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Intel Atom D525 Compiler Testing

Intel Atom D525 testing with GCC 4.7 and LLVM/Clang 3.0 from the Ubuntu Quantal repository. Benchmarking by Michael Larabel for a future article on Phoronix.com just looking at GCC vs. Clang on low-end low-power x86 hardware.

Automated Executive Summary

GCC 4.7.1 had the most wins, coming in first place for 65% of the tests.

Based on the geometric mean of all complete results, the fastest (GCC 4.7.1) was 1.135x the speed of the slowest (LLVM-Clang 3.0).

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

Smallpt (Global Illumination Renderer; 100 Samples) at 4.101x
Himeno Benchmark (Poisson Pressure Solver) at 1.621x
C-Ray (Total Time) at 1.349x
LAME MP3 Encoding (WAV To MP3) at 1.194x
Parallel BZIP2 Compression (256MB File Compression) at 1.19x
Crafty (Elapsed Time) at 1.116x
SciMark (Computational Test: Dense LU Matrix Factorization) at 1.115x
Timed MAFFT Alignment (Multiple Sequence Alignment) at 1.113x
SciMark (Computational Test: Sparse Matrix Multiply) at 1.11x

Timed HMMer Search (Pfam Database Search) at 1.086x.

Test Systems:

LLVM-Clang 3.0

Processor: Intel Atom D525 @ 1.80GHz (4 Cores), Motherboard: FOXCONN NETBOX nT-435/535, Chipset: Intel Atom D4xx/D5xx/N4xx/N5xx, Memory: 2048MB, Disk: 500GB Western Digital WD5000BEVT-2, Graphics: Intel Atom D4xx/D5xx/N4xx/N5xx IGP, Audio: Realtek ALC888, Network: Realtek RTL8111/8168B + Realtek RTL8191SEvA Wireless LAN

OS: Ubuntu 12.10, Kernel: 3.5.0-14-generic (x86_64), Desktop: Unity 6.4.0, Display Server: X Server 1.13.0, Display Driver: intel 2.20.7, OpenGL: 1.4 Mesa 8.1-devel, Compiler: Clang 3.0-6ubuntu3, File-System: ext4, Screen Resolution: 1366x768

System Notes: Compiz was running on this system.

GCC 4.7.1

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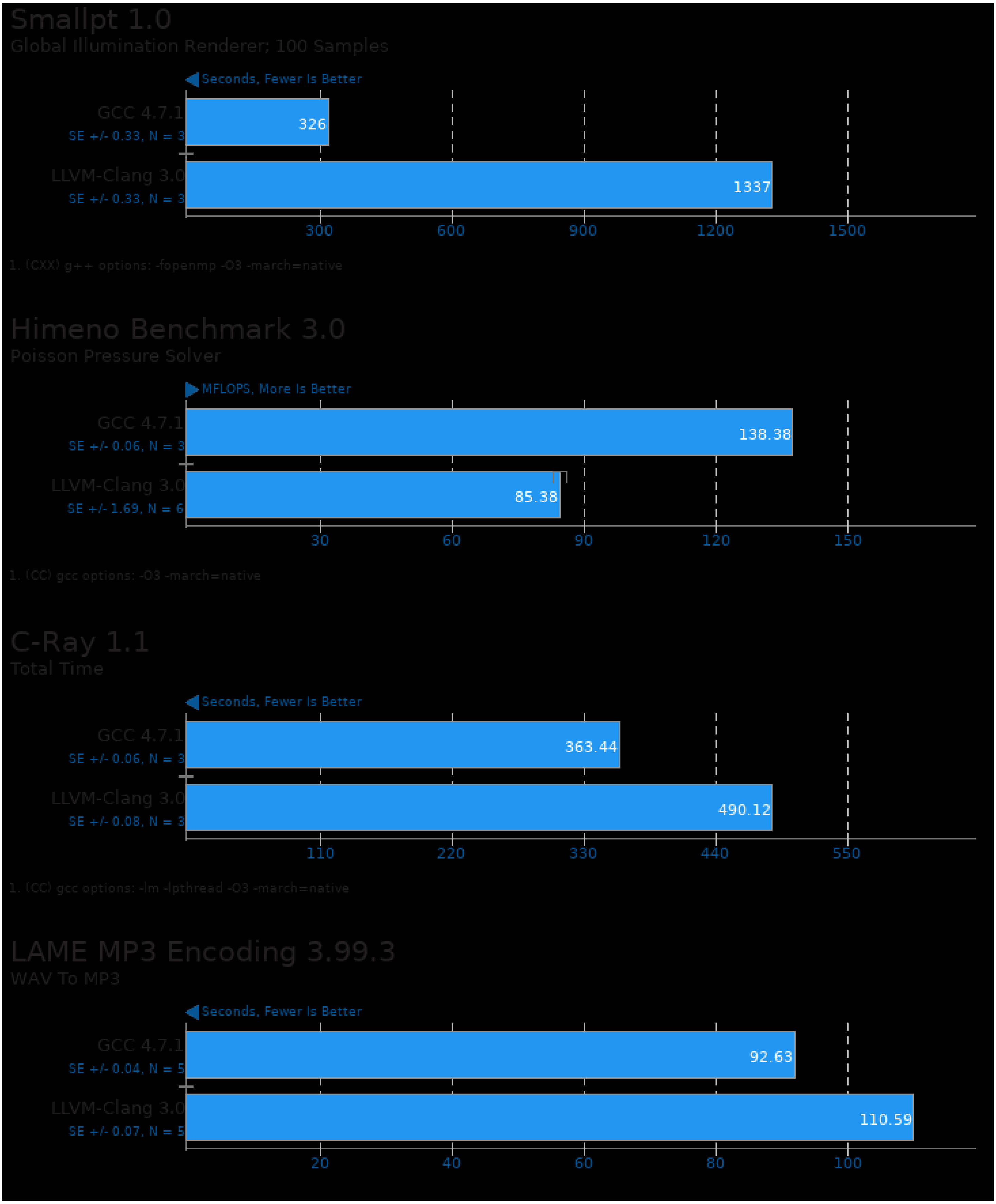
Compiler Notes: --build=x86_64-linux-gnu --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-languages=c,c++,go,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-arch-32=i686 --with-tune=generic -v
System Notes: Compiz was running on this system.

	LLVM-Clang 3.0	GCC 4.7.1
Smallpt - G.I.R.1.S (sec)	1337	326
Normalized	24.38%	100%
Standard Deviation	0%	0.2%
Himeno Benchmark - P.P.S (MFLOPS)	85.38	138.38
Normalized	61.7%	100%
Standard Deviation	4.9%	0.1%
C-Ray - Total Time (sec)	490.12	363.44
Normalized	74.15%	100%
Standard Deviation	0%	0%
LAME MP3 Encoding - WAV To MP3 (sec)	110.59	92.63
Normalized	83.76%	100%

Standard Deviation	0.1%	0.1%
Parallel BZIP2 Compression - 2.F.C (sec)	**106.75**	**89.67**
Normalized	84%	100%
Standard Deviation	1.3%	2.7%
Crafty - Elapsed Time (sec)	**517.85**	**463.93**
Normalized	89.59%	100%
Standard Deviation	0.2%	0.3%
SciMark - D.L.M.F (Mflops)	**202.33**	**181.53**
Normalized	100%	89.72%
Standard Deviation	0.2%	0.3%
Timed MAFFT Alignment - M.S.A (sec)	**67.35**	**60.53**
Normalized	89.87%	100%
Standard Deviation	4%	0.3%
SciMark - S.M.M (Mflops)	**189.46**	**170.67**
Normalized	100%	90.08%
Standard Deviation	0.2%	0.3%
Timed HMMer Search - P.D.S (sec)	**110.46**	**101.73**
Normalized	92.1%	100%
Standard Deviation	0.6%	1.5%
SciMark - Monte Carlo (Mflops)	**69.54**	**64.45**
Normalized	100%	92.68%
Standard Deviation	0%	0.2%
LAMMPS Molecular Dynamics Simulator - Rhodopsin Protein (Loop Time)	**426.79**	**456.43**
Normalized	100%	93.51%
Standard Deviation	0.3%	0.3%
SciMark - J.S.O.R (Mflops)	**341.03**	**321.04**
Normalized	100%	94.14%
Standard Deviation	0.2%	0.4%
SciMark - F.F.T (Mflops)	**26.46**	**27.76**
Normalized	95.32%	100%
Standard Deviation	0.4%	0.2%
VP8 libvpx Encoding - vpxenc (FPS)	**2.85**	**2.98**
Normalized	95.64%	100%
Standard Deviation	0.4%	1.2%
Apache Benchmark - S.W.P.S (Reqs/sec)	**3136**	**3039**
Normalized	100%	96.92%
Standard Deviation	0.2%	0.4%
7-Zip Compression - C.S.T (MIPS)	**2030**	**2094**
Normalized	96.94%	100%
Standard Deviation	0.4%	0.2%
TSCP - A.C.P (Nodes/s)	**117819**	**118279**
Normalized	99.61%	100%
Standard Deviation	0.2%	0.1%
FFTE - N.6.1.C.F.R (MFLOPS)	**943.53**	**943.95**
Normalized	99.96%	100%
Standard Deviation	0.1%	0.1%
OpenSSL - R.4.b.P (Signs/sec)	7.60	7.60
Standard Deviation	0%	0%
FLAC Audio Encoding - WAV To FLAC (sec)	50.29	
Standard Deviation	0.2%	

Intel Atom D525 Compiler Testing



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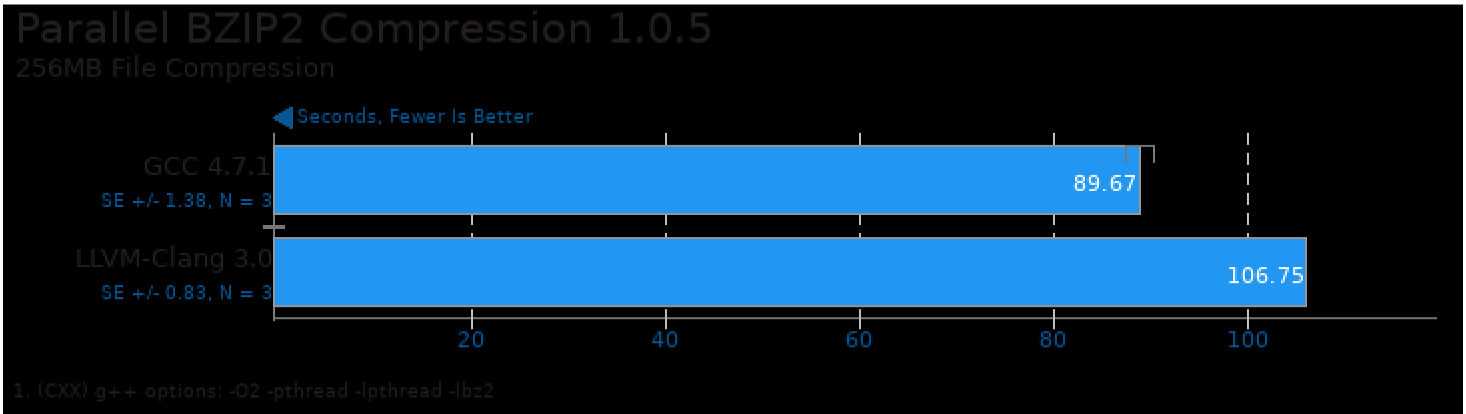

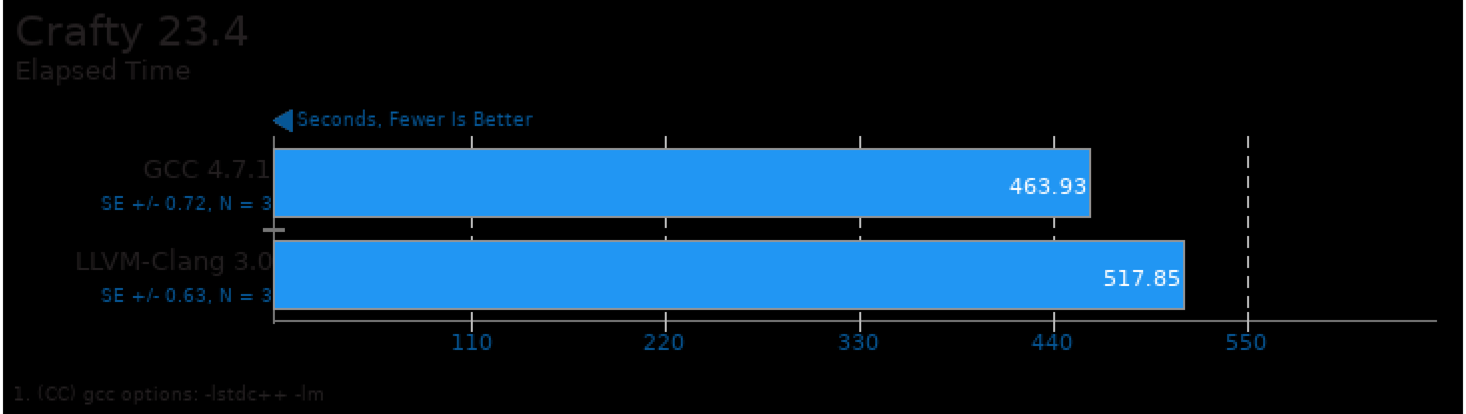

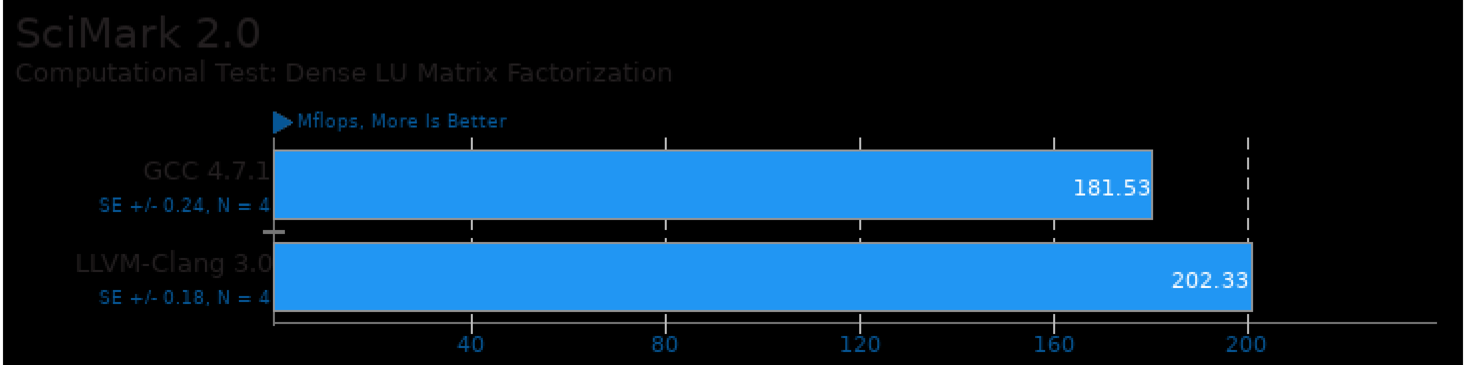

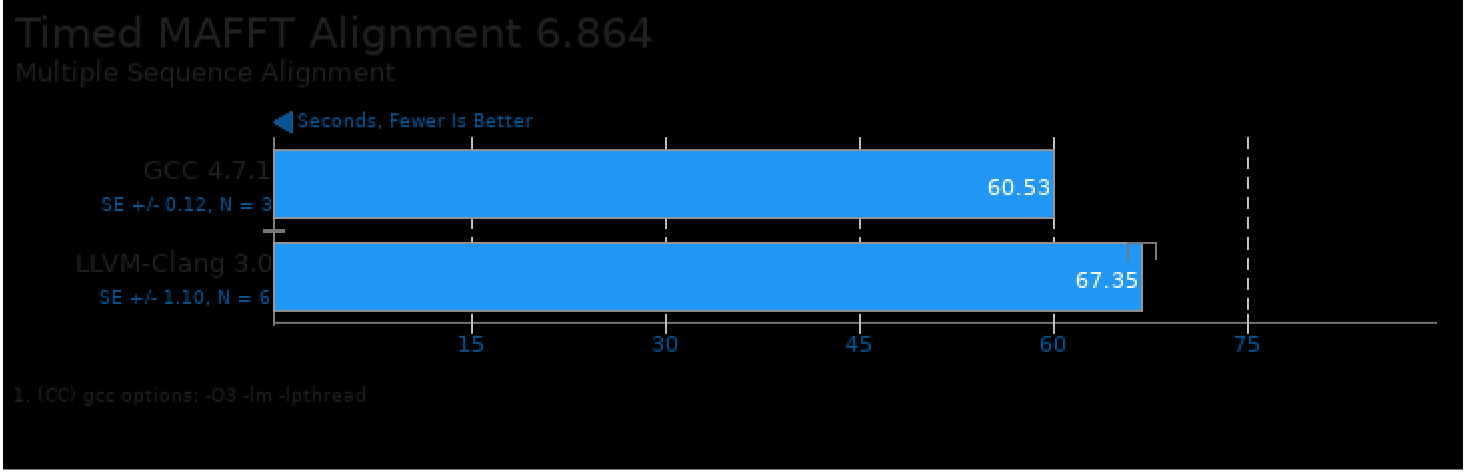

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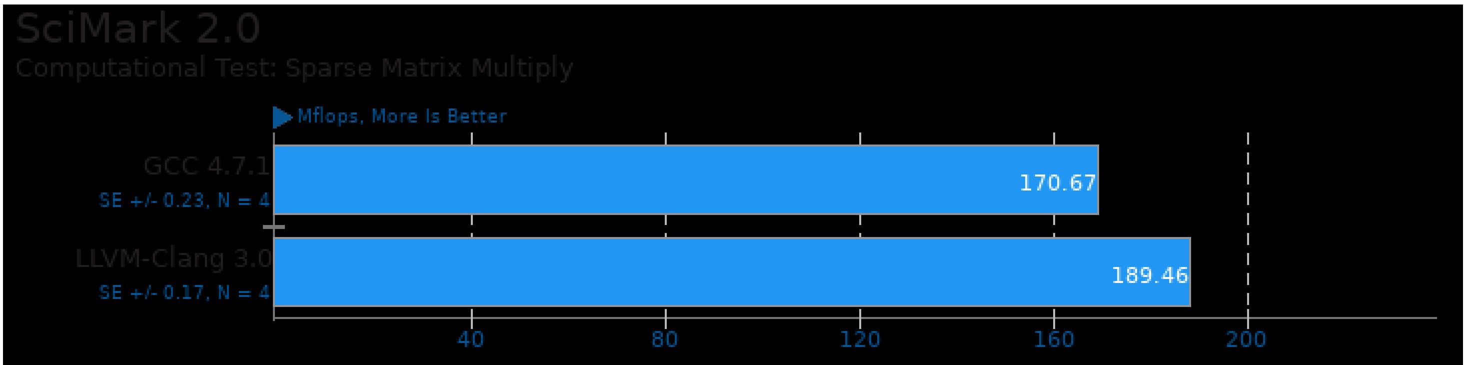

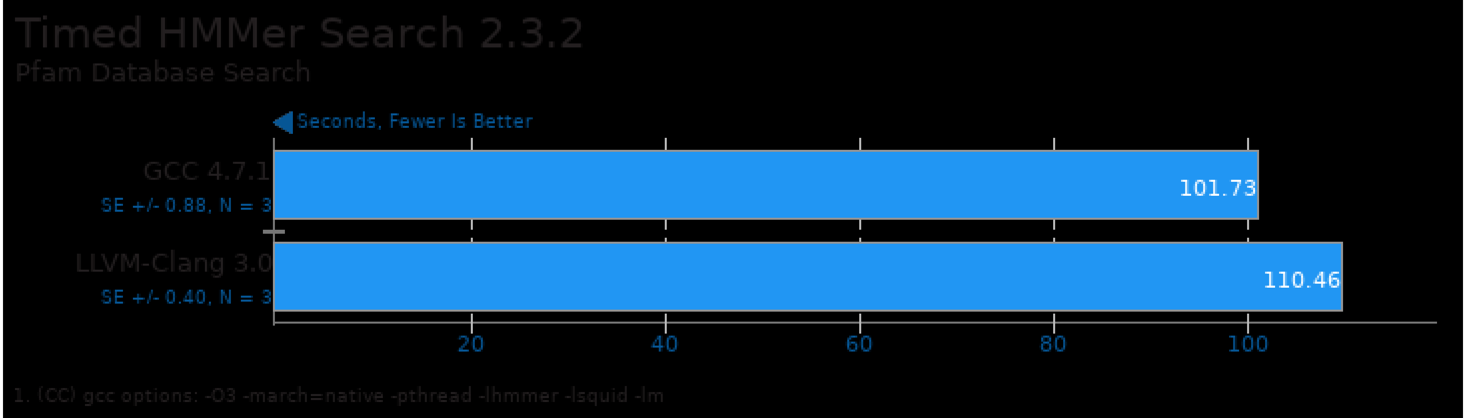

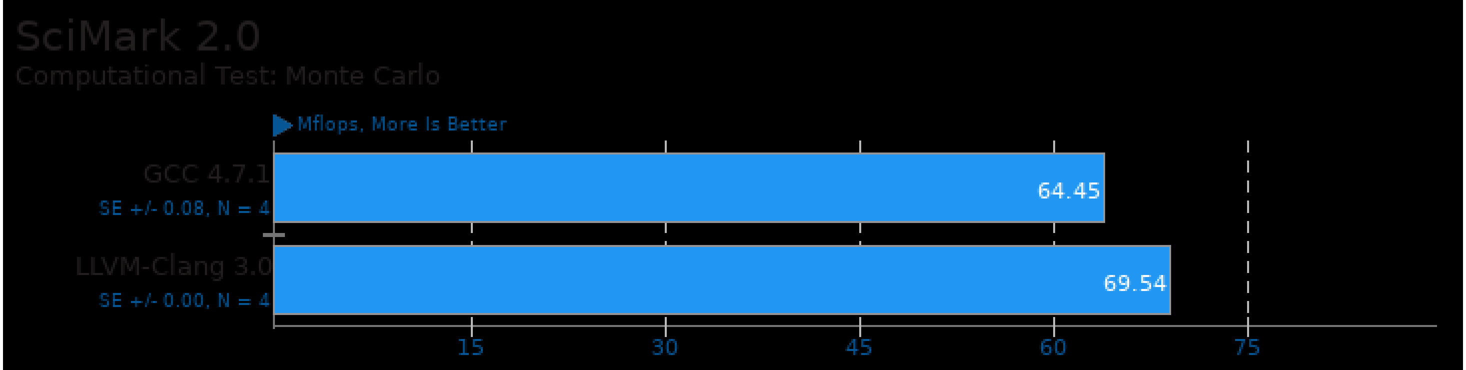

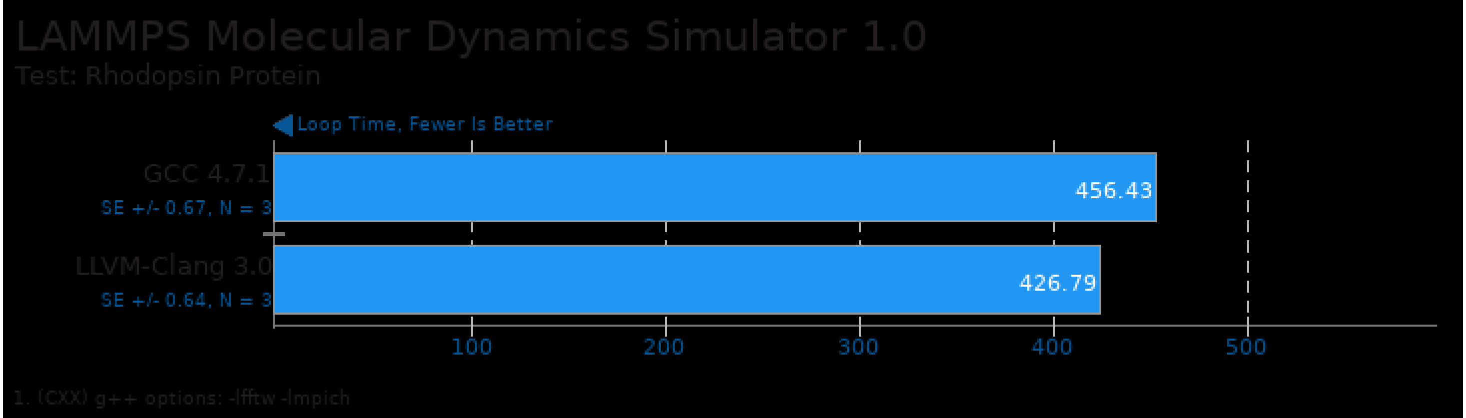

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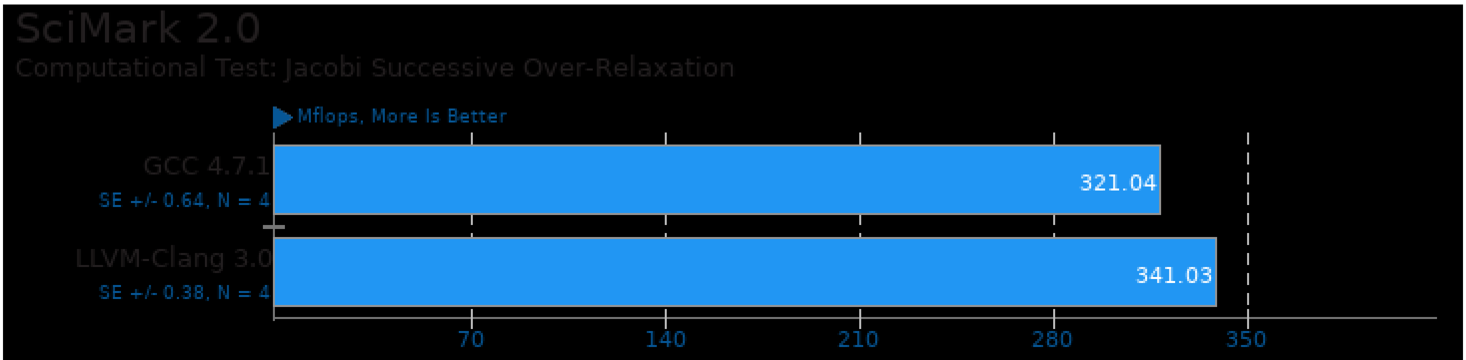

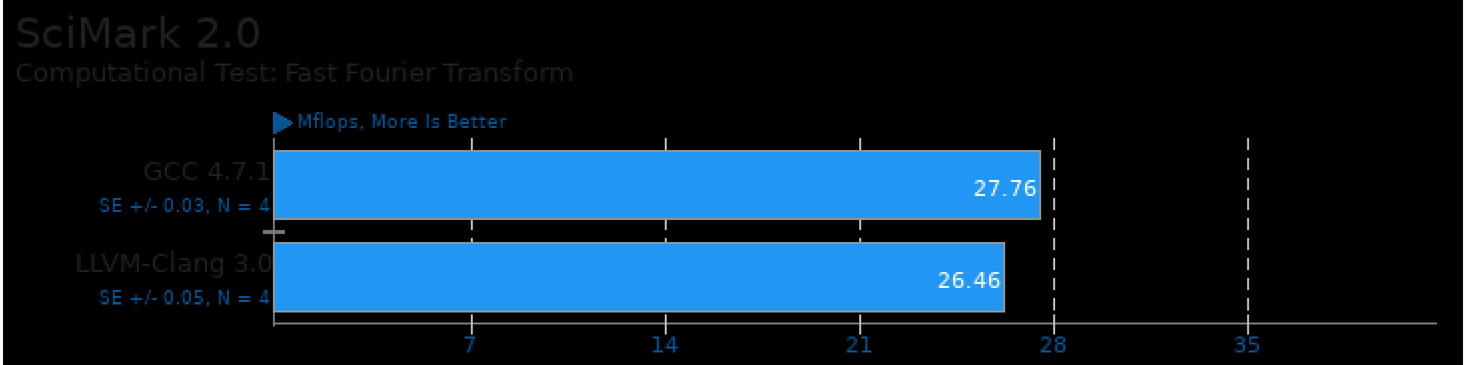

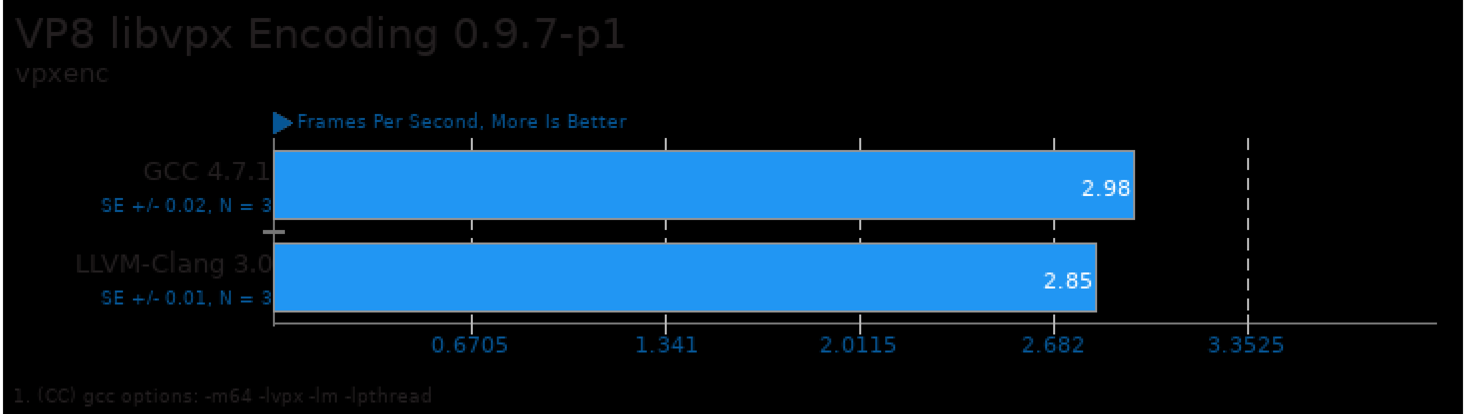

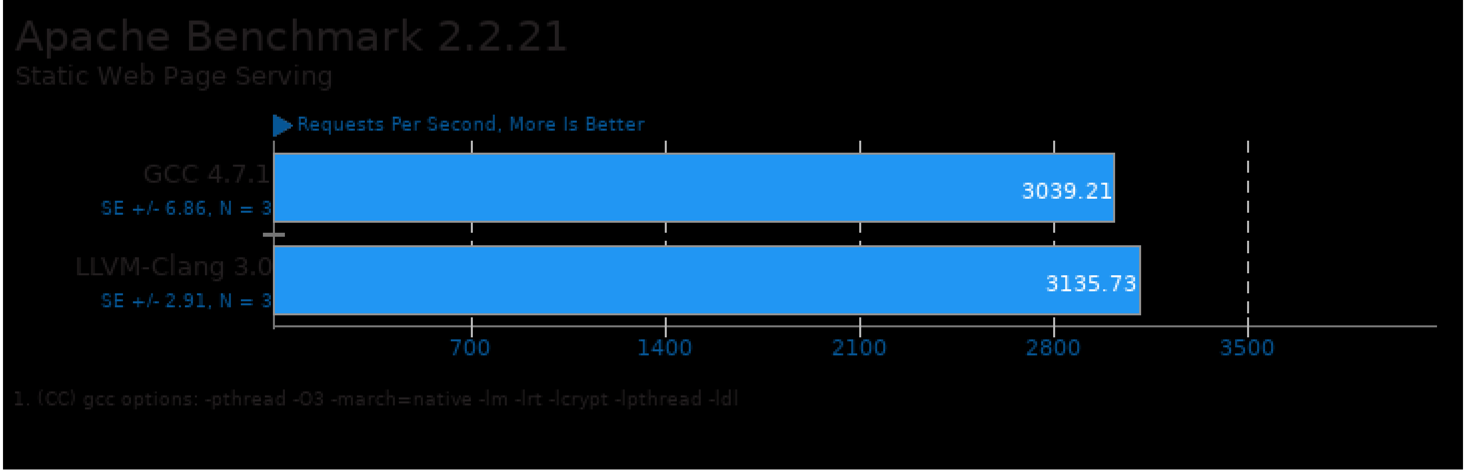

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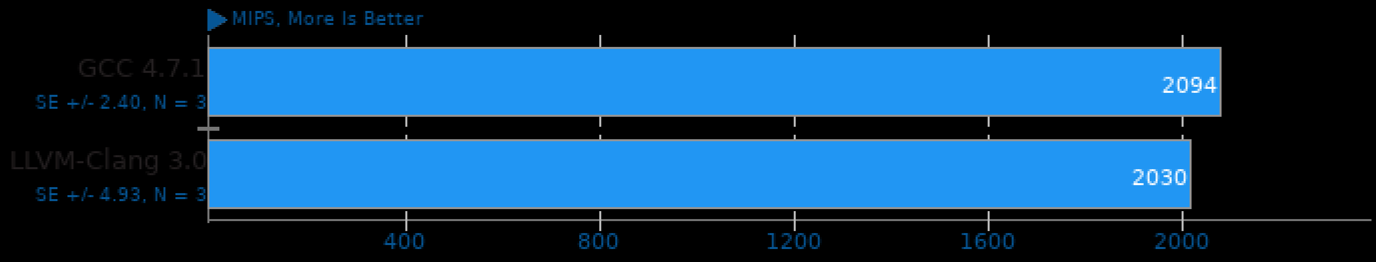
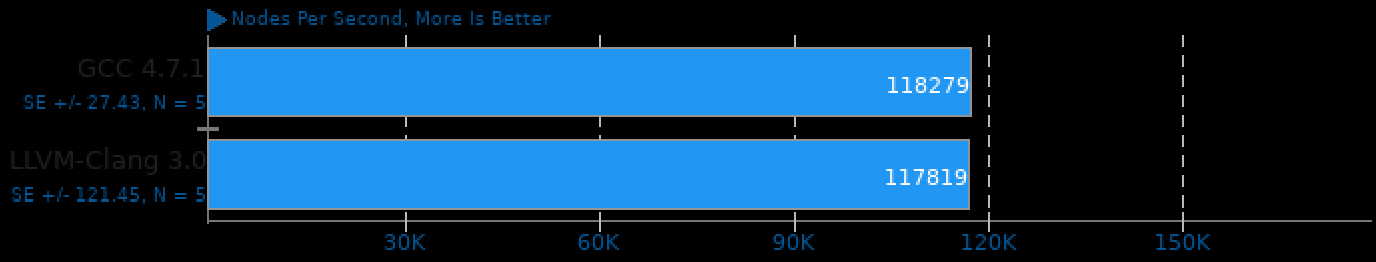
7-Zip Compression 9.20.1
Compress Speed Test

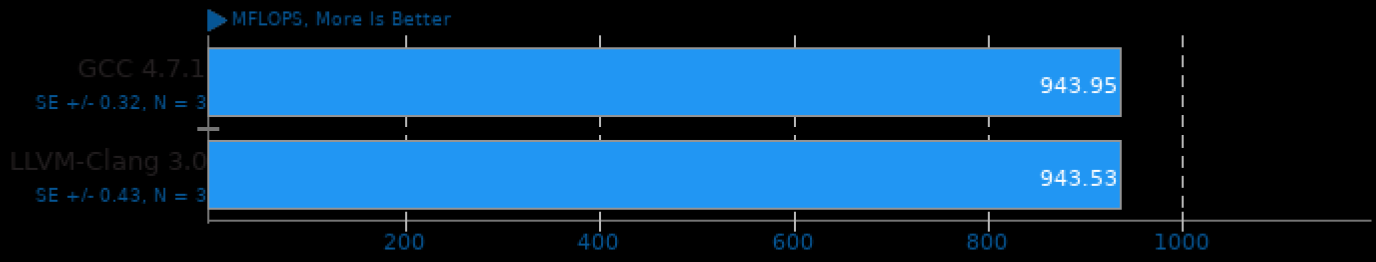


1. (CXX) g++ options: -pipe -lpthread

TSCP 1.81
AI Chess Performance

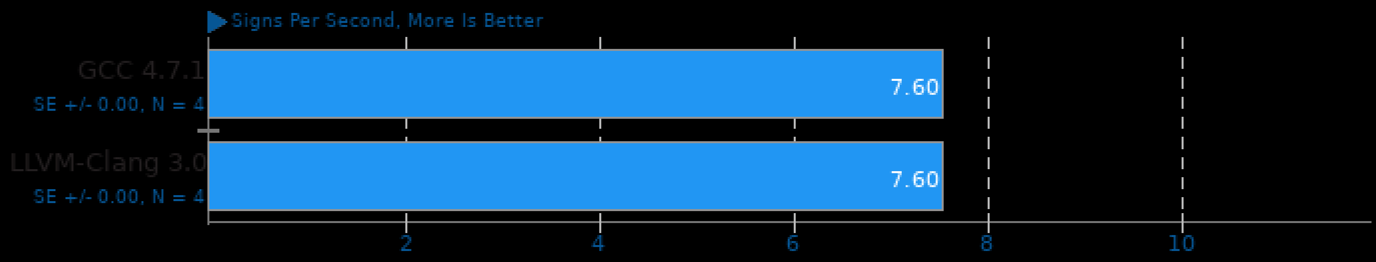


FFTE 5.0
Test: N=64, 1D Complex FFT Routine

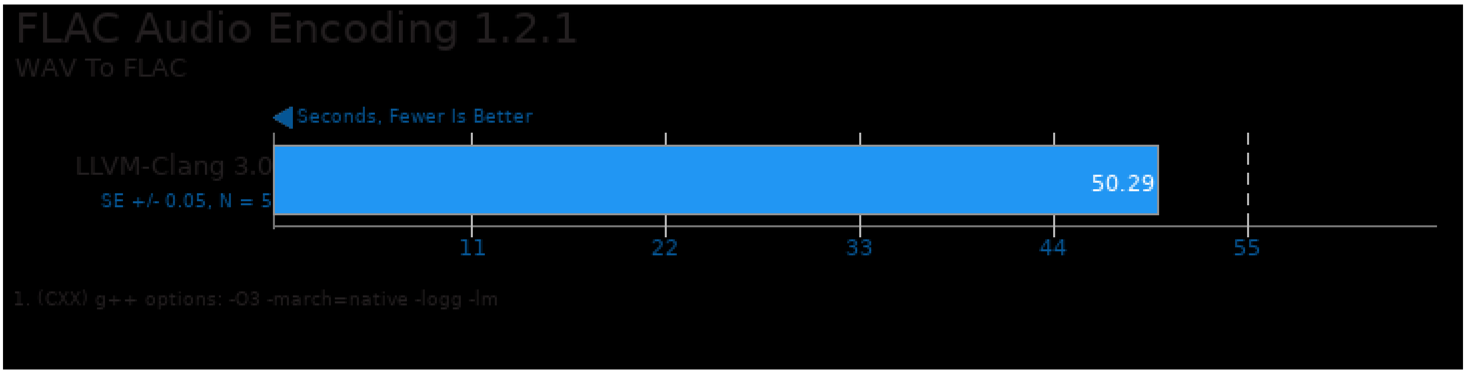


1. (F9X) gfortran options: -O3 -fomit-frame-pointer -fopenmp -lmpichf90 -lmpich -lopa -lmpl -lrt -lcr -lpthread

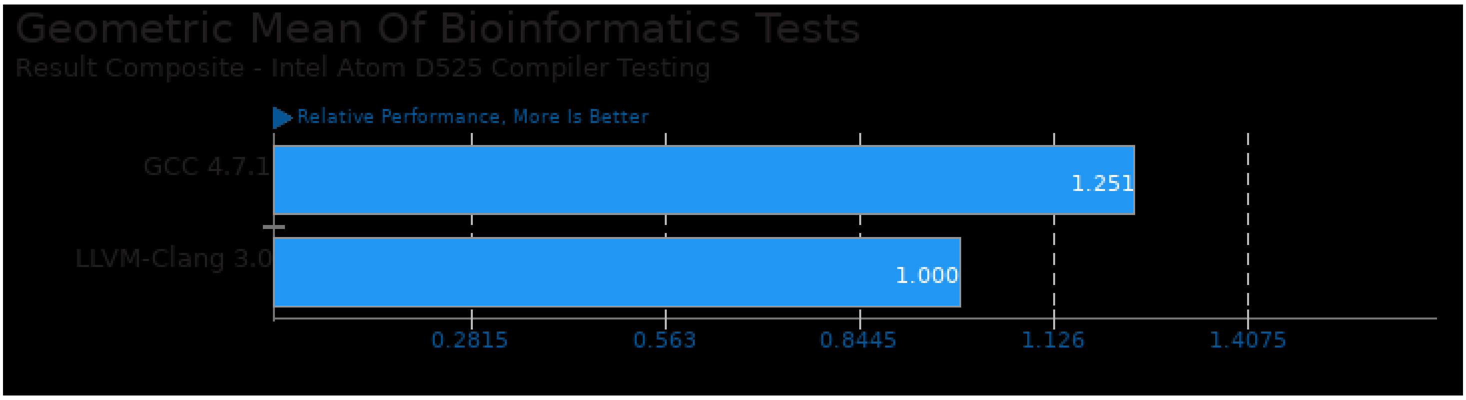
OpenSSL 1.0.0e
RSA 4096-bit Performance



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

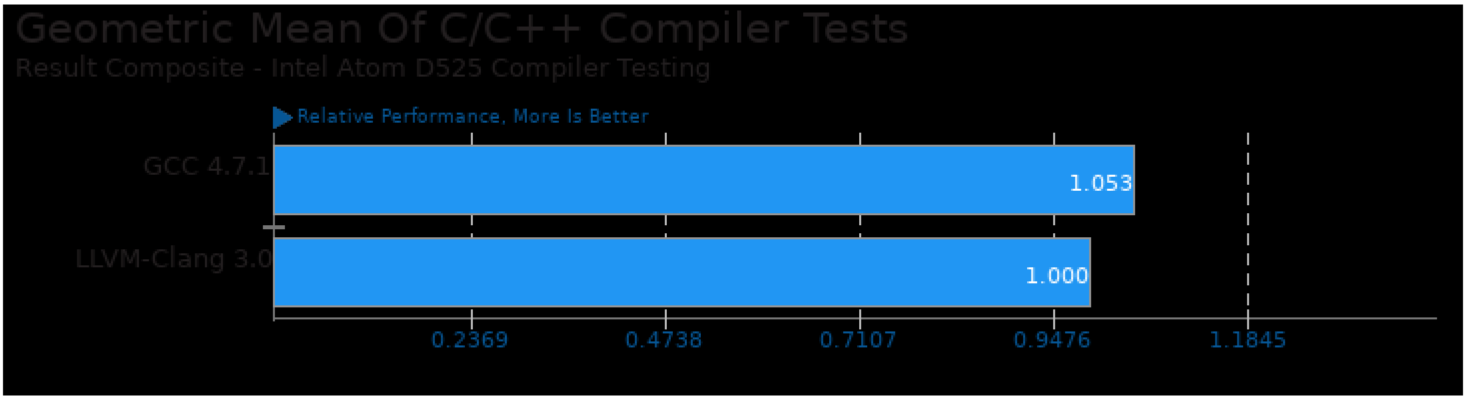

FLAC Audio Encoding 1.2.1
WAV To FLAC
Seconds, Fewer Is Better
LLVM-Clang 3.0
SE +/- 0.05, N = 5
50.29
11
22
33
44
55
1. (CXX) g++ options: -O3 -march=native -logg -lm

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

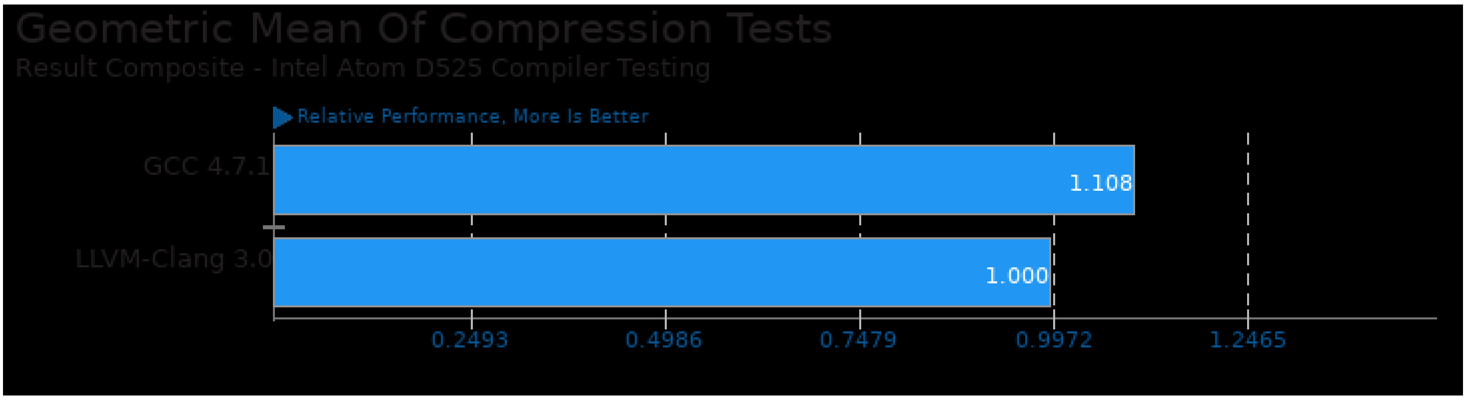


Geometric mean based upon tests: pts/himeno, pts/hmmer and pts/mafft

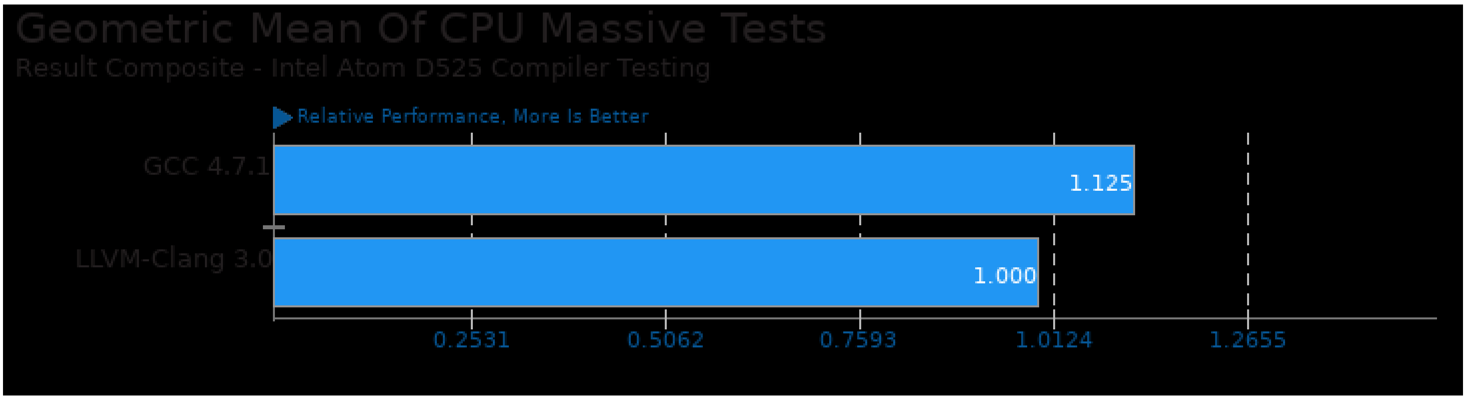
Geometric mean based upon tests: pts/crafty and pts/tscp



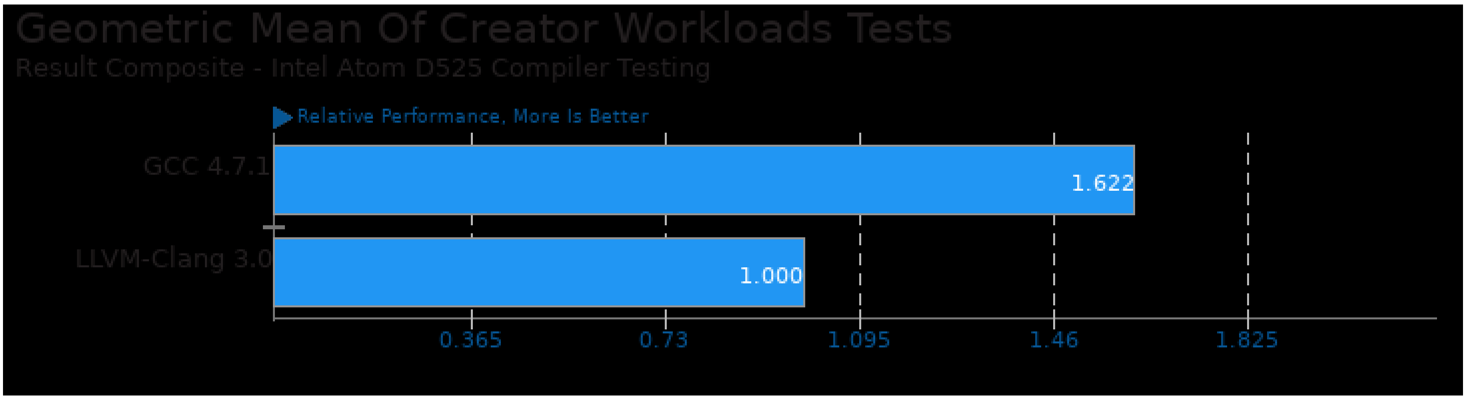
Geometric mean based upon tests: pts/mafft, pts/scimark2, pts/tscp, pts/vpxenc, pts/himeno, pts/hmmer, pts/c-ray, pts/compress-7zip, pts/encode-mp3, pts/encode-flac, pts/apache, pts/openssl and pts/lammps



Geometric mean based upon tests: pts/compress-7zip and pts/compress-pbzip2

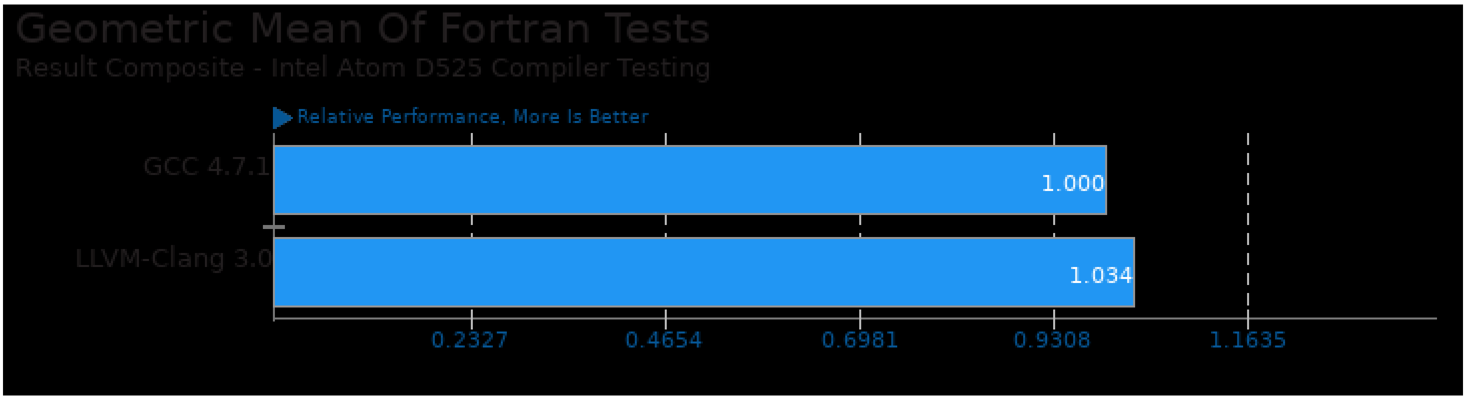


Geometric mean based upon tests: pts/apache, pts/c-ray, pts/compress-7zip, pts/compress-pbzip2, pts/crafty, pts/vpxenc, pts/encode-flac, pts/encode-mp3, pts/himeno, pts/hmmer, pts/openssl, pts/lammps and pts/mafft

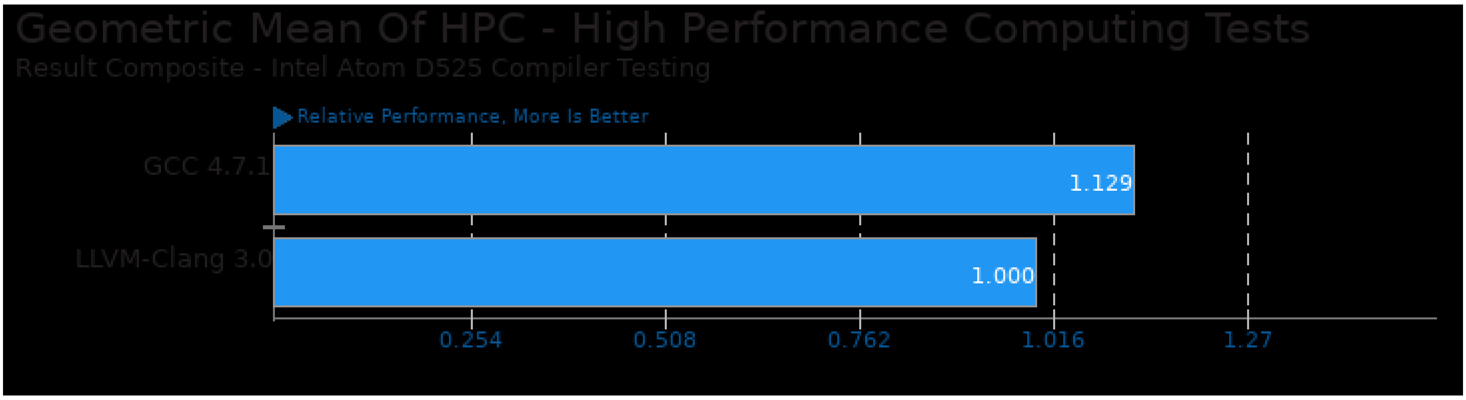


Geometric mean based upon tests: pts/c-ray, pts/smallpt, pts/vpxenc, pts/encode-mp3 and pts/encode-flac

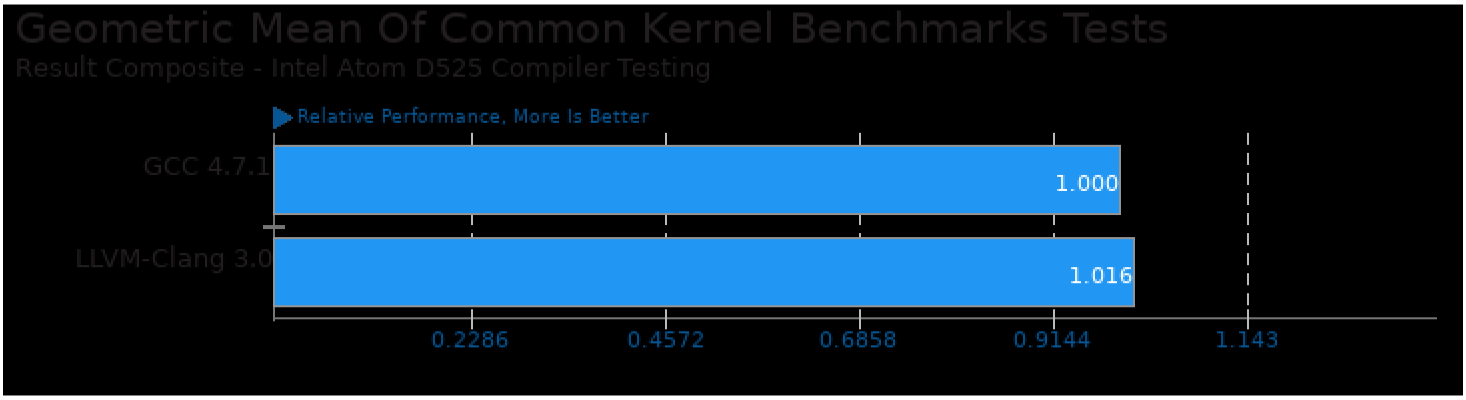
Geometric mean based upon tests: pts/encode-mp3, pts/encode-flac and pts/vpxenc



Geometric mean based upon tests: pts/lammps and pts/ffte



Geometric mean based upon tests: pts/ffte, pts/lammps, pts/himeno, pts/hmmer and pts/mafft



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

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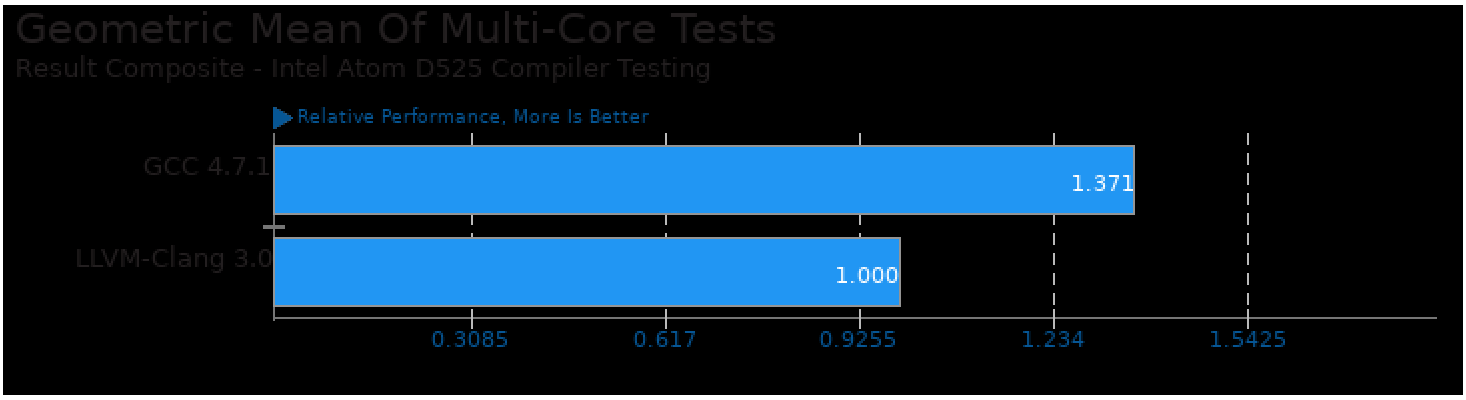
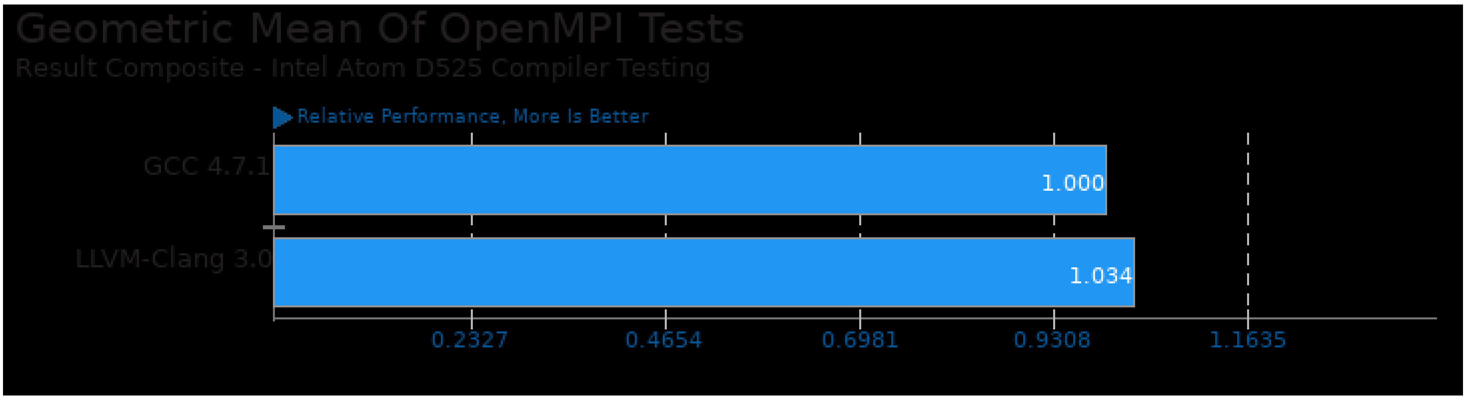
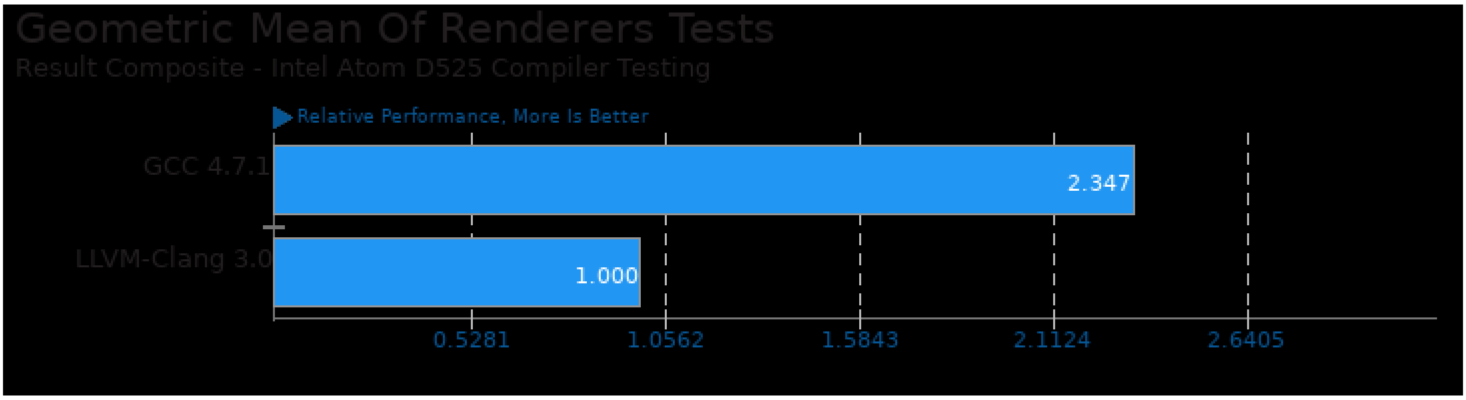


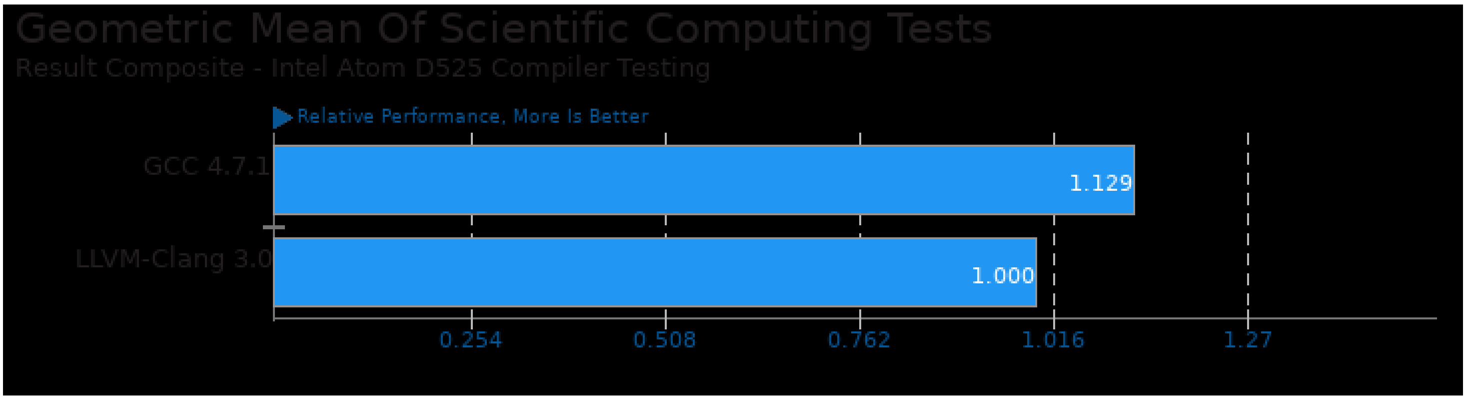
Geometric mean based upon tests: pts/c-ray, pts/vpxenc, pts/smallpt, pts/lammps, pts/compress-7zip and pts/compress-pbzip2



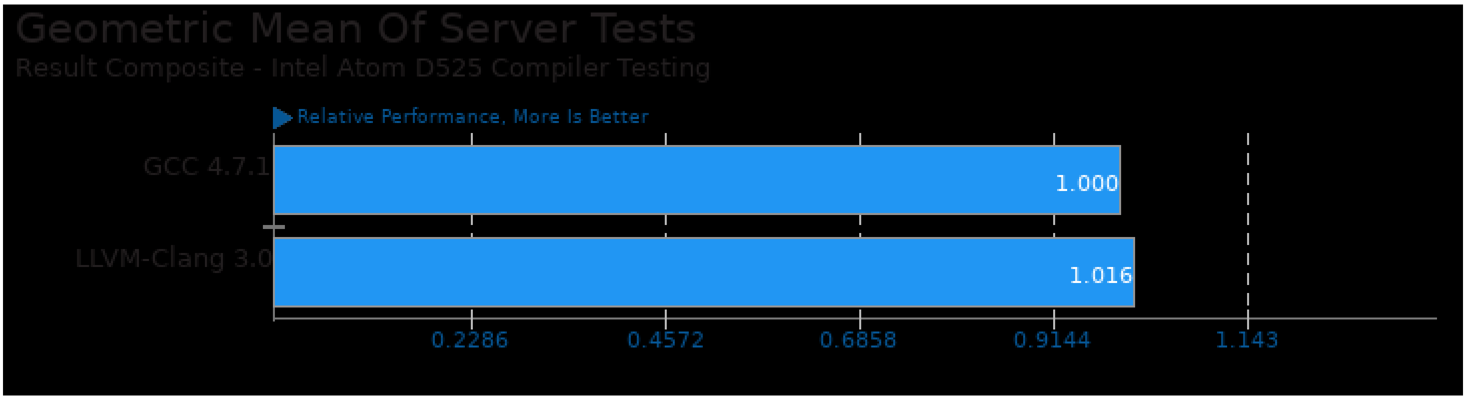
Geometric mean based upon tests: pts/lammps and pts/ffte



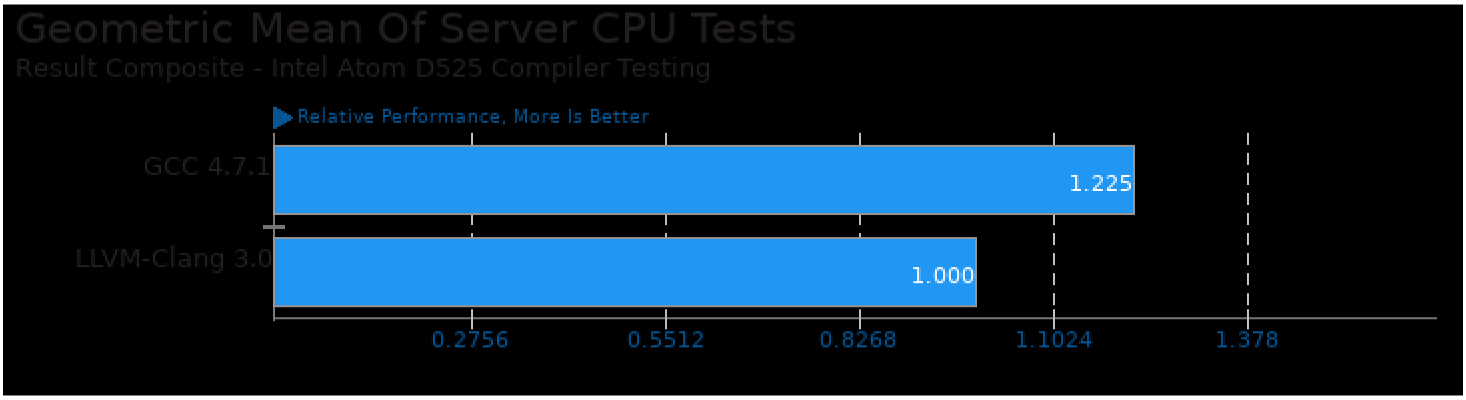
Geometric mean based upon tests: pts/c-ray and pts/smallpt



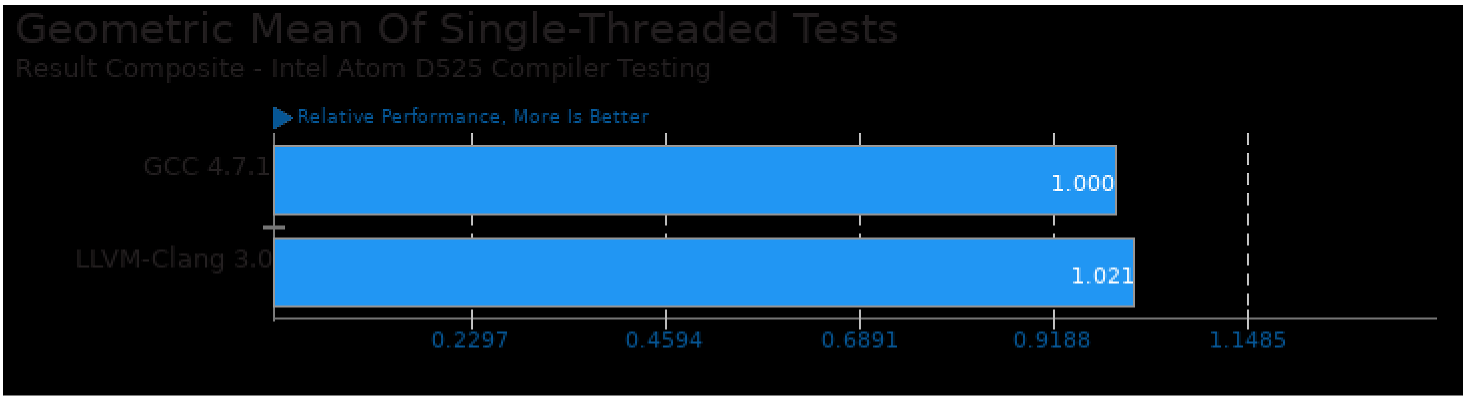
Geometric mean based upon tests: pts/ffte, pts/lammps, pts/himeno, pts/hmmer and pts/mafft



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



Geometric mean based upon tests: pts/himeno, pts/compress-7zip, pts/c-ray and pts/openssl



Geometric mean based upon tests: pts/scimark2, pts/encode-flac and pts/encode-mp3

This file was automatically generated via the Phoronix Test Suite benchmarking software on Friday, 29 March 2024 06:40.