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Test Antivirus Solution Compiler

Intel Core i7-8850H testing with a HP 842A (Q70 Ver. 01.17.00 BIOS) and NVIDIA Quadro P2000 Mobile 4GB on Ubuntu 20.04 via the Phoronix Test Suite.

Automated Executive Summary

Crowdstrike had the most wins, coming in first place for 54% of the tests.

Based on the geometric mean of all complete results, the fastest (Crowdstrike) was 1.042x the speed of the slowest (SEP). NO AV was 0.993x the speed of Crowdstrike, MSDefender was 0.999x the speed of NO AV, SEP was 0.967x the speed of MSDefender.

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

GraphicsMagick (Operation: HWB Color Space) at 1.186x
Stockfish (Total Time) at 1.118x
Timed MrBayes Analysis (Primate Phylogeny Analysis) at 1.117x
7-Zip Compression (Compress Speed Test) at 1.103x
C-Ray (Total Time - 4K, 16 Rays Per Pixel) at 1.09x
dav1d (Video Input: Summer Nature 1080p) at 1.085x
LAME MP3 Encoding (WAV To MP3) at 1.075x
Basis Universal (Settings: ETC1S) at 1.073x

System XZ Decompression at 1.055x
AOBench (Size: 2048 x 2048 - Total Time) at 1.047x.

Test Systems:

NO AV

SEP

MSDefender

Crowdstrike

Processor: Intel Core i7-8850H @ 4.30GHz (6 Cores / 12 Threads), Motherboard: HP 842A (Q70 Ver. 01.17.00 BIOS), Chipset: Intel Cannon Lake PCH, Memory: 2 x 16384 MB DDR4-2667MT/s HMA82GS6JJR8N-VK, Disk: 512GB Toshiba KXG5AZNV512G, Graphics: NVIDIA Quadro P2000 Mobile 4GB, Audio: Conexant CX11970, Network: Intel I219-LM + Intel-AC 9560

OS: Ubuntu 20.04, Kernel: 5.11.0-27-generic (x86_64), Desktop: GNOME Shell 3.36.9, Display Server: X Server 1.20.11, Vulkan: 1.0.2, Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 1920x1080

Kernel Notes: Transparent Huge Pages: madvise
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++,gm2 --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-9-HskZEa/gcc-9-9.3.0/debian/tmp-nvptx/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-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: Scaling Governor: intel_pstate performance - CPU Microcode: 0xea - Thermald 1.9.1
Security Notes: itlb_multihit: KVM: Mitigation of VMX disabled + l1tf: Mitigation of PTE Inversion; VMX: conditional cache flushes SMT vulnerable + mds: Mitigation of Clear buffers; SMT vulnerable + meltdown: Mitigation of PTI + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Full generic retpoline IBPB: conditional IBRS_FW STIBP: conditional RSB filling + srbds: Mitigation of Microcode + tsx_async_abort: Mitigation of Clear buffers; SMT vulnerable

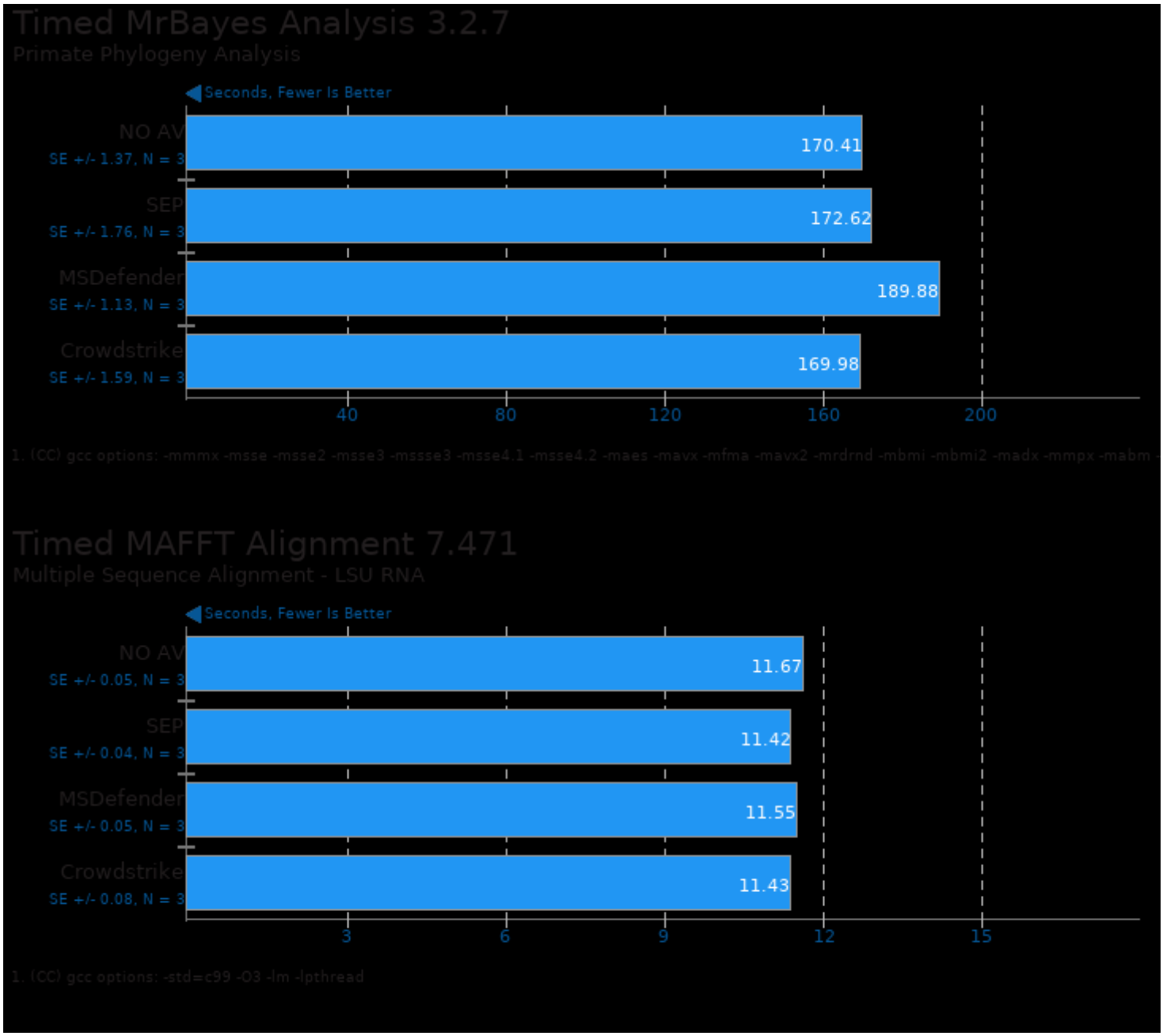
	NO AV	SEP	MSDefender	Crowdstrike
Timed MrBayes Analysis - P.P.A (sec)	170.409	172.623	**189.878**	**169.975**
Normalized	99.75%	98.47%	89.52%	100%
Standard Deviation	1.4%	1.8%	1%	1.6%
Timed MAFFT Alignment - M.S.A - LSU RNA (sec)	**11.673**	**11.422**	11.549	11.434
Normalized	97.85%	100%	98.9%	99.9%
Standard Deviation	0.8%	0.7%	0.7%	1.3%
LZ4 Compression - 1 - Compression Speed (MB/s)	**7617**	7749	7670	**7756**
Normalized	98.21%	99.92%	98.9%	100%
Standard Deviation	0.1%	0.3%	0%	0.1%
LZ4 Compression - 1 - D.S (MB/s)	**9349**	**9525**	9441	9485

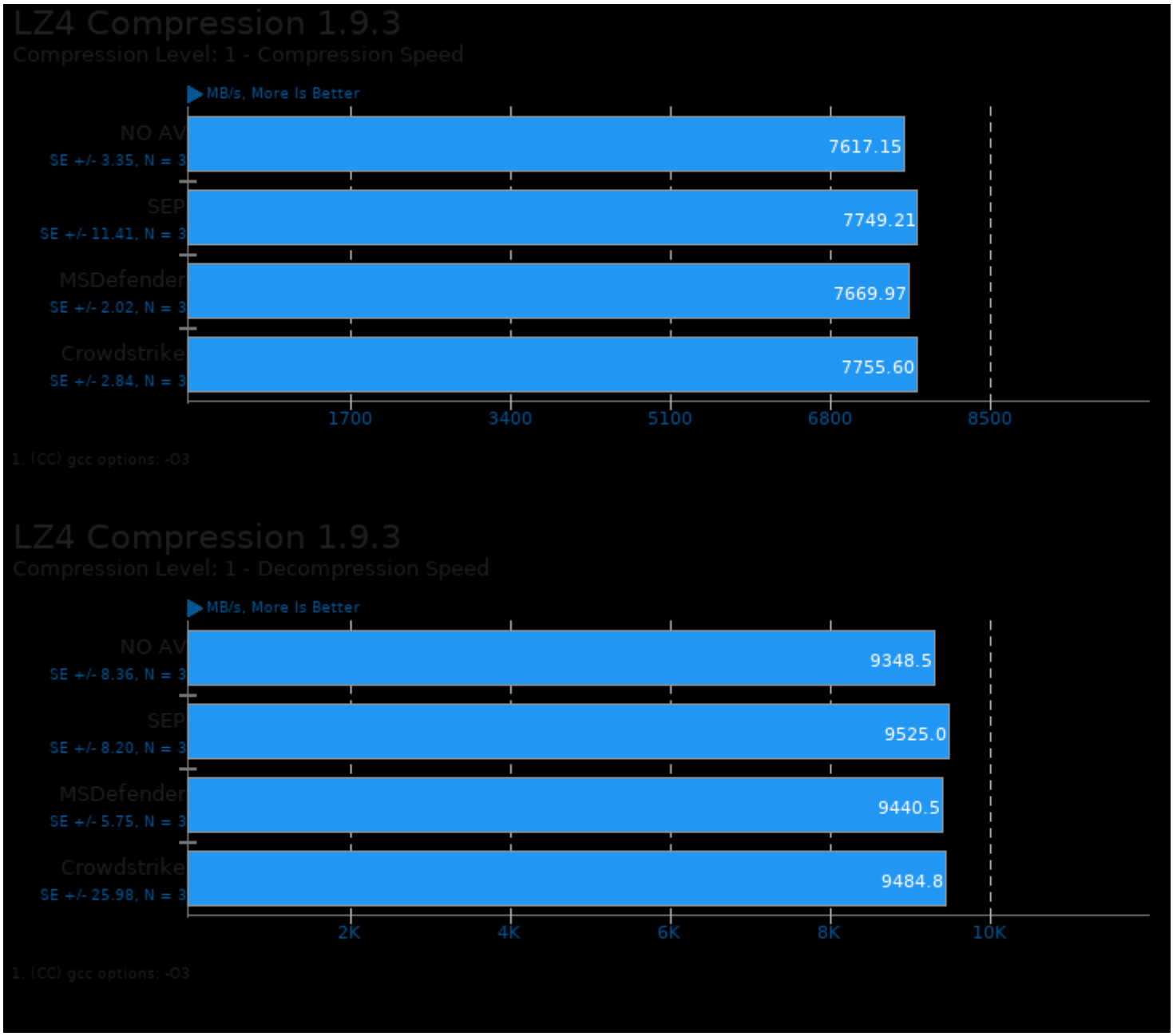
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Normalized	98.15%	100%	99.11%	99.58%
Standard Deviation	0.2%	0.1%	0.1%	0.5%
Zstd Compression - 3 - Compression Speed (MB/s)	1384	**1346**	1393	**1394**
Normalized	99.32%	96.61%	99.95%	100%
Standard Deviation	0.7%	0.3%	0.3%	0.8%
Zstd Compression - 3 - D.S (MB/s)	**3413**	3422	**3435**	3430
Normalized	99.36%	99.63%	100%	99.88%
Standard Deviation	0.4%	0.7%	0.6%	0.3%
Zstd Compression - 3 - Compression Speed (MB/s)	1237	1224	**1239**	**1221**
Normalized	99.81%	98.76%	100%	98.48%
Standard Deviation	0.9%	1.3%	0.8%	1.8%
Zstd Compression - 3 - D.S (MB/s)	**3190**	3201	**3237**	3218
Normalized	98.56%	98.88%	100%	99.4%
Standard Deviation	0.3%	0.5%	0.2%	0.9%
SciMark - Composite (Mflops)	**634.67**	**628.73**	629.03	631.88
Normalized	100%	99.06%	99.11%	99.56%
Standard Deviation	1.6%	0.2%	0.5%	0.2%
John The Ripper - Blowfish (Real C/S)	9490	**9507**	**9476**	9499
Normalized	99.82%	100%	99.67%	99.92%
Standard Deviation	2.4%	2.4%	2.4%	2.4%
John The Ripper - MD5 (Real C/S)	**509606**	511424	510413	**512192**
Normalized	99.5%	99.85%	99.65%	100%
Standard Deviation	1.8%	1.8%	1.8%	1.9%
GraphicsMagick - HWB Color Space (Iterations/min)	681	**592**	695	**702**
Normalized	97.01%	84.33%	99%	100%
Standard Deviation	0.5%	1.7%	0.9%	0.2%
dav1d - S.N.1 (FPS)	**389.11**	**358.66**	388.14	388.31
Normalized	100%	92.17%	99.75%	99.79%
Standard Deviation	0.3%	1.8%	0.4%	0.2%
7-Zip Compression - C.S.T (MIPS)	30174	**27379**	**30205**	30162
Normalized	99.9%	90.64%	100%	99.86%
Standard Deviation	1.3%	1.4%	2.3%	2.3%
Stockfish - Total Time (Nodes/s)	12881140	**11599977**	12874170	**12965933**
Normalized	99.35%	89.47%	99.29%	100%
Standard Deviation	1.5%	1.3%	2.4%	0.4%
C-Ray - Total Time - 4.1.R.P.P (sec)	132.674	**144.113**	132.356	**132.186**
Normalized	99.63%	91.72%	99.87%	100%
Standard Deviation	0.4%	0.1%	0.3%	0.3%
AOBench - 2048 x 2048 - Total Time (sec)	33.536	**34.421**	33.162	**32.890**
Normalized	98.07%	95.55%	99.18%	100%
Standard Deviation	1.5%	1.3%	1.2%	0.1%
FLAC Audio Encoding - WAV To FLAC (sec)	**17.244**	**17.972**	17.530	17.391
Normalized	100%	95.95%	98.37%	99.15%
Standard Deviation	0.7%	0.8%	1.5%	2.2%
LAME MP3 Encoding - WAV To MP3 (sec)	8.886	**9.221**	8.702	**8.576**
Normalized	96.51%	93.01%	98.55%	100%
Standard Deviation	0.3%	2.5%	0.4%	1%
System GZIP Decompression (sec)	3.023	**3.138**	3.026	**3.015**

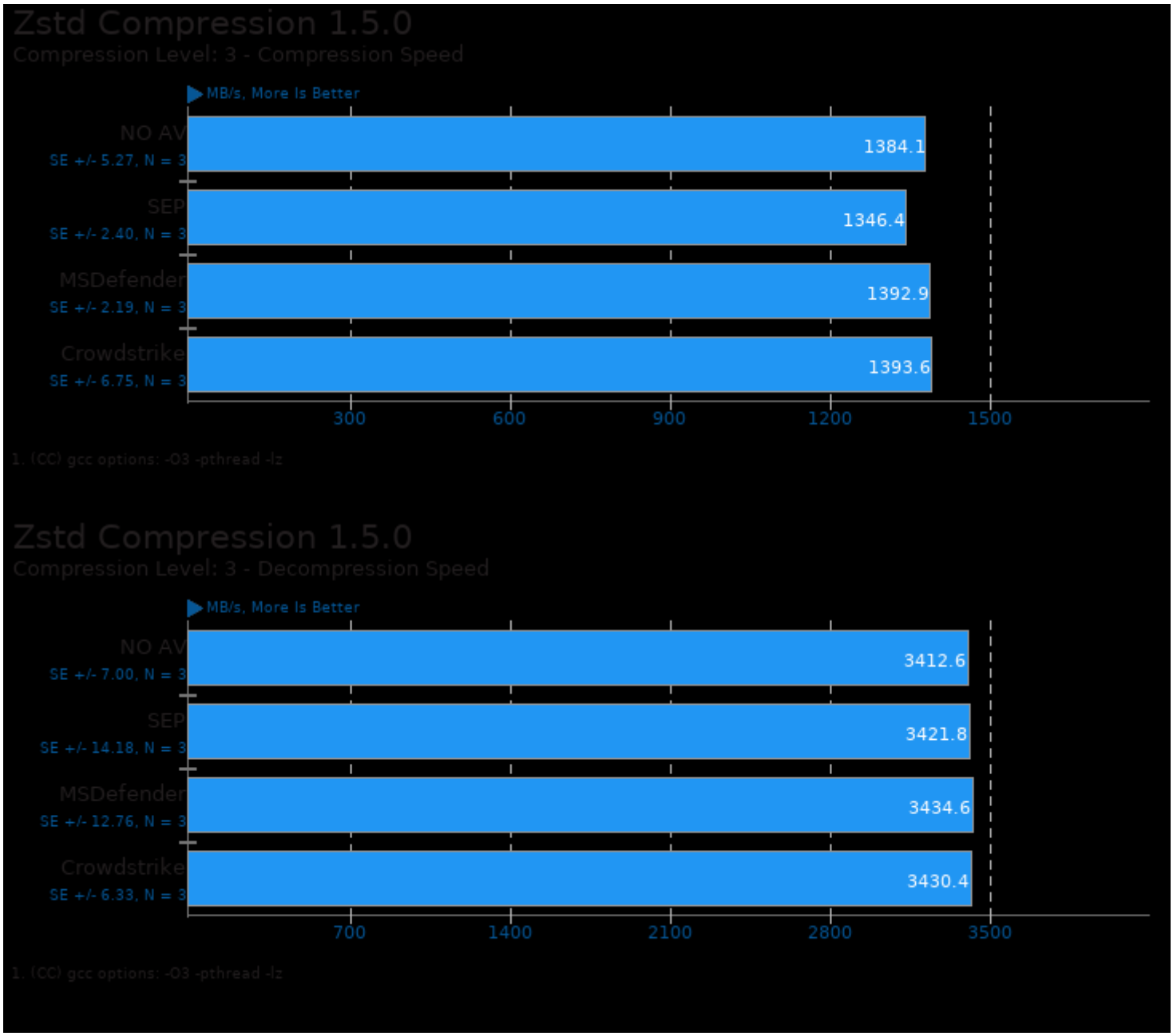
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Normalized	99.74%	96.08%	99.64%	100%
Standard Deviation	3.7%	2.6%	3.7%	3.6%
System XZ Decompression (sec)	3.791	**3.991**	3.800	**3.782**
Normalized	99.76%	94.76%	99.53%	100%
Standard Deviation	0.5%	1.5%	0.4%	0.3%
Basis Universal - ETC1S (sec)	30.824	**33.029**	30.915	**30.791**
Normalized	99.89%	93.22%	99.6%	100%
Standard Deviation	0.5%	0.3%	0.3%	0.4%

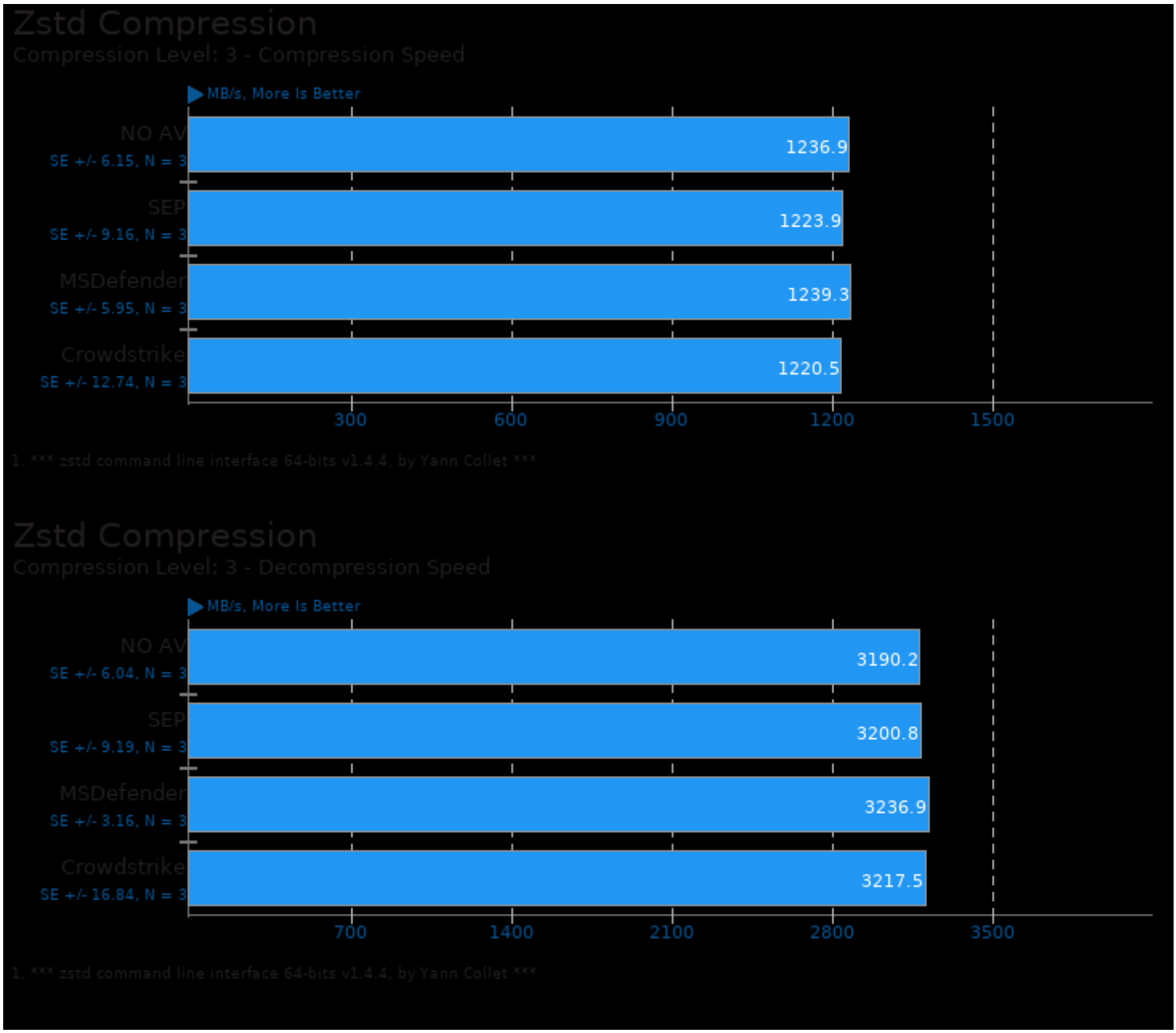

Timed MrBayes Analysis 3.2.7
Primate Phylogeny Analysis
Seconds, Fewer Is Better
NO AV
SE +/- 1.37, N = 3
170.41
SEP
SE +/- 1.76, N = 3
172.62
MSDefender
SE +/- 1.13, N = 3
189.88
Crowdstrike
SE +/- 1.59, N = 3
169.98
40
80
120
160
200
1. (CC) gcc options: -mmmx -msse -msse2 -msse3 -mssse3 -msse4.1 -msse4.2 -maes -mavx -mfma -mavx2 -mrdrnd -mbmi -mbmi2 -madx -mmpx -mabm
Timed MAFFT Alignment 7.471
Multiple Sequence Alignment - LSU RNA
Seconds, Fewer Is Better
NO AV
SE +/- 0.05, N = 3
11.67
SEP
SE +/- 0.04, N = 3
11.42
MSDefender
SE +/- 0.05, N = 3
11.55
Crowdstrike
SE +/- 0.08, N = 3
11.43
3
6
9
12
15
1. (CC) gcc options: -std=c99 -O3 -lm -lpthread


LZ4 Compression 1.9.3
Compression Level: 1 - Compression Speed
MB/s, More Is Better
NO AV
SE +/- 3.35, N = 3
7617.15
SEP
SE +/- 11.41, N = 3
7749.21
MSDefender
SE +/- 2.02, N = 3
7669.97
Crowdstrike
SE +/- 2.84, N = 3
7755.60
1700
3400
5100
6800
8500
1. (CC) gcc options: -O3
LZ4 Compression 1.9.3
Compression Level: 1 - Decompression Speed
MB/s, More Is Better
NO AV
SE +/- 8.36, N = 3
9348.5
SEP
SE +/- 8.20, N = 3
9525.0
MSDefender
SE +/- 5.75, N = 3
9440.5
Crowdstrike
SE +/- 25.98, N = 3
9484.8
2K
4K
6K
8K
10K
1. (CC) gcc options: -O3

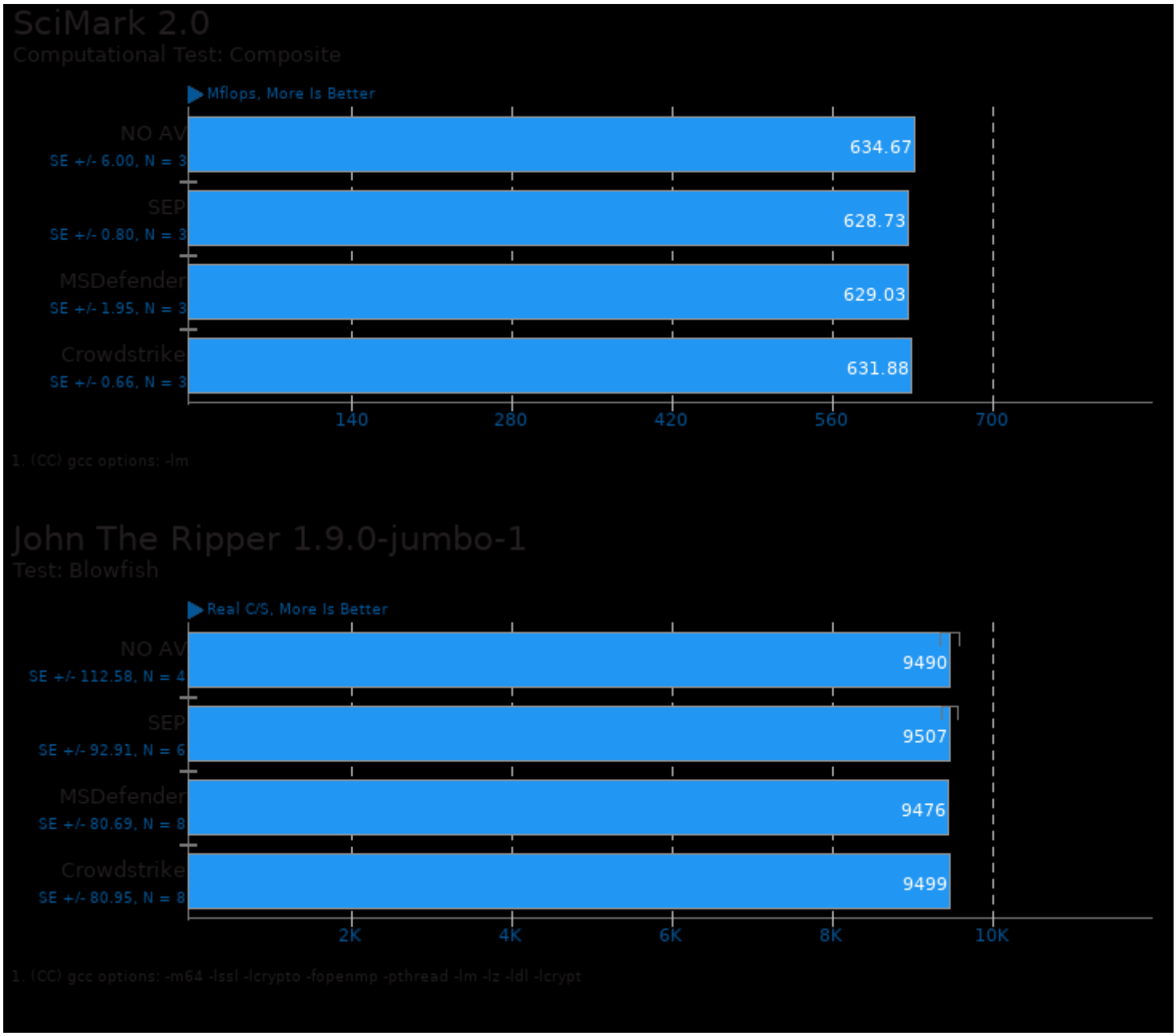
Test Antivirus Solution Compiler

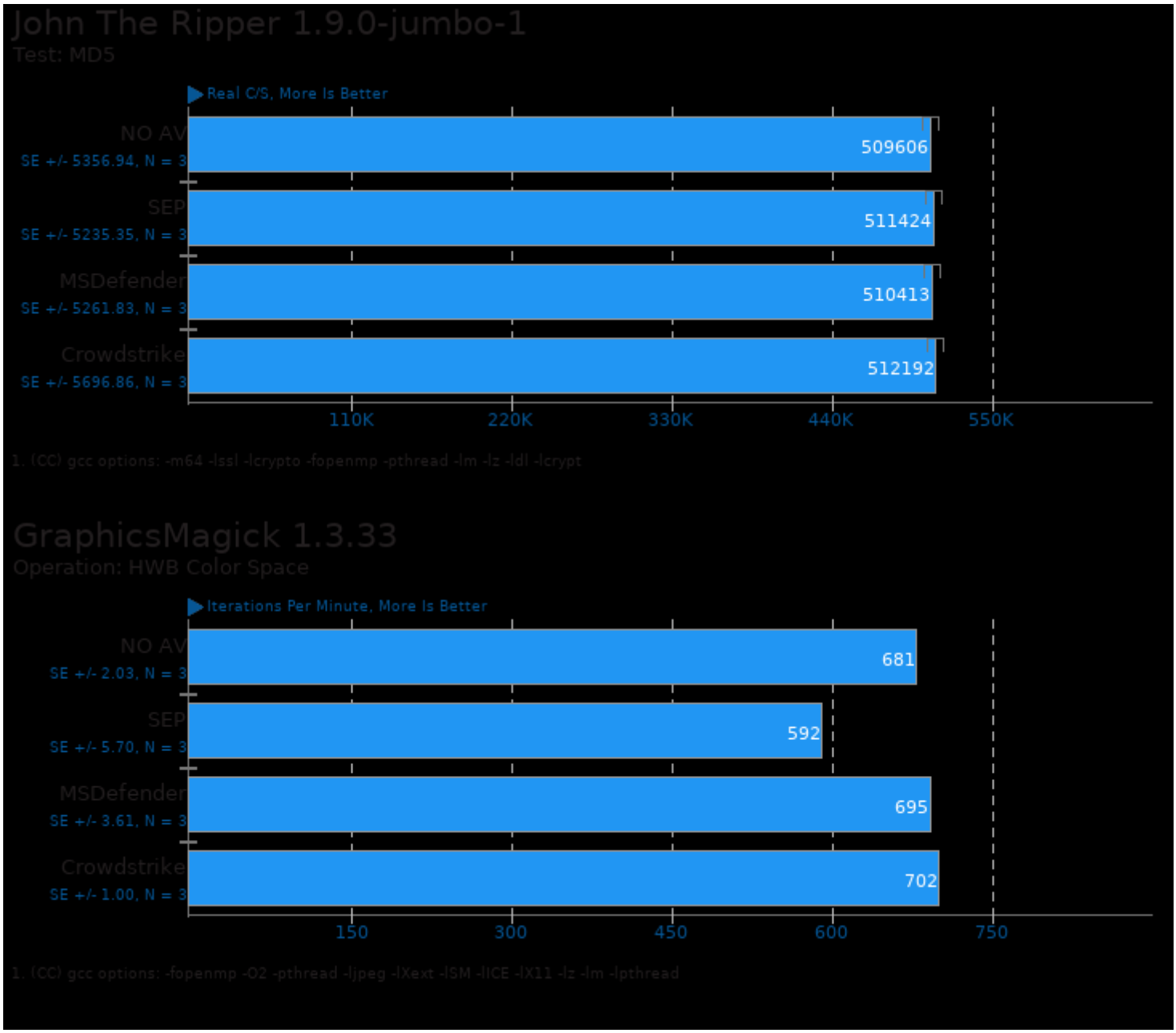


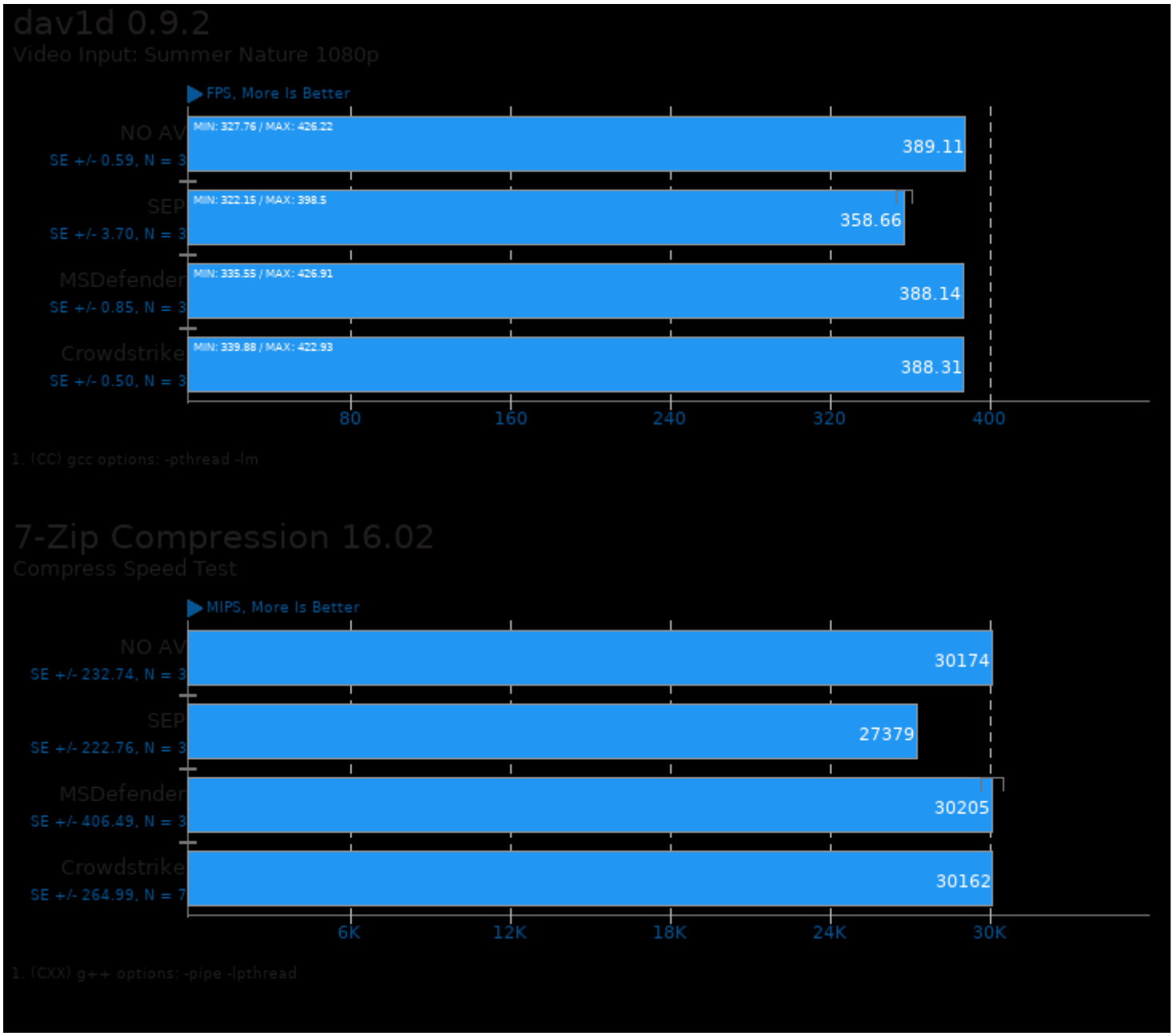
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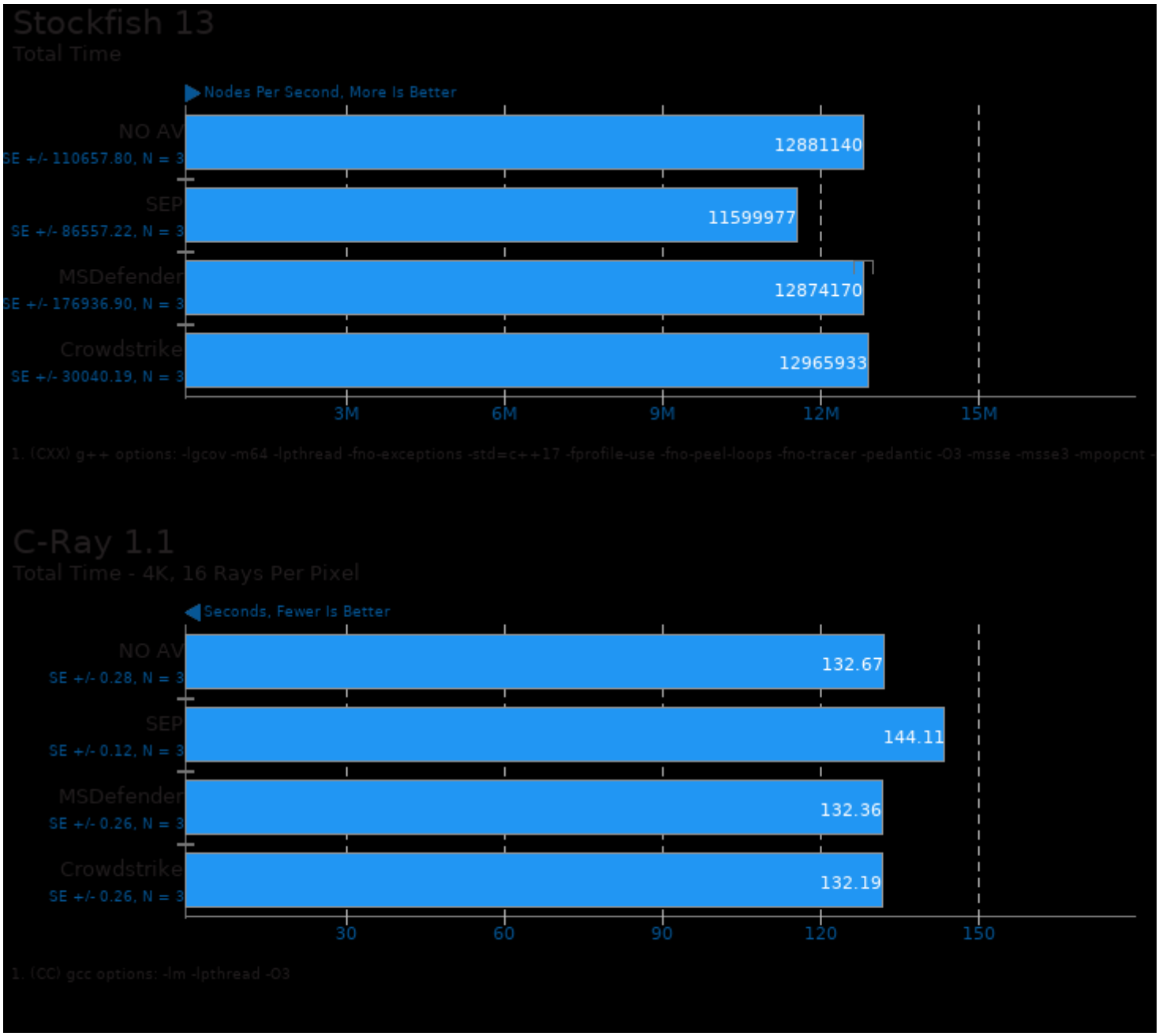
Test Antivirus Solution Compiler



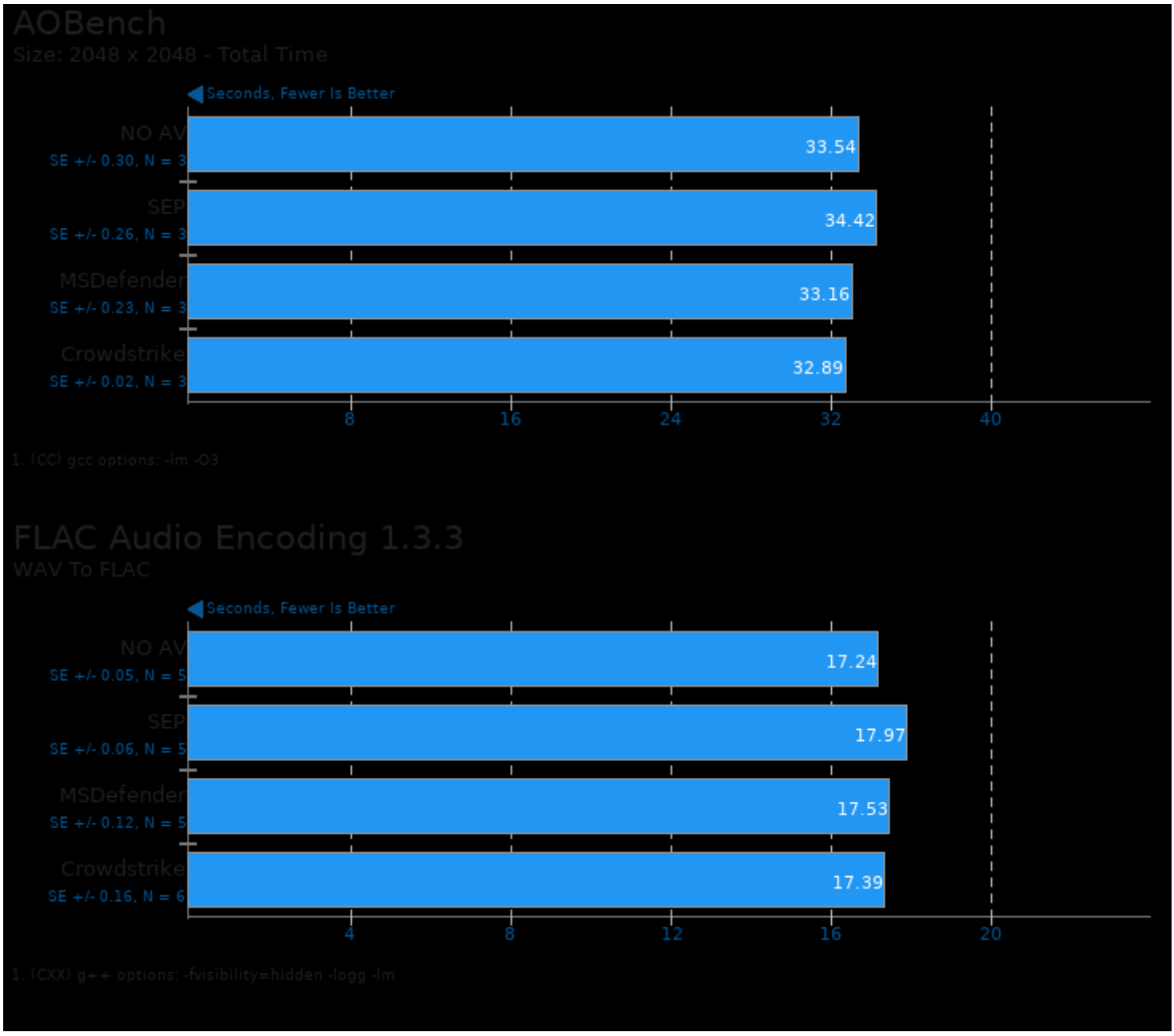

John The Ripper 1.9.0-jumbo-1
Test: MD5
Real C/S, More Is Better
NO AV
SE +/- 5356.94, N = 3
509606
SEP
SE +/- 5235.35, N = 3
511424
MSDefender
SE +/- 5261.83, N = 3
510413
Crowdstrike
SE +/- 5696.86, N = 3
512192
110K
220K
330K
440K
550K
1. (CC) gcc options: -m64 -lssl -lcrypto -fopenmp -pthread -lm -lz -ldl -lcrypt
GraphicsMagick 1.3.33
Operation: HWB Color Space
Iterations Per Minute, More Is Better
NO AV
SE +/- 2.03, N = 3
681
SEP
SE +/- 5.70, N = 3
592
MSDefender
SE +/- 3.61, N = 3
695
Crowdstrike
SE +/- 1.00, N = 3
702
150
300
450
600
750
1. (CC) gcc options: -fopenmp -O2 -pthread -ljpeg -lXext -lSM -lICE -lX11 -lz -lm -lpthread

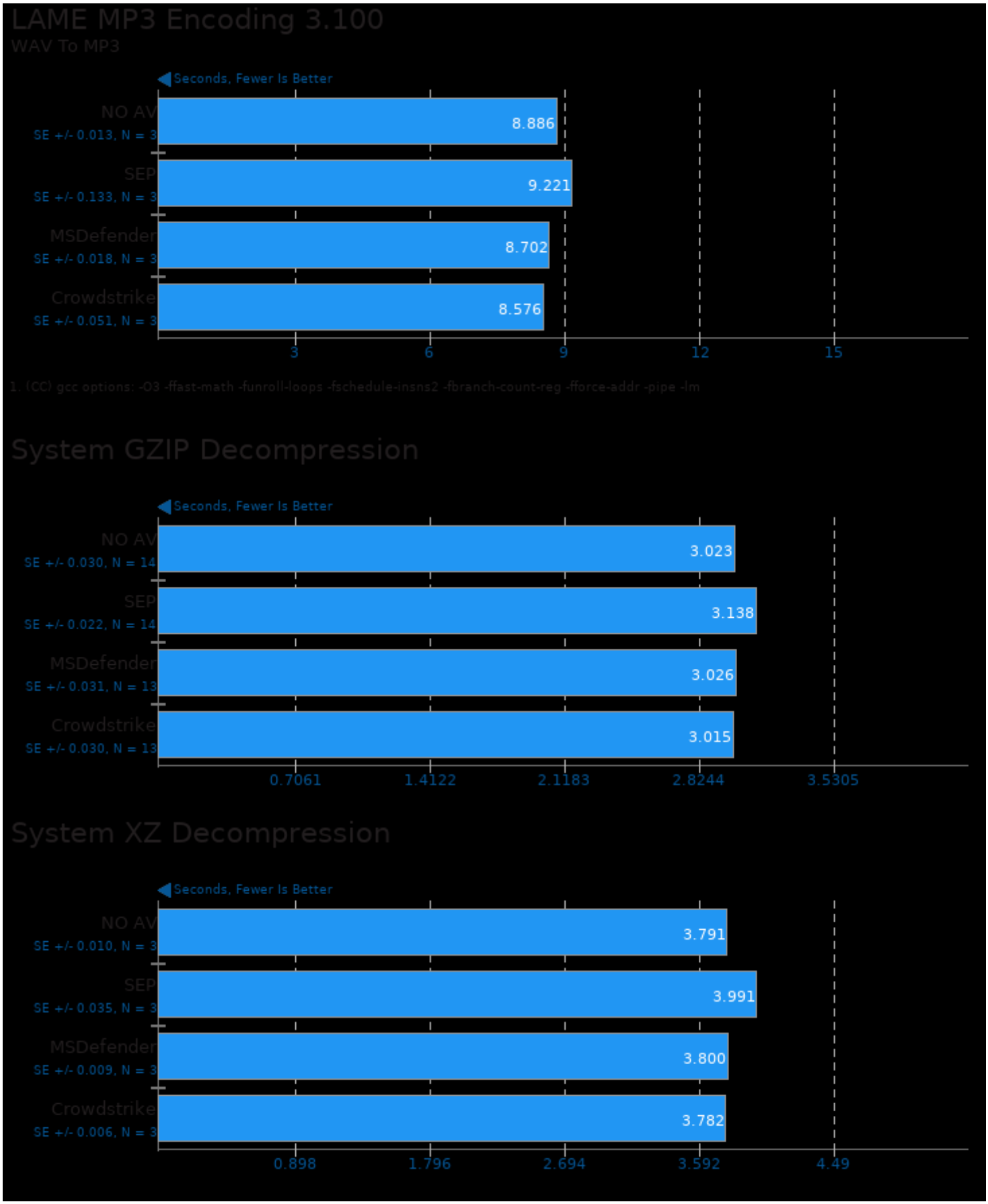

dav1d 0.9.2
Video Input: Summer Nature 1080p
FPS, More Is Better
NO AV
SE +/- 0.59, N = 3
MIN: 327.76 / MAX: 426.22
389.11
SEP
SE +/- 3.70, N = 3
MIN: 322.15 / MAX: 398.5
358.66
MSDefender
SE +/- 0.85, N = 3
MIN: 335.55 / MAX: 426.91
388.14
Crowdstrike
SE +/- 0.50, N = 3
MIN: 339.88 / MAX: 422.93
388.31
80
160
240
320
400
1. (CC) gcc options: -pthread -lm
7-Zip Compression 16.02
Compress Speed Test
MIPS, More Is Better
NO AV
SE +/- 232.74, N = 3
30174
SEP
SE +/- 222.76, N = 3
27379
MSDefender
SE +/- 406.49, N = 3
30205
Crowdstrike
SE +/- 264.99, N = 7
30162
6K
12K
18K
24K
30K
1. (CXX) g++ options: -pipe -lpthread

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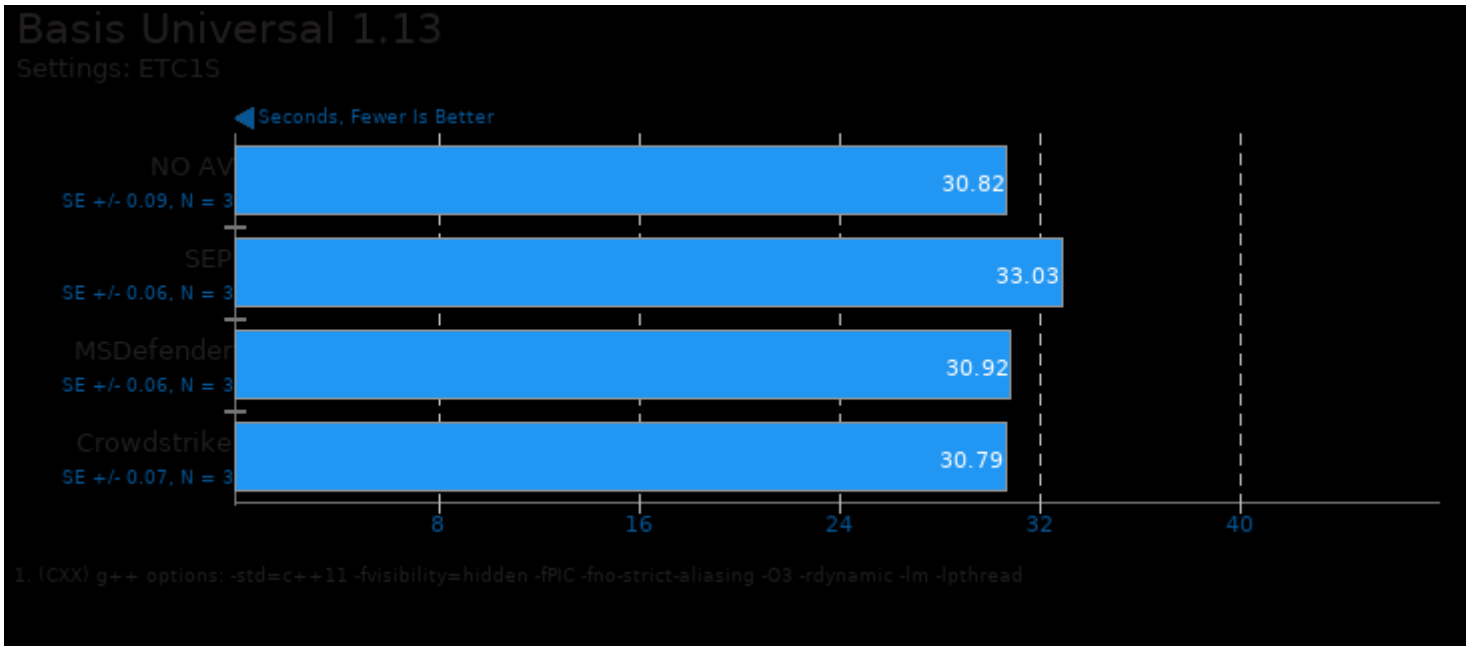


Test Antivirus Solution Compiler



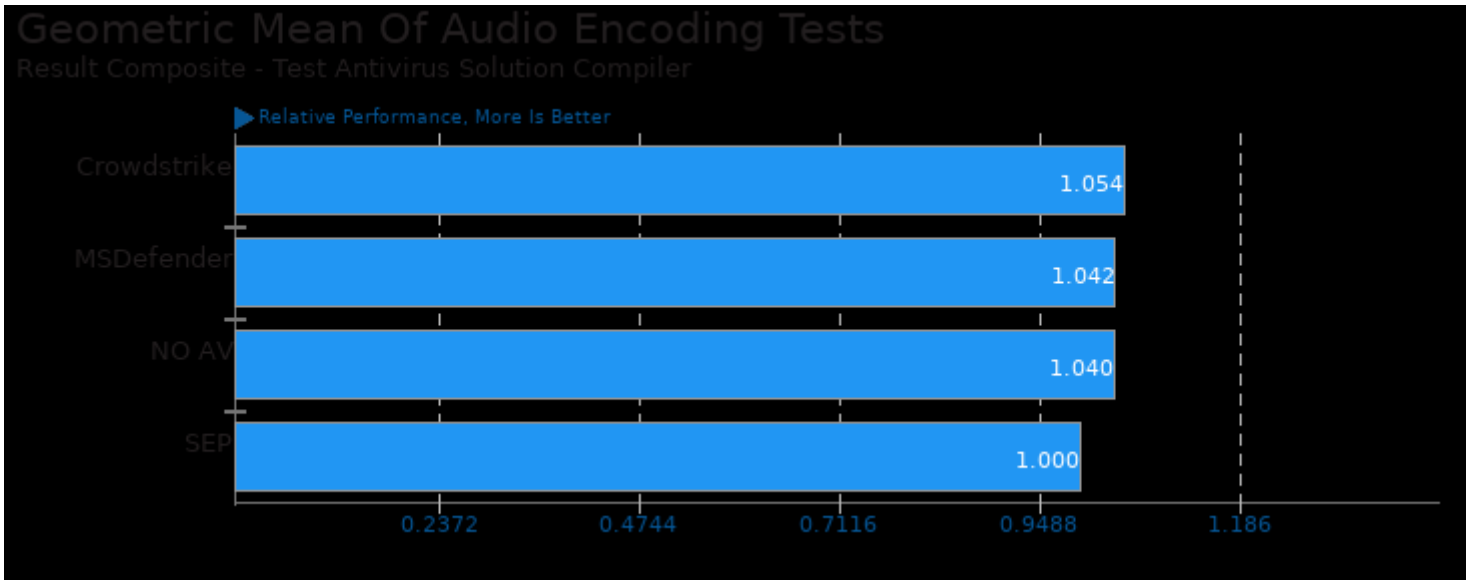

LAME MP3 Encoding 3.100
WAV To MP3
Seconds, Fewer Is Better
NO AV
SE +/- 0.013, N = 3
8.886
SEP
SE +/- 0.133, N = 3
9.221
MSDefender
SE +/- 0.018, N = 3
8.702
Crowdstrike
SE +/- 0.051, N = 3
8.576
3
6
9
12
15
1. (CC) gcc options: -O3 -ffast-math -funroll-loops -fschedule-insns2 -fbranch-count-reg -fforce-addr -pipe -lm
System GZIP Decompression
Seconds, Fewer Is Better
NO AV
SE +/- 0.030, N = 14
3.023
SEP
SE +/- 0.022, N = 14
3.138
MSDefender
SE +/- 0.031, N = 13
3.026
Crowdstrike
SE +/- 0.030, N = 13
3.015
0.7061
1.4122
2.1183
2.8244
3.5305
System XZ Decompression
Seconds, Fewer Is Better
NO AV
SE +/- 0.010, N = 3
3.791
SEP
SE +/- 0.035, N = 3
3.991
MSDefender
SE +/- 0.009, N = 3
3.800
Crowdstrike
SE +/- 0.006, N = 3
3.782
0.898
1.796
2.694
3.592
4.49

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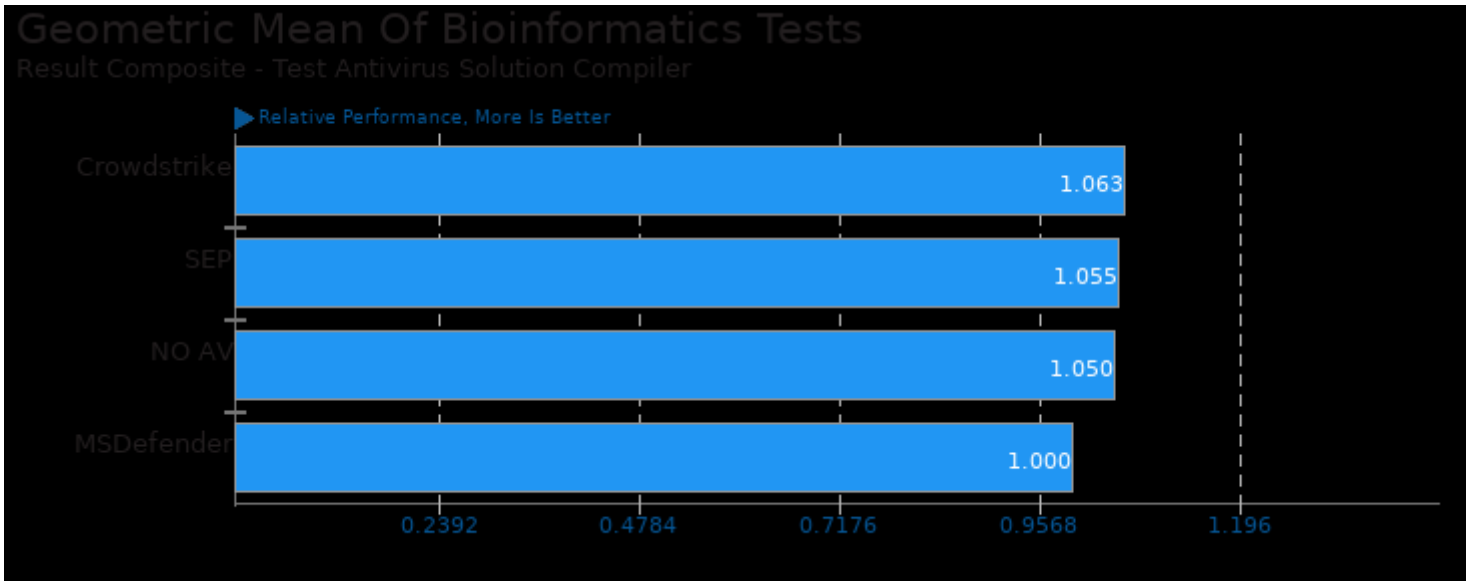


Test Antivirus Solution Compiler

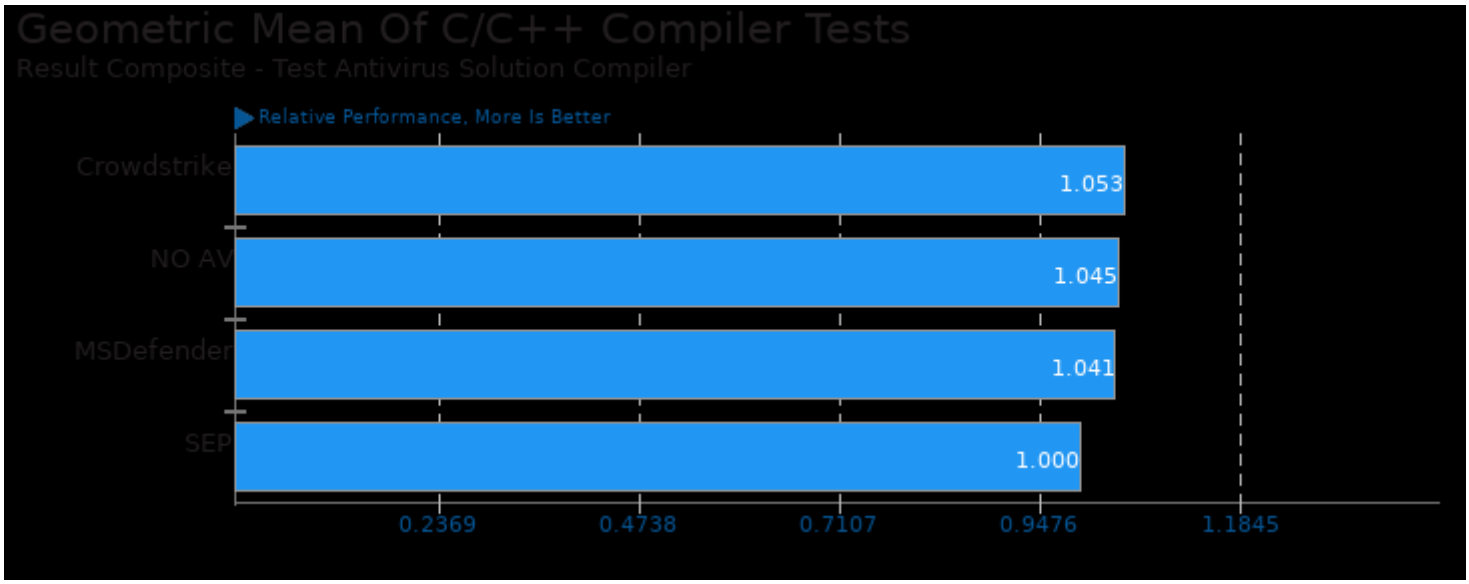
These geometric means are based upon test groupings / test suites for this result file.



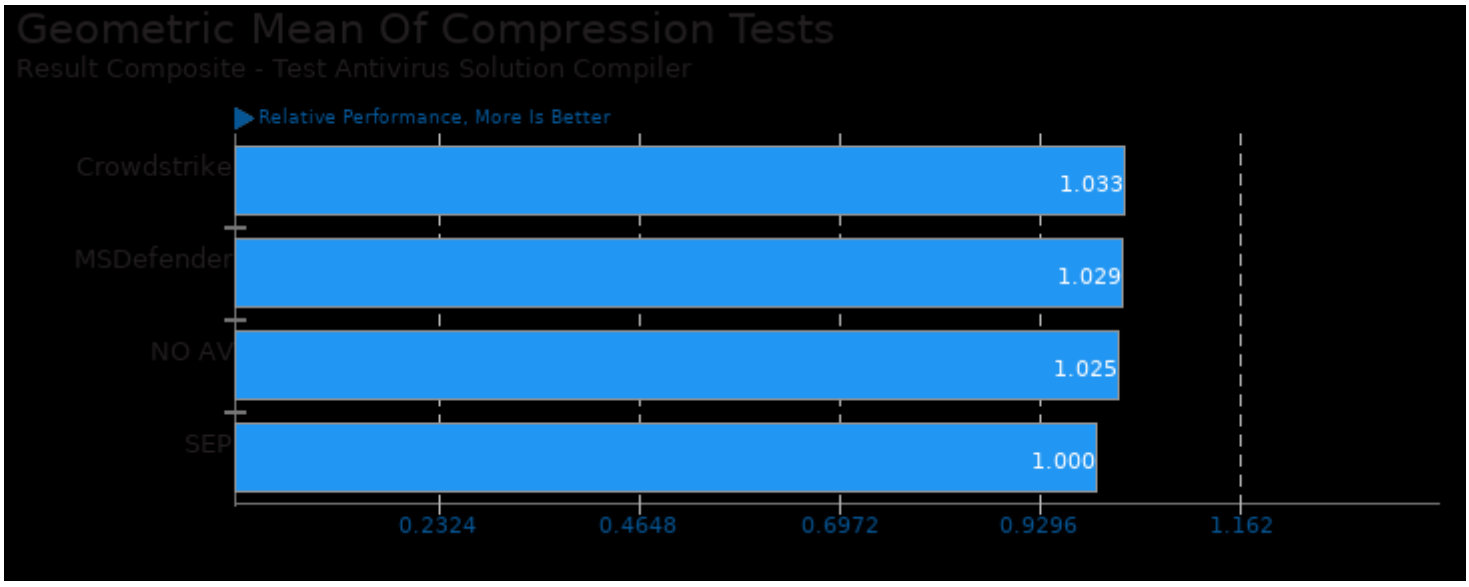
Geometric mean based upon tests: pts/encode-mp3 and pts/encode-flac



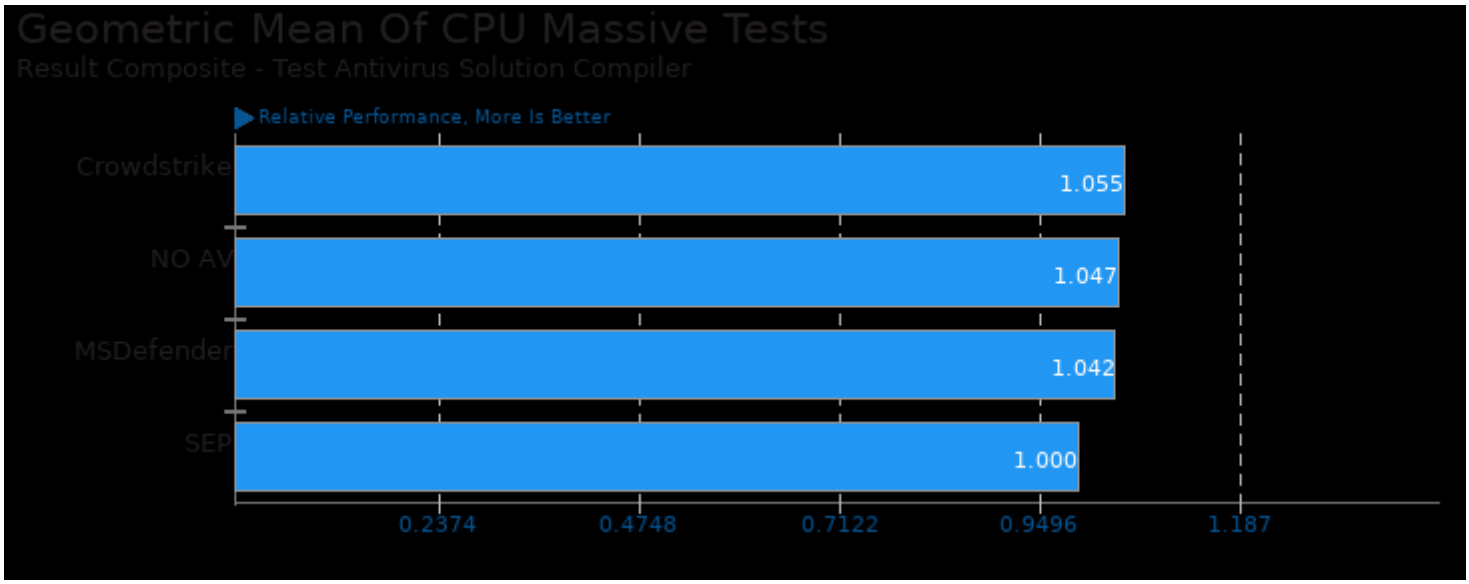
Geometric mean based upon tests: pts/mrbayes and pts/mafft



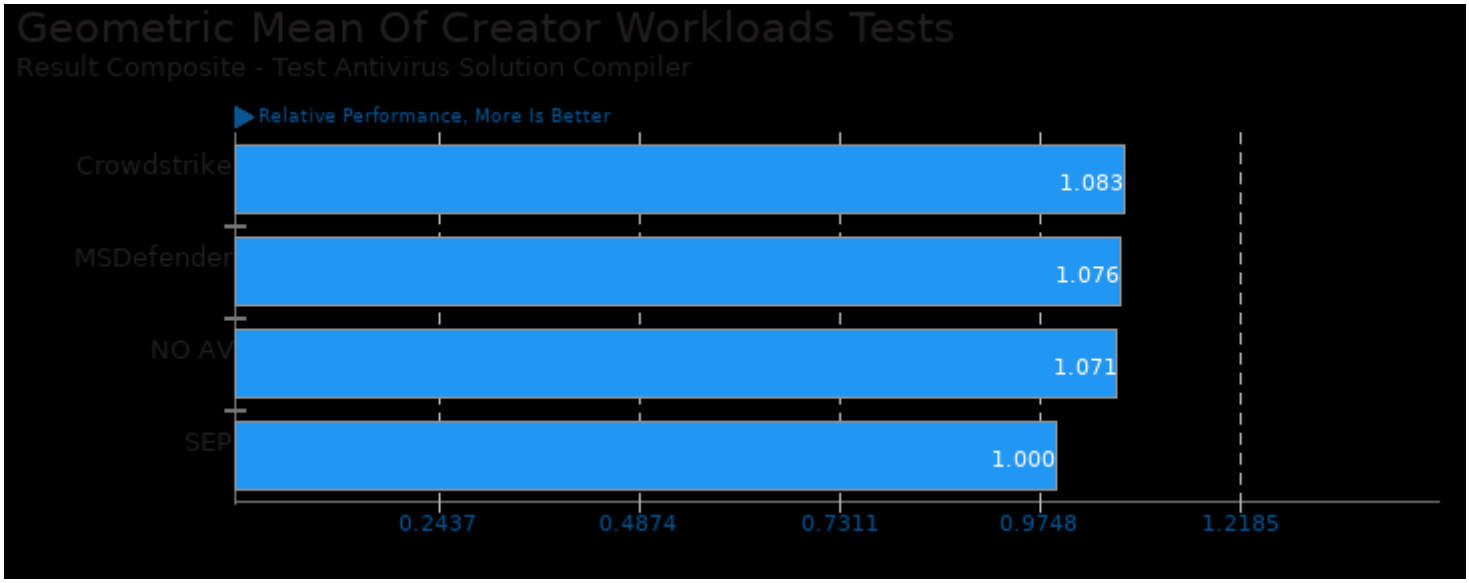
Geometric mean based upon tests: pts/mafft, pts/scimark2, pts/aobench, pts/graphics-magick, pts/stockfish, pts/c-ray, pts/compress-7zip, pts/encode-mp3, pts/encode-flac, pts/mrbayes, pts/john-the-ripper, pts/dav1d, pts/compress-zstd and pts/basis



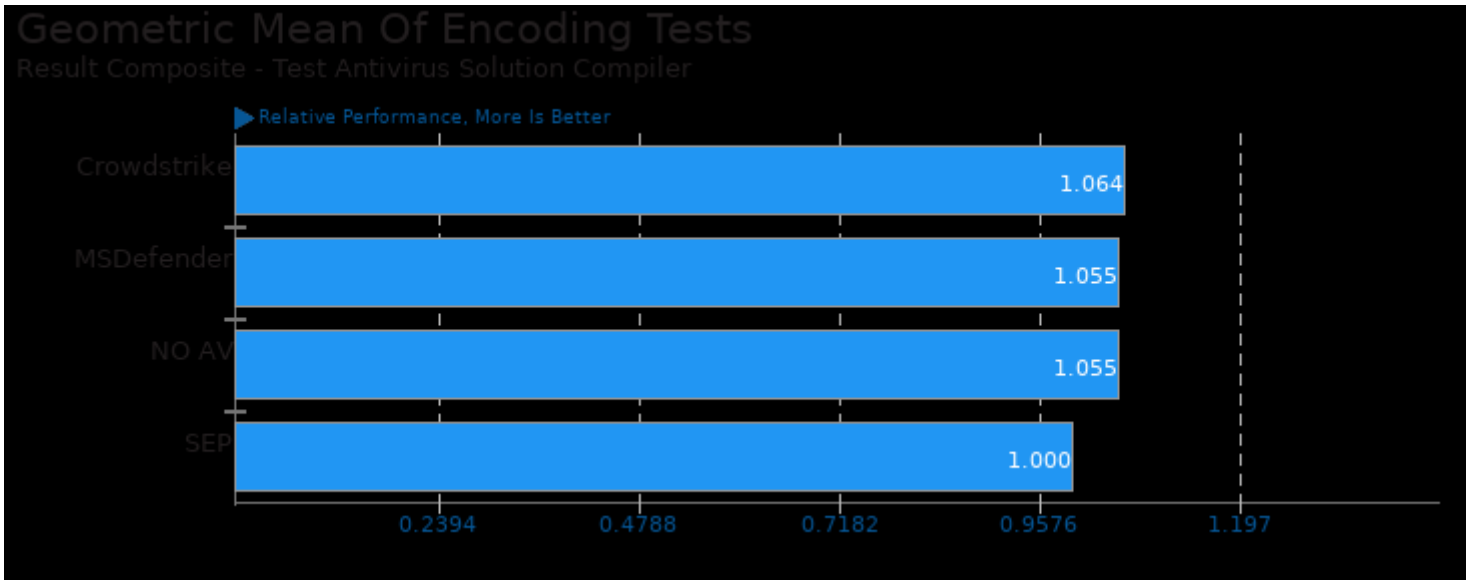
Geometric mean based upon tests: pts/compress-7zip, pts/compress-zstd, pts/compress-lz4, pts/system-decompress-xz and pts/system-decompress-gzip



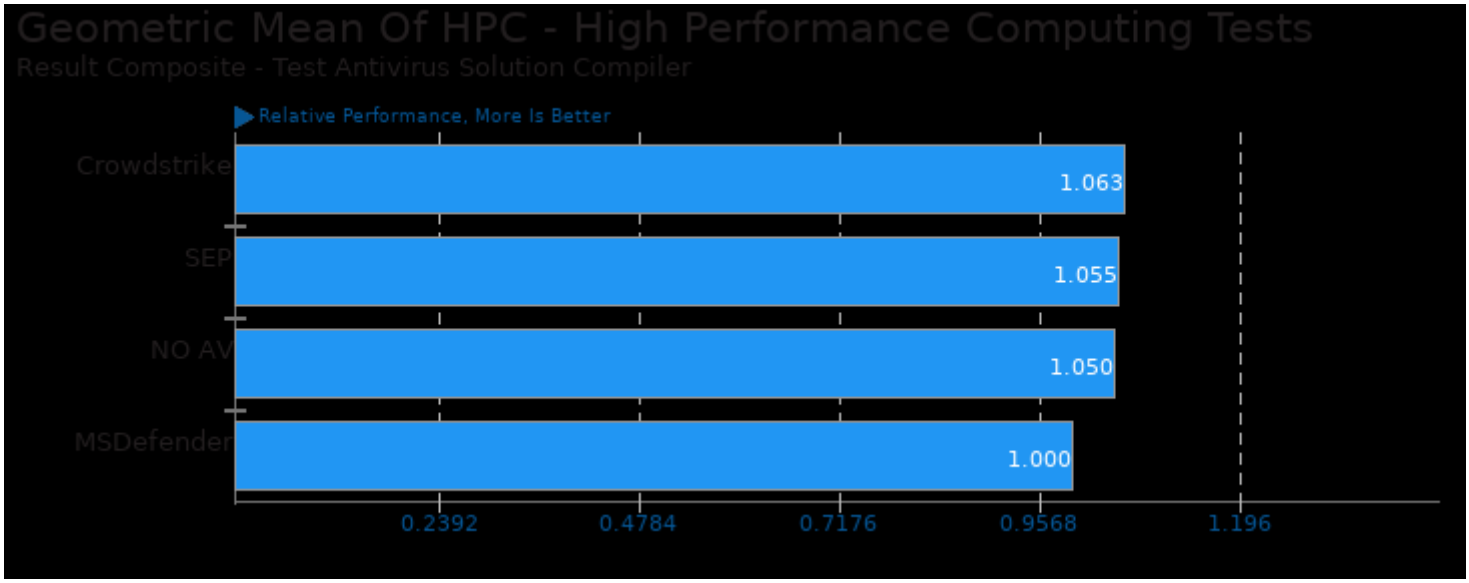
Geometric mean based upon tests: pts/c-ray, pts/compress-7zip, pts/compress-zstd, pts/dav1d, pts/encode-flac, pts/encode-mp3, pts/graphics-magick, pts/john-the-ripper, pts/mafft, pts/mrbayes and pts/stockfish



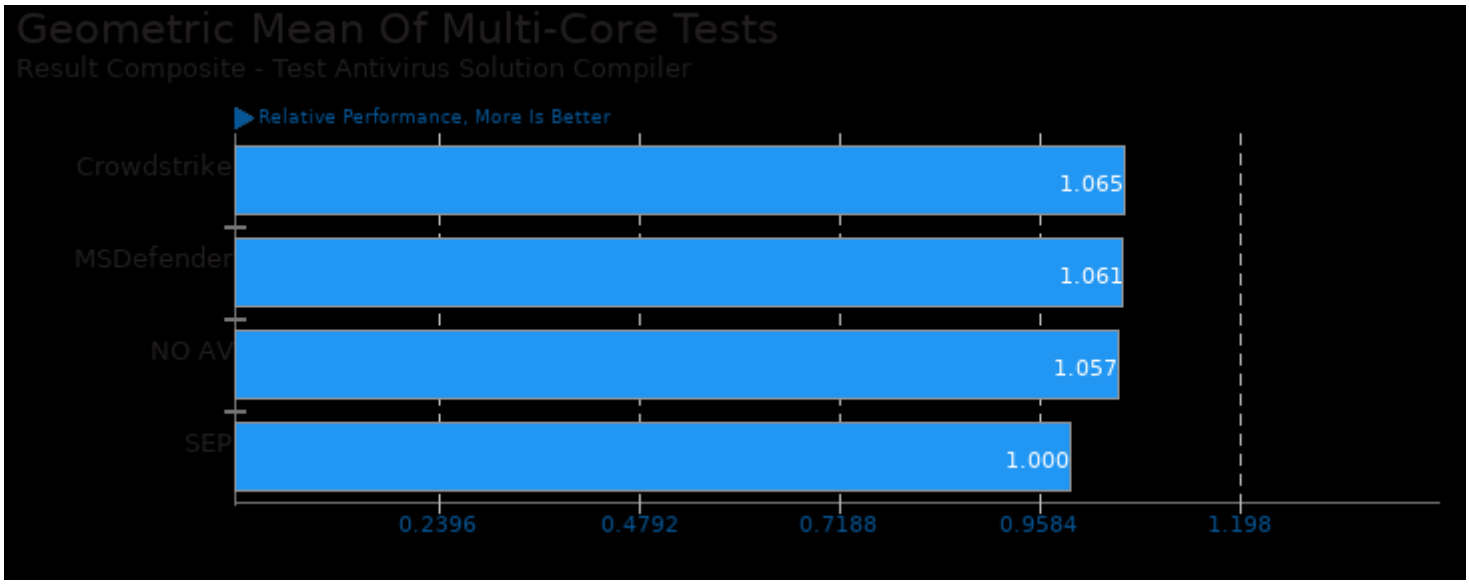
Geometric mean based upon tests: pts/c-ray, pts/aobench, pts/dav1d, pts/encode-mp3, pts/encode-flac, pts/graphics-magick and pts/basis



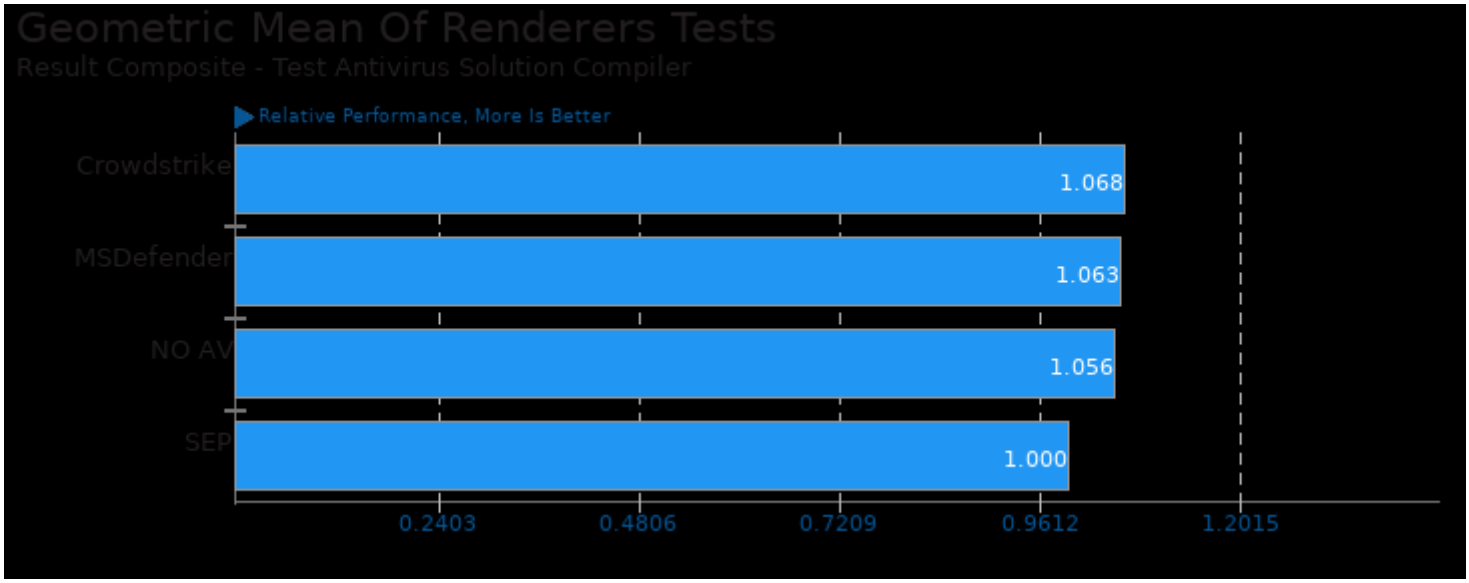
Geometric mean based upon tests: pts/encode-mp3, pts/encode-flac and pts/dav1d



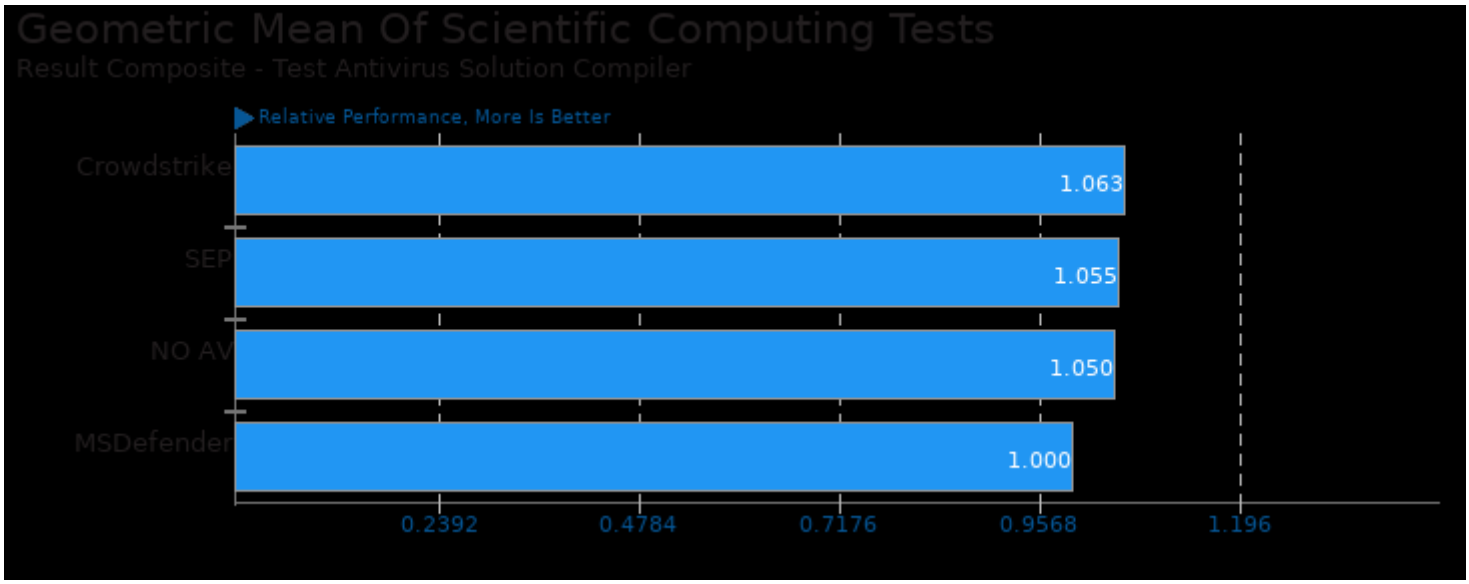
Geometric mean based upon tests: pts/mrbayes and pts/mafft



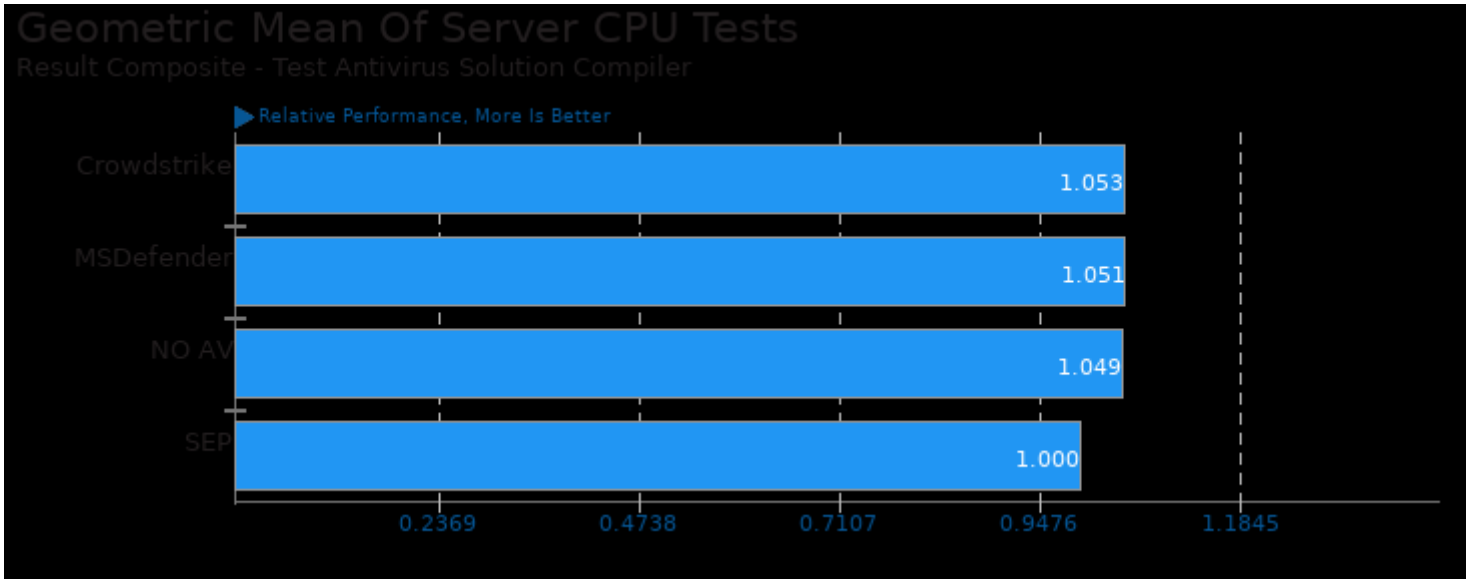
Geometric mean based upon tests: pts/c-ray, pts/stockfish, pts/dav1d, pts/john-the-ripper, pts/graphics-magick, pts/compress-7zip, pts/compress-zstd and pts/aobench



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

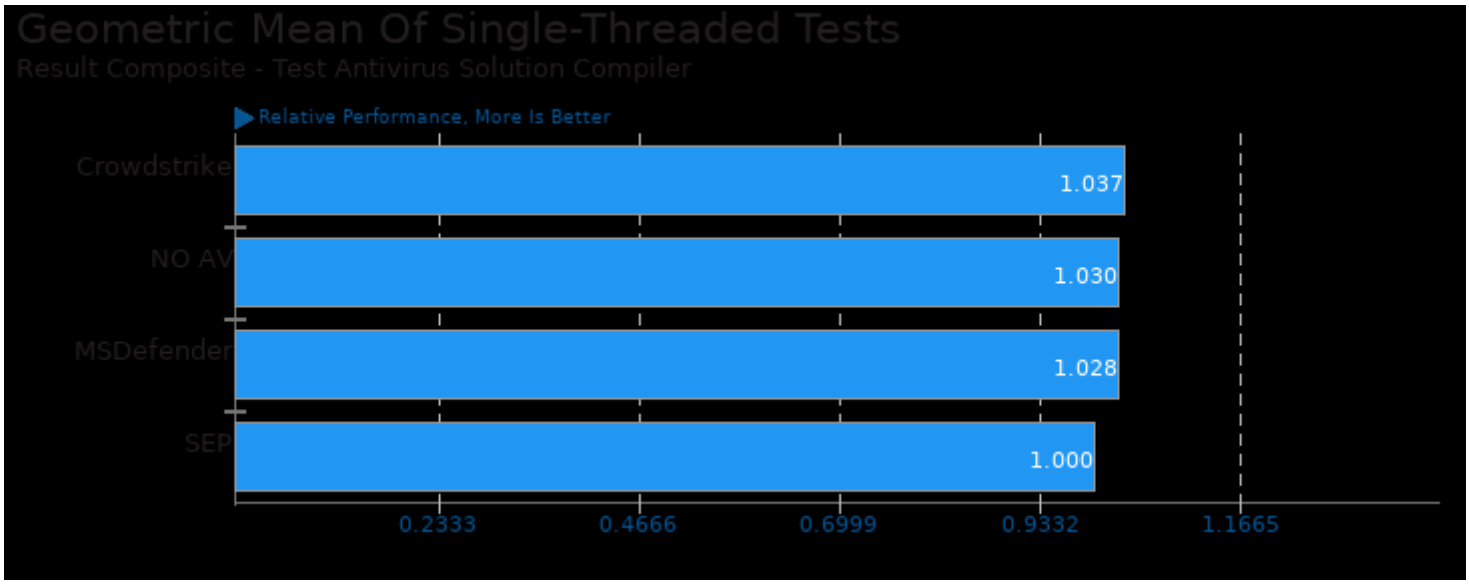


Geometric mean based upon tests: pts/mrbayes and pts/mafft



Geometric mean based upon tests: pts/john-the-ripper, pts/dav1d, pts/compress-7zip, pts/stockfish, pts/c-ray and pts/compress-zstd

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

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