

www.phoronix-test-suite.com

2019-03-17-0116

wsl testing on Ubuntu 20.04 via the Phoronix Test Suite.

Automated Executive Summary

NVIDIA GeForce GTX 1050 Ti had the most wins, coming in first place for 78% of the tests.

Based on the geometric mean of all complete results, the fastest (NVIDIA GeForce GTX 1050 Ti) was 1.092x the speed of the slowest (i9-9900K in WSL2 on HWRAID1 SSD). Intel Core i9-9900K was 0.966x the speed of NVIDIA GeForce GTX 1050 Ti and i9-9900K in WSL2 on HWRAID1 SSD was 0.948x the speed of Intel Core i9-9900K.

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

TSCP (AI Chess Performance) at 1.359x
7-Zip Compression (Compress Speed Test) at 1.272x
C-Ray (Total Time - 4K, 16 Rays Per Pixel) at 1.19x
Crafty (Elapsed Time) at 1.143x
FLAC Audio Encoding (WAV To FLAC) at 1.139x
Parallel BZIP2 Compression (256MB File Compression) at 1.139x
OpenSSL (RSA 4096-bit Performance) at 1.095x
LAME MP3 Encoding (WAV To MP3) at 1.076x
TTSIOD 3D Renderer (Phong Rendering With Soft-Shadow Mapping) at 1.059x

GraphicsMagick (Sharpen) at 1.058x.

Test Systems:

NVIDIA GeForce GTX 1050 Ti

Processor: Intel Core i9-9900K @ 5.00GHz (8 Cores / 16 Threads), Motherboard: Gigabyte Z390 I AORUS PRO WIFI-CF (F1 BIOS), Chipset: Intel Cannon Lake PCH Shared SRAM, Memory: 32768MB, Disk: Samsung SSD 970 EVO 250GB + 1000GB Samsung SSD 850 + 256GB Samsung SSD 840, Graphics: NVIDIA GeForce GTX 1050 Ti 4GB (1290/3504MHz), Audio: Realtek ALC1220, Network: Intel I219-V + Intel-AC 9560

OS: Ubuntu 18.04, Kernel: 4.20.8-042008-generic (x86_64), Desktop: GNOME Shell 3.28.3, Display Server: X Server 1.19.6, Display Driver: NVIDIA 418.43, OpenGL: 4.6.0, Compiler: GCC 8.2.0 + CUDA 10.0, File-System: ext4 (ecryptfs), Screen Resolution: 3840x1080

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
Security Notes: __user pointer sanitization + Full generic retpoline IBPB: conditional IBRS_FW STIBP: conditional RSB filling + SSB disabled via prctl and seccomp

Intel Core i9-9900K

Processor: Intel Core i9-9900K @ 5.00GHz (8 Cores / 16 Threads), Motherboard: Gigabyte Z390 I AORUS PRO WIFI-CF (F1 BIOS), Chipset: Intel Cannon Lake PCH Shared SRAM, Memory: 32768MB, Disk: Samsung SSD 970 EVO 250GB + 1000GB Samsung SSD 850 + 256GB Samsung SSD 840, Graphics: NVIDIA GeForce GTX 1050 Ti 4GB (1290/3504MHz), Audio: Realtek ALC1220, Network: Intel I219-V + Intel-AC 9560

OS: Ubuntu 18.04, Kernel: 4.20.17-042017-generic (x86_64), Desktop: GNOME Shell 3.28.4, Display Server: X Server 1.19.6, Display Driver: NVIDIA 418.43, OpenGL: 4.6.0, Compiler: GCC 7.4.0 + CUDA 10.0, File-System: ext4 (ecryptfs), Screen Resolution: 3840x1080

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
Security Notes: __user pointer sanitization + Full generic retpoline IBPB: conditional IBRS_FW STIBP: conditional RSB filling + SSB disabled via prctl and seccomp

i9-9900K in WSL2 on HWRAID1 SSD

Processor: Intel Core i9-9900K (8 Cores / 16 Threads), Memory: 16GB, Disk: 2 x 275GB Virtual Disk, Graphics: NVIDIA GeForce RTX 2080 SUPER 8GB

OS: Ubuntu 20.04, Kernel: 5.10.60.1-microsoft-standard-WSL2 (x86_64), Desktop: Openbox, Display Server: X Server 1.20.11, Compiler: GCC 10.3.0 + Clang 10.0.0-4ubuntu1 + LLVM 10.0.0 + CUDA 11.5, File-System: ext4, System Layer: wsl

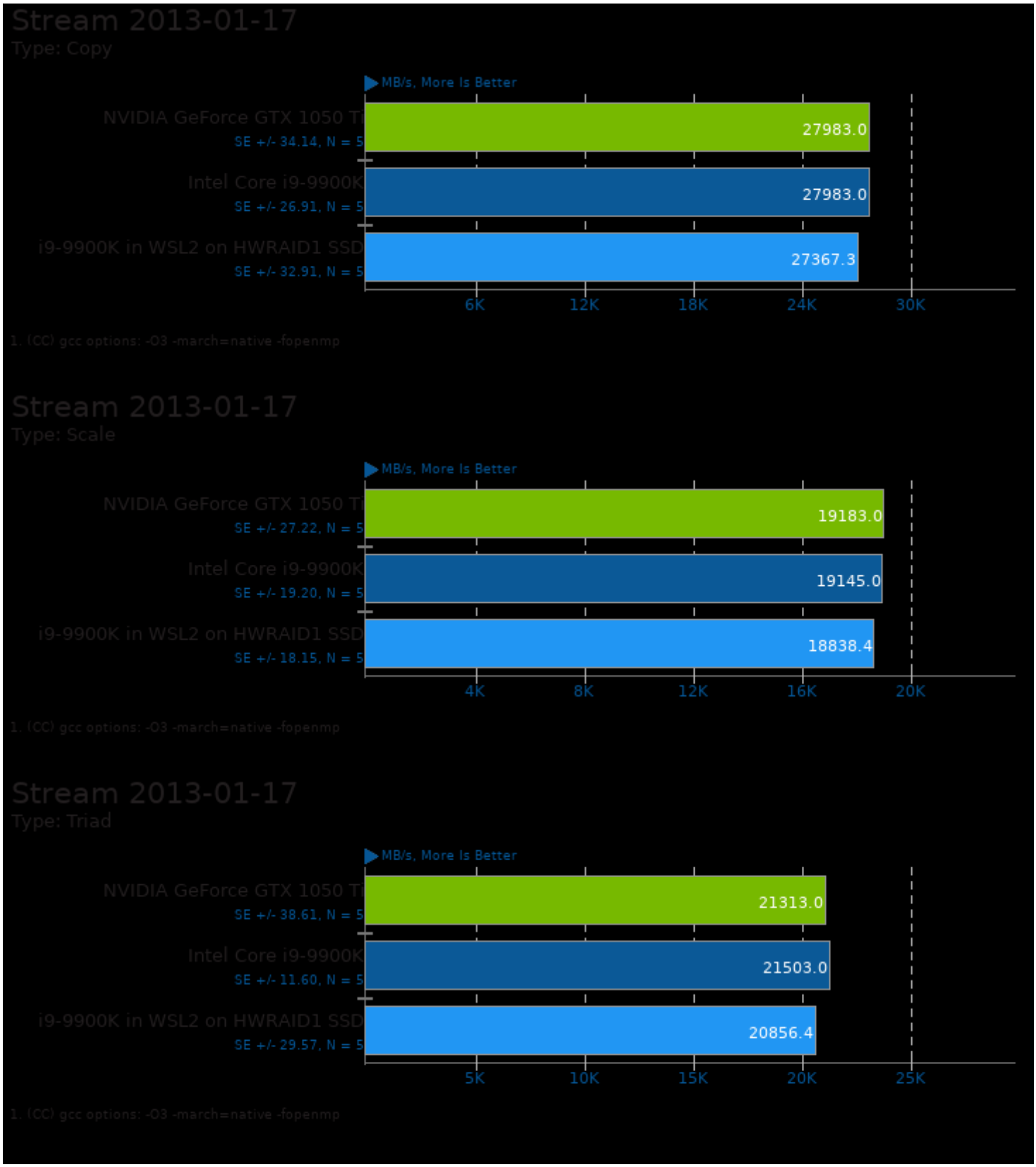
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Kernel Notes: Transparent Huge Pages: always
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-link-mutex --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-10-S4I5Pr/gcc-10-10.3.0/debian/tmp-nvptx/usr,amdgcn-amdhsa=/build/gcc-10-S4I5Pr/gcc-10-10.3.0/debian/tmp-gcn/usr,hsa --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-build-config=bootstrap-lto-lean --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic --without-cuda-driver -v
Processor Notes: CPU Microcode: 0xffffffff
Security Notes: itlb_multihit: KVM: Mitigation of VMX disabled + l1tf: Not affected + mds: Vulnerable: Clear buffers attempted no microcode; SMT Host state unknown + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Full generic retpoline IBPB: conditional IBRS_FW STIBP: conditional RSB filling + srbds: Unknown: Dependent on hypervisor status + tsx_async_abort: Vulnerable: Clear buffers attempted no microcode; SMT Host state unknown

	NVIDIA GeForce GTX 1050 Ti	Intel Core i9-9900K	i9-9900K in WSL2 on HWRAID1 SSD
Stream - Copy (MB/s)	**27983**	**27983**	**27367**
Normalized	100%	100%	97.8%
Standard Deviation	0.3%	0.2%	0.3%
Stream - Scale (MB/s)	**19183**	19145	**18838**
Normalized	100%	99.8%	98.2%
Standard Deviation	0.3%	0.2%	0.2%
Stream - Triad (MB/s)	21313	**21503**	**20856**
Normalized	99.12%	100%	96.99%
Standard Deviation	0.4%	0.1%	0.3%
Stream - Add (MB/s)	21373	**21552**	**20837**
Normalized	99.17%	100%	96.68%
Standard Deviation	0.4%	0.2%	0.4%
Timed MAFFT Alignment - M.S.A (sec)	**2.66**	**2.74**	
Normalized	100%	97.08%	
Standard Deviation	7.6%	9.5%	
Crafty - Elapsed Time (Nodes/s)	**9092411**	8906021	**7955067**
Normalized	100%	97.95%	87.49%
Standard Deviation	0.2%	0.6%	0.2%
TSCP - A.C.P (Nodes/s)	1518151	**1524890**	**1121696**
Normalized	99.56%	100%	73.56%
Standard Deviation	0.4%	0.5%	2.1%
TTSIOD 3D Renderer - P.R.W.S.S.M (FPS)	**415**	**392**	
Normalized	100%	94.46%	
Standard Deviation	0.7%	2.5%	
x264 - H.2.V.E (FPS)	**87.17**	**85.74**	
Normalized	100%	98.36%	
Standard Deviation	3.4%	3.3%	
GraphicsMagick - HWB Color Space (Iterations/min)	**298**	294	**292**
Normalized	100%	98.66%	97.99%
Standard Deviation		0.6%	0.2%
GraphicsMagick - L.A.T (Iterations/min)	**126**	**121**	123
Normalized	100%	96.03%	97.62%
GraphicsMagick - Sharpen (Iterations/min)	**219**	209	**207**
Normalized	100%	95.43%	94.52%
Standard Deviation		0.7%	0.5%
GraphicsMagick - Resizing (Iterations/min)	**276**	273	**271**
Normalized	100%	98.91%	98.19%

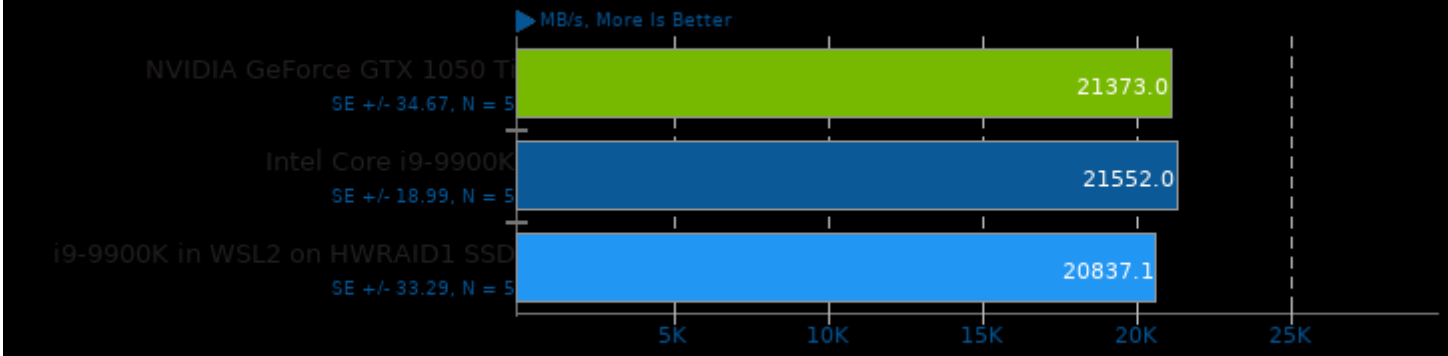
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Himeno Benchmark - P.P.S (MFLOPS)	**3115**	**2729**	2789
Normalized	100%	87.61%	89.54%
Standard Deviation	0.2%	10%	1.9%
7-Zip Compression - C.S.T (MIPS)	**48772**	46964	**38342**
Normalized	100%	96.29%	78.61%
Standard Deviation	1.3%	0.7%	1.7%
C-Ray - Total Time - 4.1.R.P.P (sec)	**79.10**	**94.13**	88.977
Normalized	100%	84.03%	88.9%
Standard Deviation	0.7%	0.9%	0.3%
Parallel BZIP2 Compression - 2.F.C (sec)	**4.21**	4.54	**4.794**
Normalized	100%	92.73%	87.82%
Standard Deviation	3.5%	4.7%	2.2%
POV-Ray - Trace Time (sec)	**52.95**	**54.64**	
Normalized	100%	96.91%	
Standard Deviation	0.7%	1.2%	
Smallpt - G.I.R.1.S (sec)	**12.42**	13.10	**13.132**
Normalized	100%	94.81%	94.58%
Standard Deviation	0.6%	1.6%	1.2%
FLAC Audio Encoding - WAV To FLAC (sec)	7.97	**7.92**	**9.022**
Normalized	99.37%	100%	87.79%
Standard Deviation	0.4%	0.4%	3.2%
LAME MP3 Encoding - WAV To MP3 (sec)	**25.46**	25.89	**27.383**
Normalized	100%	98.34%	92.98%
Standard Deviation	0.1%	0.5%	0.6%
FFmpeg - H.2.H.T.N.D (sec)	**5.11**	**5.09**	
Normalized	99.61%	100%	
Standard Deviation	2.8%	0.9%	
OpenSSL - R.4.b.P (Signs/sec)	**2512**	2455	**2293**
Normalized	100%	97.73%	91.29%
Standard Deviation	1%	1.1%	2%


Stream 2013-01-17
Type: Copy
MB/s, More Is Better
NVIDIA GeForce GTX 1050 Ti
SE +/- 34.14, N = 5
27983.0
Intel Core i9-9900K
SE +/- 26.91, N = 5
27983.0
i9-9900K in WSL2 on HWRAID1 SSD
SE +/- 32.91, N = 5
27367.3
6K
12K
18K
24K
30K
1. (CC) gcc options: -O3 -march=native -fopenmp
Stream 2013-01-17
Type: Scale
MB/s, More Is Better
NVIDIA GeForce GTX 1050 Ti
SE +/- 27.22, N = 5
19183.0
Intel Core i9-9900K
SE +/- 19.20, N = 5
19145.0
i9-9900K in WSL2 on HWRAID1 SSD
SE +/- 18.15, N = 5
18838.4
4K
8K
12K
16K
20K
1. (CC) gcc options: -O3 -march=native -fopenmp
Stream 2013-01-17
Type: Triad
MB/s, More Is Better
NVIDIA GeForce GTX 1050 Ti
SE +/- 38.61, N = 5
21313.0
Intel Core i9-9900K
SE +/- 11.60, N = 5
21503.0
i9-9900K in WSL2 on HWRAID1 SSD
SE +/- 29.57, N = 5
20856.4
5K
10K
15K
20K
25K
1. (CC) gcc options: -O3 -march=native -fopenmp

Stream 2013-01-17

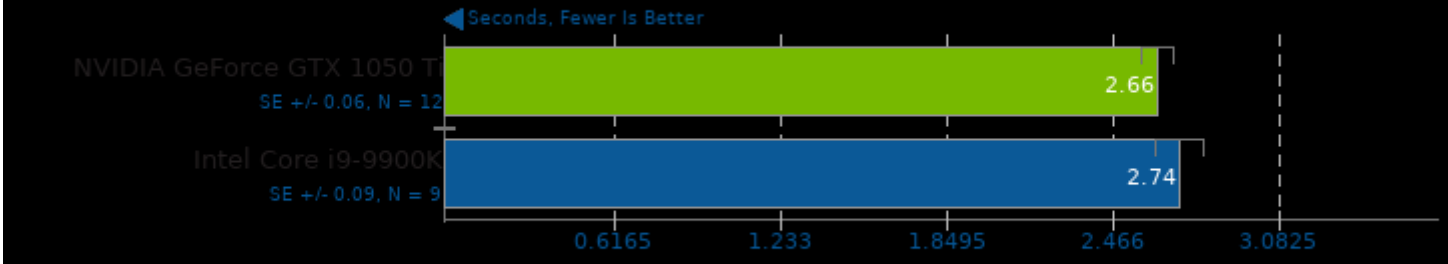
Type: Add



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

Timed MAFFT Alignment 7.392

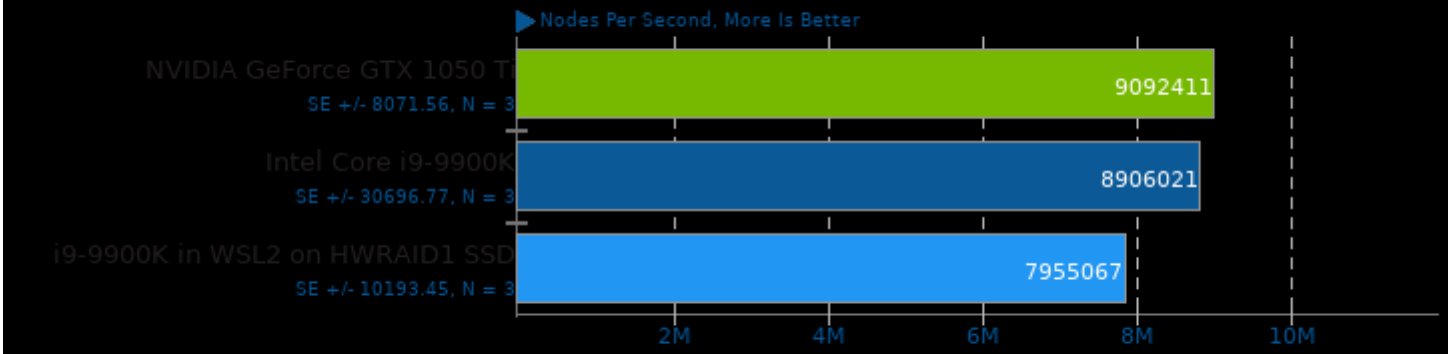
Multiple Sequence Alignment



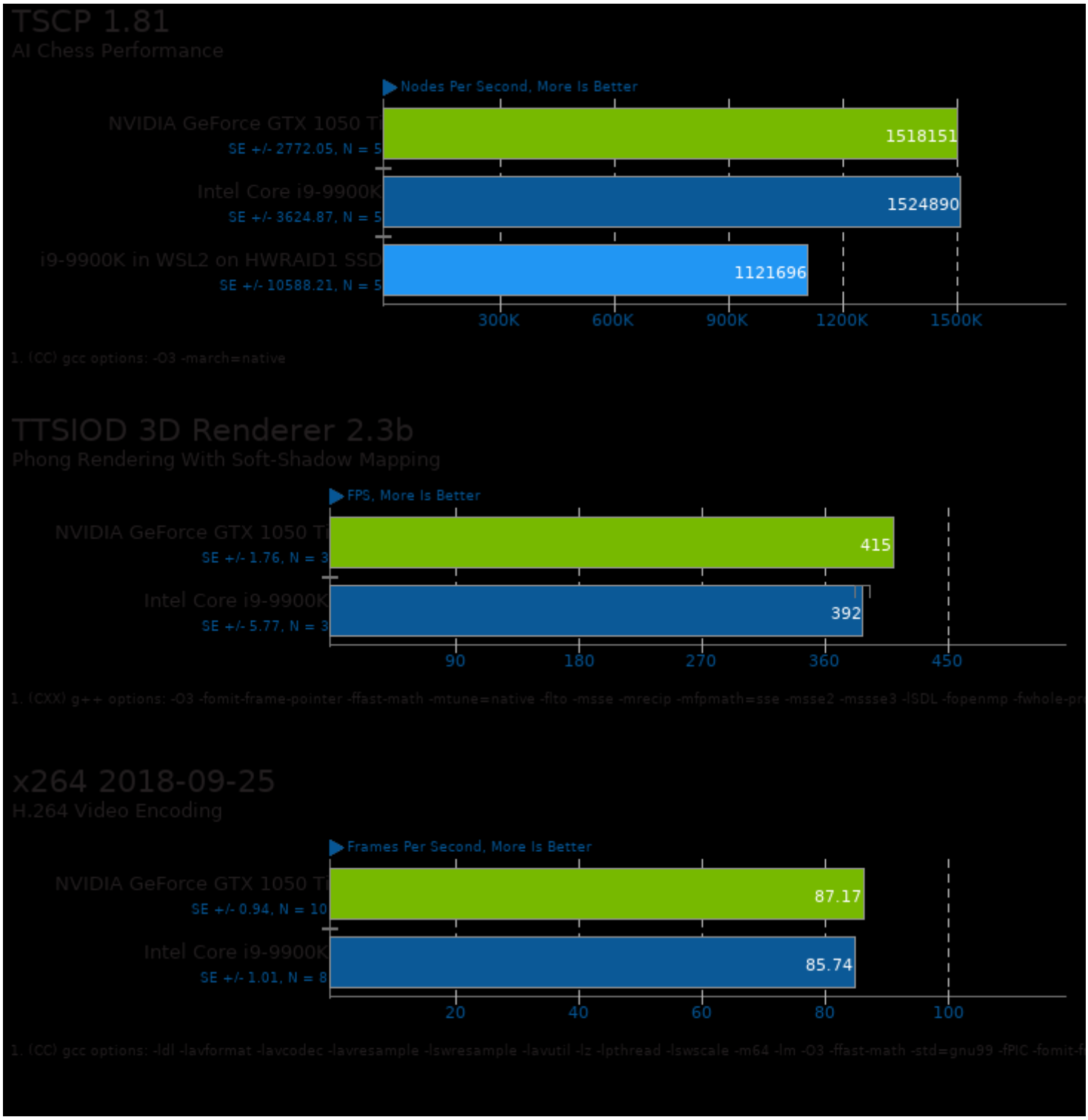
1. (CC) gcc options: -std=c99 -O3 -lm -lpthread

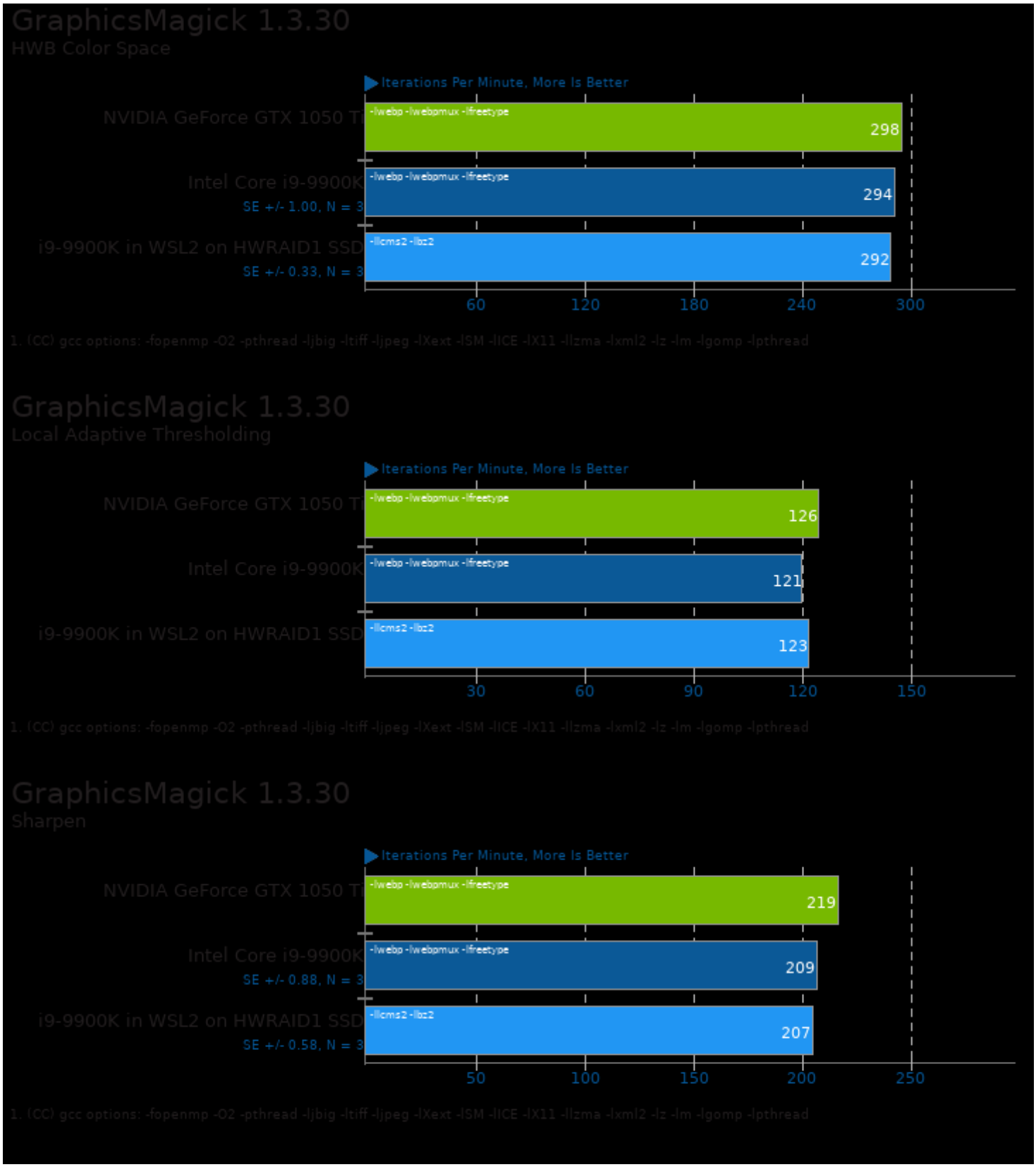
Crafty 25.2

Elapsed Time



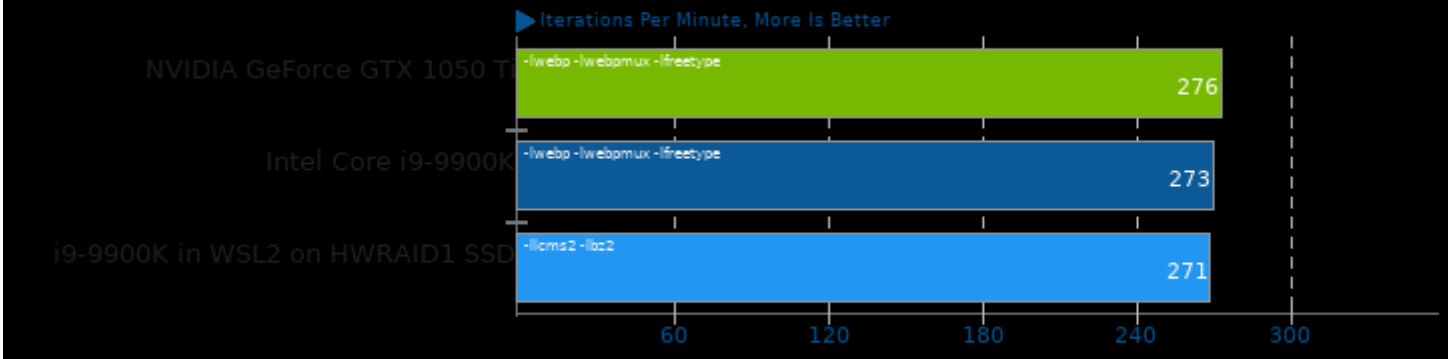
1. (CC) gcc options: -pthread -lstdc++ -fprofile-use -lm


TSCP 1.81
AI Chess Performance
Nodes Per Second, More Is Better
NVIDIA GeForce GTX 1050 Ti
SE +/- 2772.05, N = 5
1518151
Intel Core i9-9900K
SE +/- 3624.87, N = 5
1524890
i9-9900K in WSL2 on HWRAID1 SSD
SE +/- 10588.21, N = 5
1121696
300K
600K
900K
1200K
1500K
1. (CC) gcc options: -O3 -march=native
TTSIOD 3D Renderer 2.3b
Phong Rendering With Soft-Shadow Mapping
FPS, More Is Better
NVIDIA GeForce GTX 1050 Ti
SE +/- 1.76, N = 3
415
Intel Core i9-9900K
SE +/- 5.77, N = 3
392
90
180
270
360
450
1. (CXX) g++ options: -O3 -fomit-frame-pointer -ffast-math -mtune=native -flto -msse -mrecip -mfpmath=sse -msse2 -mssse3 -lSDL -fopenmp -fwhole-pr
x264 2018-09-25
H.264 Video Encoding
Frames Per Second, More Is Better
NVIDIA GeForce GTX 1050 Ti
SE +/- 0.94, N = 10
87.17
Intel Core i9-9900K
SE +/- 1.01, N = 8
85.74
20
40
60
80
100
1. (CC) gcc options: -ldl -lavformat -lavcodec -lavresample -lswresample -lavutil -lz -lpthread -lswscale -m64 -lm -O3 -ffast-math -std=gnu99 -fPIC -fomit-f


GraphicsMagick 1.3.30
HWB Color Space
Iterations Per Minute, More Is Better
NVIDIA GeForce GTX 1050 Ti
-lwebp -lwebpmux -lfreetype
298
Intel Core i9-9900K
-lwebp -lwebpmux -lfreetype
294
SE +/- 1.00, N = 3
i9-9900K in WSL2 on HWRAID1 SSD
-llcms2 -lbz2
292
SE +/- 0.33, N = 3
60
120
180
240
300
1. (CC) gcc options: -fopenmp -O2 -pthread -ljbig -ltiff -ljpeg -lXext -lSM -lICE -lX11 -llzma -lxml2 -lz -lm -lgomp -lpthread
GraphicsMagick 1.3.30
Local Adaptive Thresholding
Iterations Per Minute, More Is Better
NVIDIA GeForce GTX 1050 Ti
-lwebp -lwebpmux -lfreetype
126
Intel Core i9-9900K
-lwebp -lwebpmux -lfreetype
121
i9-9900K in WSL2 on HWRAID1 SSD
-llcms2 -lbz2
123
30
60
90
120
150
1. (CC) gcc options: -fopenmp -O2 -pthread -ljbig -ltiff -ljpeg -lXext -lSM -lICE -lX11 -llzma -lxml2 -lz -lm -lgomp -lpthread
GraphicsMagick 1.3.30
Sharpen
Iterations Per Minute, More Is Better
NVIDIA GeForce GTX 1050 Ti
-lwebp -lwebpmux -lfreetype
219
Intel Core i9-9900K
-lwebp -lwebpmux -lfreetype
209
SE +/- 0.88, N = 3
i9-9900K in WSL2 on HWRAID1 SSD
-llcms2 -lbz2
207
SE +/- 0.58, N = 3
50
100
150
200
250
1. (CC) gcc options: -fopenmp -O2 -pthread -ljbig -ltiff -ljpeg -lXext -lSM -lICE -lX11 -llzma -lxml2 -lz -lm -lgomp -lpthread

GraphicsMagick 1.3.30

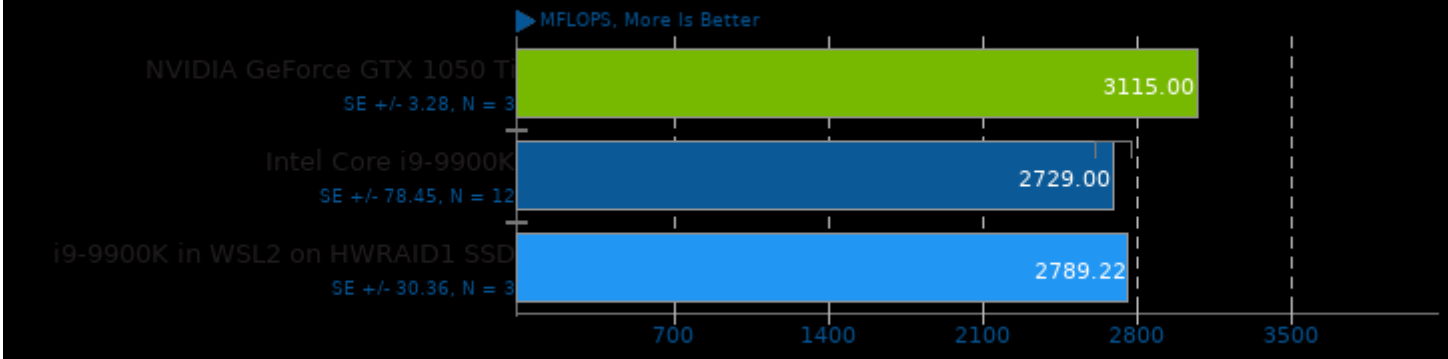
Resizing



1. (CC) gcc options: -fopenmp -O2 -pthread -ljbig -ltiff -ljpeg -lXext -lSM -lICE -lX11 -llzma -lxml2 -lz -lm -lgomp -lpthread

Himeno Benchmark 3.0

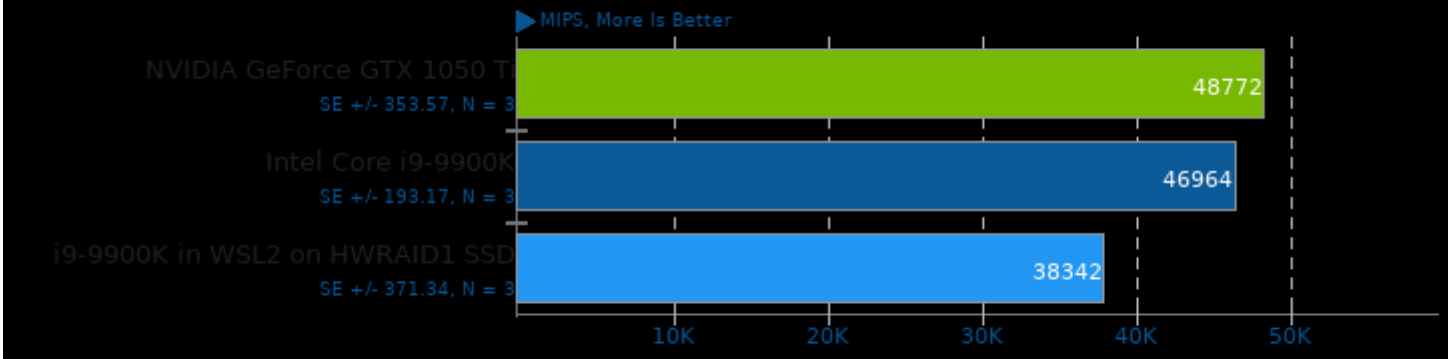
Poisson Pressure Solver



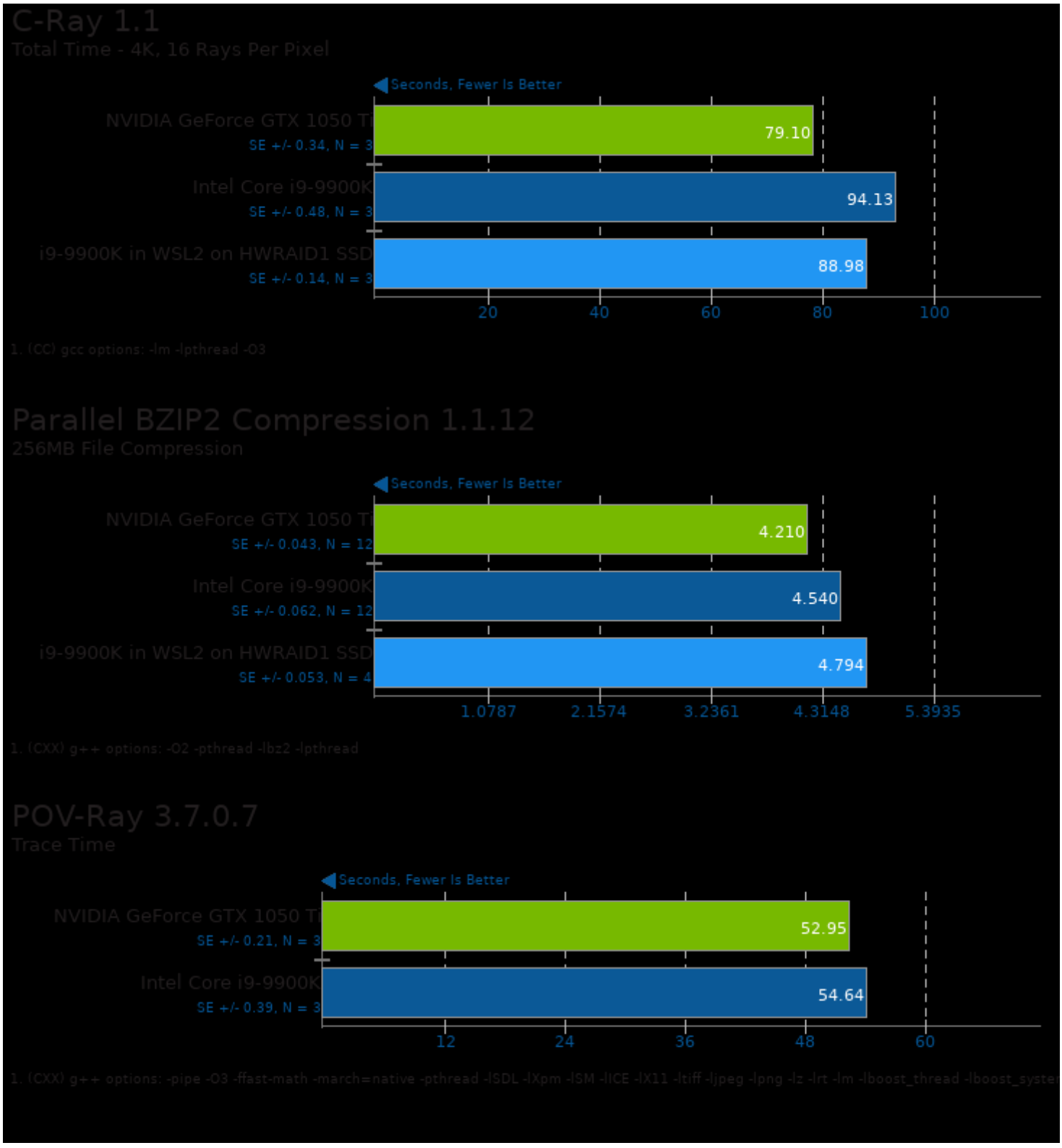
1. (CC) gcc options: -O3 -mavx2

7-Zip Compression 16.02

Compress Speed Test

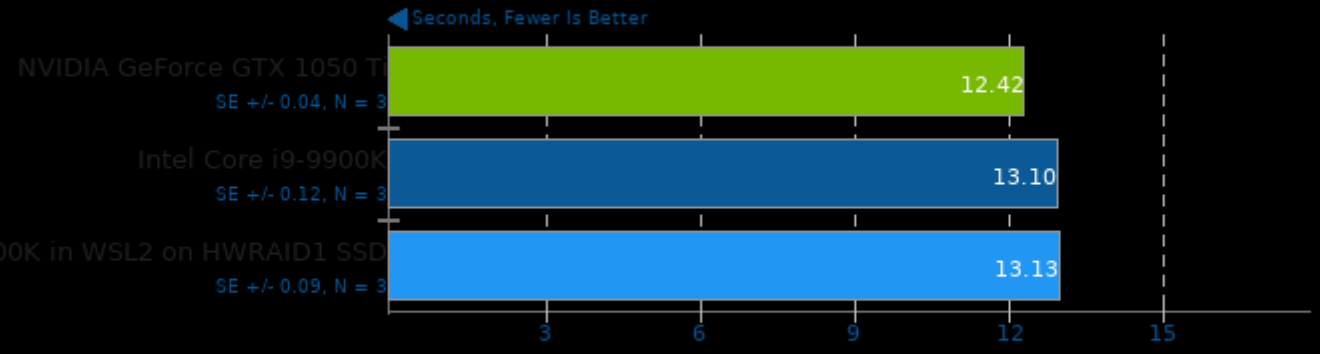


1. (CXX) g++ options: -pipe -lpthread


C-Ray 1.1
Total Time - 4K, 16 Rays Per Pixel
Seconds, Fewer Is Better
NVIDIA GeForce GTX 1050 Ti
SE +/- 0.34, N = 3
79.10
Intel Core i9-9900K
SE +/- 0.48, N = 3
94.13
i9-9900K in WSL2 on HWRAID1 SSD
SE +/- 0.14, N = 3
88.98
20
40
60
80
100
1. (CC) gcc options: -lm -lpthread -O3
Parallel BZIP2 Compression 1.1.12
256MB File Compression
Seconds, Fewer Is Better
NVIDIA GeForce GTX 1050 Ti
SE +/- 0.043, N = 12
4.210
Intel Core i9-9900K
SE +/- 0.062, N = 12
4.540
i9-9900K in WSL2 on HWRAID1 SSD
SE +/- 0.053, N = 4
4.794
1.0787
2.1574
3.2361
4.3148
5.3935
1. (CXX) g++ options: -O2 -pthread -lbz2 -lpthread
POV-Ray 3.7.0.7
Trace Time
Seconds, Fewer Is Better
NVIDIA GeForce GTX 1050 Ti
SE +/- 0.21, N = 3
52.95
Intel Core i9-9900K
SE +/- 0.39, N = 3
54.64
12
24
36
48
60
1. (CXX) g++ options: -pipe -O3 -ffast-math -march=native -pthread -lSDL -lXpm -lSM -lICE -lX11 -ltiff -ljpeg -lpng -lz -lrt -lm -lboost_thread -lboost_syste

Smallpt 1.0

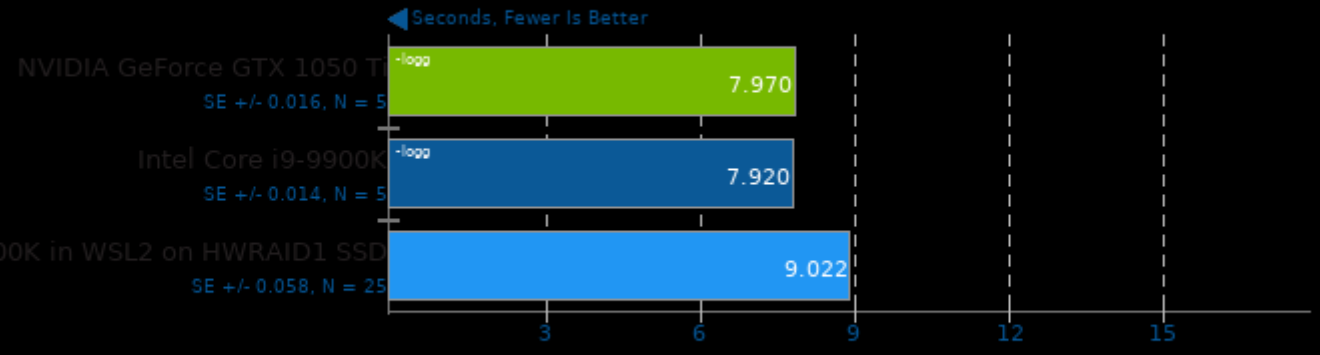
Global Illumination Renderer; 128 Samples



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

FLAC Audio Encoding 1.3.2

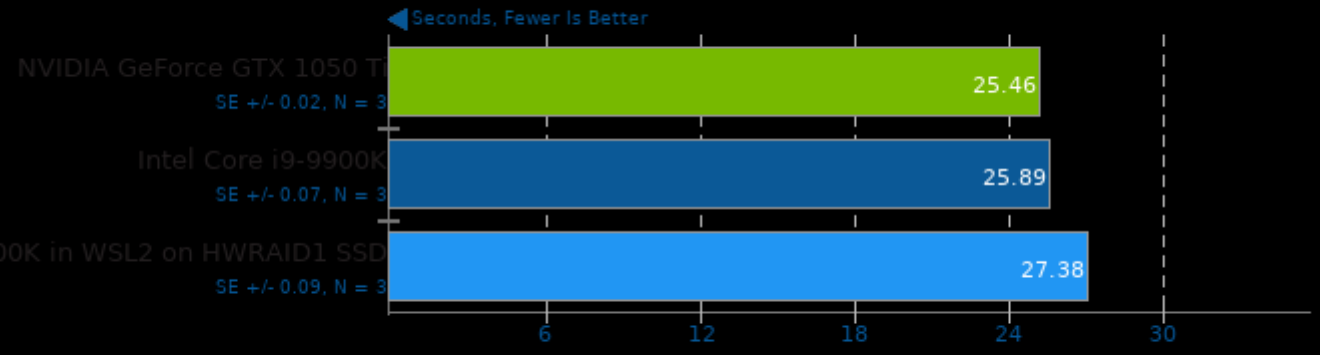
WAV To FLAC



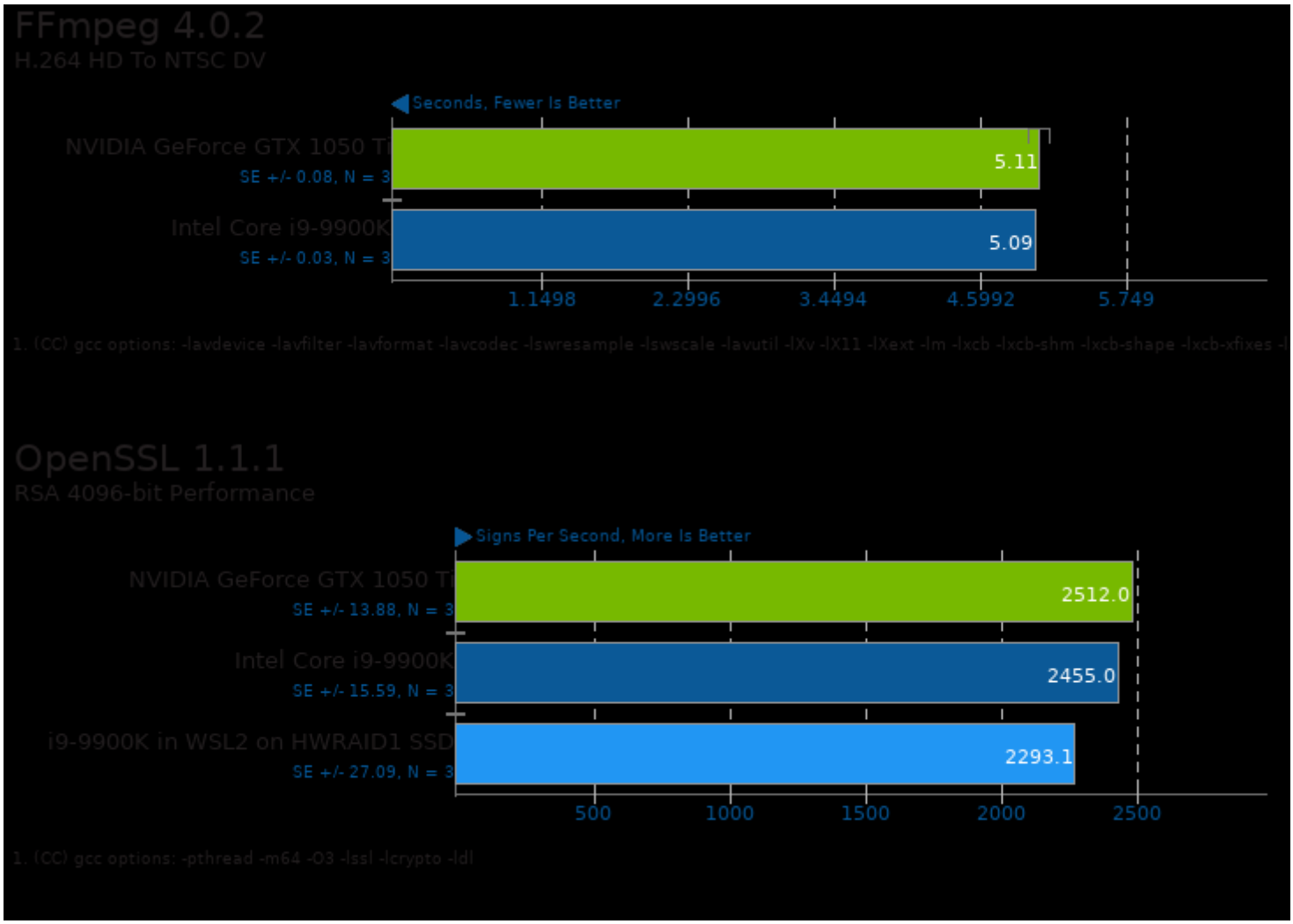
1. (CXX) g++ options: -O2 -fvisibility=hidden -lm

LAME MP3 Encoding 3.100

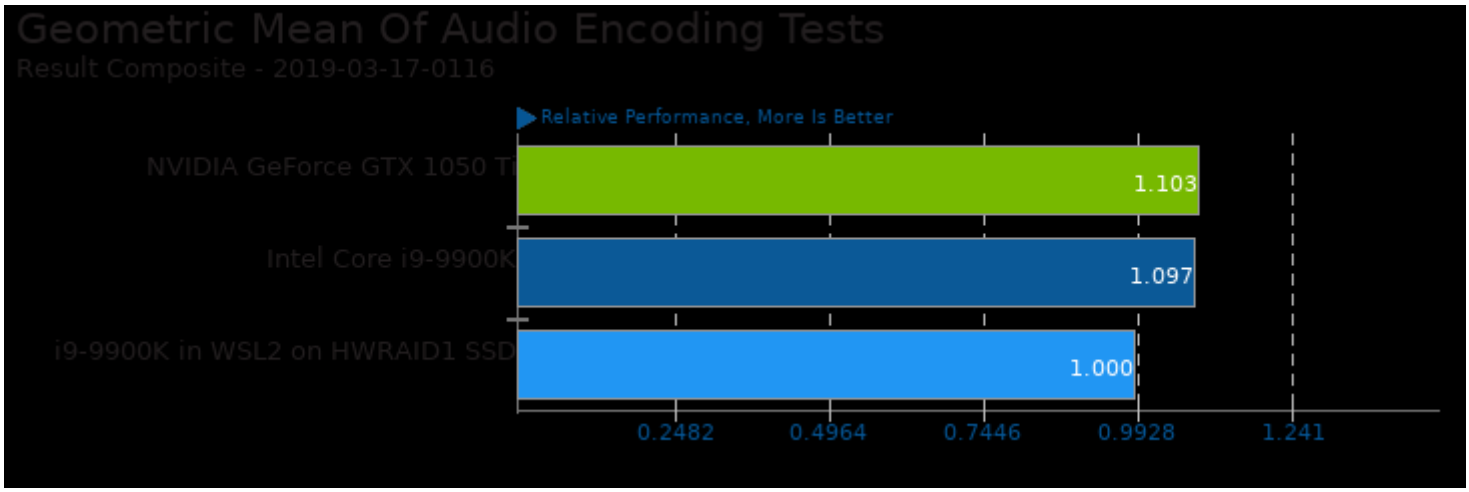
WAV To MP3



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


FFmpeg 4.0.2
H.264 HD To NTSC DV
Seconds, Fewer Is Better
NVIDIA GeForce GTX 1050 Ti
SE +/- 0.08, N = 3
5.11
Intel Core i9-9900K
SE +/- 0.03, N = 3
5.09
1.1498
2.2996
3.4494
4.5992
5.749
1. (CC) gcc options: -lavdevice -lavfilter -lavformat -lavcodec -lswresample -lswscale -lavutil -lXv -lX11 -lXext -lm -lxcb -lxcb-shm -lxcb-shape -lxcb-xfixes
OpenSSL 1.1.1
RSA 4096-bit Performance
Signs Per Second, More Is Better
NVIDIA GeForce GTX 1050 Ti
SE +/- 13.88, N = 3
2512.0
Intel Core i9-9900K
SE +/- 15.59, N = 3
2455.0
i9-9900K in WSL2 on HWRAID1 SSD
SE +/- 27.09, N = 3
2293.1
500
1000
1500
2000
2500
1. (CC) gcc options: -pthread -m64 -O3 -lssl -lcrypto -ldl

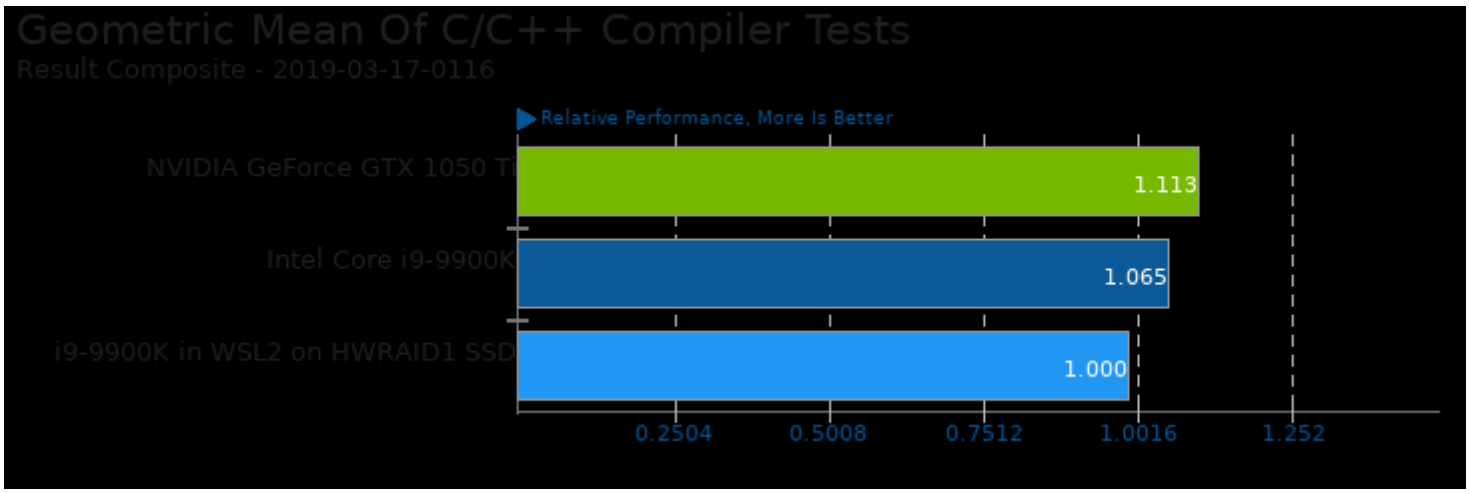
These geometric means are based upon test groupings / test suites for this result file.



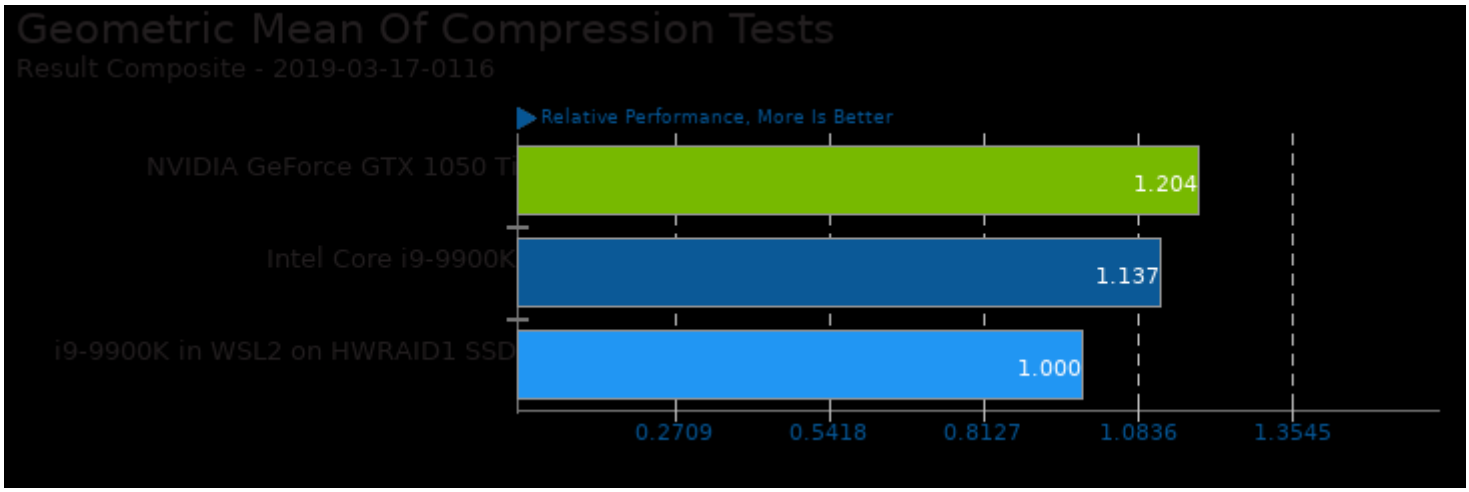
Geometric mean based upon tests: pts/encode-mp3 and pts/encode-flac



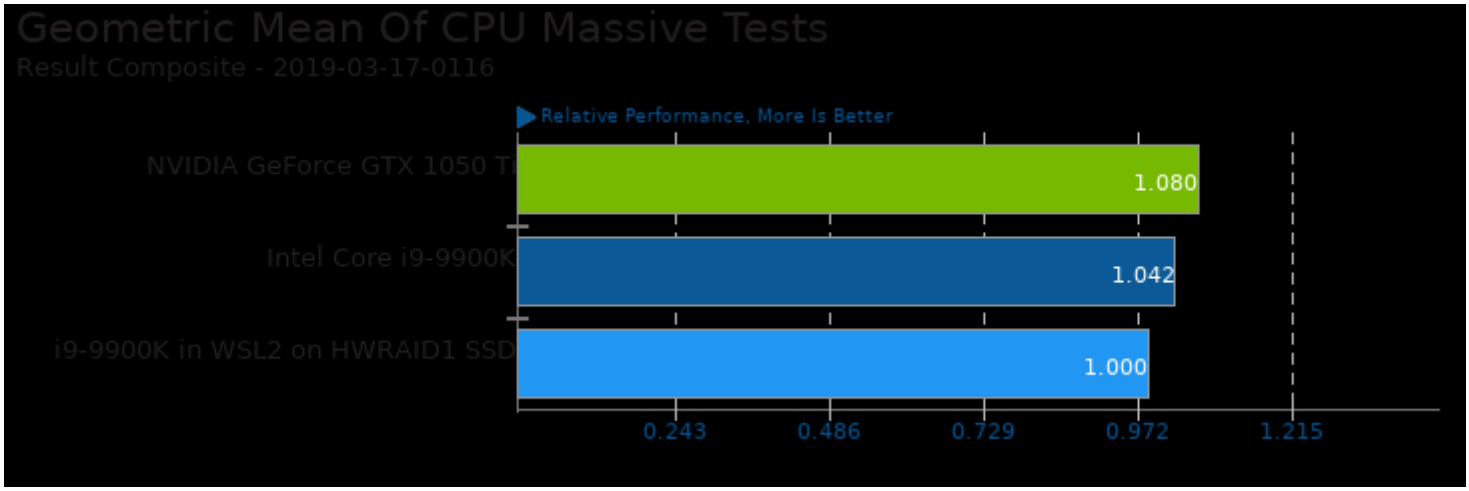
Geometric mean based upon tests: pts/crafty and pts/tscp



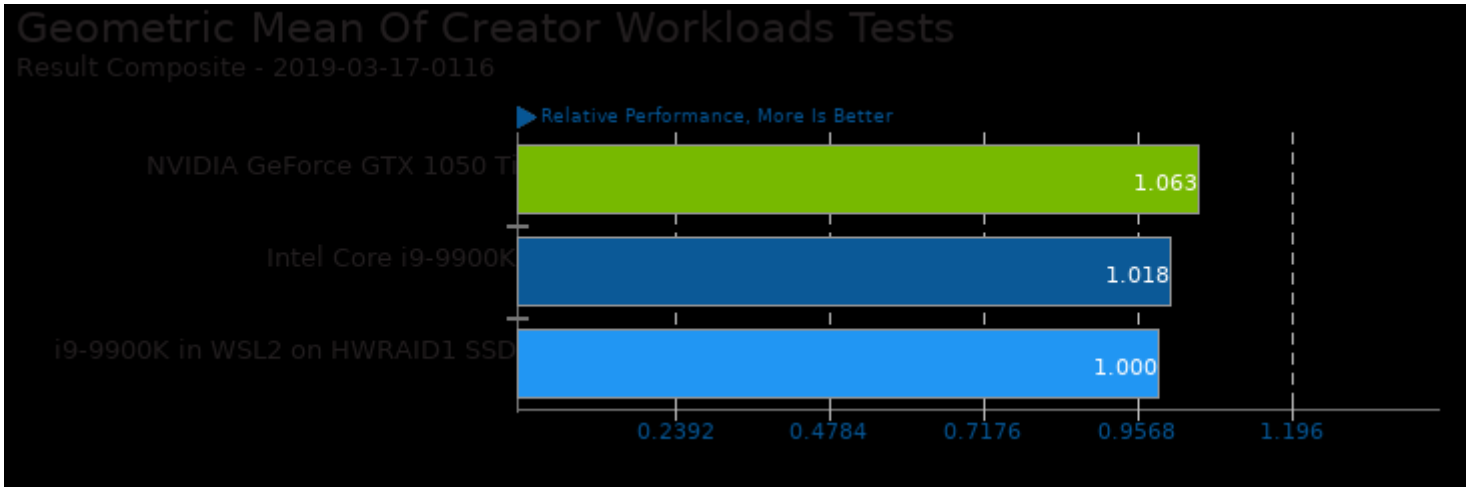
Geometric mean based upon tests: pts/mafft, pts/tscp, pts/graphics-magick, pts/himeno, pts/c-ray, pts/compress-7zip, pts/encode-mp3, pts/encode-flac, pts/x264 and pts/openssl



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



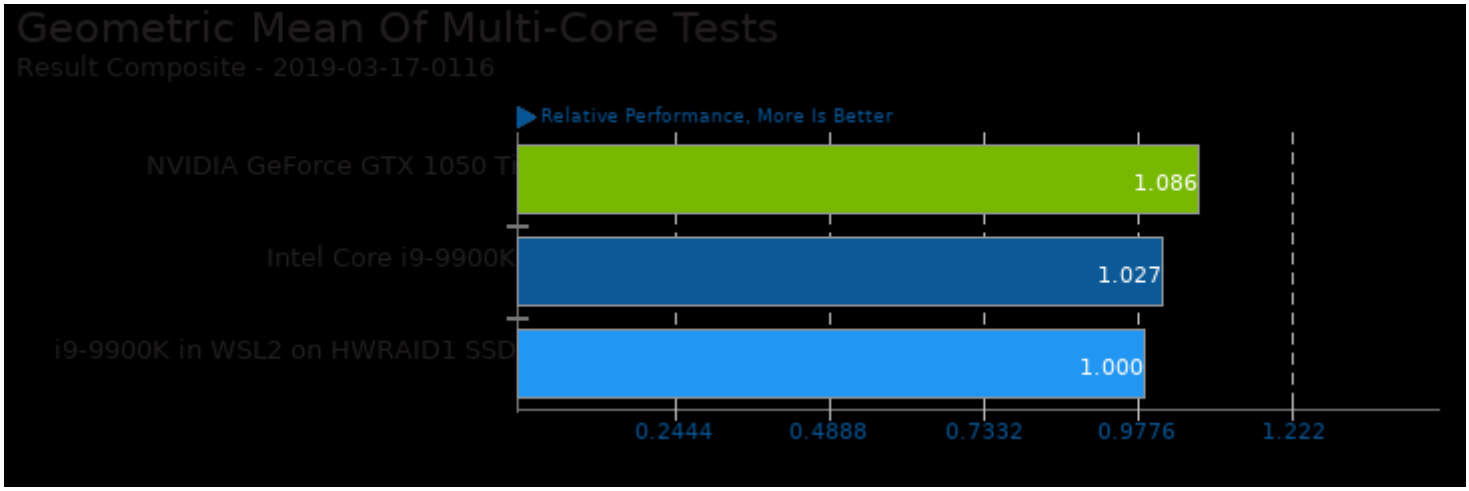
Geometric mean based upon tests: pts/c-ray, pts/compress-7zip, pts/compress-pbzip2, pts/crafty, pts/x264, pts/encode-flac, pts/encode-mp3, pts/graphics-magick, pts/himeno, pts/openssl, pts/mafft, pts/povray, pts/stream and pts/ttsiod-renderer



Geometric mean based upon tests: pts/c-ray, pts/povray, pts/smallpt, pts/ttsiod-renderer, pts/x264, pts/ffmpeg, pts/encode-mp3, pts/encode-flac and pts/graphics-magick



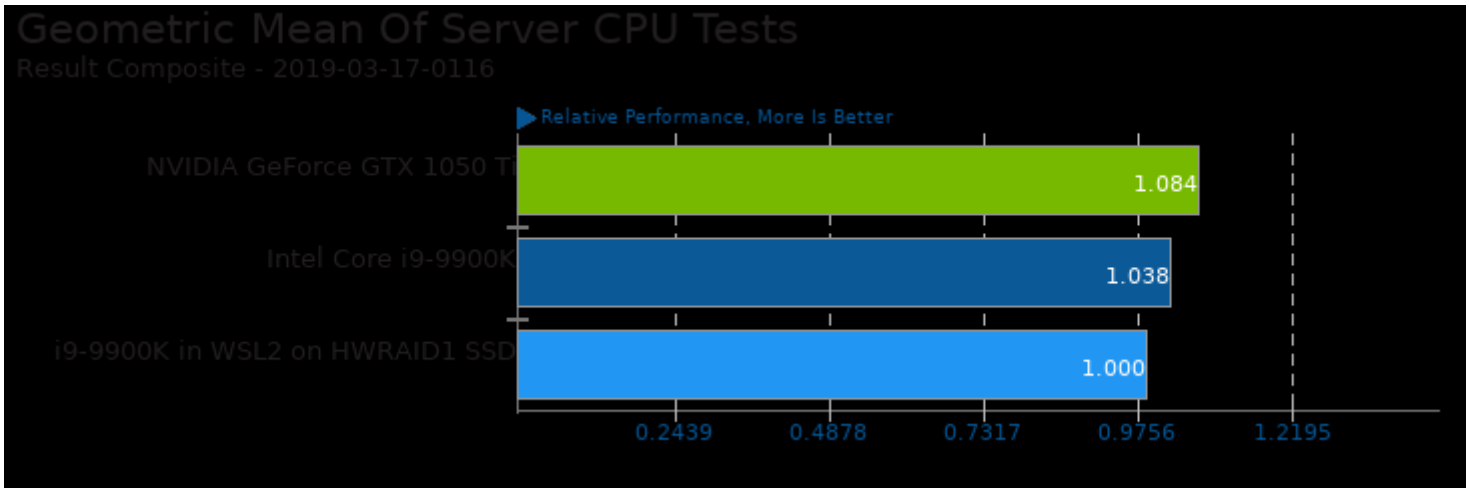
Geometric mean based upon tests: pts/encode-mp3, pts/encode-flac, pts/x264 and pts/ffmpeg



Geometric mean based upon tests: pts/c-ray, pts/povray, pts/x264, pts/ffmpeg, pts/smallpt, pts/graphics-magick, pts/compress-7zip, pts/compress-pbzip2 and pts/ttsiod-renderer



Geometric mean based upon tests: pts/c-ray, pts/povray, pts/smallpt and pts/ttsiod-renderer



Geometric mean based upon tests: pts/x264, pts/himeno, pts/compress-7zip, pts/c-ray, pts/povray, pts/openssl and pts/stream



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

This file was automatically generated via the Phoronix Test Suite benchmarking software on Thursday, 28 March 2024 21:38.