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Ryzen 1800X Encoding

AMD Ryzen 9 3900X 12-Core testing with a ASUS ROG CROSSHAIR VIII HERO (WI-FI) (3204 BIOS) and Gigabyte AMD Radeon RX 56/64 8GB on Fedora 33 via the Phoronix Test Suite.

Automated Executive Summary

test had the most wins, coming in first place for 90% of the tests.

Based on the geometric mean of all complete results, the fastest (test) was 1.362x the speed of the slowest (Ryzen 1800X Encoding).

Test Systems:

Ryzen 1800X Encoding

Processor: AMD Ryzen 7 1800X Eight-Core @ 3.60GHz (8 Cores / 16 Threads), Motherboard: BIOSTAR X370GTN (5.13 BIOS), Chipset: AMD Family 17h, Memory: 16384MB, Disk: 1000GB Samsung SSD 960 EVO 1TB + 5001GB TOSHIBA MD04ACA5, Graphics: Gigabyte AMD Radeon RX 56/64 8GB (1630/945MHz), Audio: AMD Vega 10 HDMI

Ryzen 1800X Encoding

Audio, Monitor: DELL U2518D + VE248 + ASUS MG278, Network: Realtek RTL8111/8168/8411

OS: Fedora 30, Kernel: 5.2.9-200.fc30.x86_64 (x86_64), Desktop: Cinnamon 4.2.3, Display Server: X Server 1.20.5, Display Driver: modesetting 1.20.5, OpenGL: 4.5 Mesa 19.1.4 (LLVM 8.0.0), File-System: ext4, Screen Resolution: 7040x1440

Compiler Notes: --build=x86_64-redhat-linux --disable-libunwind-exceptions --enable-__cxa_atexit --enable-bootstrap --enable-cet --enable-checking=release --enable-gnu-indirect-function --enable-gnu-unique-object --enable-initfini-array --enable-languages=c,c++,fortran,objc,obj-c++,ada,go,d,lto --enable-multilib --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --mandir=/usr/share/man --with-arch_32=i686 --with-gcc-major-version-only --with-isl --with-linker-hash-style=gnu --with-tune=generic --without-cuda-driver
Processor Notes: Scaling Governor: acpi-cpufreq ondemand
Security Notes: SELinux + usercopy/swapgs barriers and __user pointer sanitization + Full AMD retpoline STIBP: disabled RSB filling + SSB disabled via prctl and seccomp

test

Processor: AMD Ryzen 9 3900X 12-Core @ 6.08GHz (12 Cores / 24 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (WI-FI) (3204 BIOS), Chipset: AMD Starship/Matisse, Memory: 32768MB, Disk: 2048GB PCIe SSD + 1000GB Samsung SSD 960 EVO 1TB + 5001GB TOSHIBA MD04ACA5, Graphics: Gigabyte AMD Radeon RX 56/64 8GB (1630/945MHz), Audio: AMD Vega 10 HDMI Audio, Monitor: ASUS MG278 + Index HMD + DELL U2518D + VE248, Network: Realtek RTL8125 2.5GbE + Intel I211 + Intel Wi-Fi 6 AX200

OS: Fedora 33, Kernel: 5.10.18-200.fc33.x86_64 (x86_64), Desktop: Cinnamon 4.8.6, Display Server: X Server 1.20.10, Display Driver: modesetting 1.20.10, OpenGL: 4.6 Mesa 20.3.4 (LLVM 11.0.0), Vulkan: 1.2.145, Compiler: GCC 10.2.1 20201125 + Clang 11.0.0, File-System: ext4, Screen Resolution: 7040x1440

Compiler Notes: --build=x86_64-redhat-linux --disable-libunwind-exceptions --enable-__cxa_atexit --enable-bootstrap --enable-cet --enable-checking=release --enable-gnu-indirect-function --enable-gnu-unique-object --enable-initfini-array --enable-languages=c,c++,fortran,objc,obj-c++,ada,go,d,lto --enable-multilib --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --mandir=/usr/share/man --with-arch_32=i686 --with-gcc-major-version-only --with-isl --with-linker-hash-style=gnu --with-tune=generic --without-cuda-driver
Processor Notes: Scaling Governor: acpi-cpufreq schedutil
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + 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 AMD retpoline IBPB: conditional STIBP: conditional RSB filling + srbds: Not affected + tsx_async_abort: Not affected

	Ryzen 1800X Encoding	test
SVT-AV1 - 1.8.b.Y.T.A.V.E (FPS)	22.84	
Standard Deviation	1%	
SVT-HEVC - 1.8.b.Y.T.H.V.E (FPS)	**127**	**230.11**
Normalized	55.19%	100%
Standard Deviation	2.8%	2.5%
SVT-VP9 - 1.8.b.Y.T.V.V.E (FPS)	47.22	
Standard Deviation	1.1%	
VP9 libvpx Encoding - v.V.1.V.E (FPS)	**106**	**118.07**
Normalized	89.78%	100%
Standard Deviation	3.5%	2.8%
x264 - H.2.V.E (FPS)	**71.46**	**132.20**
Normalized	54.05%	100%
Standard Deviation	2.6%	6.6%
x265 - H.2.1.V.E (FPS)	**27.86**	**47.76**
Normalized	58.33%	100%
Standard Deviation	0.7%	0.4%
dav1d - Summer Nature 4K (sec)	**38.44**	**23.70**

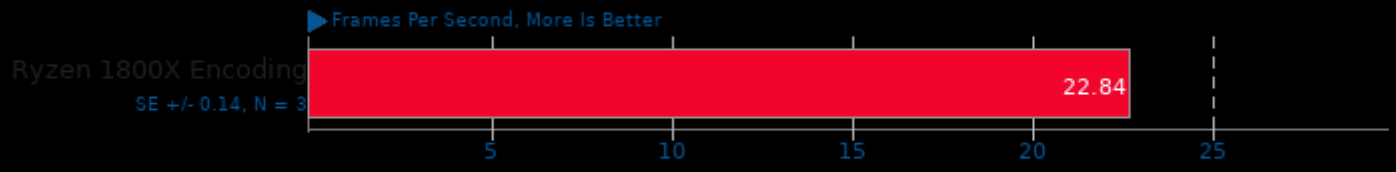
Ryzen 1800X Encoding

Normalized	61.65%	100%
Standard Deviation	0.4%	0.3%
dav1d - S.N.1 (sec)	**12.39**	**9.89**
Normalized	79.82%	100%
Standard Deviation	1.3%	1.4%
FLAC Audio Encoding - WAV To FLAC (sec)	**10.12**	**7.89**
Normalized	77.96%	100%
Standard Deviation	0.7%	0.4%
LAME MP3 Encoding - WAV To MP3 (sec)	**34.63**	**25.65**
Normalized	74.07%	100%
Standard Deviation	0.3%	0.8%
FFmpeg - H.2.H.T.N.D (sec)	**6.74**	**8.18**
Normalized	100%	82.4%
Standard Deviation	1.1%	0.8%
Mencoder - AVI To LAVC (sec)	**18.53**	**15.63**
Normalized	84.35%	100%
Standard Deviation	2%	1.2%

Ryzen 1800X Encoding

SVT-AV1 0.5

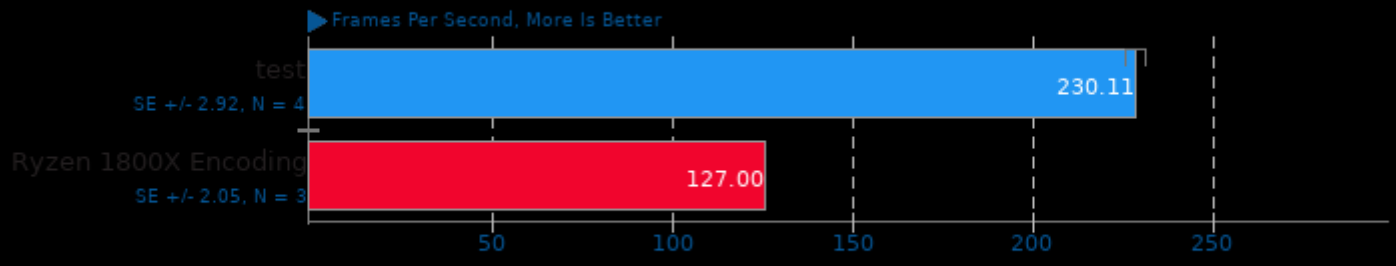
1080p 8-bit YUV To AV1 Video Encode



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

SVT-HEVC 2019-02-03

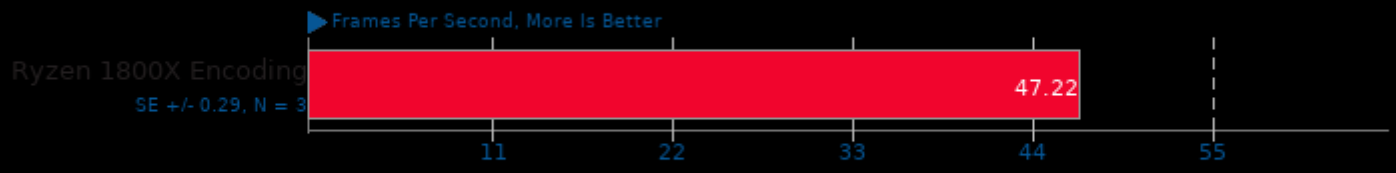
1080p 8-bit YUV To HEVC Video Encode



1. (CC) gcc options: -fPIE -fPIC -O2 -flto -fvisibility=hidden -march=native -pie -rdynamic -lpthread -lrt

SVT-VP9 2019-02-17

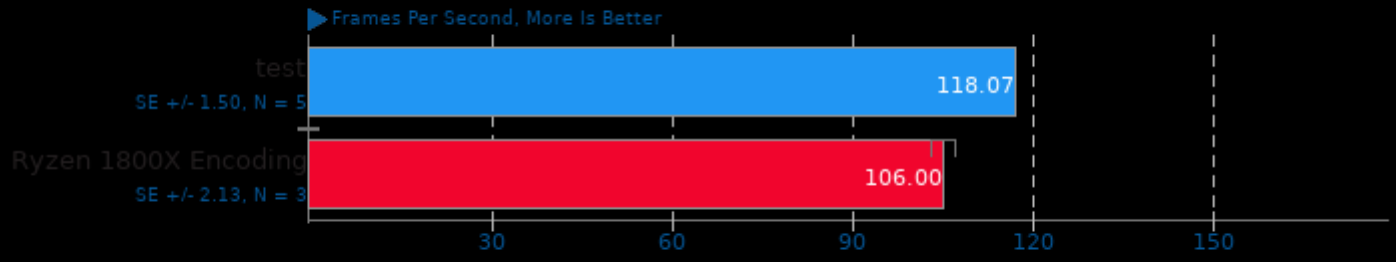
1080p 8-bit YUV To VP9 Video Encode



1. (CC) gcc options: -fPIE -fPIC -O2 -flto -fvisibility=hidden -mavx -pie -rdynamic -lpthread -lrt -lm

VP9 libvpx Encoding 1.8.0

vpxenc VP9 1080p Video Encode

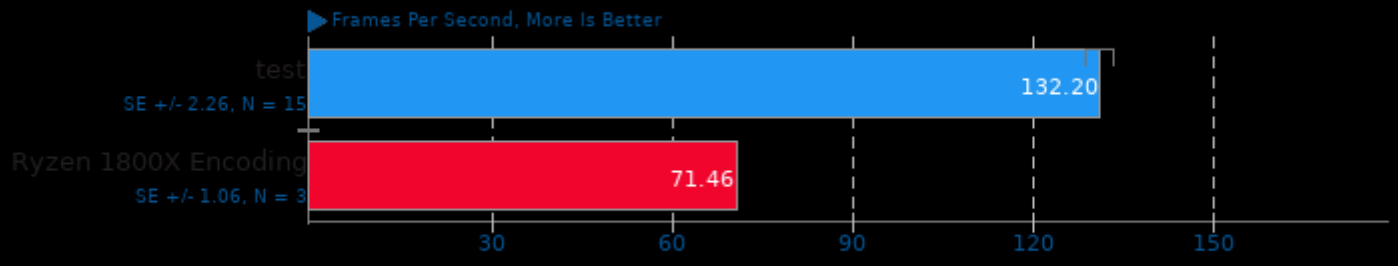


1. (CXX) g++ options: -m64 -lm -lpthread -O3 -fPIC -U_FORTIFY_SOURCE -std=c++11

Ryzen 1800X Encoding

x264 2018-09-25

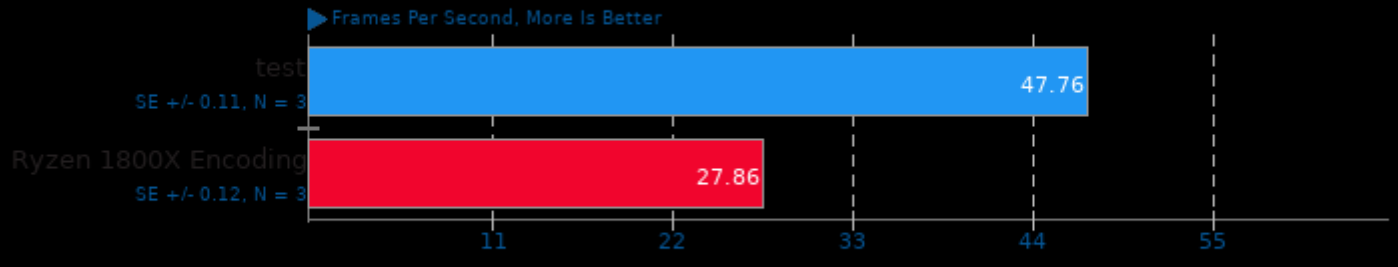
H.264 Video Encoding



1. (CC) gcc options: -ldl -m64 -lm -lpthread -O3 -ffast-math -std=gnu99 -fPIC -fomit-frame-pointer -fno-tree-vectorize

x265 3.0

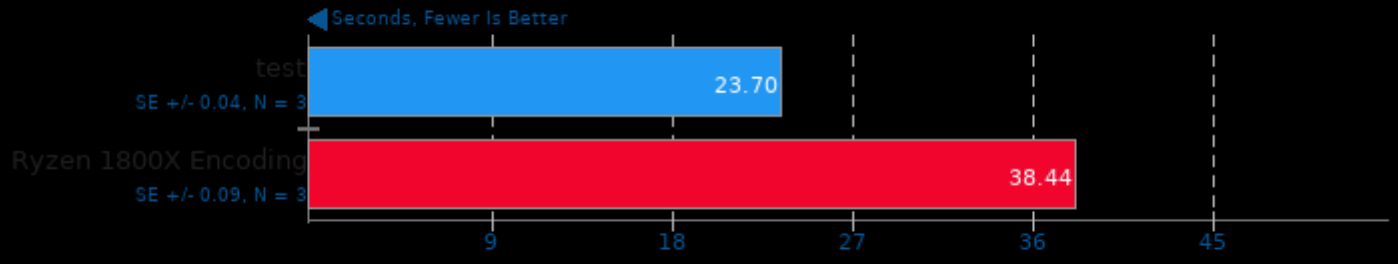
H.265 1080p Video Encoding



1. (CXX) g++ options: -O2 -rdynamic -lpthread -lrt -ldl

dav1d 0.3

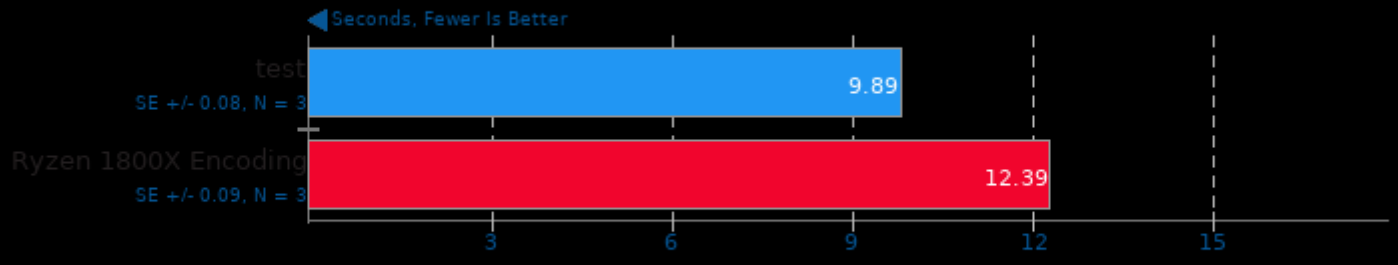
Video Input: Summer Nature 4K



1. (CC) gcc options: -pthread

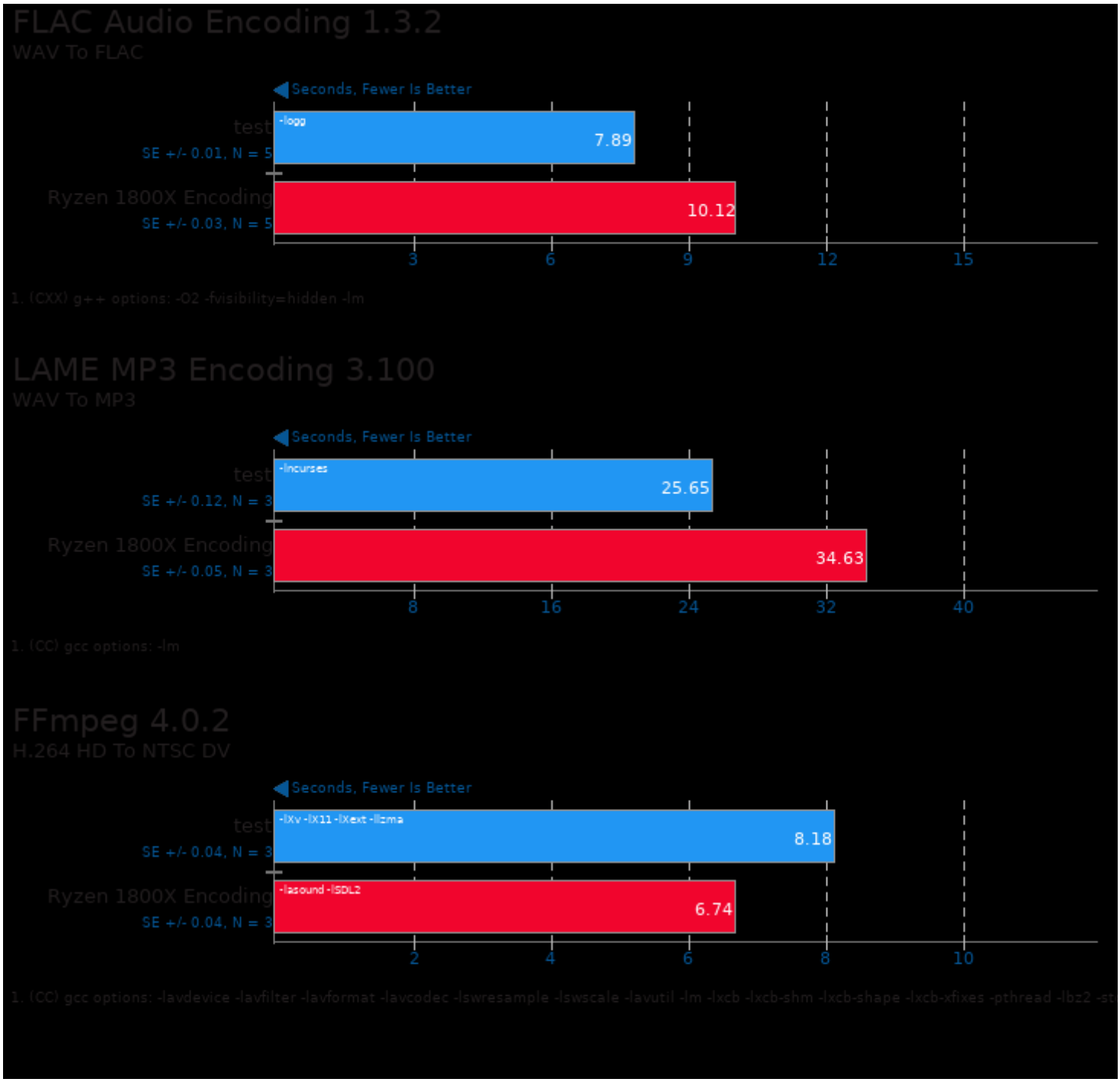
dav1d 0.3

Video Input: Summer Nature 1080p

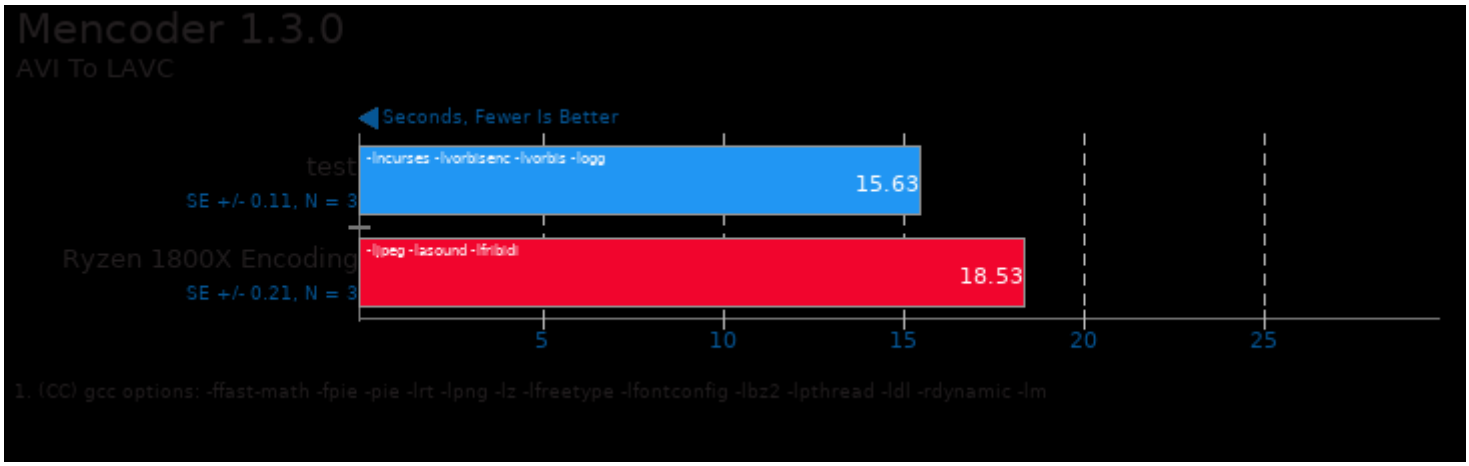


1. (CC) gcc options: -pthread

Ryzen 1800X Encoding



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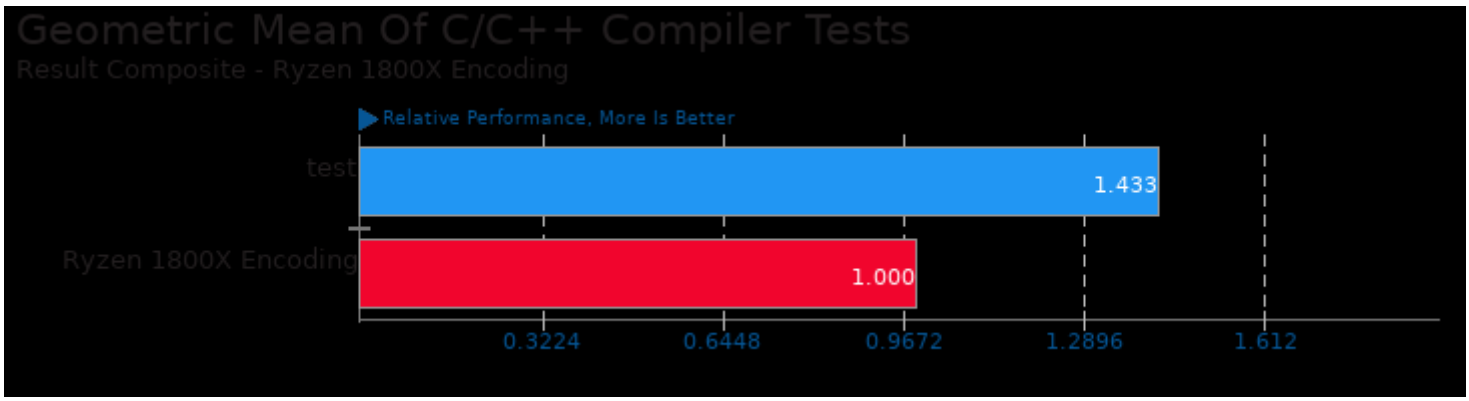
These geometric means are based upon test groupings / test suites for this result file.



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



Geometric mean based upon tests: pts/dav1d and pts/svt-av1

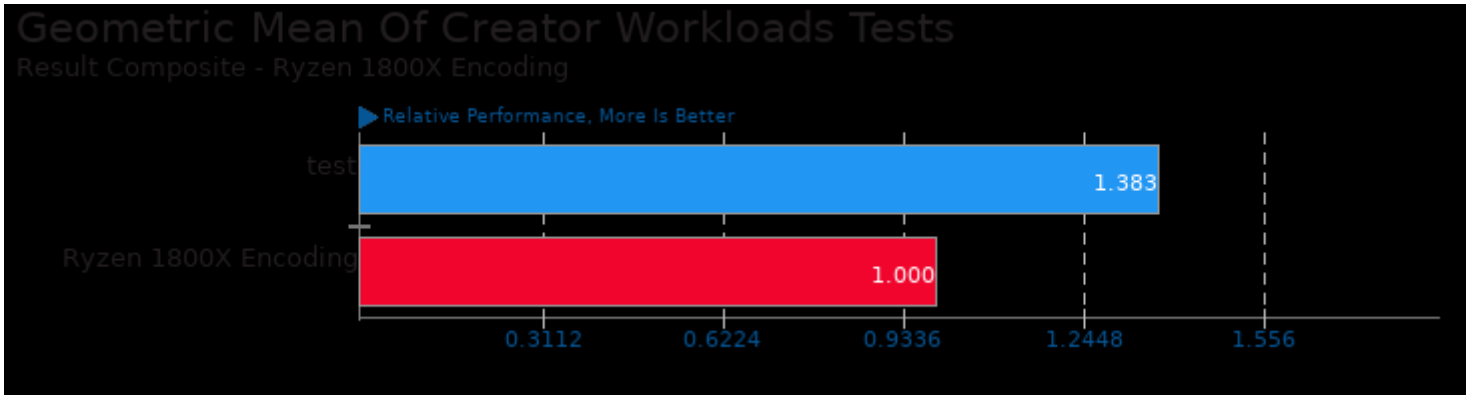


Geometric mean based upon tests: pts/vpxenc, pts/encode-mp3, pts/encode-flac, pts/dav1d, pts/x264, pts/x265, pts/svt-av1 and pts/svt-vp9

Ryzen 1800X Encoding



Geometric mean based upon tests: pts/dav1d, pts/svt-av1, pts/svt-hevc, pts/svt-vp9, pts/vpxenc, pts/x264, pts/x265, pts/encode-flac and pts/encode-mp3



Geometric mean based upon tests: pts/svt-vp9, pts/svt-hevc, pts/x264, pts/x265, pts/ffmpeg, pts/vpxenc, pts/dav1d, pts/svt-av1, pts/encode-mp3 and pts/encode-flac

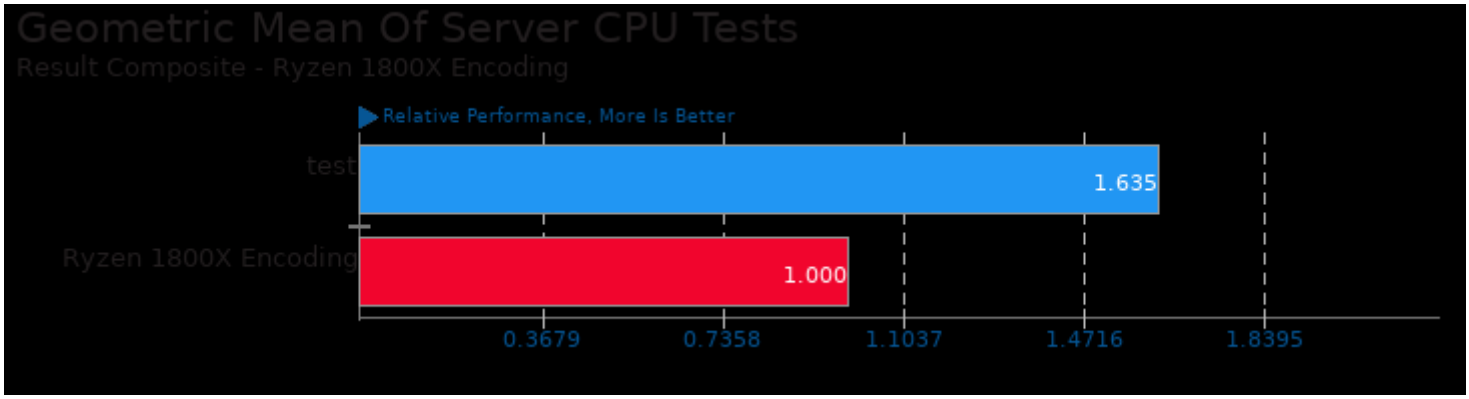


Geometric mean based upon tests: pts/encode-mp3, pts/encode-flac, pts/svt-vp9, pts/svt-hevc, pts/x264, pts/x265, pts/ffmpeg, pts/vpxenc, pts/dav1d and pts/svt-av1

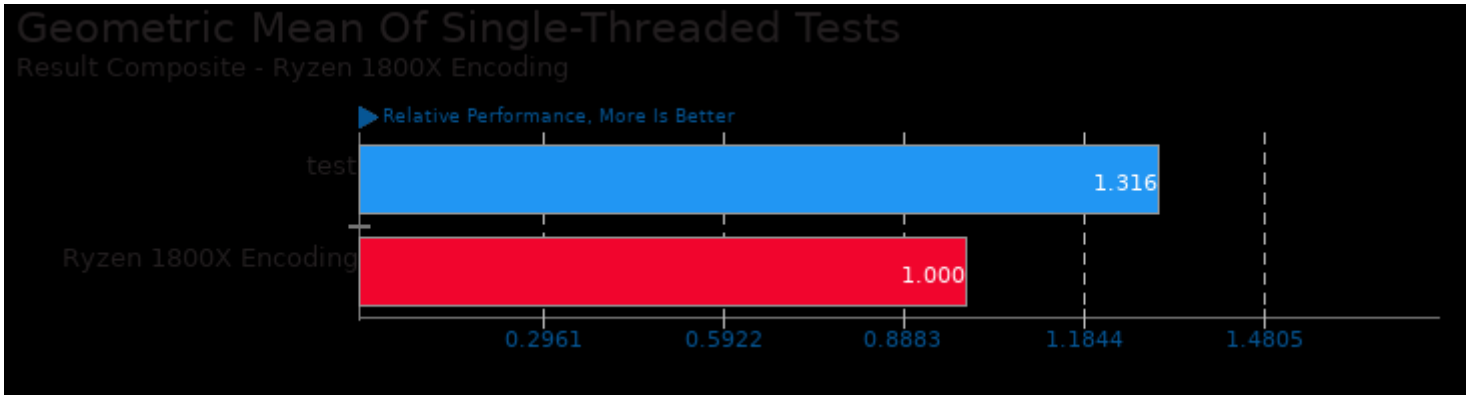
Ryzen 1800X Encoding



Geometric mean based upon tests: pts/svt-vp9, pts/svt-hevc, pts/x264, pts/x265, pts/ffmpeg, pts/vpxenc, pts/dav1d and pts/svt-av1



Geometric mean based upon tests: pts/svt-av1, pts/svt-hevc, pts/svt-vp9, pts/x264, pts/x265 and pts/dav1d



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



Ryzen 1800X Encoding

Geometric mean based upon tests: pts/svt-vp9, pts/svt-hevc, pts/x264, pts/x265, pts/ffmpeg, pts/vpxenc, pts/dav1d and pts/svt-av1

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