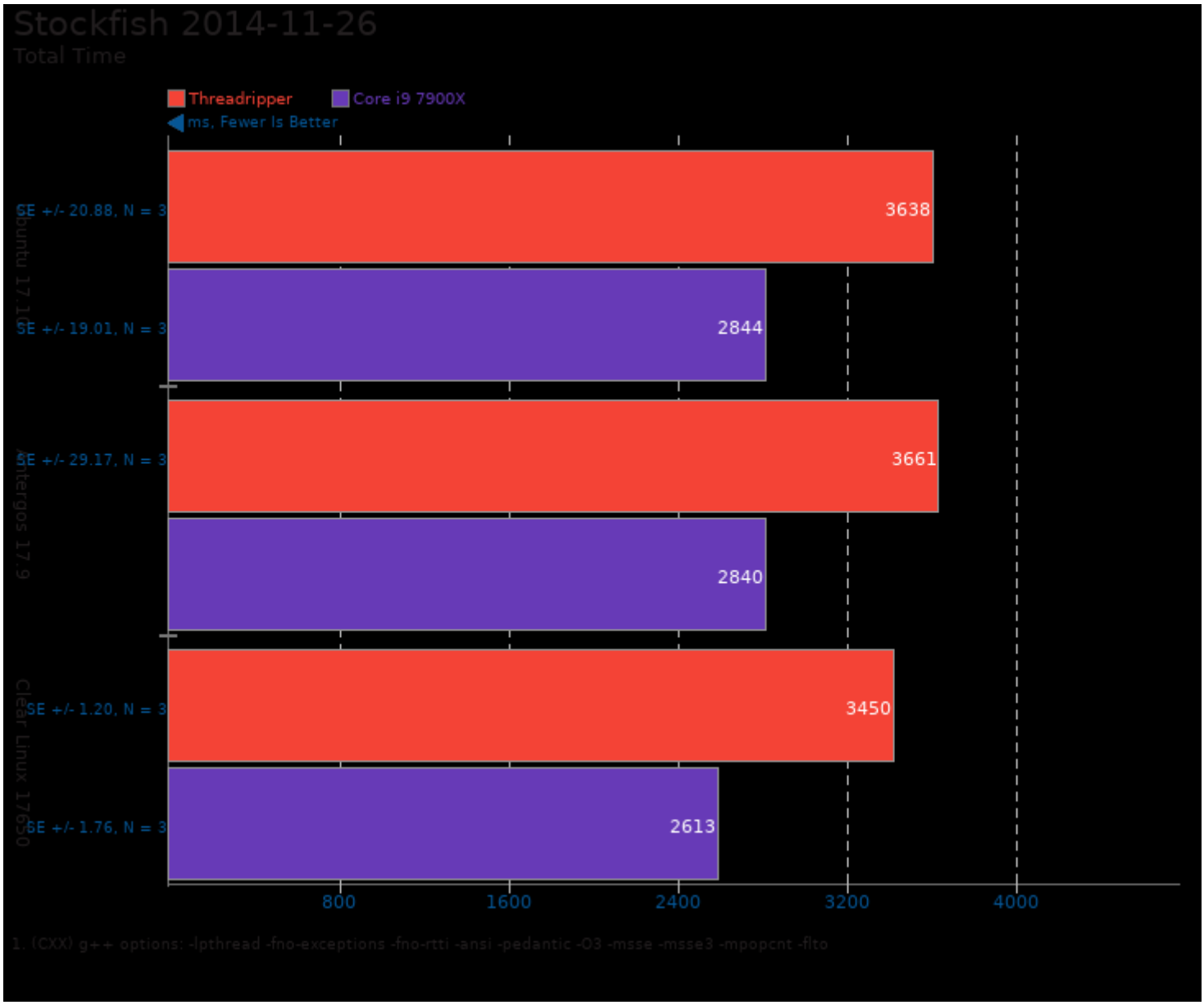

CacheBench
Test: Read / Modify / Write
Threadripper
Core i9 7900X
MB/s, More Is Better
Ubuntu 17.10
SE +/- 6.33, N = 3
29374.35
SE +/- 209.83, N = 3
33776.13
Antergos 17.9
SE +/- 293.14, N = 3
51567.97
SE +/- 3.59, N = 3
51727.63
Clear Linux 17650
SE +/- 5.55, N = 3
53551.89
SE +/- 3.81, N = 3
51790.65
11K
22K
33K
44K
55K
1. (CC) gcc options: -lrt

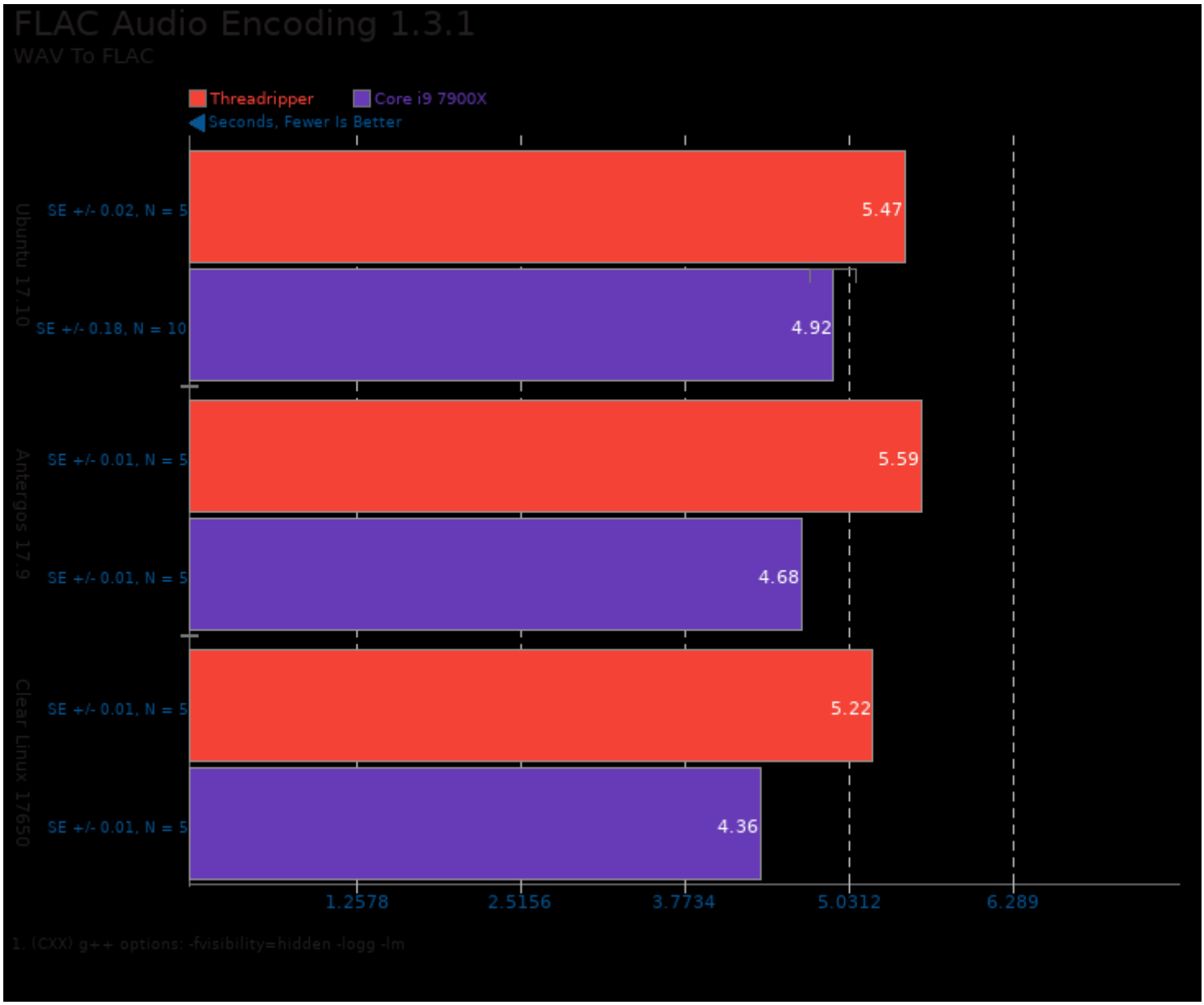

GraphicsMagick 1.3.19
Operation: Resizing
Threadripper
Core i9 7900X
Iterations Per Minute, More Is Better
SE +/- 0.67, N = 3
228
250
Ubuntu 17.10
SE +/- 0.33, N = 3
224
257
Antergos 17.
SE +/- 1.53, N = 3
216
271
Clear Linux 17650
60
120
180
240
300
1. (CC) gcc options: -fopenmp -pthread -ljpeg -lXext -lX11 -lbz2 -lz -lm -lgomp -lpthread

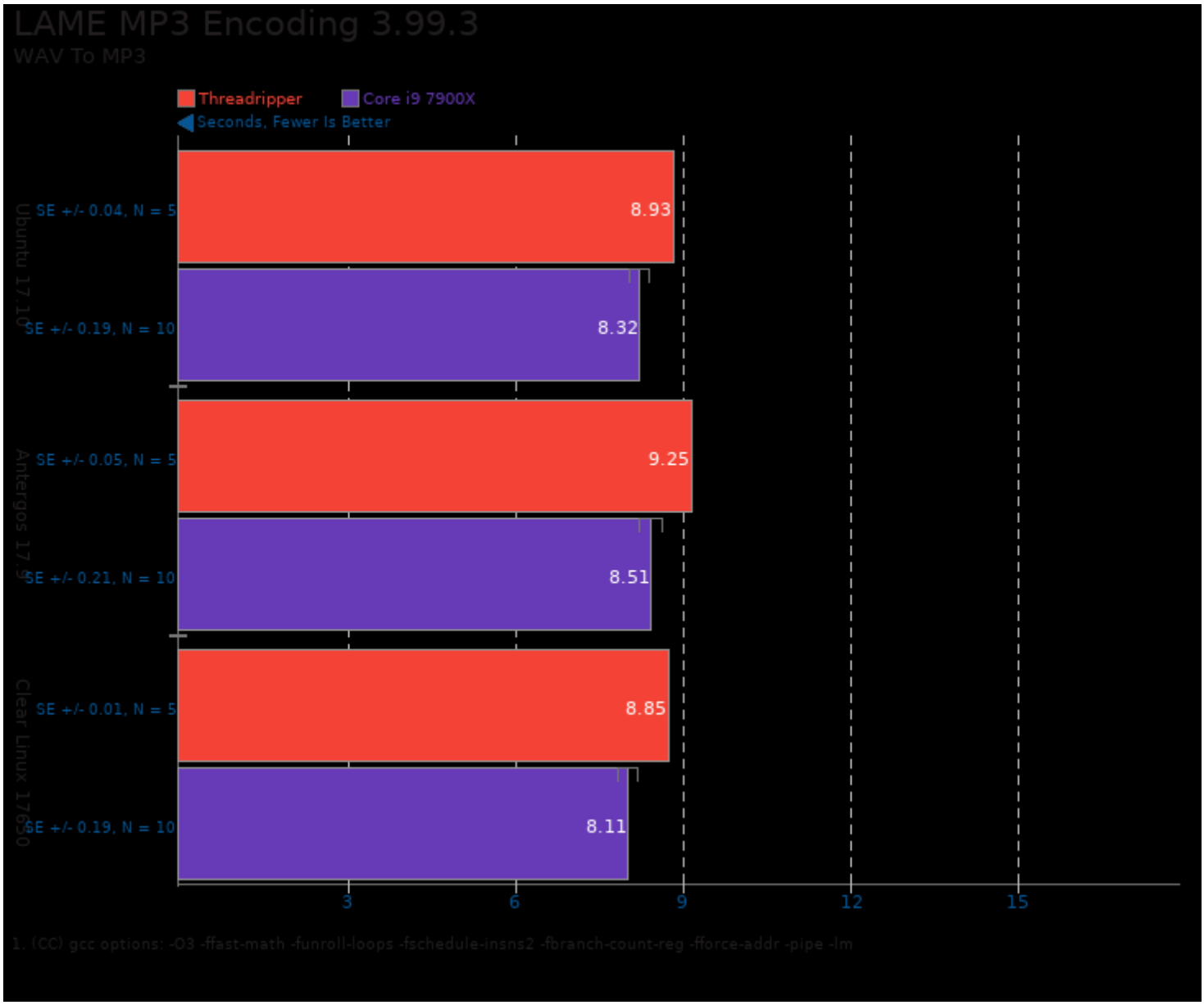

Himeno Benchmark 3.0
Poisson Pressure Solver
Threadripper
Core i9 7900X
MFLOPS, More Is Better
Ubuntu 17.10
SE +/- 1.37, N = 3
1303.67
SE +/- 34.00, N = 3
2942.40
Antergos 17.9
SE +/- 11.59, N = 3
1252.32
SE +/- 4.82, N = 3
2967.63
Clear Linux 17650
SE +/- 3.80, N = 3
1314.64
SE +/- 28.57, N = 3
3012.76
600
1200
1800
2400
3000
1. (CC) gcc options: -O3 -mavx2

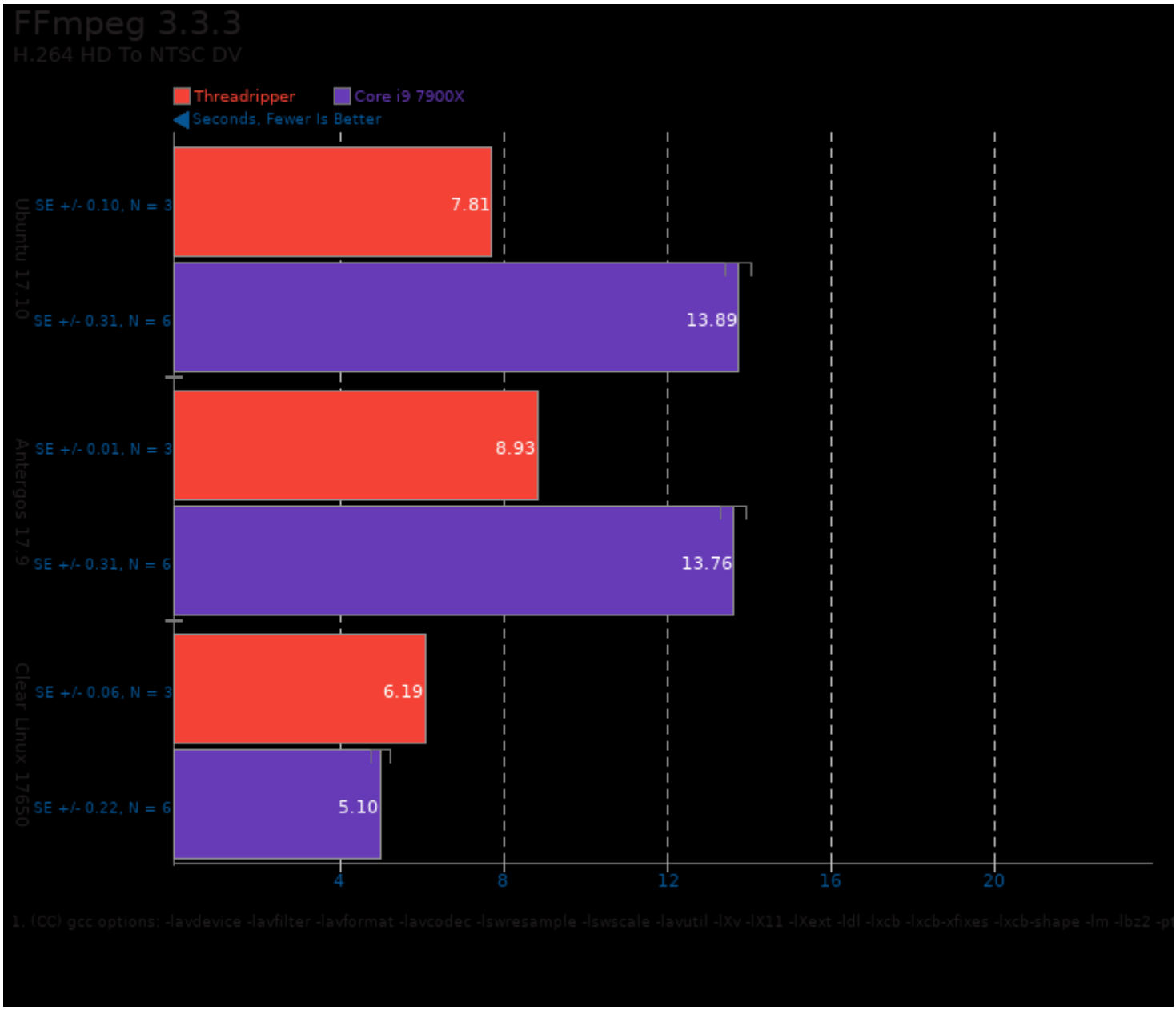

Timed LLVM Compilation 4.0.1
Time To Compile
Threadripper
Core i9 7900X
Seconds, Fewer Is Better
Ubuntu 17.10
SE +/- 0.05, N = 3
253.39
SE +/- 0.76, N = 3
261.30
Antergos 17.9
SE +/- 2.56, N = 3
261.27
SE +/- 0.71, N = 3
262.51
Clear Linux 17650
SE +/- 5.79, N = 6
354.58
80
160
240
320
400

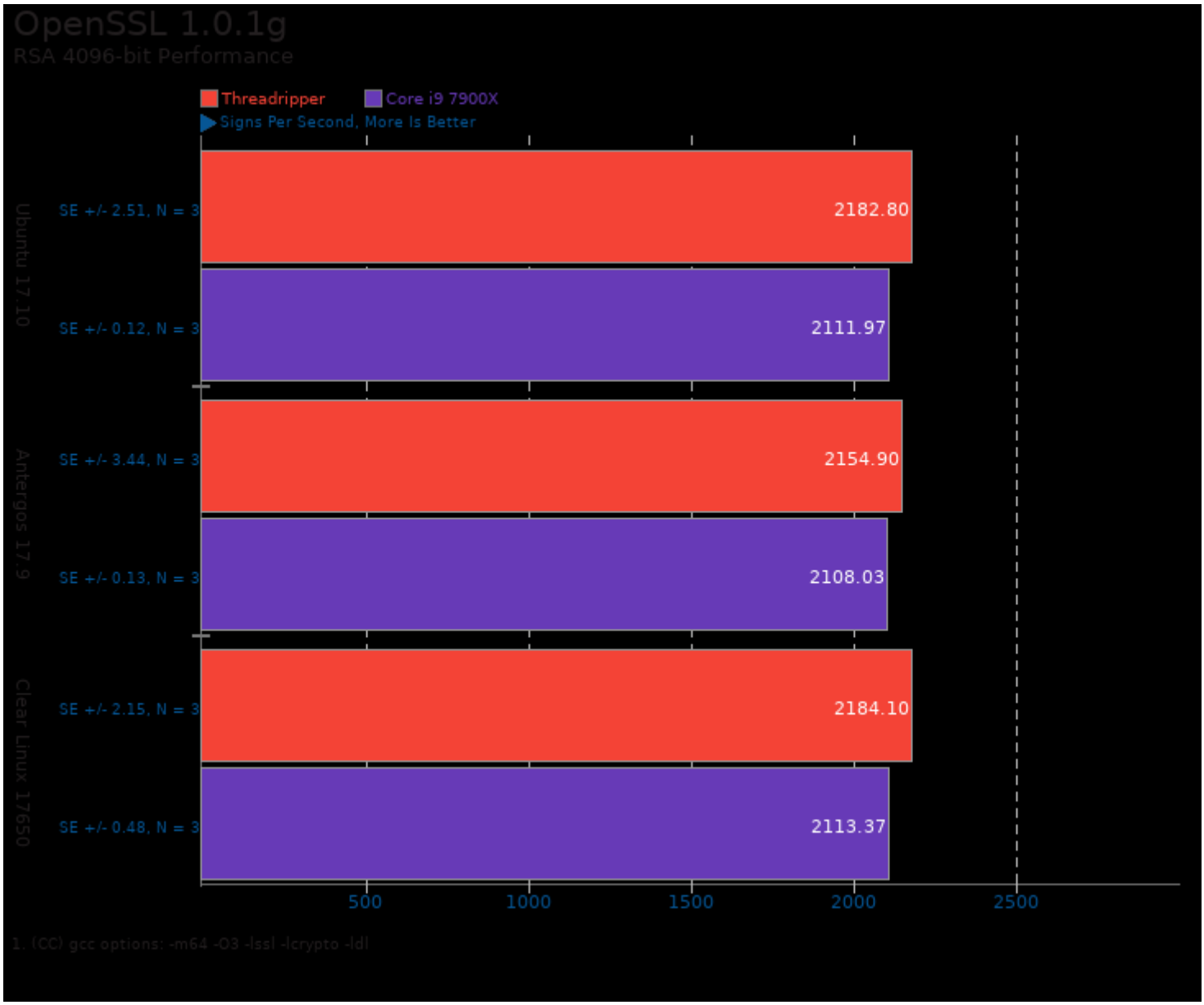

C-Ray 1.1
Total Time
Threadripper
Core i9 7900X
Seconds, Fewer Is Better
Ubuntu 17.10
SE +/- 0.01, N = 3
5.17
SE +/- 0.00, N = 3
7.38
Antergos 17.9
SE +/- 0.01, N = 3
5.28
SE +/- 0.01, N = 3
7.39
Clear Linux 17650
SE +/- 0.01, N = 3
4.09
SE +/- 0.00, N = 3
6.29
2
4
6
8
10
1. (CC) gcc options: -lm -lpthread -O3

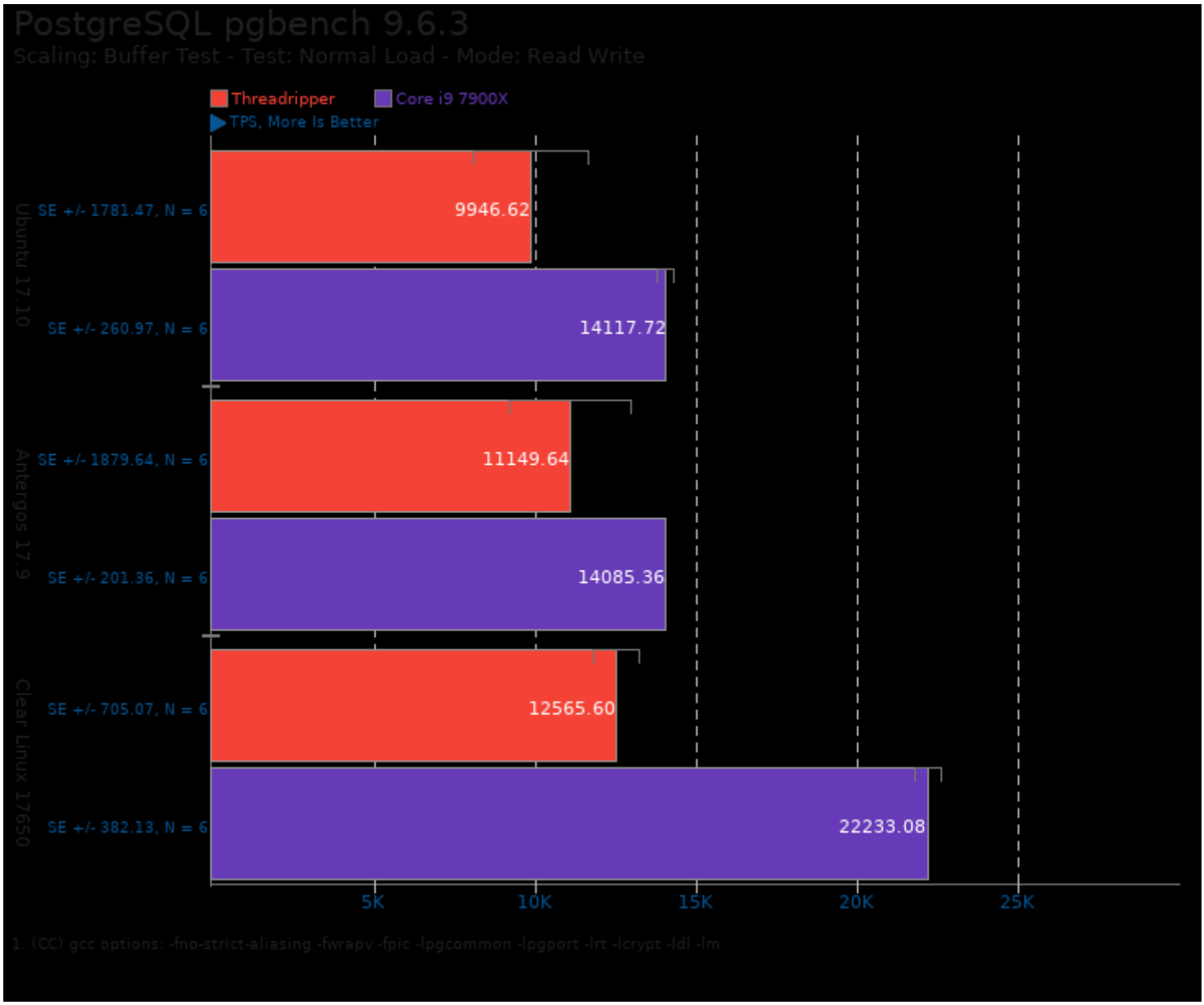

Stockfish 2014-11-26
Total Time
Threadripper
Core i9 7900X
ms, Fewer Is Better
SE +/- 20.88, N = 3
3638
SE +/- 19.01, N = 3
2844
SE +/- 29.17, N = 3
3661
2840
SE +/- 1.20, N = 3
3450
SE +/- 1.76, N = 3
2613
800
1600
2400
3200
4000
1. (CXX) g++ options: -lpthread -fno-exceptions -fno-rtti -ansi -pedantic -O3 -msse -msse3 -mpopcnt -flto

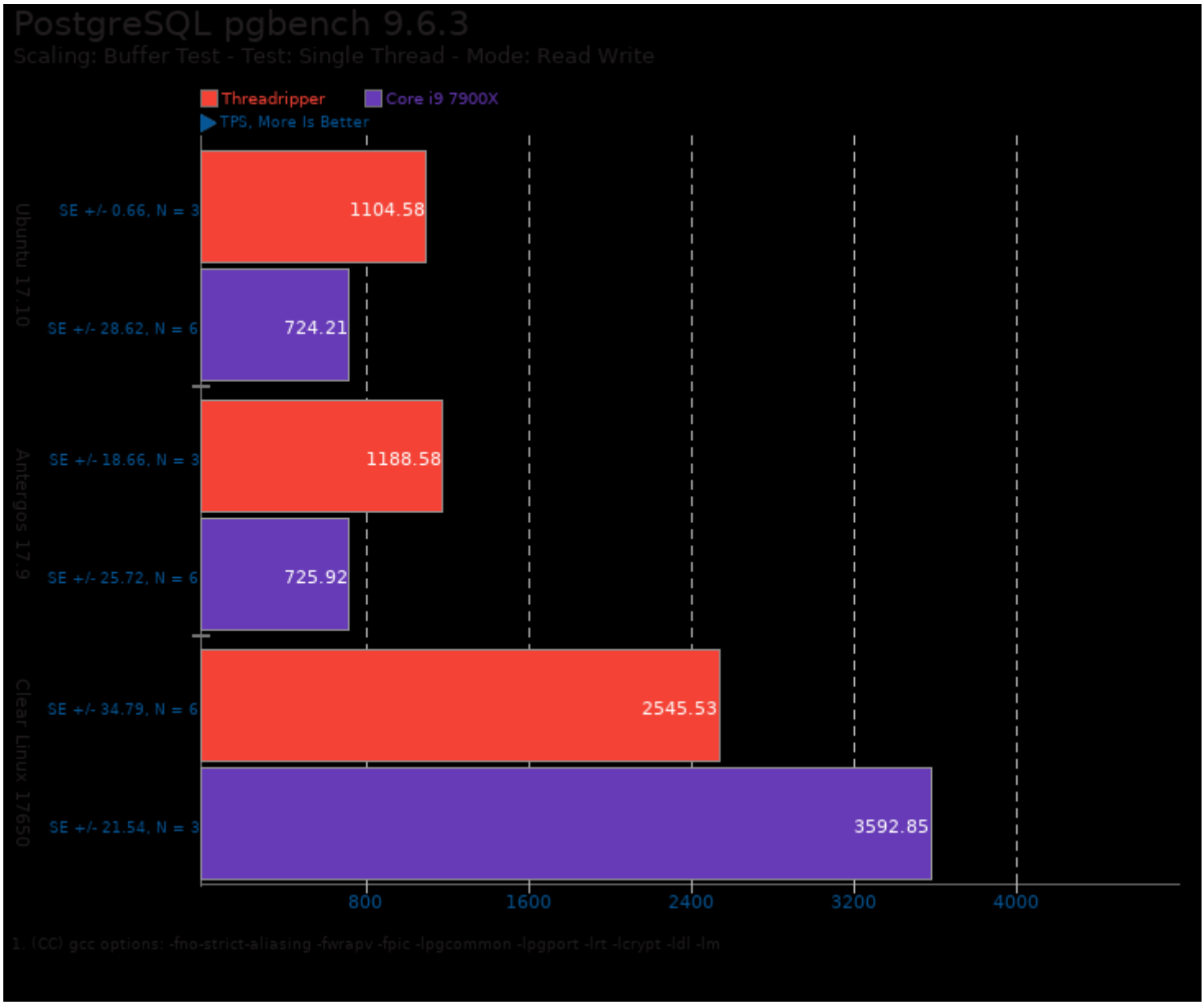

FLAC Audio Encoding 1.3.1
WAV To FLAC
Threadripper
Core i9 7900X
Seconds, Fewer Is Better
Ubuntu 17.10
SE +/- 0.02, N = 5
5.47
SE +/- 0.18, N = 10
4.92
Antergos 17.9
SE +/- 0.01, N = 5
5.59
SE +/- 0.01, N = 5
4.68
Clear Linux 17650
SE +/- 0.01, N = 5
5.22
SE +/- 0.01, N = 5
4.36
1.2578
2.5156
3.7734
5.0312
6.289
1. (CXX) g++ options: -fvisibility=hidden -logg -lm

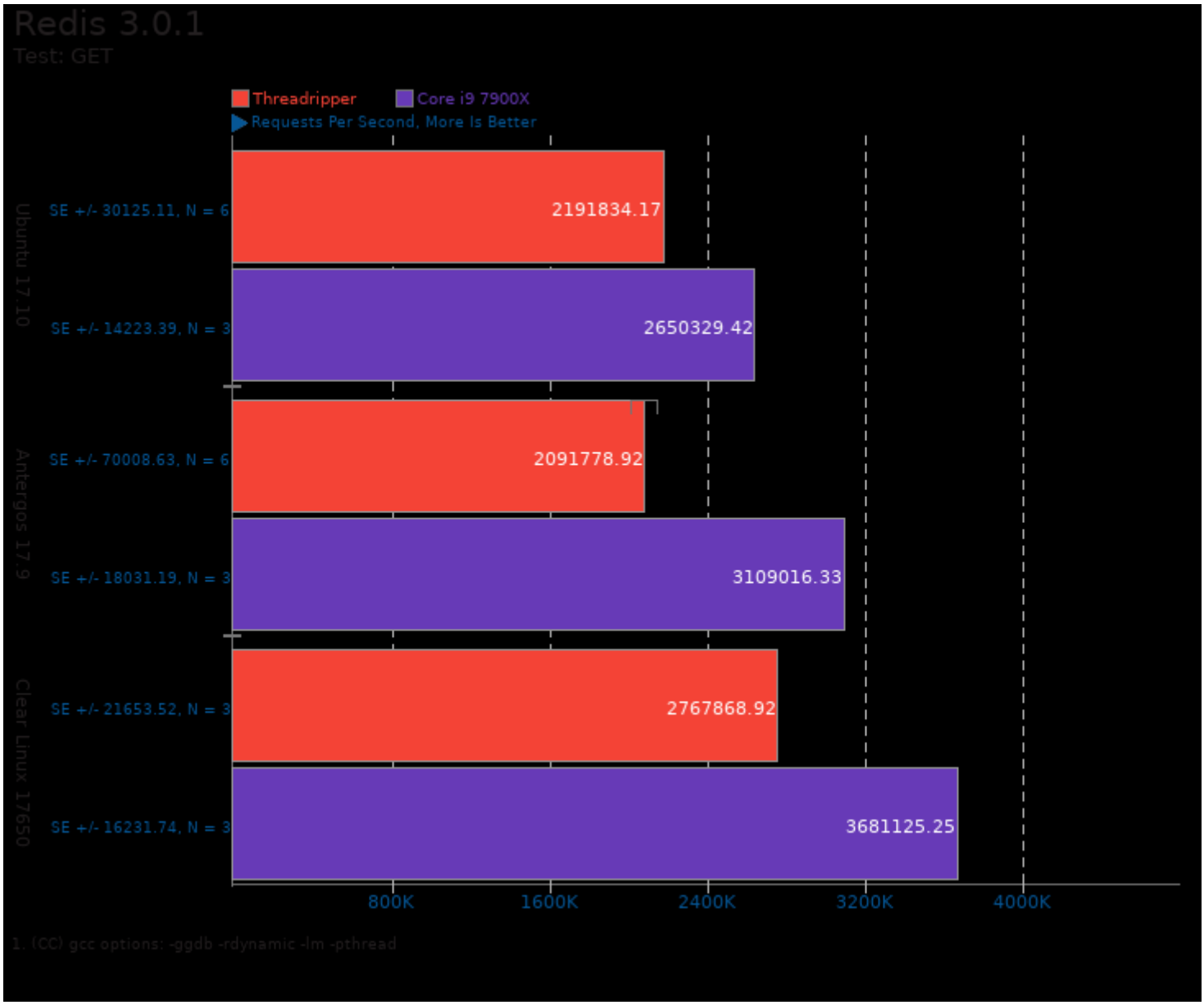

LAME MP3 Encoding 3.99.3
WAV To MP3
Threadripper
Core i9 7900X
Seconds, Fewer Is Better
Ubuntu 17.10
SE +/- 0.04, N = 5
8.93
SE +/- 0.19, N = 10
8.32
Antergos 17.9
SE +/- 0.05, N = 5
9.25
SE +/- 0.21, N = 10
8.51
Clear Linux 17850
SE +/- 0.01, N = 5
8.85
SE +/- 0.19, N = 10
8.11
3
6
9
12
15
1. (CC) gcc options: -O3 -ffast-math -funroll-loops -fschedule-insns2 -fbranch-count-reg -fforce-addr -pipe -lm

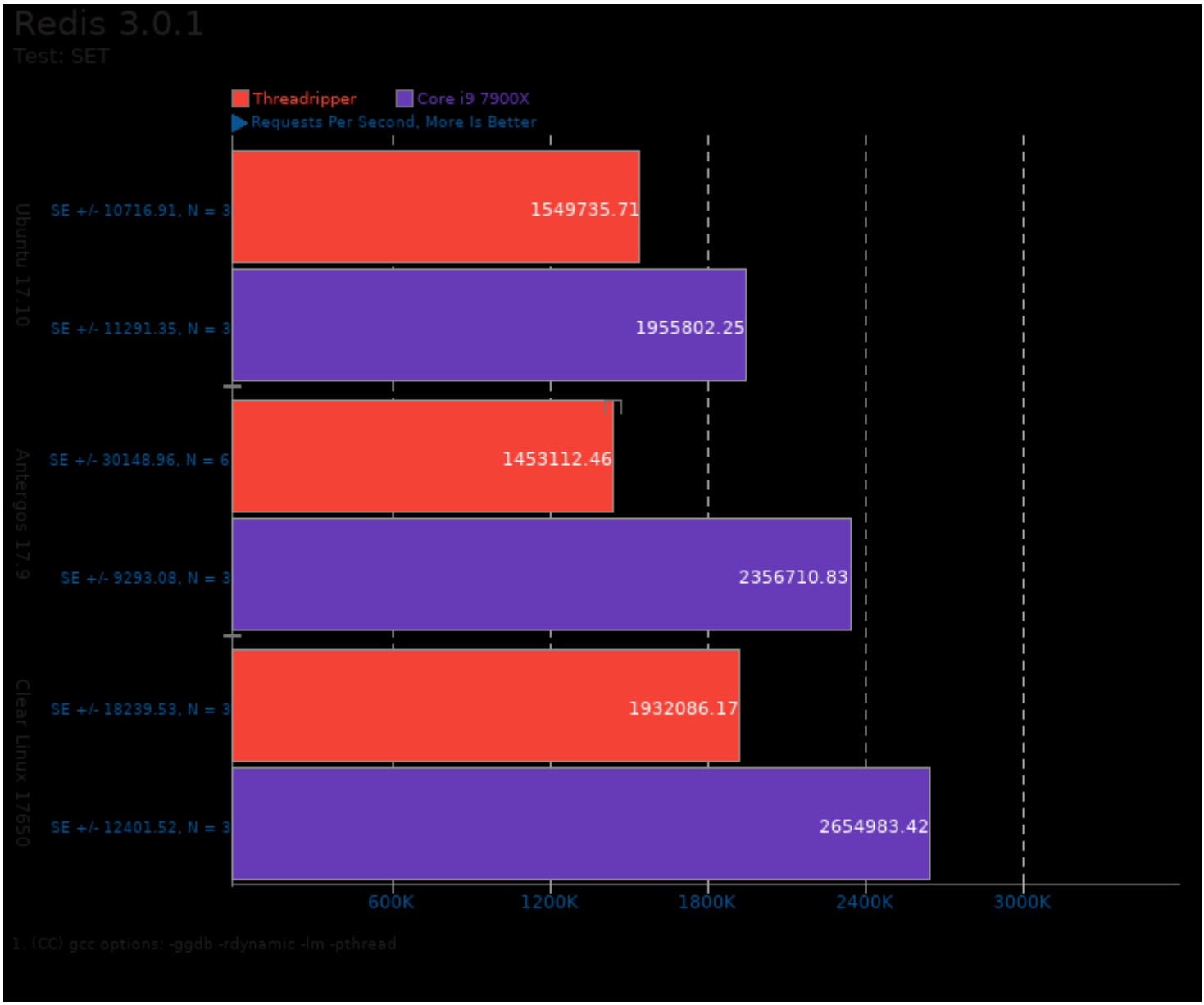

FFmpeg 3.3.3
H.264 HD To NTSC DV
Threadripper
Core i9 7900X
Seconds, Fewer Is Better
Ubuntu 17.10
SE +/- 0.10, N = 3
7.81
SE +/- 0.31, N = 6
13.89
Antergos 17.9
SE +/- 0.01, N = 3
8.93
SE +/- 0.31, N = 6
13.76
Clear Linux 17650
SE +/- 0.06, N = 3
6.19
SE +/- 0.22, N = 6
5.10
4
8
12
16
20
1. (CC) gcc options: -lavdevice -lavfilter -lavformat -lavcodec -lswresample -lswscale -lavutil -lXv -lX11 -lXext -ldl -lxcb -lxcb-xfixes -lxcb-shape -lm -lbz2

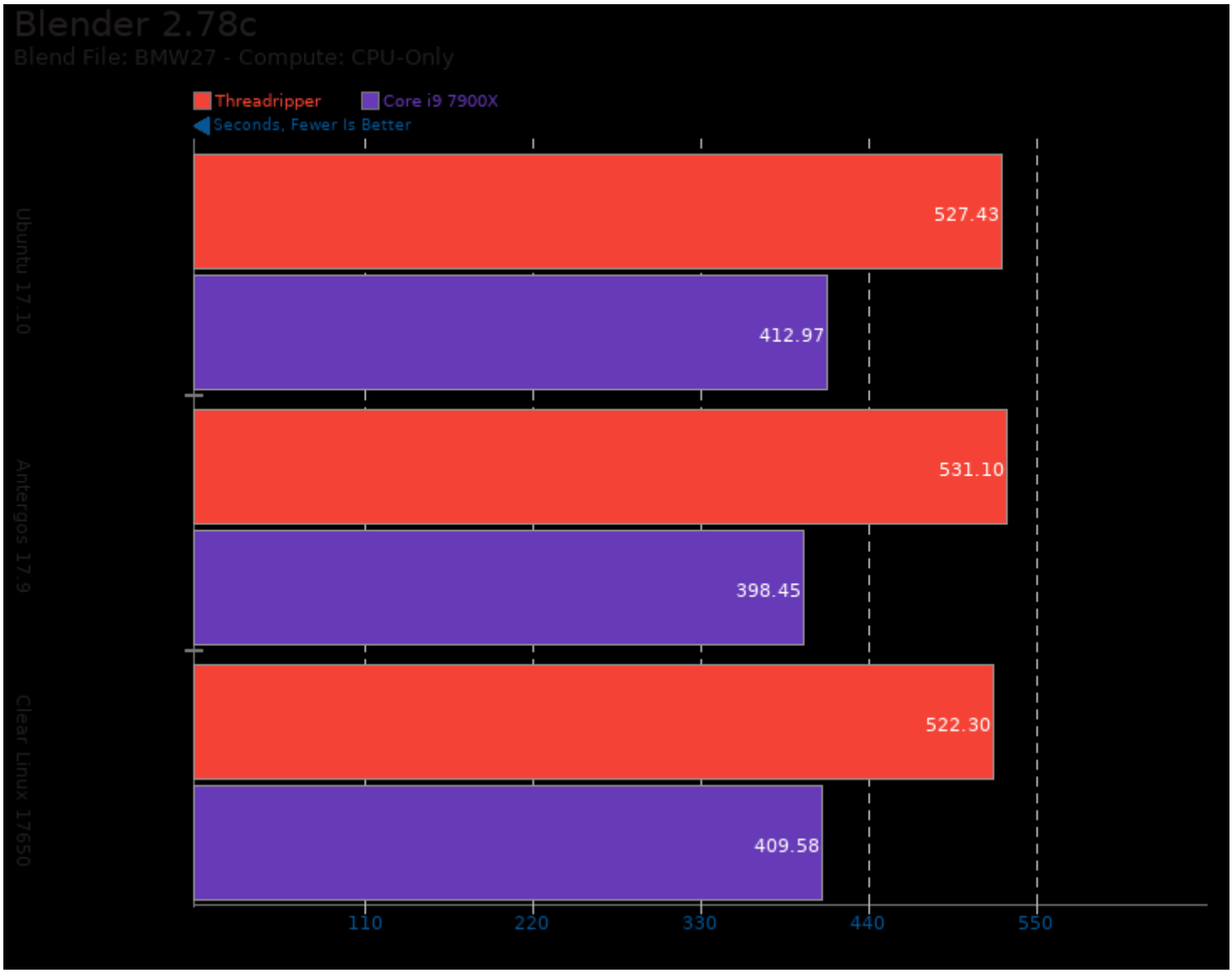

OpenSSL 1.0.1g
RSA 4096-bit Performance
Threadripper
Core i9 7900X
Signs Per Second, More Is Better
Ubuntu 17.10
Antergos 17.9
Clear Linux 17650
SE +/- 2.51, N = 3
2182.80
SE +/- 0.12, N = 3
2111.97
SE +/- 3.44, N = 3
2154.90
SE +/- 0.13, N = 3
2108.03
SE +/- 2.15, N = 3
2184.10
SE +/- 0.48, N = 3
2113.37
500
1000
1500
2000
2500
1. (CC) gcc options: -m64 -O3 -lssl -lcrypto -ldl

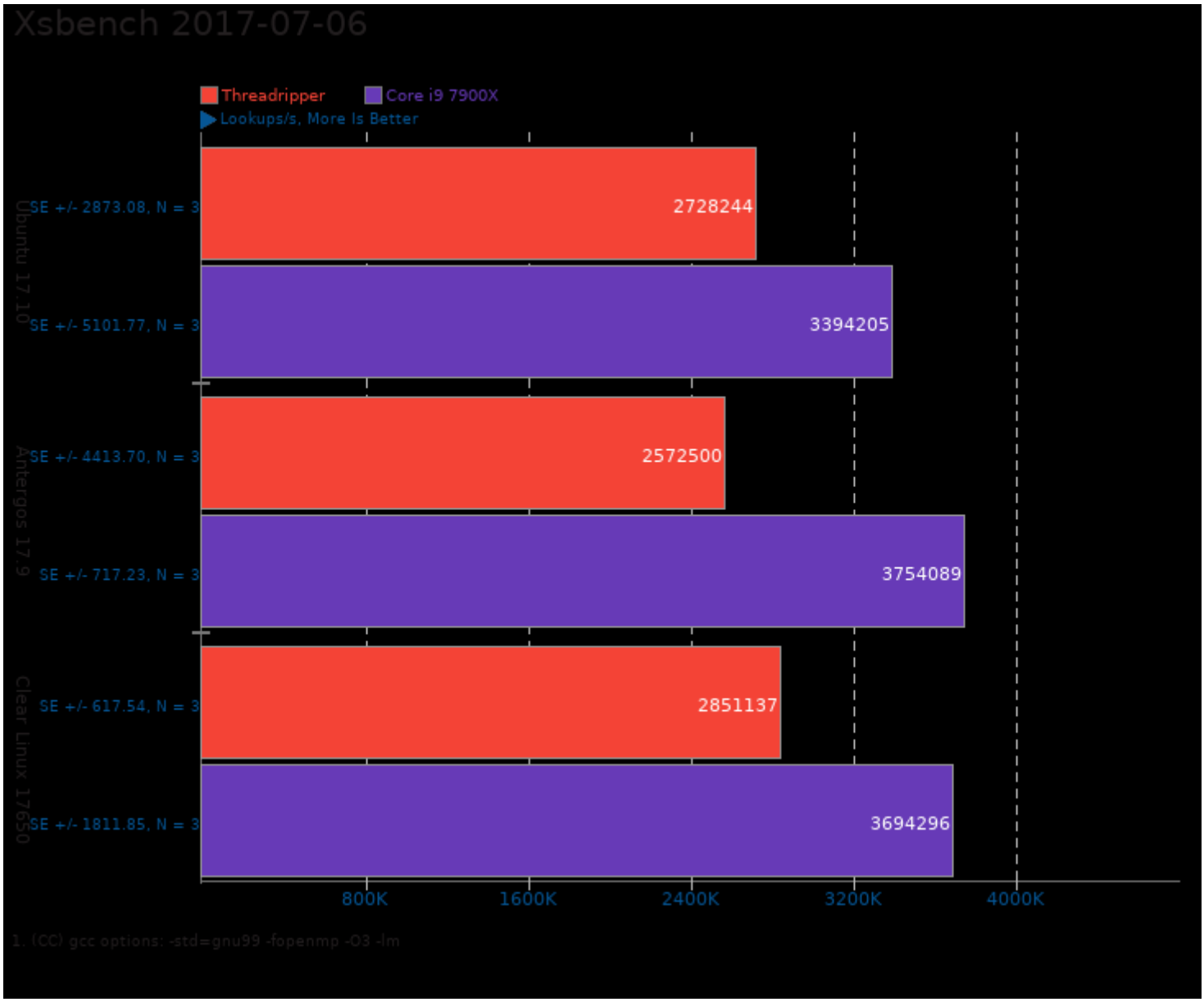

PostgreSQL pgbench 9.6.3
Scaling: Buffer Test - Test: Normal Load - Mode: Read Write
Threadripper
Core i9 7900X
TPS, More Is Better
Ubuntu 17.10
SE +/- 1781.47, N = 6
9946.62
SE +/- 260.97, N = 6
14117.72
Antergos 17.9
SE +/- 1879.64, N = 6
11149.64
SE +/- 201.36, N = 6
14085.36
Clear Linux 17650
SE +/- 705.07, N = 6
12565.60
SE +/- 382.13, N = 6
22233.08
5K
10K
15K
20K
25K
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -fpic -lpgcommon -lpgport -lrt -lcrypt -ldl -lm

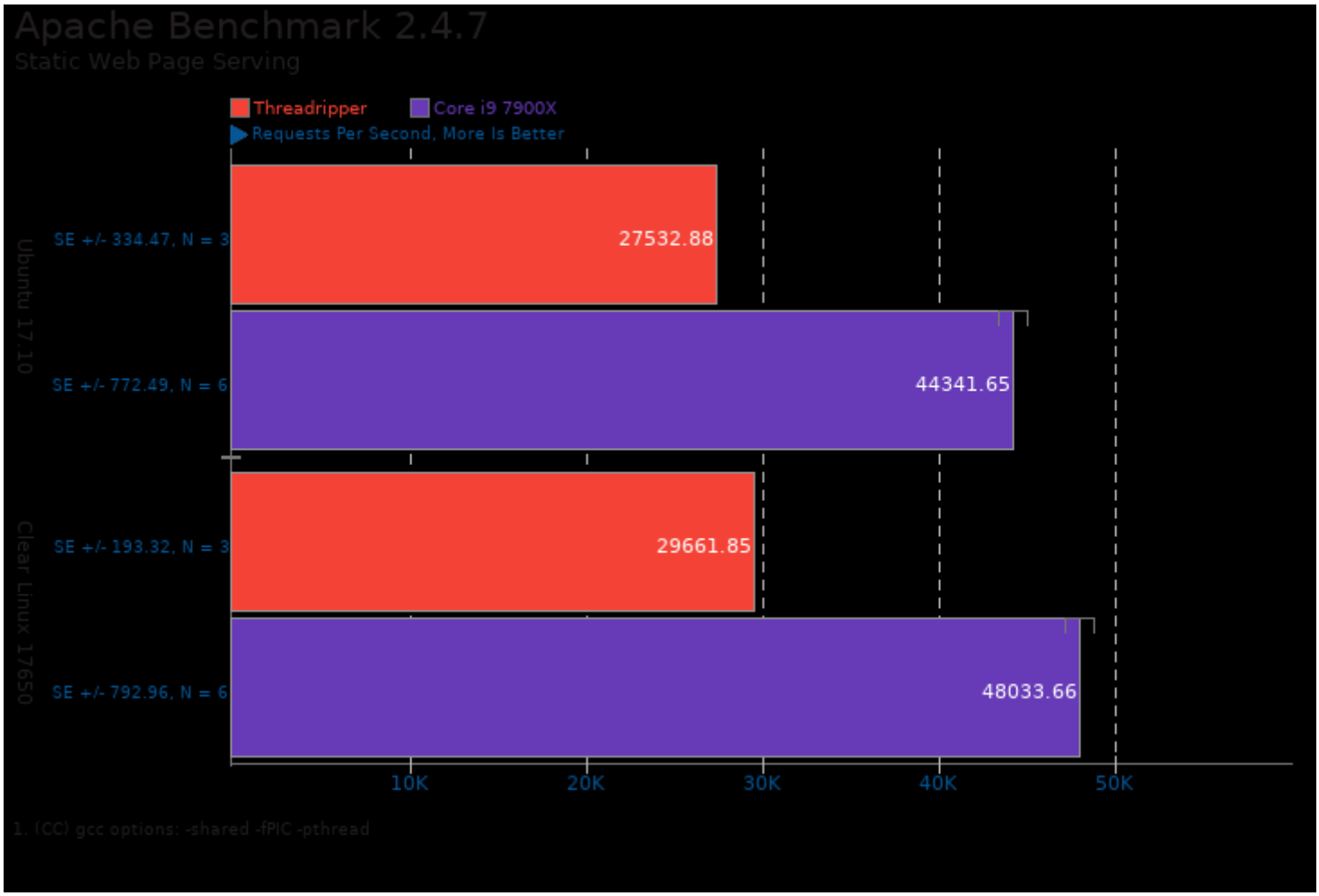

PostgreSQL pgbench 9.6.3
Scaling: Buffer Test - Test: Single Thread - Mode: Read Write
Threadripper
Core i9 7900X
TPS, More Is Better
Ubuntu 17.10
SE +/- 0.66, N = 3
1104.58
SE +/- 28.62, N = 6
724.21
Antergos 17.9
SE +/- 18.66, N = 3
1188.58
SE +/- 25.72, N = 6
725.92
Clear Linux 17650
SE +/- 34.79, N = 6
2545.53
SE +/- 21.54, N = 3
3592.85
800
1600
2400
3200
4000
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -fpic -lpgcommon -lpgport -lrt -lcrypt -ldl -lm


Redis 3.0.1
Test: GET
Threadripper
Core i9 7900X
Requests Per Second, More Is Better
Ubuntu 17.10
SE +/- 30125.11, N = 6
2191834.17
SE +/- 14223.39, N = 3
2650329.42
Antergos 17.9
SE +/- 70008.63, N = 6
2091778.92
SE +/- 18031.19, N = 3
3109016.33
Clear Linux 17650
SE +/- 21653.52, N = 3
2767868.92
SE +/- 16231.74, N = 3
3681125.25
800K
1600K
2400K
3200K
4000K
1. (CC) gcc options: -ggdb -rdynamic -lm -pthread

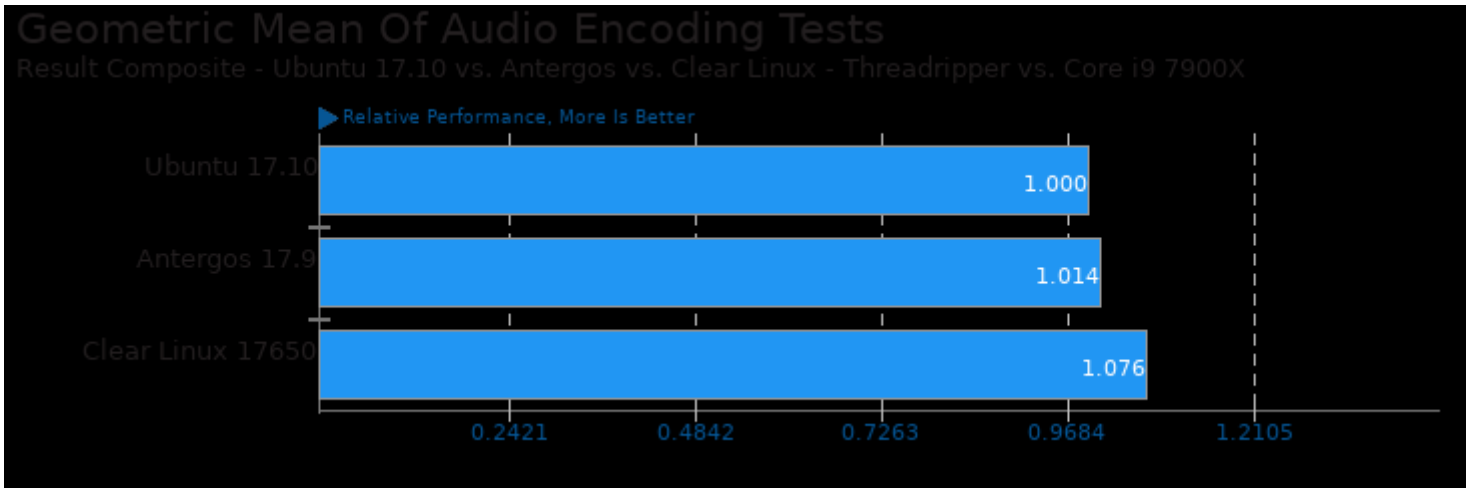

Redis 3.0.1
Test: SET
Threadripper
Core i9 7900X
Requests Per Second, More Is Better
Ubuntu 17.10
SE +/- 10716.91, N = 3
1549735.71
SE +/- 11291.35, N = 3
1955802.25
Antergos 17.9
SE +/- 30148.96, N = 6
1453112.46
SE +/- 9293.08, N = 3
2356710.83
Clear Linux 17650
SE +/- 18239.53, N = 3
1932086.17
SE +/- 12401.52, N = 3
2654983.42
600K
1200K
1800K
2400K
3000K
1. (CC) gcc options: -ggdb -rdynamic -lm -pthread


Blender 2.78c
Blend File: BMW27 - Compute: CPU-Only
Threadripper
Core i9 7900X
Seconds, Fewer Is Better
Ubuntu 17.10
Antergos 17.9
Clear Linux 17650
527.43
412.97
531.10
398.45
522.30
409.58
110
220
330
440
550

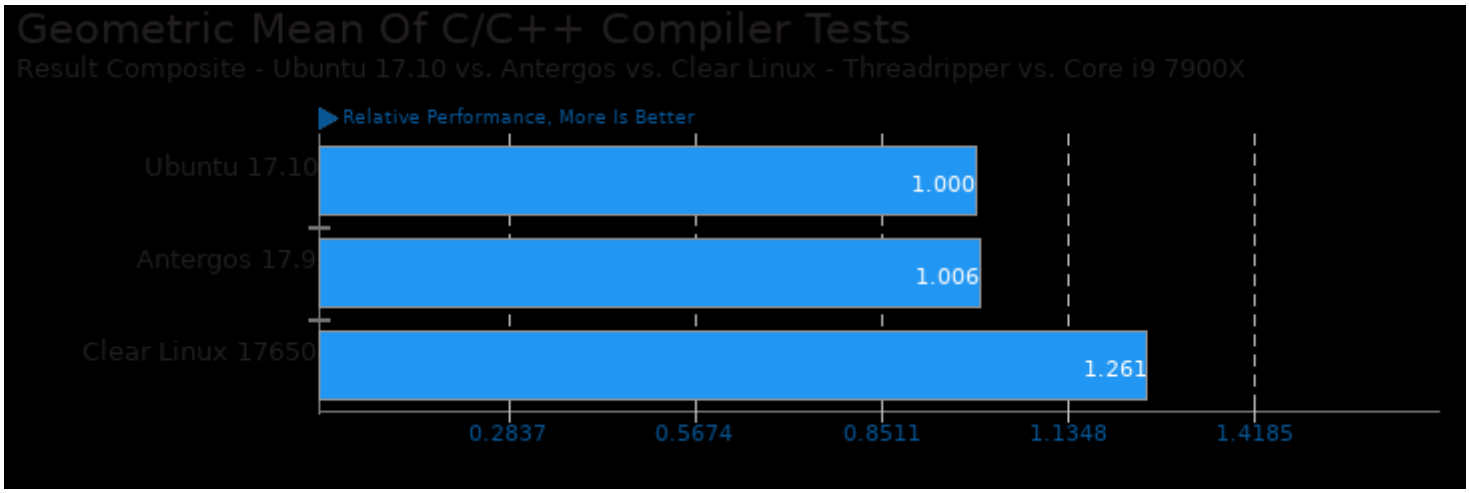

Xsbench 2017-07-06
Threadripper
Core i9 7900X
Lookups/s, More Is Better
Ubuntu 17.10
Antergos 17.9
Clear Linux 17650
SE +/- 2873.08, N = 3
2728244
SE +/- 5101.77, N = 3
3394205
SE +/- 4413.70, N = 3
2572500
SE +/- 717.23, N = 3
3754089
SE +/- 617.54, N = 3
2851137
SE +/- 1811.85, N = 3
3694296
800K
1600K
2400K
3200K
4000K
1. (CC) gcc options: -std=gnu99 -fopenmp -O3 -lm


Apache Benchmark 2.4.7
Static Web Page Serving
Threadripper
Core i9 7900X
Requests Per Second, More Is Better
Ubuntu 17.10
SE +/- 334.47, N = 3
27532.88
SE +/- 772.49, N = 6
44341.65
Clear Linux 17650
SE +/- 193.32, N = 3
29661.85
SE +/- 792.96, N = 6
48033.66
10K
20K
30K
40K
50K
1. (CC) gcc options: -shared -fPIC -pthread

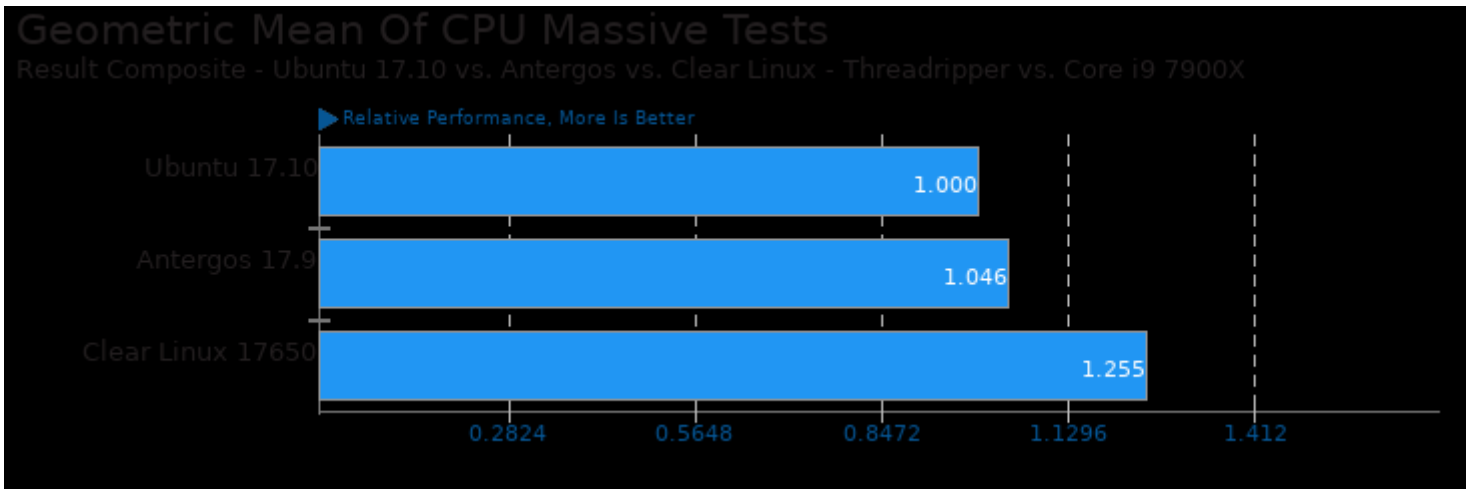
These geometric means are based upon test groupings / test suites for this result file.



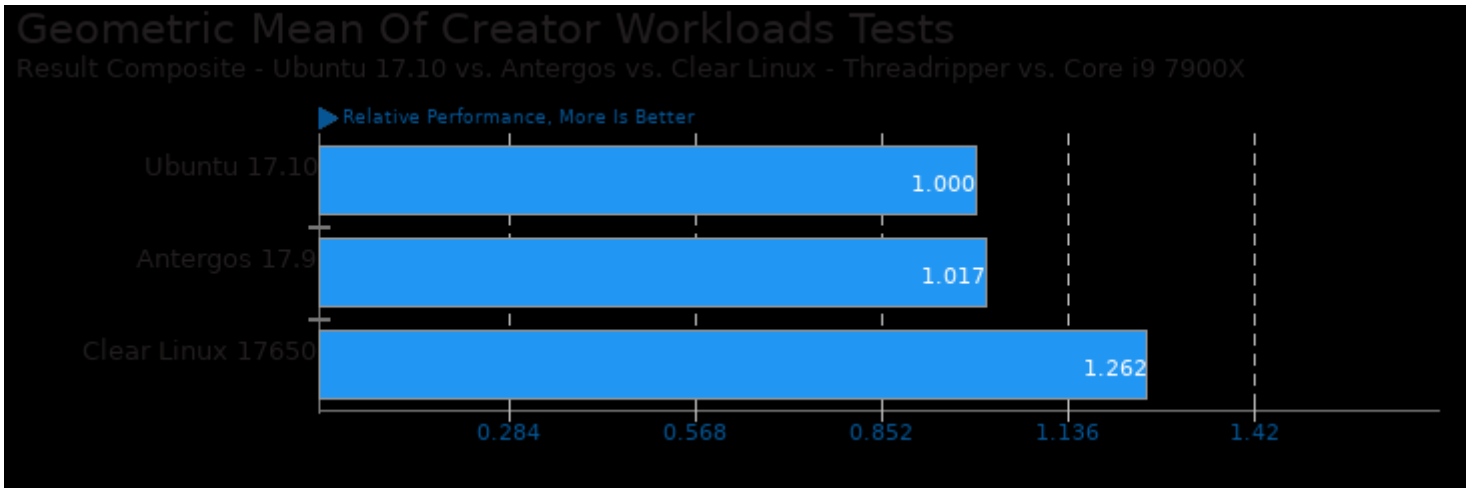
Geometric mean based upon tests: pts/encode-mp3 and pts/encode-flac



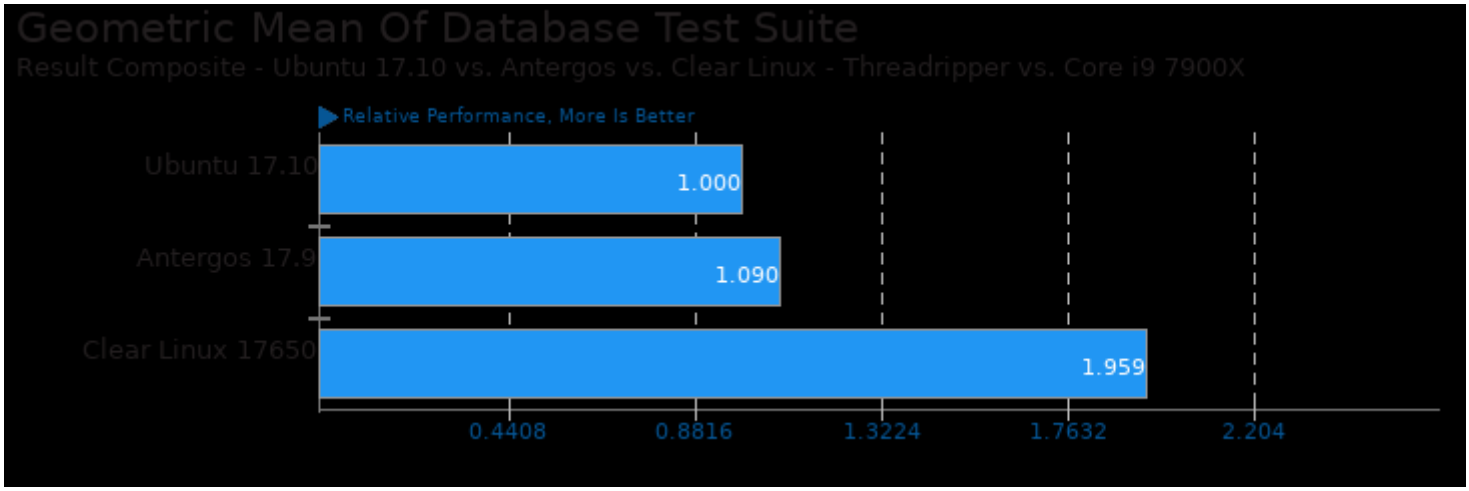
Geometric mean based upon tests: pts/fftw, pts/graphics-magick, pts/himeno, pts/stockfish, pts/hmmer, pts/build-llvm, pts/c-ray, pts/encode-mp3, pts/encode-flac, pts/pgbench, pts/apache and pts/openssl



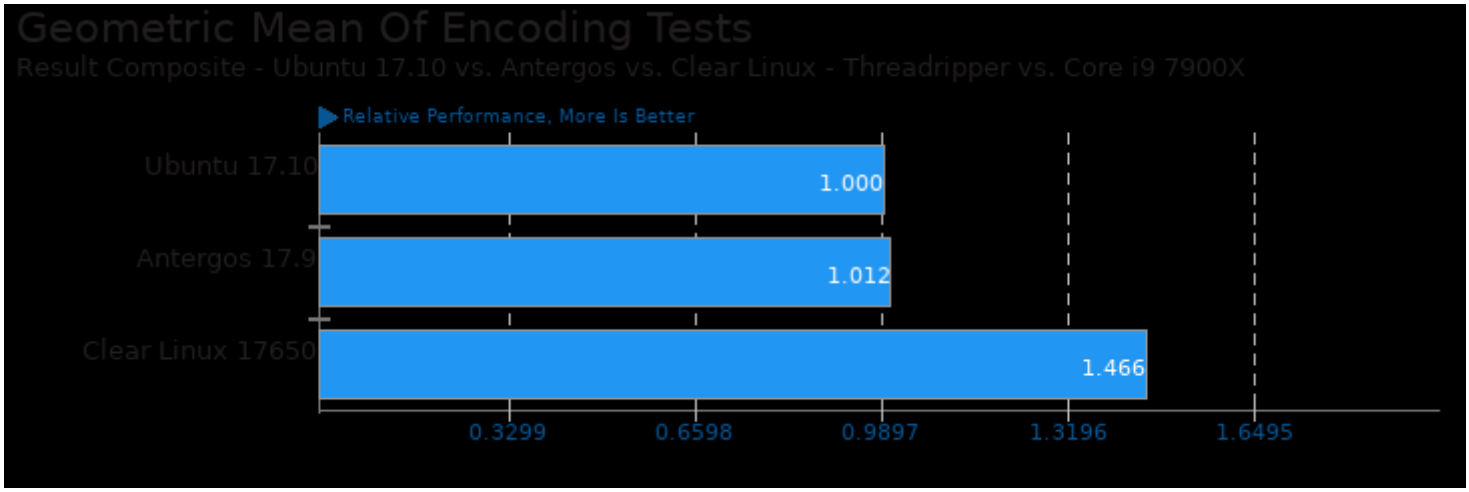
Geometric mean based upon tests: pts/apache, pts/build-llvm, pts/c-ray, pts/cachebench, pts/encode-flac, pts/encode-mp3, pts/fftw, pts/graphics-magick, pts/himeno, pts/hmmer, pts/openssl, pts/parboil, pts/pgbench, pts/redis, pts/rodinia, pts/stockfish, pts/blender and pts/xsbench



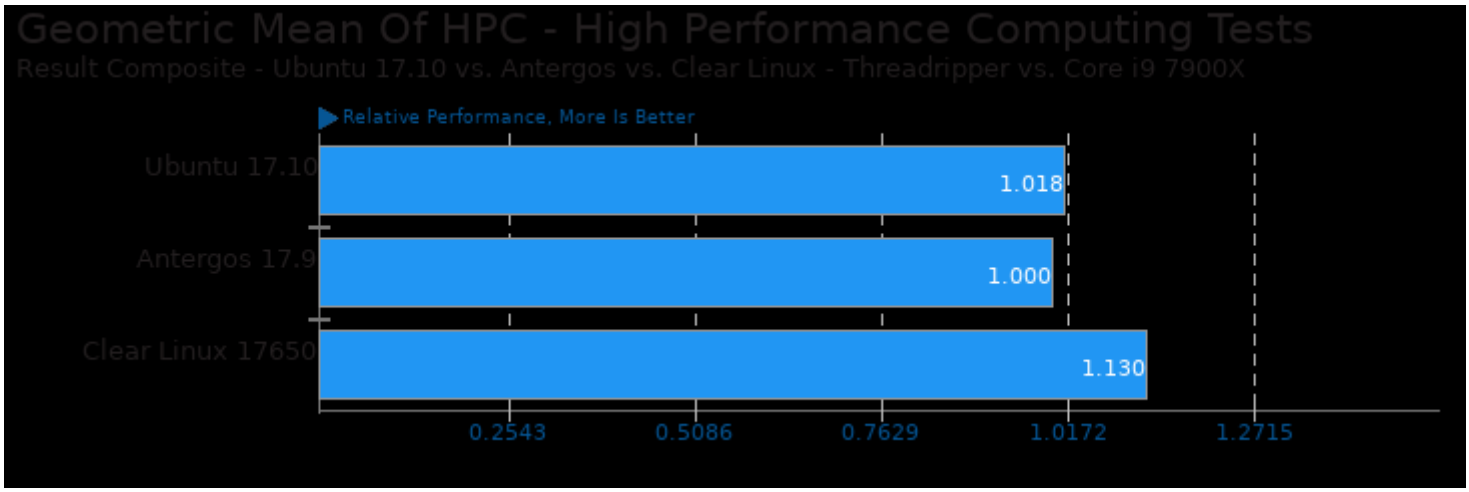
Geometric mean based upon tests: pts/c-ray, pts/blender, pts/ffmpeg, pts/encode-mp3, pts/encode-flac and pts/graphics-magick



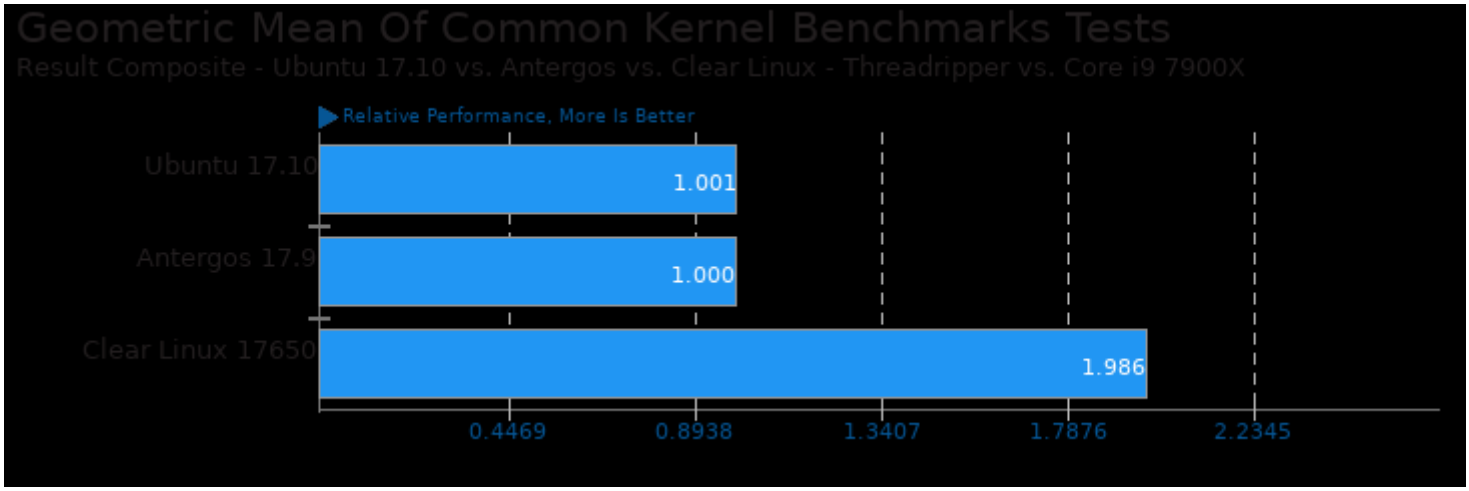
Geometric mean based upon tests: pts/redis and pts/pgbench



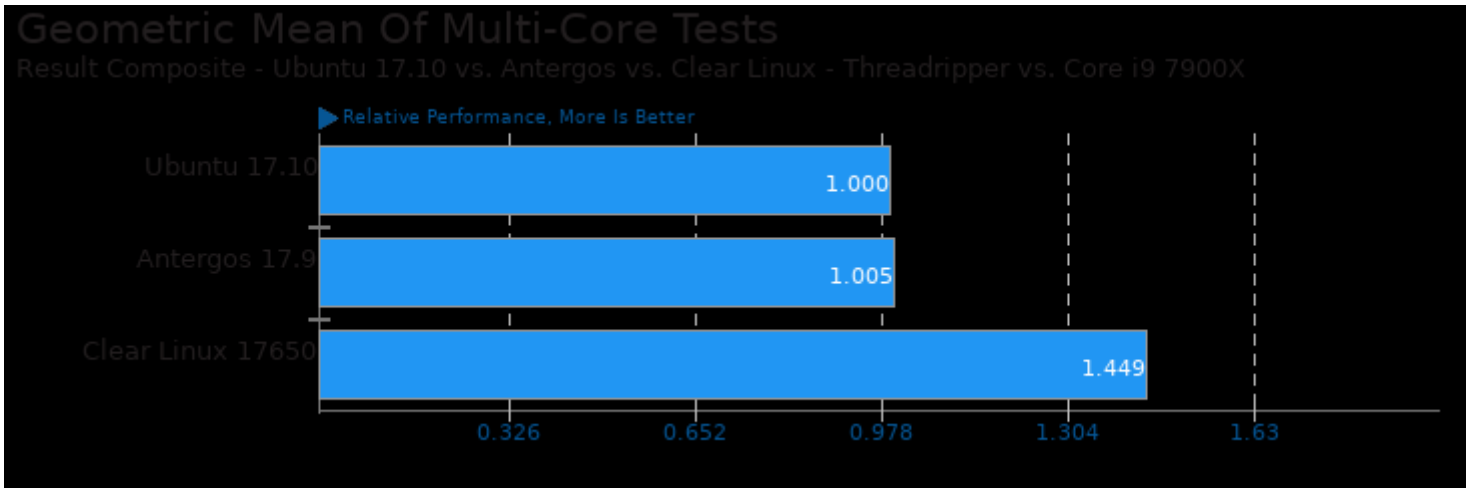
Geometric mean based upon tests: pts/encode-mp3, pts/encode-flac and pts/ffmpeg



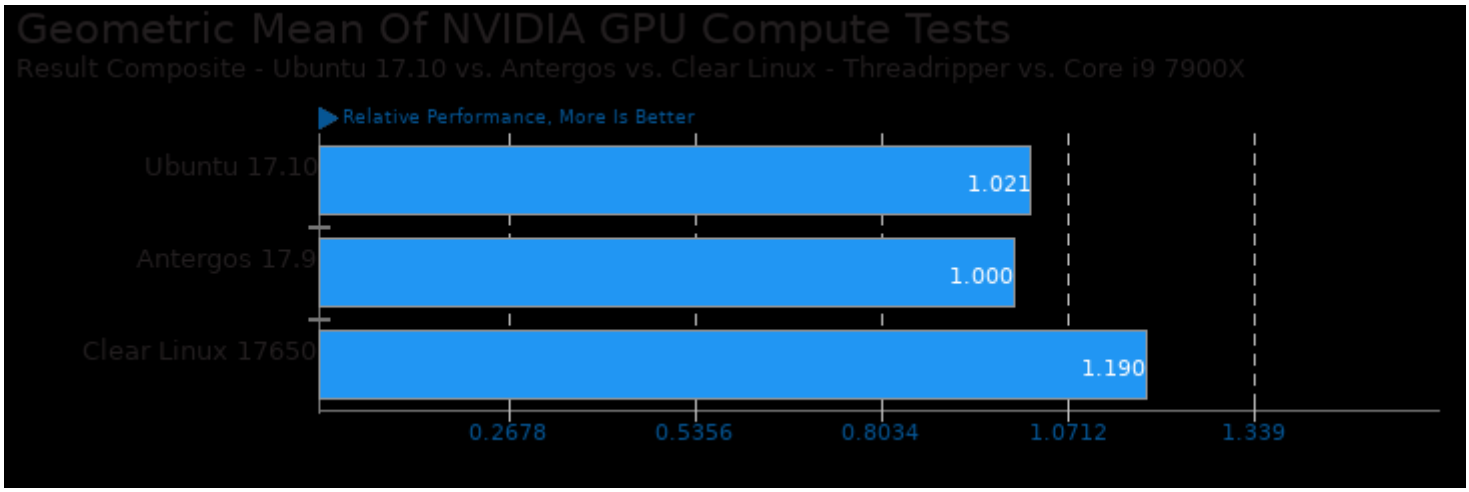
Geometric mean based upon tests: pts/rodinia, pts/parboil, pts/fftw, pts/himeno and pts/hmmer



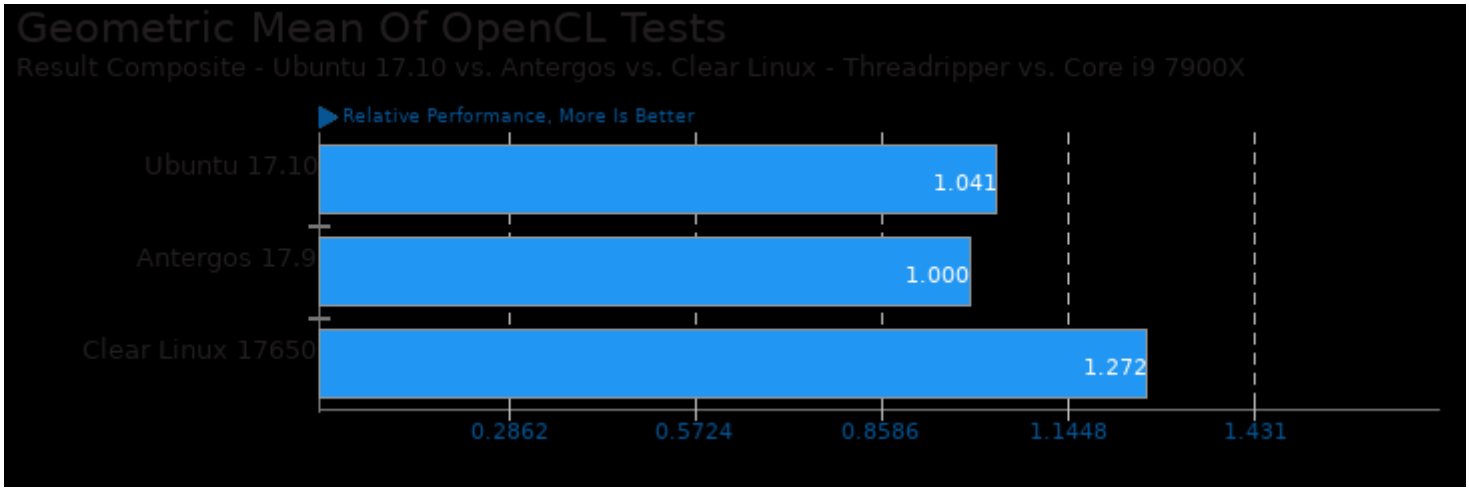
Geometric mean based upon tests: pts/apache, pts/pgbench and pts/openssl



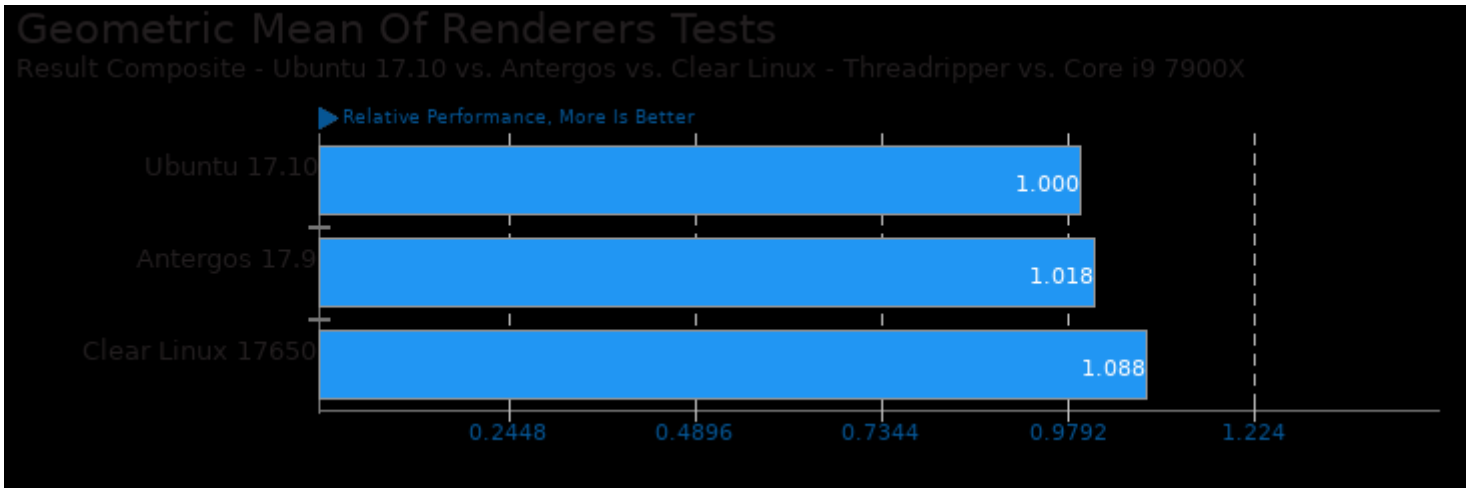
Geometric mean based upon tests: pts/blender, pts/c-ray, pts/stockfish, pts/ffmpeg, pts/rodinia, pts/parboil, pts/graphics-magick, pts/build-llvm, pts/xsbench and pts/pgbench



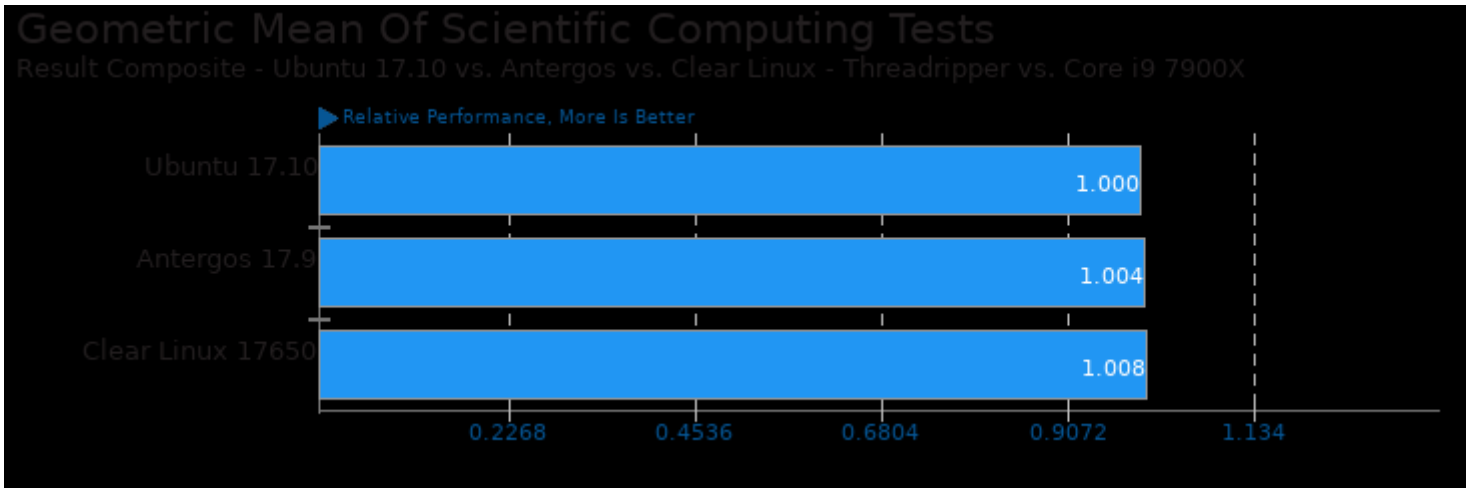
Geometric mean based upon tests: pts/rodinia and pts/blender



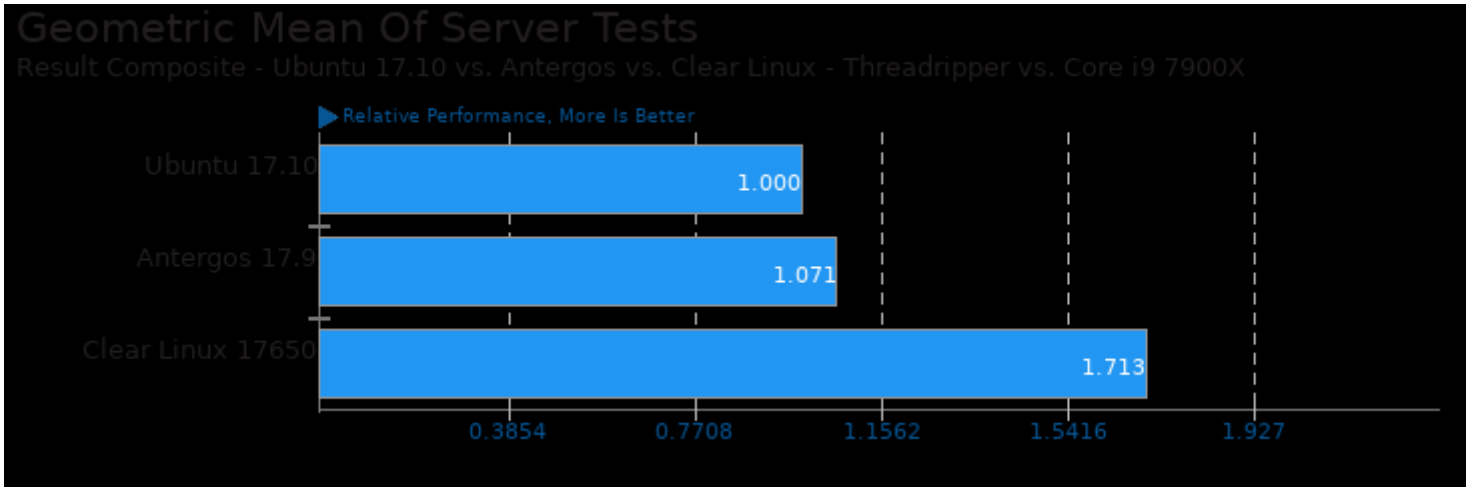
Geometric mean based upon tests: pts/rodinia and pts/parboil



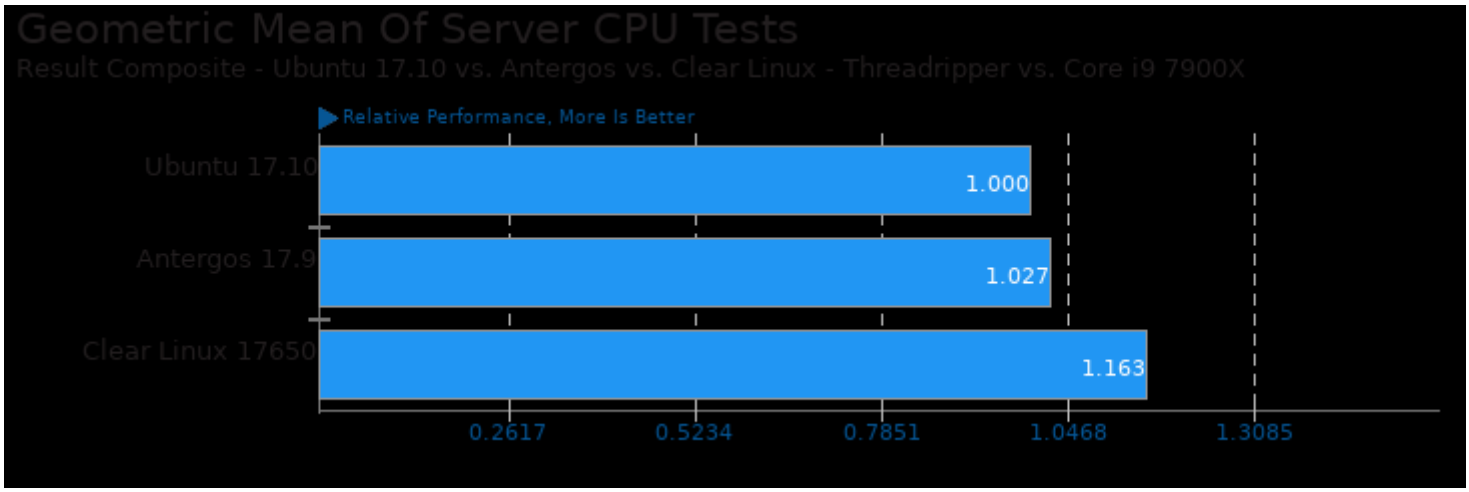
Geometric mean based upon tests: pts/c-ray and pts/blender



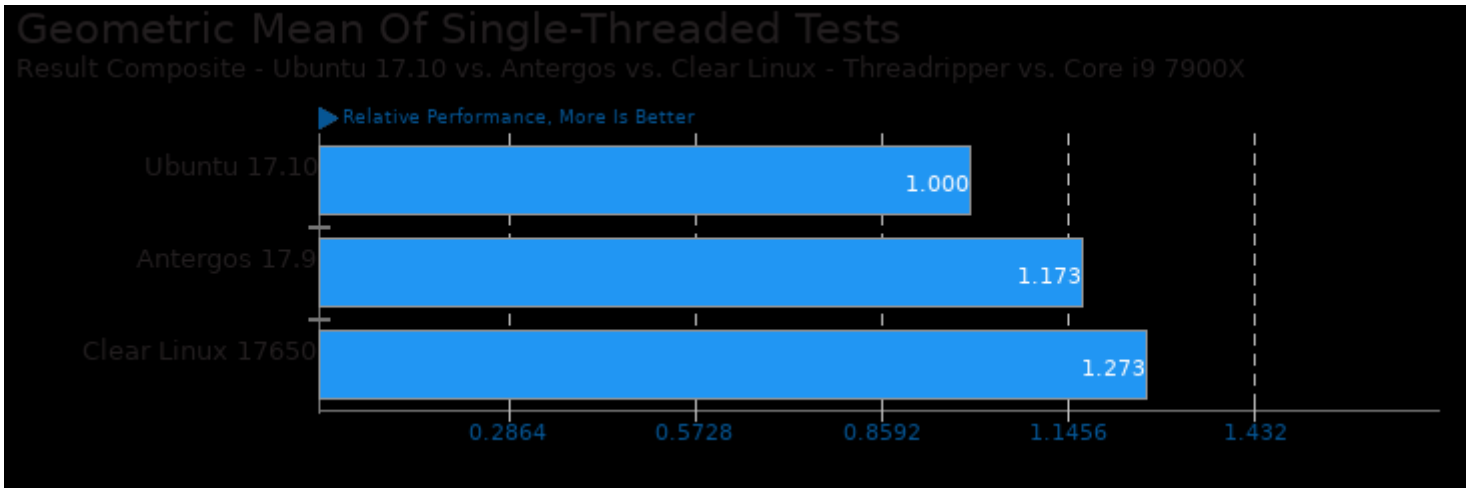
Geometric mean based upon tests: pts/fftw, pts/himeno and pts/hmmer



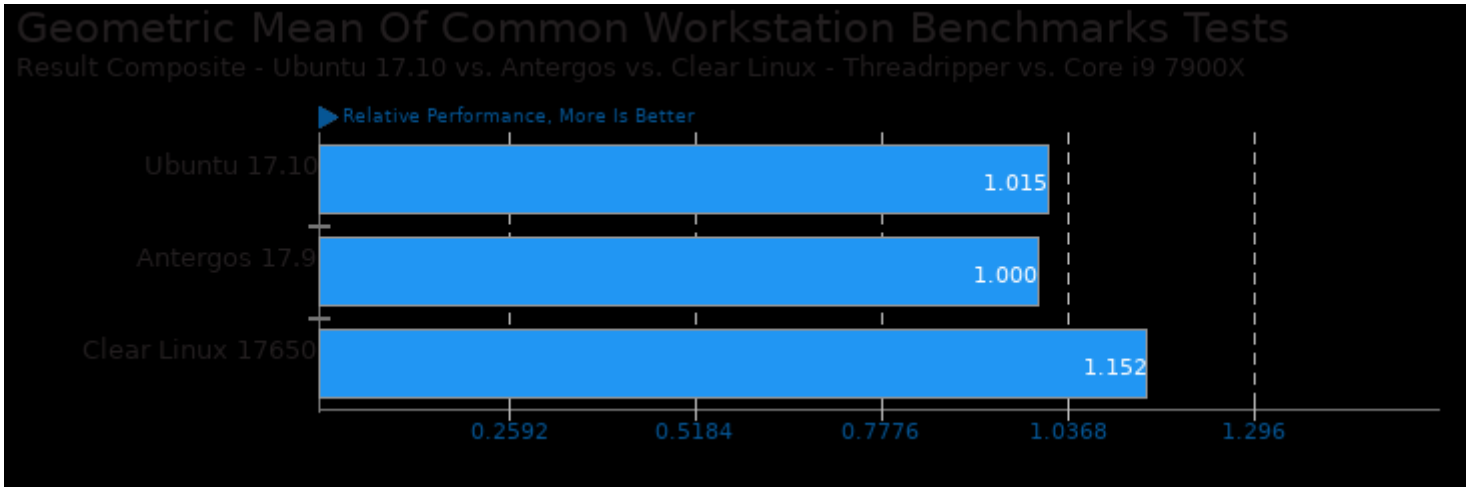
Geometric mean based upon tests: pts/apache, pts/pgbench, pts/redis and pts/openssl



Geometric mean based upon tests: pts/rodinia, pts/himeno, pts/stockfish, pts/build-llvm, pts/c-ray, pts/openssl, pts/redis and pts/blender



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



Geometric mean based upon tests: pts/blender, pts/rodinia, pts/parboil and pts/himeno

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