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1280 july

Intel Xeon E3-1280 v5 testing with a MSI Z170A SLI PLUS (MS-7998) v1.0 (2.A0 BIOS) and ASUS AMD Radeon HD 7850 / R7 265 R9 270 1024SP on Ubuntu 20.04 via the Phoronix Test Suite.

Automated Executive Summary

1 had the most wins, coming in first place for 41% of the tests.

Based on the geometric mean of all complete results, the fastest (3) was 1.003x the speed of the slowest (1). 2 was 0.999x the speed of 3 and 1 was 0.998x the speed of 2.

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

Renaissance (Test: Apache Spark Bayes) at 1.453x
Renaissance (Test: ALS Movie Lens) at 1.141x
Renaissance (Test: Random Forest) at 1.137x
Renaissance (Test: Savina Reactors.IO) at 1.125x
Renaissance (Test: Scala Dotty) at 1.115x
Renaissance (Test: Apache Spark PageRank) at 1.111x
GravityMark (Resolution: 1920 x 1080 - Renderer: OpenGL) at 1.109x
Facebook RocksDB (Test: Random Fill Sync) at 1.056x
Apache Cassandra (Test: Mixed 1:3) at 1.05x

Apache Cassandra (Test: Reads) at 1.039x.

Test Systems:

1

2

3

Processor: Intel Xeon E3-1280 v5 @ 4.00GHz (4 Cores / 8 Threads), Motherboard: MSI Z170A SLI PLUS (MS-7998) v1.0 (2.A0 BIOS), Chipset: Intel Xeon E3-1200 v5/E3-1500, Memory: 32GB, Disk: 256GB TOSHIBA RD400, Graphics: ASUS AMD Radeon HD 7850 / R7 265 R9 270 1024SP, Audio: Realtek ALC1150, Monitor: VA2431, Network: Intel I219-V

OS: Ubuntu 20.04, Kernel: 5.13.0-051300-generic (x86_64), Desktop: GNOME Shell 3.36.9, Display Server: X Server 1.20.9, OpenGL: 4.5 Mesa 20.2.6 (LLVM 11.0.0), 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 powersave - CPU Microcode: 0xe2 - Thermald 1.9.1
Graphics Notes: GLAMOR
Java Notes: OpenJDK Runtime Environment (build 11.0.11+9-Ubuntu-0ubuntu2.20.04)
Python Notes: Python 3.8.10
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

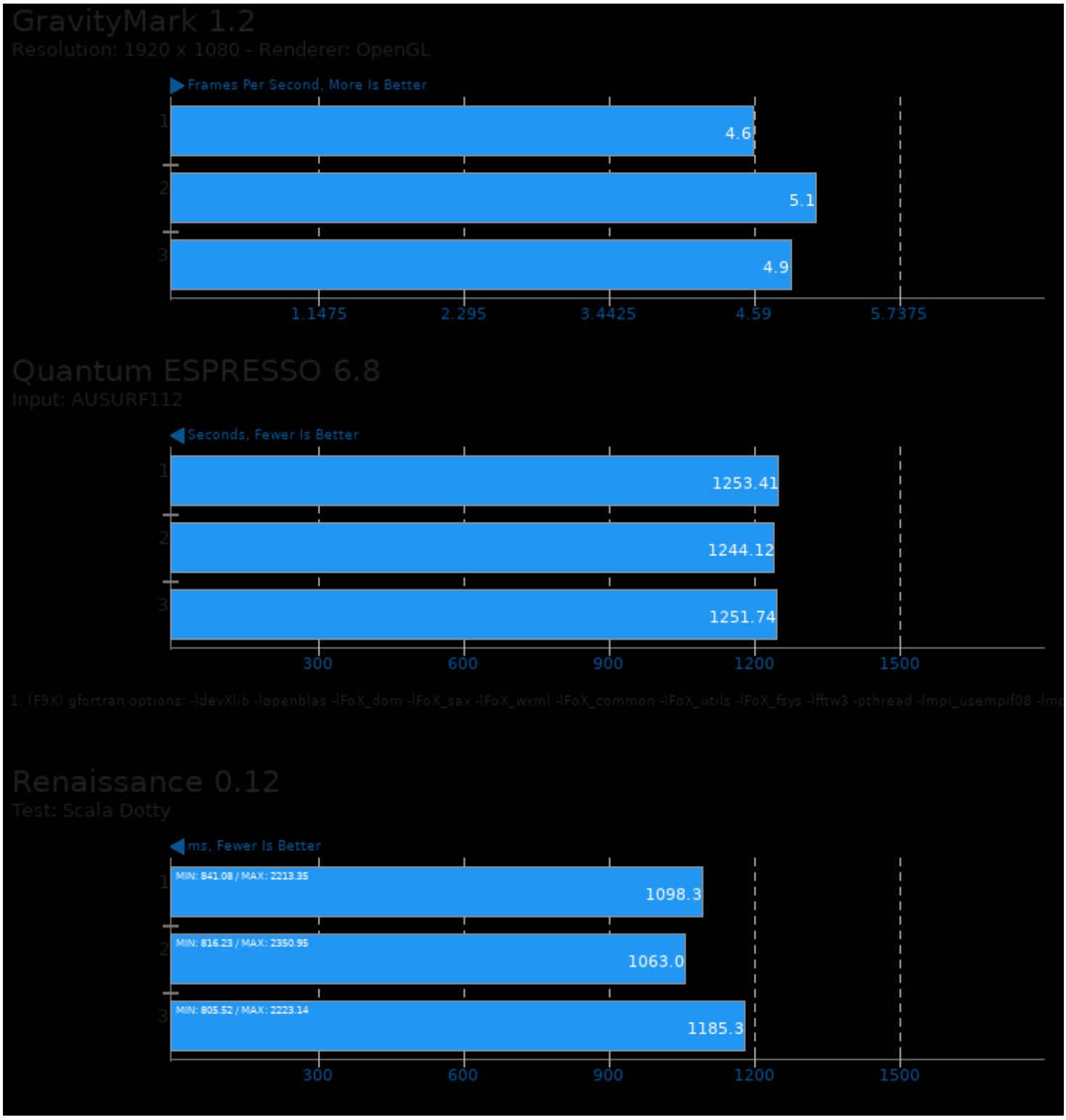
	1	2	3
GravityMark - 1920 x 1080 - OpenGL (FPS)	**4.6**	**5.1**	4.9
Normalized	90.2%	100%	96.08%
Quantum ESPRESSO - AUSURF112 (sec)	**1253**	**1244**	1252
Normalized	99.26%	100%	99.39%
Renaissance - Scala Dotty (ms)	1098	**1063**	**1185**
Normalized	96.79%	100%	89.68%
Renaissance - Rand Forest (ms)	**939.3**	833.5	**826.3**
Normalized	87.97%	99.14%	100%
Renaissance - ALS Movie Lens (ms)	**10083**	**8835**	8879
Normalized	87.62%	100%	99.51%
Renaissance - Apache Spark ALS (ms)	**3821**	**3787**	3817
Normalized	99.12%	100%	99.22%

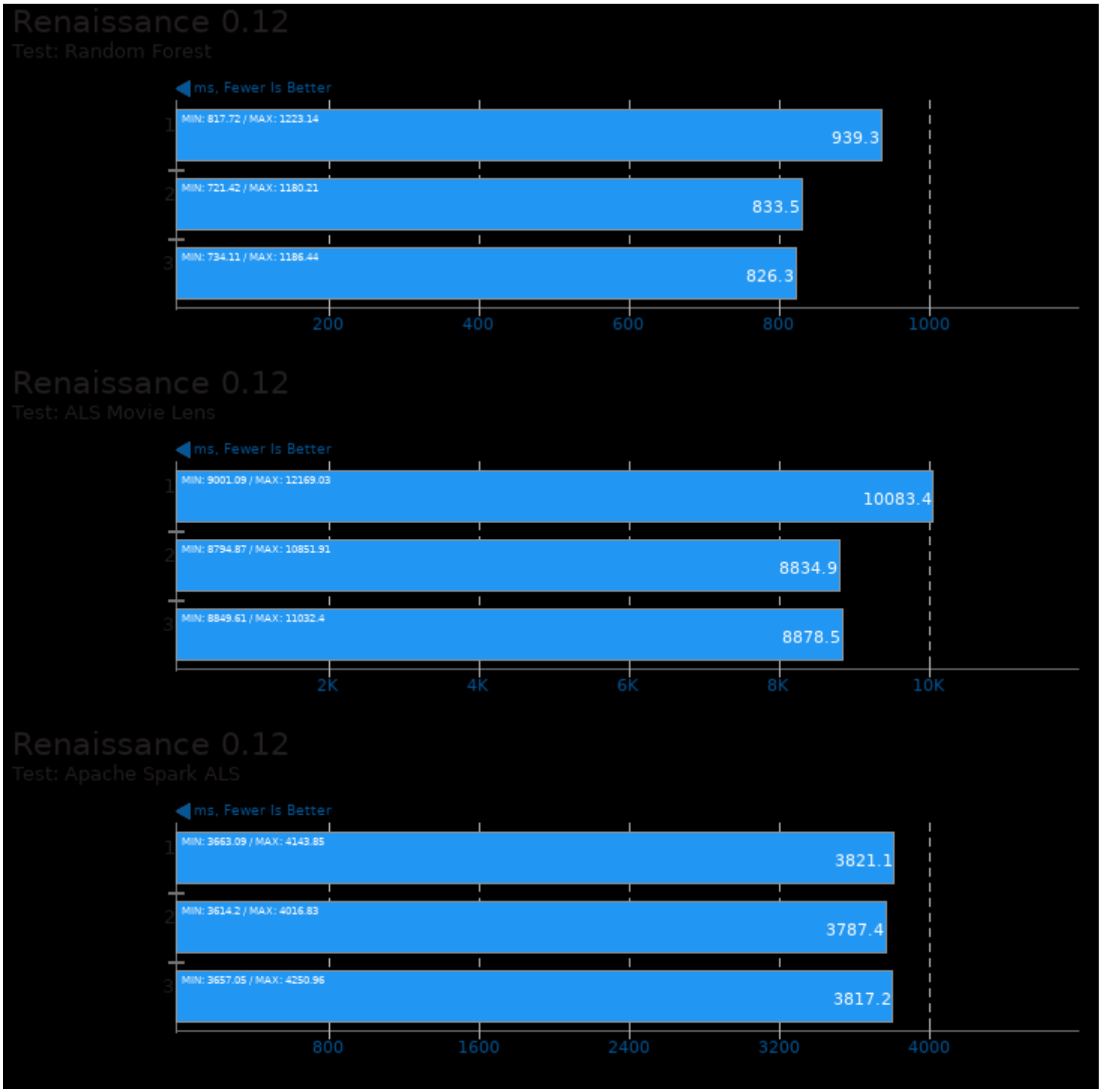
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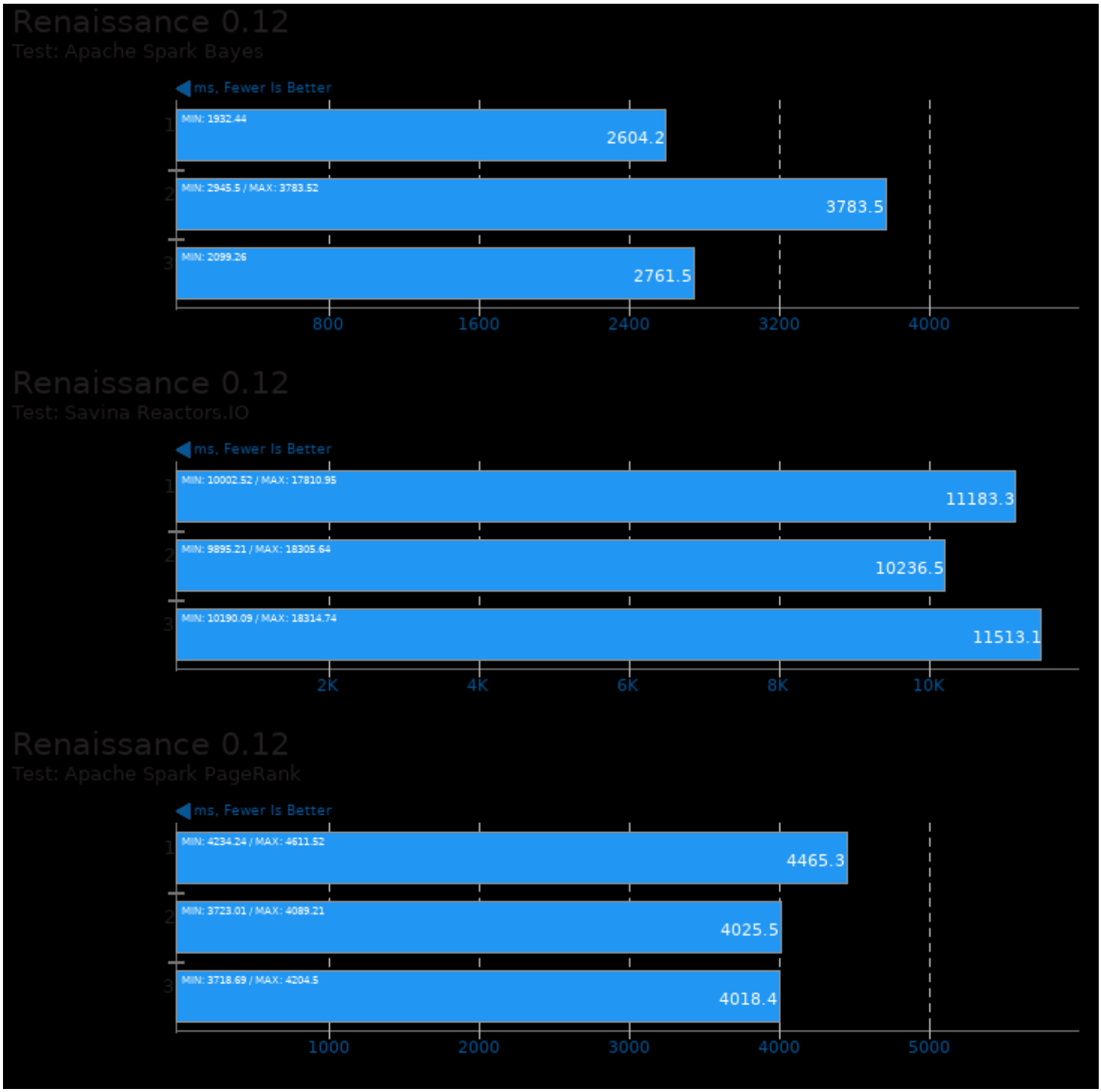
Renaissance - Apache Spark Bayes (ms)	**2604**	**3784**	2762
Normalized	100%	68.83%	94.3%
Renaissance - Savina Reactors.IO (ms)	11183	**10237**	**11513**
Normalized	91.53%	100%	88.91%
Renaissance - A.S.P (ms)	**4465**	4026	**4018**
Normalized	89.99%	99.82%	100%
Renaissance - F.H.R (ms)	2409	**2428**	**2398**
Normalized	99.54%	98.76%	100%
Renaissance - I.M.D.S (ms)	4190	**4277**	**4124**
Normalized	98.43%	96.44%	100%
Renaissance - A.U.C.T (ms)	**13283**	13462	**13508**
Normalized	100%	98.67%	98.33%
Renaissance - G.A.U.J.F (ms)	1623	**1644**	**1606**
Normalized	98.92%	97.68%	100%
YafaRay - T.T.F.S.S (sec)	**361.683**	**362.185**	361.937
Normalized	100%	99.86%	99.93%
NCNN - CPU - mobilenet (ms)	**25.35**	25.31	**25.29**
Normalized	99.76%	99.92%	100%
NCNN - CPU-v2-v2 - mobilenet-v2 (ms)	**6.83**	**6.82**	**6.82**
Normalized	99.85%	100%	100%
NCNN - CPU-v3-v3 - mobilenet-v3 (ms)	5.81	**5.84**	**5.79**
Normalized	99.66%	99.14%	100%
NCNN - CPU - shufflenet-v2 (ms)	**4.79**	**4.81**	**4.81**
Normalized	100%	99.58%	99.58%
NCNN - CPU - mnasnet (ms)	5.64	5.64	5.64
NCNN - CPU - efficientnet-b0 (ms)	**9.43**	**9.44**	**9.43**
Normalized	100%	99.89%	100%
NCNN - CPU - blazeface (ms)	1.89	1.89	1.89
NCNN - CPU - googlenet (ms)	**20.1**	**20.11**	**20.11**
Normalized	100%	99.95%	99.95%
NCNN - CPU - vgg16 (ms)	**90.61**	**90.86**	90.71
Normalized	100%	99.72%	99.89%
NCNN - CPU - resnet18 (ms)	**21.95**	22.02	**22.04**
Normalized	100%	99.68%	99.59%
NCNN - CPU - alexnet (ms)	**19.72**	19.74	**19.8**
Normalized	100%	99.9%	99.6%
NCNN - CPU - resnet50 (ms)	**40.64**	40.6	**40.59**
Normalized	99.88%	99.98%	100%
NCNN - CPU - yolov4-tiny (ms)	36.5	**36.51**	**36.38**
Normalized	99.67%	99.64%	100%
NCNN - CPU - squeezenet_ssd (ms)	**30.23**	**30.24**	**30.24**
Normalized	100%	99.97%	99.97%
NCNN - CPU - regnety_400m (ms)	**12.01**	11.99	**11.96**
Normalized	99.58%	99.75%	100%
Apache Cassandra - Reads (Op/s)	**35913**	35132	**34572**
Normalized	100%	97.83%	96.27%
Apache Cassandra - Writes (Op/s)	**40611**	**41390**	40761
Normalized	98.12%	100%	98.48%
Apache Cassandra - Mixed 1:1 (Op/s)	34782	**34596**	**34806**
Normalized	99.93%	99.4%	100%
Apache Cassandra - Mixed 1:3 (Op/s)	**34085**	33408	**32456**
Normalized	100%	98.01%	95.22%
Facebook RocksDB - Rand Fill (Op/s)	**586178**	**572817**	581521

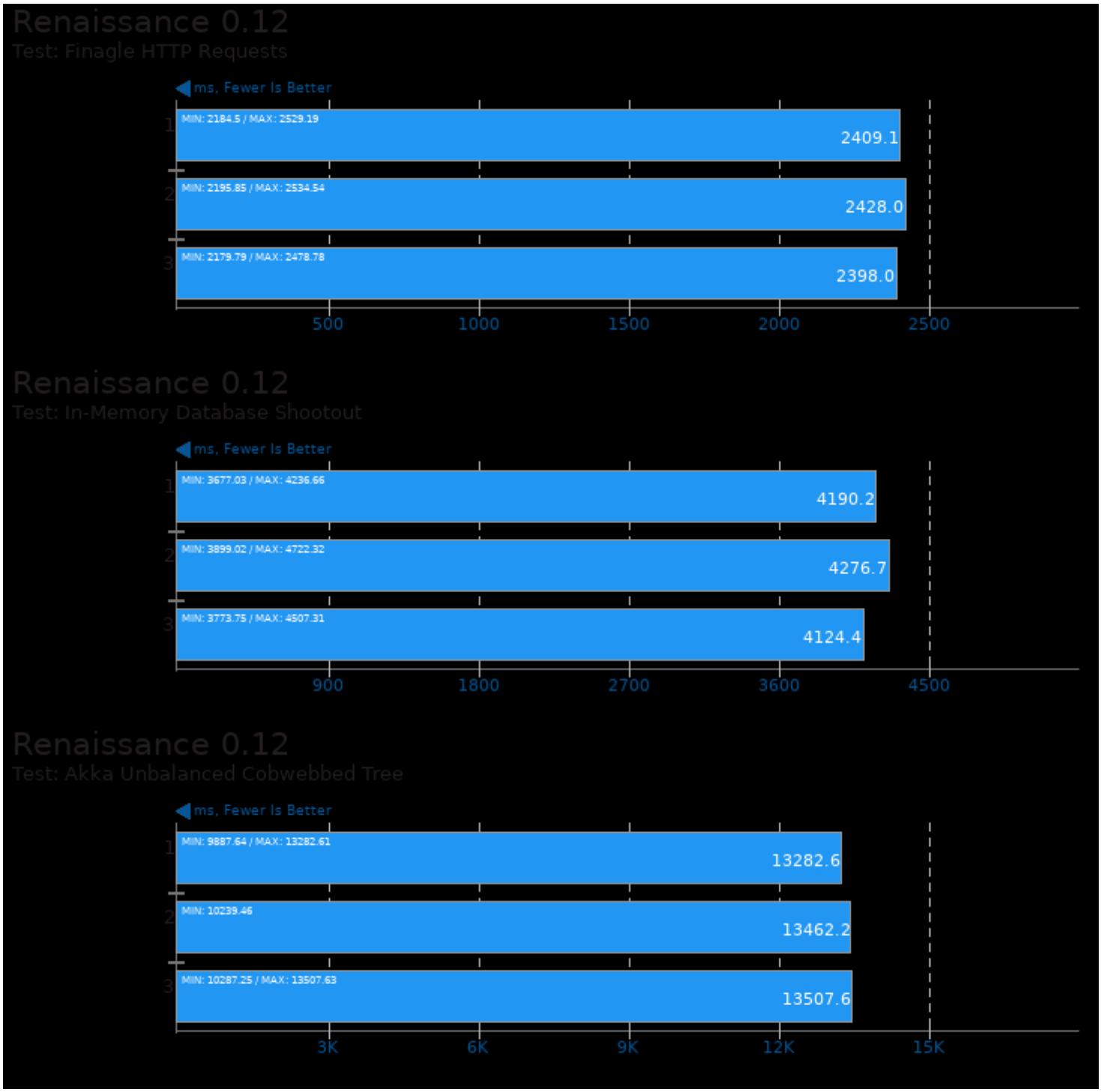
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Normalized	100%	97.72%	99.21%
Facebook RocksDB - Rand Read (Op/s)	19998288	**20028875**	**19659611**
Normalized	99.85%	100%	98.16%
Facebook RocksDB - Update Rand (Op/s)	260431	**261682**	**259568**
Normalized	99.52%	100%	99.19%
Facebook RocksDB - Seq Fill (Op/s)	777040	**791032**	**771371**
Normalized	98.23%	100%	97.51%
Facebook RocksDB - Rand Fill Sync (Op/s)	**779**	746	**738**
Normalized	100%	95.76%	94.74%
Facebook RocksDB - Read While Writing	731506	**722456**	**732920**
Normalized	99.81%	98.57%	100%
Facebook RocksDB - R.R.W.R (Op/s)	747744	**749527**	**745473**
Normalized	99.76%	100%	99.46%
Natron - Spaceship (FPS)	1.1	1.1	1.1


GravityMark 1.2
Resolution: 1920 x 1080 - Renderer: OpenGL
Frames Per Second, More Is Better
1
4.6
2
5.1
3
4.9
1.1475
2.295
3.4425
4.59
5.7375
Quantum ESPRESSO 6.8
Input: AUSURF112
Seconds, Fewer Is Better
1
1253.41
2
1244.12
3
1251.74
300
600
900
1200
1500
1. (F9X) gfortran options: -ldevXlib -lopenblas -lFoX_dom -lFoX_sax -lFoX_wxml -lFoX_common -lFoX_utils -lFoX_fsys -lfftw3 -pthread -lmpi_usempif08 -lmp
Renaissance 0.12
Test: Scala Dotty
ms, Fewer Is Better
1
MIN: 841.08 / MAX: 2213.35
1098.3
2
MIN: 816.23 / MAX: 2350.95
1063.0
3
MIN: 805.52 / MAX: 2223.14
1185.3
300
600
900
1200
1500

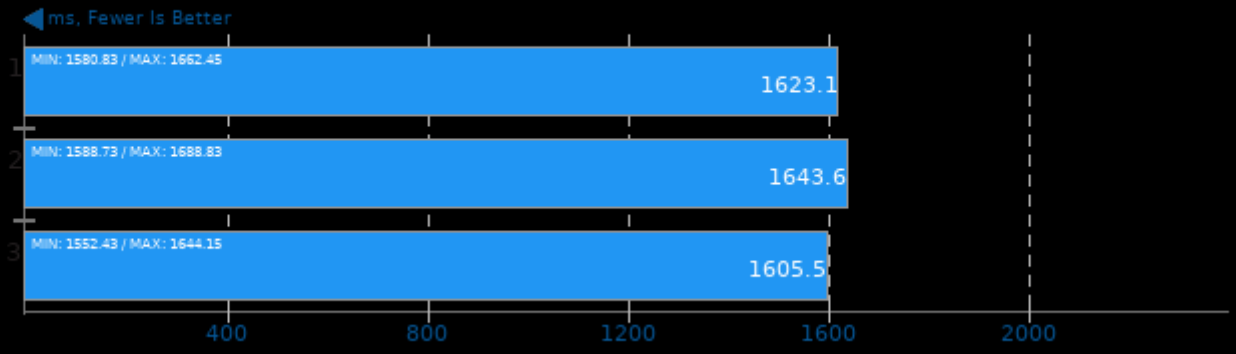

Renaissance 0.12
Test: Random Forest
ms, Fewer Is Better
1
MIN: 817.72 / MAX: 1223.14
939.3
2
MIN: 721.42 / MAX: 1180.21
833.5
3
MIN: 734.11 / MAX: 1186.44
826.3
200
400
600
800
1000
Renaissance 0.12
Test: ALS Movie Lens
ms, Fewer Is Better
1
MIN: 9001.09 / MAX: 12169.03
10083.4
2
MIN: 8794.87 / MAX: 10851.91
8834.9
3
MIN: 8849.61 / MAX: 11032.4
8878.5
2K
4K
6K
8K
10K
Renaissance 0.12
Test: Apache Spark ALS
ms, Fewer Is Better
1
MIN: 3663.09 / MAX: 4143.85
3821.1
2
MIN: 3614.2 / MAX: 4016.83
3787.4
3
MIN: 3657.05 / MAX: 4250.96
3817.2
800
1600
2400
3200
4000


Renaissance 0.12
Test: Apache Spark Bayes
ms, Fewer Is Better
1
MIN: 1932.44
2604.2
2
MIN: 2945.5 / MAX: 3783.52
3783.5
3
MIN: 2099.26
2761.5
800
1600
2400
3200
4000
Renaissance 0.12
Test: Savina Reactors.IO
ms, Fewer Is Better
1
MIN: 10002.52 / MAX: 17810.95
11183.3
2
MIN: 9895.21 / MAX: 18305.64
10236.5
3
MIN: 10190.09 / MAX: 18314.74
11513.1
2K
4K
6K
8K
10K
Renaissance 0.12
Test: Apache Spark PageRank
ms, Fewer Is Better
1
MIN: 4234.24 / MAX: 4611.52
4465.3
2
MIN: 3723.01 / MAX: 4089.21
4025.5
3
MIN: 3718.69 / MAX: 4204.5
4018.4
1000
2000
3000
4000
5000


Renaissance 0.12
Test: Finagle HTTP Requests
ms, Fewer Is Better
1
MIN: 2184.5 / MAX: 2529.19
2409.1
2
MIN: 2195.85 / MAX: 2534.54
2428.0
3
MIN: 2179.79 / MAX: 2478.78
2398.0
500
1000
1500
2000
2500
Renaissance 0.12
Test: In-Memory Database Shootout
ms, Fewer Is Better
1
MIN: 3677.03 / MAX: 4236.66
4190.2
2
MIN: 3899.02 / MAX: 4722.32
4276.7
3
MIN: 3773.75 / MAX: 4507.31
4124.4
900
1800
2700
3600
4500
Renaissance 0.12
Test: Akka Unbalanced Cobwebbed Tree
ms, Fewer Is Better
1
MIN: 9887.64 / MAX: 13282.61
13282.6
2
MIN: 10239.46
13462.2
3
MIN: 10287.25 / MAX: 13507.63
13507.6
3K
6K
9K
12K
15K

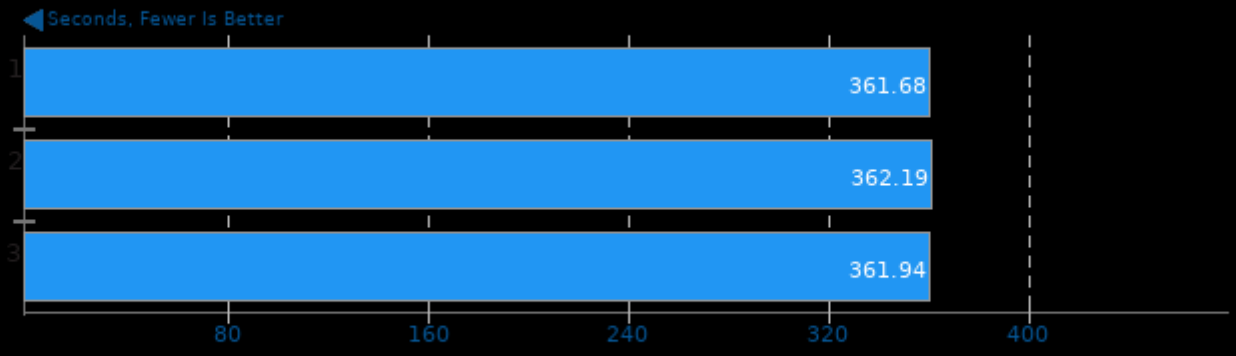
Renaissance 0.12

Test: Genetic Algorithm Using Jenetics + Futures



YafaRay 3.5.1

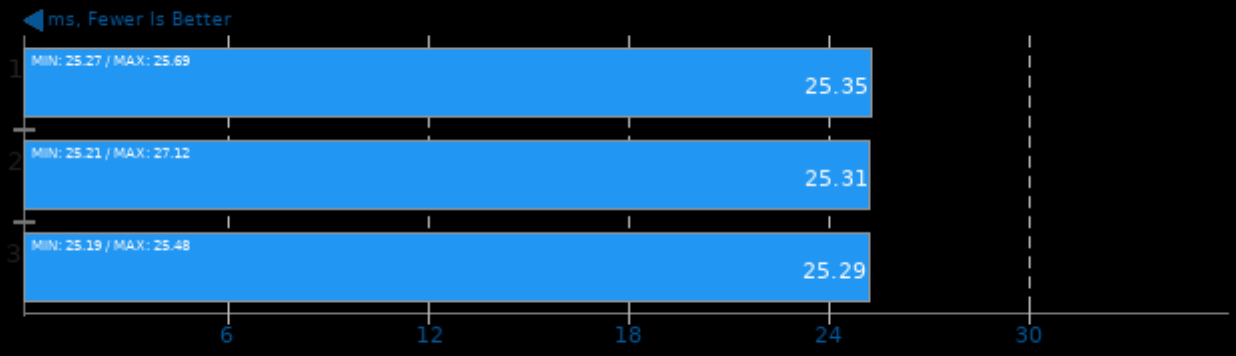
Total Time For Sample Scene



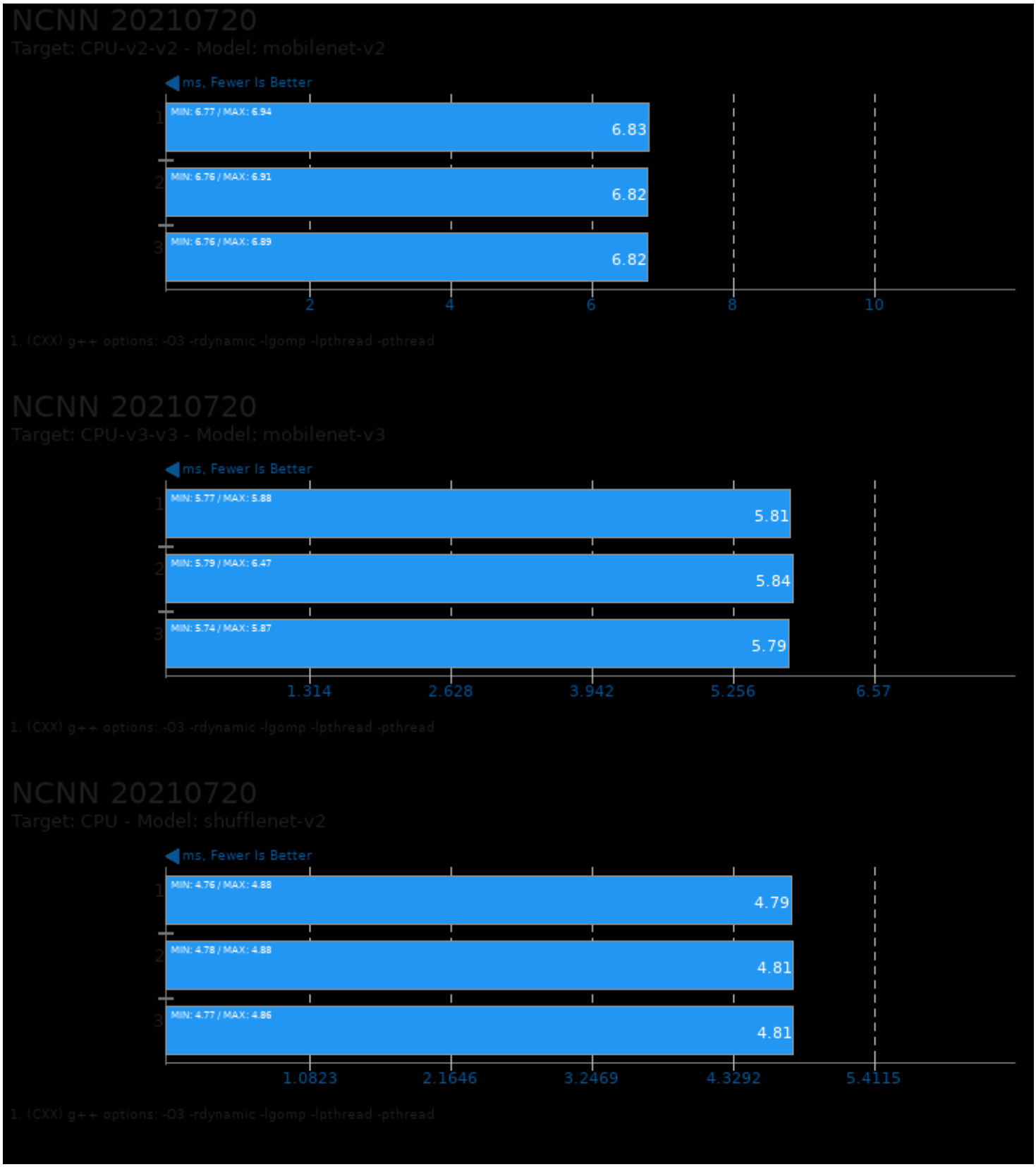
1. (CXX) g++ options: -std=c++11 -pthread -O3 -ffast-math -rdynamic -ldl -lImath -lIlmImf -lIex -lHalf -lz -lIlmThread -lxml2 -lfreetype

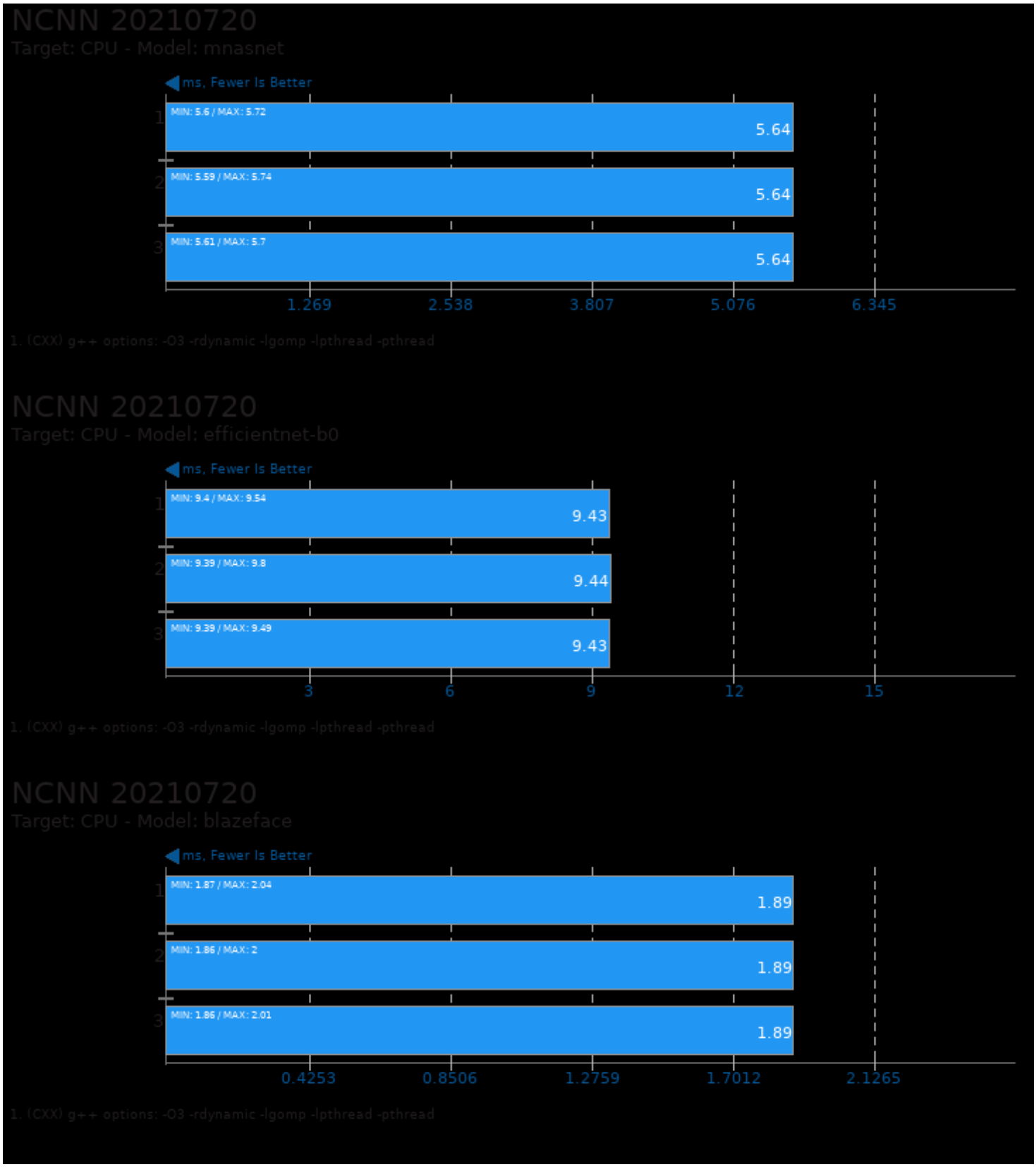
NCNN 20210720

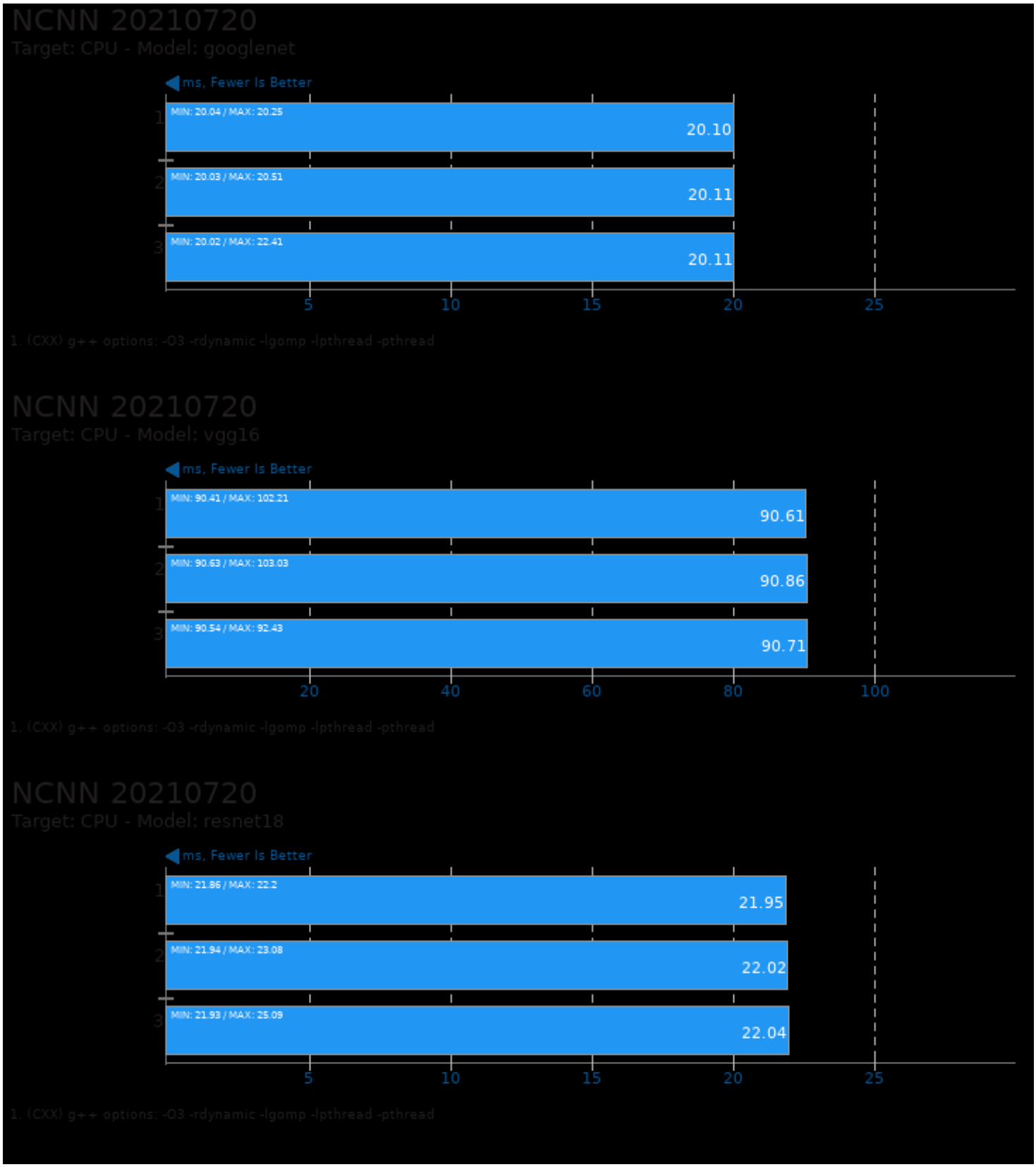
Target: CPU - Model: mobilenet

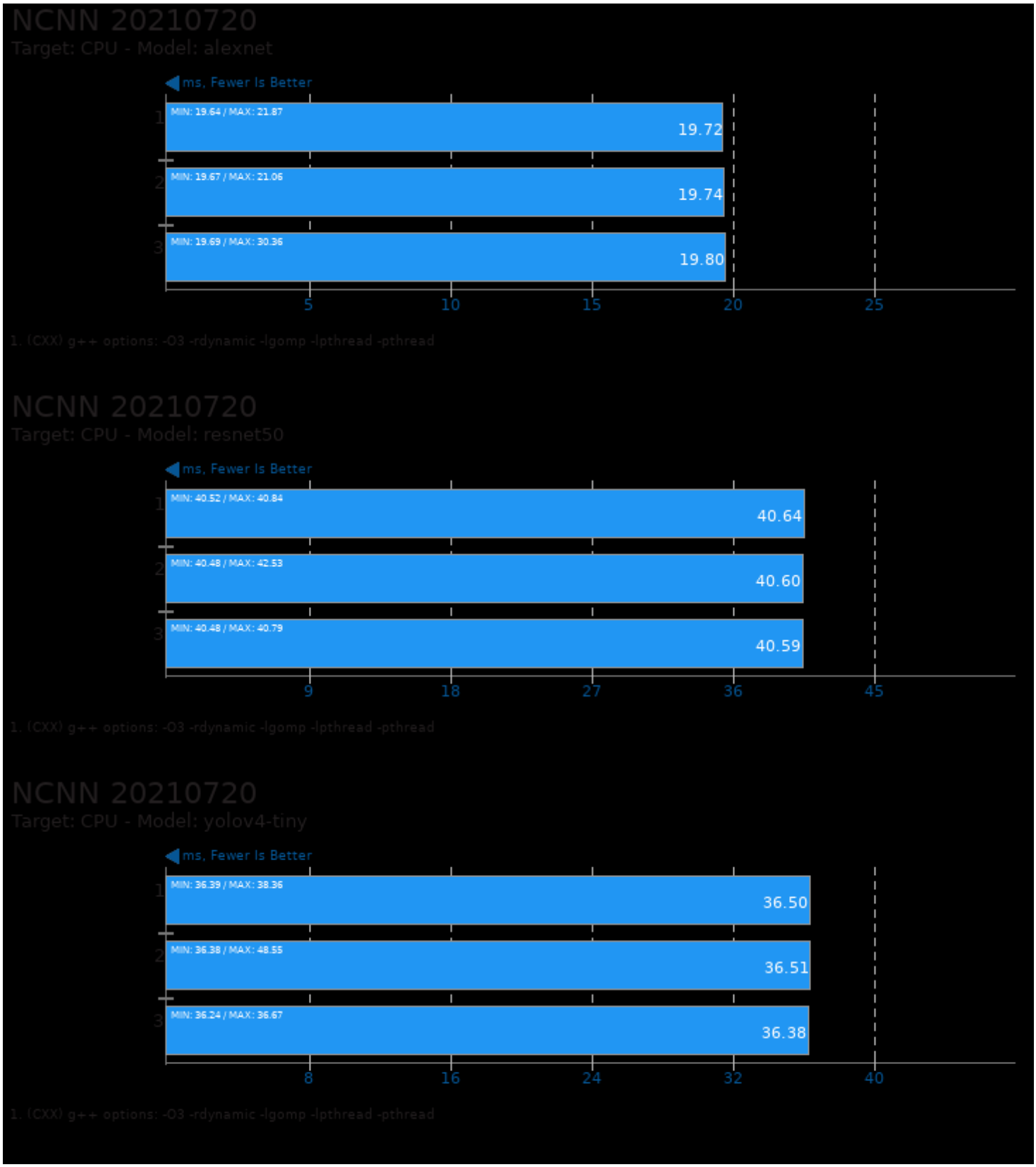


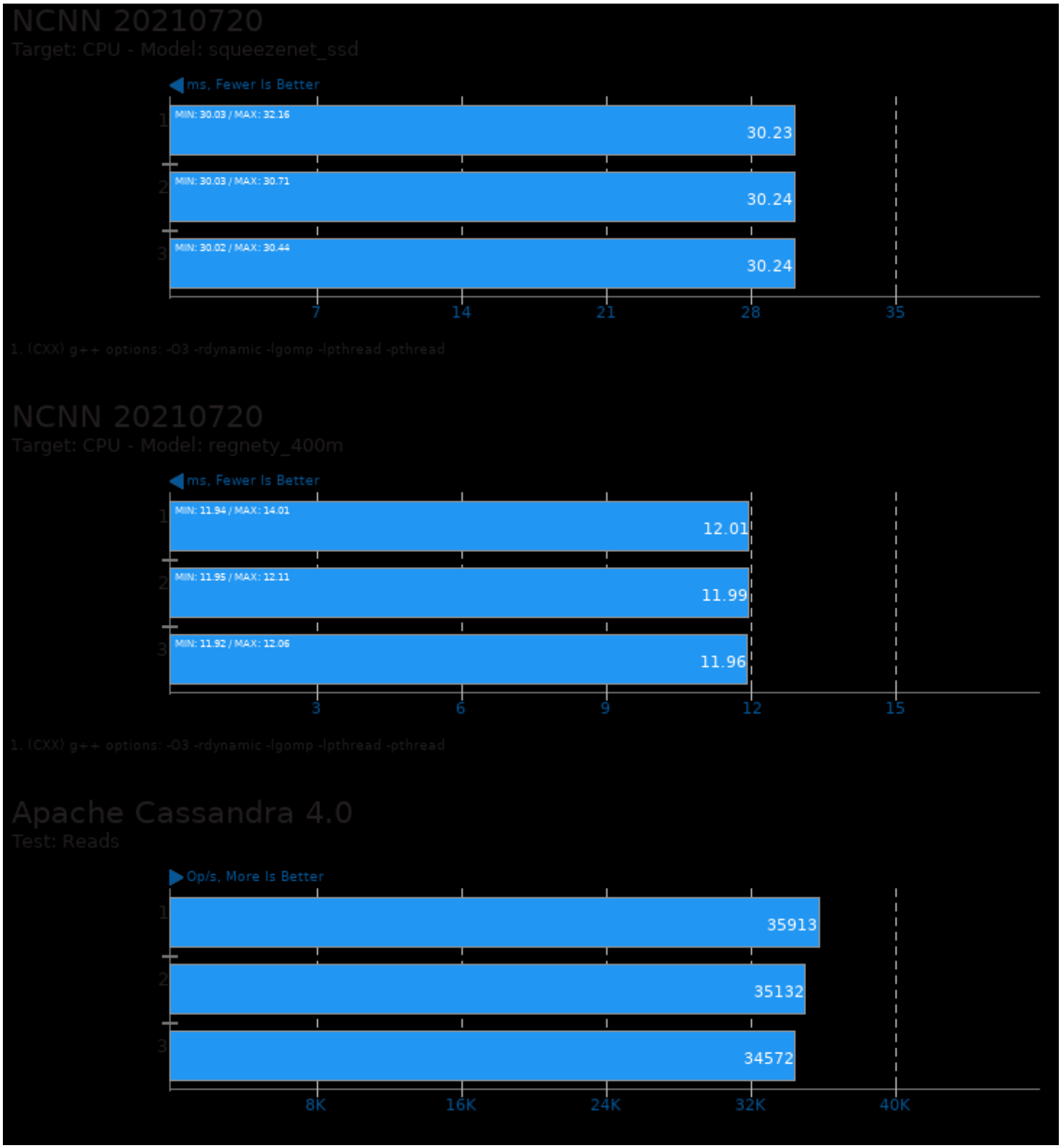
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread -pthread

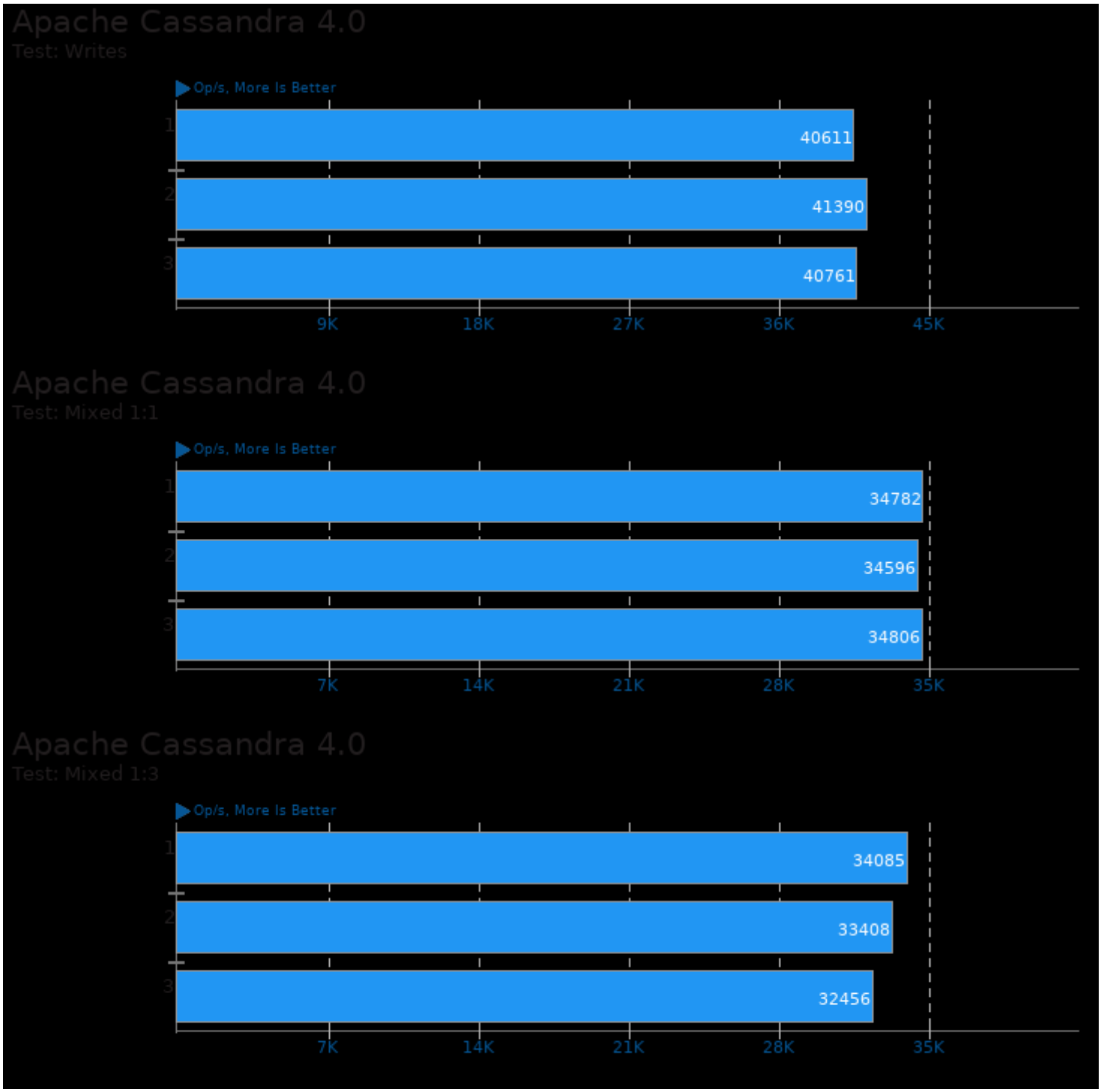

NCNN 20210720
Target: CPU-v2-v2 - Model: mobilenet-v2
ms, Fewer Is Better
1
MIN: 6.77 / MAX: 6.94
6.83
2
MIN: 6.76 / MAX: 6.91
6.82
3
MIN: 6.76 / MAX: 6.89
6.82
2
4
6
8
10
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread -pthread
NCNN 20210720
Target: CPU-v3-v3 - Model: mobilenet-v3
ms, Fewer Is Better
1
MIN: 5.77 / MAX: 5.88
5.81
2
MIN: 5.79 / MAX: 6.47
5.84
3
MIN: 5.74 / MAX: 5.87
5.79
1.314
2.628
3.942
5.256
6.57
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread -pthread
NCNN 20210720
Target: CPU - Model: shufflenet-v2
ms, Fewer Is Better
1
MIN: 4.76 / MAX: 4.88
4.79
2
MIN: 4.78 / MAX: 4.88
4.81
3
MIN: 4.77 / MAX: 4.86
4.81
1.0823
2.1646
3.2469
4.3292
5.4115
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread -pthread

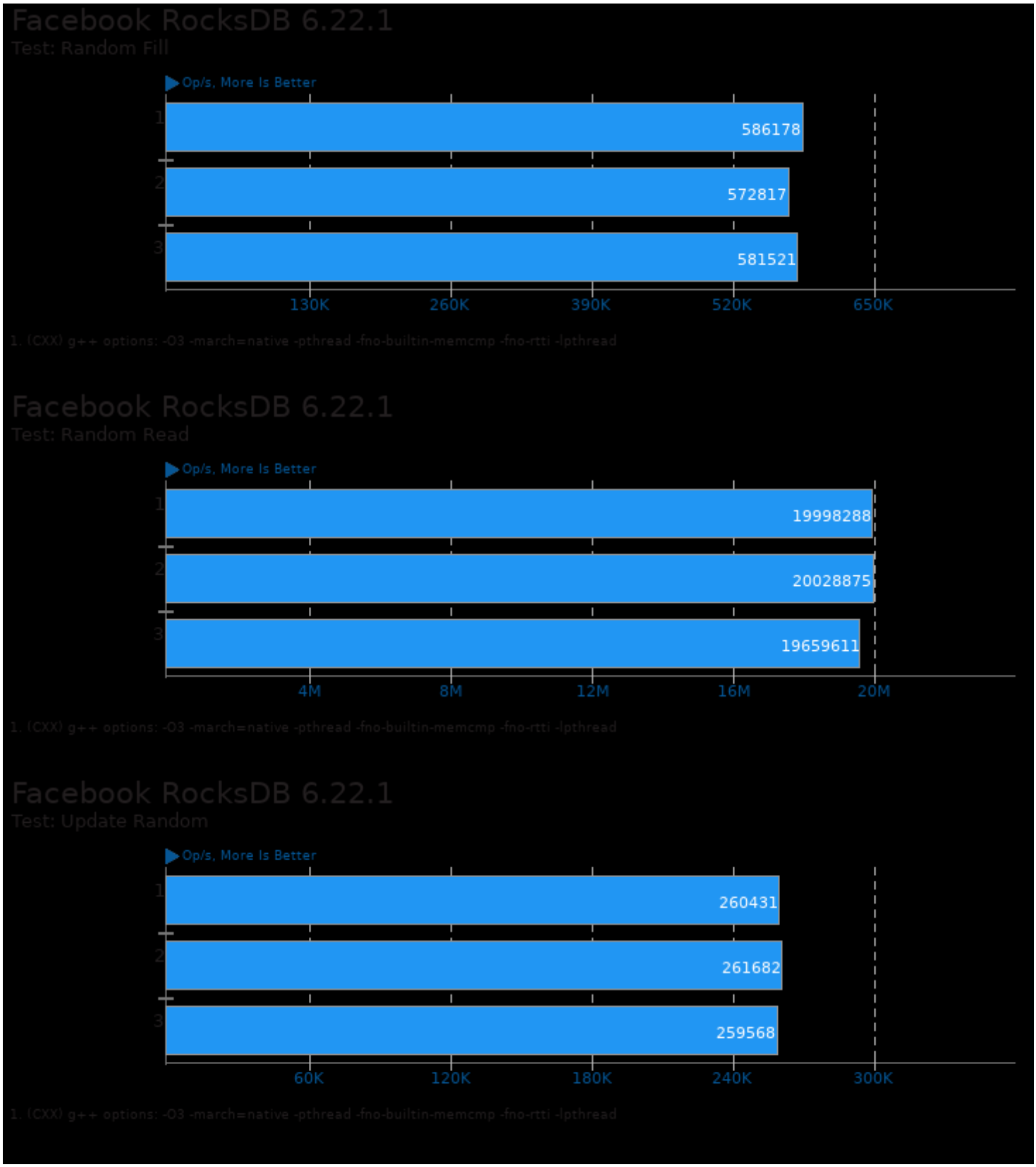

NCNN 20210720
Target: CPU - Model: mnasnet
ms, Fewer Is Better
1
MIN: 5.6 / MAX: 5.72
5.64
2
MIN: 5.59 / MAX: 5.74
5.64
3
MIN: 5.61 / MAX: 5.7
5.64
1.269
2.538
3.807
5.076
6.345
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread -pthread
NCNN 20210720
Target: CPU - Model: efficientnet-b0
ms, Fewer Is Better
1
MIN: 9.4 / MAX: 9.54
9.43
2
MIN: 9.39 / MAX: 9.8
9.44
3
MIN: 9.39 / MAX: 9.49
9.43
3
6
9
12
15
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread -pthread
NCNN 20210720
Target: CPU - Model: blazeface
ms, Fewer Is Better
1
MIN: 1.87 / MAX: 2.04
1.89
2
MIN: 1.86 / MAX: 2
1.89
3
MIN: 1.86 / MAX: 2.01
1.89
0.4253
0.8506
1.2759
1.7012
2.1265
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread -pthread


NCNN 20210720
Target: CPU - Model: googlenet
ms, Fewer Is Better
1
MIN: 20.04 / MAX: 20.25
20.10
2
MIN: 20.03 / MAX: 20.51
20.11
3
MIN: 20.02 / MAX: 22.41
20.11
5
10
15
20
25
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread -pthread
NCNN 20210720
Target: CPU - Model: vgg16
ms, Fewer Is Better
1
MIN: 90.41 / MAX: 102.21
90.61
2
MIN: 90.63 / MAX: 103.03
90.86
3
MIN: 90.54 / MAX: 92.43
90.71
20
40
60
80
100
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread -pthread
NCNN 20210720
Target: CPU - Model: resnet18
ms, Fewer Is Better
1
MIN: 21.86 / MAX: 22.2
21.95
2
MIN: 21.94 / MAX: 23.08
22.02
3
MIN: 21.93 / MAX: 25.09
22.04
5
10
15
20
25
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread -pthread


NCNN 20210720
Target: CPU - Model: alexnet
ms, Fewer Is Better
1
MIN: 19.64 / MAX: 21.87
19.72
2
MIN: 19.67 / MAX: 21.06
19.74
3
MIN: 19.69 / MAX: 30.36
19.80
5
10
15
20
25
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread -pthread
NCNN 20210720
Target: CPU - Model: resnet50
ms, Fewer Is Better
1
MIN: 40.52 / MAX: 40.84
40.64
2
MIN: 40.48 / MAX: 42.53
40.60
3
MIN: 40.48 / MAX: 40.79
40.59
9
18
27
36
45
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread -pthread
NCNN 20210720
Target: CPU - Model: yolov4-tiny
ms, Fewer Is Better
1
MIN: 36.39 / MAX: 38.36
36.50
2
MIN: 36.38 / MAX: 48.55
36.51
3
MIN: 36.24 / MAX: 36.67
36.38
8
16
24
32
40
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread -pthread

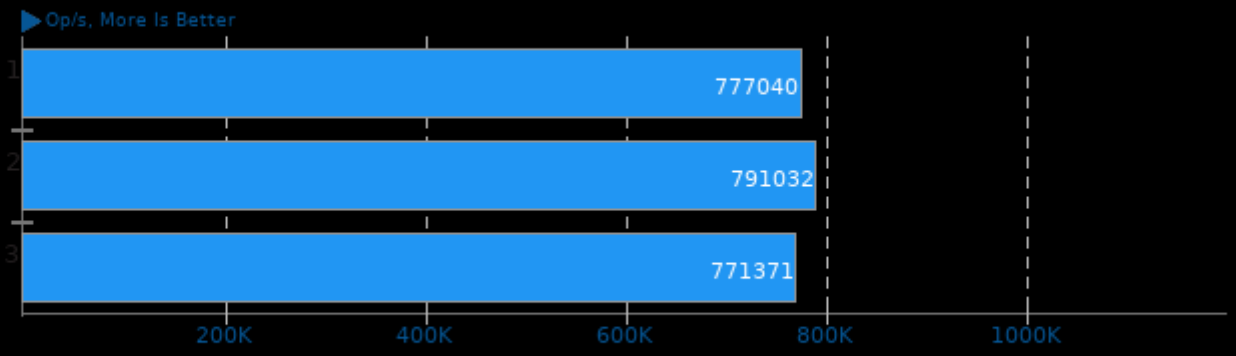

NCNN 20210720
Target: CPU - Model: squeezenet_ssd
ms, Fewer Is Better
MIN: 30.03 / MAX: 32.16
30.23
MIN: 30.03 / MAX: 30.71
30.24
MIN: 30.02 / MAX: 30.44
30.24
7
14
21
28
35
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread -pthread
NCNN 20210720
Target: CPU - Model: regnety_400m
ms, Fewer Is Better
MIN: 11.94 / MAX: 14.01
12.01
MIN: 11.95 / MAX: 12.11
11.99
MIN: 11.92 / MAX: 12.06
11.96
3
6
9
12
15
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread -pthread
Apache Cassandra 4.0
Test: Reads
Op/s, More Is Better
35913
35132
34572
8K
16K
24K
32K
40K


Apache Cassandra 4.0
Test: Writes
Op/s, More Is Better
1
2
3
40611
41390
40761
9K
18K
27K
36K
45K
Apache Cassandra 4.0
Test: Mixed 1:1
Op/s, More Is Better
1
2
3
34782
34596
34806
7K
14K
21K
28K
35K
Apache Cassandra 4.0
Test: Mixed 1:3
Op/s, More Is Better
1
2
3
34085
33408
32456
7K
14K
21K
28K
35K


Facebook RocksDB 6.22.1
Test: Random Fill
Op/s, More Is Better
1
2
3
586178
572817
581521
130K
260K
390K
520K
650K
1. (CXX) g++ options: -O3 -march=native -pthread -fno-builtin-memcmp -fno-rtti -lpthread
Facebook RocksDB 6.22.1
Test: Random Read
Op/s, More Is Better
1
2
3
19998288
20028875
19659611
4M
8M
12M
16M
20M
1. (CXX) g++ options: -O3 -march=native -pthread -fno-builtin-memcmp -fno-rtti -lpthread
Facebook RocksDB 6.22.1
Test: Update Random
Op/s, More Is Better
1
2
3
260431
261682
259568
60K
120K
180K
240K
300K
1. (CXX) g++ options: -O3 -march=native -pthread -fno-builtin-memcmp -fno-rtti -lpthread

Facebook RocksDB 6.22.1

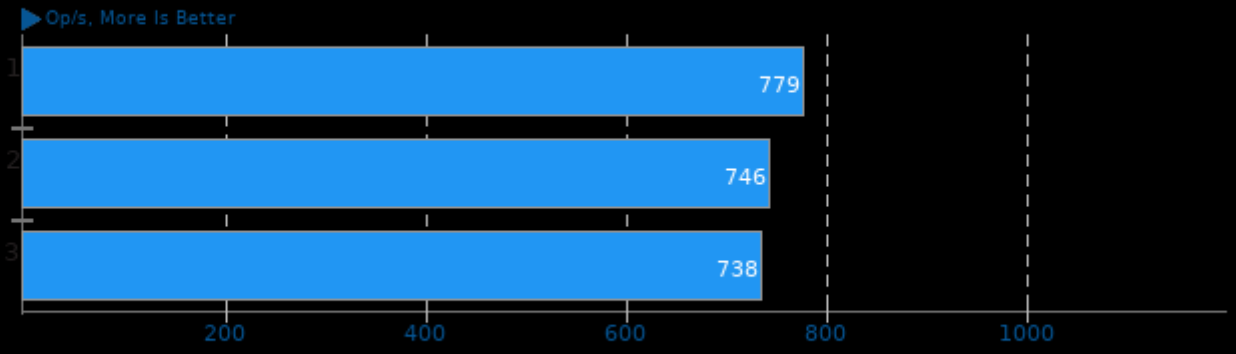
Test: Sequential Fill



1. (CXX) g++ options: -O3 -march=native -pthread -fno-builtin-memcmp -fno-rtti -lpthread

Facebook RocksDB 6.22.1

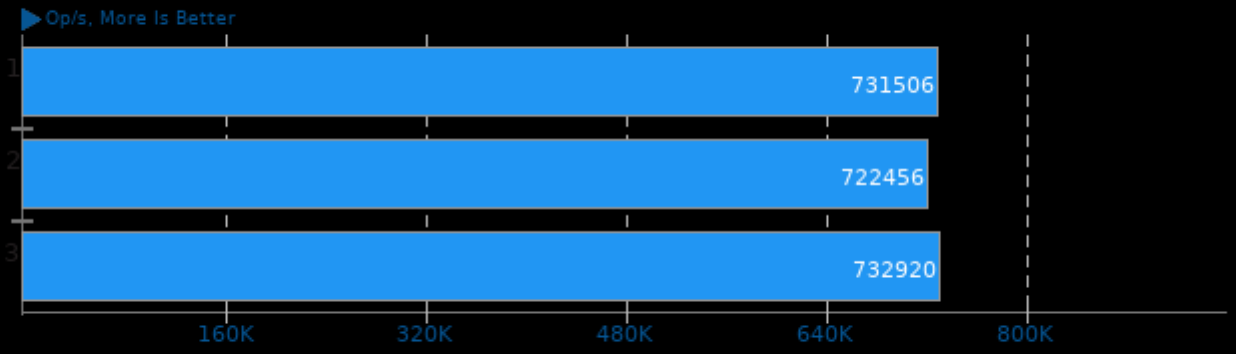
Test: Random Fill Sync



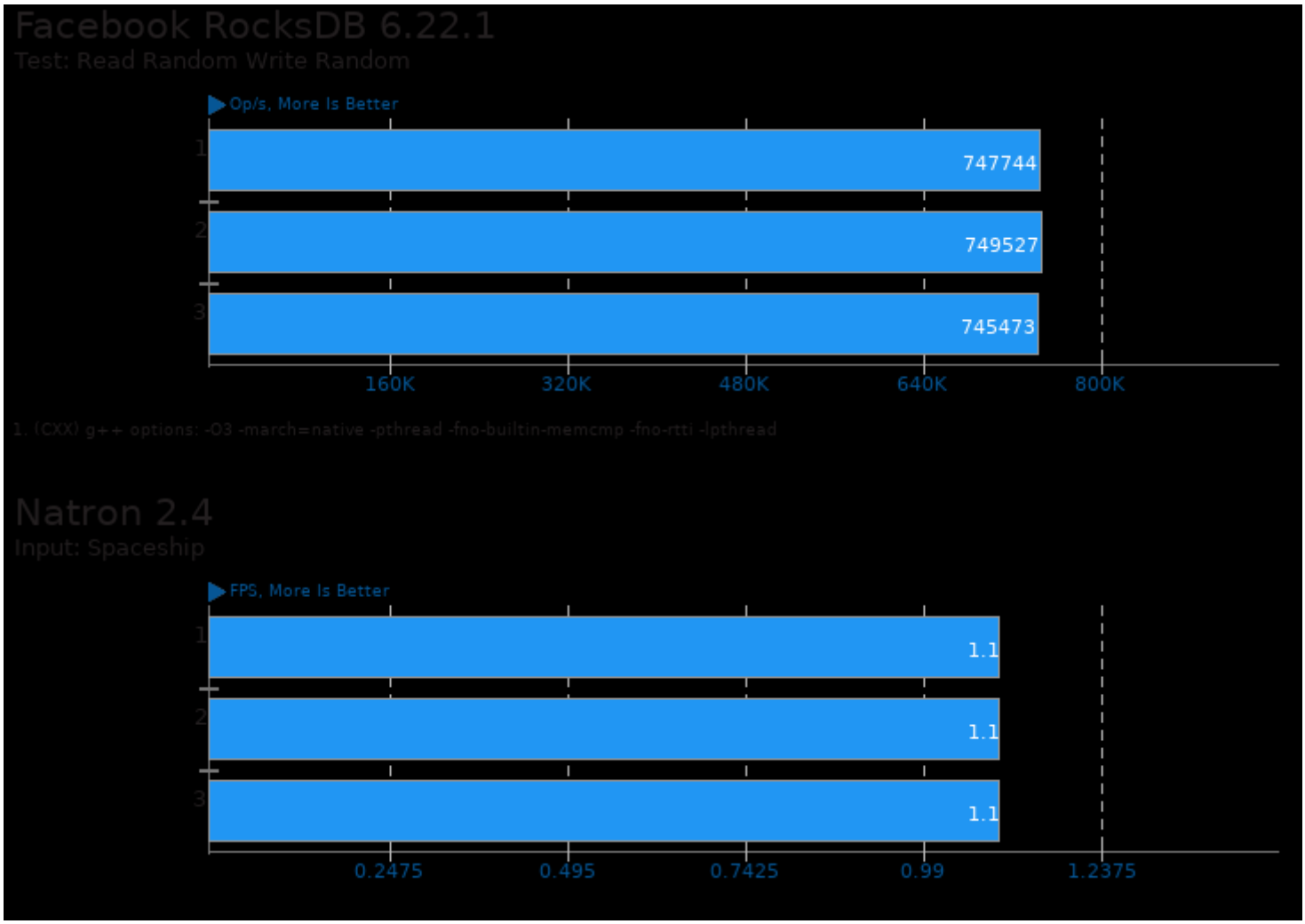
1. (CXX) g++ options: -O3 -march=native -pthread -fno-builtin-memcmp -fno-rtti -lpthread

Facebook RocksDB 6.22.1

Test: Read While Writing



1. (CXX) g++ options: -O3 -march=native -pthread -fno-builtin-memcmp -fno-rtti -lpthread


Facebook RocksDB 6.22.1
Test: Read Random Write Random
Op/s, More Is Better
1
747744
2
749527
3
745473
160K
320K
480K
640K
800K
1. (CXX) g++ options: -O3 -march=native -pthread -fno-builtin-memcmp -fno-rtti -lpthread
Natron 2.4
Input: Spaceship
FPS, More Is Better
1
1.1
2
1.1
3
1.1
0.2475
0.495
0.7425
0.99
1.2375

1280 july

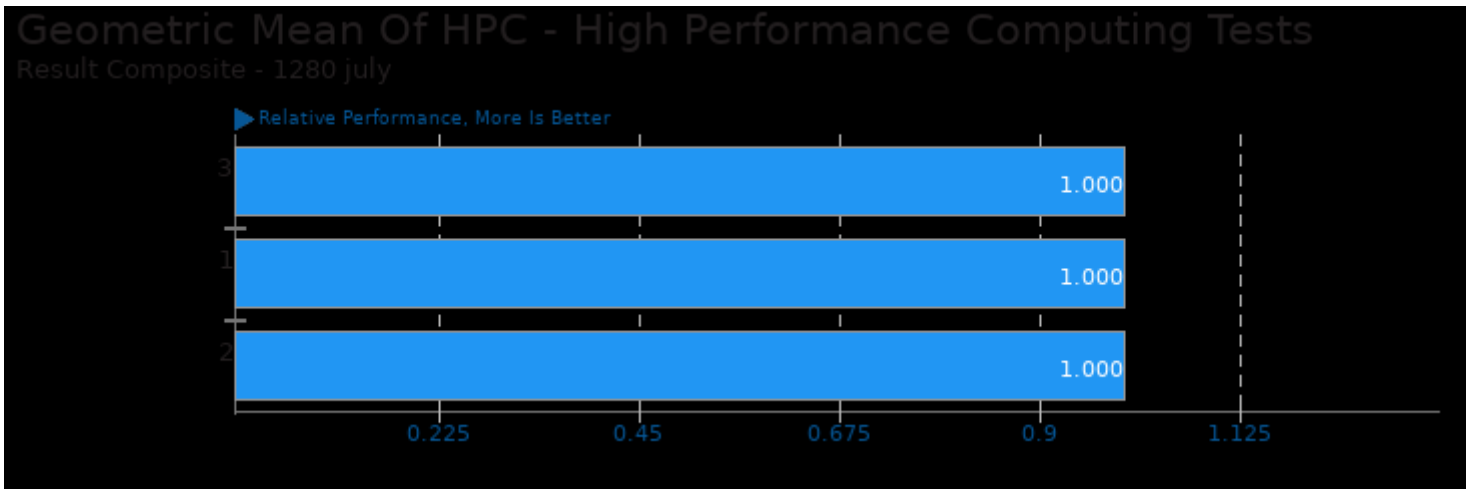
These geometric means are based upon test groupings / test suites for this result file.



Geometric mean based upon tests: pts/yafaray and pts/natron

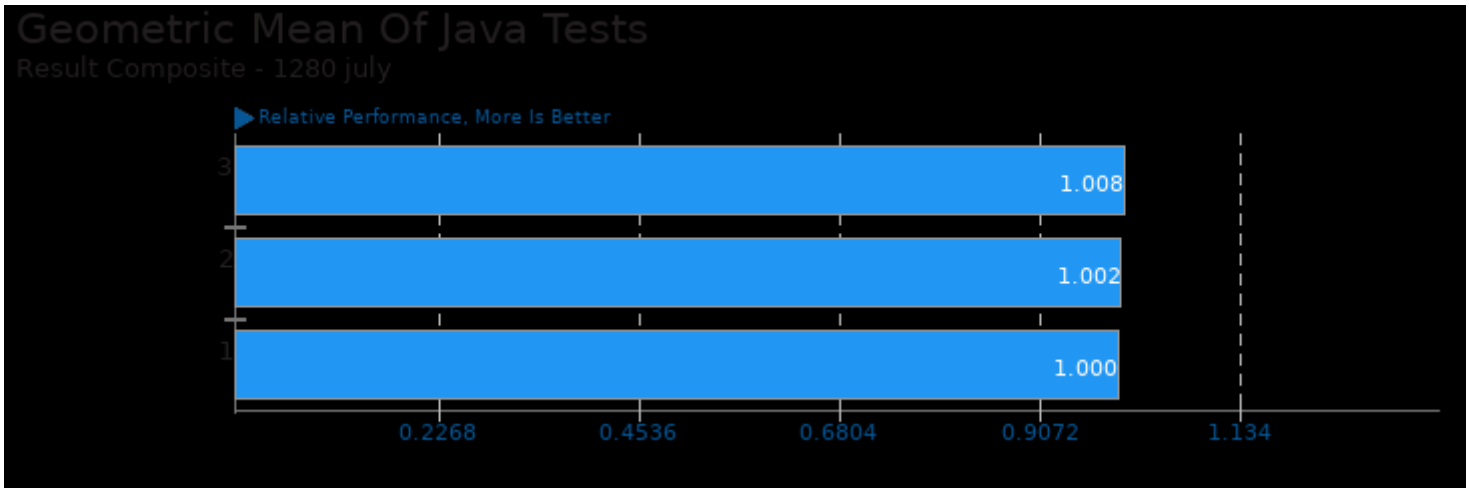


Geometric mean based upon tests: pts/rocksdb and pts/cassandra



Geometric mean based upon tests: pts/qe and pts/ncnn

1280 july



Geometric mean based upon tests: pts/renaissance and pts/cassandra



Geometric mean based upon tests: pts/yafaray, pts/natron and pts/cassandra



Geometric mean based upon tests: pts/yafaray and pts/natron

1280 july



Geometric mean based upon tests: pts/cassandra and pts/rocksdb

This file was automatically generated via the Phoronix Test Suite benchmarking software on Thursday, 28 March 2024 15:42.