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Core i5 4670 Haswell

Intel Core i5-4670 testing with a MSI B85M-P33 (MS-7817) v1.0 (V4.9 BIOS) and MSI Intel HD 4600 2GB on Ubuntu 20.04 via the Phoronix Test Suite.

Automated Executive Summary

Linux 5.4 had the most wins, coming in first place for 45% of the tests.

Based on the geometric mean of all complete results, the fastest (Linux 5.8) was 1.001x the speed of the slowest (Linux 5.4). Linux 5.8 was 1x the speed of Linux 5.9-rc7 and Linux 5.4 was 0.999x the speed of Linux 5.8.

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

Apache CouchDB (Bulk Size: 100 - Inserts: 1000 - Rounds: 24) at 1.174x
Mobile Neural Network (Model: MobileNetV2_224) at 1.098x
Mobile Neural Network (Model: mobilenet-v1-1.0) at 1.07x
LeelaChessZero (Backend: Eigen) at 1.042x
NCNN (Target: CPU-v2-v2 - Model: mobilenet-v2) at 1.041x
librsvg (Operation: SVG Files To PNG) at 1.039x
ECP-CANDLE (Benchmark: P1B2) at 1.038x
NCNN (Target: CPU-v3-v3 - Model: mobilenet-v3) at 1.037x
LeelaChessZero (Backend: BLAS) at 1.034x

InfluxDB (Concurrent Streams: 4 - Batch Size: 10000 - Tags: 2,5000,1 - Points Per Series: 10000) at 1.034x.

Test Systems:

Linux 5.4

Processor: Intel Core i5-4670 @ 3.80GHz (4 Cores), Motherboard: MSI B85M-P33 (MS-7817) v1.0 (V4.9 BIOS), Chipset: Intel 4th Gen Core DRAM, Memory: 8GB, Disk: 2000GB Samsung SSD 860, Graphics: MSI Intel HD 4600 2GB (1200MHz), Audio: Intel Xeon E3-1200 v3/4th, Monitor: DELL S2409W, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 20.04, Kernel: 5.4.0-40-generic (x86_64), Desktop: GNOME Shell 3.36.3, Display Server: X Server 1.20.8, Display Driver: modesetting 1.20.8, OpenGL: 4.5 Mesa 20.0.8, Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 1920x1080

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,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: 0x28
Python Notes: Python 2.7.18rc1 + Python 3.8.2
Security Notes: itlb_multihit: KVM: Mitigation of Split huge pages + l1tf: Mitigation of PTE Inversion; VMX: conditional cache flushes SMT disabled + mds: Mitigation of Clear buffers; SMT disabled + 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: disabled RSB filling + srbds: Mitigation of Microcode + tsx_async_abort: Not affected

Linux 5.8

Processor: Intel Core i5-4670 @ 3.80GHz (4 Cores), Motherboard: MSI B85M-P33 (MS-7817) v1.0 (V4.9 BIOS), Chipset: Intel 4th Gen Core DRAM, Memory: 8GB, Disk: 2000GB Samsung SSD 860, Graphics: MSI Intel HD 4600 2GB (1200MHz), Audio: Intel Xeon E3-1200 v3/4th, Monitor: DELL S2409W, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 20.04, Kernel: 5.8.0-050800-generic (x86_64), Desktop: GNOME Shell 3.36.3, Display Server: X Server 1.20.8, Display Driver: modesetting 1.20.8, OpenGL: 4.5 Mesa 20.0.8, Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 1920x1080

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,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_cpufreq ondemand - CPU Microcode: 0x28
Python Notes: Python 2.7.18rc1 + Python 3.8.2
Security Notes: itlb_multihit: KVM: Mitigation of Split huge pages + l1tf: Mitigation of PTE Inversion; VMX: conditional cache flushes SMT disabled + mds: Mitigation of Clear buffers; SMT disabled + 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: disabled RSB filling + srbds: Mitigation of Microcode + tsx_async_abort: Not affected

Linux 5.9-rc7

Processor: Intel Core i5-4670 @ 3.80GHz (4 Cores), Motherboard: MSI B85M-P33 (MS-7817) v1.0 (V4.9 BIOS), Chipset: Intel 4th Gen Core DRAM, Memory: 8GB, Disk: 2000GB Samsung SSD 860, Graphics: MSI Intel HD 4600 2GB (1200MHz), Audio: Intel Xeon E3-1200 v3/4th, Monitor: DELL S2409W, Network: Realtek RTL8111/8168/8411

Core i5 4670 Haswell

OS: Ubuntu 20.04, Kernel: 5.9.0-050900rc7daily20201002-generic (x86_64) 20201001, Desktop: GNOME Shell 3.36.3, Display Server: X Server 1.20.8, Display Driver: modesetting 1.20.8, OpenGL: 4.5 Mesa 20.0.8, Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 1920x1080

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,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_cpufreq ondemand - CPU Microcode: 0x28
Python Notes: Python 2.7.18rc1 + Python 3.8.2
Security Notes: itlb_multihit: KVM: Mitigation of VMX disabled + l1tf: Mitigation of PTE Inversion; VMX: conditional cache flushes SMT disabled + mds: Mitigation of Clear buffers; SMT disabled + 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: disabled RSB filling + srbds: Mitigation of Microcode + tsx_async_abort: Not affected

	Linux 5.4	Linux 5.8	Linux 5.9-rc7
LeelaChessZero - BLAS (Nodes/s)	**667**	686	**690**
Normalized	96.67%	99.42%	100%
Standard Deviation	3.9%	2.7%	1.7%
LeelaChessZero - Eigen (Nodes/s)	**617**	**643**	628
Normalized	95.96%	100%	97.67%
Standard Deviation	2.8%		1.8%
NAMD - ATPase Simulation - 327,506 Atoms (days/ns)	**5.20846**	5.14312	**5.13191**
Normalized	98.53%	99.78%	100%
Standard Deviation	0.5%	0.9%	0.9%
Dolfyn - C.F.D (sec)	**22.559**	22.689	**22.701**
Normalized	100%	99.43%	99.37%
Standard Deviation	0.2%	0.6%	0.2%
FFTE - N.2.3.C.F.R (MFLOPS)	**14528**	14609	**14694**
Normalized	98.87%	99.42%	100%
Standard Deviation	0.4%	0.4%	0.2%
Timed HMMer Search - P.D.S (sec)	**137.008**	138.566	**140.297**
Normalized	100%	98.88%	97.66%
Standard Deviation	0.1%	0.2%	0.1%
Incompact3D - Cylinder (sec)	**828.550741**	831.387268	**831.629354**
Normalized	100%	99.66%	99.63%
Standard Deviation	1%	0.9%	1.2%
Timed MAFFT Alignment - M.S.A - LSU RNA (sec)	**12.399**	**12.365**	12.379
Normalized	99.73%	100%	99.89%
Standard Deviation	1.2%	0.4%	1%
Monte Carlo Simulations of Ionised Nebulae - Dust 2D tau100.0 (sec)	**330**	**330**	**333**
Normalized	100%	100%	99.1%
Standard Deviation		0.5%	1%
LAMMPS Molecular Dynamics Simulator - Rhodopsin Protein (ns/day)	**2.660**	2.653	**2.641**
Normalized	100%	99.74%	99.29%
Standard Deviation	0.1%	1%	0.9%

WebP Image Encode - Default (Encode Time - sec)	**1.833**	1.835	**1.839**
Normalized	100%	99.89%	99.67%
Standard Deviation	0.2%	0.3%	0.6%
WebP Image Encode - Quality 100 (Encode Time - sec)	**2.806**	**2.802**	**2.802**
Normalized	99.86%	100%	100%
Standard Deviation	0.2%	0.1%	0%
WebP Image Encode - Q.1.L (Encode Time - sec)	**19.498**	**19.527**	19.523
Normalized	100%	99.85%	99.87%
Standard Deviation	0.1%	0.3%	0.4%
WebP Image Encode - Q.1.H.C (Encode Time - sec)	**8.500**	8.499	**8.498**
Normalized	99.98%	99.99%	100%
Standard Deviation	0.2%	0.1%	0.1%
WebP Image Encode - Q.1.L.H.C (Encode Time - sec)	**48.229**	**47.832**	47.838
Normalized	99.18%	100%	99.99%
Standard Deviation	0.1%	0.2%	0.1%
BYTE Unix Benchmark - Dhrystone 2 (LPS)	**36897223**	37546757	**37573969**
Normalized	98.2%	99.93%	100%
Standard Deviation	2.8%	0.2%	0.1%
Zstd Compression - 3 (MB/s)	**1862**	1896	**1908**
Normalized	97.56%	99.38%	100%
Standard Deviation	3%	1.4%	0.1%
Zstd Compression - 19 (MB/s)	**16.3**	**16.3**	**16.1**
Normalized	100%	100%	98.77%
Standard Deviation	0%	0.6%	0.4%
LibRaw - P.P.B (Mpix/sec)	**23.44**	23.71	**23.73**
Normalized	98.78%	99.92%	100%
Standard Deviation	0.1%	0.1%	0.1%
AOM AV1 - Speed 4 Two-Pass (FPS)	1.60	1.60	1.60
Standard Deviation	0.4%	0.4%	0.4%
AOM AV1 - Speed 6 Realtime (FPS)	12.65	**12.55**	**12.80**
Normalized	98.83%	98.05%	100%
Standard Deviation	1.2%	1.1%	0.1%
AOM AV1 - Speed 6 Two-Pass (FPS)	**2.54**	**2.56**	**2.56**
Normalized	99.22%	100%	100%
Standard Deviation	0.2%	0.2%	0%
AOM AV1 - Speed 8 Realtime (FPS)	**31.63**	**31.33**	31.60
Normalized	100%	99.05%	99.91%
Standard Deviation	0.5%	1.8%	0.5%
libavif avifenc - 0 (sec)	228.165	**229.198**	**227.245**
Normalized	99.6%	99.15%	100%
Standard Deviation	0.3%	1.2%	0.3%
libavif avifenc - 2 (sec)	136.060	**135.023**	**136.078**
Normalized	99.24%	100%	99.22%
Standard Deviation	0.2%	0.8%	0%
libavif avifenc - 8 (sec)	**9.448**	9.450	**9.484**
Normalized	100%	99.98%	99.62%
Standard Deviation	0%	0.1%	0.1%
libavif avifenc - 10 (sec)	**8.645**	**8.616**	8.626
Normalized	99.66%	100%	99.88%

Standard Deviation	1.2%	0.3%	0.1%
Timed Apache Compilation - Time To Compile (sec)	**38.404**	38.840	**39.509**
Normalized	100%	98.88%	97.2%
Standard Deviation	0.3%	0.1%	0.1%
Timed GDB GNU Debugger Compilation - Time To Compile (sec)	**200.137**	200.444	**202.925**
Normalized	100%	99.85%	98.63%
Standard Deviation	0.1%	0.1%	0.3%
Timed Linux Kernel Compilation - Time To Compile (sec)	**261.198**	261.780	**266.532**
Normalized	100%	99.78%	98%
Standard Deviation	0.3%	0.2%	0.4%
Timed PHP Compilation - Time To Compile (sec)	140.014	**139.155**	**141.052**
Normalized	99.39%	100%	98.66%
Standard Deviation	0.2%	0%	0.2%
Build2 - Time To Compile (sec)	**324.321**	320.546	**320.113**
Normalized	98.7%	99.86%	100%
Standard Deviation	0.5%	0.6%	0.6%
eSpeak-NG Speech Engine - T.T.S.S (sec)	**35.931**	**36.435**	36.104
Normalized	100%	98.62%	99.52%
Standard Deviation	1.4%	0.6%	0.6%
RNNoise (sec)	**25.545**	**25.644**	25.622
Normalized	100%	99.61%	99.7%
Standard Deviation	1%	1.2%	0.6%
System GZIP Decompression (sec)	**3.359**	**3.367**	3.364
Normalized	100%	99.76%	99.85%
Standard Deviation	3.9%	4.7%	4.3%
Apache CouchDB - 100 - 1000 - 24 (sec)	**212.991**	**181.356**	182.379
Normalized	85.15%	100%	99.44%
Standard Deviation	0.5%	1.7%	0.2%
GROMACS - Water Benchmark (Ns/Day)	**0.347**	0.351	**0.354**
Normalized	98.02%	99.15%	100%
Standard Deviation	0.4%	1%	2.2%
TensorFlow Lite - SqueezeNet (us)	**542297**	541893	**541857**
Normalized	99.92%	99.99%	100%
Standard Deviation	0.2%	0%	0%
TensorFlow Lite - Inception V4 (us)	**7806983**	**7808760**	7808023
Normalized	100%	99.98%	99.99%
Standard Deviation	0%	0%	0%
TensorFlow Lite - NASNet Mobile (us)	**382705**	382741	**383013**
Normalized	100%	99.99%	99.92%
Standard Deviation	0%	0%	0%
TensorFlow Lite - Mobilenet Float (us)	**365280**	365341	**365346**
Normalized	100%	99.98%	99.98%
Standard Deviation	0%	0%	0%
TensorFlow Lite - Mobilenet Quant (us)	**370694**	**370734**	370713
Normalized	100%	99.99%	99.99%
Standard Deviation	0%	0%	0%
TensorFlow Lite - I.R.V (us)	**7064413**	7065463	**7066407**
Normalized	100%	99.99%	99.97%
Standard Deviation	0%	0%	0%
ASTC Encoder - Fast (sec)	**9.71**	**9.70**	**9.71**
Normalized	99.9%	100%	99.9%

Standard Deviation	0.7%	0.3%	1%
ASTC Encoder - Medium (sec)	**14.92**	**14.91**	**14.91**
Normalized	99.93%	100%	100%
Standard Deviation	0.1%	0.1%	0.2%
ASTC Encoder - Thorough (sec)	99.79	**99.88**	**99.61**
Normalized	99.82%	99.73%	100%
Standard Deviation	0%	0%	0.4%
ASTC Encoder - Exhaustive (sec)	**797.18**	**798.06**	797.97
Normalized	100%	99.89%	99.9%
Standard Deviation	0.1%	0.1%	0%
G'MIC - 2.F.P.1.T (sec)	**99.497**	**102.209**	100.357
Normalized	100%	97.35%	99.14%
Standard Deviation	2.3%	2.3%	1%
G'MIC - P.I.O.A.3.V.1.T (sec)	**22.584**	**22.941**	22.643
Normalized	100%	98.44%	99.74%
Standard Deviation	0.1%	2.6%	0.3%
G'MIC - 3.E.F.I.R.C.1.T (sec)	**73.161**	**72.971**	73.015
Normalized	99.74%	100%	99.94%
Standard Deviation	0.1%	0.1%	0.1%
OCRMyPDF - P.6.P.P.D (sec)	**66.011**	**66.244**	66.132
Normalized	100%	99.65%	99.82%
Standard Deviation	0.5%	0.3%	0.4%
RawTherapee - T.B.T (sec)	**122.427**	**123.005**	123.003
Normalized	100%	99.53%	99.53%
Standard Deviation	0%	0.1%	0.1%
librsvg - SVG Files To PNG (sec)	**25.393**	**26.378**	26.037
Normalized	100%	96.27%	97.53%
Standard Deviation	1%	0.3%	0.5%
Caffe - AlexNet - CPU - 100 (ms)	**40206**	**40011**	40083
Normalized	99.51%	100%	99.82%
Standard Deviation	1%	0%	0%
Caffe - AlexNet - CPU - 200 (ms)	**82100**	79933	**79819**
Normalized	97.22%	99.86%	100%
Standard Deviation	3%	0.1%	0.2%
Caffe - GoogleNet - CPU - 100 (ms)	**90781**	**90649**	90650
Normalized	99.85%	100%	100%
Standard Deviation	0.1%	0.1%	0.1%
Caffe - GoogleNet - CPU - 200 (ms)	181467	**181319**	**181924**
Normalized	99.92%	100%	99.67%
Standard Deviation	0.1%	0.1%	0.8%
Mobile Neural Network - SqueezeNetV1.0	**8.796**	8.725	**8.708**
Normalized	99%	99.81%	100%
Standard Deviation	2.9%	0.3%	0.6%
Mobile Neural Network - resnet-v2-50 (ms)	**39.106**	39.579	**39.803**
Normalized	100%	98.8%	98.25%
Standard Deviation	0.5%	0.9%	1.9%
Mobile Neural Network - MobileNetV2_224	**5.797**	6.317	**6.365**
Normalized	100%	91.77%	91.08%
Standard Deviation	2.8%	2.9%	1.7%
Mobile Neural Network - mobilenet-v1-1.0	**6.745**	7.202	**7.217**
Normalized	100%	93.65%	93.46%
Standard Deviation	0.2%	4.2%	3.9%
Mobile Neural Network - inception-v3 (ms)	**50.114**	**49.718**	49.797
Normalized	99.21%	100%	99.84%
Standard Deviation	1.6%	0.2%	0.1%

NCNN - CPU - squeezenet (ms)	**30.37**	30.26	**30.16**
Normalized	99.31%	99.67%	100%
Standard Deviation	1.4%	0.3%	0.5%
NCNN - CPU - mobilenet (ms)	**36.74**	**36.36**	**36.36**
Normalized	98.97%	100%	100%
Standard Deviation	1.9%	0.1%	0.1%
NCNN - CPU-v2-v2 - mobilenet-v2 (ms)	**9.65**	**9.27**	**9.27**
Normalized	96.06%	100%	100%
Standard Deviation	5.6%	0.2%	0.4%
NCNN - CPU-v3-v3 - mobilenet-v3 (ms)	**8.42**	8.17	**8.12**
Normalized	96.44%	99.39%	100%
Standard Deviation	2.8%	0%	0.4%
NCNN - CPU - shufflenet-v2 (ms)	**5.17**	**5.12**	5.14
Normalized	99.03%	100%	99.61%
Standard Deviation	0.4%	0.1%	0.5%
NCNN - CPU - mnasnet (ms)	7.74	**7.71**	**7.75**
Normalized	99.61%	100%	99.48%
Standard Deviation	0.7%	0.1%	0.3%
NCNN - CPU - efficientnet-b0 (ms)	**13.23**	13.07	**13.06**
Normalized	98.72%	99.92%	100%
Standard Deviation	2%	0.4%	0.3%
NCNN - CPU - blazeface (ms)	**1.82**	**1.83**	**1.82**
Normalized	100%	99.45%	100%
Standard Deviation	0%	0.3%	0%
NCNN - CPU - googlenet (ms)	**31.92**	**31.80**	**31.80**
Normalized	99.62%	100%	100%
Standard Deviation	1%	0%	0.1%
NCNN - CPU - vgg16 (ms)	**137.14**	138.82	**139.11**
Normalized	100%	98.79%	98.58%
Standard Deviation	0.9%	0.3%	0.3%
NCNN - CPU - resnet18 (ms)	**35.02**	34.25	**34.22**
Normalized	97.72%	99.91%	100%
Standard Deviation	2%	0.4%	0.2%
NCNN - CPU - alexnet (ms)	**31.11**	31.04	**31.03**
Normalized	99.74%	99.97%	100%
Standard Deviation	0.1%	0.1%	0.2%
NCNN - CPU - resnet50 (ms)	**61.70**	61.63	**61.58**
Normalized	99.81%	99.92%	100%
Standard Deviation	0.1%	0.1%	0.3%
NCNN - CPU - yolov4-tiny (ms)	**56.72**	56.22	**56.15**
Normalized	99%	99.88%	100%
Standard Deviation	0.7%	0.2%	0.4%
TNN - CPU - MobileNet v2 (ms)	**301.983**	**301.417**	301.559
Normalized	99.81%	100%	99.95%
Standard Deviation	0%	0%	0.1%
TNN - CPU - SqueezeNet v1.1 (ms)	**289.154**	**289.669**	289.292
Normalized	100%	99.82%	99.95%
Standard Deviation	0.1%	0%	0.1%
ECP-CANDLE - P1B2 (sec)	**52.804**	53.427	**54.816**
Normalized	100%	98.83%	96.33%
ECP-CANDLE - P3B1 (sec)	**1853**	1859	**1901**
Normalized	100%	99.67%	97.44%
Hierarchical INTegration - FLOAT (QUIPs)	348951783	**349059484**	**348341359**
Normalized	99.97%	100%	99.79%
Standard Deviation	0.1%	0.1%	0.3%

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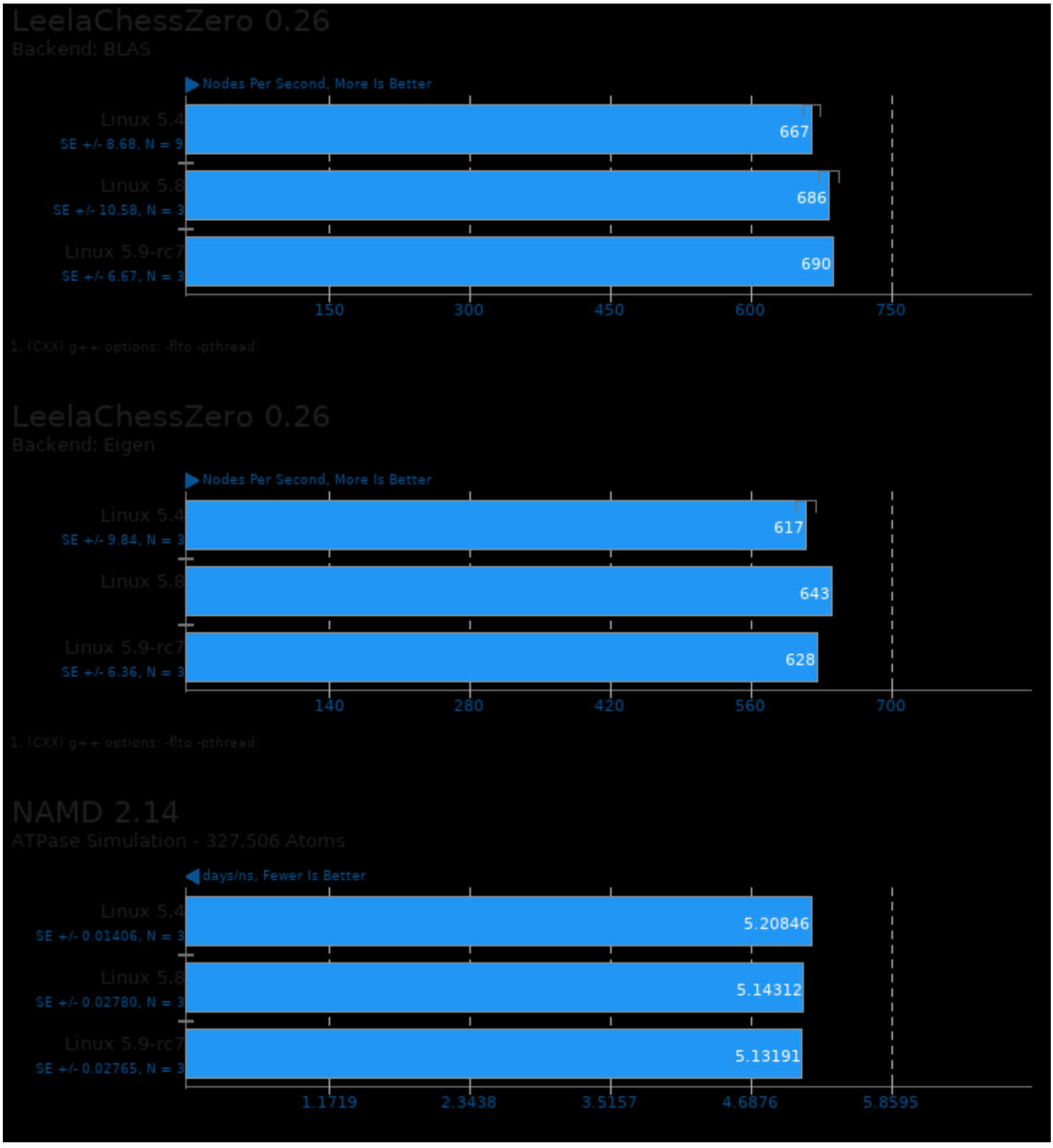
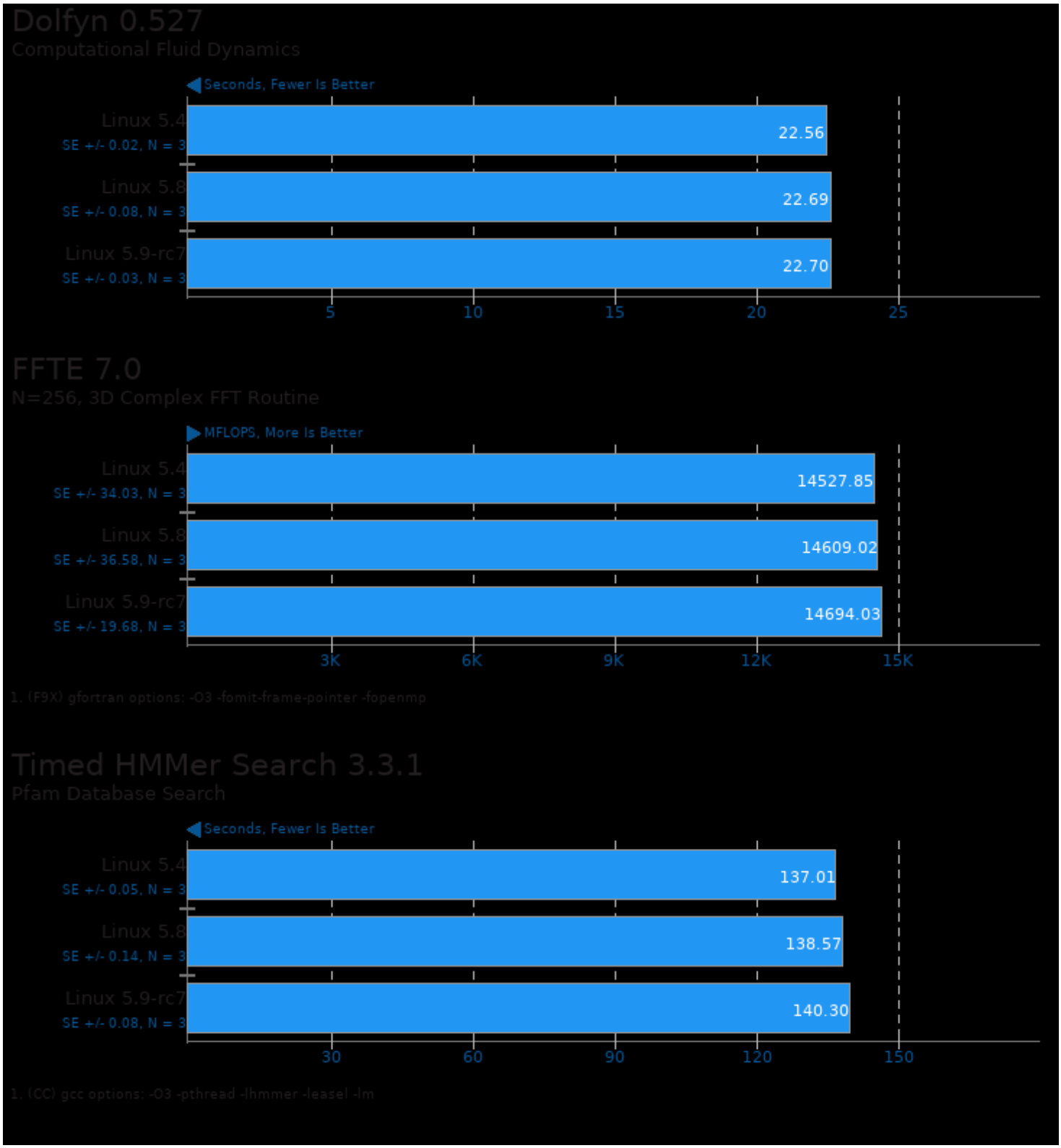
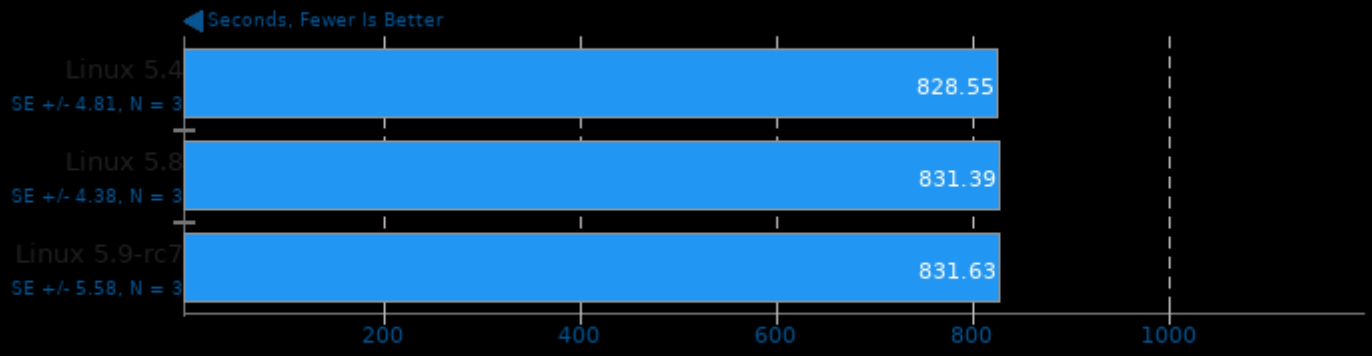
Mlpack Benchmark - scikit_ica (sec)	61.15	**60.86**	**61.18**
Normalized	99.53%	100%	99.48%
Standard Deviation	0.7%	0.6%	0.9%
Mlpack Benchmark - scikit_qda (sec)	109.41	**113.74**	**106.99**
Normalized	97.79%	94.07%	100%
Standard Deviation	5.7%	10.1%	0.5%
Mlpack Benchmark - scikit_svm (sec)	**22.68**	**22.71**	**22.71**
Normalized	100%	99.87%	99.87%
Standard Deviation	0.1%	0%	0.1%
Mlpack Benchmark - scikit_linearridgeregression (sec)	**5.26**	5.25	**5.19**
Normalized	98.67%	98.86%	100%
Standard Deviation	2.4%	2.6%	1.3%
Tesseract OCR - T.T.O.7.I (sec)	**27.630**	**27.715**	27.691
Normalized	100%	99.69%	99.78%
Standard Deviation	0.3%	0.2%	0.3%
InfluxDB - 4 - 10000 - 2,5000,1 - 10000	**831102**	**803915**	804648
Normalized	100%	96.73%	96.82%
Standard Deviation	0.4%	0.6%	0.4%
InfluxDB - 64 - 10000 - 2,5000,1 - 10000 (val/sec)	**865758**	855258	**853799**
Normalized	100%	98.79%	98.62%
Standard Deviation	1.4%	0.5%	0.6%


LeelaChessZero 0.26
Backend: BLAS
Nodes Per Second, More Is Better
Linux 5.4
SE +/- 8.68, N = 9
667
Linux 5.8
SE +/- 10.58, N = 3
686
Linux 5.9-rc7
SE +/- 6.67, N = 3
690
150
300
450
600
750
1. (CXX) g++ options: -flto -pthread
LeelaChessZero 0.26
Backend: Eigen
Nodes Per Second, More Is Better
Linux 5.4
SE +/- 9.84, N = 3
617
Linux 5.8
643
Linux 5.9-rc7
SE +/- 6.36, N = 3
628
140
280
420
560
700
1. (CXX) g++ options: -flto -pthread
NAMD 2.14
ATPase Simulation - 327,506 Atoms
days/ns, Fewer Is Better
Linux 5.4
SE +/- 0.01406, N = 3
5.20846
Linux 5.8
SE +/- 0.02780, N = 3
5.14312
Linux 5.9-rc7
SE +/- 0.02765, N = 3
5.13191
1.1719
2.3438
3.5157
4.6876
5.8595


Dolfyn 0.527
Computational Fluid Dynamics
Seconds, Fewer Is Better
Linux 5.4
SE +/- 0.02, N = 3
22.56
Linux 5.8
SE +/- 0.08, N = 3
22.69
Linux 5.9-rc7
SE +/- 0.03, N = 3
22.70
5
10
15
20
25
FFTE 7.0
N=256, 3D Complex FFT Routine
MFLOPS, More Is Better
Linux 5.4
SE +/- 34.03, N = 3
14527.85
Linux 5.8
SE +/- 36.58, N = 3
14609.02
Linux 5.9-rc7
SE +/- 19.68, N = 3
14694.03
3K
6K
9K
12K
15K
1. (F9X) gfortran options: -O3 -fomit-frame-pointer -fopenmp
Timed HMMer Search 3.3.1
Pfam Database Search
Seconds, Fewer Is Better
Linux 5.4
SE +/- 0.05, N = 3
137.01
Linux 5.8
SE +/- 0.14, N = 3
138.57
Linux 5.9-rc7
SE +/- 0.08, N = 3
140.30
30
60
90
120
150
1. (CC) gcc options: -O3 -pthread -lhmmer -leasel -lm

Incompact3D 2020-09-17

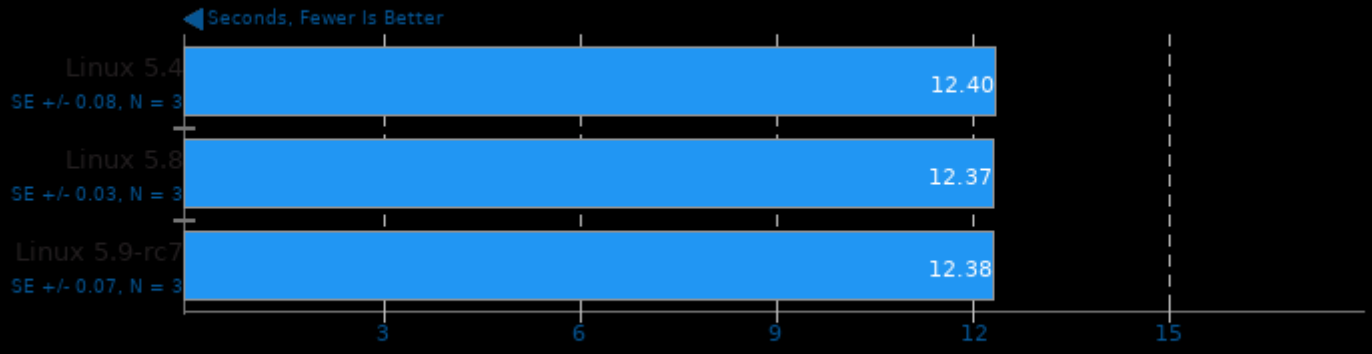
Input: Cylinder



1. (F9X) gfortran options: -cpp -funroll-loops -floop-optimize -fcray-pointer -fbacktrace -pthread -lmpi_usempif08 -lmpi_mpifh -lmpi

Timed MAFFT Alignment 7.471

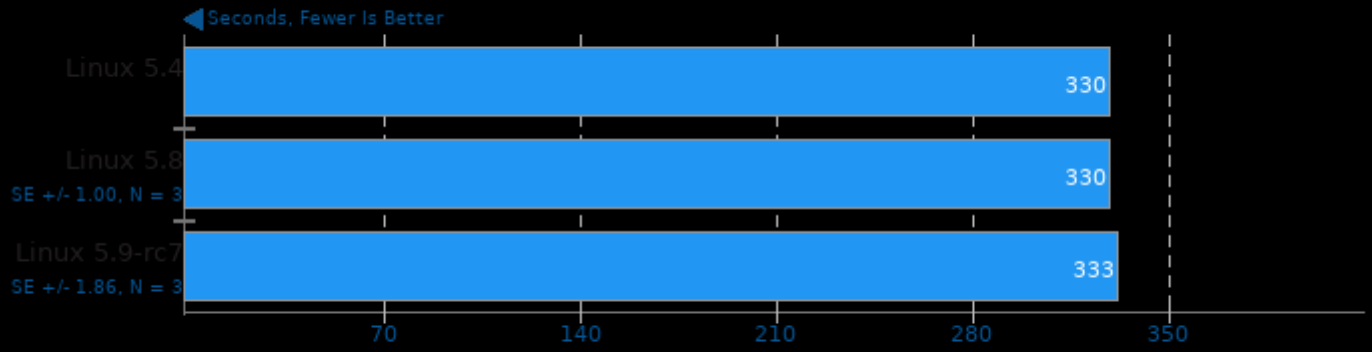
Multiple Sequence Alignment - LSU RNA



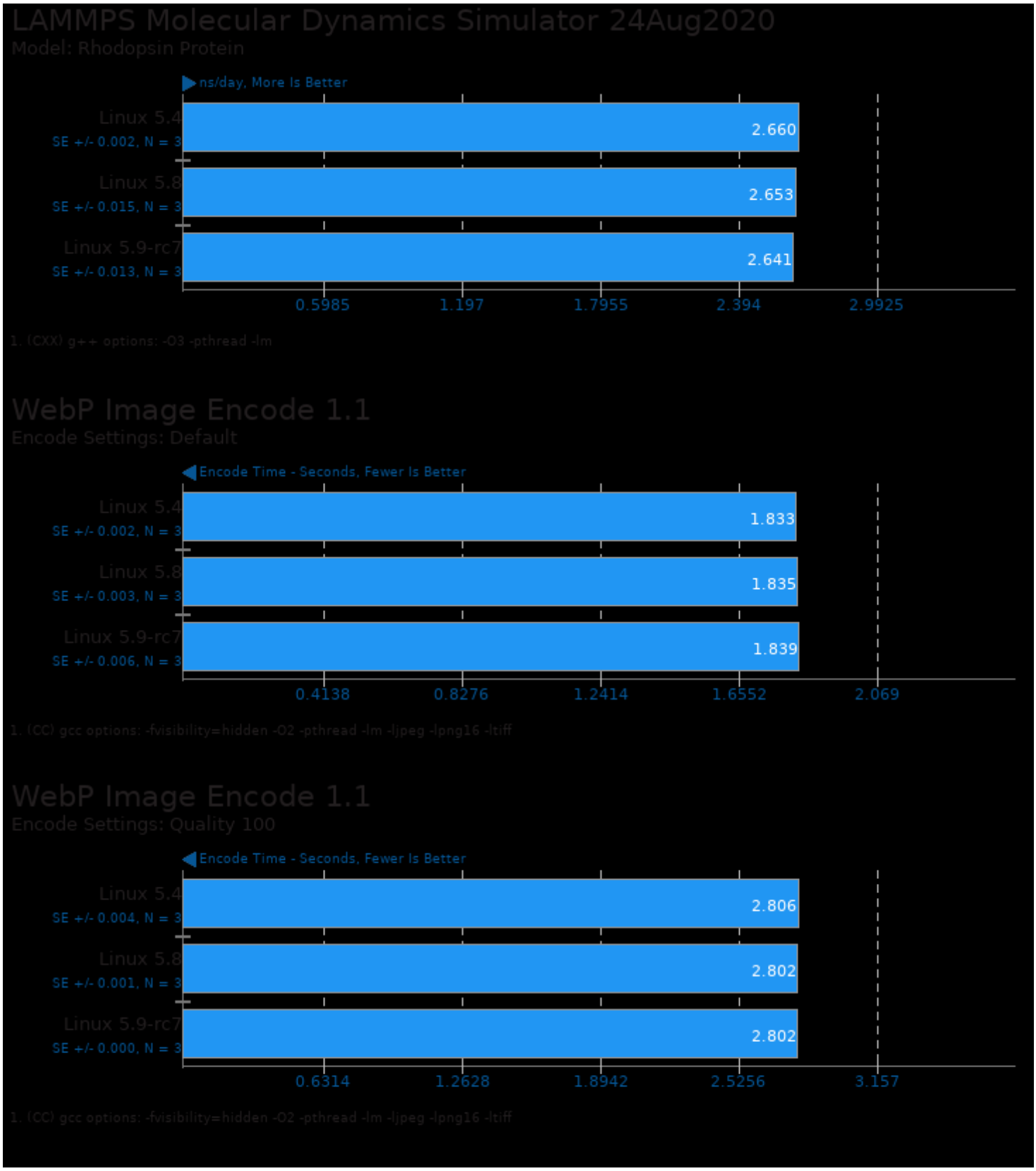
1. (CC) gcc options: -std=c99 -O3 -lm -lpthread

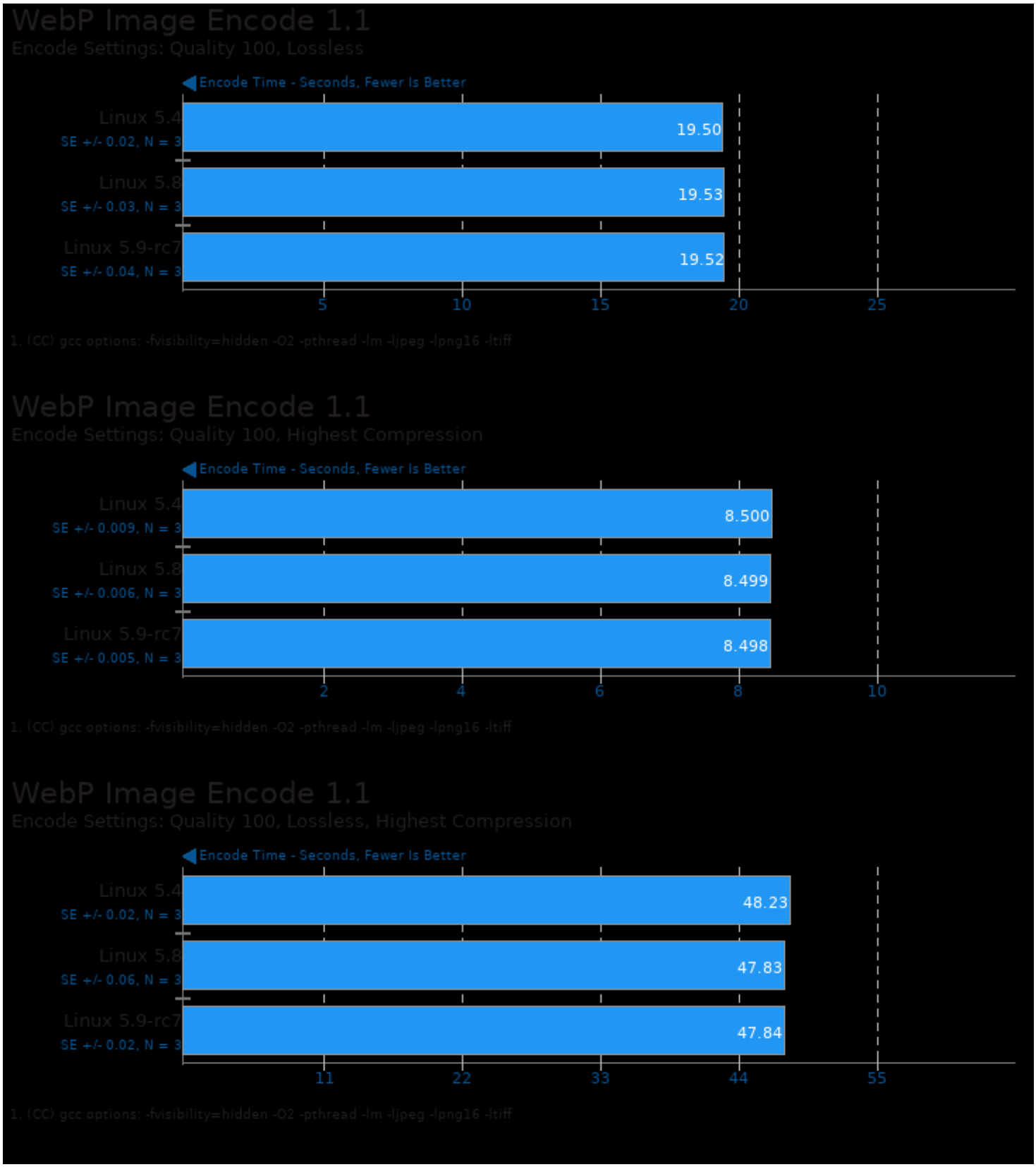
Monte Carlo Simulations of Ionised Nebulae 2019-03-24

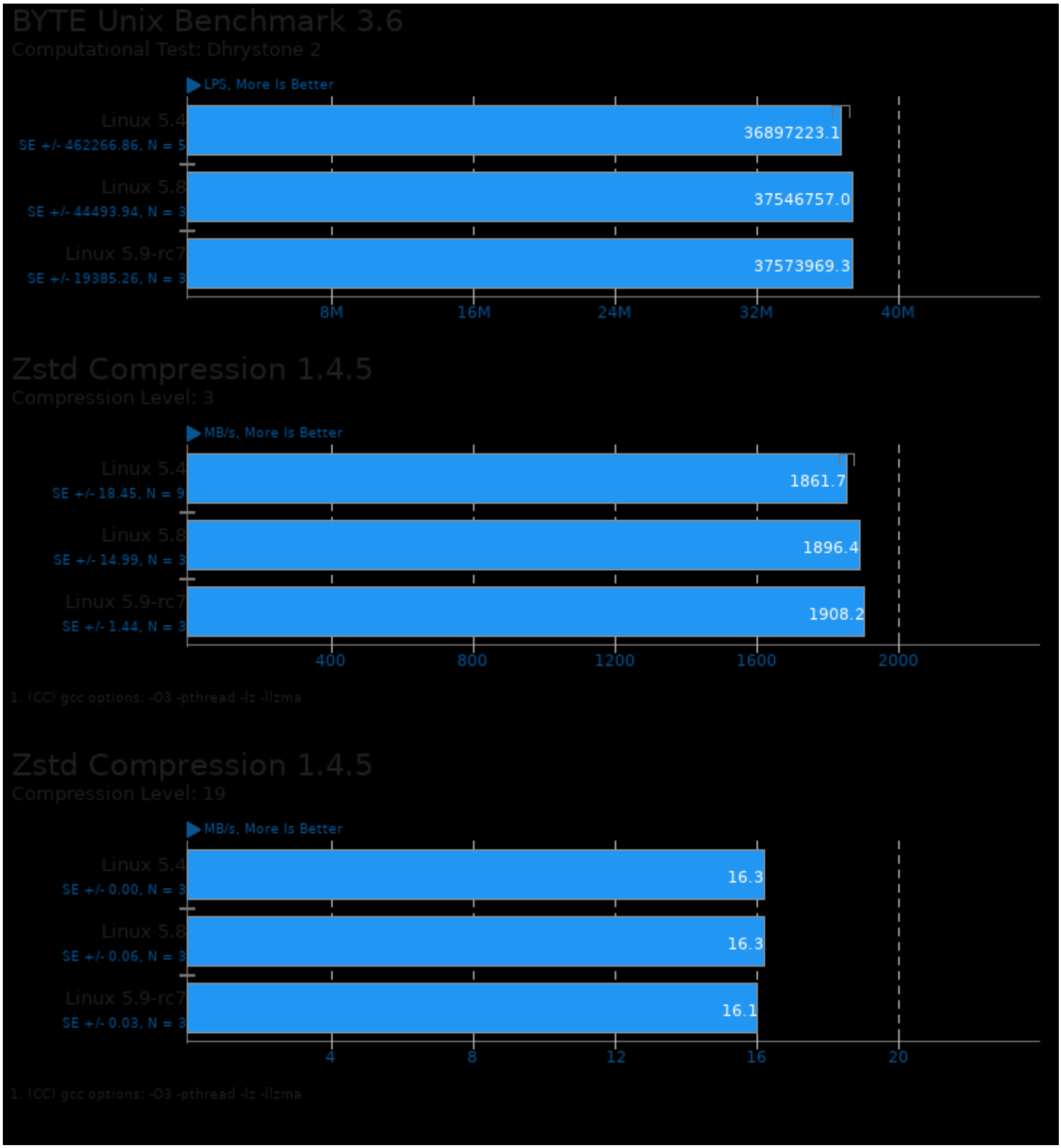
Input: Dust 2D tau100.0

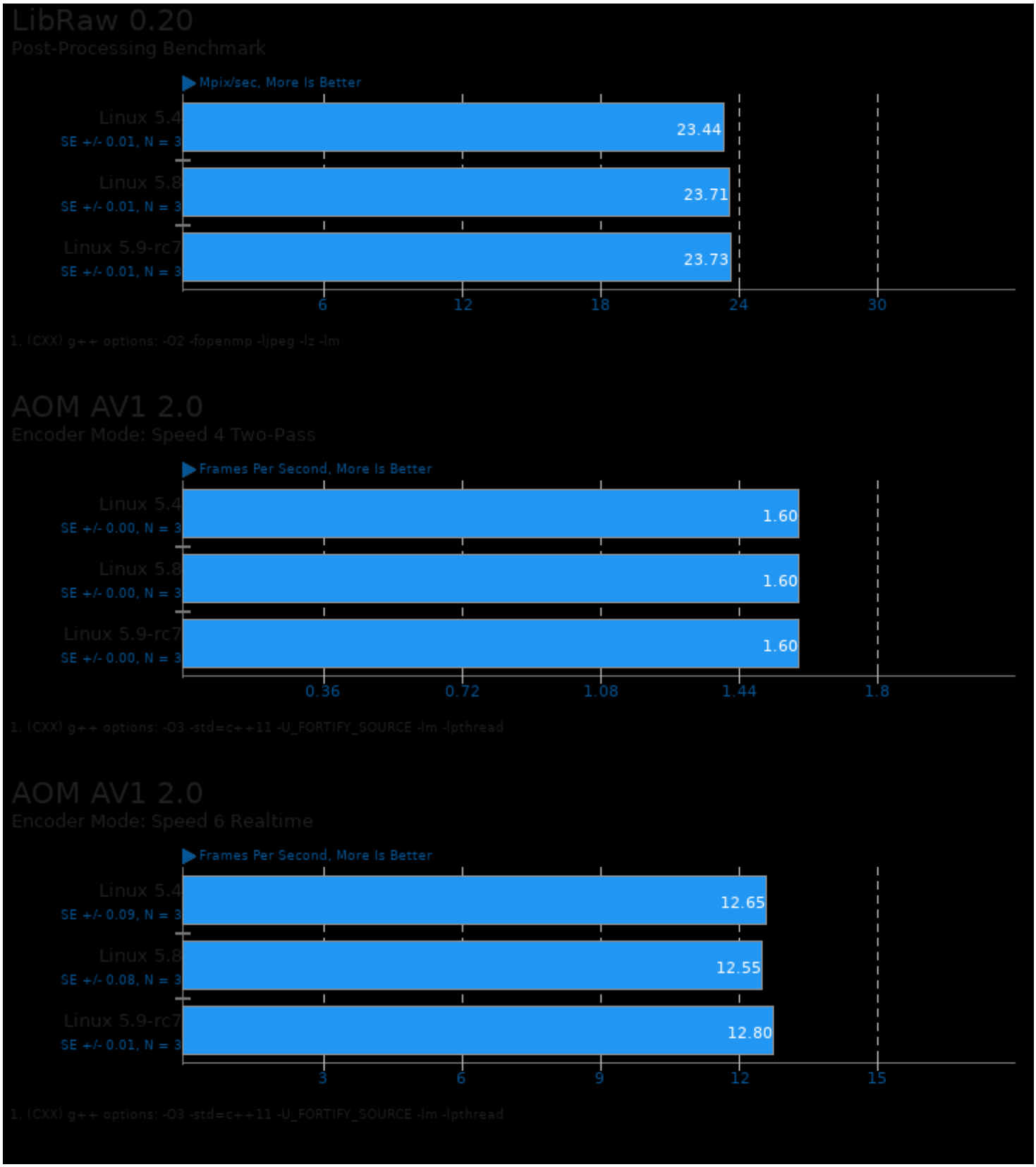


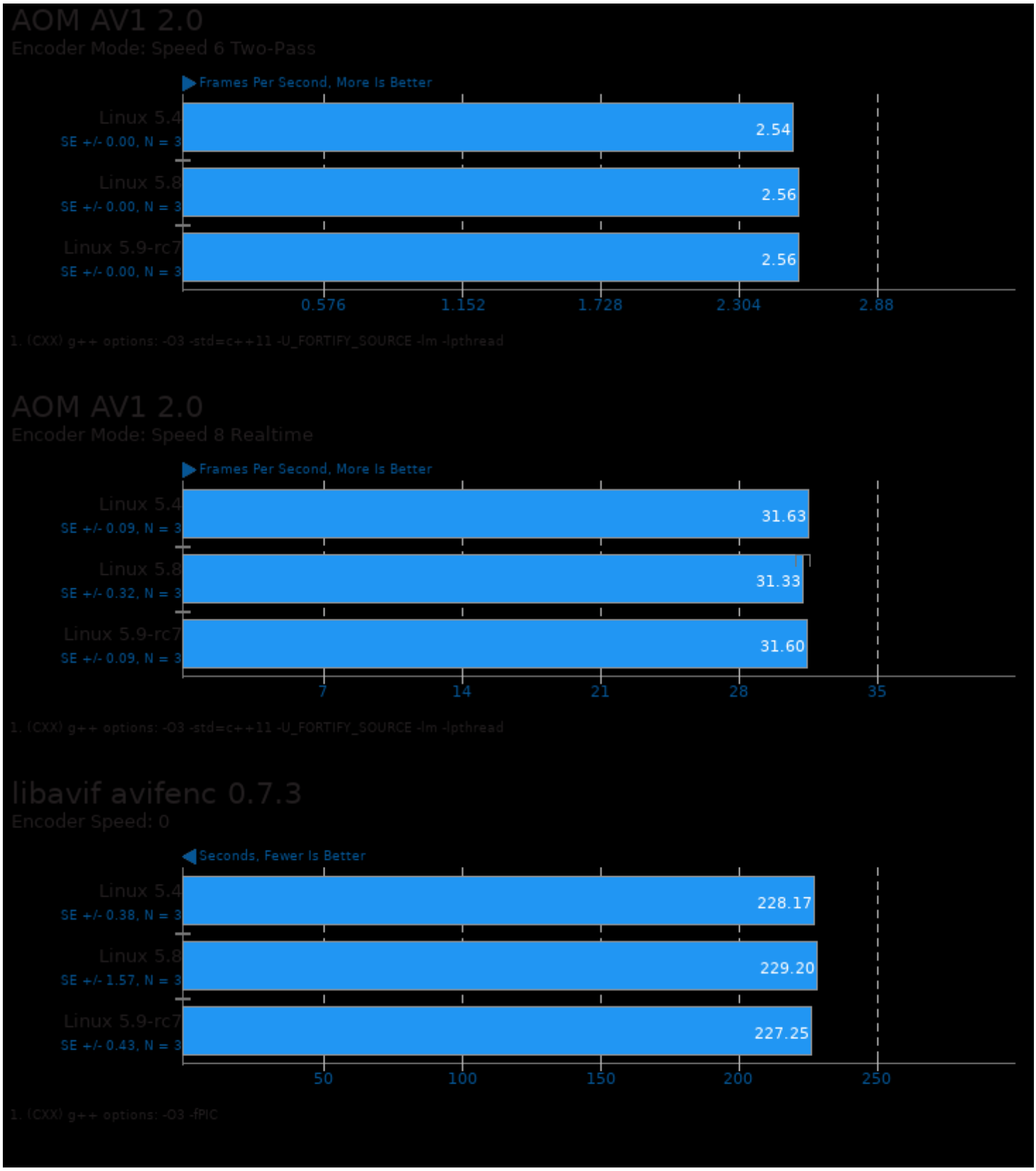
1. (F9X) gfortran options: -cpp -Jsource/ -ffree-line-length-0 -lm -std=legacy -O3 -O2 -pthread -lmpi_usempif08 -lmpi_mpifh -lmpi

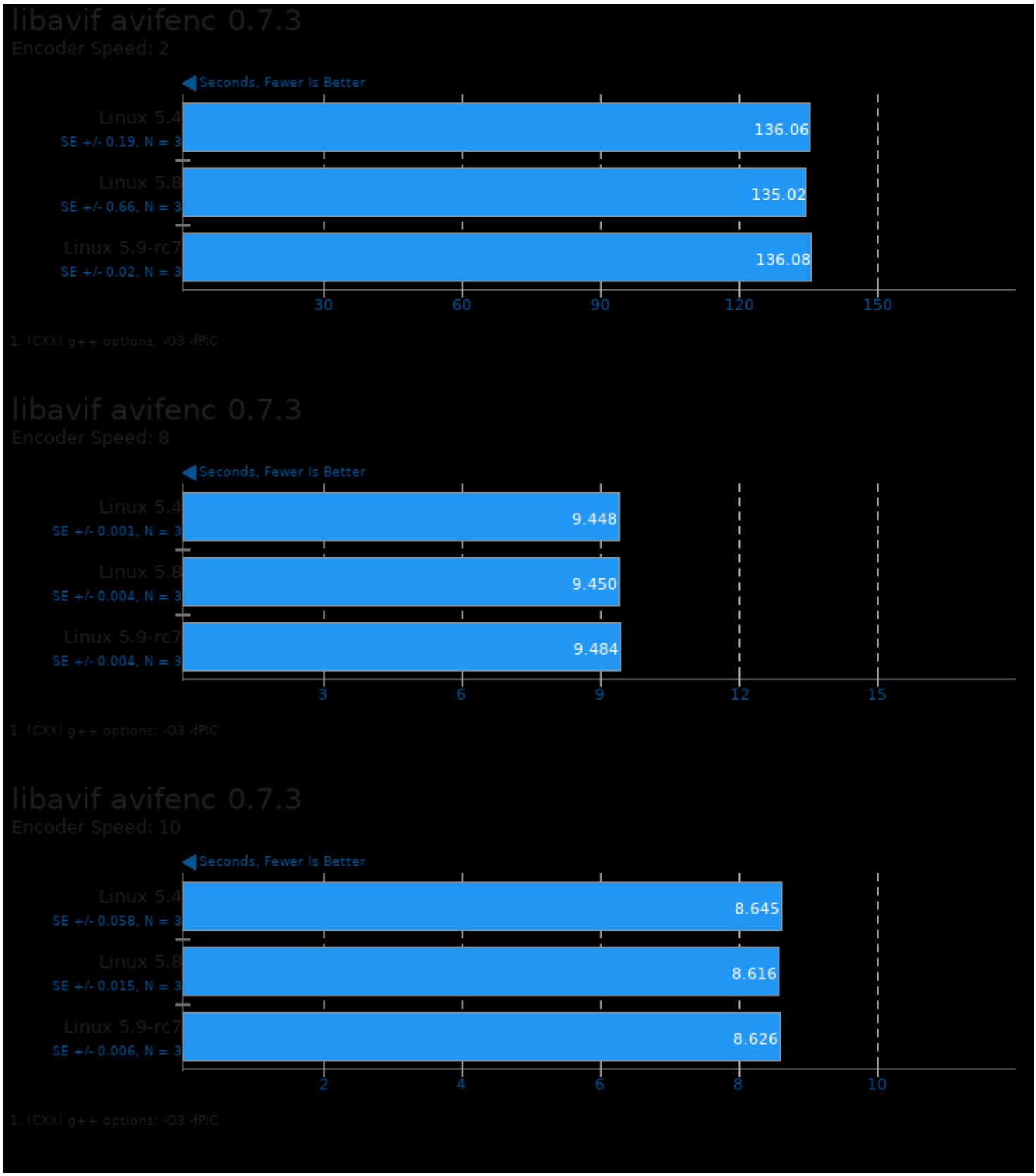

LAMMPS Molecular Dynamics Simulator 24Aug2020
Model: Rhodopsin Protein
ns/day, More Is Better
Linux 5.4
SE +/- 0.002, N = 3
2.660
Linux 5.8
SE +/- 0.015, N = 3
2.653
Linux 5.9-rc7
SE +/- 0.013, N = 3
2.641
0.5985
1.197
1.7955
2.394
2.9925
1. (CXX) g++ options: -O3 -pthread -lm
WebP Image Encode 1.1
Encode Settings: Default
Encode Time - Seconds, Fewer Is Better
Linux 5.4
SE +/- 0.002, N = 3
1.833
Linux 5.8
SE +/- 0.003, N = 3
1.835
Linux 5.9-rc7
SE +/- 0.006, N = 3
1.839
0.4138
0.8276
1.2414
1.6552
2.069
1. (CC) gcc options: -fvisibility=hidden -O2 -pthread -lm -ljpeg -lpng16 -ltiff
WebP Image Encode 1.1
Encode Settings: Quality 100
Encode Time - Seconds, Fewer Is Better
Linux 5.4
SE +/- 0.004, N = 3
2.806
Linux 5.8
SE +/- 0.001, N = 3
2.802
Linux 5.9-rc7
SE +/- 0.000, N = 3
2.802
0.6314
1.2628
1.8942
2.5256
3.157
1. (CC) gcc options: -fvisibility=hidden -O2 -pthread -lm -ljpeg -lpng16 -ltiff

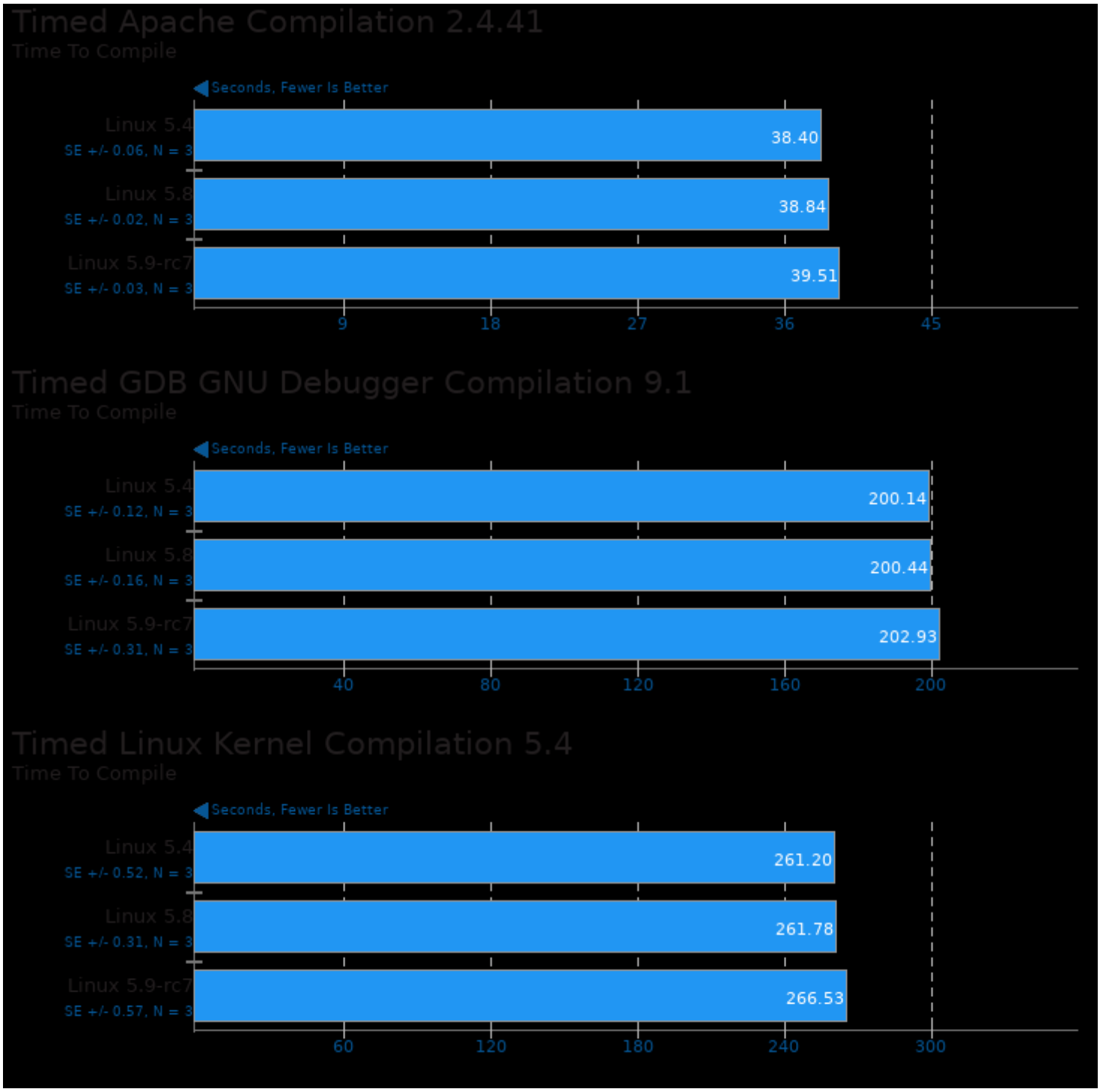

WebP Image Encode 1.1
Encode Settings: Quality 100, Lossless
Encode Time - Seconds, Fewer Is Better
Linux 5.4
SE +/- 0.02, N = 3
19.50
Linux 5.8
SE +/- 0.03, N = 3
19.53
Linux 5.9-rc7
SE +/- 0.04, N = 3
19.52
5
10
15
20
25
1. (CC) gcc options: -fvisibility=hidden -O2 -pthread -lm -ljpeg -lpng16 -ltiff
WebP Image Encode 1.1
Encode Settings: Quality 100, Highest Compression
Encode Time - Seconds, Fewer Is Better
Linux 5.4
SE +/- 0.009, N = 3
8.500
Linux 5.8
SE +/- 0.006, N = 3
8.499
Linux 5.9-rc7
SE +/- 0.005, N = 3
8.498
2
4
6
8
10
1. (CC) gcc options: -fvisibility=hidden -O2 -pthread -lm -ljpeg -lpng16 -ltiff
WebP Image Encode 1.1
Encode Settings: Quality 100, Lossless, Highest Compression
Encode Time - Seconds, Fewer Is Better
Linux 5.4
SE +/- 0.02, N = 3
48.23
Linux 5.8
SE +/- 0.06, N = 3
47.83
Linux 5.9-rc7
SE +/- 0.02, N = 3
47.84
11
22
33
44
55
1. (CC) gcc options: -fvisibility=hidden -O2 -pthread -lm -ljpeg -lpng16 -ltiff

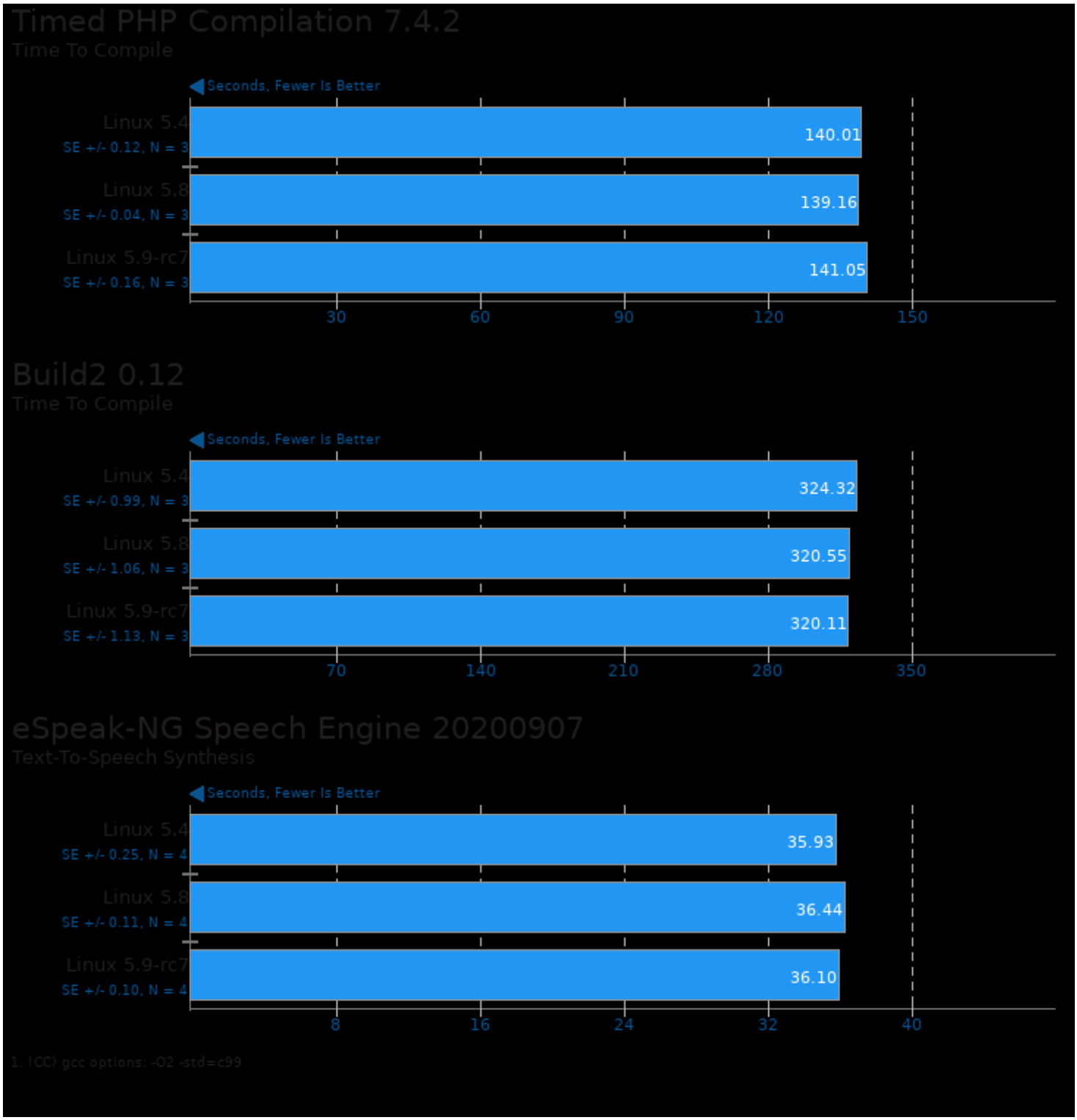

BYTE Unix Benchmark 3.6
Computational Test: Dhrystone 2
LPS, More Is Better
Linux 5.4
SE +/- 462266.86, N = 5
36897223.1
Linux 5.8
SE +/- 44493.94, N = 3
37546757.0
Linux 5.9-rc7
SE +/- 19385.26, N = 3
37573969.3
8M
16M
24M
32M
40M
Zstd Compression 1.4.5
Compression Level: 3
MB/s, More Is Better
Linux 5.4
SE +/- 18.45, N = 9
1861.7
Linux 5.8
SE +/- 14.99, N = 3
1896.4
Linux 5.9-rc7
SE +/- 1.44, N = 3
1908.2
400
800
1200
1600
2000
1. (CC) gcc options: -O3 -pthread -lz -llzma
Zstd Compression 1.4.5
Compression Level: 19
MB/s, More Is Better
Linux 5.4
SE +/- 0.00, N = 3
16.3
Linux 5.8
SE +/- 0.06, N = 3
16.3
Linux 5.9-rc7
SE +/- 0.03, N = 3
16.1
4
8
12
16
20
1. (CC) gcc options: -O3 -pthread -lz -llzma

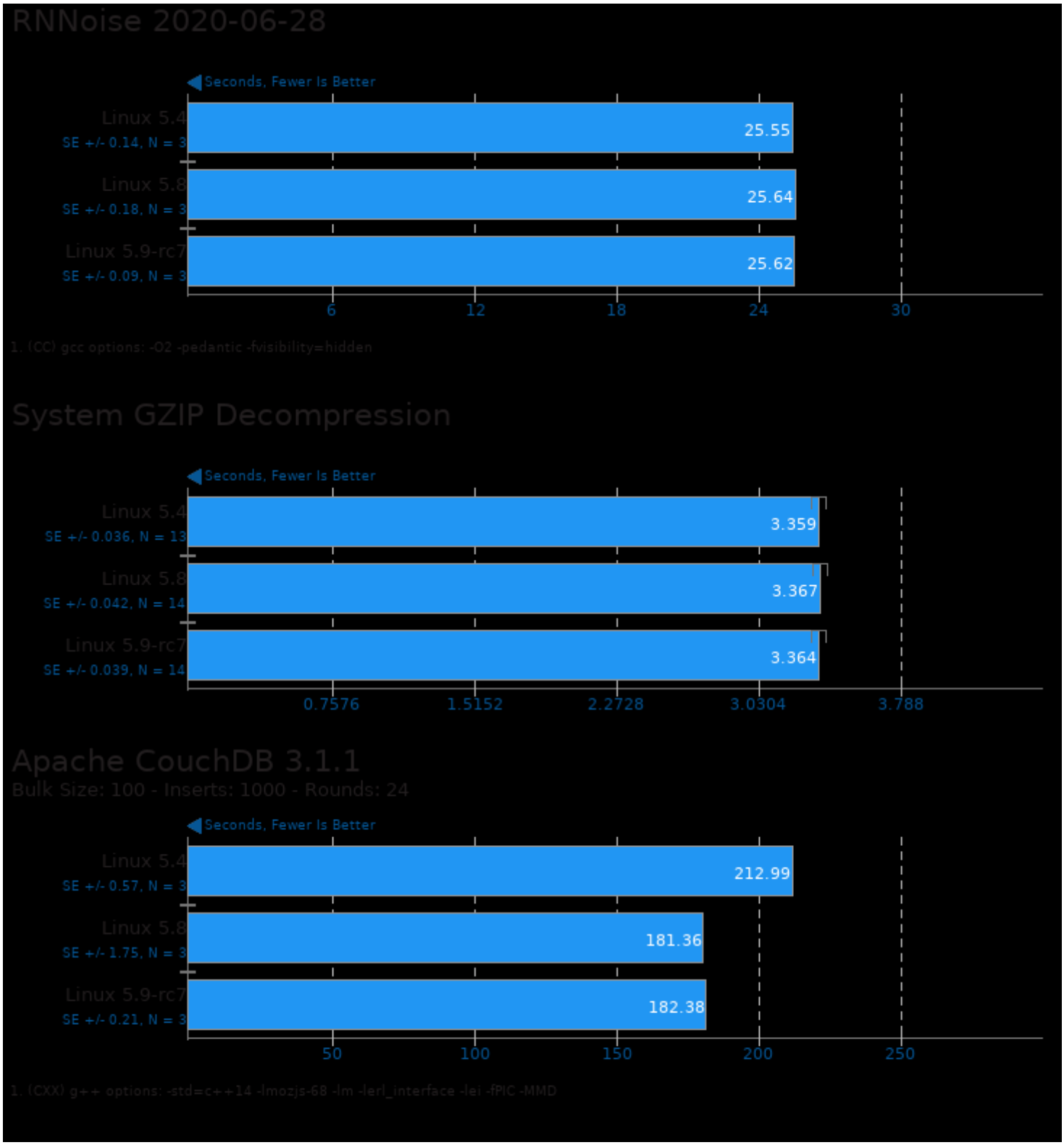

LibRaw 0.20
Post-Processing Benchmark
Mpix/sec, More Is Better
Linux 5.4
SE +/- 0.01, N = 3
23.44
Linux 5.8
SE +/- 0.01, N = 3
23.71
Linux 5.9-rc7
SE +/- 0.01, N = 3
23.73
6
12
18
24
30
1. (CXX) g++ options: -O2 -fopenmp -ljpeg -lz -lm
AOM AV1 2.0
Encoder Mode: Speed 4 Two-Pass
Frames Per Second, More Is Better
Linux 5.4
SE +/- 0.00, N = 3
1.60
Linux 5.8
SE +/- 0.00, N = 3
1.60
Linux 5.9-rc7
SE +/- 0.00, N = 3
1.60
0.36
0.72
1.08
1.44
1.8
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm -lpthread
AOM AV1 2.0
Encoder Mode: Speed 6 Realtime
Frames Per Second, More Is Better
Linux 5.4
SE +/- 0.09, N = 3
12.65
Linux 5.8
SE +/- 0.08, N = 3
12.55
Linux 5.9-rc7
SE +/- 0.01, N = 3
12.80
3
6
9
12
15
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm -lpthread

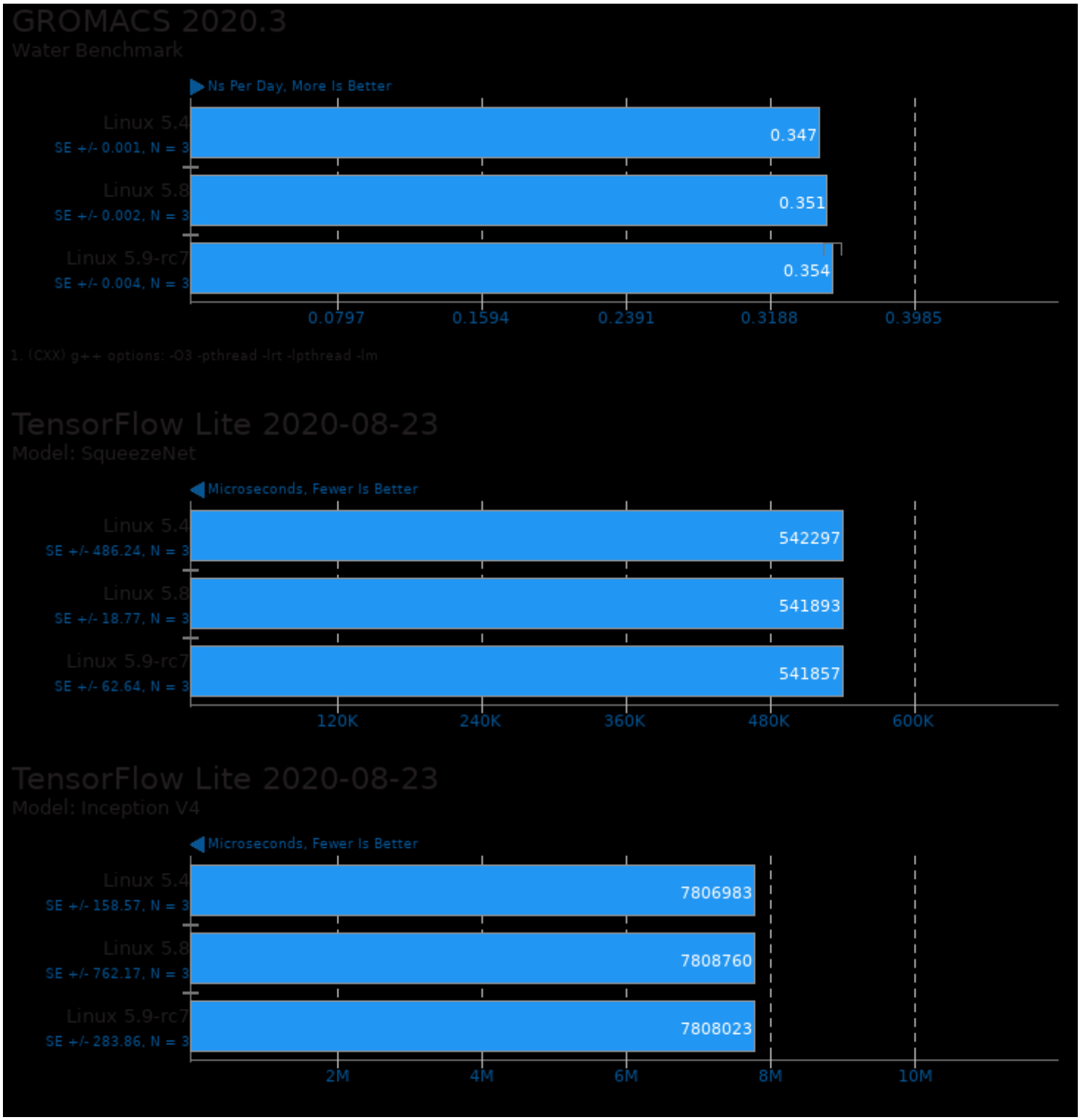

AOM AV1 2.0
Encoder Mode: Speed 6 Two-Pass
Frames Per Second, More Is Better
Linux 5.4
SE +/- 0.00, N = 3
2.54
Linux 5.8
SE +/- 0.00, N = 3
2.56
Linux 5.9-rc7
SE +/- 0.00, N = 3
2.56
0.576
1.152
1.728
2.304
2.88
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm -lpthread
AOM AV1 2.0
Encoder Mode: Speed 8 Realtime
Frames Per Second, More Is Better
Linux 5.4
SE +/- 0.09, N = 3
31.63
Linux 5.8
SE +/- 0.32, N = 3
31.33
Linux 5.9-rc7
SE +/- 0.09, N = 3
31.60
7
14
21
28
35
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm -lpthread
libavif avifenc 0.7.3
Encoder Speed: 0
Seconds, Fewer Is Better
Linux 5.4
SE +/- 0.38, N = 3
228.17
Linux 5.8
SE +/- 1.57, N = 3
229.20
Linux 5.9-rc7
SE +/- 0.43, N = 3
227.25
50
100
150
200
250
1. (CXX) g++ options: -O3 -fPIC

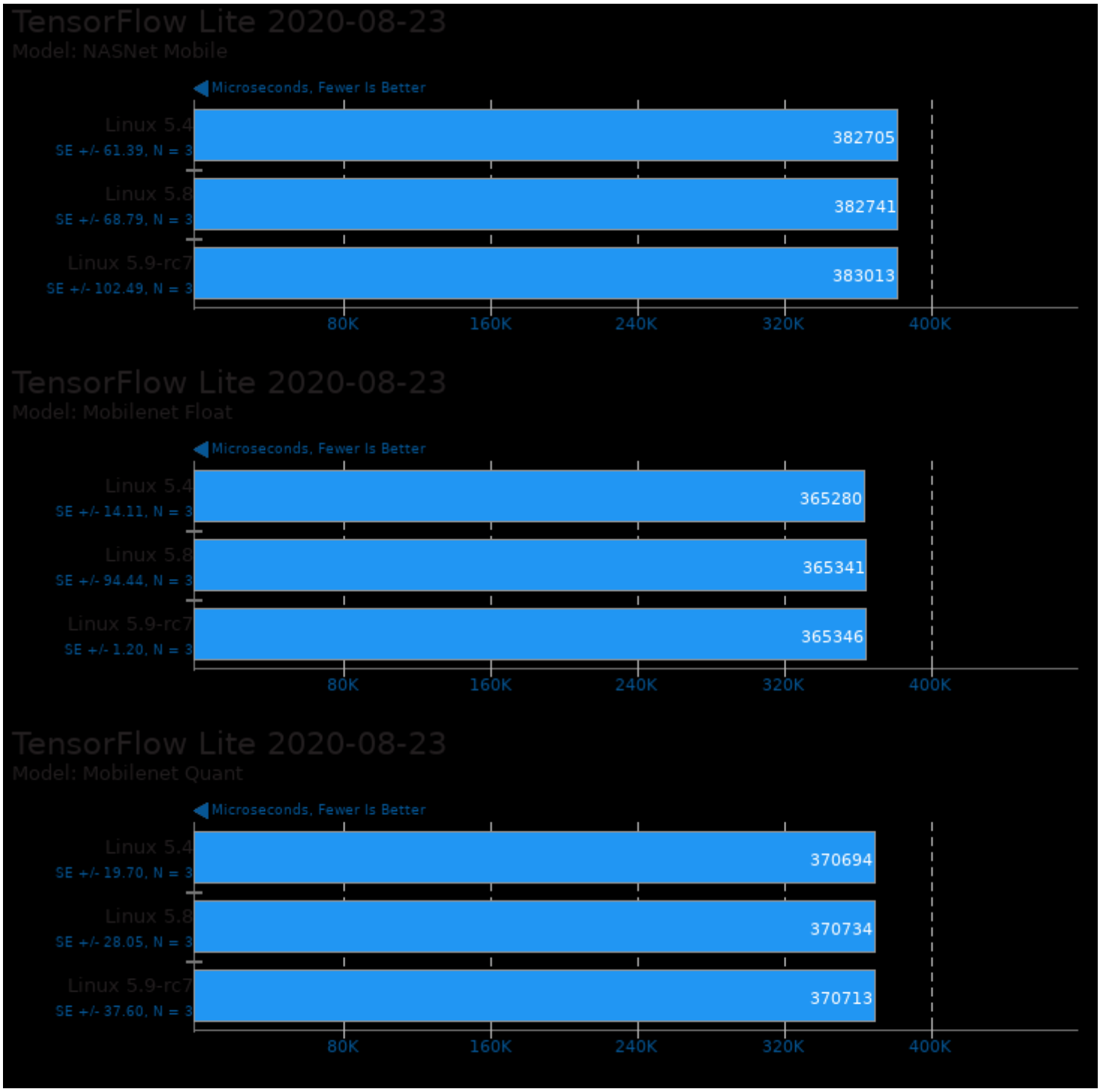

libavif avifenc 0.7.3
Encoder Speed: 2
Seconds, Fewer Is Better
Linux 5.4
SE +/- 0.19, N = 3
136.06
Linux 5.8
SE +/- 0.66, N = 3
135.02
Linux 5.9-rc7
SE +/- 0.02, N = 3
136.08
30
60
90
120
150
1. (CXX) g++ options: -O3 -fPIC
libavif avifenc 0.7.3
Encoder Speed: 8
Seconds, Fewer Is Better
Linux 5.4
SE +/- 0.001, N = 3
9.448
Linux 5.8
SE +/- 0.004, N = 3
9.450
Linux 5.9-rc7
SE +/- 0.004, N = 3
9.484
3
6
9
12
15
1. (CXX) g++ options: -O3 -fPIC
libavif avifenc 0.7.3
Encoder Speed: 10
Seconds, Fewer Is Better
Linux 5.4
SE +/- 0.058, N = 3
8.645
Linux 5.8
SE +/- 0.015, N = 3
8.616
Linux 5.9-rc7
SE +/- 0.006, N = 3
8.626
2
4
6
8
10
1. (CXX) g++ options: -O3 -fPIC

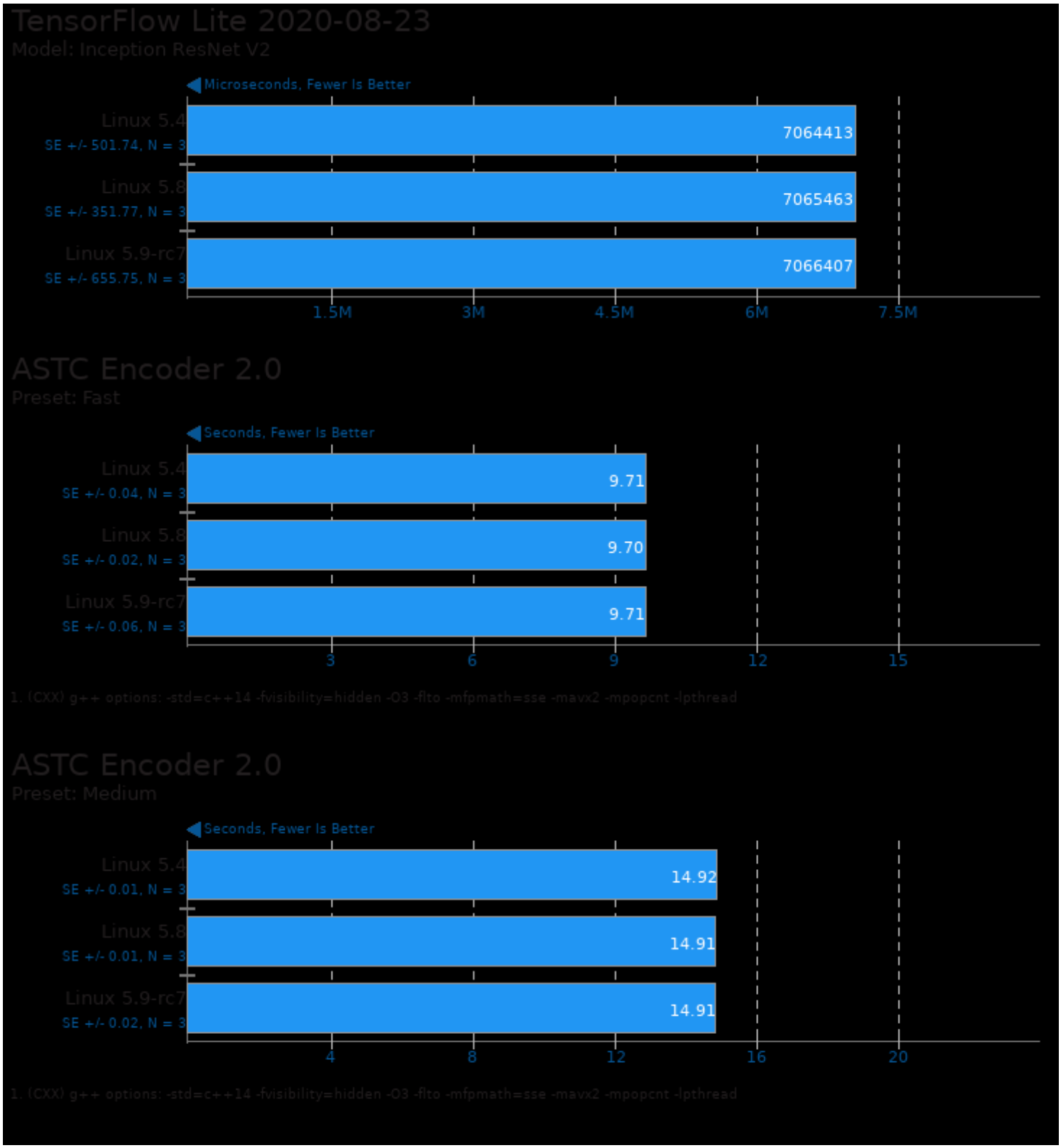

Timed Apache Compilation 2.4.41
Time To Compile
Seconds, Fewer Is Better
Linux 5.4
SE +/- 0.06, N = 3
38.40
Linux 5.8
SE +/- 0.02, N = 3
38.84
Linux 5.9-rc7
SE +/- 0.03, N = 3
39.51
9
18
27
36
45
Timed GDB GNU Debugger Compilation 9.1
Time To Compile
Seconds, Fewer Is Better
Linux 5.4
SE +/- 0.12, N = 3
200.14
Linux 5.8
SE +/- 0.16, N = 3
200.44
Linux 5.9-rc7
SE +/- 0.31, N = 3
202.93
40
80
120
160
200
Timed Linux Kernel Compilation 5.4
Time To Compile
Seconds, Fewer Is Better
Linux 5.4
SE +/- 0.52, N = 3
261.20
Linux 5.8
SE +/- 0.31, N = 3
261.78
Linux 5.9-rc7
SE +/- 0.57, N = 3
266.53
60
120
180
240
300


Timed PHP Compilation 7.4.2
Time To Compile
Seconds, Fewer Is Better
Linux 5.4
SE +/- 0.12, N = 3
140.01
Linux 5.8
SE +/- 0.04, N = 3
139.16
Linux 5.9-rc7
SE +/- 0.16, N = 3
141.05
30
60
90
120
150
Build2 0.12
Time To Compile
Seconds, Fewer Is Better
Linux 5.4
SE +/- 0.99, N = 3
324.32
Linux 5.8
SE +/- 1.06, N = 3
320.55
Linux 5.9-rc7
SE +/- 1.13, N = 3
320.11
70
140
210
280
350
eSpeak-NG Speech Engine 20200907
Text-To-Speech Synthesis
Seconds, Fewer Is Better
Linux 5.4
SE +/- 0.25, N = 4
35.93
Linux 5.8
SE +/- 0.11, N = 4
36.44
Linux 5.9-rc7
SE +/- 0.10, N = 4
36.10
8
16
24
32
40
1. (CC) gcc options: -O2 -std=c99


RNNoise 2020-06-28
Seconds, Fewer Is Better
Linux 5.4
SE +/- 0.14, N = 3
25.55
Linux 5.8
SE +/- 0.18, N = 3
25.64
Linux 5.9-rc7
SE +/- 0.09, N = 3
25.62
6
12
18
24
30
1. (CC) gcc options: -O2 -pedantic -fvisibility=hidden
System GZIP Decompression
Seconds, Fewer Is Better
Linux 5.4
SE +/- 0.036, N = 13
3.359
Linux 5.8
SE +/- 0.042, N = 14
3.367
Linux 5.9-rc7
SE +/- 0.039, N = 14
3.364
0.7576
1.5152
2.2728
3.0304
3.788
Apache CouchDB 3.1.1
Bulk Size: 100 - Inserts: 1000 - Rounds: 24
Seconds, Fewer Is Better
Linux 5.4
SE +/- 0.57, N = 3
212.99
Linux 5.8
SE +/- 1.75, N = 3
181.36
Linux 5.9-rc7
SE +/- 0.21, N = 3
182.38
50
100
150
200
250
1. (CXX) g++ options: -std=c++14 -lmozjs-68 -lm -lerl_interface -lei -fPIC -MMD

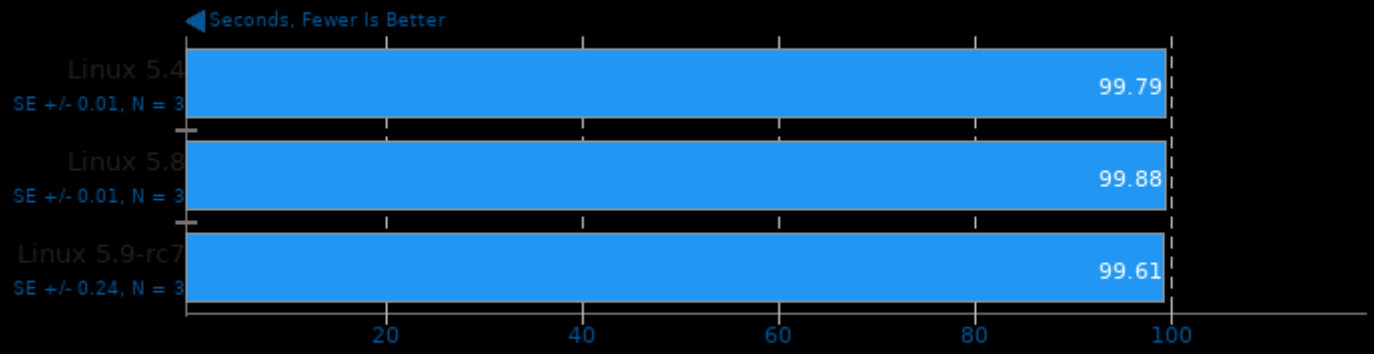

GROMACS 2020.3
Water Benchmark
Ns Per Day, More Is Better
Linux 5.4
SE +/- 0.001, N = 3
0.347
Linux 5.8
SE +/- 0.002, N = 3
0.351
Linux 5.9-rc7
SE +/- 0.004, N = 3
0.354
0.0797
0.1594
0.2391
0.3188
0.3985
1. (CXX) g++ options: -O3 -pthread -lrt -lpthread -lm
TensorFlow Lite 2020-08-23
Model: SqueezeNet
Microseconds, Fewer Is Better
Linux 5.4
SE +/- 486.24, N = 3
542297
Linux 5.8
SE +/- 18.77, N = 3
541893
Linux 5.9-rc7
SE +/- 62.64, N = 3
541857
120K
240K
360K
480K
600K
TensorFlow Lite 2020-08-23
Model: Inception V4
Microseconds, Fewer Is Better
Linux 5.4
SE +/- 158.57, N = 3
7806983
Linux 5.8
SE +/- 762.17, N = 3
7808760
Linux 5.9-rc7
SE +/- 283.86, N = 3
7808023
2M
4M
6M
8M
10M


TensorFlow Lite 2020-08-23
Model: NASNet Mobile
Microseconds, Fewer Is Better
Linux 5.4
SE +/- 61.39, N = 3
382705
Linux 5.8
SE +/- 68.79, N = 3
382741
Linux 5.9-rc7
SE +/- 102.49, N = 3
383013
80K
160K
240K
320K
400K
TensorFlow Lite 2020-08-23
Model: Mobilenet Float
Microseconds, Fewer Is Better
Linux 5.4
SE +/- 14.11, N = 3
365280
Linux 5.8
SE +/- 94.44, N = 3
365341
Linux 5.9-rc7
SE +/- 1.20, N = 3
365346
80K
160K
240K
320K
400K
TensorFlow Lite 2020-08-23
Model: Mobilenet Quant
Microseconds, Fewer Is Better
Linux 5.4
SE +/- 19.70, N = 3
370694
Linux 5.8
SE +/- 28.05, N = 3
370734
Linux 5.9-rc7
SE +/- 37.60, N = 3
370713
80K
160K
240K
320K
400K


TensorFlow Lite 2020-08-23
Model: Inception ResNet V2
Microseconds, Fewer Is Better
Linux 5.4
SE +/- 501.74, N = 3
7064413
Linux 5.8
SE +/- 351.77, N = 3
7065463
Linux 5.9-rc7
SE +/- 655.75, N = 3
7066407
1.5M
3M
4.5M
6M
7.5M
ASTC Encoder 2.0
Preset: Fast
Seconds, Fewer Is Better
Linux 5.4
SE +/- 0.04, N = 3
9.71
Linux 5.8
SE +/- 0.02, N = 3
9.70
Linux 5.9-rc7
SE +/- 0.06, N = 3
9.71
3
6
9
12
15
1. (CXX) g++ options: -std=c++14 -fvisibility=hidden -O3 -flto -mfpmath=sse -mavx2 -mpopcnt -lpthread
ASTC Encoder 2.0
Preset: Medium
Seconds, Fewer Is Better
Linux 5.4
SE +/- 0.01, N = 3
14.92
Linux 5.8
SE +/- 0.01, N = 3
14.91
Linux 5.9-rc7
SE +/- 0.02, N = 3
14.91
4
8
12
16
20
1. (CXX) g++ options: -std=c++14 -fvisibility=hidden -O3 -flto -mfpmath=sse -mavx2 -mpopcnt -lpthread

ASTC Encoder 2.0

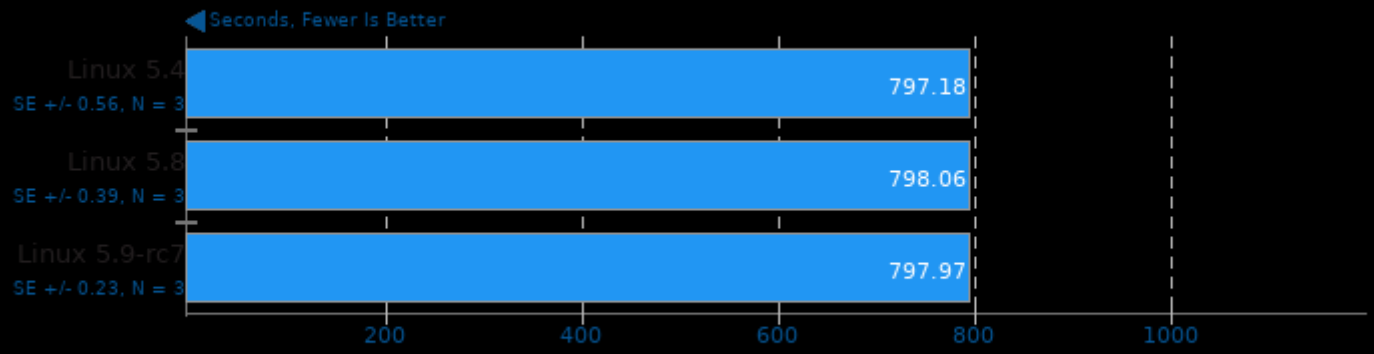
Preset: Thorough



1. (CXX) g++ options: -std=c++14 -fvisibility=hidden -O3 -flto -mfpmath=sse -mavx2 -mpopcnt -lpthread

ASTC Encoder 2.0

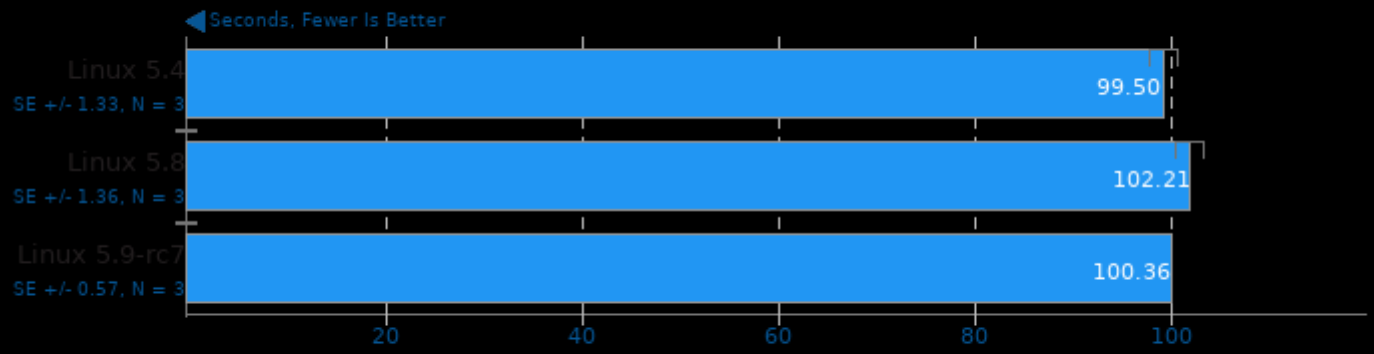
Preset: Exhaustive



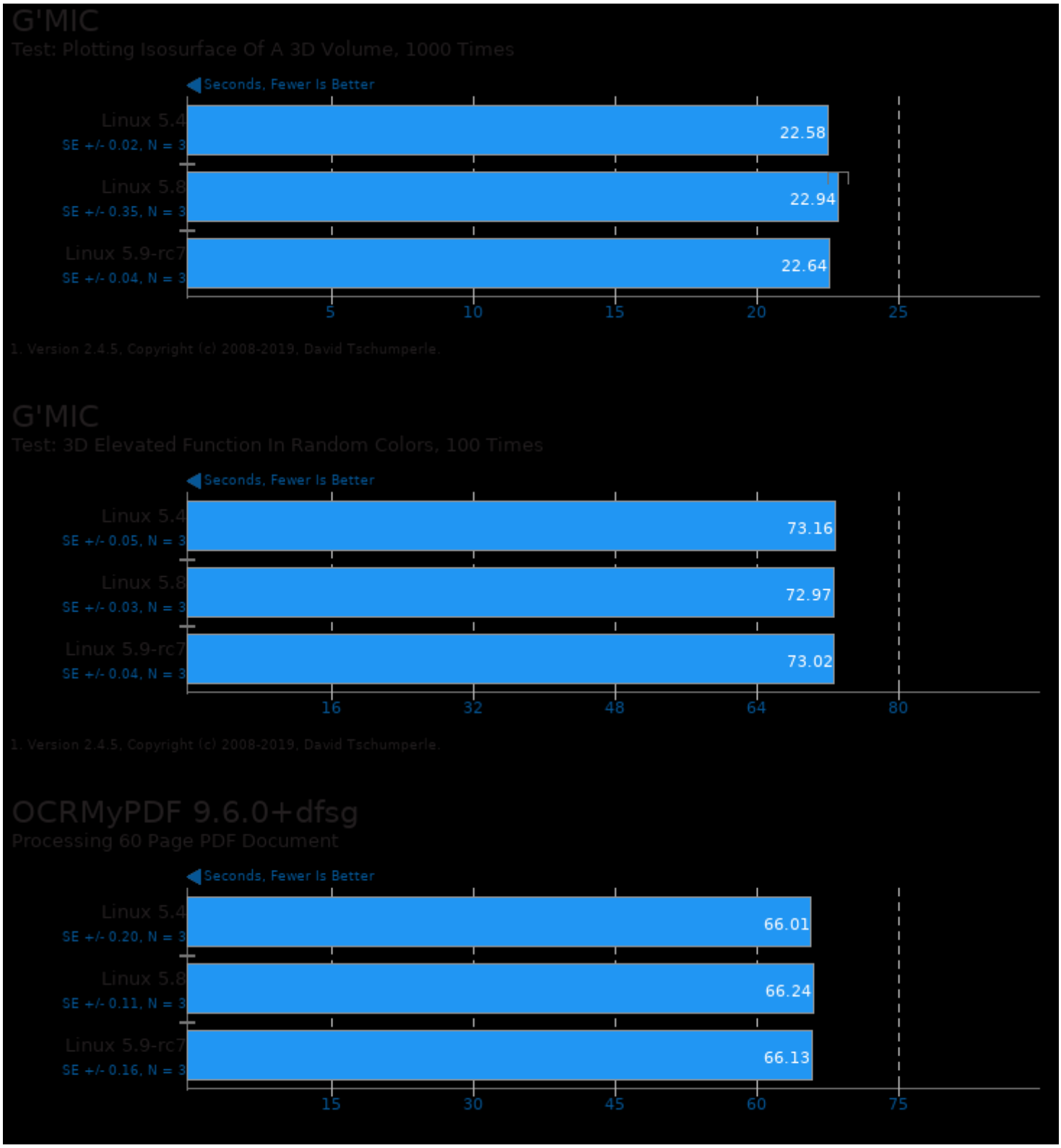
1. (CXX) g++ options: -std=c++14 -fvisibility=hidden -O3 -flto -mfpmath=sse -mavx2 -mpopcnt -lpthread

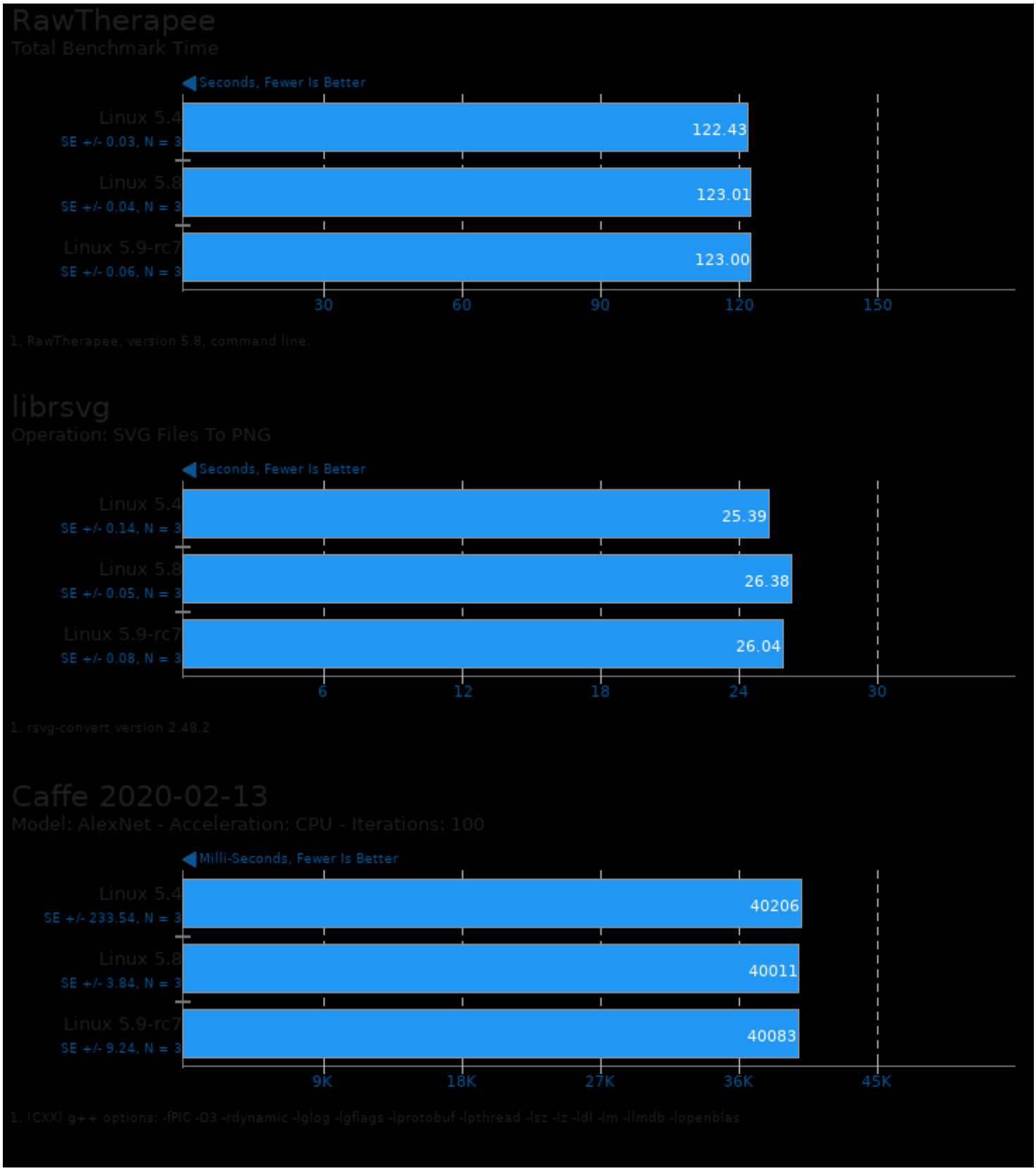
G'MIC

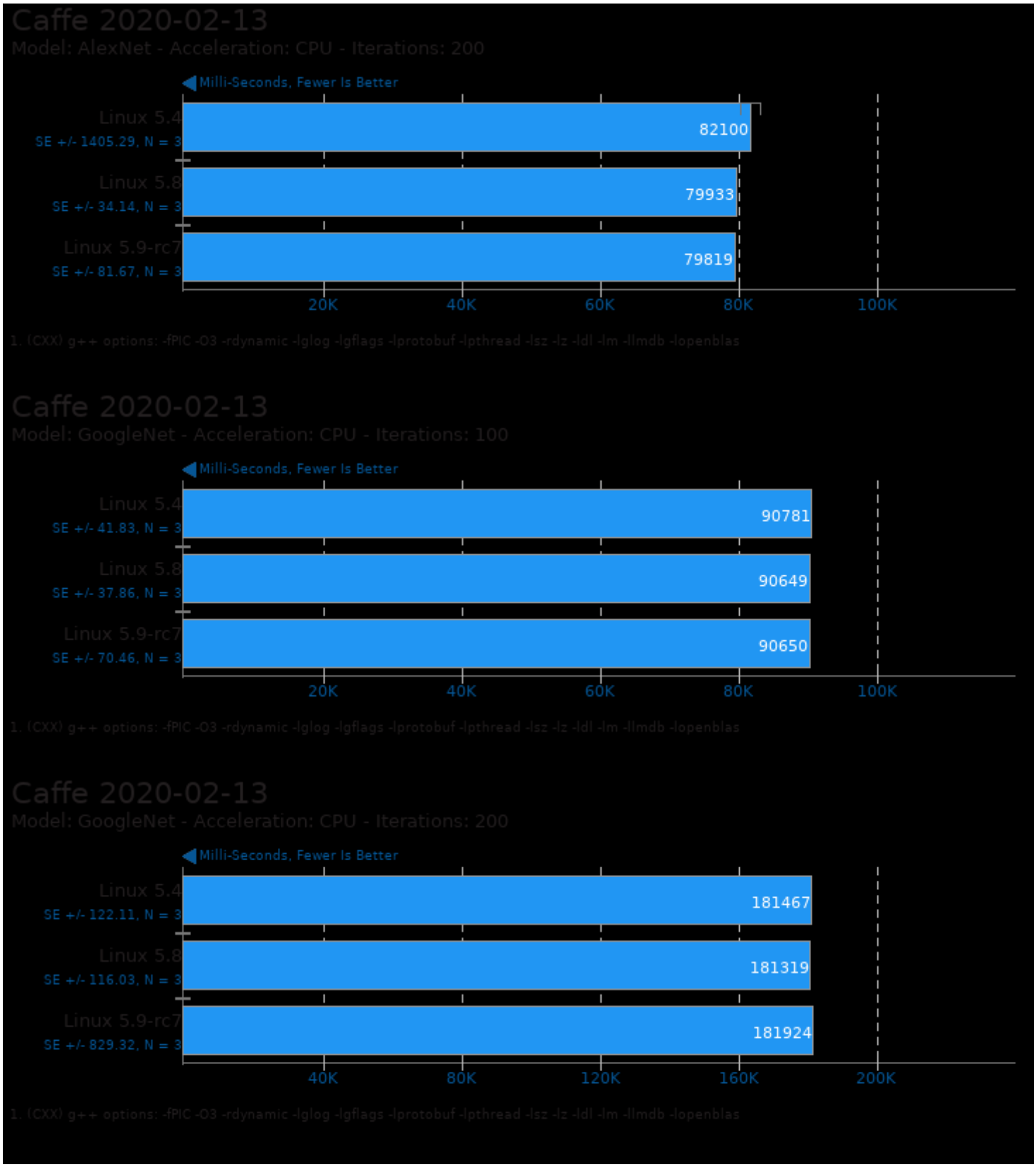
Test: 2D Function Plotting, 1000 Times

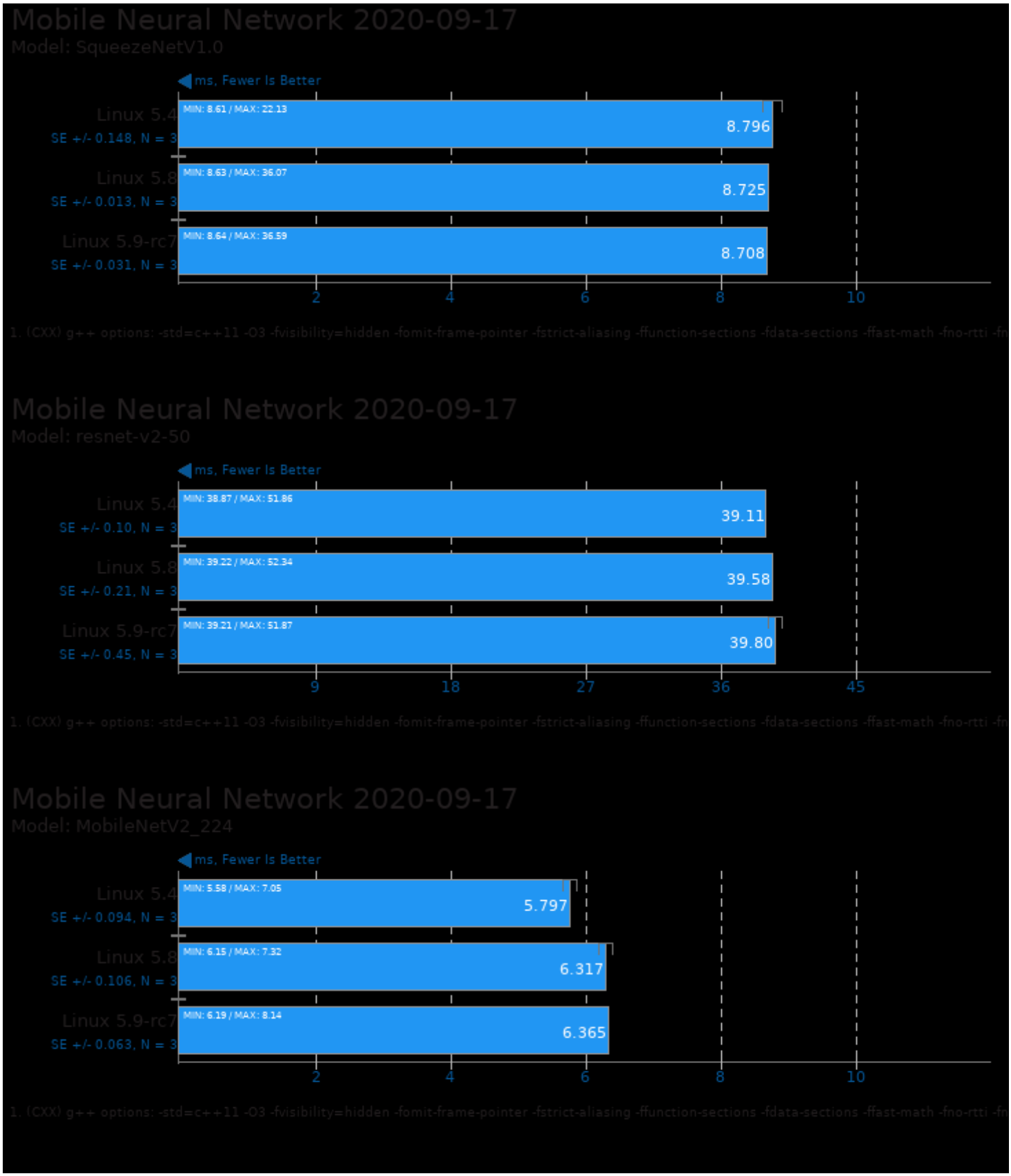


1. Version 2.4.5, Copyright (c) 2008-2019, David Tschumperle.


G'MIC
Test: Plotting Isosurface Of A 3D Volume, 1000 Times
Seconds, Fewer Is Better
Linux 5.4
SE +/- 0.02, N = 3
22.58
Linux 5.8
SE +/- 0.35, N = 3
22.94
Linux 5.9-rc7
SE +/- 0.04, N = 3
22.64
5
10
15
20
25
1. Version 2.4.5, Copyright (c) 2008-2019, David Tschumperle.
G'MIC
Test: 3D Elevated Function In Random Colors, 100 Times
Seconds, Fewer Is Better
Linux 5.4
SE +/- 0.05, N = 3
73.16
Linux 5.8
SE +/- 0.03, N = 3
72.97
Linux 5.9-rc7
SE +/- 0.04, N = 3
73.02
16
32
48
64
80
1. Version 2.4.5, Copyright (c) 2008-2019, David Tschumperle.
OCRMyPDF 9.6.0+dfsg
Processing 60 Page PDF Document
Seconds, Fewer Is Better
Linux 5.4
SE +/- 0.20, N = 3
66.01
Linux 5.8
SE +/- 0.11, N = 3
66.24
Linux 5.9-rc7
SE +/- 0.16, N = 3
66.13
15
30
45
60
75

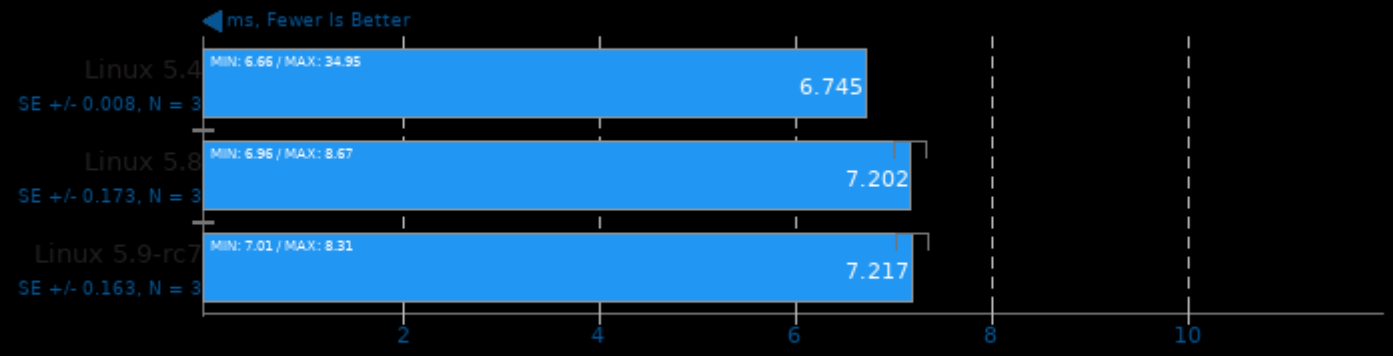

RawTherapee
Total Benchmark Time
Seconds, Fewer Is Better
Linux 5.4
SE +/- 0.03, N = 3
122.43
Linux 5.8
SE +/- 0.04, N = 3
123.01
Linux 5.9-rc7
SE +/- 0.06, N = 3
123.00
30
60
90
120
150
1. RawTherapee, version 5.8, command line.
librsvg
Operation: SVG Files To PNG
Seconds, Fewer Is Better
Linux 5.4
SE +/- 0.14, N = 3
25.39
Linux 5.8
SE +/- 0.05, N = 3
26.38
Linux 5.9-rc7
SE +/- 0.08, N = 3
26.04
6
12
18
24
30
1. rsvg-convert version 2.48.2
Caffe 2020-02-13
Model: AlexNet - Acceleration: CPU - Iterations: 100
Milli-Seconds, Fewer Is Better
Linux 5.4
SE +/- 233.54, N = 3
40206
Linux 5.8
SE +/- 3.84, N = 3
40011
Linux 5.9-rc7
SE +/- 9.24, N = 3
40083
9K
18K
27K
36K
45K
1. (CXX) g++ options: -fPIC -O3 -rdynamic -lglog -lgflags -lprotobuf -lpthread -lsz -lz -ldl -lm -llmdb -lopenblas


Caffe 2020-02-13
Model: AlexNet - Acceleration: CPU - Iterations: 200
Milli-Seconds, Fewer Is Better
Linux 5.4
SE +/- 1405.29, N = 3
82100
Linux 5.8
SE +/- 34.14, N = 3
79933
Linux 5.9-rc7
SE +/- 81.67, N = 3
79819
20K
40K
60K
80K
100K
1. (CXX) g++ options: -fPIC -O3 -rdynamic -lglog -lgflags -lprotobuf -lpthread -lsz -lz -ldl -lm -llmdb -lopenblas
Caffe 2020-02-13
Model: GoogleNet - Acceleration: CPU - Iterations: 100
Milli-Seconds, Fewer Is Better
Linux 5.4
SE +/- 41.83, N = 3
90781
Linux 5.8
SE +/- 37.86, N = 3
90649
Linux 5.9-rc7
SE +/- 70.46, N = 3
90650
20K
40K
60K
80K
100K
1. (CXX) g++ options: -fPIC -O3 -rdynamic -lglog -lgflags -lprotobuf -lpthread -lsz -lz -ldl -lm -llmdb -lopenblas
Caffe 2020-02-13
Model: GoogleNet - Acceleration: CPU - Iterations: 200
Milli-Seconds, Fewer Is Better
Linux 5.4
SE +/- 122.11, N = 3
181467
Linux 5.8
SE +/- 116.03, N = 3
181319
Linux 5.9-rc7
SE +/- 829.32, N = 3
181924
40K
80K
120K
160K
200K
1. (CXX) g++ options: -fPIC -O3 -rdynamic -lglog -lgflags -lprotobuf -lpthread -lsz -lz -ldl -lm -llmdb -lopenblas


Mobile Neural Network 2020-09-17
Model: SqueezeNetV1.0
ms, Fewer Is Better
Linux 5.4
SE +/- 0.148, N = 3
MIN: 8.61 / MAX: 22.13
8.796
Linux 5.8
SE +/- 0.013, N = 3
MIN: 8.63 / MAX: 36.07
8.725
Linux 5.9-rc7
SE +/- 0.031, N = 3
MIN: 8.64 / MAX: 36.59
8.708
2
4
6
8
10
1. (CXX) g++ options: -std=c++11 -O3 -fvisibility=hidden -fomit-frame-pointer -fstrict-aliasing -ffunction-sections -fdata-sections -ffast-math -fno-rtti -fv
Mobile Neural Network 2020-09-17
Model: resnet-v2-50
ms, Fewer Is Better
Linux 5.4
SE +/- 0.10, N = 3
MIN: 38.87 / MAX: 51.86
39.11
Linux 5.8
SE +/- 0.21, N = 3
MIN: 39.22 / MAX: 52.34
39.58
Linux 5.9-rc7
SE +/- 0.45, N = 3
MIN: 39.21 / MAX: 51.87
39.80
9
18
27
36
45
1. (CXX) g++ options: -std=c++11 -O3 -fvisibility=hidden -fomit-frame-pointer -fstrict-aliasing -ffunction-sections -fdata-sections -ffast-math -fno-rtti -fv
Mobile Neural Network 2020-09-17
Model: MobileNetV2_224
ms, Fewer Is Better
Linux 5.4
SE +/- 0.094, N = 3
MIN: 5.58 / MAX: 7.05
5.797
Linux 5.8
SE +/- 0.106, N = 3
MIN: 6.15 / MAX: 7.32
6.317
Linux 5.9-rc7
SE +/- 0.063, N = 3
MIN: 6.19 / MAX: 8.14
6.365
2
4
6
8
10
1. (CXX) g++ options: -std=c++11 -O3 -fvisibility=hidden -fomit-frame-pointer -fstrict-aliasing -ffunction-sections -fdata-sections -ffast-math -fno-rtti -fv

Mobile Neural Network 2020-09-17

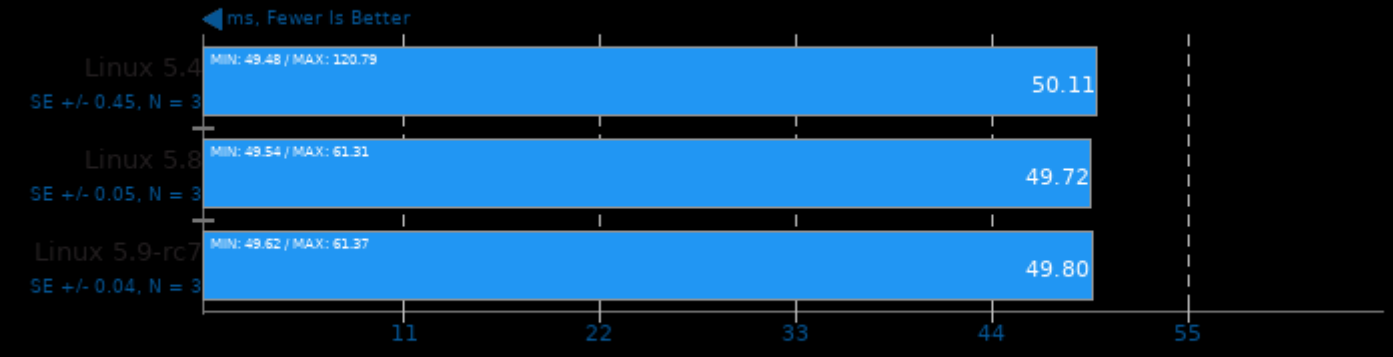
Model: mobilenet-v1-1.0



1. (CXX) g++ options: -std=c++11 -O3 -fvisibility=hidden -fomit-frame-pointer -fstrict-aliasing -ffunction-sections -fdata-sections -ffast-math -fno-rtti -fv

Mobile Neural Network 2020-09-17

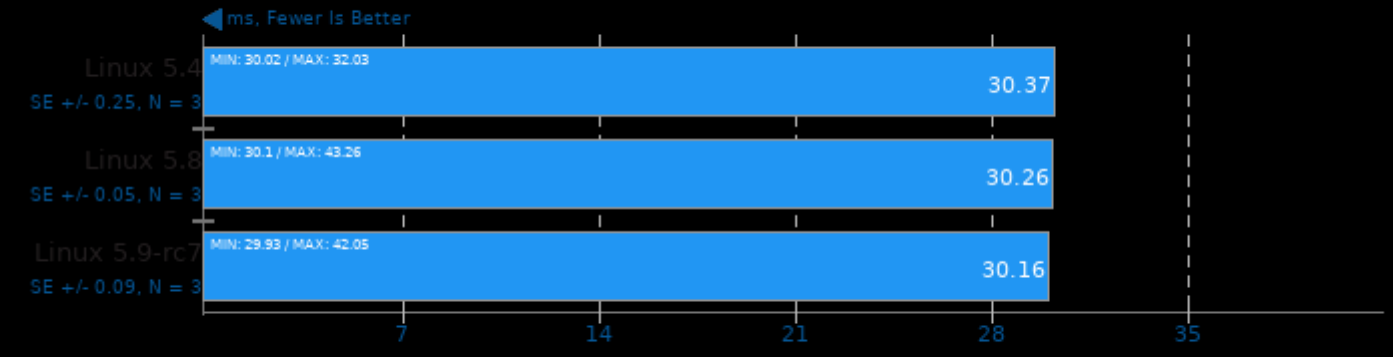
Model: inception-v3



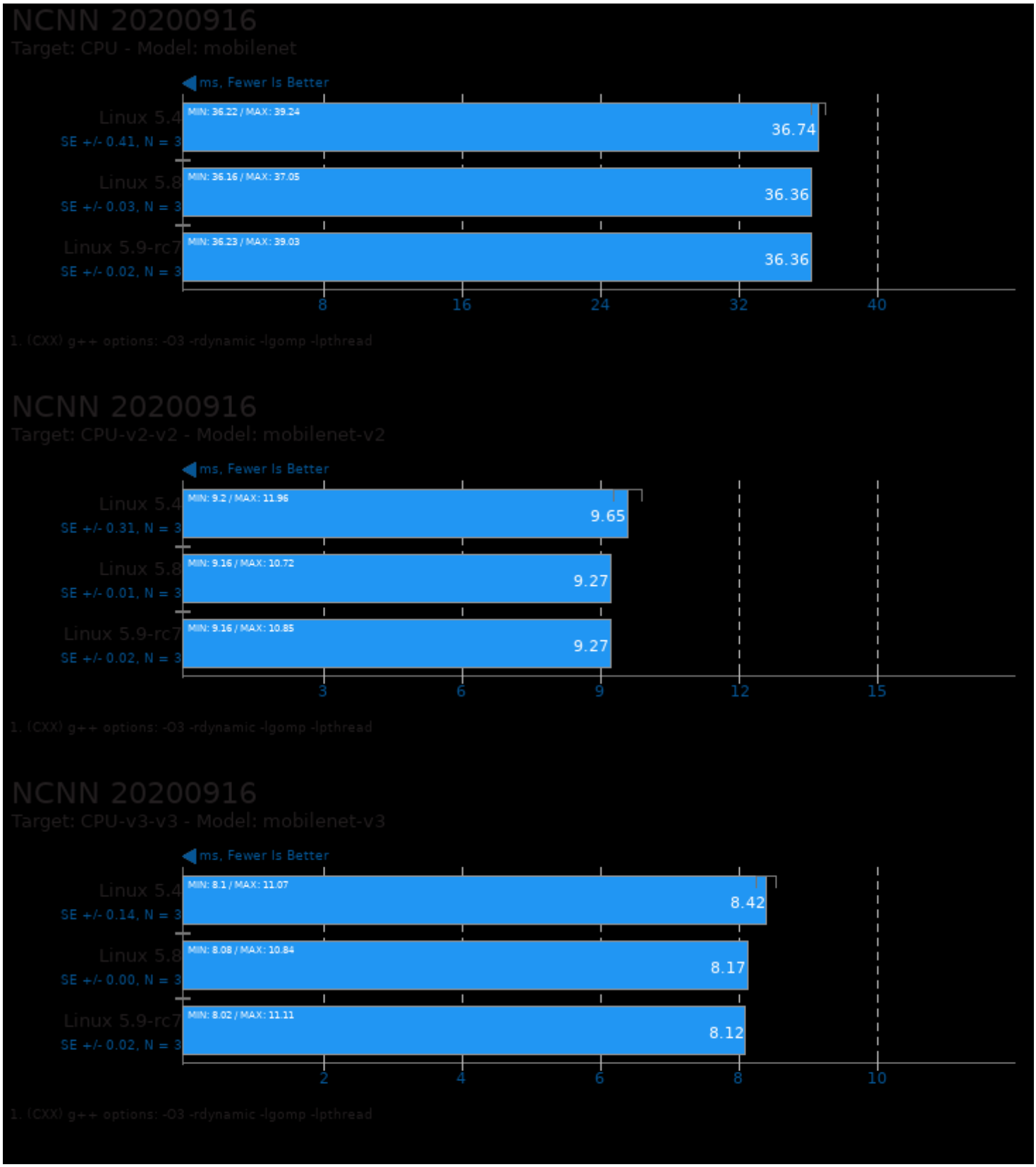
1. (CXX) g++ options: -std=c++11 -O3 -fvisibility=hidden -fomit-frame-pointer -fstrict-aliasing -ffunction-sections -fdata-sections -ffast-math -fno-rtti -fv

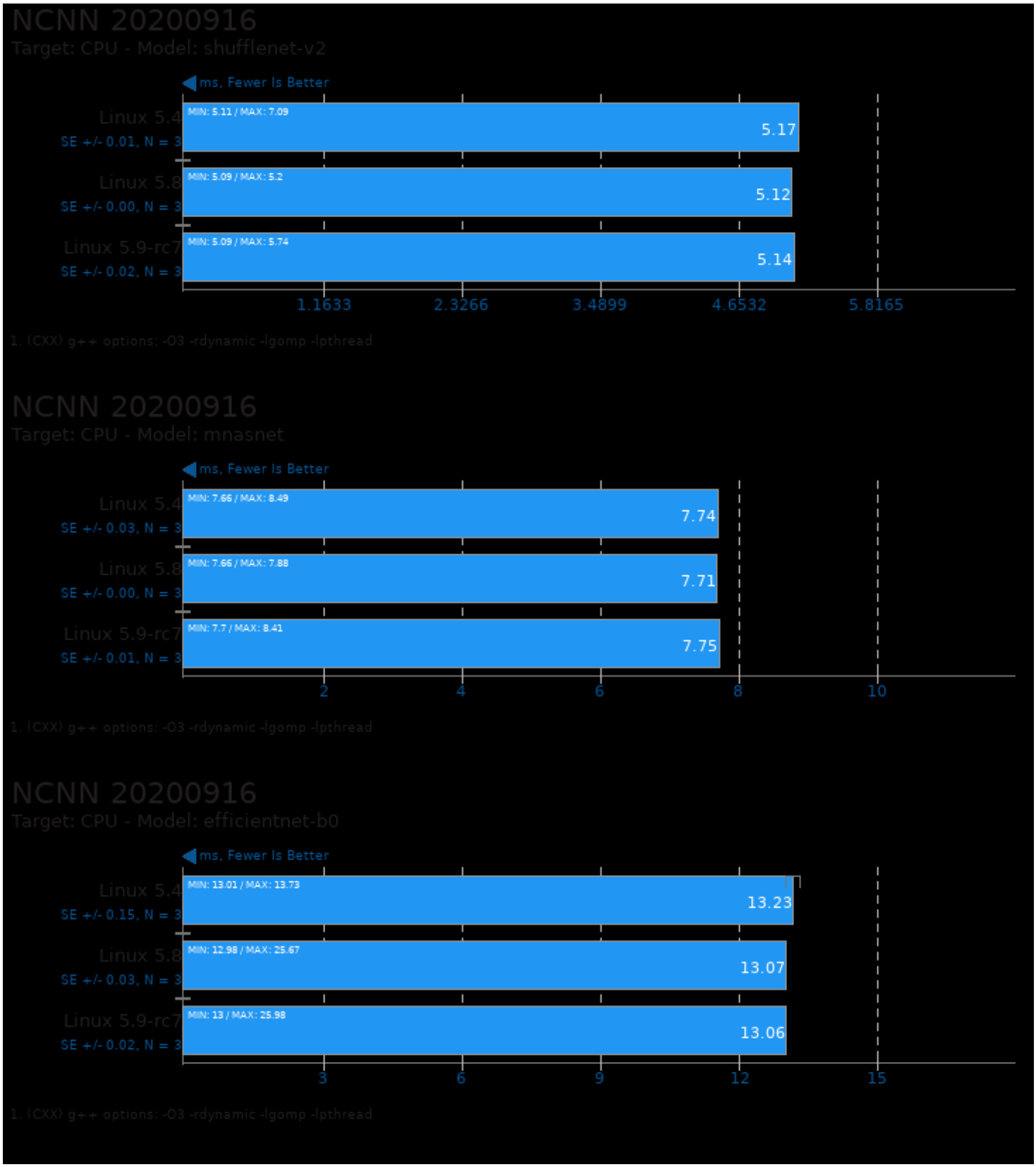
NCNN 20200916

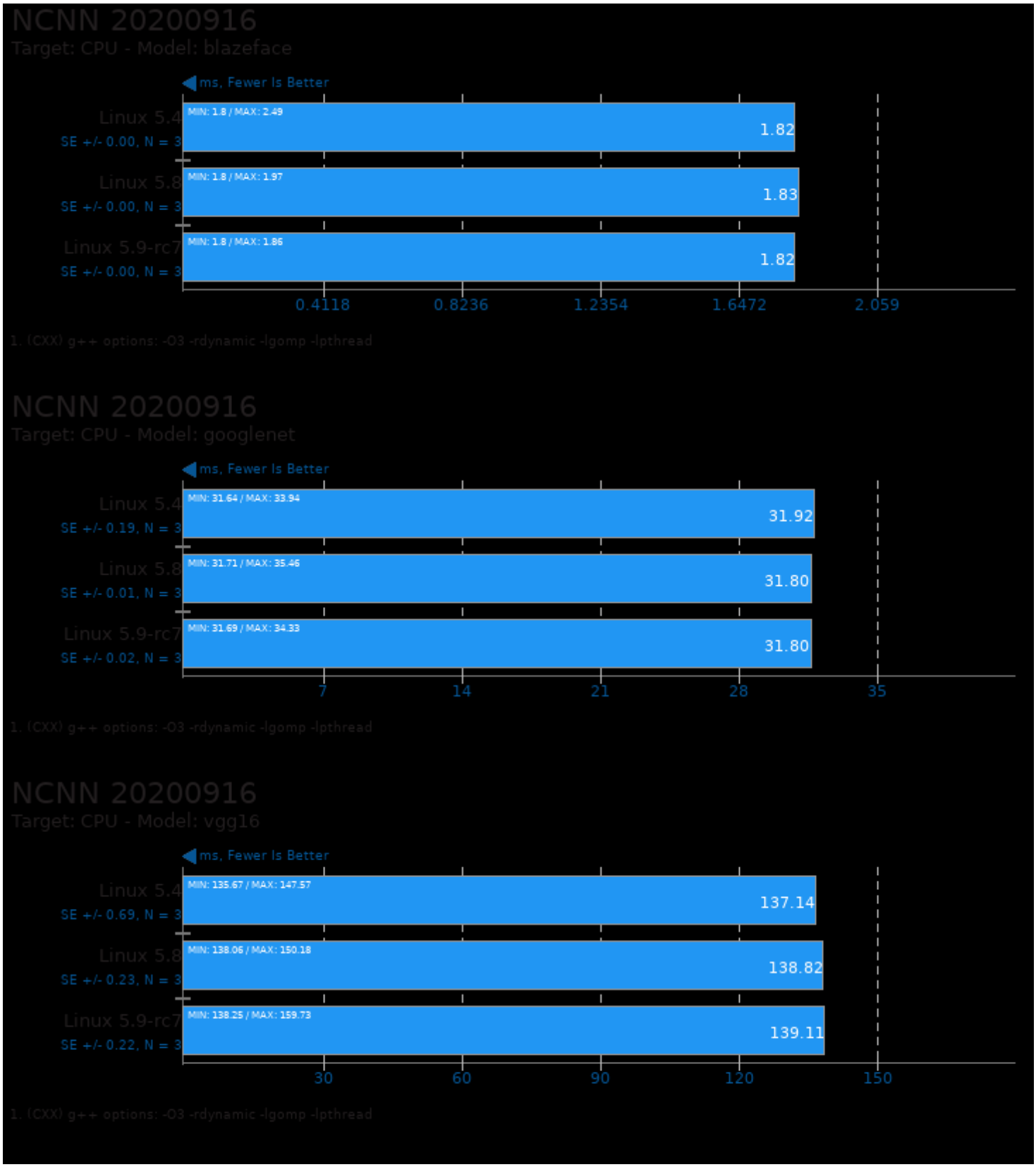
Target: CPU - Model: squeezenet

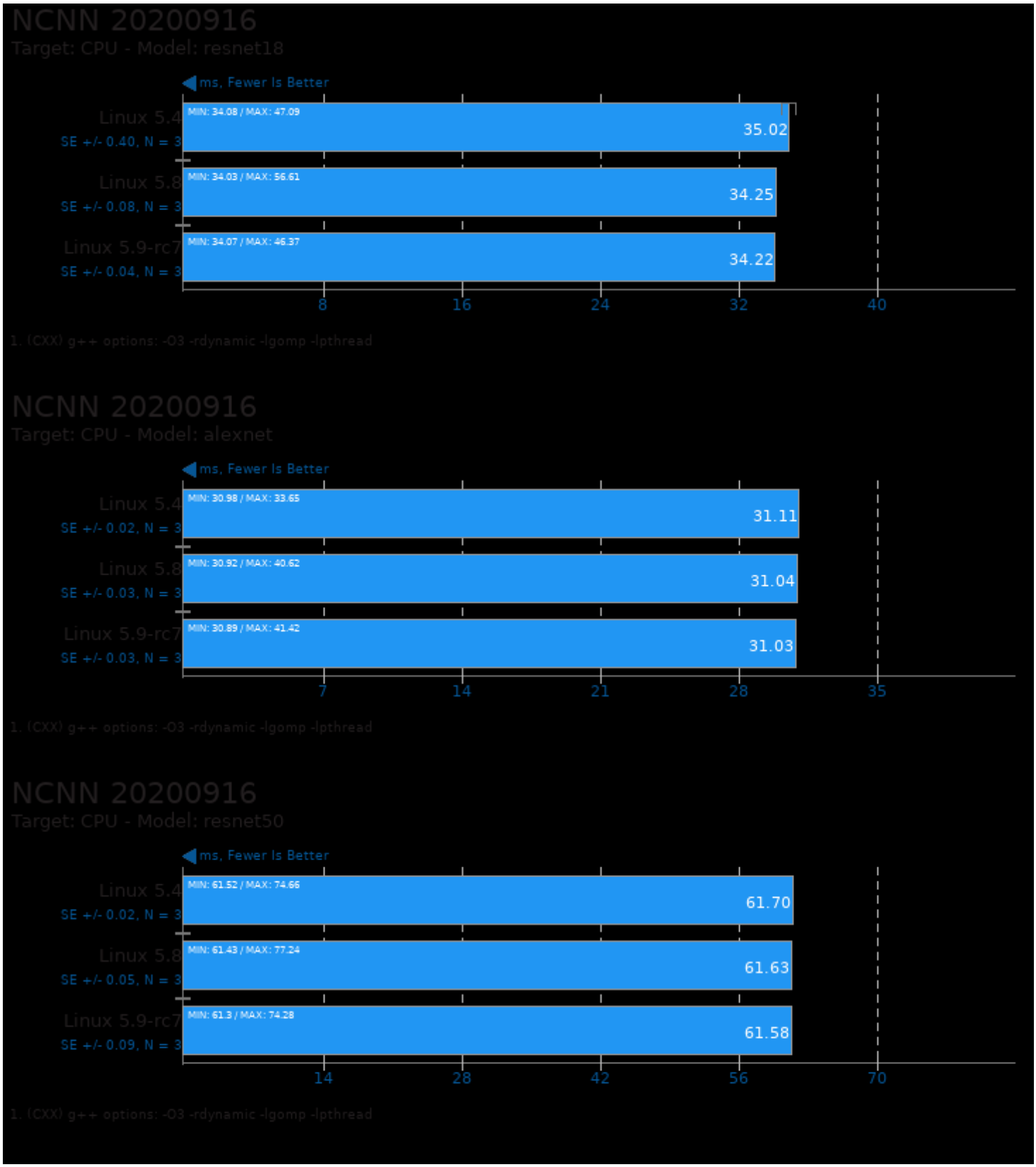


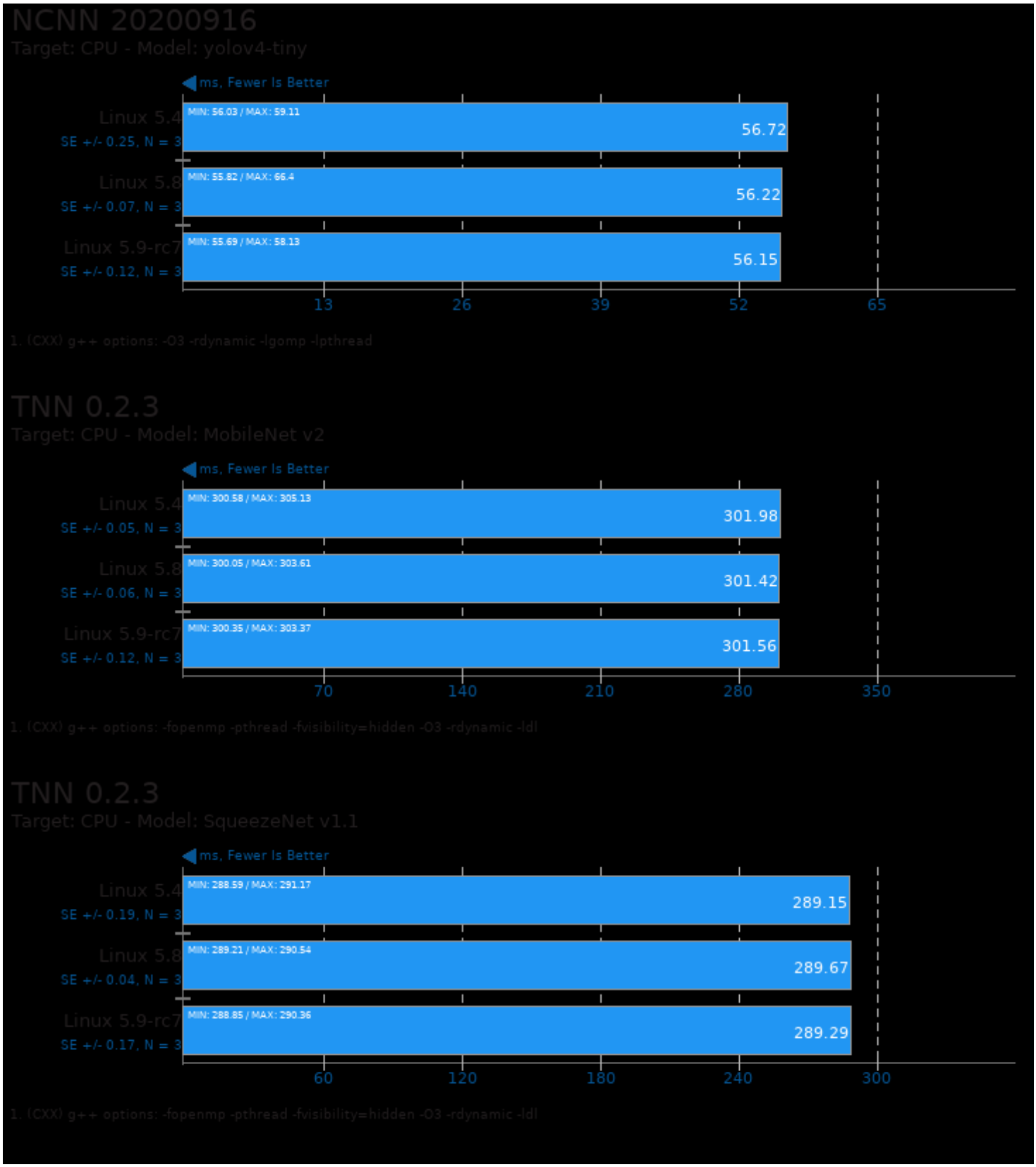
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread

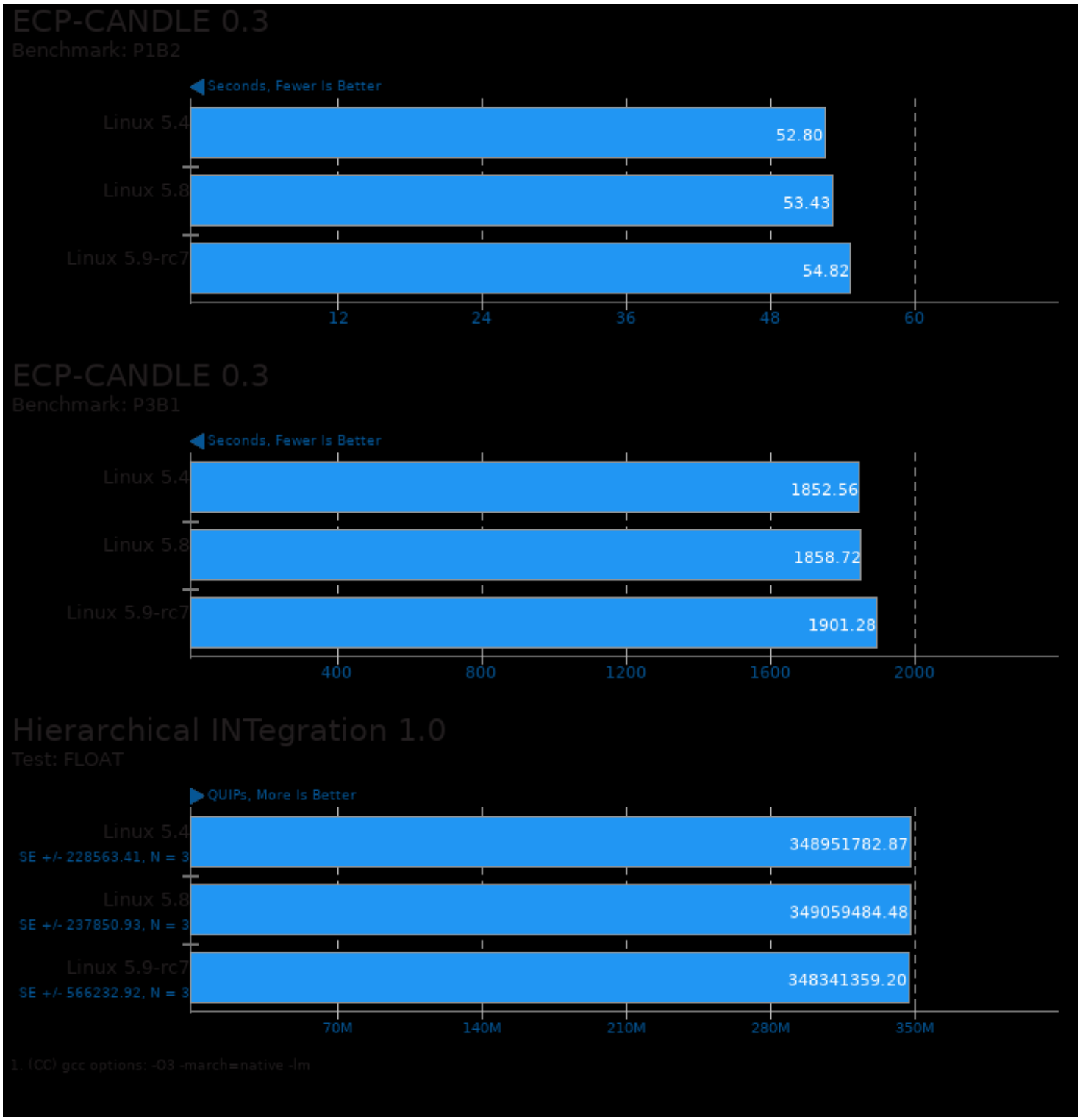

NCNN 20200916
Target: CPU - Model: mobilenet
ms, Fewer Is Better
Linux 5.4
SE +/- 0.41, N = 3
MIN: 36.22 / MAX: 39.24
36.74
Linux 5.8
SE +/- 0.03, N = 3
MIN: 36.16 / MAX: 37.05
36.36
Linux 5.9-rc7
SE +/- 0.02, N = 3
MIN: 36.23 / MAX: 39.03
36.36
8
16
24
32
40
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20200916
Target: CPU-v2-v2 - Model: mobilenet-v2
ms, Fewer Is Better
Linux 5.4
SE +/- 0.31, N = 3
MIN: 9.2 / MAX: 11.96
9.65
Linux 5.8
SE +/- 0.01, N = 3
MIN: 9.16 / MAX: 10.72
9.27
Linux 5.9-rc7
SE +/- 0.02, N = 3
MIN: 9.16 / MAX: 10.85
9.27
3
6
9
12
15
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20200916
Target: CPU-v3-v3 - Model: mobilenet-v3
ms, Fewer Is Better
Linux 5.4
SE +/- 0.14, N = 3
MIN: 8.1 / MAX: 11.07
8.42
Linux 5.8
SE +/- 0.00, N = 3
MIN: 8.08 / MAX: 10.84
8.17
Linux 5.9-rc7
SE +/- 0.02, N = 3
MIN: 8.02 / MAX: 11.11
8.12
2
4
6
8
10
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread

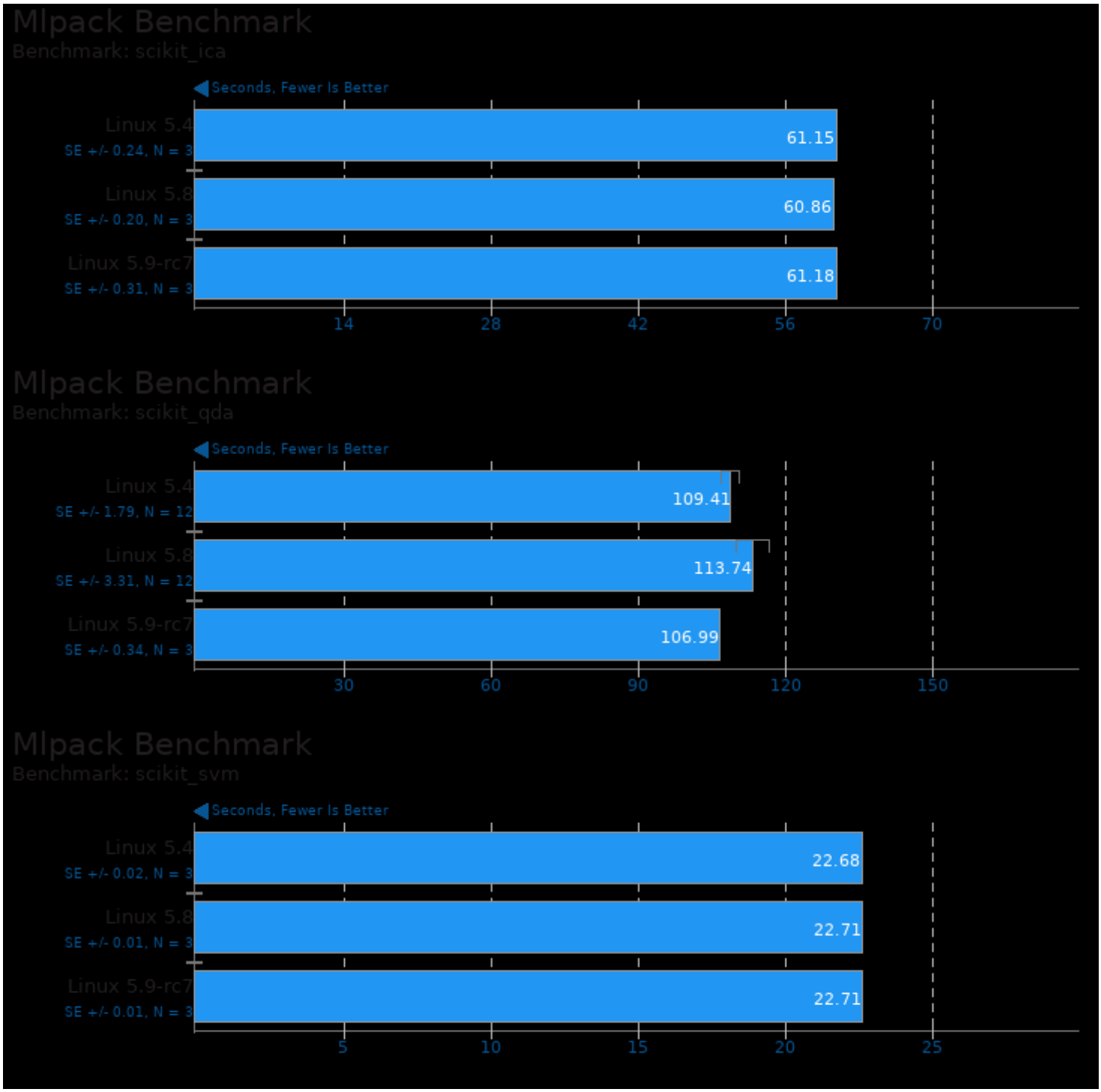

NCNN 20200916
Target: CPU - Model: shufflenet-v2
ms, Fewer Is Better
Linux 5.4
SE +/- 0.01, N = 3
MIN: 5.11 / MAX: 7.09
5.17
Linux 5.8
SE +/- 0.00, N = 3
MIN: 5.09 / MAX: 5.2
5.12
Linux 5.9-rc7
SE +/- 0.02, N = 3
MIN: 5.09 / MAX: 5.74
5.14
1.1633
2.3266
3.4899
4.6532
5.8165
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20200916
Target: CPU - Model: mnasnet
ms, Fewer Is Better
Linux 5.4
SE +/- 0.03, N = 3
MIN: 7.66 / MAX: 8.49
7.74
Linux 5.8
SE +/- 0.00, N = 3
MIN: 7.66 / MAX: 7.88
7.71
Linux 5.9-rc7
SE +/- 0.01, N = 3
MIN: 7.7 / MAX: 8.41
7.75
2
4
6
8
10
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20200916
Target: CPU - Model: efficientnet-b0
ms, Fewer Is Better
Linux 5.4
SE +/- 0.15, N = 3
MIN: 13.01 / MAX: 13.73
13.23
Linux 5.8
SE +/- 0.03, N = 3
MIN: 12.98 / MAX: 25.67
13.07
Linux 5.9-rc7
SE +/- 0.02, N = 3
MIN: 13 / MAX: 25.98
13.06
3
6
9
12
15
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread

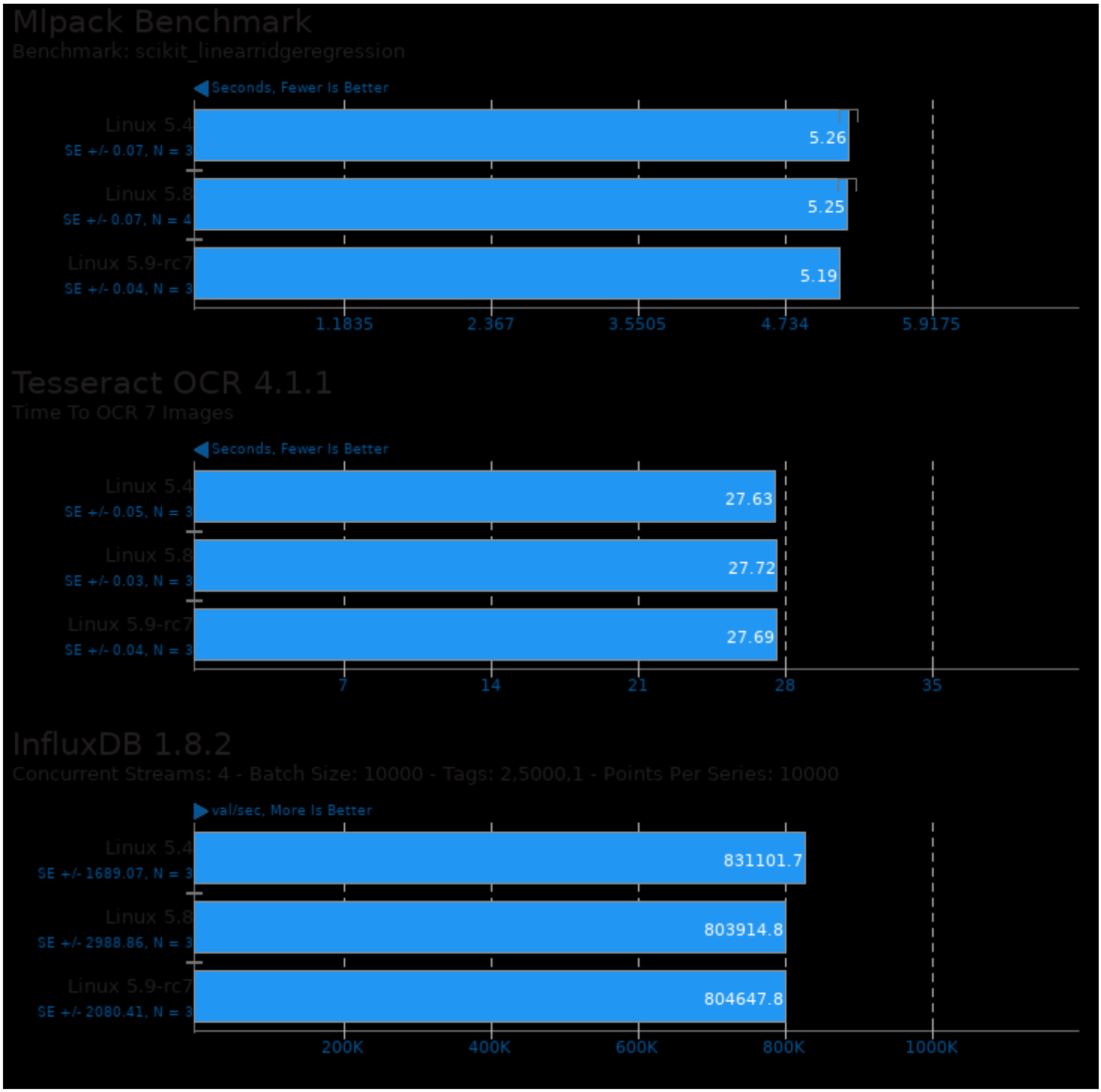

NCNN 20200916
Target: CPU - Model: blazeface
ms, Fewer Is Better
Linux 5.4
SE +/- 0.00, N = 3
MIN: 1.8 / MAX: 2.49
1.82
Linux 5.8
SE +/- 0.00, N = 3
MIN: 1.8 / MAX: 1.97
1.83
Linux 5.9-rc7
SE +/- 0.00, N = 3
MIN: 1.8 / MAX: 1.86
1.82
0.4118
0.8236
1.2354
1.6472
2.059
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20200916
Target: CPU - Model: googlenet
ms, Fewer Is Better
Linux 5.4
SE +/- 0.19, N = 3
MIN: 31.64 / MAX: 33.94
31.92
Linux 5.8
SE +/- 0.01, N = 3
MIN: 31.71 / MAX: 35.46
31.80
Linux 5.9-rc7
SE +/- 0.02, N = 3
MIN: 31.69 / MAX: 34.33
31.80
7
14
21
28
35
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20200916
Target: CPU - Model: vgg16
ms, Fewer Is Better
Linux 5.4
SE +/- 0.69, N = 3
MIN: 135.67 / MAX: 147.57
137.14
Linux 5.8
SE +/- 0.23, N = 3
MIN: 138.06 / MAX: 150.18
138.82
Linux 5.9-rc7
SE +/- 0.22, N = 3
MIN: 138.25 / MAX: 159.73
139.11
30
60
90
120
150
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread

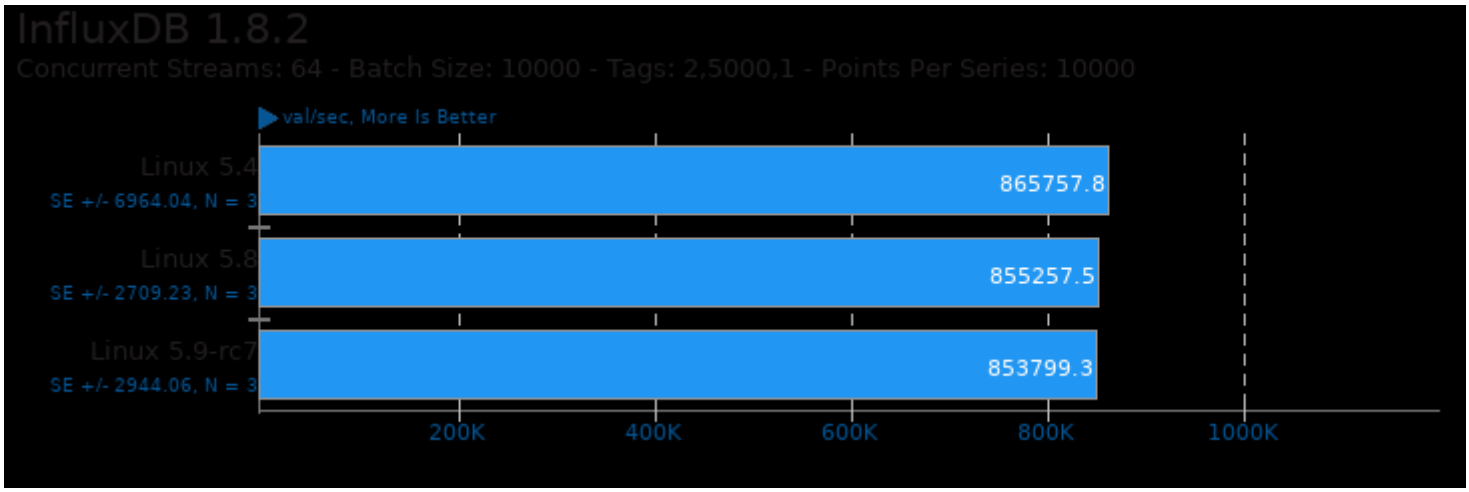

NCNN 20200916
Target: CPU - Model: resnet18
ms, Fewer Is Better
Linux 5.4
SE +/- 0.40, N = 3
MIN: 34.08 / MAX: 47.09
35.02
Linux 5.8
SE +/- 0.08, N = 3
MIN: 34.03 / MAX: 56.61
34.25
Linux 5.9-rc7
SE +/- 0.04, N = 3
MIN: 34.07 / MAX: 46.37
34.22
8
16
24
32
40
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20200916
Target: CPU - Model: alexnet
ms, Fewer Is Better
Linux 5.4
SE +/- 0.02, N = 3
MIN: 30.98 / MAX: 33.65
31.11
Linux 5.8
SE +/- 0.03, N = 3
MIN: 30.92 / MAX: 40.62
31.04
Linux 5.9-rc7
SE +/- 0.03, N = 3
MIN: 30.89 / MAX: 41.42
31.03
7
14
21
28
35
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20200916
Target: CPU - Model: resnet50
ms, Fewer Is Better
Linux 5.4
SE +/- 0.02, N = 3
MIN: 61.52 / MAX: 74.66
61.70
Linux 5.8
SE +/- 0.05, N = 3
MIN: 61.43 / MAX: 77.24
61.63
Linux 5.9-rc7
SE +/- 0.09, N = 3
MIN: 61.3 / MAX: 74.28
61.58
14
28
42
56
70
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread


NCNN 20200916
Target: CPU - Model: yolov4-tiny
ms, Fewer Is Better
Linux 5.4
SE +/- 0.25, N = 3
MIN: 56.03 / MAX: 59.11
56.72
Linux 5.8
SE +/- 0.07, N = 3
MIN: 55.82 / MAX: 66.4
56.22
Linux 5.9-rc7
SE +/- 0.12, N = 3
MIN: 55.69 / MAX: 58.13
56.15
13
26
39
52
65
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
TNN 0.2.3
Target: CPU - Model: MobileNet v2
ms, Fewer Is Better
Linux 5.4
SE +/- 0.05, N = 3
MIN: 300.58 / MAX: 305.13
301.98
Linux 5.8
SE +/- 0.06, N = 3
MIN: 300.05 / MAX: 303.61
301.42
Linux 5.9-rc7
SE +/- 0.12, N = 3
MIN: 300.35 / MAX: 303.37
301.56
70
140
210
280
350
1. (CXX) g++ options: -fopenmp -pthread -fvisibility=hidden -O3 -rdynamic -ldl
TNN 0.2.3
Target: CPU - Model: SqueezeNet v1.1
ms, Fewer Is Better
Linux 5.4
SE +/- 0.19, N = 3
MIN: 288.59 / MAX: 291.17
289.15
Linux 5.8
SE +/- 0.04, N = 3
MIN: 289.21 / MAX: 290.54
289.67
Linux 5.9-rc7
SE +/- 0.17, N = 3
MIN: 288.85 / MAX: 290.36
289.29
60
120
180
240
300
1. (CXX) g++ options: -fopenmp -pthread -fvisibility=hidden -O3 -rdynamic -ldl

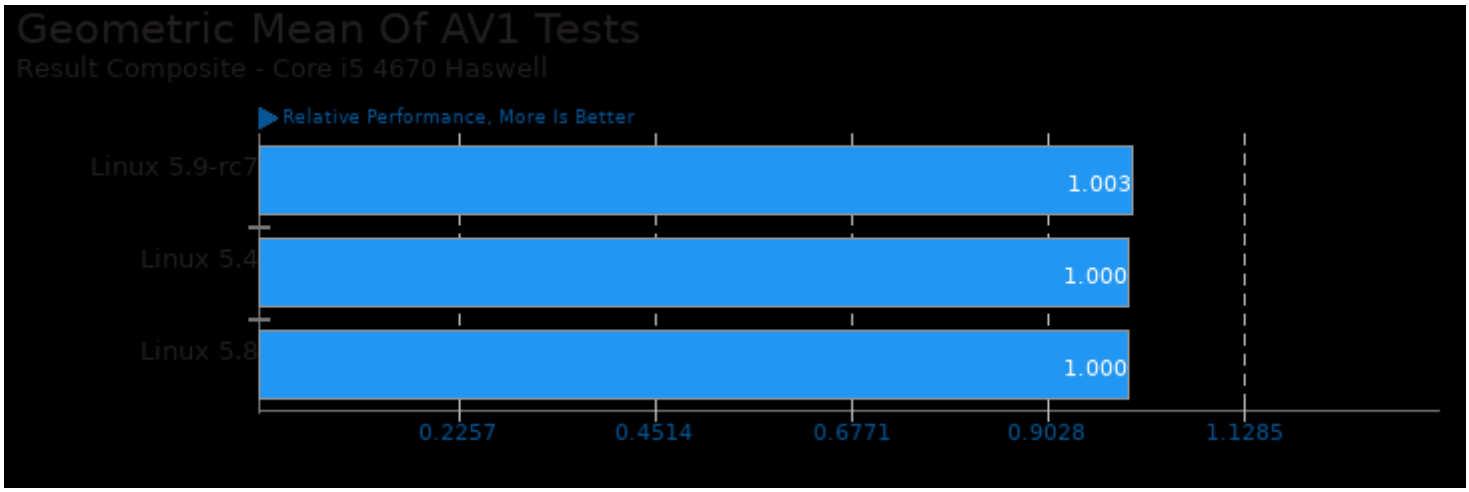

ECP-CANDLE 0.3
Benchmark: P1B2
Seconds, Fewer Is Better
Linux 5.4
52.80
Linux 5.8
53.43
Linux 5.9-rc7
54.82
12
24
36
48
60
ECP-CANDLE 0.3
Benchmark: P3B1
Seconds, Fewer Is Better
Linux 5.4
1852.56
Linux 5.8
1858.72
Linux 5.9-rc7
1901.28
400
800
1200
1600
2000
Hierarchical INTegration 1.0
Test: FLOAT
QUIPs, More Is Better
Linux 5.4
SE +/- 228563.41, N = 3
348951782.87
Linux 5.8
SE +/- 237850.93, N = 3
349059484.48
Linux 5.9-rc7
SE +/- 566232.92, N = 3
348341359.20
70M
140M
210M
280M
350M
1. (CC) gcc options: -O3 -march=native -lm


Mlpack Benchmark
Benchmark: scikit_ica
Seconds, Fewer Is Better
Linux 5.4
SE +/- 0.24, N = 3
61.15
Linux 5.8
SE +/- 0.20, N = 3
60.86
Linux 5.9-rc7
SE +/- 0.31, N = 3
61.18
14
28
42
56
70
Mlpack Benchmark
Benchmark: scikit_qda
Seconds, Fewer Is Better
Linux 5.4
SE +/- 1.79, N = 12
109.41
Linux 5.8
SE +/- 3.31, N = 12
113.74
Linux 5.9-rc7
SE +/- 0.34, N = 3
106.99
30
60
90
120
150
Mlpack Benchmark
Benchmark: scikit_svm
Seconds, Fewer Is Better
Linux 5.4
SE +/- 0.02, N = 3
22.68
Linux 5.8
SE +/- 0.01, N = 3
22.71
Linux 5.9-rc7
SE +/- 0.01, N = 3
22.71
5
10
15
20
25

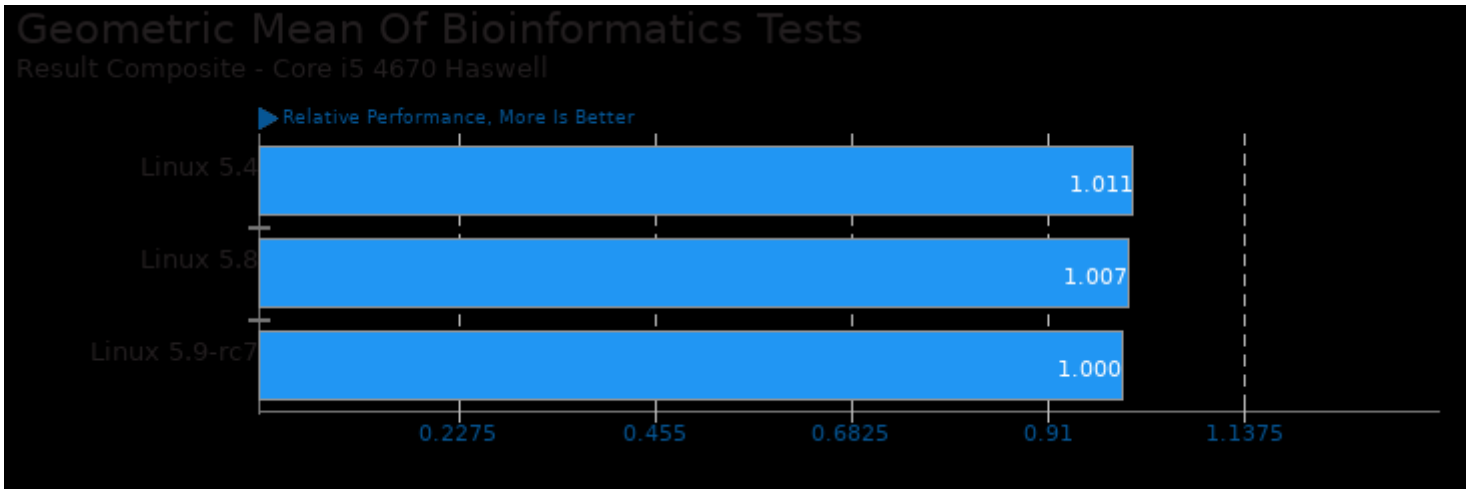

Mlpack Benchmark
Benchmark: scikit_linearridgeregression
Seconds, Fewer Is Better
Linux 5.4
SE +/- 0.07, N = 3
5.26
Linux 5.8
SE +/- 0.07, N = 4
5.25
Linux 5.9-rc7
SE +/- 0.04, N = 3
5.19
1.1835
2.367
3.5505
4.734
5.9175
Tesseract OCR 4.1.1
Time To OCR 7 Images
Seconds, Fewer Is Better
Linux 5.4
SE +/- 0.05, N = 3
27.63
Linux 5.8
SE +/- 0.03, N = 3
27.72
Linux 5.9-rc7
SE +/- 0.04, N = 3
27.69
7
14
21
28
35
InfluxDB 1.8.2
Concurrent Streams: 4 - Batch Size: 10000 - Tags: 2,5000,1 - Points Per Series: 10000
val/sec, More Is Better
Linux 5.4
SE +/- 1689.07, N = 3
831101.7
Linux 5.8
SE +/- 2988.86, N = 3
803914.8
Linux 5.9-rc7
SE +/- 2080.41, N = 3
804647.8
200K
400K
600K
800K
1000K


InfluxDB 1.8.2
Concurrent Streams: 64 - Batch Size: 10000 - Tags: 2,5000,1 - Points Per Series: 10000
val/sec, More Is Better
Linux 5.4
SE +/- 6964.04, N = 3
865757.8
Linux 5.8
SE +/- 2709.23, N = 3
855257.5
Linux 5.9-rc7
SE +/- 2944.06, N = 3
853799.3
200K
400K
600K
800K
1000K

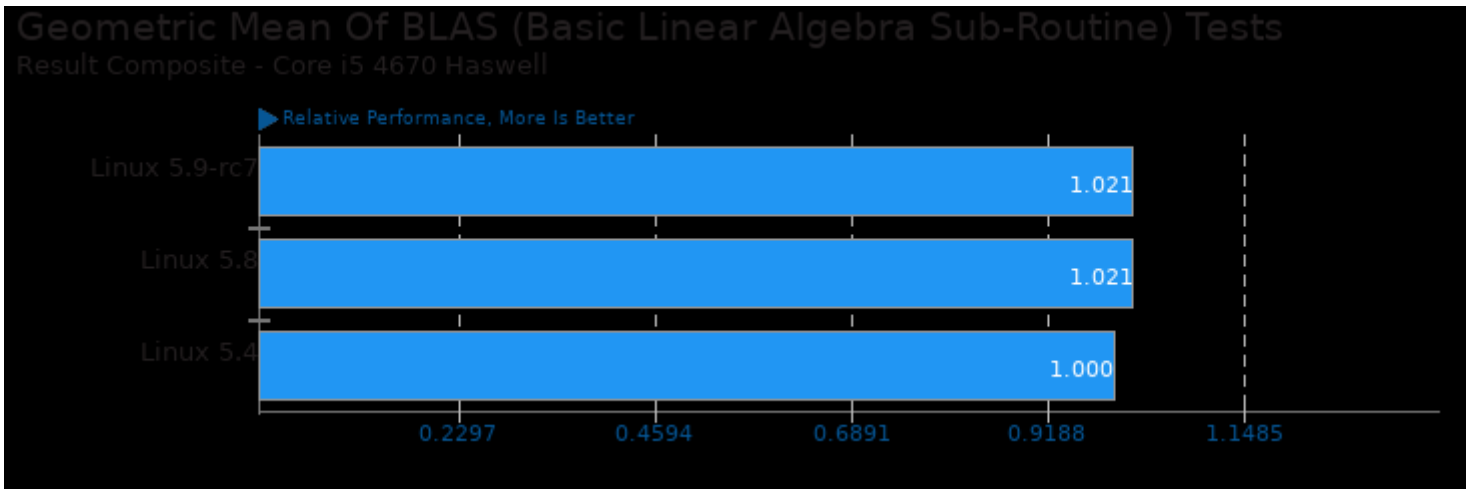
These geometric means are based upon test groupings / test suites for this result file.



Geometric mean based upon tests: pts/aom-av1 and pts/avifenc

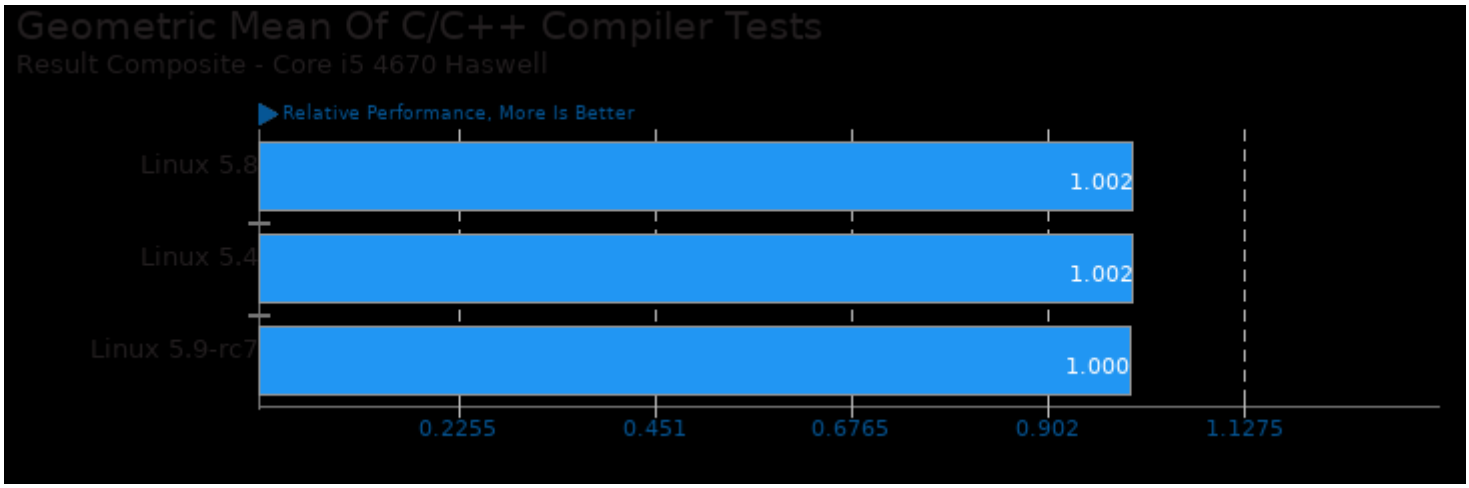


Geometric mean based upon tests: pts/hmmer and pts/mafft

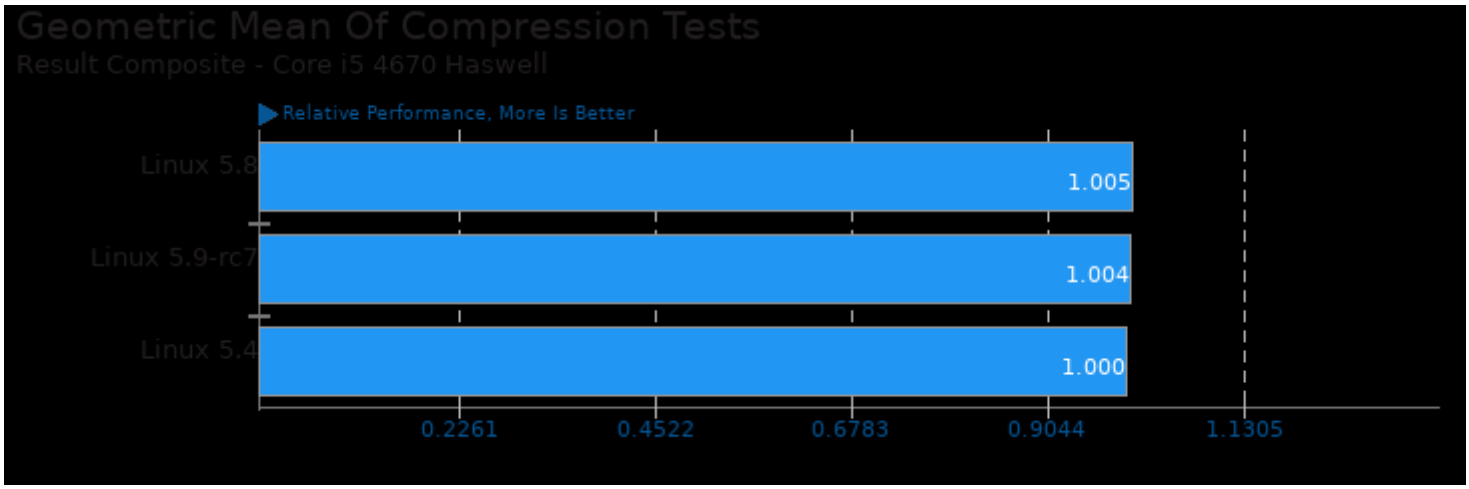


Geometric mean based upon tests: pts/lczero and pts/caffe

Geometric mean based upon tests: pts/build-apache, pts/build-php, pts/build-linux-kernel, pts/build-gdb and pts/build2



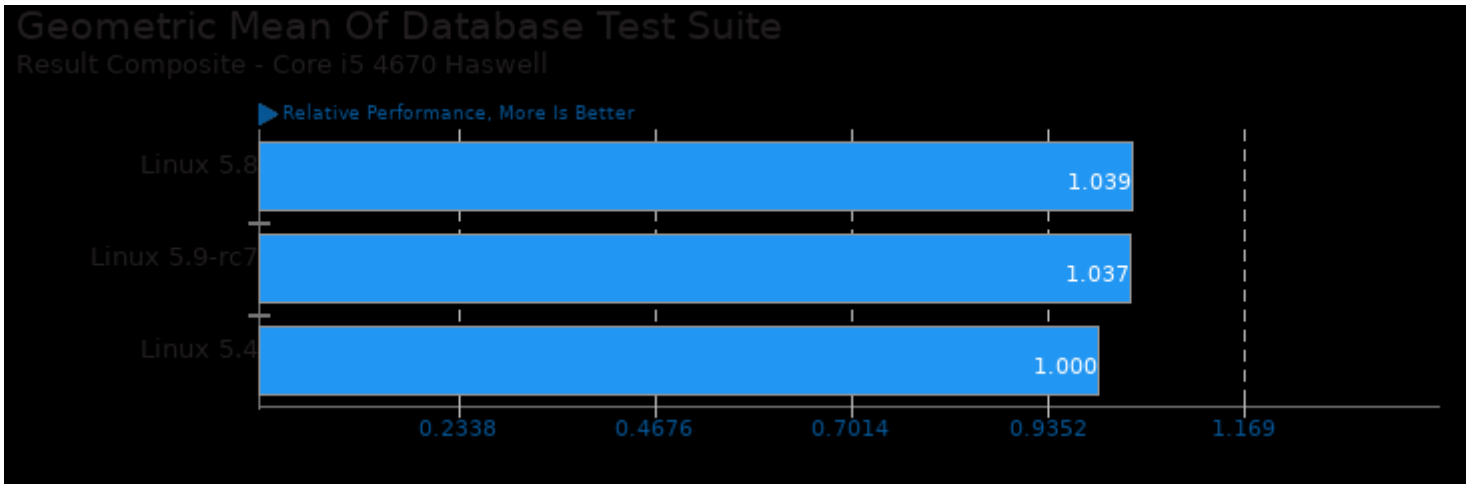
Geometric mean based upon tests: pts/mafft, pts/hmmer, pts/build-php, pts/compress-zstd, pts/lammps, pts/aom-av1, pts/gromacs, pts/build-gdb and pts/build-apache



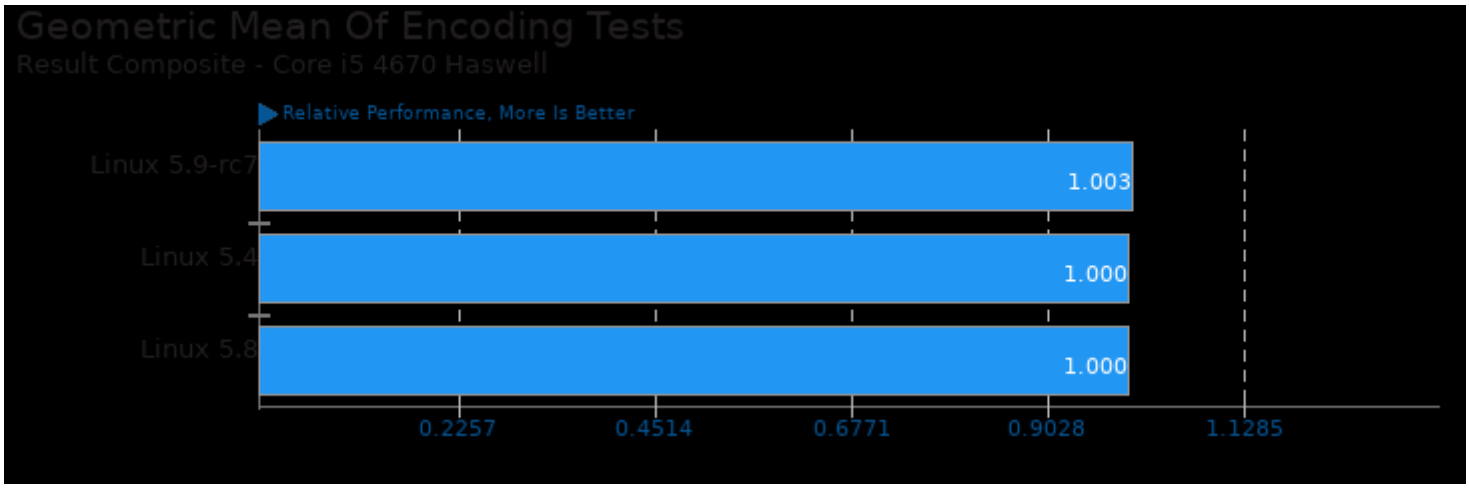
Geometric mean based upon tests: pts/compress-zstd and pts/system-decompress-gzip

Geometric mean based upon tests: pts/build-apache, pts/build-linux-kernel, pts/build-php, pts/compress-zstd, pts/dolfyn, pts/hint, pts/hmmer, pts/lammps, pts/lczero, pts/mafft, pts/namd and system/tesseract-ocr

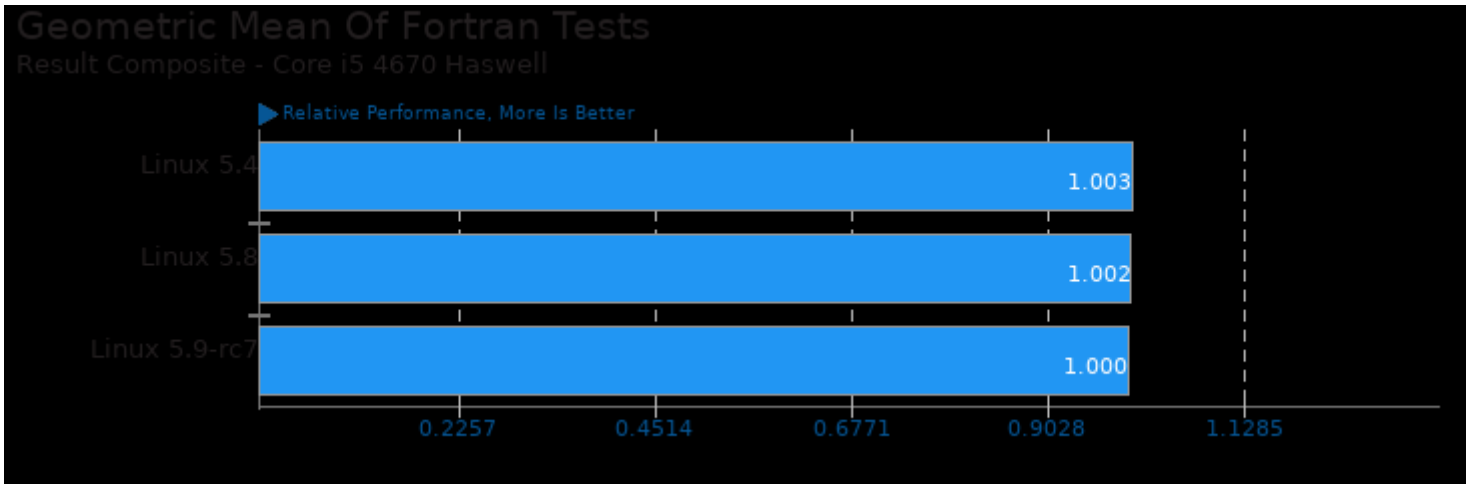
Geometric mean based upon tests: system/tesseract-ocr, system/ocrmypdf, pts/aom-av1, pts/avifenc, system/gmic, pts/libraw, pts/webp, system/rawtherapee, system/rsvg, pts/astcenc, pts/espeak and pts/rnnoise



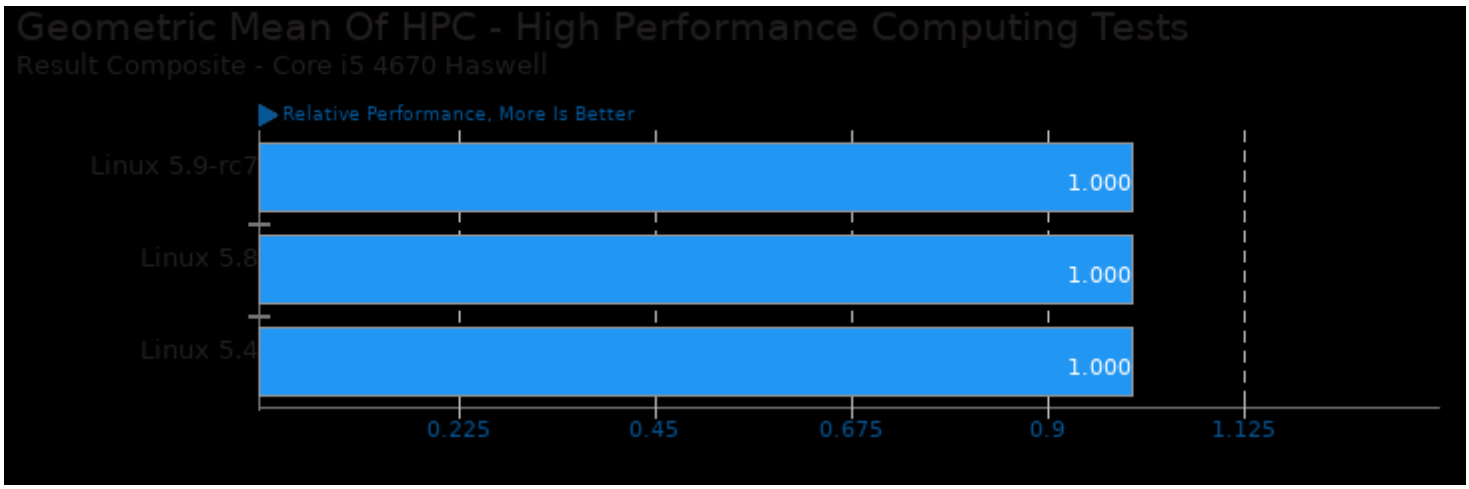
Geometric mean based upon tests: pts/couchdb and pts/influxdb



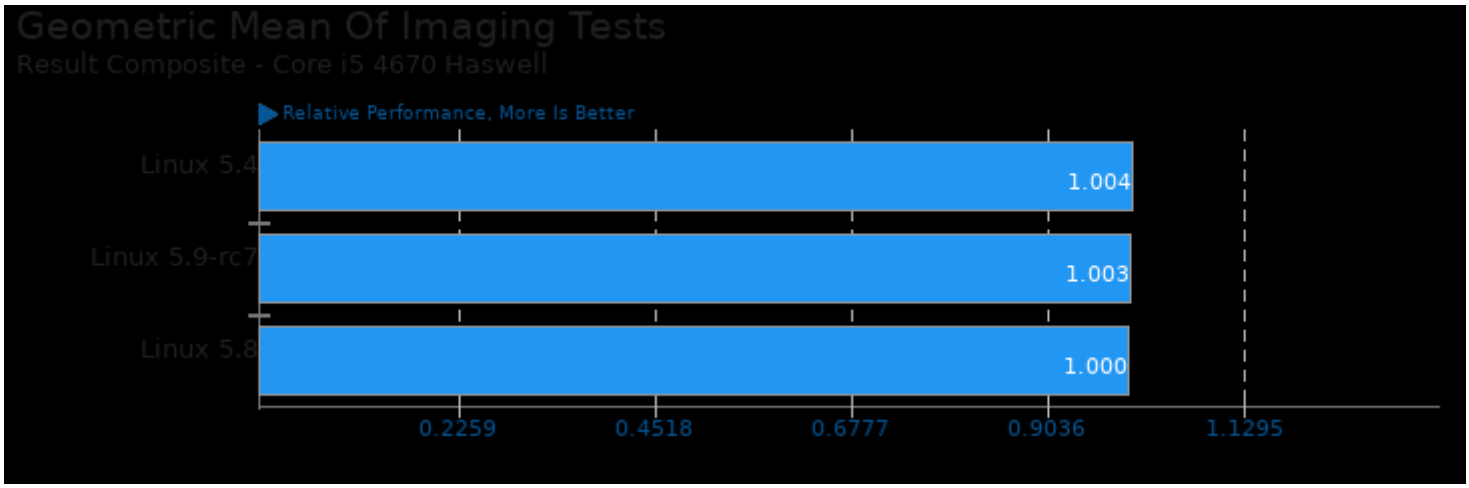
Geometric mean based upon tests: pts/aom-av1 and pts/avifenc



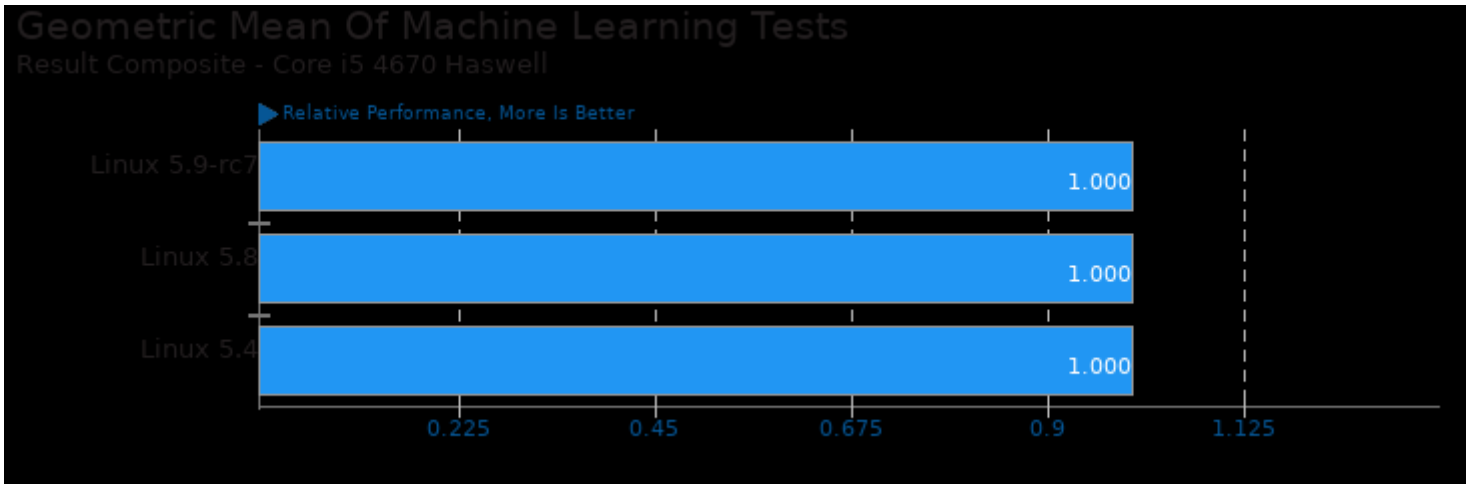
Geometric mean based upon tests: pts/dolfyn, pts/ffte, pts/incompact3d, pts/mocassin and pts/lammps



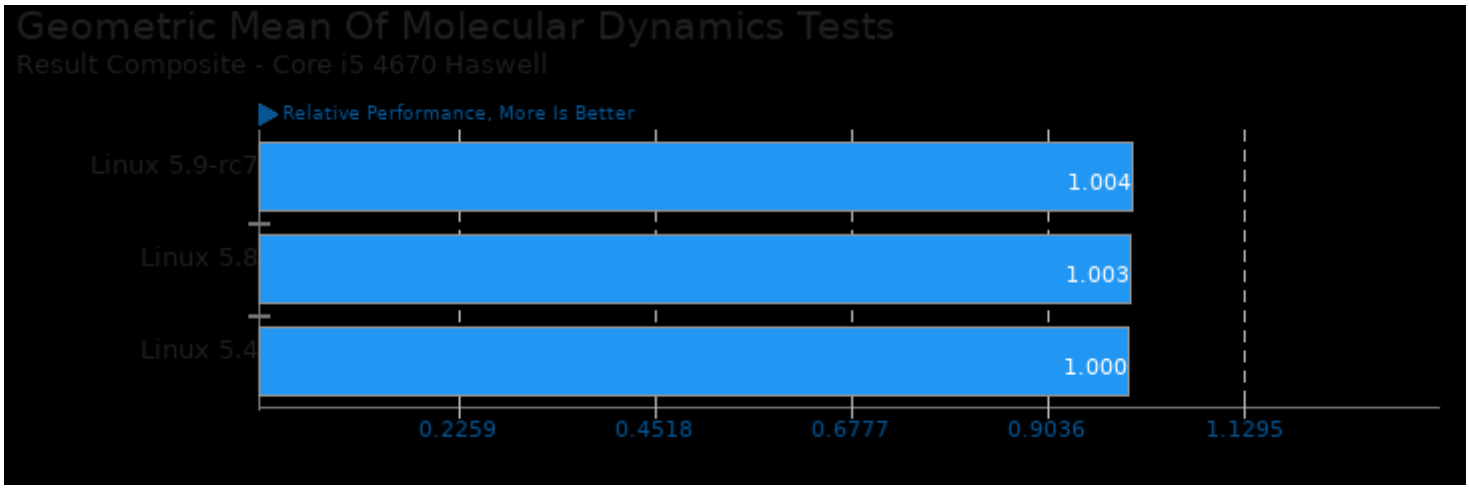
Geometric mean based upon tests: pts/ffte, pts/namd, pts/gromacs, pts/dolfyn, pts/lammps, pts/incompact3d, pts/hmmer, pts/mafft, pts/mocassin, pts/mnn, pts/ncnn, pts/tnn, pts/caffe, pts/ecp-candle, pts/rnnoise, pts/mlpack, pts/tensorflow-lite and pts/lczero



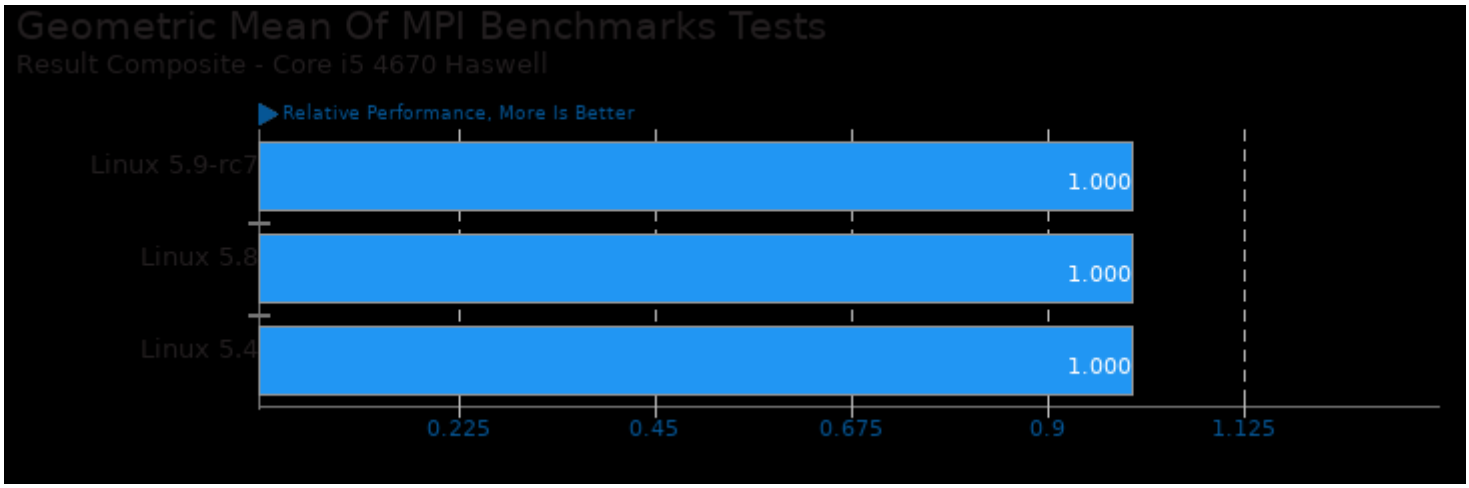
Geometric mean based upon tests: system/gmic, pts/libraw, pts/webp, system/rawtherapee, system/rsvg and pts/avifenc



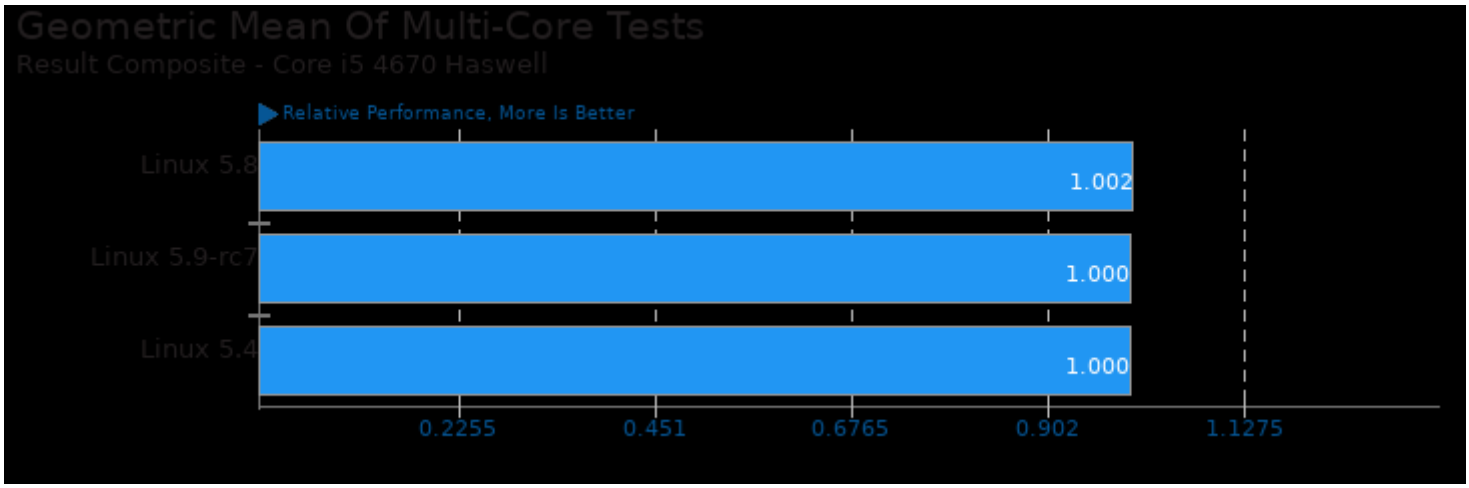
Geometric mean based upon tests: pts/mnn, pts/ncnn, pts/tnn, pts/caffe, pts/ecp-candle, pts/rnnoise, pts/mlpack, pts/tensorflow-lite and pts/lczero



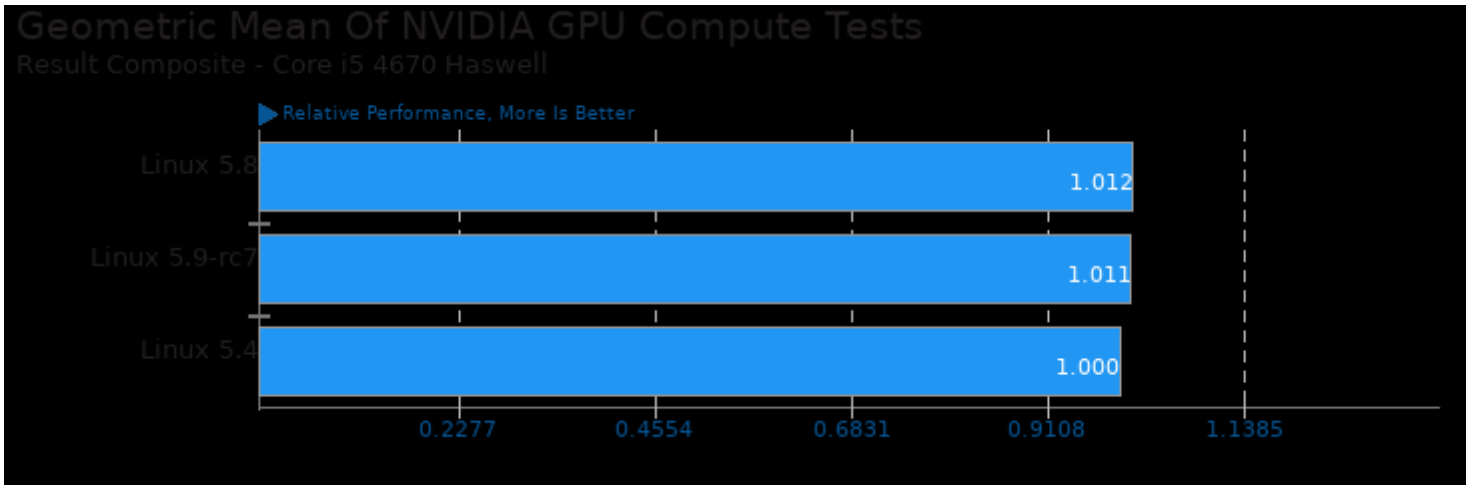
Geometric mean based upon tests: pts/namd, pts/gromacs, pts/dolfyn, pts/lammps and pts/incompact3d



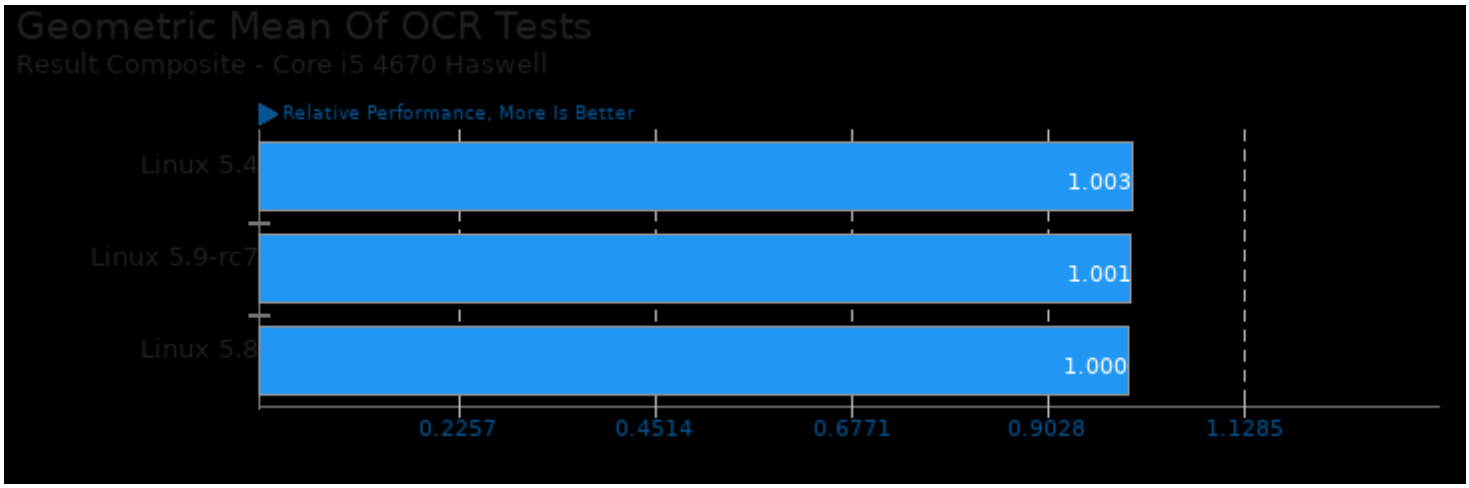
Geometric mean based upon tests: pts/lammps, pts/incompact3d, pts/mocassin and pts/gromacs



Geometric mean based upon tests: pts/aom-av1, pts/avifenc, pts/namd, pts/lammps, pts/gromacs, pts/compress-zstd, pts/build-apache, pts/build-php, pts/build-linux-kernel, pts/build-gdb and pts/build2

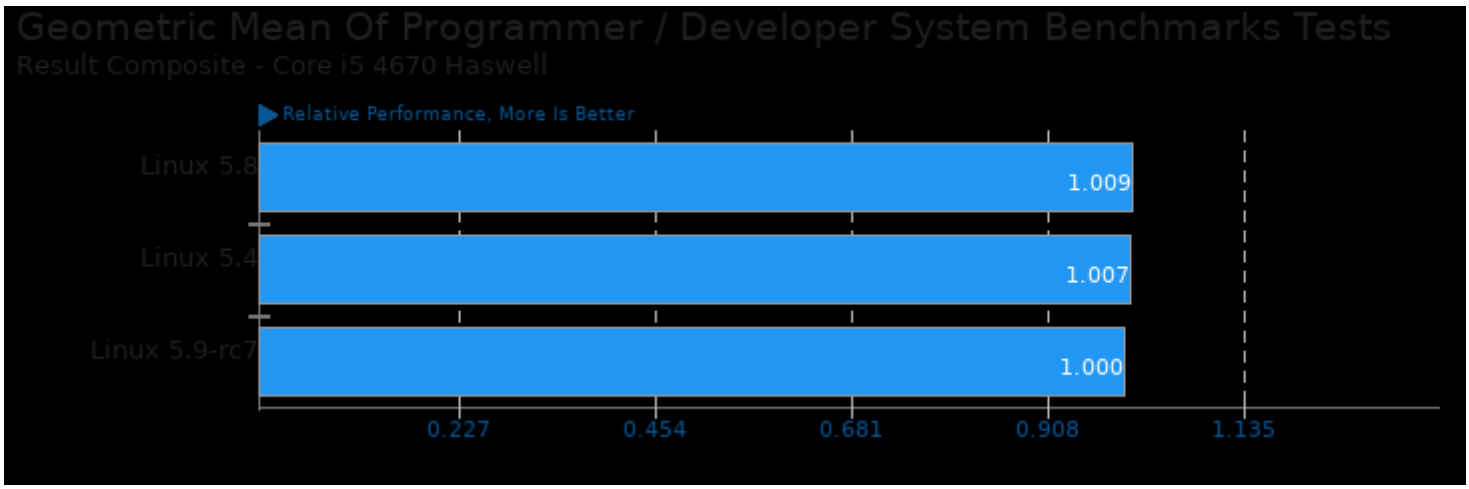


Geometric mean based upon tests: pts/gromacs, pts/lczero, pts/caffe and pts/ncnn

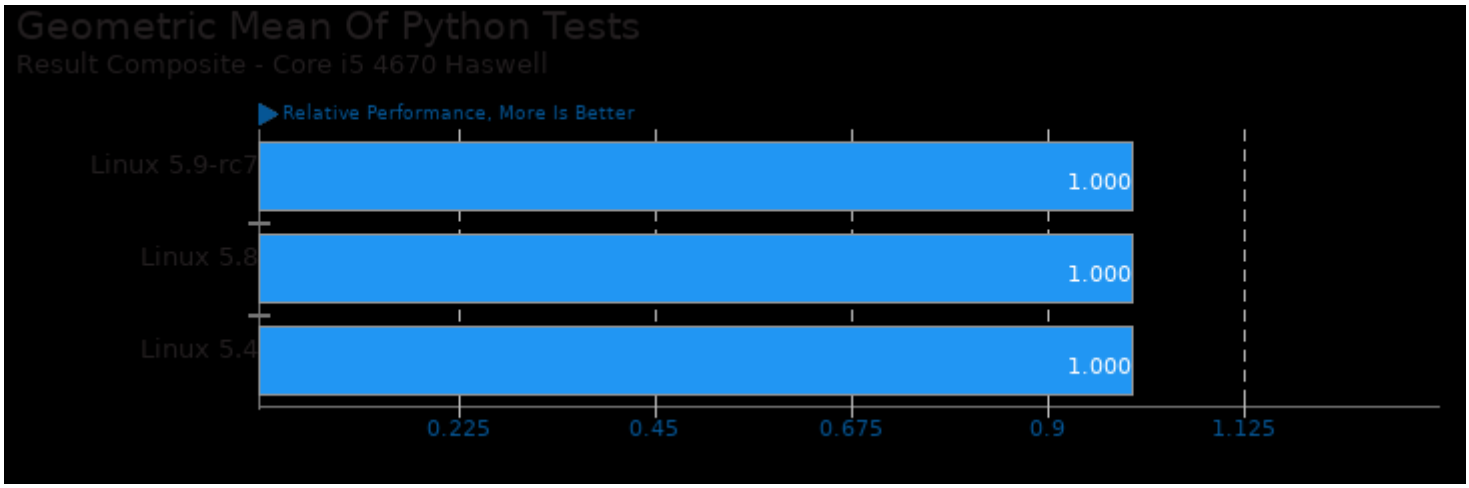


Geometric mean based upon tests: system/tesseract-ocr and system/ocrmypdf

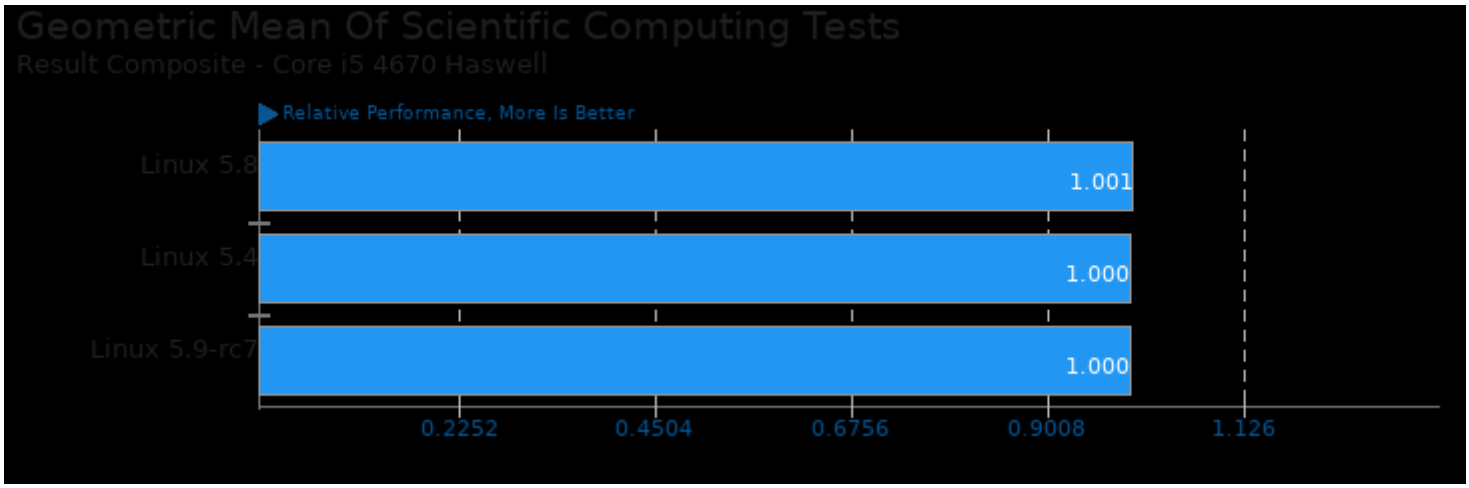
Geometric mean based upon tests: pts/incompact3d, pts/mocassin, pts/lammps and pts/gromacs



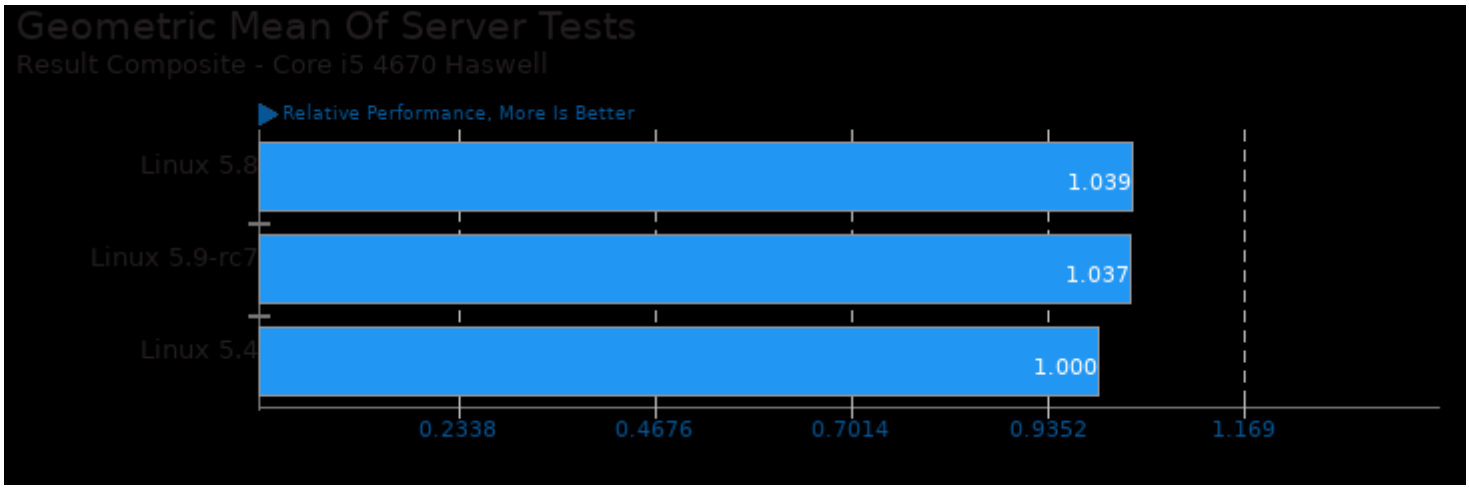
Geometric mean based upon tests: pts/compress-zstd, pts/build-apache, pts/build-php, pts/build-linux-kernel, pts/build-gdb and pts/build2



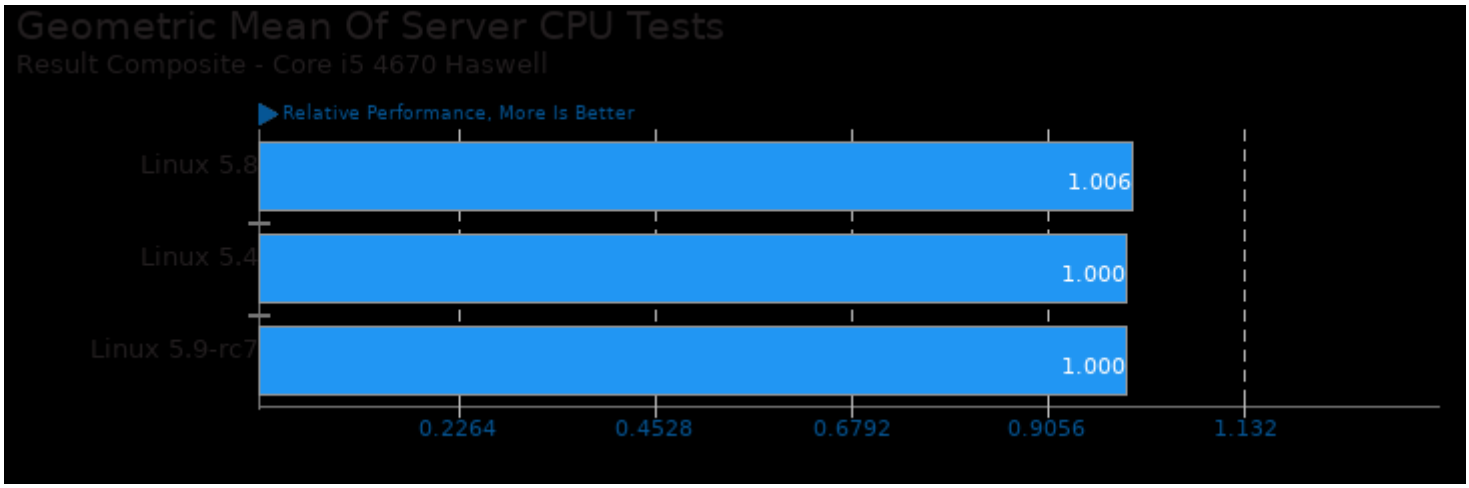
Geometric mean based upon tests: system/ocrmypdf, pts/caffe, pts/ecp-candle and pts/mlpack



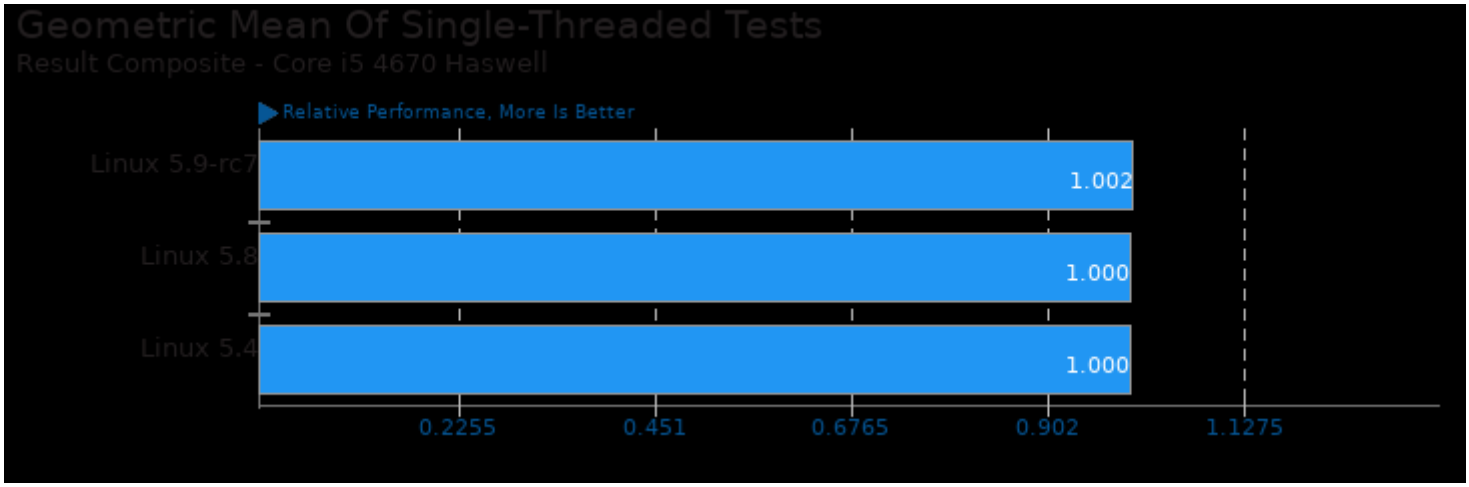
Geometric mean based upon tests: pts/ffte, pts/namd, pts/gromacs, pts/dolfyn, pts/lammps, pts/incompact3d, pts/hmmer, pts/mafft and pts/mocassin



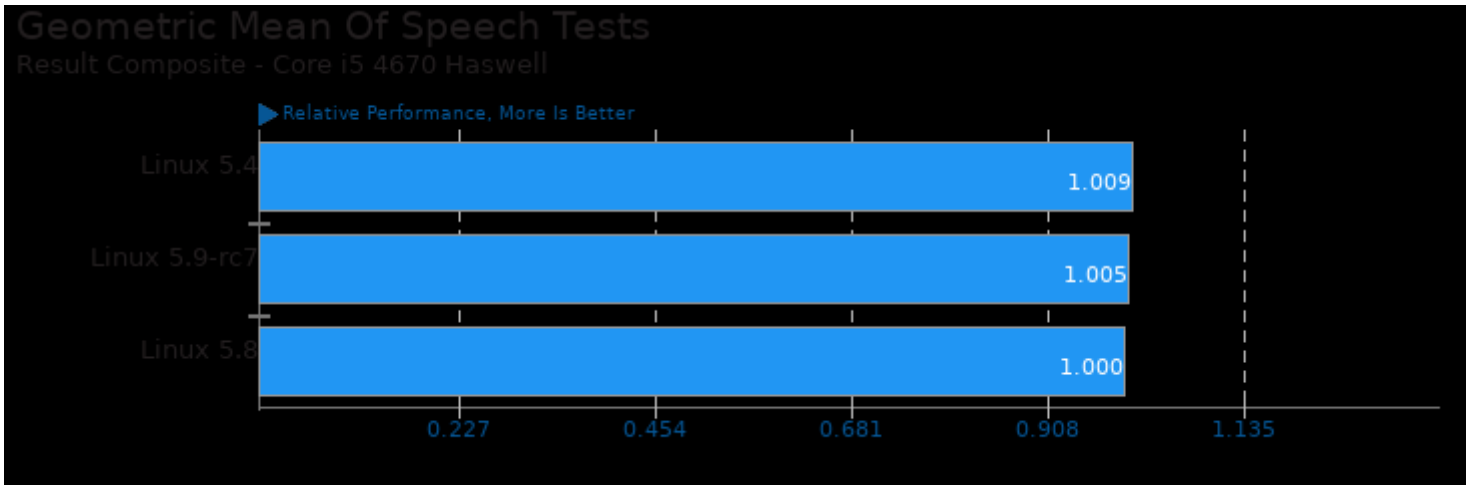
Geometric mean based upon tests: pts/couchdb and pts/influxdb



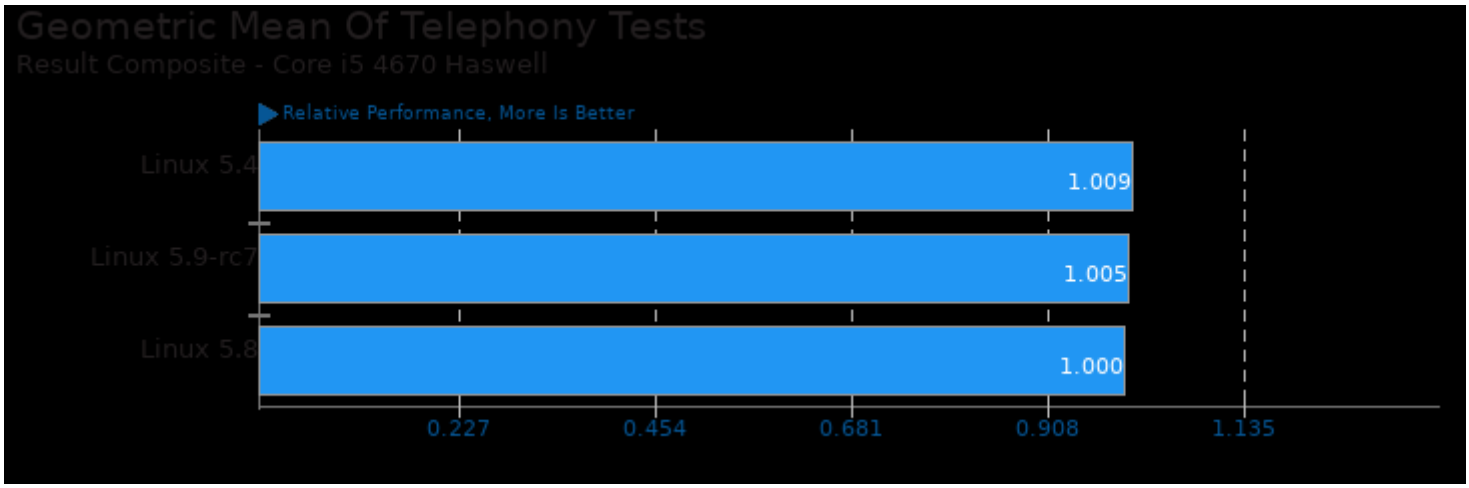
Geometric mean based upon tests: pts/namd, pts/build-linux-kernel, pts/build-php, pts/compress-zstd and system/tesseract-ocr



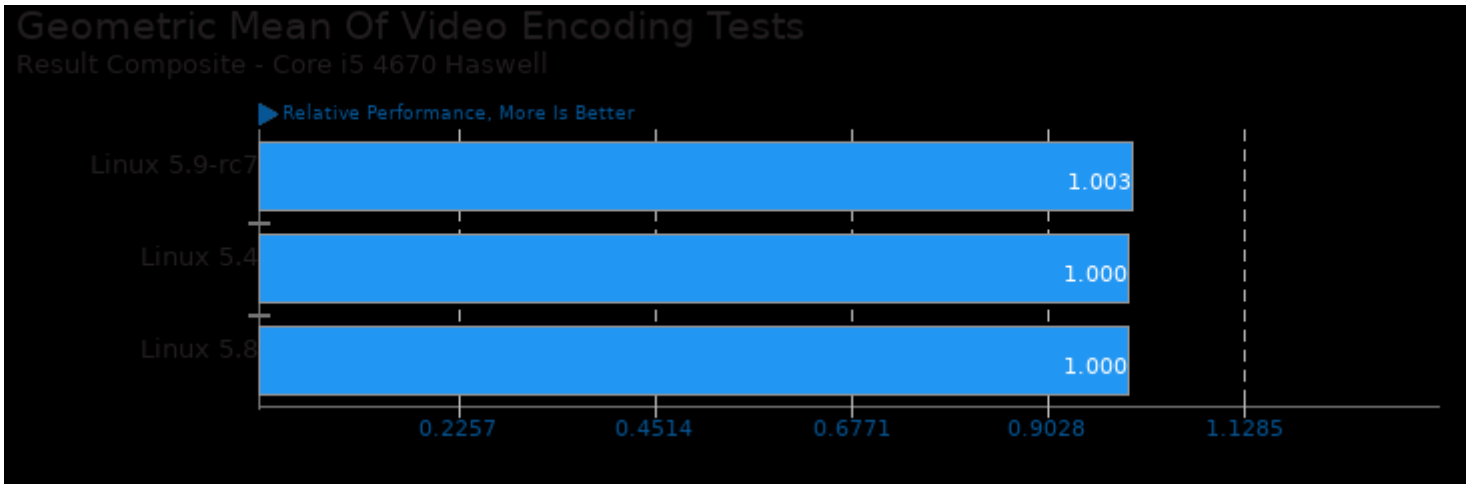
Geometric mean based upon tests: pts/byte, pts/espeak, pts/hint and system/tesseract-ocr



Geometric mean based upon tests: pts/espeak and pts/rnnoise



Geometric mean based upon tests: pts/espeak and pts/rnnoise



Geometric mean based upon tests: pts/aom-av1 and pts/avifenc

This file was automatically generated via the Phoronix Test Suite benchmarking software on Thursday, 28 March 2024 08:20.