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intel satty

Intel Core i9-9900K testing with a ASRock Z390M Pro4 (P4.20 BIOS) and Intel UHD 630 CFL GT2 3GB on Ubuntu 20.04 via the Phoronix Test Suite.

Automated Executive Summary

A had the most wins, coming in first place for 62% of the tests.

Based on the geometric mean of all complete results, the fastest (A) was 1.008x the speed of the slowest (B). C was 0.994x the speed of A and B was 0.998x the speed of C.

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

OpenCV (Test: Object Detection) at 1.098x
OpenCV (Test: DNN - Deep Neural Network) at 1.097x
Stockfish (Total Time) at 1.086x
OpenCV (Test: Image Processing) at 1.062x
OpenCV (Test: Video) at 1.018x
Chia Blockchain VDF (Test: Square Assembly Optimized) at 1.018x
OSPRay (Benchmark: gravity_spheres_volume/dim_512/scivis/real_time) at 1.017x
OSPRay (Benchmark: gravity_spheres_volume/dim_512/ao/real_time) at 1.015x
ParaView (Test: Wavelet Volume - Resolution: 800 x 600) at 1.012x

OSPRay (Benchmark: particle_volume/pathtracer/real_time) at 1.011x.

Test Systems:

A

B

C

Processor: Intel Core i9-9900K @ 5.00GHz (8 Cores / 16 Threads), Motherboard: ASRock Z390M Pro4 (P4.20 BIOS), Chipset: Intel Cannon Lake PCH, Memory: 16GB, Disk: 240GB Corsair Force MP510, Graphics: Intel UHD 630 CFL GT2 3GB (1200MHz), Audio: Realtek ALC892, Monitor: MX279, Network: Intel I219-V

OS: Ubuntu 20.04, Kernel: 5.9.0-050900rc1daily20200819-generic (x86_64) 20200818, Desktop: GNOME Shell 3.36.9, Display Server: X Server 1.20.8, OpenGL: 4.6 Mesa 21.2.6, OpenCL: OpenCL 2.1, Compiler: GCC 9.4.0, 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-Av3uEd/gcc-9-9.4.0/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 powersave (EPP: balance_performance) - CPU Microcode: 0xd6 - Thermald 1.9.1
Python Notes: Python 2.7.18 + Python 3.8.10
Security Notes: itlb_multihit: KVM: Mitigation of VMX disabled + l1tf: Not affected + mds: Vulnerable; SMT vulnerable + meltdown: Not affected + spec_store_bypass: Vulnerable + spectre_v1: Vulnerable: __user pointer sanitization and usercopy barriers only; no swapgs barriers + spectre_v2: Vulnerable IBPB: disabled STIBP: disabled + srbds: Vulnerable + tsx_async_abort: Vulnerable

	A	B	C
ParaView - Many Spheres - 800 x 600 (Frames / Sec)	**6.83**	**6.79**	6.81
Normalized	100%	99.41%	99.71%
ParaView - Many Spheres - 800 x 600 (MiPolys / Sec)	**684.584**	**681.215**	682.651
Normalized	100%	99.51%	99.72%
ParaView - Many Spheres - 1024 x 768 (Frames / Sec)	**6.79**	**6.77**	**6.77**
Normalized	100%	99.71%	99.71%
ParaView - Many Spheres - 1024 x 768 (MiPolys / Sec)	**680.573**	678.533	**678.477**
Normalized	100%	99.7%	99.69%

ParaView - Many Spheres - 1280 x 1024 (Frames / Sec)	**6.72**	**6.71**	**6.72**
Normalized	100%	99.85%	100%
ParaView - Many Spheres - 1280 x 1024 (MiPolys / Sec)	673.48	**672.542**	**673.89**
Normalized	99.94%	99.8%	100%
ParaView - Many Spheres - 1920 x 1080 (Frames / Sec)	**6.65**	**6.66**	**6.66**
Normalized	99.85%	100%	100%
ParaView - Many Spheres - 1920 x 1080 (MiPolys / Sec)	**666.939**	667.379	**667.705**
Normalized	99.89%	99.95%	100%
ParaView - Wavelet Volume - 800 x 600 (Frames / Sec)	41.32	**41.16**	**41.64**
Normalized	99.23%	98.85%	100%
ParaView - Wavelet Volume - 800 x 600 (MiVoxels / Sec)	661.149	**658.544**	**666.2**
Normalized	99.24%	98.85%	100%
ParaView - Wavelet Contour - 800 x 600 (Frames / Sec)	**54.43**	**54.2**	54.29
Normalized	100%	99.58%	99.74%
ParaView - Wavelet Contour - 800 x 600 (MiPolys / Sec)	**567.231**	**564.847**	565.721
Normalized	100%	99.58%	99.73%
ParaView - Wavelet Volume - 1024 x 768 (Frames / Sec)	**32.34**	**32.19**	**32.34**
Normalized	100%	99.54%	100%
ParaView - Wavelet Volume - 1024 x 768 (MiVoxels / Sec)	**517.514**	**515.054**	517.401
Normalized	100%	99.52%	99.98%
ParaView - Wavelet Contour - 1024 x 768 (Frames / Sec)	**49.72**	49.26	**49.2**
Normalized	100%	99.07%	98.95%
ParaView - Wavelet Contour - 1024 x 768 (MiPolys / Sec)	**518.094**	513.317	**512.7**
Normalized	100%	99.08%	98.96%
ParaView - Wavelet Volume - 1280 x 1024 (Frames / Sec)	**24.42**	24.4	**24.25**
Normalized	100%	99.92%	99.3%
ParaView - Wavelet Volume - 1280 x 1024 (MiVoxels / Sec)	**390.725**	390.332	**388.061**
Normalized	100%	99.9%	99.32%
ParaView - Wavelet Volume - 1920 x 1080 (Frames / Sec)	**24.05**	**24.07**	**24.05**
Normalized	99.92%	100%	99.92%
ParaView - Wavelet Volume - 1920 x 1080 (MiVoxels / Sec)	**384.735**	**385.091**	384.876
Normalized	99.91%	100%	99.94%
ParaView - Wavelet Contour - 1280 x 1024 (Frames / Sec)	**41.34**	**41.34**	**41.65**
Normalized	99.26%	99.26%	100%

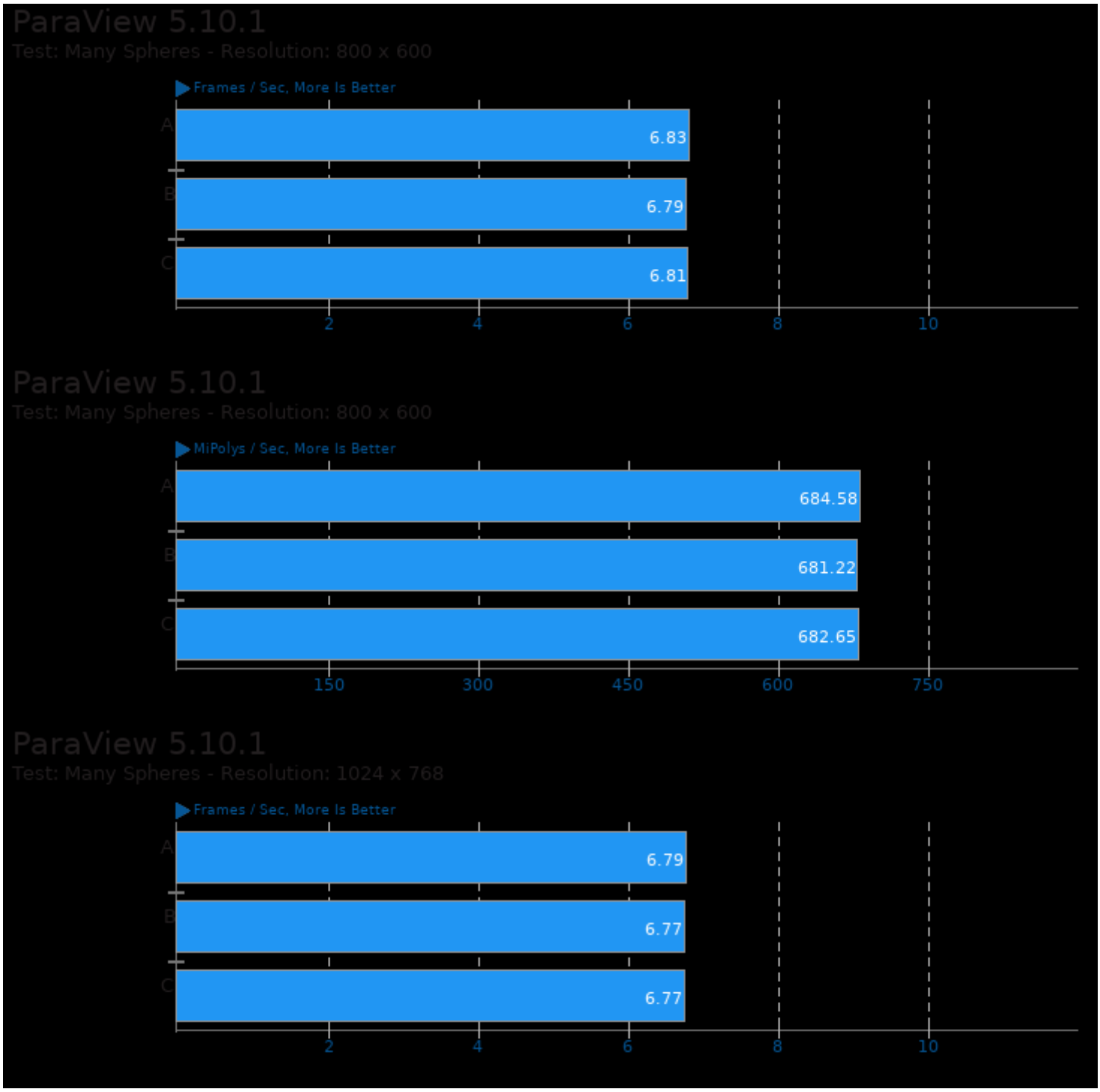
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ParaView - Wavelet Contour - 1280 x 1024 (MiPolys / Sec)	430.822	430.858	434.03
Normalized	99.26%	99.27%	100%
ParaView - Wavelet Contour - 1920 x 1080 (Frames / Sec)	39.14	39.02	39.06
Normalized	100%	99.69%	99.8%
ParaView - Wavelet Contour - 1920 x 1080 (MiPolys / Sec)	407.882	406.611	407.076
Normalized	100%	99.69%	99.8%
VKMark - 800 x 600 - Mailbox (VKMark Score)	3697	3693	3700
Normalized	99.92%	99.81%	100%
VKMark - 1024 x 768 - Mailbox (VKMark	2572	2565	2566
Normalized	100%	99.73%	99.77%
VKMark - 1280 x 1024 - Mailbox (VKMark Score)	1523	1532	1531
Normalized	99.41%	100%	99.93%
VKMark - 1920 x 1080 - Mailbox (VKMark Score)	801	799	801
Normalized	100%	99.75%	100%
VKMark - 800 x 600 - Immediate (VKMark Score)	3698	3698	3698
VKMark - 1024 x 768 - Immediate (VKMark Score)	2571	2569	2560
Normalized	100%	99.92%	99.57%
VKMark - 1280 x 1024 - Immediate (VKMark Score)	1520	1522	1522
Normalized	99.87%	100%	100%
VKMark - 1920 x 1080 - Immediate (VKMark Score)	805	800	799
Normalized	100%	99.38%	99.25%
Chia Blockchain VDF - Square Plain C++	155900	156100	156100
Normalized	99.87%	100%	100%
Chia Blockchain VDF - S.A.O (IPS)	231800	230000	227700
Normalized	100%	99.22%	98.23%
OSPRay - particle_volume/ao/real_time (Items/sec)	4.37173	4.37792	4.33507
Normalized	99.86%	100%	99.02%
OSPRay - particle_volume/scivis/real_time (Items/sec)	4.31353	4.30656	4.30178
Normalized	100%	99.84%	99.73%
OSPRay - particle_volume/pathtracer/real_time	126.635	125.219	125.648
Normalized	100%	98.88%	99.22%
OSPRay - gravity_spheres_volume/dim_512/ao/real_time (Items/sec)	2.07555	2.05782	2.08932
Normalized	99.34%	98.49%	100%

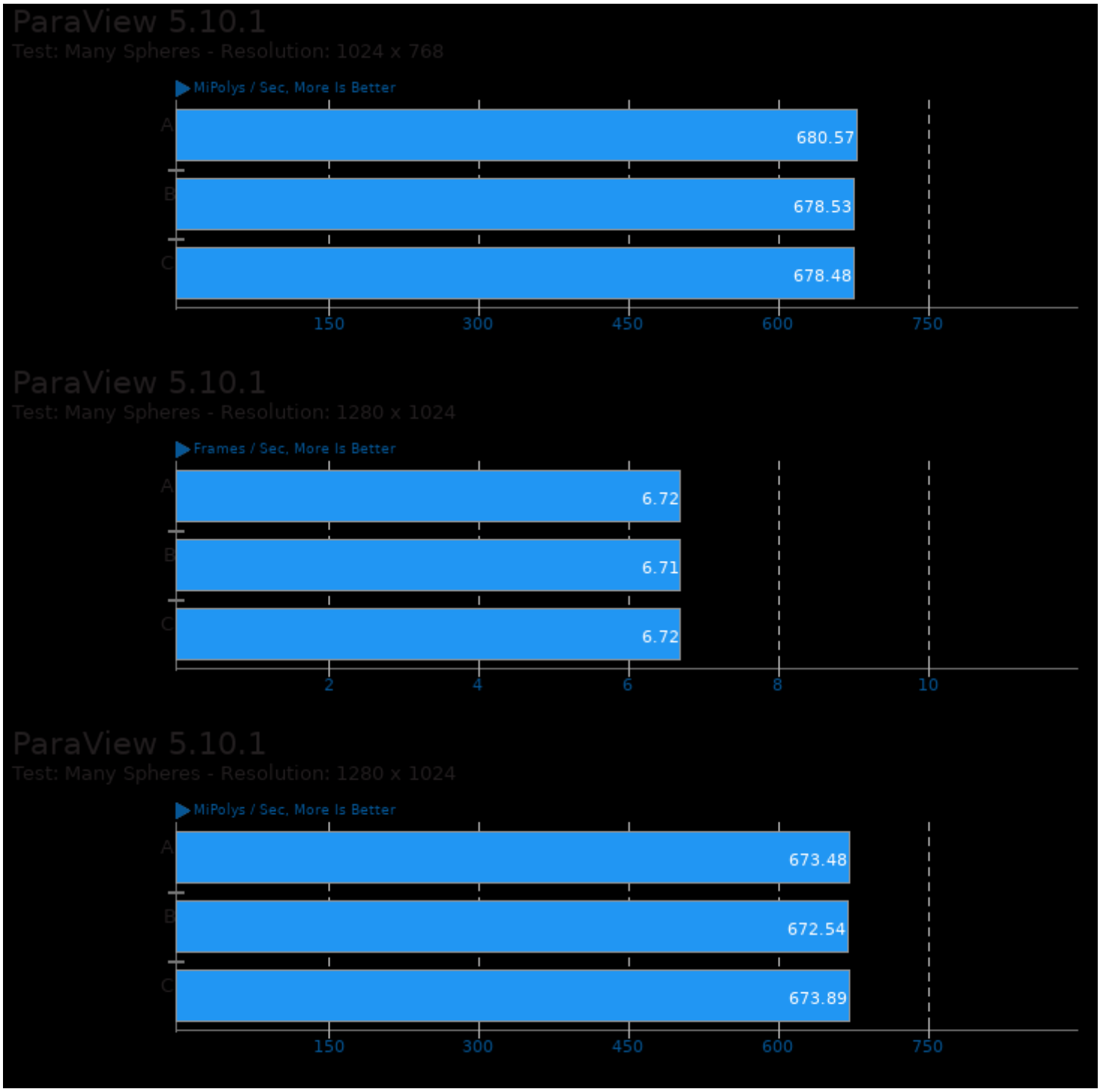
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OSPRay - gravity_spheres_volume/dim_512/scivis/real_time (Items/sec)	2.0149	1.99306	1.9813
Normalized	100%	98.92%	98.33%
OSPRay - gravity_spheres_volume/dim_512/pathtracer/real_time (Items/sec)	2.91393	2.91961	2.92167
Normalized	99.74%	99.93%	100%
Stockfish - Total Time (Nodes/s)	20615657	18979011	19146000
Normalized	100%	92.06%	92.87%
Chaos Group V-RAY - CPU (vsamples)	9113	9109	9113
Normalized	100%	99.96%	100%
OpenCV - Core (ms)	62202	62293	62503
Normalized	100%	99.85%	99.52%
OpenCV - Video (ms)	23875	23794	23450
Normalized	98.22%	98.55%	100%
OpenCV - Graph API (ms)	161666	161917	162299
Normalized	100%	99.84%	99.61%
OpenCV - Stitching (ms)	163240	163011	163512
Normalized	99.86%	100%	99.69%
OpenCV - Features 2D (ms)	48090	47756	48011
Normalized	99.31%	100%	99.47%
OpenCV - Image Processing (ms)	86236	90505	91618
Normalized	100%	95.28%	94.13%
OpenCV - Object Detection (ms)	41310	45341	44331
Normalized	100%	91.11%	93.19%
OpenCV - DNN - D.N.N (ms)	7238	7942	7591
Normalized	100%	91.14%	95.35%

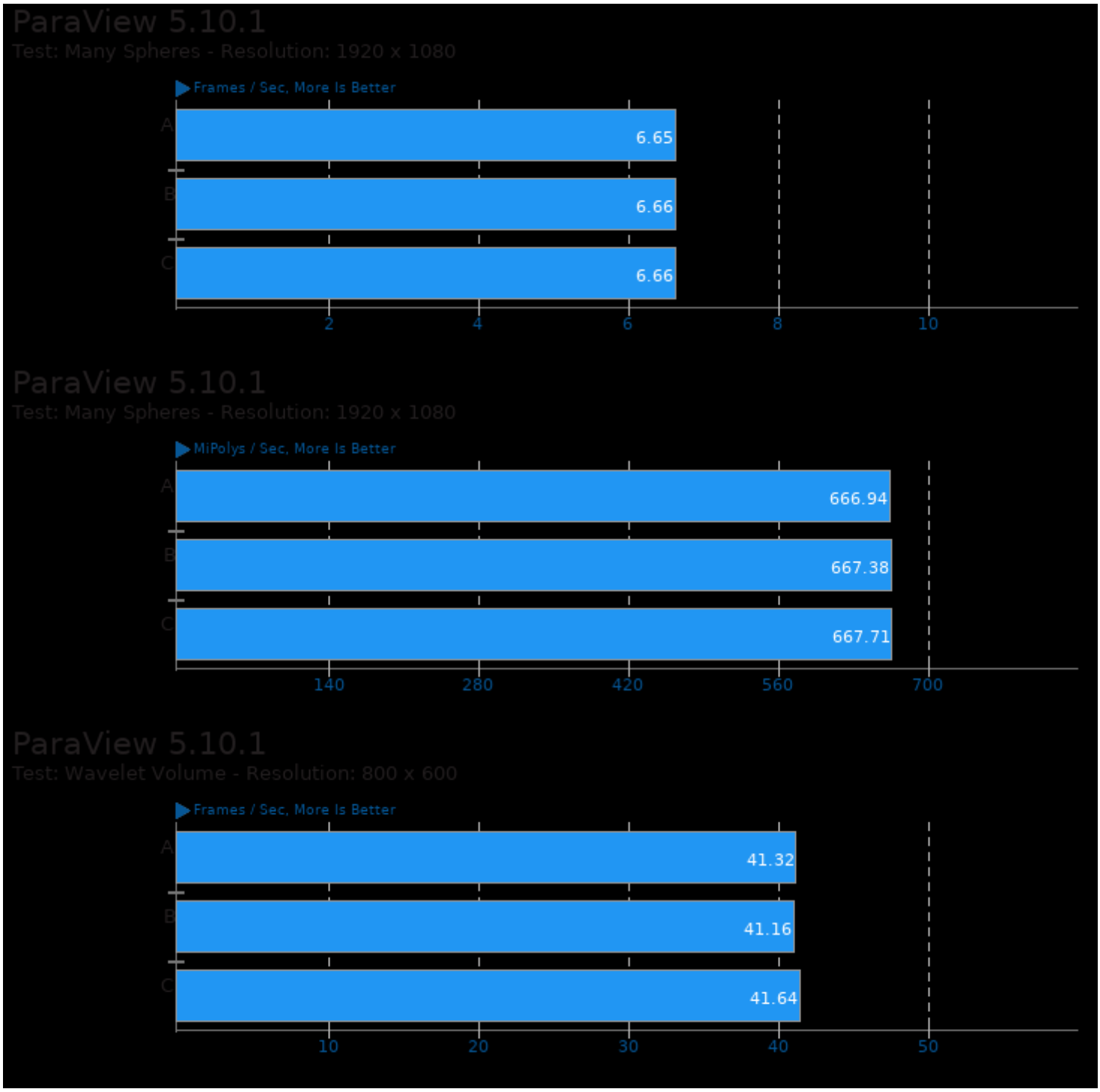
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ParaView 5.10.1
Test: Many Spheres - Resolution: 800 x 600
Frames / Sec, More Is Better
A
B
C
6.83
6.79
6.81
2
4
6
8
10
ParaView 5.10.1
Test: Many Spheres - Resolution: 800 x 600
MiPolys / Sec, More Is Better
A
B
C
684.58
681.22
682.65
150
300
450
600
750
ParaView 5.10.1
Test: Many Spheres - Resolution: 1024 x 768
Frames / Sec, More Is Better
A
B
C
6.79
6.77
6.77
2
4
6
8
10

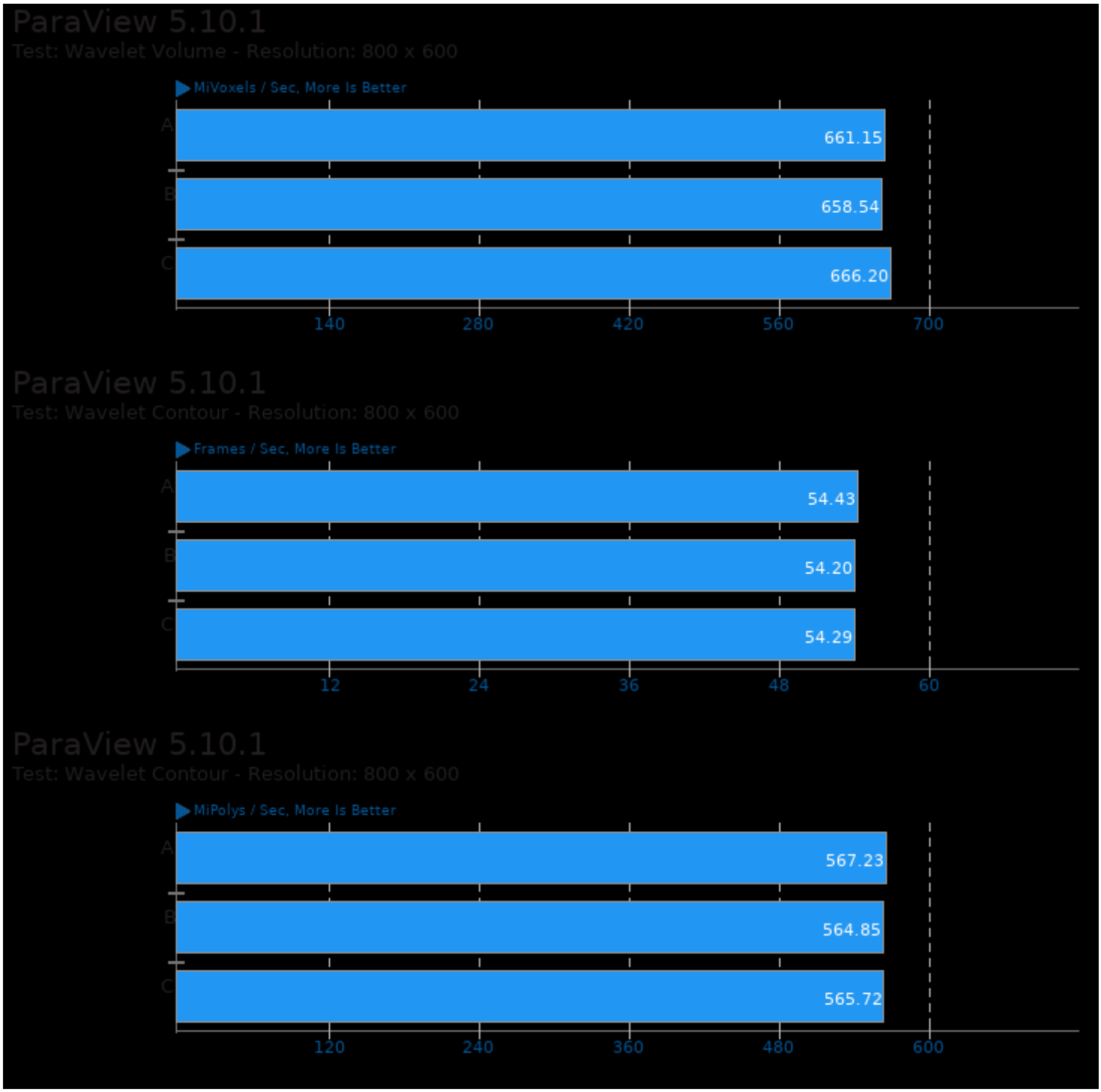
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ParaView 5.10.1
Test: Many Spheres - Resolution: 1024 x 768
MiPolys / Sec, More Is Better
A
B
C
680.57
678.53
678.48
150
300
450
600
750
ParaView 5.10.1
Test: Many Spheres - Resolution: 1280 x 1024
Frames / Sec, More Is Better
A
B
C
6.72
6.71
6.72
2
4
6
8
10
ParaView 5.10.1
Test: Many Spheres - Resolution: 1280 x 1024
MiPolys / Sec, More Is Better
A
B
C
673.48
672.54
673.89
150
300
450
600
750

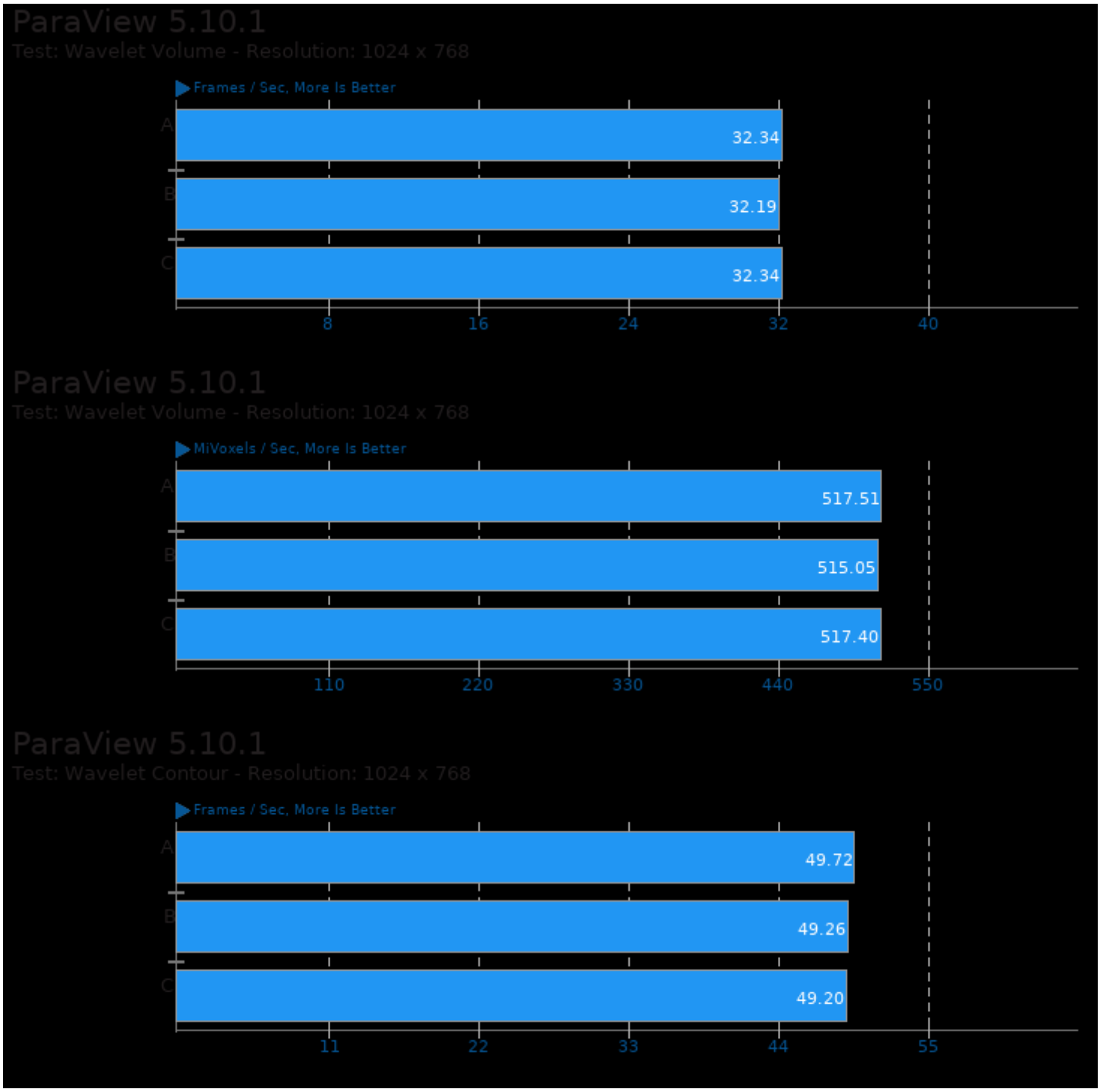
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ParaView 5.10.1
Test: Many Spheres - Resolution: 1920 x 1080
Frames / Sec, More Is Better
A
B
C
6.65
6.66
6.66
2
4
6
8
10
ParaView 5.10.1
Test: Many Spheres - Resolution: 1920 x 1080
MiPolys / Sec, More Is Better
A
B
C
666.94
667.38
667.71
140
280
420
560
700
ParaView 5.10.1
Test: Wavelet Volume - Resolution: 800 x 600
Frames / Sec, More Is Better
A
B
C
41.32
41.16
41.64
10
20
30
40
50

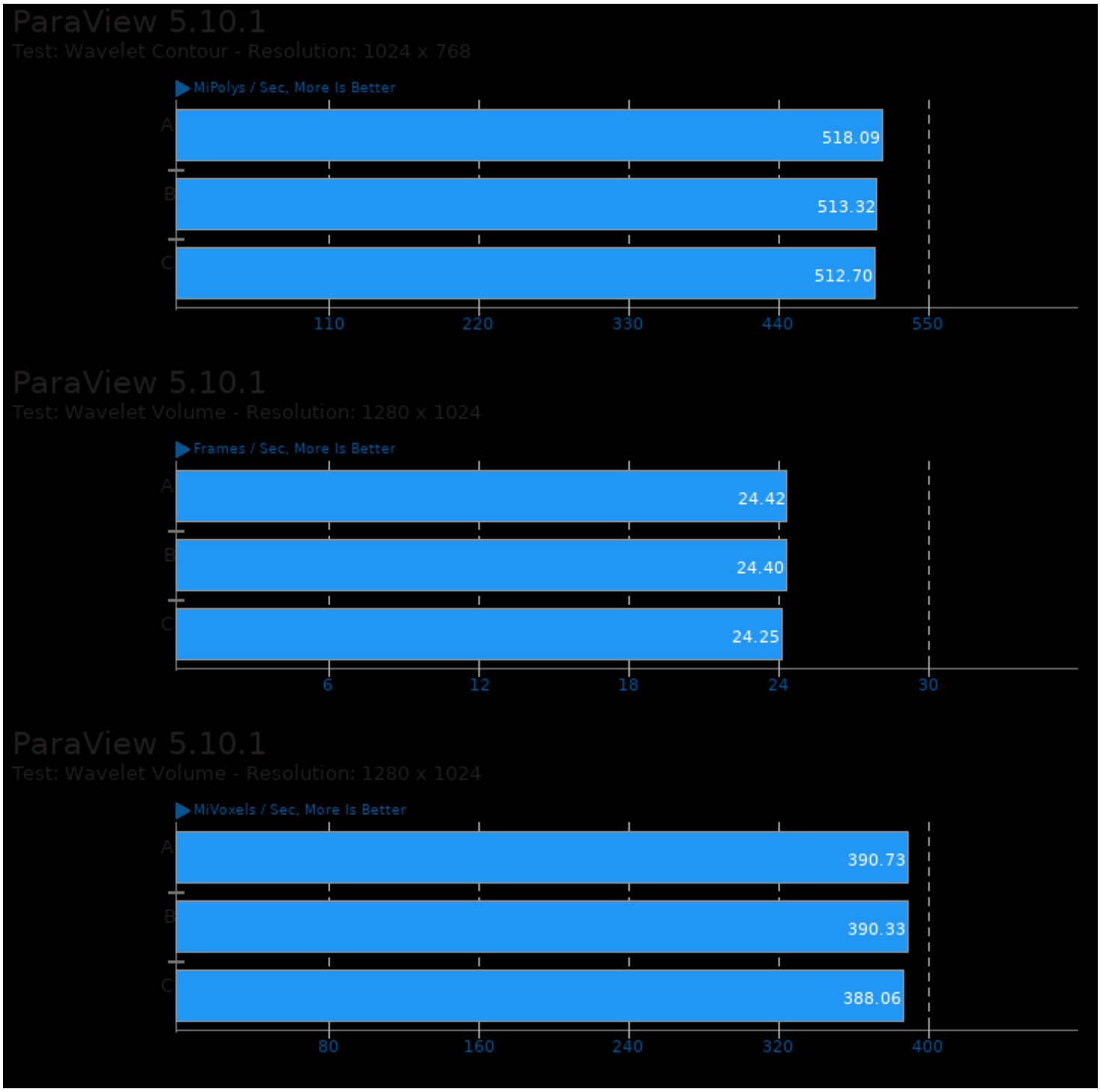
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ParaView 5.10.1
Test: Wavelet Volume - Resolution: 800 x 600
MiVoxels / Sec, More Is Better
A
661.15
B
658.54
C
666.20
140
280
420
560
700
ParaView 5.10.1
Test: Wavelet Contour - Resolution: 800 x 600
Frames / Sec, More Is Better
A
54.43
B
54.20
C
54.29
12
24
36
48
60
ParaView 5.10.1
Test: Wavelet Contour - Resolution: 800 x 600
MiPolys / Sec, More Is Better
A
567.23
B
564.85
C
565.72
120
240
360
480
600

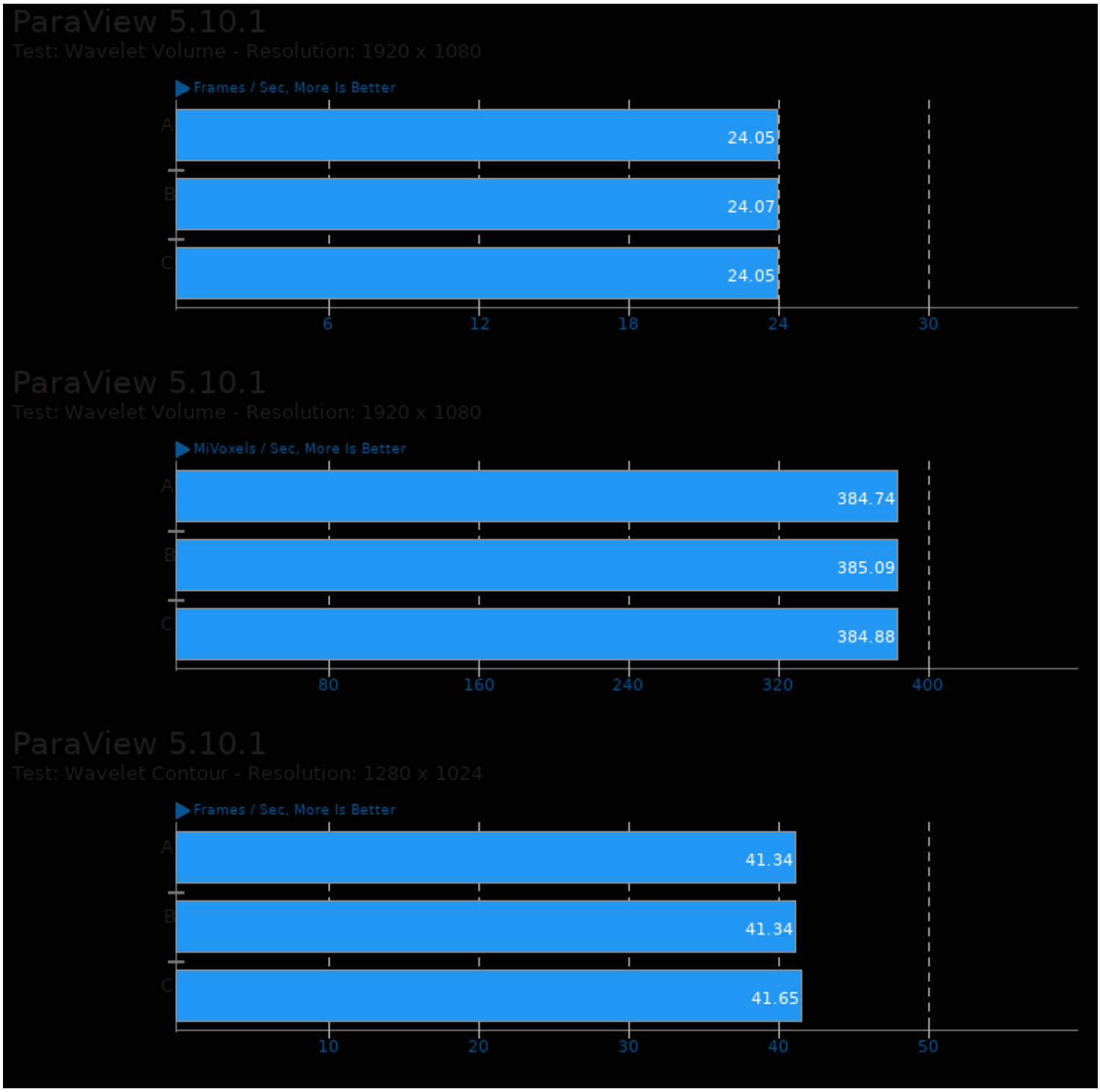
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ParaView 5.10.1
Test: Wavelet Volume - Resolution: 1024 x 768
Frames / Sec, More Is Better
A
B
C
32.34
32.19
32.34
8
16
24
32
40
ParaView 5.10.1
Test: Wavelet Volume - Resolution: 1024 x 768
MiVoxels / Sec, More Is Better
A
B
C
517.51
515.05
517.40
110
220
330
440
550
ParaView 5.10.1
Test: Wavelet Contour - Resolution: 1024 x 768
Frames / Sec, More Is Better
A
B
C
49.72
49.26
49.20
11
22
33
44
55

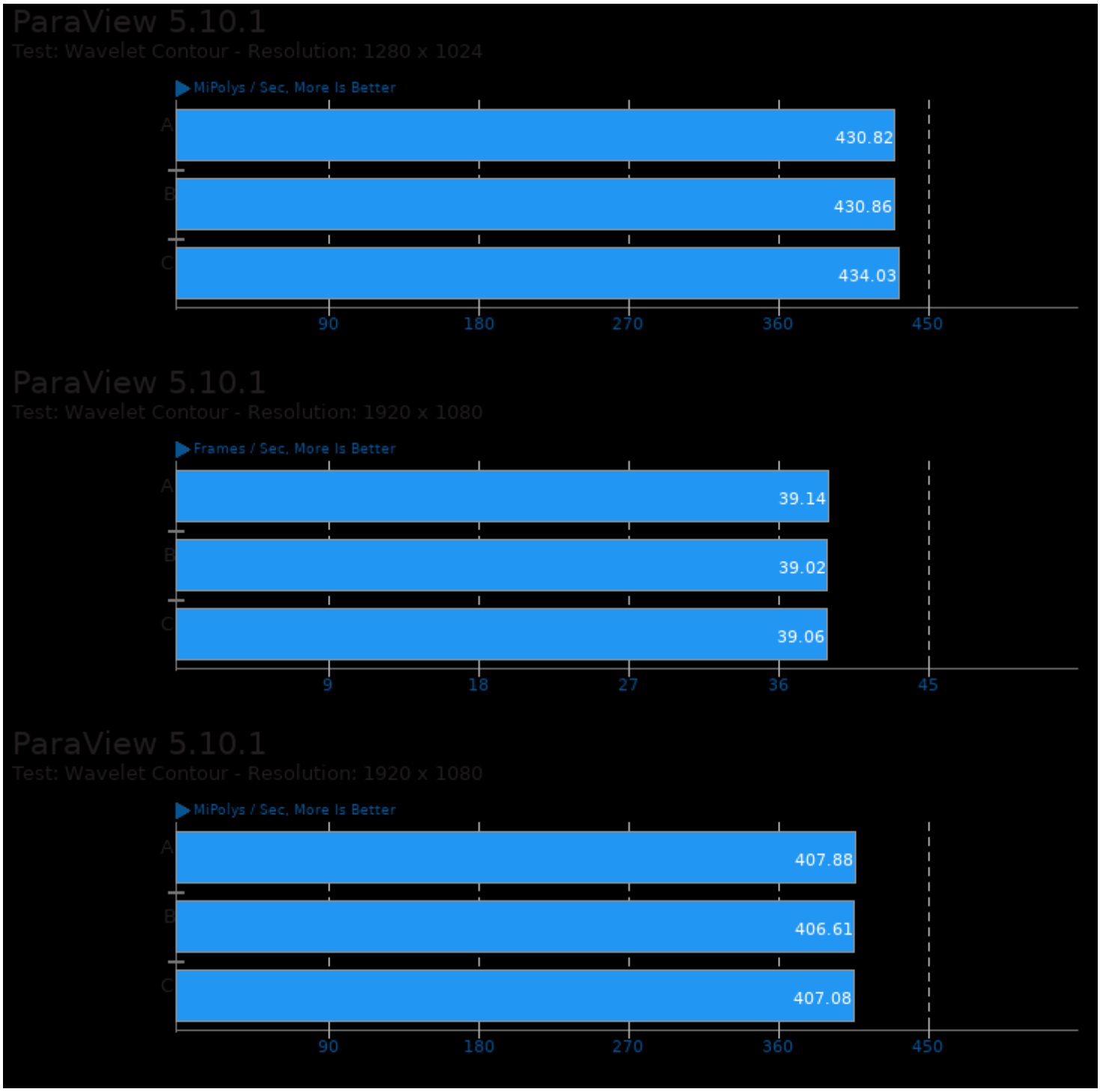
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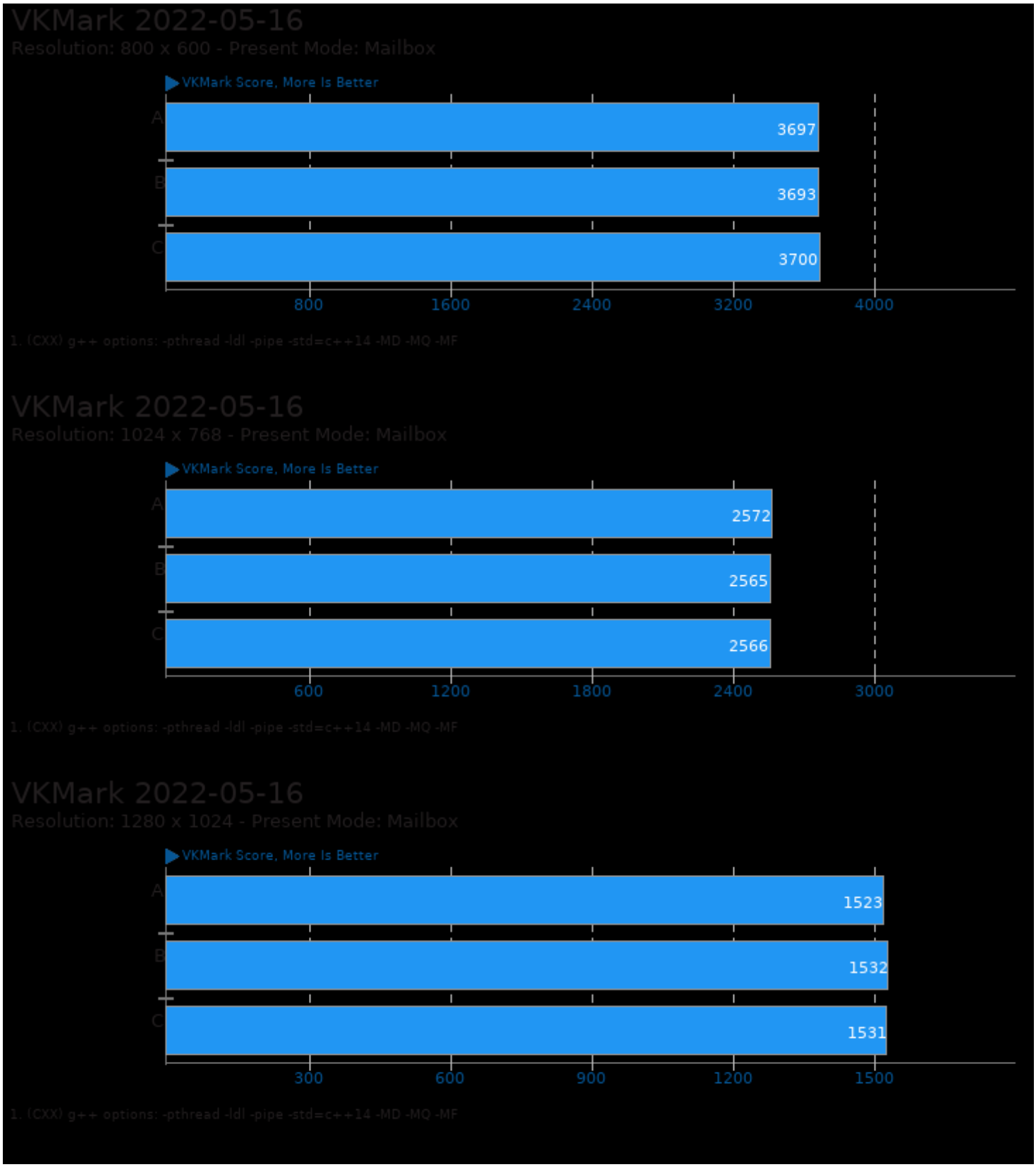

ParaView 5.10.1
Test: Wavelet Contour - Resolution: 1024 x 768
MiPolys / Sec, More Is Better
A
B
C
518.09
513.32
512.70
110
220
330
440
550
ParaView 5.10.1
Test: Wavelet Volume - Resolution: 1280 x 1024
Frames / Sec, More Is Better
A
B
C
24.42
24.40
24.25
6
12
18
24
30
ParaView 5.10.1
Test: Wavelet Volume - Resolution: 1280 x 1024
MiVoxels / Sec, More Is Better
A
B
C
390.73
390.33
388.06
80
160
240
320
400

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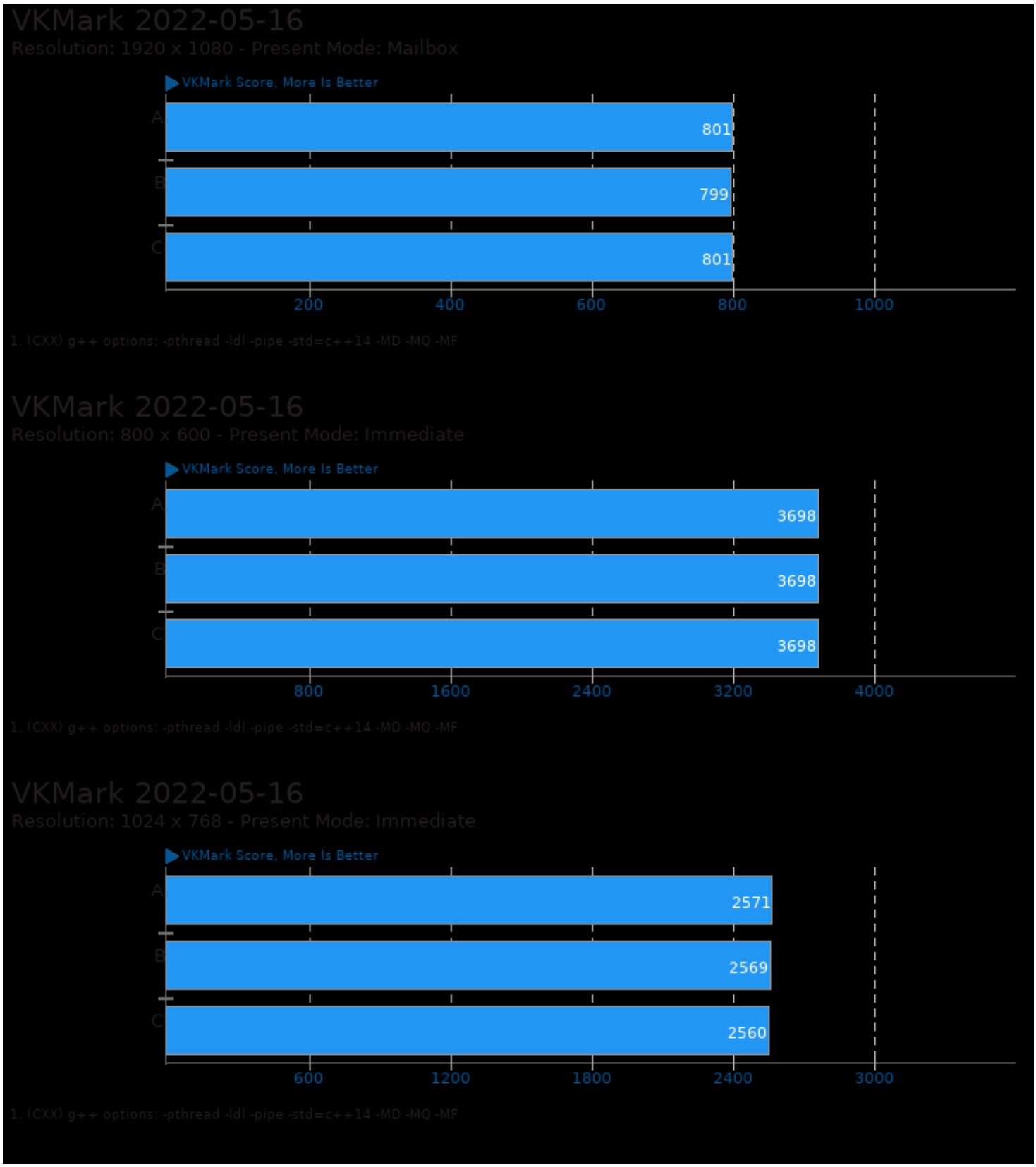

ParaView 5.10.1
Test: Wavelet Volume - Resolution: 1920 x 1080
Frames / Sec, More Is Better
A
B
C
24.05
24.07
24.05
6
12
18
24
30
ParaView 5.10.1
Test: Wavelet Volume - Resolution: 1920 x 1080
MiVoxels / Sec, More Is Better
A
B
C
384.74
385.09
384.88
80
160
240
320
400
ParaView 5.10.1
Test: Wavelet Contour - Resolution: 1280 x 1024
Frames / Sec, More Is Better
A
B
C
41.34
41.34
41.65
10
20
30
40
50

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ParaView 5.10.1
Test: Wavelet Contour - Resolution: 1280 x 1024
MiPolys / Sec, More Is Better
A
B
C
430.82
430.86
434.03
90
180
270
360
450
ParaView 5.10.1
Test: Wavelet Contour - Resolution: 1920 x 1080
Frames / Sec, More Is Better
A
B
C
39.14
39.02
39.06
9
18
27
36
45
ParaView 5.10.1
Test: Wavelet Contour - Resolution: 1920 x 1080
MiPolys / Sec, More Is Better
A
B
C
407.88
406.61
407.08
90
180
270
360
450

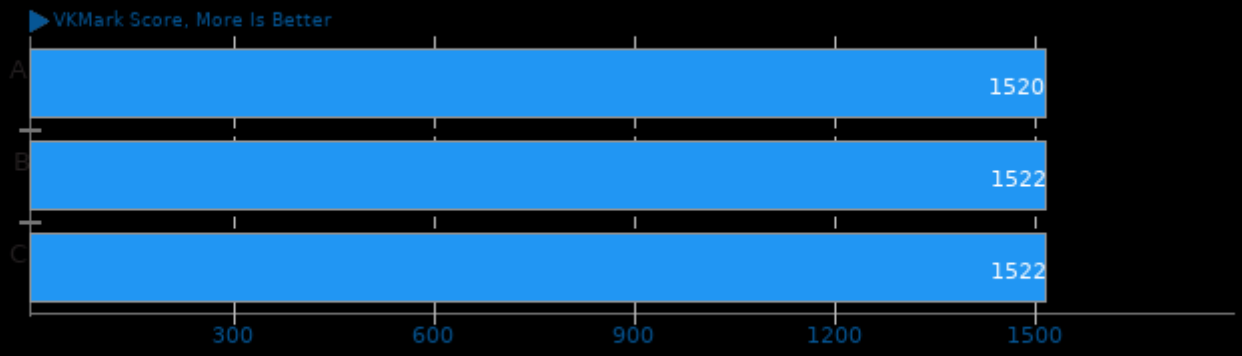

VKMark 2022-05-16
Resolution: 800 x 600 - Present Mode: Mailbox
VKMark Score, More Is Better
A
B
C
3697
3693
3700
800
1600
2400
3200
4000
1. (CXX) g++ options: -pthread -ldl -pipe -std=c++14 -MD -MQ -MF
VKMark 2022-05-16
Resolution: 1024 x 768 - Present Mode: Mailbox
VKMark Score, More Is Better
A
B
C
2572
2565
2566
600
1200
1800
2400
3000
1. (CXX) g++ options: -pthread -ldl -pipe -std=c++14 -MD -MQ -MF
VKMark 2022-05-16
Resolution: 1280 x 1024 - Present Mode: Mailbox
VKMark Score, More Is Better
A
B
C
1523
1532
1531
300
600
900
1200
1500
1. (CXX) g++ options: -pthread -ldl -pipe -std=c++14 -MD -MQ -MF

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VKMark 2022-05-16
Resolution: 1920 x 1080 - Present Mode: Mailbox
VKMark Score, More Is Better
A
801
B
799
C
801
200
400
600
800
1000
1. (CXX) g++ options: -pthread -ldl -pipe -std=c++14 -MD -MQ -MF
VKMark 2022-05-16
Resolution: 800 x 600 - Present Mode: Immediate
VKMark Score, More Is Better
A
3698
B
3698
C
3698
800
1600
2400
3200
4000
1. (CXX) g++ options: -pthread -ldl -pipe -std=c++14 -MD -MQ -MF
VKMark 2022-05-16
Resolution: 1024 x 768 - Present Mode: Immediate
VKMark Score, More Is Better
A
2571
B
2569
C
2560
600
1200
1800
2400
3000
1. (CXX) g++ options: -pthread -ldl -pipe -std=c++14 -MD -MQ -MF

VKMark 2022-05-16

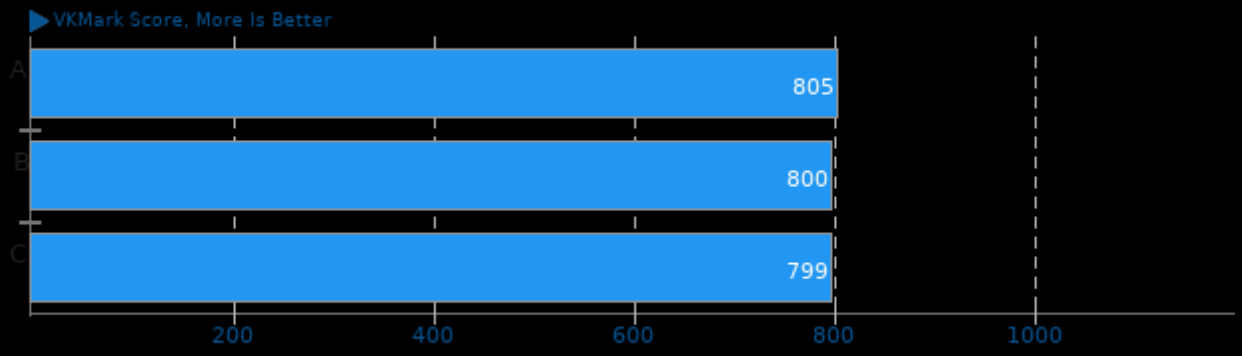
Resolution: 1280 x 1024 - Present Mode: Immediate



1. (CXX) g++ options: -pthread -ldl -pipe -std=c++14 -MD -MQ -MF

VKMark 2022-05-16

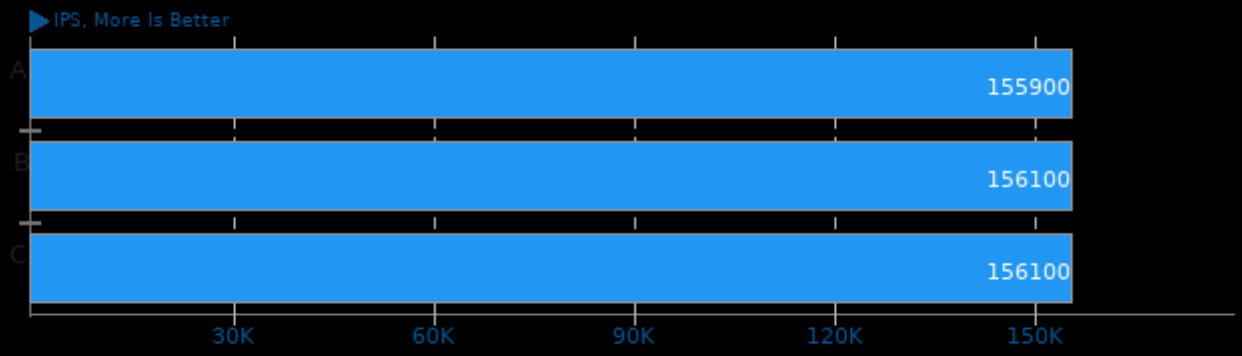
Resolution: 1920 x 1080 - Present Mode: Immediate



1. (CXX) g++ options: -pthread -ldl -pipe -std=c++14 -MD -MQ -MF

Chia Blockchain VDF 1.0.7

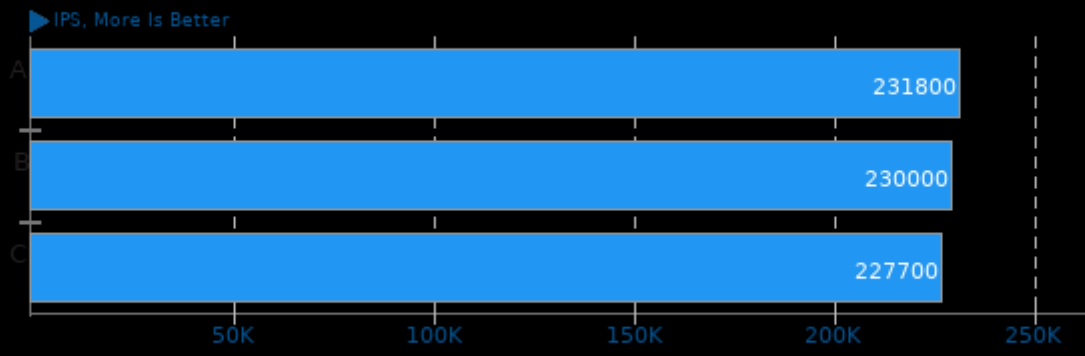
Test: Square Plain C++



1. (CXX) g++ options: -flto -no-pie -lgmpxx -lgmp -lboost_system -pthread

Chia Blockchain VDF 1.0.7

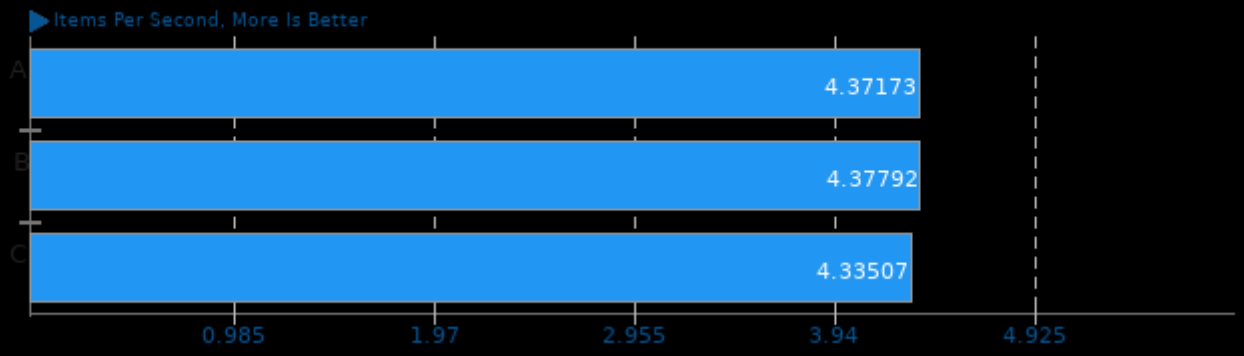
Test: Square Assembly Optimized



1. (CXX) g++ options: -flto -no-pie -lgmpxx -lgmp -lboost_system -pthread

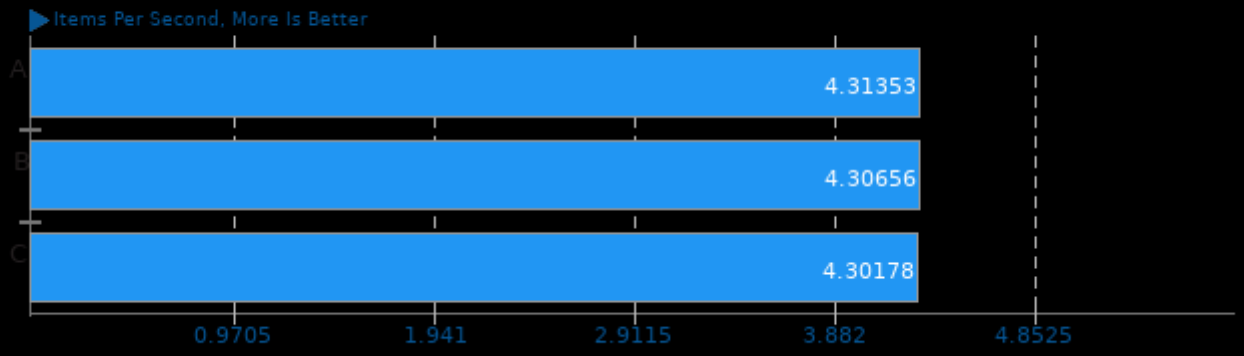
OSPRay 2.10

Benchmark: particle_volume/ao/real_time

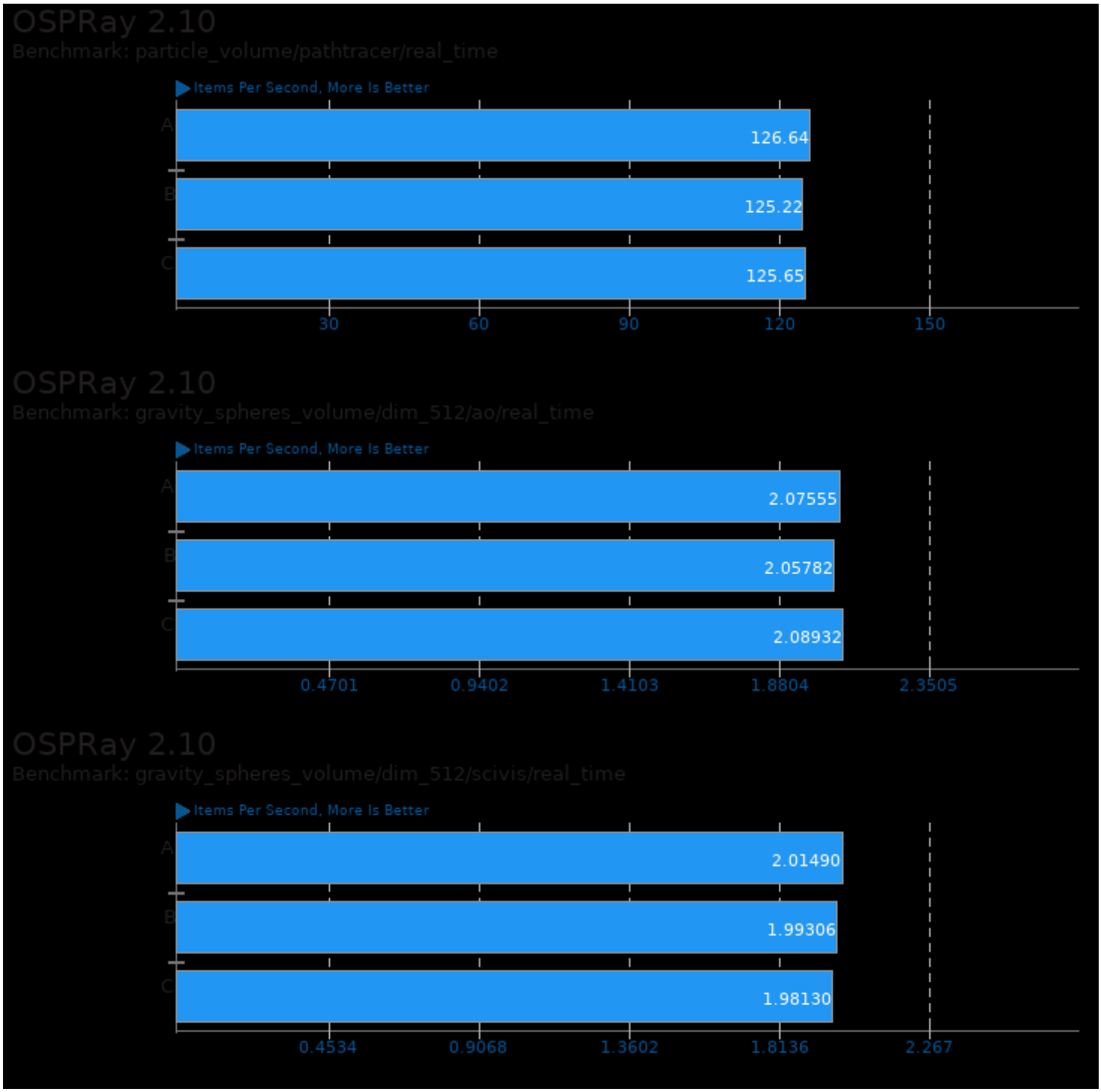


OSPRay 2.10

Benchmark: particle_volume/scivis/real_time



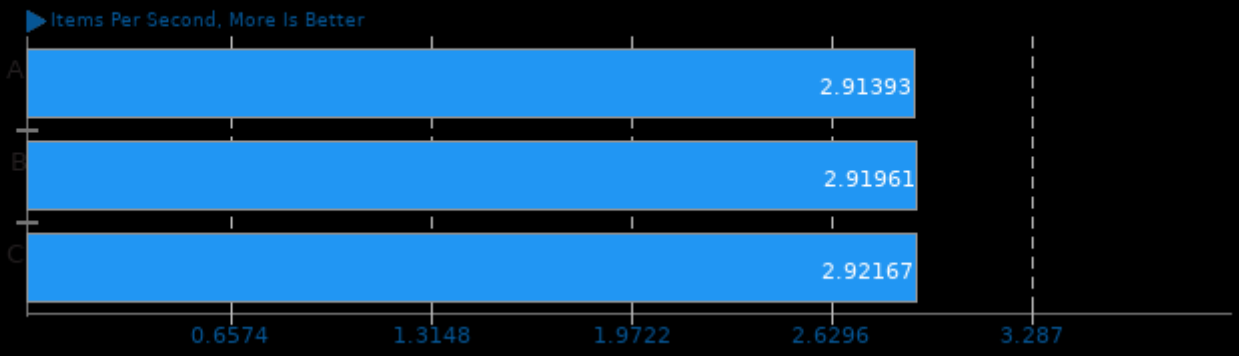
intel satty


OSPRay 2.10
Benchmark: particle_volume/pathtracer/real_time
Items Per Second, More Is Better
A
B
C
126.64
125.22
125.65
30
60
90
120
150
OSPRay 2.10
Benchmark: gravity_spheres_volume/dim_512/ao/real_time
Items Per Second, More Is Better
A
B
C
2.07555
2.05782
2.08932
0.4701
0.9402
1.4103
1.8804
2.3505
OSPRay 2.10
Benchmark: gravity_spheres_volume/dim_512/scivis/real_time
Items Per Second, More Is Better
A
B
C
2.01490
1.99306
1.98130
0.4534
0.9068
1.3602
1.8136
2.267

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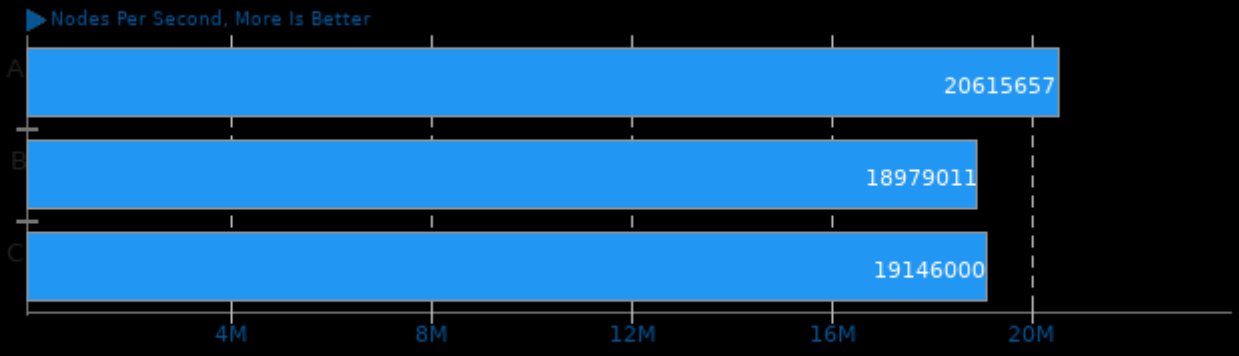
OSPRay 2.10

Benchmark: gravity_spheres_volume/dim_512/pathtracer/real_time



Stockfish 15

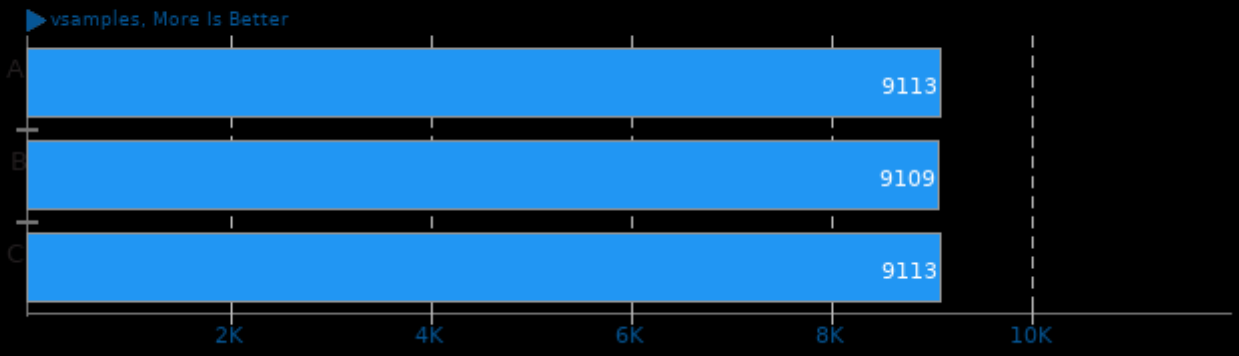
Total Time



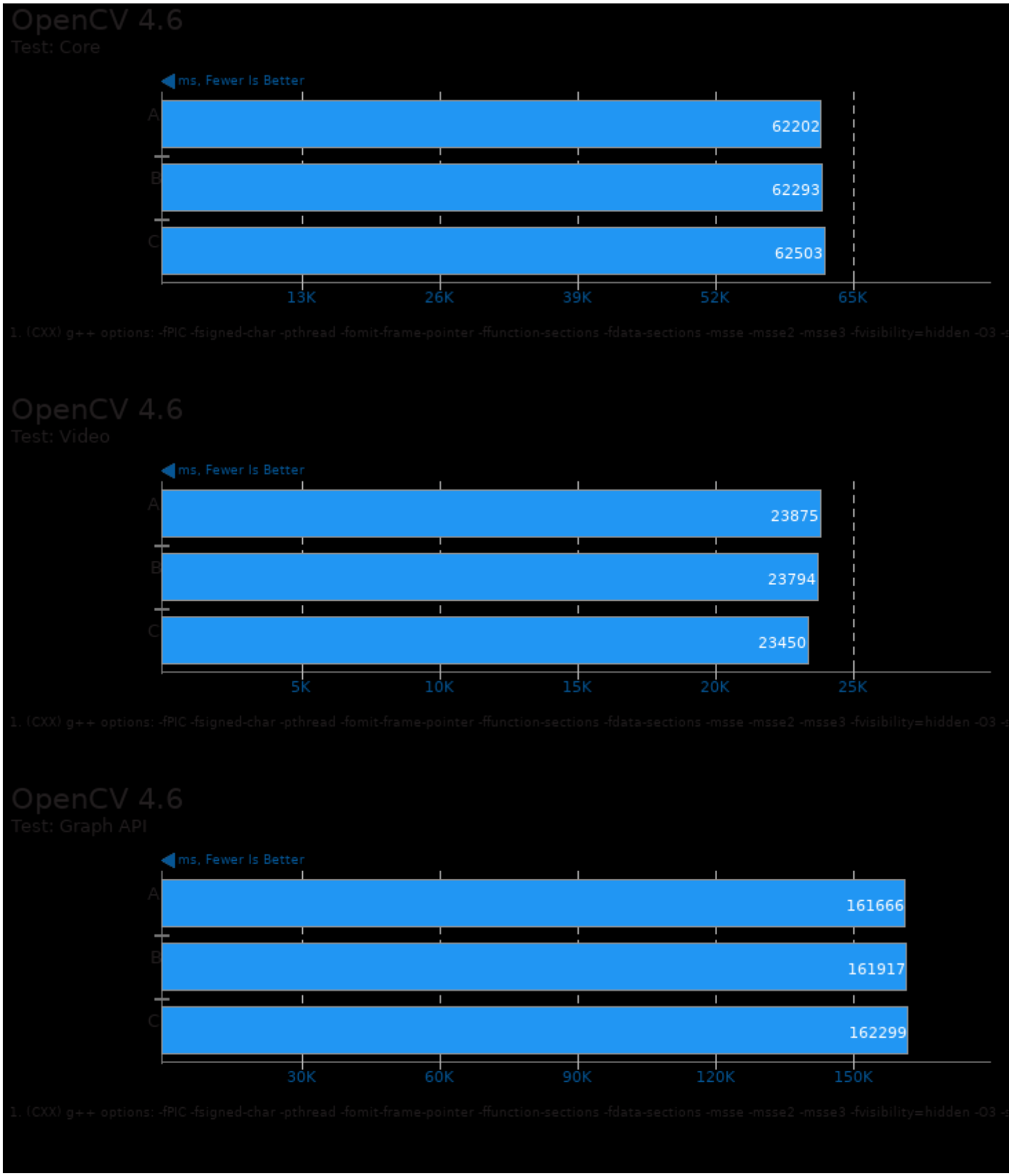
1. (CXX) g++ options: -lgcov -m64 -lpthread -fno-exceptions -std=c++17 -fno-peel-loops -fno-tracer -pedantic -O3 -msse -msse3 -mpopcnt -mavx2 -msse

Chaos Group V-RAY 5.02

Mode: CPU

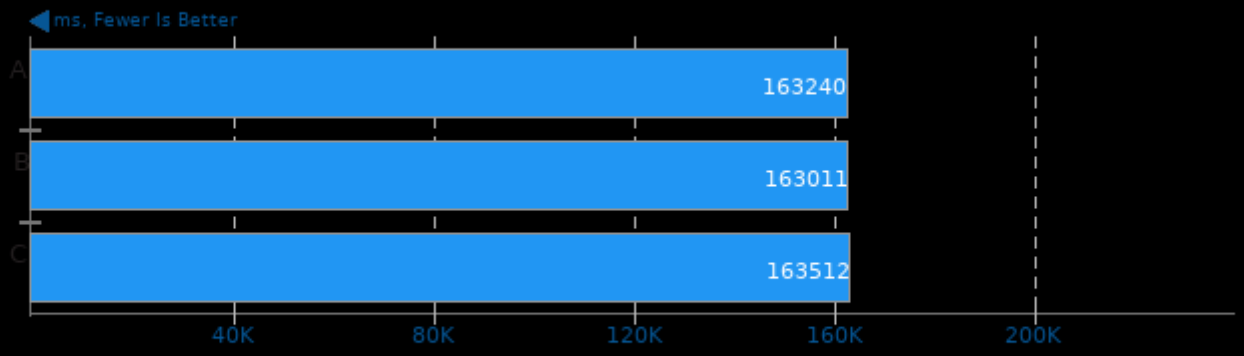


intel satty


OpenCV 4.6
Test: Core
ms, Fewer Is Better
A
B
C
62202
62293
62503
13K
26K
39K
52K
65K
1. (CXX) g++ options: -fPIC -fsigned-char -pthread -fomit-frame-pointer -ffunction-sections -fdata-sections -msse -msse2 -msse3 -fvisibility=hidden -O3
OpenCV 4.6
Test: Video
ms, Fewer Is Better
A
B
C
23875
23794
23450
5K
10K
15K
20K
25K
1. (CXX) g++ options: -fPIC -fsigned-char -pthread -fomit-frame-pointer -ffunction-sections -fdata-sections -msse -msse2 -msse3 -fvisibility=hidden -O3
OpenCV 4.6
Test: Graph API
ms, Fewer Is Better
A
B
C
161666
161917
162299
30K
60K
90K
120K
150K
1. (CXX) g++ options: -fPIC -fsigned-char -pthread -fomit-frame-pointer -ffunction-sections -fdata-sections -msse -msse2 -msse3 -fvisibility=hidden -O3

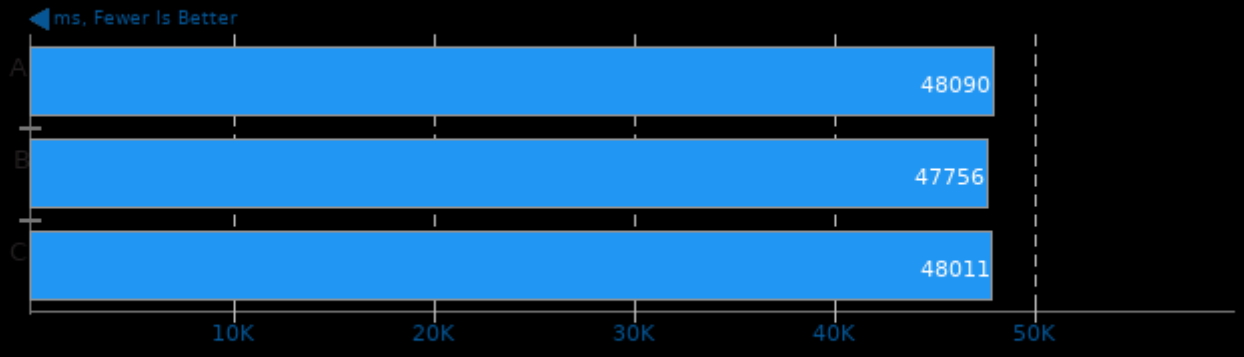
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OpenCV 4.6
Test: Stitching



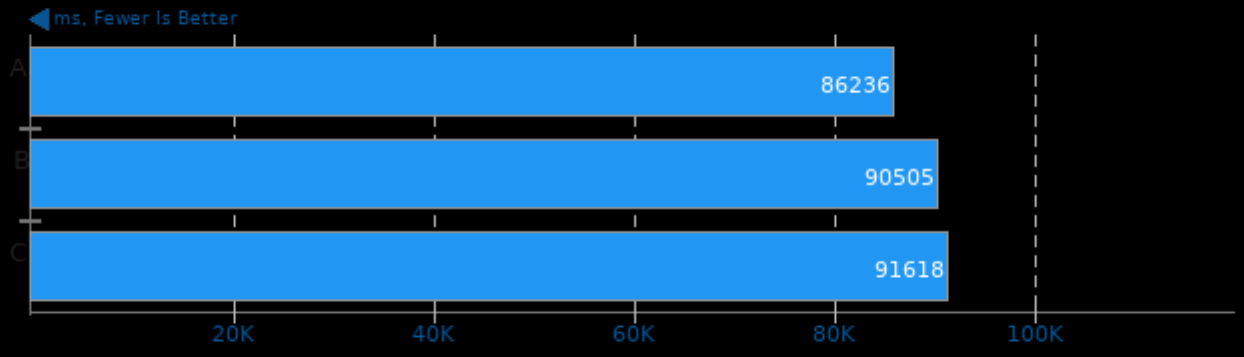
1. (CXX) g++ options: -fPIC -fsigned-char -pthread -fomit-frame-pointer -ffunction-sections -fdata-sections -msse -msse2 -msse3 -fvisibility=hidden -O3

OpenCV 4.6
Test: Features 2D



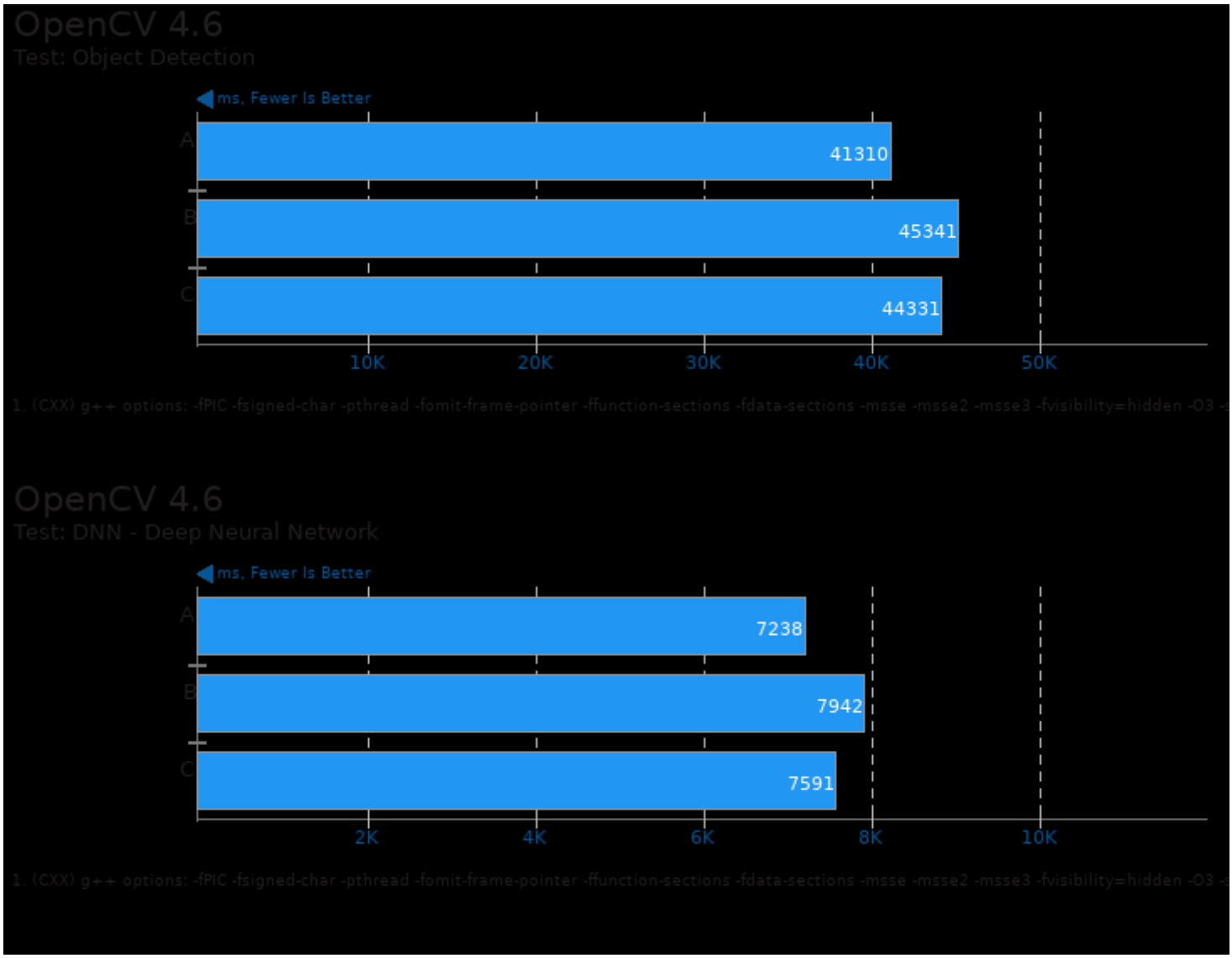
1. (CXX) g++ options: -fPIC -fsigned-char -pthread -fomit-frame-pointer -ffunction-sections -fdata-sections -msse -msse2 -msse3 -fvisibility=hidden -O3

OpenCV 4.6
Test: Image Processing



1. (CXX) g++ options: -fPIC -fsigned-char -pthread -fomit-frame-pointer -ffunction-sections -fdata-sections -msse -msse2 -msse3 -fvisibility=hidden -O3

intel satty


OpenCV 4.6
Test: Object Detection
ms, Fewer Is Better
A
B
C
41310
45341
44331
10K
20K
30K
40K
50K
1. (CXX) g++ options: -fPIC -fsigned-char -pthread -fomit-frame-pointer -ffunction-sections -fdata-sections -msse -msse2 -msse3 -fvisibility=hidden -O3
OpenCV 4.6
Test: DNN - Deep Neural Network
ms, Fewer Is Better
A
B
C
7238
7942
7591
2K
4K
6K
8K
10K
1. (CXX) g++ options: -fPIC -fsigned-char -pthread -fomit-frame-pointer -ffunction-sections -fdata-sections -msse -msse2 -msse3 -fvisibility=hidden -O3

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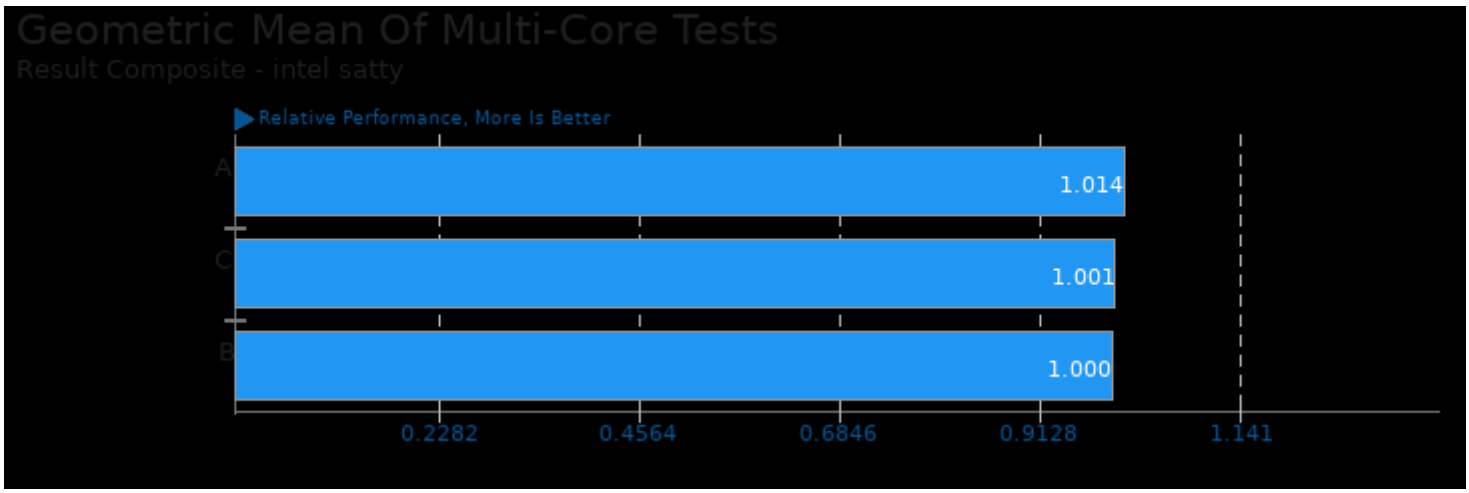
These geometric means are based upon test groupings / test suites for this result file.



Geometric mean based upon tests: pts/stockfish and pts/v-ray



Geometric mean based upon tests: pts/ospray and pts/v-ray



Geometric mean based upon tests: pts/ospray, pts/stockfish and pts/v-ray

intel satty



Geometric mean based upon tests: pts/paraview and pts/chia-vdf



Geometric mean based upon tests: pts/ospray and pts/v-ray

This file was automatically generated via the Phoronix Test Suite benchmarking software on Friday, 29 March 2024 07:23.