

www.phoronix-test-suite.com

Talos 2 Raptor POWER9 System

POWER9 altivec supported testing with a PowerNV T2P9D01 REV 1.00 and AMD Radeon Pro WX 7100 8192MB on Debian testing via the Phoronix Test Suite.

Automated Executive Summary

GCC 8.0.1 had the most wins, coming in first place for 41% of the tests.

Based on the geometric mean of all complete results, the fastest (LLVM Clang 6.0) was 1.128x the speed of the slowest (GCC 7.3.0 Stock Debian Compiler). GCC 8.0.1 was 0.891x the speed of LLVM Clang 6.0 and GCC 7.3.0 Stock Debian Compiler was 0.995x the speed of GCC 8.0.1.

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

LAME MP3 Encoding (WAV To MP3) at 4.026x
CacheBench (Test: Write) at 3.733x
C-Ray (Total Time) at 3.309x
CacheBench (Test: Read / Modify / Write) at 2.933x
OSBench (Test: Create Processes) at 1.121x
FLAC Audio Encoding (WAV To FLAC) at 1.099x
Redis (Test: SET) at 1.067x
Stockfish (Total Time) at 1.058x

Redis (Test: GET) at 1.046x
OpenSSL (RSA 4096-bit Performance) at 1.044x.

Test Systems:

GCC 7.3.0 Stock Debian Compiler

Processor: POWER9 altivec supported @ 3.80GHz (64 Cores), Motherboard: PowerNV T2P9D01 REV 1.00, Memory: 262144MB, Disk: 500GB MAXTOR STM350063, Graphics: AMD Radeon Pro WX 7100 8192MB, Audio: AMD Ellesmere, Network: Broadcom Limited NetXtreme BCM5719 Gigabit PCIe

OS: Debian testing, Kernel: 4.16.0-rc4 (ppc64le) 20180307, Display Driver: amdgpu 1.4.0, Compiler: GCC 7.3.0, File-System: ext4, Screen Resolution: 1024x768

Compiler Notes: --build=powerpc64le-linux-gnu --disable-libquadmath --disable-libquadmath-support --disable-multilib --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc=auto --enable-plugin --enable-secureplt --enable-shared --enable-targets=powerpcle-linux --enable-threads=posix --host=powerpc64le-linux-gnu --program-prefix=powerpc64le-linux-gnu- --target=powerpc64le-linux-gnu --with-cpu=power8 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-long-double-128 -v
Processor Notes: Scaling Governor: powernv-cpufreq ondemand
Python Notes: Python 2.7.14+ + Python 3.6.4+

GCC 8.0.1

Processor: POWER9 altivec supported @ 3.80GHz (64 Cores), Motherboard: PowerNV T2P9D01 REV 1.00, Memory: 262144MB, Disk: 500GB MAXTOR STM350063, Graphics: AMD Radeon Pro WX 7100 8192MB, Audio: AMD Ellesmere, Network: Broadcom Limited NetXtreme BCM5719 Gigabit PCIe

OS: Debian testing, Kernel: 4.16.0-rc4 (ppc64le) 20180307, Display Driver: amdgpu 1.4.0, Compiler: GCC 8.0.1 20180331, File-System: ext4, Screen Resolution: 1024x768

Compiler Notes: --build=powerpc64le-linux-gnu --enable-checking=release --host=powerpc64le-linux-gnu --target=powerpc64le-linux-gnu --with-cpu=power9
Processor Notes: Scaling Governor: powernv-cpufreq ondemand
Python Notes: Python 2.7.14+ + Python 3.6.5rc1

LLVM Clang 6.0

Processor: POWER9 altivec supported @ 3.80GHz (64 Cores), Motherboard: PowerNV T2P9D01 REV 1.00, Memory: 262144MB, Disk: 500GB MAXTOR STM350063, Graphics: AMD Radeon Pro WX 7100 8192MB, Audio: AMD Ellesmere, Network: Broadcom Limited NetXtreme BCM5719 Gigabit PCIe

OS: Debian testing, Kernel: 4.16.0-rc4 (ppc64le) 20180307, Display Driver: amdgpu 1.4.0, Compiler: Clang 6.0.0 + LLVM 6.0.0, File-System: ext4, Screen Resolution: 1024x768

Compiler Notes: Optimized build with assertions; Default target: powerpc64le-unknown-linux-gnu; Host CPU: pwr9
Processor Notes: Scaling Governor: powernv-cpufreq ondemand
Python Notes: Python 2.7.14+ + Python 3.6.5rc1

Talos 2 Raptor POWER9 System

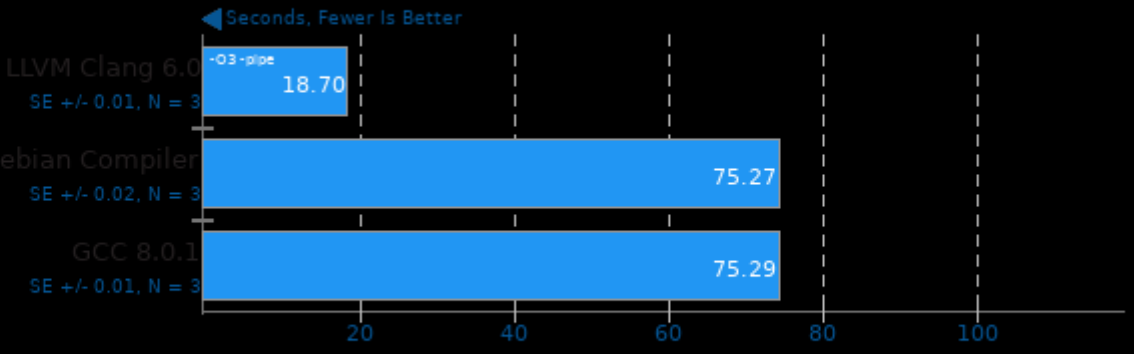
	GCC 7.3.0 Stock Debian Compiler	GCC 8.0.1	LLVM Clang 6.0
LAME MP3 Encoding - WAV To MP3 (sec)	75.27	**75.29**	**18.70**
Normalized	24.84%	24.84%	100%
Standard Deviation	0%	0%	0.1%
CacheBench - Write (MB/s)	**11335**	11862	**42310**
Normalized	26.79%	28.04%	100%
Standard Deviation	0.2%	0%	0%
C-Ray - Total Time (sec)	4.65	**4.63**	**15.32**
Normalized	99.57%	100%	30.22%
Standard Deviation	1.1%	0.6%	0.4%
CacheBench - R.M.W (MB/s)	**20073**	21333	**58880**
Normalized	34.09%	36.23%	100%
Standard Deviation	0.3%	0%	0%
OSBench - Create Processes (us/Event)	**29.77**	32.67	**33.37**
Normalized	100%	91.12%	89.21%
Standard Deviation	1.1%	1.1%	0.4%
FLAC Audio Encoding - WAV To FLAC (sec)	51.79	**47.39**	**52.08**
Normalized	91.5%	100%	90.99%
Standard Deviation	1.1%	1.7%	0.6%
Redis - SET (Reqs/sec)	**606874**	608465	**647811**
Normalized	93.68%	93.93%	100%
Standard Deviation	3.3%	1.3%	0.2%
Stockfish - Total Time (ms)	4915	**4773**	**5051**
Normalized	97.11%	100%	94.5%
Standard Deviation	0%	0.4%	0.3%
Redis - GET (Reqs/sec)	**1049994**	**1098319**	1097154
Normalized	95.6%	100%	99.89%
Standard Deviation	2.1%	1.7%	3.4%
OpenSSL - R.4.b.P (Signs/sec)	**2105**	2098	**2015**
Normalized	100%	99.68%	95.75%
Standard Deviation	0.1%	0.2%	0.3%
Parboil - OpenMP Stencil (sec)	**10.51**	**10.90**	
Normalized	100%	96.42%	
Standard Deviation	0.7%	3.1%	
Smallpt - G.I.R.1.S (sec)	**29**	**30**	
Normalized	100%	96.67%	
Standard Deviation		1.9%	
Sunflow Rendering System - G.I.I.S (sec)	**1.85**	1.81	**1.80**
Normalized	97.3%	99.45%	100%
Standard Deviation	5.8%	2.4%	5.6%
7-Zip Compression - C.S.T (MIPS)	**82447**	**84579**	
Normalized	97.48%	100%	
Standard Deviation	0.8%	0.2%	
Parboil - OpenMP LBM (sec)	**66.08**	**67.64**	
Normalized	100%	97.69%	
Standard Deviation	0.5%	0.2%	
OSBench - Create Threads (us/Event)	27.17	**26.83**	**27.46**
Normalized	98.75%	100%	97.71%
Standard Deviation	3.3%	1.4%	0.8%
Parboil - OpenMP CUTCP (sec)	**9.69**	**9.48**	
Normalized	97.83%	100%	
Standard Deviation	2.5%	4.9%	
FFmpeg - H.2.H.T.N.D (sec)	**18.52**	**18.12**	
Normalized	97.84%	100%	

Talos 2 Raptor POWER9 System

Standard Deviation	2.2%	3%	
x264 - H.2.V.E (FPS)	43.72		42.82
Normalized	100%		97.94%
Standard Deviation	0.5%		0.6%
CacheBench - Read (MB/s)	4898	4900	4809
Normalized	99.94%	100%	98.13%
Standard Deviation	0%	0%	0%
Timed GCC Compilation - Time To Compile (sec)	1071	1084	
Normalized	100%	98.77%	
Standard Deviation	0.4%	0.8%	
Rodinia - O.S (sec)	27.80	27.50	
Normalized	98.92%	100%	
Standard Deviation	0.5%	0.6%	
OSBench - Memory Allocations (Ns/Event)	83.03	83.10	82.53
Normalized	99.4%	99.31%	100%
Standard Deviation	1.4%	1.1%	0.3%
Rodinia - OpenMP CFD Solver (sec)	19.09	19.00	
Normalized	99.53%	100%	
Standard Deviation	1.4%	1%	
Rodinia - OpenMP LavaMD (sec)	38.58	38.43	
Normalized	99.61%	100%	
Standard Deviation	0.2%	0.1%	
Parboil - O.M.G (sec)	817.44	820.29	
Normalized	100%	99.65%	
Standard Deviation	0.1%	0.1%	
PHPBench - P.B.S (Score)	163208	163000	163261
Normalized	99.97%	99.84%	100%
Standard Deviation	0.1%	0.1%	0%
PyBench - T.F.A.T.T (Milliseconds)	4859	4861	4859
Normalized	100%	99.96%	100%
Standard Deviation	0.2%	0.2%	0.3%
Java JMH - Throughput (Ops/s)	3487241235	3487164246	3488143489
Normalized	99.97%	99.97%	100%
Timed Linux Kernel Compilation - Time To Compile (sec)	72.61		
Standard Deviation	3.3%		
FFTE - N.2.1.C.F.R (MFLOPS)	6549		
Standard Deviation	0.2%		
PostgreSQL pgbench - Buffer Test - Single Thread - Read Write (TPS)	98.00	102.42	100.16
Normalized	95.68%	100%	97.79%
Standard Deviation	1.2%	2.1%	6.7%
PostgreSQL pgbench - Buffer Test - Normal Load - Read Write (TPS)	515.31	442.72	401.93
Normalized	100%	85.91%	78%
Standard Deviation	29.5%	36.8%	16.9%

LAME MP3 Encoding 3.100

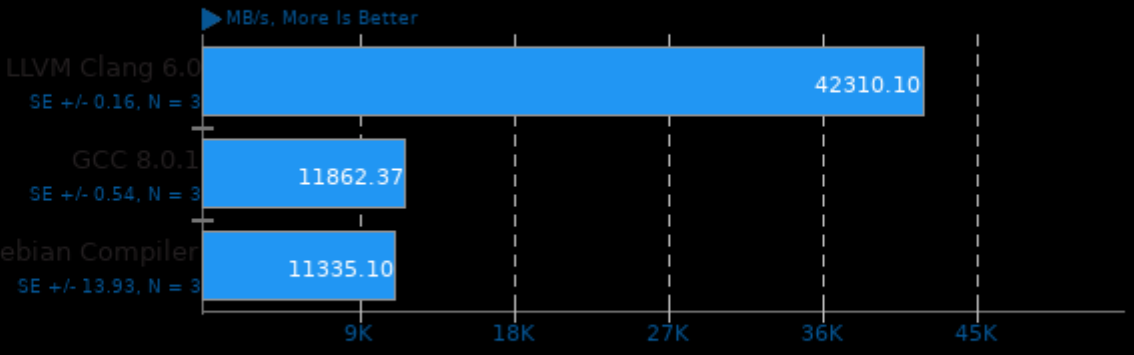
WAV To MP3



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

CacheBench

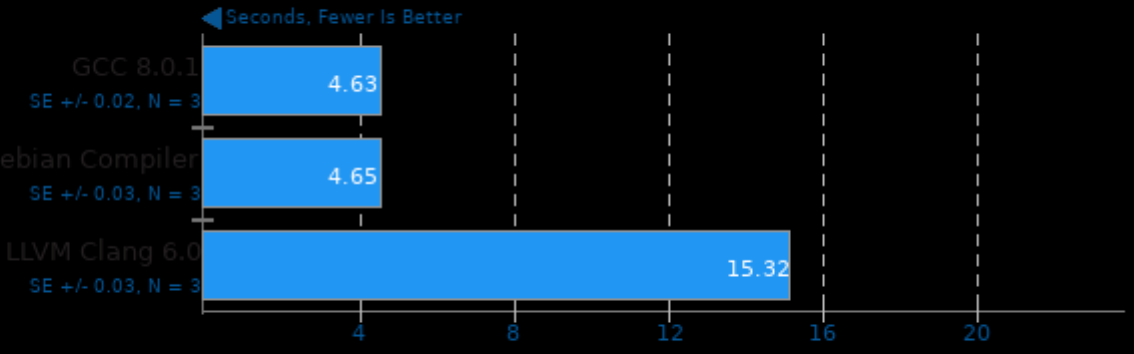
Test: Write



1. (CC) gcc options: -lrt

C-Ray 1.1

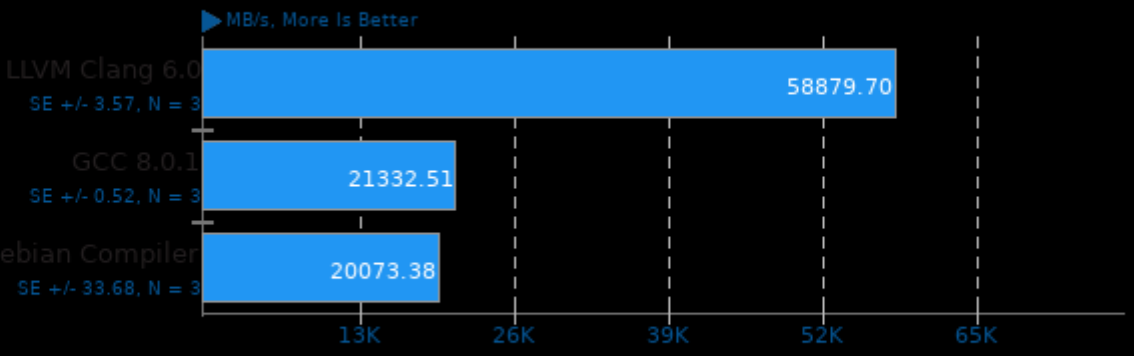
Total Time



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

CacheBench

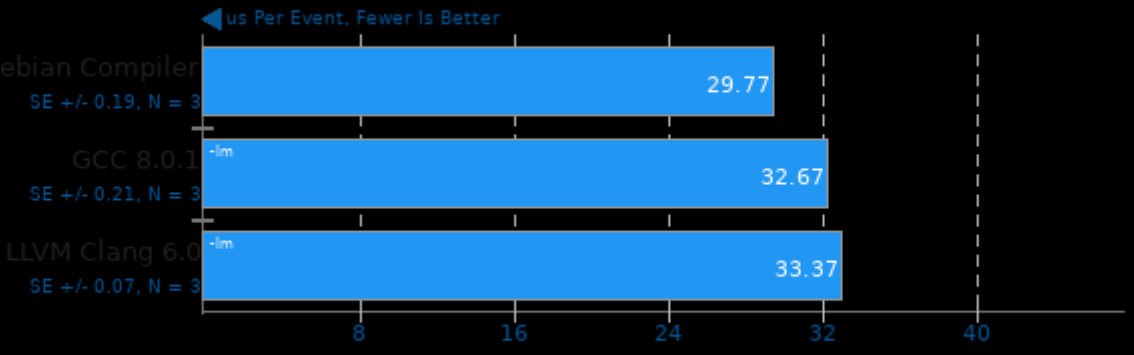
Test: Read / Modify / Write



1. (CC) gcc options: -lrt

OSBench

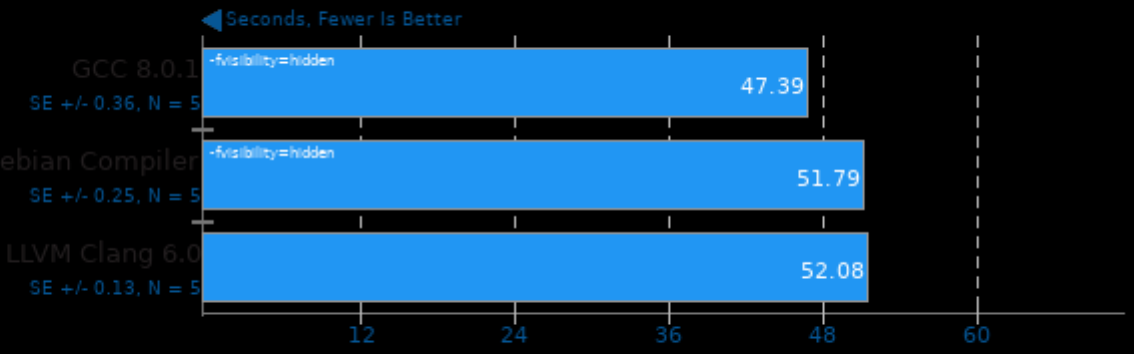
Test: Create Processes



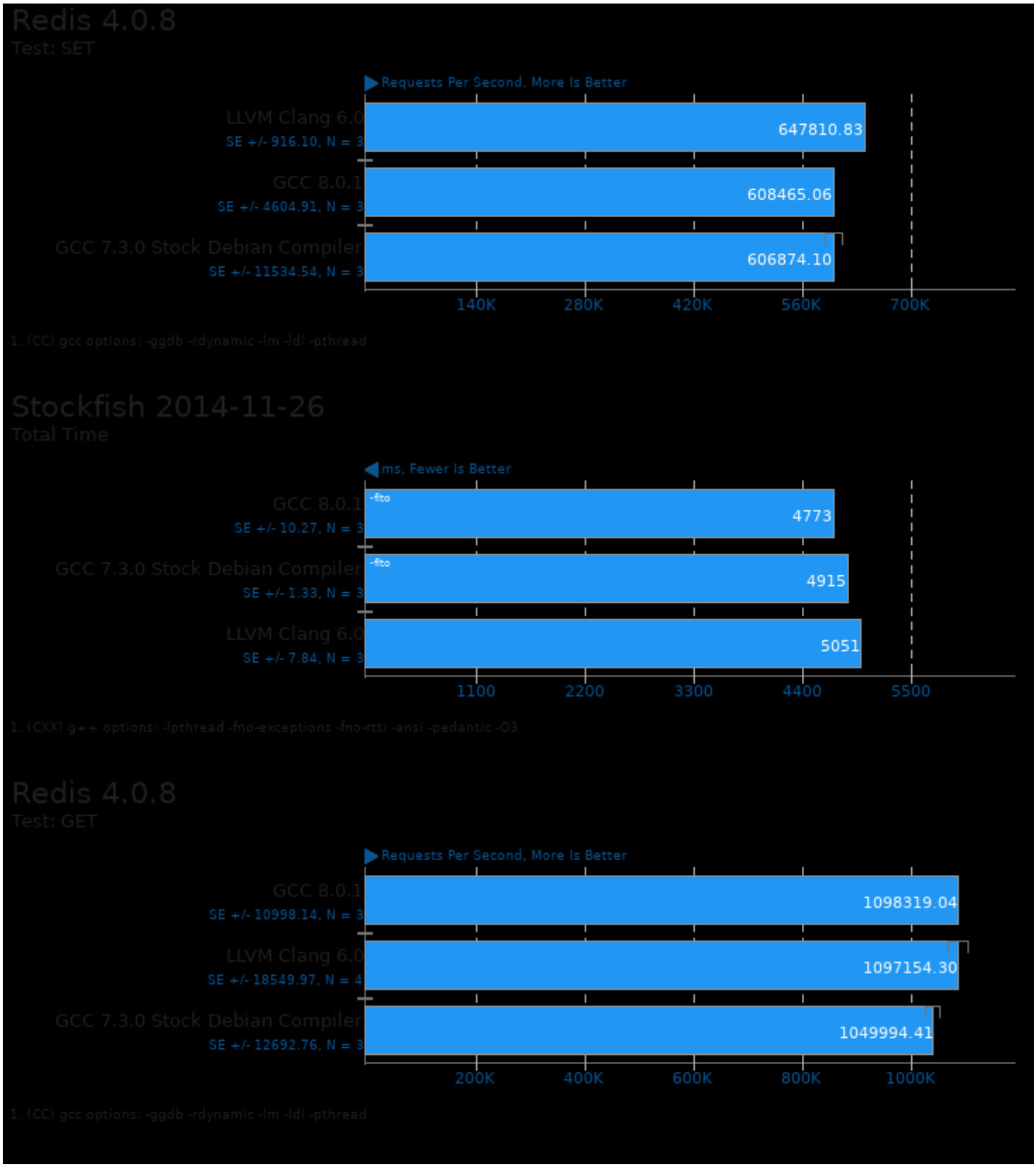
1. (CC) gcc options:

FLAC Audio Encoding 1.3.2

WAV To FLAC

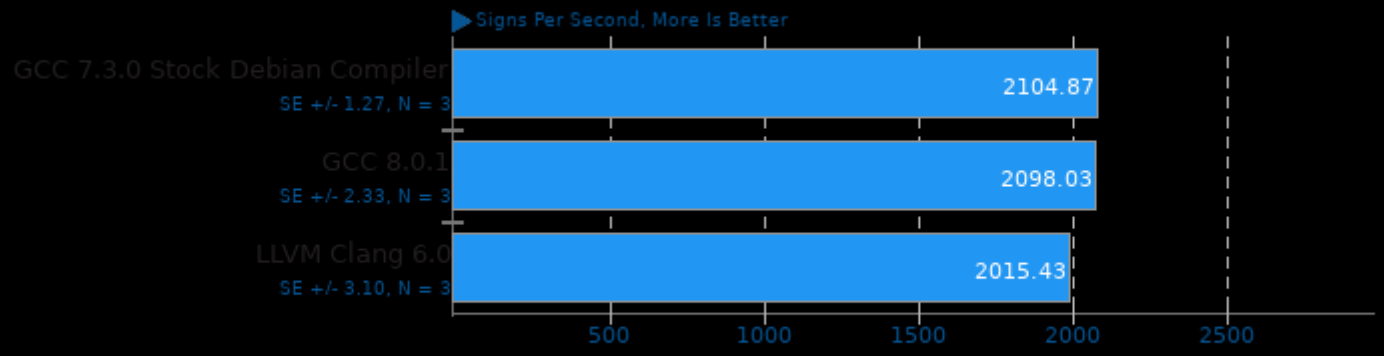


1. (CXX) g++ options: -O2 -logg -lm


Redis 4.0.8
Test: SET
Requests Per Second, More Is Better
LLVM Clang 6.0
SE +/- 916.10, N = 3
647810.83
GCC 8.0.1
SE +/- 4604.91, N = 3
608465.06
GCC 7.3.0 Stock Debian Compiler
SE +/- 11534.54, N = 3
606874.10
140K
280K
420K
560K
700K
1. (CC) gcc options: -ggdb -rdynamic -lm -ldl -pthread
Stockfish 2014-11-26
Total Time
ms, Fewer Is Better
GCC 8.0.1
-flto
SE +/- 10.27, N = 3
4773
GCC 7.3.0 Stock Debian Compiler
-flto
SE +/- 1.33, N = 3
4915
LLVM Clang 6.0
SE +/- 7.84, N = 3
5051
1100
2200
3300
4400
5500
1. (CXX) g++ options: -lpthread -fno-exceptions -fno-rtti -ansi -pedantic -O3
Redis 4.0.8
Test: GET
Requests Per Second, More Is Better
GCC 8.0.1
SE +/- 10998.14, N = 3
1098319.04
LLVM Clang 6.0
SE +/- 18549.97, N = 4
1097154.30
GCC 7.3.0 Stock Debian Compiler
SE +/- 12692.76, N = 3
1049994.41
200K
400K
600K
800K
1000K
1. (CC) gcc options: -ggdb -rdynamic -lm -ldl -pthread

OpenSSL 1.1.0f

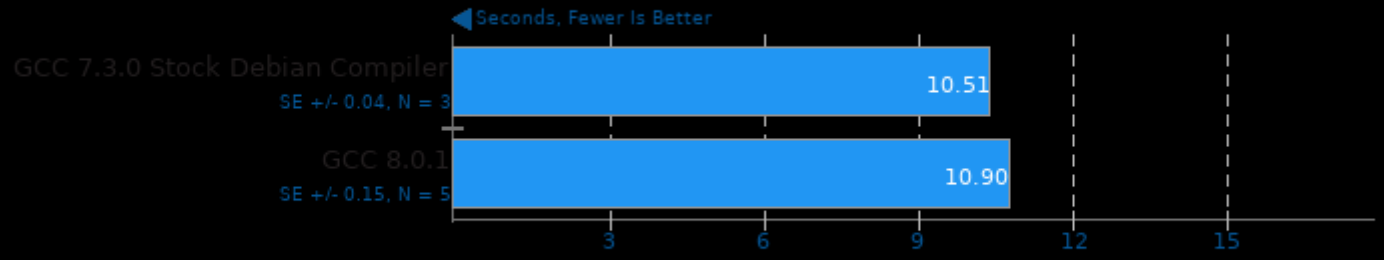
RSA 4096-bit Performance



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

Parboil 2.5

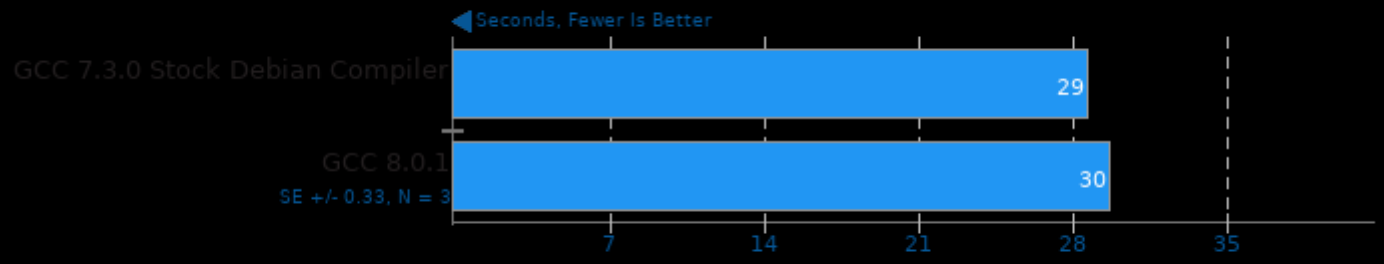
Test: OpenMP Stencil



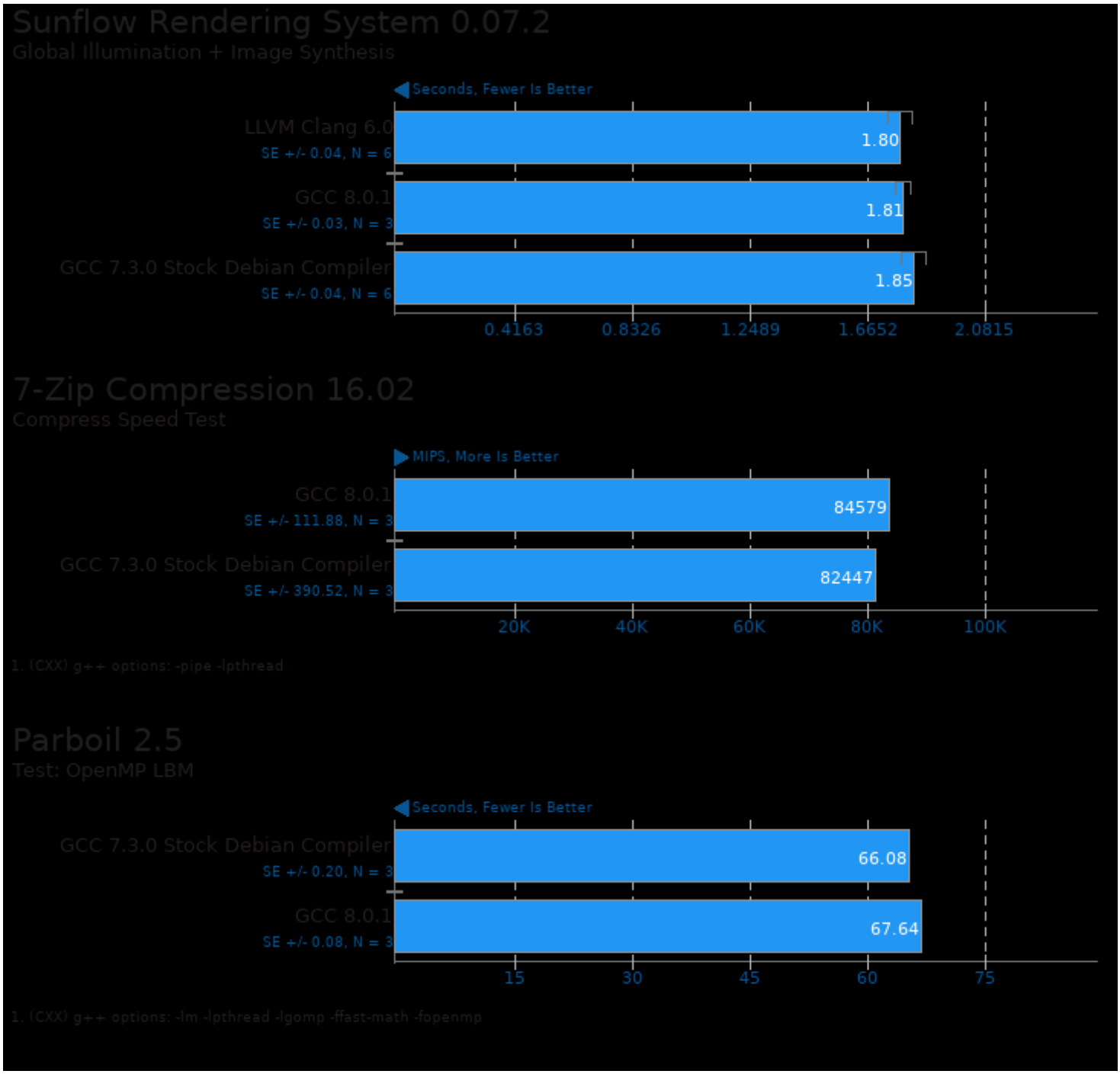
1. (CXX) g++ options: -lm -lpthread -lgomp -ffast-math -fopenmp

Smallpt 1.0

Global Illumination Renderer; 100 Samples

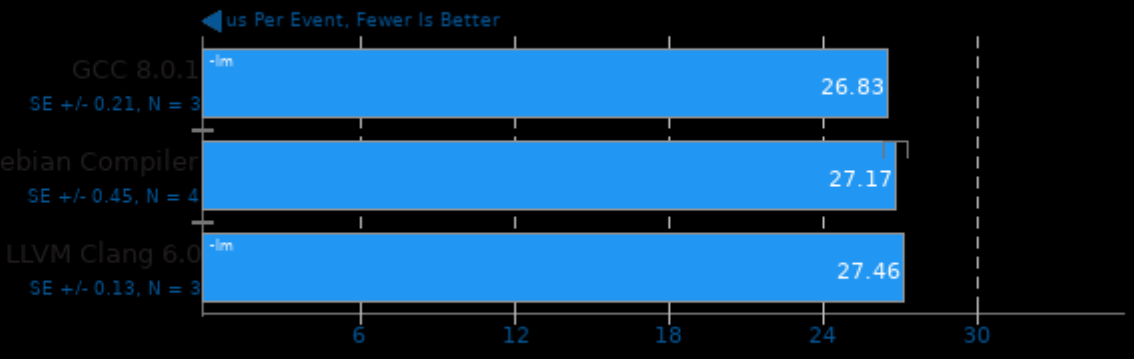


1. (CXX) g++ options: -fopenmp


Sunflow Rendering System 0.07.2
Global Illumination + Image Synthesis
Seconds, Fewer Is Better
LLVM Clang 6.0
SE +/- 0.04, N = 6
1.80
GCC 8.0.1
SE +/- 0.03, N = 3
1.81
GCC 7.3.0 Stock Debian Compiler
SE +/- 0.04, N = 6
1.85
0.4163
0.8326
1.2489
1.6652
2.0815
7-Zip Compression 16.02
Compress Speed Test
MIPS, More Is Better
GCC 8.0.1
SE +/- 111.88, N = 3
84579
GCC 7.3.0 Stock Debian Compiler
SE +/- 390.52, N = 3
82447
20K
40K
60K
80K
100K
1. (CXX) g++ options: -pipe -lpthread
Parboil 2.5
Test: OpenMP LBM
Seconds, Fewer Is Better
GCC 7.3.0 Stock Debian Compiler
SE +/- 0.20, N = 3
66.08
GCC 8.0.1
SE +/- 0.08, N = 3
67.64
15
30
45
60
75
1. (CXX) g++ options: -lm -lpthread -lgomp -ffast-math -fopenmp

OSBench

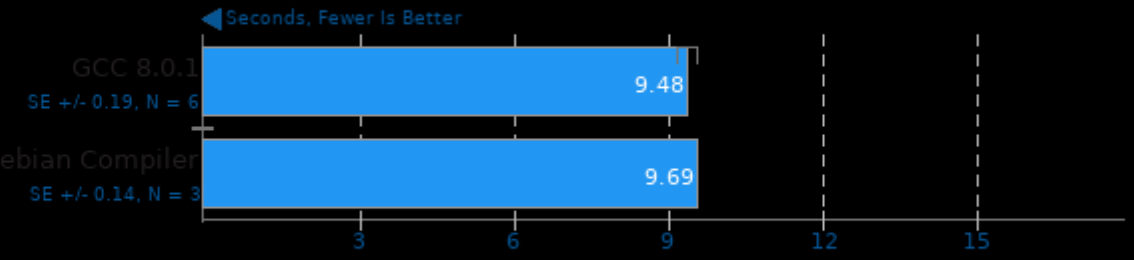
Test: Create Threads



1. (CC) gcc options:

Parboil 2.5

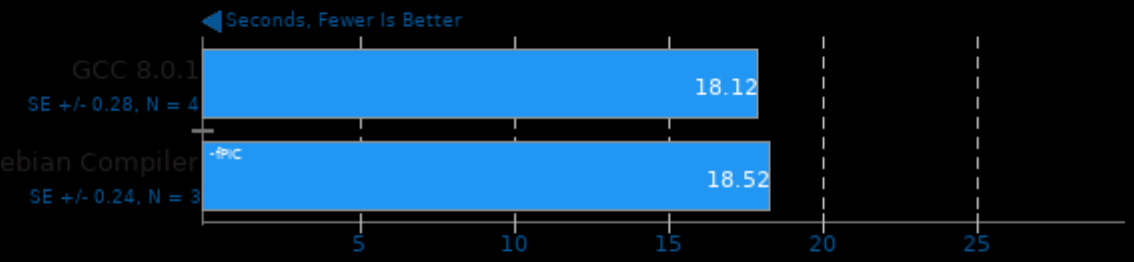
Test: OpenMP CUTCP



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

FFmpeg 3.4.1

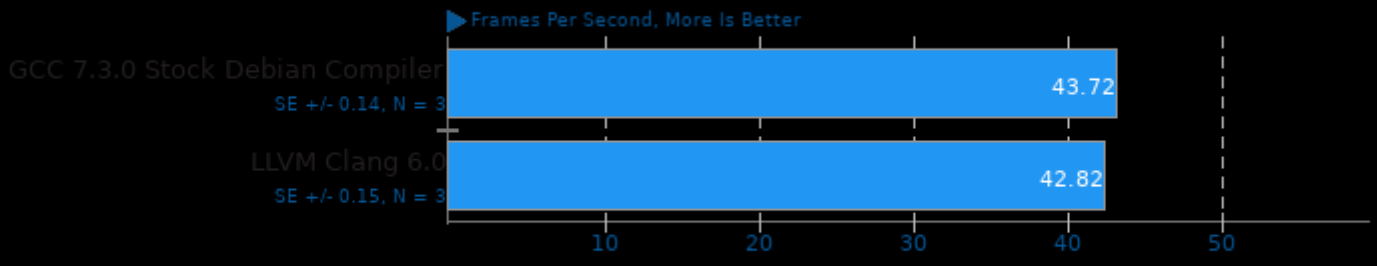
H.264 HD To NTSC DV



1. (CC) gcc options: -lavdevice -lavfilter -lavformat -lavcodec -lswresample -lswscale -lavutil -lxcb -lxcb-xfixes -lxcb-shape -lasound -lm -ldl -llzma -pthread

x264 2018-02-05

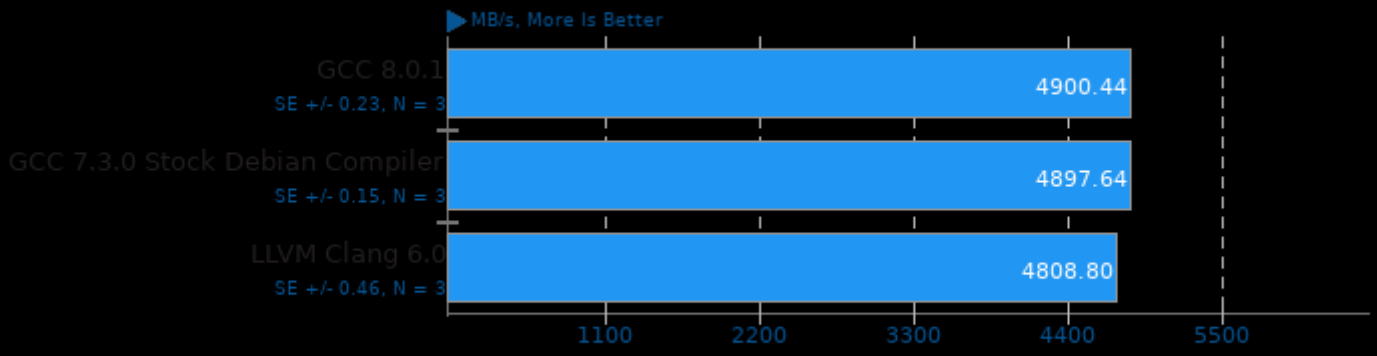
H.264 Video Encoding



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

CacheBench

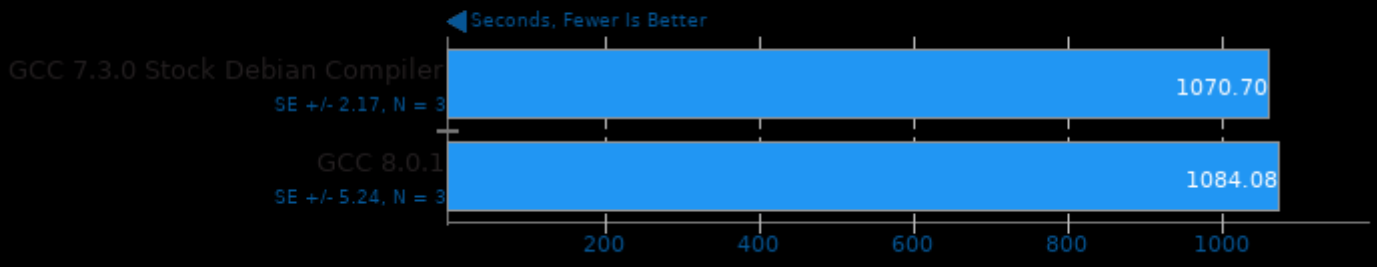
Test: Read



1. (CC) gcc options: -lrt

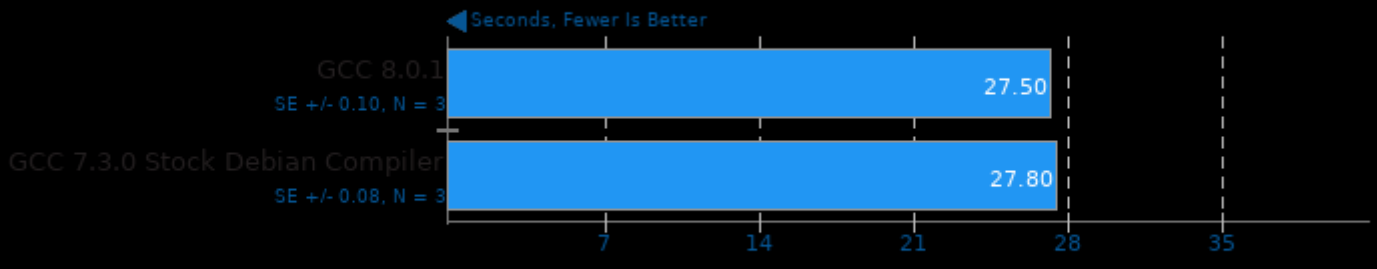
Timed GCC Compilation 7.2

Time To Compile



Rodinia 2.4

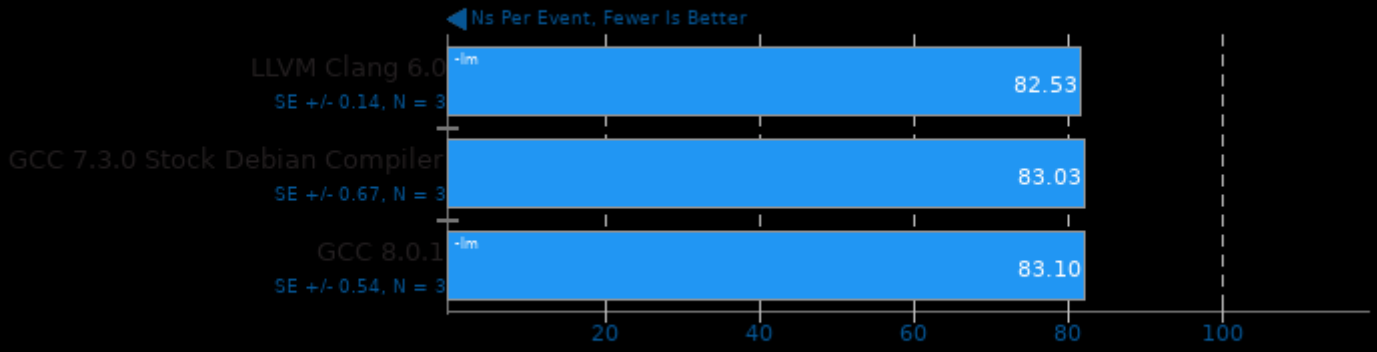
Test: OpenMP Streamcluster



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

OSBench

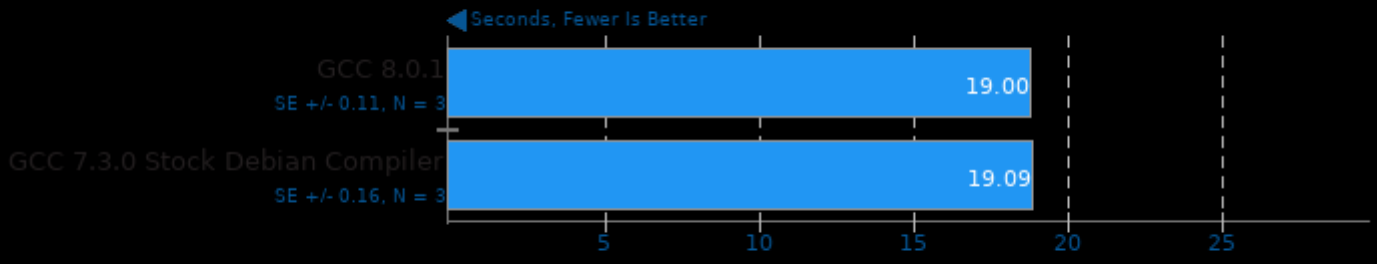
Test: Memory Allocations



1. (CC) gcc options:

Rodinia 2.4

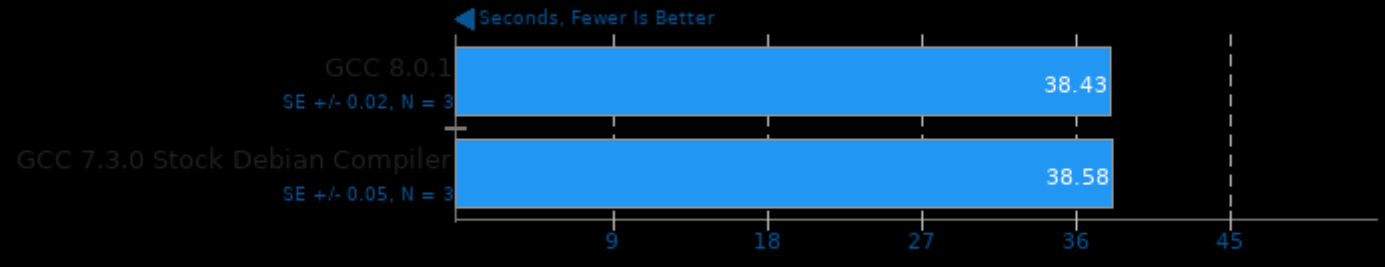
Test: OpenMP CFD Solver



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

Rodinia 2.4

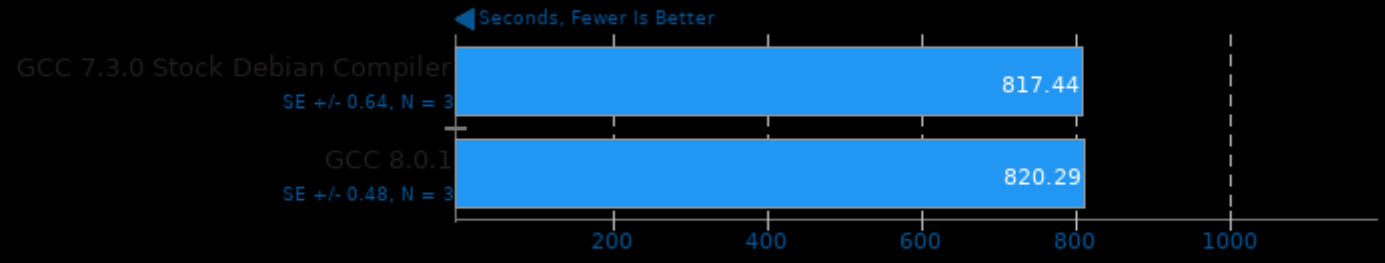
Test: OpenMP LavaMD



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

Parboil 2.5

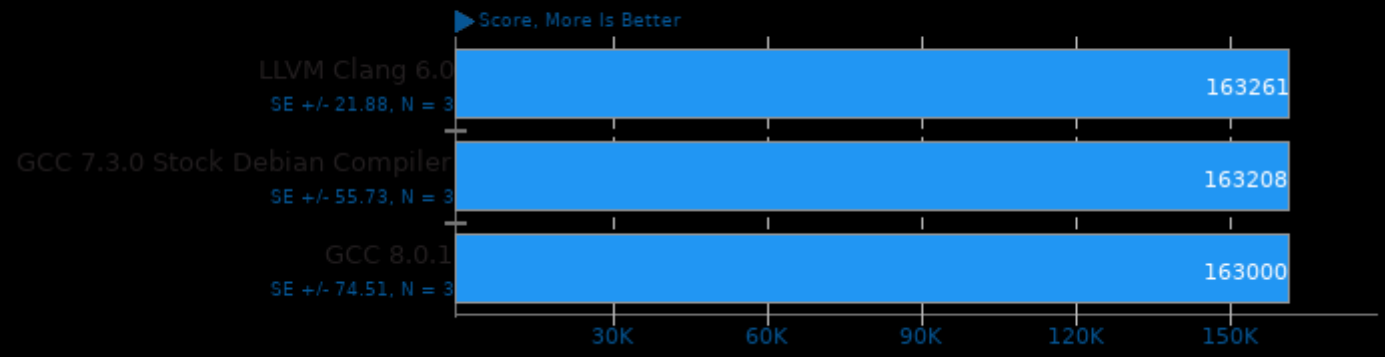
Test: OpenMP MRI Gridding

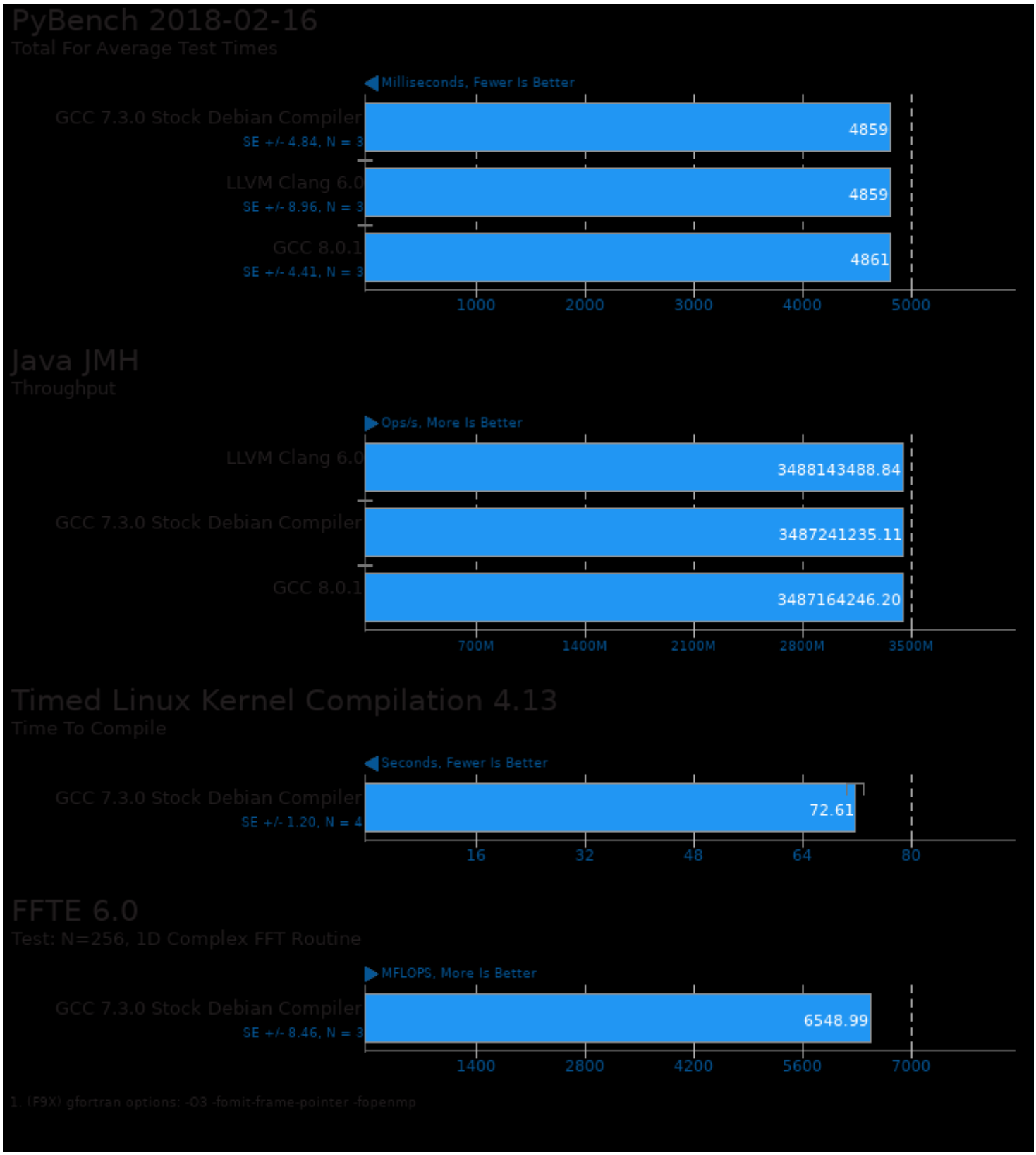


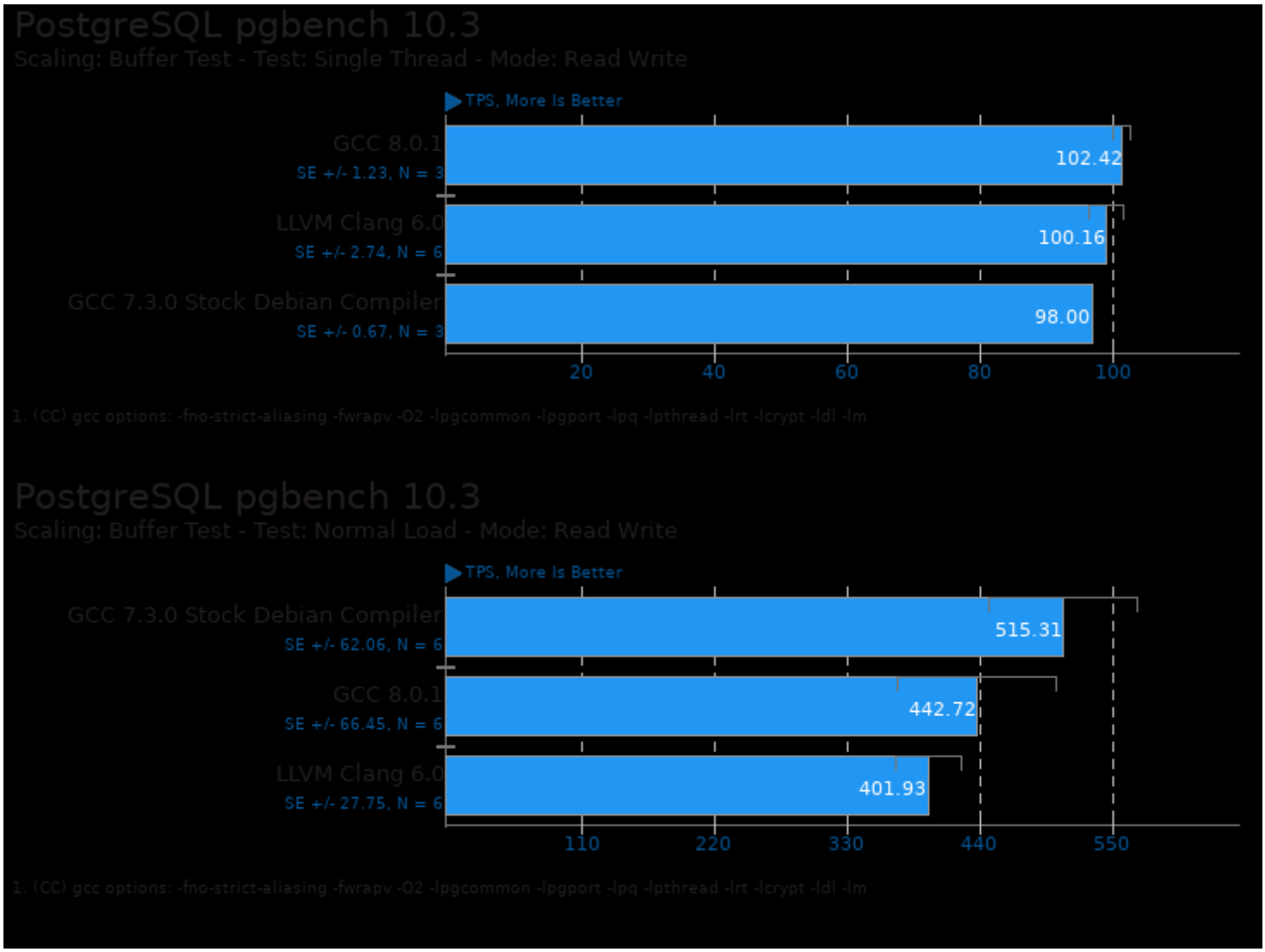
1. (CXX) g++ options: -lm -lpthread -lgomp -ffast-math -fopenmp

PHPBench 0.8.1

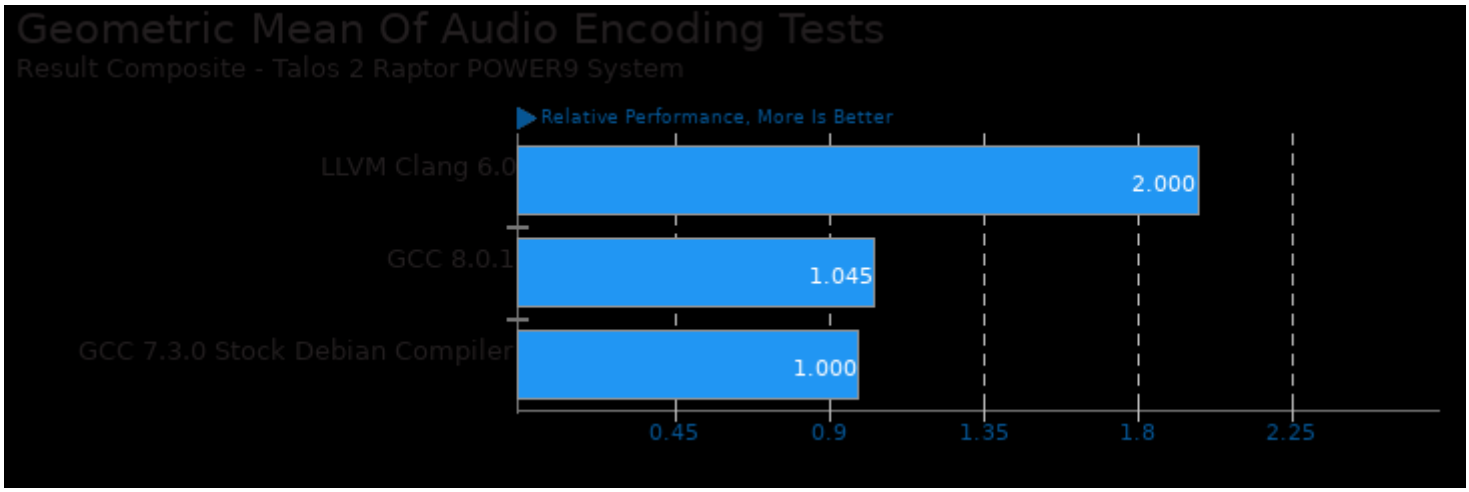
PHP Benchmark Suite



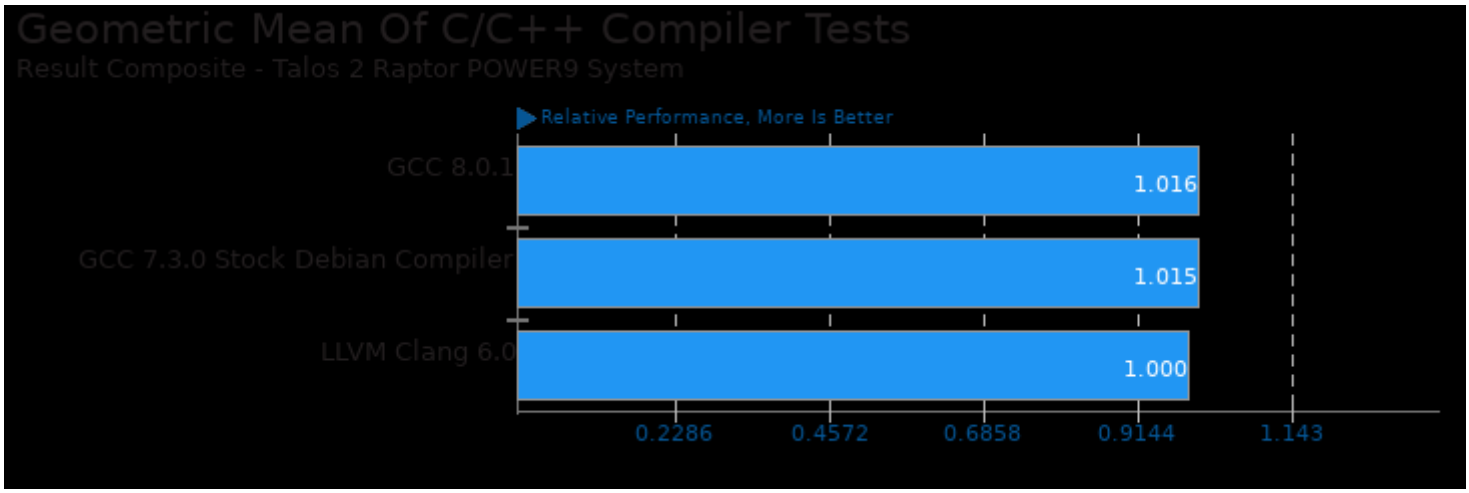

PyBench 2018-02-16
Total For Average Test Times
Milliseconds, Fewer Is Better
GCC 7.3.0 Stock Debian Compiler
SE +/- 4.84, N = 3
4859
LLVM Clang 6.0
SE +/- 8.96, N = 3
4859
GCC 8.0.1
SE +/- 4.41, N = 3
4861
1000
2000
3000
4000
5000
Java JMH
Throughput
Ops/s, More Is Better
LLVM Clang 6.0
3488143488.84
GCC 7.3.0 Stock Debian Compiler
3487241235.11
GCC 8.0.1
3487164246.20
700M
1400M
2100M
2800M
3500M
Timed Linux Kernel Compilation 4.13
Time To Compile
Seconds, Fewer Is Better
GCC 7.3.0 Stock Debian Compiler
SE +/- 1.20, N = 4
72.61
16
32
48
64
80
FFTE 6.0
Test: N=256, 1D Complex FFT Routine
MFLOPS, More Is Better
GCC 7.3.0 Stock Debian Compiler
SE +/- 8.46, N = 3
6548.99
1400
2800
4200
5600
7000
1. (F9X) gfortran options: -O3 -fomit-frame-pointer -fopenmp


PostgreSQL pgbench 10.3
Scaling: Buffer Test - Test: Single Thread - Mode: Read Write
TPS, More Is Better
GCC 8.0.1
SE +/- 1.23, N = 3
102.42
LLVM Clang 6.0
SE +/- 2.74, N = 6
100.16
GCC 7.3.0 Stock Debian Compiler
SE +/- 0.67, N = 3
98.00
20
40
60
80
100
1. (CC) 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
TPS, More Is Better
GCC 7.3.0 Stock Debian Compiler
SE +/- 62.06, N = 6
515.31
GCC 8.0.1
SE +/- 66.45, N = 6
442.72
LLVM Clang 6.0
SE +/- 27.75, N = 6
401.93
110
220
330
440
550
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lpthread -lrt -lcrypt -ldl -lm

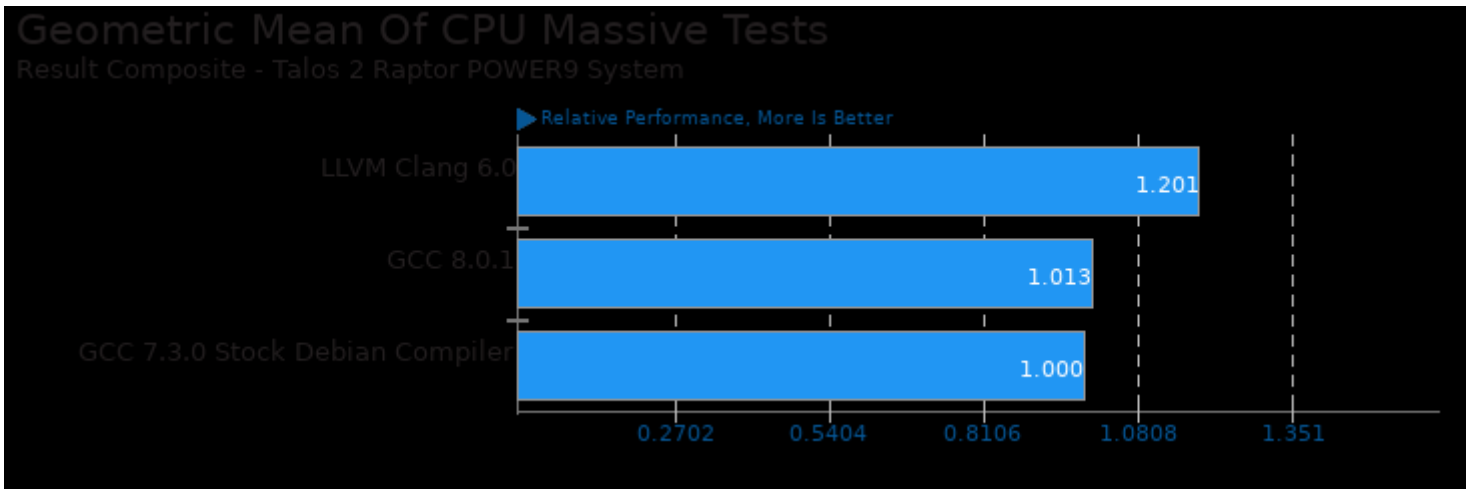
These geometric means are based upon test groupings / test suites for this result file.



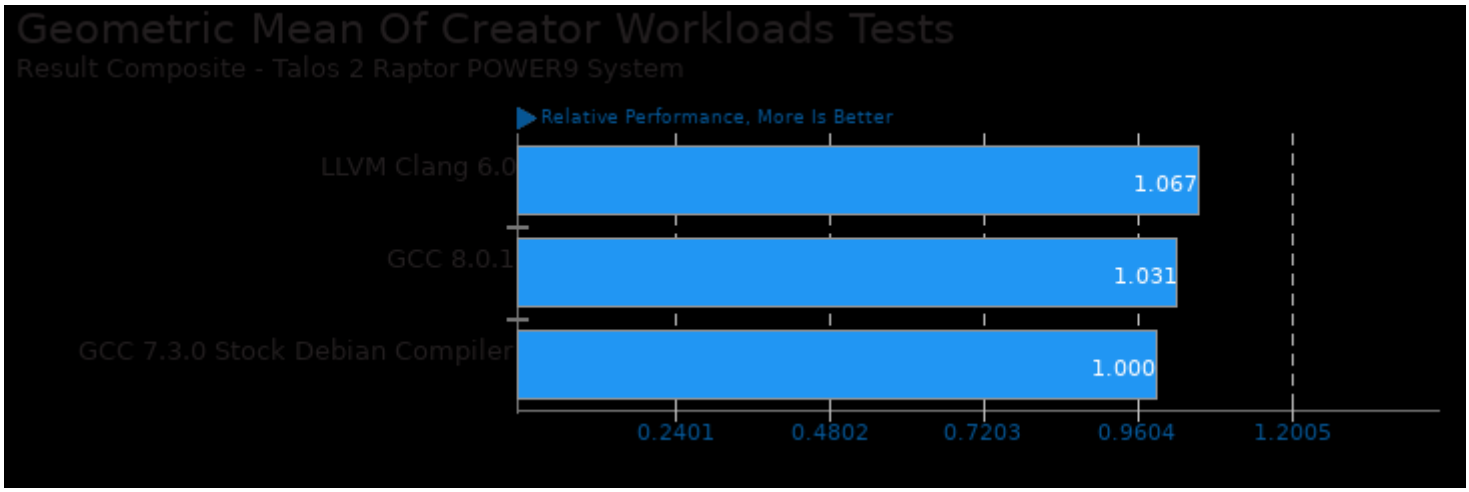
Geometric mean based upon tests: pts/encode-mp3 and pts/encode-flac



Geometric mean based upon tests: pts/stockfish, pts/c-ray, pts/compress-7zip, pts/encode-mp3, pts/encode-flac, pts/pgbench, pts/x264 and pts/openssl



Geometric mean based upon tests: pts/build-gcc, pts/build-linux-kernel, pts/c-ray, pts/cachebench, pts/compress-7zip, pts/x264, pts/encode-flac, pts/encode-mp3, pts/openssl, pts/parboil, pts/pgbench, pts/phpbench, pts/redis, pts/rodinia and pts/stockfish



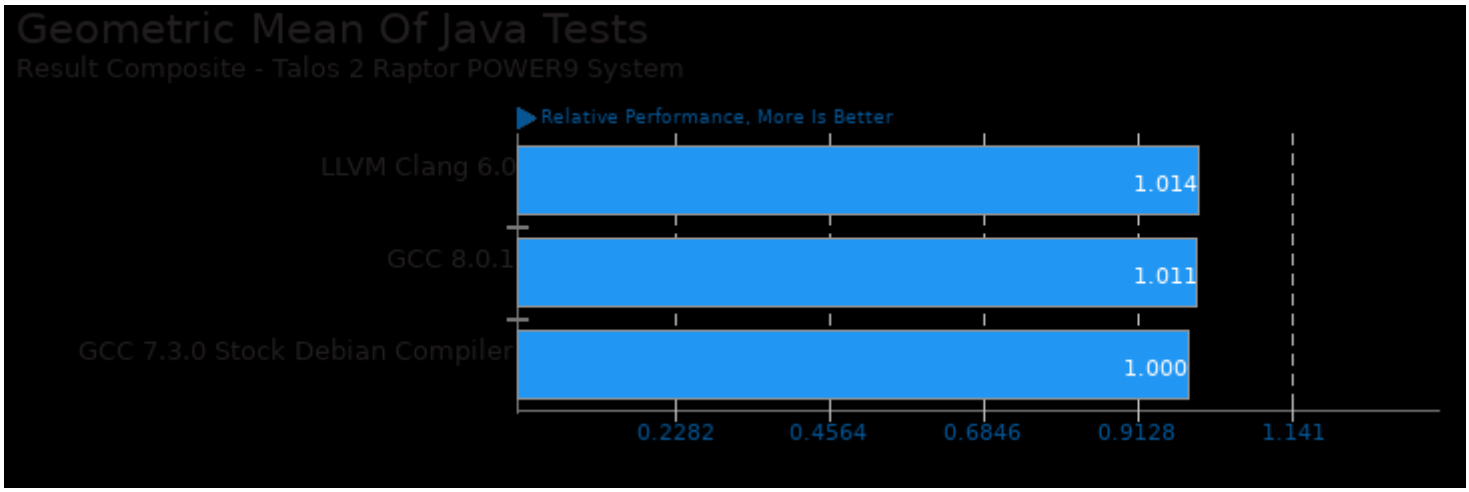
Geometric mean based upon tests: pts/c-ray, pts/smallpt, pts/x264, pts/ffmpeg, pts/encode-mp3 and pts/encode-flac



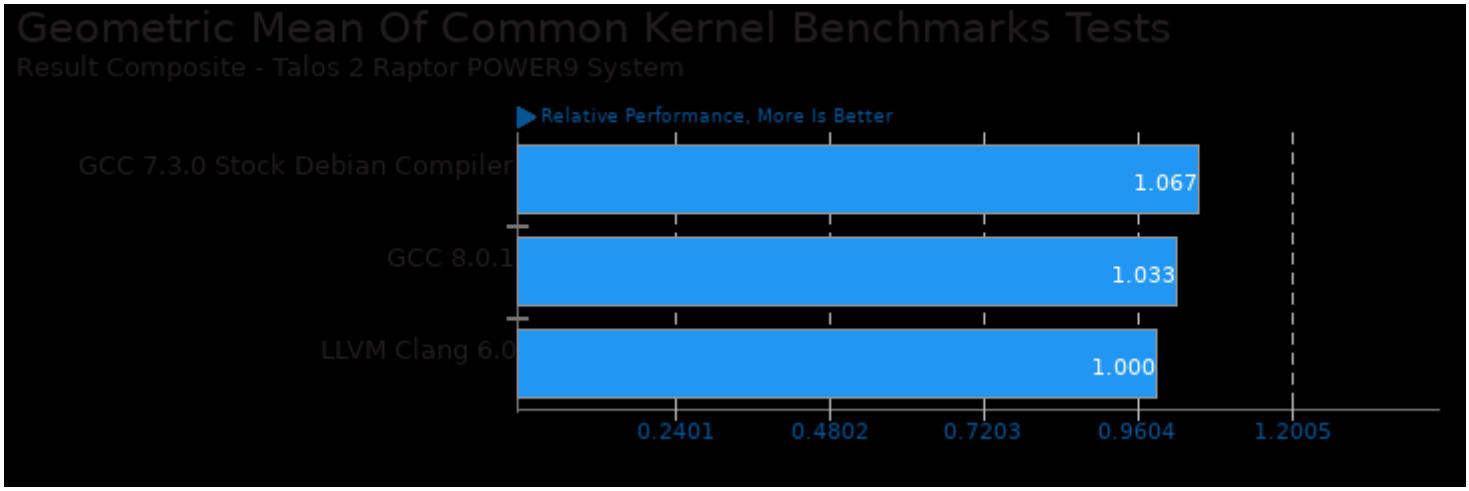
Geometric mean based upon tests: pts/redis and pts/pgbench



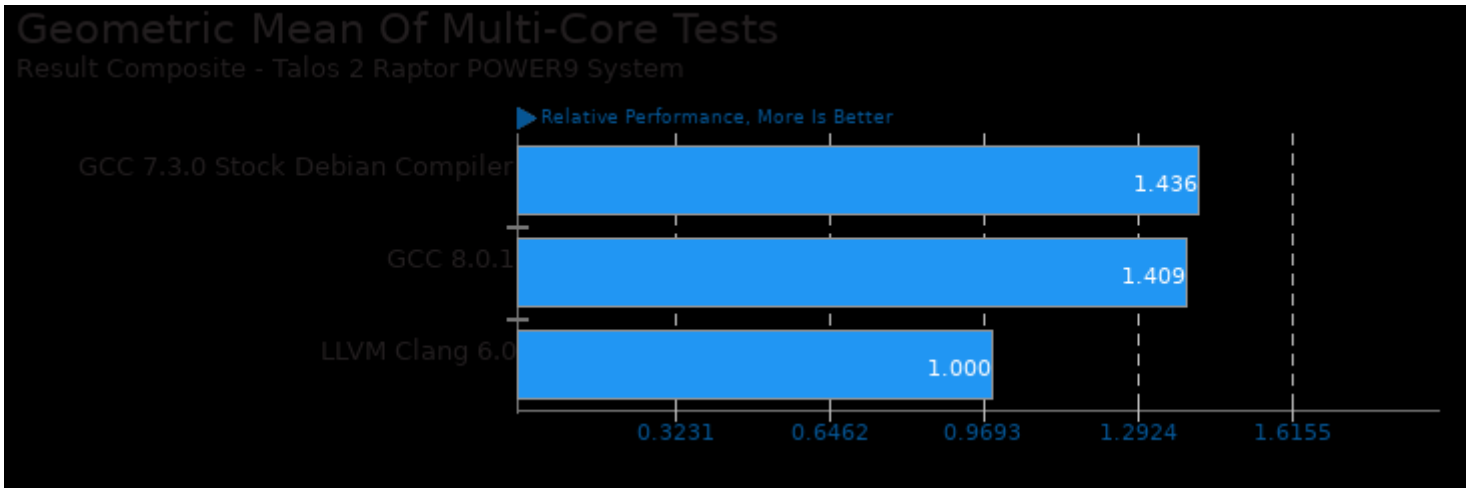
Geometric mean based upon tests: pts/encode-mp3, pts/encode-flac, pts/x264 and pts/ffmpeg



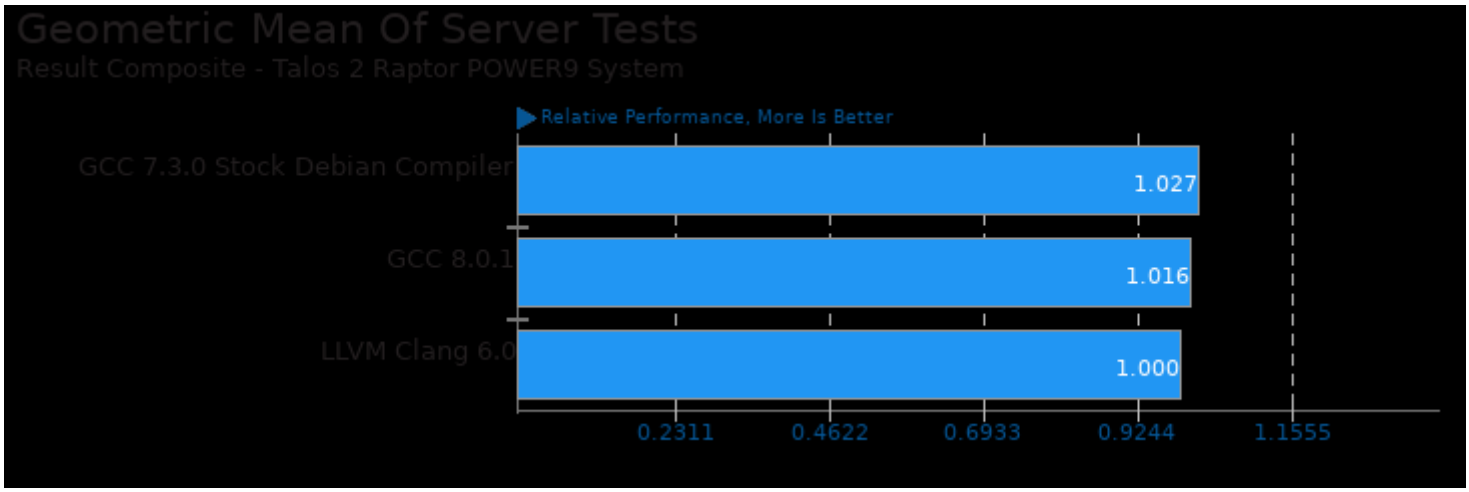
Geometric mean based upon tests: pts/sunflow and pts/java-jmh



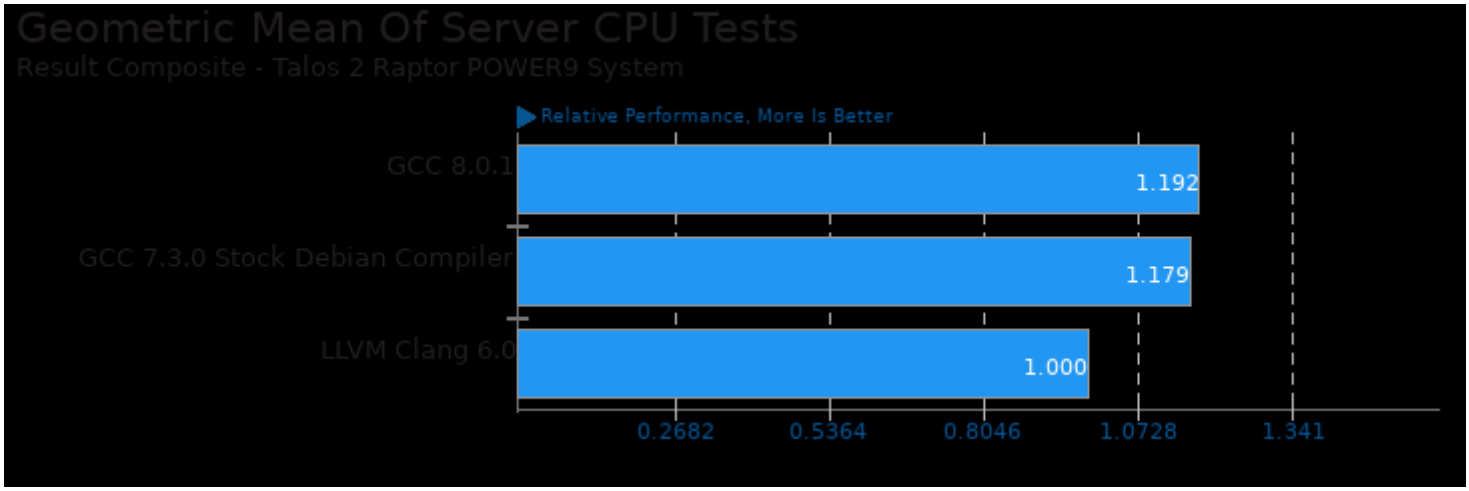
Geometric mean based upon tests: pts/pgbench, pts/openssl and pts/osbench



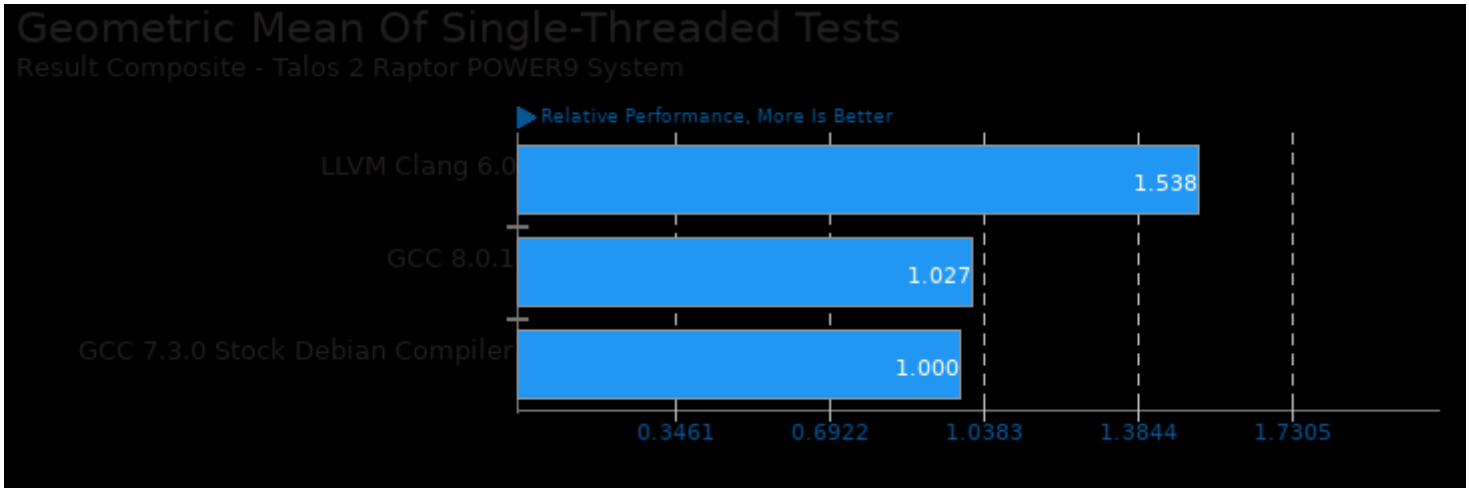
Geometric mean based upon tests: pts/c-ray, pts/stockfish, pts/x264, pts/ffmpeg, pts/rodinia, pts/parboil, pts/smallpt, pts/compress-7zip, pts/build-linux-kernel, pts/build-gcc and pts/pgbench



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



Geometric mean based upon tests: pts/rodinia, pts/x264, pts/compress-7zip, pts/stockfish, pts/build-gcc, pts/build-linux-kernel, pts/c-ray, pts/openssl, pts/redis, pts/pybench and pts/phpbench



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

This file was automatically generated via the Phoronix Test Suite benchmarking software on Thursday, 28 March 2024 16:19.