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Clear Linux vs Other Distros - Tiger Lake

Intel Core i7-1165G7 testing of Linux distributions for a future article.

Automated Executive Summary

Fedora Workstation 33 had the most wins, coming in first place for 50% of the tests.

Based on the geometric mean of all complete results, the fastest (Fedora Workstation 33) was 1.147x the speed of the slowest (Ubuntu 20.10). Clear Linux 34130 was 0.943x the speed of Fedora Workstation 33, Manjaro 20.2 was 0.942x the speed of Clear Linux 34130, Ubuntu 20.10 was 0.982x the speed of Manjaro 20.2.

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

Darktable (Test: Boat - Acceleration: CPU-only) at 1.664x
SVT-VP9 (Tuning: Visual Quality Optimized - Input: Bosphorus 1080p) at 1.636x
librsvg (Operation: SVG Files To PNG) at 1.44x
libavif avifenc (Encoder Speed: 10) at 1.417x
Timed Linux Kernel Compilation (Time To Compile) at 1.341x
SVT-AV1 (Encoder Mode: Enc Mode 0 - Input: 1080p) at 1.333x
Timed FFmpeg Compilation (Time To Compile) at 1.311x
ASTC Encoder (Preset: Thorough) at 1.309x
Selenium (Benchmark: Maze Solver - Browser: Firefox) at 1.3x

TensorFlow Lite (Model: Inception V4) at 1.281x.

Test Systems:

Clear Linux 34130

Processor: Intel Core i7-1165G7 @ 4.70GHz (4 Cores / 8 Threads), Motherboard: Dell 0GG9PT (1.0.3 BIOS), Chipset: Intel Tiger Lake-LP, Memory: 16GB, Disk: Kioxia KBG40ZNS256G NVMe 256GB, Graphics: Intel UHD 3GB (1300MHz), Audio: Intel Tiger Lake-LP Smart Sound Audio, Network: Intel Wi-Fi 6 AX201

OS: Clear Linux OS 34130, Kernel: 5.9.16-1009.native (x86_64), Desktop: GNOME Shell 3.38.2, Display Server: X Server 1.20.10, Display Driver: modesetting 1.20.10, OpenGL: 4.6 Mesa 20.3.1, OpenCL: OpenCL 2.1, Vulkan: 1.2.145, Compiler: GCC 10.2.1 20201222 releases/gcc-10.2.0-649-g03e2d83f59 + Clang 10.0.1 + LLVM 10.0.1, File-System: ext4, Screen Resolution: 1920x1200

Environment Notes: FFLAGS="-g -O3 -feliminate-unused-debug-types -pipe -Wall -Wp,-D_FORTIFY_SOURCE=2 -fexceptions -fstack-protector --param=ssp-buffer-size=32 -m64 -fasynchronous-unwind-tables -Wp,-D_REENTRANT -ftree-loop-distribute-patterns -Wl,-z -Wl,now -Wl,-z -Wl,relro -malign-data=abi -fno-semantic-interposition -ftree-vectorize -ftree-loop-vectorize -Wl,--enable-new-dtags -Wa,-mbranches-within-32B-boundaries" CXXFLAGS="-g -O3 -feliminate-unused-debug-types -pipe -Wall -Wp,-D_FORTIFY_SOURCE=2 -fexceptions -fstack-protector --param=ssp-buffer-size=32 -Wformat -Wformat-security -m64 -fasynchronous-unwind-tables -Wp,-D_REENTRANT -ftree-loop-distribute-patterns -Wl,-z -Wl,now -Wl,-z -Wl,relro -fno-semantic-interposition -ffat-lto-objects -fno-trapping-math -Wl,-sort-common -Wl,--enable-new-dtags -mtune=skylake -Wa,-mbranches-within-32B-boundaries -fvisibility-inlines-hidden -Wl,--enable-new-dtags" MESA_GLSL_CACHE_DISABLE=0 FCFLAGS="-g -O3 -feliminate-unused-debug-types -pipe -Wall -Wp,-D_FORTIFY_SOURCE=2 -fexceptions -fstack-protector --param=ssp-buffer-size=32 -m64 -fasynchronous-unwind-tables -Wp,-D_REENTRANT -ftree-loop-distribute-patterns -Wl,-z -Wl,now -Wl,-z -Wl,relro -malign-data=abi -fno-semantic-interposition -ftree-vectorize -ftree-loop-vectorize -Wl,-sort-common -Wl,--enable-new-dtags" CFLAGS="-g -O3 -feliminate-unused-debug-types -pipe -Wall -Wp,-D_FORTIFY_SOURCE=2 -fexceptions -fstack-protector --param=ssp-buffer-size=32 -Wformat -Wformat-security -m64 -fasynchronous-unwind-tables -Wp,-D_REENTRANT -ftree-loop-distribute-patterns -Wl,-z -Wl,now -Wl,-z -Wl,relro -fno-semantic-interposition -ffat-lto-objects -fno-trapping-math -Wl,-sort-common -Wl,--enable-new-dtags -mtune=skylake -Wa,-mbranches-within-32B-boundaries" THEANO_FLAGS="floatX=float32,openmp=true,gcc.cxxflags="-ftree-vectorize -mavx""
Compiler Notes: --build=x86_64-generic-linux --disable-libmpx --disable-libunwind-exceptions --disable-multiarch --disable-vtable-verify --disable-werror --enable-__cxa_atexit --enable-bootstrap --enable-cet --enable-clocale=gnu --enable-default-pie --enable-gnu-indirect-function --enable-languages=c,c++,fortran,go --enable-ld=default --enable-libstdcxx-pch --enable-lto --enable-multilib --enable-plugin --enable-shared --enable-threads=posix --exec-prefix=/usr --includedir=/usr/include --target=x86_64-generic-linux --with-arch=westmere --with-gcc-major-version-only --with-glibc-version=2.19 --with-gnu-ld --with-isl --with-ppl=yes --with-tune=haswell
Disk Notes: BFQ / relatime,rw,stripe=256 / Block Size: 4096
Processor Notes: Scaling Governor: intel_pstate performance - CPU Microcode: 0x60 - Thermald 2.4.1
Python Notes: Python 3.9.1
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 Enhanced IBRS IBPB: conditional RSB filling + srbds: Not affected + tsx_async_abort: Not affected

Manjaro 20.2

Processor: Intel Core i7-1165G7 @ 4.70GHz (4 Cores / 8 Threads), Motherboard: Dell 0GG9PT (1.0.3 BIOS), Chipset: Intel Tiger Lake-LP, Memory: 16GB, Disk: Kioxia KBG40ZNS256G NVMe 256GB, Graphics: Intel UHD 3GB (1300MHz), Audio: Intel Tiger Lake-LP Smart Sound Audio, Network: Intel Wi-Fi 6 AX201

OS: ManjaroLinux 20.2, Kernel: 5.9.11-3-MANJARO (x86_64), Desktop: Xfce 4.14, Display Server: X Server 1.20.10, Display Driver: intel 2.99.917, OpenGL: 4.6 Mesa 20.2.3, Vulkan: 1.2.145, Compiler: GCC 10.2.0, File-System: ext4, Screen Resolution: 1920x1200

Compiler Notes: --disable-libssp --disable-libstdcxx-pch --disable-libunwind-exceptions --disable-werror --enable-__cxa_atexit --enable-cet=auto --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-default-ssp --enable-gnu-indirect-function --enable-gnu-unique-object --enable-install-libiberty --enable-languages=c,c++,ada,fortran,go,lto,objc,obj-c++,d --enable-lto --enable-multilib --enable-plugin --enable-shared --enable-threads=posix --mandir=/usr/share/man --with-isl --with-linker-hash-style=gnu
Disk Notes: NONE / noatime,rw / Block Size: 4096
Processor Notes: Scaling Governor: intel_pstate powersave - CPU Microcode: 0x60
Graphics Notes: SNA
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 Enhanced IBRS IBPB: conditional RSB filling +

srbds: Not affected + tsx_async_abort: Not affected

Fedora Workstation 33

Processor: Intel Core i7-1165G7 @ 4.70GHz (4 Cores / 8 Threads), Motherboard: Dell 0GG9PT (1.0.3 BIOS), Chipset: Intel Tiger Lake-LP, Memory: 16GB, Disk: Kioxia KBG40ZNS256G NVMe 256GB, Graphics: Intel UHD 3GB (1300MHz), Audio: Intel Tiger Lake-LP Smart Sound Audio, Network: Intel Wi-Fi 6 AX201

OS: Fedora 33, Kernel: 5.8.15-301.fc33.x86_64 (x86_64), Desktop: GNOME Shell 3.38.2, Display Server: X Server + Wayland, OpenGL: 4.6 Mesa 20.2.6, Compiler: GCC 10.2.1 20201125 + Clang 11.0.0, File-System: btrfs, Screen Resolution: 1920x1200

Compiler Notes: --build=x86_64-redhat-linux --disable-libunwind-exceptions --enable-__cxa_atexit --enable-bootstrap --enable-cet --enable-checking=release --enable-gnu-indirect-function --enable-gnu-unique-object --enable-initfini-array --enable-languages=c,c++,fortran,objc,obj-c++,ada,go,d,lto --enable-multilib --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --mandir=/usr/share/man --with-arch_32=i686 --with-gcc-major-version-only --with-isl --with-linker-hash-style=gnu --with-tune=generic --without-cuda-driver
Disk Notes: NONE / relatime,rw,seclabel,space_cache,ssd,subvol=/home,subvolid=256 / Block Size: 4096
Processor Notes: Scaling Governor: intel_pstate powersave - CPU Microcode: 0x60
Python Notes: Python 3.9.1
Security Notes: SELinux + 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 Enhanced IBRS IBPB: conditional RSB filling + srbds: Not affected + tsx_async_abort: Not affected

Ubuntu 20.10

Processor: Intel Core i7-1165G7 @ 4.70GHz (4 Cores / 8 Threads), Motherboard: Dell 0GG9PT (1.0.3 BIOS), Chipset: Intel Tiger Lake-LP, Memory: 16GB, Disk: Kioxia KBG40ZNS256G NVMe 256GB, Graphics: Intel UHD (1300MHz), Audio: Realtek ALC289, Network: Intel Wi-Fi 6 AX201

OS: Ubuntu 20.10, Kernel: 5.8.0-33-generic (x86_64), Desktop: GNOME Shell 3.38.1, Display Server: X Server 1.20.9, Display Driver: modesetting 1.20.9, OpenGL: 4.6 Mesa 20.2.1, Vulkan: 1.2.145, Compiler: GCC 10.2.0, File-System: ext4, Screen Resolution: 1920x1200

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
Disk Notes: NONE / errors=remount-ro,relatime,rw / Block Size: 4096
Processor Notes: Scaling Governor: intel_pstate powersave - CPU Microcode: 0x60 - Thermald 2.3
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 Enhanced IBRS IBPB: conditional RSB filling + srbds: Not affected + tsx_async_abort: Not affected

	Clear Linux 34130	Manjaro 20.2	Fedora Workstation 33	Ubuntu 20.10
Basemark GPU - OpenGL - 1920 x 1200 - High (FPS)	**28.84**	30.81	**34.25**	29.74
Normalized	84.2%	89.96%	100%	86.83%
Standard Deviation	5.2%	0.8%	0.2%	0.6%

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Basemark GPU - Vulkan - 1920 x 1200 - High (FPS)	26.38	28.51	30.00	27.68
Normalized	87.93%	95.03%	100%	92.27%
Standard Deviation	1%	0%	0.2%	0.4%
ET: Legacy - Renderer2 - 1920 x 1200 (FPS)	133.4	126.7	151.8	126.0
Normalized	87.88%	83.47%	100%	83%
Standard Deviation	18.2%	0.8%	1.2%	0.9%
Tesseract - 1920 x 1200 (FPS)	156.5044	140.4887	165.3627	129.1598
Normalized	94.64%	84.96%	100%	78.11%
Standard Deviation	1.5%	0.8%	2.4%	0.9%
Xonotic - 1920 x 1200 - Low (FPS)	354.7893429	272.5520359	372.8174763	318.0343367
Normalized	95.16%	73.11%	100%	85.31%
Standard Deviation	17%	2.2%	0.7%	2.3%
Xonotic - 1920 x 1200 - High (FPS)	180.2490147	171.4443729	241.8373006	189.8508052
Normalized	74.53%	70.89%	100%	78.5%
Standard Deviation	13.3%	0.8%	0.2%	1%
Xonotic - 1920 x 1200 - Ultra (FPS)	146.2895877	146.2127324	198.3841854	154.9343308
Normalized	73.74%	73.7%	100%	78.1%
Standard Deviation	6.9%	0.5%	7%	0.6%
Xonotic - 1920 x 1200 - Ultimate (FPS)	109.0371800	114.6085590	144.9669775	119.6124110
Normalized	75.22%	79.06%	100%	82.51%
Standard Deviation	1.8%	0.3%	6.7%	0.6%
SVT-AV1 - Enc Mode 0 - 1080p (FPS)	0.083	0.078	0.096	0.072
Normalized	86.46%	81.25%	100%	75%
Standard Deviation	3.8%	0%	1%	0.8%
SVT-AV1 - Enc Mode 4 - 1080p (FPS)	1.462	1.345	1.648	1.191
Normalized	88.71%	81.61%	100%	72.27%
Standard Deviation	21.1%	1.5%	11.4%	1.1%
SVT-VP9 - P.S.O - Bosphorus 1080p (FPS)	122.80	79.94	107.87	73.78
Normalized	100%	65.1%	87.84%	60.08%
Standard Deviation	1.3%	7.1%	9%	5.8%
SVT-VP9 - V.Q.O - Bosphorus 1080p (FPS)	90.13	58.51	84.66	55.09
Normalized	100%	64.92%	93.93%	61.12%
Standard Deviation	1.9%	5.5%	1.5%	4.6%
VP9 libvpx Encoding - Speed 5 (FPS)	23.01	19.48	24.30	18.88
Normalized	94.69%	80.16%	100%	77.7%
Standard Deviation	22.8%	2.1%	0.9%	2.5%
x264 - H.2.V.E (FPS)	40.13	34.41	45.64	32.94
Normalized	87.93%	75.39%	100%	72.17%
Standard Deviation	25%	2.5%	4.7%	2.4%
x265 - Bosphorus 4K (FPS)	5.68	5.48	6.31	5.28
Normalized	90.02%	86.85%	100%	83.68%
Standard Deviation	4.8%	1.3%	4%	0.6%
x265 - Bosphorus 1080p (FPS)	29.03	25.56	34.92	24.42
Normalized	83.13%	73.2%	100%	69.93%
Standard Deviation	26.1%	2.5%	2.5%	2.4%
Selenium - Octane - Firefox (Geometric Mean)	23091	23109	22964	21994
Normalized	99.92%	100%	99.37%	95.18%
Standard Deviation	0.3%	1.4%	0.5%	1.9%
Chaos Group V-RAY - CPU (Ksamples)	5117	4634	5666	4487

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Normalized	90.31%	81.79%	100%	79.19%
Standard Deviation	9.4%	2.4%	6.1%	1.7%
IndigoBench - CPU - Bedroom (M samples/s)	**0.681**	0.510	0.531	**0.496**
Normalized	100%	74.89%	77.97%	72.83%
Standard Deviation	28.3%	0.3%	13.5%	0.2%
IndigoBench - CPU - Supercar (M samples/s)	1.404	1.200	**1.698**	**1.167**
Normalized	82.69%	70.67%	100%	68.73%
Standard Deviation	32.9%	0.4%	5.9%	0.1%
LevelDB - Rand Fill (MB/s)	42.2	**43.0**	**34.8**	40.4
Normalized	98.14%	100%	80.93%	93.95%
Standard Deviation	0.1%	1%	1.3%	1.7%
LevelDB - Seq Fill (MB/s)	**44.2**	38.0	36.5	**35.1**
Normalized	100%	85.97%	82.58%	79.41%
Standard Deviation	0.7%	5.4%	0.4%	4.4%
LZ4 Compression - 1 - Compression Speed (MB/s)	8839	9147	**8686**	**9154**
Normalized	96.56%	99.93%	94.89%	100%
Standard Deviation	0.1%	0%	0.5%	0%
LZ4 Compression - 1 - D.S (MB/s)	9655	9928	**9483**	**9934**
Normalized	97.2%	99.94%	95.46%	100%
Standard Deviation	0.1%	0.6%	0.3%	0.1%
LZ4 Compression - 3 - Compression Speed (MB/s)	61.15	63.05	**64.85**	**59.81**
Normalized	94.29%	97.22%	100%	92.23%
Standard Deviation	0.9%	1.6%	0.5%	1.3%
LZ4 Compression - 3 - D.S (MB/s)	9342	**9565**	**9295**	9505
Normalized	97.67%	100%	97.17%	99.37%
Standard Deviation	0%	0.2%	1.5%	0.1%
LZ4 Compression - 9 - Compression Speed (MB/s)	59.99	59.22	**63.58**	**58.72**
Normalized	94.35%	93.14%	100%	92.36%
Standard Deviation	2.1%	6.1%	0.5%	0.6%
LZ4 Compression - 9 - D.S (MB/s)	9352	9528	**9330**	**9563**
Normalized	97.79%	99.63%	97.56%	100%
Standard Deviation	0.1%	0.2%	1.2%	0.2%
Zstd Compression - 3 (MB/s)	**3728**	4075	4080	**4142**
Normalized	90.02%	98.38%	98.5%	100%
Standard Deviation	15.4%	2.4%	0.8%	0.3%
Zstd Compression - 19 (MB/s)	**20.2**	22.9	**23.1**	22.2
Normalized	87.45%	99.13%	100%	96.1%
Standard Deviation	2.3%	0.5%	0%	1.2%
libjpeg-turbo tjbench - D.T (Megapixels/sec)	216.640954	**214.396587**	**217.594501**	216.579616
Normalized	99.56%	98.53%	100%	99.53%
Standard Deviation	0.7%	0.7%	0.2%	0.2%
LibRaw - P.P.B (Mpix/sec)	**44.85**	27.97	33.64	**26.49**
Normalized	100%	62.36%	75.01%	59.06%
Standard Deviation	21.1%	2.1%	6%	4.4%
Stockfish - Total Time (Nodes/s)	5705100	5764570	**7097119**	**5595920**
Normalized	80.39%	81.22%	100%	78.85%
Standard Deviation	6.8%	1.8%	2%	1.7%
asmFish - 1.H.M.2.D (Nodes/s)	8385784	8569639	**9718130**	**8171755**

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Normalized	86.29%	88.18%	100%	84.09%
Standard Deviation	3%	1.6%	1.5%	2.4%
GROMACS - Water Benchmark (Ns/Day)	0.424	0.421	**0.512**	**0.408**
Normalized	82.81%	82.23%	100%	79.69%
Standard Deviation	5.3%	1.4%	1.2%	0.6%
Selenium - StyleBench - Firefox (Runs / Minute)	109.9	106	**113**	**100.5**
Normalized	97.26%	93.81%	100%	88.94%
Standard Deviation	11.2%		0.9%	1.3%
Selenium - Speedometer - Firefox (Runs/min)	**143**	**143**	131	**121**
Normalized	100%	100%	91.61%	84.62%
Standard Deviation	0.8%	2.4%		2.3%
Numpy Benchmark (Score)	**510.34**	**416.37**	425.94	417.34
Normalized	100%	81.59%	83.46%	81.78%
Standard Deviation	1.8%	1.2%	0.5%	1.2%
AI Benchmark Alpha - D.I.S (Score)	532	**540**		**527**
Normalized	98.52%	100%		97.59%
AI Benchmark Alpha - D.T.S (Score)	620	**630**		**614**
Normalized	98.41%	100%		97.46%
AI Benchmark Alpha - Device AI Score (Score)	1152	**1170**		**1141**
Normalized	98.46%	100%		97.52%
Selenium - Jetstream - Firefox (Score)	**187.33**	185.99	187.26	**179.32**
Normalized	100%	99.28%	99.96%	95.72%
Standard Deviation	0.5%	0.3%	0.5%	0.2%
Selenium - CanvasMark - Firefox	15348	**15578**	**14028**	14472
Normalized	98.52%	100%	90.05%	92.9%
Standard Deviation	0.9%	1.2%	0.6%	1.4%
Selenium - Jetstream 2 - Firefox	**94.460**	89.261	88.606	**85.521**
Normalized	100%	94.5%	93.8%	90.54%
Standard Deviation	0.6%	0.8%	1.4%	1.4%
CLOMP - Static OMP Speedup (Speedup)	**6.2**	4.9	6.1	**4.8**
Normalized	100%	79.03%	98.39%	77.42%
Standard Deviation	11.1%	0%	0%	1.2%
NAMD - ATPase Simulation - 327,506 Atoms (days/ns)	**6.72795**	5.50073	**4.62934**	5.96795
Normalized	68.81%	84.16%	100%	77.57%
Standard Deviation	9.4%	0.1%	19.4%	0.5%
WebP Image Encode - Q.1.L.H.C (Encode Time - sec)	**31.805**	37.562	33.493	**38.845**
Normalized	100%	84.67%	94.96%	81.88%
Standard Deviation	0.9%	2.2%	2%	1.8%
LevelDB - Hot Read (us/Op)	**3.701**	3.545	3.568	**3.525**
Normalized	95.24%	99.44%	98.79%	100%
Standard Deviation	2.3%	1.1%	0.6%	0.9%
LevelDB - Rand Fill (us/Op)	20.933	**20.563**	**25.436**	21.905
Normalized	98.23%	100%	80.84%	93.87%
Standard Deviation	0.2%	1.1%	1.3%	1.7%
LevelDB - Rand Read (us/Op)	**3.663**	3.543	3.553	**3.507**
Normalized	95.74%	98.98%	98.71%	100%
Standard Deviation	0.7%	1.4%	0.8%	0.4%

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LevelDB - Seek Rand (us/Op)	4.599	5.756	**4.459**	**5.802**
Normalized	96.96%	77.47%	100%	76.85%
Standard Deviation	0.9%	9.6%	0.4%	10%
LevelDB - Seq Fill (us/Op)	**19.989**	23.317	24.251	**25.238**
Normalized	100%	85.73%	82.43%	79.2%
Standard Deviation	0.7%	5%	0.3%	3.9%
TensorFlow Lite - SqueezeNet (us)	527761	559790	**430928**	**578303**
Normalized	81.65%	76.98%	100%	74.52%
Standard Deviation	9.1%	0.8%	1.1%	1.3%
TensorFlow Lite - Inception V4 (us)	7525253	8120123	**6547940**	**8389730**
Normalized	87.01%	80.64%	100%	78.05%
Standard Deviation	4.6%	0.1%	0.4%	0.1%
TensorFlow Lite - NASNet Mobile (us)	379325	402074	**318435**	**418846**
Normalized	83.95%	79.2%	100%	76.03%
Standard Deviation	8.5%	1.1%	2.1%	1.1%
TensorFlow Lite - Mobilenet Float (us)	354479	375484	**297656**	**388423**
Normalized	83.97%	79.27%	100%	76.63%
Standard Deviation	10.5%	1.5%	2.2%	1.2%
TensorFlow Lite - Mobilenet Quant	349703	368942	**299659**	**383271**
Normalized	85.69%	81.22%	100%	78.18%
Standard Deviation	9.8%	1.4%	1.8%	1.2%
TensorFlow Lite - I.R.V (us)	6849918	7362320	**5986360**	**7589697**
Normalized	87.39%	81.31%	100%	78.87%
Standard Deviation	4.3%	0.1%	1.4%	0%
PyBench - T.F.A.T.T (Milliseconds)	769	786	**967**	**750**
Normalized	97.53%	95.42%	77.56%	100%
Standard Deviation	0.5%	0.8%	19%	0.5%
PyPerformance - pathlib	**12.4**	13.5	13.7	**14.1**
Normalized	100%	91.85%	90.51%	87.94%
Standard Deviation	0.5%	1.5%	0.8%	0.4%
PyPerformance - json_loads (Milliseconds)	**17.8**	**19.7**	19.0	18.6
Normalized	100%	90.36%	93.68%	95.7%
Standard Deviation	0.3%	0.9%	0.6%	0.3%
PyPerformance - regex_compile (Milliseconds)	**132**	134	**147**	**132**
Normalized	100%	98.51%	89.8%	100%
Standard Deviation	0.4%	1.3%	0.4%	1.8%
PyPerformance - python_startup (Milliseconds)	**6.31**	**7.65**	6.73	6.42
Normalized	100%	82.48%	93.76%	98.29%
Standard Deviation	0.3%	0.7%	0.2%	0.4%
NCNN - CPU - mobilenet (ms)	24.87	30.25	**23.74**	**31.55**
Normalized	95.46%	78.48%	100%	75.25%
Standard Deviation	36.8%	0.9%	16%	1.2%
NCNN - CPU - shufflenet-v2 (ms)	7.10	9.93	**6.91**	**10.38**
Normalized	97.32%	69.59%	100%	66.57%
Standard Deviation	11.8%	0.8%	8.5%	1%
NCNN - CPU - mnasnet (ms)	**5.32**	7.80	5.45	**8.04**
Normalized	100%	68.21%	97.61%	66.17%
Standard Deviation	14.1%	1.2%	7.5%	1.5%
NCNN - CPU - efficientnet-b0 (ms)	8.23	11.46	**8.16**	**11.82**
Normalized	99.15%	71.2%	100%	69.04%
Standard Deviation	14%	1.4%	13.6%	1%

Clear Linux vs Other Distros - Tiger Lake

NCNN - CPU - vgg16 (ms)	**84.71**	69.06	**52.71**	72.06
Normalized	62.22%	76.32%	100%	73.15%
Standard Deviation	45.2%	0.6%	3.8%	0.4%
NCNN - CPU - resnet50 (ms)	**68.00**	49.65	**42.97**	50.87
Normalized	63.19%	86.55%	100%	84.47%
Standard Deviation	39.6%	0.1%	8.1%	0%
NCNN - CPU - squeezenet_ssd (ms)	**47.06**	32.88	**30.50**	34.14
Normalized	64.81%	92.76%	100%	89.34%
Standard Deviation	38.2%	0.7%	5%	0.6%
NCNN - Vulkan GPU - vgg16 (ms)	**88.23**	69.20	**52.99**	71.81
Normalized	60.06%	76.58%	100%	73.79%
Standard Deviation	47%	0.2%	3.5%	0.1%
NCNN - Vulkan GPU - resnet18 (ms)	**22.15**	21.16	**14.87**	21.78
Normalized	67.13%	70.27%	100%	68.27%
Standard Deviation	60.3%	1%	2.2%	0.6%
NCNN - Vulkan GPU - alexnet (ms)	**18.82**	18.30	**13.50**	18.65
Normalized	71.73%	73.77%	100%	72.39%
Standard Deviation	50.8%	0.7%	1.5%	0.3%
NCNN - Vulkan GPU - resnet50 (ms)	**63.10**	49.73	**43.21**	50.78
Normalized	68.48%	86.89%	100%	85.09%
Standard Deviation	43.7%	0.4%	7.2%	0.1%
NCNN - Vulkan GPU - squeezenet_ssd (ms)	**44.27**	**32.99**	33.23	33.95
Normalized	74.52%	100%	99.28%	97.17%
Standard Deviation	42.6%	0.9%	16.4%	0.2%
NCNN - Vulkan GPU - regnety_400m (ms)	**19.57**	16.88	**14.01**	17.53
Normalized	71.59%	83%	100%	79.92%
Standard Deviation	49.8%	11.8%	0.4%	5.8%
TNN - CPU - MobileNet v2 (ms)	**276.594**	284.107	**287.673**	285.357
Normalized	100%	97.36%	96.15%	96.93%
Standard Deviation	2.4%	0.2%	0.8%	0.5%
TNN - CPU - SqueezeNet v1.1 (ms)	267.361	**266.285**	266.931	**267.695**
Normalized	99.6%	100%	99.76%	99.47%
Standard Deviation	0.6%	0.1%	0.1%	0.4%
Selenium - ARES-6 - Firefox (ms)	**41.14**	41.71	43.01	**45.29**
Normalized	100%	98.63%	95.65%	90.84%
Standard Deviation	0.8%	0.7%	0.4%	0.2%
Selenium - Kraken - Firefox (ms)	**977.4**	992.4	**1018**	1017
Normalized	100%	98.49%	96%	96.09%
Standard Deviation	0.2%	0.1%	0.3%	0.5%
Selenium - W.i - Firefox (ms)	**28.8**	28.1	**28.0**	28.2
Normalized	97.22%	99.64%	100%	99.29%
Standard Deviation	2.3%	0.5%	2.3%	2.6%
Selenium - W.c - Firefox (ms)	339.8	**339.9**	332.5	**332.2**
Normalized	97.76%	97.73%	99.91%	100%
Standard Deviation	0.8%	0.5%	2.2%	1.7%
Selenium - PSPDFKit WASM - Firefox (Score)	**2859**	2936	3005	**3035**
Normalized	100%	97.38%	95.14%	94.2%
Standard Deviation	0.5%	0.2%	0.1%	1%
RealSR-NCNN - 4x - No (sec)	**65.038**	68.813	66.033	**69.984**
Normalized	100%	94.51%	98.49%	92.93%
Standard Deviation	0.3%	1%	0.1%	1%

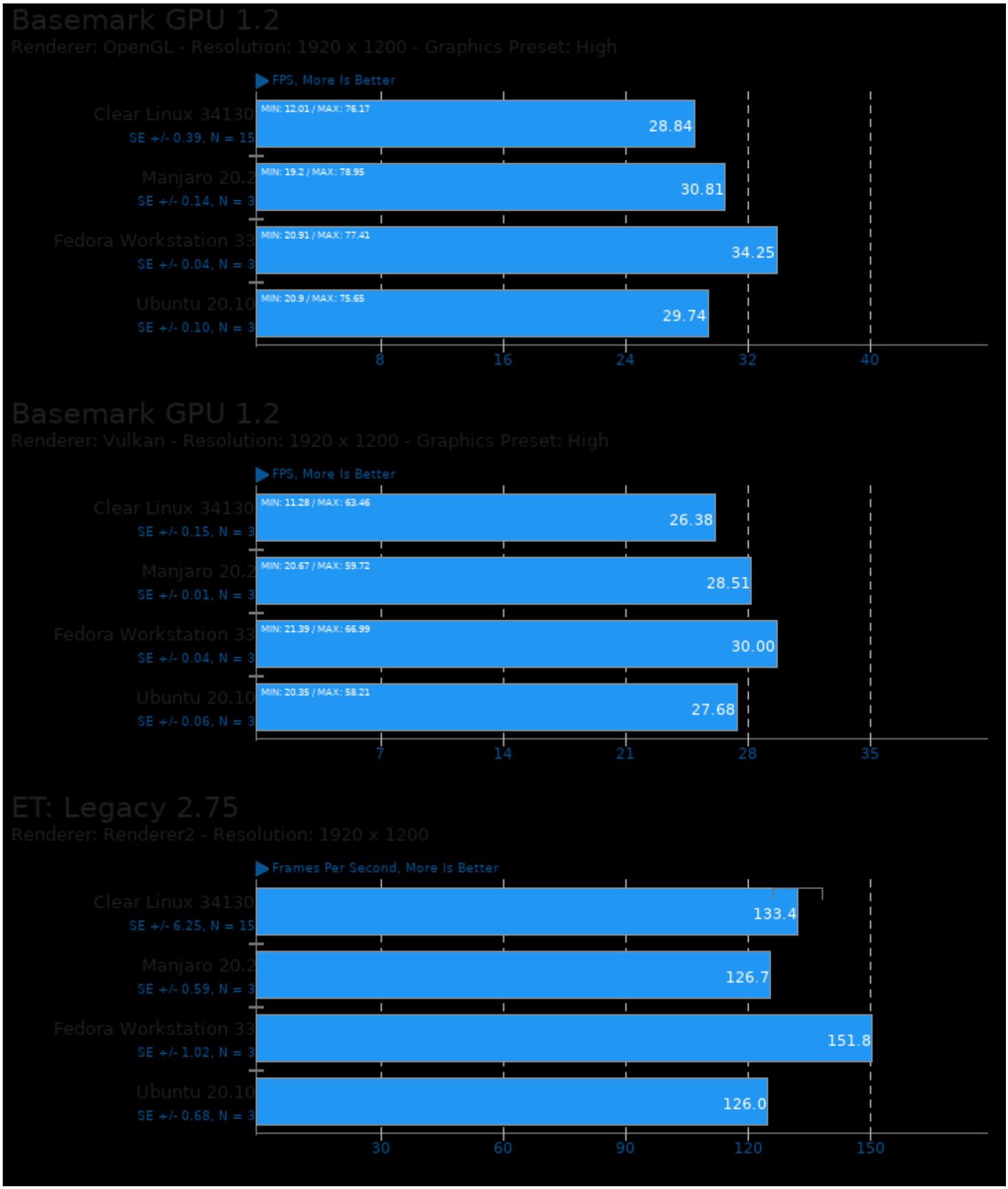
Clear Linux vs Other Distros - Tiger Lake

RealSR-NCNN - 4x - Yes (sec)	520.294	541.255	**508.597**	**550.429**
Normalized	97.75%	93.97%	100%	92.4%
Standard Deviation	1.5%	0.2%	0.1%	0.2%
Waifu2x-NCNN Vulkan - 2x - 3 - No	**4.099**	**4.220**	4.198	4.203
Normalized	100%	97.13%	97.64%	97.53%
Standard Deviation	2.2%	1.4%	1.7%	2.1%
Waifu2x-NCNN Vulkan - 2x - 3 - Yes (sec)	**26.923**	27.325	**27.353**	27.250
Normalized	100%	98.53%	98.43%	98.8%
Standard Deviation	0.1%	0.2%	0.3%	0.1%
WireGuard + Linux Networking Stack Stress Test (sec)	**210.676**	**321.262**	215.535	280.530
Normalized	100%	65.58%	97.75%	75.1%
Standard Deviation	7%	0.7%	2.4%	1.1%
Dolfyn - C.F.D (sec)	16.409	**16.133**	16.153	**16.603**
Normalized	98.32%	100%	99.88%	97.17%
Standard Deviation	2.1%	0.5%	1.7%	2.1%
Timed MrBayes Analysis - P.P.A (sec)	102.931	102.904	**83.715**	**106.316**
Normalized	81.33%	81.35%	100%	78.74%
Standard Deviation	6.7%	0.8%	4%	0.6%
libavif avifenc - 10 (sec)	**4.679**	6.411	6.512	**6.631**
Normalized	100%	72.98%	71.85%	70.56%
Standard Deviation	0.3%	3.8%	0.6%	5.5%
Timed FFmpeg Compilation - Time To Compile (sec)	150.579	157.077	**122.702**	**160.861**
Normalized	81.49%	78.12%	100%	76.28%
Standard Deviation	4.8%	0.6%	4.7%	0.4%
Timed Linux Kernel Compilation - Time To Compile (sec)	227.623	**267.410**	**199.404**	258.060
Normalized	87.6%	74.57%	100%	77.27%
Standard Deviation	1.9%	0.3%	2.2%	0.4%
Timed Eigen Compilation - Time To Compile (sec)	**60.434**	66.728	61.024	**67.982**
Normalized	100%	90.57%	99.03%	88.9%
Standard Deviation	0.6%	0.6%	0.1%	0.6%
XZ Compression - C.u.1.0.3.s.i.i.C.L.9 (sec)	58.968	60.304	**51.378**	**63.053**
Normalized	87.13%	85.2%	100%	81.48%
Standard Deviation	16.3%	0.6%	1.1%	0.3%
DeepSpeech - CPU (sec)	**66.88168**	61.61175	63.87221	**61.49769**
Normalized	91.95%	99.81%	96.28%	100%
Standard Deviation	6.8%	1.1%	0.7%	0.5%
Perl Benchmarks - Pod2html (sec)	**0.07835017**	**0.09129946**	0.08869303	0.08976229
Normalized	100%	85.82%	88.34%	87.29%
Standard Deviation	1.3%	0.2%	0.5%	0.8%
Perl Benchmarks - Interpreter (sec)	0.00083850	**0.00093976**	0.00088536	**0.00074050**
Normalized	88.31%	78.8%	83.64%	100%
Standard Deviation	1%	0.3%	1.5%	0.5%
ASTC Encoder - Thorough (sec)	78.42	85.70	**68.05**	**89.11**
Normalized	86.78%	79.4%	100%	76.37%
Standard Deviation	4.5%	1%	5.6%	1.2%
ASTC Encoder - Exhaustive (sec)	677.65	726.90	**606.73**	**749.74**
Normalized	89.53%	83.47%	100%	80.93%
Standard Deviation	0.6%	0.7%	1.1%	0.2%

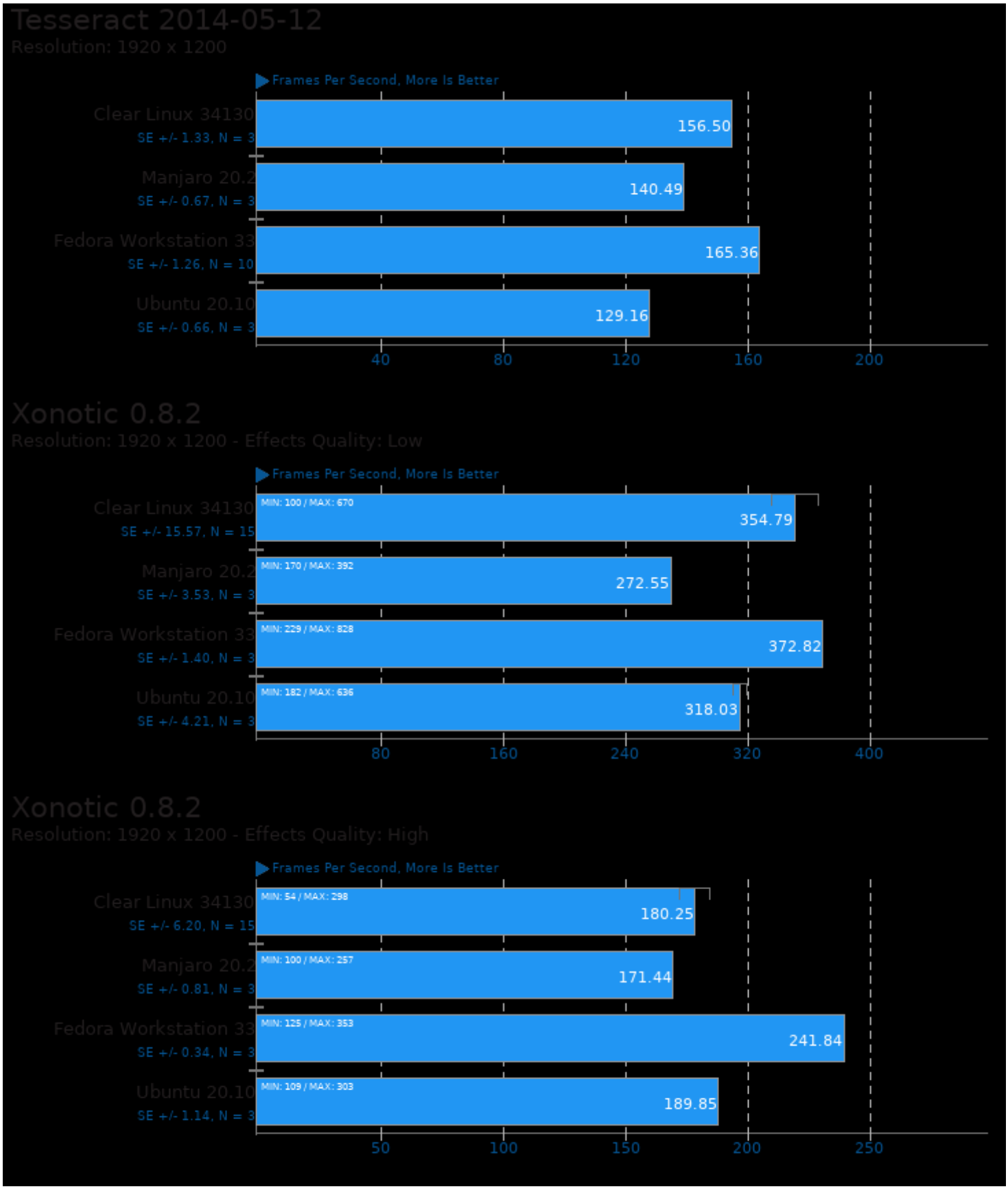
Clear Linux vs Other Distros - Tiger Lake

Basis Universal - UASTC Level 2 (sec)	85.124	86.361	**77.355**	**89.670**
Normalized	90.87%	89.57%	100%	86.27%
Standard Deviation	2.2%	0.9%	4.5%	0.8%
SQLite Speedtest - Timed Time - Size 1,000 (sec)	**49.504**	52.294	**55.956**	52.219
Normalized	100%	94.66%	88.47%	94.8%
Standard Deviation	2.2%	0.2%	2.5%	1.3%
Darktable - Boat - CPU-only (sec)	**10.254**	16.116	10.828	**17.065**
Normalized	100%	63.63%	94.7%	60.09%
Standard Deviation	1.8%	2.5%	1.4%	2.4%
Darktable - Masskrug - CPU-only (sec)	7.882	8.990	**7.143**	**9.388**
Normalized	90.62%	79.45%	100%	76.09%
Standard Deviation	34.4%	5.3%	1%	3.9%
Darktable - Server Room - CPU-only (sec)	**4.586**	6.996	5.561	**7.581**
Normalized	100%	65.55%	82.47%	60.49%
Standard Deviation	0.4%	8.6%	0.3%	5%
RawTherapee - T.B.T (sec)	88.746	99.518	**81.974**	**102.444**
Normalized	92.37%	82.37%	100%	80.02%
Standard Deviation	6.2%	1.3%	3.7%	0.5%
librsvg - SVG Files To PNG (sec)	**24.304**	20.385	17.231	**16.874**
Normalized	69.43%	82.78%	97.93%	100%
Standard Deviation	0.1%	0.9%	0.6%	1.5%
Appleseed - Emily (sec)	1223	1230	**1079**	**1274**
Normalized	88.21%	87.66%	100%	84.68%
Selenium - Maze Solver - Firefox (sec)	**4**	**5.2**	5.1	**5.2**
Normalized	100%	76.92%	78.43%	76.92%
Standard Deviation		0%	0%	0%
Git - T.T.C.C.G.C (sec)	45.918	47.297	**45.227**	**48.096**
Normalized	98.5%	95.62%	100%	94.03%
Standard Deviation	1.3%	1.2%	1.1%	1.9%

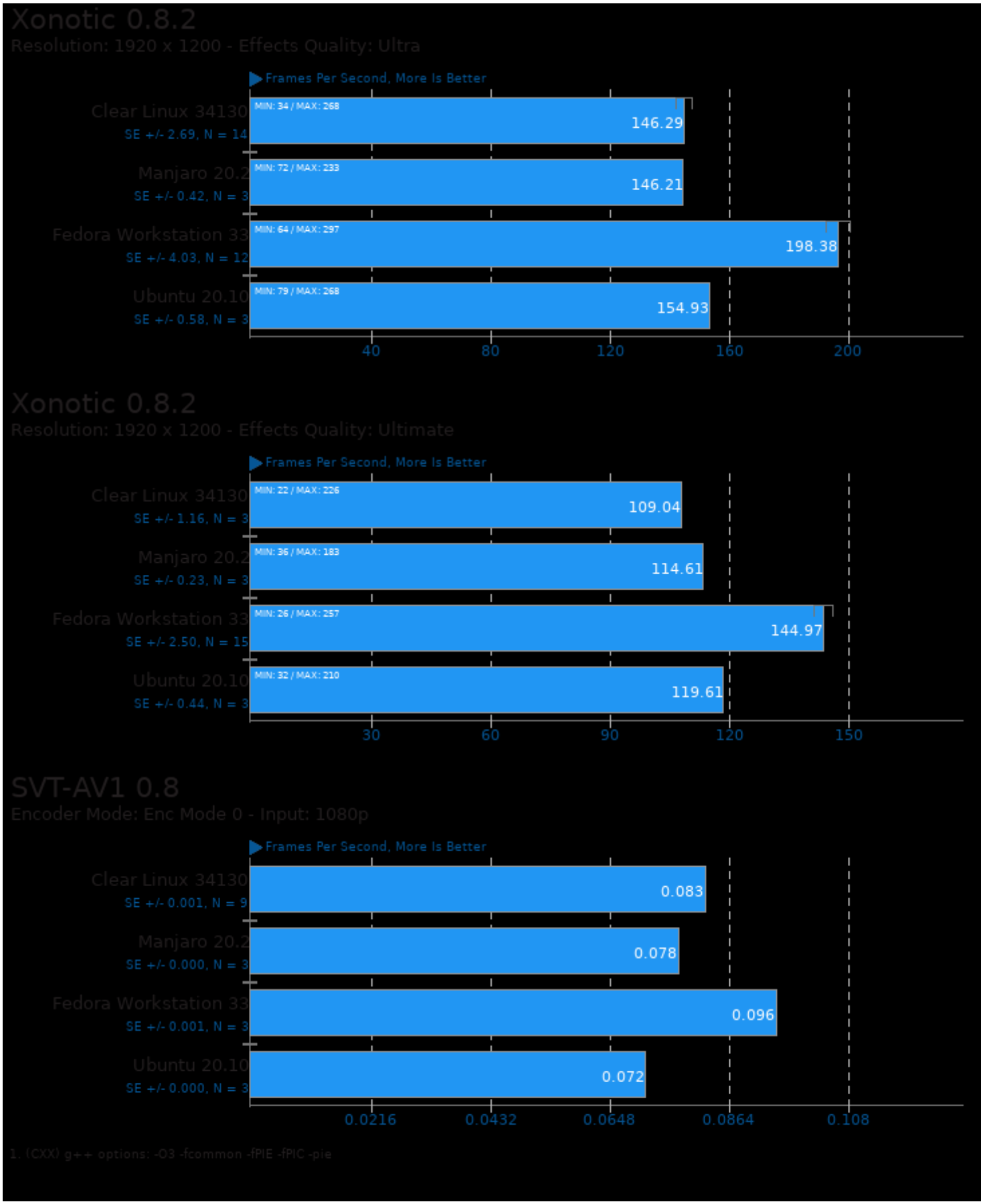
Clear Linux vs Other Distros - Tiger Lake



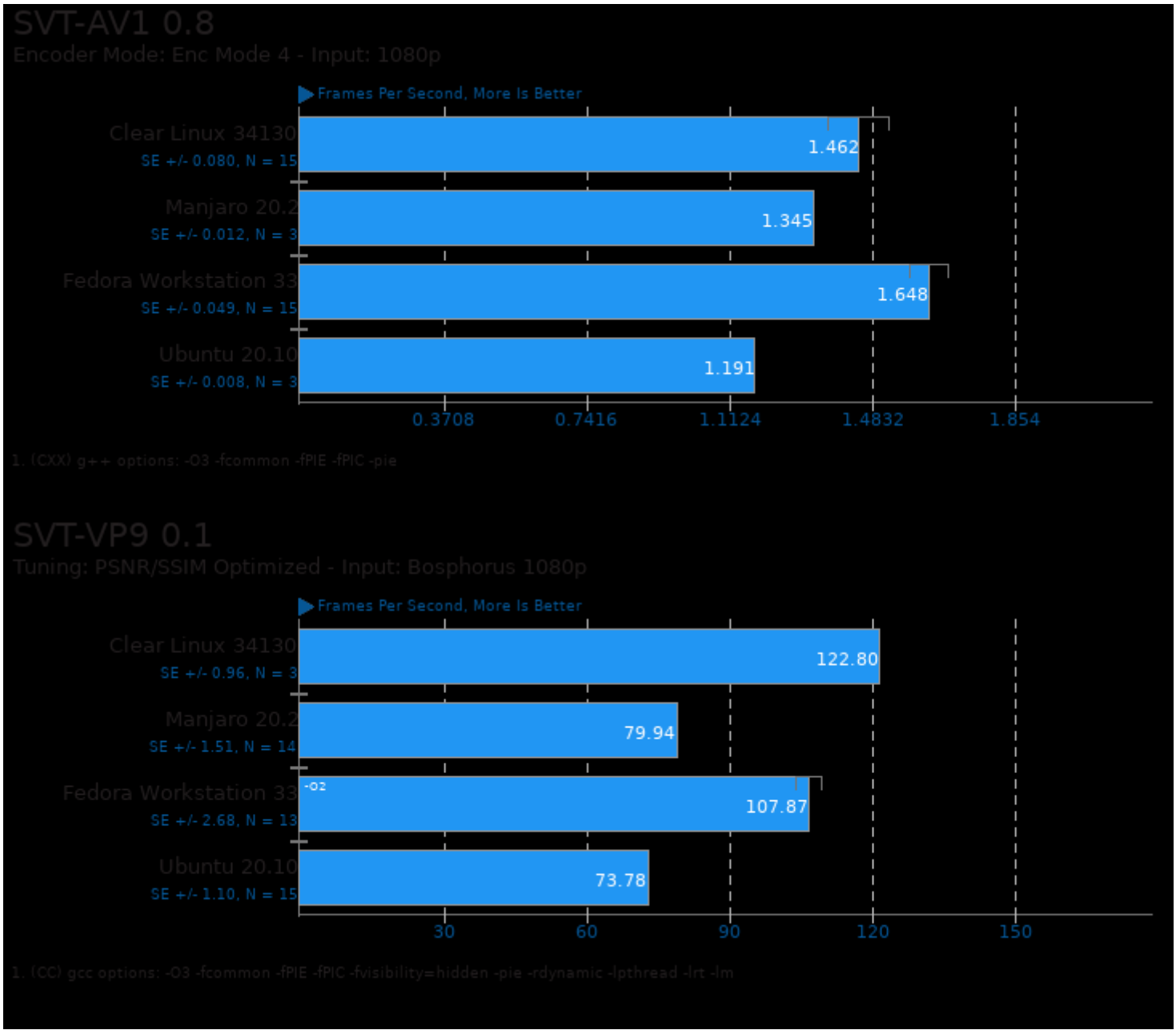
Clear Linux vs Other Distros - Tiger Lake



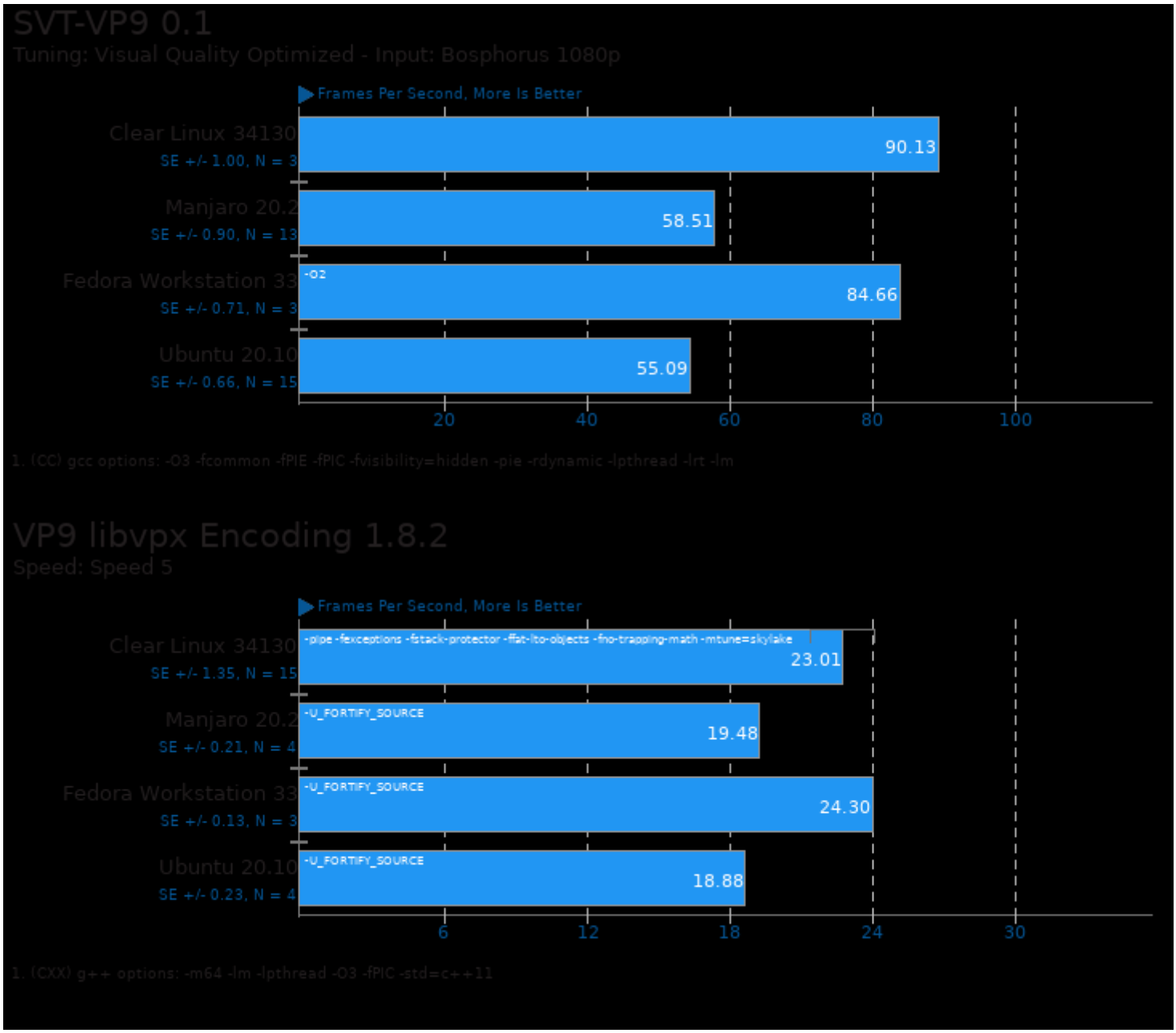
Clear Linux vs Other Distros - Tiger Lake



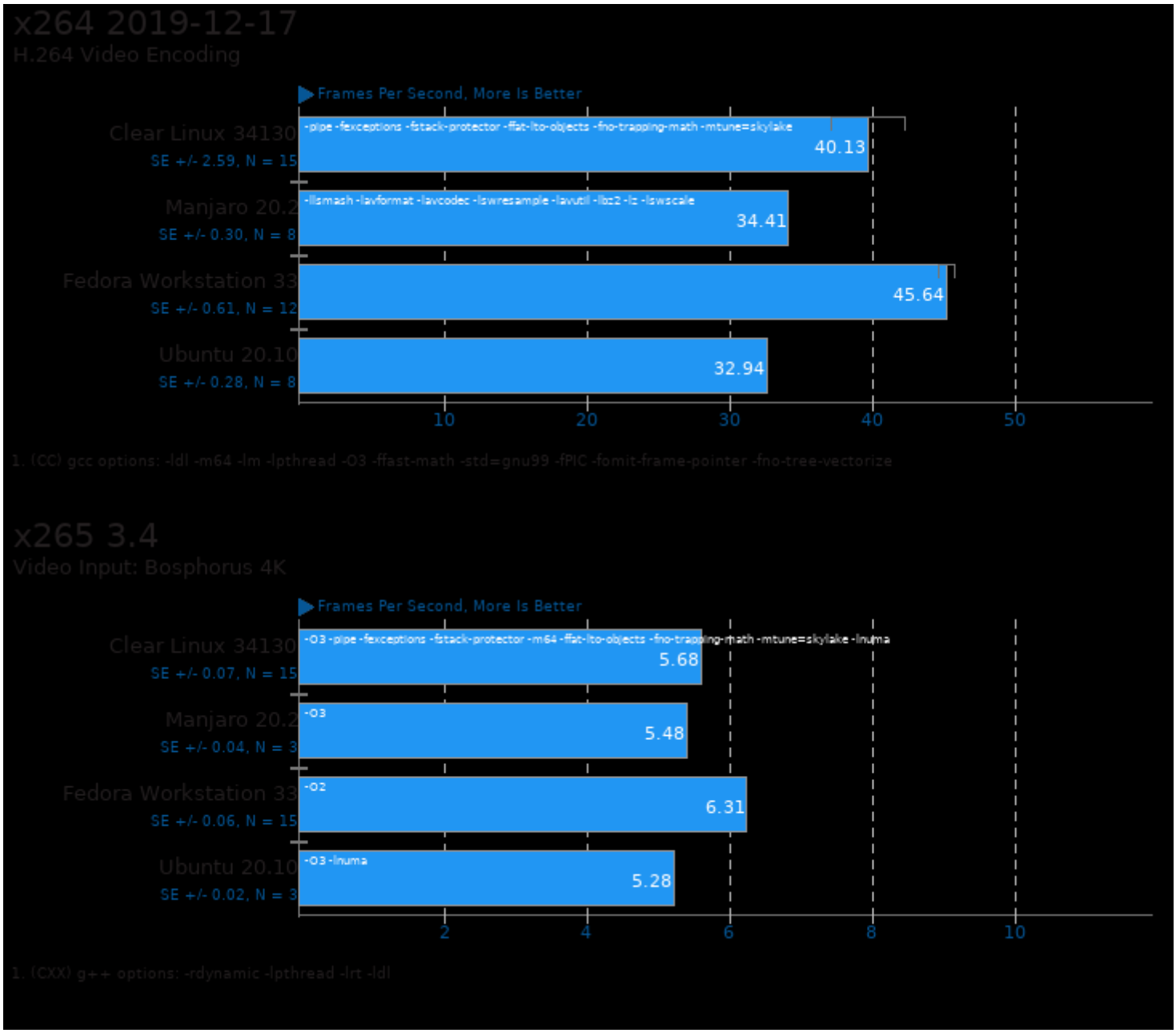
Clear Linux vs Other Distros - Tiger Lake



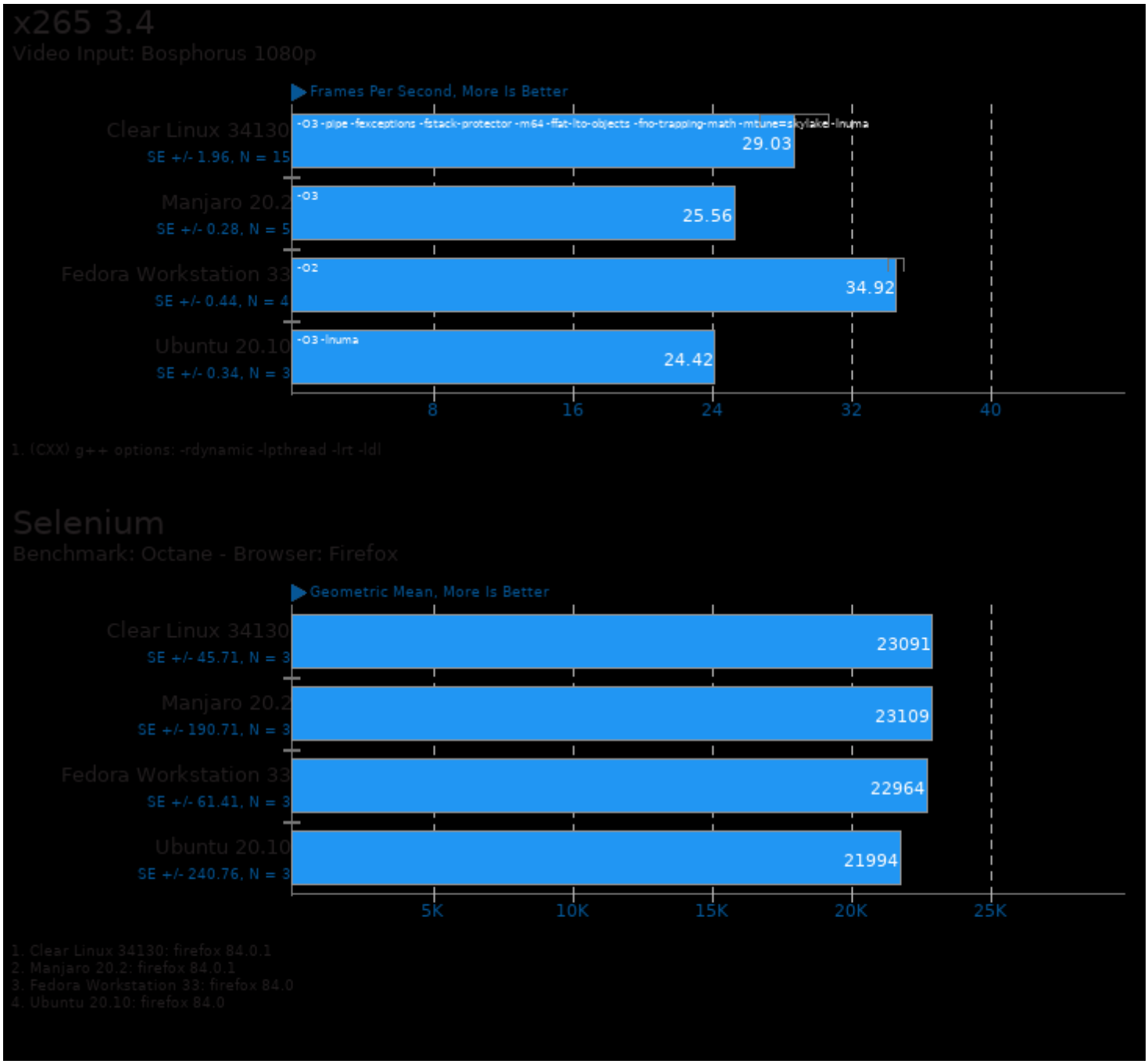
Clear Linux vs Other Distros - Tiger Lake



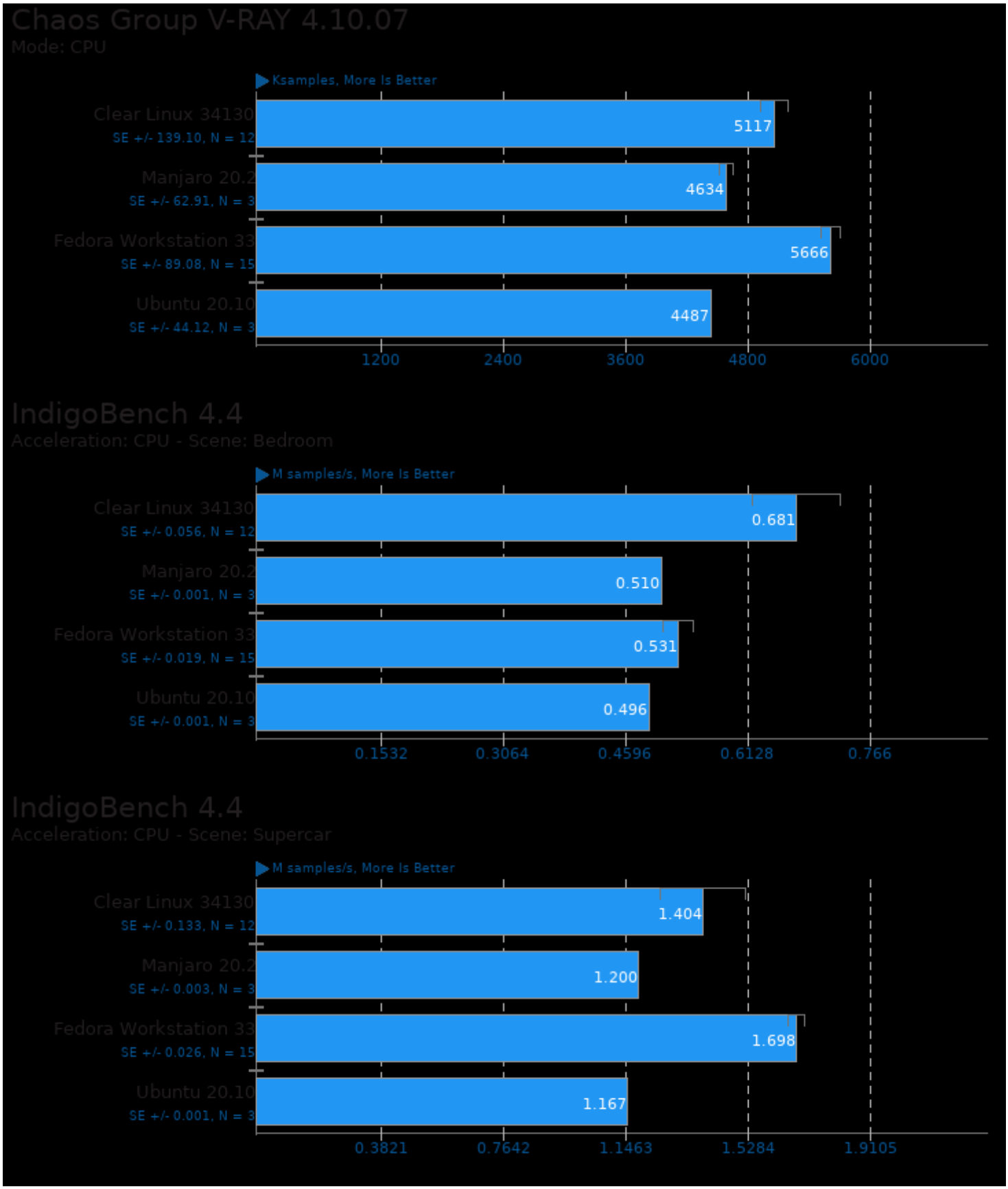
Clear Linux vs Other Distros - Tiger Lake



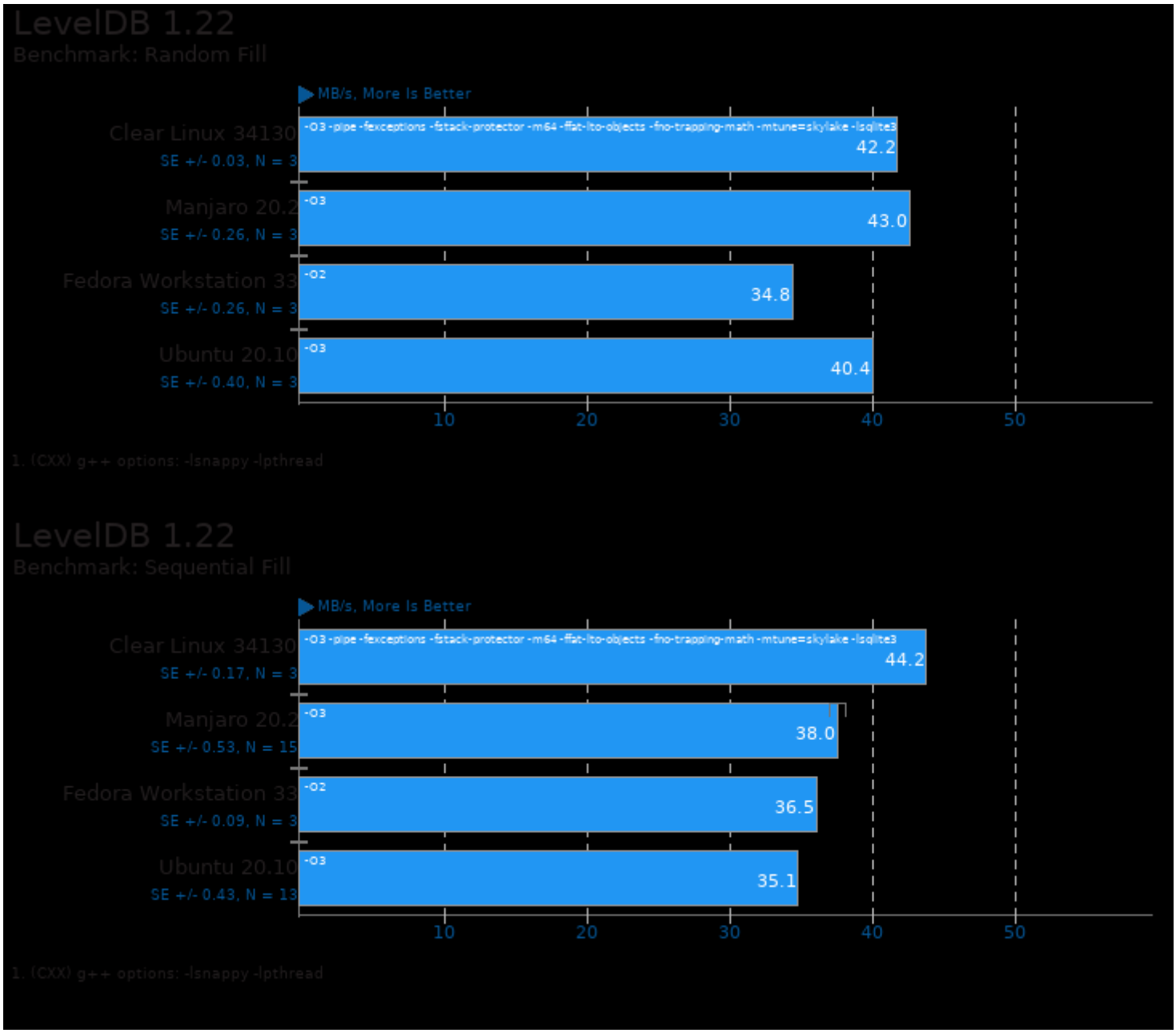
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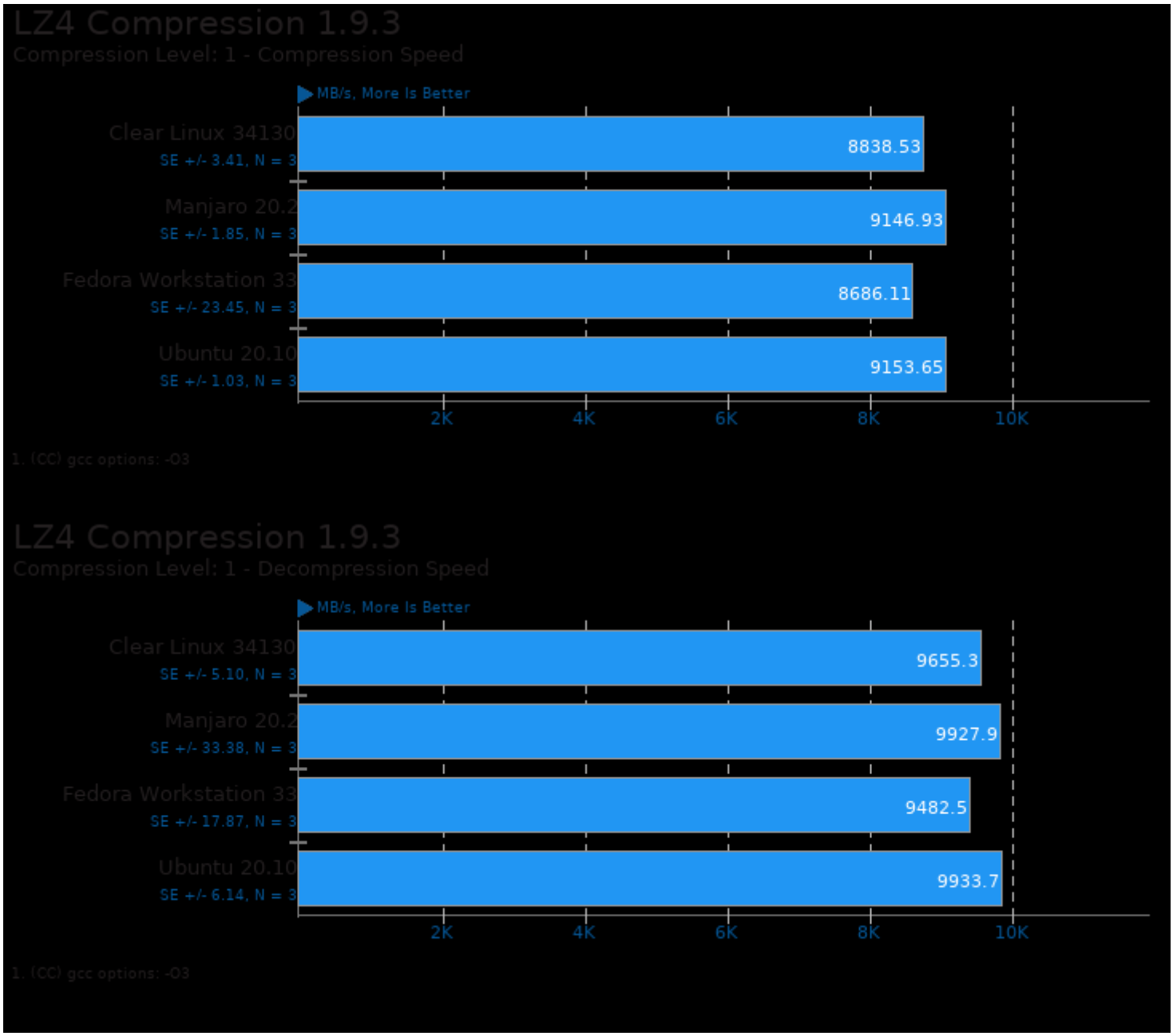


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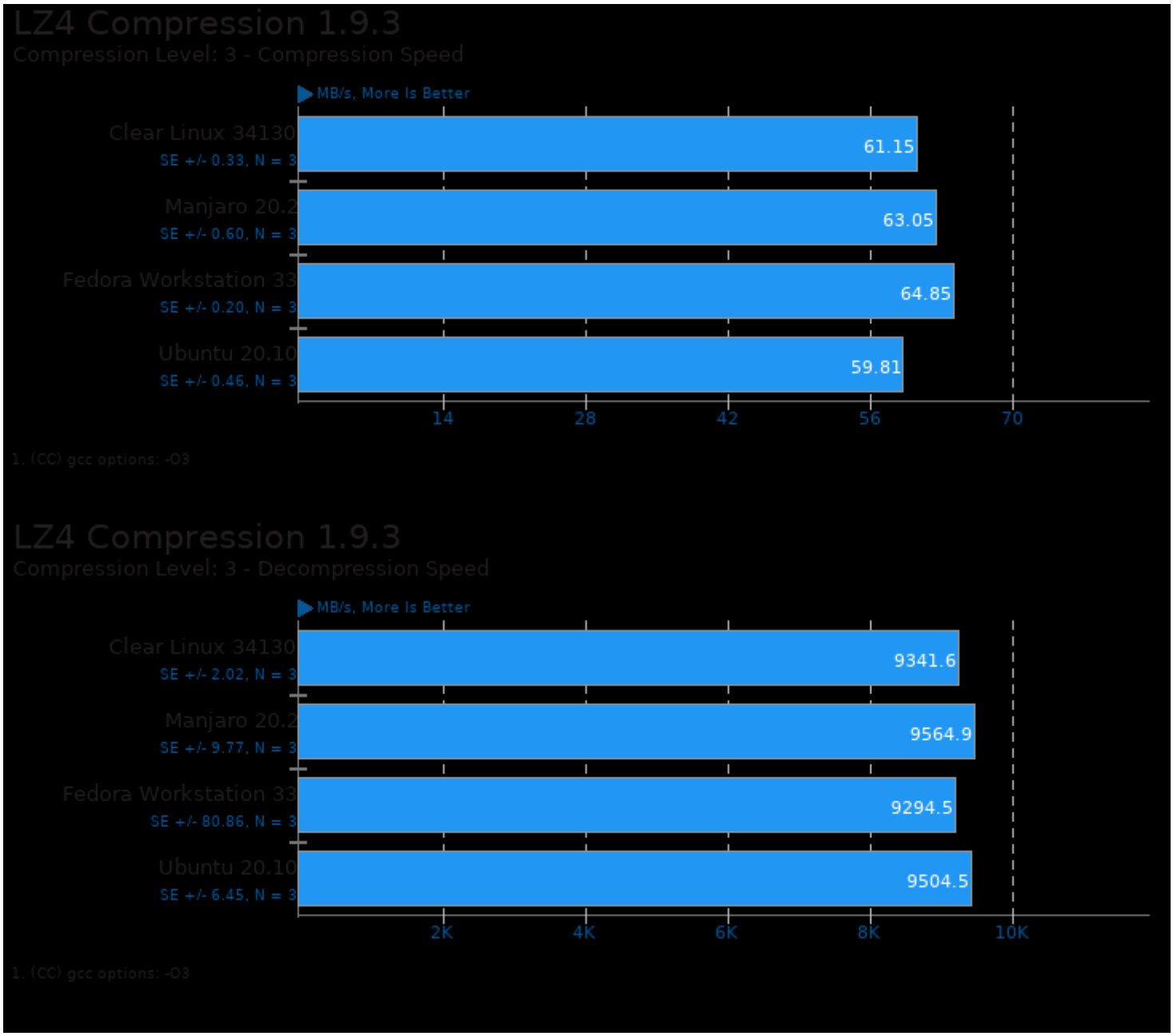


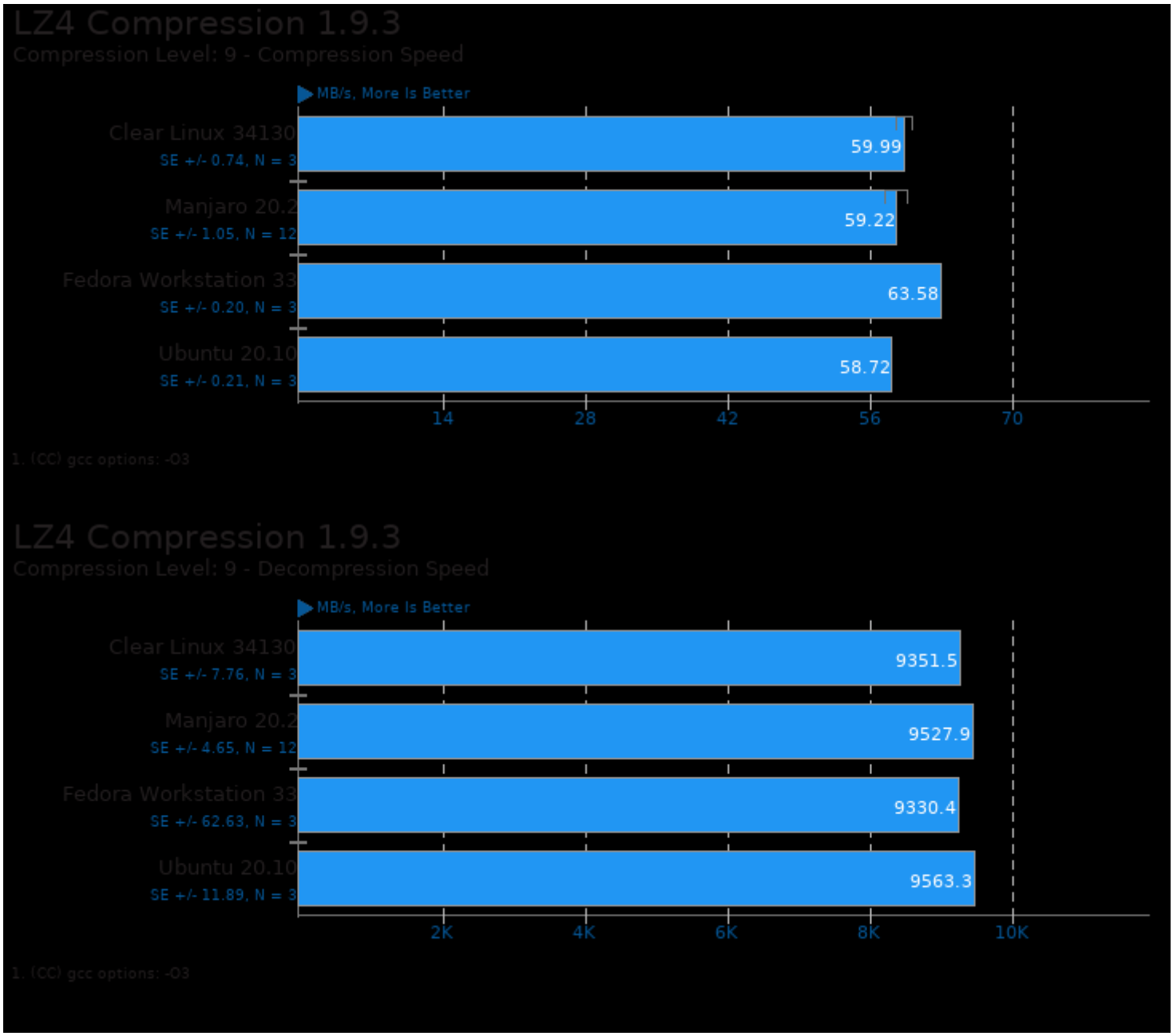
Clear Linux vs Other Distros - Tiger Lake



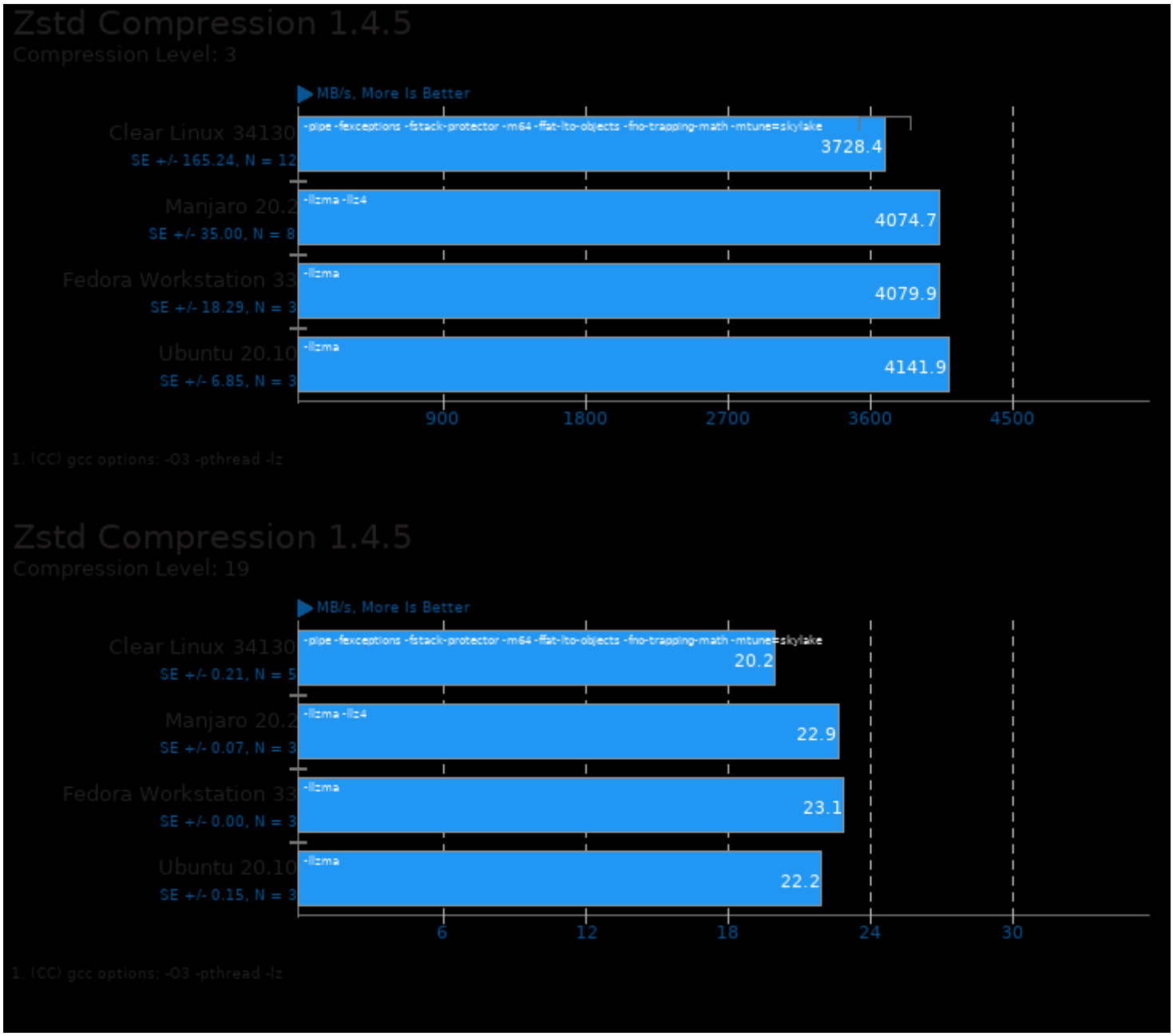

LZ4 Compression 1.9.3
Compression Level: 1 - Compression Speed
MB/s, More Is Better
Clear Linux 34130
SE +/- 3.41, N = 3
8838.53
Manjaro 20.2
SE +/- 1.85, N = 3
9146.93
Fedora Workstation 33
SE +/- 23.45, N = 3
8686.11
Ubuntu 20.10
SE +/- 1.03, N = 3
9153.65
2K
4K
6K
8K
10K
1. (CC) gcc options: -O3
LZ4 Compression 1.9.3
Compression Level: 1 - Decompression Speed
MB/s, More Is Better
Clear Linux 34130
SE +/- 5.10, N = 3
9655.3
Manjaro 20.2
SE +/- 33.38, N = 3
9927.9
Fedora Workstation 33
SE +/- 17.87, N = 3
9482.5
Ubuntu 20.10
SE +/- 6.14, N = 3
9933.7
2K
4K
6K
8K
10K
1. (CC) gcc options: -O3

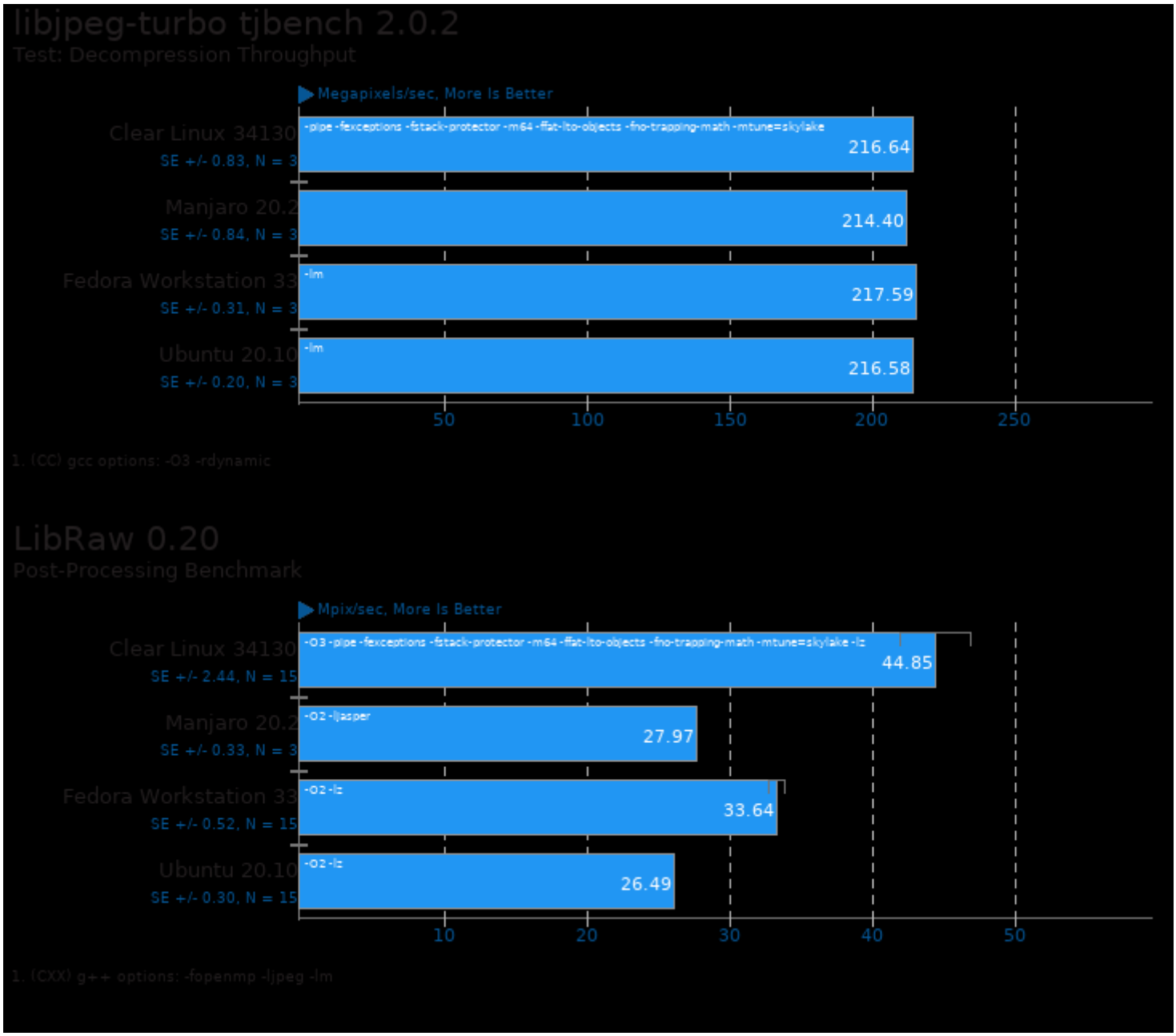
Clear Linux vs Other Distros - Tiger Lake



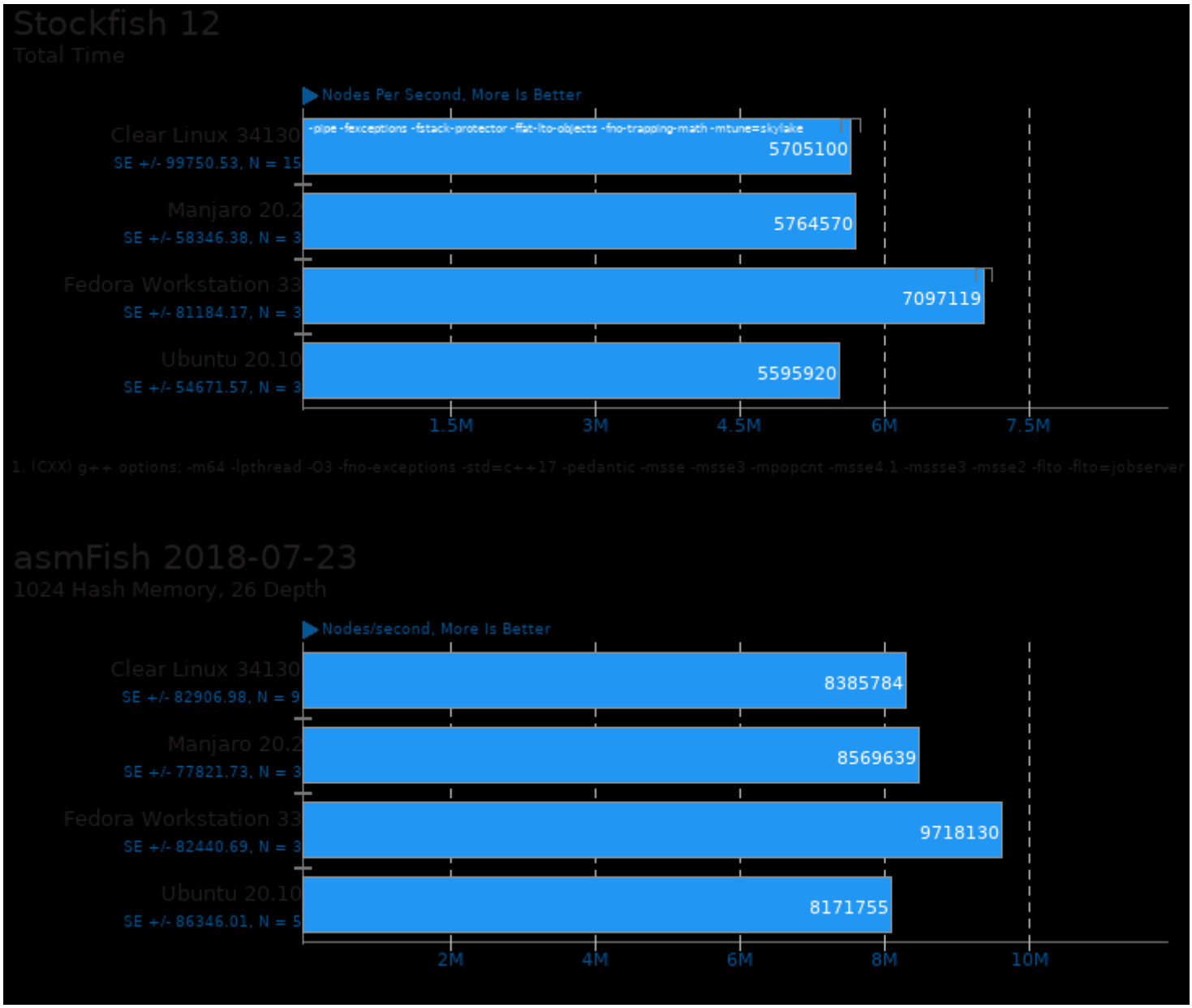

LZ4 Compression 1.9.3
Compression Level: 9 - Compression Speed
MB/s, More Is Better
Clear Linux 34130
SE +/- 0.74, N = 3
59.99
Manjaro 20.2
SE +/- 1.05, N = 12
59.22
Fedora Workstation 33
SE +/- 0.20, N = 3
63.58
Ubuntu 20.10
SE +/- 0.21, N = 3
58.72
14
28
42
56
70
1. (CC) gcc options: -O3
LZ4 Compression 1.9.3
Compression Level: 9 - Decompression Speed
MB/s, More Is Better
Clear Linux 34130
SE +/- 7.76, N = 3
9351.5
Manjaro 20.2
SE +/- 4.65, N = 12
9527.9
Fedora Workstation 33
SE +/- 62.63, N = 3
9330.4
Ubuntu 20.10
SE +/- 11.89, N = 3
9563.3
2K
4K
6K
8K
10K
1. (CC) gcc options: -O3

Clear Linux vs Other Distros - Tiger Lake

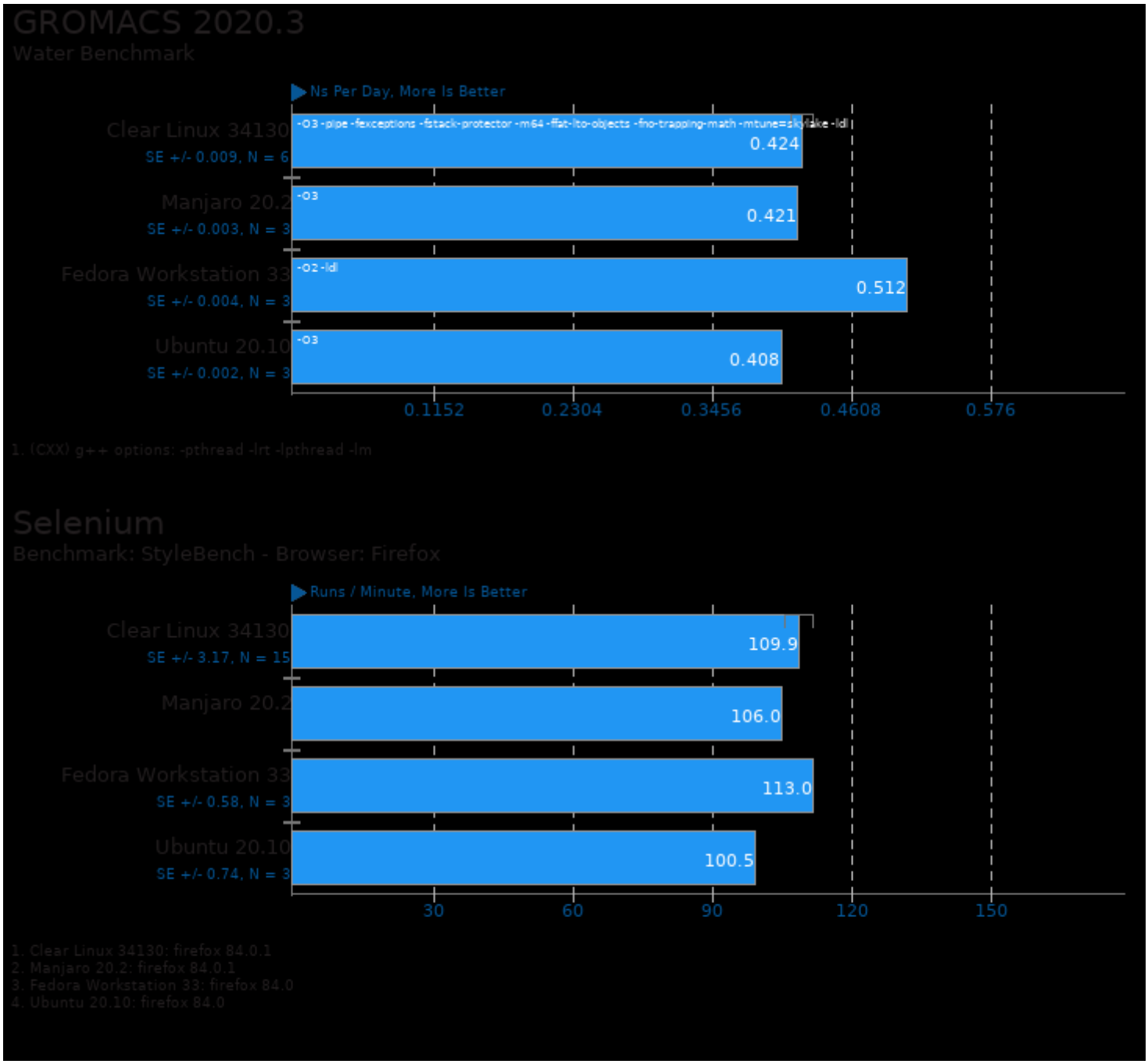



libjpeg-turbo tjbench 2.0.2
Test: Decompression Throughput
Megapixels/sec, More Is Better
Clear Linux 34130
SE +/- 0.83, N = 3
-pipe -fexceptions -fstack-protector -m64 -flat-lto-objects -fno-trapping-math -mtune=skylake
216.64
Manjaro 20.2
SE +/- 0.84, N = 3
214.40
Fedora Workstation 33
SE +/- 0.31, N = 3
-lm
217.59
Ubuntu 20.10
SE +/- 0.20, N = 3
-lm
216.58
50
100
150
200
250
1. (CC) gcc options: -O3 -rdynamic
LibRaw 0.20
Post-Processing Benchmark
Mpix/sec, More Is Better
Clear Linux 34130
SE +/- 2.44, N = 15
-O3 -pipe -fexceptions -fstack-protector -m64 -flat-lto-objects -fno-trapping-math -mtune=skylake -lz
44.85
Manjaro 20.2
SE +/- 0.33, N = 3
-O2 -ljasper
27.97
Fedora Workstation 33
SE +/- 0.52, N = 15
-O2 -lz
33.64
Ubuntu 20.10
SE +/- 0.30, N = 15
-O2 -lz
26.49
10
20
30
40
50
1. (CXX) g++ options: -fopenmp -ljpeg -lm

Clear Linux vs Other Distros - Tiger Lake

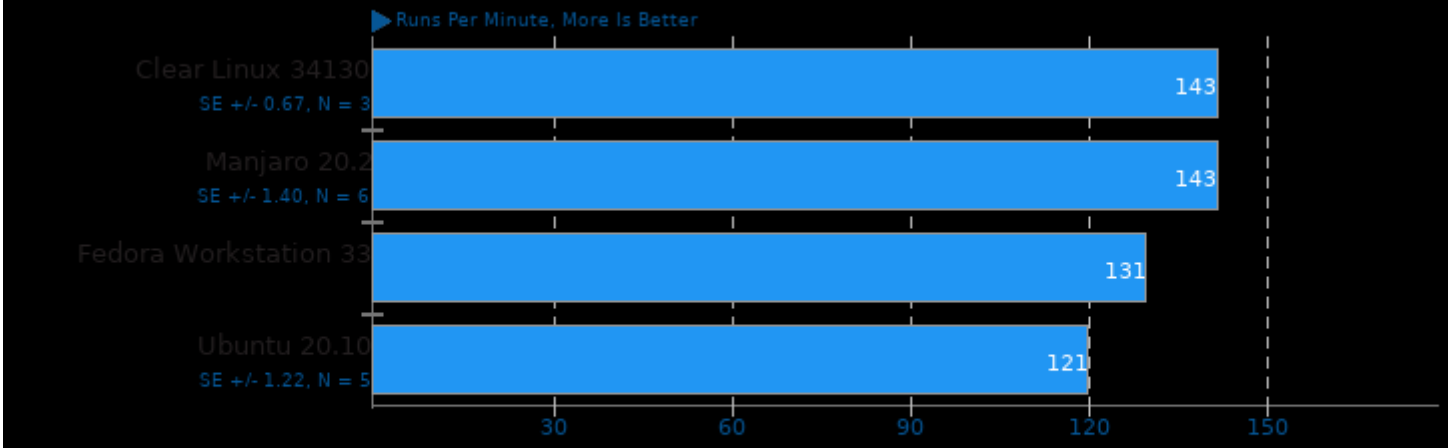


Clear Linux vs Other Distros - Tiger Lake



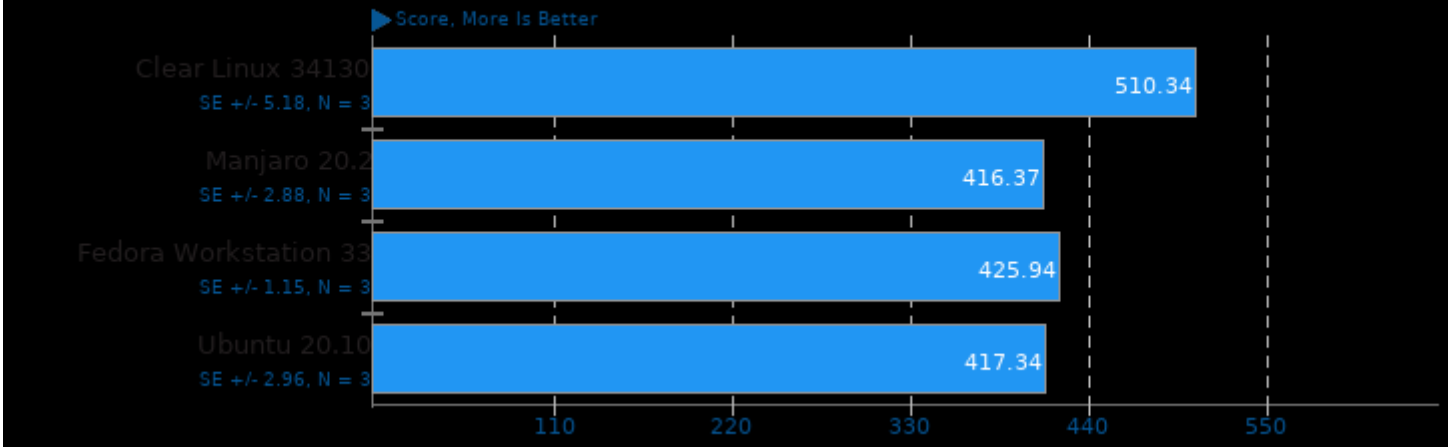
Selenium

Benchmark: Speedometer - Browser: Firefox



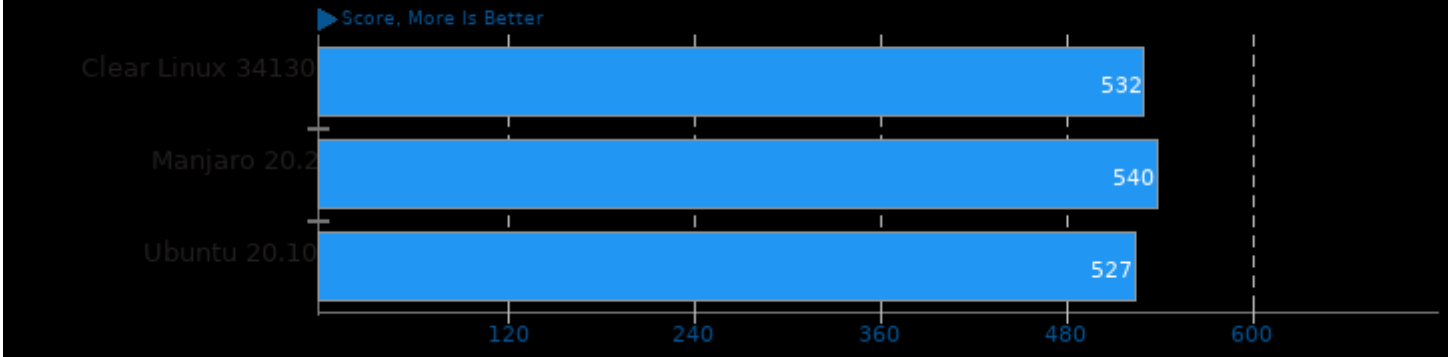
1. Clear Linux 34130: firefox 84.0.1
2. Manjaro 20.2: firefox 84.0.1
3. Fedora Workstation 33: firefox 84.0
4. Ubuntu 20.10: firefox 84.0

Numpy Benchmark

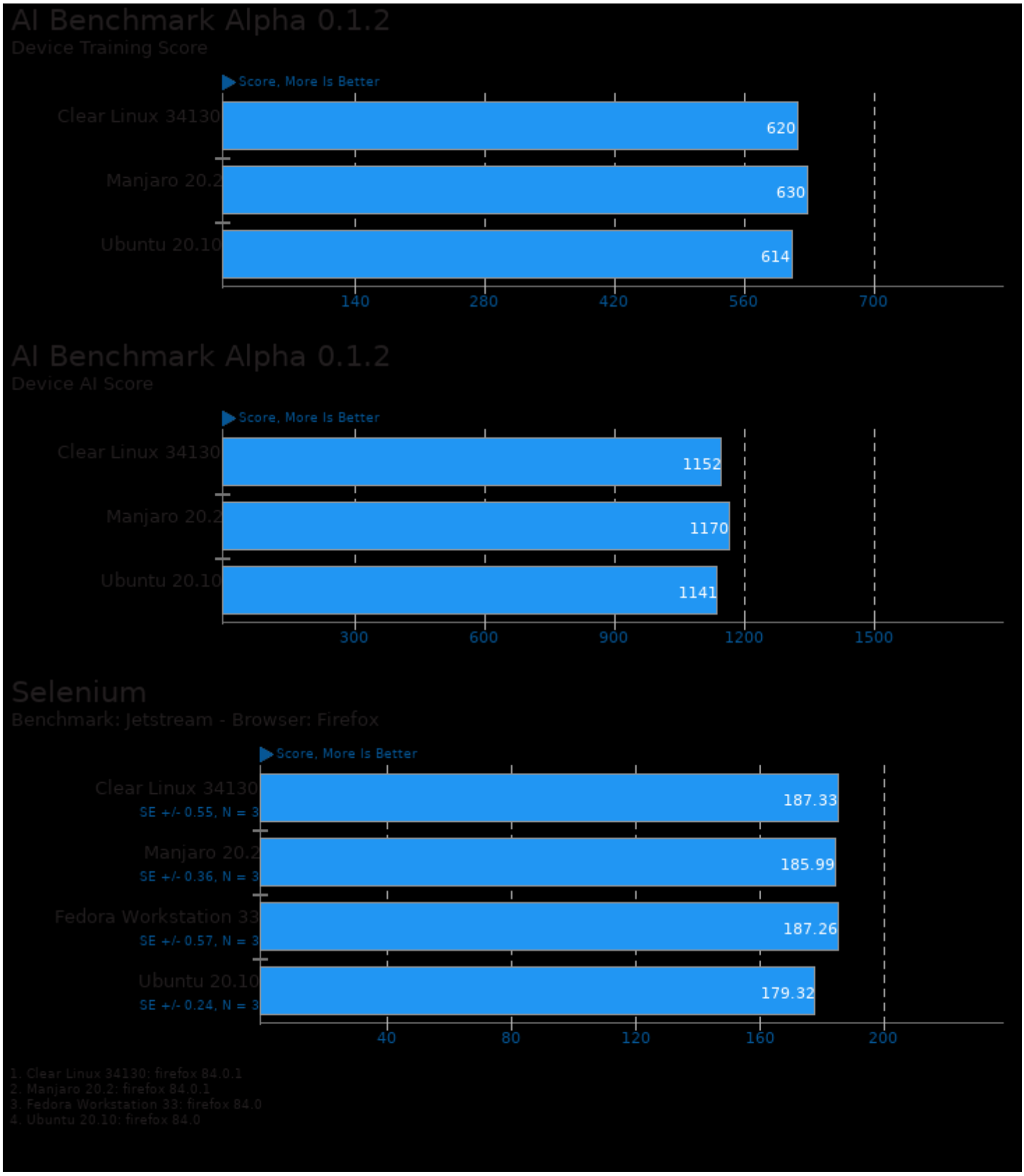


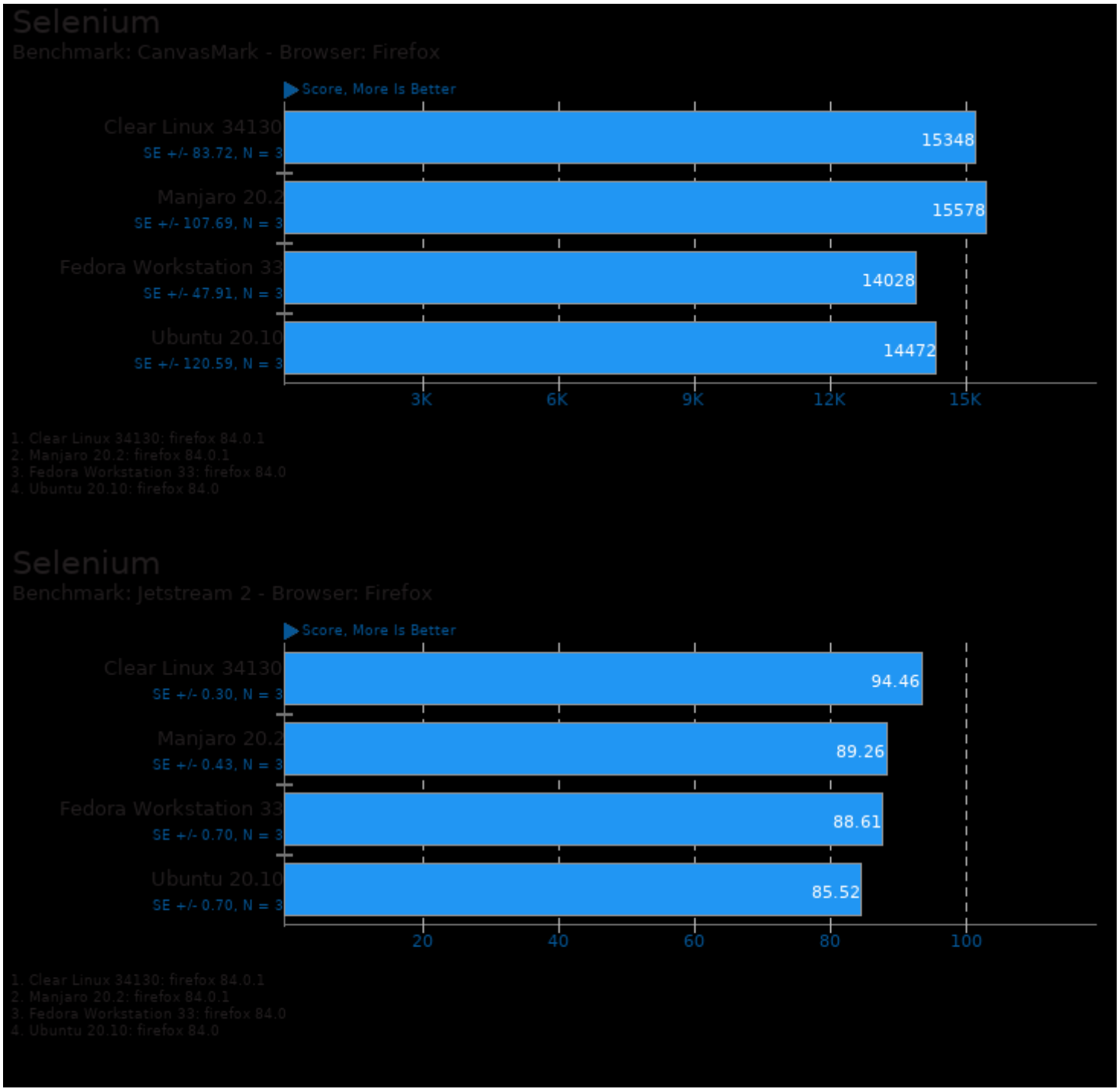
AI Benchmark Alpha 0.1.2

Device Inference Score



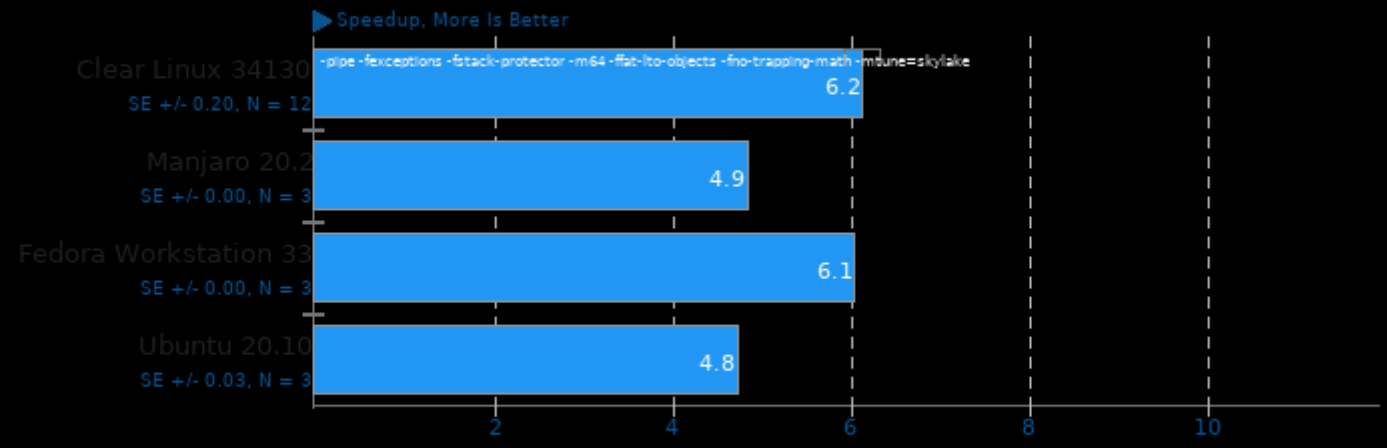
Clear Linux vs Other Distros - Tiger Lake




Selenium
Benchmark: CanvasMark - Browser: Firefox
Score, More Is Better
Clear Linux 34130
SE +/- 83.72, N = 3
15348
Manjaro 20.2
SE +/- 107.69, N = 3
15578
Fedora Workstation 33
SE +/- 47.91, N = 3
14028
Ubuntu 20.10
SE +/- 120.59, N = 3
14472
3K
6K
9K
12K
15K
1. Clear Linux 34130: firefox 84.0.1
2. Manjaro 20.2: firefox 84.0.1
3. Fedora Workstation 33: firefox 84.0
4. Ubuntu 20.10: firefox 84.0
Selenium
Benchmark: Jetstream 2 - Browser: Firefox
Score, More Is Better
Clear Linux 34130
SE +/- 0.30, N = 3
94.46
Manjaro 20.2
SE +/- 0.43, N = 3
89.26
Fedora Workstation 33
SE +/- 0.70, N = 3
88.61
Ubuntu 20.10
SE +/- 0.70, N = 3
85.52
20
40
60
80
100
1. Clear Linux 34130: firefox 84.0.1
2. Manjaro 20.2: firefox 84.0.1
3. Fedora Workstation 33: firefox 84.0
4. Ubuntu 20.10: firefox 84.0

CLOMP 1.2

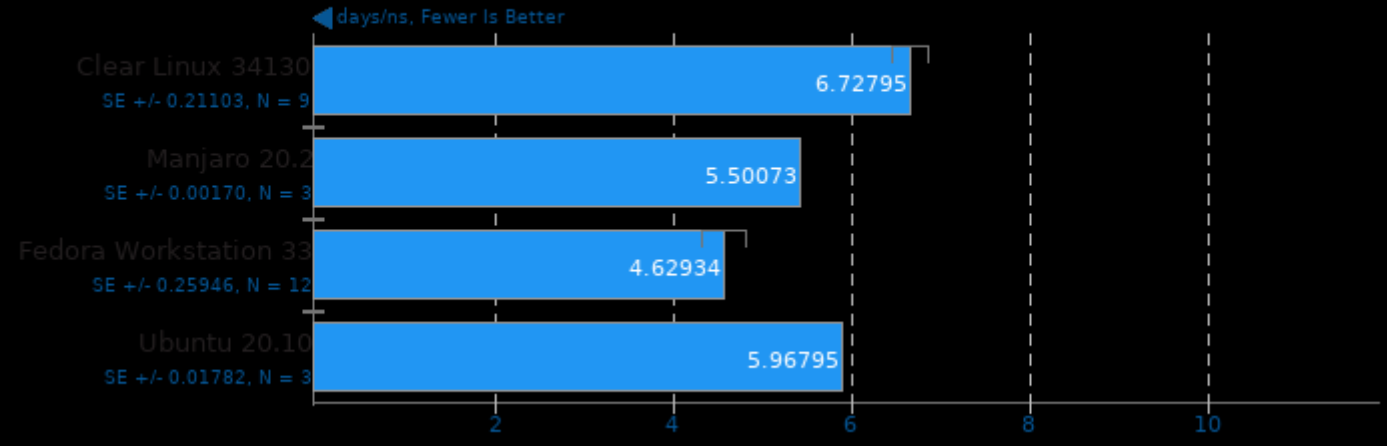
Static OMP Speedup



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

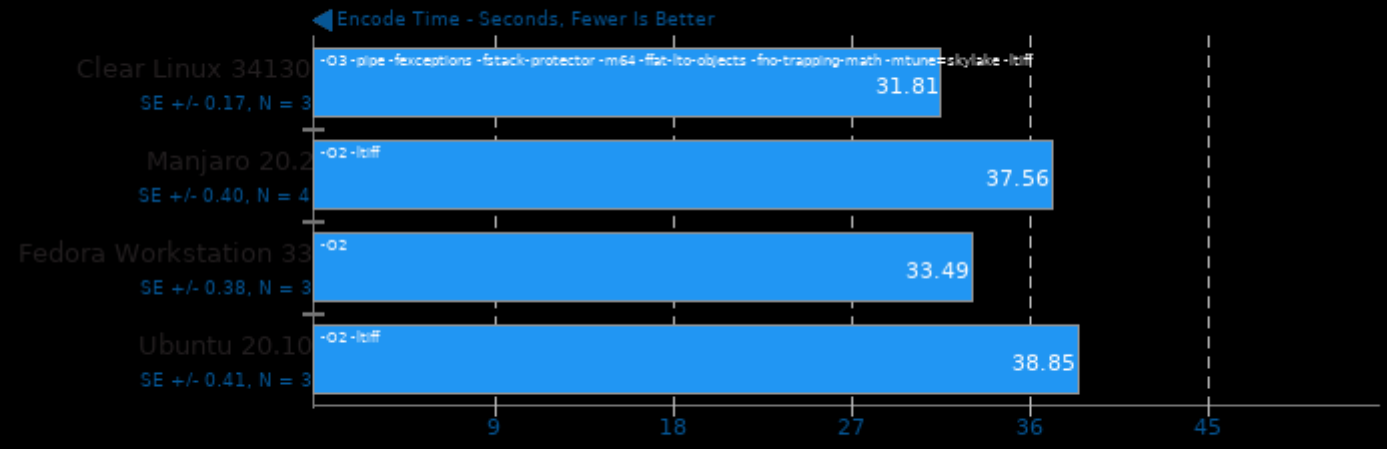
NAMD 2.14

ATPase Simulation - 327,506 Atoms



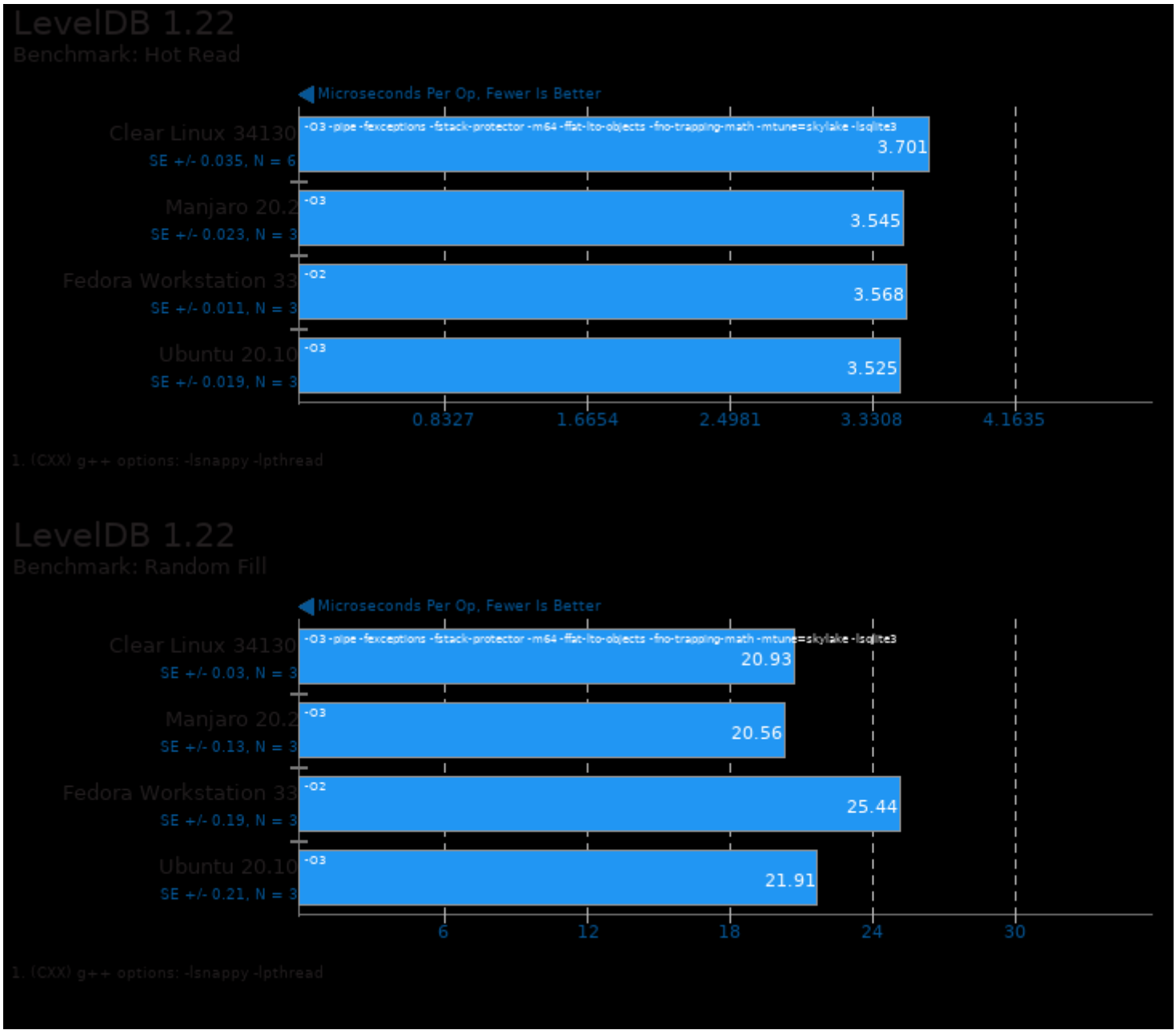
WebP Image Encode 1.1

Encode Settings: Quality 100, Lossless, Highest Compression

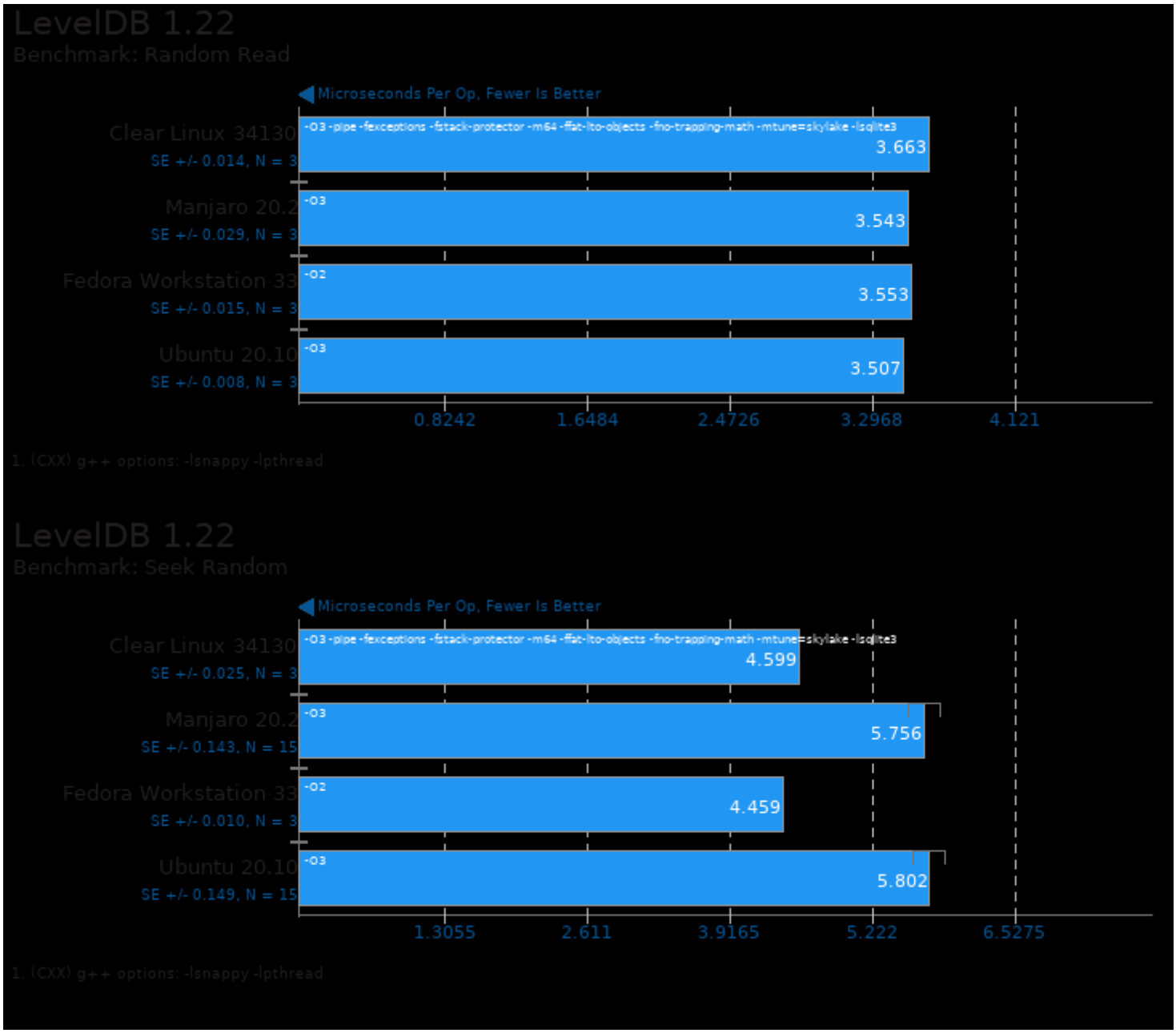


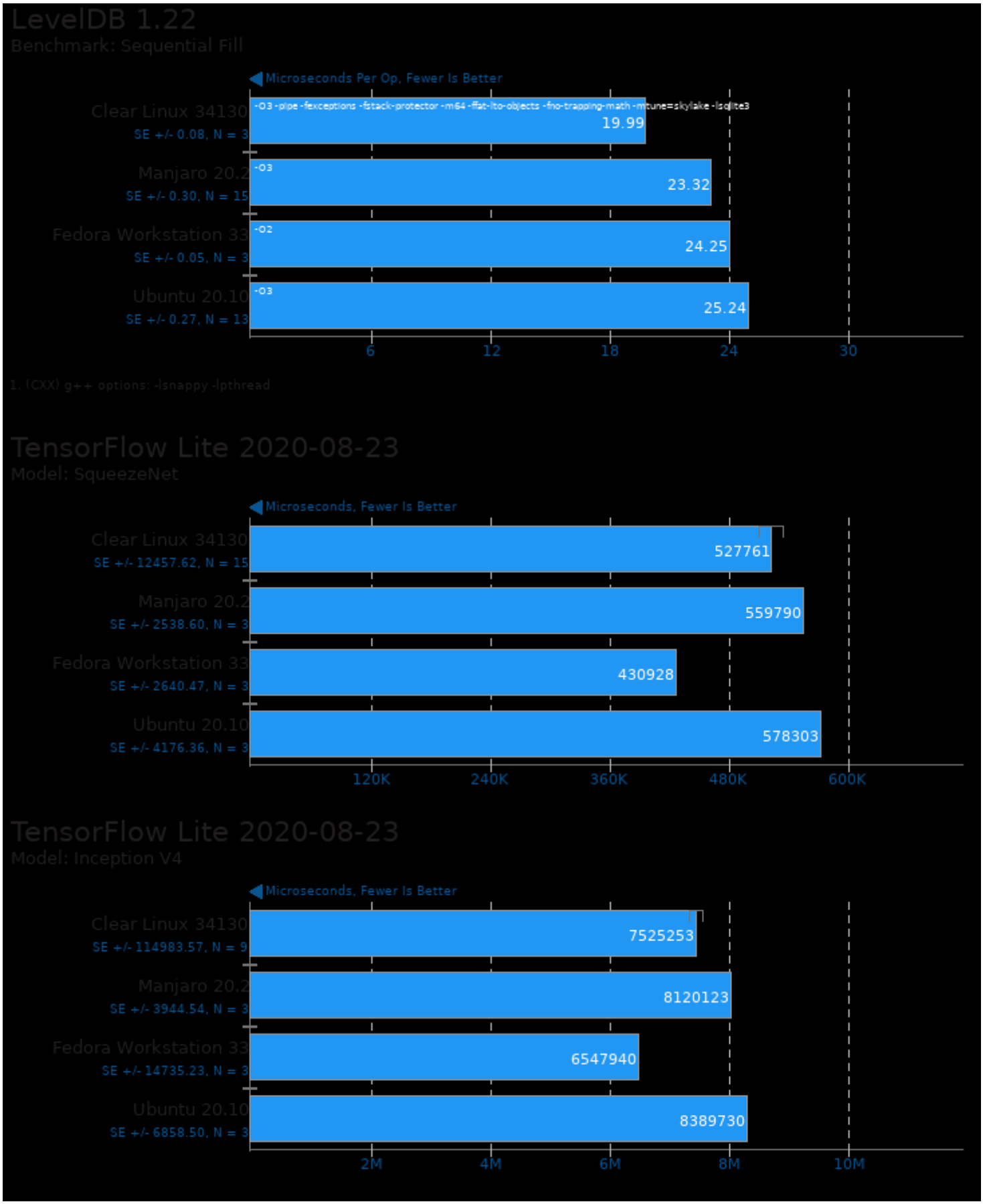
1. (CC) gcc options: -fvisibility=hidden -pthread -lm -ljpeg -lpng16

Clear Linux vs Other Distros - Tiger Lake

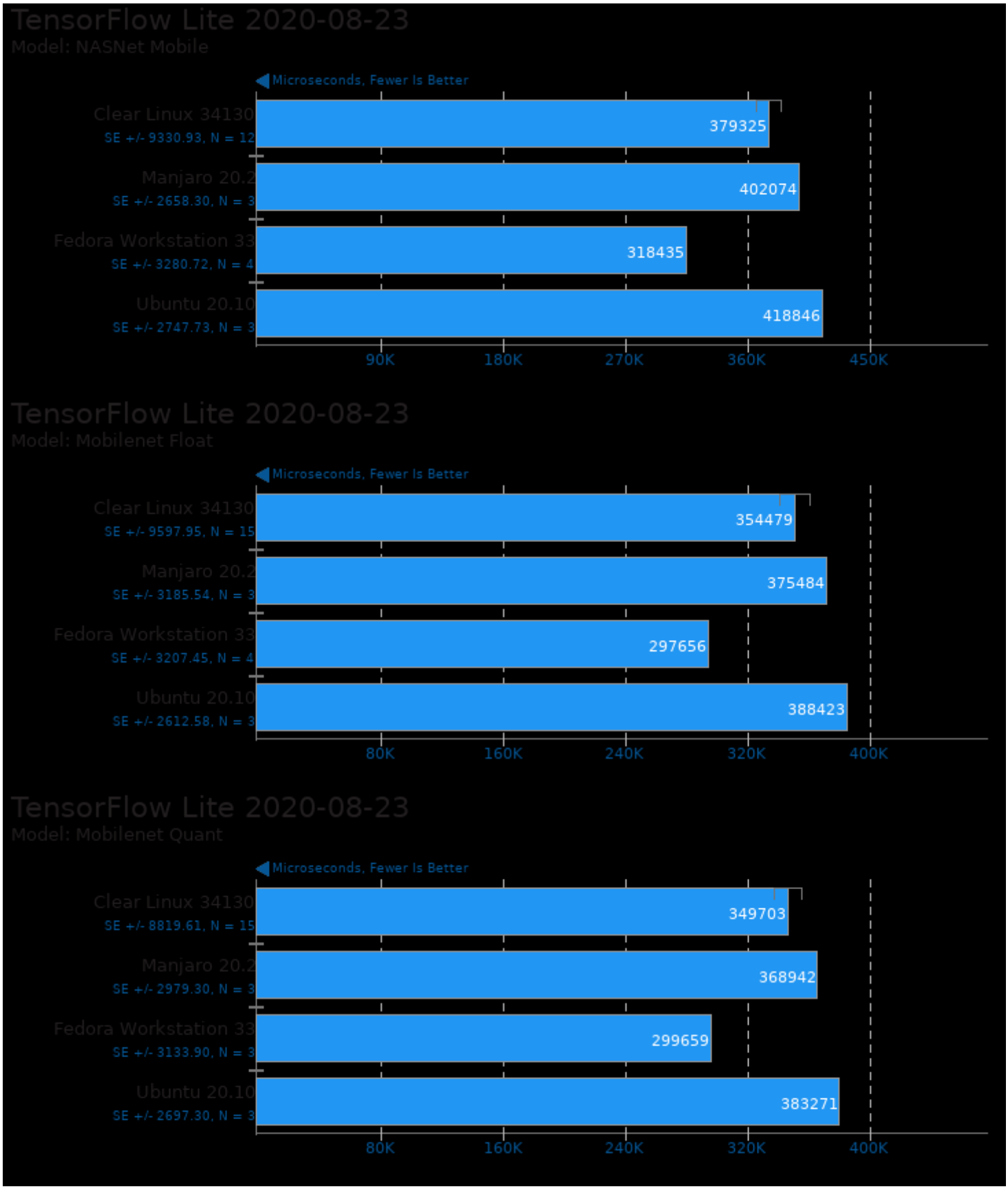


Clear Linux vs Other Distros - Tiger Lake

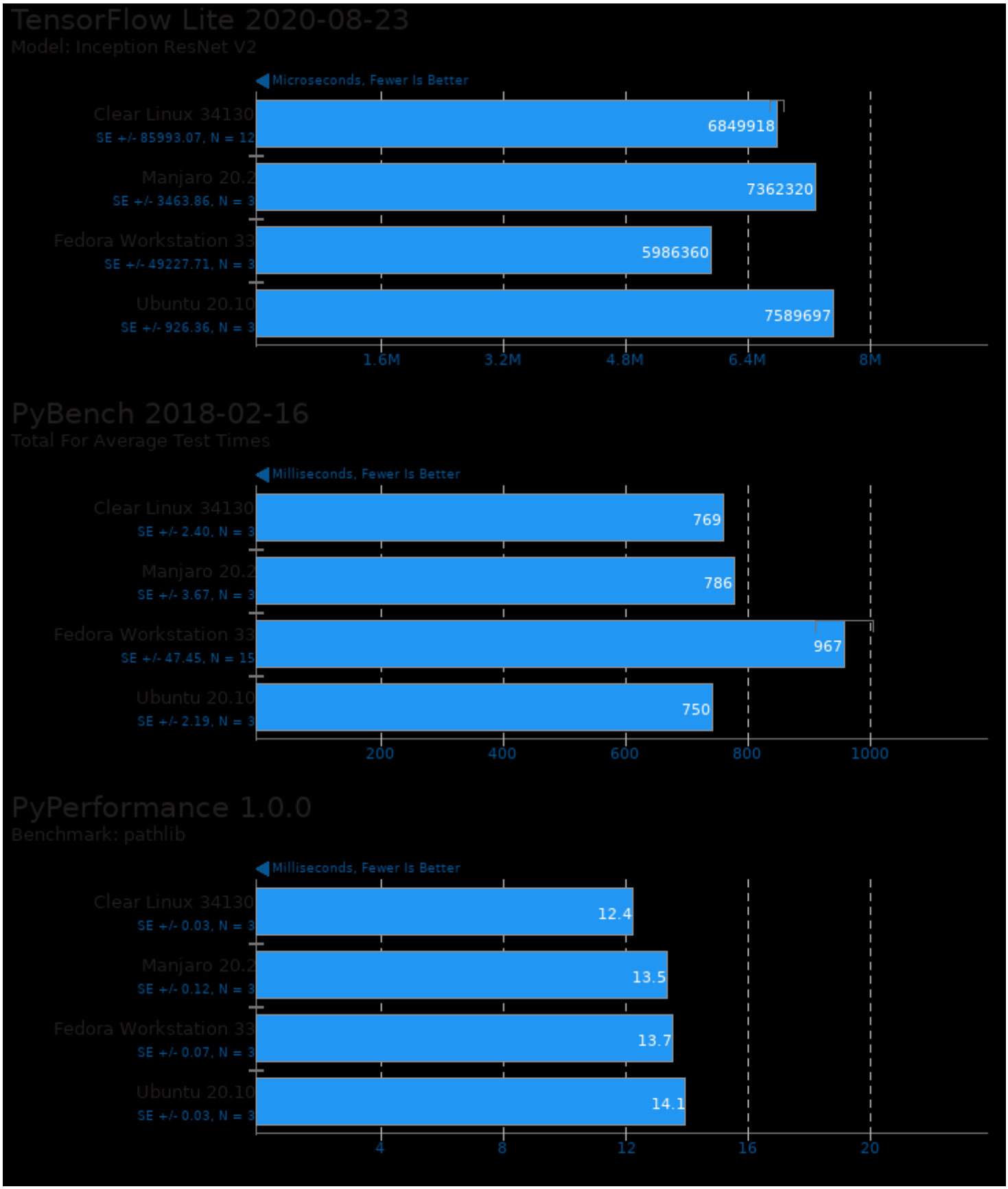



LevelDB 1.22
Benchmark: Sequential Fill
Microseconds Per Op, Fewer Is Better
Clear Linux 34130
SE +/- 0.08, N = 3
-O3 -pipe -fexceptions -fstack-protector -m64 -ffat-lto-objects -fno-trapping-math -mtune=skylake -lsqlite3
19.99
Manjaro 20.2
SE +/- 0.30, N = 15
-O3
23.32
Fedora Workstation 33
SE +/- 0.05, N = 3
-O2
24.25
Ubuntu 20.10
SE +/- 0.27, N = 13
-O3
25.24
6
12
18
24
30
1. (CXX) g++ options: -lsnappy -lpthread
TensorFlow Lite 2020-08-23
Model: SqueezeNet
Microseconds, Fewer Is Better
Clear Linux 34130
SE +/- 12457.62, N = 15
527761
Manjaro 20.2
SE +/- 2538.60, N = 3
559790
Fedora Workstation 33
SE +/- 2640.47, N = 3
430928
Ubuntu 20.10
SE +/- 4176.36, N = 3
578303
120K
240K
360K
480K
600K
TensorFlow Lite 2020-08-23
Model: Inception V4
Microseconds, Fewer Is Better
Clear Linux 34130
SE +/- 114983.57, N = 9
7525253
Manjaro 20.2
SE +/- 3944.54, N = 3
8120123
Fedora Workstation 33
SE +/- 14735.23, N = 3
6547940
Ubuntu 20.10
SE +/- 6858.50, N = 3
8389730
2M
4M
6M
8M
10M

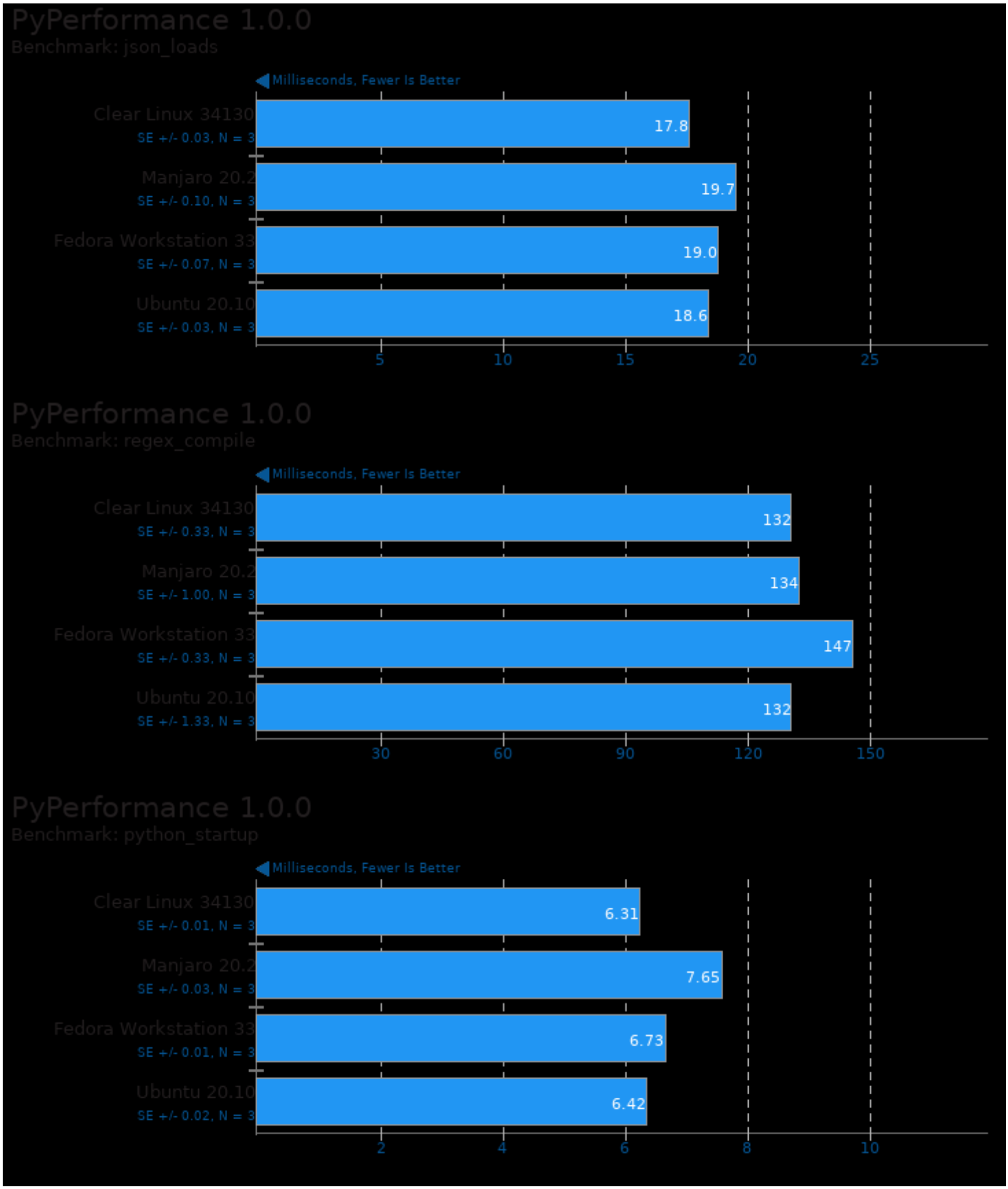
Clear Linux vs Other Distros - Tiger Lake

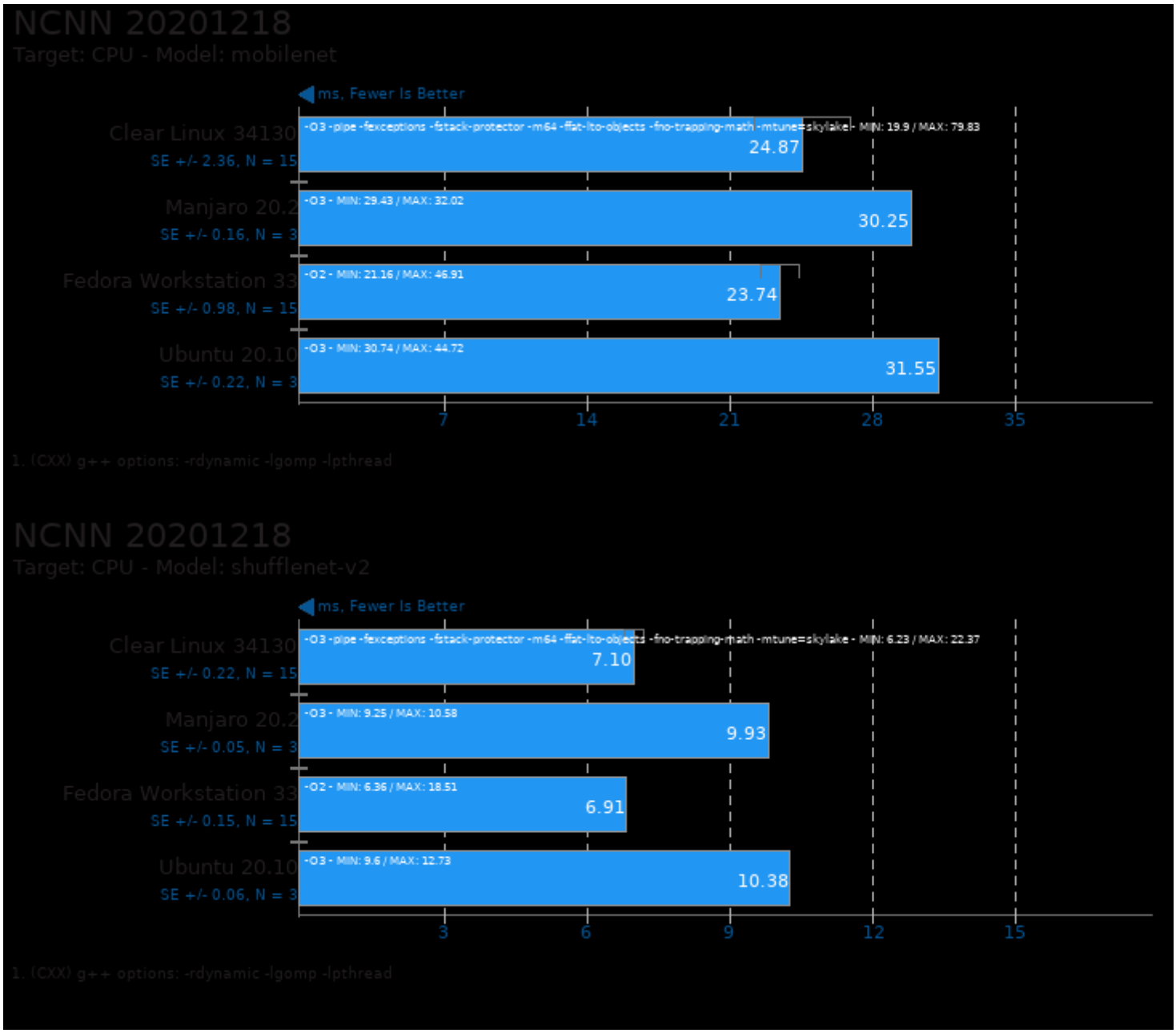


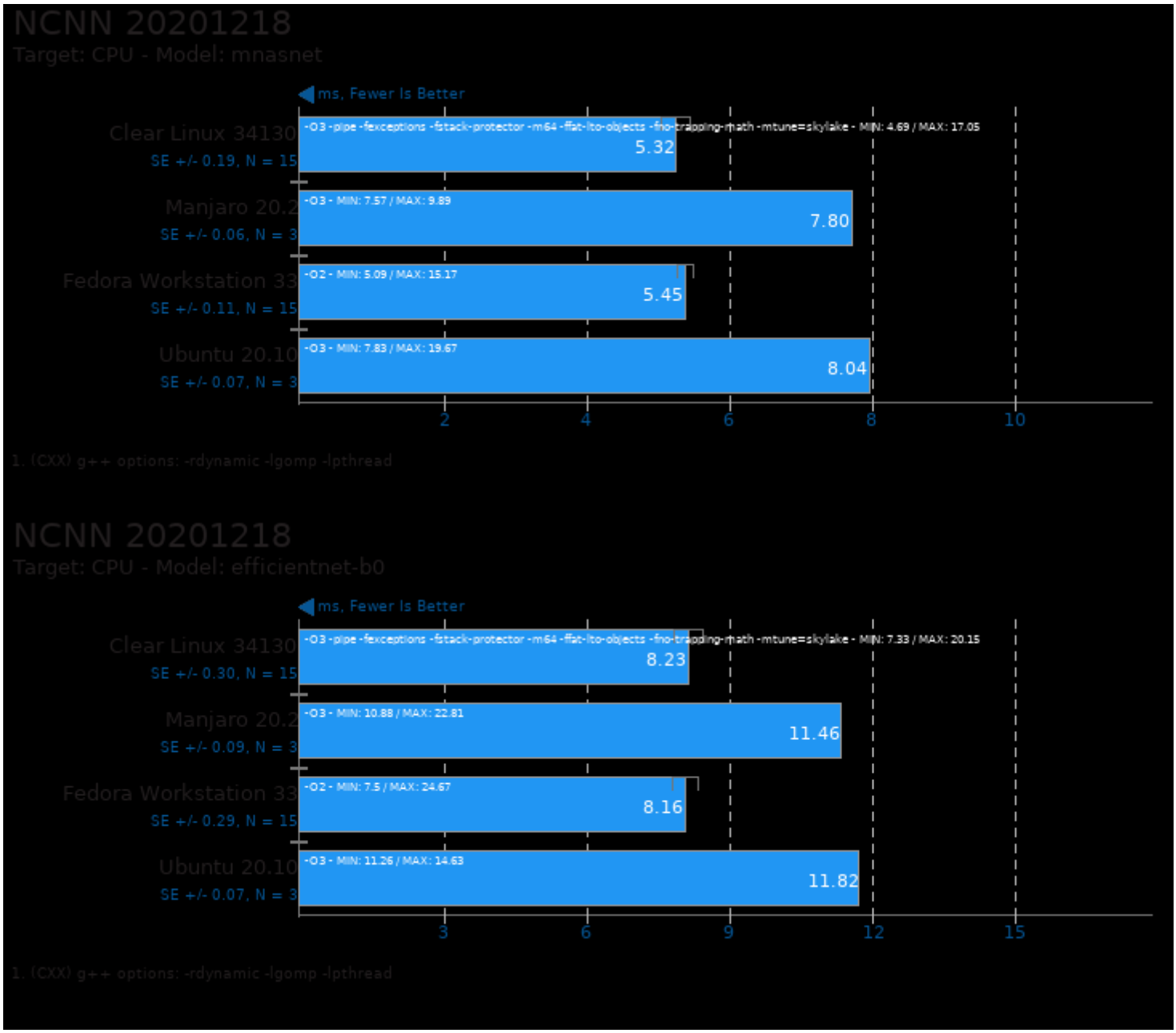
Clear Linux vs Other Distros - Tiger Lake



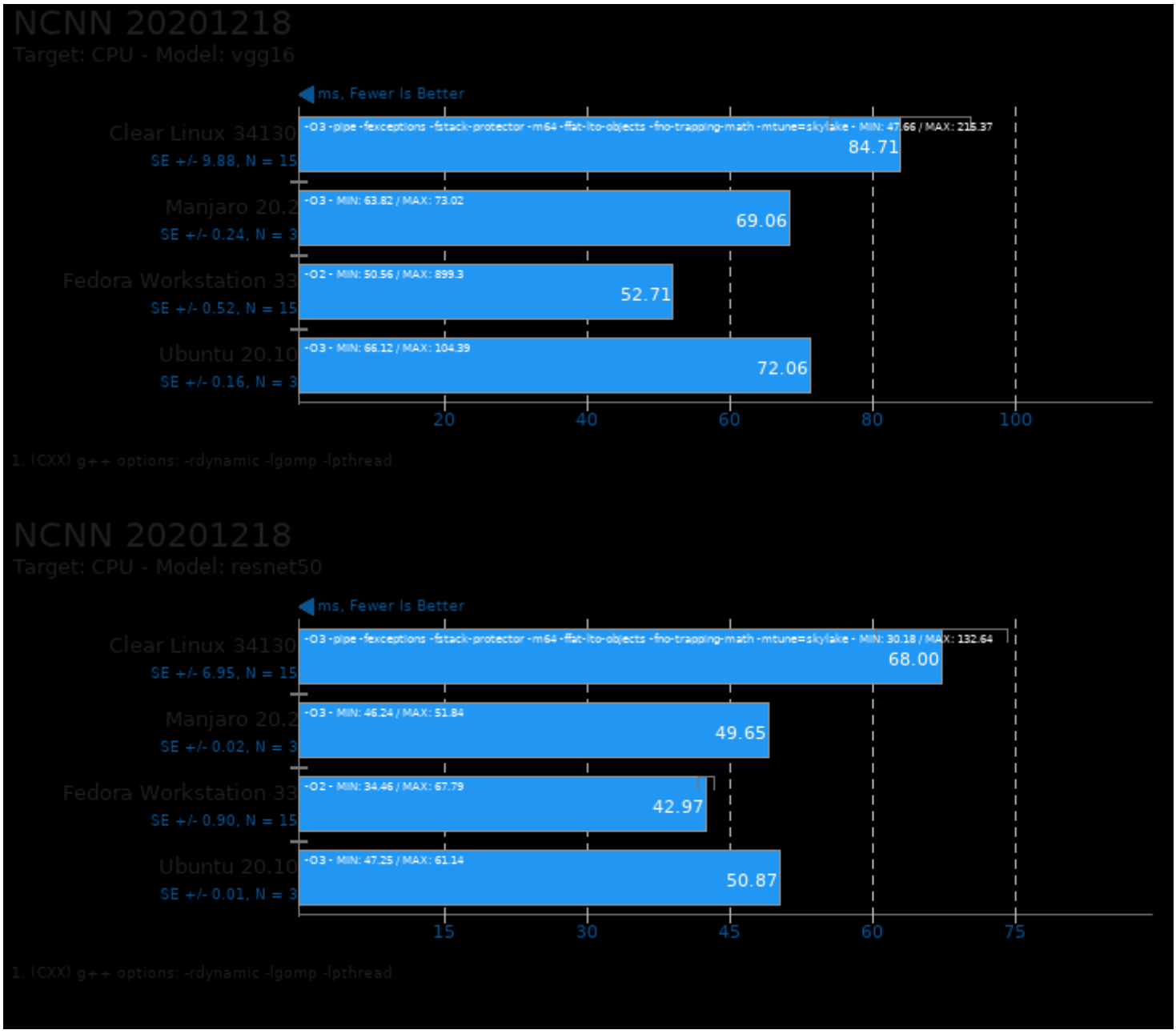
Clear Linux vs Other Distros - Tiger Lake

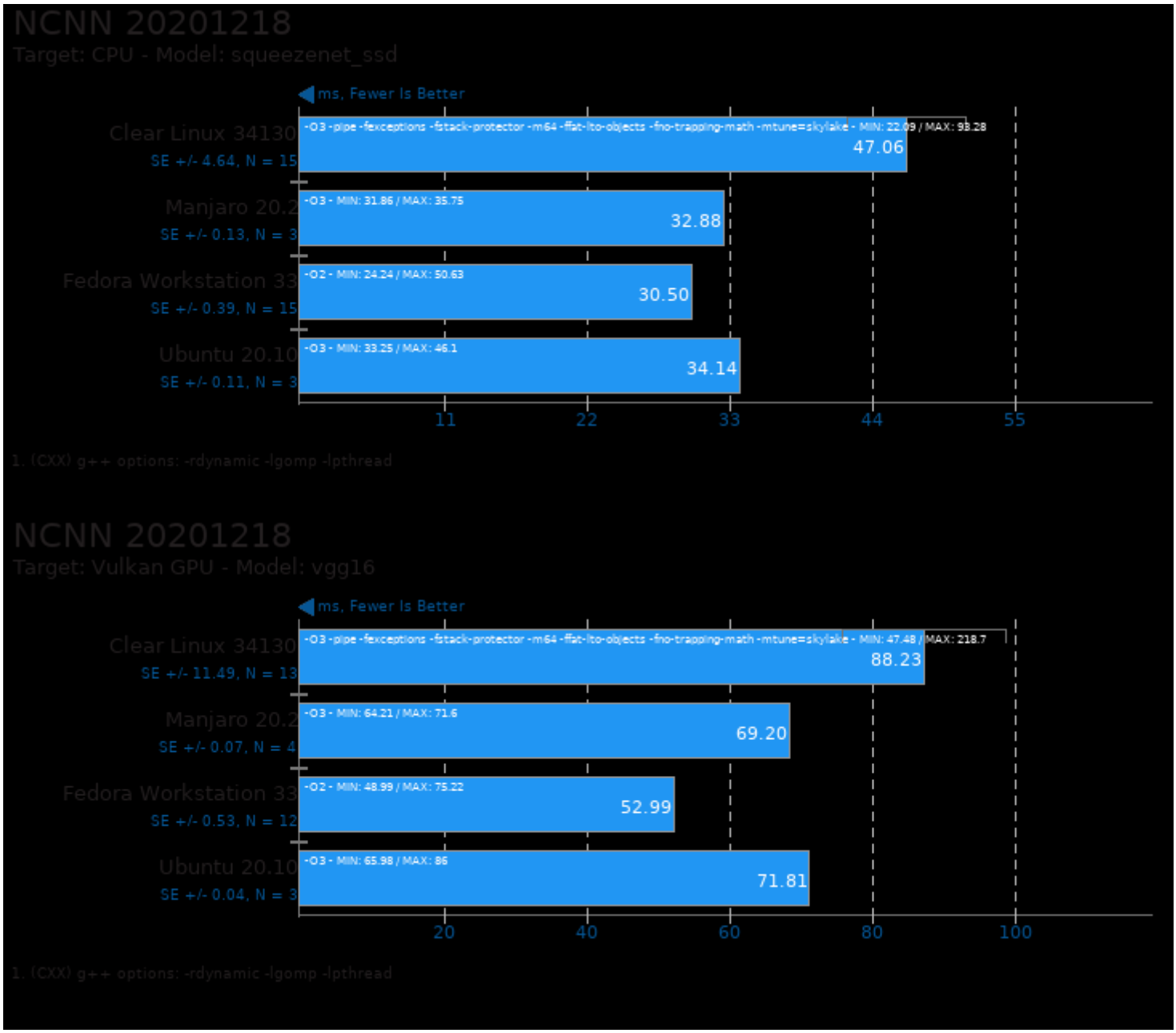



NCNN 20201218
Target: CPU - Model: mobilenet
ms, Fewer Is Better
Clear Linux 34130
SE +/- 2.36, N = 15
-O3 -pipe -fexceptions -fstack-protector -m64 -flat-lto-objects -fno-trapping-math -mtune=skylake - MIN: 19.9 / MAX: 79.83
24.87
Manjaro 20.2
SE +/- 0.16, N = 3
-O3 - MIN: 29.43 / MAX: 32.02
30.25
Fedora Workstation 33
SE +/- 0.98, N = 15
-O2 - MIN: 21.16 / MAX: 46.91
23.74
Ubuntu 20.10
SE +/- 0.22, N = 3
-O3 - MIN: 30.74 / MAX: 44.72
31.55
7
14
21
28
35
1. (CXX) g++ options: -rdynamic -lgomp -lpthread
NCNN 20201218
Target: CPU - Model: shufflenet-v2
ms, Fewer Is Better
Clear Linux 34130
SE +/- 0.22, N = 15
-O3 -pipe -fexceptions -fstack-protector -m64 -flat-lto-objects -fno-trapping-math -mtune=skylake - MIN: 6.23 / MAX: 22.37
7.10
Manjaro 20.2
SE +/- 0.05, N = 3
-O3 - MIN: 9.25 / MAX: 10.58
9.93
Fedora Workstation 33
SE +/- 0.15, N = 15
-O2 - MIN: 6.36 / MAX: 18.51
6.91
Ubuntu 20.10
SE +/- 0.06, N = 3
-O3 - MIN: 9.6 / MAX: 12.73
10.38
3
6
9
12
15
1. (CXX) g++ options: -rdynamic -lgomp -lpthread

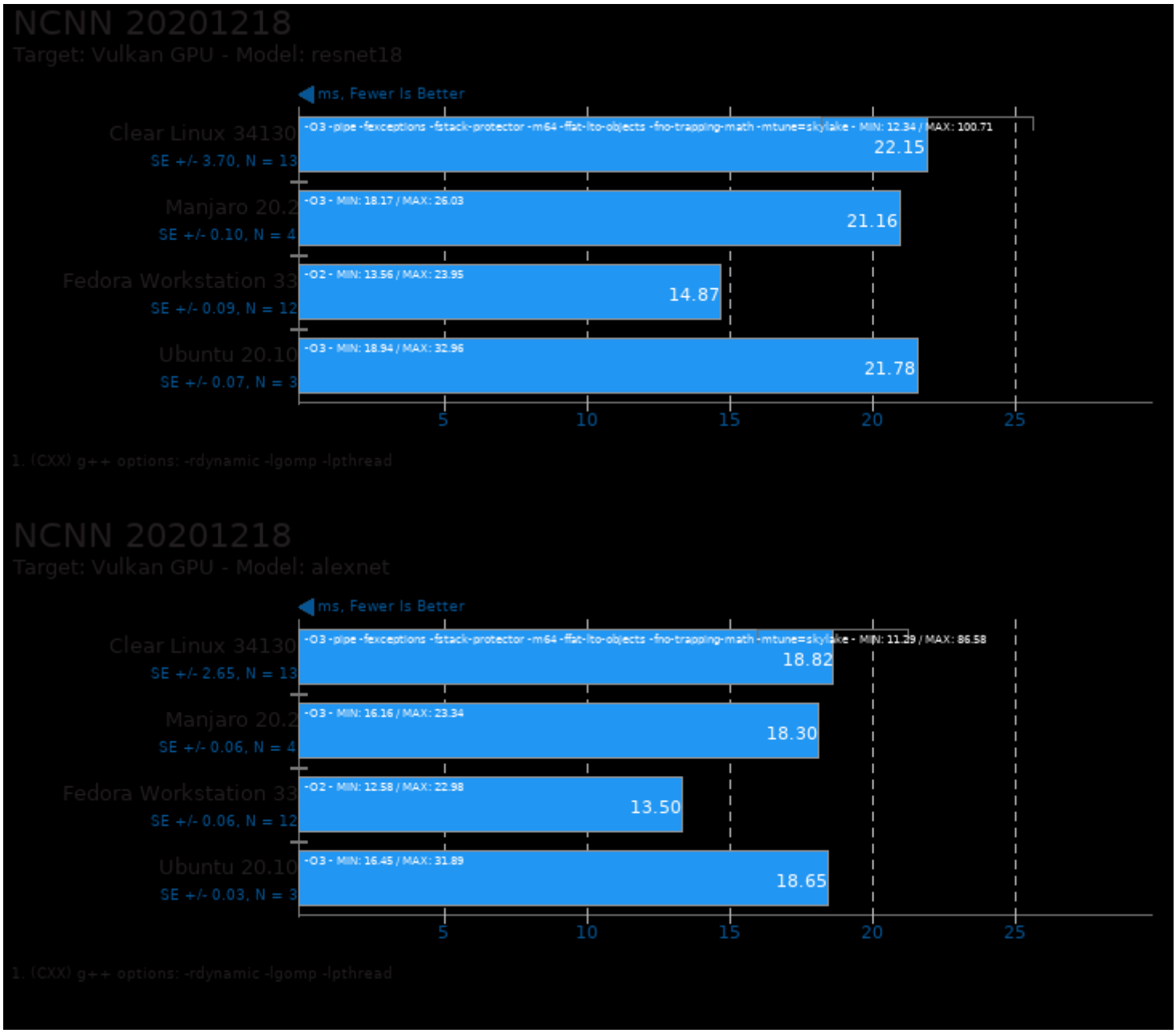

NCNN 20201218
Target: CPU - Model: mnasnet
ms, Fewer Is Better
Clear Linux 34130
SE +/- 0.19, N = 15
-O3 -pipe -fexceptions -fstack-protector -m64 -flat-lto-objects -fno-trapping-math -mtune=skylake - MIN: 4.69 / MAX: 17.05
5.32
Manjaro 20.2
SE +/- 0.06, N = 3
-O3 - MIN: 7.57 / MAX: 9.89
7.80
Fedora Workstation 33
SE +/- 0.11, N = 15
-O2 - MIN: 5.09 / MAX: 15.17
5.45
Ubuntu 20.10
SE +/- 0.07, N = 3
-O3 - MIN: 7.83 / MAX: 19.67
8.04
2
4
6
8
10
1. (CXX) g++ options: -rdynamic -lgomp -lpthread
NCNN 20201218
Target: CPU - Model: efficientnet-b0
ms, Fewer Is Better
Clear Linux 34130
SE +/- 0.30, N = 15
-O3 -pipe -fexceptions -fstack-protector -m64 -flat-lto-objects -fno-trapping-math -mtune=skylake - MIN: 7.33 / MAX: 20.15
8.23
Manjaro 20.2
SE +/- 0.09, N = 3
-O3 - MIN: 10.88 / MAX: 22.81
11.46
Fedora Workstation 33
SE +/- 0.29, N = 15
-O2 - MIN: 7.5 / MAX: 24.67
8.16
Ubuntu 20.10
SE +/- 0.07, N = 3
-O3 - MIN: 11.26 / MAX: 14.63
11.82
3
6
9
12
15
1. (CXX) g++ options: -rdynamic -lgomp -lpthread

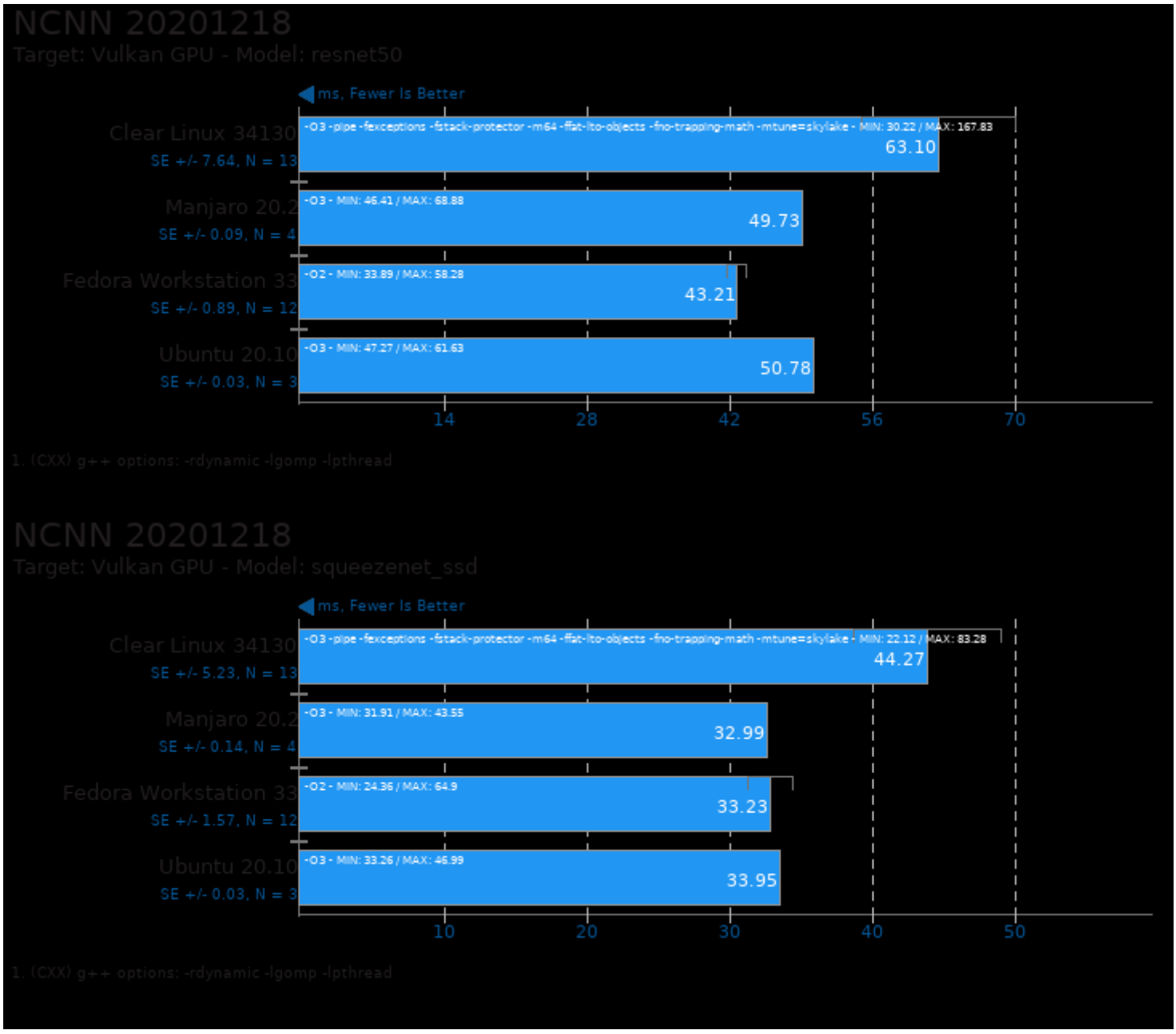
Clear Linux vs Other Distros - Tiger Lake

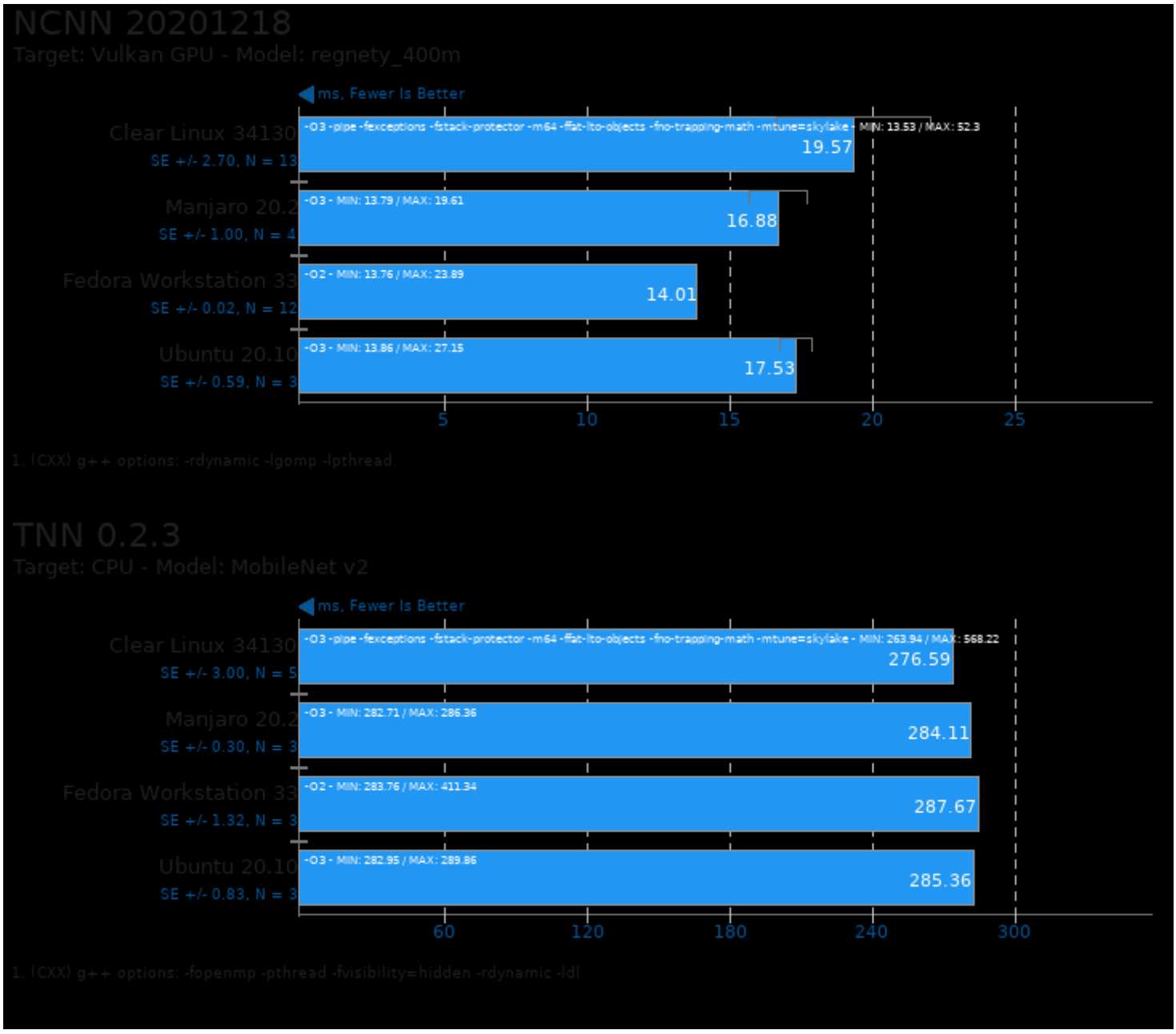


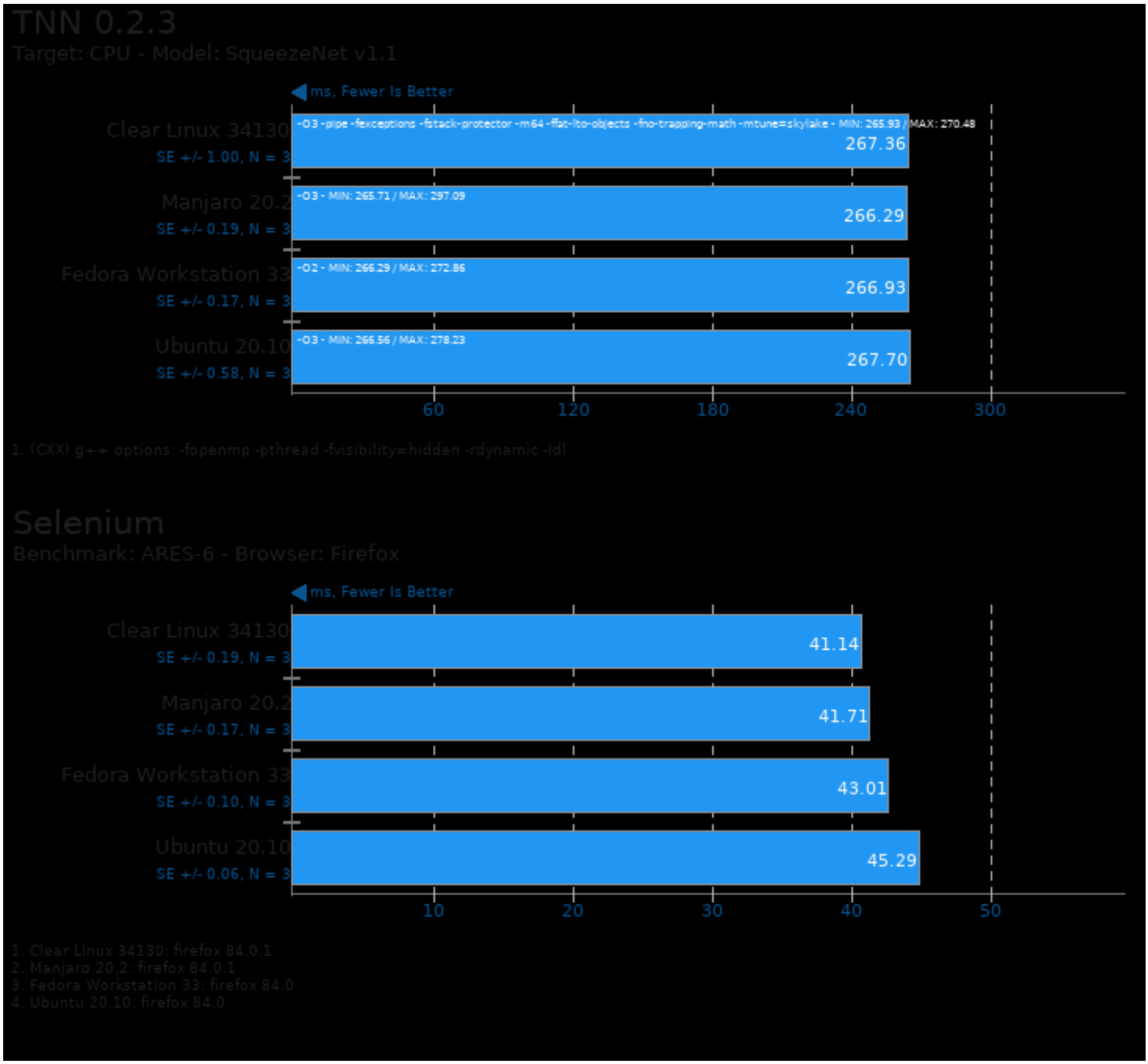

NCNN 20201218
Target: CPU - Model: squeezenet_ssd
ms, Fewer Is Better
Clear Linux 34130
SE +/- 4.64, N = 15
-O3 -pipe -fexceptions -fstack-protector -m64 -ffat-lto-objects -fno-trapping-math -mtune=skylake - MIN: 22.09 / MAX: 98.28
47.06
Manjaro 20.2
SE +/- 0.13, N = 3
-O3 - MIN: 31.86 / MAX: 35.75
32.88
Fedora Workstation 33
SE +/- 0.39, N = 15
-O2 - MIN: 24.24 / MAX: 50.63
30.50
Ubuntu 20.10
SE +/- 0.11, N = 3
-O3 - MIN: 33.25 / MAX: 46.1
34.14
11
22
33
44
55
1. (CXX) g++ options: -rdynamic -lgomp -lpthread
NCNN 20201218
Target: Vulkan GPU - Model: vgg16
ms, Fewer Is Better
Clear Linux 34130
SE +/- 11.49, N = 13
-O3 -pipe -fexceptions -fstack-protector -m64 -ffat-lto-objects -fno-trapping-math -mtune=skylake - MIN: 47.48 / MAX: 218.7
88.23
Manjaro 20.2
SE +/- 0.07, N = 4
-O3 - MIN: 64.21 / MAX: 71.6
69.20
Fedora Workstation 33
SE +/- 0.53, N = 12
-O2 - MIN: 48.99 / MAX: 75.22
52.99
Ubuntu 20.10
SE +/- 0.04, N = 3
-O3 - MIN: 65.98 / MAX: 86
71.81
20
40
60
80
100
1. (CXX) g++ options: -rdynamic -lgomp -lpthread

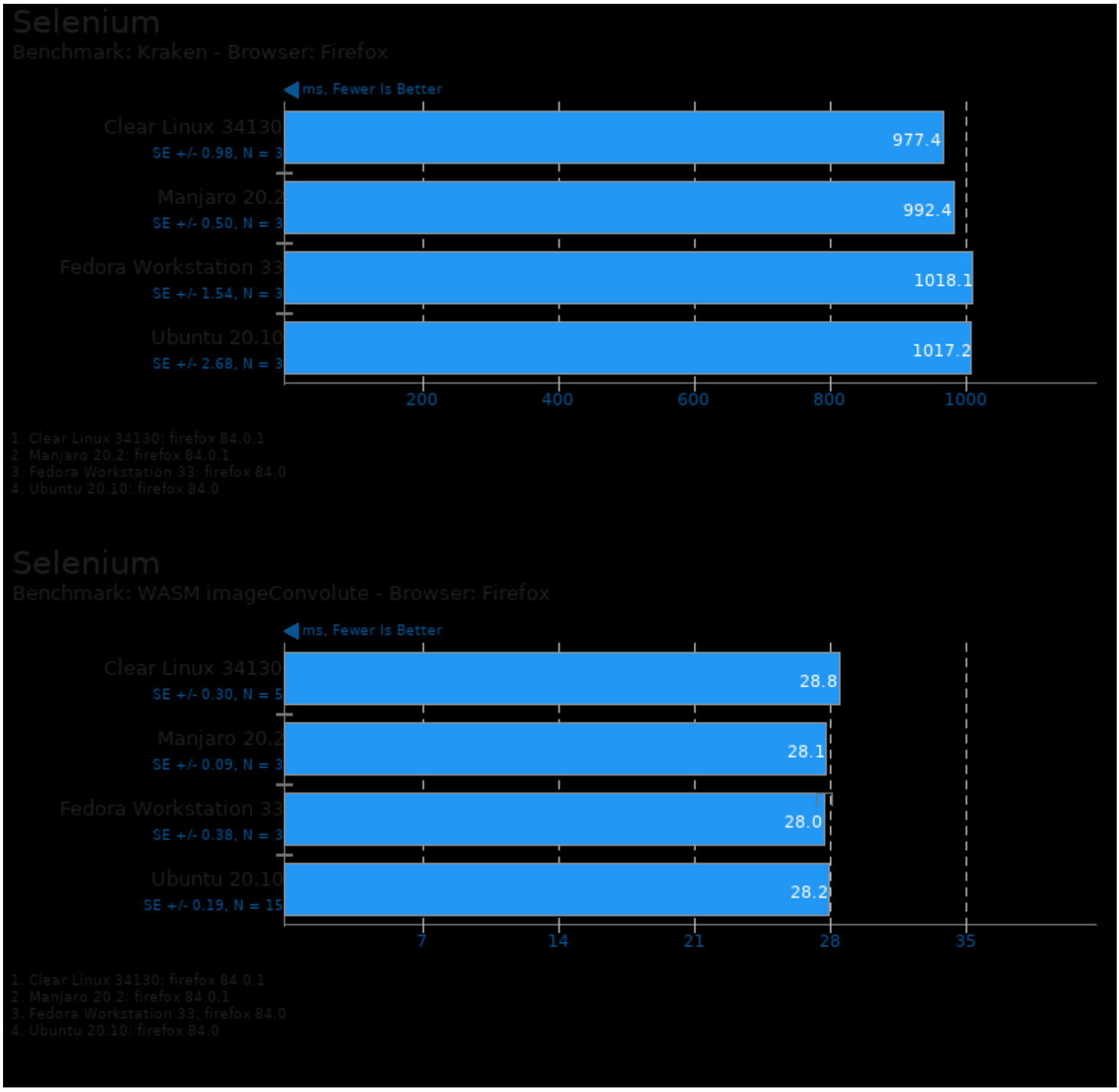
Clear Linux vs Other Distros - Tiger Lake

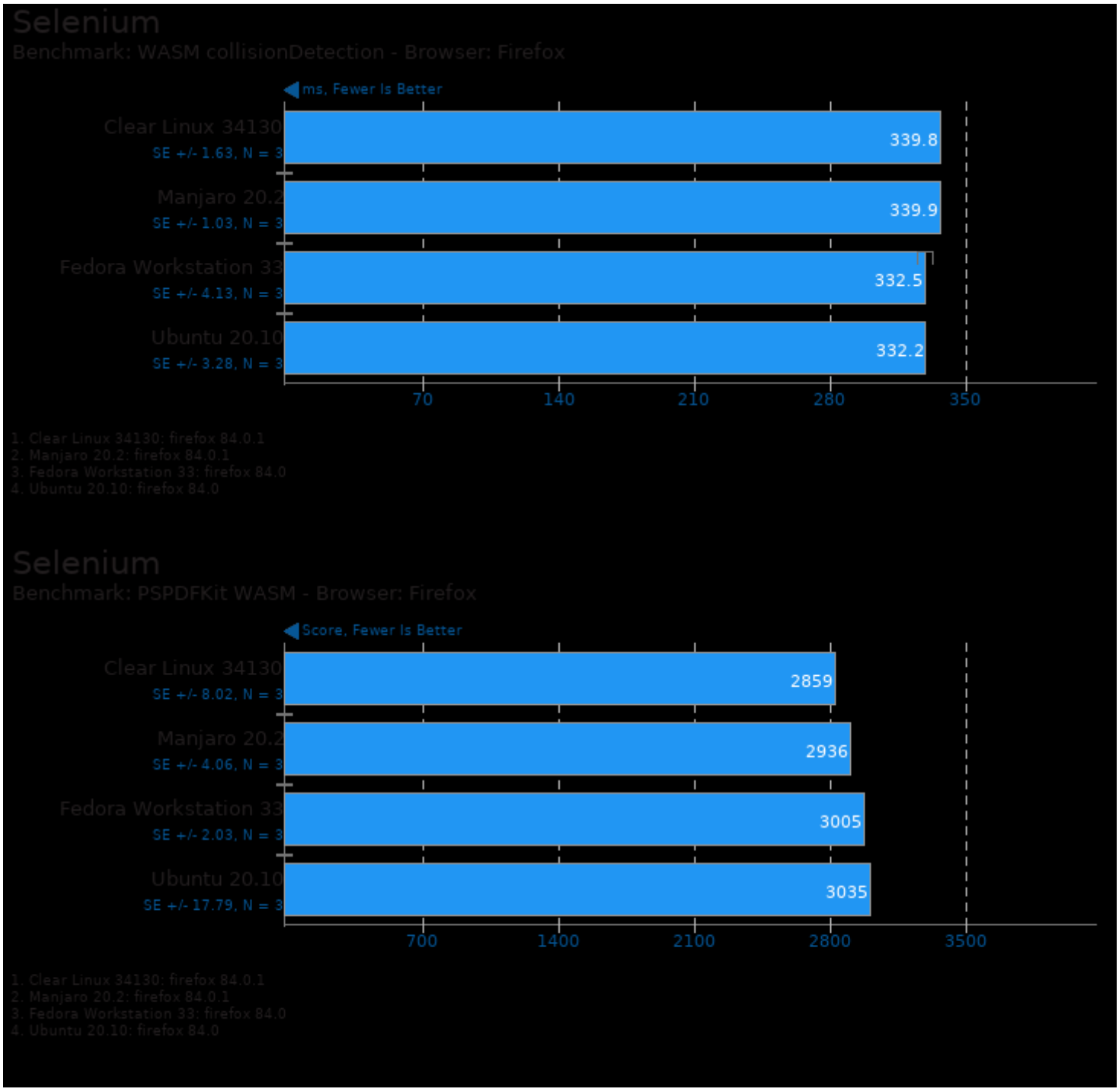



NCNN 20201218
Target: Vulkan GPU - Model: resnet50
ms, Fewer Is Better
Clear Linux 34130
SE +/- 7.64, N = 13
-O3 -pipe -fexceptions -fstack-protector -m64 -ffat-lto-objects -fno-trapping-math -mtune=skylake - MIN: 30.22 / MAX: 167.83
63.10
Manjaro 20.2
SE +/- 0.09, N = 4
-O3 - MIN: 46.41 / MAX: 68.88
49.73
Fedora Workstation 33
SE +/- 0.89, N = 12
-O2 - MIN: 33.89 / MAX: 58.28
43.21
Ubuntu 20.10
SE +/- 0.03, N = 3
-O3 - MIN: 47.27 / MAX: 61.63
50.78
14
28
42
56
70
1. (CXX) g++ options: -rdynamic -lgomp -lpthread
NCNN 20201218
Target: Vulkan GPU - Model: squeezenet_ssd
ms, Fewer Is Better
Clear Linux 34130
SE +/- 5.23, N = 13
-O3 -pipe -fexceptions -fstack-protector -m64 -ffat-lto-objects -fno-trapping-math -mtune=skylake - MIN: 22.12 / MAX: 83.28
44.27
Manjaro 20.2
SE +/- 0.14, N = 4
-O3 - MIN: 31.91 / MAX: 43.55
32.99
Fedora Workstation 33
SE +/- 1.57, N = 12
-O2 - MIN: 24.36 / MAX: 64.9
33.23
Ubuntu 20.10
SE +/- 0.03, N = 3
-O3 - MIN: 33.26 / MAX: 46.99
33.95
10
20
30
40
50
1. (CXX) g++ options: -rdynamic -lgomp -lpthread

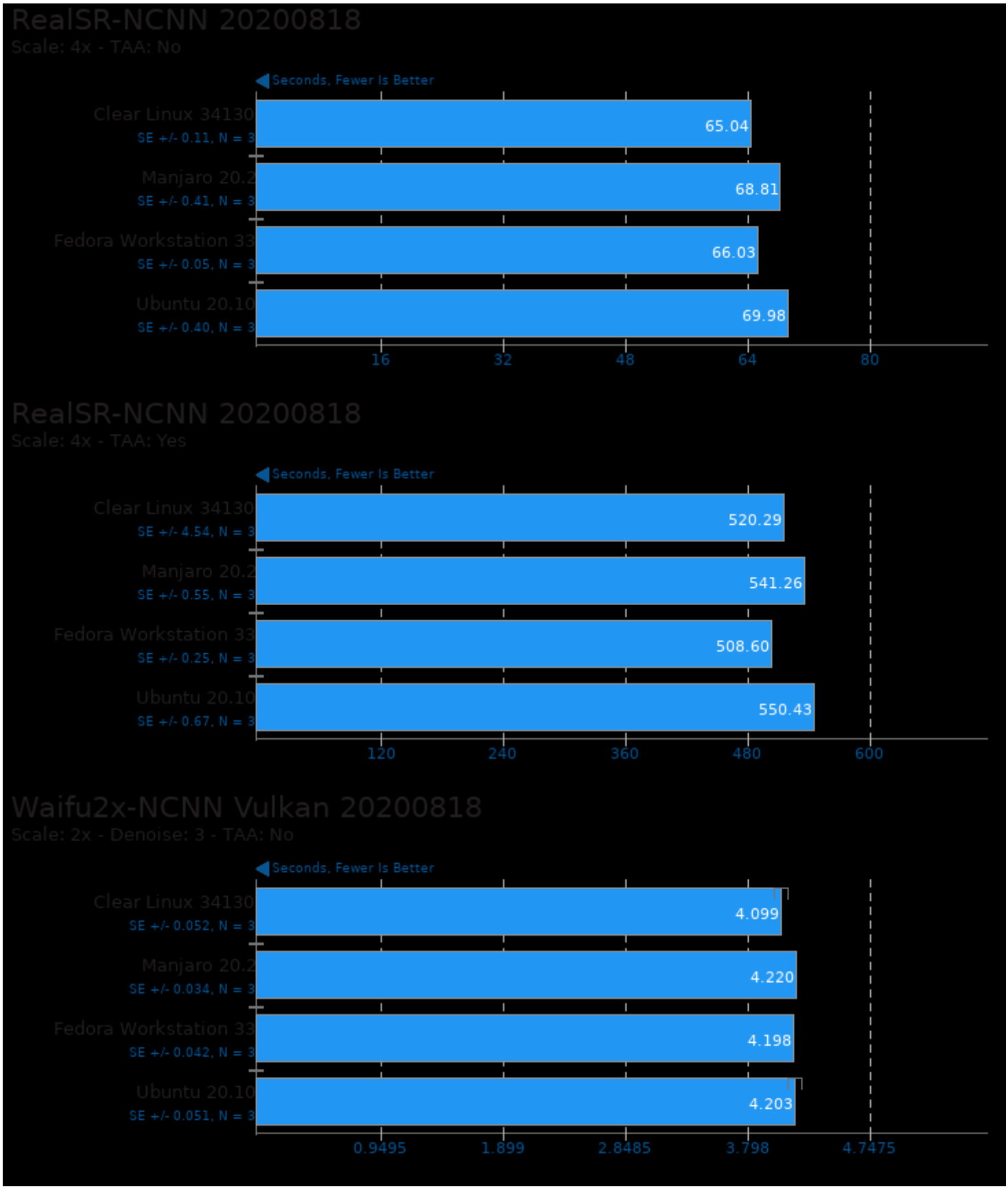

NCNN 20201218
Target: Vulkan GPU - Model: regnety_400m
ms, Fewer Is Better
Clear Linux 34130
SE +/- 2.70, N = 13
-O3 -pipe -fexceptions -fstack-protector -m64 -ffat-lto-objects -fno-trapping-math -mtune=skylake - MIN: 13.53 / MAX: 52.3
19.57
Manjaro 20.2
SE +/- 1.00, N = 4
-O3 - MIN: 13.79 / MAX: 19.61
16.88
Fedora Workstation 33
SE +/- 0.02, N = 12
-O2 - MIN: 13.76 / MAX: 23.89
14.01
Ubuntu 20.10
SE +/- 0.59, N = 3
-O3 - MIN: 13.86 / MAX: 27.15
17.53
5
10
15
20
25
1. (CXX) g++ options: -rdynamic -lgomp -lpthread
TNN 0.2.3
Target: CPU - Model: MobileNet v2
ms, Fewer Is Better
Clear Linux 34130
SE +/- 3.00, N = 5
-O3 -pipe -fexceptions -fstack-protector -m64 -ffat-lto-objects -fno-trapping-math -mtune=skylake - MIN: 263.94 / MAX: 568.22
276.59
Manjaro 20.2
SE +/- 0.30, N = 3
-O3 - MIN: 282.71 / MAX: 286.36
284.11
Fedora Workstation 33
SE +/- 1.32, N = 3
-O2 - MIN: 283.76 / MAX: 411.34
287.67
Ubuntu 20.10
SE +/- 0.83, N = 3
-O3 - MIN: 282.95 / MAX: 289.86
285.36
60
120
180
240
300
1. (CXX) g++ options: -fopenmp -pthread -fvisibility=hidden -rdynamic -ldl


TNN 0.2.3
Target: CPU - Model: SqueezeNet v1.1
ms, Fewer Is Better
Clear Linux 34130
SE +/- 1.00, N = 3
-O3 -pipe -fexceptions -fstack-protector -m64 -ffat-lto-objects -fno-trapping-math -mtune=skylake - MIN: 265.93 / MAX: 270.48
267.36
Manjaro 20.2
SE +/- 0.19, N = 3
-O3 - MIN: 265.71 / MAX: 297.09
266.29
Fedora Workstation 33
SE +/- 0.17, N = 3
-O2 - MIN: 266.29 / MAX: 272.86
266.93
Ubuntu 20.10
SE +/- 0.58, N = 3
-O3 - MIN: 266.56 / MAX: 278.23
267.70
60
120
180
240
300
1. (CXX) g++ options: -fopenmp -pthread -fvisibility=hidden -rdynamic -ldl
Selenium
Benchmark: ARES-6 - Browser: Firefox
ms, Fewer Is Better
Clear Linux 34130
SE +/- 0.19, N = 3
41.14
Manjaro 20.2
SE +/- 0.17, N = 3
41.71
Fedora Workstation 33
SE +/- 0.10, N = 3
43.01
Ubuntu 20.10
SE +/- 0.06, N = 3
45.29
10
20
30
40
50
1. Clear Linux 34130: firefox 84.0.1
2. Manjaro 20.2: firefox 84.0.1
3. Fedora Workstation 33: firefox 84.0
4. Ubuntu 20.10: firefox 84.0

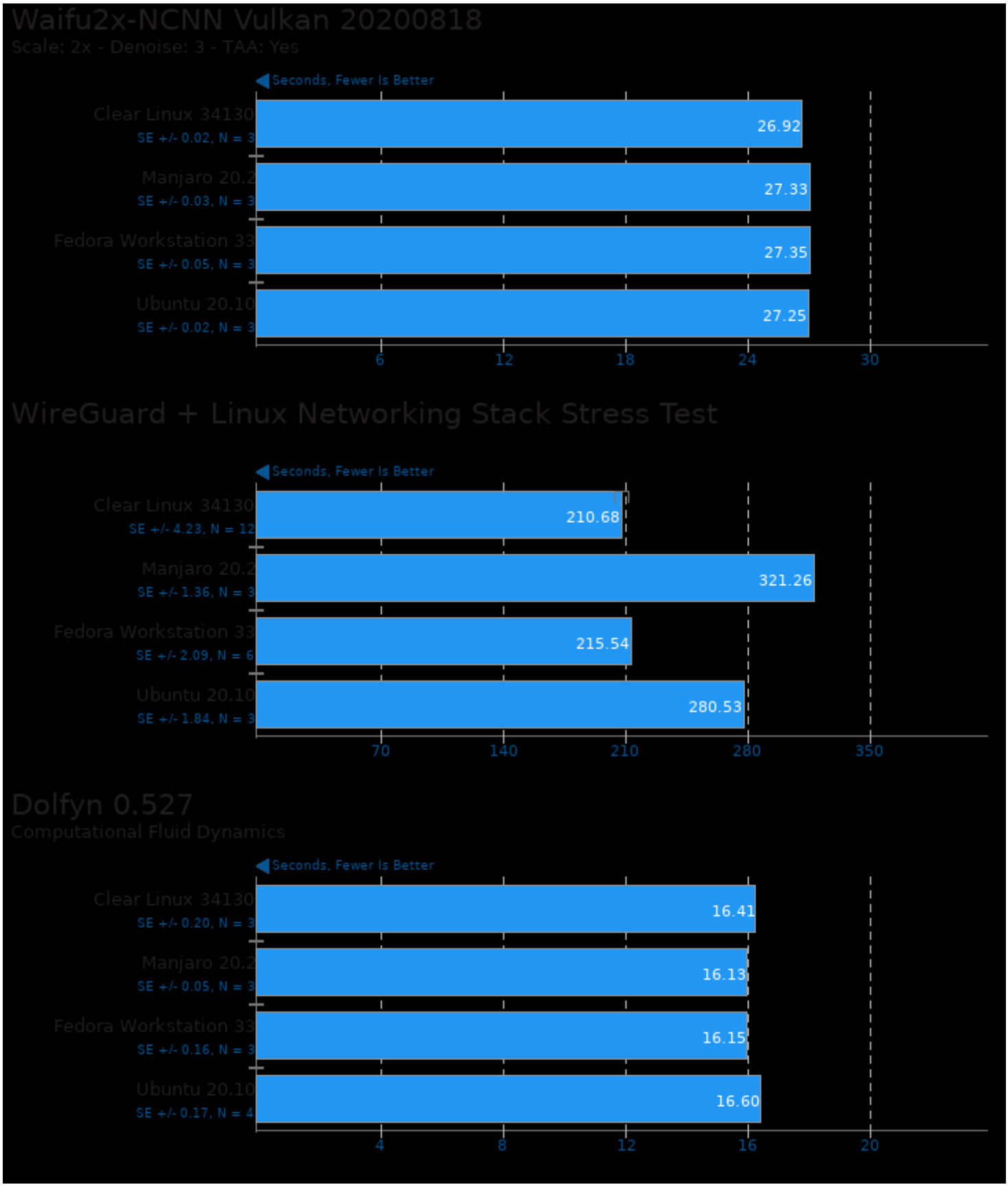

Selenium
Benchmark: Kraken - Browser: Firefox
ms, Fewer Is Better
Clear Linux 34130
SE +/- 0.98, N = 3
977.4
Manjaro 20.2
SE +/- 0.50, N = 3
992.4
Fedora Workstation 33
SE +/- 1.54, N = 3
1018.1
Ubuntu 20.10
SE +/- 2.68, N = 3
1017.2
200
400
600
800
1000
1. Clear Linux 34130: firefox 84.0.1
2. Manjaro 20.2: firefox 84.0.1
3. Fedora Workstation 33: firefox 84.0
4. Ubuntu 20.10: firefox 84.0
Selenium
Benchmark: WASM imageConvolute - Browser: Firefox
ms, Fewer Is Better
Clear Linux 34130
SE +/- 0.30, N = 5
28.8
Manjaro 20.2
SE +/- 0.09, N = 3
28.1
Fedora Workstation 33
SE +/- 0.38, N = 3
28.0
Ubuntu 20.10
SE +/- 0.19, N = 15
28.2
7
14
21
28
35
1. Clear Linux 34130: firefox 84.0.1
2. Manjaro 20.2: firefox 84.0.1
3. Fedora Workstation 33: firefox 84.0
4. Ubuntu 20.10: firefox 84.0

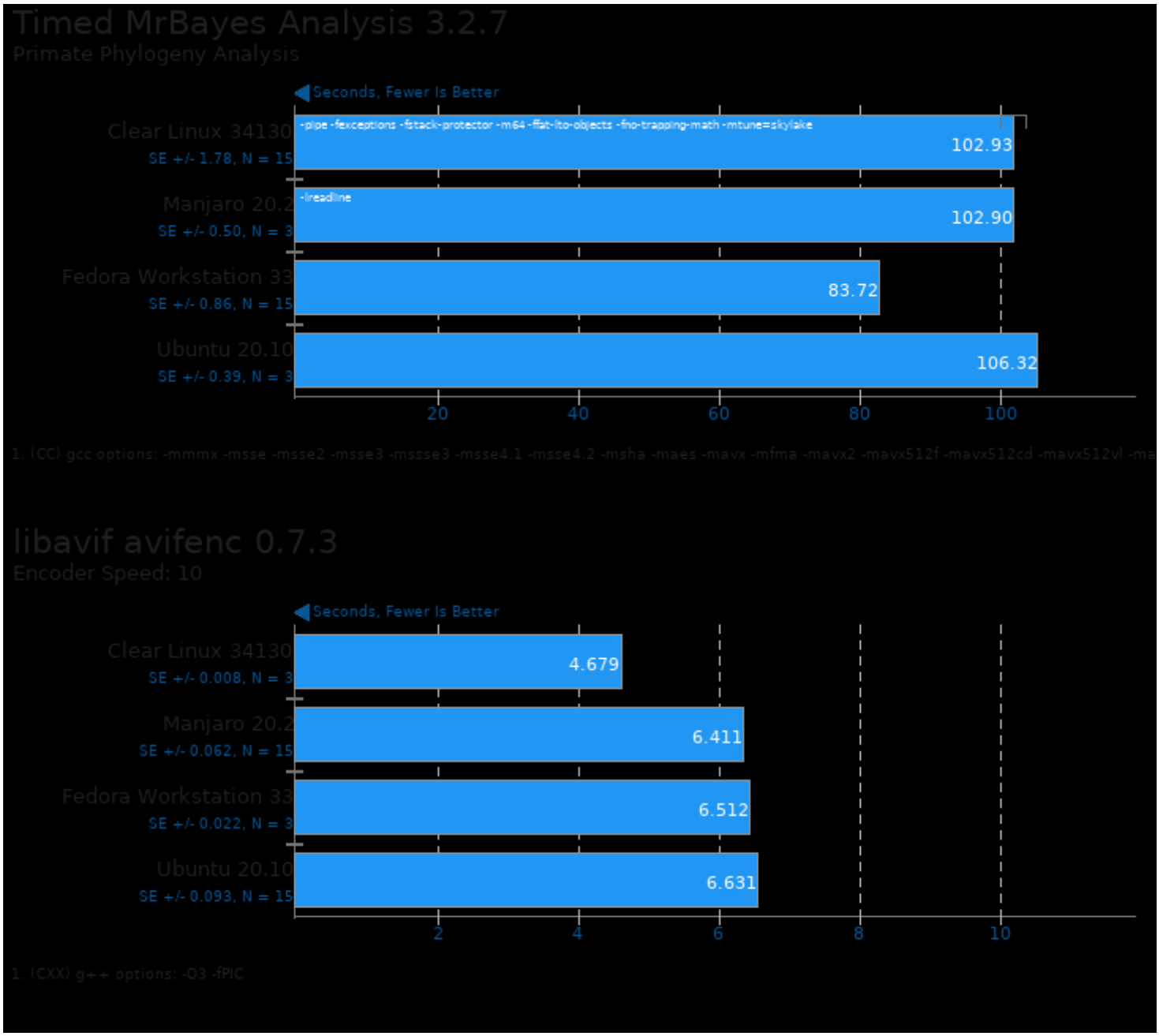

Selenium
Benchmark: WASM collisionDetection - Browser: Firefox
ms, Fewer Is Better
Clear Linux 34130
SE +/- 1.63, N = 3
339.8
Manjaro 20.2
SE +/- 1.03, N = 3
339.9
Fedora Workstation 33
SE +/- 4.13, N = 3
332.5
Ubuntu 20.10
SE +/- 3.28, N = 3
332.2
70
140
210
280
350
1. Clear Linux 34130: firefox 84.0.1
2. Manjaro 20.2: firefox 84.0.1
3. Fedora Workstation 33: firefox 84.0
4. Ubuntu 20.10: firefox 84.0
Selenium
Benchmark: PSPDFKit WASM - Browser: Firefox
Score, Fewer Is Better
Clear Linux 34130
SE +/- 8.02, N = 3
2859
Manjaro 20.2
SE +/- 4.06, N = 3
2936
Fedora Workstation 33
SE +/- 2.03, N = 3
3005
Ubuntu 20.10
SE +/- 17.79, N = 3
3035
700
1400
2100
2800
3500
1. Clear Linux 34130: firefox 84.0.1
2. Manjaro 20.2: firefox 84.0.1
3. Fedora Workstation 33: firefox 84.0
4. Ubuntu 20.10: firefox 84.0

Clear Linux vs Other Distros - Tiger Lake

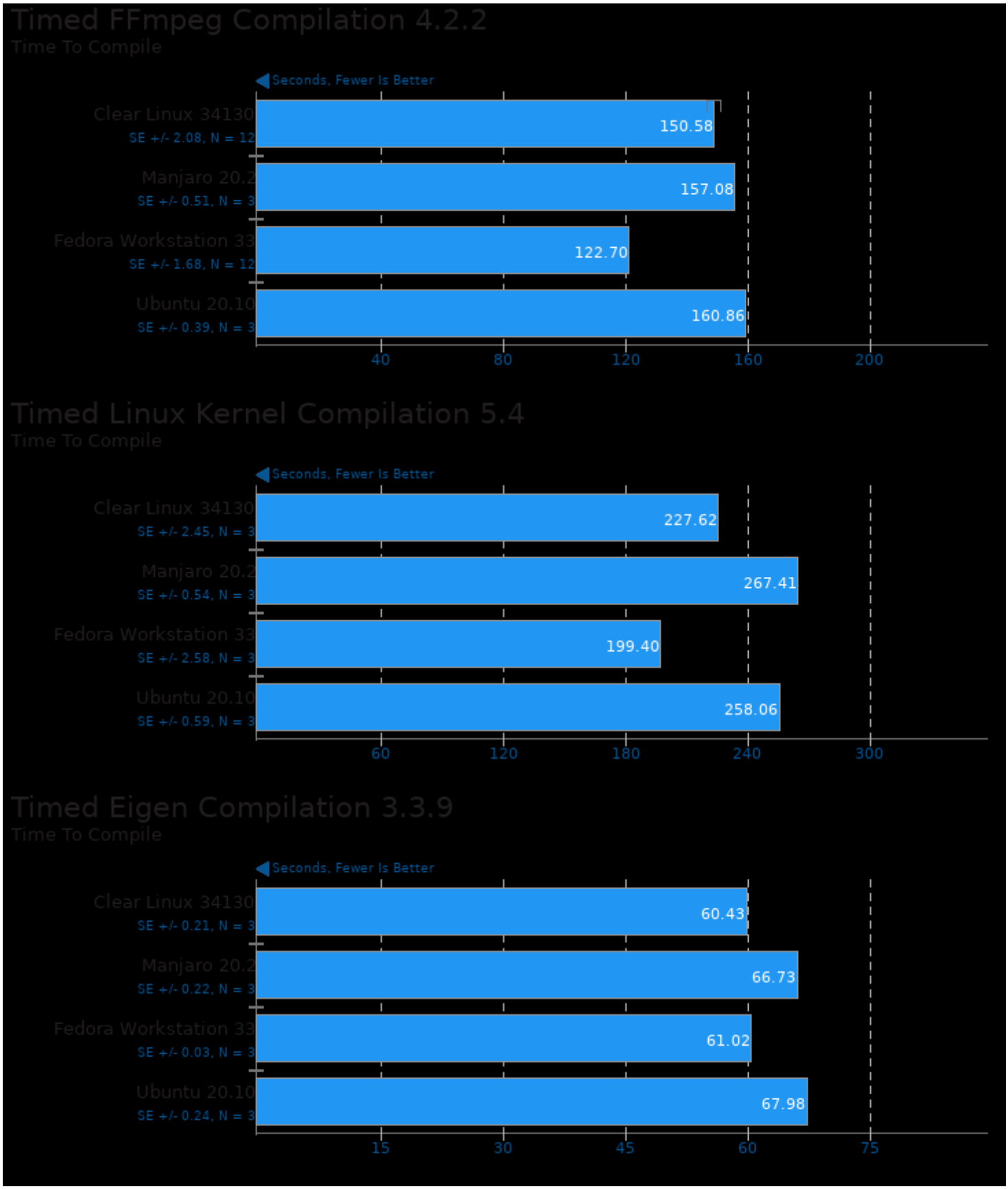


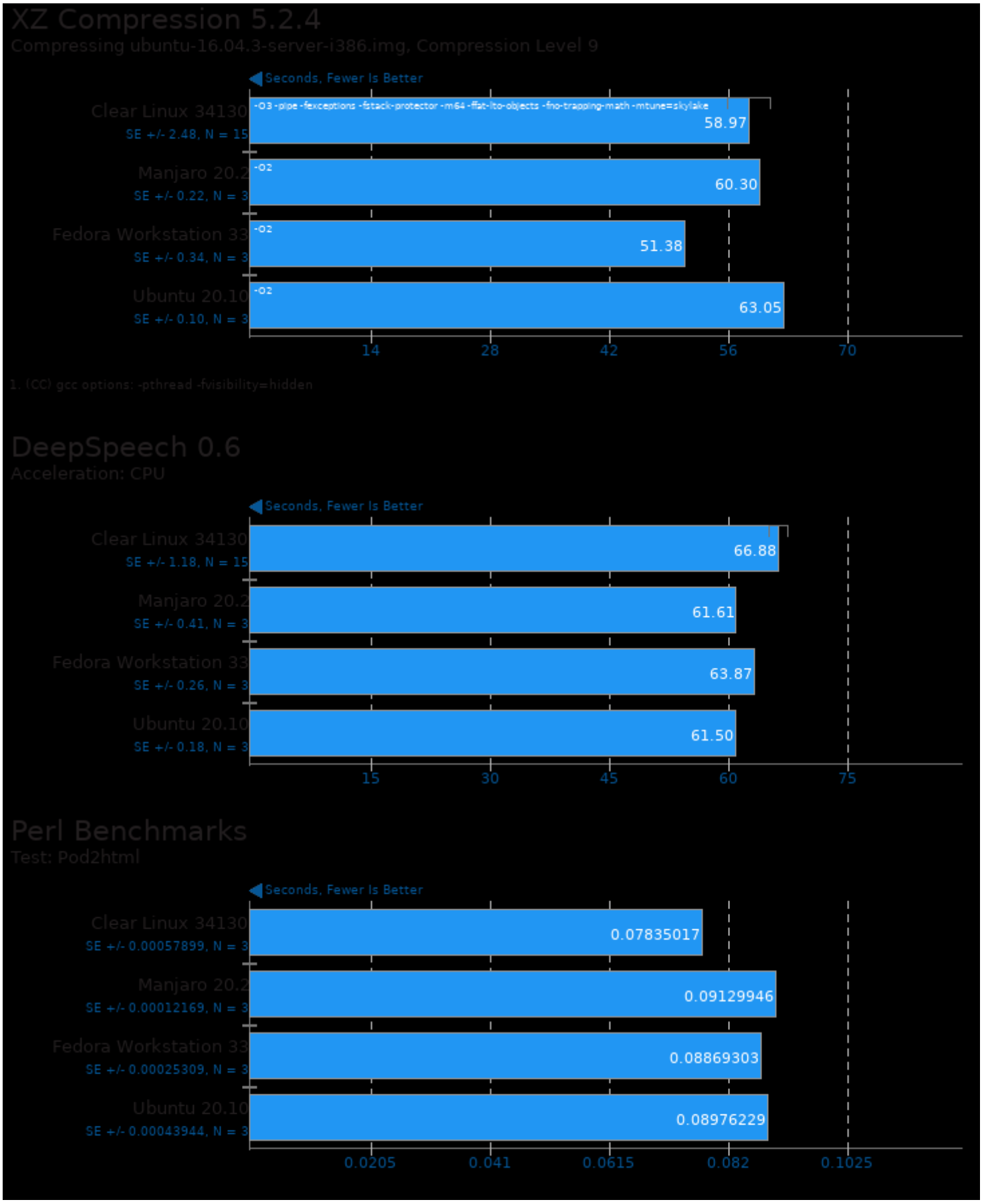
Clear Linux vs Other Distros - Tiger Lake




Timed MrBayes Analysis 3.2.7
Primate Phylogeny Analysis
Seconds, Fewer Is Better
Clear Linux 34130
SE +/- 1.78, N = 15
-pipe -fexceptions -fstack-protector -m64 -flat-lto-objects -fno-trapping-math -mtune=skylake
102.93
Manjaro 20.2
SE +/- 0.50, N = 3
-lreadline
102.90
Fedora Workstation 33
SE +/- 0.86, N = 15
83.72
Ubuntu 20.10
SE +/- 0.39, N = 3
106.32
20
40
60
80
100
1. (CC) gcc options: -mmmx -msse -msse2 -msse3 -mssse3 -msse4.1 -msse4.2 -msha -maes -mavx -mfma -mavx2 -mavx512f -mavx512cd -mavx512vl
libavif avifenc 0.7.3
Encoder Speed: 10
Seconds, Fewer Is Better
Clear Linux 34130
SE +/- 0.008, N = 3
4.679
Manjaro 20.2
SE +/- 0.062, N = 15
6.411
Fedora Workstation 33
SE +/- 0.022, N = 3
6.512
Ubuntu 20.10
SE +/- 0.093, N = 15
6.631
2
4
6
8
10
1. (CXX) g++ options: -O3 -fPIC

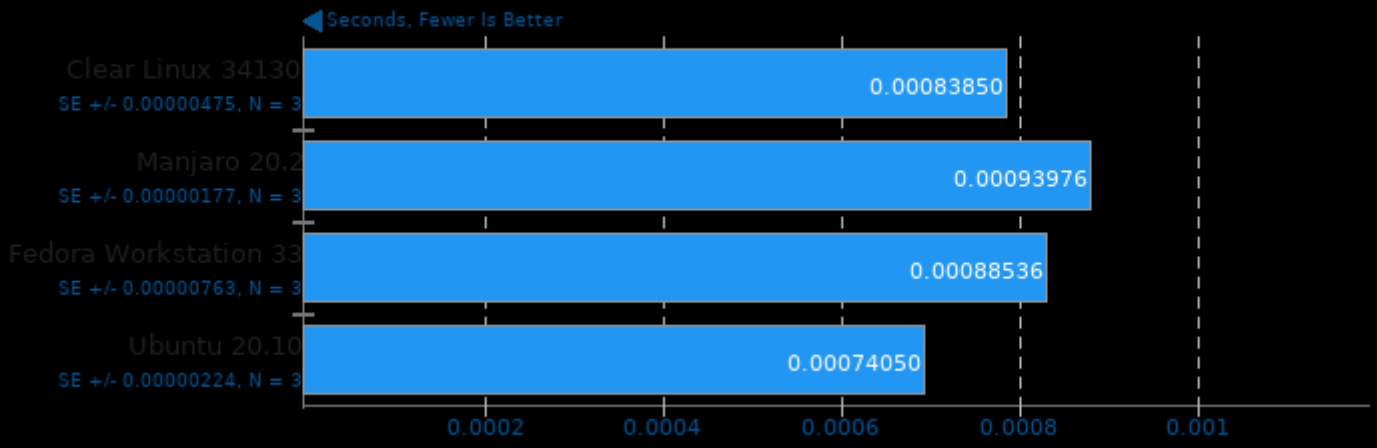
Clear Linux vs Other Distros - Tiger Lake




XZ Compression 5.2.4
Compressing ubuntu-16.04.3-server-i386.img, Compression Level 9
Seconds, Fewer Is Better
Clear Linux 34130
SE +/- 2.48, N = 15
-O3 -pipe -fexceptions -fstack-protector -m64 -ffat-lto-objects -fno-trapping-math -mtune=skylake
58.97
Manjaro 20.2
SE +/- 0.22, N = 3
-O2
60.30
Fedora Workstation 33
SE +/- 0.34, N = 3
-O2
51.38
Ubuntu 20.10
SE +/- 0.10, N = 3
-O2
63.05
14
28
42
56
70
1. (CC) gcc options: -pthread -fvisibility=hidden
DeepSpeech 0.6
Acceleration: CPU
Seconds, Fewer Is Better
Clear Linux 34130
SE +/- 1.18, N = 15
66.88
Manjaro 20.2
SE +/- 0.41, N = 3
61.61
Fedora Workstation 33
SE +/- 0.26, N = 3
63.87
Ubuntu 20.10
SE +/- 0.18, N = 3
61.50
15
30
45
60
75
Perl Benchmarks
Test: Pod2html
Seconds, Fewer Is Better
Clear Linux 34130
SE +/- 0.00057899, N = 3
0.07835017
Manjaro 20.2
SE +/- 0.00012169, N = 3
0.09129946
Fedora Workstation 33
SE +/- 0.00025309, N = 3
0.08869303
Ubuntu 20.10
SE +/- 0.00043944, N = 3
0.08976229
0.0205
0.041
0.0615
0.082
0.1025

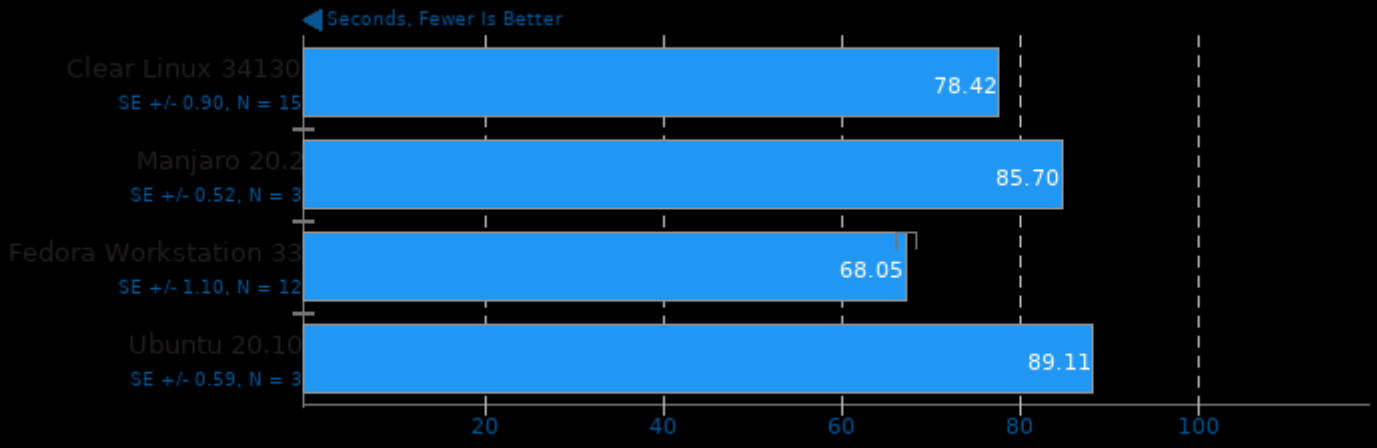
Perl Benchmarks

Test: Interpreter



ASTC Encoder 2.0

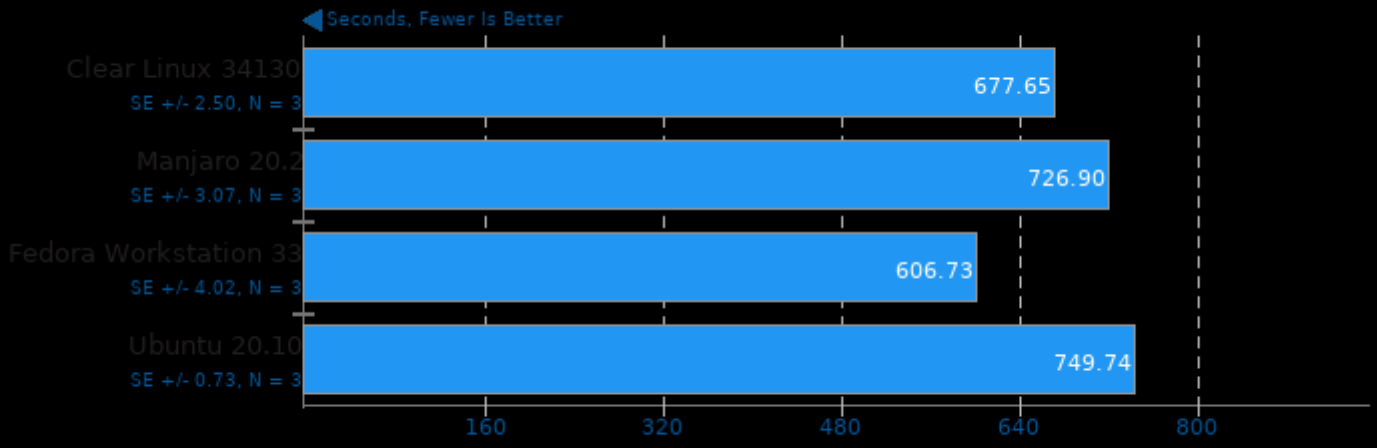
Preset: Thorough



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

ASTC Encoder 2.0

Preset: Exhaustive

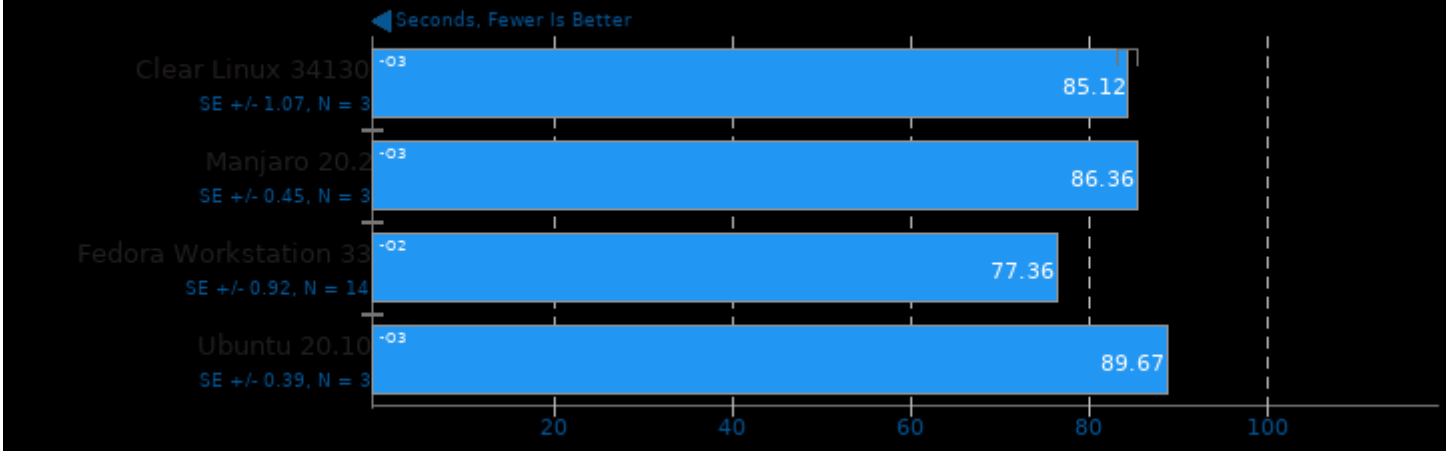


1. (CXX) g++ options: -std=c++14 -fvisibility=hidden -O3 -flto -mfpmath=sse -mavx2 -mpopcnt -lpthread

Clear Linux vs Other Distros - Tiger Lake

Basis Universal 1.12

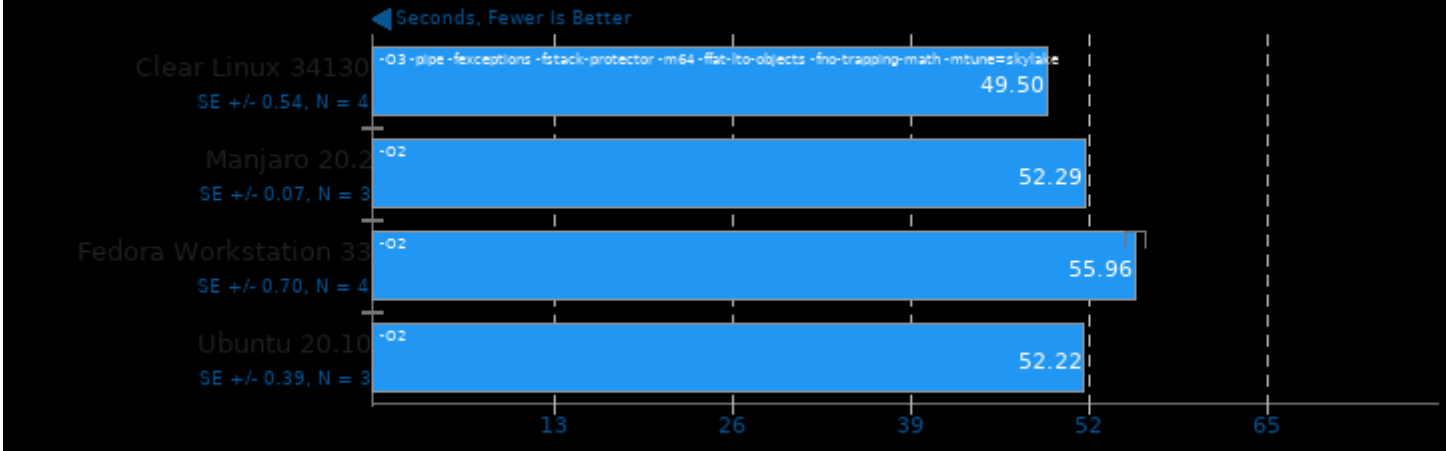
Settings: UASTC Level 2



1. (CXX) g++ options: -std=c++11 -fvisibility=hidden -fPIC -fno-strict-aliasing -rdynamic -lm -lpthread

SQLite Speedtest 3.30

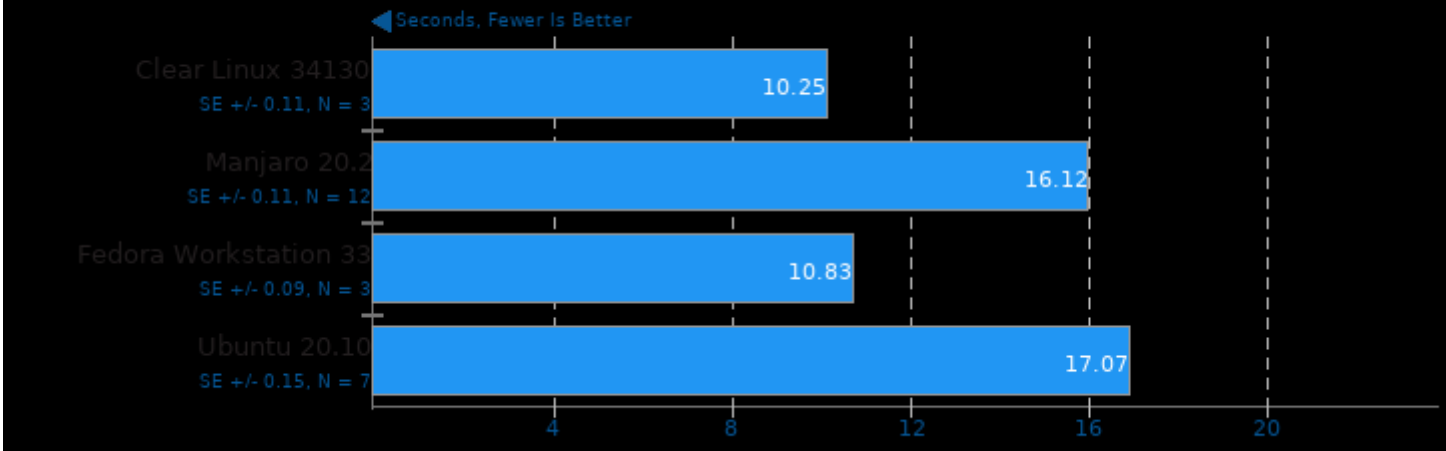
Timed Time - Size 1,000



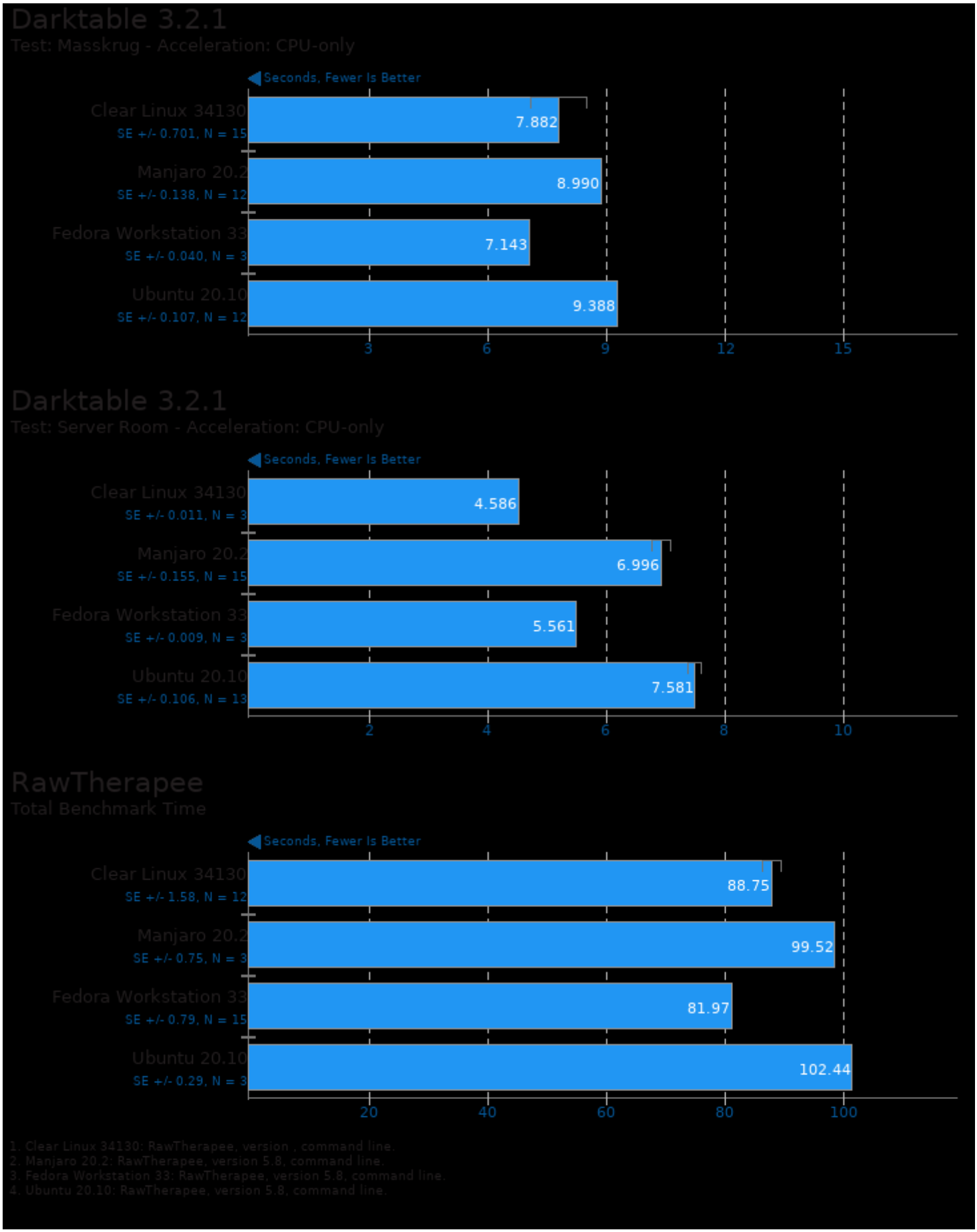
1. (CC) gcc options: -ldl -lz -lpthread

Darktable 3.2.1

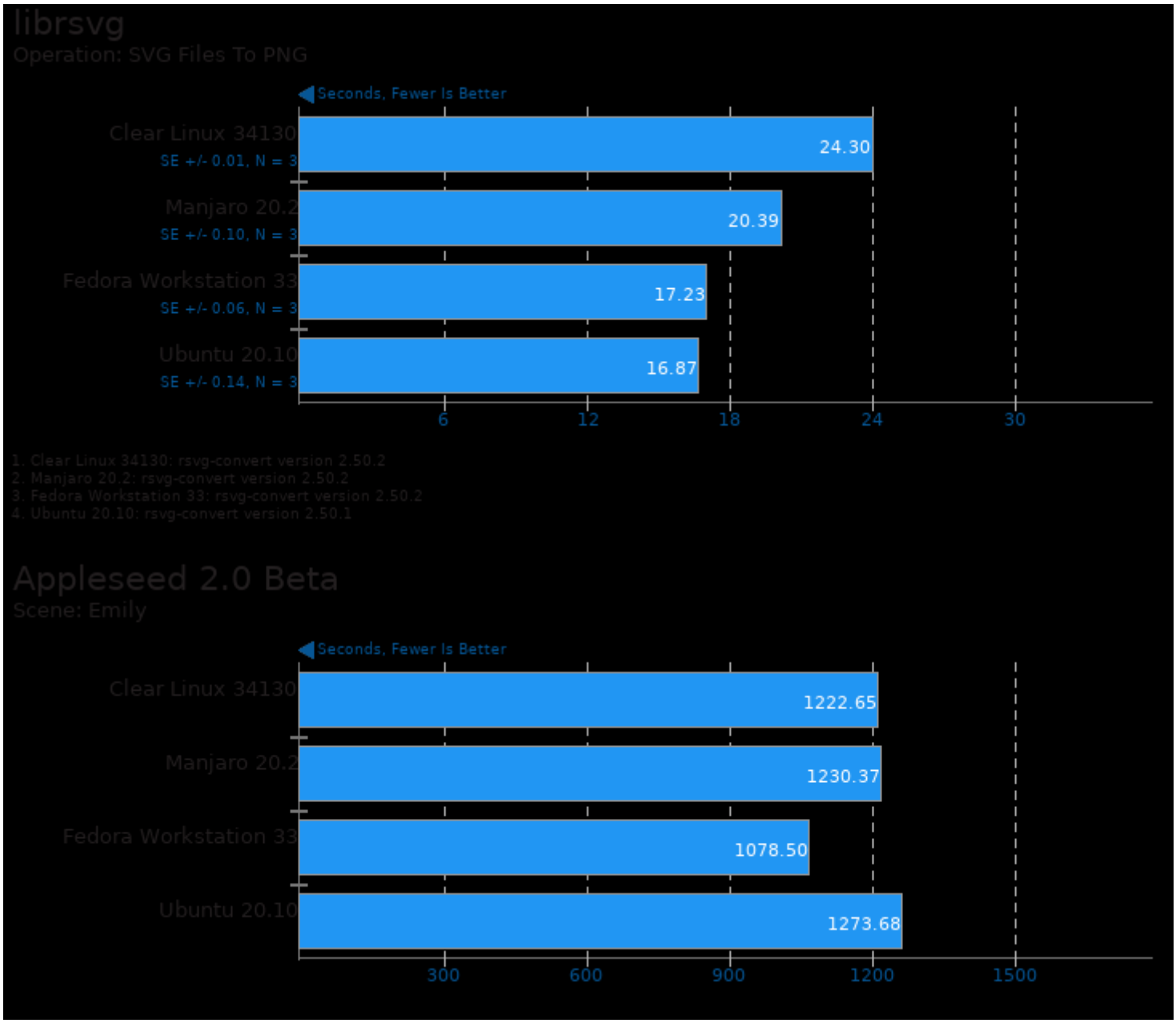
Test: Boat - Acceleration: CPU-only



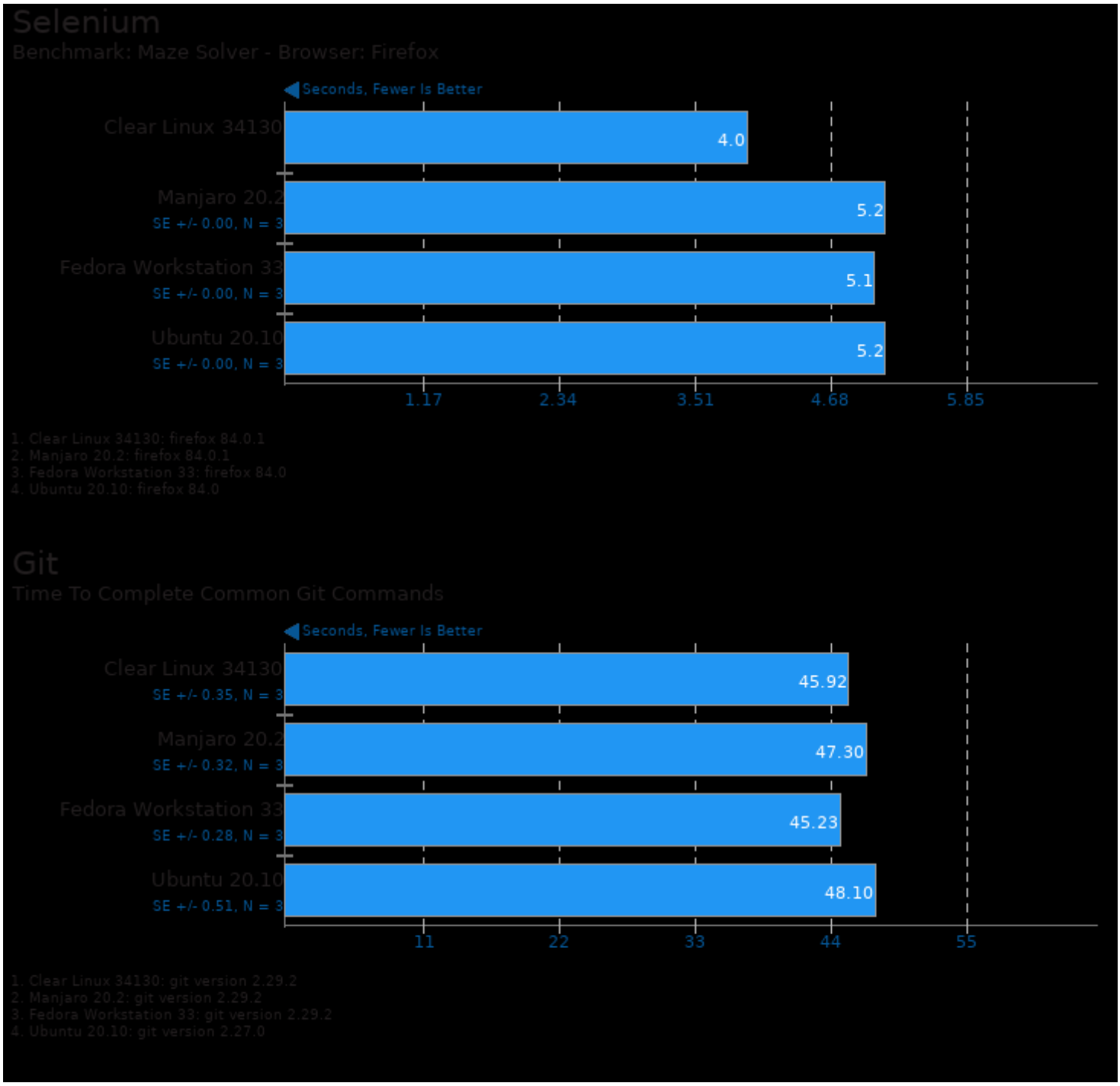
Clear Linux vs Other Distros - Tiger Lake



Clear Linux vs Other Distros - Tiger Lake

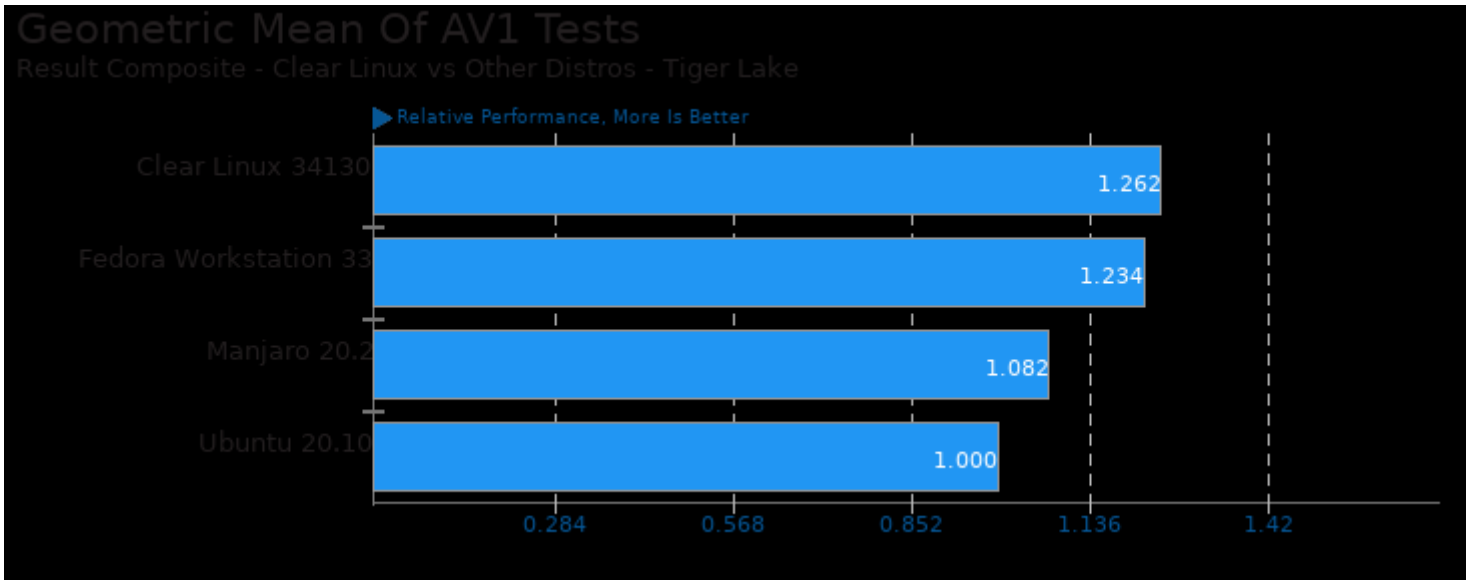


Clear Linux vs Other Distros - Tiger Lake

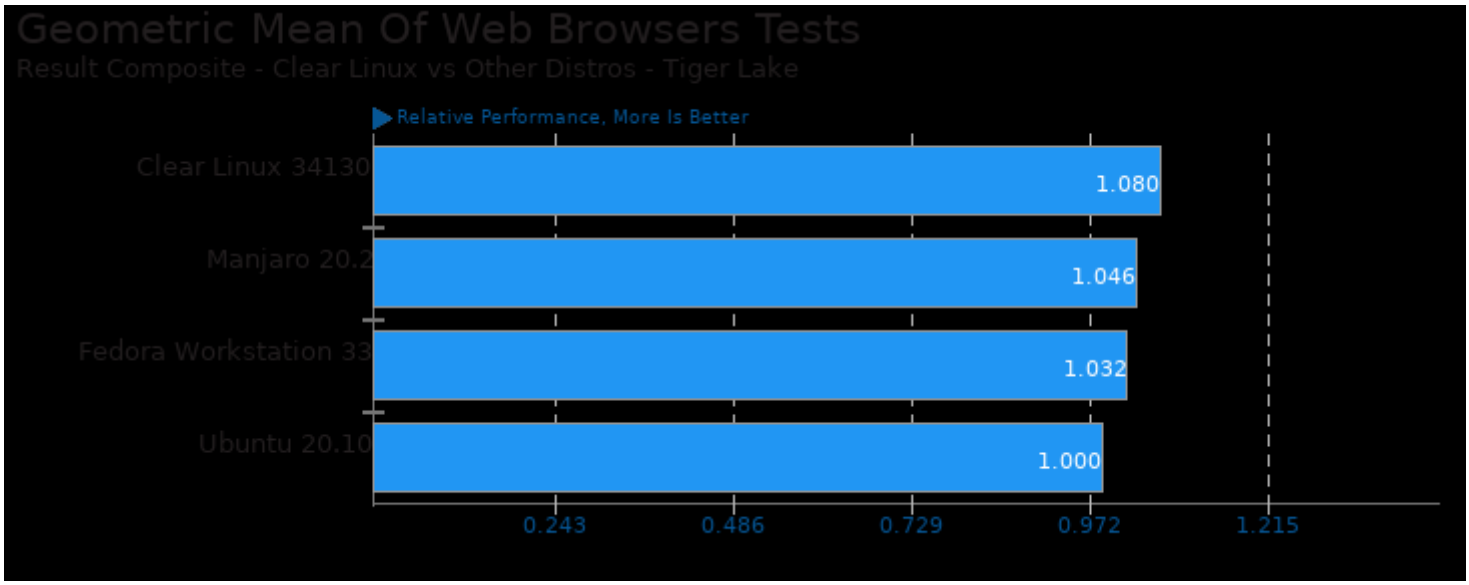


Clear Linux vs Other Distros - Tiger Lake

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

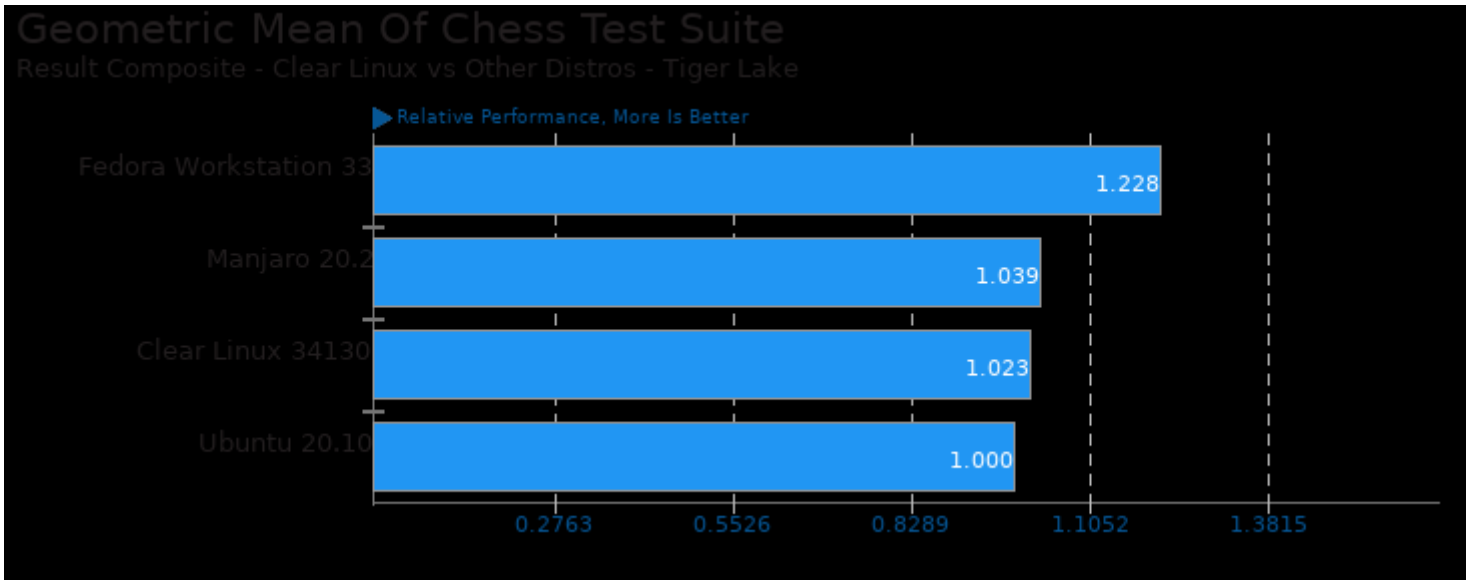


Geometric mean based upon tests: pts/svt-av1 and pts/avifenc

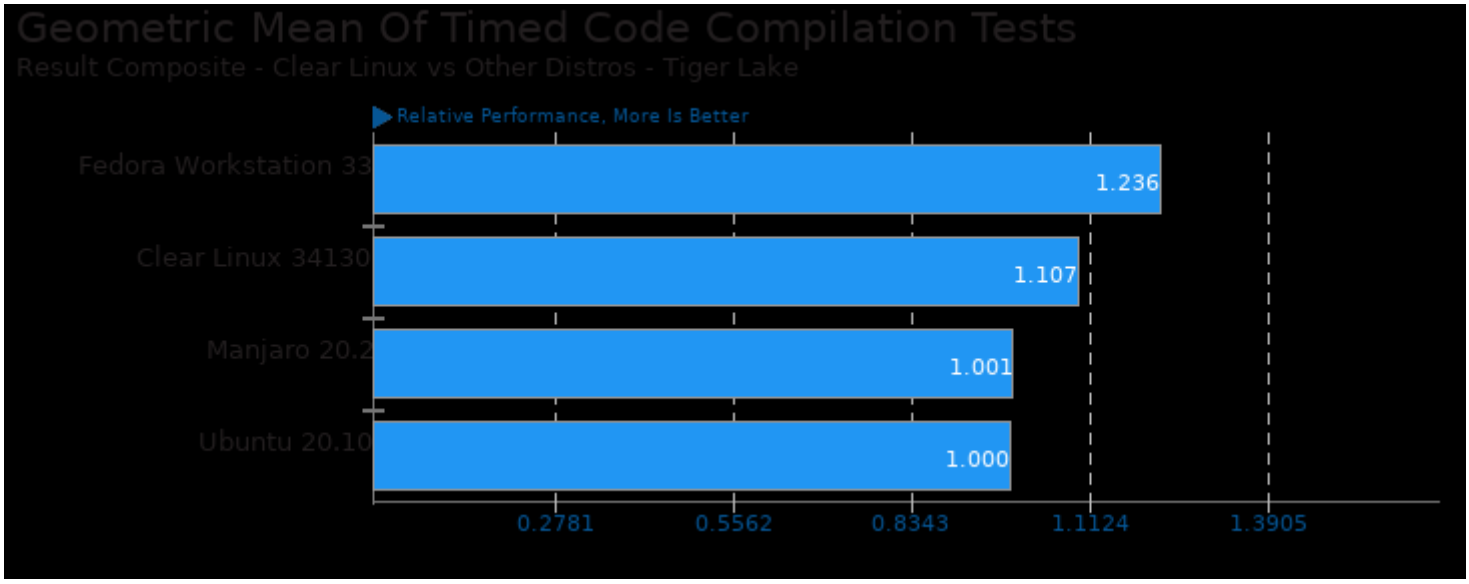


Geometric mean based upon tests: system/selenium

Clear Linux vs Other Distros - Tiger Lake

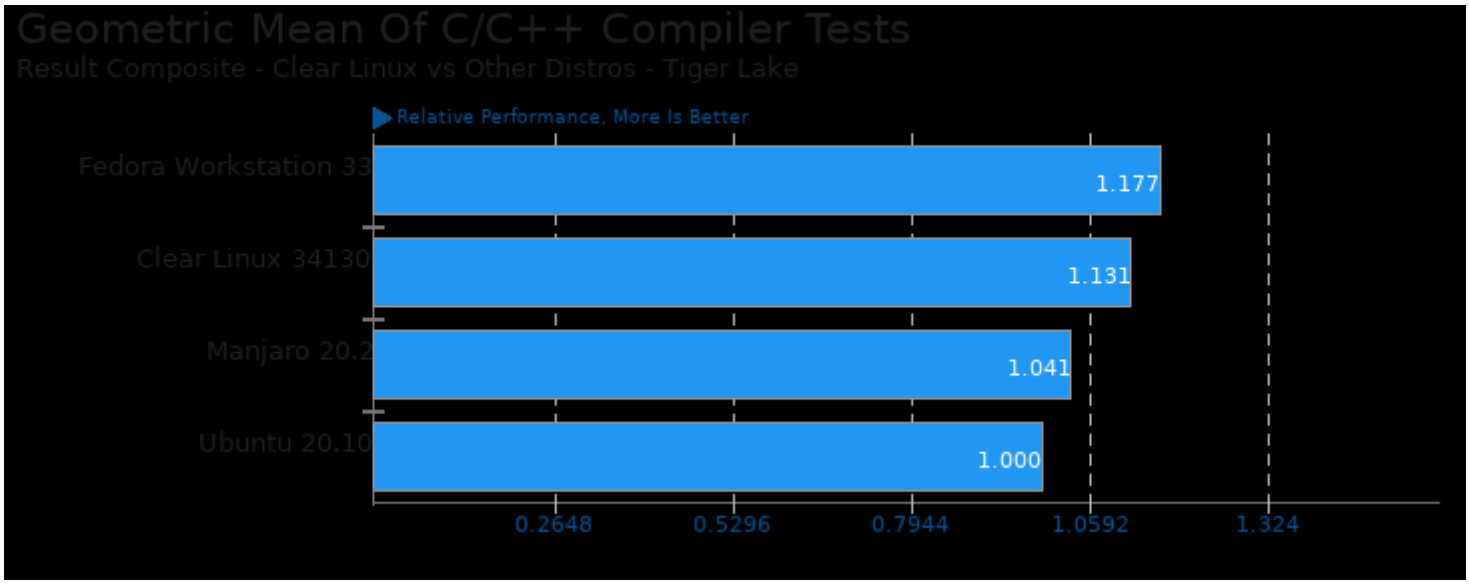


Geometric mean based upon tests: pts/stockfish and pts/asmfish

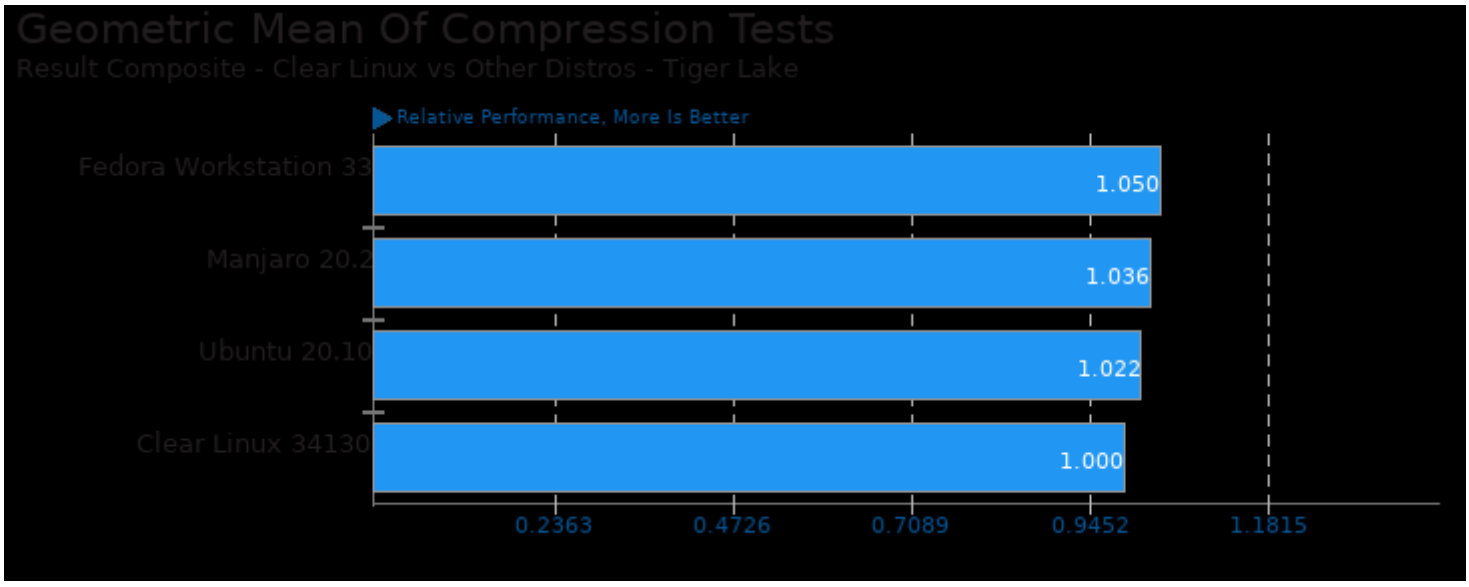


Geometric mean based upon tests: pts/build-eigen, pts/build-linux-kernel and pts/build-ffmpeg

Clear Linux vs Other Distros - Tiger Lake

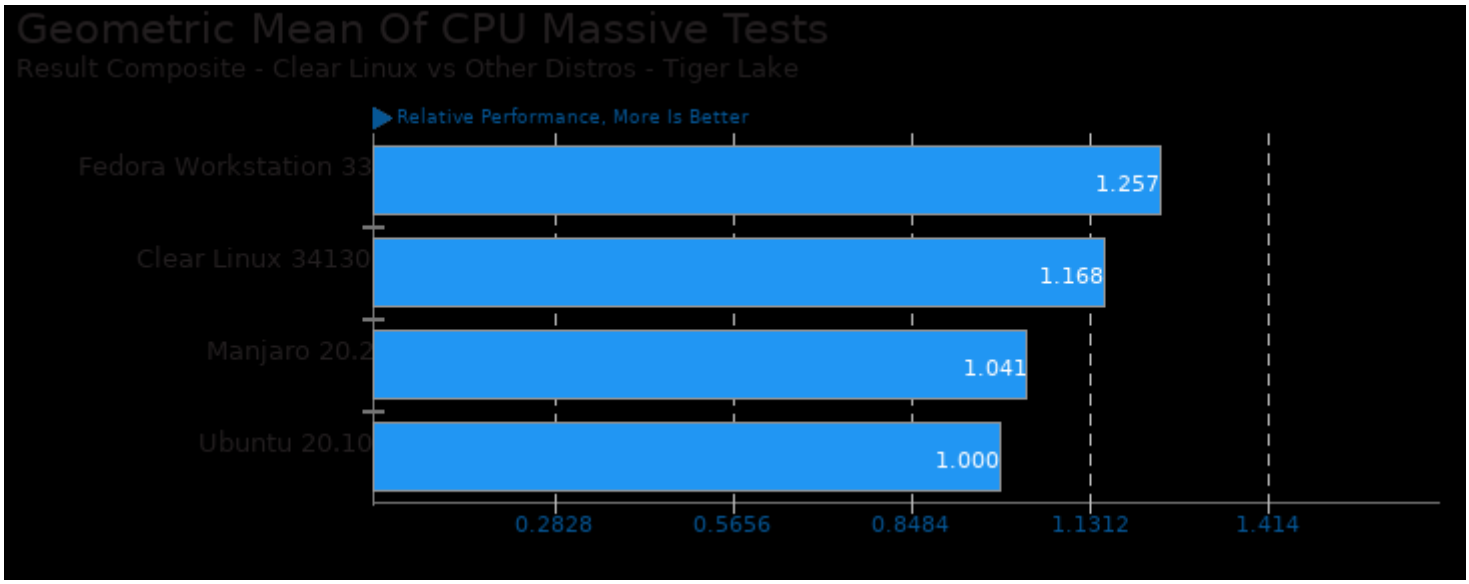


Geometric mean based upon tests: pts/vpxenc, pts/stockfish, pts/sqlite-speedtest, pts/mrbayes, pts/x264, pts/x265, pts/clomp, pts/compress-xz, pts/compress-zstd, pts/svt-av1, pts/svt-vp9, pts/gromacs, pts/build-ffmpeg, pts/leveldb and pts/basis

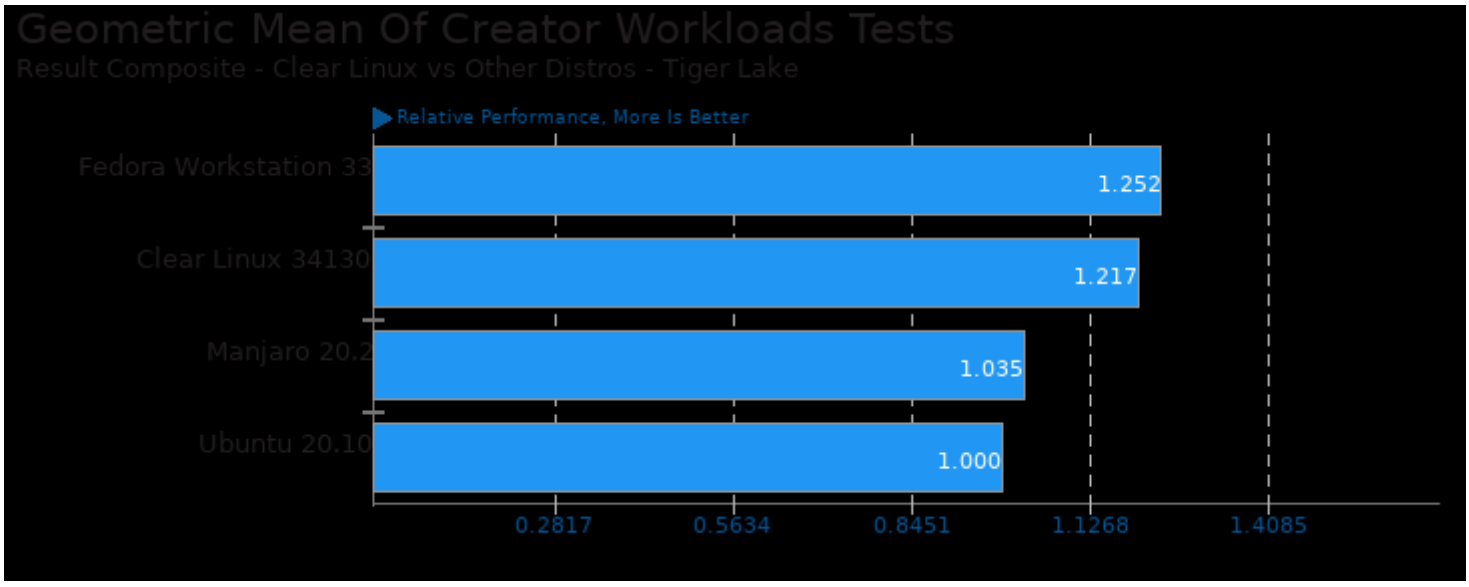


Geometric mean based upon tests: pts/compress-zstd, pts/compress-lz4 and pts/compress-xz

Clear Linux vs Other Distros - Tiger Lake

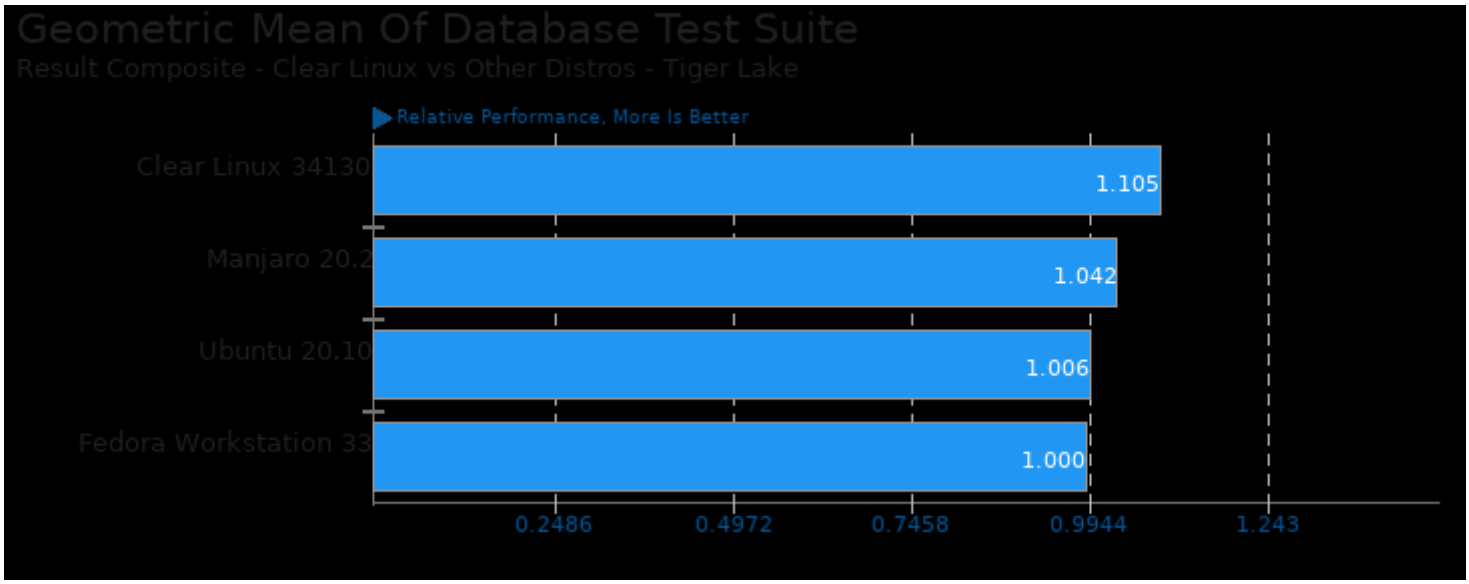


Geometric mean based upon tests: pts/asmfish, pts/build-linux-kernel, pts/compress-xz, pts/compress-zstd, pts/svt-av1, pts/svt-vp9, pts/vpxenc, pts/x264, pts/x265, pts/dolfyn, pts/mrbayes, pts/namd, pts/numpy, pts/stockfish, pts/v-ray, system/darktable, pts/clomp and pts/tjbench

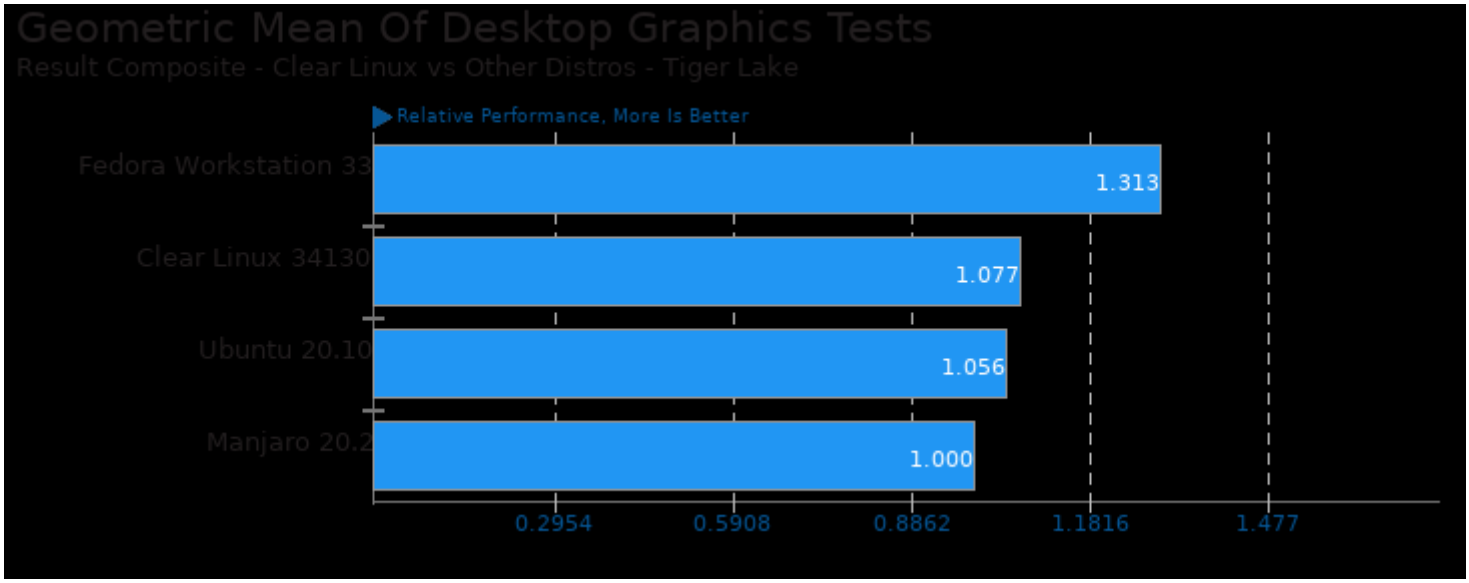


Geometric mean based upon tests: pts/appleseed, pts/v-ray, pts/indigobench, pts/svt-vp9, pts/x264, pts/x265, pts/vpxenc, pts/svt-av1, pts/avifenc, pts/libraw, pts/webp, system/rawtherapee, pts/tjbench, system/darktable, system/rsvg, pts/basis, pts/astcenc and pts/deepspeech

Clear Linux vs Other Distros - Tiger Lake

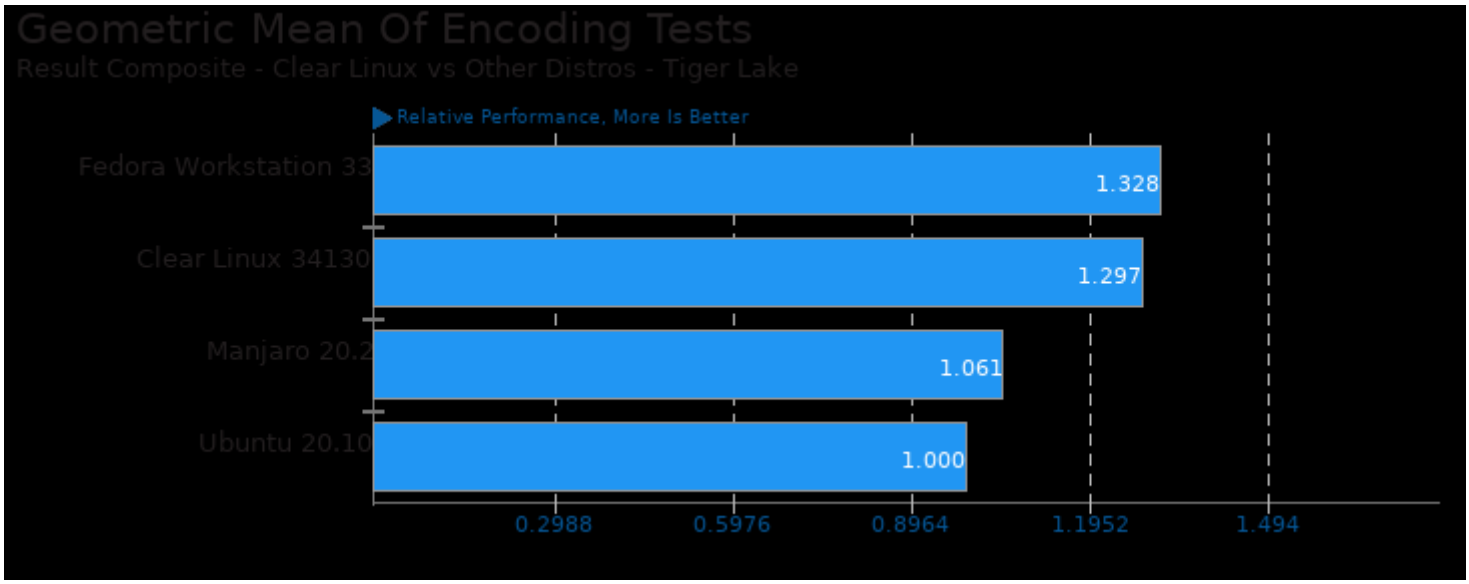


Geometric mean based upon tests: pts/sqlite-speedtest and pts/leveldb

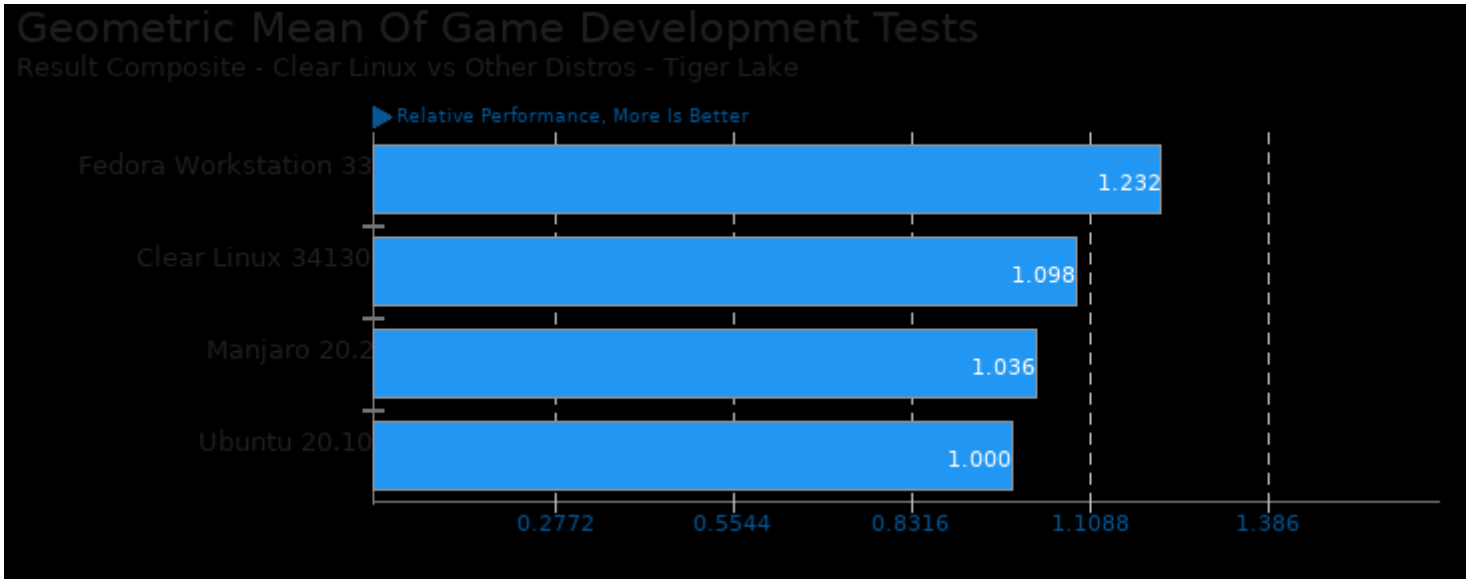


Geometric mean based upon tests: pts/xonotic and pts/tesseract

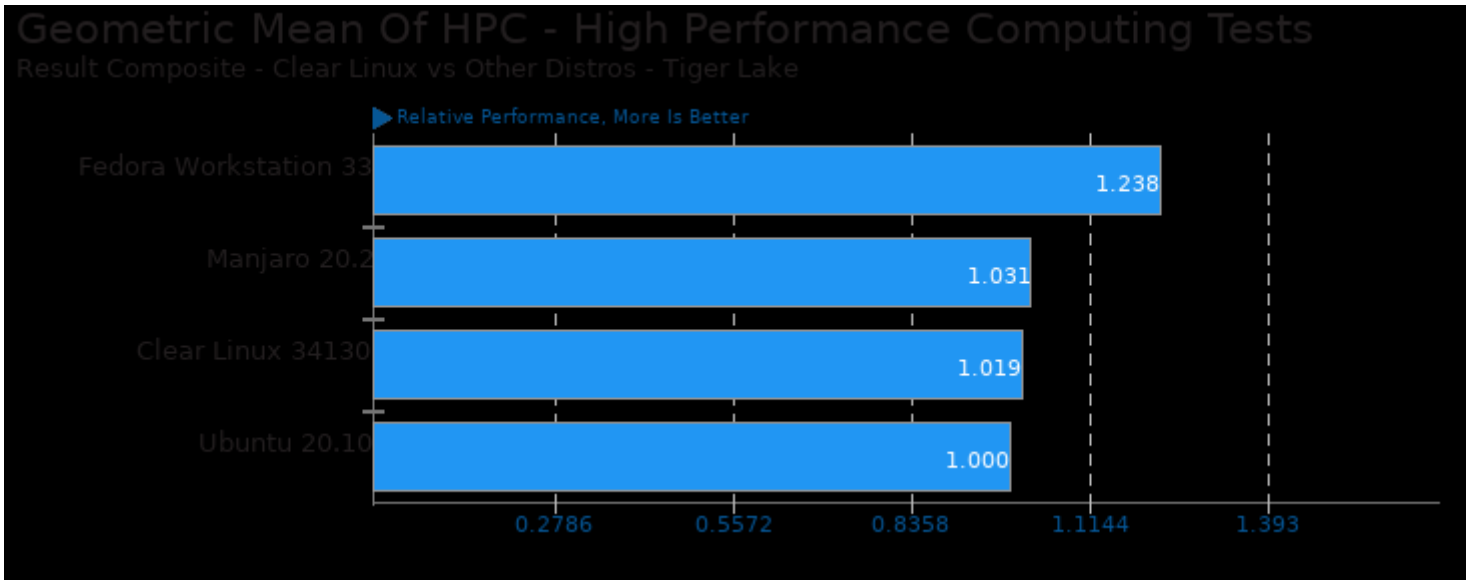
Clear Linux vs Other Distros - Tiger Lake



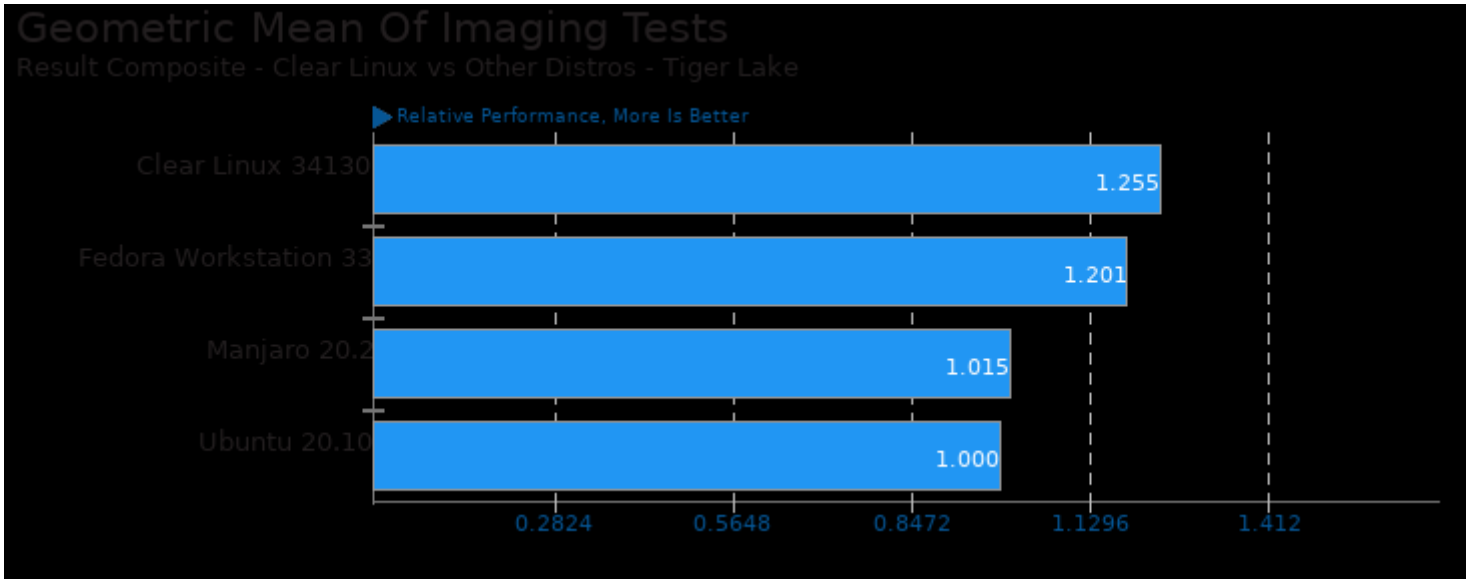
Geometric mean based upon tests: pts/svt-vp9, pts/x264, pts/x265, pts/vpxenc, pts/svt-av1 and pts/avifenc



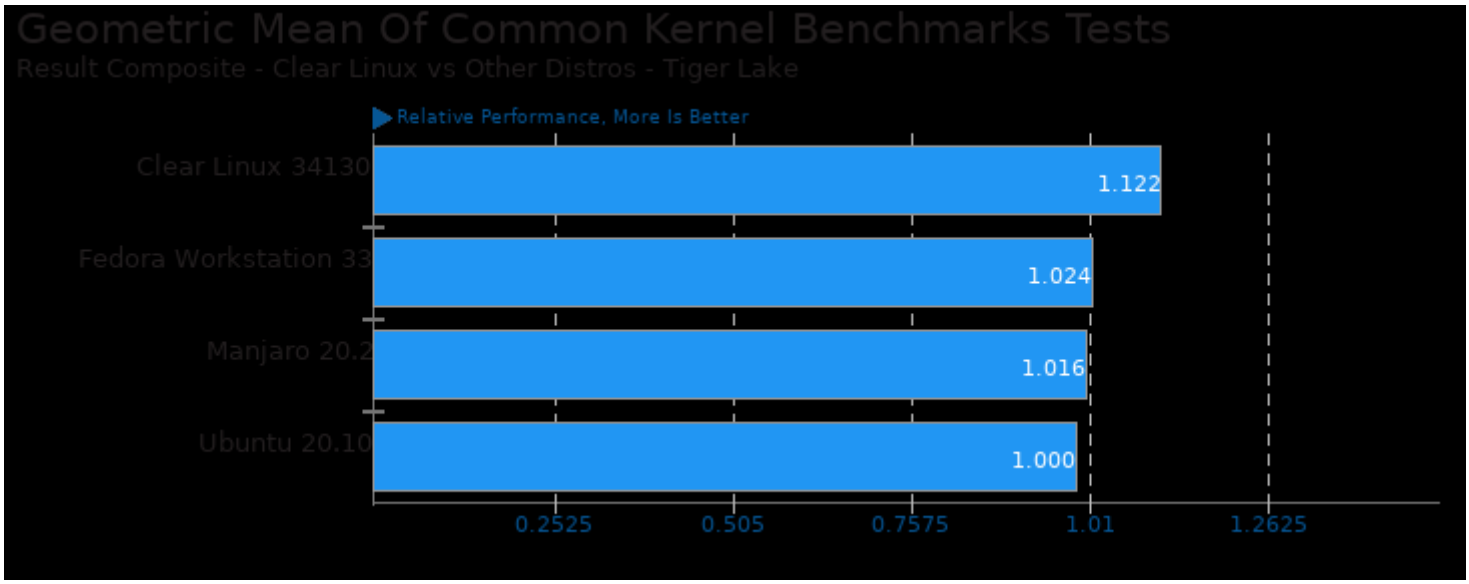
Geometric mean based upon tests: pts/basis and pts/astcenc



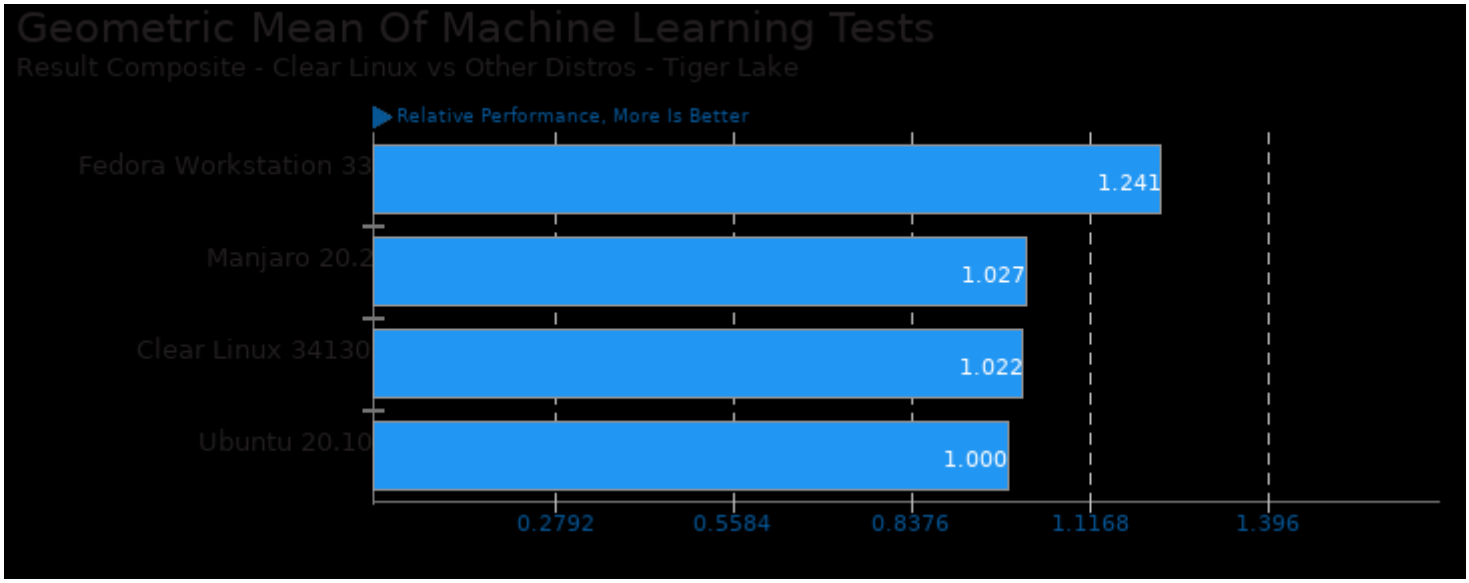
Geometric mean based upon tests: pts/namd, pts/gromacs, pts/dolfyn, pts/mrbayes, pts/ncnn, pts/tnn, pts/numpy, pts/ai-benchmark, pts/deepspeech and pts/tensorflow-lite



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

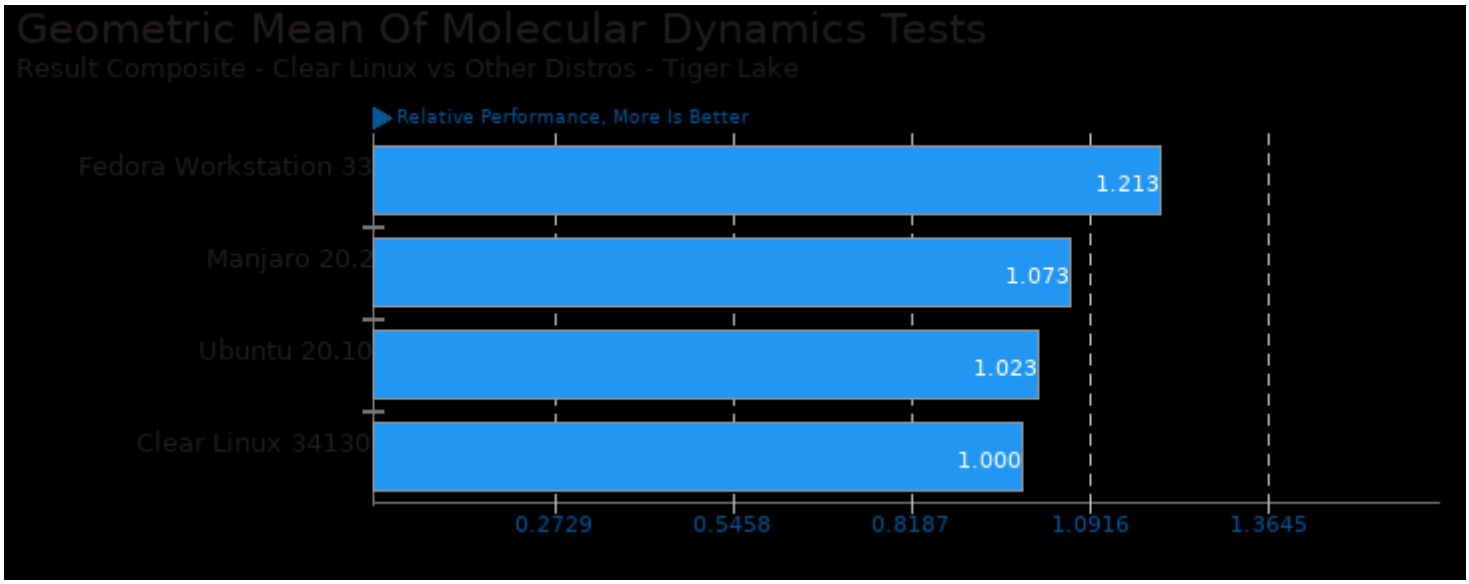


Geometric mean based upon tests: system/wireguard, pts/sqlite-speedtest and pts/leveldb

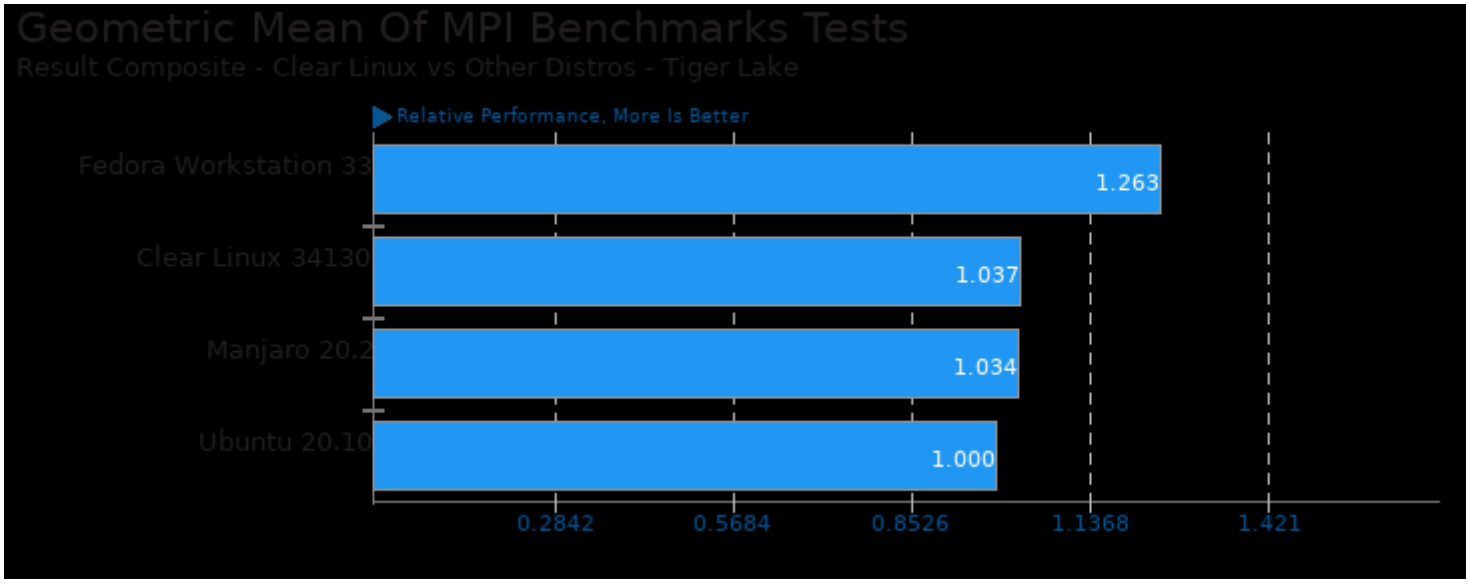


Geometric mean based upon tests: pts/ncnn, pts/tnn, pts/numpy, pts/ai-benchmark, pts/deepspeech and pts/tensorflow-lite

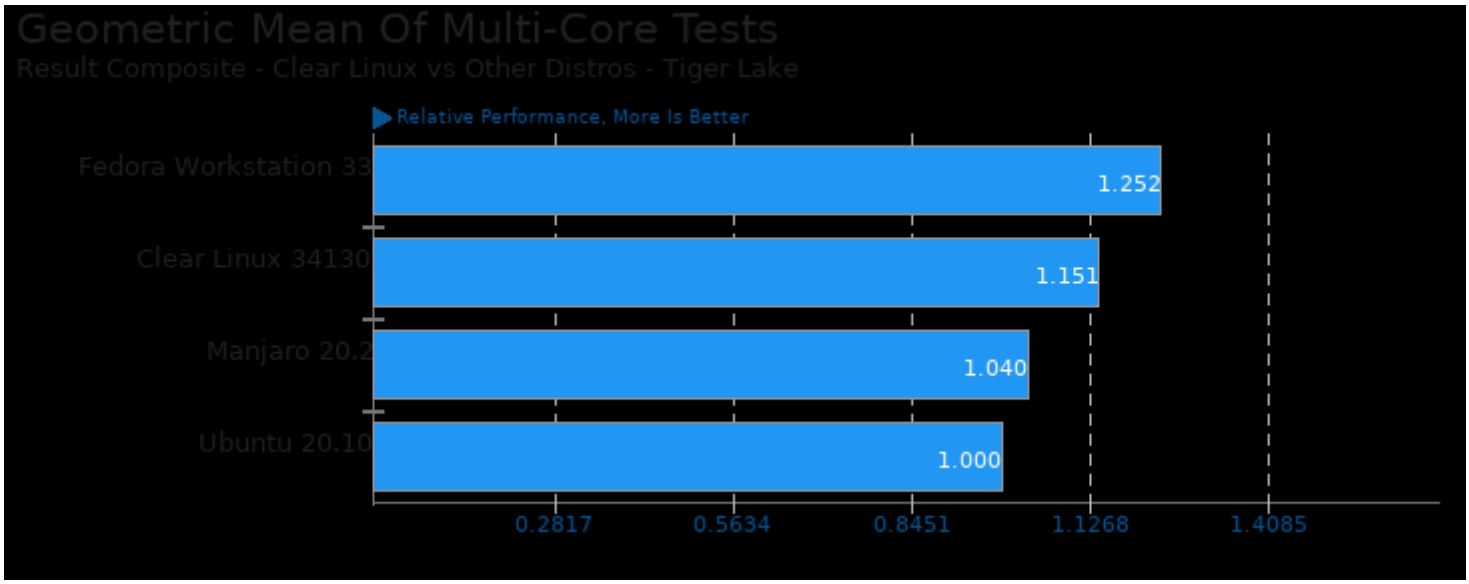
Clear Linux vs Other Distros - Tiger Lake



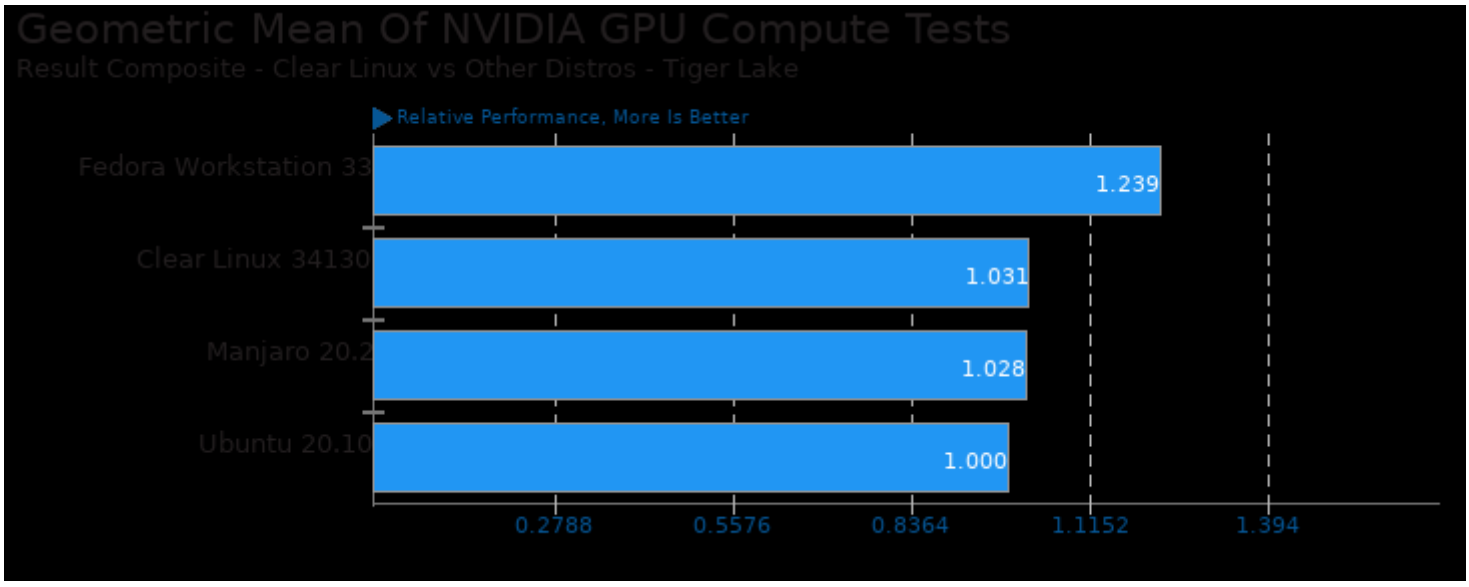
Geometric mean based upon tests: pts/namd, pts/gromacs and pts/dolfyn



Geometric mean based upon tests: pts/gromacs and pts/mrbayes

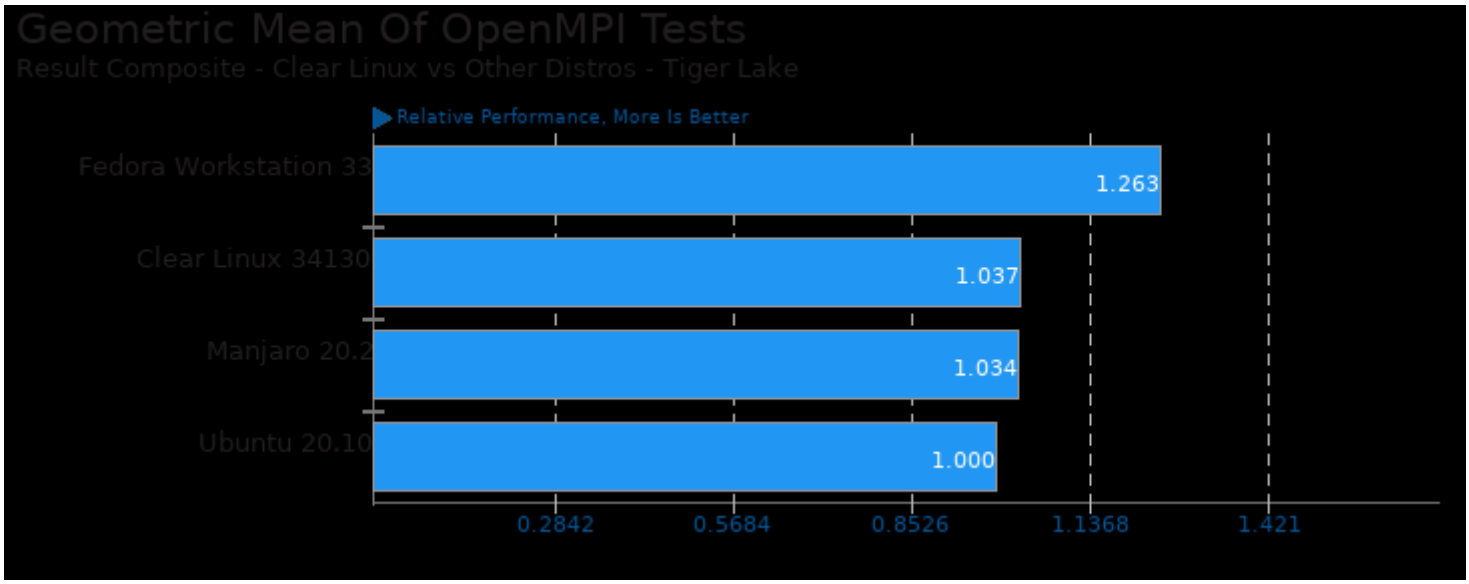


Geometric mean based upon tests: pts/stockfish, pts/svt-vp9, pts/x264, pts/x265, pts/vpxenc, pts/svt-av1, pts/avifenc, pts/namd, pts/asmfish, pts/gromacs, pts/compress-zstd, pts/build-eigen, pts/build-linux-kernel, pts/build-ffmpeg, pts/appleseed, pts/v-ray and pts/indigobench

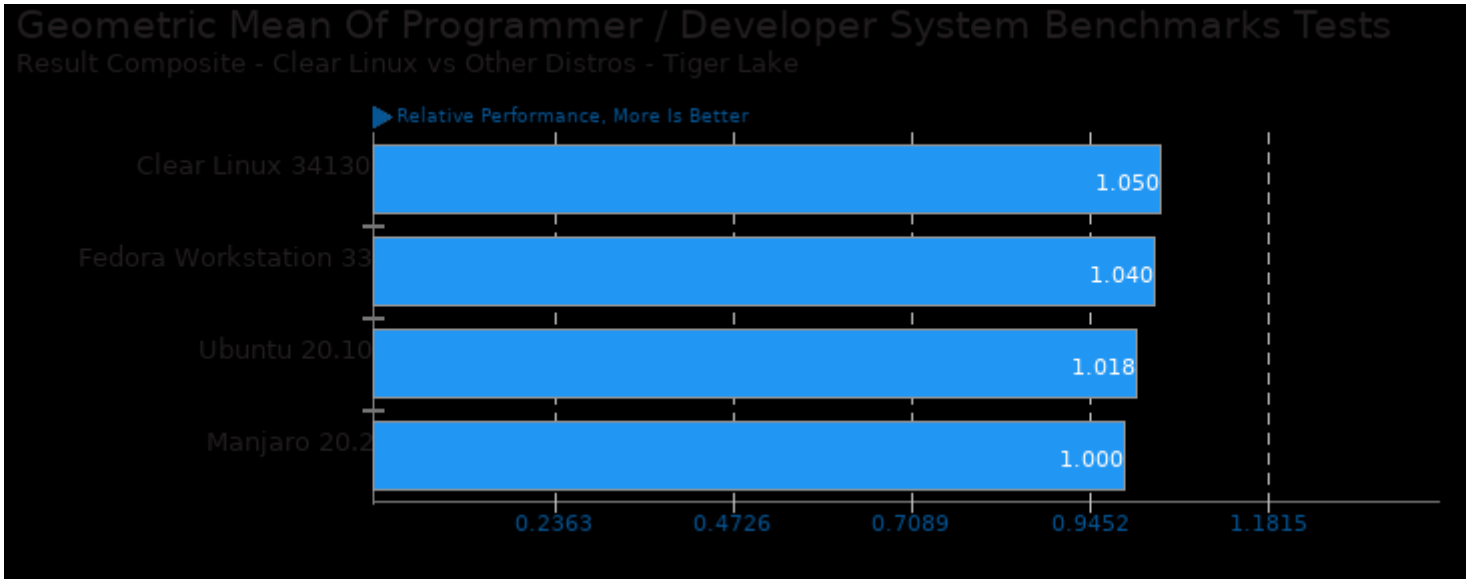


Geometric mean based upon tests: pts/gromacs, pts/indigobench, pts/v-ray, pts/ncnn, pts/realsr-ncnn and pts/waifu2x-ncnn

Clear Linux vs Other Distros - Tiger Lake

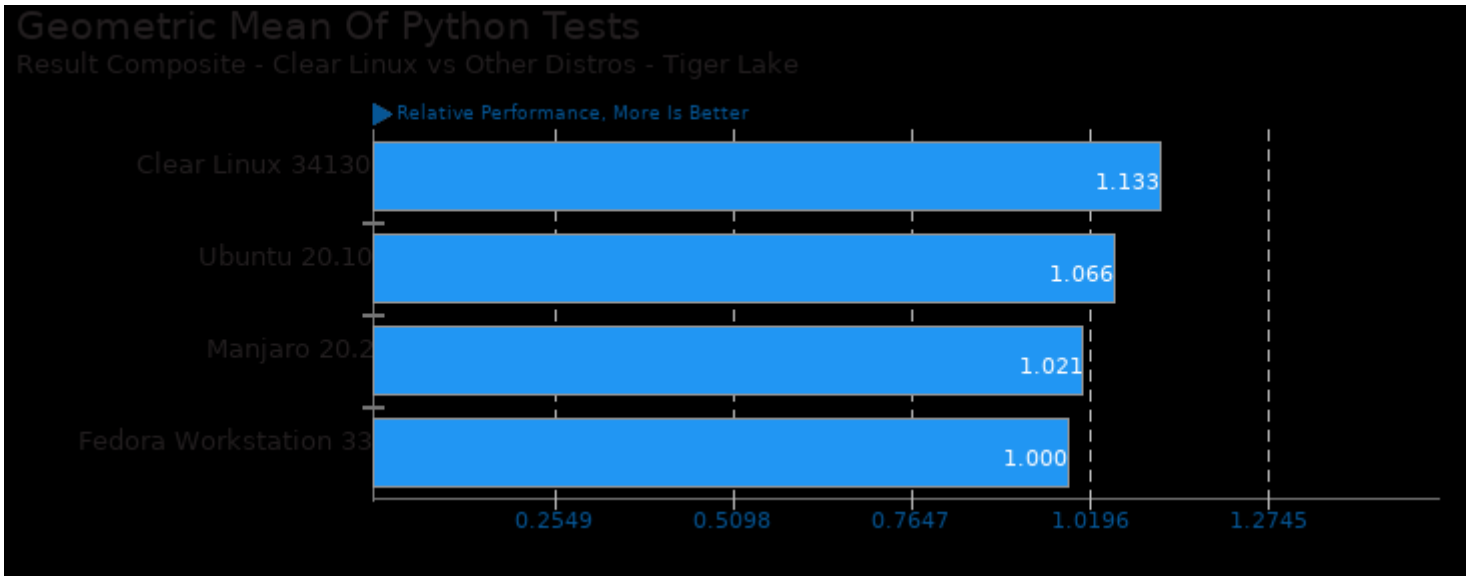


Geometric mean based upon tests: pts/gromacs and pts/mrbayes

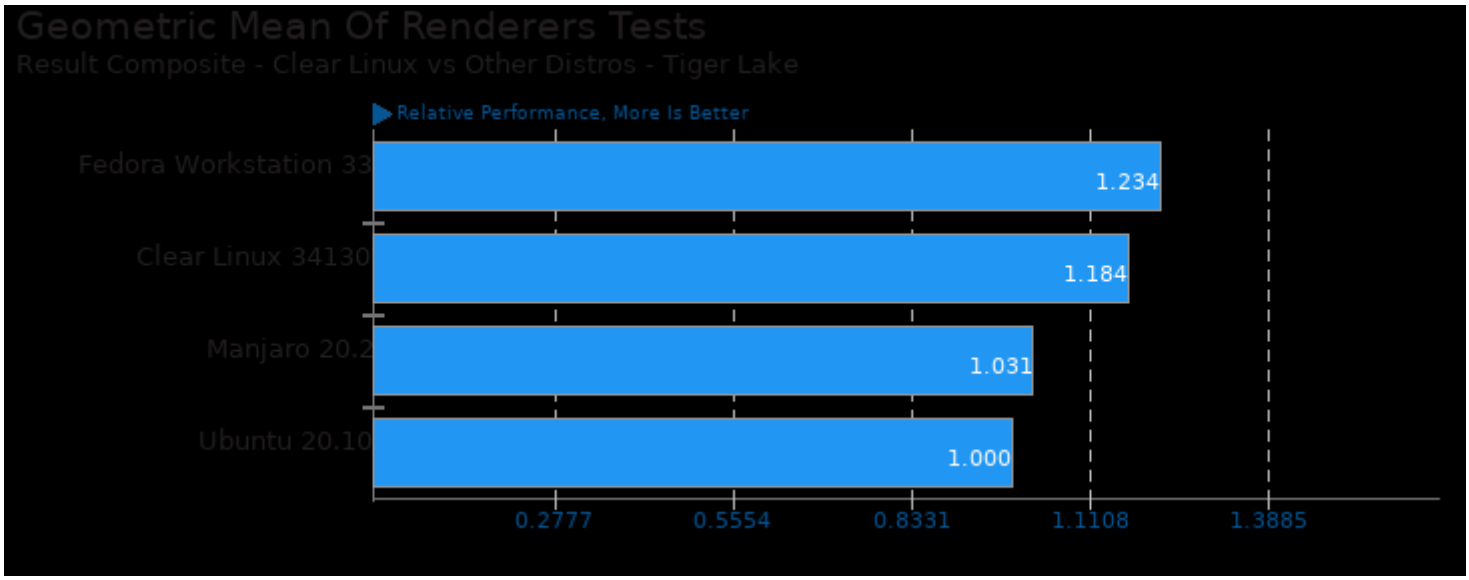


Geometric mean based upon tests: pts/sqlite-speedtest, pts/git, pts/compress-zstd, pts/pyperformance, pts/pybench, pts/build-eigen, pts/build-linux-kernel and pts/build-ffmpeg

Clear Linux vs Other Distros - Tiger Lake

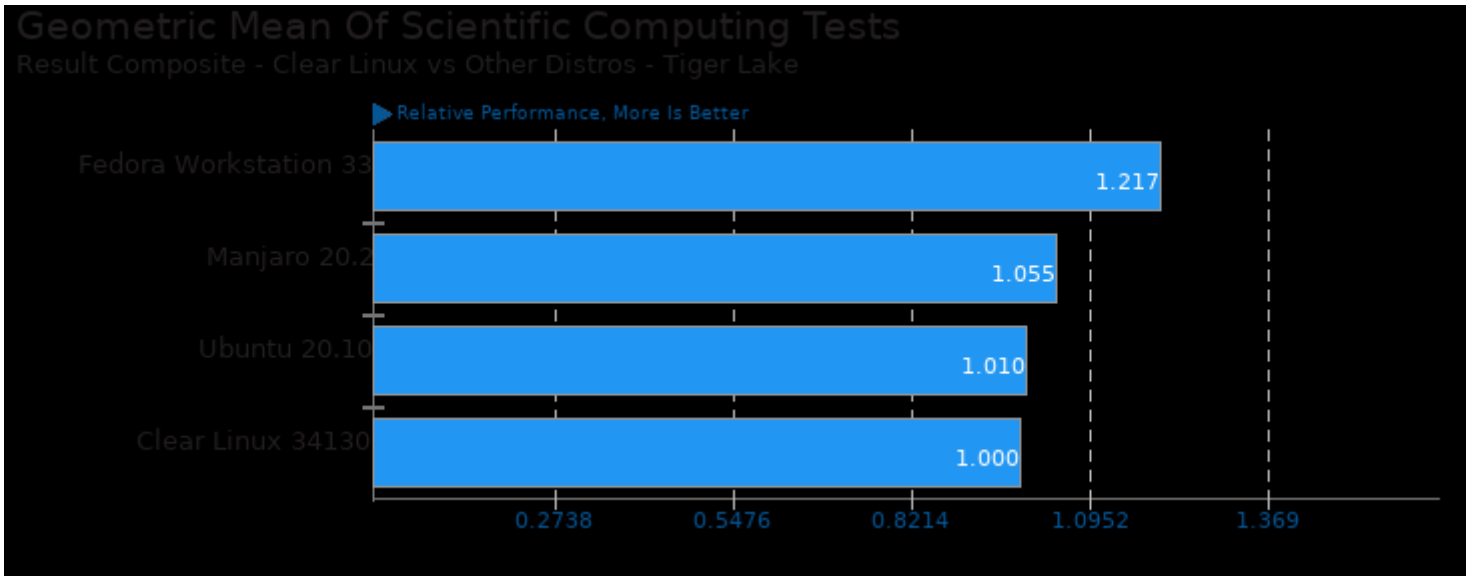


Geometric mean based upon tests: pts/pybench, pts/numpy and pts/pyperformance

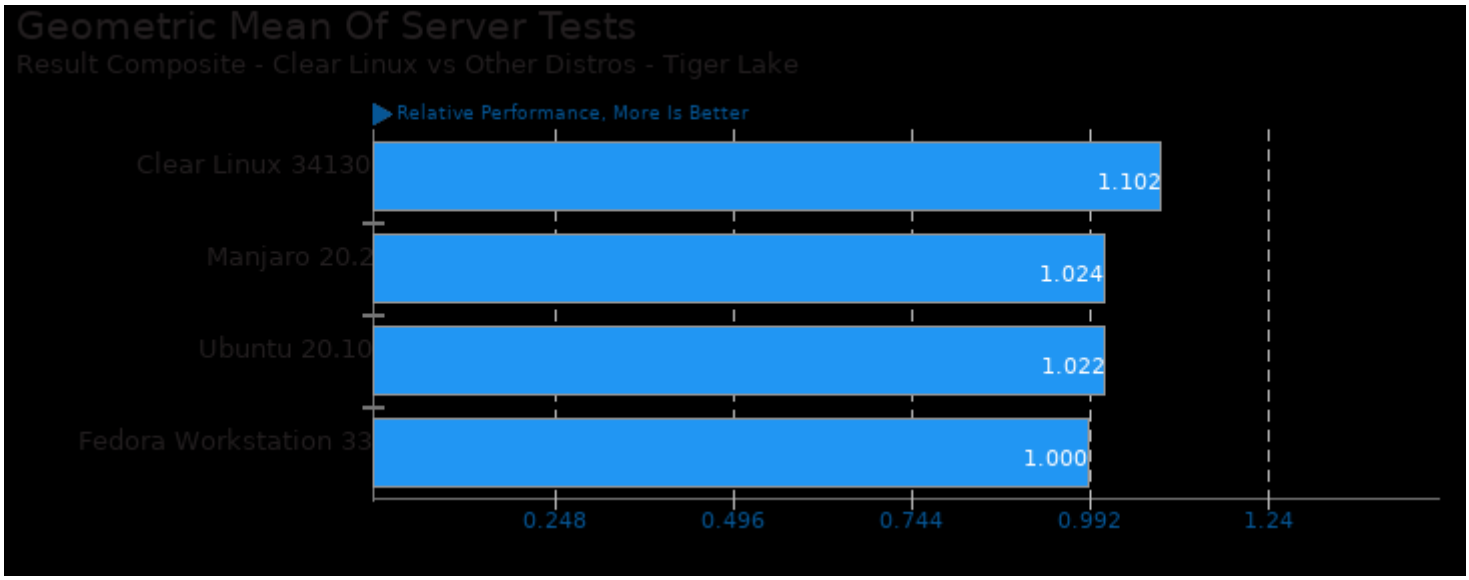


Geometric mean based upon tests: pts/appleseed, pts/v-ray and pts/indigobench

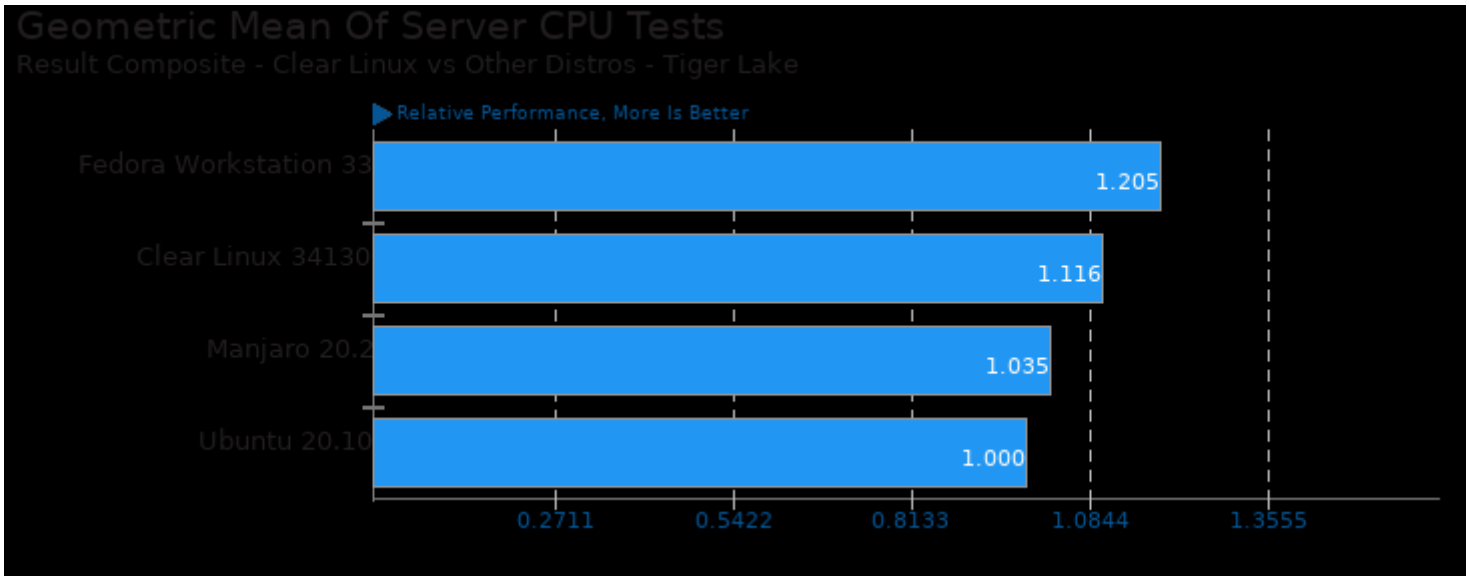
Clear Linux vs Other Distros - Tiger Lake



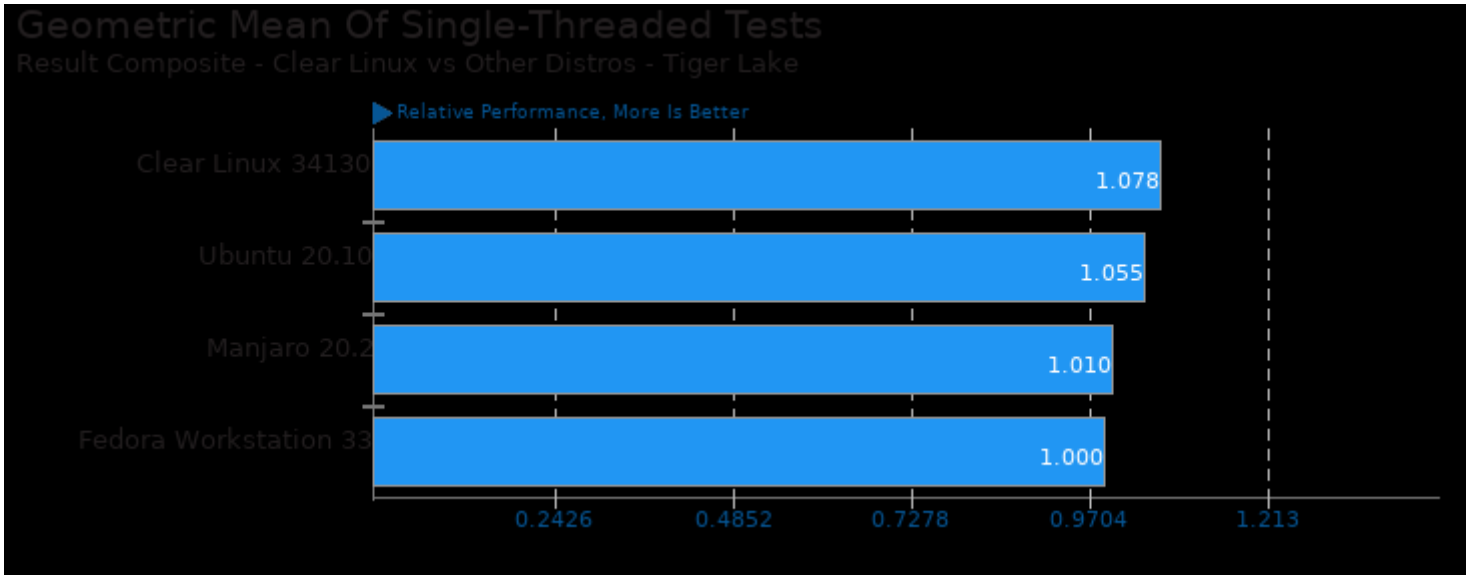
Geometric mean based upon tests: pts/namd, pts/gromacs, pts/dolfyn and pts/mrbayes



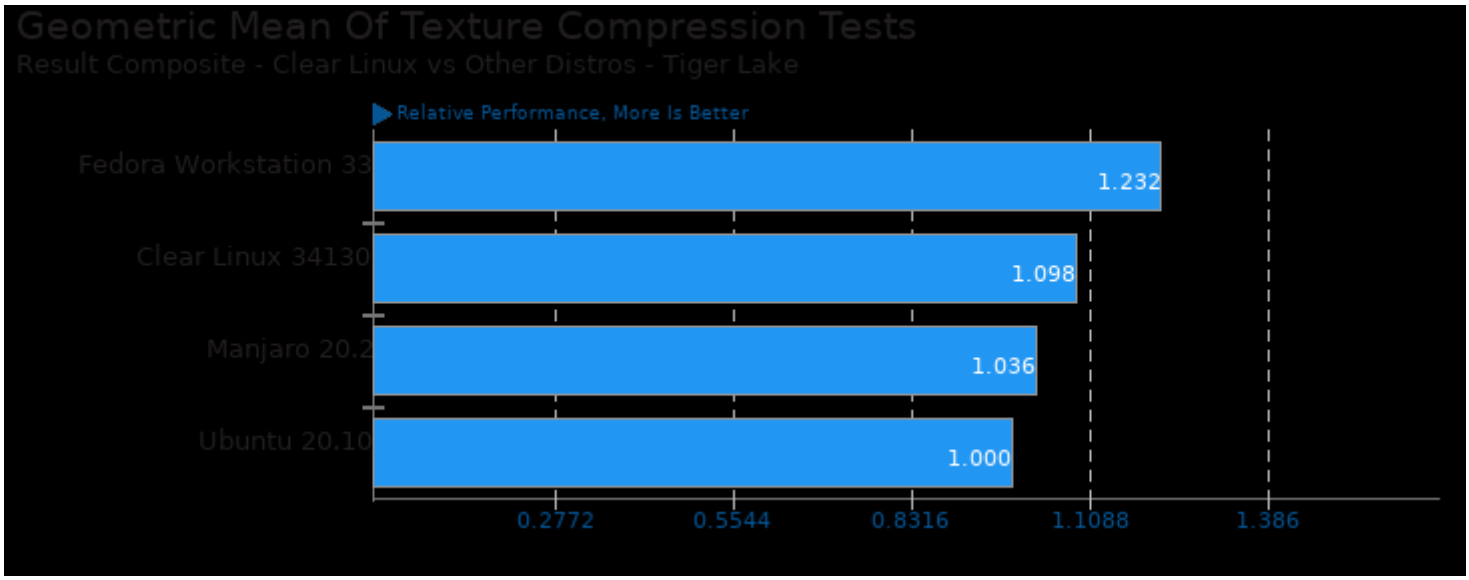
Geometric mean based upon tests: pts/perl-benchmark, pts/sqlite-speedtest and pts/leveldb



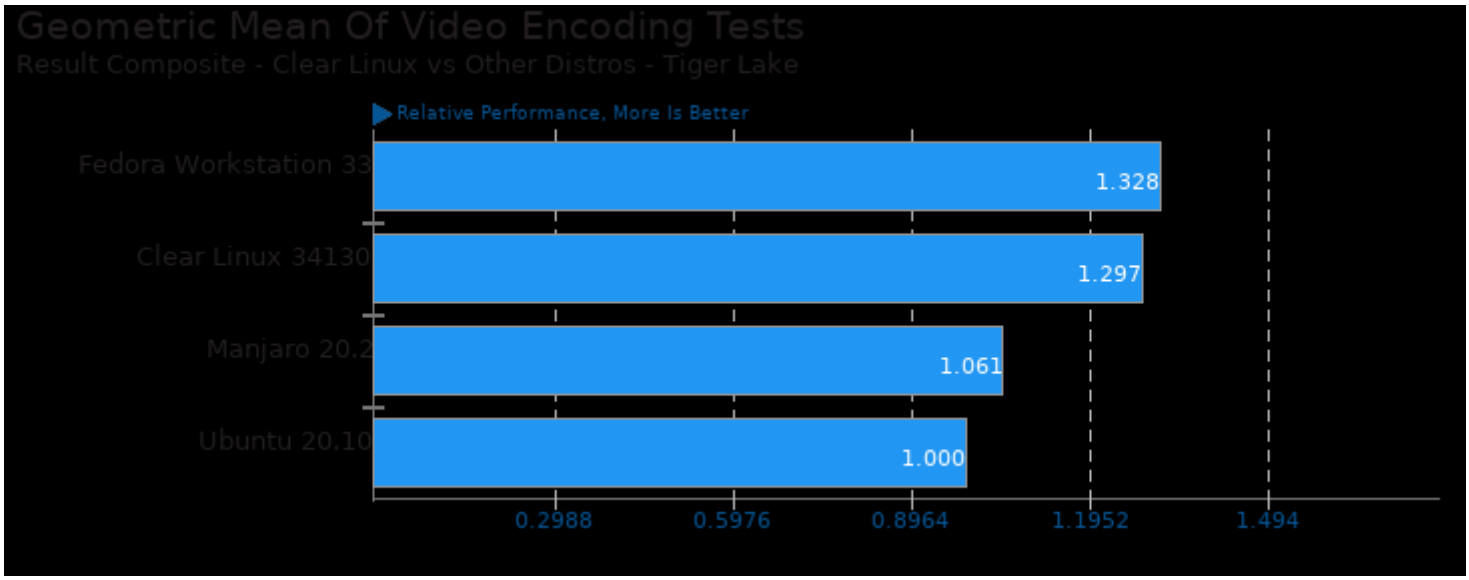
Geometric mean based upon tests: pts/namd, pts/svt-av1, pts/svt-vp9, pts/x264, pts/x265, pts/stockfish, pts/asmfish, pts/build-linux-kernel, pts/compress-zstd, pts/tjbench, pts/appleseed, pts/pybench and pts/numpy



Geometric mean based upon tests: pts/numpy, pts/deepspeech, pts/perl-benchmark, pts/tjbench, pts/pybench and pts/git

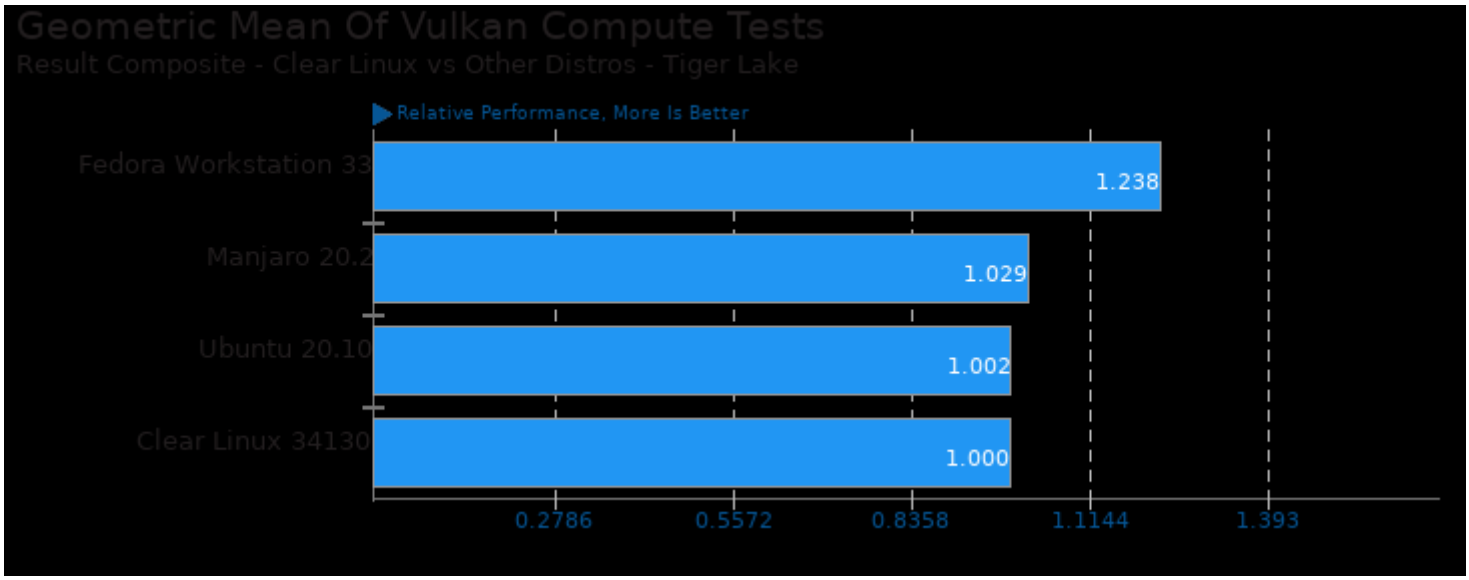


Geometric mean based upon tests: pts/basis and pts/astcenc

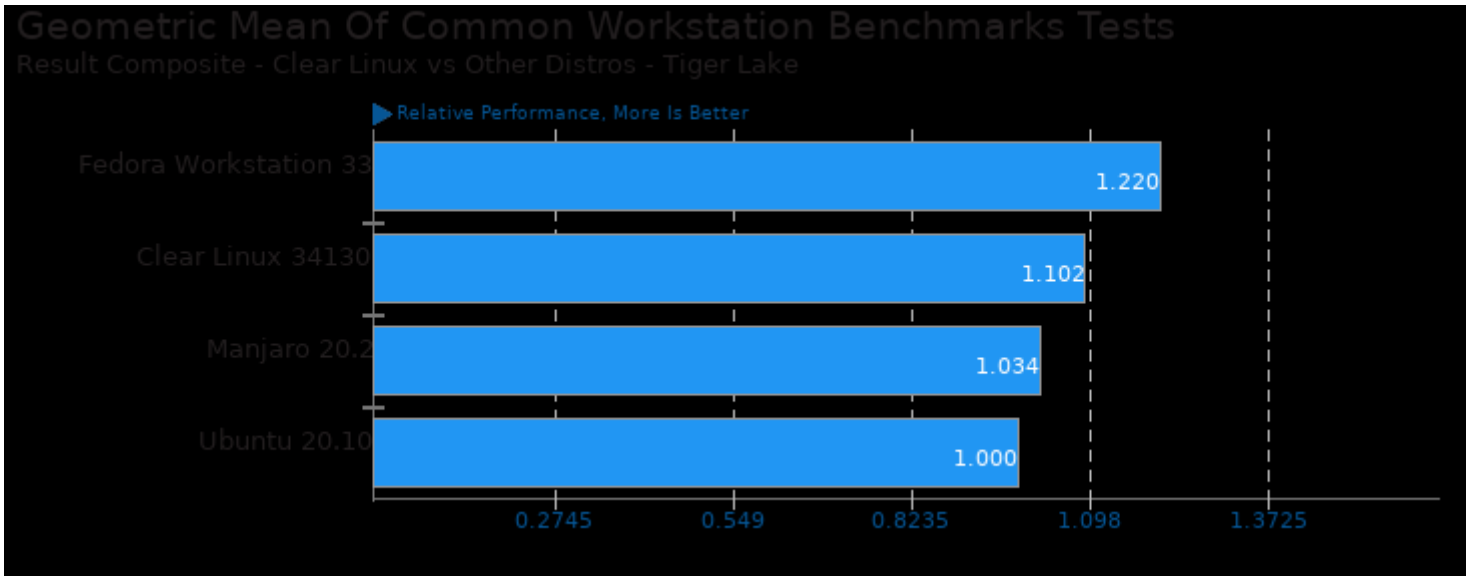


Geometric mean based upon tests: pts/svt-vp9, pts/x264, pts/x265, pts/vpxenc, pts/svt-av1 and pts/avifenc

Clear Linux vs Other Distros - Tiger Lake



Geometric mean based upon tests: pts/ncnn, pts/realsr-ncnn and pts/waifu2x-ncnn



Geometric mean based upon tests: pts/x265 and pts/git

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