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AMD Ryzen 9 5950X Linux 5.11

Benchmarks by Michael Larabel.

Automated Executive Summary

Linux 5.11 Patched had the most wins, coming in first place for 47% of the tests.

Based on the geometric mean of all complete results, the fastest (Linux 5.11 Patched) was 1.041x the speed of the slowest (Linux 5.11). Linux 5.10.9 was 0.975x the speed of Linux 5.11 Patched and Linux 5.11 was 0.985x the speed of Linux 5.10.9.

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

DDraceNetwork (Resolution: 3840 x 2160 - Mode: Fullscreen - Renderer: OpenGL 2.0 - Zoom: Default - Demo: Multeasymap - Total Frame Time) at 4.333x
DDraceNetwork (Resolution: 3840 x 2160 - Mode: Fullscreen - Renderer: OpenGL 3.3 - Zoom: Default - Demo: Multeasymap - Total Frame Time) at 4.052x
dav1d (Video Input: Summer Nature 1080p) at 1.717x
GLmark2 (Resolution: 3840 x 2160) at 1.653x
dav1d (Video Input: Chimera 1080p) at 1.507x
oneDNN (Harness: Matrix Multiply Batch Shapes Transformer - Data Type: f32 - Engine: CPU) at 1.444x
Selenium (Benchmark: Kraken - Browser: Google Chrome) at 1.422x

dav1d (Video Input: Chimera 1080p 10-bit) at 1.406x
AOM AV1 (Encoder Mode: Speed 6 Realtime) at 1.382x
Selenium (Benchmark: ARES-6 - Browser: Firefox) at 1.328x.

Test Systems:

Linux 5.10.9

Processor: AMD Ryzen 9 5950X 16-Core @ 3.40GHz (16 Cores / 32 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (WI-FI) (3202 BIOS), Chipset: AMD Starship/Matisse, Memory: 32GB, Disk: 2000GB Corsair Force MP600 + 2000GB, Graphics: AMD Radeon RX 5600 OEM/5600 XT / 5700/5700 8GB (2100/875MHz), Audio: AMD Navi 10 HDMI Audio, Monitor: ASUS MG28U, Network: Realtek RTL8125 2.5GbE + Intel I211 + Intel Wi-Fi 6 AX200

OS: Ubuntu 20.10, Kernel: 5.10.9-051009-generic (x86_64), Desktop: GNOME Shell 3.38.1, Display Server: X Server 1.20.9, Display Driver: amdgpu 19.1.0, OpenGL: 4.6 Mesa 21.0.0-devel (git-f01bca8 2021-01-08 groovy-oibaf-ppa) (LLVM 11.0.1), Vulkan: 1.2.164, Compiler: GCC 10.2.0, File-System: ext4, Screen Resolution: 3840x2160

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++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-nvptx/usr,amdgcn-amdhsa=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-gcn/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: acpi-cpufreq schedutil (Boost: Enabled) - CPU Microcode: 0xa201009
Graphics Notes: GLAMOR
Java Notes: OpenJDK Runtime Environment (build 11.0.9.1+1-Ubuntu-0ubuntu1.20.10)
Python Notes: Python 3.8.6
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline IBPB: conditional IBRS_FW STIBP: always-on RSB filling + srbds: Not affected + tsx_async_abort: Not affected

Linux 5.11

Processor: AMD Ryzen 9 5950X 16-Core @ 3.40GHz (16 Cores / 32 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (WI-FI) (3202 BIOS), Chipset: AMD Starship/Matisse, Memory: 32GB, Disk: 2000GB Corsair Force MP600 + 2000GB, Graphics: AMD Radeon RX 5600 OEM/5600 XT / 5700/5700 8GB (2100/875MHz), Audio: AMD Navi 10 HDMI Audio, Monitor: ASUS MG28U, Network: Realtek RTL8125 2.5GbE + Intel I211 + Intel Wi-Fi 6 AX200

OS: Ubuntu 20.10, Kernel: 5.11.0-051100rc4daily20210121-generic (x86_64) 20210120, Desktop: GNOME Shell 3.38.1, Display Server: X Server 1.20.9, Display Driver: amdgpu 19.1.0, OpenGL: 4.6 Mesa 21.0.0-devel (git-f01bca8 2021-01-08 groovy-oibaf-ppa) (LLVM 11.0.1), Vulkan: 1.2.164, Compiler: GCC 10.2.0, File-System: ext4, Screen Resolution: 3840x2160

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++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-nvptx/usr,amdgcn-amdhsa=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-gcn/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: acpi-cpufreq schedutil (Boost: Enabled) - CPU Microcode: 0xa201009
Graphics Notes: GLAMOR

Java Notes: OpenJDK Runtime Environment (build 11.0.9.1+1-Ubuntu-0ubuntu1.20.10)
Python Notes: Python 3.8.6
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline IBPB: conditional IBRS_FW STIBP: always-on RSB filling + srbds: Not affected + tsx_async_abort: Not affected

Linux 5.11 Patched

Processor: AMD Ryzen 9 5950X 16-Core @ 3.40GHz (16 Cores / 32 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (WI-FI) (3202 BIOS), Chipset: AMD Starship/Matisse, Memory: 32GB, Disk: 2000GB Corsair Force MP600 + 2000GB, Graphics: AMD Radeon RX 5600 OEM/5600 XT / 5700/5700 8GB (2100/875MHz), Audio: AMD Navi 10 HDMI Audio, Monitor: ASUS MG28U, Network: Realtek RTL8125 2.5GbE + Intel I211 + Intel Wi-Fi 6 AX200

OS: Ubuntu 20.10, Kernel: 5.11.0-rc4-max-boost-inv-patch (x86_64) 20210121, Desktop: GNOME Shell 3.38.1, Display Server: X Server 1.20.9, Display Driver: amdgpu 19.1.0, OpenGL: 4.6 Mesa 21.0.0-devel (git-f01bca8 2021-01-08 groovy-oibaf-ppa) (LLVM 11.0.1), Vulkan: 1.2.164, Compiler: GCC 10.2.0, File-System: ext4, Screen Resolution: 3840x2160

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++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-nvptx/usr,amdgcn-amdhsa=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-gcn/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: acpi-cpufreq schedutil (Boost: Enabled) - CPU Microcode: 0xa201009
Java Notes: OpenJDK Runtime Environment (build 11.0.9.1+1-Ubuntu-0ubuntu1.20.10)
Python Notes: Python 3.8.6
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline IBPB: conditional IBRS_FW STIBP: always-on RSB filling + srbds: Not affected + tsx_async_abort: Not affected

	Linux 5.10.9	Linux 5.11	Linux 5.11 Patched
Renaissance - A.U.C.T (ms)	**9312**	9184	**9117**
Normalized	97.91%	99.28%	100%
Standard Deviation	1.3%	2.7%	2.4%
Selenium - Jetstream 2 - Google Chrome (Score)	172.135	**161.812**	**196.476**
Normalized	87.61%	82.36%	100%
Standard Deviation	2.1%	2.3%	0.7%
Renaissance - I.M.D.S (ms)	3669	**3706**	**2850**
Normalized	77.69%	76.91%	100%
Standard Deviation	6.5%	5%	8.7%
LeelaChessZero - BLAS (Nodes/s)	406	**415**	**390**
Normalized	97.83%	100%	93.98%
Standard Deviation	2.3%	2.4%	1.5%
oneDNN - R.N.N.I - f32 - CPU (ms)	**1653**	**1704**	1687
Normalized	100%	97.02%	98%
Standard Deviation	3.6%	6.7%	4.4%
AI Benchmark Alpha - Device AI Score	2690	**2637**	**2743**
Normalized	98.07%	96.14%	100%
AI Benchmark Alpha - D.T.S (Score)	1176	**1156**	**1199**
Normalized	98.08%	96.41%	100%

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AI Benchmark Alpha - D.I.S (Score)	1514	**1481**	**1544**
Normalized	98.06%	95.92%	100%
Unigine Superposition - 1920 x 1080 - Fullscreen - Low - OpenGL (FPS)	238.7	**218.6**	**241.4**
Normalized	98.88%	90.56%	100%
Standard Deviation	1.9%	9.3%	1%
LeelaChessZero - Eigen (Nodes/s)	**407**	400	**392**
Normalized	100%	98.28%	96.31%
Standard Deviation	0.2%	2.2%	1.7%
GPAW - Carbon Nanotube (sec)	**324.634**	**326.421**	326.376
Normalized	100%	99.45%	99.47%
Standard Deviation	0.3%	0.2%	0.3%
Himeno Benchmark - P.P.S (MFLOPS)	**5343**	**5227**	5309
Normalized	100%	97.82%	99.37%
Standard Deviation	5.8%	3.9%	5.9%
CP2K Molecular Dynamics - Fayalite-FIST Data (sec)	**793.202**	794.73	**888.218**
Normalized	100%	99.81%	89.3%
High Performance Conjugate Gradient (GFLOP/s)	4.25418	**4.25559**	**4.24824**
Normalized	99.97%	100%	99.83%
Standard Deviation	0.1%	0%	0.2%
Selenium - Jetstream 2 - Firefox (Score)	84.980	**80.483**	**91.873**
Normalized	92.5%	87.6%	100%
Standard Deviation	2.3%	0.6%	1.9%
Mobile Neural Network - inception-v3 (ms)	31.426	**31.138**	**31.558**
Normalized	99.08%	100%	98.67%
Standard Deviation	2.5%	1.9%	1.7%
Mobile Neural Network - resnet-v2-50 (ms)	**24.156**	**23.969**	24.020
Normalized	99.23%	100%	99.79%
Standard Deviation	1.5%	1%	0.1%
Mobile Neural Network - SqueezeNetV1.0	5.186	**5.174**	**5.285**
Normalized	99.77%	100%	97.9%
Standard Deviation	4.8%	3.7%	2.4%
PlaidML - No - Inference - ResNet 50 - CPU (FPS)	11.52	**11.60**	**11.46**
Normalized	99.31%	100%	98.79%
Standard Deviation	1.7%	0.9%	2.4%
Unigine Superposition - 3840 x 2160 - Fullscreen - Low - OpenGL (FPS)	**96.5**	**96.5**	**96.4**
Normalized	100%	100%	99.9%
Standard Deviation	0%	0.1%	0.1%
Incompact3D - Cylinder (sec)	**183.715825**	**182.655787**	182.896179
Normalized	99.42%	100%	99.87%
Standard Deviation	1.5%	0.3%	0.1%
Selenium - ARES-6 - Firefox (ms)	50.04	**59.48**	**44.80**
Normalized	89.53%	75.32%	100%
Standard Deviation	0.7%	0.7%	1.4%
Selenium - Speedometer - Firefox (Runs/min)	122	**111**	**125**
Normalized	97.6%	88.8%	100%
Standard Deviation	1.4%	4.1%	1.2%
NCNN - CPU - regnety_400m (ms)	**17.97**	17.94	**17.74**
Normalized	98.72%	98.89%	100%
Standard Deviation	0.5%	0.3%	0.5%

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NCNN - CPU - squeezenet_ssd (ms)	**14.68**	**14.77**	14.70
Normalized	100%	99.39%	99.86%
Standard Deviation	1.5%	0.4%	1.6%
NCNN - CPU - yolov4-tiny (ms)	21.62	**21.48**	**21.72**
Normalized	99.35%	100%	98.9%
Standard Deviation	3.2%	0.9%	3.5%
NCNN - CPU - resnet50 (ms)	25.19	**25.11**	**25.45**
Normalized	99.68%	100%	98.66%
Standard Deviation	1.5%	0.3%	3.2%
NCNN - CPU - alexnet (ms)	**11.37**	**11.13**	**11.37**
Normalized	97.89%	100%	97.89%
Standard Deviation	5.1%	0.2%	3.5%
NCNN - CPU - resnet18 (ms)	**14.67**	14.69	**14.76**
Normalized	100%	99.86%	99.39%
Standard Deviation	0.7%	0.2%	2%
NCNN - CPU - vgg16 (ms)	**59.34**	60.13	**60.14**
Normalized	100%	98.69%	98.67%
Standard Deviation	0.6%	0%	0.2%
NCNN - CPU - googlenet (ms)	13.17	**13.12**	**13.24**
Normalized	99.62%	100%	99.09%
Standard Deviation	1.5%	0.1%	4.2%
NCNN - CPU - blazeface (ms)	**1.84**	**1.83**	**1.83**
Normalized	99.46%	100%	100%
Standard Deviation	0.9%	0.3%	2.9%
NCNN - CPU - efficientnet-b0 (ms)	**5.43**	**5.39**	5.40
Normalized	99.26%	100%	99.81%
Standard Deviation	1.6%	0.1%	2%
NCNN - CPU - mnasnet (ms)	**4.01**	**3.98**	4.00
Normalized	99.25%	100%	99.5%
Standard Deviation	2.1%	0.3%	2.9%
NCNN - CPU - shufflenet-v2 (ms)	**4.46**	4.45	**4.44**
Normalized	99.55%	99.78%	100%
Standard Deviation	0.9%	0.5%	0.6%
NCNN - CPU-v3-v3 - mobilenet-v3 (ms)	4.17	**4.18**	**4.16**
Normalized	99.76%	99.52%	100%
Standard Deviation	0.8%	0.6%	0.4%
NCNN - CPU-v2-v2 - mobilenet-v2 (ms)	**4.49**	4.48	**4.46**
Normalized	99.33%	99.55%	100%
Standard Deviation	0.4%	0.3%	0.3%
NCNN - CPU - mobilenet (ms)	**12.22**	12.21	**12.20**
Normalized	99.84%	99.92%	100%
Standard Deviation	2.4%	2%	3.9%
Renaissance - Apache Spark ALS (ms)	1460	**1496**	**1396**
Normalized	95.59%	93.3%	100%
Standard Deviation	2.5%	1.8%	2%
GROMACS - Water Benchmark (Ns/Day)	**1.255**	1.259	**1.260**
Normalized	99.6%	99.92%	100%
Standard Deviation	0.2%	0.2%	0.6%
Selenium - StyleBench - Firefox (Runs /	**88.3**	89.2	**115**
Normalized	76.78%	77.57%	100%
Standard Deviation	1.6%	4.9%	
DDraceNetwork - 3840 x 2160 - Fullscreen - OpenGL 2.0 - Default - Multeasymap (FPS)	252.30	**243.23**	**305.92**
Normalized	82.47%	79.51%	100%
Standard Deviation	1.4%	5.6%	1.7%

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DDraceNetwork - 3840 x 2160 - Fullscreen - OpenGL 3.3 - Default - Multeasymap (FPS)	**388.77**	415.31	**463.17**
Normalized	83.94%	89.67%	100%
Standard Deviation	1%	2.2%	3.9%
LZ4 Compression - 9 - D.S (MB/s)	**13242**	13175	**13095**
Normalized	100%	99.5%	98.89%
Standard Deviation	0.6%	0.7%	0.8%
LZ4 Compression - 9 - Compression Speed (MB/s)	**70.76**	69.14	**68.39**
Normalized	100%	97.71%	96.65%
Standard Deviation	2.9%	2.4%	1.5%
asmFish - 1.H.M.2.D (Nodes/s)	**60742608**	60022898	**59991962**
Normalized	100%	98.82%	98.76%
Standard Deviation	1.7%	1.5%	2.3%
CloverLeaf - L.E.H (sec)	**133.71**	135.15	**136.24**
Normalized	100%	98.93%	98.14%
Standard Deviation	0.9%	0.1%	0.6%
PlaidML - No - Inference - VGG19 - CPU	**17.21**	**17.38**	**17.38**
Normalized	99.02%	100%	100%
Standard Deviation	0.3%	0.3%	0.8%
VKMark - 3840 x 2160 (VKMark Score)	**662**	**639**	640
Normalized	100%	96.53%	96.68%
LZ4 Compression - 3 - D.S (MB/s)	**13226**	13155	**13131**
Normalized	100%	99.46%	99.28%
Standard Deviation	0.9%	0.3%	0.8%
LZ4 Compression - 3 - Compression Speed (MB/s)	**74.17**	70.55	**70.13**
Normalized	100%	95.12%	94.55%
Standard Deviation	2.5%	2.6%	2.5%
Appleseed - Emily (sec)	191.138557	**194.362976**	**190.538231**
Normalized	99.69%	98.03%	100%
dav1d - C.1.1.b (FPS)	102.03	**96.48**	**135.62**
Normalized	75.23%	71.14%	100%
Standard Deviation	0.3%	0.2%	0.7%
NAS Parallel Benchmarks - BT.C (Mop/s)	24091	**24138**	**23613**
Normalized	99.81%	100%	97.82%
Standard Deviation	0.1%	0.2%	0.1%
Kripke (Throughput FoM)	**70949383**	**74758563**	73934070
Normalized	94.9%	100%	98.9%
Standard Deviation	3.1%	0.6%	1.1%
GLmark2 - 3840 x 2160 (Score)	**4631**	**2802**	2873
Normalized	100%	60.51%	62.04%
Stress-NG - CPU Cache (Bogo Ops/s)	**36.43**	36.76	**38.12**
Normalized	95.57%	96.43%	100%
Standard Deviation	3.8%	1.6%	3.6%
PlaidML - No - Inference - VGG16 - CPU	20.96	**21.21**	**20.92**
Normalized	98.82%	100%	98.63%
Standard Deviation	1.5%	2.3%	1%
Tesseract - 1920 x 1080 (FPS)	516.8878	**400.6544**	**691.1239**
Normalized	74.79%	57.97%	100%
Standard Deviation	3.5%	6.9%	2.2%
FinanceBench - Bonds OpenMP (ms)	40036	**40215**	**39804**
Normalized	99.42%	98.98%	100%
Standard Deviation	0.3%	2.9%	0.6%

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ASTC Encoder - Exhaustive (sec)	**100.50**	**100.64**	100.62
Normalized	100%	99.86%	99.88%
Standard Deviation	0.1%	0.1%	0.2%
OSPray - San Miguel - Path Tracer (FPS)	**2.48**	**2.47**	**2.47**
Normalized	100%	99.6%	99.6%
Standard Deviation	0.3%	0.1%	0.7%
Xonotic - 3840 x 2160 - Ultimate (FPS)	371.7135044	**260.8848193**	**376.9448431**
Normalized	98.61%	69.21%	100%
Standard Deviation	0.5%	8.5%	0.6%
Xonotic - 3840 x 2160 - Ultra (FPS)	468.1189340	**299.3136323**	**472.0354187**
Normalized	99.17%	63.41%	100%
Standard Deviation	0.5%	9.2%	0.2%
Stockfish - Total Time (Nodes/s)	**44197865**	**43240425**	43755897
Normalized	100%	97.83%	99%
Standard Deviation	3%	1.6%	1.2%
Warsow - 1920 x 1080 (FPS)	**954.6**	957.0	**957.9**
Normalized	99.66%	99.91%	100%
Standard Deviation	0.2%	0.2%	0.2%
Build2 - Time To Compile (sec)	**82.430**	**81.338**	81.571
Normalized	98.68%	100%	99.71%
Standard Deviation	1%	0.5%	0.1%
Warsow - 3840 x 2160 (FPS)	**422.2**	431.9	**432.7**
Normalized	97.57%	99.82%	100%
Standard Deviation	0.1%	0.1%	0.1%
ASKAP - tConvolve MT - Degridding (Million Grid Points/sec)	1890	**1895**	**1884**
Normalized	99.74%	100%	99.43%
Standard Deviation	0.7%	0.2%	0.6%
ASKAP - tConvolve MT - Gridding (Million Grid Points/sec)	917.598	**919.710**	**915.039**
Normalized	99.77%	100%	99.49%
Standard Deviation	0.2%	0.1%	0.3%
oneDNN - R.N.N.T - f32 - CPU (ms)	**2534**	2574	**2657**
Normalized	100%	98.44%	95.34%
Standard Deviation	2%	1.3%	2%
Timed Godot Game Engine Compilation - Time To Compile (sec)	79.736	**80.026**	**79.566**
Normalized	99.79%	99.43%	100%
Standard Deviation	0.3%	0.4%	0.2%
Selenium - Speedometer - Google Chrome (Runs/min)	174	**159**	**179**
Normalized	97.21%	88.83%	100%
Standard Deviation	0.3%	2.4%	0.6%
Selenium - StyleBench - Google Chrome (Runs / Minute)	54.9	**52.3**	**55.2**
Normalized	99.46%	94.75%	100%
Standard Deviation	0.7%	1.3%	0.3%
Appleseed - Material Tester (sec)	**111.791755**	**113.431576**	112.252499
Normalized	100%	98.55%	99.59%
NAS Parallel Benchmarks - LU.C (Mop/s)	28133	**28232**	**27471**
Normalized	99.65%	100%	97.3%
Standard Deviation	0.2%	0.1%	0.2%
Tesseract - 3840 x 2160 (FPS)	**345.9139**	363.7753	**426.4120**
Normalized	81.12%	85.31%	100%

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Standard Deviation	2.5%	5.3%	0.9%
OSPray - XFrog Forest - Path Tracer (FPS)	**2.95**	**2.95**	**2.94**
Normalized	100%	100%	99.66%
Standard Deviation	0.3%	0.3%	0.2%
Xonotic - 3840 x 2160 - High (FPS)	536.4375687	**385.3378538**	**540.7442902**
Normalized	99.2%	71.26%	100%
Standard Deviation	0.4%	21.9%	0.3%
TensorFlow Lite - Inception V4 (us)	**1351443**	1352733	**1352833**
Normalized	100%	99.9%	99.9%
Standard Deviation	0.1%	0%	0.1%
Timed GDB GNU Debugger Compilation - Time To Compile (sec)	**75.910**	65.454	**62.619**
Normalized	82.49%	95.67%	100%
Standard Deviation	0.6%	1.1%	0.8%
Zstd Compression - 19 (MB/s)	**43.3**	**43.4**	**43.4**
Normalized	99.77%	100%	100%
Standard Deviation	0.2%	0.2%	0.2%
YafaRay - T.T.F.S.S (sec)	**66.648**	**66.562**	66.579
Normalized	99.87%	100%	99.97%
Standard Deviation	0.5%	0.8%	0.5%
GpuTest - GiMark - 3840 x 2160 - Fullscreen (Points)	**10912**	10884	**10870**
Normalized	100%	99.74%	99.62%
Standard Deviation	0.4%	0.1%	0.1%
GpuTest - Furmark - 3840 x 2160 - Fullscreen (Points)	**4617**	**4617**	**4620**
Normalized	99.94%	99.94%	100%
Standard Deviation	0.1%	0.2%	0.1%
GpuTest - Pixmark Volplosion - 3840 x 2160 - Fullscreen (Points)	**2090**	**2094**	2091
Normalized	99.81%	100%	99.86%
Standard Deviation	0.1%	0.1%	0.1%
GpuTest - TessMark - 3840 x 2160 - Fullscreen (Points)	19604	**19625**	**19597**
Normalized	99.89%	100%	99.86%
Standard Deviation	0.1%	0.1%	0.1%
GpuTest - Plot3D - 3840 x 2160 - Fullscreen (Points)	**69051**	68987	**68923**
Normalized	100%	99.91%	99.81%
Standard Deviation	0.1%	0.1%	0.1%
GpuTest - Pixmark Piano - 3840 x 2160 - Fullscreen (Points)	**845**	**847**	846
Normalized	99.76%	100%	99.88%
Standard Deviation	0.1%		0.1%
GpuTest - Triangle - 3840 x 2160 - Fullscreen (Points)	**425381**	**424446**	424552
Normalized	100%	99.78%	99.81%
Standard Deviation	0.3%	0.1%	0.1%
Chaos Group V-RAY - CPU (Ksamples)	**32427**	32442	**32508**
Normalized	99.75%	99.8%	100%
Standard Deviation	0.4%	0.2%	0.7%
Timed MrBayes Analysis - P.P.A (sec)	**62.959**	**63.178**	62.991
Normalized	100%	99.65%	99.95%
Standard Deviation	0.1%	0.4%	0.4%

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Tesseract OCR - T.T.O.7.I (sec)	18.691	**18.643**	**18.824**
Normalized	99.74%	100%	99.04%
Standard Deviation	2.6%	1%	3.6%
TensorFlow Lite - I.R.V (us)	1216837	**1216700**	**1217200**
Normalized	99.99%	100%	99.96%
Standard Deviation	0.1%	0.1%	0.1%
Cpuminer-Opt - Garlicoin (kH/s)	3949	**3388**	**5233**
Normalized	75.46%	64.75%	100%
Standard Deviation	10.6%	2.3%	1.1%
IndigoBench - CPU - Supercar (M samples/s)	**8.693**	**8.662**	8.674
Normalized	100%	99.64%	99.78%
Standard Deviation	0.1%	0.1%	0.3%
IndigoBench - CPU - Bedroom (M samples/s)	4.130	**4.114**	**4.142**
Normalized	99.71%	99.32%	100%
Standard Deviation	0.2%	0.3%	0.2%
Node.js V8 Web Tooling Benchmark (runs/s)	**14.88**	14.90	**15.23**
Normalized	97.7%	97.83%	100%
Standard Deviation	1.4%	1%	1.2%
Selenium - Kraken - Google Chrome (ms)	616.8	**789.5**	**555.2**
Normalized	90.01%	70.32%	100%
Standard Deviation	1.4%	4.9%	1.1%
TensorFlow Lite - NASNet Mobile (us)	104166	**104351**	**103996**
Normalized	99.84%	99.66%	100%
Standard Deviation	0.2%	0.5%	0.5%
TensorFlow Lite - SqueezeNet (us)	95107	**95244**	**95054**
Normalized	99.94%	99.8%	100%
Standard Deviation	0.1%	0.2%	0.2%
TensorFlow Lite - Mobilenet Quant (us)	**68040**	68059	**68077**
Normalized	100%	99.97%	99.94%
Standard Deviation	0.1%	0.2%	0.2%
TensorFlow Lite - Mobilenet Float (us)	**62744**	62776	**62793**
Normalized	100%	99.95%	99.92%
Standard Deviation	0.2%	0.1%	0.1%
John The Ripper - MD5 (Real C/S)	**2221333**	**2212000**	2217000
Normalized	100%	99.58%	99.8%
Standard Deviation	0.8%	0.6%	0.3%
ACES DGEMM - S.F.P.R (GFLOP/s)	**9.464163**	9.441494	**9.415304**
Normalized	100%	99.76%	99.48%
Standard Deviation	2%	0.7%	3.8%
rav1e - 10 (FPS)	4.397	**3.575**	**5.060**
Normalized	86.9%	70.65%	100%
Standard Deviation	2.2%	6%	1%
NAS Parallel Benchmarks - IS.D (Mop/s)	649.99	**649.01**	**650.14**
Normalized	99.98%	99.83%	100%
Standard Deviation	0.2%	0.5%	0.6%
AOM AV1 - Speed 6 Realtime (FPS)	22.34	**22.14**	**30.59**
Normalized	73.03%	72.38%	100%
Standard Deviation	0.9%	2.2%	3.6%
NAMD - ATPase Simulation - 327,506 Atoms (days/ns)	**1.07576**	1.08231	**1.08745**
Normalized	100%	99.39%	98.93%
Standard Deviation	1%	0.2%	0.7%
Radiance Benchmark - SMP Parallel (sec)	138.05	**136.747**	**141.301**
Normalized	99.06%	100%	96.78%
NAS Parallel Benchmarks - SP.B (Mop/s)	**7895**	7888	**7647**

Normalized	100%	99.91%	96.85%
Standard Deviation	0.4%	0.3%	0%
Timed Linux Kernel Compilation - Time To Compile (sec)	**46.310**	**45.556**	45.902
Normalized	98.37%	100%	99.25%
Standard Deviation	1.6%	2.4%	1.2%
Tachyon - Total Time (sec)	**44.4286**	**44.5379**	44.4373
Normalized	100%	99.75%	99.98%
Standard Deviation	0.7%	0.5%	0.3%
DeepSpeech - CPU (sec)	66.66266	**70.53203**	**61.76937**
Normalized	92.66%	87.58%	100%
Standard Deviation	0.1%	0.6%	1.3%
Renaissance - T.H.R (ms)	**1943**	1914	**1890**
Normalized	97.28%	98.75%	100%
Standard Deviation	1.2%	2.2%	1.7%
C-Blosc - blosclz (MB/s)	12484	**12134**	**14457**
Normalized	86.35%	83.93%	100%
Standard Deviation	1.4%	1.5%	1.1%
Algebraic Multi-Grid Benchmark (Figure Of Merit)	209751500	**210448767**	**209237533**
Normalized	99.67%	100%	99.42%
Standard Deviation	0.3%	0.3%	1%
GEGL - Color Enhance (sec)	**41.631**	41.330	**40.862**
Normalized	98.15%	98.87%	100%
Standard Deviation	0.1%	0.3%	0.8%
OSPray - XFrog Forest - SciVis (FPS)	**5.50**	**5.49**	**5.49**
Normalized	100%	99.82%	99.82%
Standard Deviation	0.3%	0.5%	0%
Selenium - ARES-6 - Google Chrome (ms)	17.19	**18.58**	**14.47**
Normalized	84.18%	77.88%	100%
Standard Deviation	1.8%	0.5%	1%
rav1e - 5 (FPS)	1.553	**1.508**	**1.631**
Normalized	95.22%	92.46%	100%
Standard Deviation	0.5%	1.2%	1.5%
Git - T.T.C.C.G.C (sec)	**38.222**	38.056	**38.028**
Normalized	99.49%	99.93%	100%
Standard Deviation	0.7%	1.2%	1.3%
rav1e - 1 (FPS)	**0.544**	0.549	**0.555**
Normalized	98.02%	98.92%	100%
Standard Deviation	1%	1%	0.5%
Selenium - PSPDFKit WASM - Firefox (Score)	3171	**3325**	**2826**
Normalized	89.12%	84.99%	100%
Standard Deviation	0.6%	1.9%	1.4%
Hugin - P.P.A.S.T (sec)	**35.089**	34.950	**34.076**
Normalized	97.11%	97.5%	100%
Standard Deviation	1.5%	1.2%	1.7%
NAS Parallel Benchmarks - FT.C (Mop/s)	12075	**12148**	**12056**
Normalized	99.4%	100%	99.25%
Standard Deviation	0%	0.2%	0.1%
Selenium - PSPDFKit WASM - Google Chrome (Score)	**3060**	**3110**	3061
Normalized	100%	98.39%	99.97%
Standard Deviation	0.9%	0.9%	0.4%
Stress-NG - CPU Stress (Bogo Ops/s)	12300	**12301**	**12206**
Normalized	99.99%	100%	99.23%

Standard Deviation	0.2%	2.1%	1.3%
FinanceBench - Repo OpenMP (ms)	27389	**27284**	**27738**
Normalized	99.62%	100%	98.36%
Standard Deviation	0.3%	0.4%	2.4%
Rust Mandelbrot - T.T.C.S.P.M (sec)	32.467	**32.678**	**31.609**
Normalized	97.36%	96.73%	100%
Standard Deviation	0.7%	0.2%	1%
7-Zip Compression - C.S.T (MIPS)	95379	**93931**	**95640**
Normalized	99.73%	98.21%	100%
Standard Deviation	0.3%	0.2%	0.4%
C-Ray - Total Time - 4.1.R.P.P (sec)	**30.912**	30.891	**30.865**
Normalized	99.85%	99.92%	100%
Standard Deviation	0.3%	0.1%	0.2%
Cpuminer-Opt - x25x (kH/s)	625.43	**626.31**	**623.19**
Normalized	99.86%	100%	99.5%
Standard Deviation	2.5%	0.6%	0.9%
Cpuminer-Opt - Deepcoin (kH/s)	**12127**	12170	**12223**
Normalized	99.21%	99.57%	100%
Standard Deviation	2.3%	1.3%	1.1%
Cpuminer-Opt - Magi (kH/s)	885.48	**901.00**	**867.39**
Normalized	98.28%	100%	96.27%
Standard Deviation	2%	2.1%	0.3%
AOBench - 2048 x 2048 - Total Time (sec)	**27.682**	**27.152**	27.365
Normalized	98.09%	100%	99.22%
Standard Deviation	2.1%	1.6%	1.3%
Zstd Compression - 3 (MB/s)	4808	**4834**	**4798**
Normalized	99.45%	100%	99.26%
Standard Deviation	0.2%	0.4%	0.5%
John The Ripper - Blowfish (Real C/S)	**38406**	38351	**38256**
Normalized	100%	99.86%	99.61%
Standard Deviation	0.3%	0.4%	0.5%
Aircrack-ng (k/s)	**74815**	74944	**74981**
Normalized	99.78%	99.95%	100%
Standard Deviation	0.2%	0.1%	0.2%
Stress-NG - Crypto (Bogo Ops/s)	**4838**	**4846**	4838
Normalized	99.83%	100%	99.84%
Standard Deviation	0.3%	0.4%	0.4%
Stress-NG - Vector Math (Bogo Ops/s)	172974	**173053**	**172877**
Normalized	99.95%	100%	99.9%
Standard Deviation	0.2%	0.2%	0.1%
GEGL - Rotate 90 Degrees (sec)	29.993	**30.010**	**29.509**
Normalized	98.39%	98.33%	100%
Standard Deviation	0.3%	0.4%	0.4%
rav1e - 6 (FPS)	2.083	**2.004**	**2.191**
Normalized	95.07%	91.47%	100%
Standard Deviation	1.8%	1.1%	0.8%
x265 - Bosphorus 4K (FPS)	27.04	**24.42**	**28.07**
Normalized	96.33%	87%	100%
Standard Deviation	0.1%	2.5%	0.3%
WebP Image Encode - Q.1.L.H.C (Encode Time - sec)	**27.162**	**27.284**	27.173
Normalized	100%	99.55%	99.96%
Standard Deviation	0.2%	0.5%	0.2%
Selenium - Kraken - Firefox (ms)	**909.3**	**896.9**	903.2
Normalized	98.64%	100%	99.3%

Standard Deviation	2.1%	1.3%	0.7%
OSPray - NASA Streamlines - Path Tracer (FPS)	8.26	8.26	8.26
Standard Deviation	0%	0%	0%
AOM AV1 - Speed 8 Realtime (FPS)	56.88	**52.99**	**57.52**
Normalized	98.89%	92.12%	100%
Standard Deviation	1.6%	4.8%	1.1%
Coremark - CoreMark Size 666 - I.P.S (Iterations/Sec)	**820504**	**812888**	813873
Normalized	100%	99.07%	99.19%
Standard Deviation	0.7%	0.3%	0.3%
Embree - Pathtracer ISPC - Crown (FPS)	23.8276	**23.6319**	**23.8476**
Normalized	99.92%	99.1%	100%
Standard Deviation	0.6%	0.1%	0.4%
Embree - Pathtracer - Crown (FPS)	24.2128	**24.0859**	**24.2868**
Normalized	99.7%	99.17%	100%
Standard Deviation	0.4%	1.1%	0.4%
Embree - Pathtracer - Asian Dragon (FPS)	**24.9964**	24.8480	**24.8096**
Normalized	100%	99.41%	99.25%
Standard Deviation	1.6%	0.5%	0.8%
OSPray - San Miguel - SciVis (FPS)	**29.71**	**30.01**	**30.01**
Normalized	99%	100%	100%
Standard Deviation	1.7%	1.7%	1.7%
Embree - Pathtracer ISPC - Asian Dragon (FPS)	25.5815	**25.3228**	**25.6582**
Normalized	99.7%	98.69%	100%
Standard Deviation	0.3%	0.2%	0.9%
XZ Compression - C.u.1.0.3.s.i.i.C.L.9 (sec)	**23.169**	23.148	**22.991**
Normalized	99.23%	99.32%	100%
Standard Deviation	0.4%	0.4%	1%
LibRaw - P.P.B (Mpix/sec)	53.96	**53.91**	**54.11**
Normalized	99.72%	99.63%	100%
Standard Deviation	0.9%	0.5%	0.3%
NAS Parallel Benchmarks - CG.C (Mop/s)	**7110**	7010	**6901**
Normalized	100%	98.59%	97.06%
Standard Deviation	1.5%	1.3%	0.8%
Kvazaar - Bosphorus 4K - Very Fast (FPS)	29.11	**26.57**	**29.35**
Normalized	99.18%	90.53%	100%
Standard Deviation	0.3%	0.3%	0.3%
oneDNN - D.B.s - f32 - CPU (ms)	**2.41886**	2.42791	**2.43083**
Normalized	100%	99.63%	99.51%
Standard Deviation	0.3%	0.3%	0.5%
Xonotic - 3840 x 2160 - Low (FPS)	**667.3234012**	667.8954646	**675.2723592**
Normalized	98.82%	98.91%	100%
Standard Deviation	0.4%	0.3%	2.2%
ASKAP - tConvolve OpenMP - Degridding (Million Grid Points/sec)	4226	**4276**	**4205**
Normalized	98.85%	100%	98.34%
Standard Deviation	0%	1.5%	1.1%
ASKAP - tConvolve OpenMP - Gridding (Million Grid Points/sec)	**3301**	3378	**3431**
Normalized	96.24%	98.47%	100%
Standard Deviation	1.9%	2.4%	4.2%
Selenium - W.i - Google Chrome (ms)	24.5742	**24.4030**	**24.6737**

Normalized	99.3%	100%	98.9%
Standard Deviation	0.9%	2.5%	2.7%
TTSIOD 3D Renderer - P.R.W.S.S.M (FPS)	1040	**1056**	**1038**
Normalized	98.44%	100%	98.25%
Standard Deviation	2.4%	2.1%	0.6%
CLOMP - Static OMP Speedup (Speedup)	**20.3**	20.6	**21.3**
Normalized	95.31%	96.71%	100%
Standard Deviation	1.2%	1.3%	0.5%
FFmpeg - H.2.H.T.N.D (sec)	**6.968**	6.908	**6.453**
Normalized	92.61%	93.41%	100%
Standard Deviation	0.9%	3.2%	2.4%
NAS Parallel Benchmarks - MG.C (Mop/s)	**9937**	9921	**9813**
Normalized	100%	99.84%	98.75%
Standard Deviation	0.2%	0.1%	0%
Xsbench (Lookups/s)	**3146782**	**3071331**	3141666
Normalized	100%	97.6%	99.84%
Standard Deviation	0.1%	2.4%	0.2%
NeatBench - CPU (FPS)	**29.6**	32.1	**32.6**
Normalized	90.8%	98.47%	100%
Standard Deviation	4.1%	1.4%	0.8%
dav1d - Chimera 1080p (FPS)	652.90	**597.38**	**900.42**
Normalized	72.51%	66.34%	100%
Standard Deviation	0.2%	0.3%	0%
Crafty - Elapsed Time (Nodes/s)	**11675424**	11588672	**11356738**
Normalized	100%	99.26%	97.27%
Standard Deviation	0.7%	0.5%	1%
Swet - Average (Operations/sec)	1110470194	**1097526391**	**1113589473**
Normalized	99.72%	98.56%	100%
Standard Deviation	0.8%	0.4%	1.5%
dav1d - Summer Nature 4K (FPS)	236.83	**232.45**	**238.79**
Normalized	99.18%	97.34%	100%
Standard Deviation	0.6%	0.2%	0.3%
Selenium - W.c - Firefox (ms)	302.1	**298.7**	**302.9**
Normalized	98.87%	100%	98.61%
Standard Deviation	0.5%	1.4%	0.6%
GEGL - Scale (sec)	**4.829**	4.727	**4.520**
Normalized	93.6%	95.62%	100%
Standard Deviation	1.8%	3.3%	2.4%
RNNoise (sec)	**15.380**	**15.276**	15.338
Normalized	99.32%	100%	99.6%
Standard Deviation	0.5%	0.6%	0.2%
TNN - CPU - MobileNet v2 (ms)	217.271	**218.723**	**214.925**
Normalized	98.92%	98.26%	100%
Standard Deviation	1.1%	1.5%	1.3%
oneDNN - IP Shapes 1D - f32 - CPU (ms)	**3.83570**	**3.92764**	3.89227
Normalized	100%	97.66%	98.55%
Standard Deviation	0.8%	0.6%	0.2%
TNN - CPU - SqueezeNet v1.1 (ms)	209.087	**208.568**	**209.487**
Normalized	99.75%	100%	99.56%
Standard Deviation	0.7%	0.6%	0.7%
SVT-AV1 - Enc Mode 4 - 1080p (FPS)	**6.049**	**6.134**	6.094
Normalized	98.61%	100%	99.35%
Standard Deviation	1.1%	0.8%	0.8%
Selenium - W.c - Google Chrome (ms)	**252.8077**	**254.4815**	253.0180
Normalized	100%	99.34%	99.92%

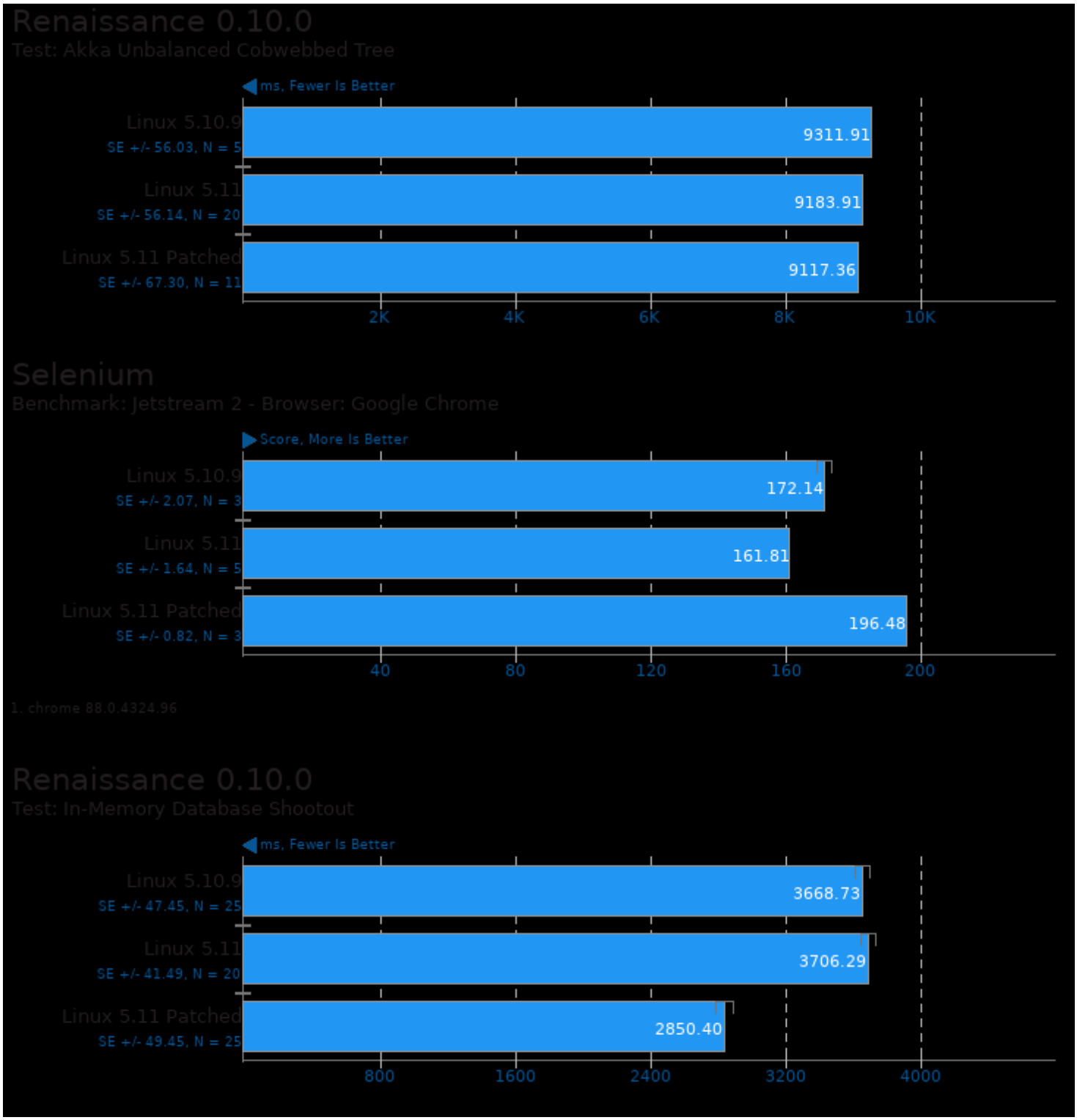
Standard Deviation	1.6%	2.2%	2.2%
yquake2 - Software CPU - 3840 x 2160 (FPS)	49.0	**50.5**	**48.9**
Normalized	97.03%	100%	96.83%
Standard Deviation	0.4%	0.6%	1.6%
GIMP - unsharp-mask (sec)	13.109	**14.615**	**12.122**
Normalized	92.47%	82.94%	100%
Standard Deviation	0.3%	1.1%	0.6%
Dolfyn - C.F.D (sec)	13.381	**13.390**	**13.051**
Normalized	97.53%	97.47%	100%
Standard Deviation	0.5%	1%	0.3%
WebP Image Encode - Q.1.L (Encode Time - sec)	13.010	**13.026**	**12.957**
Normalized	99.59%	99.47%	100%
Standard Deviation	0.5%	0.9%	1.2%
OCRMyPDF - P.6.P.P.D (sec)	12.629	**12.781**	**12.473**
Normalized	98.76%	97.59%	100%
Standard Deviation	0.4%	2.4%	1.1%
oneDNN - M.M.B.S.T - f32 - CPU (ms)	**0.924960**	**0.640735**	0.645934
Normalized	69.27%	100%	99.2%
Standard Deviation	1.3%	0.5%	0.7%
SVT-VP9 - P.S.O - Bosphorus 1080p (FPS)	232.62	**233.27**	**228.67**
Normalized	99.72%	100%	98.03%
Standard Deviation	3.2%	2.9%	3.1%
Kvazaar - Bosphorus 4K - Ultra Fast (FPS)	53.16	**49.15**	**53.40**
Normalized	99.55%	92.04%	100%
Standard Deviation	0.1%	0.8%	0.3%
Primesieve - 1.P.N.G (sec)	**11.163**	11.152	**11.149**
Normalized	99.87%	99.97%	100%
Standard Deviation	0.2%	0.3%	0.4%
FLAC Audio Encoding - WAV To FLAC (sec)	**6.374**	6.341	**6.332**
Normalized	99.34%	99.86%	100%
Standard Deviation	2.1%	1.2%	0.7%
GIMP - auto-levels (sec)	10.541	**11.233**	**9.542**
Normalized	90.52%	84.95%	100%
Standard Deviation	0.8%	1.3%	0.9%
OSPray - M.R - SciVis (FPS)	**22.06**	21.90	**21.74**
Normalized	100%	99.27%	98.55%
Standard Deviation	1.3%	1.3%	0%
DaCapo Benchmark - Tradebeans (msec)	3686	**3786**	**3460**
Normalized	93.87%	91.39%	100%
Standard Deviation	1.6%	2%	2.4%
x264 - H.2.V.E (FPS)	196.51	**176.93**	**208.87**
Normalized	94.08%	84.71%	100%
Standard Deviation	2.5%	1.7%	2.6%
Sysbench - CPU (Events/sec)	**90776**	90627	**90585**
Normalized	100%	99.84%	99.79%
Standard Deviation	0.2%	0.1%	0.2%
oneDNN - IP Shapes 3D - f32 - CPU (ms)	**8.13842**	8.35037	**8.40829**
Normalized	100%	97.46%	96.79%
Standard Deviation	0.9%	1.6%	1.1%
GIMP - rotate (sec)	**9.459**	9.294	**8.454**
Normalized	89.38%	90.96%	100%
Standard Deviation	1.1%	1%	0.3%

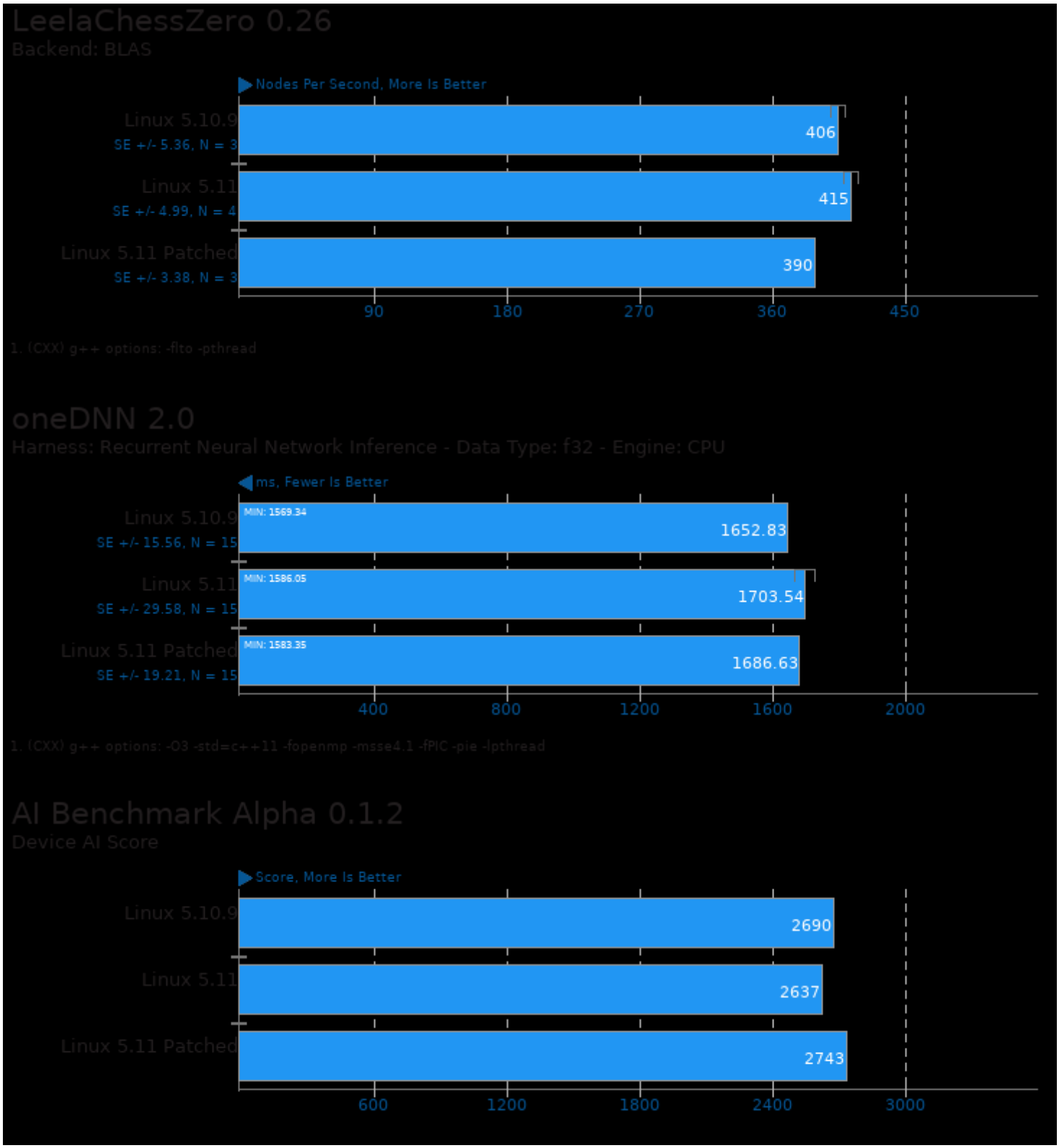
AMD Ryzen 9 5950X Linux 5.11

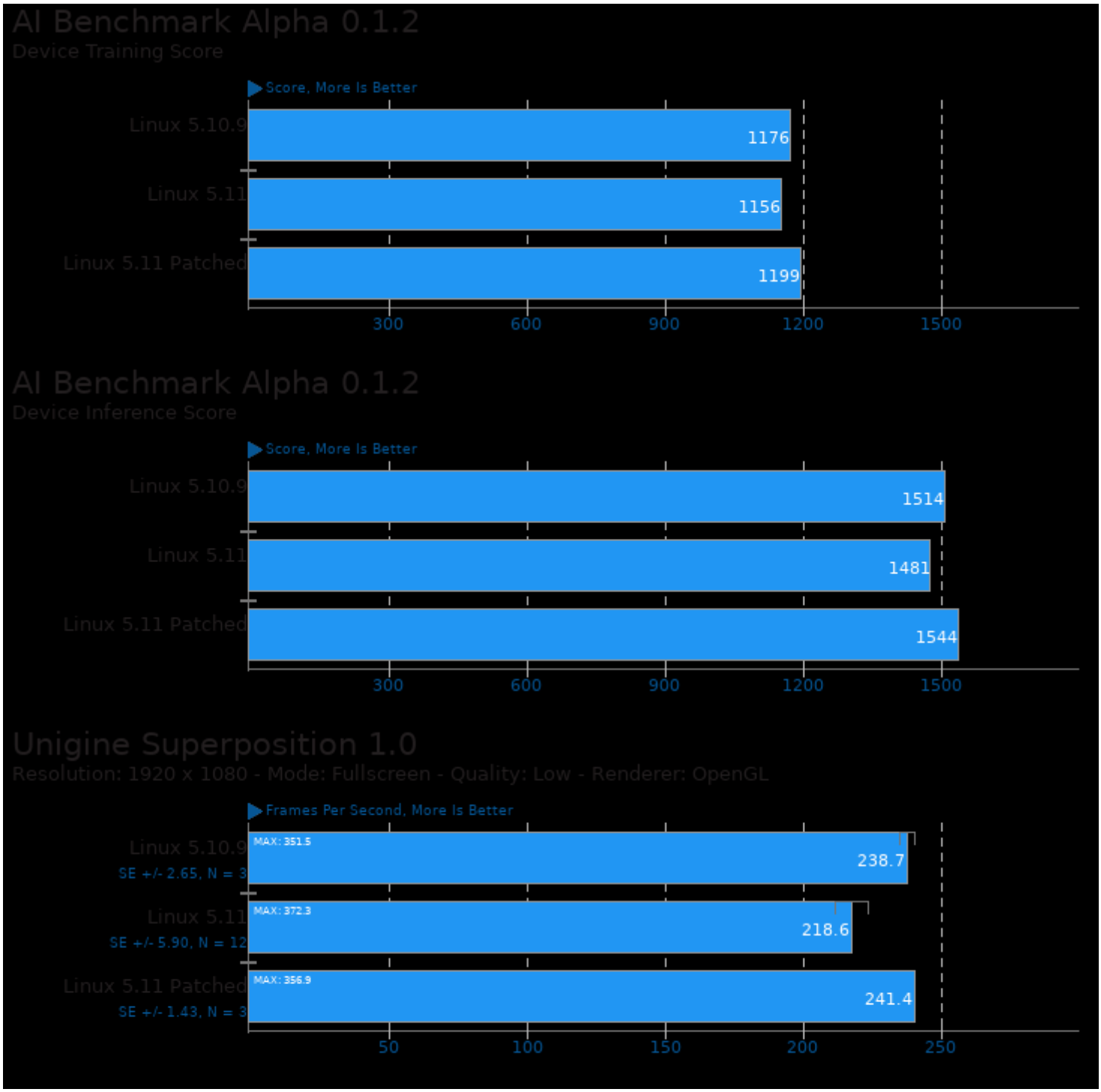
Timed MAFFT Alignment - M.S.A - LSU RNA (sec)	7.888	**8.592**	**7.413**
Normalized	93.98%	86.28%	100%
Standard Deviation	0.1%	0.7%	0.7%
Selenium - W.i - Firefox (ms)	**24.4**	**23.9**	24.2
Normalized	97.95%	100%	98.76%
Standard Deviation	0.4%	2.1%	0.4%
SVT-AV1 - Enc Mode 8 - 1080p (FPS)	50.464	**48.757**	**51.966**
Normalized	97.11%	93.82%	100%
Standard Deviation	1.4%	1.3%	1%
Sysbench - Memory (Events/sec)	**15246091**	15268296	**15419966**
Normalized	98.87%	99.02%	100%
Standard Deviation	0.3%	0.2%	0.1%
OSPray - NASA Streamlines - SciVis (FPS)	40	40	40
oneDNN - C.B.S.A - f32 - CPU (ms)	**17.2598**	**16.9447**	16.9879
Normalized	98.17%	100%	99.75%
Standard Deviation	0.3%	0.4%	0.3%
GIMP - resize (sec)	6.510	**6.738**	**5.434**
Normalized	83.47%	80.65%	100%
Standard Deviation	1.8%	2.1%	1.9%
dav1d - S.N.1 (FPS)	576.69	**538.39**	**924.64**
Normalized	62.37%	58.23%	100%
Standard Deviation	0.8%	0.7%	0.8%
DaCapo Benchmark - Jython (msec)	3012	**3030**	**2948**
Normalized	97.88%	97.29%	100%
Standard Deviation	1.1%	1.1%	0.8%
Rust Prime Benchmark - P.N.T.T.2.0.0 (sec)	**5.191**	**5.175**	5.182
Normalized	99.69%	100%	99.86%
Standard Deviation	0%	0%	0%
Smallpt - G.I.R.1.S (sec)	4.925	**4.936**	**4.924**
Normalized	99.98%	99.76%	100%
Standard Deviation	0%	0.4%	0.4%
NAS Parallel Benchmarks - EP.C (Mop/s)	1900	**1895**	**1902**
Normalized	99.87%	99.6%	100%
Standard Deviation	1.2%	0.9%	0.5%
libavif avifenc - 8 (sec)	**4.317**	4.299	**4.277**
Normalized	99.07%	99.49%	100%
Standard Deviation	0.3%	1.1%	0.4%
libavif avifenc - 10 (sec)	**4.194**	4.150	**4.094**
Normalized	97.62%	98.65%	100%
Standard Deviation	0.6%	0.4%	1%
ParaView - Wavelet Contour - 3840 x 2160 (MiPolys / Sec)	**2009**	2055	**2056**
Normalized	97.69%	99.92%	100%
Standard Deviation	0.3%	0.1%	0.5%
ParaView - Wavelet Contour - 3840 x 2160 (Frames / Sec)	**192.77**	197.17	**197.32**
Normalized	97.69%	99.92%	100%
Standard Deviation	0.3%	0.1%	0.5%
FFTE - N.2.3.C.F.R (MFLOPS)	**34957**	34812	**34674**
Normalized	100%	99.58%	99.19%
Standard Deviation	0%	0.2%	0.3%

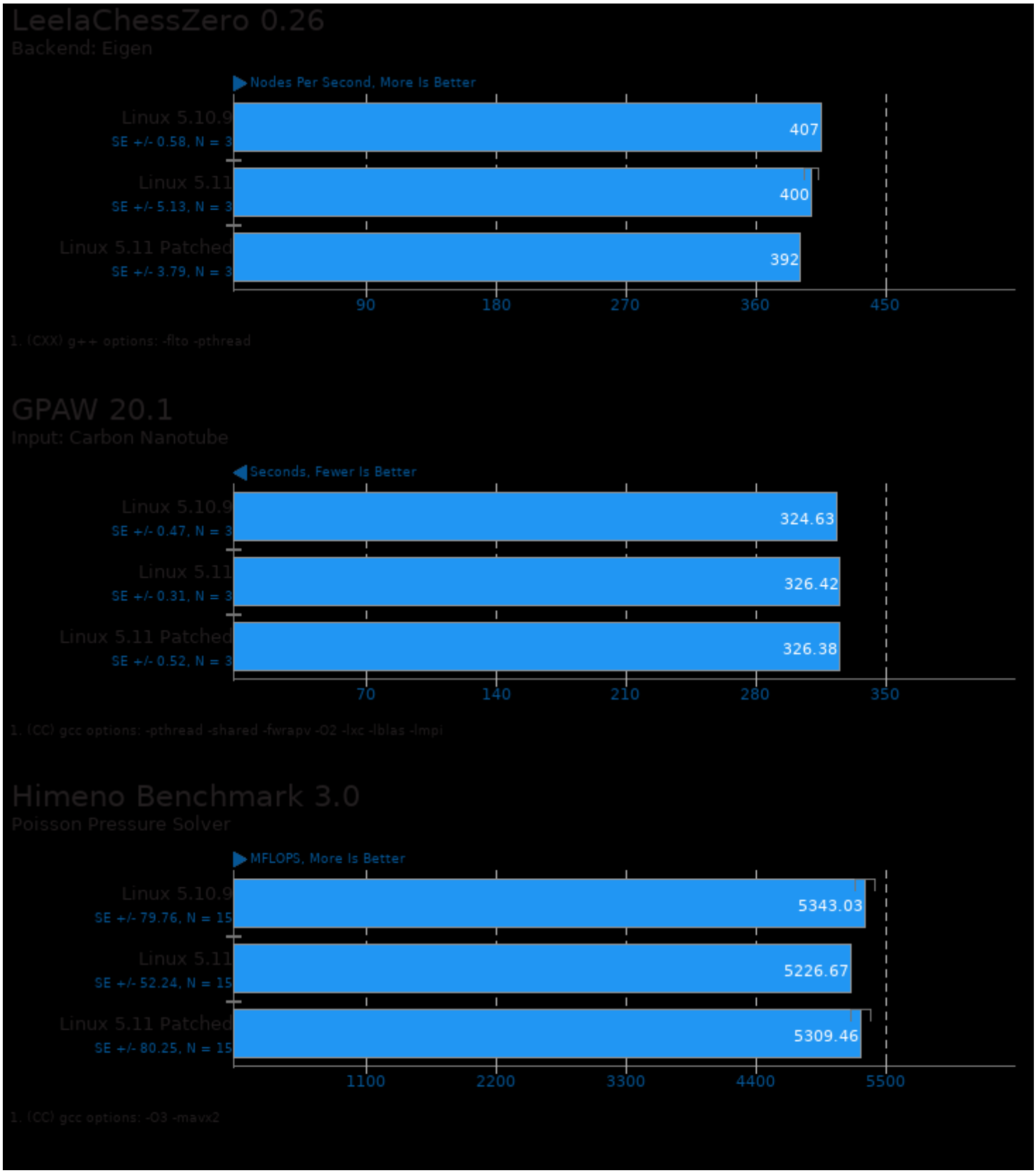
AMD Ryzen 9 5950X Linux 5.11

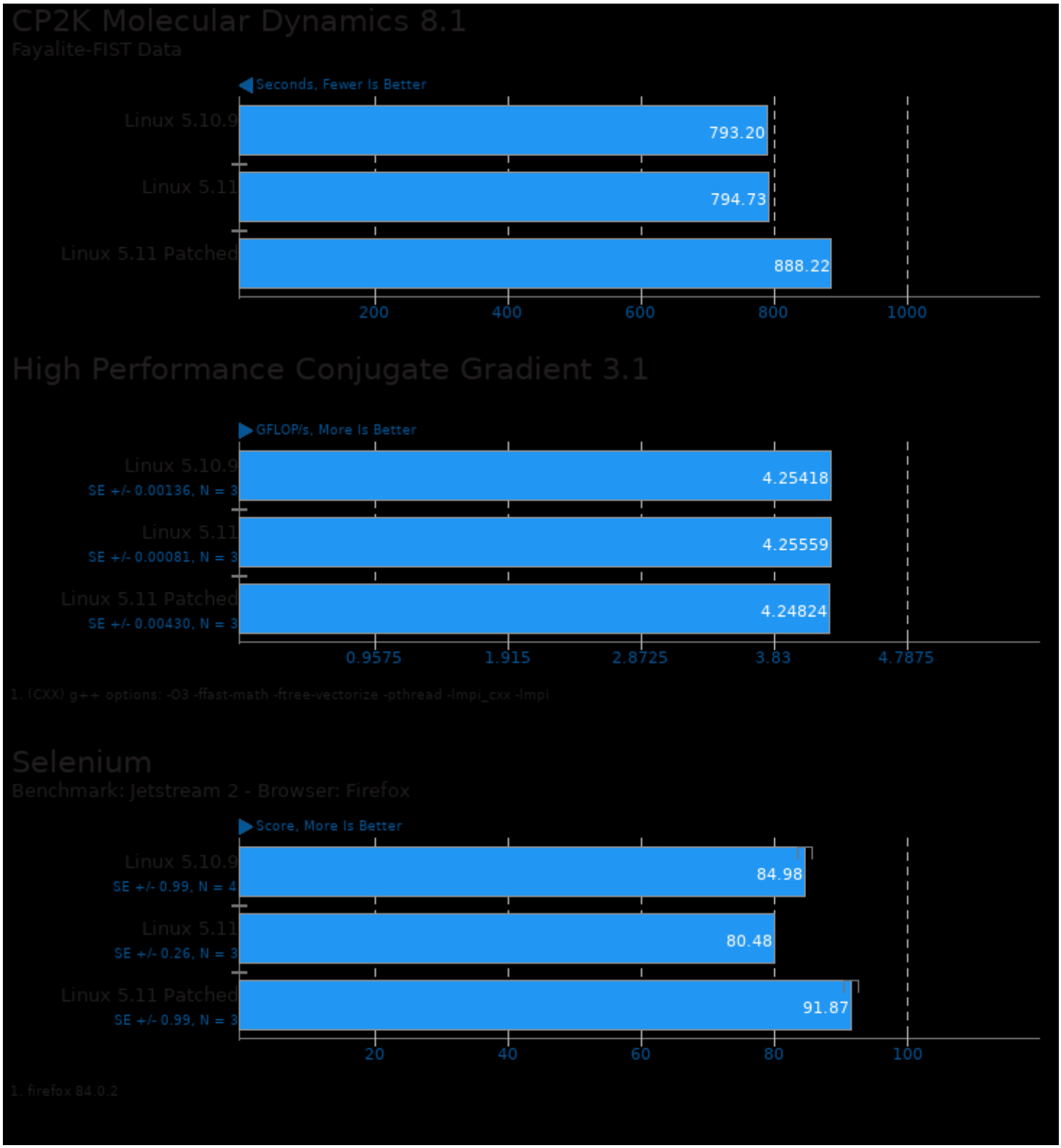
ParaView - Wavelet Volume - 3840 x 2160 (MiVoxels / Sec)	**3538**	**4059**	3941
Normalized	87.17%	100%	97.1%
Standard Deviation	12.6%	0.7%	1.4%
ParaView - Wavelet Volume - 3840 x 2160 (Frames / Sec)	**221.12**	**253.67**	246.30
Normalized	87.17%	100%	97.09%
Standard Deviation	12.6%	0.7%	1.4%
oneDNN - D.B.s - f32 - CPU (ms)	**3.54830**	**3.53779**	3.54069
Normalized	99.7%	100%	99.92%
Standard Deviation	0.2%	0.2%	0.3%
SVT-VP9 - V.Q.O - Bosphorus 1080p (FPS)	223.02	**224.74**	**222.17**
Normalized	99.23%	100%	98.86%
Standard Deviation	0.3%	1%	0.3%
yquake2 - OpenGL 3.x - 3840 x 2160 (FPS)	**989.5**	988.5	**987.0**
Normalized	100%	99.9%	99.75%
Standard Deviation	0.1%	0.1%	0.4%
BLAKE2 (Cycles/Byte)	4.35	**4.28**	**4.41**
Normalized	98.39%	100%	97.05%
Standard Deviation	1%	2%	0.8%

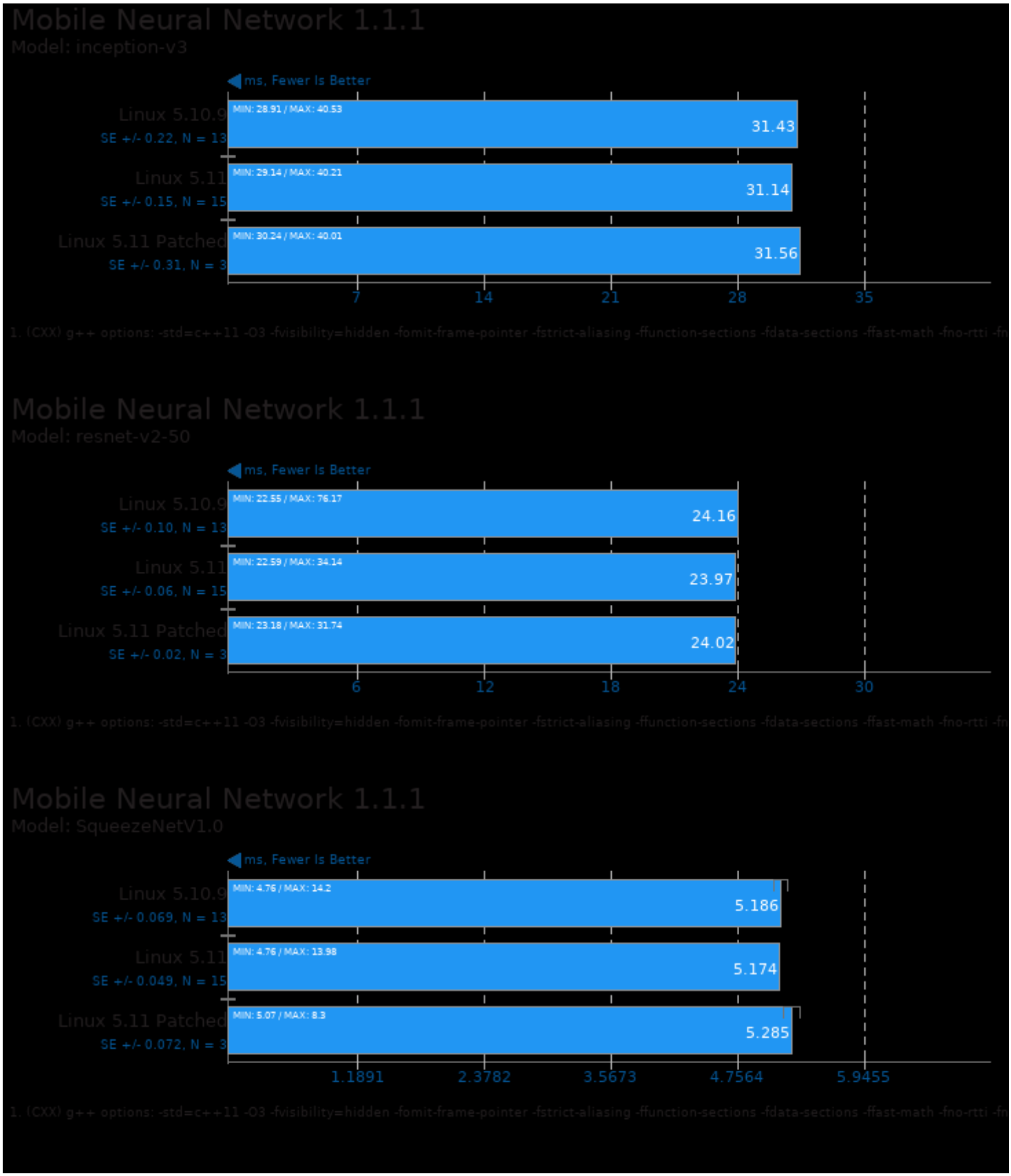

Renaissance 0.10.0
Test: Akka Unbalanced Cobwebbed Tree
ms, Fewer Is Better
Linux 5.10.9
SE +/- 56.03, N = 5
9311.91
Linux 5.11
SE +/- 56.14, N = 20
9183.91
Linux 5.11 Patched
SE +/- 67.30, N = 11
9117.36
2K
4K
6K
8K
10K
Selenium
Benchmark: Jetstream 2 - Browser: Google Chrome
Score, More Is Better
Linux 5.10.9
SE +/- 2.07, N = 3
172.14
Linux 5.11
SE +/- 1.64, N = 5
161.81
Linux 5.11 Patched
SE +/- 0.82, N = 3
196.48
40
80
120
160
200
1: chrome 88.0.4324.96
Renaissance 0.10.0
Test: In-Memory Database Shootout
ms, Fewer Is Better
Linux 5.10.9
SE +/- 47.45, N = 25
3668.73
Linux 5.11
SE +/- 41.49, N = 20
3706.29
Linux 5.11 Patched
SE +/- 49.45, N = 25
2850.40
800
1600
2400
3200
4000

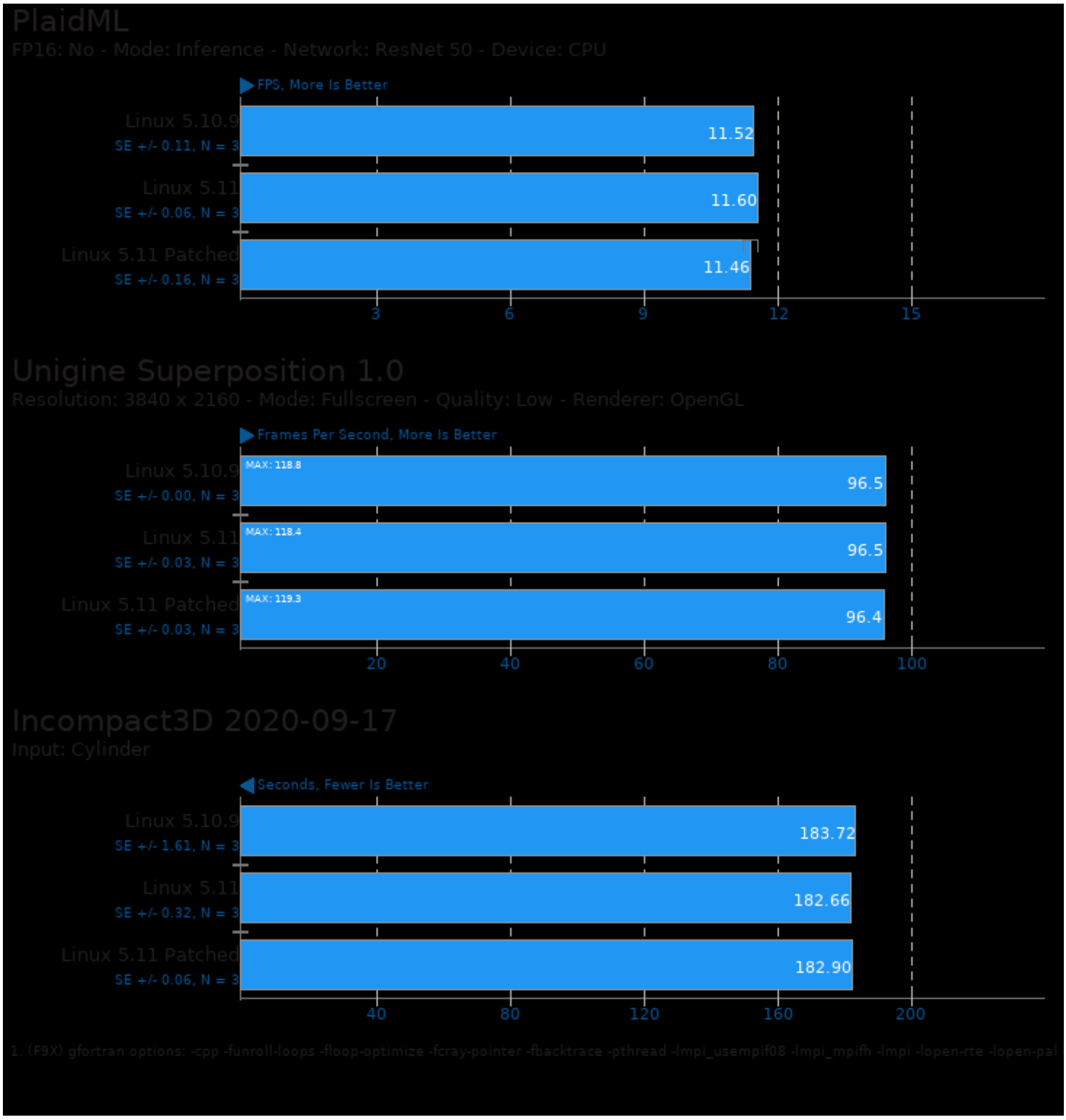

LeelaChessZero 0.26
Backend: BLAS
Nodes Per Second, More Is Better
Linux 5.10.9
SE +/- 5.36, N = 3
406
Linux 5.11
SE +/- 4.99, N = 4
415
Linux 5.11 Patched
SE +/- 3.38, N = 3
390
90
180
270
360
450
1. (CXX) g++ options: -flto -pthread
oneDNN 2.0
Harness: Recurrent Neural Network Inference - Data Type: f32 - Engine: CPU
ms, Fewer Is Better
Linux 5.10.9
SE +/- 15.56, N = 15
MIN: 1569.34
1652.83
Linux 5.11
SE +/- 29.58, N = 15
MIN: 1586.05
1703.54
Linux 5.11 Patched
SE +/- 19.21, N = 15
MIN: 1583.35
1686.63
400
800
1200
1600
2000
1. (CXX) g++ options: -O3 -std=c++11 -fopenmp -msse4.1 -fPIC -pie -lpthread
AI Benchmark Alpha 0.1.2
Device AI Score
Score, More Is Better
Linux 5.10.9
2690
Linux 5.11
2637
Linux 5.11 Patched
2743
600
1200
1800
2400
3000

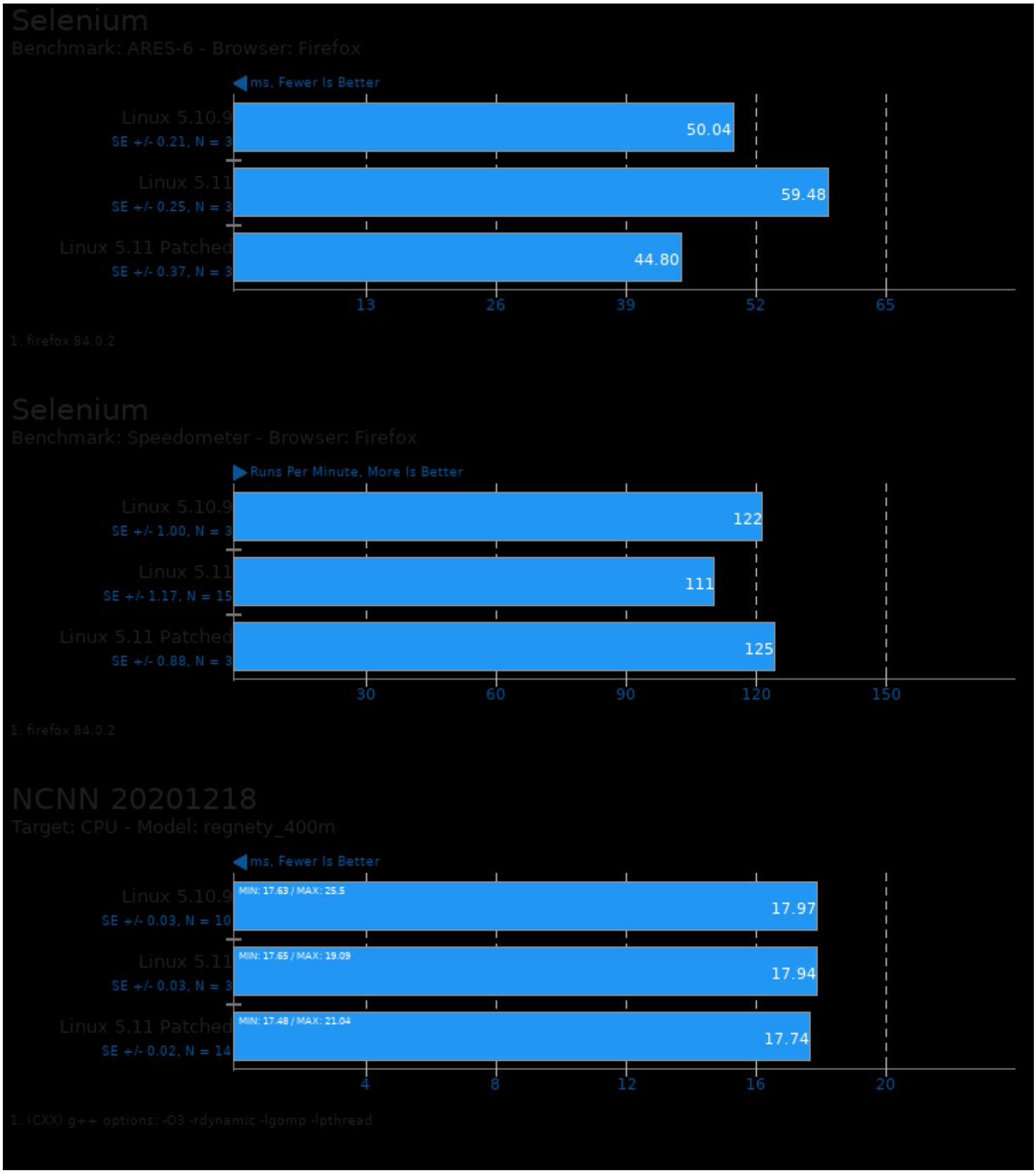

AI Benchmark Alpha 0.1.2
Device Training Score
Score, More Is Better
Linux 5.10.9
1176
Linux 5.11
1156
Linux 5.11 Patched
1199
300
600
900
1200
1500
AI Benchmark Alpha 0.1.2
Device Inference Score
Score, More Is Better
Linux 5.10.9
1514
Linux 5.11
1481
Linux 5.11 Patched
1544
300
600
900
1200
1500
Unigine Superposition 1.0
Resolution: 1920 x 1080 - Mode: Fullscreen - Quality: Low - Renderer: OpenGL
Frames Per Second, More Is Better
Linux 5.10.9
SE +/- 2.65, N = 3
MAX: 351.5
238.7
Linux 5.11
SE +/- 5.90, N = 12
MAX: 372.3
218.6
Linux 5.11 Patched
SE +/- 1.43, N = 3
MAX: 356.9
241.4
50
100
150
200
250

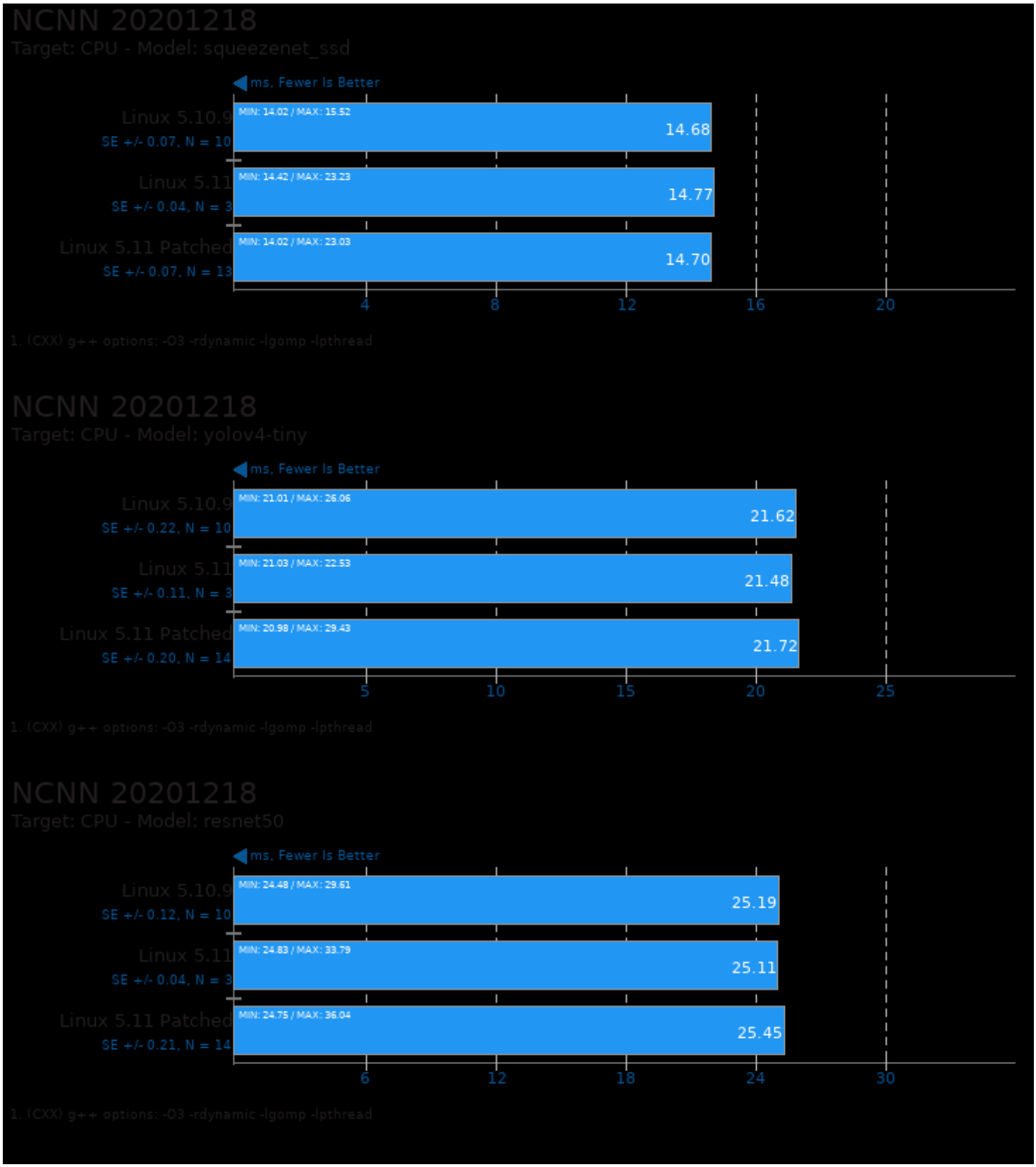

LeelaChessZero 0.26
Backend: Eigen
Nodes Per Second, More Is Better
Linux 5.10.9
SE +/- 0.58, N = 3
407
Linux 5.11
SE +/- 5.13, N = 3
400
Linux 5.11 Patched
SE +/- 3.79, N = 3
392
90
180
270
360
450
1. (CXX) g++ options: -flto -pthread
GPAW 20.1
Input: Carbon Nanotube
Seconds, Fewer Is Better
Linux 5.10.9
SE +/- 0.47, N = 3
324.63
Linux 5.11
SE +/- 0.31, N = 3
326.42
Linux 5.11 Patched
SE +/- 0.52, N = 3
326.38
70
140
210
280
350
1. (CC) gcc options: -pthread -shared -fwrapv -O2 -lxc -lblas -lmpi
Himeno Benchmark 3.0
Poisson Pressure Solver
MFLOPS, More Is Better
Linux 5.10.9
SE +/- 79.76, N = 15
5343.03
Linux 5.11
SE +/- 52.24, N = 15
5226.67
Linux 5.11 Patched
SE +/- 80.25, N = 15
5309.46
1100
2200
3300
4400
5500
1. (CC) gcc options: -O3 -mavx2


CP2K Molecular Dynamics 8.1
Fayalite-FIST Data
Seconds, Fewer Is Better
Linux 5.10.9
793.20
Linux 5.11
794.73
Linux 5.11 Patched
888.22
200
400
600
800
1000
High Performance Conjugate Gradient 3.1
GFLOP/s, More Is Better
Linux 5.10.9
SE +/- 0.00136, N = 3
4.25418
Linux 5.11
SE +/- 0.00081, N = 3
4.25559
Linux 5.11 Patched
SE +/- 0.00430, N = 3
4.24824
0.9575
1.915
2.8725
3.83
4.7875
1. (CXX) g++ options: -O3 -ffast-math -ftree-vectorize -pthread -lmpi_cxx -lmpi
Selenium
Benchmark: Jetstream 2 - Browser: Firefox
Score, More Is Better
Linux 5.10.9
SE +/- 0.99, N = 4
84.98
Linux 5.11
SE +/- 0.26, N = 3
80.48
Linux 5.11 Patched
SE +/- 0.99, N = 3
91.87
20
40
60
80
100
1. firefox 84.0.2

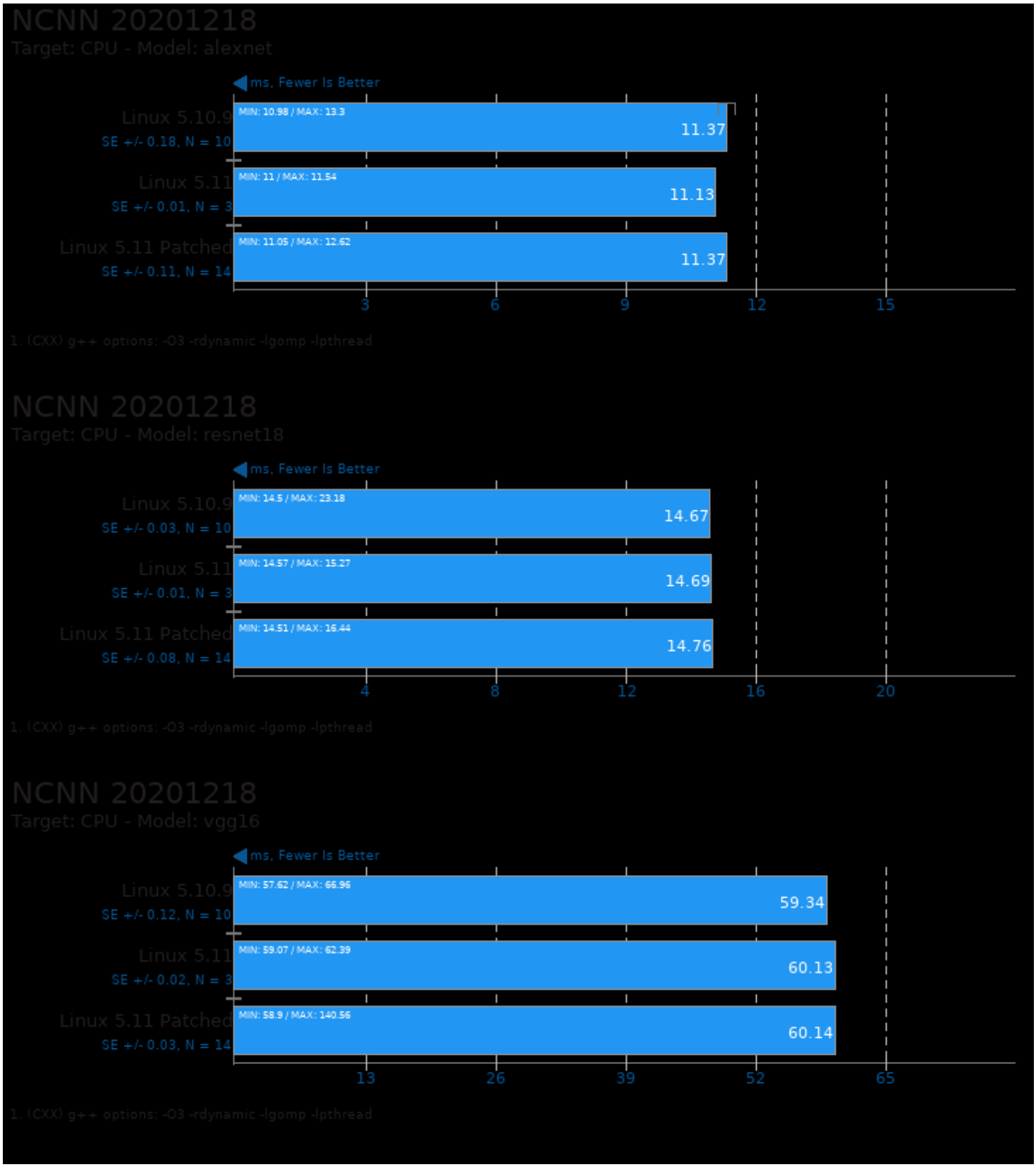

Mobile Neural Network 1.1.1
Model: inception-v3
ms, Fewer Is Better
Linux 5.10.9
SE +/- 0.22, N = 13
MIN: 28.91 / MAX: 40.53
31.43
Linux 5.11
SE +/- 0.15, N = 15
MIN: 29.14 / MAX: 40.21
31.14
Linux 5.11 Patched
SE +/- 0.31, N = 3
MIN: 30.24 / MAX: 40.01
31.56
7
14
21
28
35
1. (CXX) g++ options: -std=c++11 -O3 -fvisibility=hidden -fomit-frame-pointer -fstrict-aliasing -ffunction-sections -fdata-sections -ffast-math -fno-rtti -fv
Mobile Neural Network 1.1.1
Model: resnet-v2-50
ms, Fewer Is Better
Linux 5.10.9
SE +/- 0.10, N = 13
MIN: 22.55 / MAX: 76.17
24.16
Linux 5.11
SE +/- 0.06, N = 15
MIN: 22.59 / MAX: 34.14
23.97
Linux 5.11 Patched
SE +/- 0.02, N = 3
MIN: 23.18 / MAX: 31.74
24.02
6
12
18
24
30
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 1.1.1
Model: SqueezeNetV1.0
ms, Fewer Is Better
Linux 5.10.9
SE +/- 0.069, N = 13
MIN: 4.76 / MAX: 14.2
5.186
Linux 5.11
SE +/- 0.049, N = 15
MIN: 4.76 / MAX: 13.98
5.174
Linux 5.11 Patched
SE +/- 0.072, N = 3
MIN: 5.07 / MAX: 8.3
5.285
1.1891
2.3782
3.5673
4.7564
5.9455
1. (CXX) g++ options: -std=c++11 -O3 -fvisibility=hidden -fomit-frame-pointer -fstrict-aliasing -ffunction-sections -fdata-sections -ffast-math -fno-rtti -fv

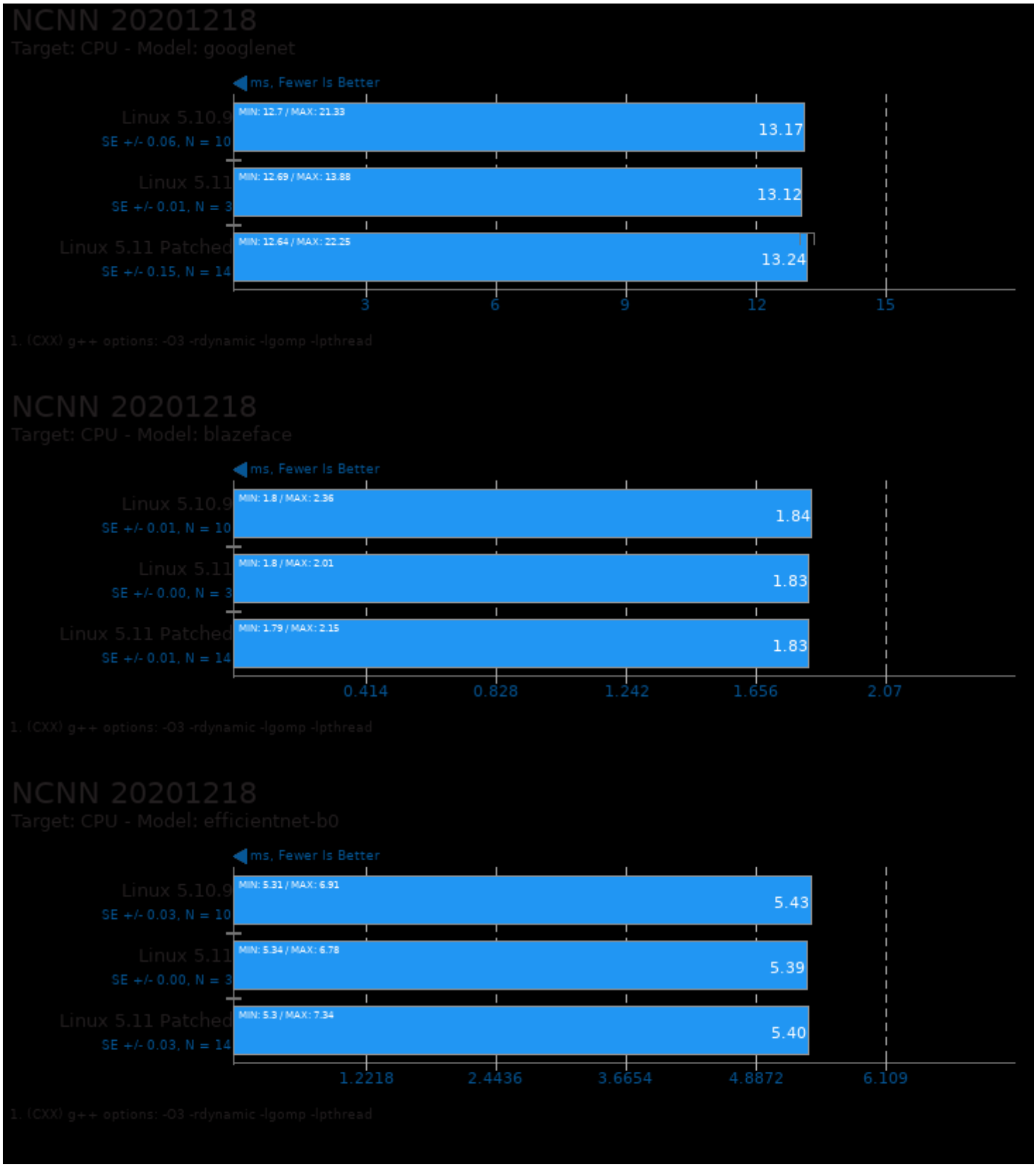

PlaidML
FP16: No - Mode: Inference - Network: ResNet 50 - Device: CPU
FPS, More Is Better
Linux 5.10.9
SE +/- 0.11, N = 3
11.52
Linux 5.11
SE +/- 0.06, N = 3
11.60
Linux 5.11 Patched
SE +/- 0.16, N = 3
11.46
3
6
9
12
15
Unigine Superposition 1.0
Resolution: 3840 x 2160 - Mode: Fullscreen - Quality: Low - Renderer: OpenGL
Frames Per Second, More Is Better
Linux 5.10.9
SE +/- 0.00, N = 3
MAX: 118.8
96.5
Linux 5.11
SE +/- 0.03, N = 3
MAX: 118.4
96.5
Linux 5.11 Patched
SE +/- 0.03, N = 3
MAX: 119.3
96.4
20
40
60
80
100
Incompact3D 2020-09-17
Input: Cylinder
Seconds, Fewer Is Better
Linux 5.10.9
SE +/- 1.61, N = 3
183.72
Linux 5.11
SE +/- 0.32, N = 3
182.66
Linux 5.11 Patched
SE +/- 0.06, N = 3
182.90
40
80
120
160
200
1. (F9X) gfortran options: -cpp -funroll-loops -floop-optimize -fcray-pointer -fbacktrace -pthread -lmpi_usempif08 -lmpi_mpifh -lmpi -lopen-rte -lopen-pal

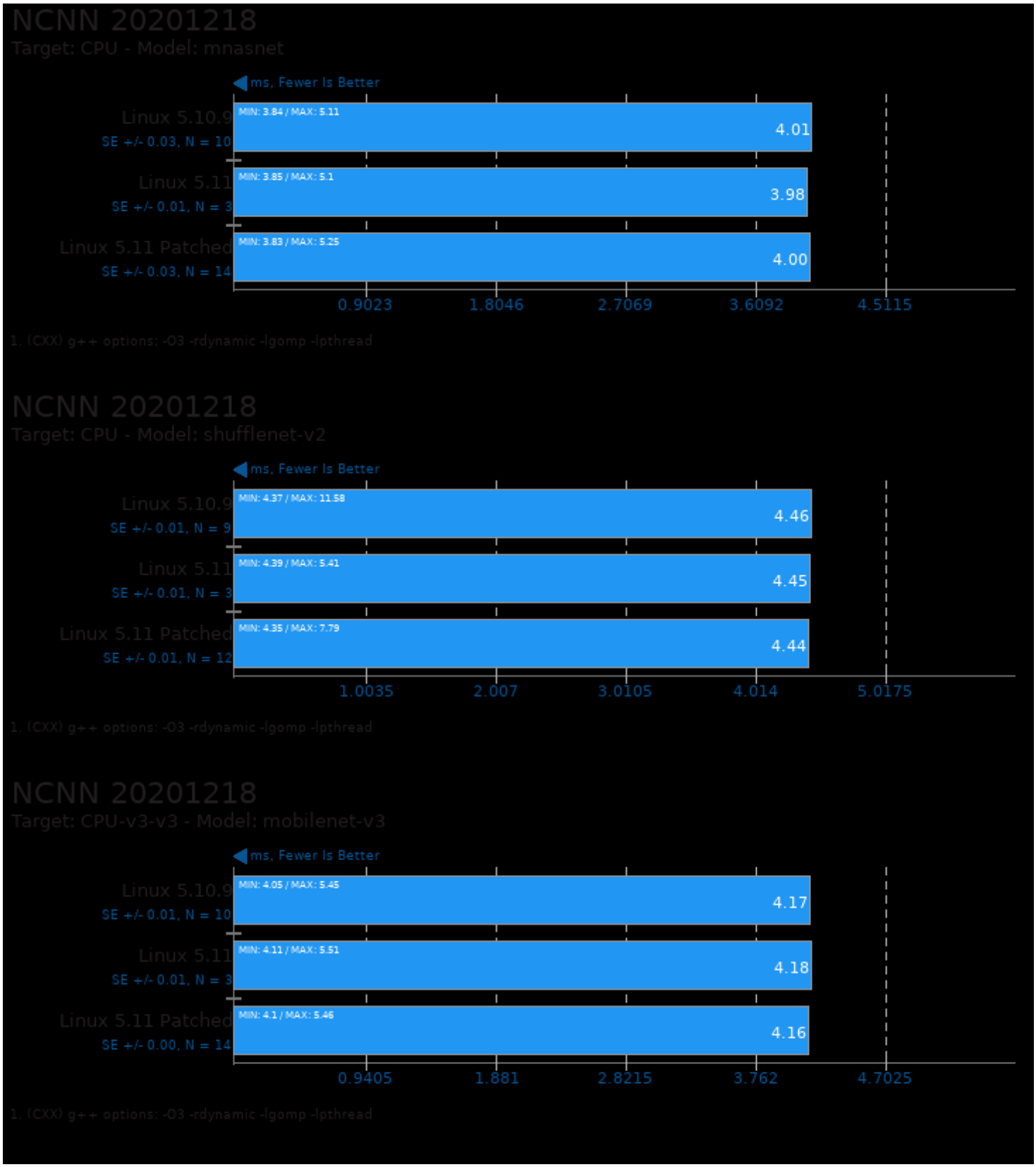

Selenium
Benchmark: ARES-6 - Browser: Firefox
ms, Fewer Is Better
Linux 5.10.9
SE +/- 0.21, N = 3
50.04
Linux 5.11
SE +/- 0.25, N = 3
59.48
Linux 5.11 Patched
SE +/- 0.37, N = 3
44.80
13
26
39
52
65
1. firefox 84.0.2
Selenium
Benchmark: Speedometer - Browser: Firefox
Runs Per Minute, More Is Better
Linux 5.10.9
SE +/- 1.00, N = 3
122
Linux 5.11
SE +/- 1.17, N = 15
111
Linux 5.11 Patched
SE +/- 0.88, N = 3
125
30
60
90
120
150
1. firefox 84.0.2
NCNN 20201218
Target: CPU - Model: regnety_400m
ms, Fewer Is Better
Linux 5.10.9
SE +/- 0.03, N = 10
MIN: 17.63 / MAX: 25.5
17.97
Linux 5.11
SE +/- 0.03, N = 3
MIN: 17.65 / MAX: 19.09
17.94
Linux 5.11 Patched
SE +/- 0.02, N = 14
MIN: 17.48 / MAX: 21.04
17.74
4
8
12
16
20
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread

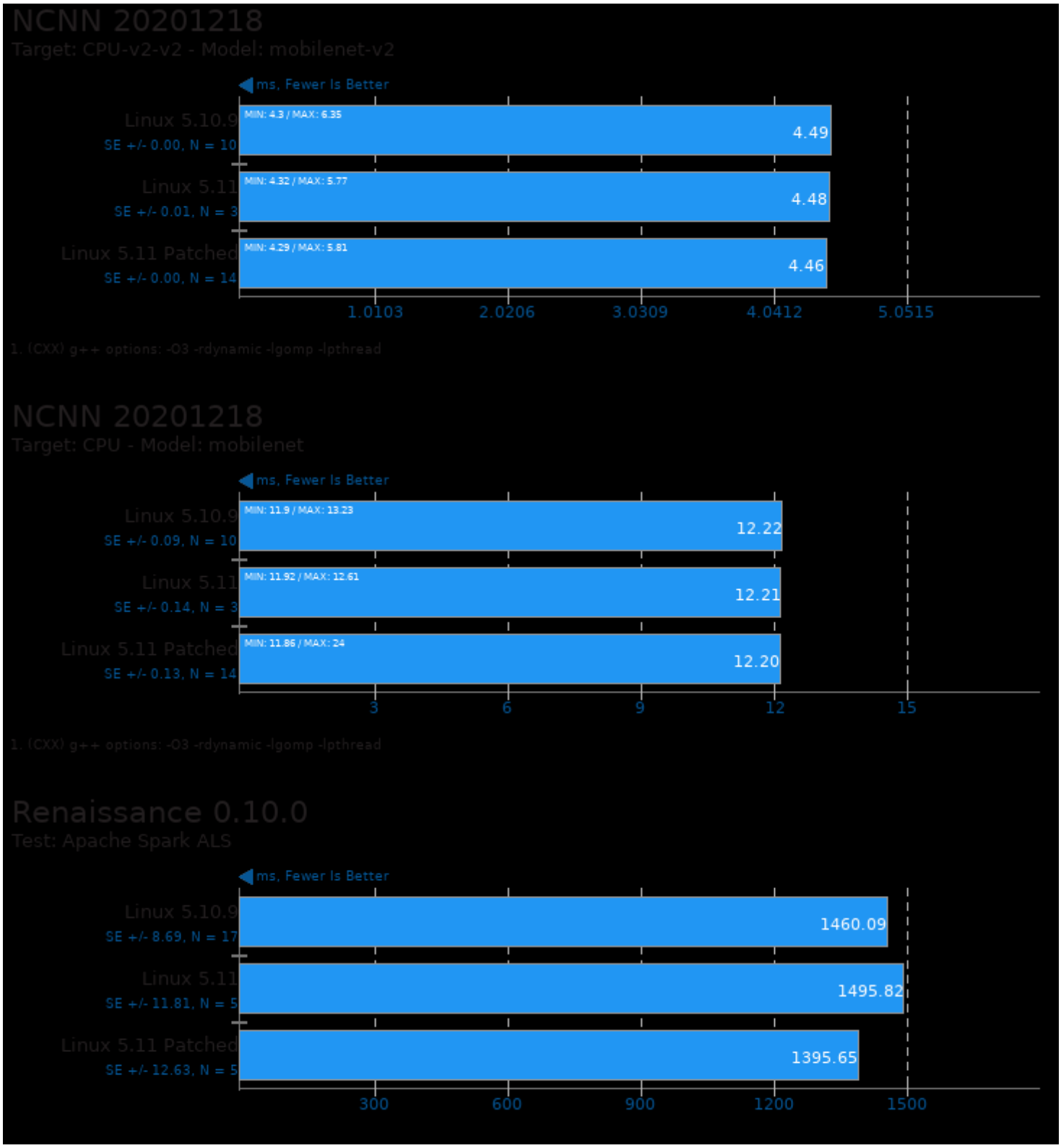

NCNN 20201218
Target: CPU - Model: squeezenet_ssd
ms, Fewer Is Better
Linux 5.10.9
SE +/- 0.07, N = 10
MIN: 14.02 / MAX: 15.52
14.68
Linux 5.11
SE +/- 0.04, N = 3
MIN: 14.42 / MAX: 23.23
14.77
Linux 5.11 Patched
SE +/- 0.07, N = 13
MIN: 14.02 / MAX: 23.03
14.70
4
8
12
16
20
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20201218
Target: CPU - Model: yolov4-tiny
ms, Fewer Is Better
Linux 5.10.9
SE +/- 0.22, N = 10
MIN: 21.01 / MAX: 26.06
21.62
Linux 5.11
SE +/- 0.11, N = 3
MIN: 21.03 / MAX: 22.53
21.48
Linux 5.11 Patched
SE +/- 0.20, N = 14
MIN: 20.98 / MAX: 29.43
21.72
5
10
15
20
25
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20201218
Target: CPU - Model: resnet50
ms, Fewer Is Better
Linux 5.10.9
SE +/- 0.12, N = 10
MIN: 24.48 / MAX: 29.61
25.19
Linux 5.11
SE +/- 0.04, N = 3
MIN: 24.83 / MAX: 33.79
25.11
Linux 5.11 Patched
SE +/- 0.21, N = 14
MIN: 24.75 / MAX: 36.04
25.45
6
12
18
24
30
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread

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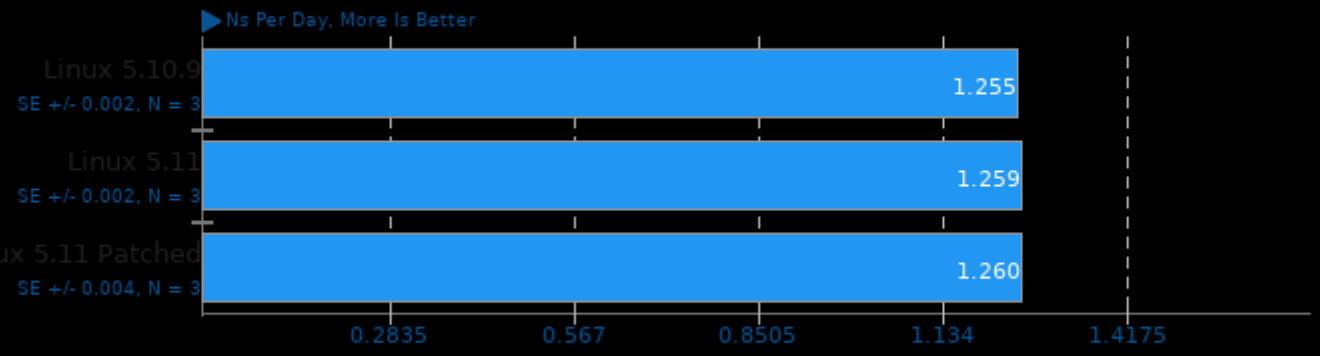

NCNN 20201218
Target: CPU - Model: googlenet
ms, Fewer Is Better
Linux 5.10.9
SE +/- 0.06, N = 10
MIN: 12.7 / MAX: 21.33
13.17
Linux 5.11
SE +/- 0.01, N = 3
MIN: 12.69 / MAX: 13.88
13.12
Linux 5.11 Patched
SE +/- 0.15, N = 14
MIN: 12.64 / MAX: 22.25
13.24
3
6
9
12
15
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20201218
Target: CPU - Model: blazeface
ms, Fewer Is Better
Linux 5.10.9
SE +/- 0.01, N = 10
MIN: 1.8 / MAX: 2.36
1.84
Linux 5.11
SE +/- 0.00, N = 3
MIN: 1.8 / MAX: 2.01
1.83
Linux 5.11 Patched
SE +/- 0.01, N = 14
MIN: 1.79 / MAX: 2.15
1.83
0.414
0.828
1.242
1.656
2.07
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20201218
Target: CPU - Model: efficientnet-b0
ms, Fewer Is Better
Linux 5.10.9
SE +/- 0.03, N = 10
MIN: 5.31 / MAX: 6.91
5.43
Linux 5.11
SE +/- 0.00, N = 3
MIN: 5.34 / MAX: 6.78
5.39
Linux 5.11 Patched
SE +/- 0.03, N = 14
MIN: 5.3 / MAX: 7.34
5.40
1.2218
2.4436
3.6654
4.8872
6.109
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread


NCNN 20201218
Target: CPU - Model: mnasnet
ms, Fewer Is Better
Linux 5.10.9
SE +/- 0.03, N = 10
MIN: 3.84 / MAX: 5.11
4.01
Linux 5.11
SE +/- 0.01, N = 3
MIN: 3.85 / MAX: 5.1
3.98
Linux 5.11 Patched
SE +/- 0.03, N = 14
MIN: 3.83 / MAX: 5.25
4.00
0.9023
1.8046
2.7069
3.6092
4.5115
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20201218
Target: CPU - Model: shufflenet-v2
ms, Fewer Is Better
Linux 5.10.9
SE +/- 0.01, N = 9
MIN: 4.37 / MAX: 11.58
4.46
Linux 5.11
SE +/- 0.01, N = 3
MIN: 4.39 / MAX: 5.41
4.45
Linux 5.11 Patched
SE +/- 0.01, N = 12
MIN: 4.35 / MAX: 7.79
4.44
1.0035
2.007
3.0105
4.014
5.0175
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20201218
Target: CPU-v3-v3 - Model: mobilenet-v3
ms, Fewer Is Better
Linux 5.10.9
SE +/- 0.01, N = 10
MIN: 4.05 / MAX: 5.45
4.17
Linux 5.11
SE +/- 0.01, N = 3
MIN: 4.11 / MAX: 5.51
4.18
Linux 5.11 Patched
SE +/- 0.00, N = 14
MIN: 4.1 / MAX: 5.46
4.16
0.9405
1.881
2.8215
3.762
4.7025
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread


NCNN 20201218
Target: CPU-v2-v2 - Model: mobilenet-v2
ms, Fewer Is Better
Linux 5.10.9
SE +/- 0.00, N = 10
MIN: 4.3 / MAX: 6.35
4.49
Linux 5.11
SE +/- 0.01, N = 3
MIN: 4.32 / MAX: 5.77
4.48
Linux 5.11 Patched
SE +/- 0.00, N = 14
MIN: 4.29 / MAX: 5.81
4.46
1.0103
2.0206
3.0309
4.0412
5.0515
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
NCNN 20201218
Target: CPU - Model: mobilenet
ms, Fewer Is Better
Linux 5.10.9
SE +/- 0.09, N = 10
MIN: 11.9 / MAX: 13.23
12.22
Linux 5.11
SE +/- 0.14, N = 3
MIN: 11.92 / MAX: 12.61
12.21
Linux 5.11 Patched
SE +/- 0.13, N = 14
MIN: 11.86 / MAX: 24
12.20
3
6
9
12
15
1. (CXX) g++ options: -O3 -rdynamic -lgomp -lpthread
Renaissance 0.10.0
Test: Apache Spark ALS
ms, Fewer Is Better
Linux 5.10.9
SE +/- 8.69, N = 17
1460.09
Linux 5.11
SE +/- 11.81, N = 5
1495.82
Linux 5.11 Patched
SE +/- 12.63, N = 5
1395.65
300
600
900
1200
1500

GROMACS 2020.3

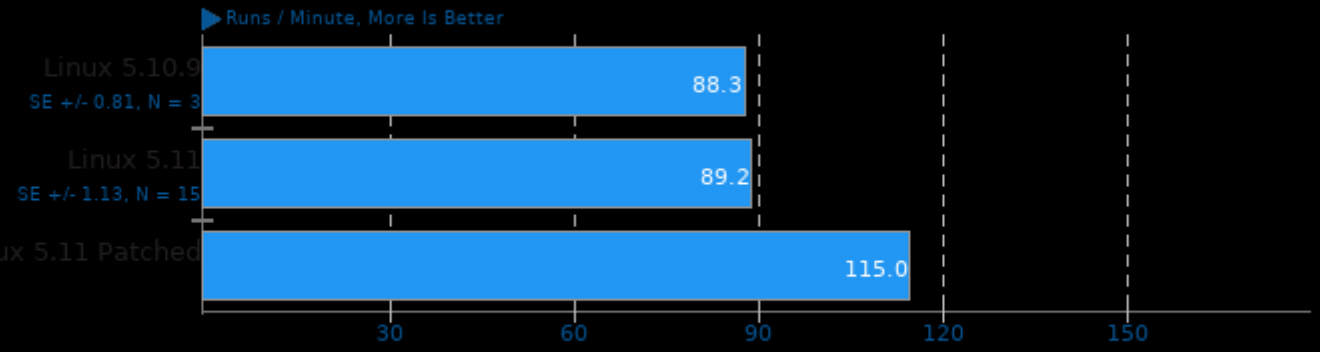
Water Benchmark



1. (CXX) g++ options: -O3 -pthread -lrt -lpthread -lm

Selenium

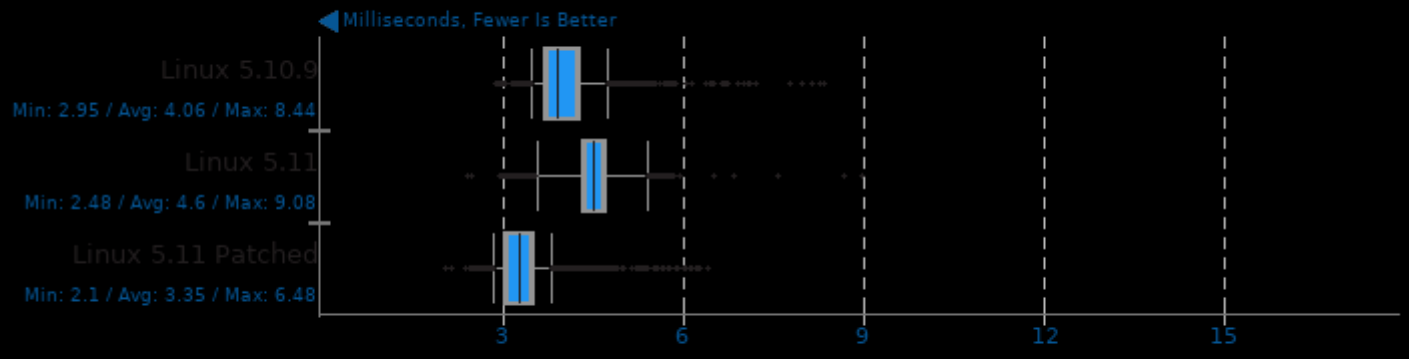
Benchmark: StyleBench - Browser: Firefox



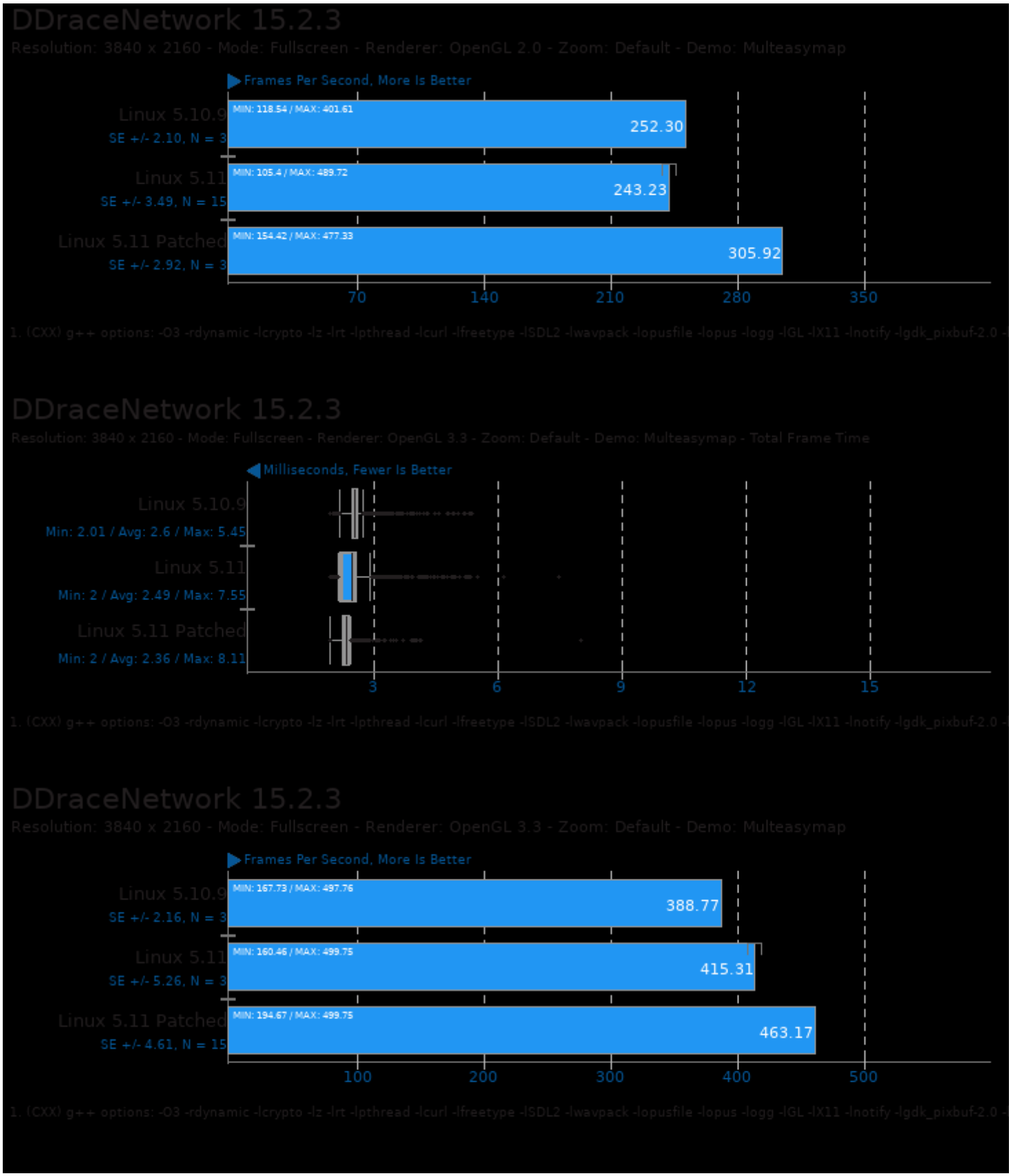
1. firefox 84.0.2

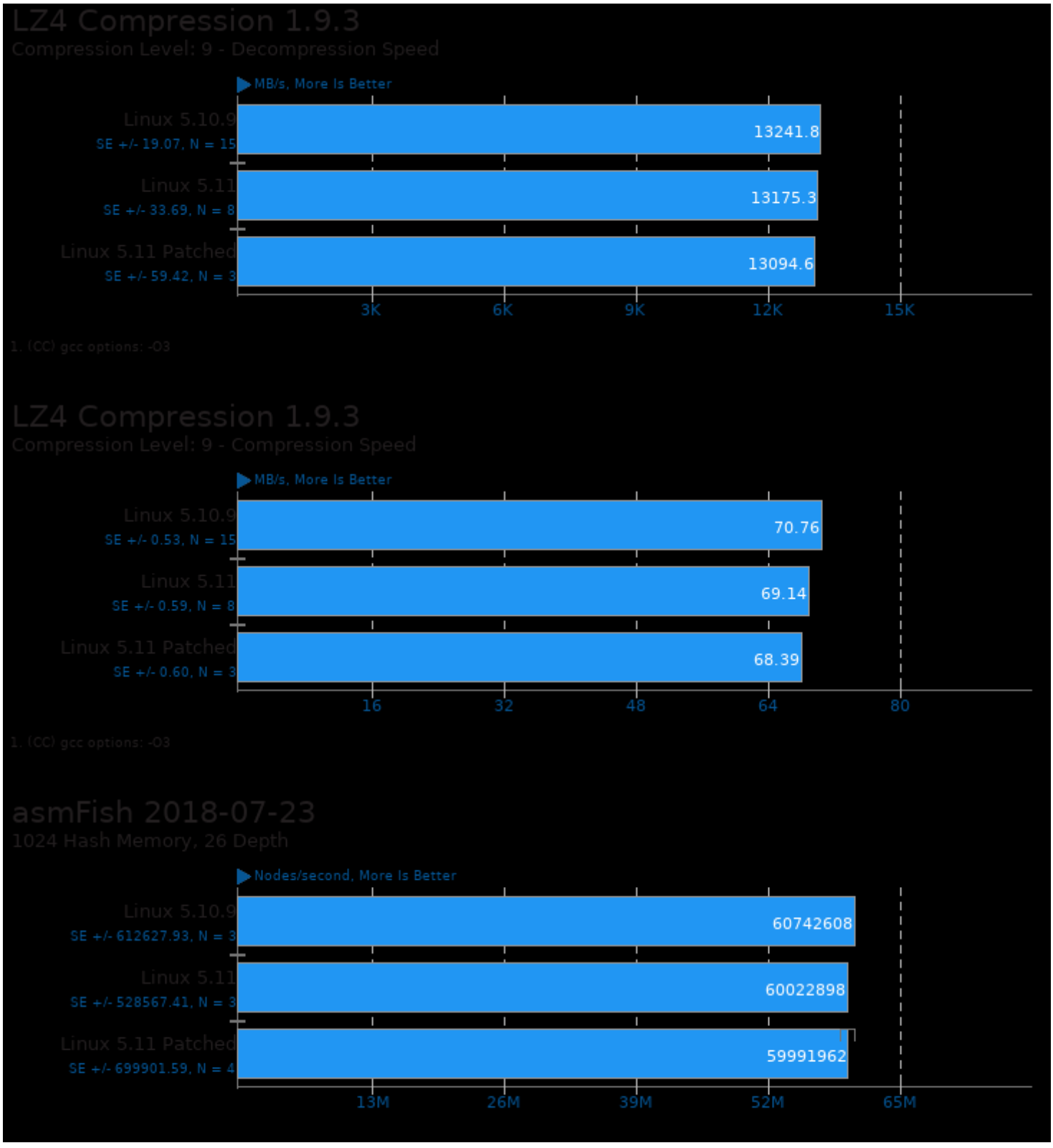
DDraceNetwork 15.2.3

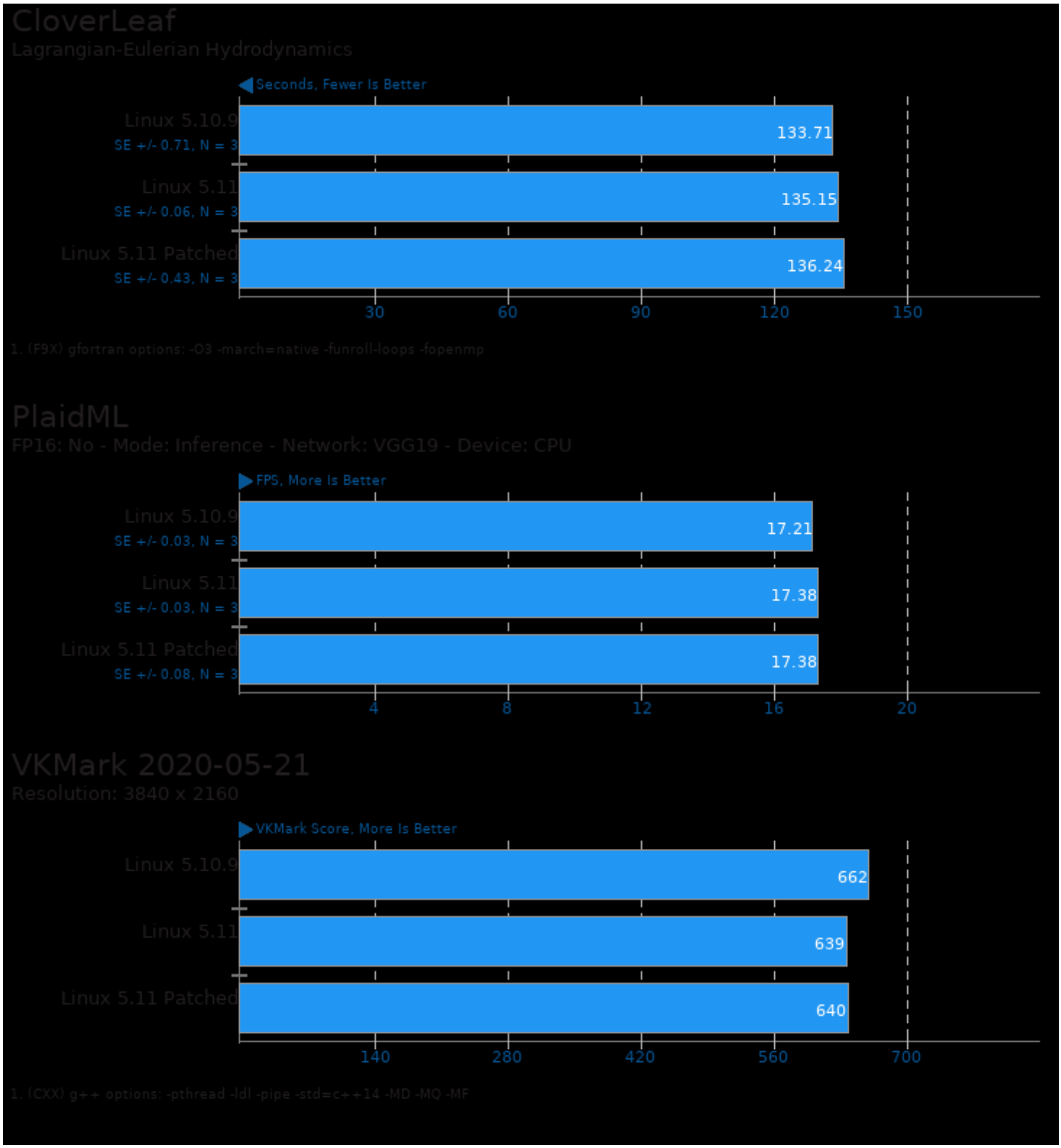
Resolution: 3840 x 2160 - Mode: Fullscreen - Renderer: OpenGL 2.0 - Zoom: Default - Demo: Multeasymap - Total Frame Time

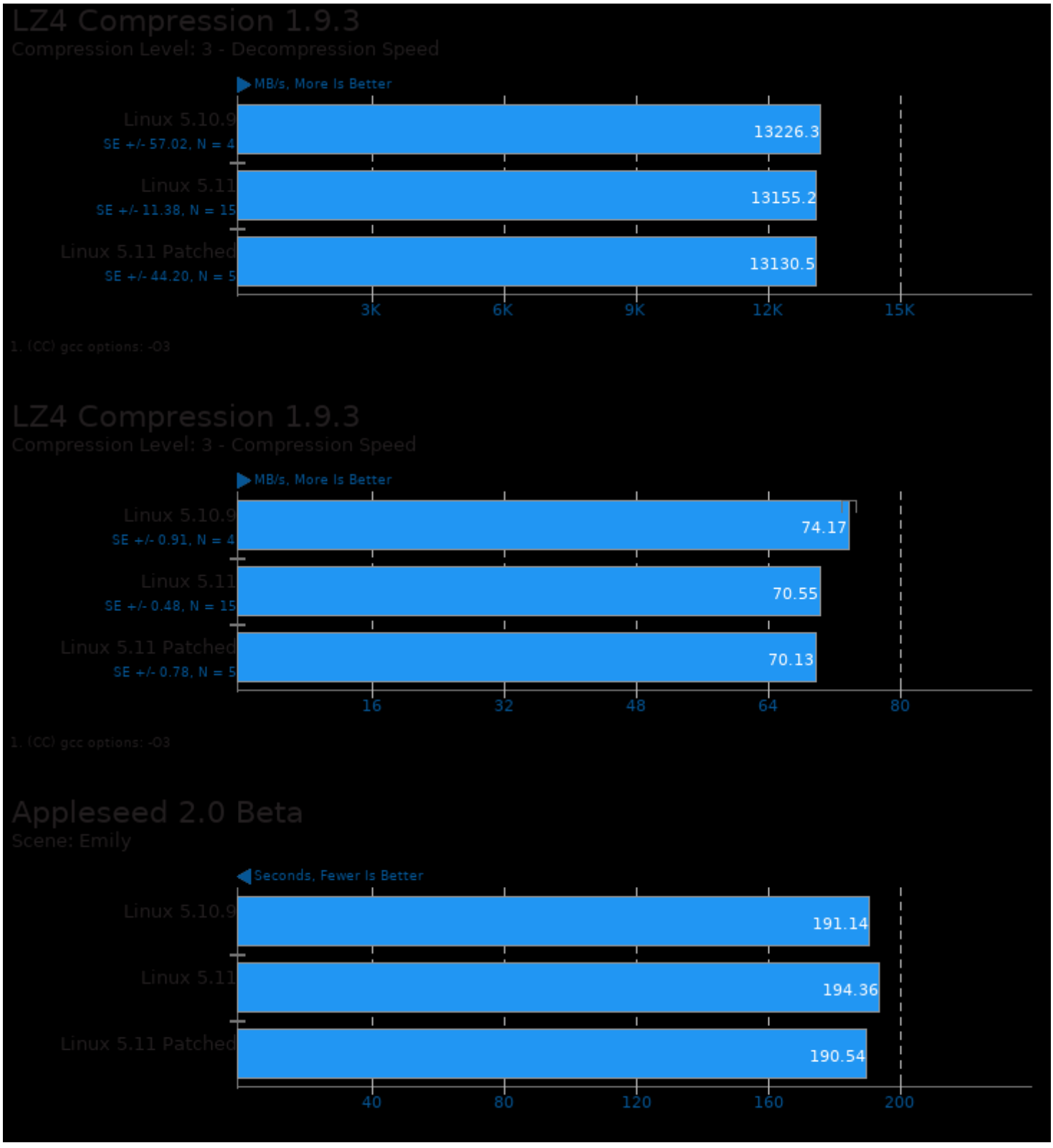


1. (CXX) g++ options: -O3 -rdynamic -lcrypto -lz -lrt -lpthread -lcurl -lfreetype -lSDL2 -lwavpack -lopusfile -lopus -logg -lGL -lX11 -lnotify -lgdk_pixbuf-2.0 -


DDraceNetwork 15.2.3
Resolution: 3840 x 2160 - Mode: Fullscreen - Renderer: OpenGL 2.0 - Zoom: Default - Demo: Multeasymap
Frames Per Second, More Is Better
Linux 5.10.9
SE +/- 2.10, N = 3
MIN: 118.54 / MAX: 401.61
252.30
Linux 5.11
SE +/- 3.49, N = 15
MIN: 105.4 / MAX: 489.72
243.23
Linux 5.11 Patched
SE +/- 2.92, N = 3
MIN: 154.42 / MAX: 477.33
305.92
70
140
210
280
350
1. (CXX) g++ options: -O3 -rdynamic -lcrypto -lz -lrt -lpthread -lcurl -lfreetype -lSDL2 -lwavpack -lopusfile -lopus -logg -lGL -lX11 -lnotify -lgdk_pixbuf-2.0
DDraceNetwork 15.2.3
Resolution: 3840 x 2160 - Mode: Fullscreen - Renderer: OpenGL 3.3 - Zoom: Default - Demo: Multeasymap - Total Frame Time
Milliseconds, Fewer Is Better
Linux 5.10.9
Min: 2.01 / Avg: 2.6 / Max: 5.45
Linux 5.11
Min: 2 / Avg: 2.49 / Max: 7.55
Linux 5.11 Patched
Min: 2 / Avg: 2.36 / Max: 8.11
3
6
9
12
15
1. (CXX) g++ options: -O3 -rdynamic -lcrypto -lz -lrt -lpthread -lcurl -lfreetype -lSDL2 -lwavpack -lopusfile -lopus -logg -lGL -lX11 -lnotify -lgdk_pixbuf-2.0
DDraceNetwork 15.2.3
Resolution: 3840 x 2160 - Mode: Fullscreen - Renderer: OpenGL 3.3 - Zoom: Default - Demo: Multeasymap
Frames Per Second, More Is Better
Linux 5.10.9
SE +/- 2.16, N = 3
MIN: 167.73 / MAX: 497.76
388.77
Linux 5.11
SE +/- 5.26, N = 3
MIN: 160.46 / MAX: 499.75
415.31
Linux 5.11 Patched
SE +/- 4.61, N = 15
MIN: 194.67 / MAX: 499.75
463.17
100
200
300
400
500
1. (CXX) g++ options: -O3 -rdynamic -lcrypto -lz -lrt -lpthread -lcurl -lfreetype -lSDL2 -lwavpack -lopusfile -lopus -logg -lGL -lX11 -lnotify -lgdk_pixbuf-2.0

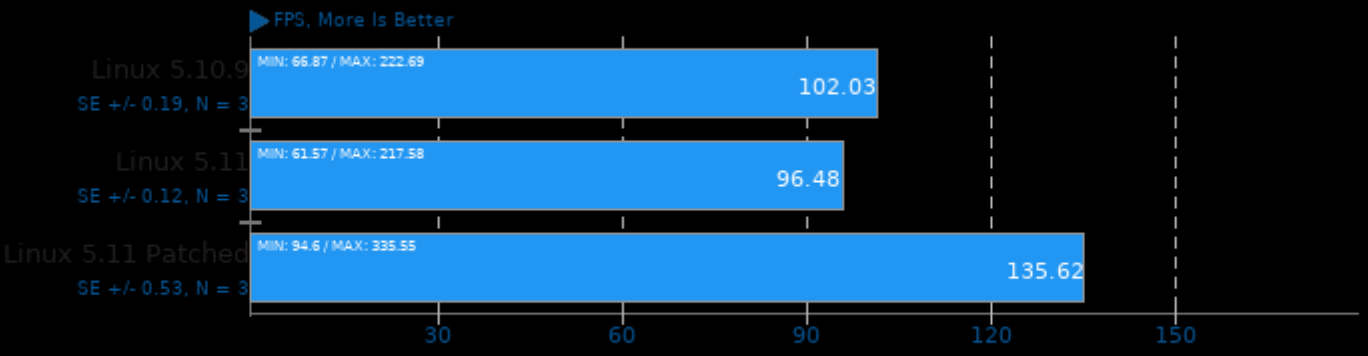

LZ4 Compression 1.9.3
Compression Level: 9 - Decompression Speed
MB/s, More Is Better
Linux 5.10.9
SE +/- 19.07, N = 15
13241.8
Linux 5.11
SE +/- 33.69, N = 8
13175.3
Linux 5.11 Patched
SE +/- 59.42, N = 3
13094.6
3K
6K
9K
12K
15K
1. (CC) gcc options: -O3
LZ4 Compression 1.9.3
Compression Level: 9 - Compression Speed
MB/s, More Is Better
Linux 5.10.9
SE +/- 0.53, N = 15
70.76
Linux 5.11
SE +/- 0.59, N = 8
69.14
Linux 5.11 Patched
SE +/- 0.60, N = 3
68.39
16
32
48
64
80
1. (CC) gcc options: -O3
asmFish 2018-07-23
1024 Hash Memory, 26 Depth
Nodes/second, More Is Better
Linux 5.10.9
SE +/- 612627.93, N = 3
60742608
Linux 5.11
SE +/- 528567.41, N = 3
60022898
Linux 5.11 Patched
SE +/- 699901.59, N = 4
59991962
13M
26M
39M
52M
65M


CloverLeaf
Lagrangian-Eulerian Hydrodynamics
Seconds, Fewer Is Better
Linux 5.10.9
SE +/- 0.71, N = 3
133.71
Linux 5.11
SE +/- 0.06, N = 3
135.15
Linux 5.11 Patched
SE +/- 0.43, N = 3
136.24
30
60
90
120
150
1. (F9X) gfortran options: -O3 -march=native -funroll-loops -fopenmp
PlaidML
FP16: No - Mode: Inference - Network: VGG19 - Device: CPU
FPS, More Is Better
Linux 5.10.9
SE +/- 0.03, N = 3
17.21
Linux 5.11
SE +/- 0.03, N = 3
17.38
Linux 5.11 Patched
SE +/- 0.08, N = 3
17.38
4
8
12
16
20
VKMark 2020-05-21
Resolution: 3840 x 2160
VKMark Score, More Is Better
Linux 5.10.9
662
Linux 5.11
639
Linux 5.11 Patched
640
140
280
420
560
700
1. (CXX) g++ options: -pthread -ldl -pipe -std=c++14 -MD -MQ -MF


LZ4 Compression 1.9.3
Compression Level: 3 - Decompression Speed
MB/s, More Is Better
Linux 5.10.9
SE +/- 57.02, N = 4
13226.3
Linux 5.11
SE +/- 11.38, N = 15
13155.2
Linux 5.11 Patched
SE +/- 44.20, N = 5
13130.5
3K
6K
9K
12K
15K
1. (CC) gcc options: -O3
LZ4 Compression 1.9.3
Compression Level: 3 - Compression Speed
MB/s, More Is Better
Linux 5.10.9
SE +/- 0.91, N = 4
74.17
Linux 5.11
SE +/- 0.48, N = 15
70.55
Linux 5.11 Patched
SE +/- 0.78, N = 5
70.13
16
32
48
64
80
1. (CC) gcc options: -O3
Appleseed 2.0 Beta
Scene: Emily
Seconds, Fewer Is Better
Linux 5.10.9
191.14
Linux 5.11
194.36
Linux 5.11 Patched
190.54
40
80
120
160
200

dav1d 0.8.1

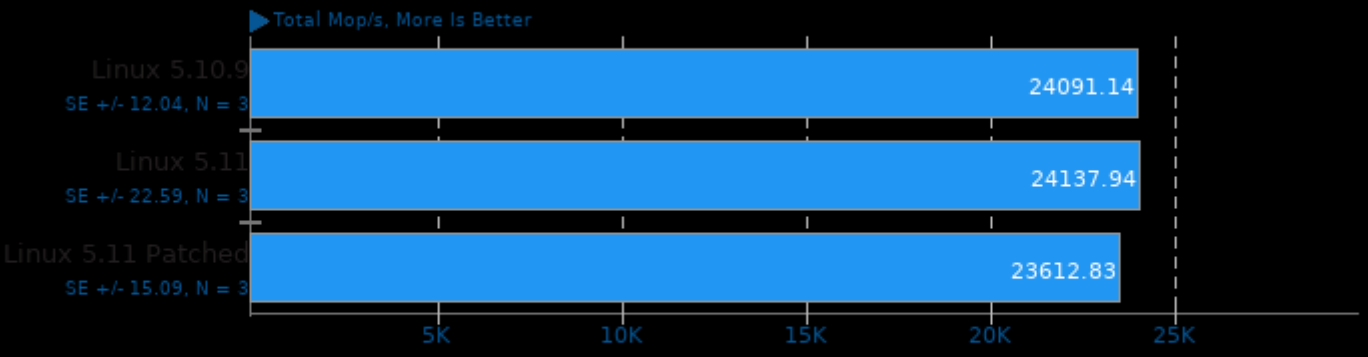
Video Input: Chimera 1080p 10-bit



1. (CC) gcc options: -pthread

NAS Parallel Benchmarks 3.4

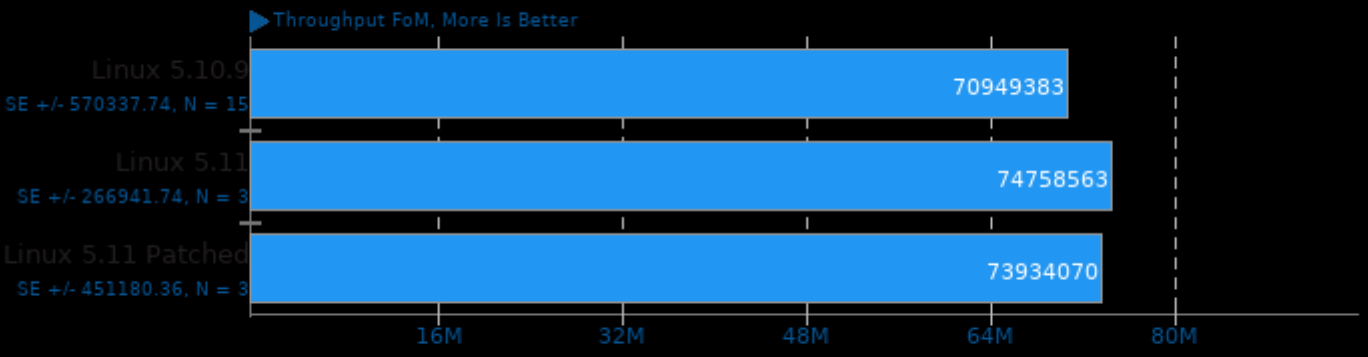
Test / Class: BT.C



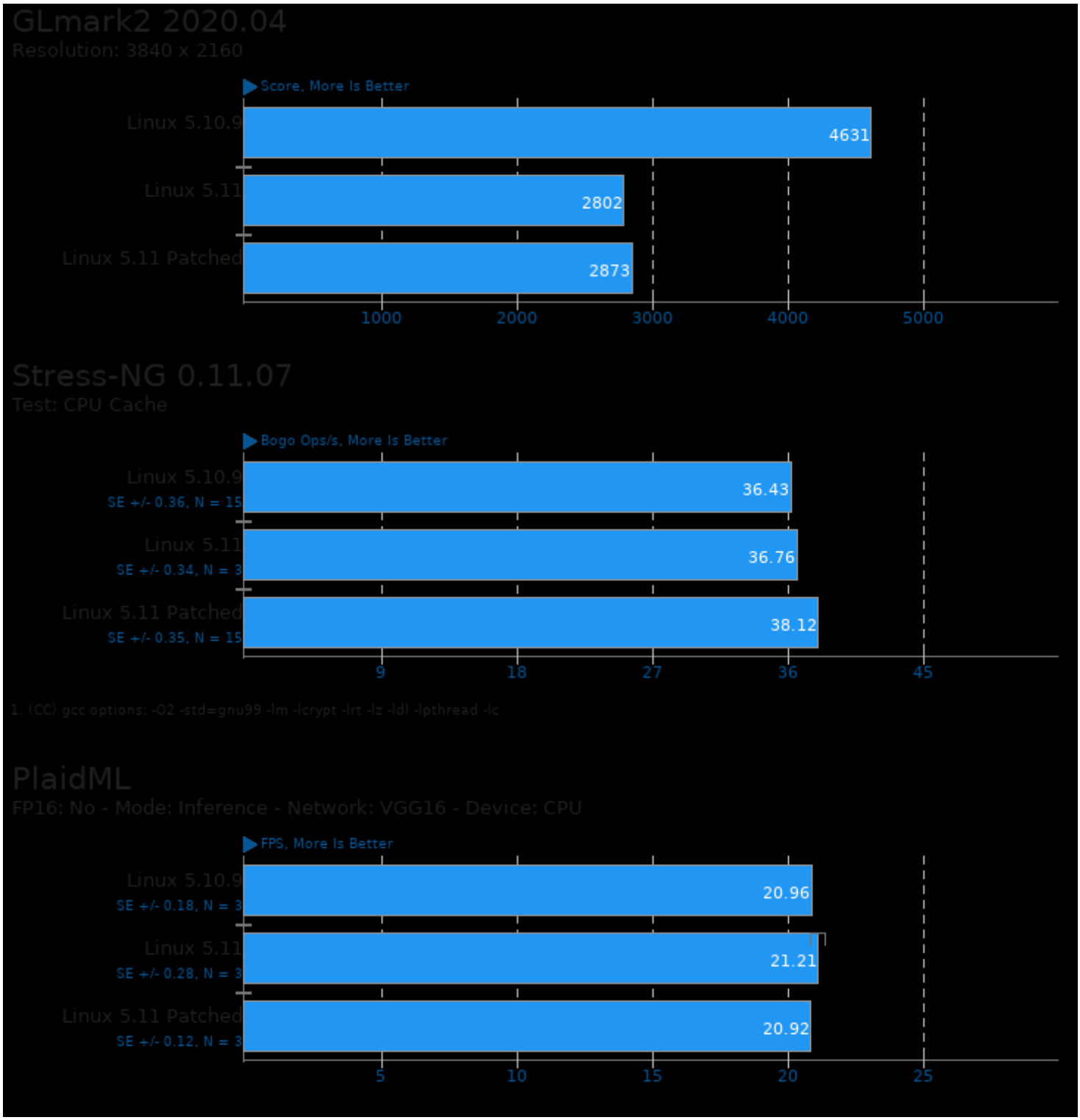
1. (F9X) gfortran options: -O3 -march=native -pthread -lmpi_usempif08 -lmpi_mpifh -lmpi -lopen-rte -lopen-pal -lhwloc -ldl -levent -levent_pthreads -luti

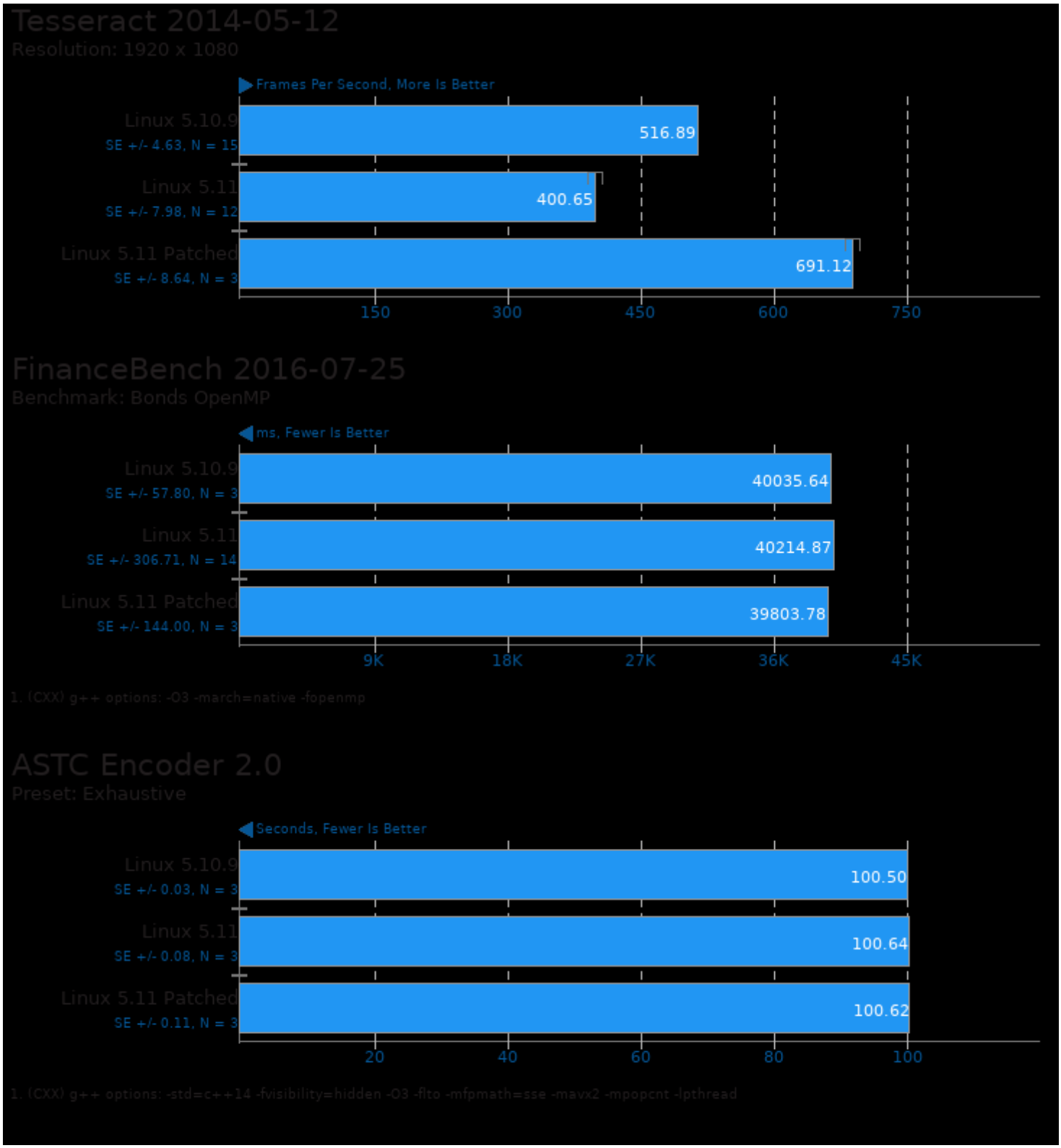
2. Open MPI 4.0.3

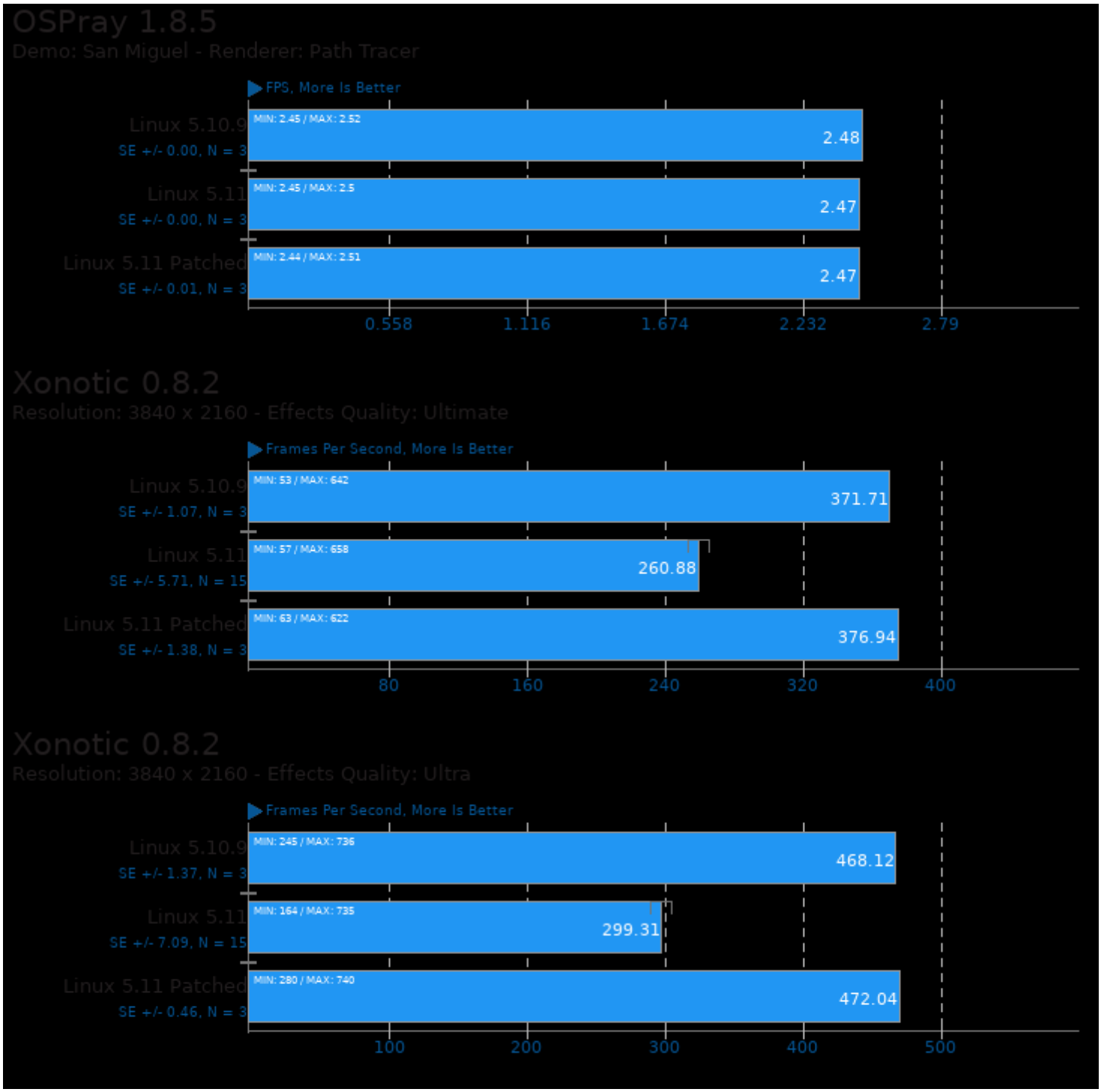
Kripke 1.2.4

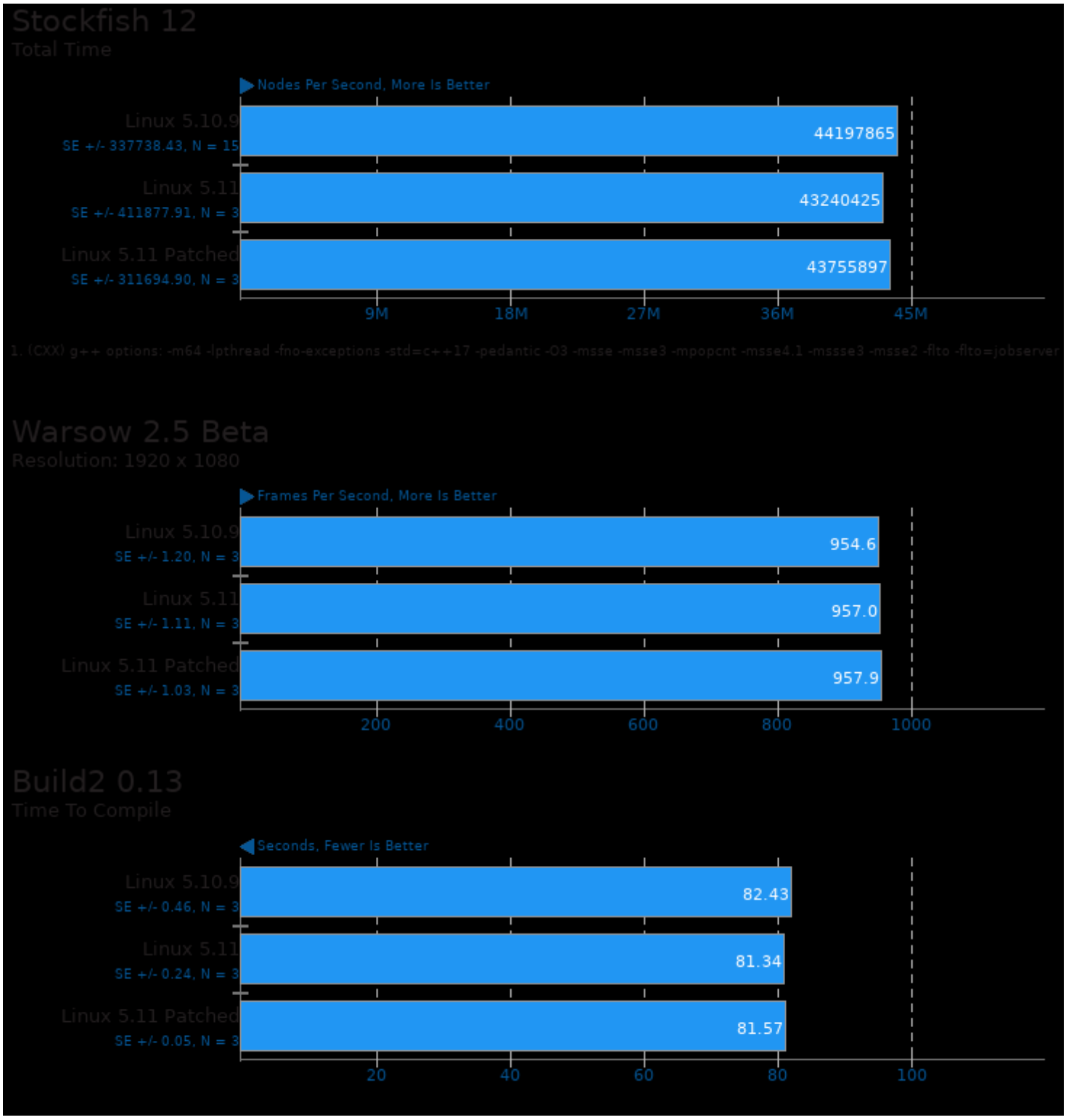


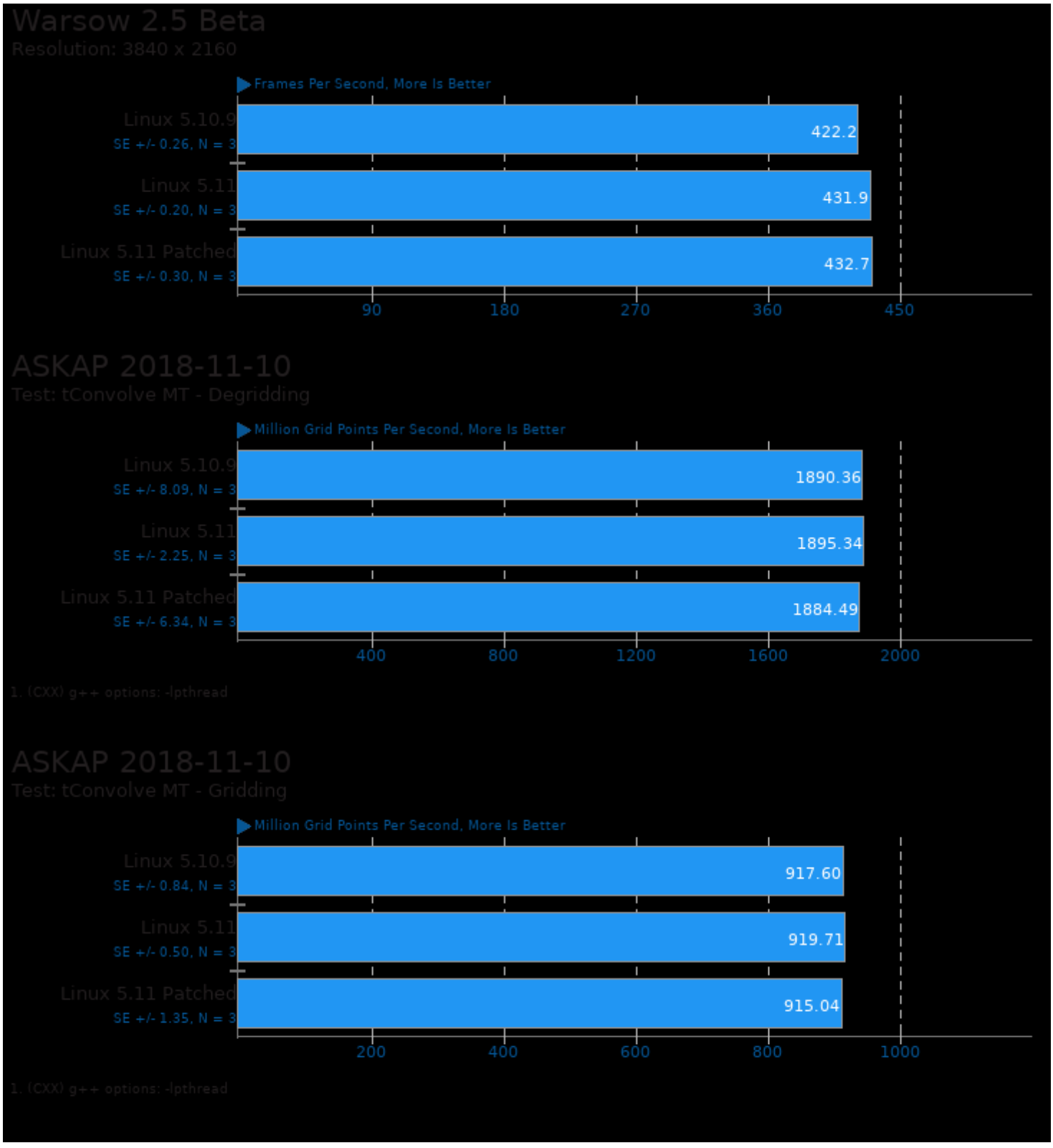
1. (CXX) g++ options: -O3 -fopenmp

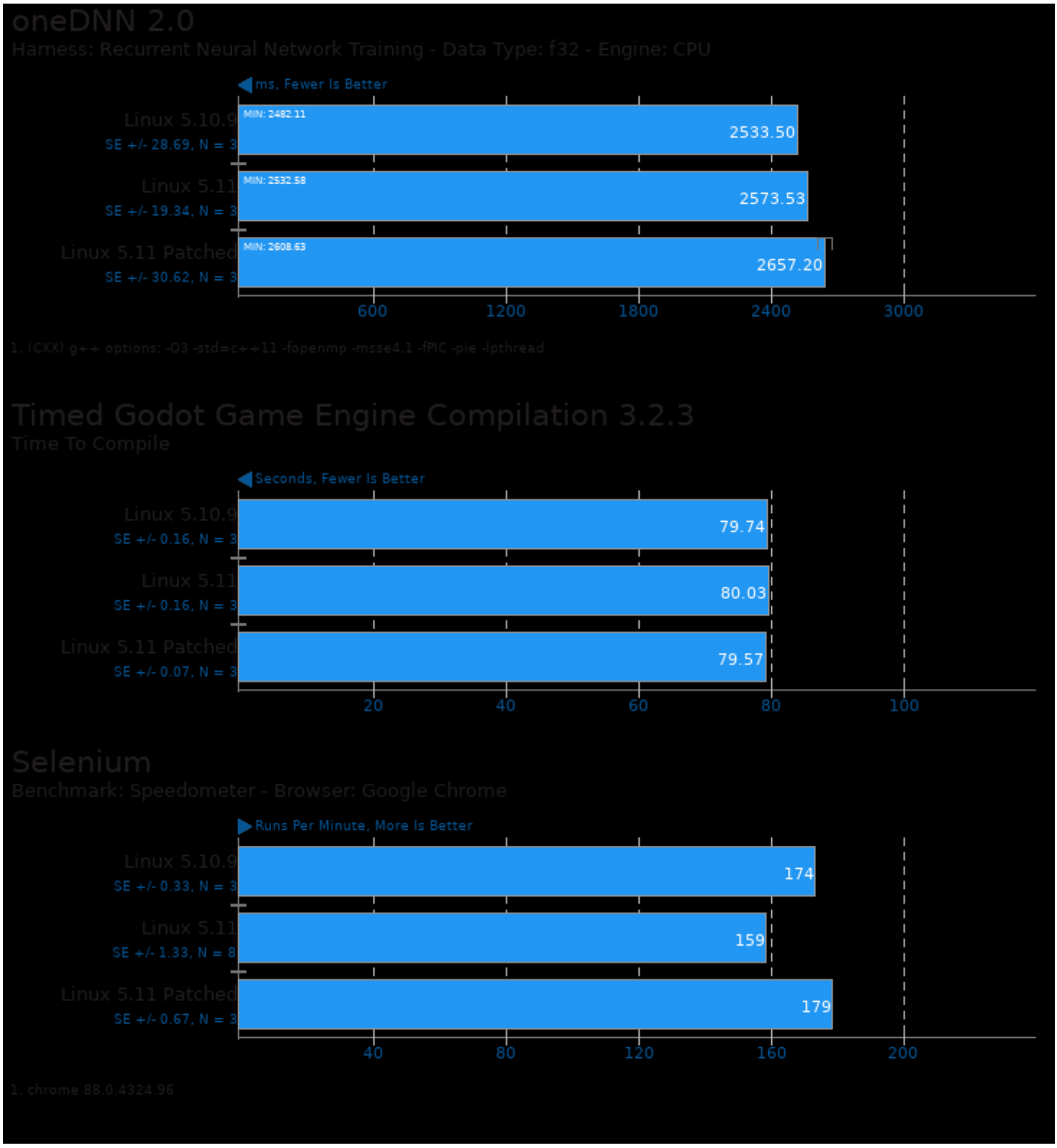

GLmark2 2020.04
Resolution: 3840 x 2160
Score, More Is Better
Linux 5.10.9
4631
Linux 5.11
2802
Linux 5.11 Patched
2873
1000
2000
3000
4000
5000
Stress-NG 0.11.07
Test: CPU Cache
Bogo Ops/s, More Is Better
Linux 5.10.9
SE +/- 0.36, N = 15
36.43
Linux 5.11
SE +/- 0.34, N = 3
36.76
Linux 5.11 Patched
SE +/- 0.35, N = 15
38.12
9
18
27
36
45
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lz -ldl -lpthread -lc
PlaidML
FP16: No - Mode: Inference - Network: VGG16 - Device: CPU
FPS, More Is Better
Linux 5.10.9
SE +/- 0.18, N = 3
20.96
Linux 5.11
SE +/- 0.28, N = 3
21.21
Linux 5.11 Patched
SE +/- 0.12, N = 3
20.92
5
10
15
20
25


Tesseract 2014-05-12
Resolution: 1920 x 1080
Frames Per Second, More Is Better
Linux 5.10.9
SE +/- 4.63, N = 15
516.89
Linux 5.11
SE +/- 7.98, N = 12
400.65
Linux 5.11 Patched
SE +/- 8.64, N = 3
691.12
150
300
450
600
750
FinanceBench 2016-07-25
Benchmark: Bonds OpenMP
ms, Fewer Is Better
Linux 5.10.9
SE +/- 57.80, N = 3
40035.64
Linux 5.11
SE +/- 306.71, N = 14
40214.87
Linux 5.11 Patched
SE +/- 144.00, N = 3
39803.78
9K
18K
27K
36K
45K
1. (CXX) g++ options: -O3 -march=native -fopenmp
ASTC Encoder 2.0
Preset: Exhaustive
Seconds, Fewer Is Better
Linux 5.10.9
SE +/- 0.03, N = 3
100.50
Linux 5.11
SE +/- 0.08, N = 3
100.64
Linux 5.11 Patched
SE +/- 0.11, N = 3
100.62
20
40
60
80
100
1. (CXX) g++ options: -std=c++14 -fvisibility=hidden -O3 -flto -mfpmath=sse -mavx2 -mpopcnt -lpthread


OSPray 1.8.5
Demo: San Miguel - Renderer: Path Tracer
FPS, More Is Better
Linux 5.10.9
SE +/- 0.00, N = 3
MIN: 2.45 / MAX: 2.52
2.48
Linux 5.11
SE +/- 0.00, N = 3
MIN: 2.45 / MAX: 2.5
2.47
Linux 5.11 Patched
SE +/- 0.01, N = 3
MIN: 2.44 / MAX: 2.51
2.47
0.558
1.116
1.674
2.232
2.79
Xonotic 0.8.2
Resolution: 3840 x 2160 - Effects Quality: Ultimate
Frames Per Second, More Is Better
Linux 5.10.9
SE +/- 1.07, N = 3
MIN: 53 / MAX: 642
371.71
Linux 5.11
SE +/- 5.71, N = 15
MIN: 57 / MAX: 658
260.88
Linux 5.11 Patched
SE +/- 1.38, N = 3
MIN: 63 / MAX: 622
376.94
80
160
240
320
400
Xonotic 0.8.2
Resolution: 3840 x 2160 - Effects Quality: Ultra
Frames Per Second, More Is Better
Linux 5.10.9
SE +/- 1.37, N = 3
MIN: 245 / MAX: 736
468.12
Linux 5.11
SE +/- 7.09, N = 15
MIN: 164 / MAX: 735
299.31
Linux 5.11 Patched
SE +/- 0.46, N = 3
MIN: 280 / MAX: 740
472.04
100
200
300
400
500

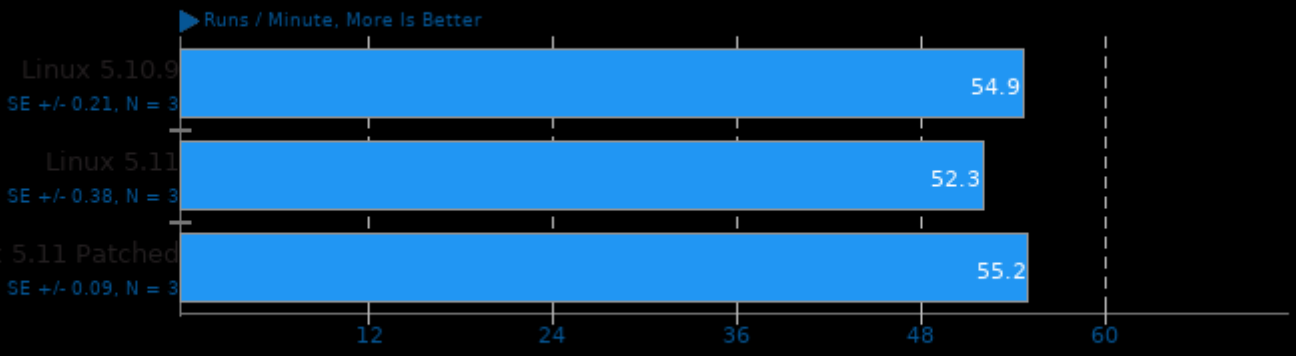

Stockfish 12
Total Time
Nodes Per Second, More Is Better
Linux 5.10.9
SE +/- 337738.43, N = 15
44197865
Linux 5.11
SE +/- 411877.91, N = 3
43240425
Linux 5.11 Patched
SE +/- 311694.90, N = 3
43755897
9M
18M
27M
36M
45M
1. (CXX) g++ options: -m64 -lpthread -fno-exceptions -std=c++17 -pedantic -O3 -msse -msse3 -mpopcnt -msse4.1 -mssse3 -msse2 -flto -flto=jobserver
Warsow 2.5 Beta
Resolution: 1920 x 1080
Frames Per Second, More Is Better
Linux 5.10.9
SE +/- 1.20, N = 3
954.6
Linux 5.11
SE +/- 1.11, N = 3
957.0
Linux 5.11 Patched
SE +/- 1.03, N = 3
957.9
200
400
600
800
1000
Build2 0.13
Time To Compile
Seconds, Fewer Is Better
Linux 5.10.9
SE +/- 0.46, N = 3
82.43
Linux 5.11
SE +/- 0.24, N = 3
81.34
Linux 5.11 Patched
SE +/- 0.05, N = 3
81.57
20
40
60
80
100


Warsow 2.5 Beta
Resolution: 3840 x 2160
Frames Per Second, More Is Better
Linux 5.10.9
SE +/- 0.26, N = 3
422.2
Linux 5.11
SE +/- 0.20, N = 3
431.9
Linux 5.11 Patched
SE +/- 0.30, N = 3
432.7
90
180
270
360
450
ASKAP 2018-11-10
Test: tConvolve MT - Degridding
Million Grid Points Per Second, More Is Better
Linux 5.10.9
SE +/- 8.09, N = 3
1890.36
Linux 5.11
SE +/- 2.25, N = 3
1895.34
Linux 5.11 Patched
SE +/- 6.34, N = 3
1884.49
400
800
1200
1600
2000
1. (CXX) g++ options: -lpthread
ASKAP 2018-11-10
Test: tConvolve MT - Gridding
Million Grid Points Per Second, More Is Better
Linux 5.10.9
SE +/- 0.84, N = 3
917.60
Linux 5.11
SE +/- 0.50, N = 3
919.71
Linux 5.11 Patched
SE +/- 1.35, N = 3
915.04
200
400
600
800
1000
1. (CXX) g++ options: -lpthread


oneDNN 2.0
Harness: Recurrent Neural Network Training - Data Type: f32 - Engine: CPU
ms, Fewer Is Better
Linux 5.10.9
SE +/- 28.69, N = 3
MIN: 2482.11
2533.50
Linux 5.11
SE +/- 19.34, N = 3
MIN: 2532.58
2573.53
Linux 5.11 Patched
SE +/- 30.62, N = 3
MIN: 2608.63
2657.20
600
1200
1800
2400
3000
1. (CXX) g++ options: -O3 -std=c++11 -fopenmp -msse4.1 -fPIC -pie -lpthread
Timed Godot Game Engine Compilation 3.2.3
Time To Compile
Seconds, Fewer Is Better
Linux 5.10.9
SE +/- 0.16, N = 3
79.74
Linux 5.11
SE +/- 0.16, N = 3
80.03
Linux 5.11 Patched
SE +/- 0.07, N = 3
79.57
20
40
60
80
100
Selenium
Benchmark: Speedometer - Browser: Google Chrome
Runs Per Minute, More Is Better
Linux 5.10.9
SE +/- 0.33, N = 3
174
Linux 5.11
SE +/- 1.33, N = 8
159
Linux 5.11 Patched
SE +/- 0.67, N = 3
179
40
80
120
160
200
1. chrome 88.0.4324.96

Selenium

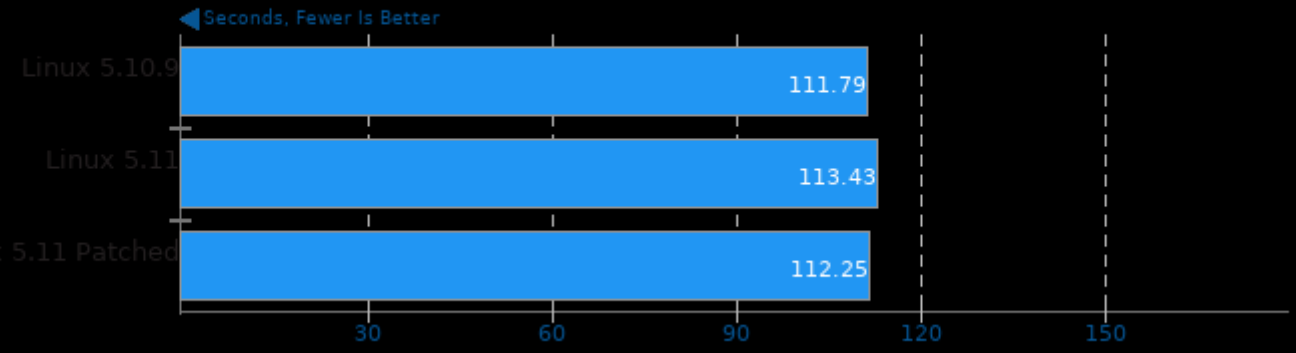
Benchmark: StyleBench - Browser: Google Chrome



1. chrome 88.0.4324.96

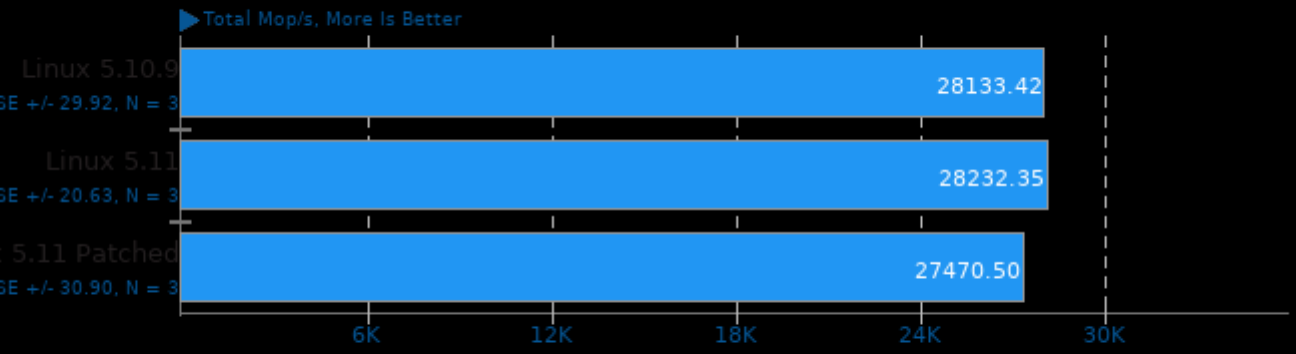
Appleseed 2.0 Beta

Scene: Material Tester



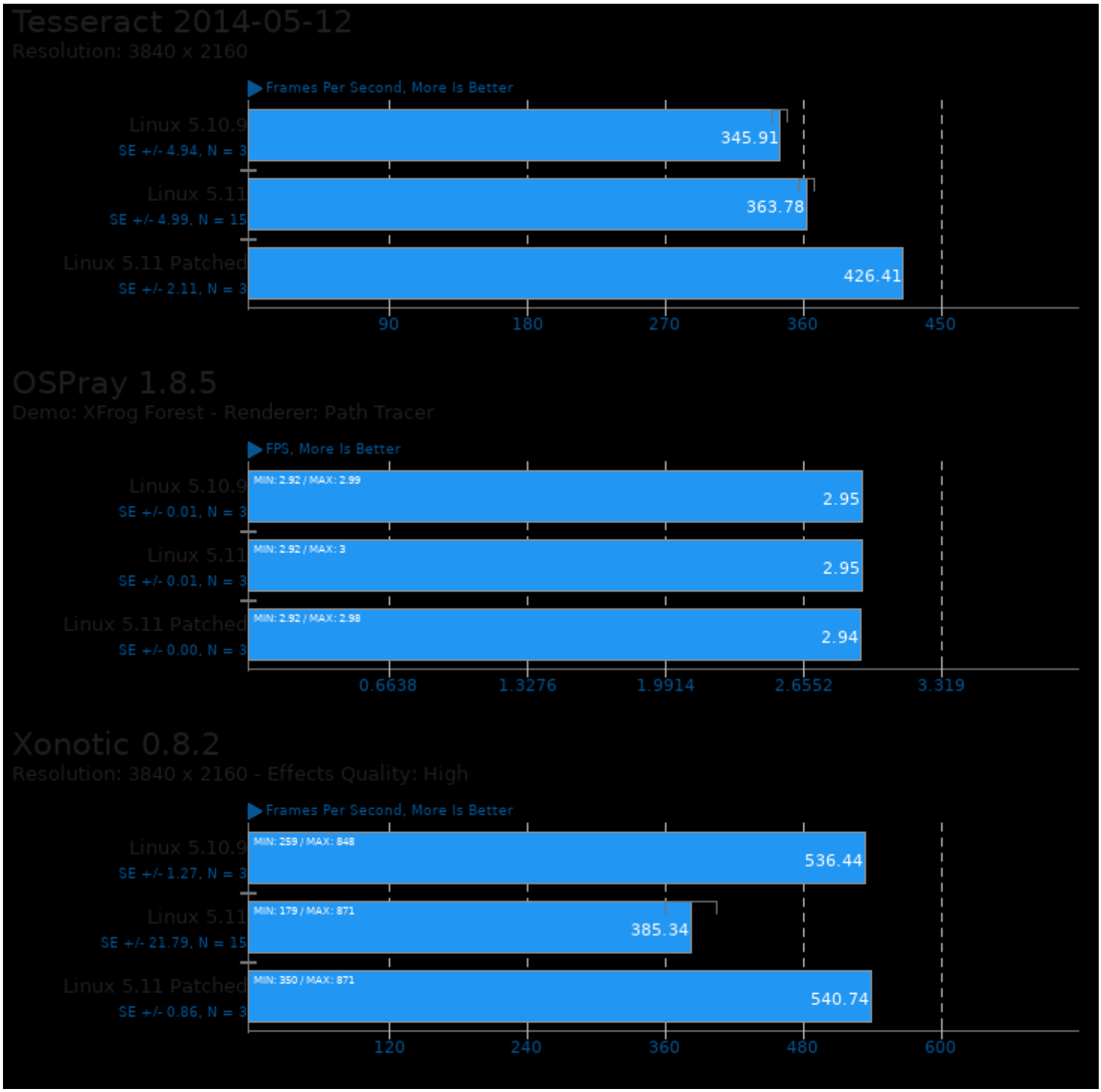
NAS Parallel Benchmarks 3.4

Test / Class: LU.C

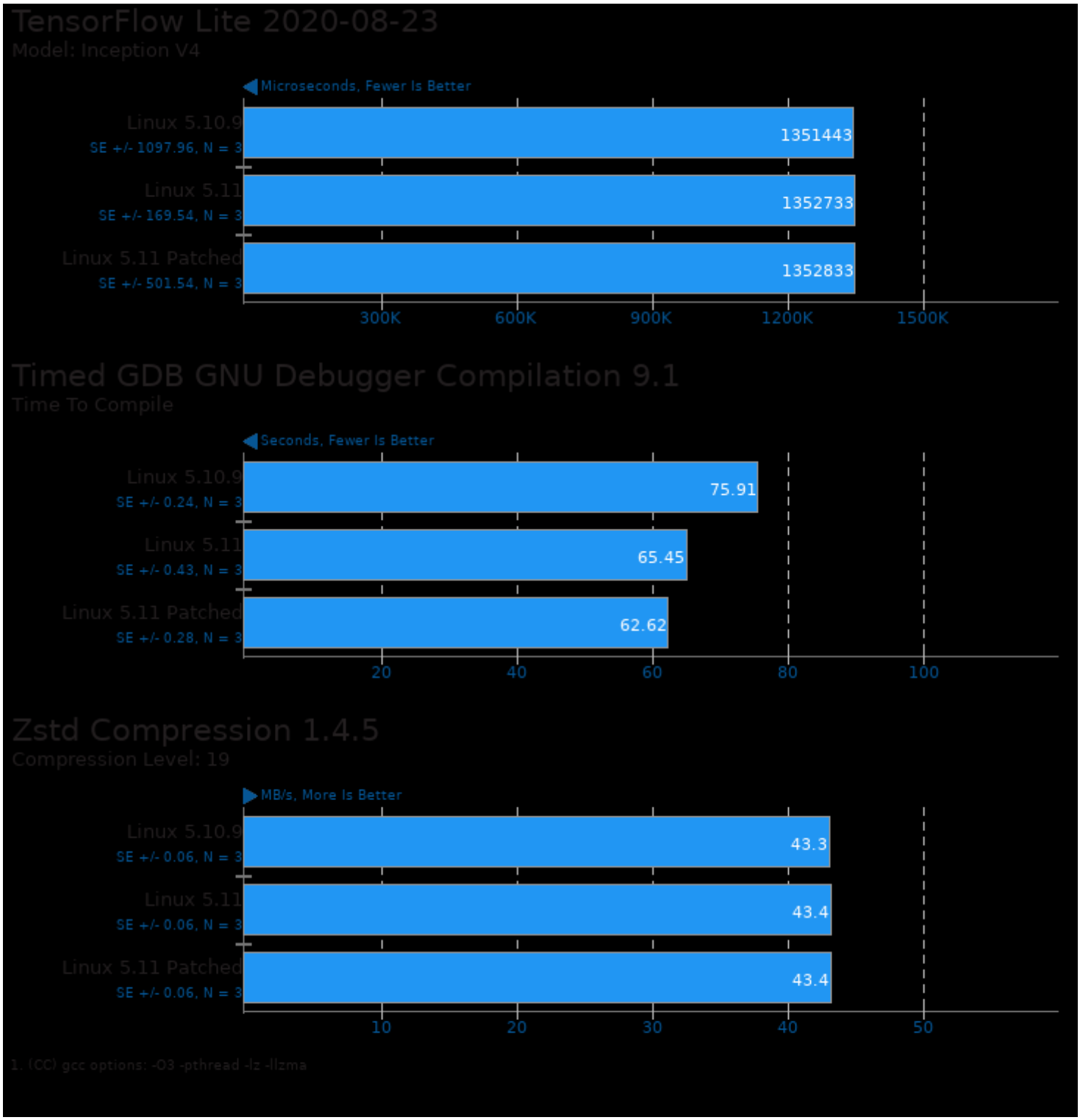


1. (F9X) gfortran options: -O3 -march=native -pthread -lmpi_usempif08 -lmpi_mpifh -lmpi -lopen-rte -lopen-pal -lhwloc -ldl -levent -levent_pthreads -luti

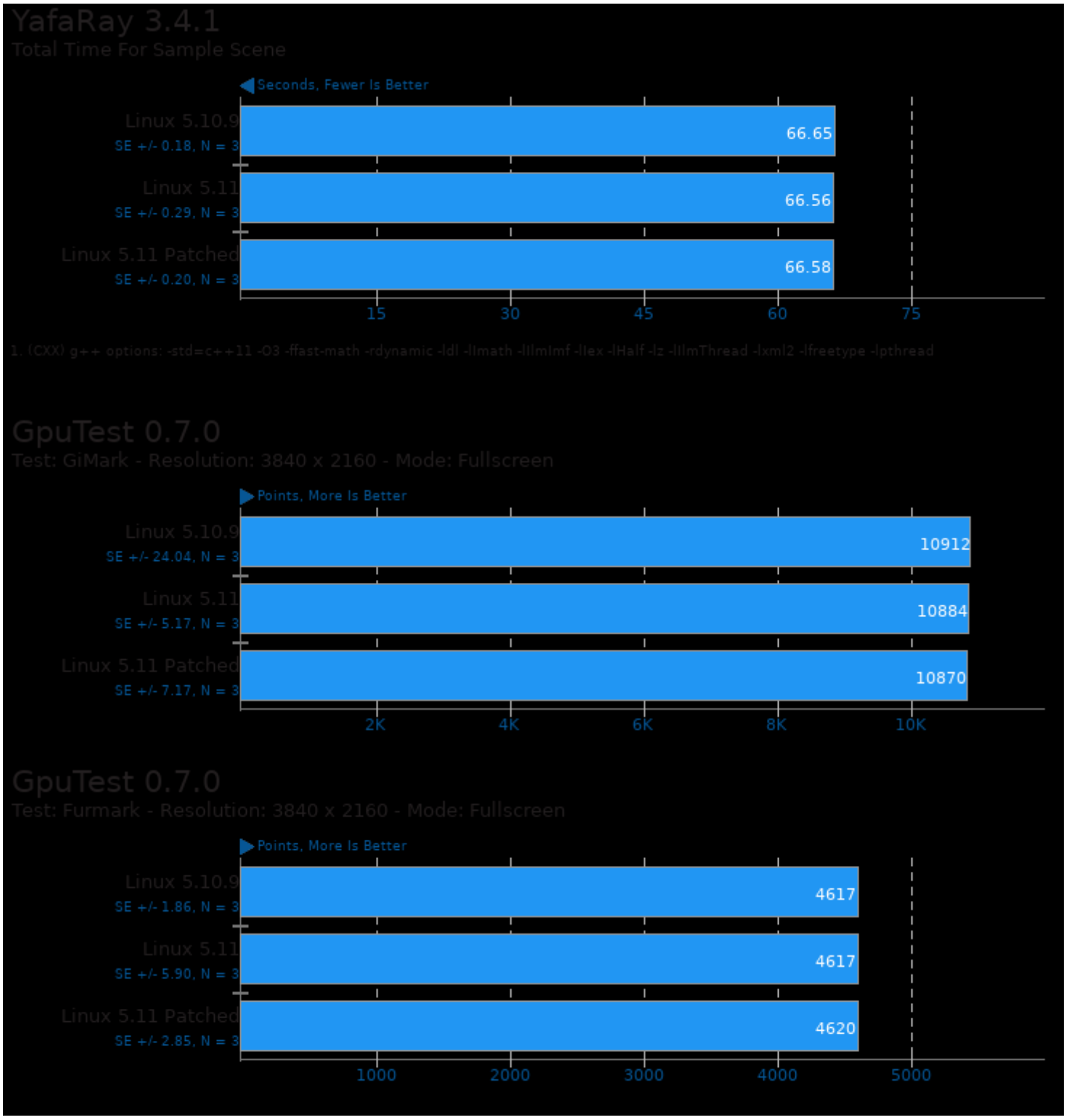
2. Open MPI 4.0.3

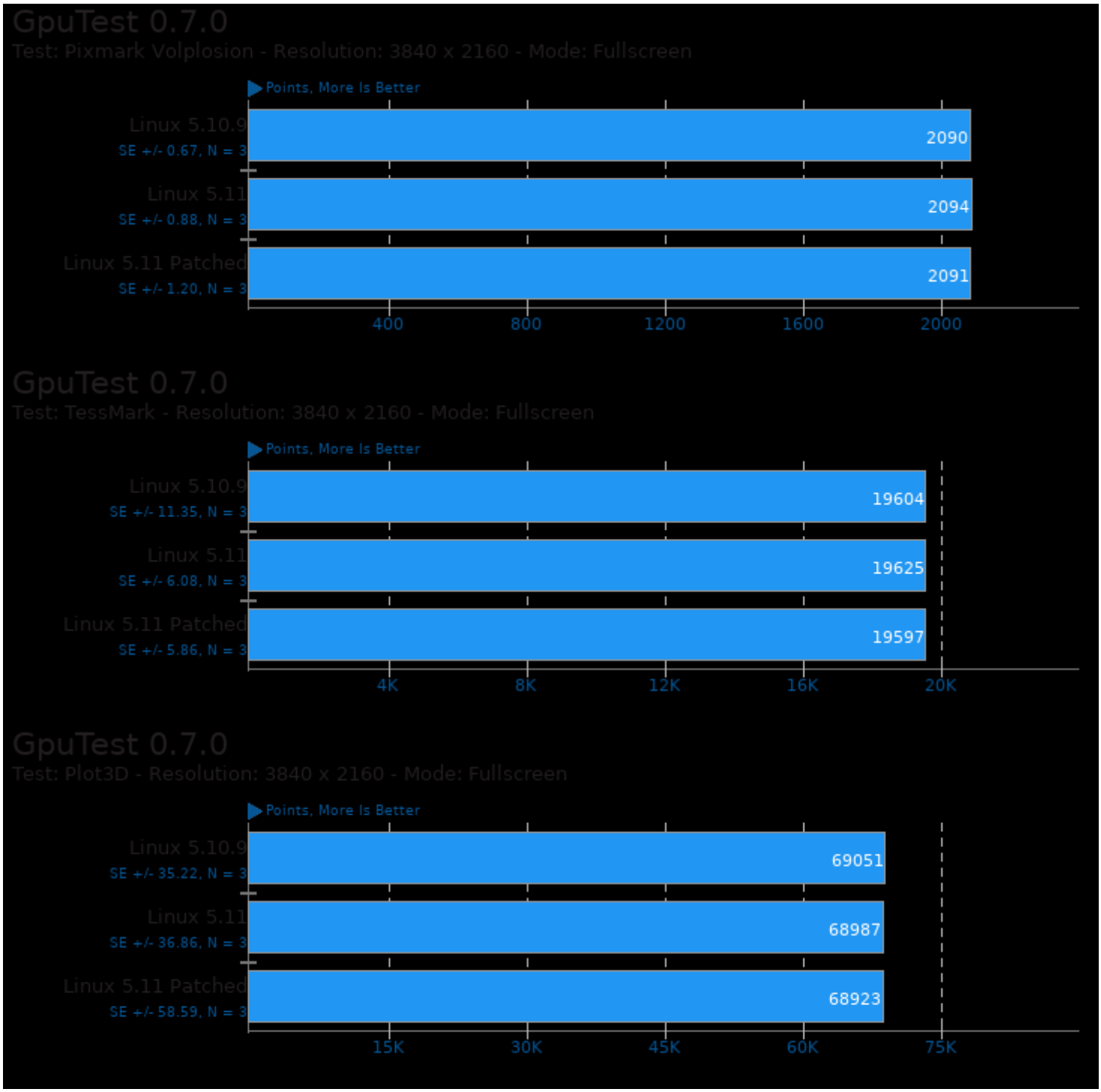

Tesseract 2014-05-12
Resolution: 3840 x 2160
Frames Per Second, More Is Better
Linux 5.10.9
SE +/- 4.94, N = 3
345.91
Linux 5.11
SE +/- 4.99, N = 15
363.78
Linux 5.11 Patched
SE +/- 2.11, N = 3
426.41
90
180
270
360
450
OSPray 1.8.5
Demo: XFrog Forest - Renderer: Path Tracer
FPS, More Is Better
Linux 5.10.9
SE +/- 0.01, N = 3
MIN: 2.92 / MAX: 2.99
2.95
Linux 5.11
SE +/- 0.01, N = 3
MIN: 2.92 / MAX: 3
2.95
Linux 5.11 Patched
SE +/- 0.00, N = 3
MIN: 2.92 / MAX: 2.98
2.94
0.6638
1.3276
1.9914
2.6552
3.319
Xonotic 0.8.2
Resolution: 3840 x 2160 - Effects Quality: High
Frames Per Second, More Is Better
Linux 5.10.9
SE +/- 1.27, N = 3
MIN: 259 / MAX: 848
536.44
Linux 5.11
SE +/- 21.79, N = 15
MIN: 179 / MAX: 871
385.34
Linux 5.11 Patched
SE +/- 0.86, N = 3
MIN: 350 / MAX: 871
540.74
120
240
360
480
600

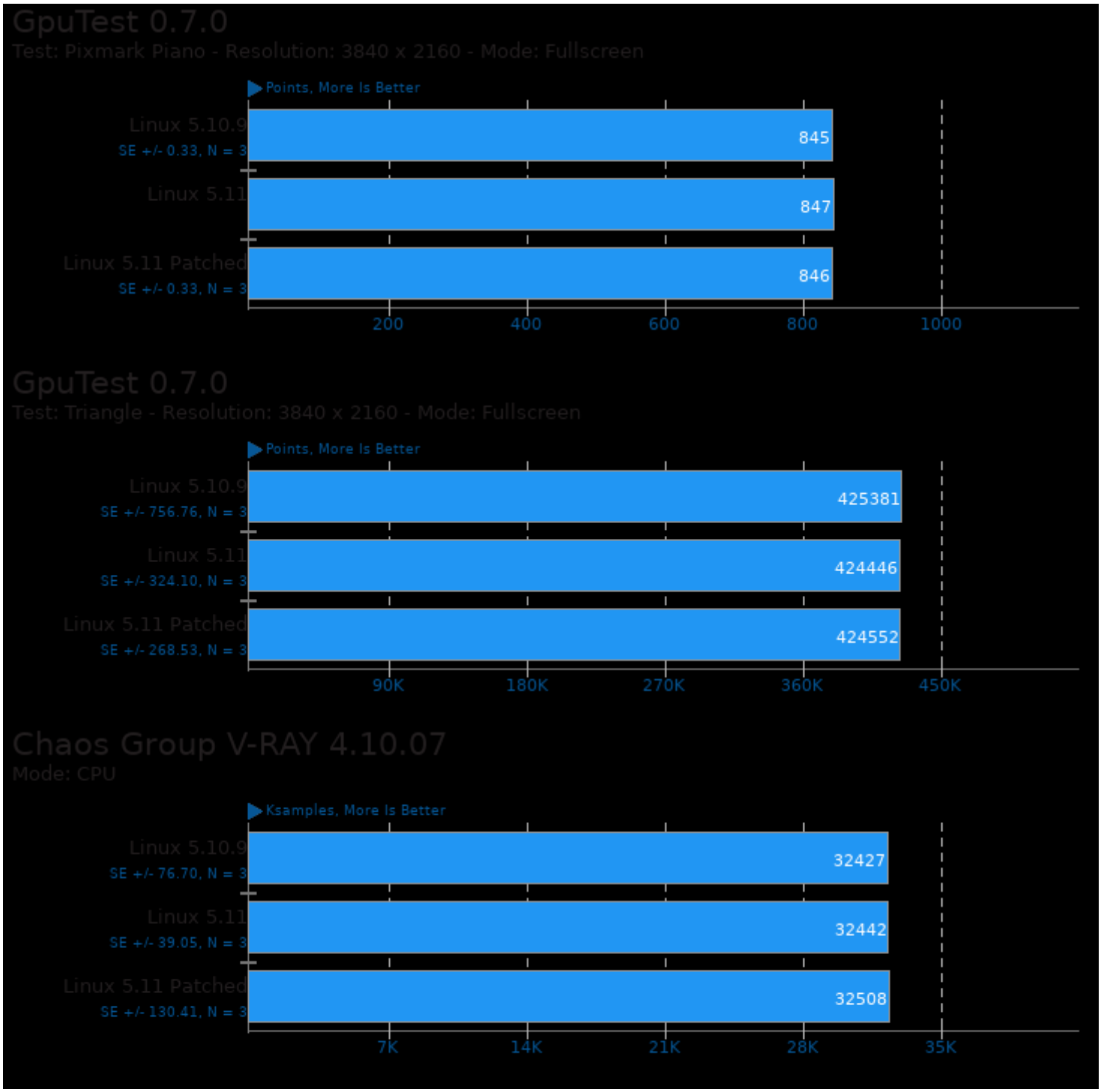
AMD Ryzen 9 5950X Linux 5.11

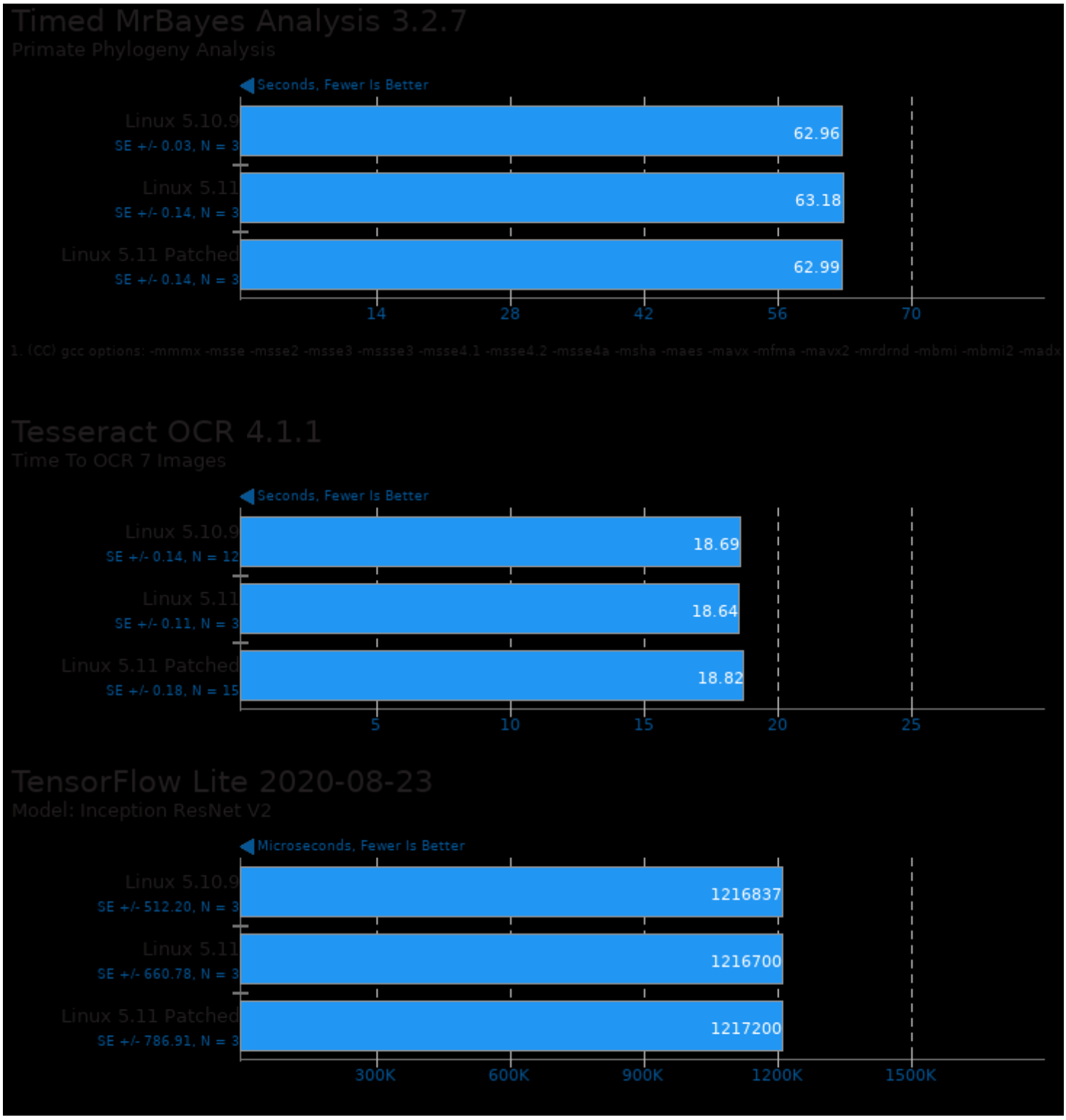


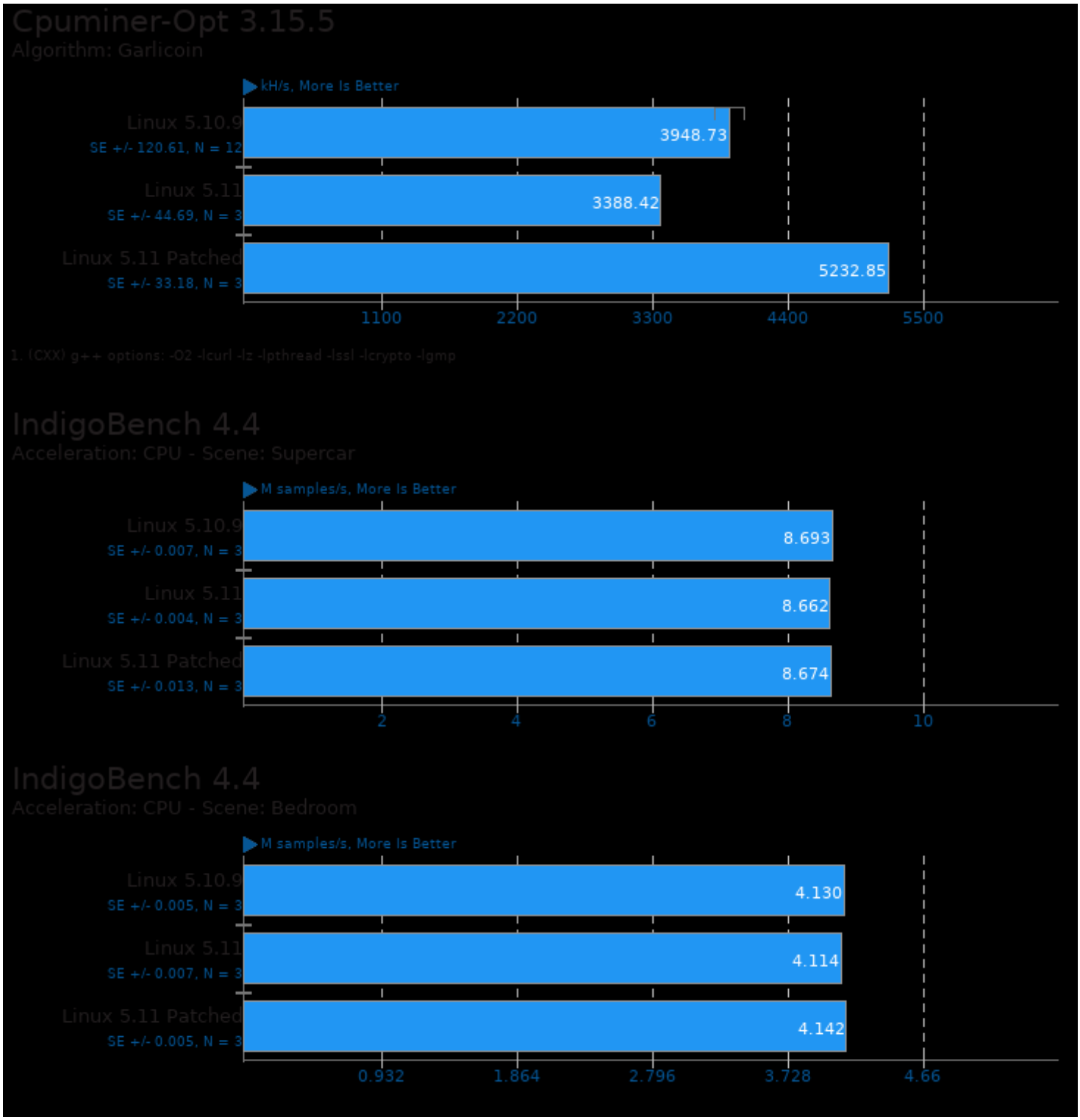
AMD Ryzen 9 5950X Linux 5.11



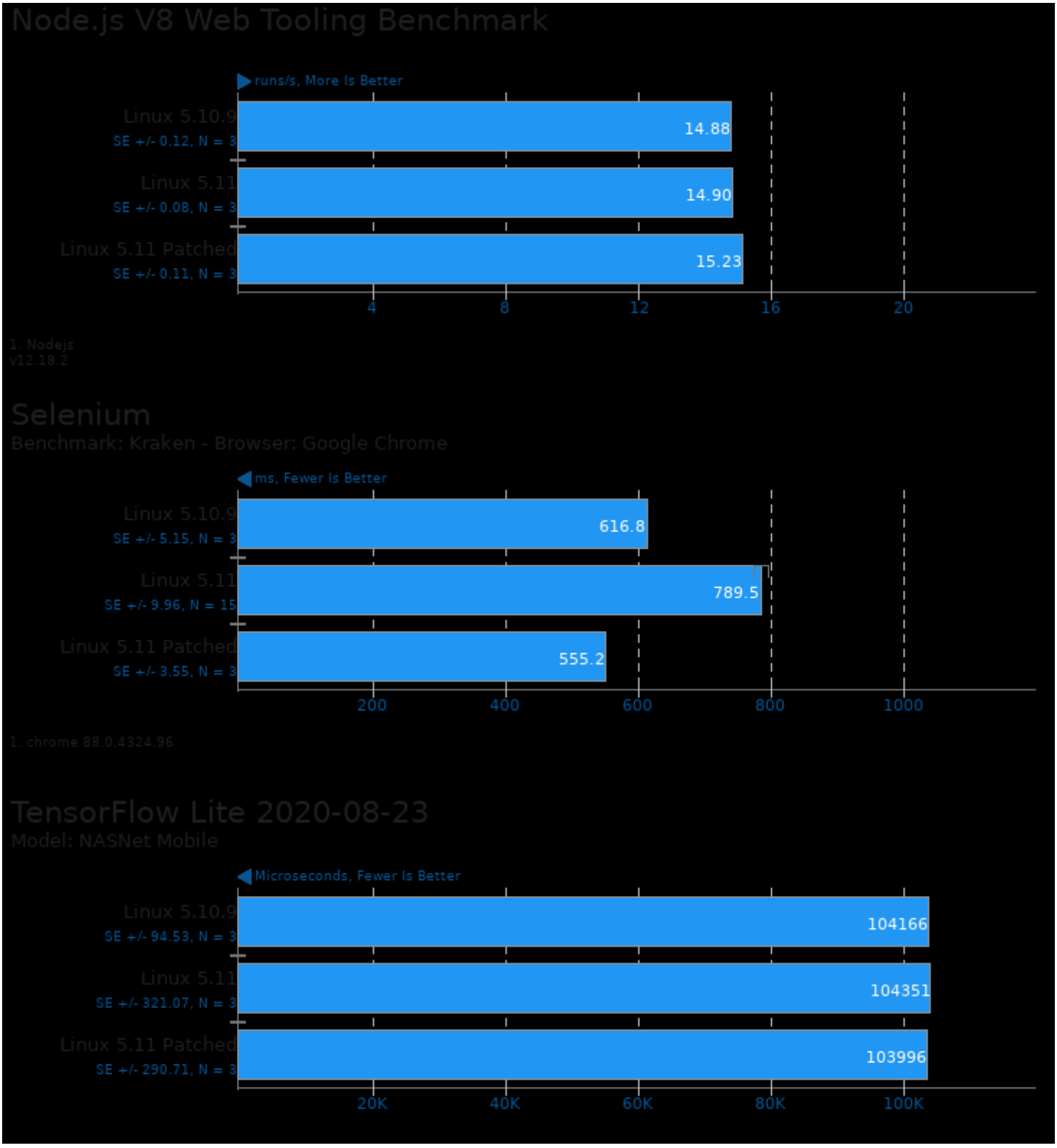

GpuTest 0.7.0
Test: Pixmark Volplosion - Resolution: 3840 x 2160 - Mode: Fullscreen
Points, More Is Better
Linux 5.10.9
SE +/- 0.67, N = 3
2090
Linux 5.11
SE +/- 0.88, N = 3
2094
Linux 5.11 Patched
SE +/- 1.20, N = 3
2091
400
800
1200
1600
2000
GpuTest 0.7.0
Test: TessMark - Resolution: 3840 x 2160 - Mode: Fullscreen
Points, More Is Better
Linux 5.10.9
SE +/- 11.35, N = 3
19604
Linux 5.11
SE +/- 6.08, N = 3
19625
Linux 5.11 Patched
SE +/- 5.86, N = 3
19597
4K
8K
12K
16K
20K
GpuTest 0.7.0
Test: Plot3D - Resolution: 3840 x 2160 - Mode: Fullscreen
Points, More Is Better
Linux 5.10.9
SE +/- 35.22, N = 3
69051
Linux 5.11
SE +/- 36.86, N = 3
68987
Linux 5.11 Patched
SE +/- 58.59, N = 3
68923
15K
30K
45K
60K
75K


GpuTest 0.7.0
Test: Pixmark Piano - Resolution: 3840 x 2160 - Mode: Fullscreen
Points, More Is Better
Linux 5.10.9
SE +/- 0.33, N = 3
845
Linux 5.11
847
Linux 5.11 Patched
SE +/- 0.33, N = 3
846
200
400
600
800
1000
GpuTest 0.7.0
Test: Triangle - Resolution: 3840 x 2160 - Mode: Fullscreen
Points, More Is Better
Linux 5.10.9
SE +/- 756.76, N = 3
425381
Linux 5.11
SE +/- 324.10, N = 3
424446
Linux 5.11 Patched
SE +/- 268.53, N = 3
424552
90K
180K
270K
360K
450K
Chaos Group V-RAY 4.10.07
Mode: CPU
Ksamples, More Is Better
Linux 5.10.9
SE +/- 76.70, N = 3
32427
Linux 5.11
SE +/- 39.05, N = 3
32442
Linux 5.11 Patched
SE +/- 130.41, N = 3
32508
7K
14K
21K
28K
35K


Timed MrBayes Analysis 3.2.7
Primate Phylogeny Analysis
Seconds, Fewer Is Better
Linux 5.10.9
SE +/- 0.03, N = 3
62.96
Linux 5.11
SE +/- 0.14, N = 3
63.18
Linux 5.11 Patched
SE +/- 0.14, N = 3
62.99
14
28
42
56
70
1. (CC) gcc options: -mmmx -msse -msse2 -msse3 -mssse3 -msse4.1 -msse4.2 -msse4a -msha -maes -mavx -mfma -mavx2 -mrdrnd -mbmi -mbmi2 -madx
Tesseract OCR 4.1.1
Time To OCR 7 Images
Seconds, Fewer Is Better
Linux 5.10.9
SE +/- 0.14, N = 12
18.69
Linux 5.11
SE +/- 0.11, N = 3
18.64
Linux 5.11 Patched
SE +/- 0.18, N = 15
18.82
5
10
15
20
25
TensorFlow Lite 2020-08-23
Model: Inception ResNet V2
Microseconds, Fewer Is Better
Linux 5.10.9
SE +/- 512.20, N = 3
1216837
Linux 5.11
SE +/- 660.78, N = 3
1216700
Linux 5.11 Patched
SE +/- 786.91, N = 3
1217200
300K
600K
900K
1200K
1500K


Cpuminer-Opt 3.15.5
Algorithm: Garlicoin
kH/s, More Is Better
Linux 5.10.9
SE +/- 120.61, N = 12
3948.73
Linux 5.11
SE +/- 44.69, N = 3
3388.42
Linux 5.11 Patched
SE +/- 33.18, N = 3
5232.85
1100
2200
3300
4400
5500
1. (CXX) g++ options: -O2 -lcurl -lz -lpthread -lssl -lcrypto -lgmp
IndigoBench 4.4
Acceleration: CPU - Scene: Supercar
M samples/s, More Is Better
Linux 5.10.9
SE +/- 0.007, N = 3
8.693
Linux 5.11
SE +/- 0.004, N = 3
8.662
Linux 5.11 Patched
SE +/- 0.013, N = 3
8.674
2
4
6
8
10
IndigoBench 4.4
Acceleration: CPU - Scene: Bedroom
M samples/s, More Is Better
Linux 5.10.9
SE +/- 0.005, N = 3
4.130
Linux 5.11
SE +/- 0.007, N = 3
4.114
Linux 5.11 Patched
SE +/- 0.005, N = 3
4.142
0.932
1.864
2.796
3.728
4.66

Node.js V8 Web Tooling Benchmark

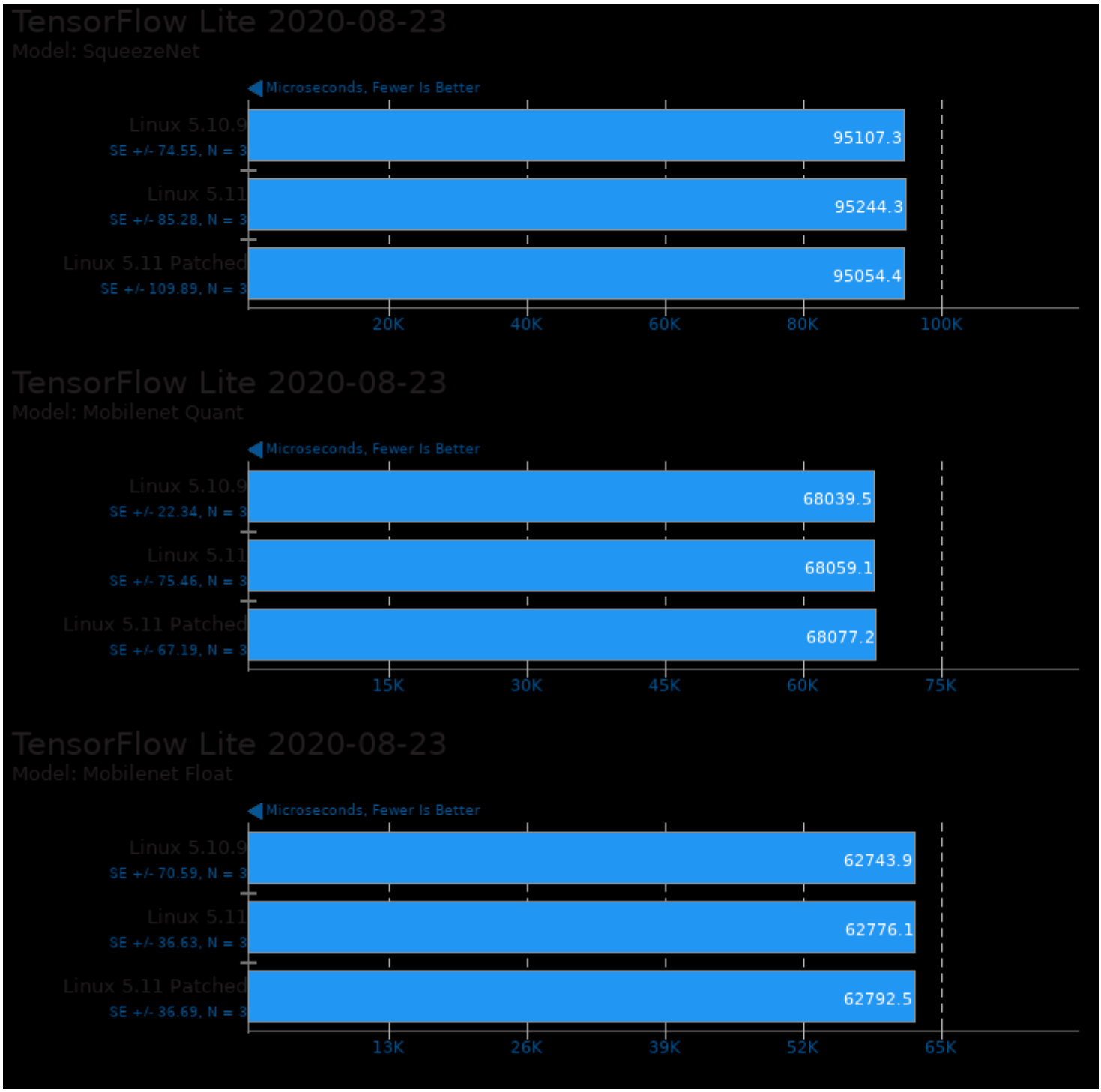


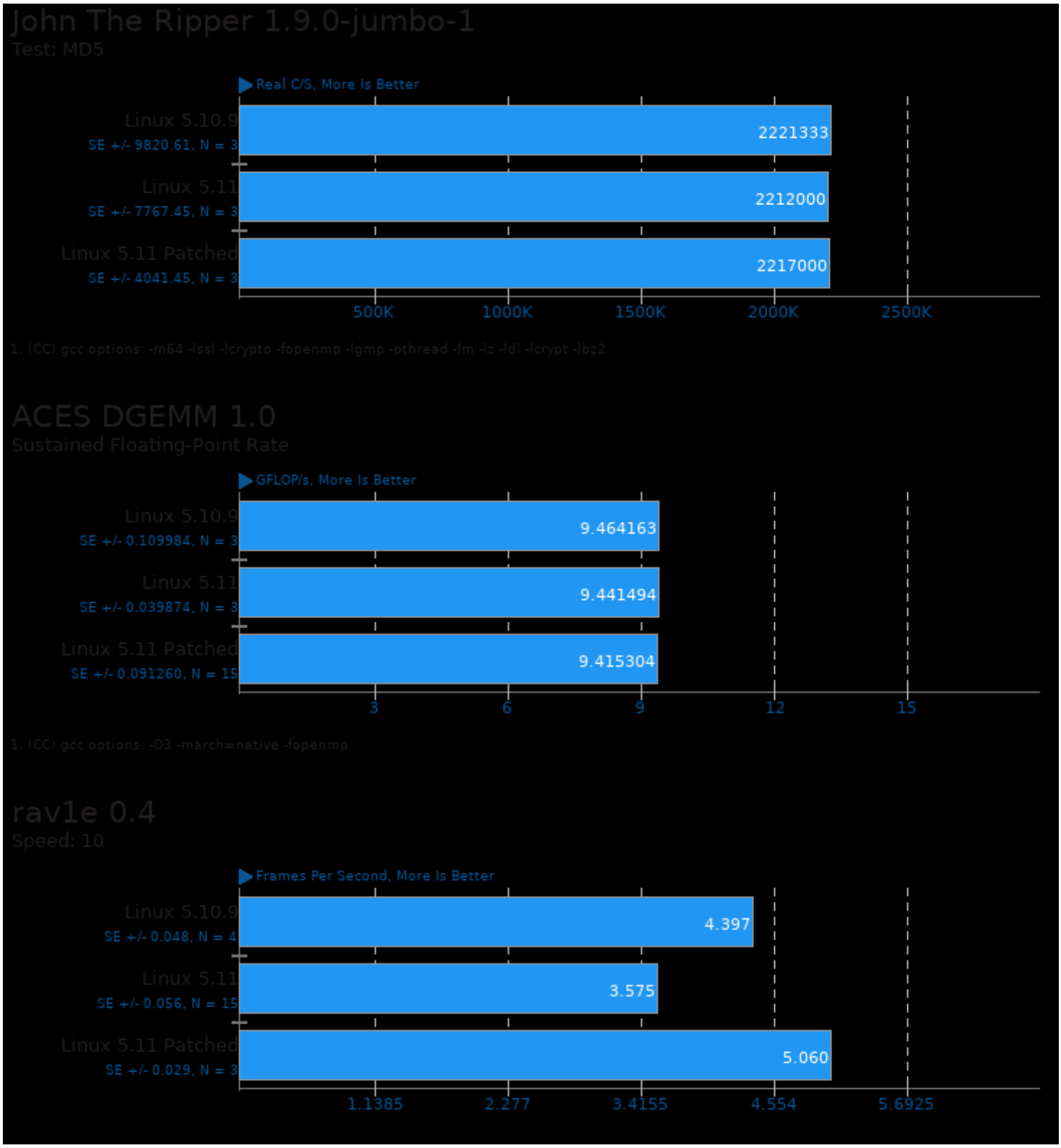
Selenium

Benchmark: Kraken - Browser: Google Chrome

TensorFlow Lite 2020-08-23

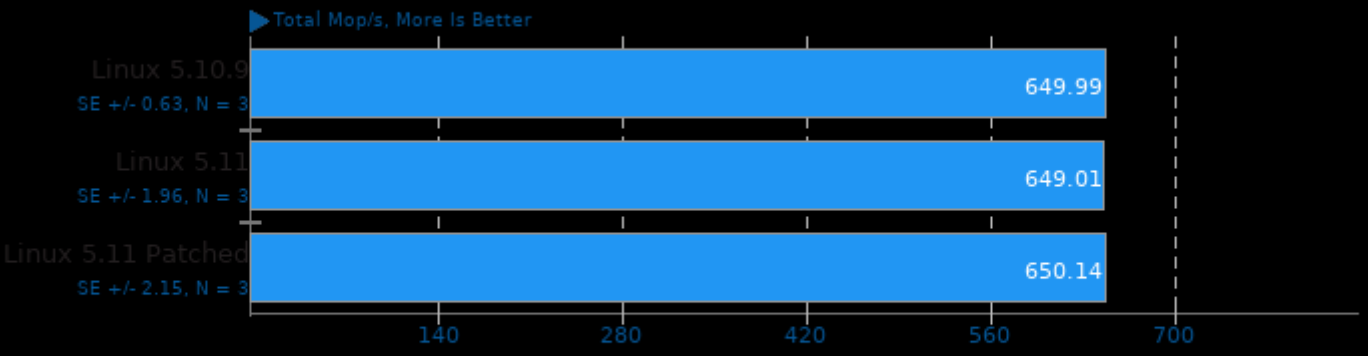
Model: NASNet Mobile


TensorFlow Lite 2020-08-23
Model: SqueezeNet
Microseconds, Fewer Is Better
Linux 5.10.9
SE +/- 74.55, N = 3
95107.3
Linux 5.11
SE +/- 85.28, N = 3
95244.3
Linux 5.11 Patched
SE +/- 109.89, N = 3
95054.4
20K
40K
60K
80K
100K
TensorFlow Lite 2020-08-23
Model: Mobilenet Quant
Microseconds, Fewer Is Better
Linux 5.10.9
SE +/- 22.34, N = 3
68039.5
Linux 5.11
SE +/- 75.46, N = 3
68059.1
Linux 5.11 Patched
SE +/- 67.19, N = 3
68077.2
15K
30K
45K
60K
75K
TensorFlow Lite 2020-08-23
Model: Mobilenet Float
Microseconds, Fewer Is Better
Linux 5.10.9
SE +/- 70.59, N = 3
62743.9
Linux 5.11
SE +/- 36.63, N = 3
62776.1
Linux 5.11 Patched
SE +/- 36.69, N = 3
62792.5
13K
26K
39K
52K
65K


John The Ripper 1.9.0-jumbo-1
Test: MD5
Real C/S, More Is Better
Linux 5.10.9
SE +/- 9820.61, N = 3
2221333
Linux 5.11
SE +/- 7767.45, N = 3
2212000
Linux 5.11 Patched
SE +/- 4041.45, N = 3
2217000
500K
1000K
1500K
2000K
2500K
1. (CC) gcc options: -m64 -lssl -lcrypto -fopenmp -lgmp -pthread -lm -lz -ldl -lcrypt -lbz2
ACES DGEMM 1.0
Sustained Floating-Point Rate
GFLOP/s, More Is Better
Linux 5.10.9
SE +/- 0.109984, N = 3
9.464163
Linux 5.11
SE +/- 0.039874, N = 3
9.441494
Linux 5.11 Patched
SE +/- 0.091260, N = 15
9.415304
3
6
9
12
15
1. (CC) gcc options: -O3 -march=native -fopenmp
rav1e 0.4
Speed: 10
Frames Per Second, More Is Better
Linux 5.10.9
SE +/- 0.048, N = 4
4.397
Linux 5.11
SE +/- 0.056, N = 15
3.575
Linux 5.11 Patched
SE +/- 0.029, N = 3
5.060
1.1385
2.277
3.4155
4.554
5.6925

NAS Parallel Benchmarks 3.4

Test / Class: IS.D

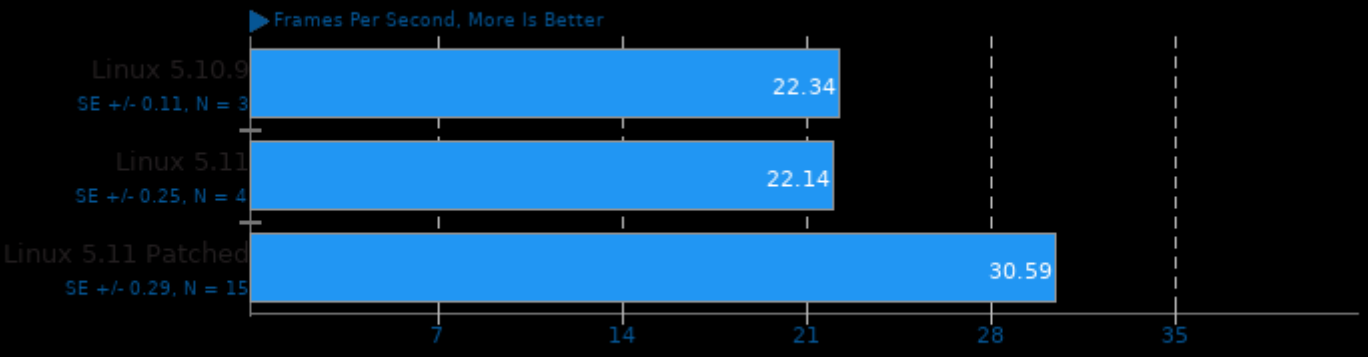


1. (F9X) gfortran options: -O3 -march=native -pthread -lmpi_usempif08 -lmpi_mpifh -lmpi -lopen-rte -lopen-pal -lhwloc -ldl -levent -levent_pthreads -luti

2. Open MPI 4.0.3

AOM AV1 2.0

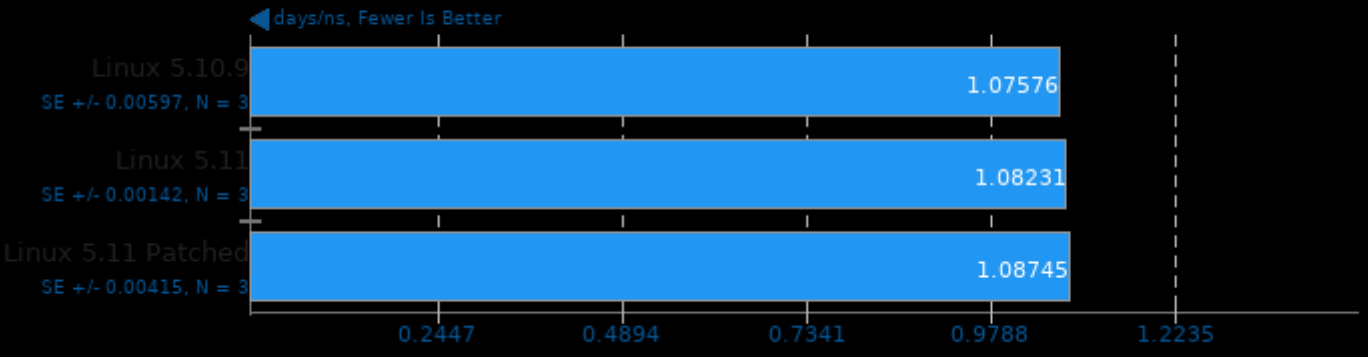
Encoder Mode: Speed 6 Realtime



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

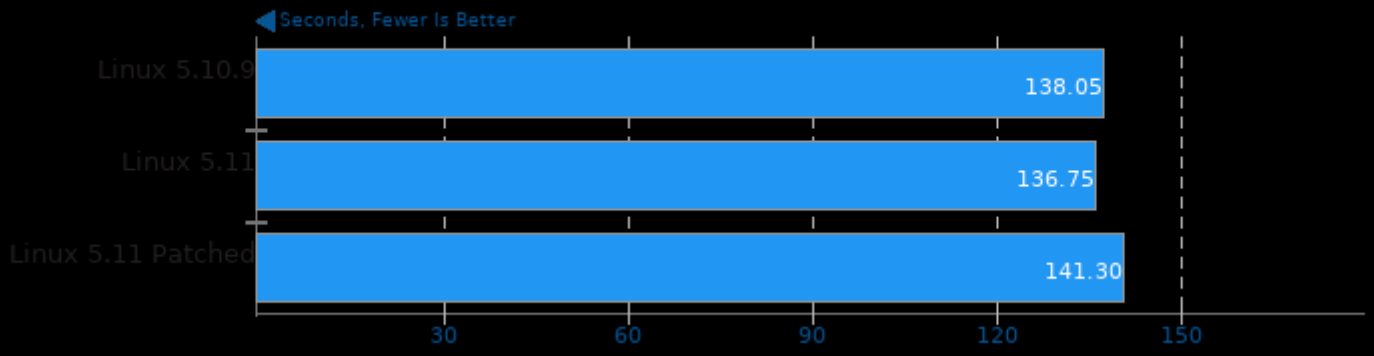
NAMD 2.14

ATPase Simulation - 327,506 Atoms



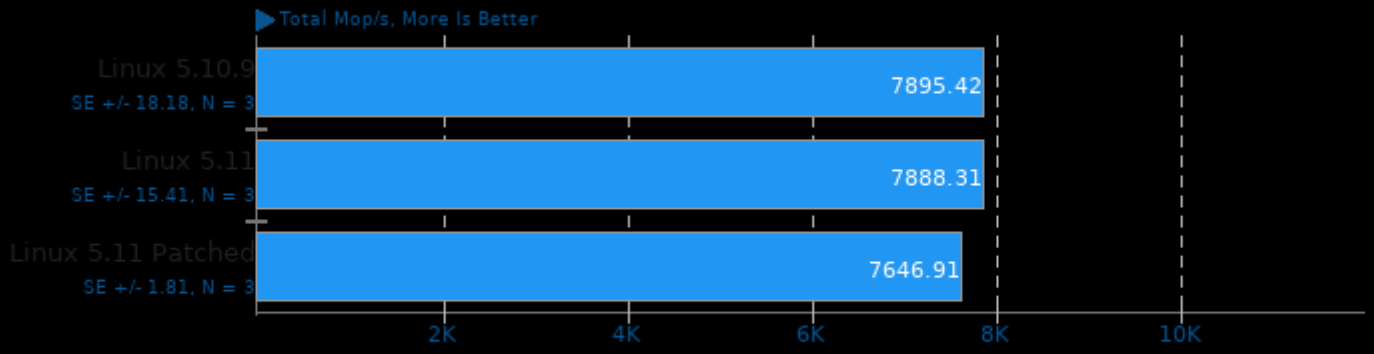
Radiance Benchmark 5.0

Test: SMP Parallel



NAS Parallel Benchmarks 3.4

Test / Class: SP.B

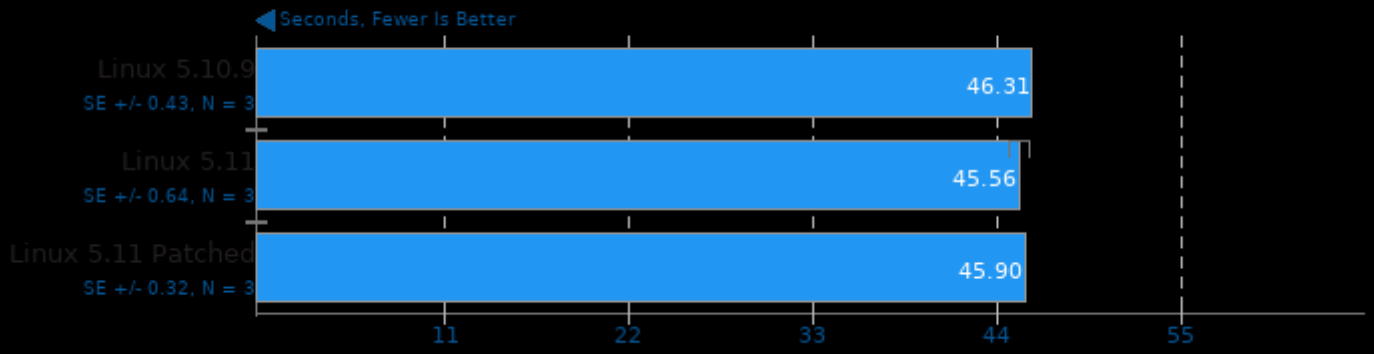


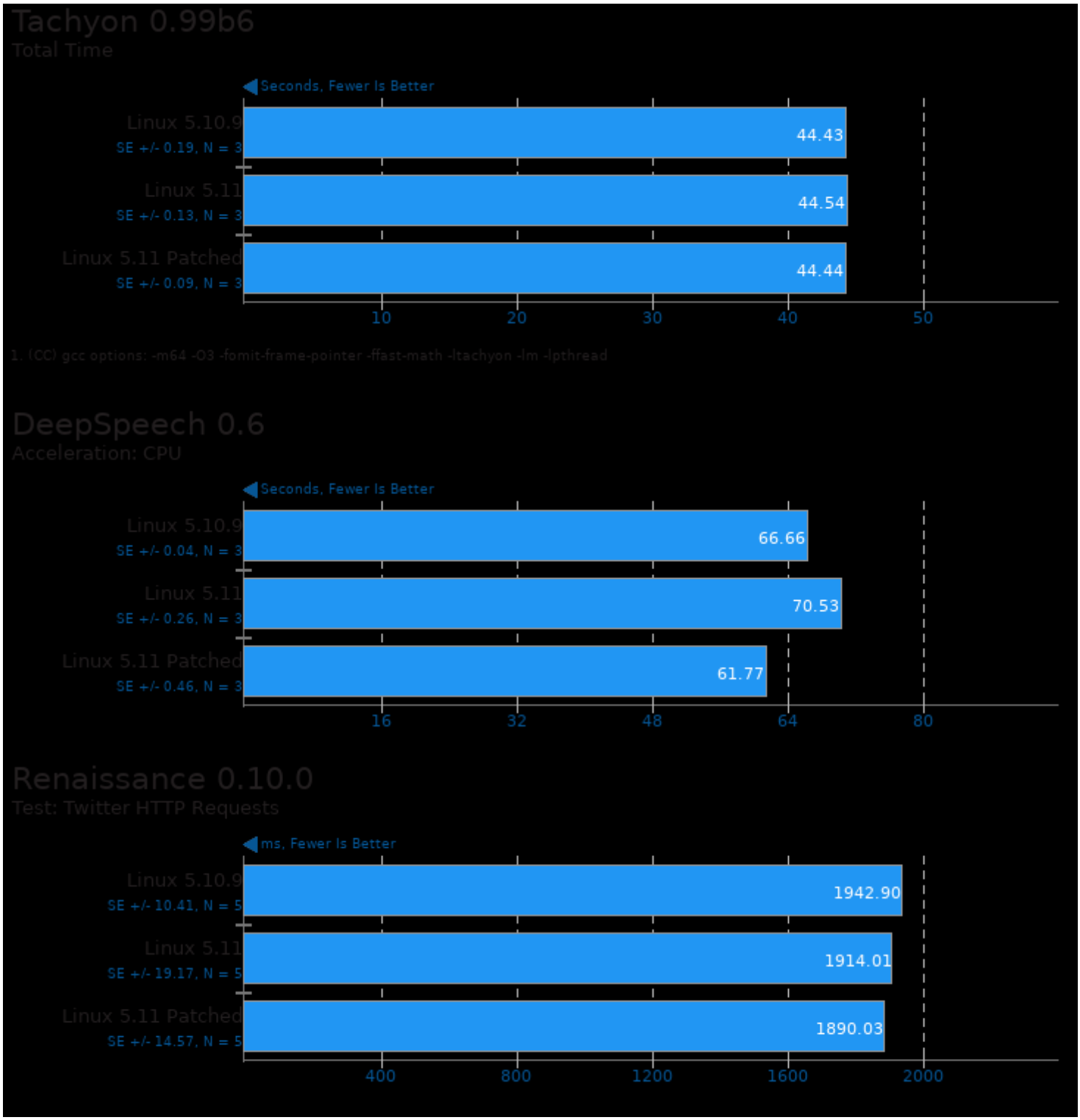
1. (F9X) gfortran options: -O3 -march=native -pthread -lmpi_usempif08 -lmpi_mpifh -lmpi -lopen-rte -lopen-pal -lhwloc -ldl -levent -levent_pthreads -luti

2. Open MPI 4.0.3

Timed Linux Kernel Compilation 5.4

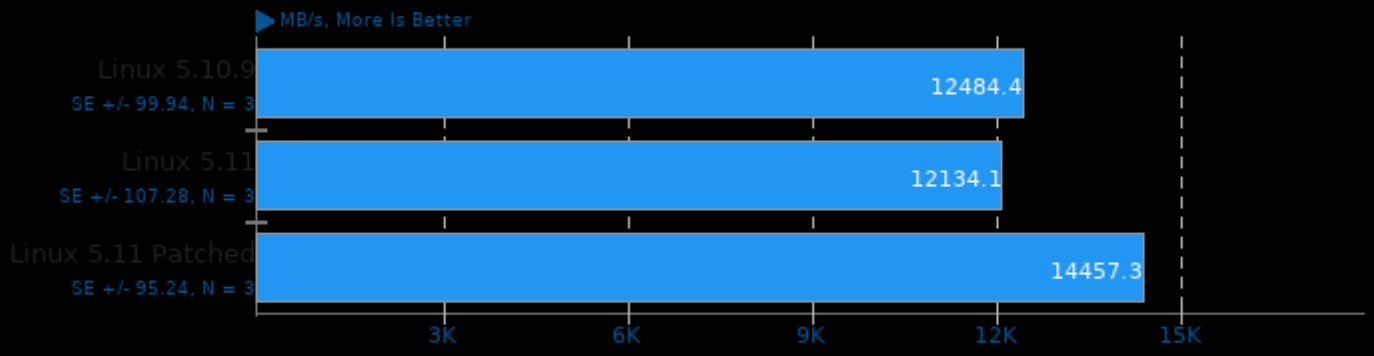
Time To Compile




Tachyon 0.99b6
Total Time
Seconds, Fewer Is Better
Linux 5.10.9
SE +/- 0.19, N = 3
44.43
Linux 5.11
SE +/- 0.13, N = 3
44.54
Linux 5.11 Patched
SE +/- 0.09, N = 3
44.44
10
20
30
40
50
1. (CC) gcc options: -m64 -O3 -fomit-frame-pointer -ffast-math -ltachyon -lm -lpthread
DeepSpeech 0.6
Acceleration: CPU
Seconds, Fewer Is Better
Linux 5.10.9
SE +/- 0.04, N = 3
66.66
Linux 5.11
SE +/- 0.26, N = 3
70.53
Linux 5.11 Patched
SE +/- 0.46, N = 3
61.77
16
32
48
64
80
Renaissance 0.10.0
Test: Twitter HTTP Requests
ms, Fewer Is Better
Linux 5.10.9
SE +/- 10.41, N = 5
1942.90
Linux 5.11
SE +/- 19.17, N = 5
1914.01
Linux 5.11 Patched
SE +/- 14.57, N = 5
1890.03
400
800
1200
1600
2000

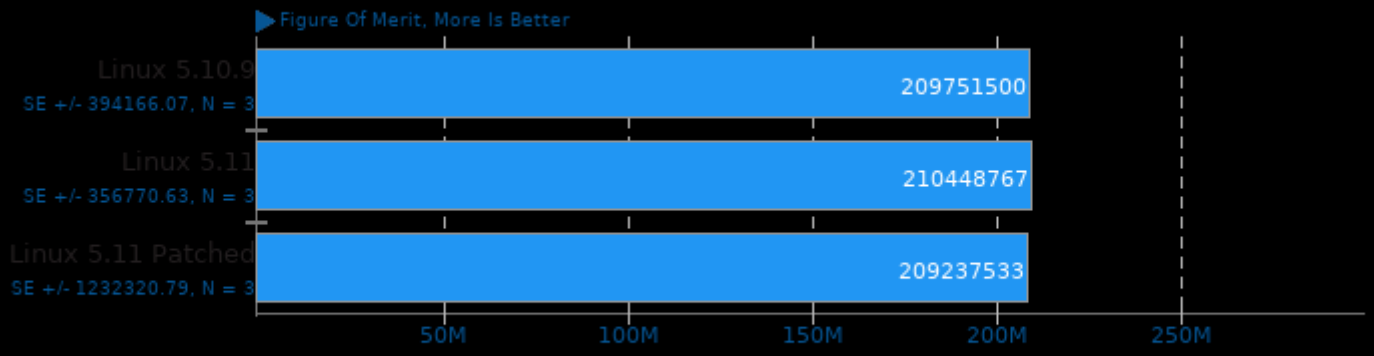
C-Blosc 2.0 Beta 5

Compressor: blosclz



1. (CXX) g++ options: -rdynamic

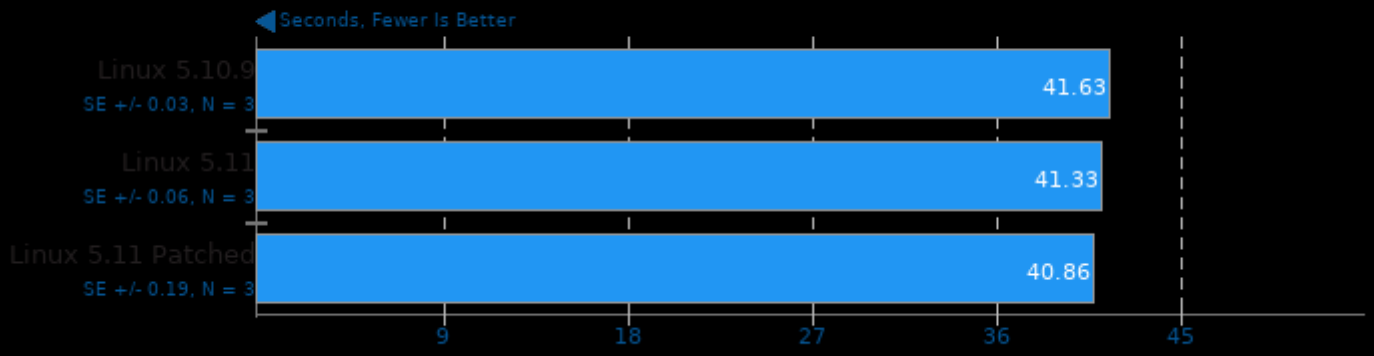
Algebraic Multi-Grid Benchmark 1.2

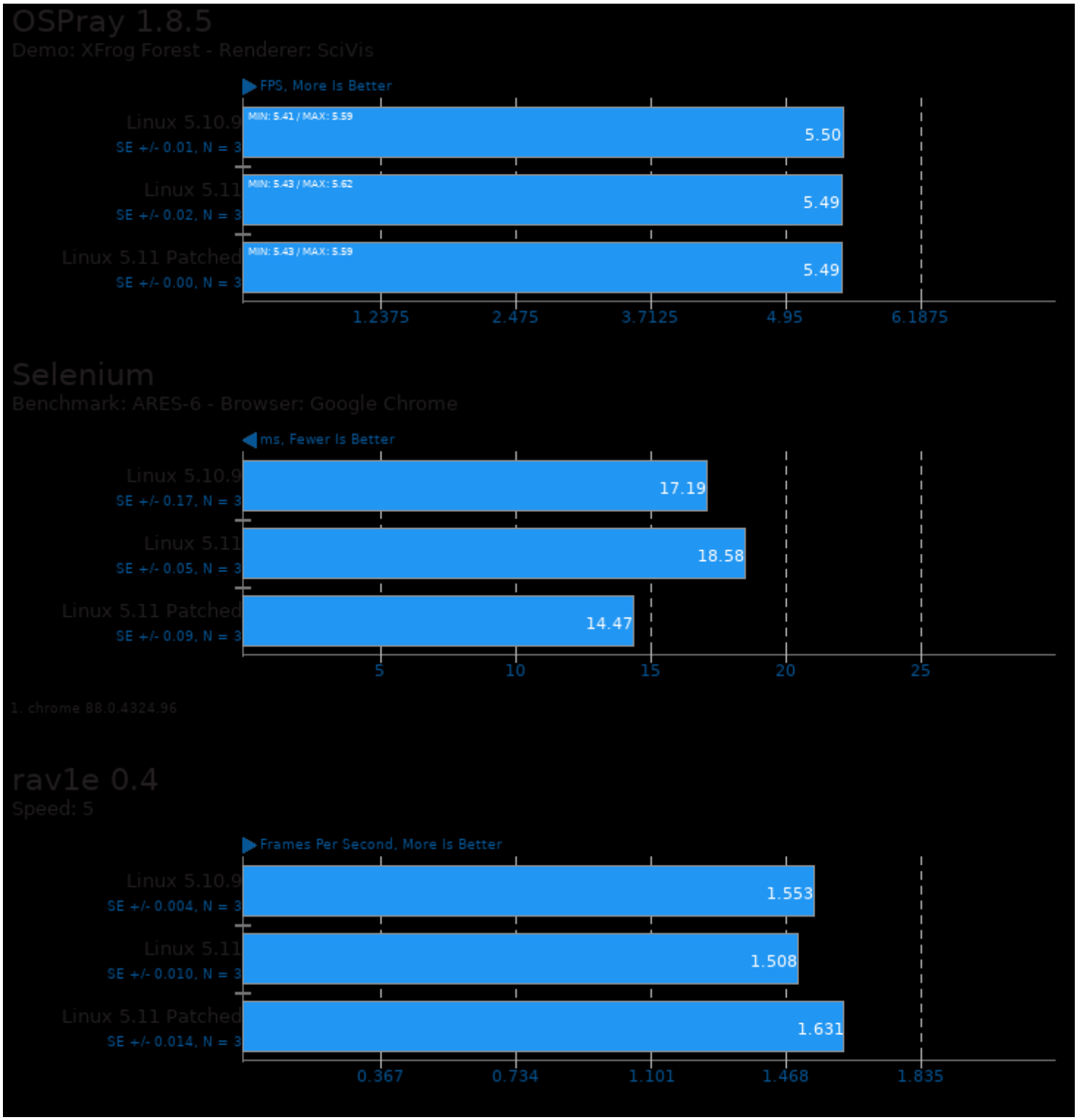


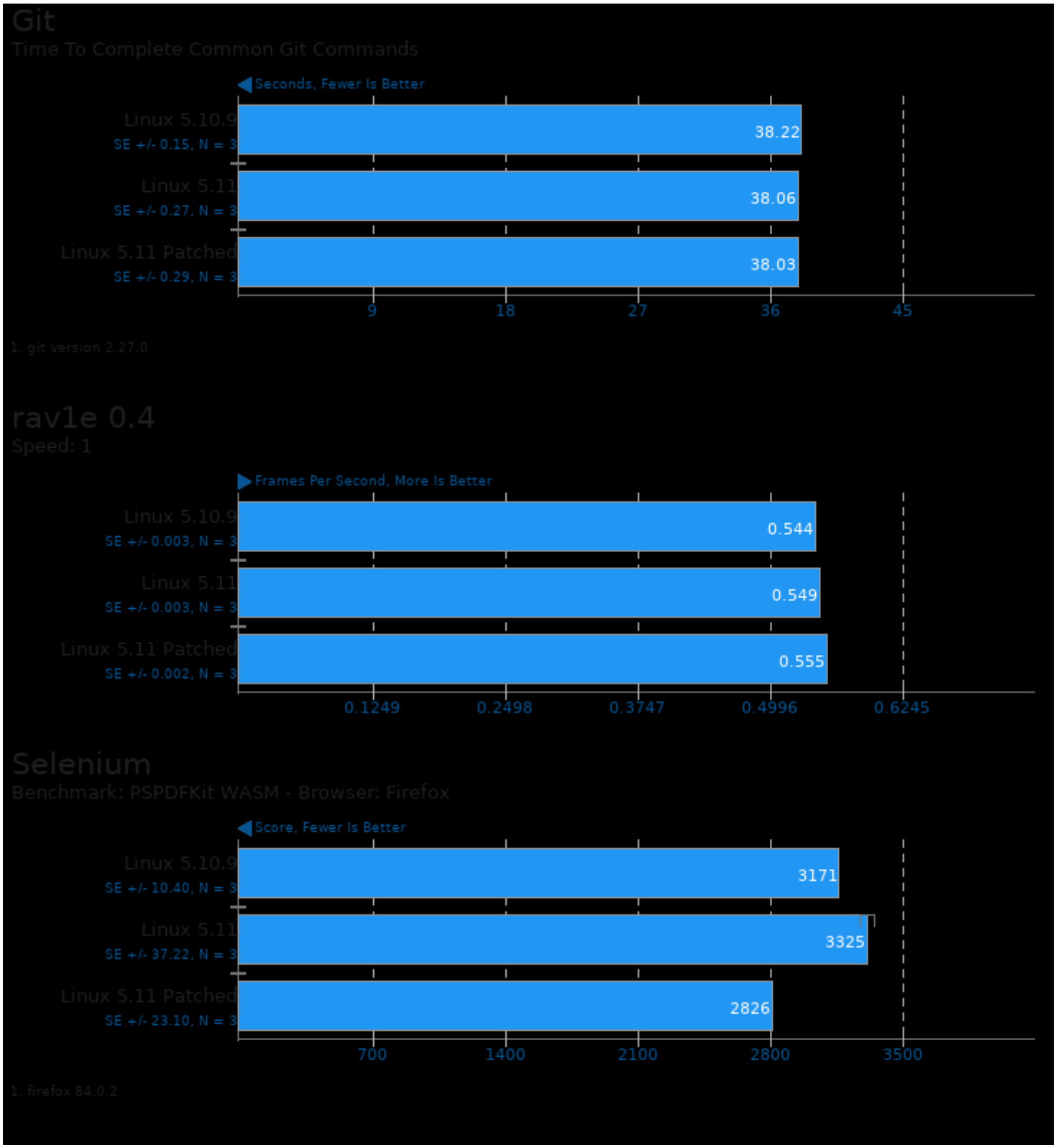
1. (CC) gcc options: -lparcsr_ls -lparcsr_mv -lseq_mv -lIJ_mv -lkrylov -lHYPRE_utilities -lm -fopenmp -pthread -lmpi

GEGL

Operation: Color Enhance

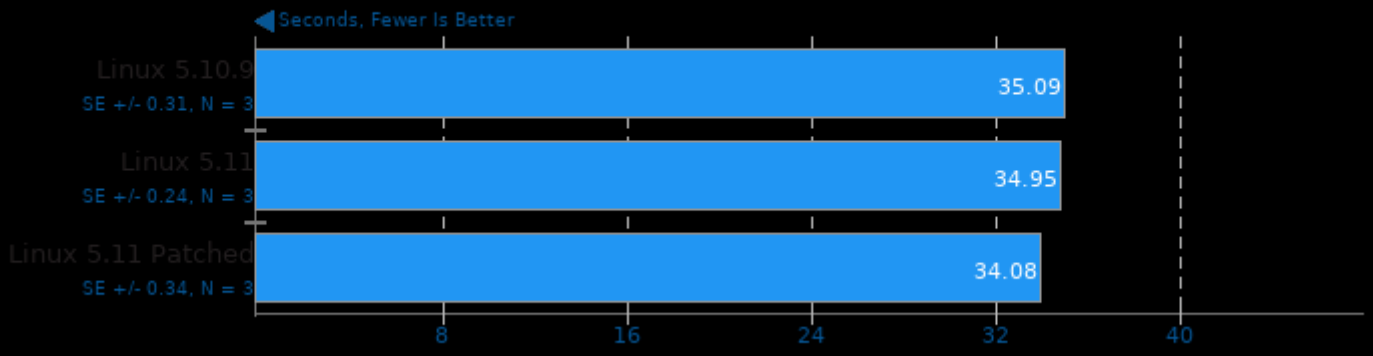



OSPray 1.8.5
Demo: XFrog Forest - Renderer: SciVis
FPS, More Is Better
Linux 5.10.9
SE +/- 0.01, N = 3
MIN: 5.41 / MAX: 5.59
5.50
Linux 5.11
SE +/- 0.02, N = 3
MIN: 5.43 / MAX: 5.62
5.49
Linux 5.11 Patched
SE +/- 0.00, N = 3
MIN: 5.43 / MAX: 5.59
5.49
1.2375
2.475
3.7125
4.95
6.1875
Selenium
Benchmark: ARES-6 - Browser: Google Chrome
ms, Fewer Is Better
Linux 5.10.9
SE +/- 0.17, N = 3
17.19
Linux 5.11
SE +/- 0.05, N = 3
18.58
Linux 5.11 Patched
SE +/- 0.09, N = 3
14.47
5
10
15
20
25
1: chrome 88.0.4324.96
rav1e 0.4
Speed: 5
Frames Per Second, More Is Better
Linux 5.10.9
SE +/- 0.004, N = 3
1.553
Linux 5.11
SE +/- 0.010, N = 3
1.508
Linux 5.11 Patched
SE +/- 0.014, N = 3
1.631
0.367
0.734
1.101
1.468
1.835


Git
Time To Complete Common Git Commands
Seconds, Fewer Is Better
Linux 5.10.9
SE +/- 0.15, N = 3
38.22
Linux 5.11
SE +/- 0.27, N = 3
38.06
Linux 5.11 Patched
SE +/- 0.29, N = 3
38.03
9
18
27
36
45
1. git version 2.27.0
rav1e 0.4
Speed: 1
Frames Per Second, More Is Better
Linux 5.10.9
SE +/- 0.003, N = 3
0.544
Linux 5.11
SE +/- 0.003, N = 3
0.549
Linux 5.11 Patched
SE +/- 0.002, N = 3
0.555
0.1249
0.2498
0.3747
0.4996
0.6245
Selenium
Benchmark: PSPDFKit WASM - Browser: Firefox
Score, Fewer Is Better
Linux 5.10.9
SE +/- 10.40, N = 3
3171
Linux 5.11
SE +/- 37.22, N = 3
3325
Linux 5.11 Patched
SE +/- 23.10, N = 3
2826
700
1400
2100
2800
3500
1. firefox 84.0.2

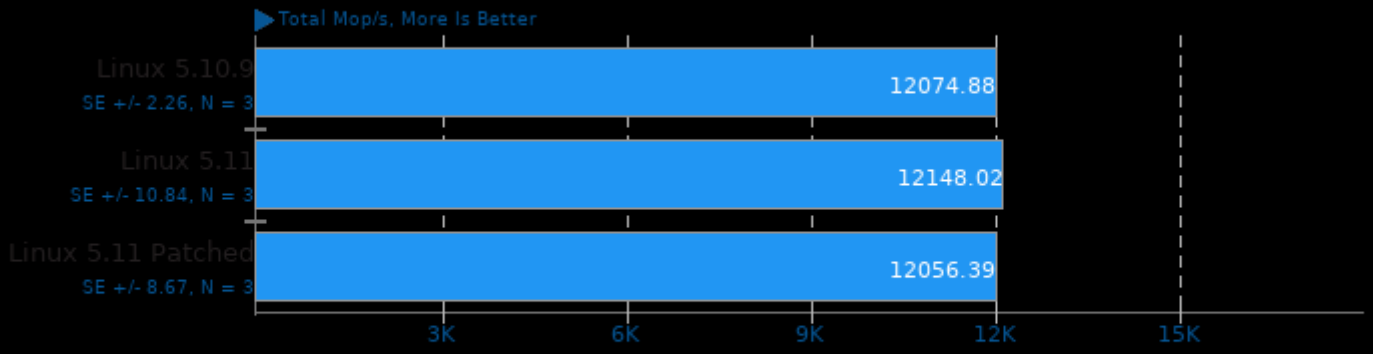
Hugin

Panorama Photo Assistant + Stitching Time



NAS Parallel Benchmarks 3.4

Test / Class: FT.C

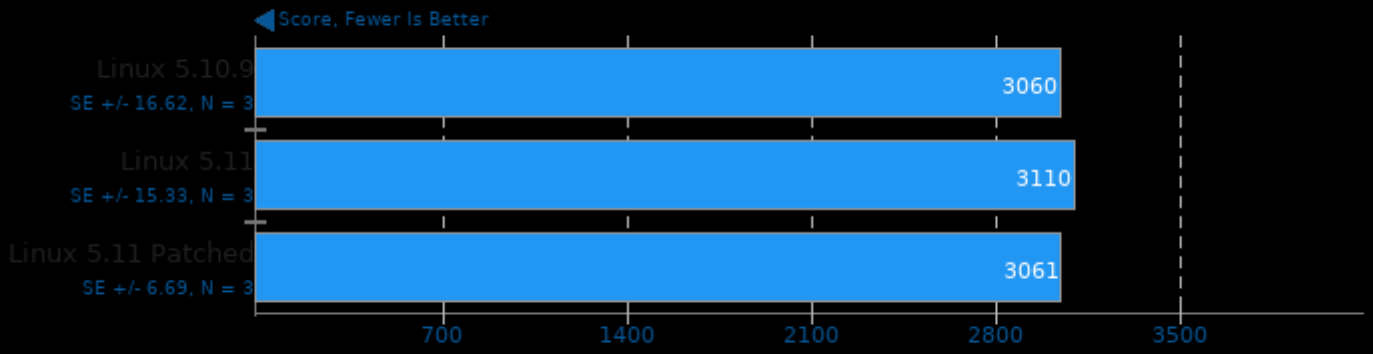


1. (F9X) gfortran options: -O3 -march=native -pthread -lmpi_usempif08 -lmpi_mpifh -lmpi -lopen-rte -lopen-pal -lhwloc -ldl -levent -levent_pthreads -luti

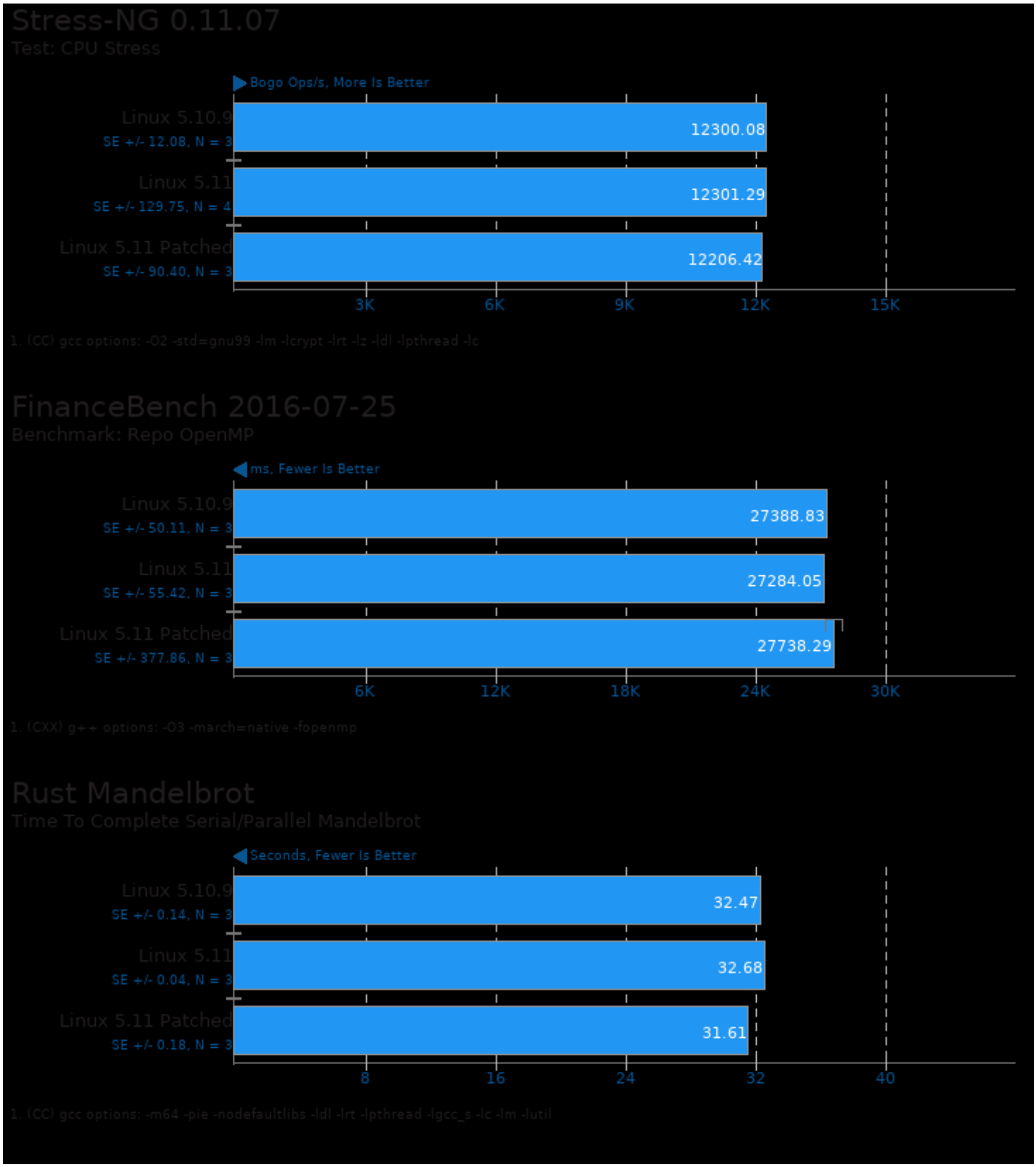
2. Open MPI 4.0.3

Selenium

Benchmark: PSPDFKit WASM - Browser: Google Chrome

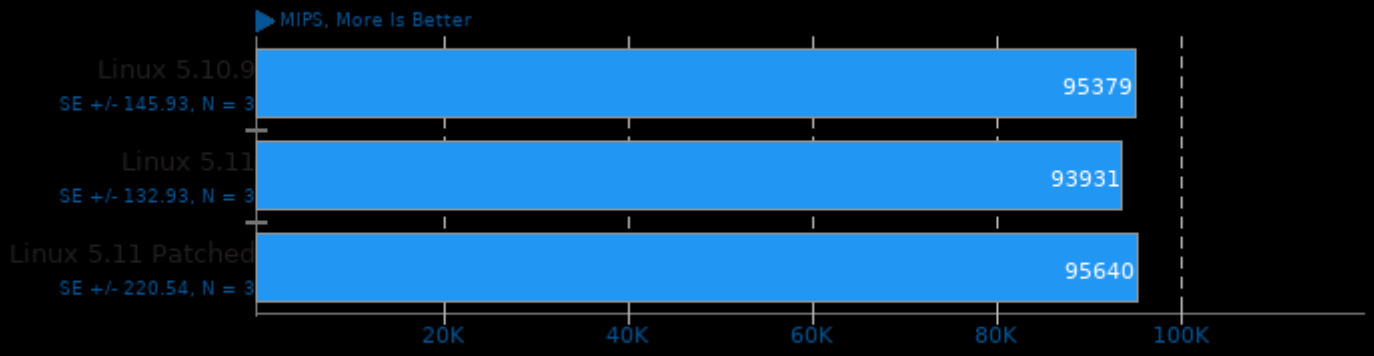


1. chrome 88.0.4324.96


Stress-NG 0.11.07
Test: CPU Stress
Bogo Ops/s, More Is Better
Linux 5.10.9
SE +/- 12.08, N = 3
12300.08
Linux 5.11
SE +/- 129.75, N = 4
12301.29
Linux 5.11 Patched
SE +/- 90.40, N = 3
12206.42
3K
6K
9K
12K
15K
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lz -ldl -lpthread -lc
FinanceBench 2016-07-25
Benchmark: Repo OpenMP
ms, Fewer Is Better
Linux 5.10.9
SE +/- 50.11, N = 3
27388.83
Linux 5.11
SE +/- 55.42, N = 3
27284.05
Linux 5.11 Patched
SE +/- 377.86, N = 3
27738.29
6K
12K
18K
24K
30K
1. (CXX) g++ options: -O3 -march=native -fopenmp
Rust Mandelbrot
Time To Complete Serial/Parallel Mandelbrot
Seconds, Fewer Is Better
Linux 5.10.9
SE +/- 0.14, N = 3
32.47
Linux 5.11
SE +/- 0.04, N = 3
32.68
Linux 5.11 Patched
SE +/- 0.18, N = 3
31.61
8
16
24
32
40
1. (CC) gcc options: -m64 -pie -nodefaultlibs -ldl -lrt -lpthread -lgcc_s -lc -lm -lutil

7-Zip Compression 16.02

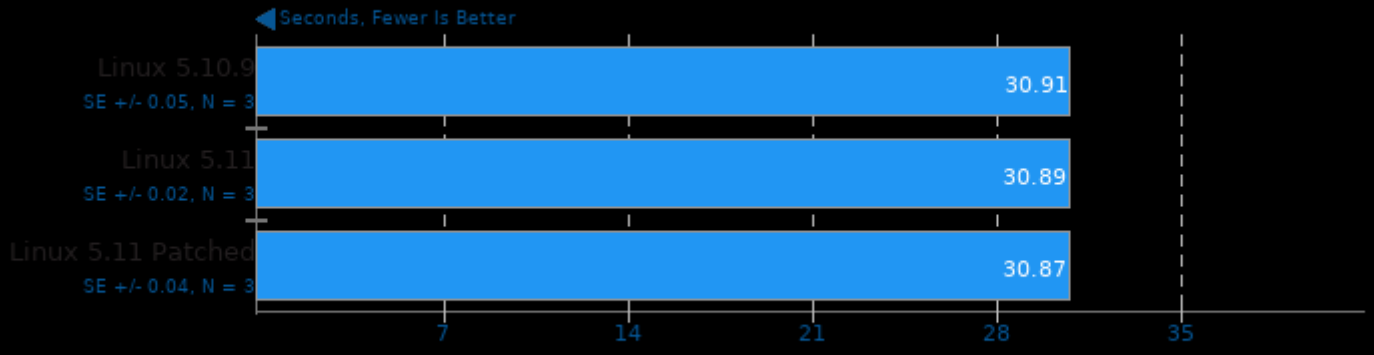
Compress Speed Test



1. (CXX) g++ options: -pipe -lpthread

C-Ray 1.1

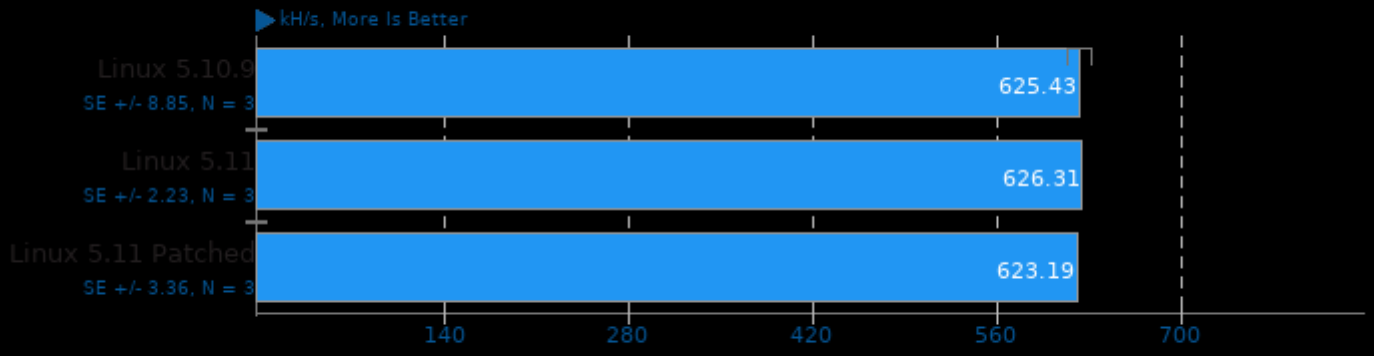
Total Time - 4K, 16 Rays Per Pixel



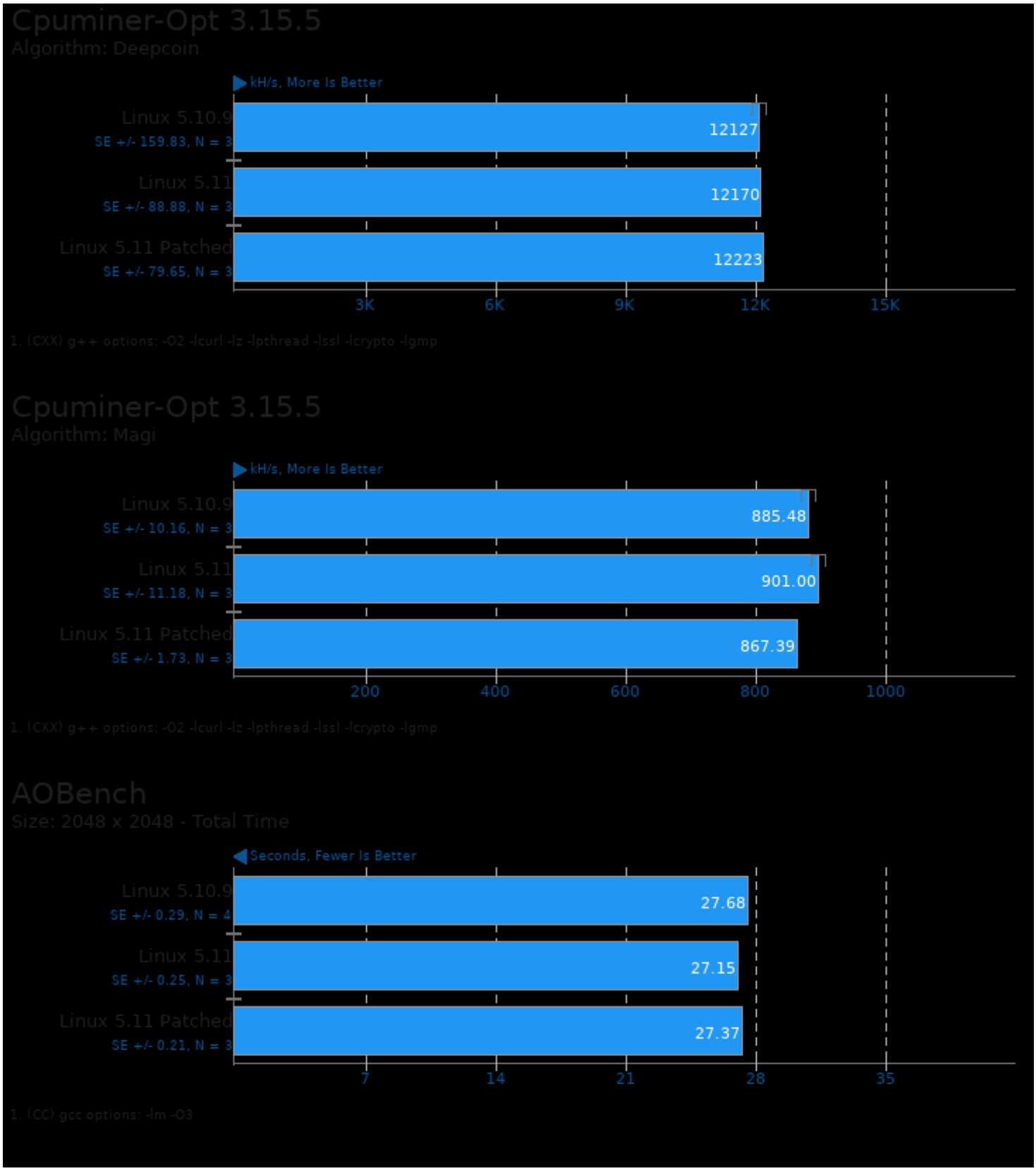
1. (CC) gcc options: -lm -lpthread -O3

Cpuminer-Opt 3.15.5

Algorithm: x25x

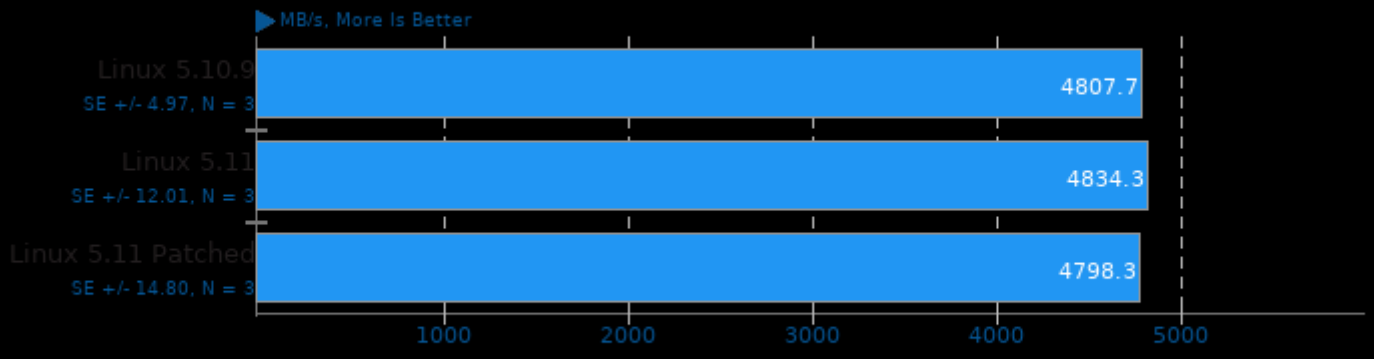


1. (CXX) g++ options: -O2 -lcurl -lz -lpthread -lssl -lcrypto -lgmp


Cpuminer-Opt 3.15.5
Algorithm: Deepcoin
kH/s, More Is Better
Linux 5.10.9
SE +/- 159.83, N = 3
12127
Linux 5.11
SE +/- 88.88, N = 3
12170
Linux 5.11 Patched
SE +/- 79.65, N = 3
12223
3K
6K
9K
12K
15K
1. (CXX) g++ options: -O2 -lcurl -lz -lpthread -lssl -lcrypto -lgmp
Cpuminer-Opt 3.15.5
Algorithm: Magi
kH/s, More Is Better
Linux 5.10.9
SE +/- 10.16, N = 3
885.48
Linux 5.11
SE +/- 11.18, N = 3
901.00
Linux 5.11 Patched
SE +/- 1.73, N = 3
867.39
200
400
600
800
1000
1. (CXX) g++ options: -O2 -lcurl -lz -lpthread -lssl -lcrypto -lgmp
AOBench
Size: 2048 x 2048 - Total Time
Seconds, Fewer Is Better
Linux 5.10.9
SE +/- 0.29, N = 4
27.68
Linux 5.11
SE +/- 0.25, N = 3
27.15
Linux 5.11 Patched
SE +/- 0.21, N = 3
27.37
7
14
21
28
35
1. (CC) gcc options: -lm -O3

Zstd Compression 1.4.5

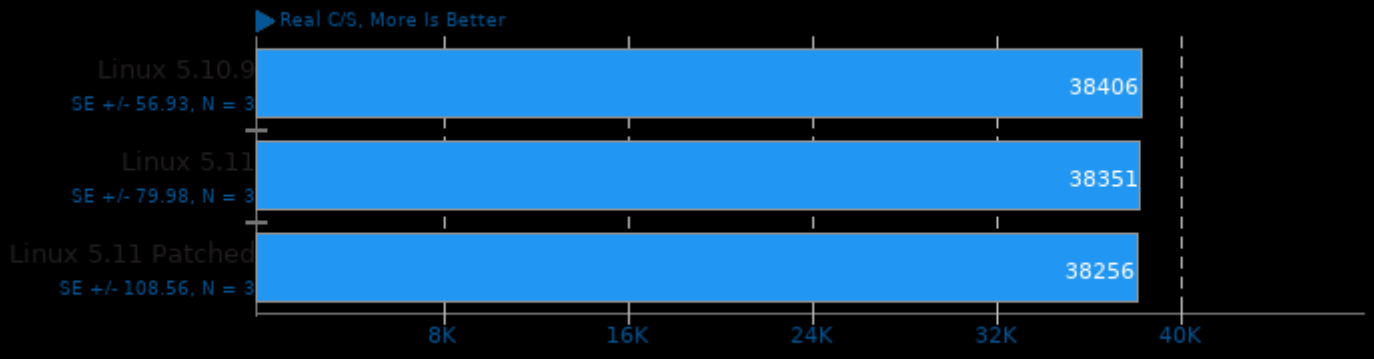
Compression Level: 3



1. (CC) gcc options: -O3 -pthread -lz -llzma

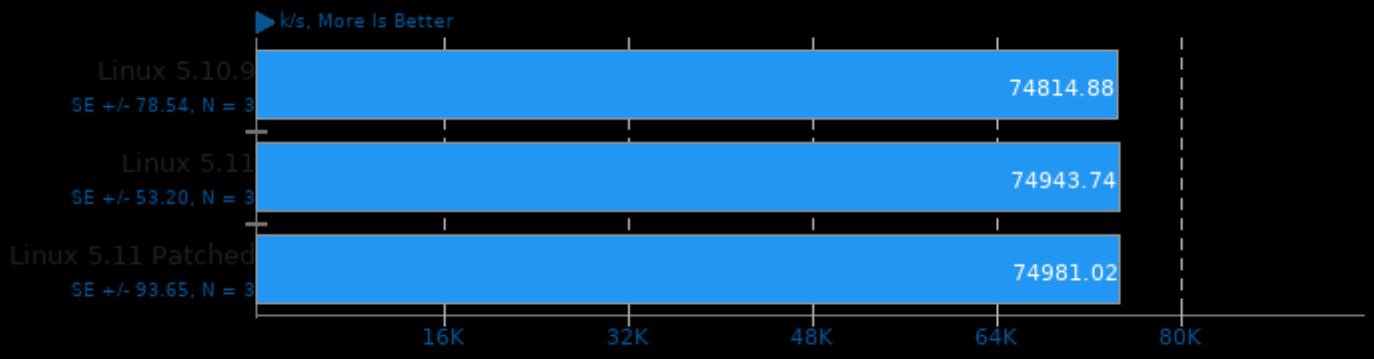
John The Ripper 1.9.0-jumbo-1

Test: Blowfish

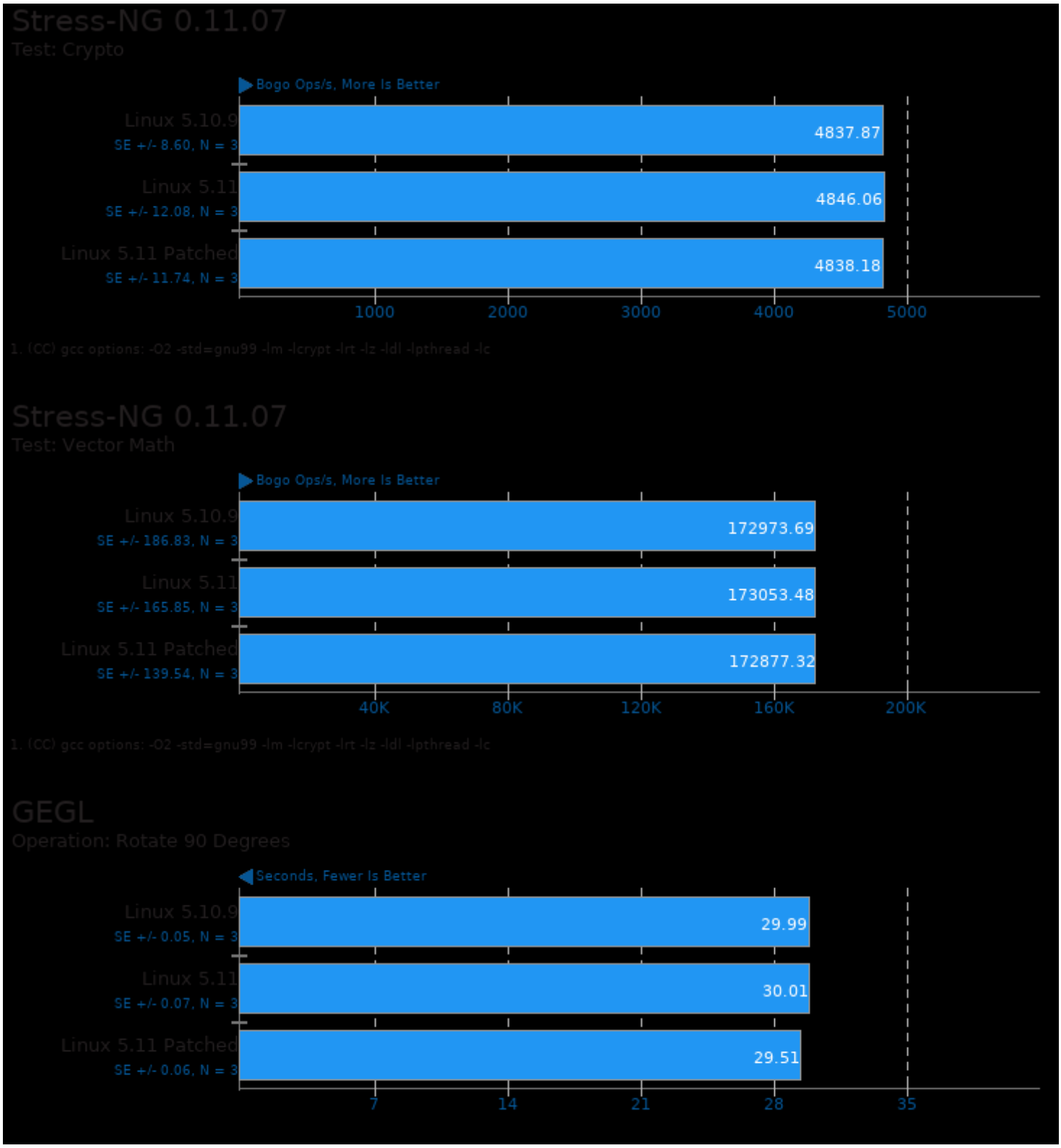


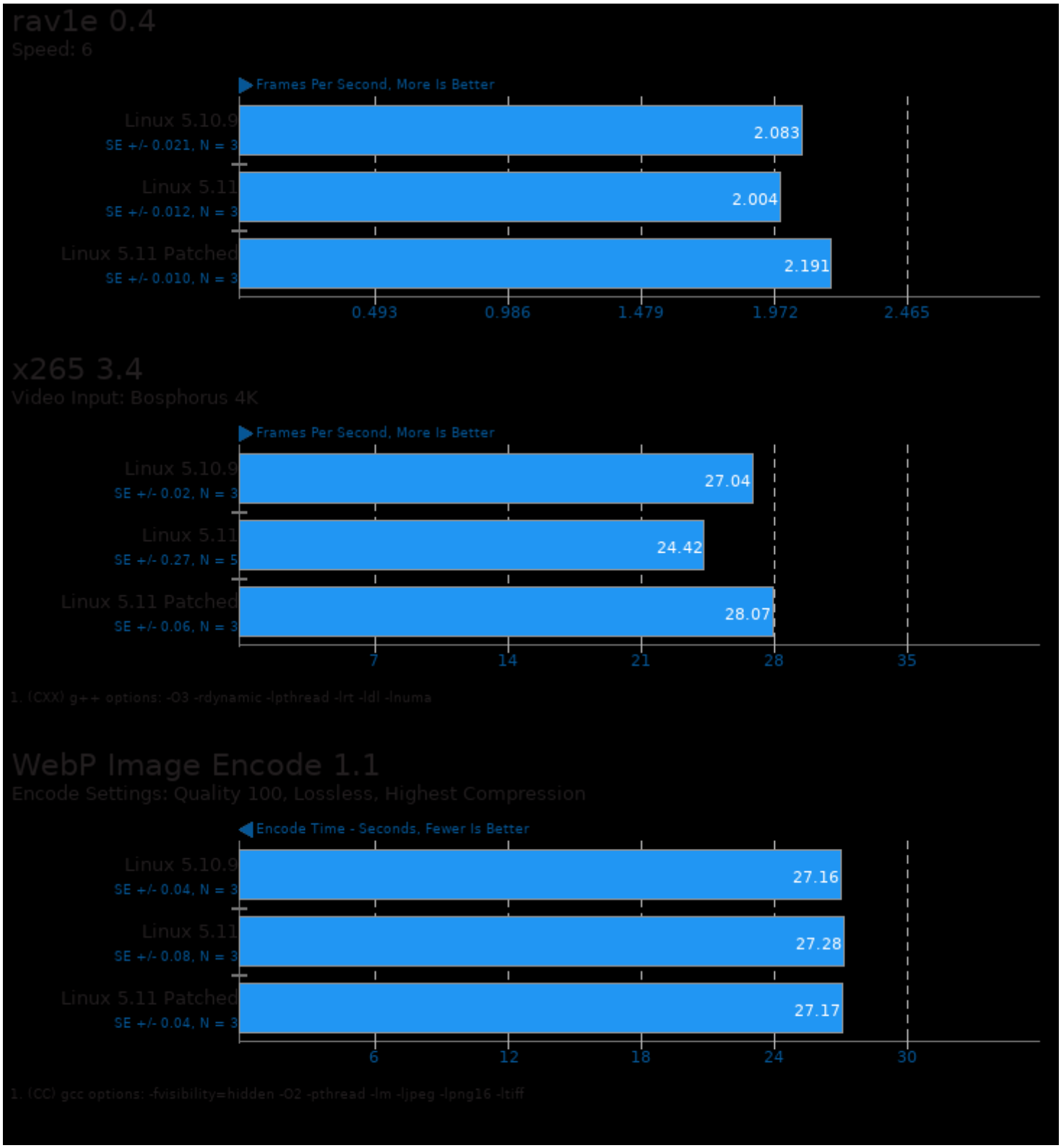
1. (CC) gcc options: -m64 -lssl -lcrypto -fopenmp -lgmp -pthread -lm -lz -ldl -lcrypt -lbz2

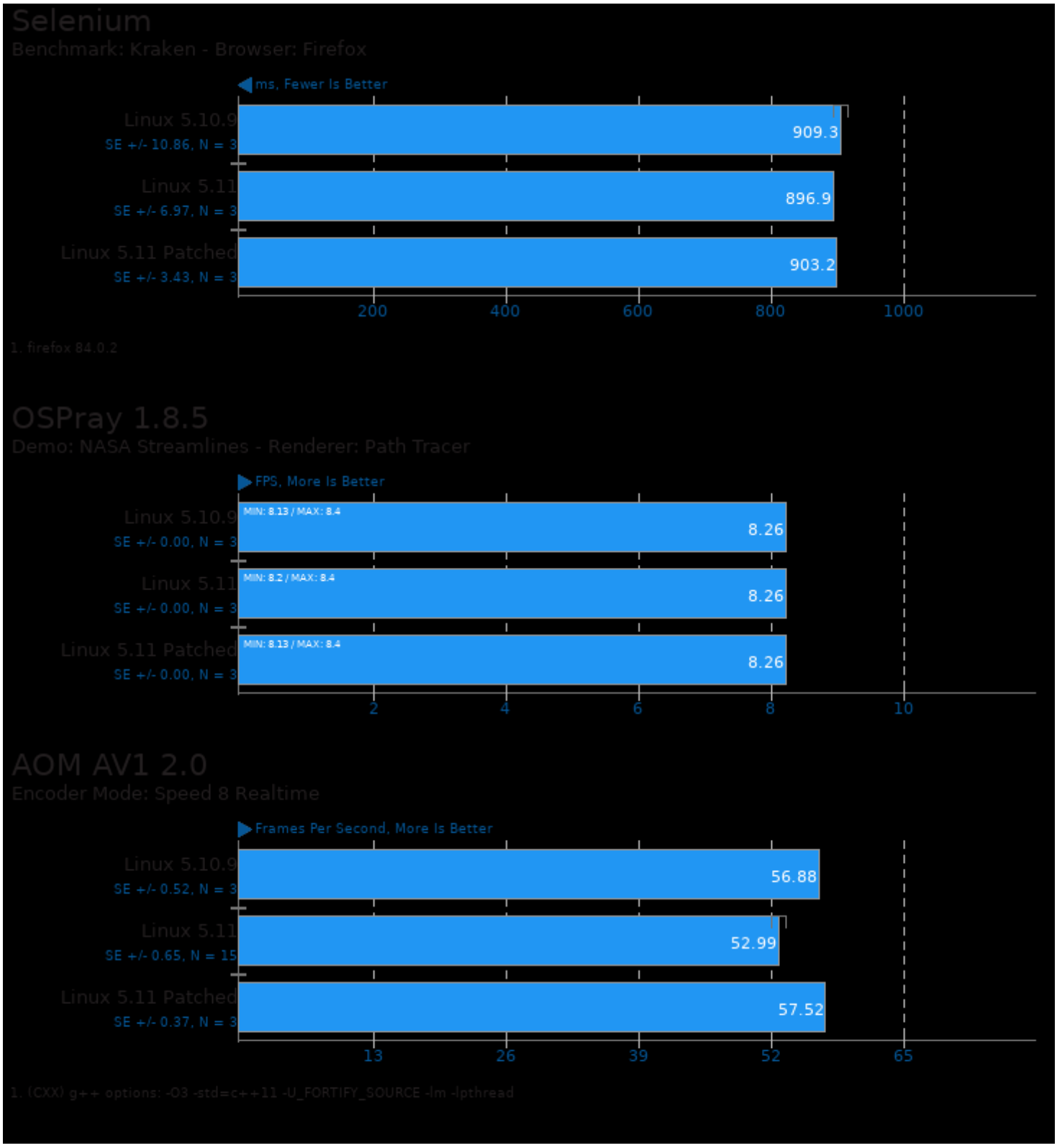
Aircrack-ng 1.5.2

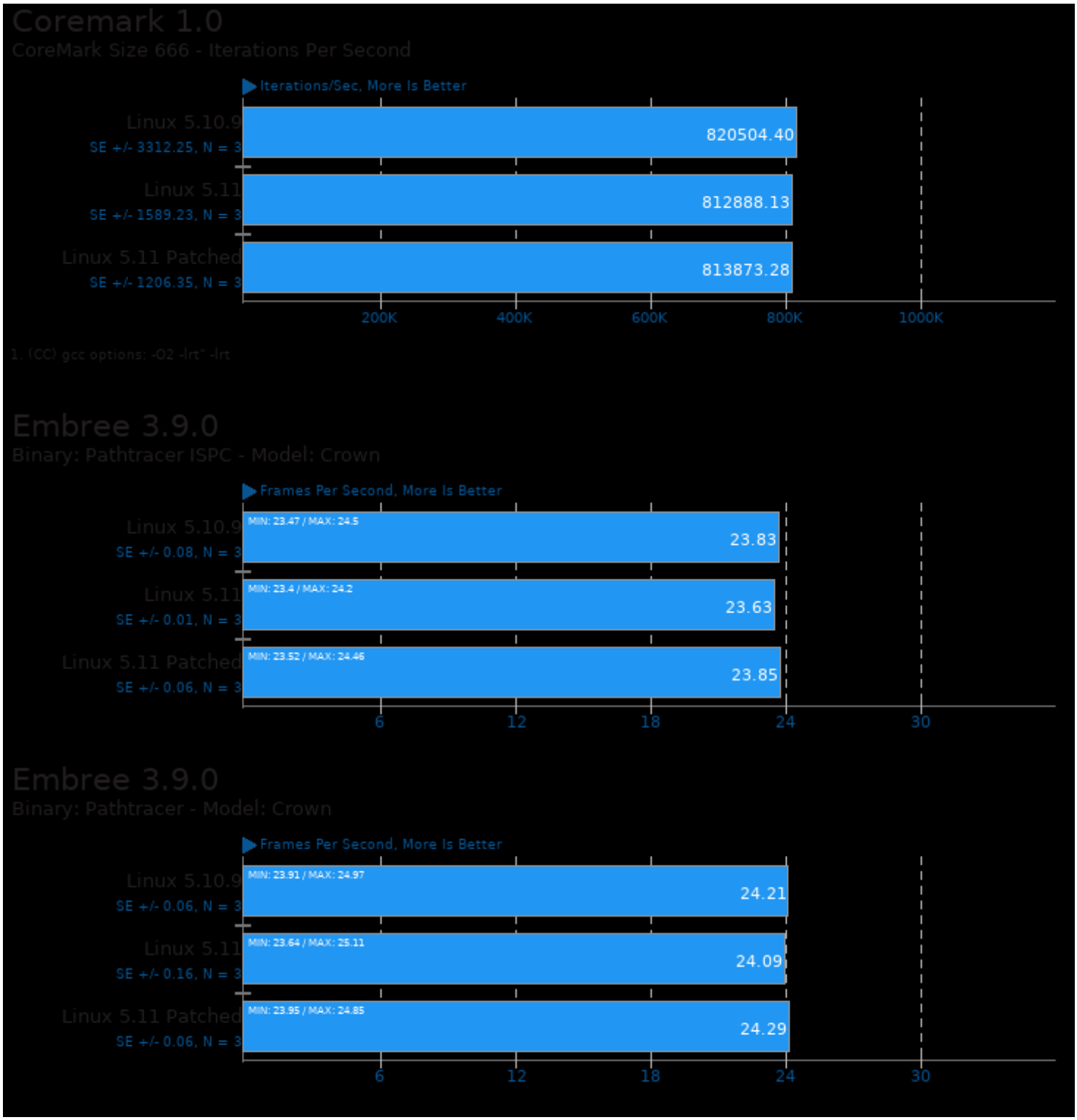


1. (CXX) g++ options: -O3 -fvisibility=hidden -masm=intel -fcommon -rdynamic -lpthread -lz -lcrypto -lhwloc -ldl -lm -pthread

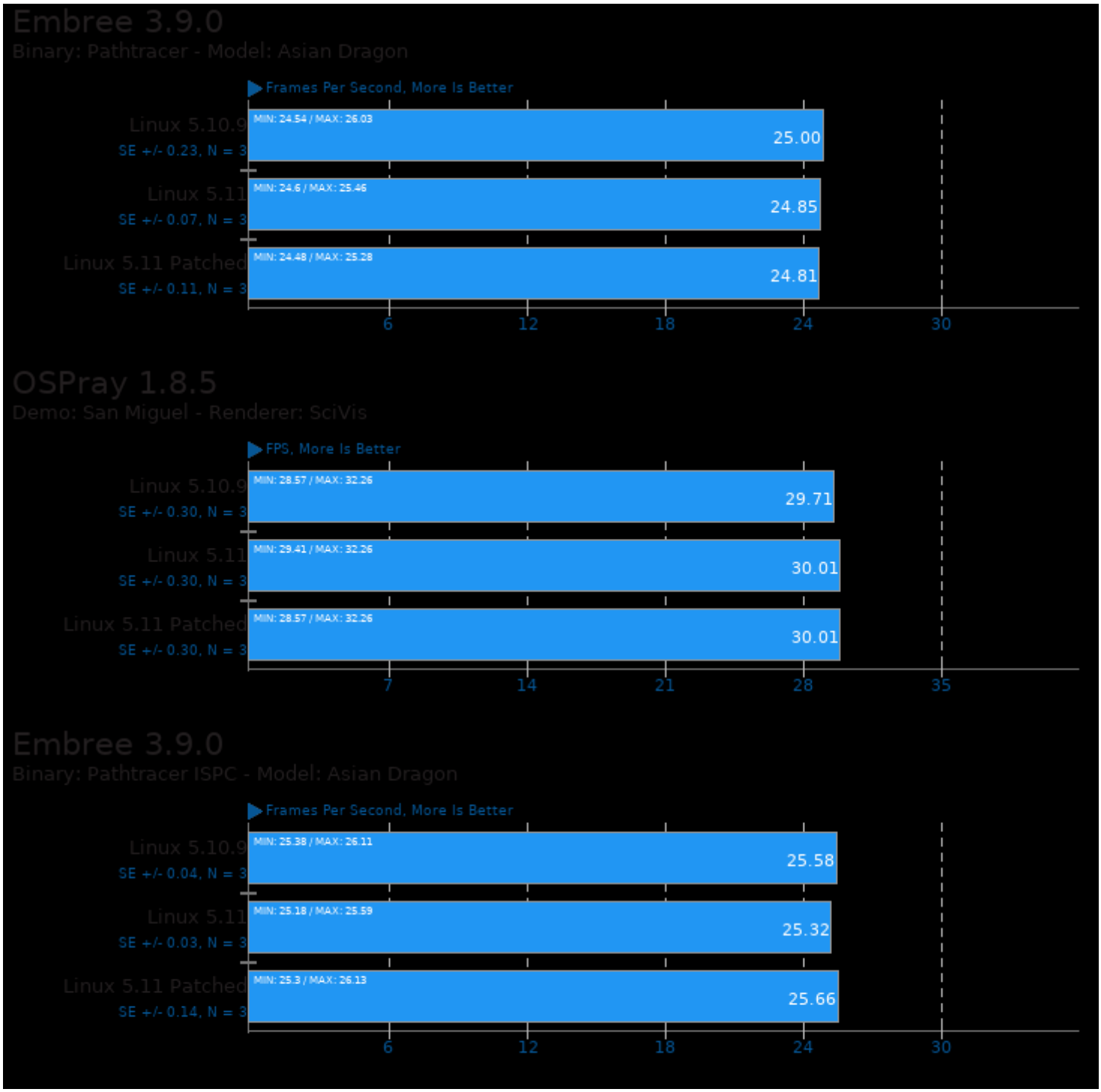

Stress-NG 0.11.07
Test: Crypto
Bogo Ops/s, More Is Better
Linux 5.10.9
SE +/- 8.60, N = 3
4837.87
Linux 5.11
SE +/- 12.08, N = 3
4846.06
Linux 5.11 Patched
SE +/- 11.74, N = 3
4838.18
1000
2000
3000
4000
5000
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lz -ldl -lpthread -lc
Stress-NG 0.11.07
Test: Vector Math
Bogo Ops/s, More Is Better
Linux 5.10.9
SE +/- 186.83, N = 3
172973.69
Linux 5.11
SE +/- 165.85, N = 3
173053.48
Linux 5.11 Patched
SE +/- 139.54, N = 3
172877.32
40K
80K
120K
160K
200K
1. (CC) gcc options: -O2 -std=gnu99 -lm -lcrypt -lrt -lz -ldl -lpthread -lc
GEGL
Operation: Rotate 90 Degrees
Seconds, Fewer Is Better
Linux 5.10.9
SE +/- 0.05, N = 3
29.99
Linux 5.11
SE +/- 0.07, N = 3
30.01
Linux 5.11 Patched
SE +/- 0.06, N = 3
29.51
7
14
21
28
35


rav1e 0.4
Speed: 6
Frames Per Second, More Is Better
Linux 5.10.9
SE +/- 0.021, N = 3
2.083
Linux 5.11
SE +/- 0.012, N = 3
2.004
Linux 5.11 Patched
SE +/- 0.010, N = 3
2.191
0.493
0.986
1.479
1.972
2.465
x265 3.4
Video Input: Bosphorus 4K
Frames Per Second, More Is Better
Linux 5.10.9
SE +/- 0.02, N = 3
27.04
Linux 5.11
SE +/- 0.27, N = 5
24.42
Linux 5.11 Patched
SE +/- 0.06, N = 3
28.07
7
14
21
28
35
1. (CXX) g++ options: -O3 -rdynamic -lpthread -lrt -ldl -lnuma
WebP Image Encode 1.1
Encode Settings: Quality 100, Lossless, Highest Compression
Encode Time - Seconds, Fewer Is Better
Linux 5.10.9
SE +/- 0.04, N = 3
27.16
Linux 5.11
SE +/- 0.08, N = 3
27.28
Linux 5.11 Patched
SE +/- 0.04, N = 3
27.17
6
12
18
24
30
1. (CC) gcc options: -fvisibility=hidden -O2 -pthread -lm -ljpeg -lpng16 -ltiff


Selenium
Benchmark: Kraken - Browser: Firefox
ms, Fewer Is Better
Linux 5.10.9
SE +/- 10.86, N = 3
909.3
Linux 5.11
SE +/- 6.97, N = 3
896.9
Linux 5.11 Patched
SE +/- 3.43, N = 3
903.2
200
400
600
800
1000
1. firefox 84.0.2
OSPray 1.8.5
Demo: NASA Streamlines - Renderer: Path Tracer
FPS, More Is Better
Linux 5.10.9
SE +/- 0.00, N = 3
MIN: 8.13 / MAX: 8.4
8.26
Linux 5.11
SE +/- 0.00, N = 3
MIN: 8.2 / MAX: 8.4
8.26
Linux 5.11 Patched
SE +/- 0.00, N = 3
MIN: 8.13 / MAX: 8.4
8.26
2
4
6
8
10
AOM AV1 2.0
Encoder Mode: Speed 8 Realtime
Frames Per Second, More Is Better
Linux 5.10.9
SE +/- 0.52, N = 3
56.88
Linux 5.11
SE +/- 0.65, N = 15
52.99
Linux 5.11 Patched
SE +/- 0.37, N = 3
57.52
13
26
39
52
65
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm -lpthread

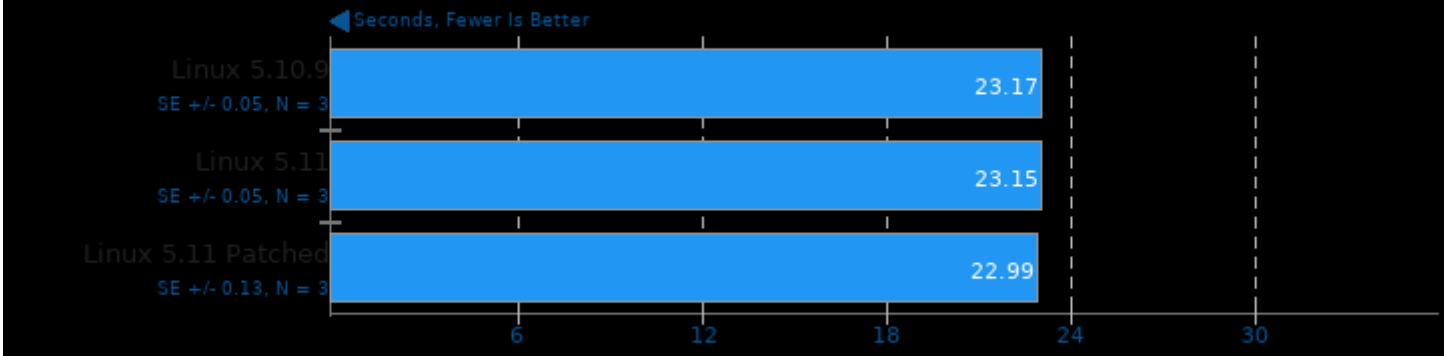

Coremark 1.0
CoreMark Size 666 - Iterations Per Second
Iterations/Sec, More Is Better
Linux 5.10.9
SE +/- 3312.25, N = 3
820504.40
Linux 5.11
SE +/- 1589.23, N = 3
812888.13
Linux 5.11 Patched
SE +/- 1206.35, N = 3
813873.28
200K
400K
600K
800K
1000K
1. (CC) gcc options: -O2 -lrt" -lrt
Embree 3.9.0
Binary: Pathtracer ISPC - Model: Crown
Frames Per Second, More Is Better
Linux 5.10.9
SE +/- 0.08, N = 3
MIN: 23.47 / MAX: 24.5
23.83
Linux 5.11
SE +/- 0.01, N = 3
MIN: 23.4 / MAX: 24.2
23.63
Linux 5.11 Patched
SE +/- 0.06, N = 3
MIN: 23.52 / MAX: 24.46
23.85
6
12
18
24
30
Embree 3.9.0
Binary: Pathtracer - Model: Crown
Frames Per Second, More Is Better
Linux 5.10.9
SE +/- 0.06, N = 3
MIN: 23.91 / MAX: 24.97
24.21
Linux 5.11
SE +/- 0.16, N = 3
MIN: 23.64 / MAX: 25.11
24.09
Linux 5.11 Patched
SE +/- 0.06, N = 3
MIN: 23.95 / MAX: 24.85
24.29
6
12
18
24
30

AMD Ryzen 9 5950X Linux 5.11



XZ Compression 5.2.4

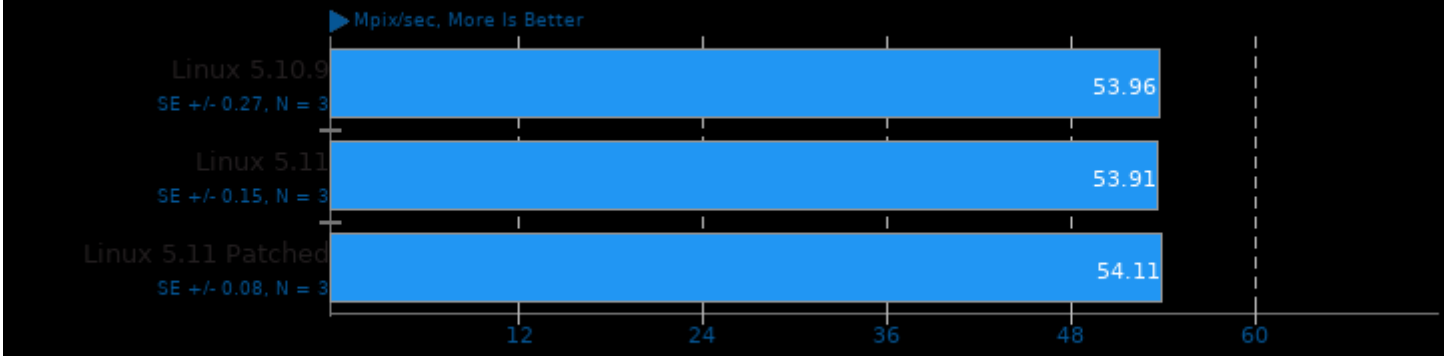
Compressing ubuntu-16.04.3-server-i386.img, Compression Level 9



1. (CC) gcc options: -pthread -fvisibility=hidden -O2

LibRaw 0.20

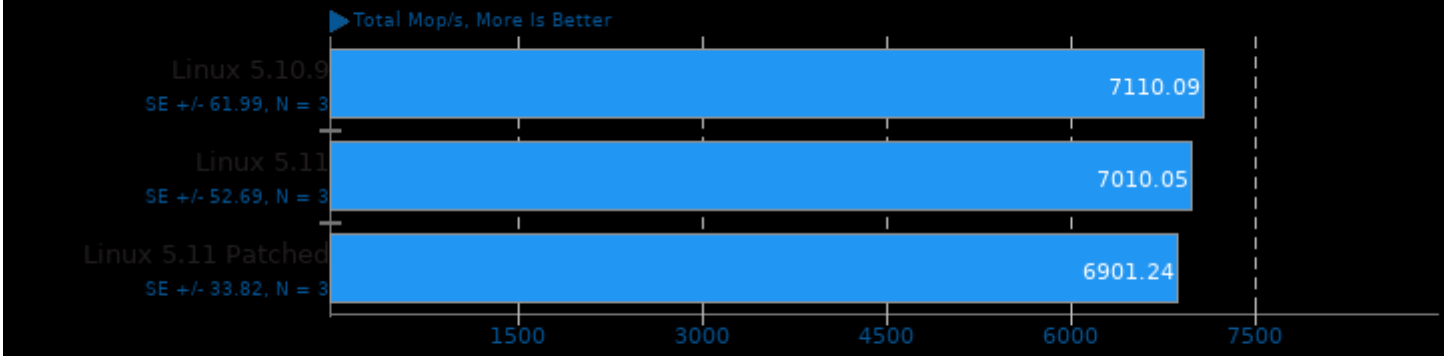
Post-Processing Benchmark



1. (CXX) g++ options: -O2 -fopenmp -ljpeg -lz -lm

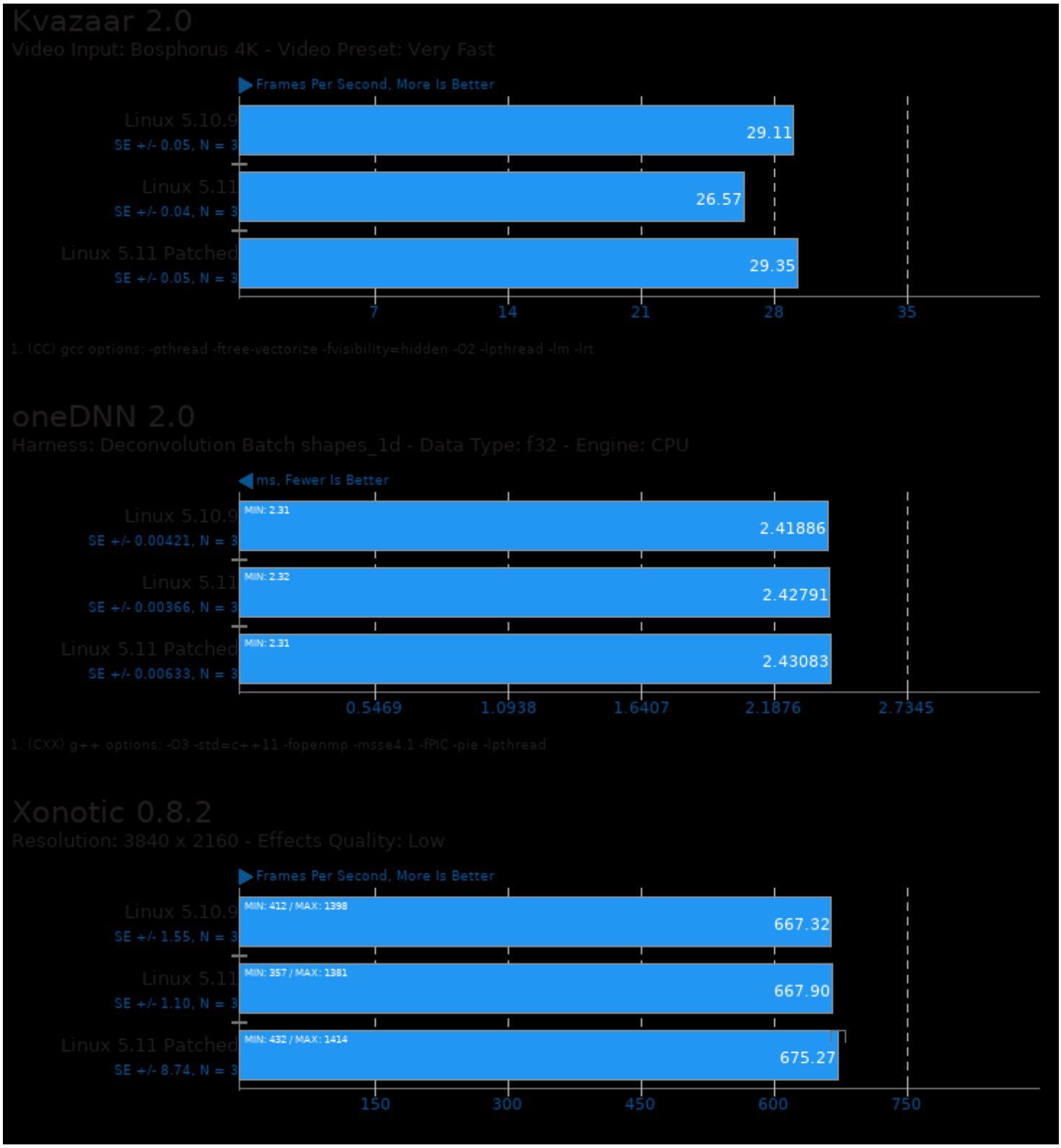
NAS Parallel Benchmarks 3.4

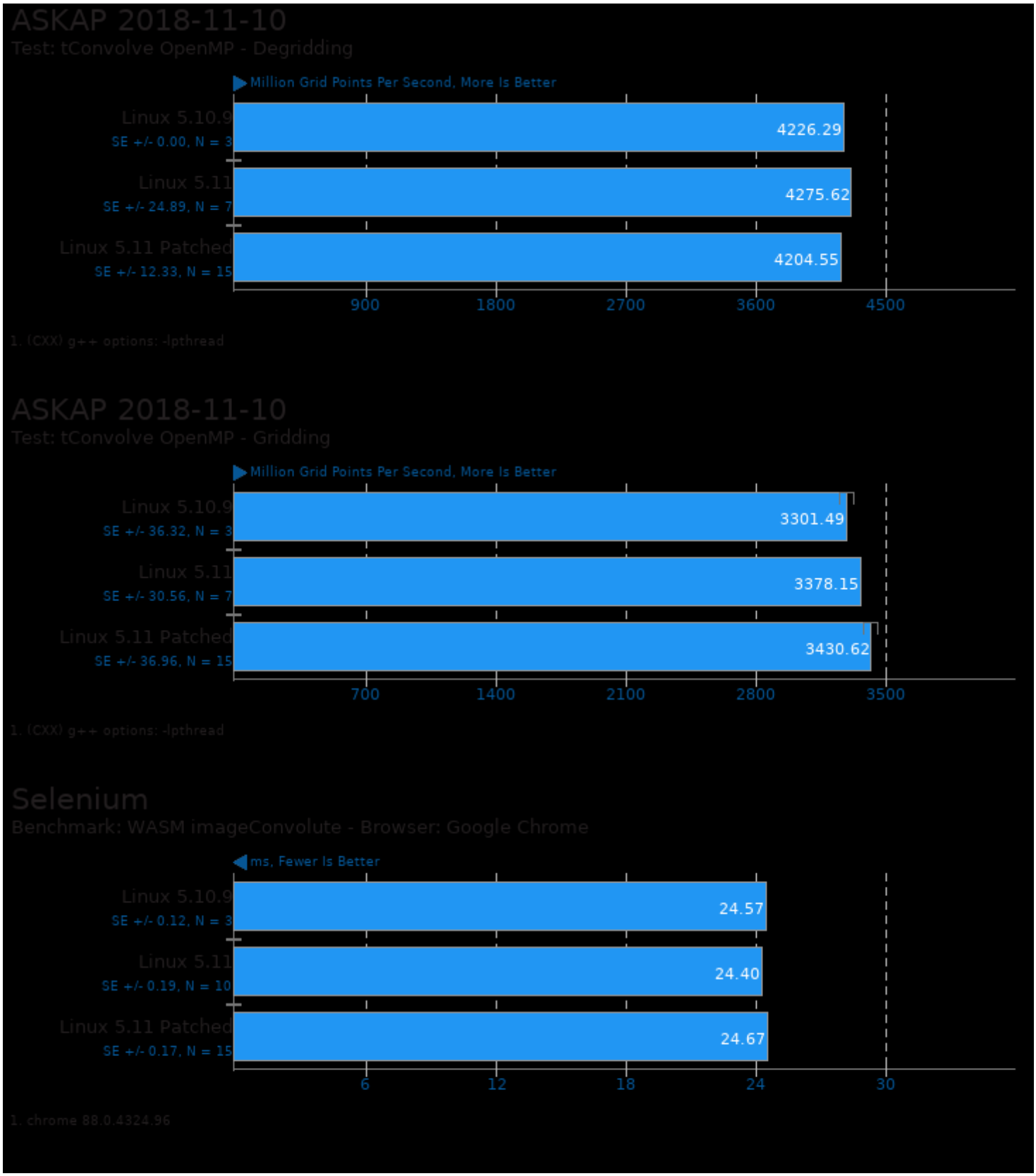
Test / Class: CG.C



1. (F9X) gfortran options: -O3 -march=native -pthread -lmpi_usempif08 -lmpi_mpifh -lmpi -lopen-rte -lopen-pal -lhwloc -ldl -levent -levent_pthreads -lut

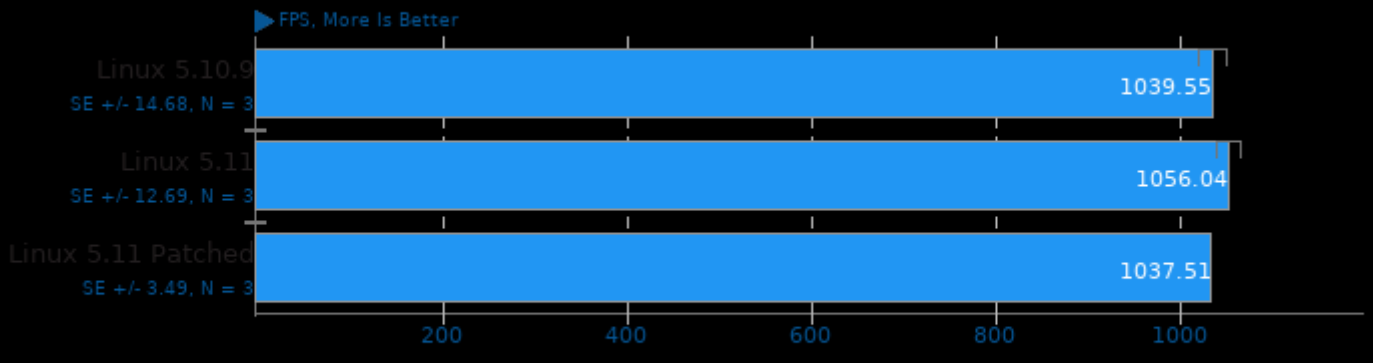
2. Open MPI 4.0.3


Kvazaar 2.0
Video Input: Bosphorus 4K - Video Preset: Very Fast
Frames Per Second, More Is Better
Linux 5.10.9
SE +/- 0.05, N = 3
29.11
Linux 5.11
SE +/- 0.04, N = 3
26.57
Linux 5.11 Patched
SE +/- 0.05, N = 3
29.35
7
14
21
28
35
1. (CC) gcc options: -pthread -ftree-vectorize -fvisibility=hidden -O2 -lpthread -lm -lrt
oneDNN 2.0
Harness: Deconvolution Batch shapes_1d - Data Type: f32 - Engine: CPU
ms, Fewer Is Better
Linux 5.10.9
SE +/- 0.00421, N = 3
MIN: 2.31
2.41886
Linux 5.11
SE +/- 0.00366, N = 3
MIN: 2.32
2.42791
Linux 5.11 Patched
SE +/- 0.00633, N = 3
MIN: 2.31
2.43083
0.5469
1.0938
1.6407
2.1876
2.7345
1. (CXX) g++ options: -O3 -std=c++11 -fopenmp -msse4.1 -fPIC -pie -lpthread
Xonotic 0.8.2
Resolution: 3840 x 2160 - Effects Quality: Low
Frames Per Second, More Is Better
Linux 5.10.9
SE +/- 1.55, N = 3
MIN: 412 / MAX: 1398
667.32
Linux 5.11
SE +/- 1.10, N = 3
MIN: 357 / MAX: 1381
667.90
Linux 5.11 Patched
SE +/- 8.74, N = 3
MIN: 432 / MAX: 1414
675.27
150
300
450
600
750


ASKAP 2018-11-10
Test: tConvolve OpenMP - Degridding
Million Grid Points Per Second, More Is Better
Linux 5.10.9
SE +/- 0.00, N = 3
4226.29
Linux 5.11
SE +/- 24.89, N = 7
4275.62
Linux 5.11 Patched
SE +/- 12.33, N = 15
4204.55
900
1800
2700
3600
4500
1. (CXX) g++ options: -lpthread
ASKAP 2018-11-10
Test: tConvolve OpenMP - Gridding
Million Grid Points Per Second, More Is Better
Linux 5.10.9
SE +/- 36.32, N = 3
3301.49
Linux 5.11
SE +/- 30.56, N = 7
3378.15
Linux 5.11 Patched
SE +/- 36.96, N = 15
3430.62
700
1400
2100
2800
3500
1. (CXX) g++ options: -lpthread
Selenium
Benchmark: WASM imageConvolute - Browser: Google Chrome
ms, Fewer Is Better
Linux 5.10.9
SE +/- 0.12, N = 3
24.57
Linux 5.11
SE +/- 0.19, N = 10
24.40
Linux 5.11 Patched
SE +/- 0.17, N = 15
24.67
6
12
18
24
30
1. chrome 88.0.4324.96

TTSIOD 3D Renderer 2.3b

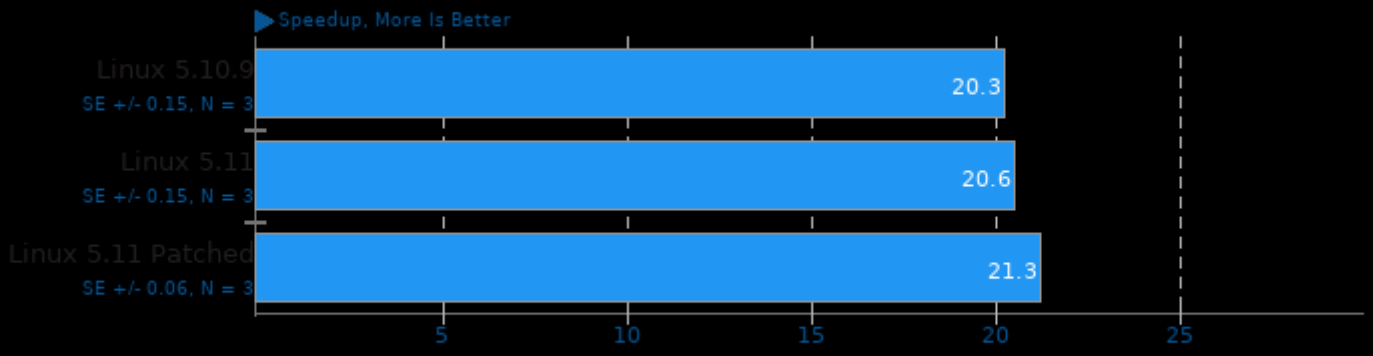
Phong Rendering With Soft-Shadow Mapping



1. (CXX) g++ options: -O3 -fomit-frame-pointer -ffast-math -mtune=native -flto -msse -mrecip -mfpmath=sse -msse2 -mssse3 -lSDL -fopenmp -fwhole-pr

CLOMP 1.2

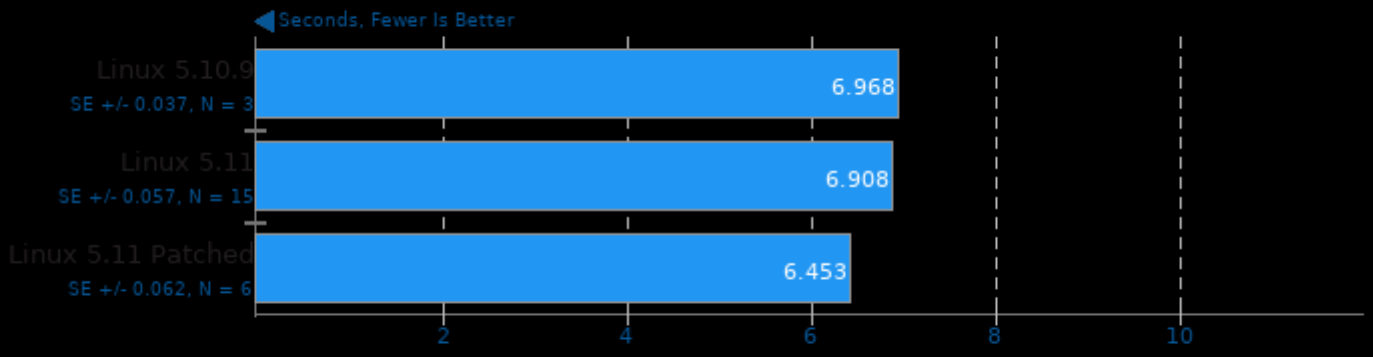
Static OMP Speedup



1. (CC) gcc options: -fopenmp -O3 -lm

FFmpeg 4.0.2

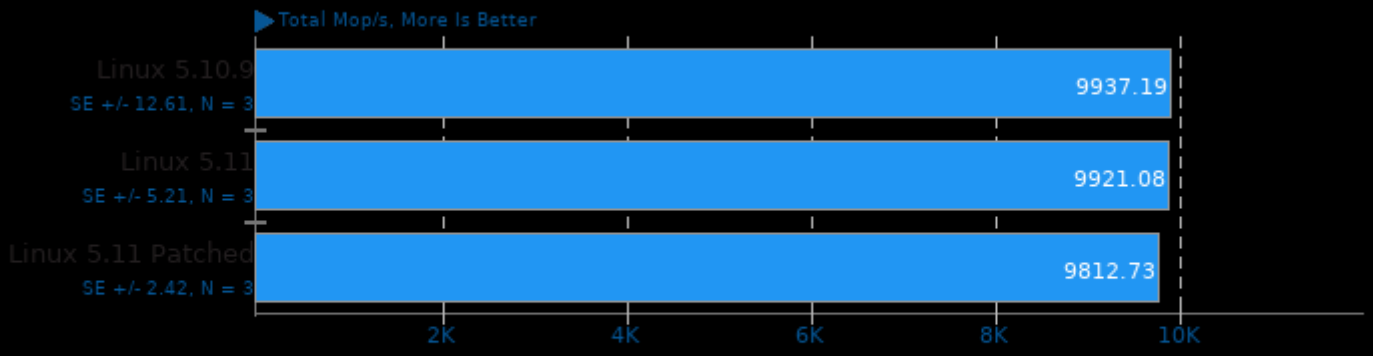
H.264 HD To NTSC DV



1. (CC) gcc options: -lavdevice -lavfilter -lavformat -lavcodec -lswresample -lswscale -lavutil -lXv -lX11 -lXext -lm -lxcb -lasound -lSDL2 -lsndio -pthread -l

NAS Parallel Benchmarks 3.4

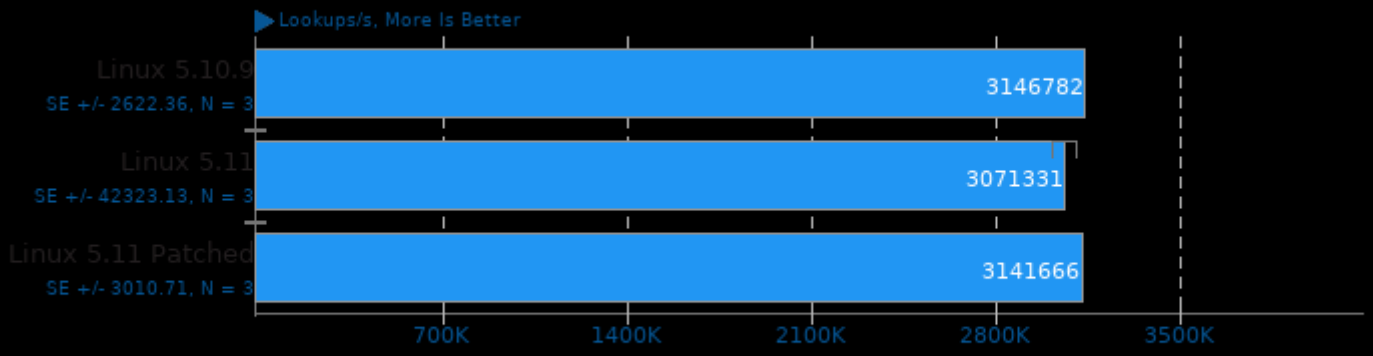
Test / Class: MG.C



1. (F9X) gfortran options: -O3 -march=native -pthread -lmpi_usempif08 -lmpi_mpifh -lmpi -lopen-rte -lopen-pal -lhwloc -ldl -levent -levent_pthreads -luti

2. Open MPI 4.0.3

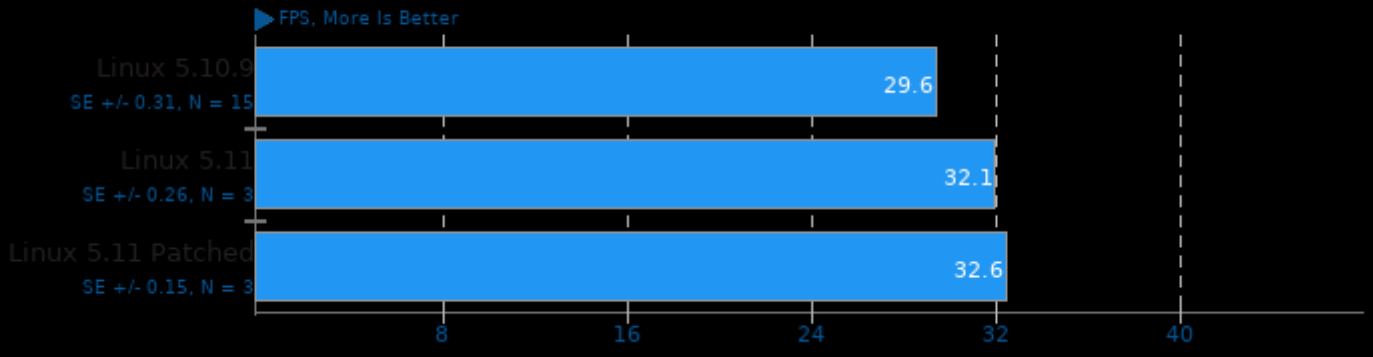
Xsbench 2017-07-06

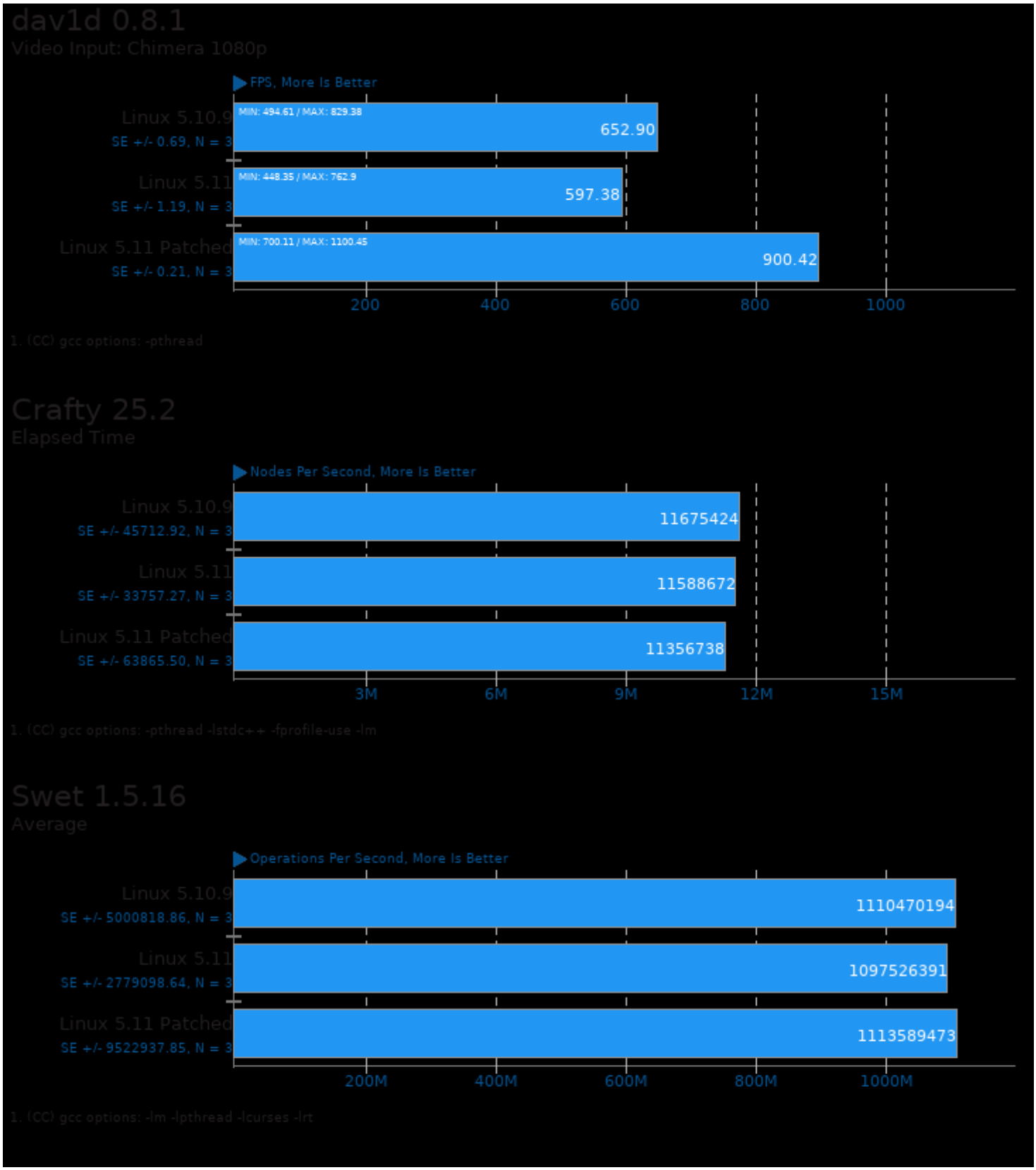


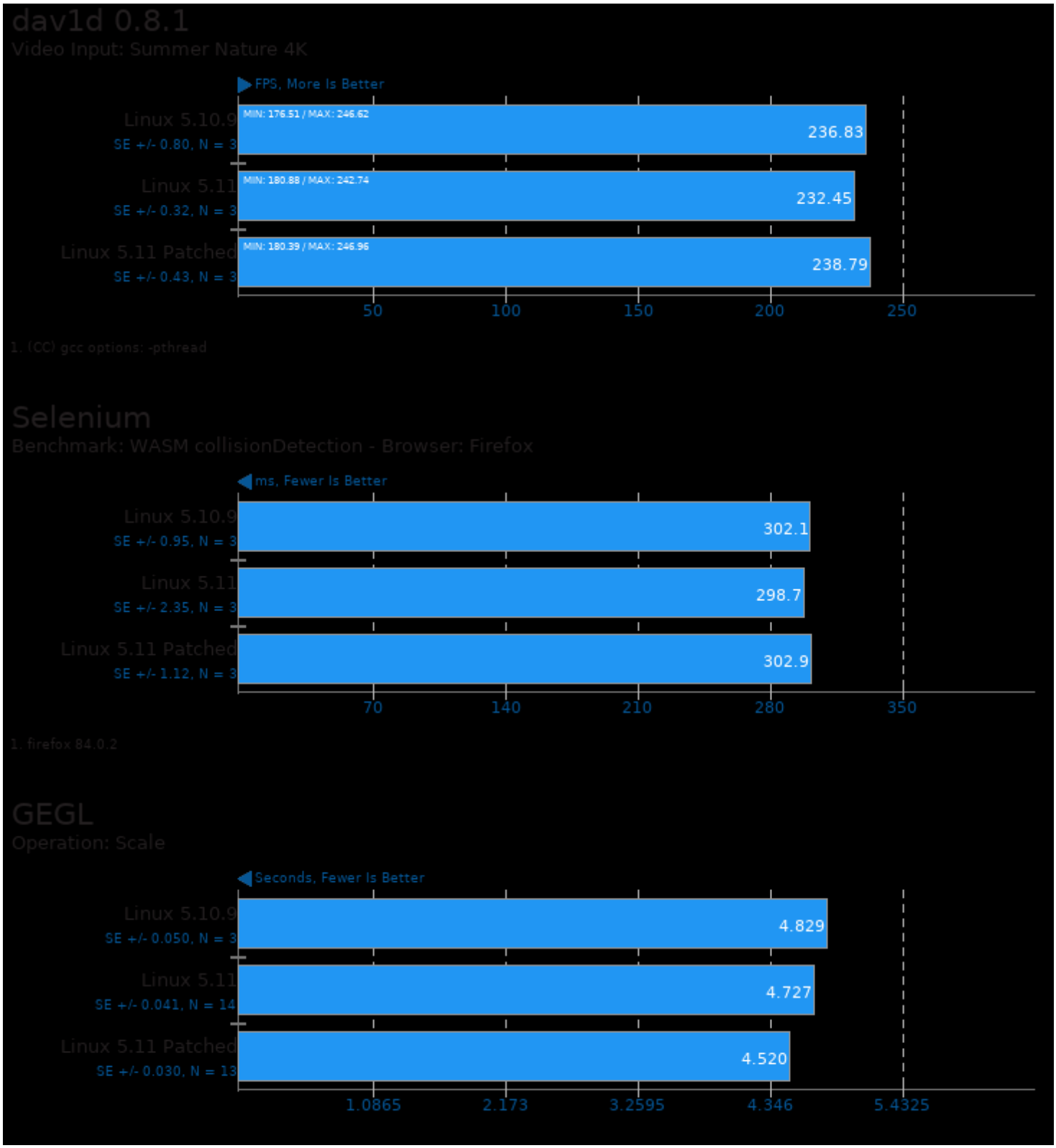
1. (CC) gcc options: -std=gnu99 -fopenmp -O3 -lm

NeatBench 5

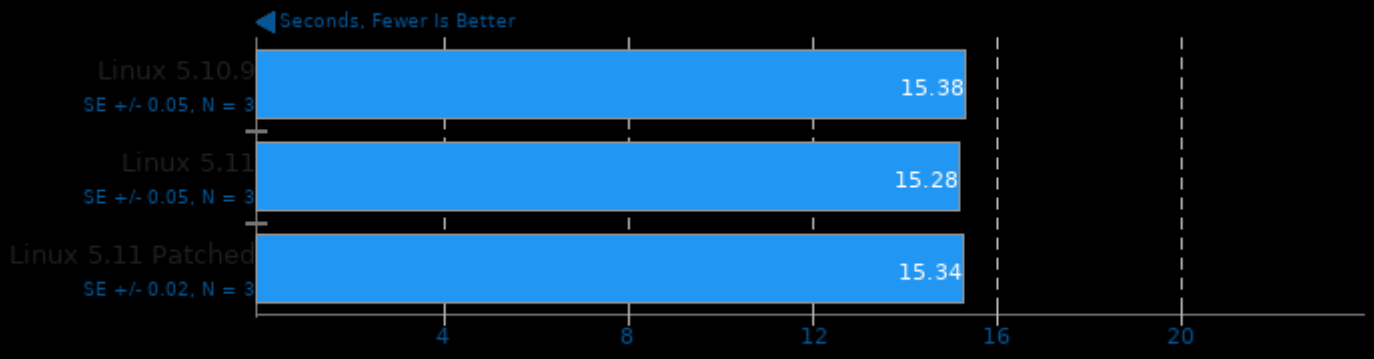
Acceleration: CPU




dav1d 0.8.1
Video Input: Chimera 1080p
FPS, More Is Better
Linux 5.10.9
SE +/- 0.69, N = 3
MIN: 494.61 / MAX: 829.38
652.90
Linux 5.11
SE +/- 1.19, N = 3
MIN: 448.35 / MAX: 762.9
597.38
Linux 5.11 Patched
SE +/- 0.21, N = 3
MIN: 700.11 / MAX: 1100.45
900.42
200
400
600
800
1000
1. (CC) gcc options: -pthread
Crafty 25.2
Elapsed Time
Nodes Per Second, More Is Better
Linux 5.10.9
SE +/- 45712.92, N = 3
11675424
Linux 5.11
SE +/- 33757.27, N = 3
11588672
Linux 5.11 Patched
SE +/- 63865.50, N = 3
11356738
3M
6M
9M
12M
15M
1. (CC) gcc options: -pthread -lstdc++ -fprofile-use -lm
Swet 1.5.16
Average
Operations Per Second, More Is Better
Linux 5.10.9
SE +/- 5000818.86, N = 3
1110470194
Linux 5.11
SE +/- 2779098.64, N = 3
1097526391
Linux 5.11 Patched
SE +/- 9522937.85, N = 3
1113589473
200M
400M
600M
800M
1000M
1. (CC) gcc options: -lm -lpthread -lcurses -lrt


dav1d 0.8.1
Video Input: Summer Nature 4K
FPS, More Is Better
Linux 5.10.9
SE +/- 0.80, N = 3
MIN: 176.51 / MAX: 246.62
236.83
Linux 5.11
SE +/- 0.32, N = 3
MIN: 180.88 / MAX: 242.74
232.45
Linux 5.11 Patched
SE +/- 0.43, N = 3
MIN: 180.39 / MAX: 246.96
238.79
50
100
150
200
250
1. (CC) gcc options: -pthread
Selenium
Benchmark: WASM collisionDetection - Browser: Firefox
ms, Fewer Is Better
Linux 5.10.9
SE +/- 0.95, N = 3
302.1
Linux 5.11
SE +/- 2.35, N = 3
298.7
Linux 5.11 Patched
SE +/- 1.12, N = 3
302.9
70
140
210
280
350
1. firefox 84.0.2
GEGL
Operation: Scale
Seconds, Fewer Is Better
Linux 5.10.9
SE +/- 0.050, N = 3
4.829
Linux 5.11
SE +/- 0.041, N = 14
4.727
Linux 5.11 Patched
SE +/- 0.030, N = 13
4.520
1.0865
2.173
3.2595
4.346
5.4325

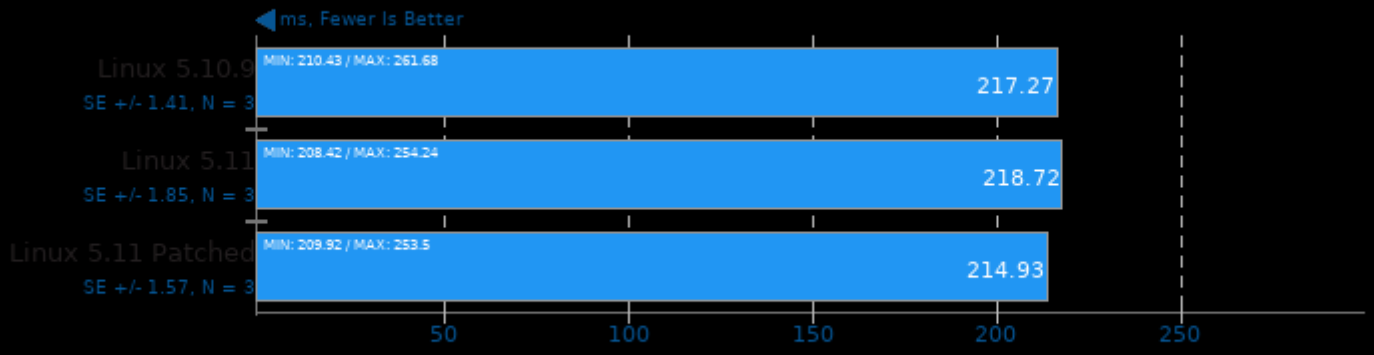
RNNoise 2020-06-28



1. (CC) gcc options: -O2 -pedantic -fvisibility=hidden

TNN 0.2.3

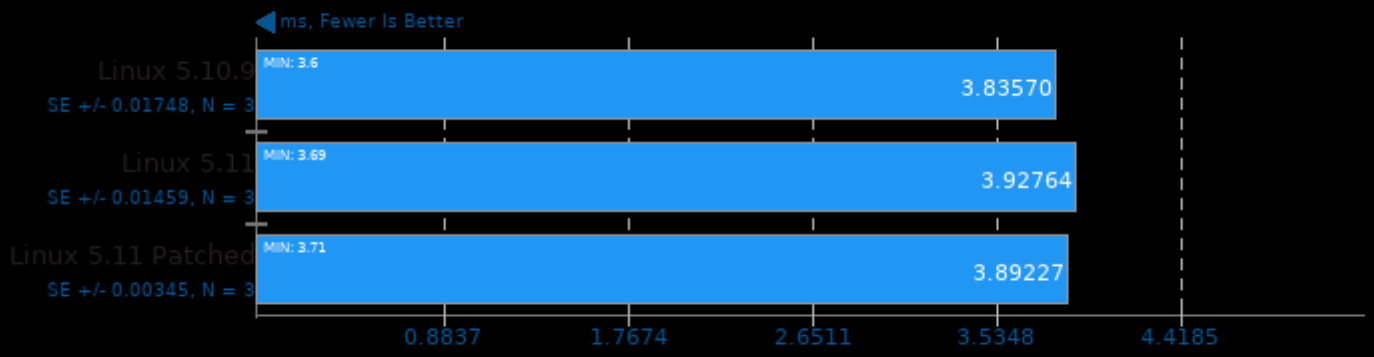
Target: CPU - Model: MobileNet v2



1. (CXX) g++ options: -fopenmp -pthread -fvisibility=hidden -O3 -rdynamic -ldl

oneDNN 2.0

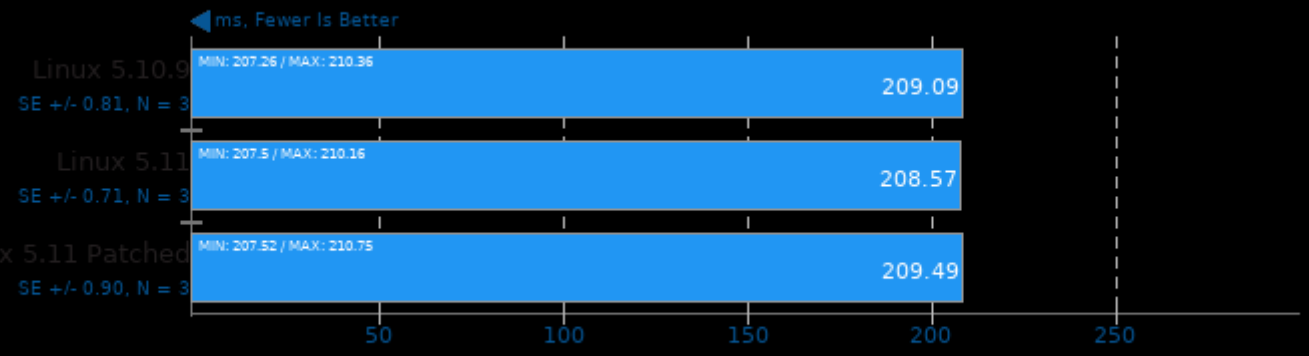
Harness: IP Shapes 1D - Data Type: f32 - Engine: CPU



1. (CXX) g++ options: -O3 -std=c++11 -fopenmp -msse4.1 -fPIC -pie -lpthread

TNN 0.2.3

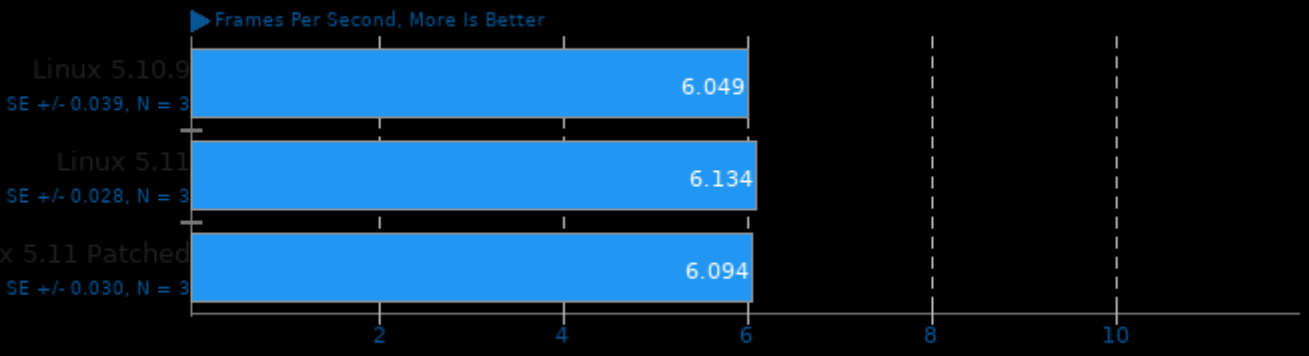
Target: CPU - Model: SqueezeNet v1.1



1. (CXX) g++ options: -fopenmp -pthread -fvisibility=hidden -O3 -rdynamic -ldl

SVT-AV1 0.8

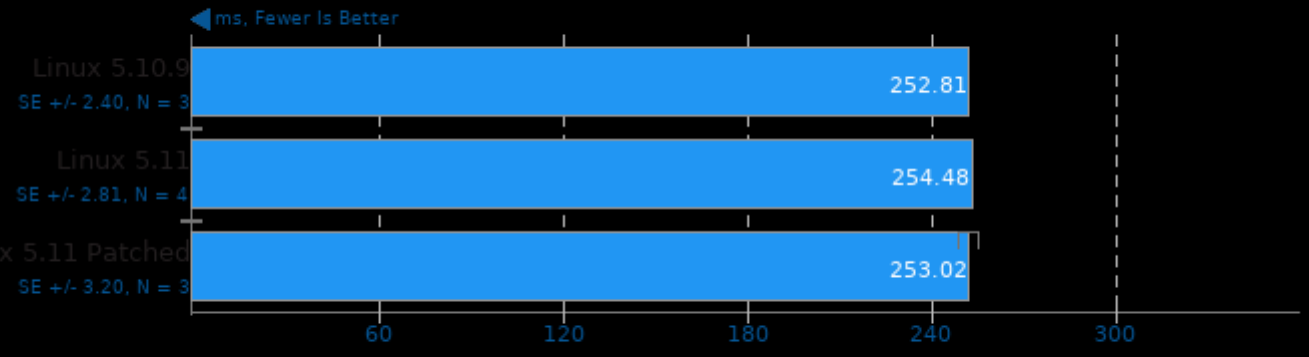
Encoder Mode: Enc Mode 4 - Input: 1080p



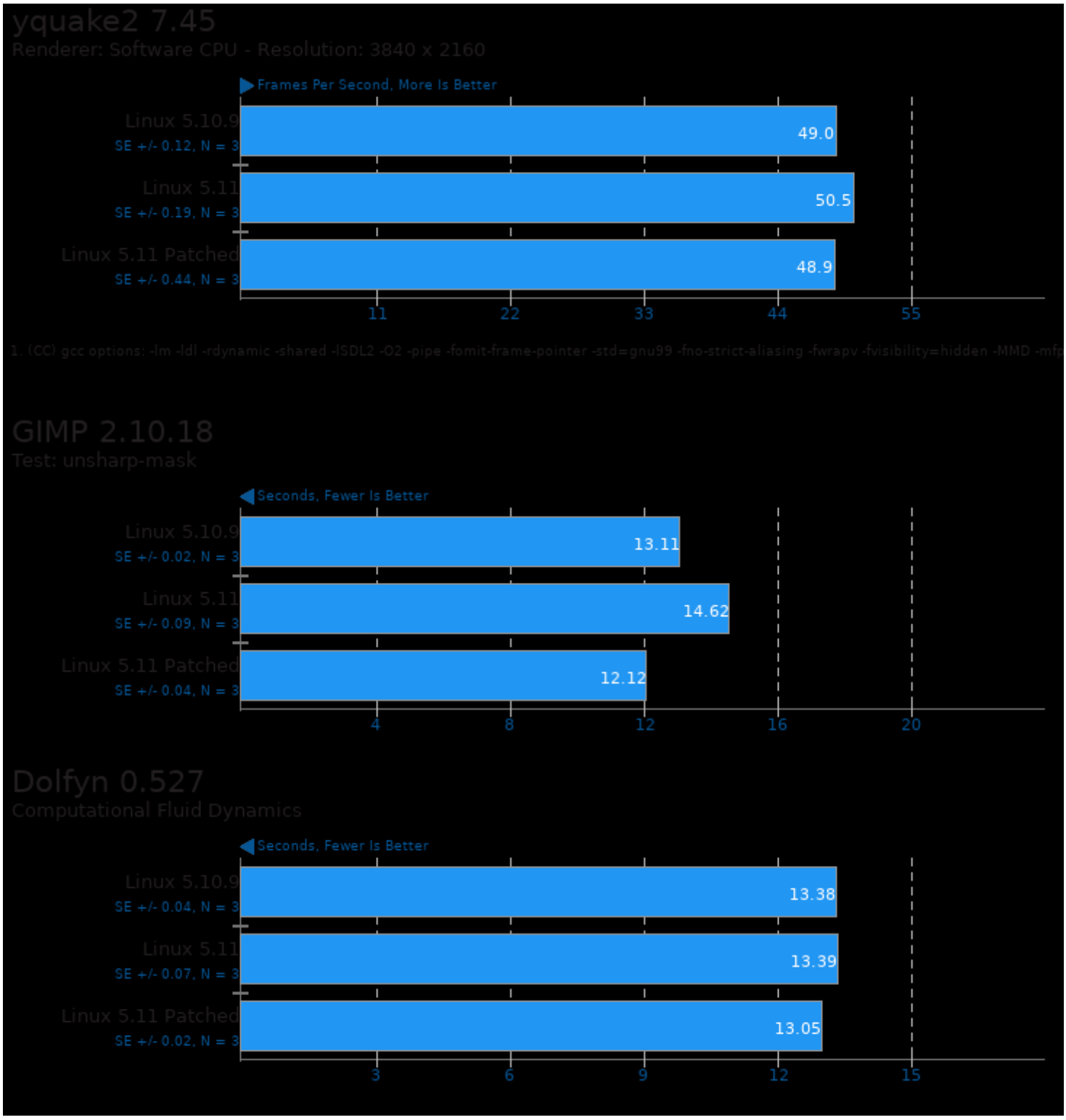
1. (CXX) g++ options: -O3 -fcommon -fPIE -fPIC -pie

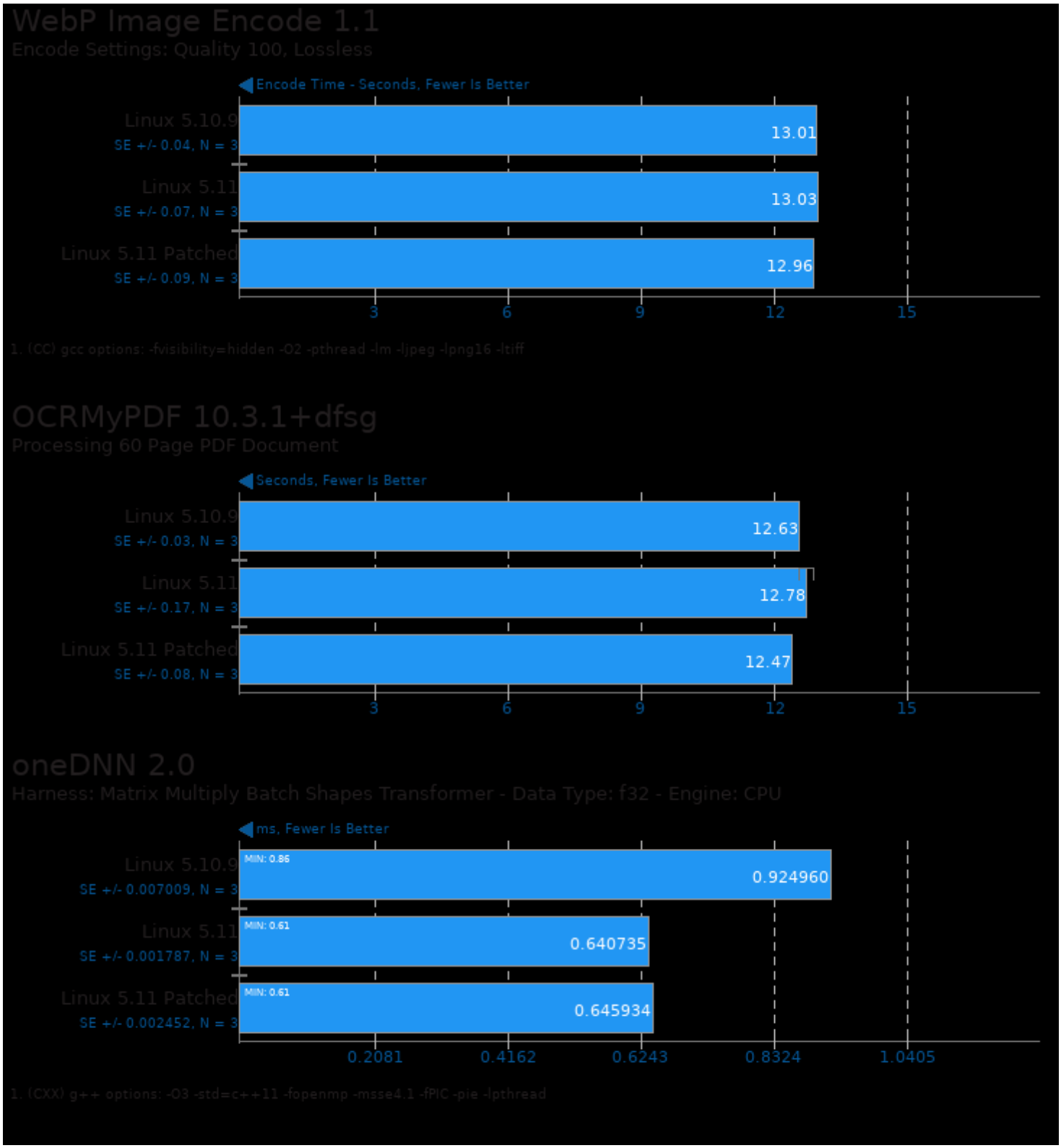
Selenium

Benchmark: WASM collisionDetection - Browser: Google Chrome



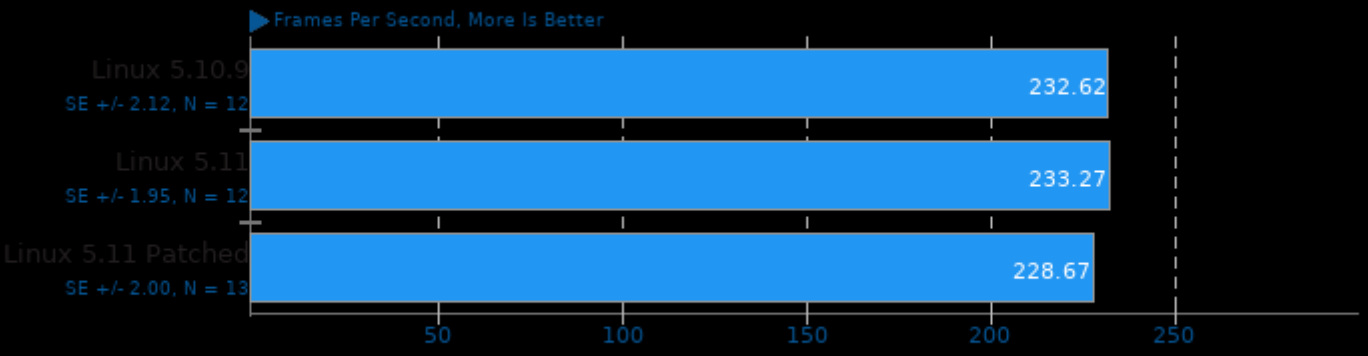
1. chrome 88.0.4324.96


yquake2 7.45
Renderer: Software CPU - Resolution: 3840 x 2160
Frames Per Second, More Is Better
Linux 5.10.9
SE +/- 0.12, N = 3
49.0
Linux 5.11
SE +/- 0.19, N = 3
50.5
Linux 5.11 Patched
SE +/- 0.44, N = 3
48.9
11
22
33
44
55
1. (CC) gcc options: -lm -ldl -rdynamic -shared -lSDL2 -O2 -pipe -fomit-frame-pointer -std=gnu99 -fno-strict-aliasing -fwrapv -fvisibility=hidden -MMD -mfp
GIMP 2.10.18
Test: unsharp-mask
Seconds, Fewer Is Better
Linux 5.10.9
SE +/- 0.02, N = 3
13.11
Linux 5.11
SE +/- 0.09, N = 3
14.62
Linux 5.11 Patched
SE +/- 0.04, N = 3
12.12
4
8
12
16
20
Dolfyn 0.527
Computational Fluid Dynamics
Seconds, Fewer Is Better
Linux 5.10.9
SE +/- 0.04, N = 3
13.38
Linux 5.11
SE +/- 0.07, N = 3
13.39
Linux 5.11 Patched
SE +/- 0.02, N = 3
13.05
3
6
9
12
15


WebP Image Encode 1.1
Encode Settings: Quality 100, Lossless
Encode Time - Seconds, Fewer Is Better
Linux 5.10.9
SE +/- 0.04, N = 3
13.01
Linux 5.11
SE +/- 0.07, N = 3
13.03
Linux 5.11 Patched
SE +/- 0.09, N = 3
12.96
3
6
9
12
15
1. (CC) gcc options: -fvisibility=hidden -O2 -pthread -lm -ljpeg -lpng16 -ltiff
OCRMyPDF 10.3.1+dfsg
Processing 60 Page PDF Document
Seconds, Fewer Is Better
Linux 5.10.9
SE +/- 0.03, N = 3
12.63
Linux 5.11
SE +/- 0.17, N = 3
12.78
Linux 5.11 Patched
SE +/- 0.08, N = 3
12.47
3
6
9
12
15
oneDNN 2.0
Harness: Matrix Multiply Batch Shapes Transformer - Data Type: f32 - Engine: CPU
ms, Fewer Is Better
Linux 5.10.9
SE +/- 0.007009, N = 3
MIN: 0.86
0.924960
Linux 5.11
SE +/- 0.001787, N = 3
MIN: 0.61
0.640735
Linux 5.11 Patched
SE +/- 0.002452, N = 3
MIN: 0.61
0.645934
0.2081
0.4162
0.6243
0.8324
1.0405
1. (CXX) g++ options: -O3 -std=c++11 -fopenmp -msse4.1 -fPIC -pie -lpthread

SVT-VP9 0.1

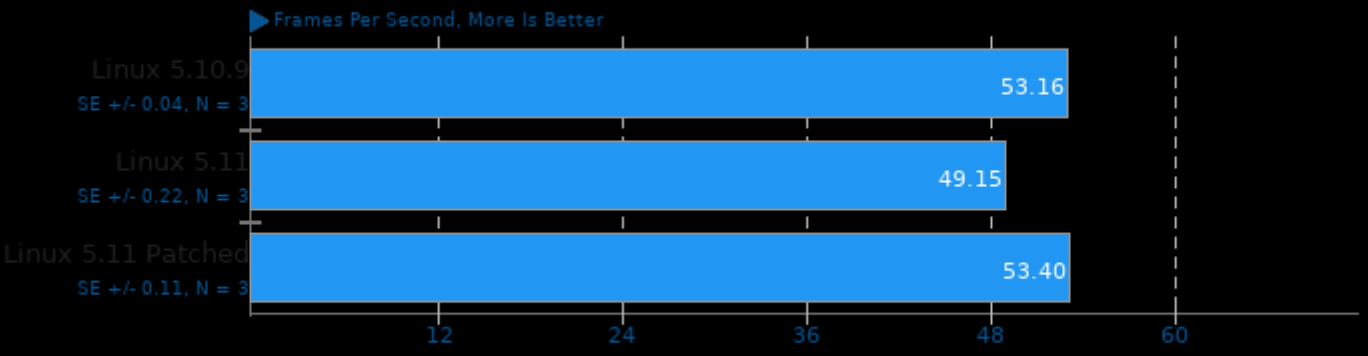
Tuning: PSNR/SSIM Optimized - Input: Bosphorus 1080p



1. (CC) gcc options: -O3 -fcommon -fPIE -fPIC -fvisibility=hidden -pie -rdynamic -lpthread -lrt -lm

Kvazaar 2.0

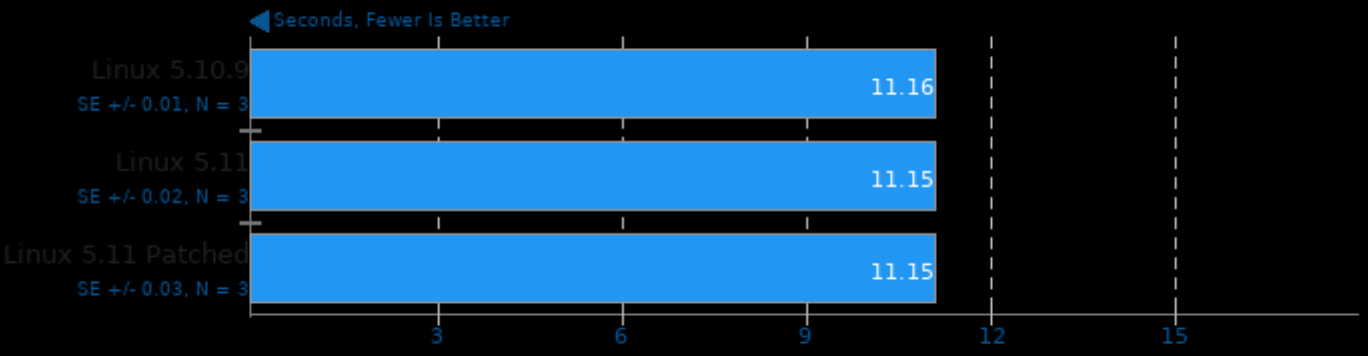
Video Input: Bosphorus 4K - Video Preset: Ultra Fast



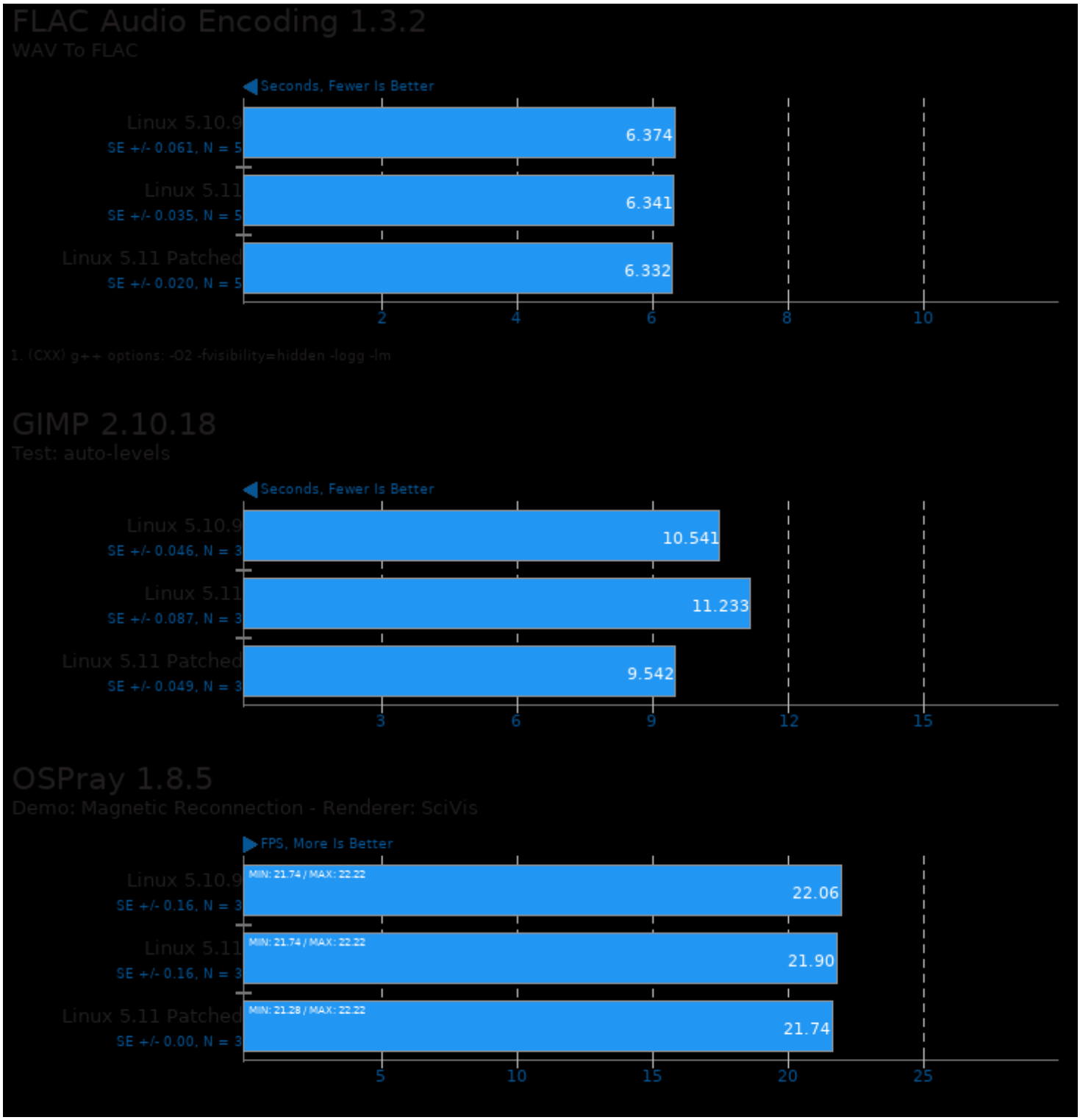
1. (CC) gcc options: -pthread -ftree-vectorize -fvisibility=hidden -O2 -lpthread -lm -lrt

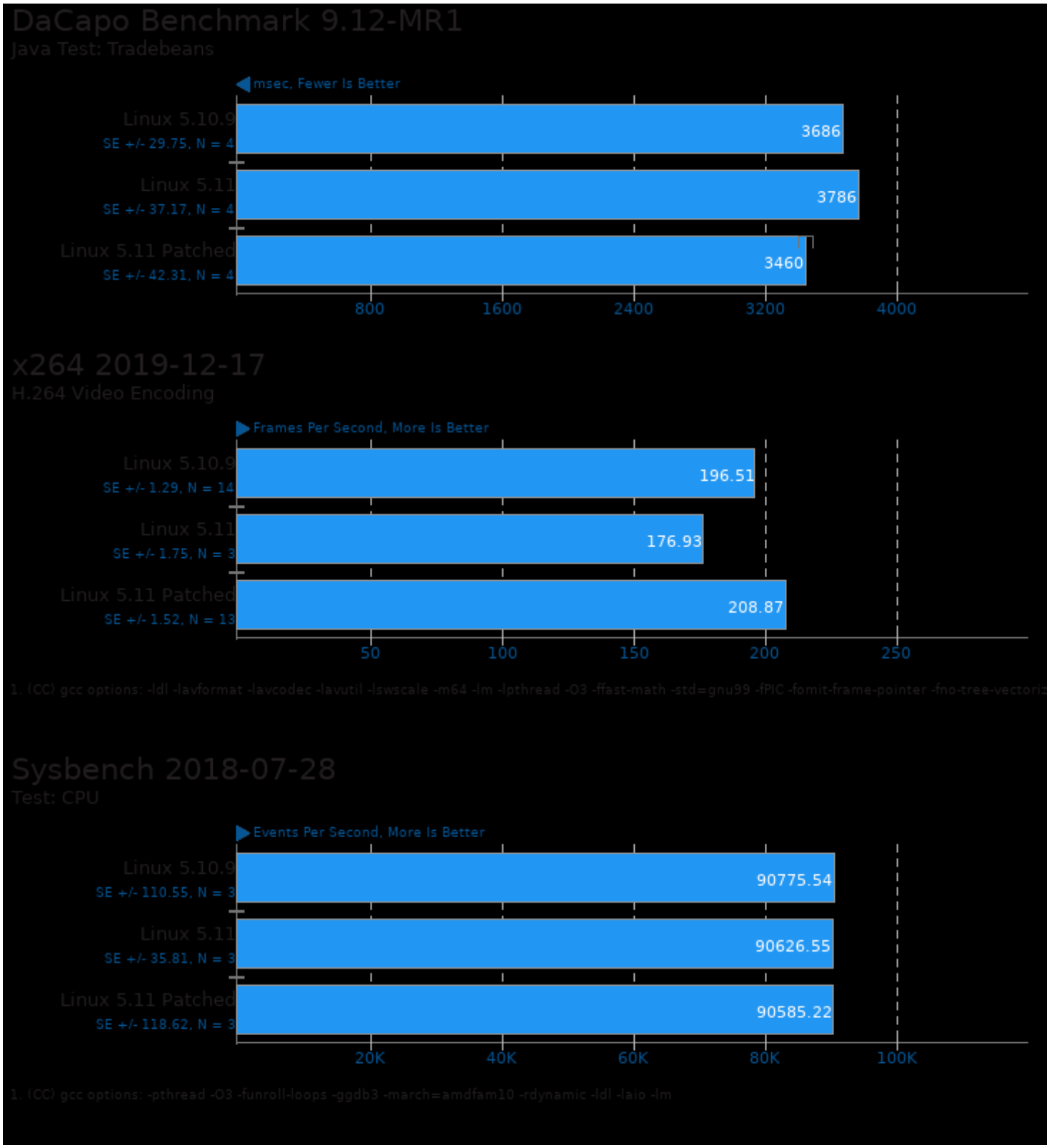
Primesieve 7.4

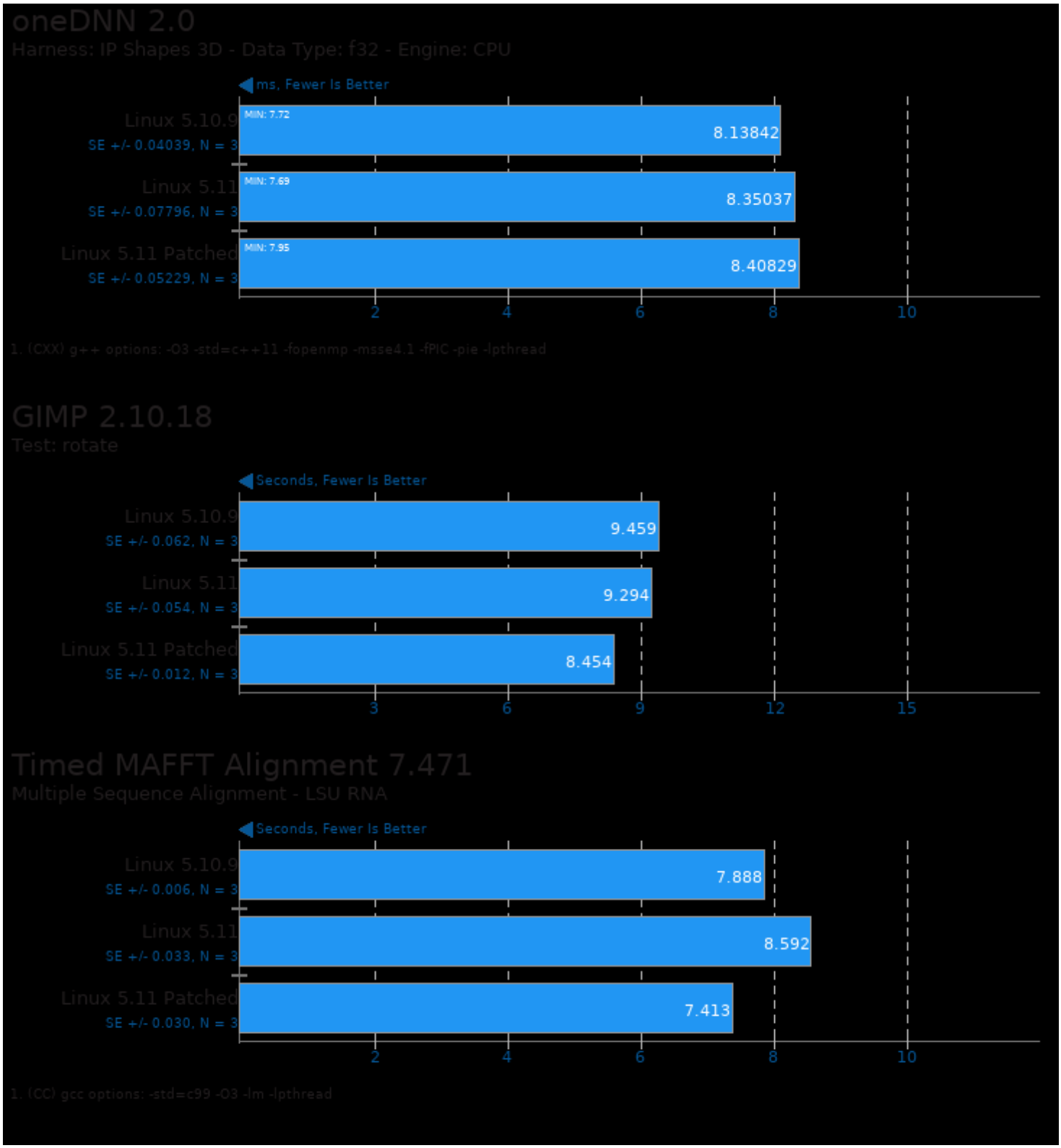
1e12 Prime Number Generation



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

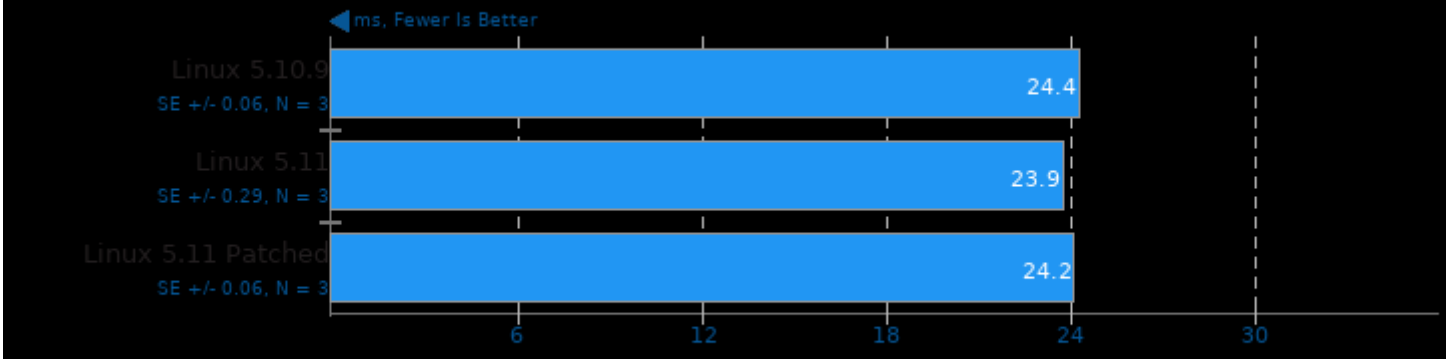

FLAC Audio Encoding 1.3.2
WAV To FLAC
Seconds, Fewer Is Better
Linux 5.10.9
SE +/- 0.061, N = 5
6.374
Linux 5.11
SE +/- 0.035, N = 5
6.341
Linux 5.11 Patched
SE +/- 0.020, N = 5
6.332
2
4
6
8
10
1. (CXX) g++ options: -O2 -fvisibility=hidden -logg -lm
GIMP 2.10.18
Test: auto-levels
Seconds, Fewer Is Better
Linux 5.10.9
SE +/- 0.046, N = 3
10.541
Linux 5.11
SE +/- 0.087, N = 3
11.233
Linux 5.11 Patched
SE +/- 0.049, N = 3
9.542
3
6
9
12
15
OSPray 1.8.5
Demo: Magnetic Reconnection - Renderer: SciVis
FPS, More Is Better
Linux 5.10.9
SE +/- 0.16, N = 3
MIN: 21.74 / MAX: 22.22
22.06
Linux 5.11
SE +/- 0.16, N = 3
MIN: 21.74 / MAX: 22.22
21.90
Linux 5.11 Patched
SE +/- 0.00, N = 3
MIN: 21.28 / MAX: 22.22
21.74
5
10
15
20
25


DaCapo Benchmark 9.12-MR1
Java Test: Tradebeans
msec, Fewer Is Better
Linux 5.10.9
SE +/- 29.75, N = 4
3686
Linux 5.11
SE +/- 37.17, N = 4
3786
Linux 5.11 Patched
SE +/- 42.31, N = 4
3460
800
1600
2400
3200
4000
x264 2019-12-17
H.264 Video Encoding
Frames Per Second, More Is Better
Linux 5.10.9
SE +/- 1.29, N = 14
196.51
Linux 5.11
SE +/- 1.75, N = 3
176.93
Linux 5.11 Patched
SE +/- 1.52, N = 13
208.87
50
100
150
200
250
1. (CC) gcc options: -ldl -lavformat -lavcodec -lavutil -lswscale -m64 -lm -lpthread -O3 -ffast-math -std=gnu99 -fPIC -fomit-frame-pointer -fno-tree-vectori
Sysbench 2018-07-28
Test: CPU
Events Per Second, More Is Better
Linux 5.10.9
SE +/- 110.55, N = 3
90775.54
Linux 5.11
SE +/- 35.81, N = 3
90626.55
Linux 5.11 Patched
SE +/- 118.62, N = 3
90585.22
20K
40K
60K
80K
100K
1. (CC) gcc options: -pthread -O3 -funroll-loops -ggdb3 -march=amdfam10 -rdynamic -ldl -laio -lm


oneDNN 2.0
Harness: IP Shapes 3D - Data Type: f32 - Engine: CPU
ms, Fewer Is Better
Linux 5.10.9
SE +/- 0.04039, N = 3
MIN: 7.72
8.13842
Linux 5.11
SE +/- 0.07796, N = 3
MIN: 7.69
8.35037
Linux 5.11 Patched
SE +/- 0.05229, N = 3
MIN: 7.95
8.40829
2
4
6
8
10
1. (CXX) g++ options: -O3 -std=c++11 -fopenmp -msse4.1 -fPIC -pie -lpthread
GIMP 2.10.18
Test: rotate
Seconds, Fewer Is Better
Linux 5.10.9
SE +/- 0.062, N = 3
9.459
Linux 5.11
SE +/- 0.054, N = 3
9.294
Linux 5.11 Patched
SE +/- 0.012, N = 3
8.454
3
6
9
12
15
Timed MAFFT Alignment 7.471
Multiple Sequence Alignment - LSU RNA
Seconds, Fewer Is Better
Linux 5.10.9
SE +/- 0.006, N = 3
7.888
Linux 5.11
SE +/- 0.033, N = 3
8.592
Linux 5.11 Patched
SE +/- 0.030, N = 3
7.413
2
4
6
8
10
1. (CC) gcc options: -std=c99 -O3 -lm -lpthread

Selenium

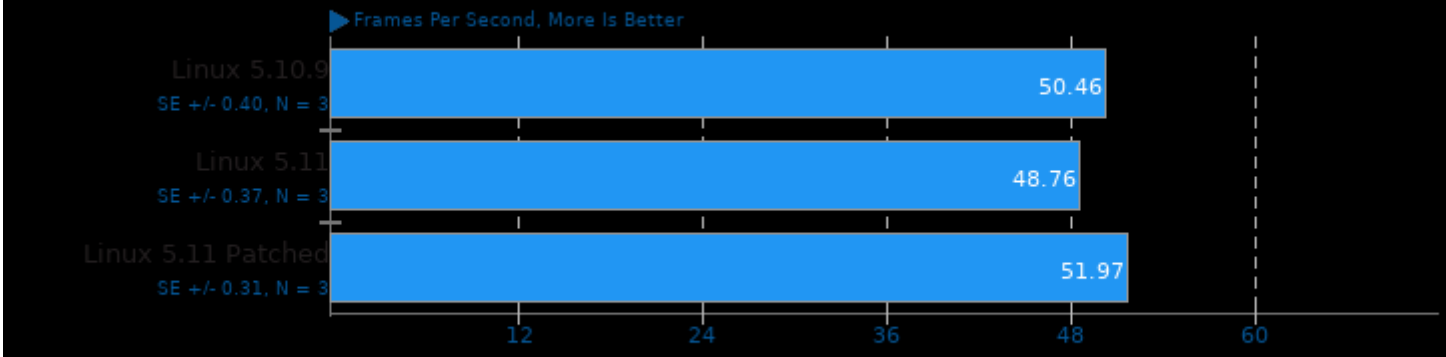
Benchmark: WASM imageConvolute - Browser: Firefox



1. firefox 84.0.2

SVT-AV1 0.8

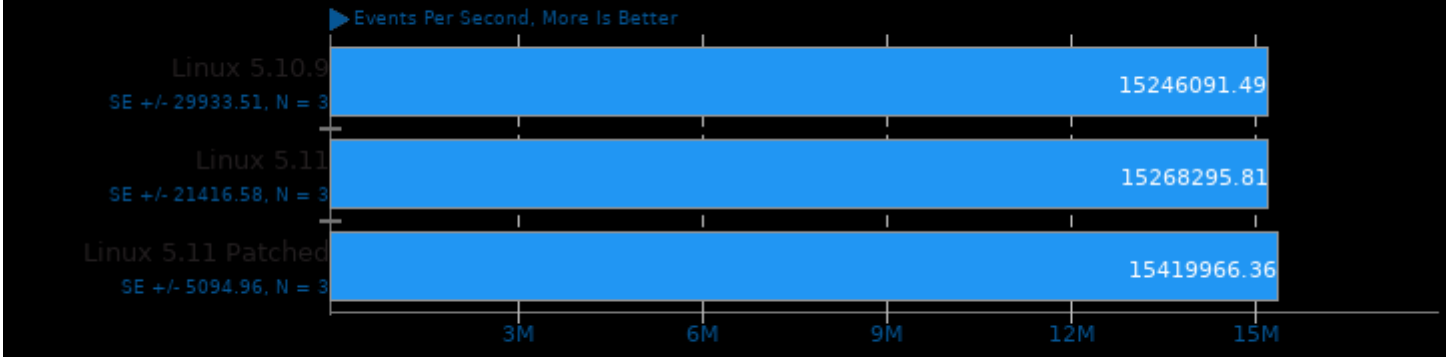
Encoder Mode: Enc Mode 8 - Input: 1080p



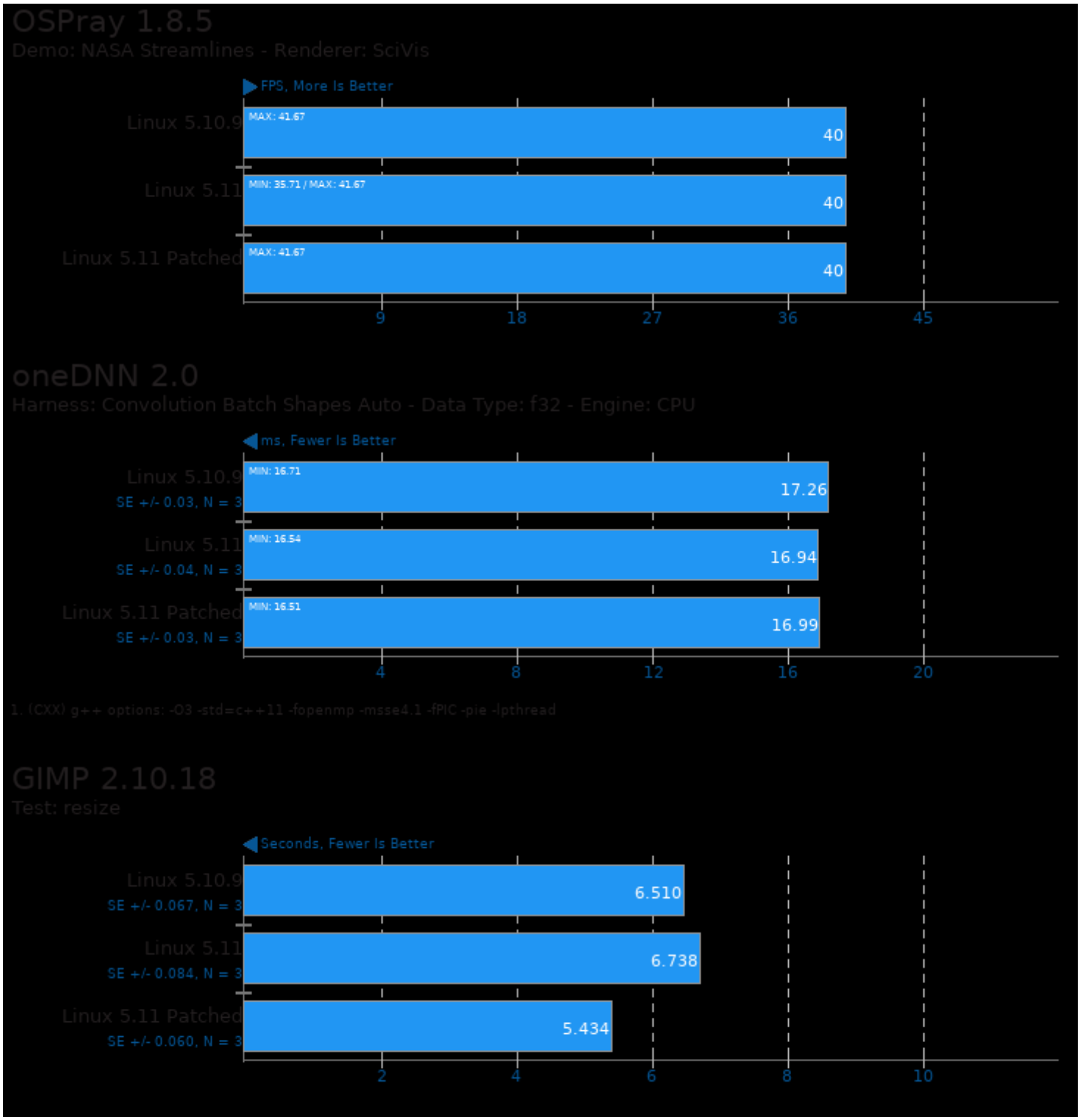
1. (CXX) g++ options: -O3 -fcommon -fPIE -fPIC -pie

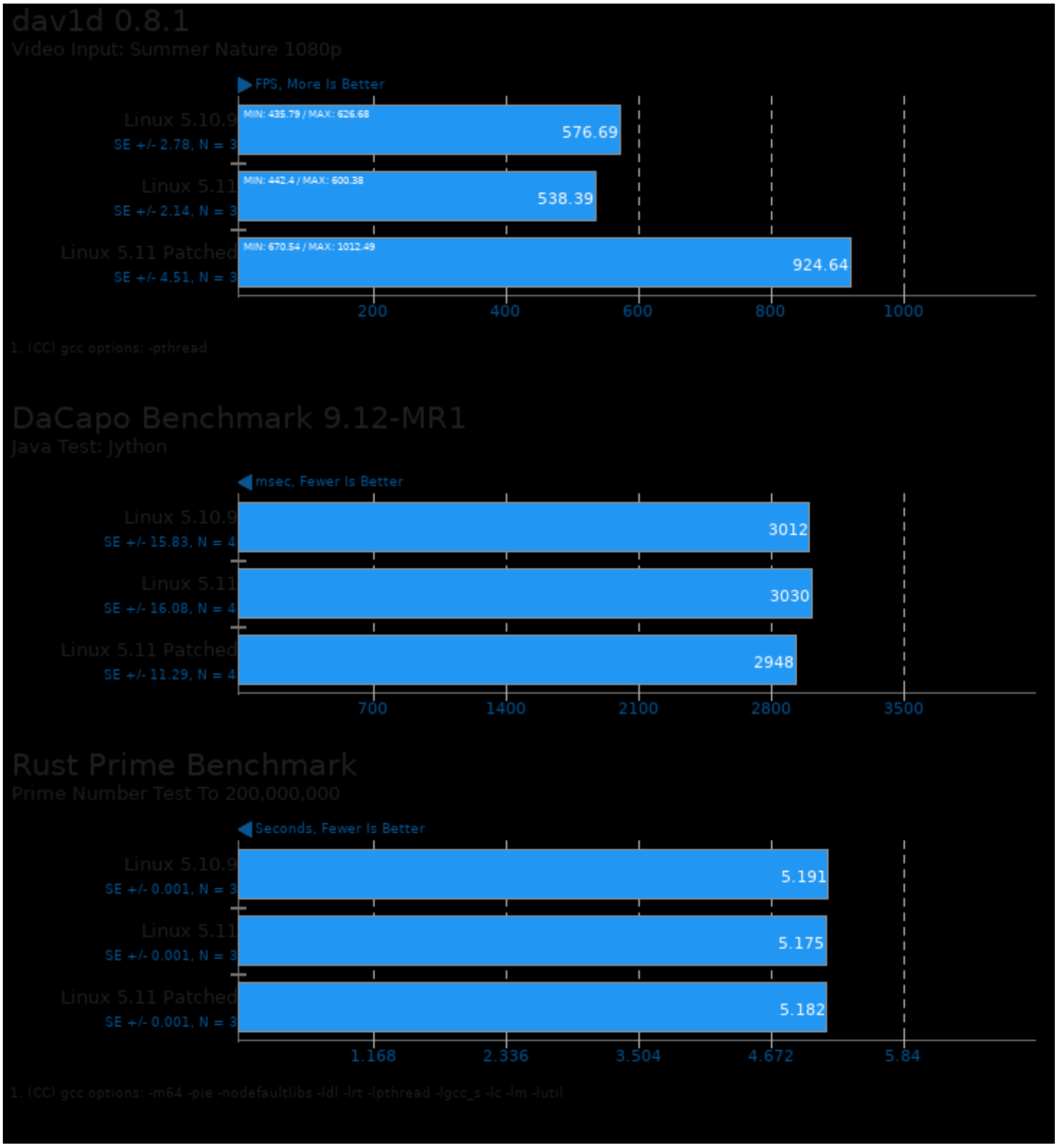
Sysbench 2018-07-28

Test: Memory



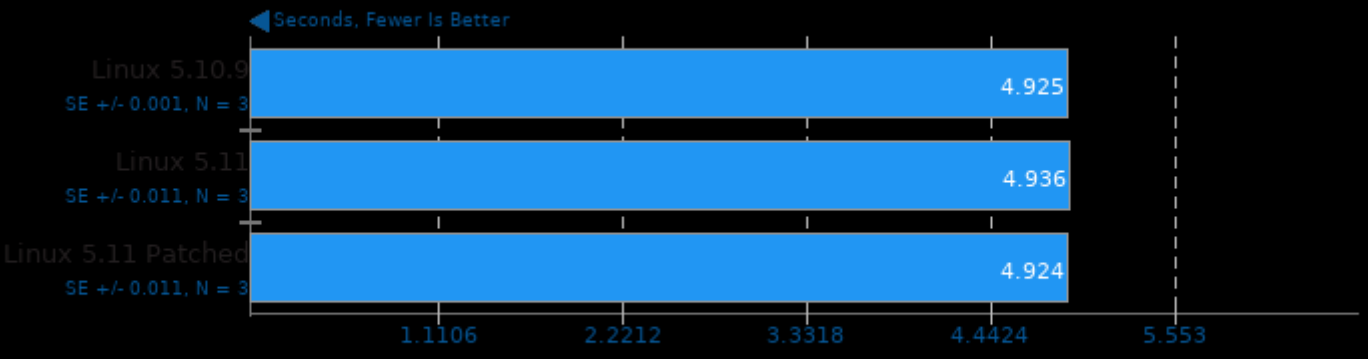
1. (CC) gcc options: -pthread -O3 -funroll-loops -ggdb3 -march=amdfam10 -rdynamic -ldl -laio -lm


OSPray 1.8.5
Demo: NASA Streamlines - Renderer: SciVis
FPS, More Is Better
Linux 5.10.9
MAX: 41.67
40
Linux 5.11
MIN: 35.71 / MAX: 41.67
40
Linux 5.11 Patched
MAX: 41.67
40
9
18
27
36
45
oneDNN 2.0
Harness: Convolution Batch Shapes Auto - Data Type: f32 - Engine: CPU
ms, Fewer Is Better
Linux 5.10.9
SE +/- 0.03, N = 3
MIN: 16.71
17.26
Linux 5.11
SE +/- 0.04, N = 3
MIN: 16.54
16.94
Linux 5.11 Patched
SE +/- 0.03, N = 3
MIN: 16.51
16.99
4
8
12
16
20
1. (CXX) g++ options: -O3 -std=c++11 -fopenmp -msse4.1 -fPIC -pie -lpthread
GIMP 2.10.18
Test: resize
Seconds, Fewer Is Better
Linux 5.10.9
SE +/- 0.067, N = 3
6.510
Linux 5.11
SE +/- 0.084, N = 3
6.738
Linux 5.11 Patched
SE +/- 0.060, N = 3
5.434
2
4
6
8
10


dav1d 0.8.1
Video Input: Summer Nature 1080p
FPS, More Is Better
Linux 5.10.9
SE +/- 2.78, N = 3
MIN: 435.79 / MAX: 626.68
576.69
Linux 5.11
SE +/- 2.14, N = 3
MIN: 442.4 / MAX: 600.38
538.39
Linux 5.11 Patched
SE +/- 4.51, N = 3
MIN: 670.54 / MAX: 1012.49
924.64
200
400
600
800
1000
1. (CC) gcc options: -pthread
DaCapo Benchmark 9.12-MR1
Java Test: Jython
msec, Fewer Is Better
Linux 5.10.9
SE +/- 15.83, N = 4
3012
Linux 5.11
SE +/- 16.08, N = 4
3030
Linux 5.11 Patched
SE +/- 11.29, N = 4
2948
700
1400
2100
2800
3500
Rust Prime Benchmark
Prime Number Test To 200,000,000
Seconds, Fewer Is Better
Linux 5.10.9
SE +/- 0.001, N = 3
5.191
Linux 5.11
SE +/- 0.001, N = 3
5.175
Linux 5.11 Patched
SE +/- 0.001, N = 3
5.182
1.168
2.336
3.504
4.672
5.84
1. (CC) gcc options: -m64 -pie -nodefaultlibs -ldl -lrt -lpthread -lgcc_s -lc -lm -lutil

Smallpt 1.0

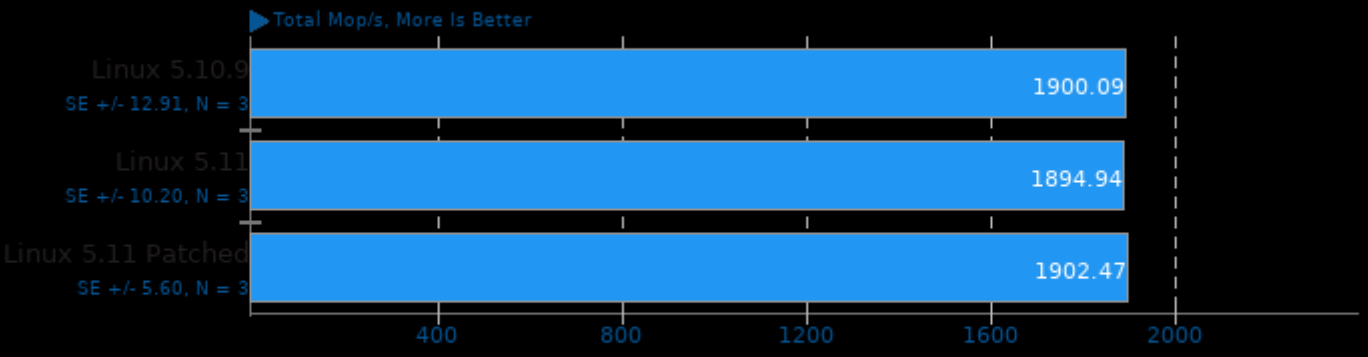
Global Illumination Renderer; 128 Samples



1. (CXX) g++ options: -fopenmp -O3

NAS Parallel Benchmarks 3.4

Test / Class: EP.C

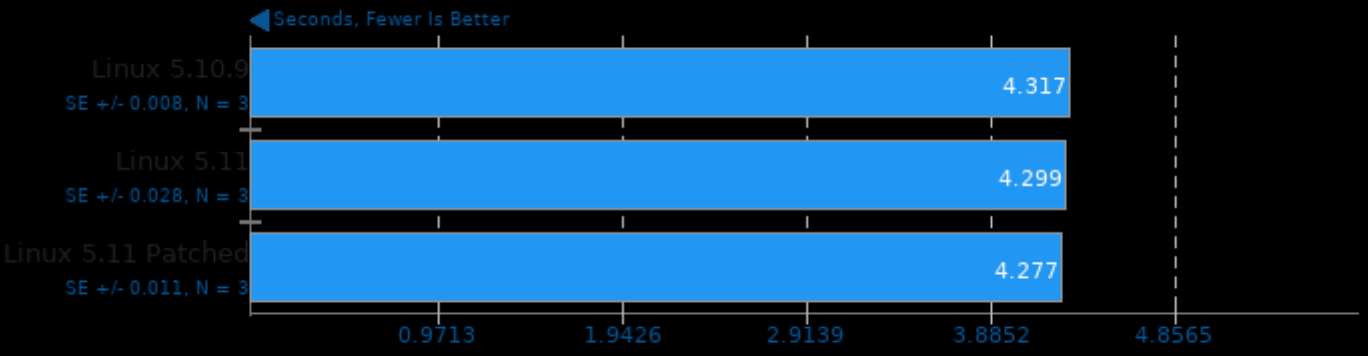


1. (F9X) gfortran options: -O3 -march=native -pthread -lmpi_usempif08 -lmpi_mpifh -lmpi -lopen-rte -lopen-pal -lhwloc -ldl -levent -levent_pthreads -luti

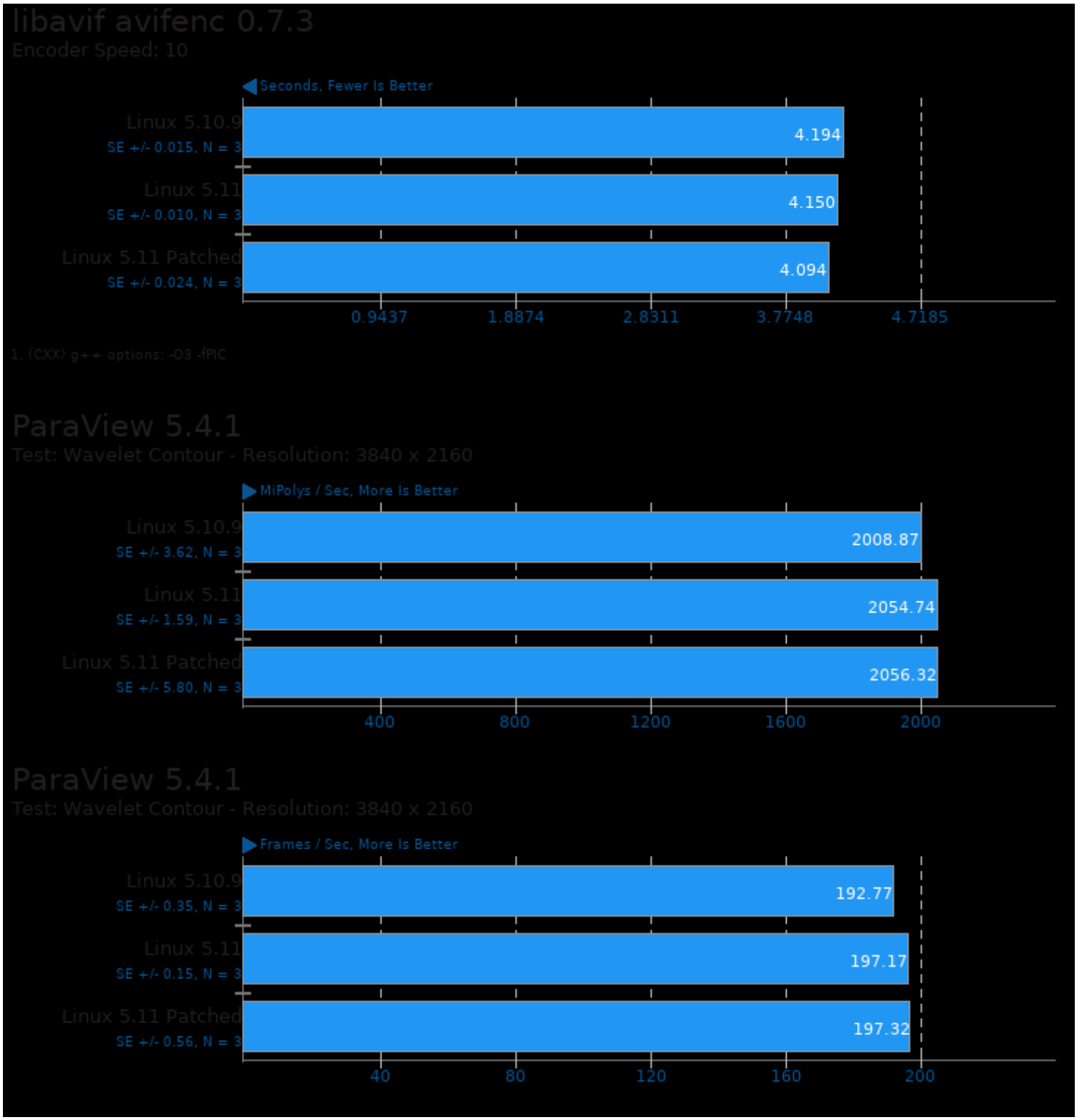
2. Open MPI 4.0.3

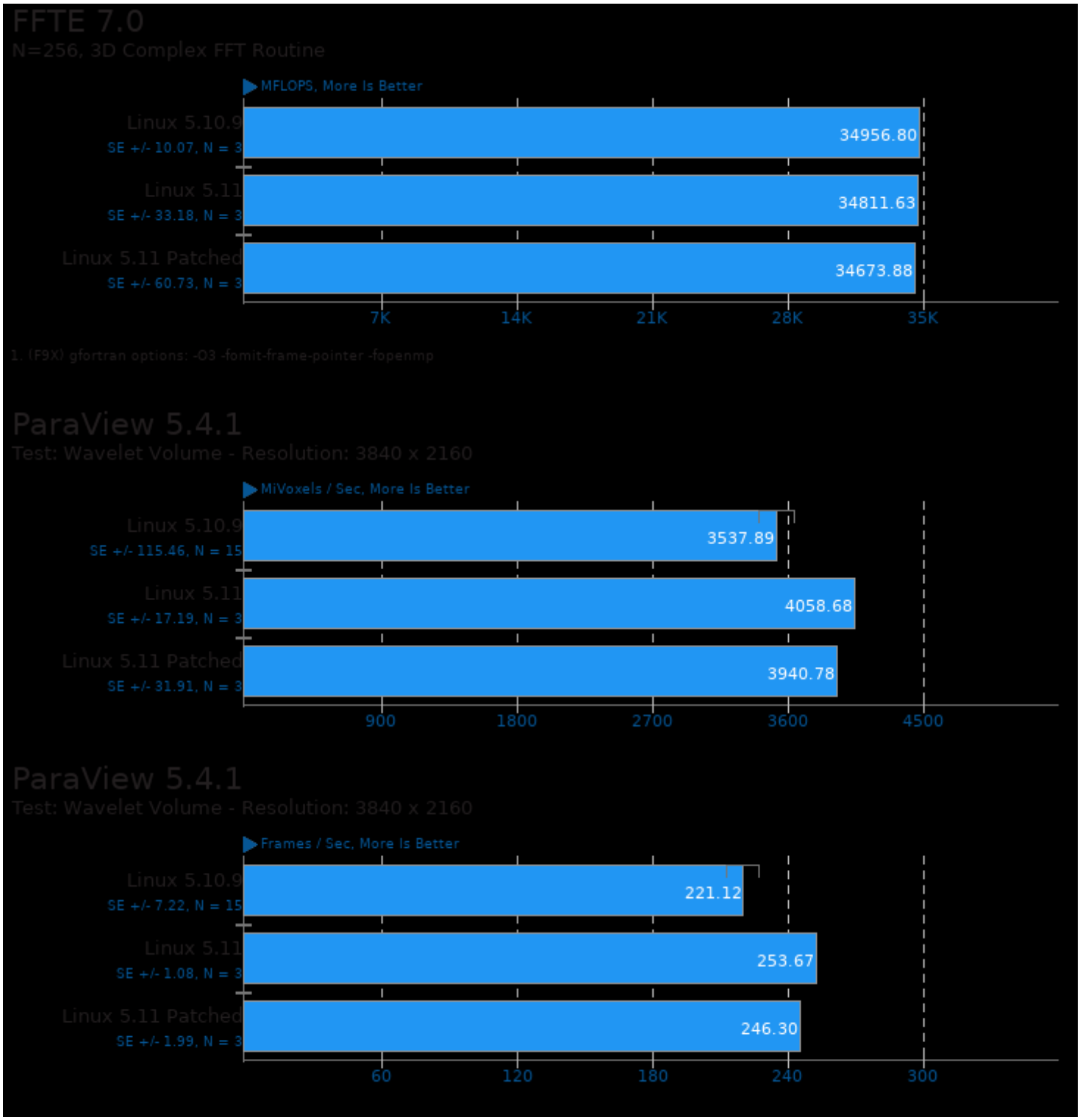
libavif avifenc 0.7.3

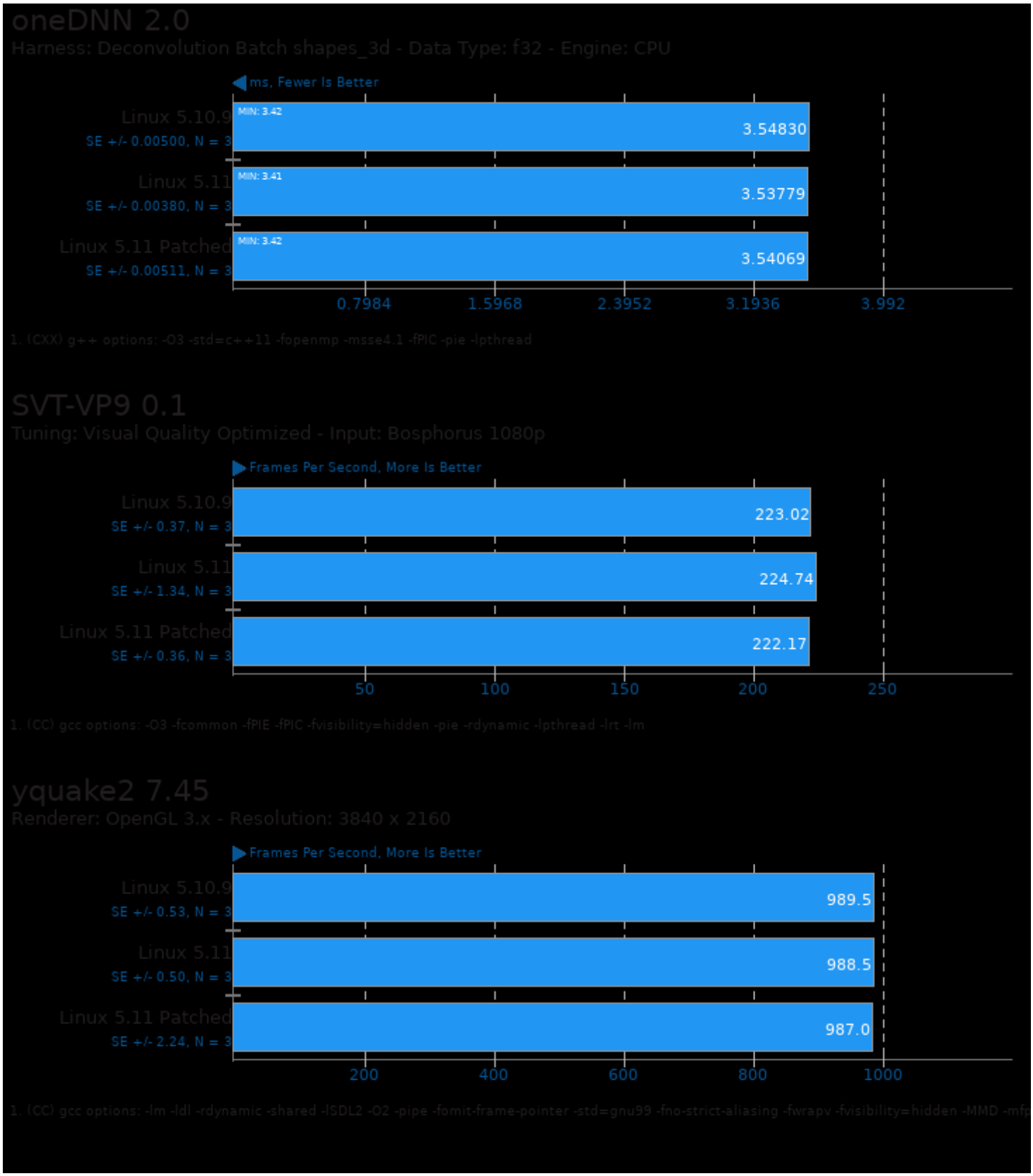
Encoder Speed: 8

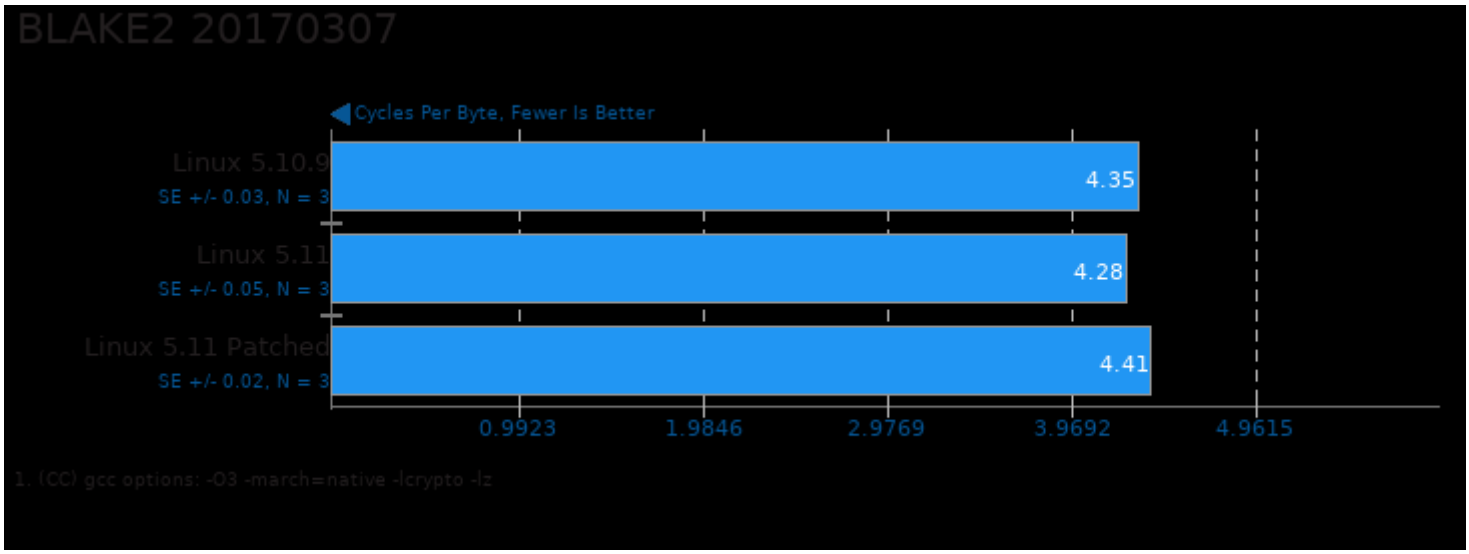


1. (CXX) g++ options: -O3 -fPIC

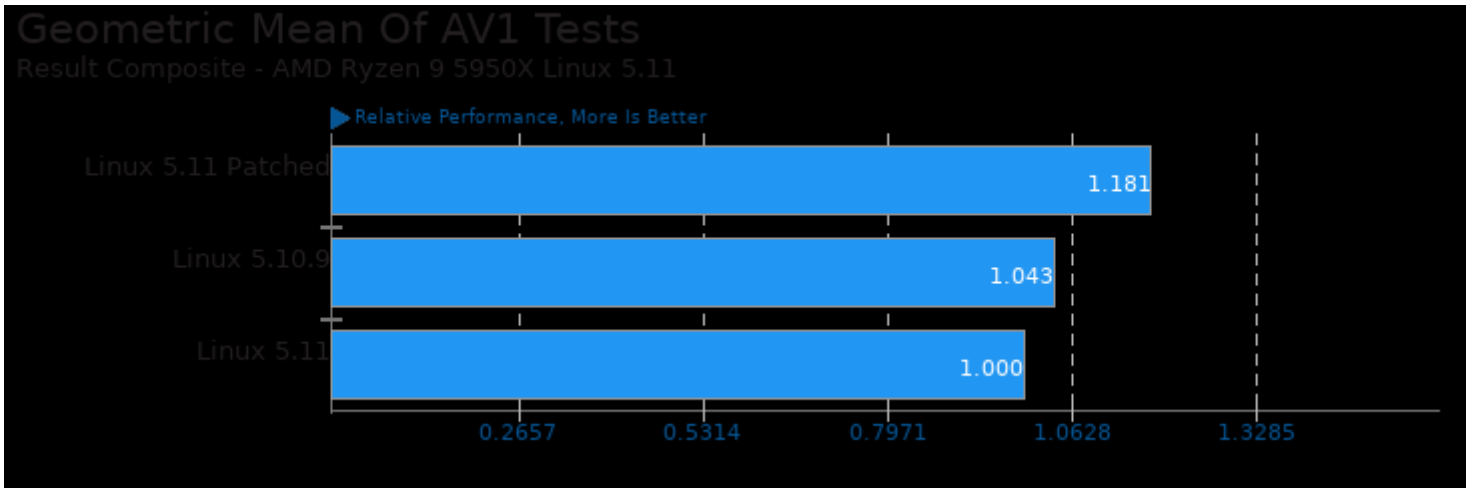

libavif avifenc 0.7.3
Encoder Speed: 10
Seconds, Fewer Is Better
Linux 5.10.9
SE +/- 0.015, N = 3
4.194
Linux 5.11
SE +/- 0.010, N = 3
4.150
Linux 5.11 Patched
SE +/- 0.024, N = 3
4.094
0.9437
1.8874
2.8311
3.7748
4.7185
1. (CXX) g++ options: -O3 -fPIC
ParaView 5.4.1
Test: Wavelet Contour - Resolution: 3840 x 2160
MiPolys / Sec, More Is Better
Linux 5.10.9
SE +/- 3.62, N = 3
2008.87
Linux 5.11
SE +/- 1.59, N = 3
2054.74
Linux 5.11 Patched
SE +/- 5.80, N = 3
2056.32
400
800
1200
1600
2000
ParaView 5.4.1
Test: Wavelet Contour - Resolution: 3840 x 2160
Frames / Sec, More Is Better
Linux 5.10.9
SE +/- 0.35, N = 3
192.77
Linux 5.11
SE +/- 0.15, N = 3
197.17
Linux 5.11 Patched
SE +/- 0.56, N = 3
197.32
40
80
120
160
200


FFTE 7.0
N=256, 3D Complex FFT Routine
MFLOPS, More Is Better
Linux 5.10.9
SE +/- 10.07, N = 3
34956.80
Linux 5.11
SE +/- 33.18, N = 3
34811.63
Linux 5.11 Patched
SE +/- 60.73, N = 3
34673.88
7K
14K
21K
28K
35K
1. (F9X) gfortran options: -O3 -fomit-frame-pointer -fopenmp
ParaView 5.4.1
Test: Wavelet Volume - Resolution: 3840 x 2160
MiVoxels / Sec, More Is Better
Linux 5.10.9
SE +/- 115.46, N = 15
3537.89
Linux 5.11
SE +/- 17.19, N = 3
4058.68
Linux 5.11 Patched
SE +/- 31.91, N = 3
3940.78
900
1800
2700
3600
4500
ParaView 5.4.1
Test: Wavelet Volume - Resolution: 3840 x 2160
Frames / Sec, More Is Better
Linux 5.10.9
SE +/- 7.22, N = 15
221.12
Linux 5.11
SE +/- 1.08, N = 3
253.67
Linux 5.11 Patched
SE +/- 1.99, N = 3
246.30
60
120
180
240
300

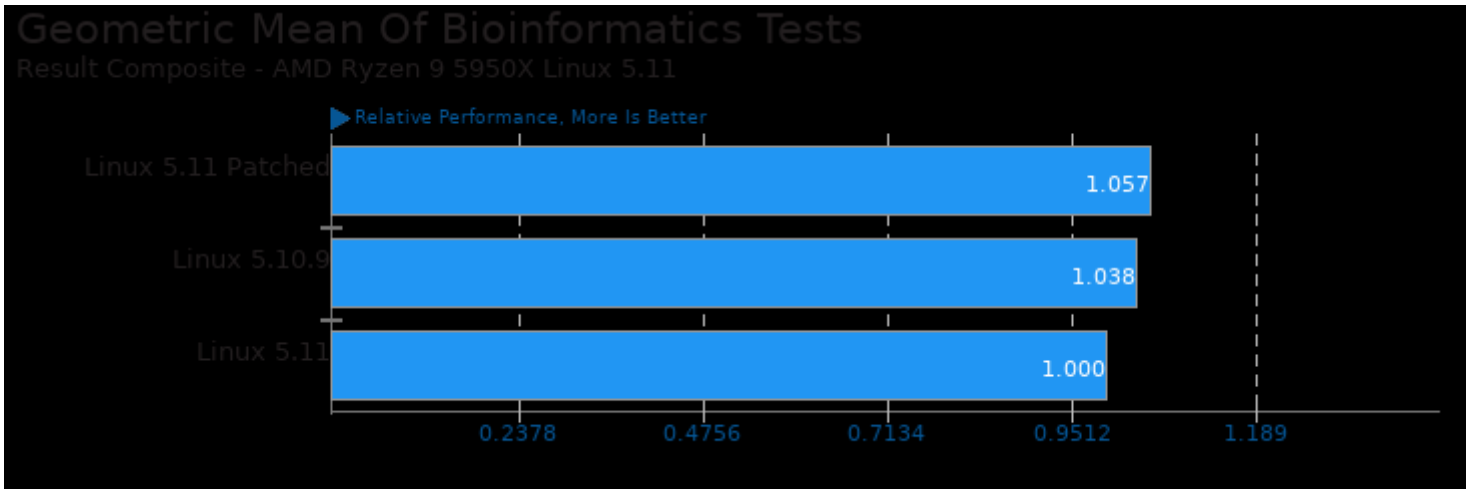

oneDNN 2.0
Harness: Deconvolution Batch shapes_3d - Data Type: f32 - Engine: CPU
ms, Fewer Is Better
Linux 5.10.9
SE +/- 0.00500, N = 3
MIN: 3.42
3.54830
Linux 5.11
SE +/- 0.00380, N = 3
MIN: 3.41
3.53779
Linux 5.11 Patched
SE +/- 0.00511, N = 3
MIN: 3.42
3.54069
0.7984
1.5968
2.3952
3.1936
3.992
1. (CXX) g++ options: -O3 -std=c++11 -fopenmp -msse4.1 -fPIC -pie -lpthread
SVT-VP9 0.1
Tuning: Visual Quality Optimized - Input: Bosphorus 1080p
Frames Per Second, More Is Better
Linux 5.10.9
SE +/- 0.37, N = 3
223.02
Linux 5.11
SE +/- 1.34, N = 3
224.74
Linux 5.11 Patched
SE +/- 0.36, N = 3
222.17
50
100
150
200
250
1. (CC) gcc options: -O3 -fcommon -fPIE -fPIC -fvisibility=hidden -pie -rdynamic -lpthread -lrt -lm
yquake2 7.45
Renderer: OpenGL 3.x - Resolution: 3840 x 2160
Frames Per Second, More Is Better
Linux 5.10.9
SE +/- 0.53, N = 3
989.5
Linux 5.11
SE +/- 0.50, N = 3
988.5
Linux 5.11 Patched
SE +/- 2.24, N = 3
987.0
200
400
600
800
1000
1. (CC) gcc options: -lm -ldl -rdynamic -shared -lSDL2 -O2 -pipe -fomit-frame-pointer -std=gnu99 -fno-strict-aliasing -fwrapv -fvisibility=hidden -MMD -mf


BLAKE2 20170307
Cycles Per Byte, Fewer Is Better
Linux 5.10.9
SE +/- 0.03, N = 3
4.35
Linux 5.11
SE +/- 0.05, N = 3
4.28
Linux 5.11 Patched
SE +/- 0.02, N = 3
4.41
0.9923
1.9846
2.9769
3.9692
4.9615
1. (CC) gcc options: -O3 -march=native -lcrypto -lz

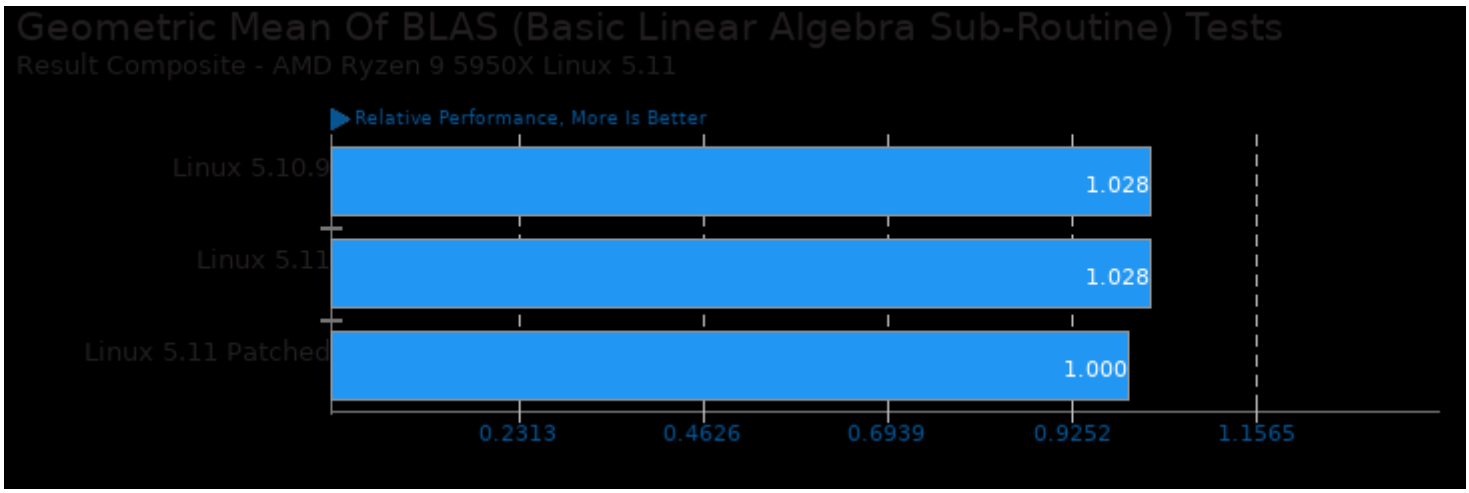
These geometric means are based upon test groupings / test suites for this result file.



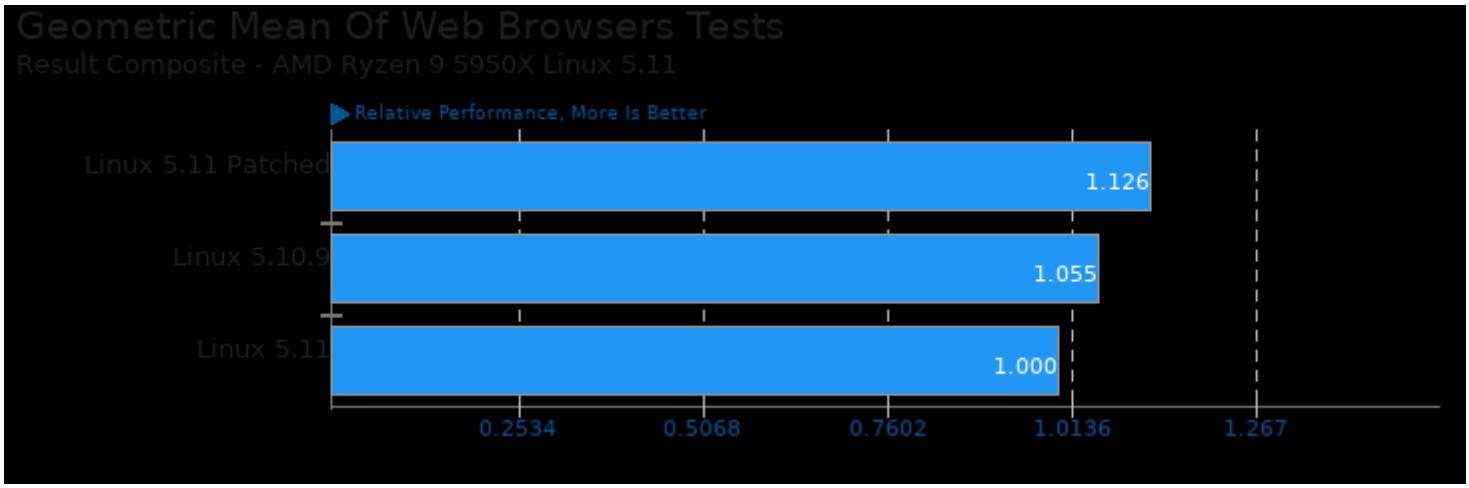
Geometric mean based upon tests: pts/dav1d, pts/aom-av1, pts/svt-av1, pts/rav1e and pts/avifenc



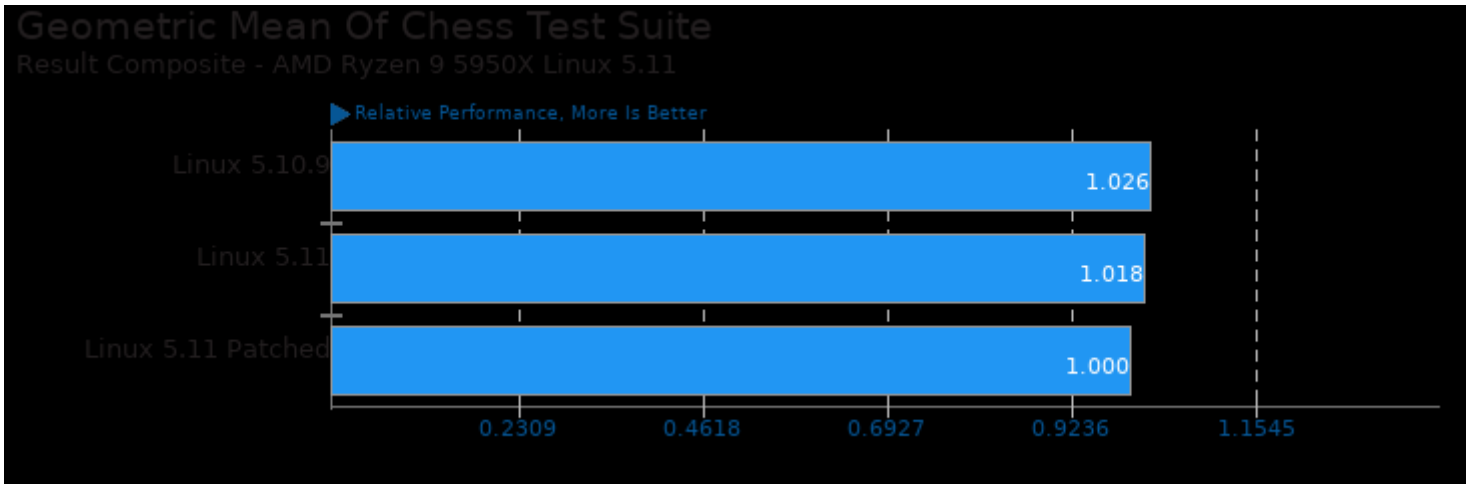
Geometric mean based upon tests: pts/himeno, pts/mrbayes and pts/mafft



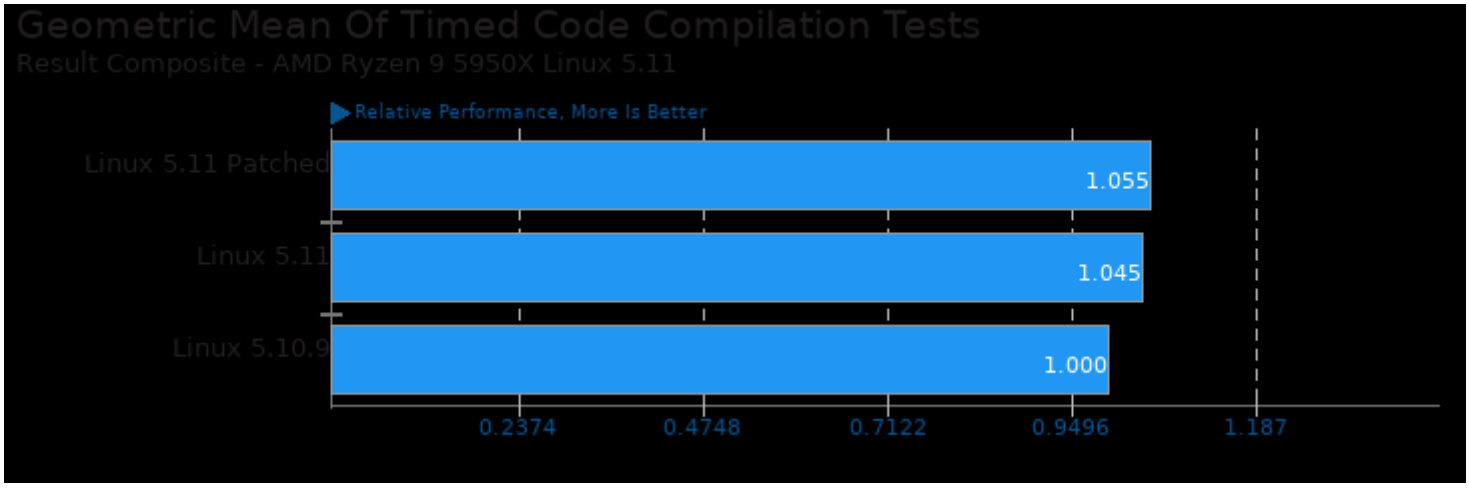
Geometric mean based upon tests: pts/lczero and pts/gpaw



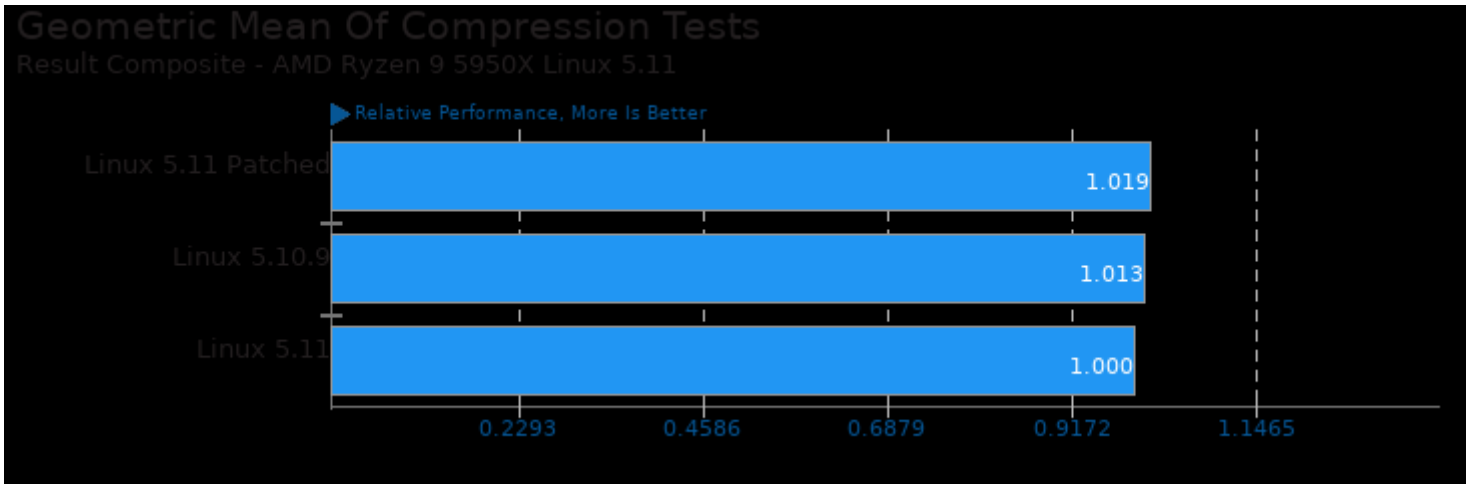
Geometric mean based upon tests: system/selenium



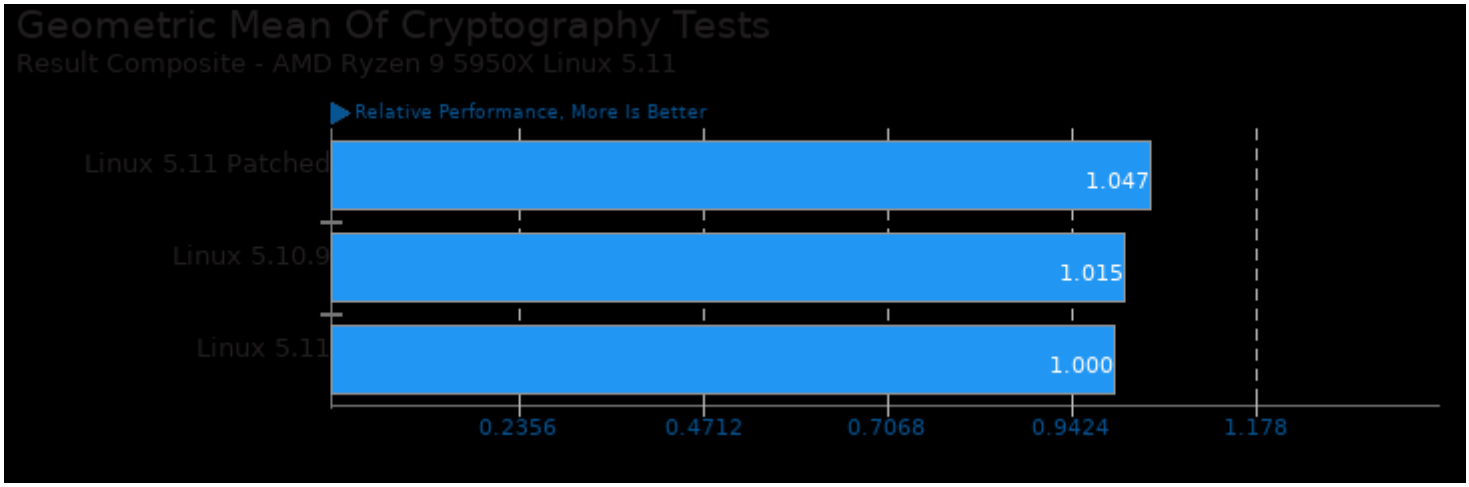
Geometric mean based upon tests: pts/crafty, pts/lczero, pts/stockfish and pts/asmfish



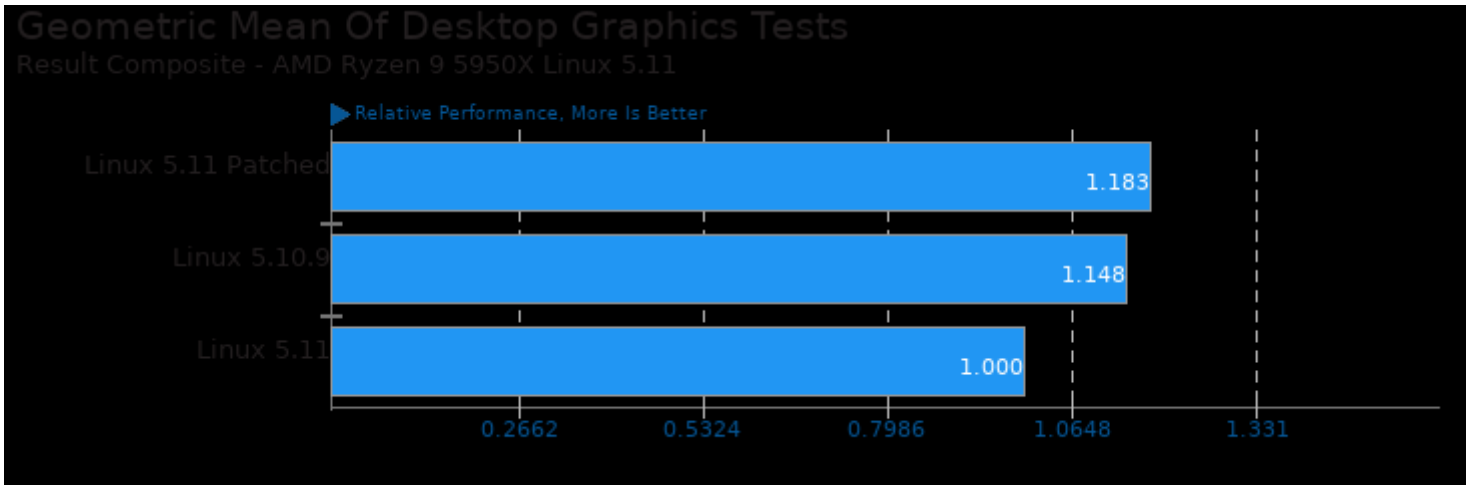
Geometric mean based upon tests: pts/build-linux-kernel, pts/build-gdb, pts/build2 and pts/build-godot



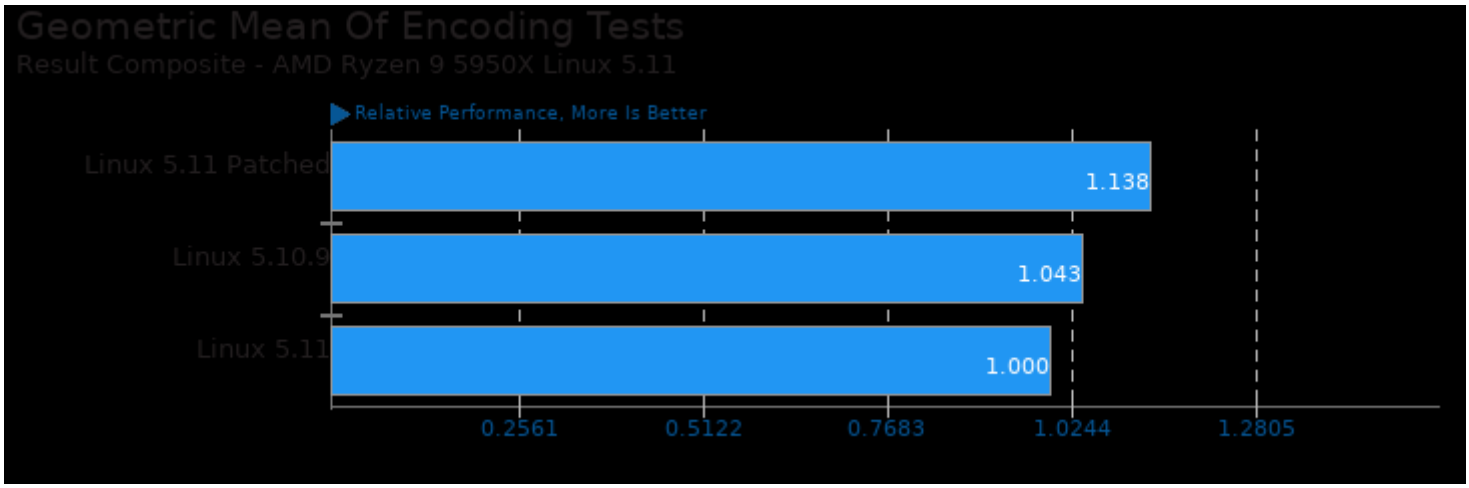
Geometric mean based upon tests: pts/compress-7zip, pts/compress-zstd, pts/compress-lz4, pts/compress-xz and pts/blosc



Geometric mean based upon tests: pts/blake2, pts/john-the-ripper, pts/aircrack-ng and pts/cpuminer-opt



Geometric mean based upon tests: pts/xonotic, pts/tesseract, pts/paraview and pts/glmark2



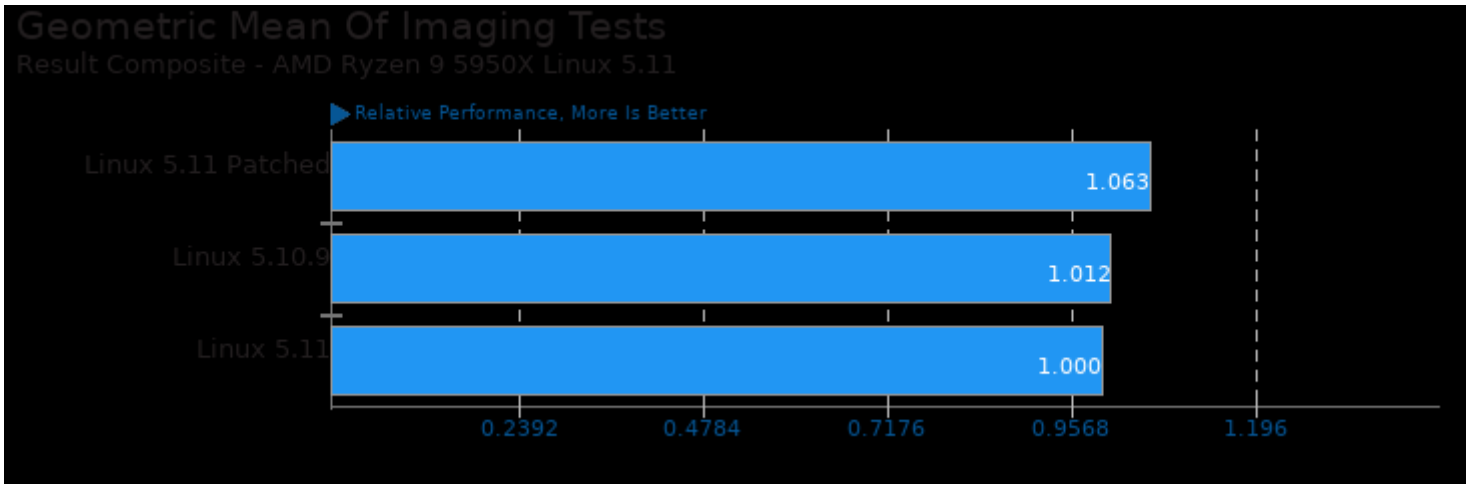
Geometric mean based upon tests: pts/encode-flac, pts/svt-vp9, pts/x264, pts/x265, pts/kvazaar, pts/ffmpeg, pts/dav1d, pts/aom-av1, pts/svt-av1, pts/rav1e and pts/avifenc



Geometric mean based upon tests: pts/hpcg, pts/incompact3d, pts/cloverleaf, pts/npb, pts/dolfyn and pts/ffte



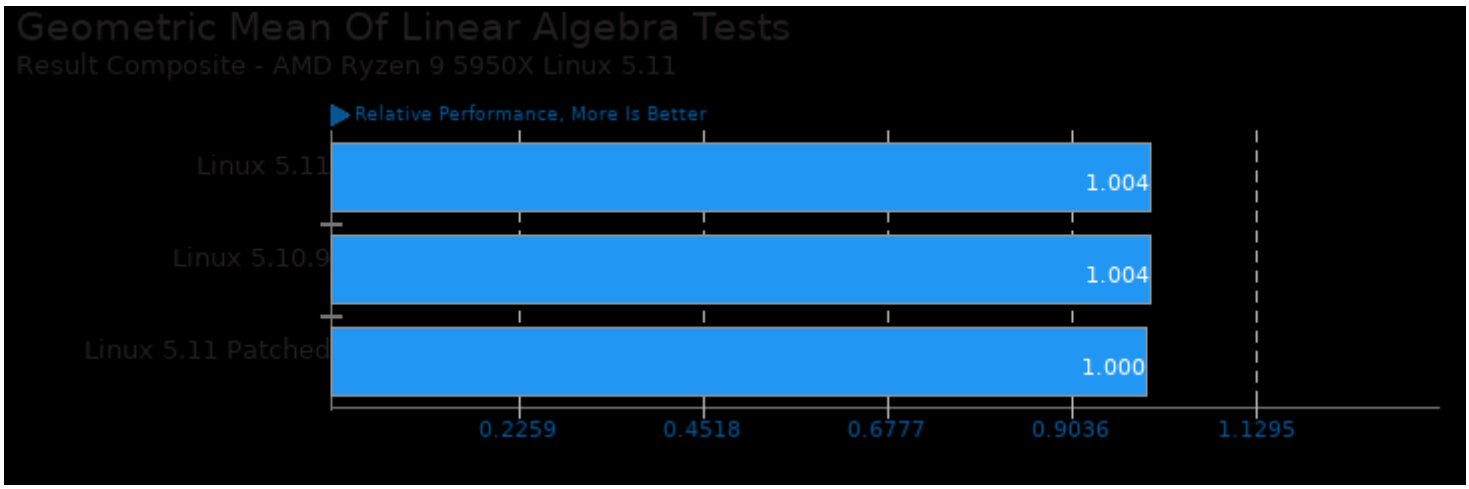
Geometric mean based upon tests: pts/astcenc and pts/build-godot



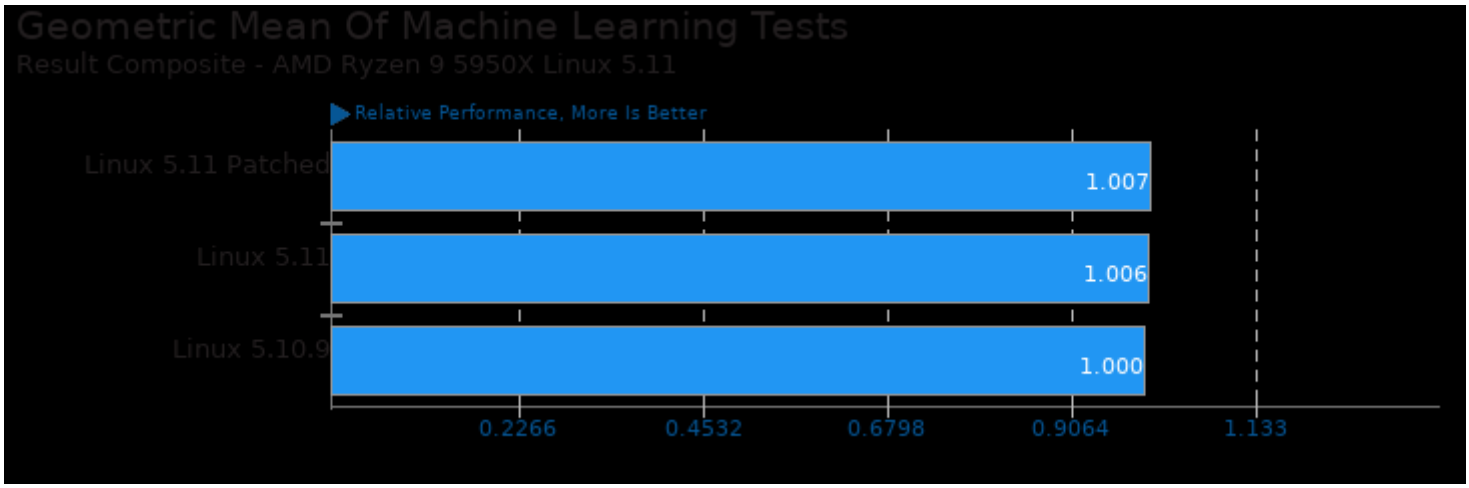
Geometric mean based upon tests: pts/libraw, pts/webp, system/gimp, system/hugin, system/gegl and pts/avifenc



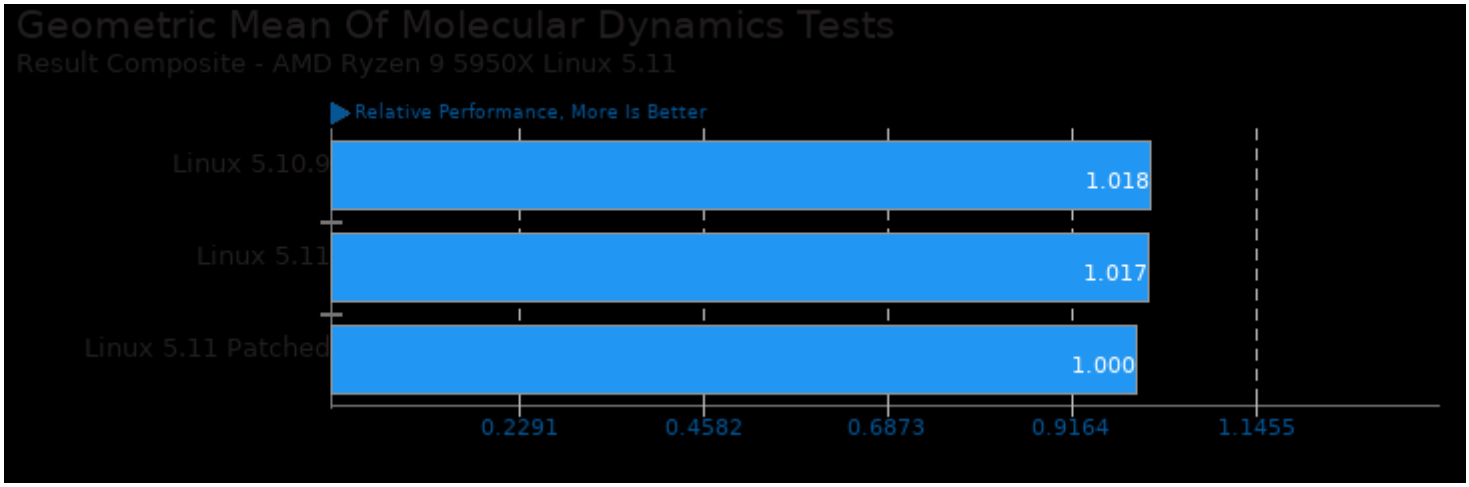
Geometric mean based upon tests: pts/dacapobench and pts/renaissance



Geometric mean based upon tests: pts/mt-dgemm and pts/amg



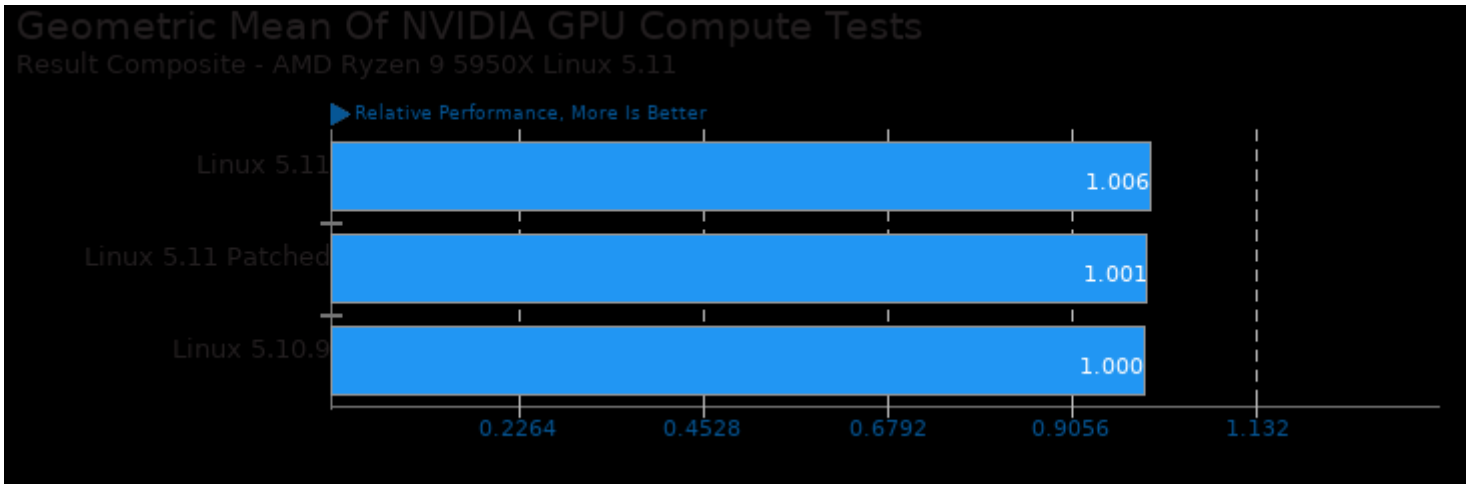
Geometric mean based upon tests: pts/mnn, pts/ncnn, pts/tnn, pts/ai-benchmark, pts/deepspeech, pts/rnnoise, pts/tensorflow-lite, pts/onednn, pts/plaidml and pts/lczero



Geometric mean based upon tests: pts/namd, pts/gromacs, pts/cp2k, pts/dolfyn, pts/cloverleaf and pts/incompact3d



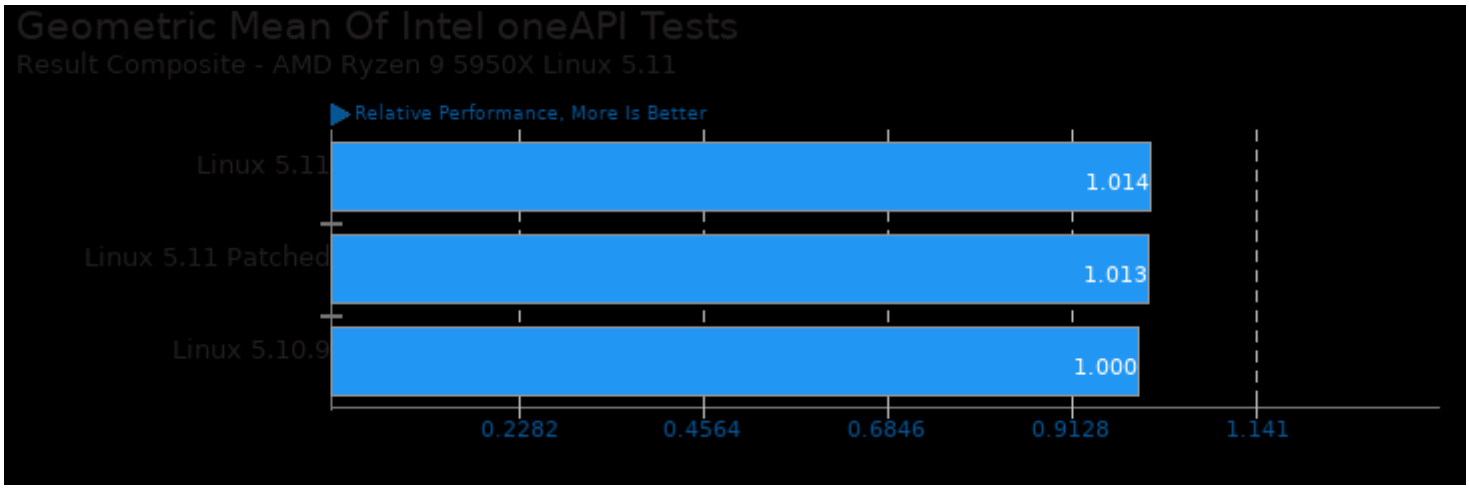
Geometric mean based upon tests: pts/askap, pts/incompact3d, pts/gpaw, pts/gromacs, pts/hpcg, pts/mrbayes and pts/npb



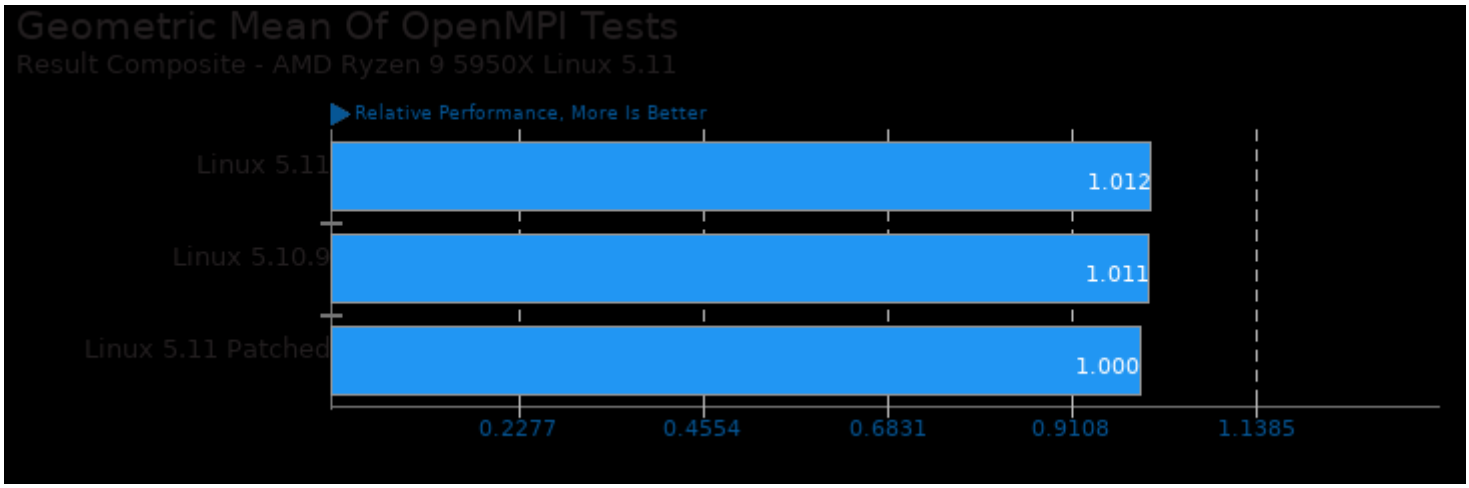
Geometric mean based upon tests: pts/gromacs, pts/neatbench, pts/financebench, pts/plaidml, pts/lczero, pts/indigobench, pts/v-ray and pts/ncnn



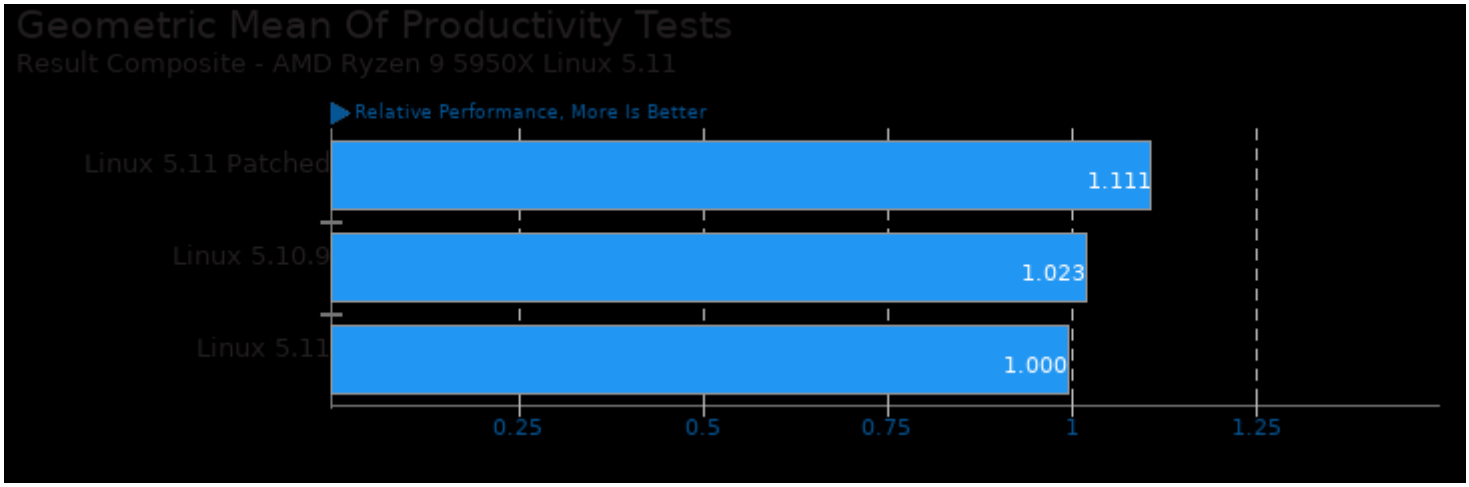
Geometric mean based upon tests: system/tesseract-ocr and system/ocrmypdf



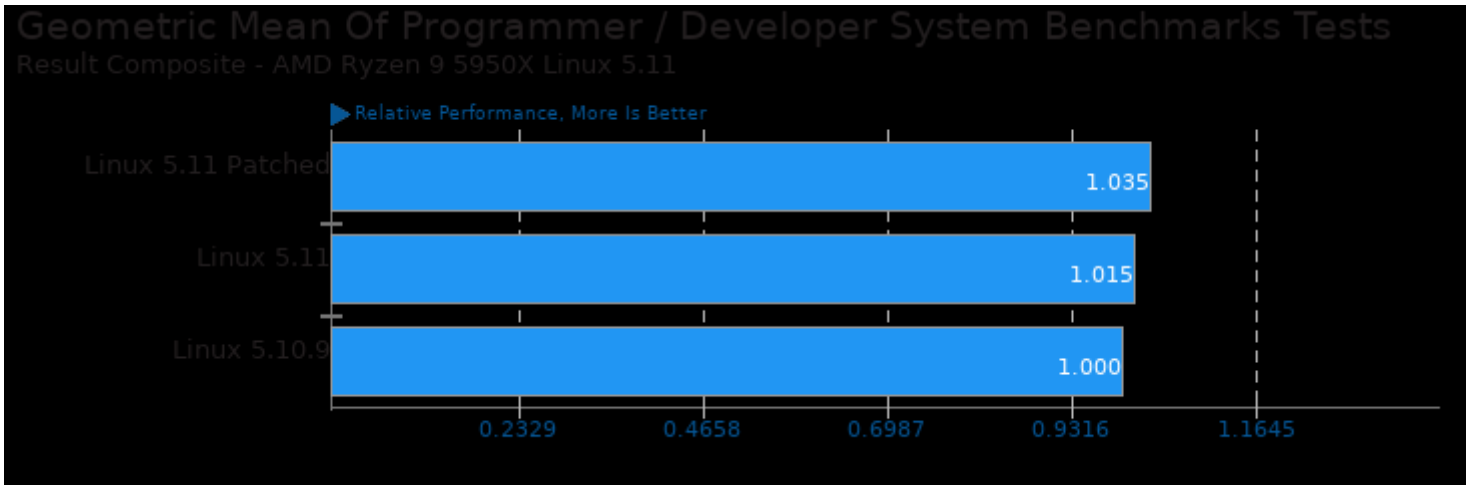
Geometric mean based upon tests: pts/embree, pts/onednn and pts/ospray



Geometric mean based upon tests: pts/gpaw, pts/cp2k, pts/hpcg, pts/incompact3d, pts/gromacs, pts/cloverleaf, pts/npb, pts/askap, pts/mrbayes and pts/amg



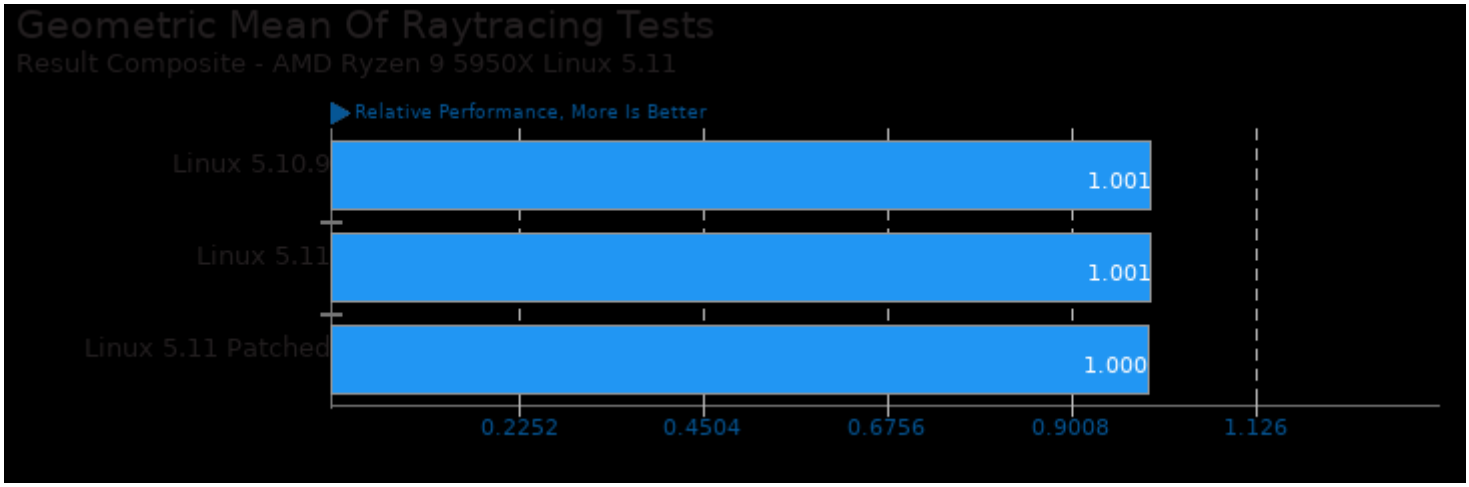
Geometric mean based upon tests: system/gimp and system/gegl



Geometric mean based upon tests: pts/node-web-tooling, pts/git, pts/blosc, pts/compress-zstd, pts/build-linux-kernel, pts/build-gdb, pts/build2, pts/build-godot, pts/mt-dgemm and pts/amg



Geometric mean based upon tests: system/selenium, pts/ai-benchmark, pts/gpaw, pts/plaidml, pts/glmark2, pts/build-godot, pts/yafaray, system/ocrmypdf and pts/paraview



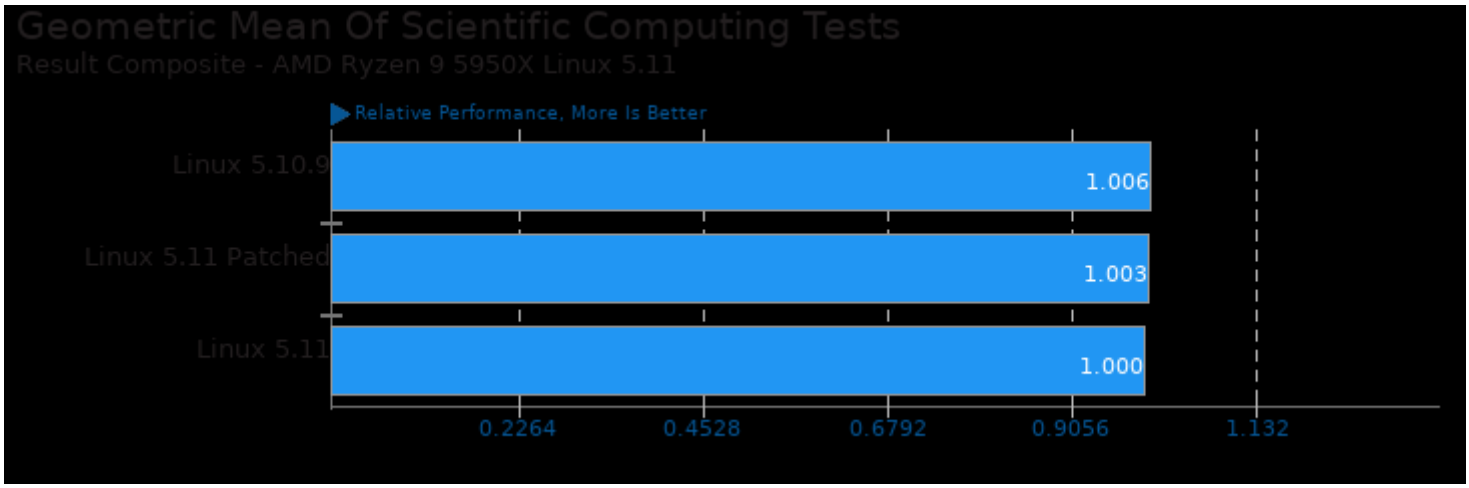
Geometric mean based upon tests: pts/ospray, pts/c-ray, pts/tachyon and pts/yafaray



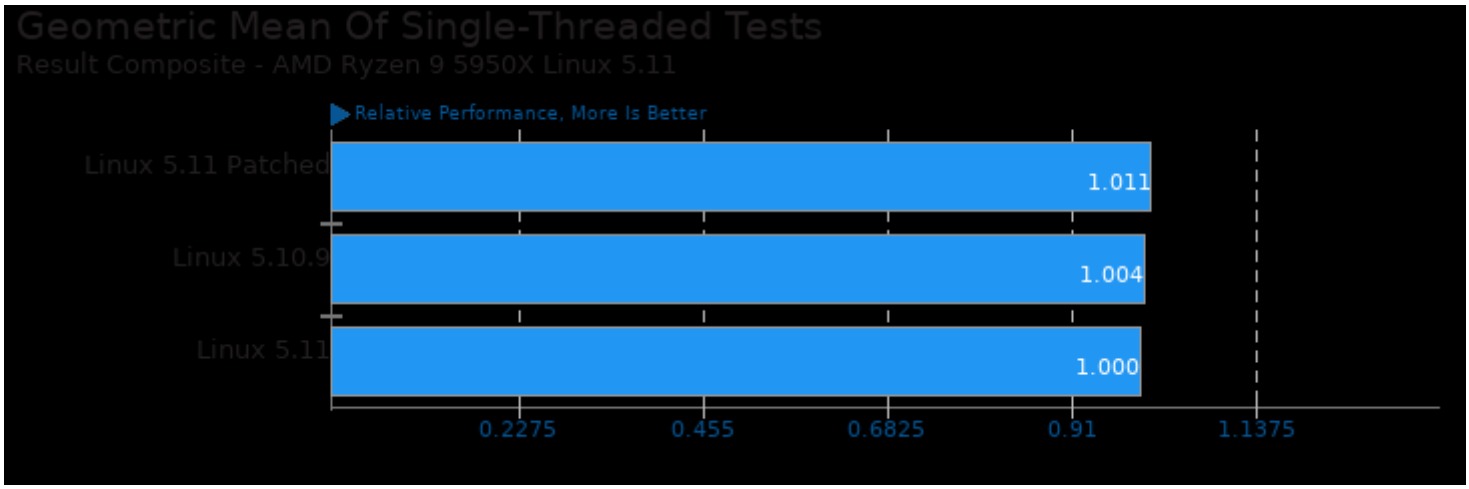
Geometric mean based upon tests: pts/ospray, pts/c-ray, pts/tachyon, pts/yafaray, pts/appleseed, pts/radiance, pts/aobench, pts/smallpt, pts/ttsiod-renderer, pts/v-ray and pts/indigobench



Geometric mean based upon tests: pts/rav1e, pts/rust-mandel and pts/rust-prime



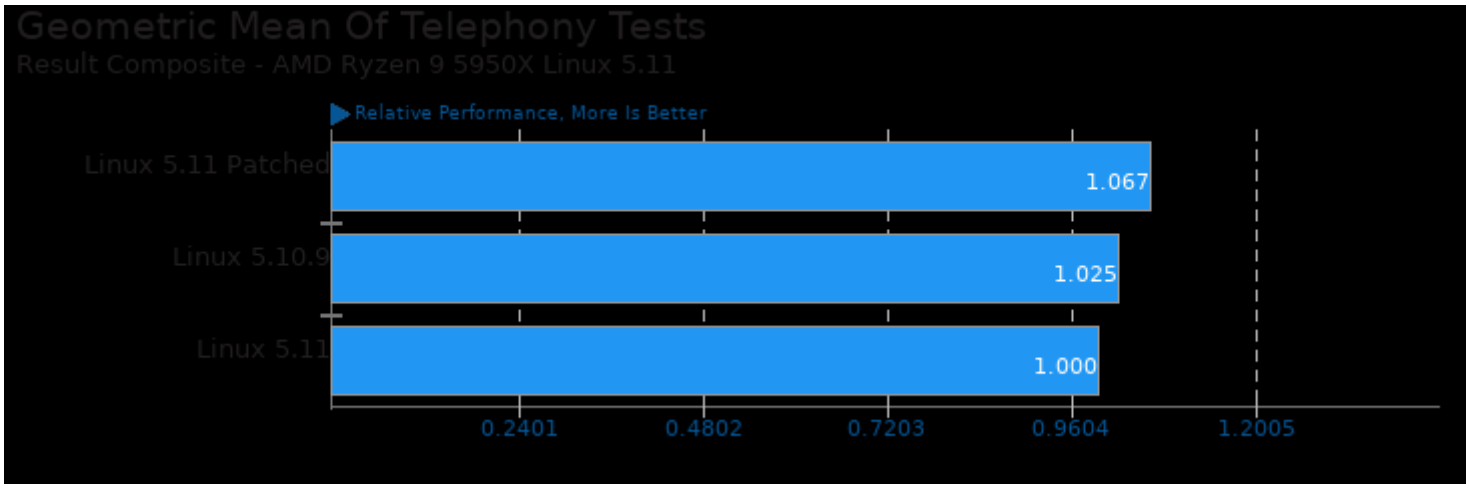
Geometric mean based upon tests: pts/ffte, pts/mt-dgemm, pts/amg, pts/namd, pts/gromacs, pts/cp2k, pts/dolfyn, pts/cloverleaf, pts/incompact3d, pts/himeno, pts/mrbayes, pts/mafft, pts/gpaw and pts/kripke



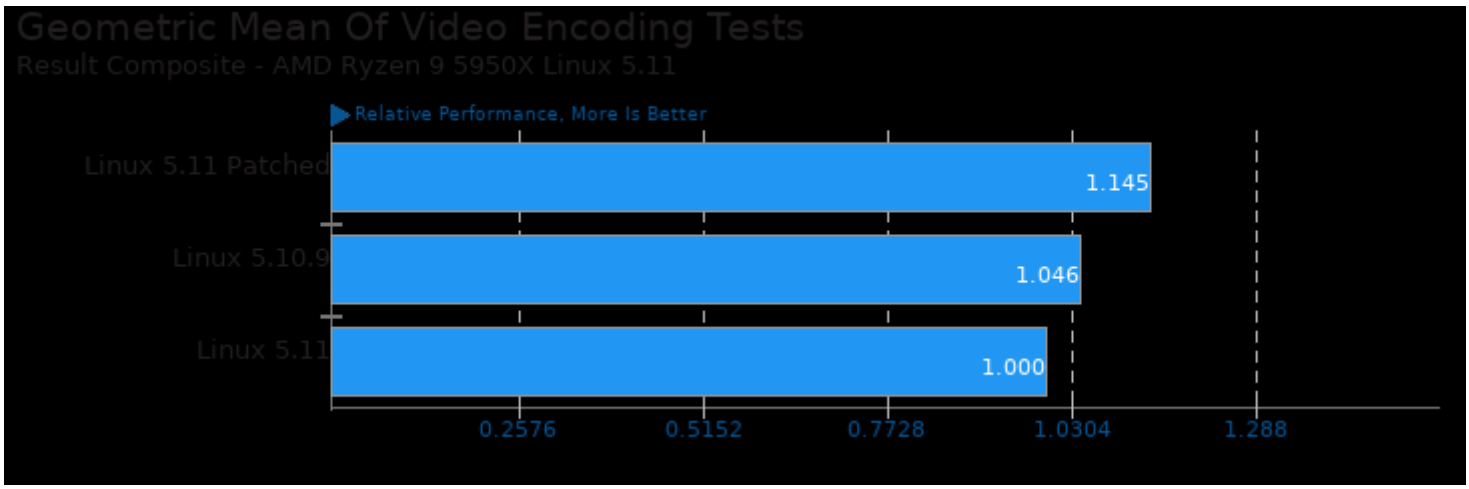
Geometric mean based upon tests: pts/blake2, pts/swet, pts/deepspeech, pts/encode-flac, pts/radiance, pts/git and system/tesseract-ocr



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



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



Geometric mean based upon tests: pts/svt-vp9, pts/x264, pts/x265, pts/kvazaar, pts/ffmpeg, pts/dav1d, pts/aom-av1, pts/svt-av1, pts/rav1e and pts/avifenc

AMD Ryzen 9 5950X Linux 5.11



Geometric mean based upon tests: pts/himeno, pts/x265, pts/paraview, pts/swet, pts/sysbench and pts/git

This file was automatically generated via the Phoronix Test Suite benchmarking software on Friday, 29 March 2024 01:36.