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Linux Distro Tests

AMD EPYC 7551 32-Core testing with a GIGABYTE MZ31-AR0-00 v01010101 (F03 BIOS) and llvmpipe 28032MB on openSUSE Tumbleweed 20180312 via the Phoronix Test Suite.

Automated Executive Summary

Clear Linux 21260 had the most wins, coming in first place for 52% of the tests.

Based on the geometric mean of all complete results, the fastest (Clear Linux 21260) was 1.212x the speed of the slowest (openSUSE Tumbleweed). Ubuntu 16.04 LTS was 0.87x the speed of Clear Linux 21260, Ubuntu 18.04 LTS 20180311 was 0.979x the speed of Ubuntu 16.04 LTS, Fedora Workstation 27 was 0.983x the speed of Ubuntu 18.04 LTS 20180311, Debian Testing was 0.992x the speed of Fedora Workstation 27, openSUSE Tumbleweed was 0.994x the speed of Debian Testing.

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

Scikit-Learn at 8.165x
Gzip Compression (Linux Source Tree Archiving To .tar.gz) at 7.831x
Compile Bench (Test: Read Compiled Tree) at 2.093x
R Benchmark at 2.055x
PHPBench (PHP Benchmark Suite) at 1.656x
Compile Bench (Test: Initial Create) at 1.649x

Compile Bench (Test: Compile) at 1.579x
Redis (Test: GET) at 1.454x
Flexible IO Tester (Type: Sequential Read - IO Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 64KB - Disk Target: Default Test Directory) at 1.454x
Flexible IO Tester (Type: Sequential Read - IO Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 64KB - Disk Target: Default Test Directory) at 1.453x.

Test Systems:

Ubuntu 18.04 LTS 20180311

Processor: AMD EPYC 7551 32-Core @ 2.00GHz (32 Cores / 64 Threads), Motherboard: GIGABYTE MZ31-AR0-00 v01010101 (F03 BIOS), Chipset: AMD Family 17h, Memory: 28672MB, Disk: Samsung SSD 960 EVO 500GB, Graphics: llvmpipe 28032MB, Audio: NVIDIA GP104 HD Audio, Monitor: ASUS PB278, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 18.04, Kernel: 4.15.0-10-generic (x86_64), Desktop: GNOME Shell 3.27.92, Display Driver: modesetting 1.19.6, OpenGL: 3.3 Mesa 18.0.0-rc4 (LLVM 5.0 128 bits), Compiler: GCC 7.3.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --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 --with-tune=generic --without-cuda-driver -v
Disk Notes: NONE / data=ordered,errors=remount-ro,relatime,rw
Processor Notes: Scaling Governor: acpi-cpufreq ondemand
Python Notes: Python 2.7.14+ + Python 3.6.4+
Security Notes: __user pointer sanitization + Full AMD retpoline Protection

Clear Linux 21260

Processor: AMD EPYC 7551 32-Core @ 2.00GHz (32 Cores / 64 Threads), Motherboard: GIGABYTE MZ31-AR0-00 v01010101 (F03 BIOS), Chipset: AMD Family 17h, Memory: 8 x 4096 MB DDR4-2666MT/s 9ASF51272PZ-2G6E1, Disk: Samsung SSD 960 EVO 500GB, Graphics: ASPEED ASPEED Family 8192MB, Audio: NVIDIA GP104 HD Audio, Network: Realtek RTL8111/8168/8411

OS: Clear Linux OS 21260, Kernel: 4.15.7-536.native (x86_64), Vulkan: 1.0.39, Compiler: GCC 7.3.0 + Clang 5.0.1 + LLVM 5.0.1, File-System: ext4, Screen Resolution: 1920x1080

Environment Notes:
CFFLAGS=-g-O3-feliminate-unused-debug-types-pipe-Wall-Wp-D_FORTIFY_SOURCE=2-fexceptions-fstack-protector--param=ssp-buffer-size=32-Wl--copy-dt-needed-entries-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
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-Wl--copy-dt-needed-entries-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-signed-zeros-fno-trapping-math-fassociative-math-Wl-sort-common
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-Wl--copy-dt-needed-entries-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-signed-zeros-fno-trapping-math-fassociative-math-Wl-sort-common-fvisibility-inlines-hidden
FFLAGS=-g-O3-feliminate-unused-debug-types-pipe-Wall-Wp-D_FORTIFY_SOURCE=2-fexceptions-fstack-protector--param=ssp-buffer-size=32-Wl--copy-dt-needed-entries-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 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 --enable-__cxa_atexit --enable-bootstrap --enable-clocale=gnu --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-glibc-version=2.19 --with-gnu-ld --with-isl --with-ppl=yes --with-tune=haswell
Disk Notes: KYBER / data=ordered,relatime,rw,stripe=256
Processor Notes: Scaling Governor: acpi-cpufreq performance
Python Notes: Python 3.6.4
Security Notes: __user pointer sanitization + Full AMD retpoline Protection

Ubuntu 16.04 LTS

Processor: AMD EPYC 7551 32-Core @ 2.00GHz (32 Cores / 64 Threads), Motherboard: GIGABYTE MZ31-AR0-00 v01010101 (F03 BIOS), Chipset: AMD Device 1450, Memory: 28672MB, Disk: Samsung SSD 960 EVO 500GB, Graphics: llvmpipe 28032MB, Audio: NVIDIA Device 10f0, Monitor: ASUS PB278, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 16.04, Kernel: 4.13.0-36-generic (x86_64), Desktop: Unity 7.4.5, Display Driver: modesetting 1.19.5, OpenGL: 3.3 Mesa 17.2.8 (LLVM 5.0 128 bits), Compiler: GCC 5.4.0 20160609, File-System: ext4, Screen Resolution: 1920x1080

Environment Notes: LIBGL_ALWAYS_SOFTWARE=1
Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,ada,c++,java,go,d,fortran,objc,obj-c++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-default-libstdcxx-abi=new --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Disk Notes: NONE / data=ordered,errors=remount-ro,relatime,rw
Processor Notes: Scaling Governor: acpi-cpufreq ondemand
Python Notes: Python 2.7.12 + Python 3.5.2
Security Notes: OSB (observable speculation barrier Intel v6) + Full AMD retpoline Protection

Fedora Workstation 27

Processor: AMD EPYC 7551 32-Core @ 2.00GHz (32 Cores / 64 Threads), Motherboard: GIGABYTE MZ31-AR0-00 v01010101 (F03 BIOS), Chipset: AMD Family 17h, Memory: 28672MB, Disk: Samsung SSD 960 EVO 500GB, Graphics: llvmpipe 28032MB, Audio: NVIDIA GP104 HD Audio, Monitor: ASUS PB278, Network: Realtek RTL8111/8168/8411

OS: Fedora 27, Kernel: 4.15.7-300.fc27.x86_64 (x86_64), Desktop: GNOME Shell 3.26.2, OpenGL: 2.1 Mesa 17.3.6 (LLVM 5.0 128 bits), Compiler: GCC 7.3.1 20180303, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-redhat-linux --disable-libunwind-exceptions --enable-__cxa_atexit --enable-bootstrap --enable-checking=release --enable-gnu-indirect-function --enable-gnu-unique-object --enable-initfini-array --enable-languages=c,c++,objc,obj-c++,fortran,ada,go,lto --enable-libmpx --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 / data=ordered,relatime,rw,seclabel
Processor Notes: Scaling Governor: acpi-cpufreq ondemand
Python Notes: Python 2.7.14 + Python 3.6.4
Security Notes: SELinux + __user pointer sanitization + Full AMD retpoline IBPB Protection

Debian Testing

Processor: AMD EPYC 7551 32-Core @ 2.00GHz (32 Cores / 64 Threads), Motherboard: GIGABYTE MZ31-AR0-00 v01010101 (F03 BIOS), Chipset: AMD Family 17h, Memory: 8 x 4096 MB DDR4-2666MT/s 9ASF51272PZ-2G6E1, Disk: Samsung SSD 960 EVO 500GB, Graphics: llvmpipe 28032MB, Audio: NVIDIA GP104 HD Audio, Monitor: ASUS PB278, Network: Realtek RTL8111/8168/8411

OS: Debian testing, Kernel: 4.14.0-3-amd64 (x86_64), Desktop: GNOME Shell 3.26.2, Display Server: X Server 1.19.6, OpenGL: 3.3 Mesa 17.3.6 (LLVM 5.0 128 bits), Compiler: GCC 7.3.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --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 --with-tune=generic --without-cuda-driver -v
Disk Notes: NONE / data=ordered,errors=remount-ro,relatime,rw
Processor Notes: Scaling Governor: acpi-cpufreq ondemand
Python Notes: Python 2.7.14+ + Python 3.6.4+
Security Notes: Full AMD retpoline Protection

openSUSE Tumbleweed

Processor: AMD EPYC 7551 32-Core @ 2.00GHz (32 Cores / 64 Threads), Motherboard: GIGABYTE MZ31-AR0-00 v01010101 (F03 BIOS), Chipset: AMD Family 17h, Memory: 28672MB, Disk: Samsung SSD 960 EVO 500GB, Graphics: llvmpipe 28032MB, Audio: NVIDIA GP104 HD Audio, Monitor: ASUS PB278, Network: Realtek RTL8111/8168/8411

OS: openSUSE Tumbleweed 20180312, Kernel: 4.15.7-1-default (x86_64), Desktop: KDE Plasma 5.12.3, Display Server: X Server 1.19.6, Display Driver: modesetting 1.19.6, OpenGL: 3.3 Mesa 18.0.0-rc4 (LLVM 5.0 128 bits), Compiler: GCC 7.3.1 20180307 [gcc-7-branch revision 258314], File-System: xfs, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-suse-linux --disable-libcc1 --disable-libssp --disable-libstdcxx-pch --disable-libvtv --disable-werror --enable-__cxa_atexit --enable-checking=release --enable-gnu-indirect-function --enable-languages=c,c++,objc,fortran,obj-c++,ada,go --enable-libstdcxx-allocator=new --enable-linux-futex --enable-multilib --enable-offload-targets=hsa,nvptx-none=/usr/nvptx-none, --enable-plugin --enable-ssp --enable-version-specific-runtime-libs --host=x86_64-suse-linux --mandir=/usr/share/man --with-arch-32=x86-64 --with-gcc-major-version-only --with-slibdir=/lib64 --with-tune=generic --without-cuda-driver --without-system-libunwind
Disk Notes: NONE / attr2,inode64,noquota,relatime,rw
Processor Notes: Scaling Governor: acpi-cpufreq ondemand
Python Notes: Python 2.7.14 + Python 3.6.4
Security Notes: __user pointer sanitization + Full AMD retpoline IBPB Protection

	Ubuntu 18.04 LTS 20180311	Clear Linux 21260	Ubuntu 16.04 LTS	Fedora Workstation 27	Debian Testing	openSUSE Tumbleweed
SQLite - T.S.I (sec)	**44.21**	**40.10**	42.93	42.64	43.29	43.26
Normalized	90.7%	100%	93.41%	94.04%	92.63%	92.7%
Standard Deviation	2.8%	0.4%	0.6%	0.4%	0.5%	0.1%
Flexible IO Tester - Rand Read - Linux AIO - No - Yes - 64KB (MB/s)	**921**	**934**	933	926	927	**934**
Normalized	98.61%	100%	99.89%	99.14%	99.25%	100%
Flexible IO Tester - Rand Read - Linux AIO - No - Yes - 64KB (IOPS)	**14700**	**14900**	**14900**	14800	14800	**14900**
Normalized	98.66%	100%	100%	99.33%	99.33%	100%
Flexible IO Tester - Rand Write - Linux AIO - No - Yes - 64KB (MB/s)	1589	**1617**	1599	1579	**1576**	1601
Normalized	98.27%	100%	98.89%	97.65%	97.46%	99.01%
Standard Deviation	0.3%	0.3%	0.6%	0.6%	0.2%	1%
Flexible IO Tester - Rand Write - Linux AIO - No - Yes - 64KB (IOPS)	25400	**25833**	25600	25267	**25233**	25600
Normalized	98.32%	100%	99.1%	97.81%	97.68%	99.1%
Standard Deviation		0.2%	0.7%	0.6%	0.2%	1%

Linux Distro Tests

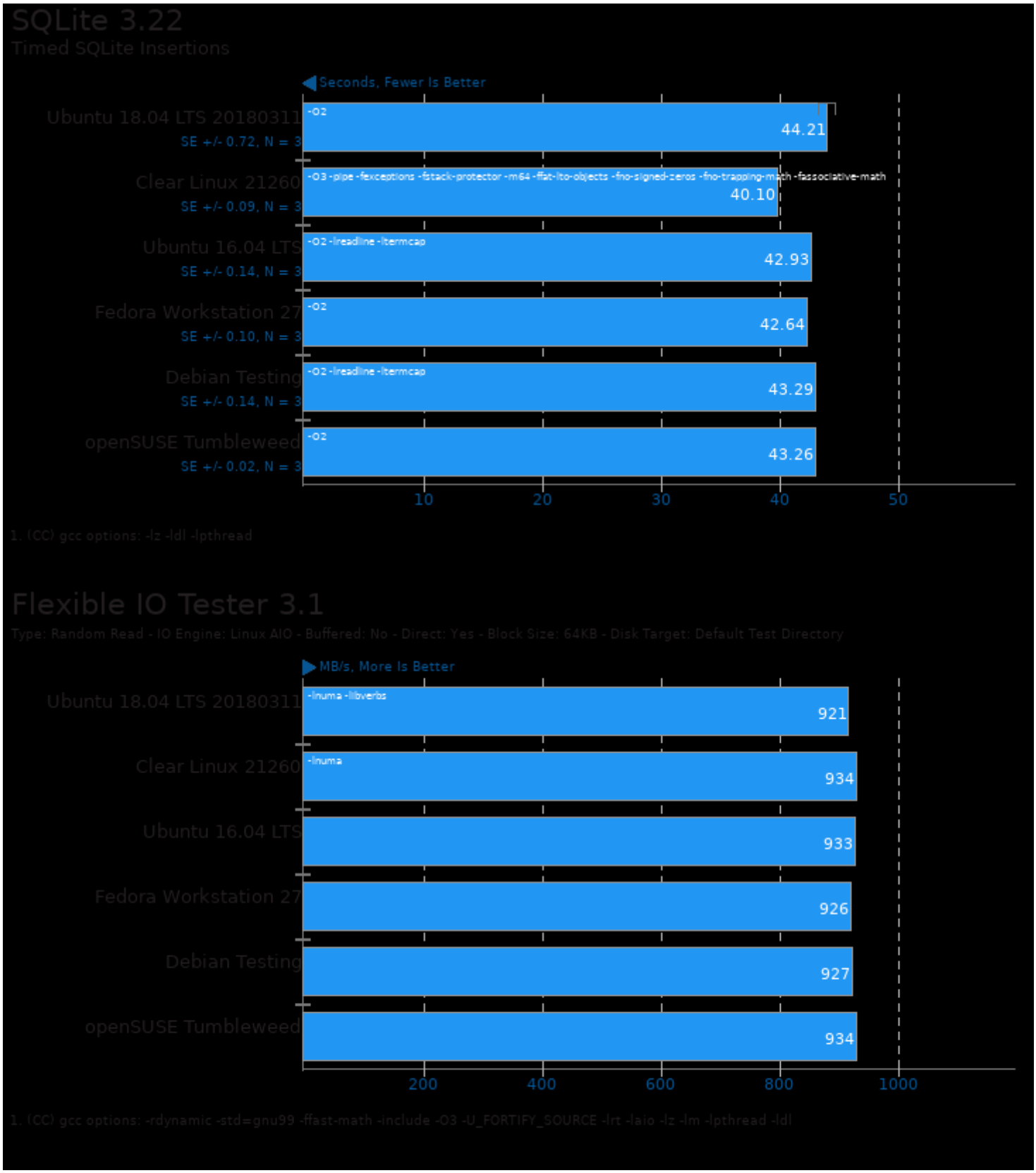
Flexible IO Tester - Seq Read - Linux AIO - No - Yes - 64KB (MB/s)	2332	1604	1842	1661	1632	1790
Normalized	100%	68.78%	78.99%	71.23%	69.98%	76.76%
Standard Deviation	0.3%		0%			
Flexible IO Tester - Seq Read - Linux AIO - No - Yes - 64KB (IOPS)	37333	25700	29500	26600	26100	28600
Normalized	100%	68.84%	79.02%	71.25%	69.91%	76.61%
Standard Deviation	0.3%					
Flexible IO Tester - Seq Write - Linux AIO - No - Yes - 64KB (MB/s)	1779	1798	1802	1764	1756	1802
Normalized	98.72%	99.78%	100%	97.89%	97.45%	100%
Standard Deviation	0.2%	0.1%	0.1%	0.3%	0.1%	0.1%
Flexible IO Tester - Seq Write - Linux AIO - No - Yes - 64KB (IOPS)	28467	28767	28833	28233	28100	28833
Normalized	98.73%	99.77%	100%	97.92%	97.46%	100%
Standard Deviation	0.2%	0.2%	0.2%	0.4%		0.2%
BlogBench - Write (Final Score)	14583	11054	18907	13299	17356	6513
Normalized	77.13%	58.47%	100%	70.34%	91.8%	34.45%
Standard Deviation	7.6%	2.2%	5.3%	6.9%	5.1%	19%
Compile Bench - Compile (MB/s)	1071	1690	1391	1471	1453	1588
Normalized	63.33%	100%	82.27%	87%	85.92%	93.91%
Standard Deviation	2.8%	3.2%	1.6%	1%	1.2%	9.9%
Compile Bench - Initial Create (MB/s)	351.53	441.89	383.66	271.12	348.01	267.95
Normalized	79.55%	100%	86.82%	61.35%	78.75%	60.64%
Standard Deviation	3%	3.6%	0.6%	2.9%	3.6%	1%
Compile Bench - Read Compiled Tree (MB/s)	2091	1073	2126	1904	1016	2064
Normalized	98.37%	50.45%	100%	89.56%	47.77%	97.07%
Standard Deviation	2.2%	2.2%	2.1%	1.6%	1.5%	0.9%
Timed MAFFT Alignment - M.S.A (sec)	3.95	3.75	3.71	3.85	3.80	
Normalized	93.92%	98.93%	100%	96.36%	97.63%	
Standard Deviation	10.3%	12.5%	4.7%	9.5%	9.2%	
Numpy Benchmark (Nanoseconds)	9327444	8812639	9128211	10119953	9569290	10603271
Normalized	94.48%	100%	96.54%	87.08%	92.09%	83.11%
Crafty - Elapsed Time (Nodes/s)	5306777	5473131	5474669	5492756	5281660	5523601
Normalized	96.07%	99.09%	99.11%	99.44%	95.62%	100%
Standard Deviation	0.5%	0.7%	0%	0.3%	0.8%	0.3%
x264 - H.2.V.E (FPS)	99.76	121.27	96.83		102.82	101.28
Normalized	82.26%	100%	79.85%		84.79%	83.52%
Standard Deviation	3.3%	0.8%	1.7%		2.6%	3.3%

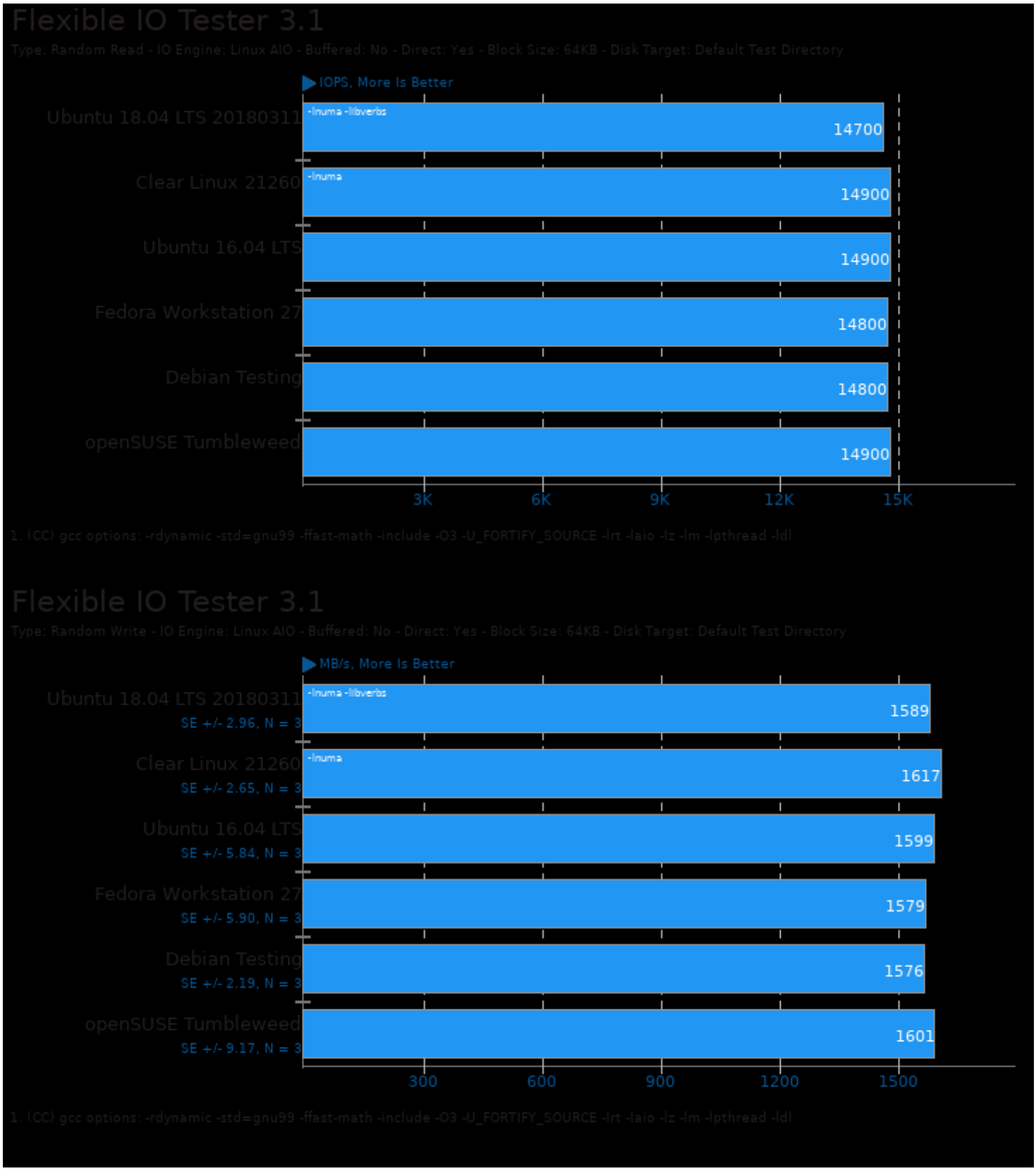
Linux Distro Tests

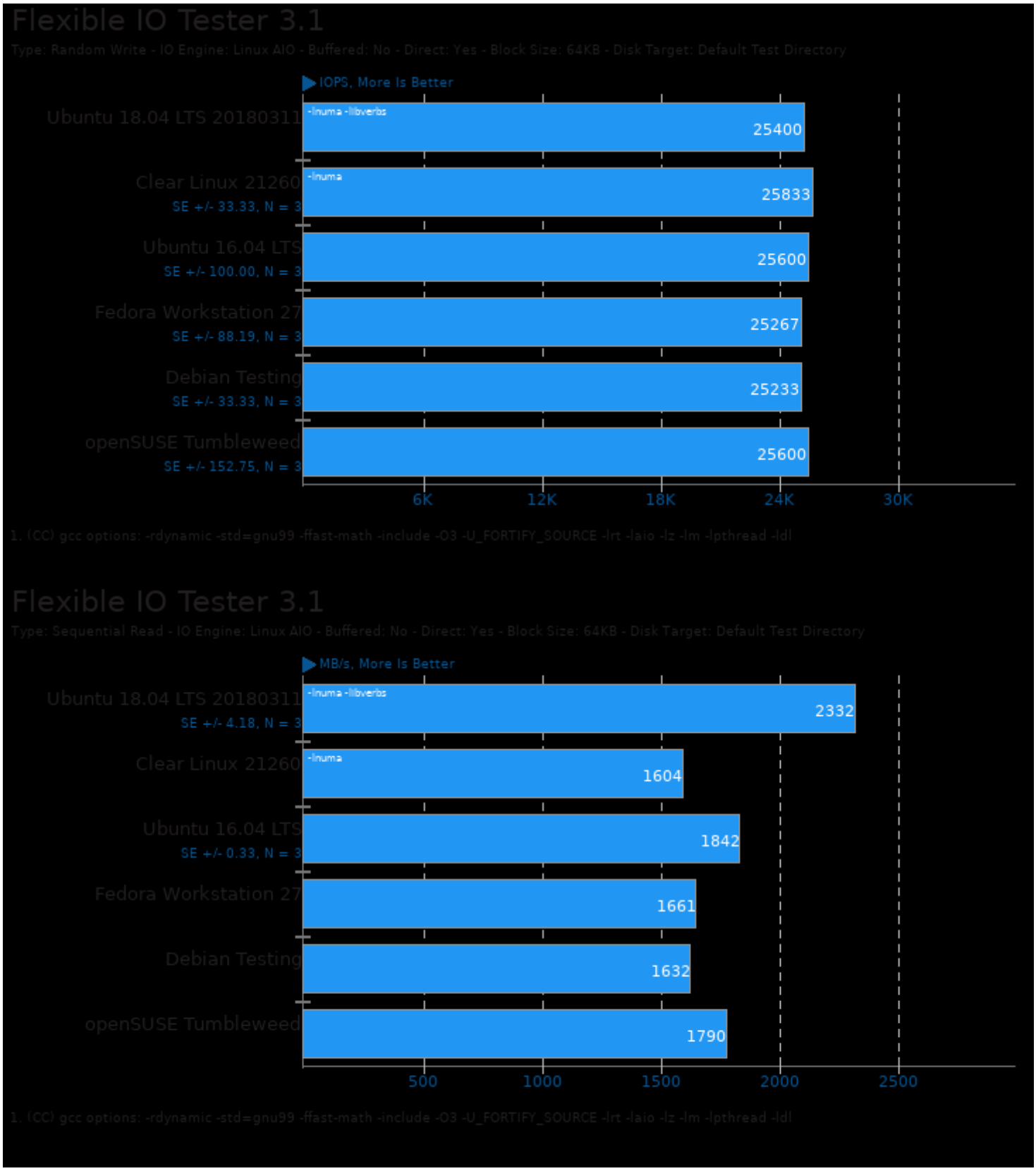
GraphicsMagick - Blur (Iterations/min)	130		136	144		
Normalized	90.28%		94.44%	100%		
Standard Deviation	1.9%		0.4%			
GraphicsMagick - Sharpen (Iterations/min)	169		164	173		
Normalized	97.69%		94.8%	100%		
Standard Deviation	0.9%			0.3%		
GraphicsMagick - Resizing (Iterations/min)	166		159	169		
Normalized	98.22%		94.08%	100%		
Standard Deviation			0.7%	3.3%		
GraphicsMagick - HWB Color Space (Iterations/min)	185		183	192		
Normalized	96.35%		95.31%	100%		
Standard Deviation	2.8%			5.3%		
GraphicsMagick - L.A.T (Iterations/min)	102		100	102		
Normalized	100%		98.04%	100%		
Standard Deviation				1.5%		
Himeno Benchmark - P.P.S (MFLOPS)	957.43	964.54	961.89	959.38	962.25	951.66
Normalized	99.26%	100%	99.73%	99.47%	99.76%	98.66%
Standard Deviation	1.2%	1.5%	0.5%	0.6%	0.3%	1.5%
7-Zip Compression - C.S.T (MIPS)	81832	94387	82153	81882	94986	93965
Normalized	86.15%	99.37%	86.49%	86.2%	100%	98.93%
Standard Deviation	6.9%	1.8%	2.5%	2.2%	2.9%	3.7%
Y-Cruncher - C.5.P.D (sec)	22.24	18.42	23.79	22.14	27.92	20.43
Normalized	82.82%	100%	77.43%	83.2%	65.97%	90.16%
Standard Deviation	2.8%	1.4%	7.8%	12.1%	23.4%	5.2%
Gzip Compression - L.S.T.A.T.t.g (sec)	49.79	6.62	48.17	51.84	49.98	49.25
Normalized	13.3%	100%	13.74%	12.77%	13.25%	13.44%
Standard Deviation	0.1%	0.3%	0.6%	0.6%	1.5%	0.5%
FLAC Audio Encoding - WAV To FLAC (sec)	13.15	11.92	12.50	12.68	12.73	12.59
Normalized	90.65%	100%	95.36%	94.01%	93.64%	94.68%
Standard Deviation	2.7%	0.2%	0.9%	0.3%	1.7%	0.2%
FFmpeg - H.2.H.T.N.D (sec)	10.63	7.51	10.82	8.23	10.39	10.09
Normalized	70.65%	100%	69.41%	91.25%	72.28%	74.43%
Standard Deviation	0.6%	1.1%	1.9%	1.9%	1.8%	1.2%
Perl Benchmarks - Pod2html (sec)	0.20304006		0.21876299		0.20709668	0.21019464
Normalized	100%		92.81%		98.04%	96.6%
Standard Deviation	0.3%		0.2%		1.5%	1.1%
Perl Benchmarks - Interpreter (sec)	0.00271835		0.00264319		0.00279077	0.00295936
Normalized	97.24%		100%		94.71%	89.32%
Standard Deviation	1.5%		0.9%		0.7%	0.3%
R Benchmark (sec)	0.9586		1.0390	0.5055	0.9839	
Normalized	52.73%		48.65%	100%	51.38%	
Standard Deviation	0.9%		0.6%	1.5%	3.7%	

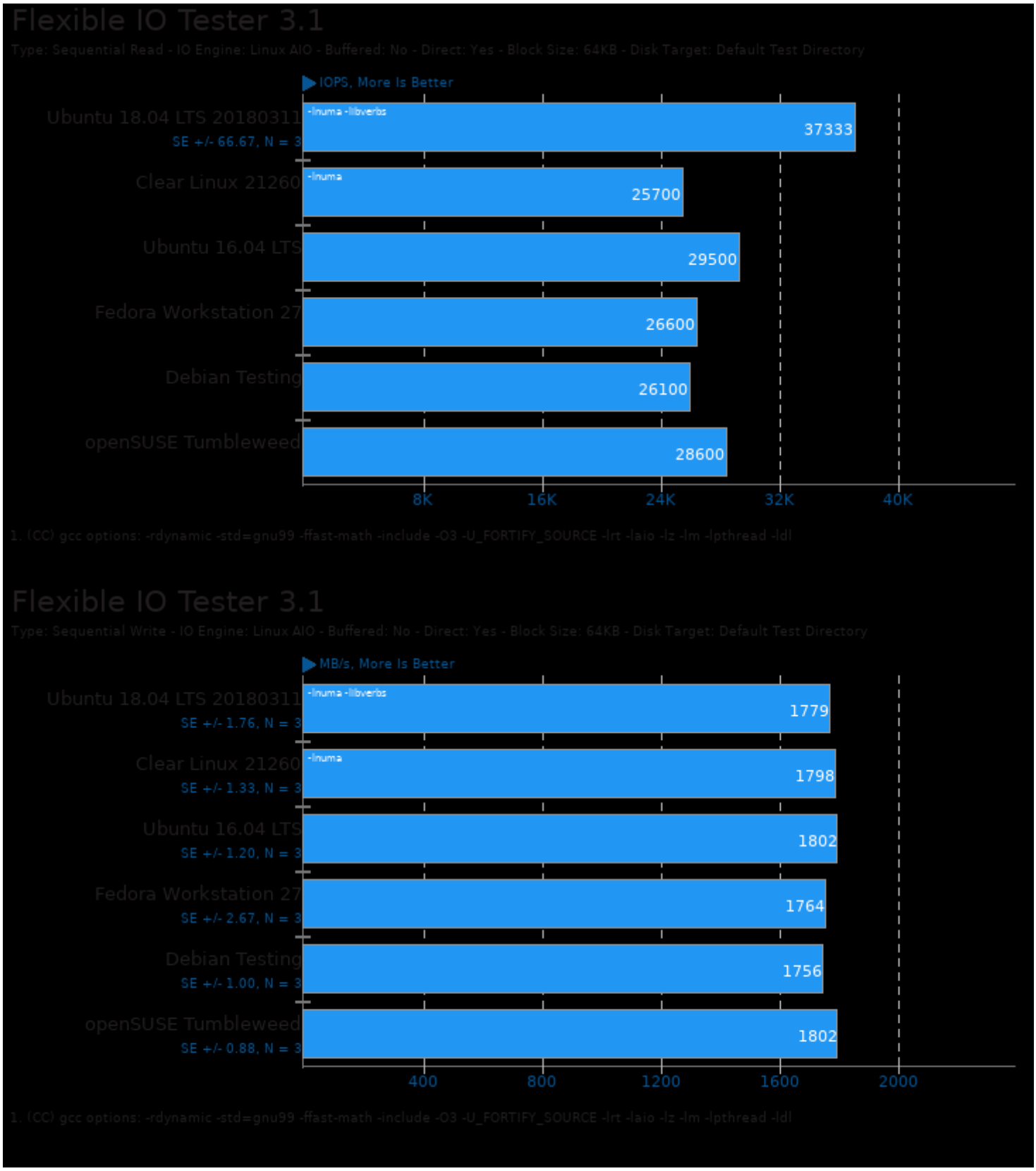
Linux Distro Tests

libjpeg-turbo tjbench - D.T (Megapixels/sec)	129.52	131.82	**132.62**	131.33	**127.72**	132.16
Normalized	97.66%	99.4%	100%	99.03%	96.31%	99.65%
Standard Deviation	0.9%	0%	0.1%	0.1%	3.3%	0.1%
Redis - GET (Reqs/sec)	1452810	**1985370**	1610047	1470004	1554551	**1365271**
Normalized	73.18%	100%	81.1%	74.04%	78.3%	68.77%
Standard Deviation	4.1%	9.2%	8%	4.1%	3%	2.1%
Redis - SET (Reqs/sec)	1044721	**1304731**	1075445	1020777	1080347	**999337**
Normalized	80.07%	100%	82.43%	78.24%	82.8%	76.59%
Standard Deviation	2.7%	6.4%	3.1%	0.6%	8.8%	5.2%
PyBench - T.F.A.T.T (Milliseconds)	2168	**1619**	2160	2168	**2170**	2153
Normalized	74.68%	100%	74.95%	74.68%	74.61%	75.2%
Standard Deviation	0.1%	0.3%		0.1%	0.1%	0.4%
Apache Benchmark - S.W.P.S (Reqs/sec)	**16675**	**20590**	18985		19011	
Normalized	80.98%	100%	92.2%		92.33%	
Standard Deviation	0.2%	0.2%	0.5%		1.2%	
PHPBench - P.B.S (Score)	357160	**481860**	**290917**	308566	366323	382149
Normalized	74.12%	100%	60.37%	64.04%	76.02%	79.31%
Standard Deviation	0.9%	0.5%	0.7%	1%	0.7%	0.8%
Scikit-Learn (sec)	152.26	**19.68**	**160.69**		151.04	
Normalized	12.93%	100%	12.25%		13.03%	
Standard Deviation	0.1%	1%	0.2%		0.1%	

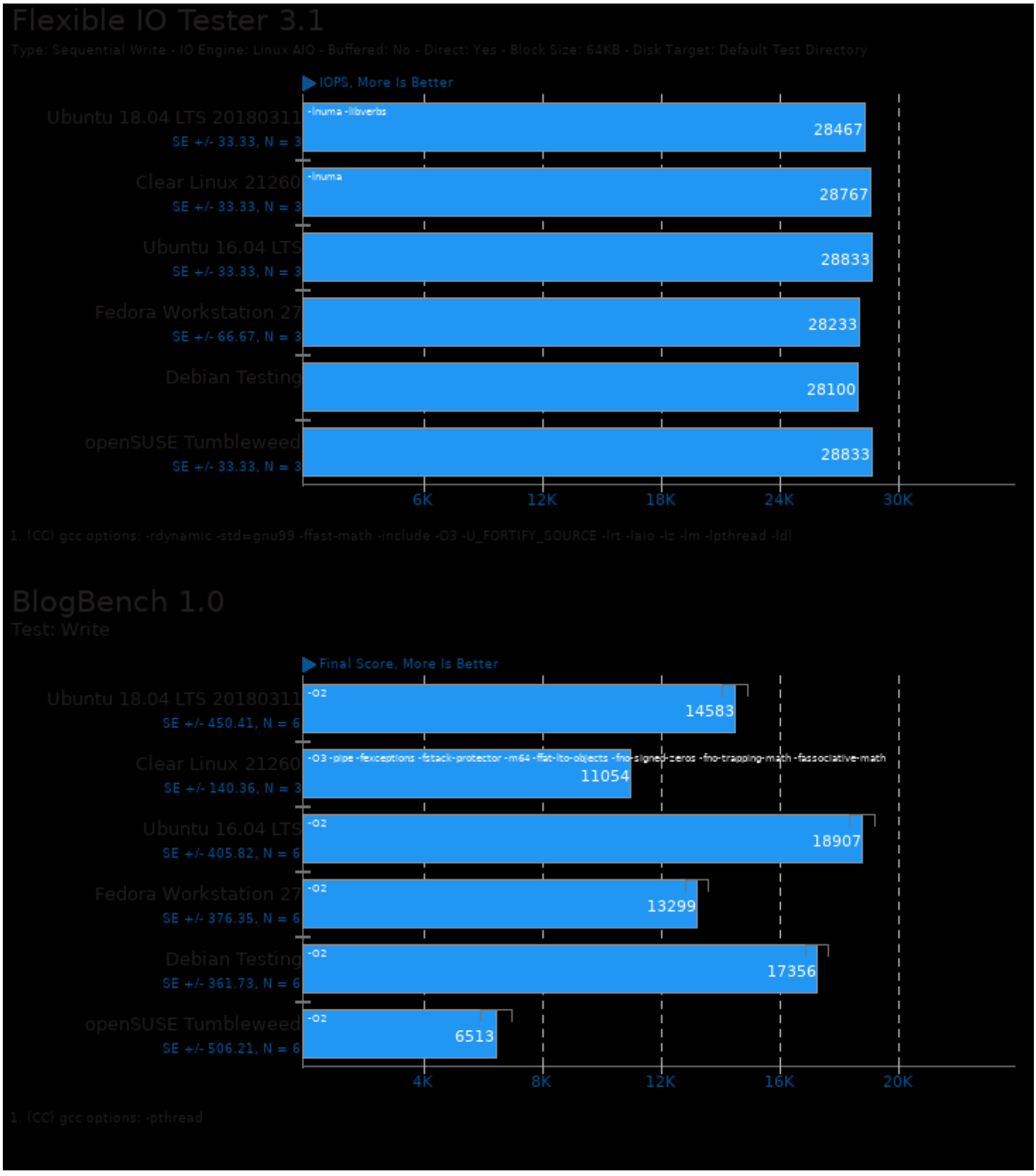

SQLite 3.22
Timed SQLite Insertions
Seconds, Fewer Is Better
Ubuntu 18.04 LTS 20180311
SE +/- 0.72, N = 3
-O2
44.21
Clear Linux 21260
SE +/- 0.09, N = 3
-O3 -pipe -fexceptions -fstack-protector -m64 -flat-lto-objects -fno-signed-zeros -fno-trapping-math -fassociative-math
40.10
Ubuntu 16.04 LTS
SE +/- 0.14, N = 3
-O2 -lreadline -ltermcap
42.93
Fedora Workstation 27
SE +/- 0.10, N = 3
-O2
42.64
Debian Testing
SE +/- 0.14, N = 3
-O2 -lreadline -ltermcap
43.29
openSUSE Tumbleweed
SE +/- 0.02, N = 3
-O2
43.26
10
20
30
40
50
1. (CC) gcc options: -lz -ldl -lpthread
Flexible IO Tester 3.1
Type: Random Read - IO Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 64KB - Disk Target: Default Test Directory
MB/s, More Is Better
Ubuntu 18.04 LTS 20180311
-lnuma -libverbs
921
Clear Linux 21260
-lnuma
934
Ubuntu 16.04 LTS
933
Fedora Workstation 27
926
Debian Testing
927
openSUSE Tumbleweed
934
200
400
600
800
1000
1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -U_FORTIFY_SOURCE -lrt -laio -lz -lm -lpthread -ldl


Flexible IO Tester 3.1
Type: Random Read - IO Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 64KB - Disk Target: Default Test Directory
IOPS, More Is Better
Ubuntu 18.04 LTS 20180311
-lnuma -libverbs
14700
Clear Linux 21260
-lnuma
14900
Ubuntu 16.04 LTS
14900
Fedora Workstation 27
14800
Debian Testing
14800
openSUSE Tumbleweed
14900
3K
6K
9K
12K
15K
1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -U_FORTIFY_SOURCE -lrt -laio -lz -lm -lpthread -ldl
Flexible IO Tester 3.1
Type: Random Write - IO Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 64KB - Disk Target: Default Test Directory
MB/s, More Is Better
Ubuntu 18.04 LTS 20180311
SE +/- 2.96, N = 3
-lnuma -libverbs
1589
Clear Linux 21260
SE +/- 2.65, N = 3
-lnuma
1617
Ubuntu 16.04 LTS
SE +/- 5.84, N = 3
1599
Fedora Workstation 27
SE +/- 5.90, N = 3
1579
Debian Testing
SE +/- 2.19, N = 3
1576
openSUSE Tumbleweed
SE +/- 9.17, N = 3
1601
300
600
900
1200
1500
1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -U_FORTIFY_SOURCE -lrt -laio -lz -lm -lpthread -ldl

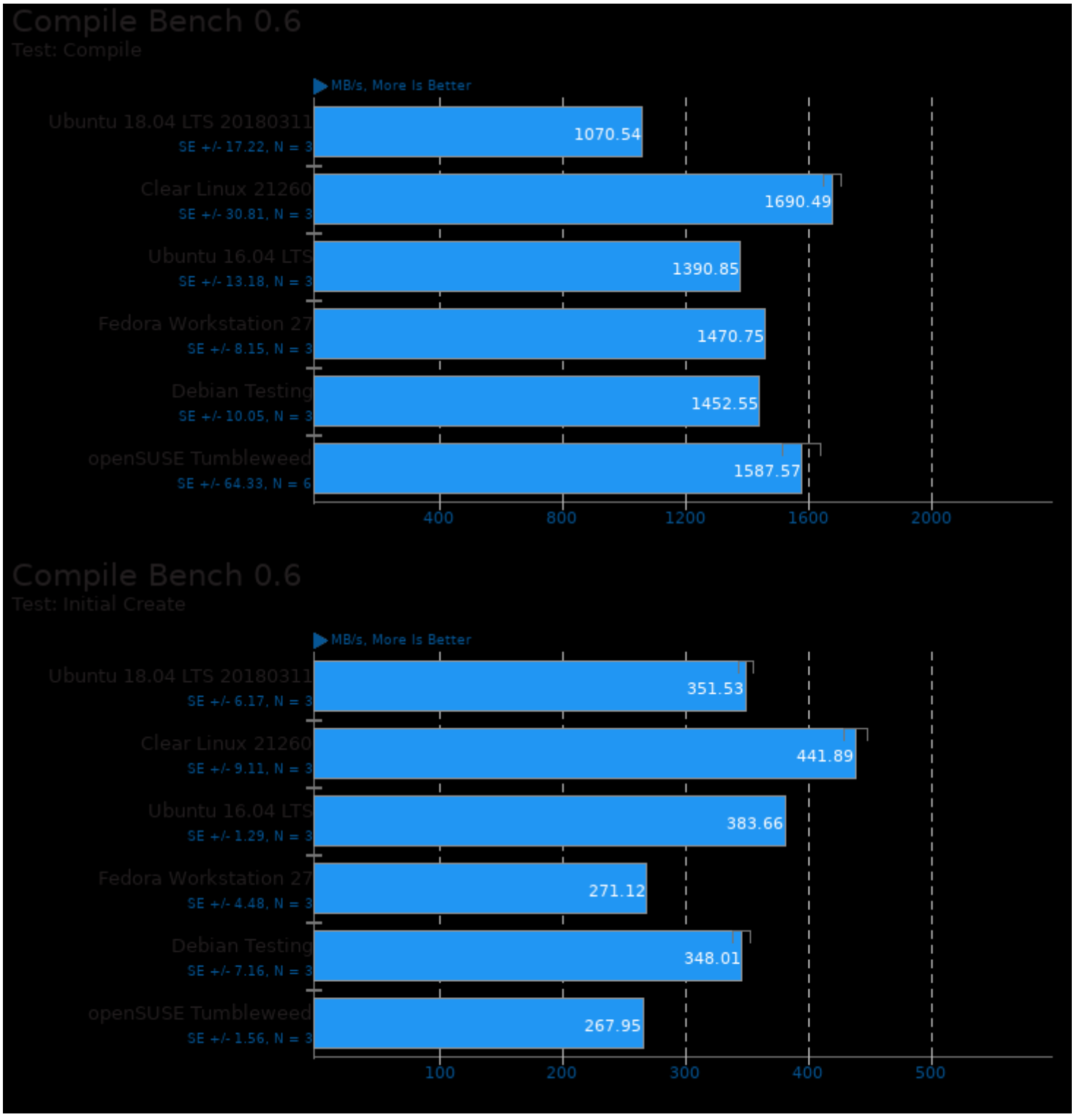

Flexible IO Tester 3.1
Type: Random Write - IO Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 64KB - Disk Target: Default Test Directory
IOPS, More Is Better
Ubuntu 18.04 LTS 20180311
-lnuma -libverbs
25400
Clear Linux 21260
SE +/- 33.33, N = 3
-lnuma
25833
Ubuntu 16.04 LTS
SE +/- 100.00, N = 3
25600
Fedora Workstation 27
SE +/- 88.19, N = 3
25267
Debian Testing
SE +/- 33.33, N = 3
25233
openSUSE Tumbleweed
SE +/- 152.75, N = 3
25600
6K
12K
18K
24K
30K
1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -U_FORTIFY_SOURCE -lrt -laio -lz -lm -lpthread -ldl
Flexible IO Tester 3.1
Type: Sequential Read - IO Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 64KB - Disk Target: Default Test Directory
MB/s, More Is Better
Ubuntu 18.04 LTS 20180311
SE +/- 4.18, N = 3
-lnuma -libverbs
2332
Clear Linux 21260
-lnuma
1604
Ubuntu 16.04 LTS
SE +/- 0.33, N = 3
1842
Fedora Workstation 27
1661
Debian Testing
1632
openSUSE Tumbleweed
1790
500
1000
1500
2000
2500
1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -U_FORTIFY_SOURCE -lrt -laio -lz -lm -lpthread -ldl

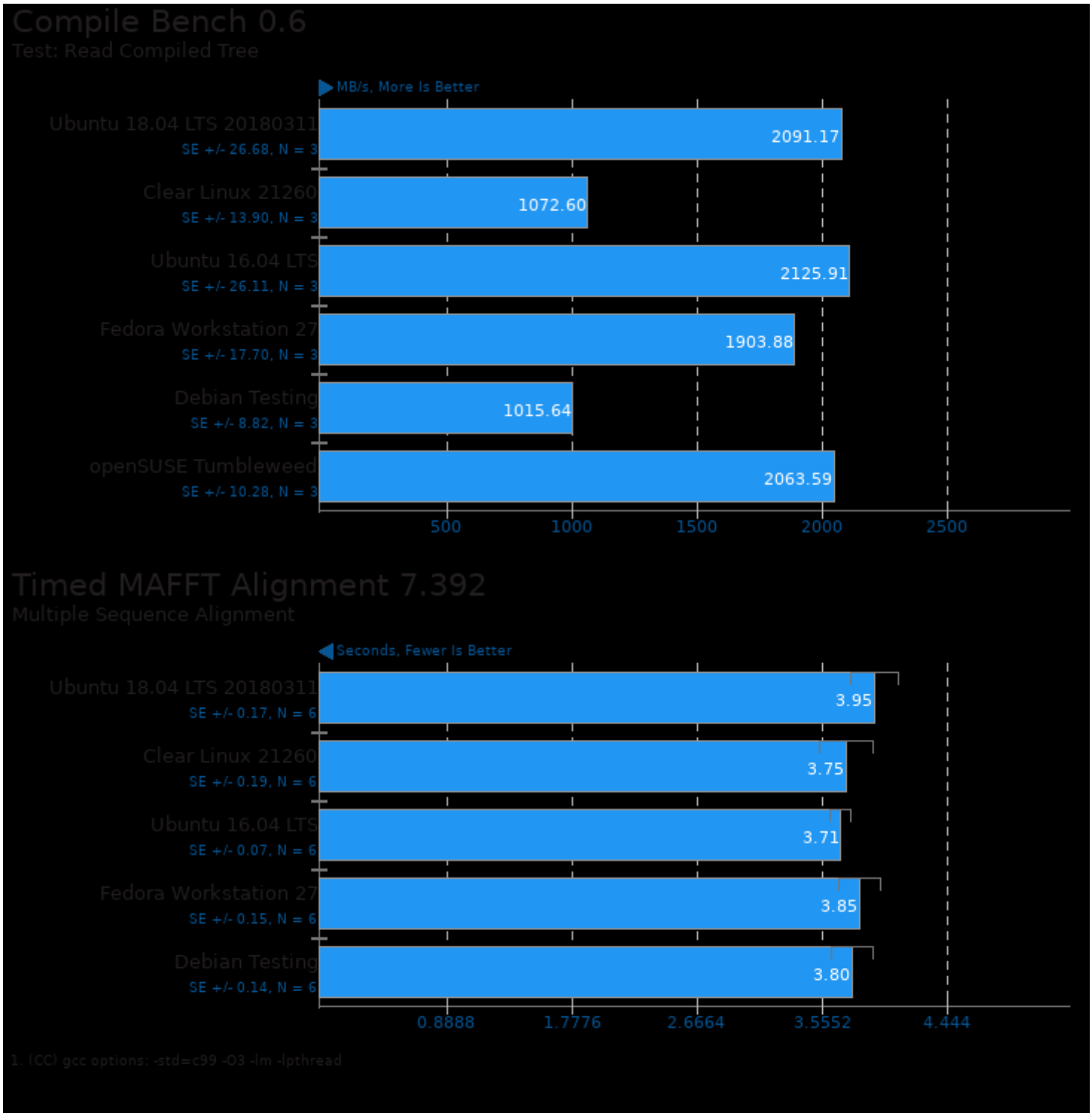

Flexible IO Tester 3.1
Type: Sequential Read - IO Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 64KB - Disk Target: Default Test Directory
IOPS, More Is Better
Ubuntu 18.04 LTS 20180311
SE +/- 66.67, N = 3
-lnuma -libverbs
37333
Clear Linux 21260
-lnuma
25700
Ubuntu 16.04 LTS
29500
Fedora Workstation 27
26600
Debian Testing
26100
openSUSE Tumbleweed
28600
8K
16K
24K
32K
40K
1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -U_FORTIFY_SOURCE -lrt -laio -lz -lm -lpthread -ldl
Flexible IO Tester 3.1
Type: Sequential Write - IO Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 64KB - Disk Target: Default Test Directory
MB/s, More Is Better
Ubuntu 18.04 LTS 20180311
SE +/- 1.76, N = 3
-lnuma -libverbs
1779
Clear Linux 21260
SE +/- 1.33, N = 3
-lnuma
1798
Ubuntu 16.04 LTS
SE +/- 1.20, N = 3
1802
Fedora Workstation 27
SE +/- 2.67, N = 3
1764
Debian Testing
SE +/- 1.00, N = 3
1756
openSUSE Tumbleweed
SE +/- 0.88, N = 3
1802
400
800
1200
1600
2000
1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -U_FORTIFY_SOURCE -lrt -laio -lz -lm -lpthread -ldl

Linux Distro Tests

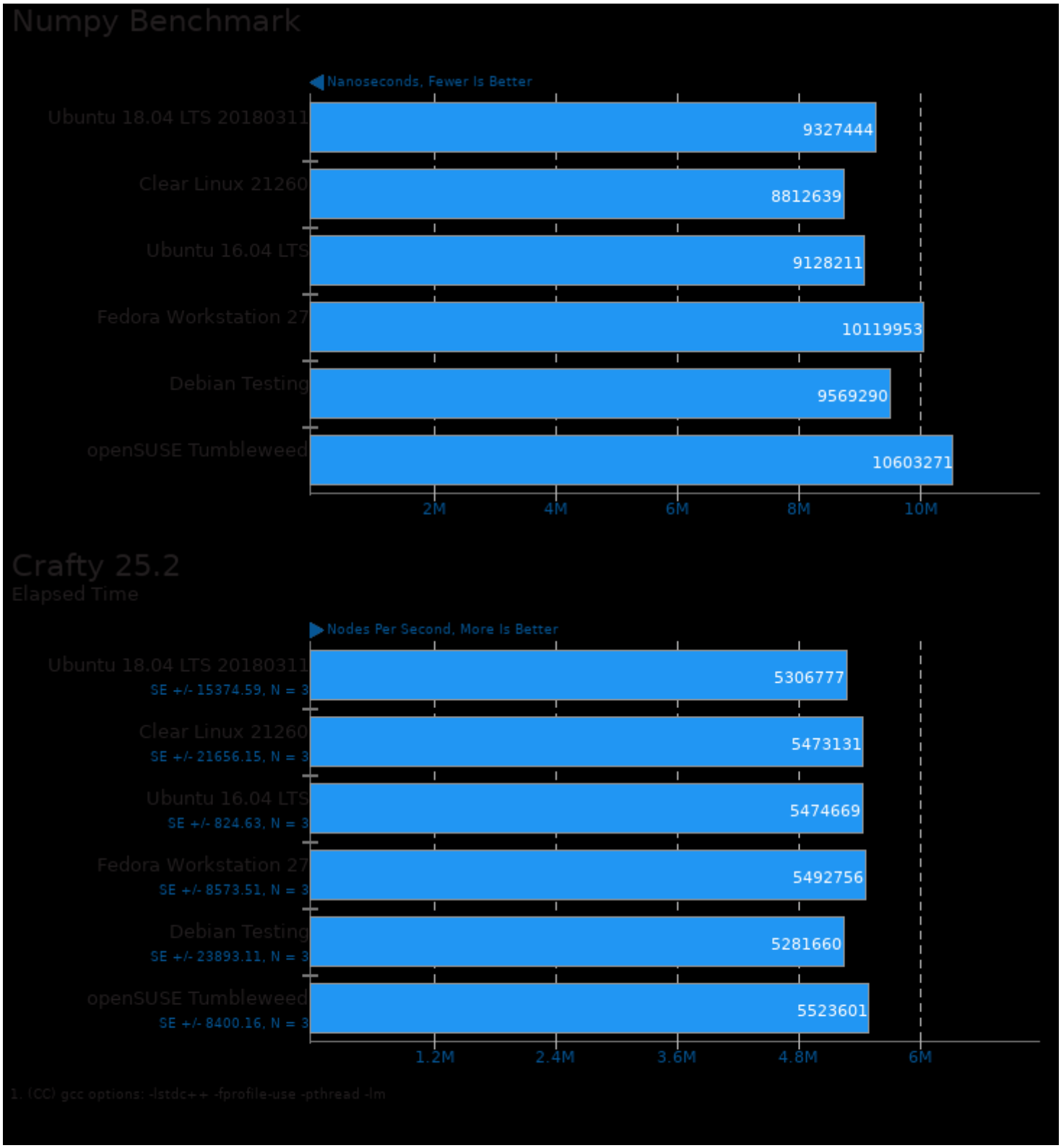


Linux Distro Tests



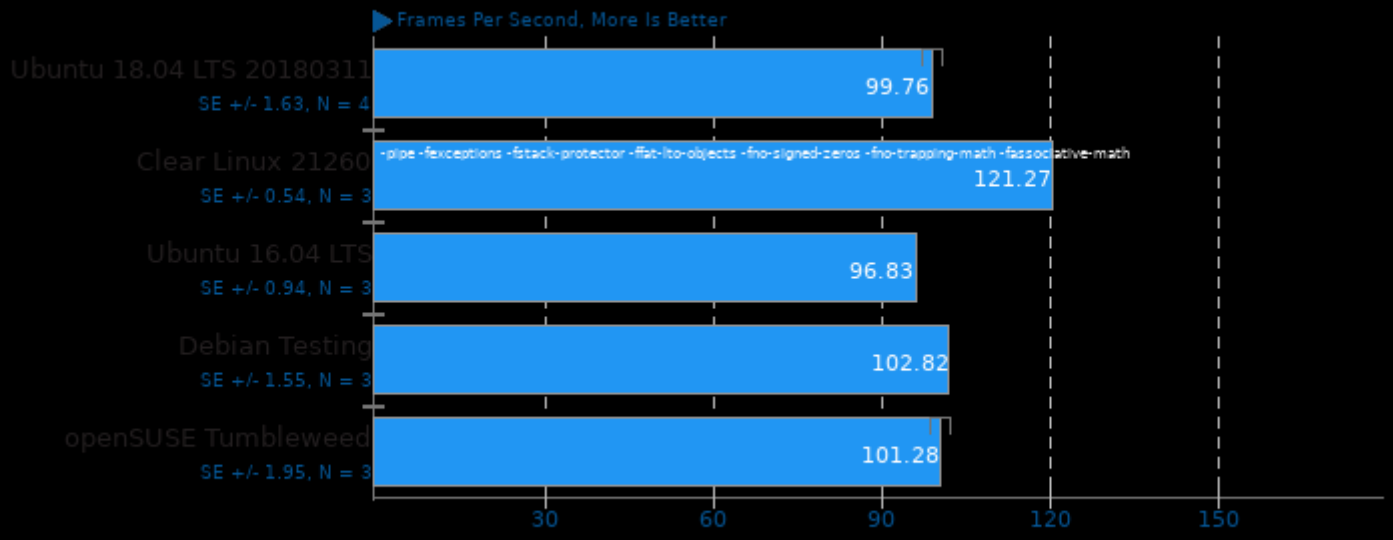

Compile Bench 0.6
Test: Read Compiled Tree
MB/s, More Is Better
Ubuntu 18.04 LTS 20180311
SE +/- 26.68, N = 3
2091.17
Clear Linux 21260
SE +/- 13.90, N = 3
1072.60
Ubuntu 16.04 LTS
SE +/- 26.11, N = 3
2125.91
Fedora Workstation 27
SE +/- 17.70, N = 3
1903.88
Debian Testing
SE +/- 8.82, N = 3
1015.64
openSUSE Tumbleweed
SE +/- 10.28, N = 3
2063.59
500
1000
1500
2000
2500
Timed MAFFT Alignment 7.392
Multiple Sequence Alignment
Seconds, Fewer Is Better
Ubuntu 18.04 LTS 20180311
SE +/- 0.17, N = 6
3.95
Clear Linux 21260
SE +/- 0.19, N = 6
3.75
Ubuntu 16.04 LTS
SE +/- 0.07, N = 6
3.71
Fedora Workstation 27
SE +/- 0.15, N = 6
3.85
Debian Testing
SE +/- 0.14, N = 6
3.80
0.8888
1.7776
2.6664
3.5552
4.444
1. (CC) gcc options: -std=c99 -O3 -lm -lpthread

Linux Distro Tests



x264 2018-02-05

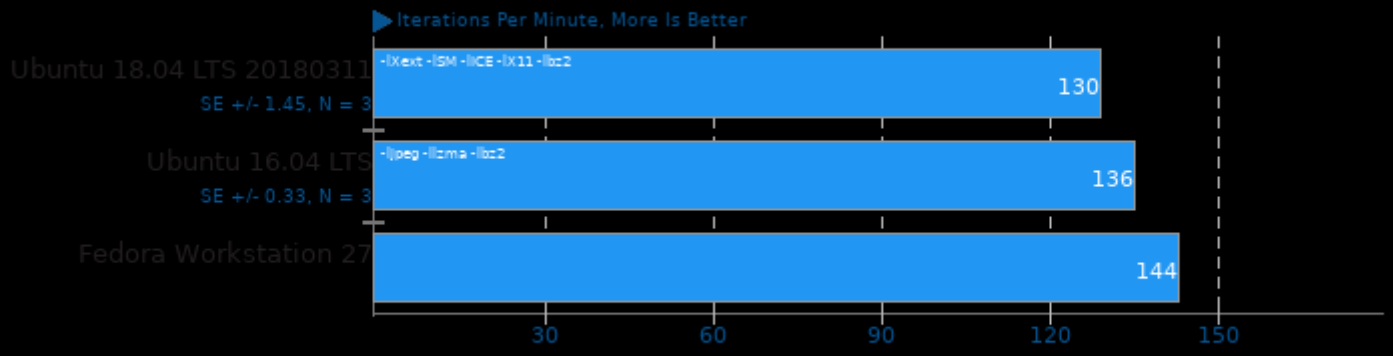
H.264 Video Encoding



1. (CC) gcc options: -ldl -m64 -lm -lpthread -O3 -ffast-math -std=gnu99 -fPIC -fomit-frame-pointer -fno-tree-vectorize

GraphicsMagick 1.3.28

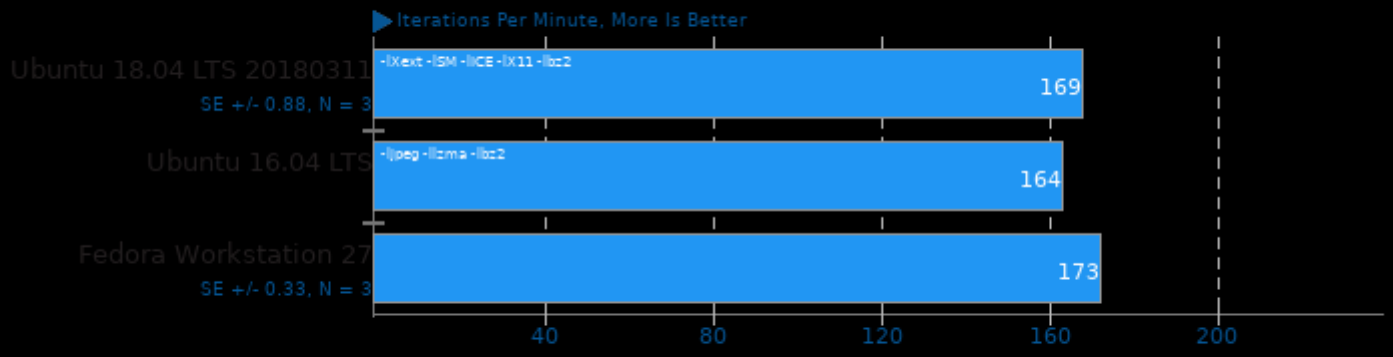
Operation: Blur



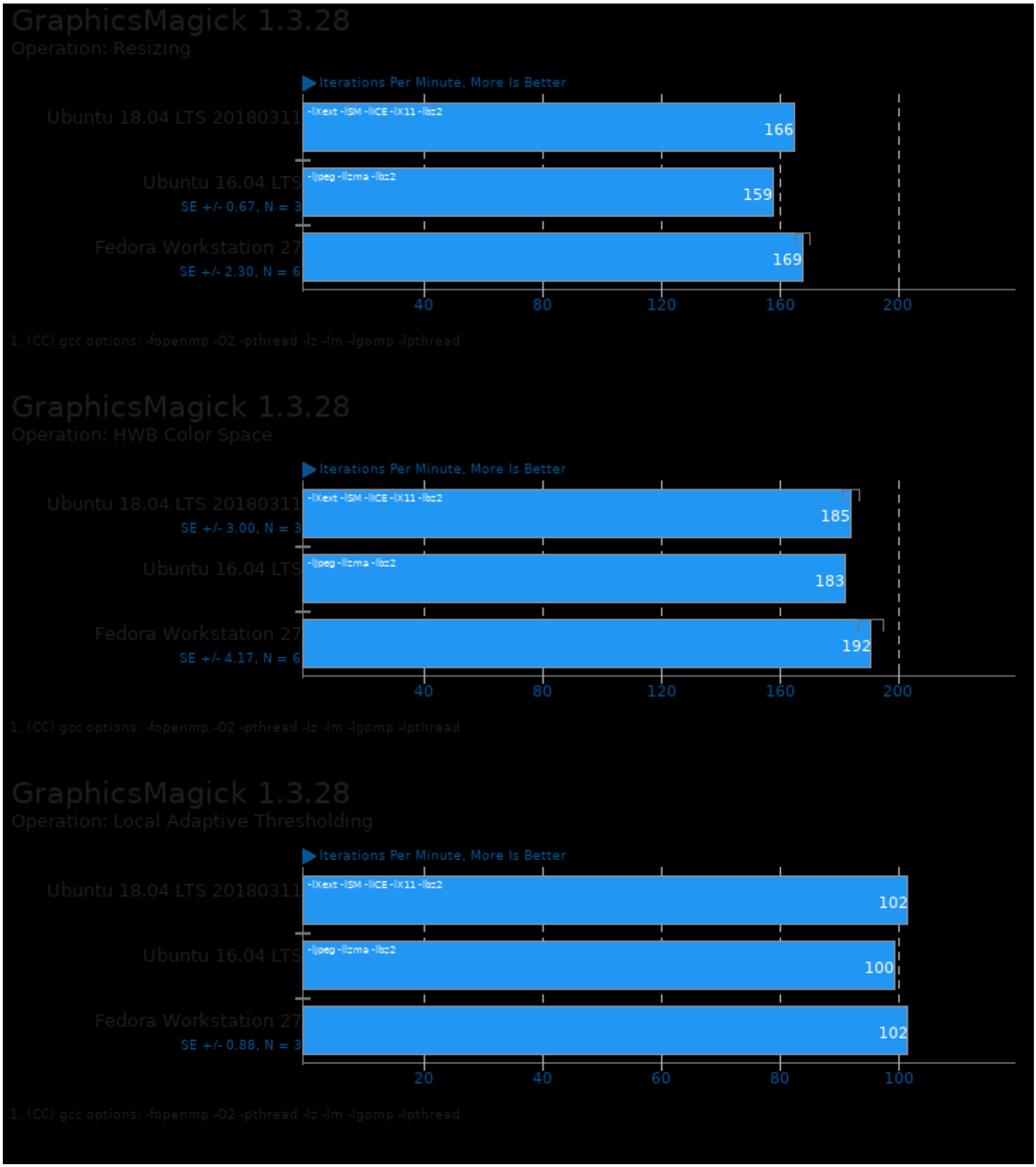
1. (CC) gcc options: -fopenmp -O2 -pthread -lz -lm -lgomp -lpthread

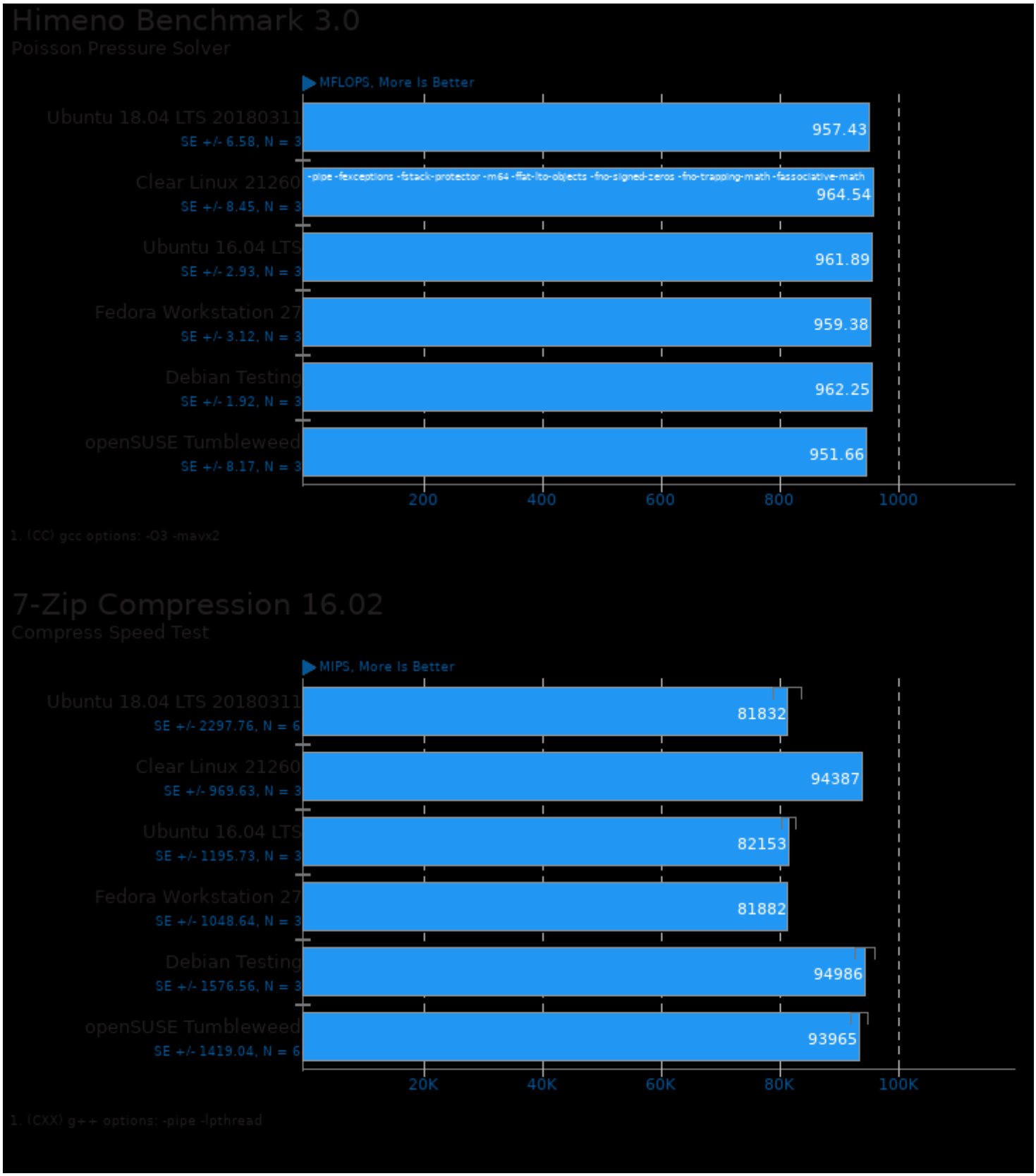
GraphicsMagick 1.3.28

Operation: Sharpen

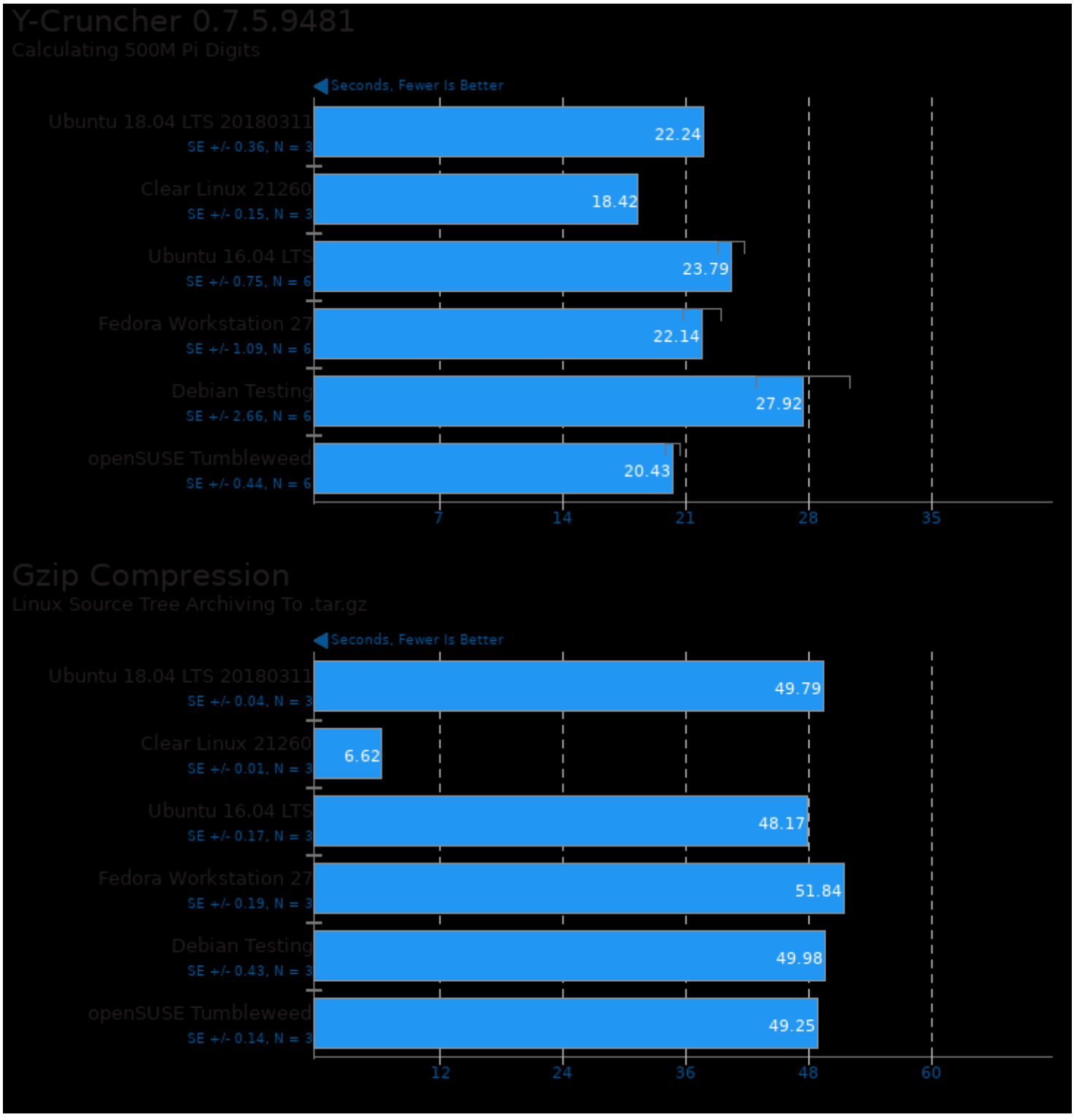


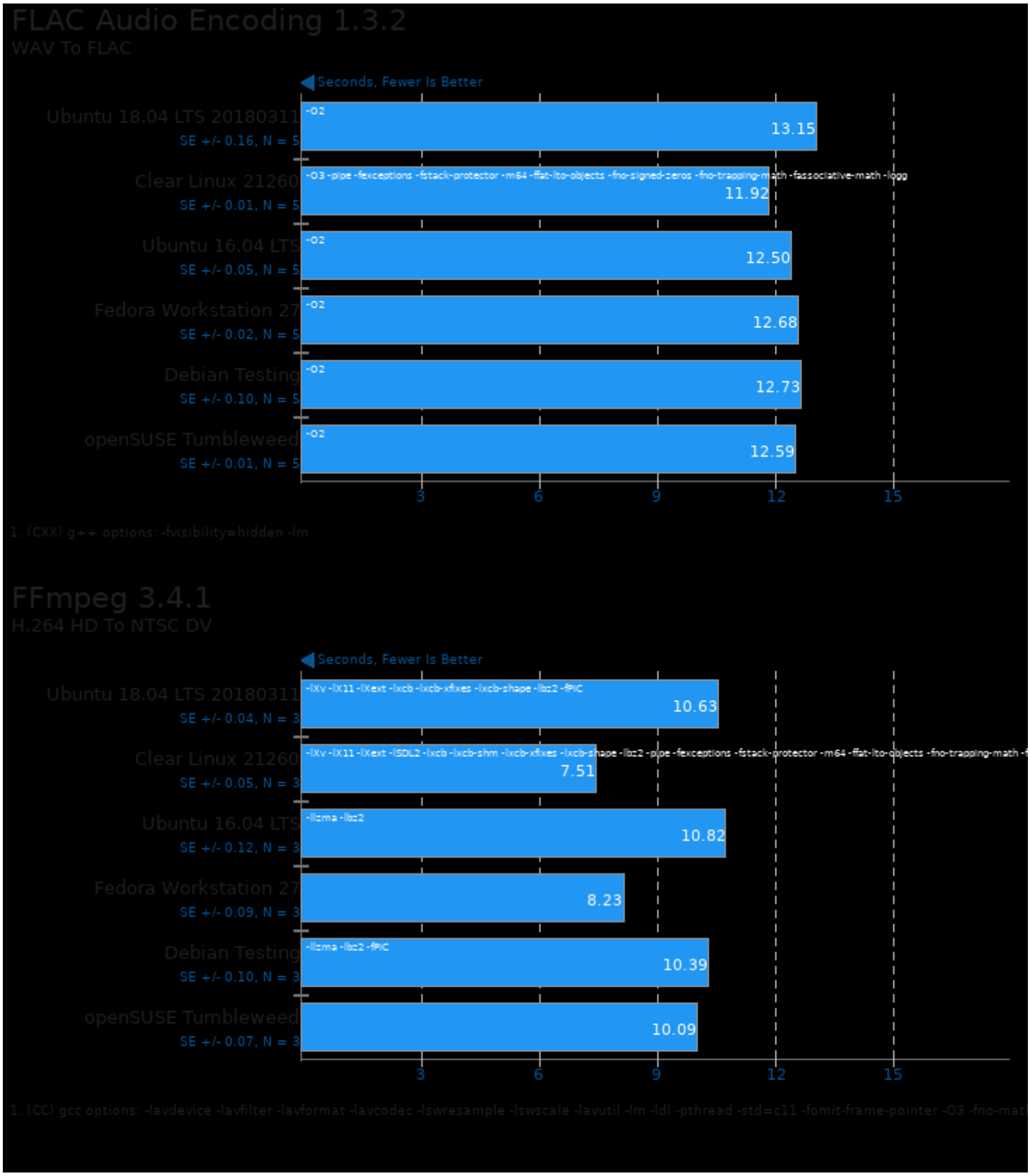
1. (CC) gcc options: -fopenmp -O2 -pthread -lz -lm -lgomp -lpthread


GraphicsMagick 1.3.28
Operation: Resizing
Iterations Per Minute, More Is Better
Ubuntu 18.04 LTS 20180311
-lXext -lSM -lICE -lX11 -lbz2
166
Ubuntu 16.04 LTS
-ljpeg -llzma -lbz2
159
SE +/- 0.67, N = 3
Fedora Workstation 27
169
SE +/- 2.30, N = 6
40
80
120
160
200
1. (CC) gcc options: -fopenmp -O2 -pthread -lz -lm -lgomp -lpthread
GraphicsMagick 1.3.28
Operation: HWB Color Space
Iterations Per Minute, More Is Better
Ubuntu 18.04 LTS 20180311
-lXext -lSM -lICE -lX11 -lbz2
185
SE +/- 3.00, N = 3
Ubuntu 16.04 LTS
-ljpeg -llzma -lbz2
183
Fedora Workstation 27
192
SE +/- 4.17, N = 6
40
80
120
160
200
1. (CC) gcc options: -fopenmp -O2 -pthread -lz -lm -lgomp -lpthread
GraphicsMagick 1.3.28
Operation: Local Adaptive Thresholding
Iterations Per Minute, More Is Better
Ubuntu 18.04 LTS 20180311
-lXext -lSM -lICE -lX11 -lbz2
102
Ubuntu 16.04 LTS
-ljpeg -llzma -lbz2
100
Fedora Workstation 27
102
SE +/- 0.88, N = 3
20
40
60
80
100
1. (CC) gcc options: -fopenmp -O2 -pthread -lz -lm -lgomp -lpthread


Himeno Benchmark 3.0
Poisson Pressure Solver
MFLOPS, More Is Better
Ubuntu 18.04 LTS 20180311
SE +/- 6.58, N = 3
957.43
Clear Linux 21260
SE +/- 8.45, N = 3
-pipe -fexceptions -fstack-protector -m64 -flat-lto-objects -fno-signed-zeros -fno-trapping-math -fassociative-math
964.54
Ubuntu 16.04 LTS
SE +/- 2.93, N = 3
961.89
Fedora Workstation 27
SE +/- 3.12, N = 3
959.38
Debian Testing
SE +/- 1.92, N = 3
962.25
openSUSE Tumbleweed
SE +/- 8.17, N = 3
951.66
200
400
600
800
1000
1. (CC) gcc options: -O3 -mavx2
7-Zip Compression 16.02
Compress Speed Test
MIPS, More Is Better
Ubuntu 18.04 LTS 20180311
SE +/- 2297.76, N = 6
81832
Clear Linux 21260
SE +/- 969.63, N = 3
94387
Ubuntu 16.04 LTS
SE +/- 1195.73, N = 3
82153
Fedora Workstation 27
SE +/- 1048.64, N = 3
81882
Debian Testing
SE +/- 1576.56, N = 3
94986
openSUSE Tumbleweed
SE +/- 1419.04, N = 6
93965
20K
40K
60K
80K
100K
1. (CXX) g++ options: -pipe -lpthread

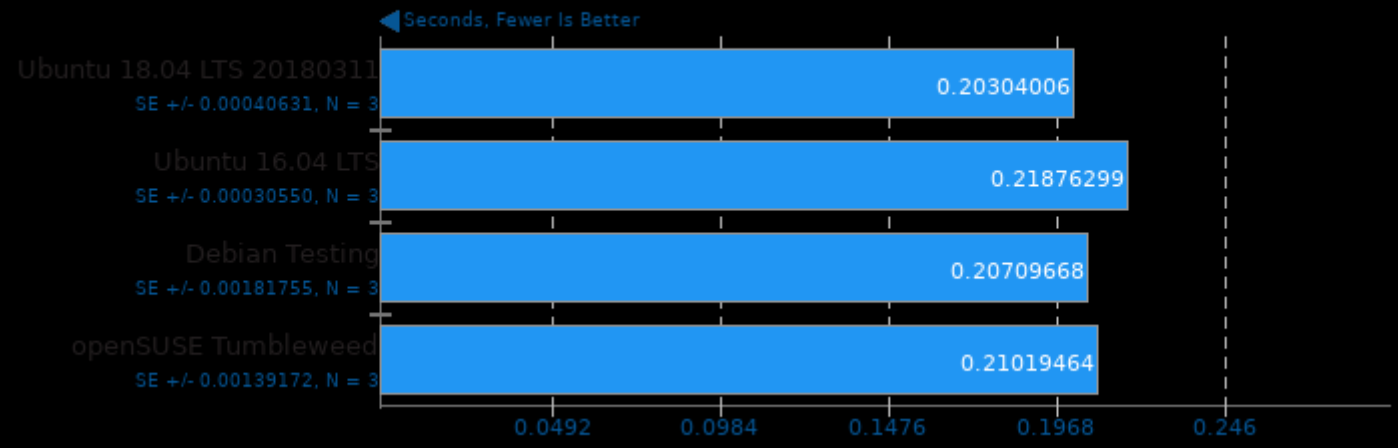
Linux Distro Tests




FLAC Audio Encoding 1.3.2
WAV To FLAC
Seconds, Fewer Is Better
Ubuntu 18.04 LTS 20180311
SE +/- 0.16, N = 5
-O2
13.15
Clear Linux 21260
SE +/- 0.01, N = 5
-O3 -pipe -fexceptions -fstack-protector -m64 -flat-lto-objects -fno-signed-zeros -fno-trapping-math -fassociative-math -logg
11.92
Ubuntu 16.04 LTS
SE +/- 0.05, N = 5
-O2
12.50
Fedora Workstation 27
SE +/- 0.02, N = 5
-O2
12.68
Debian Testing
SE +/- 0.10, N = 5
-O2
12.73
openSUSE Tumbleweed
SE +/- 0.01, N = 5
-O2
12.59
3
6
9
12
15
1. (CXX) g++ options: -fvisibility=hidden -lm
FFmpeg 3.4.1
H.264 HD To NTSC DV
Seconds, Fewer Is Better
Ubuntu 18.04 LTS 20180311
SE +/- 0.04, N = 3
-lXv -lX11 -lXext -lxcb -lxcb-xfixes -lxcb-shape -lbz2 -fPIC
10.63
Clear Linux 21260
SE +/- 0.05, N = 3
-lXv -lX11 -lXext -lSDL2 -lxcb -lxcb-shm -lxcb-xfixes -lxcb-shape -lbz2 -pipe -fexceptions -fstack-protector -m64 -flat-lto-objects -fno-trapping-math -f
7.51
Ubuntu 16.04 LTS
SE +/- 0.12, N = 3
-llzma -lbz2
10.82
Fedora Workstation 27
SE +/- 0.09, N = 3
8.23
Debian Testing
SE +/- 0.10, N = 3
-llzma -lbz2 -fPIC
10.39
openSUSE Tumbleweed
SE +/- 0.07, N = 3
10.09
3
6
9
12
15
1. (CC) gcc options: -lavdevice -lavfilter -lavformat -lavcodec -lswresample -lswscale -lavutil -lm -ldl -pthread -std=c11 -fomit-frame-pointer -O3 -fno-mat

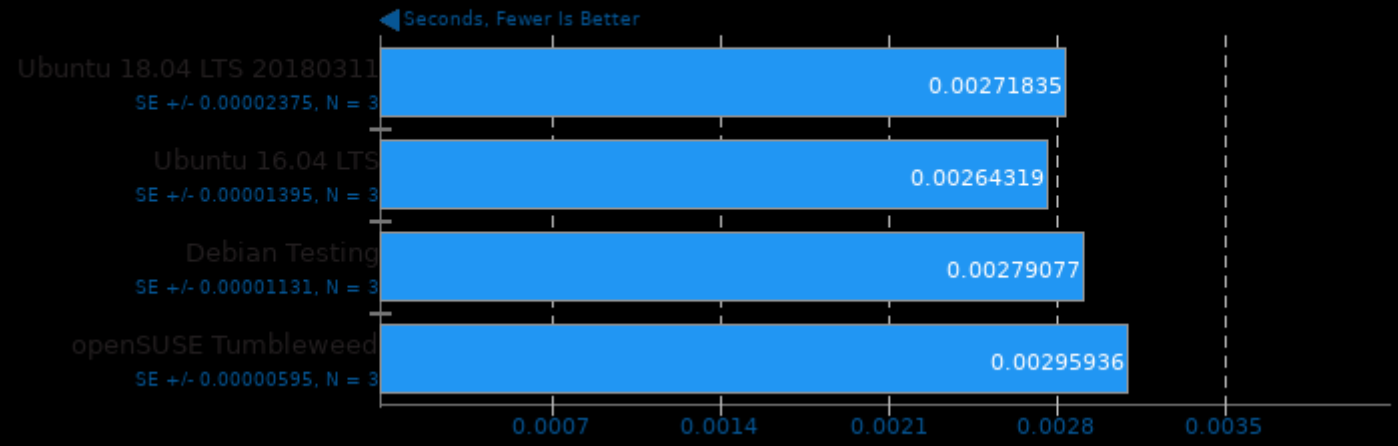
Perl Benchmarks

Test: Pod2html

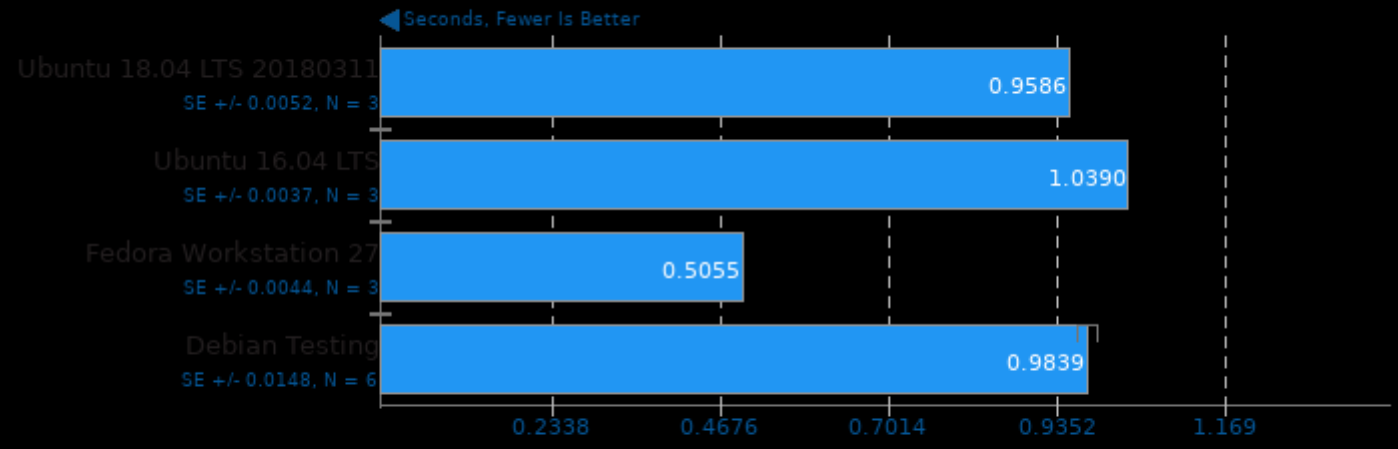


Perl Benchmarks

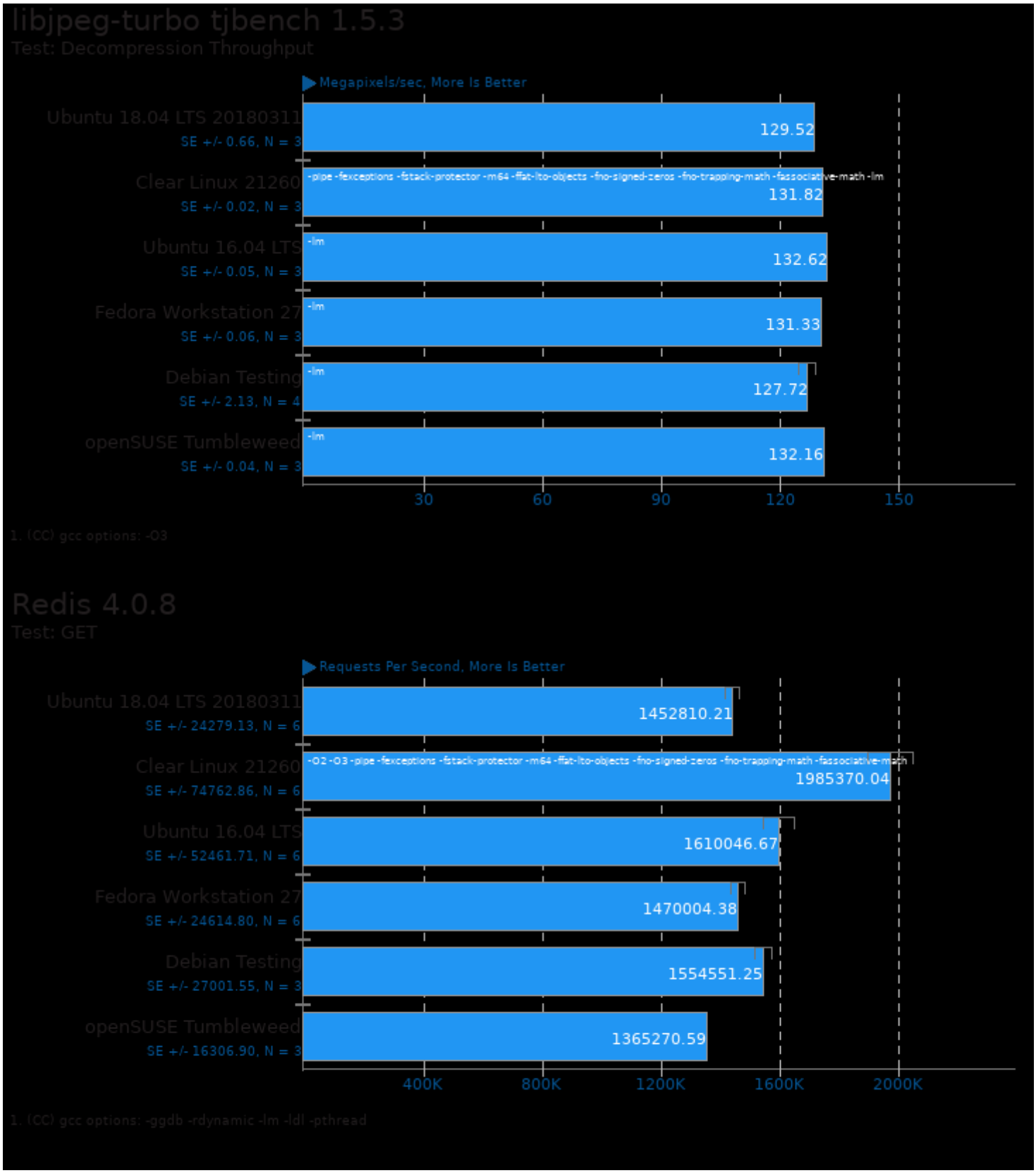
Test: Interpreter

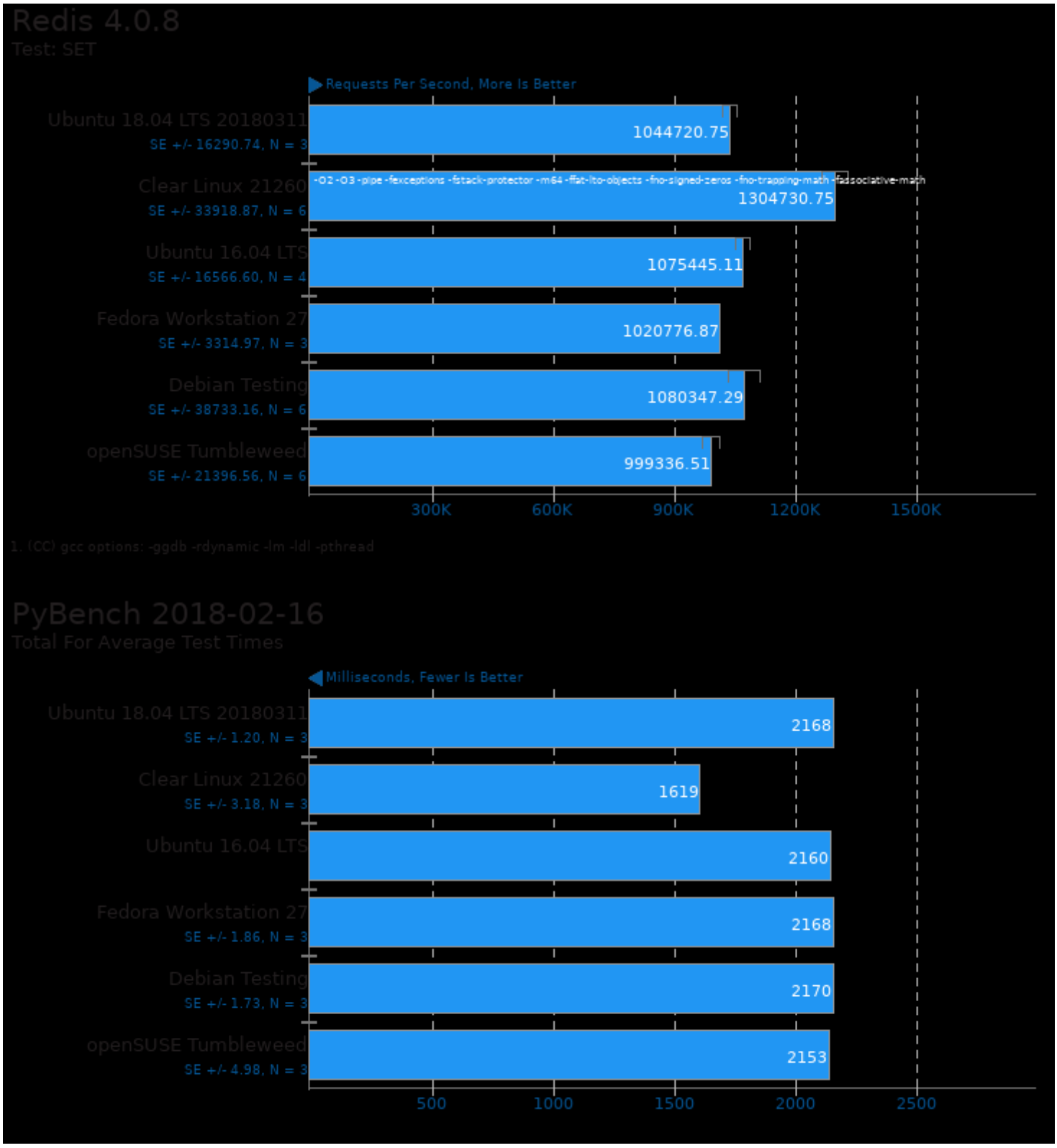


R Benchmark

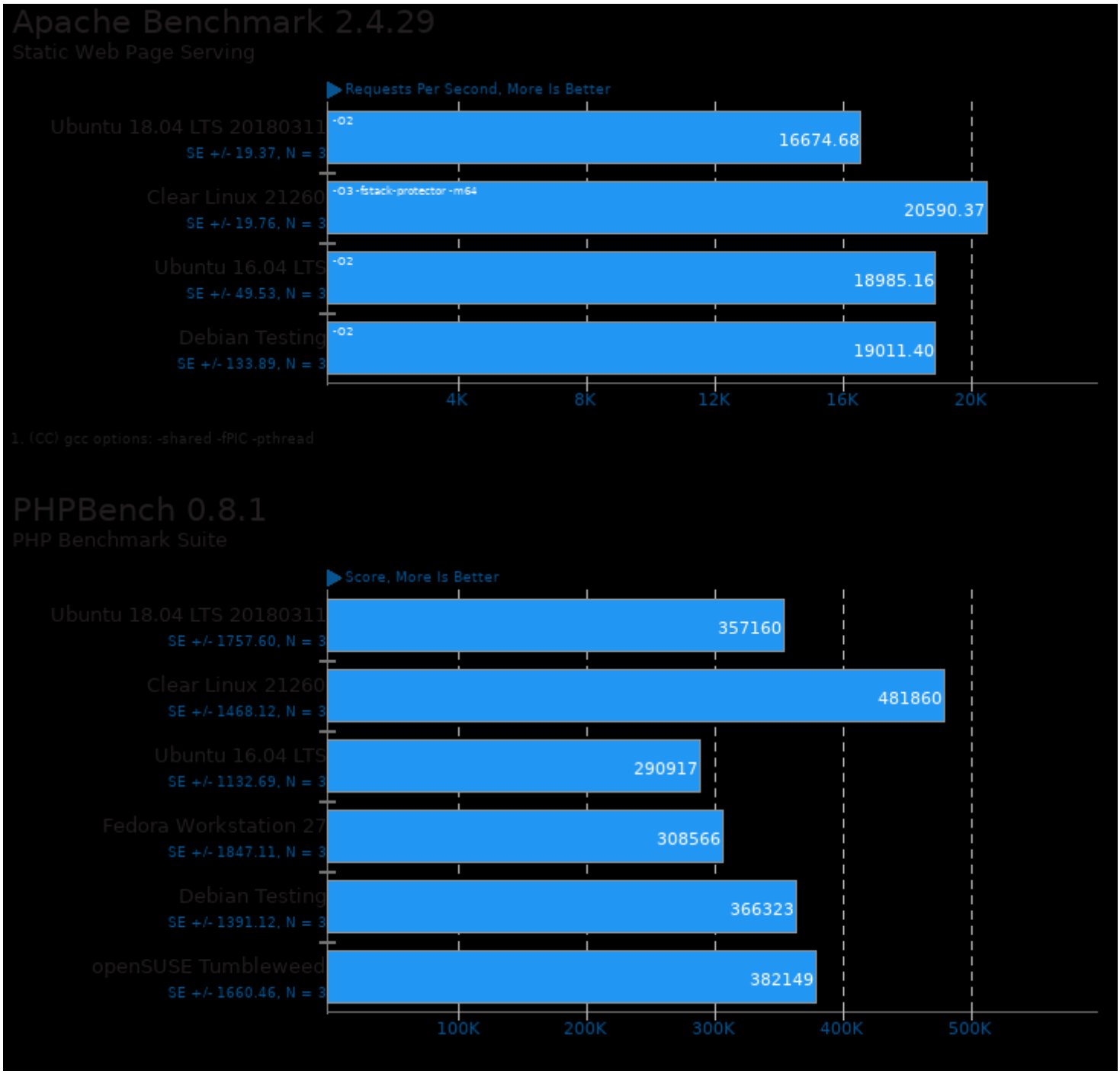


1. Ubuntu 18.04 LTS 20180311: R scripting front-end version 3.4.3 (2017-11-30)
2. Ubuntu 16.04 LTS: R scripting front-end version 3.2.3 (2015-12-10)
3. Fedora Workstation 27: R scripting front-end version 3.4.3 (2017-11-30)
4. Debian Testing: R scripting front-end version 3.4.3 (2017-11-30)

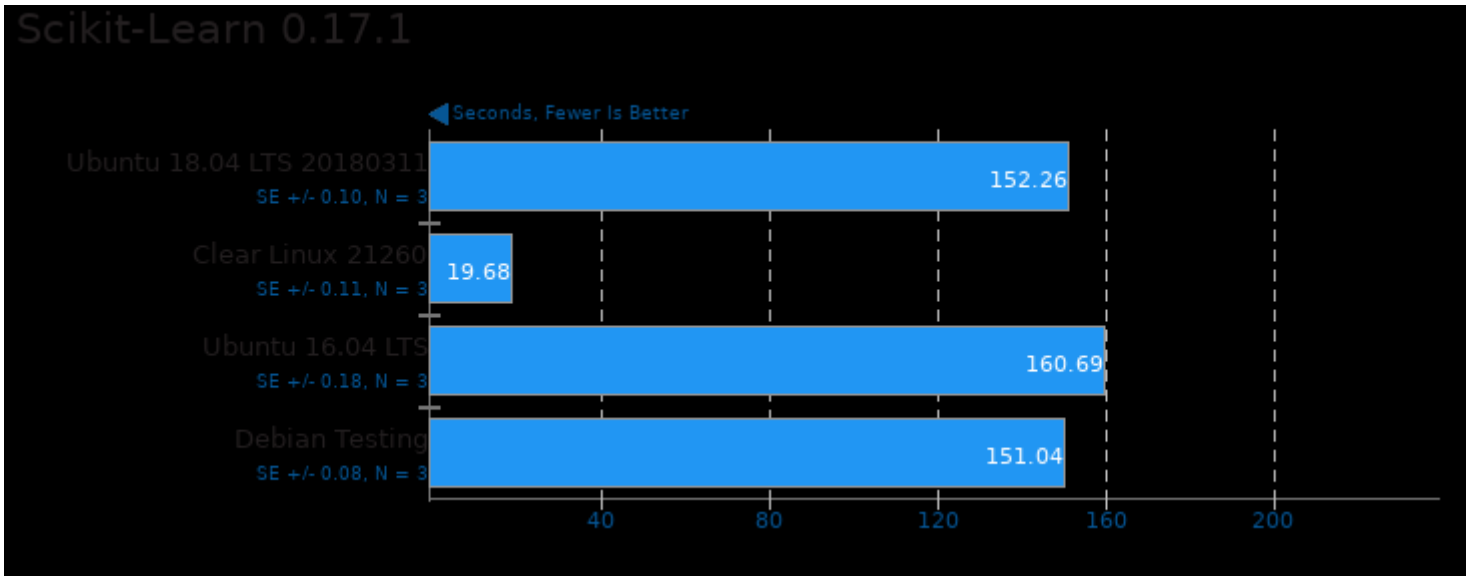

libjpeg-turbo tjbench 1.5.3
Test: Decompression Throughput
Megapixels/sec, More Is Better
Ubuntu 18.04 LTS 20180311
SE +/- 0.66, N = 3
129.52
Clear Linux 21260
SE +/- 0.02, N = 3
-pipe -fexceptions -fstack-protector -m64 -flat-lto-objects -fno-signed-zeros -fno-trapping-math -fassociative-math -lm
131.82
Ubuntu 16.04 LTS
SE +/- 0.05, N = 3
-lm
132.62
Fedora Workstation 27
SE +/- 0.06, N = 3
-lm
131.33
Debian Testing
SE +/- 2.13, N = 4
-lm
127.72
openSUSE Tumbleweed
SE +/- 0.04, N = 3
-lm
132.16
30
60
90
120
150
1. (CC) gcc options: -O3
Redis 4.0.8
Test: GET
Requests Per Second, More Is Better
Ubuntu 18.04 LTS 20180311
SE +/- 24279.13, N = 6
1452810.21
Clear Linux 21260
SE +/- 74762.86, N = 6
-O2 -O3 -pipe -fexceptions -fstack-protector -m64 -flat-lto-objects -fno-signed-zeros -fno-trapping-math -fassociative-math
1985370.04
Ubuntu 16.04 LTS
SE +/- 52461.71, N = 6
1610046.67
Fedora Workstation 27
SE +/- 24614.80, N = 6
1470004.38
Debian Testing
SE +/- 27001.55, N = 3
1554551.25
openSUSE Tumbleweed
SE +/- 16306.90, N = 3
1365270.59
400K
800K
1200K
1600K
2000K
1. (CC) gcc options: -ggdb -rdynamic -lm -ldl -pthread


Redis 4.0.8
Test: SET
Requests Per Second, More Is Better
Ubuntu 18.04 LTS 20180311
SE +/- 16290.74, N = 3
1044720.75
Clear Linux 21260
SE +/- 33918.87, N = 6
-O2 -O3 -pipe -fexceptions -fstack-protector -m64 -flat-lto-objects -fno-signed-zeros -fno-trapping-math -fassociative-math
1304730.75
Ubuntu 16.04 LTS
SE +/- 16566.60, N = 4
1075445.11
Fedora Workstation 27
SE +/- 3314.97, N = 3
1020776.87
Debian Testing
SE +/- 38733.16, N = 6
1080347.29
openSUSE Tumbleweed
SE +/- 21396.56, N = 6
999336.51
300K
600K
900K
1200K
1500K
1. (CC) gcc options: -ggdb -rdynamic -lm -ldl -pthread

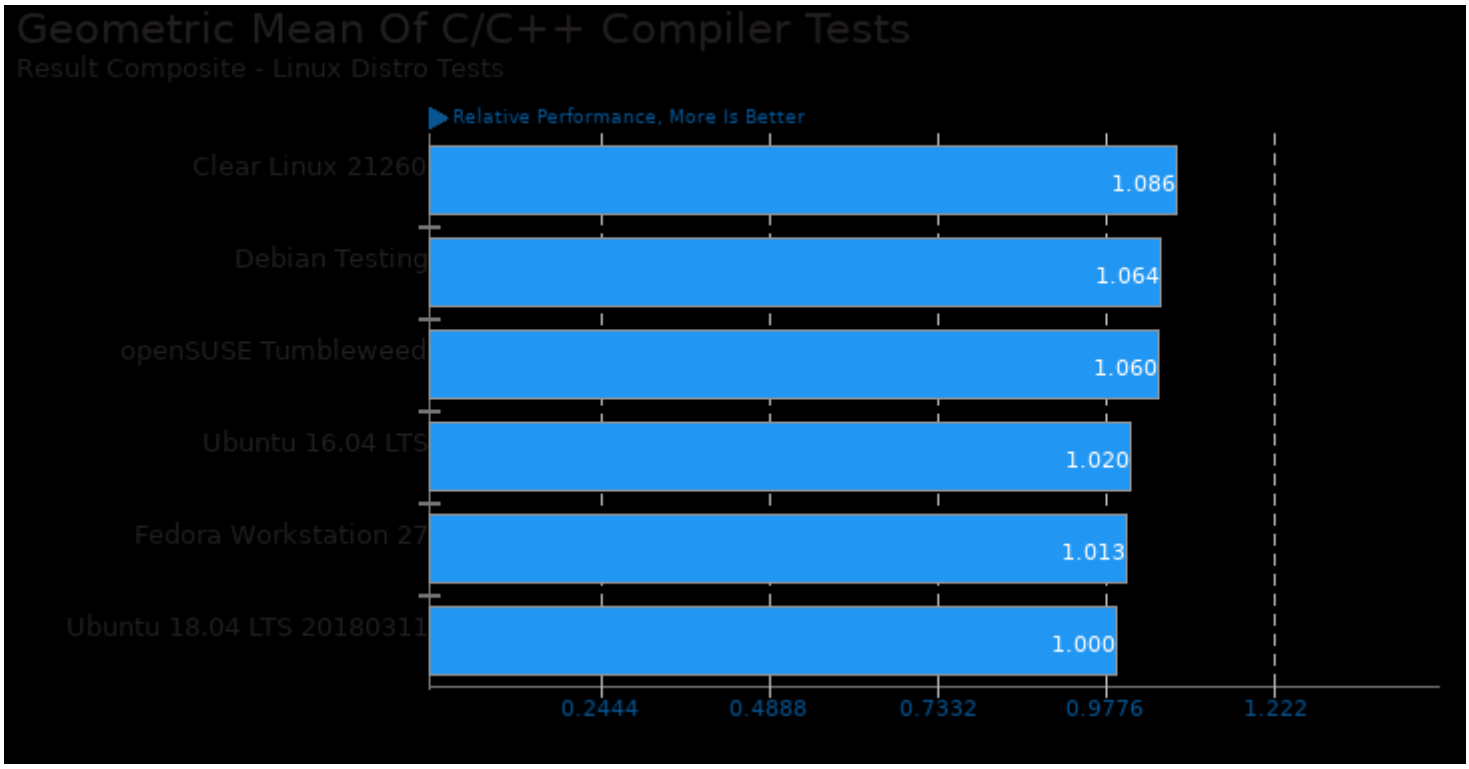
PyBench 2018-02-16
Total For Average Test Times
Milliseconds, Fewer Is Better
Ubuntu 18.04 LTS 20180311
SE +/- 1.20, N = 3
2168
Clear Linux 21260
SE +/- 3.18, N = 3
1619
Ubuntu 16.04 LTS
2160
Fedora Workstation 27
SE +/- 1.86, N = 3
2168
Debian Testing
SE +/- 1.73, N = 3
2170
openSUSE Tumbleweed
SE +/- 4.98, N = 3
2153
500
1000
1500
2000
2500


Apache Benchmark 2.4.29
Static Web Page Serving
Requests Per Second, More Is Better
Ubuntu 18.04 LTS 20180311
SE +/- 19.37, N = 3
-O2
16674.68
Clear Linux 21260
SE +/- 19.76, N = 3
-O3 -fstack-protector -m64
20590.37
Ubuntu 16.04 LTS
SE +/- 49.53, N = 3
-O2
18985.16
Debian Testing
SE +/- 133.89, N = 3
-O2
19011.40
4K
8K
12K
16K
20K
1. (CC) gcc options: -shared -fPIC -pthread
PHPBench 0.8.1
PHP Benchmark Suite
Score, More Is Better
Ubuntu 18.04 LTS 20180311
SE +/- 1757.60, N = 3
357160
Clear Linux 21260
SE +/- 1468.12, N = 3
481860
Ubuntu 16.04 LTS
SE +/- 1132.69, N = 3
290917
Fedora Workstation 27
SE +/- 1847.11, N = 3
308566
Debian Testing
SE +/- 1391.12, N = 3
366323
openSUSE Tumbleweed
SE +/- 1660.46, N = 3
382149
100K
200K
300K
400K
500K

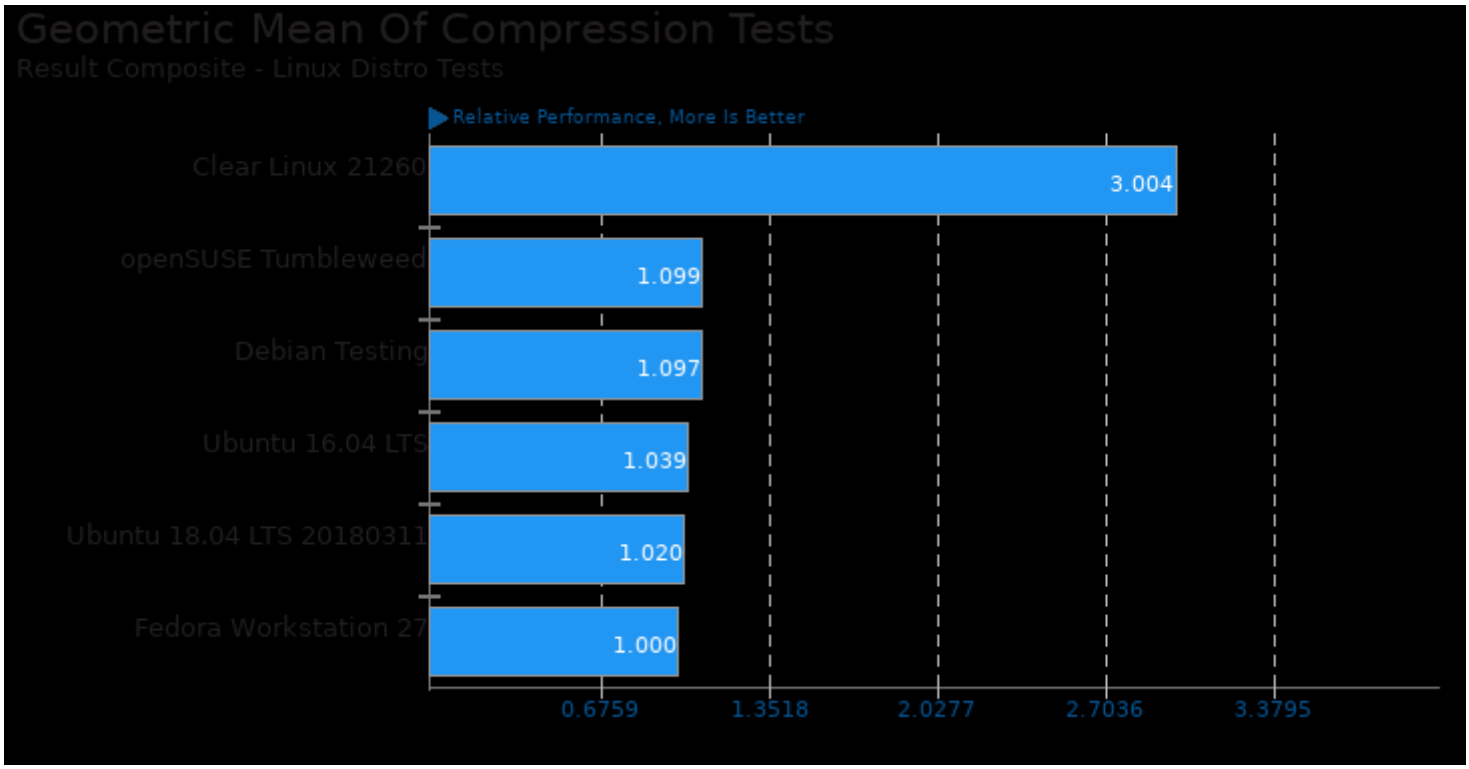
Linux Distro Tests



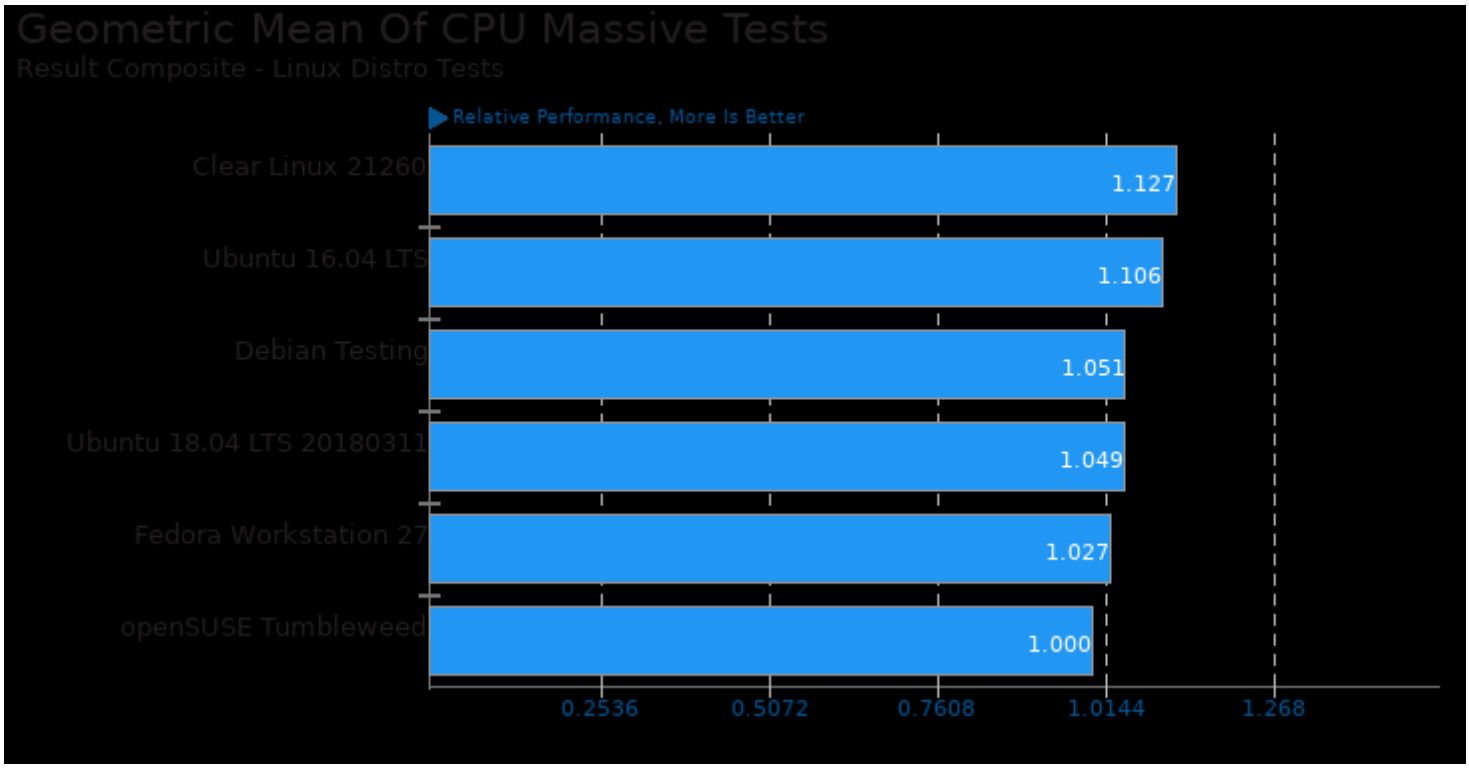
These geometric means are based upon test groupings / test suites for this result file.



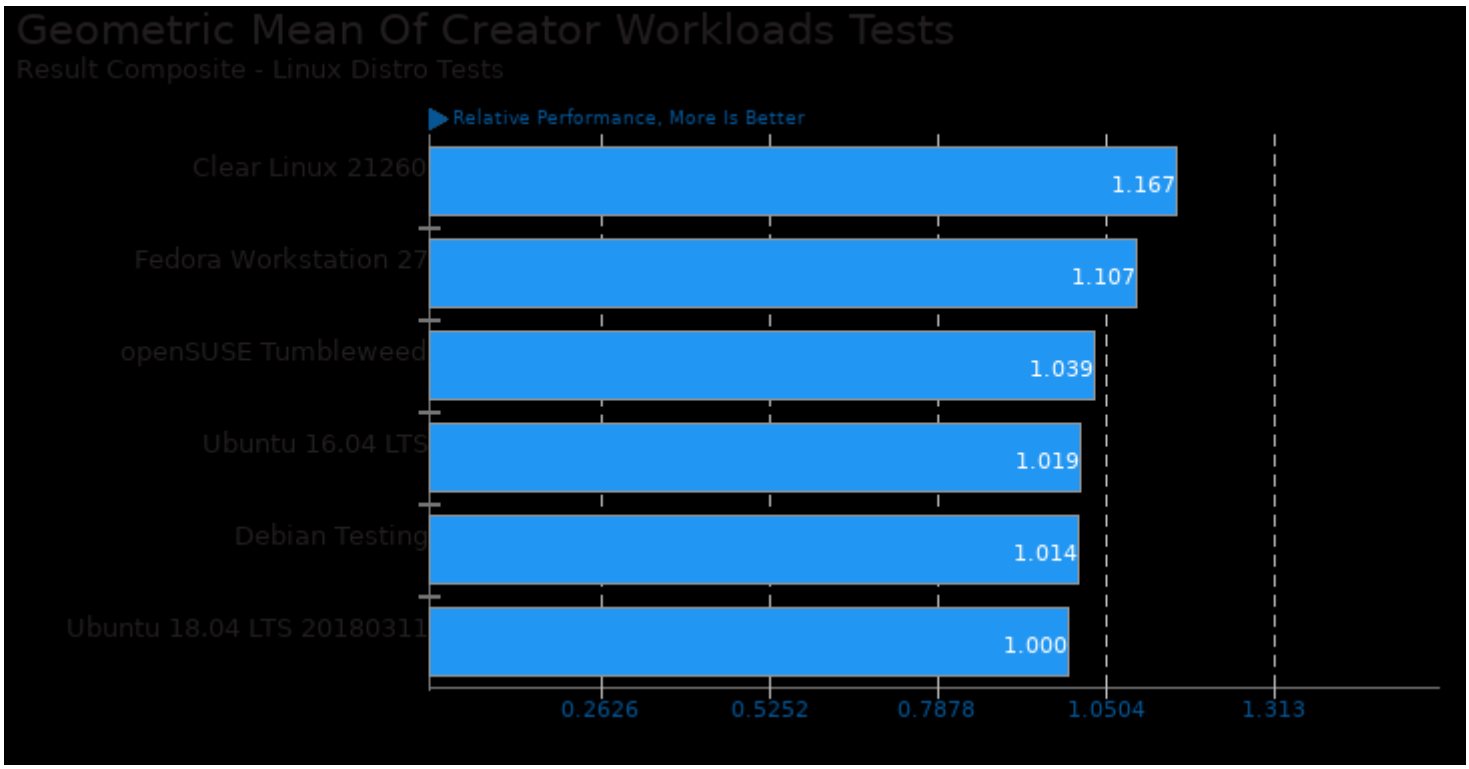
Geometric mean based upon tests: pts/mafft, pts/graphics-magick, pts/himeno, pts/compress-7zip, pts/encode-flac, pts/apache and pts/x264



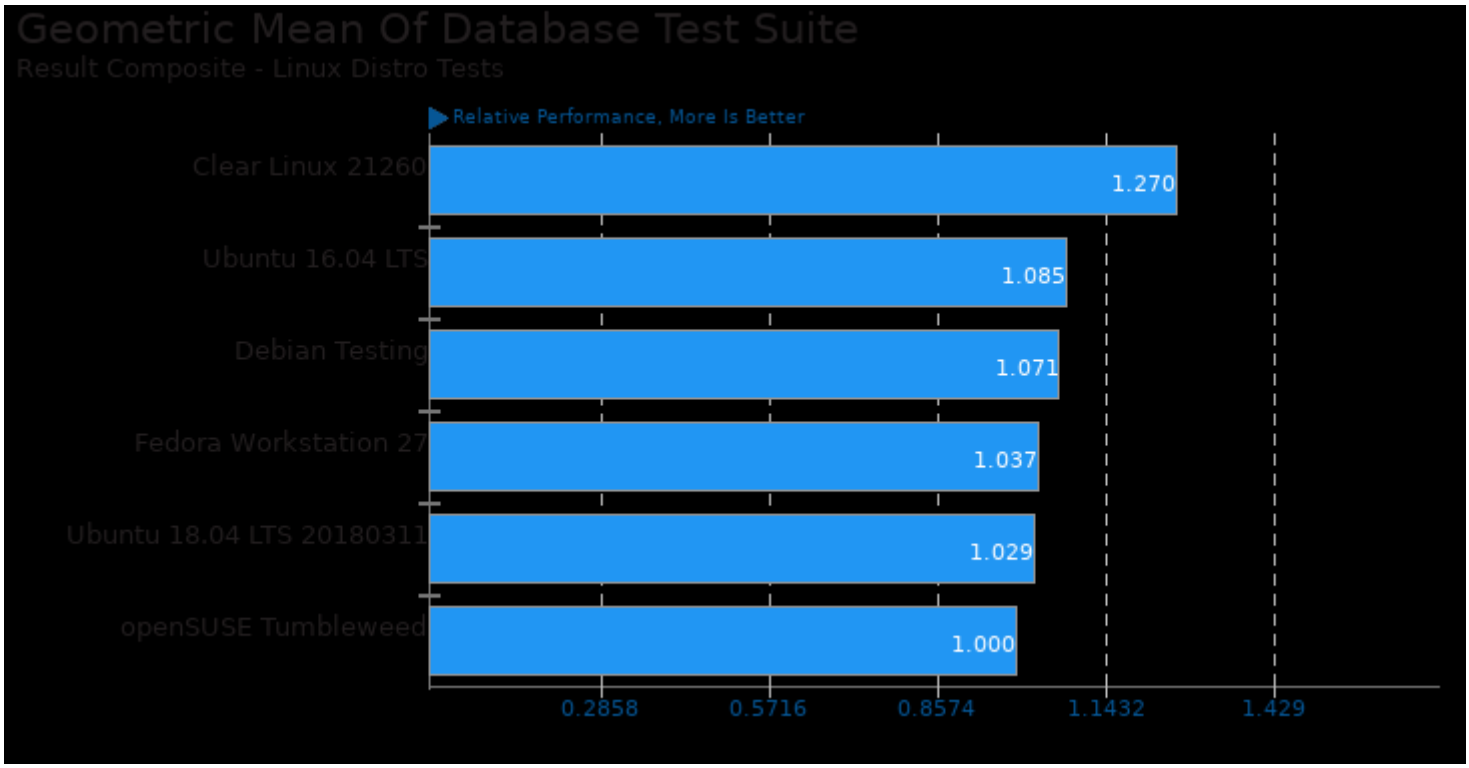
Geometric mean based upon tests: pts/compress-7zip and pts/compress-gzip



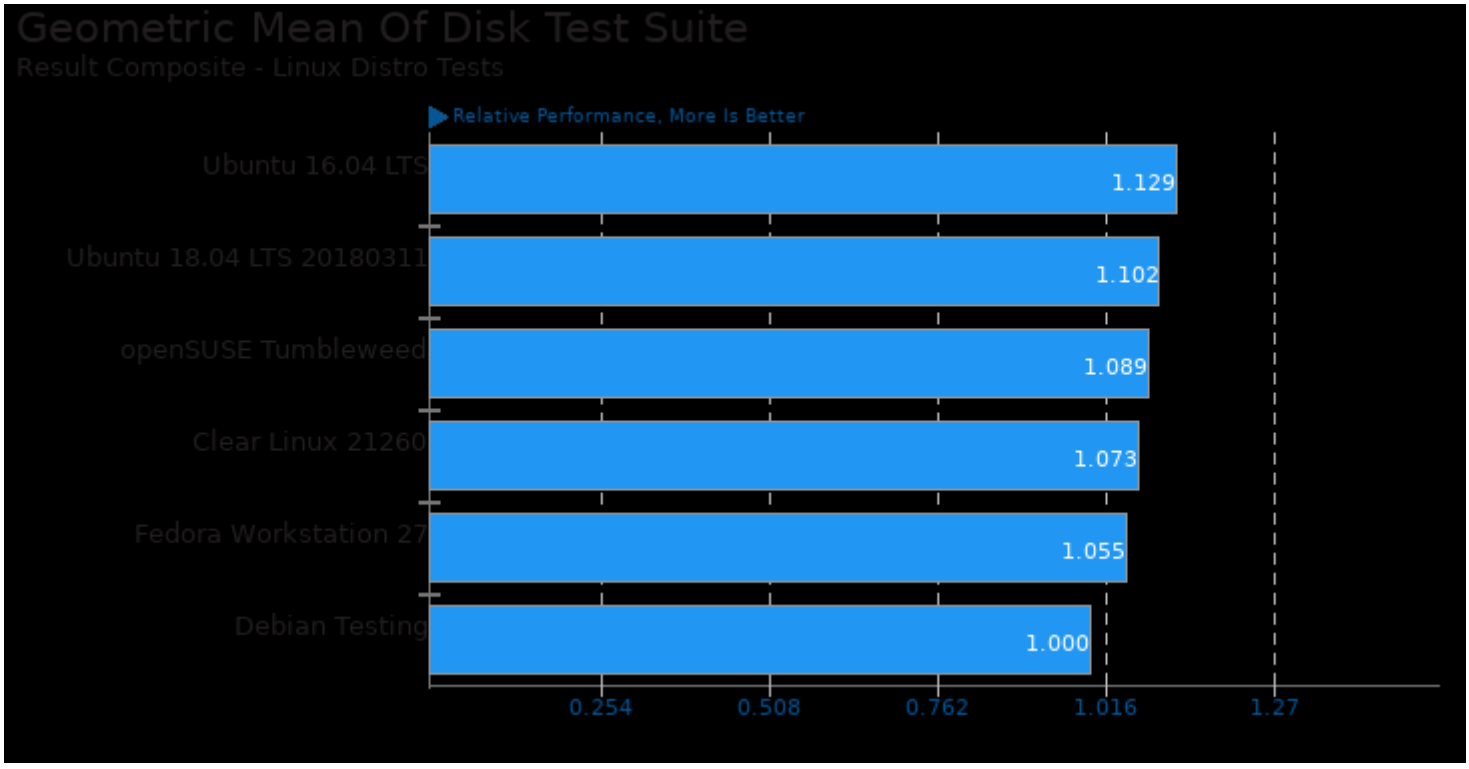
Geometric mean based upon tests: pts/apache, pts/blogbench, pts/compilebench, pts/compress-7zip, pts/crafty, pts/x264, pts/encode-flac, pts/graphics-magick, pts/himeno, pts/mafft, pts/numpy, pts/phpbench, pts/rbenchmark, pts/redis, pts/scikit-learn and pts/tjbench



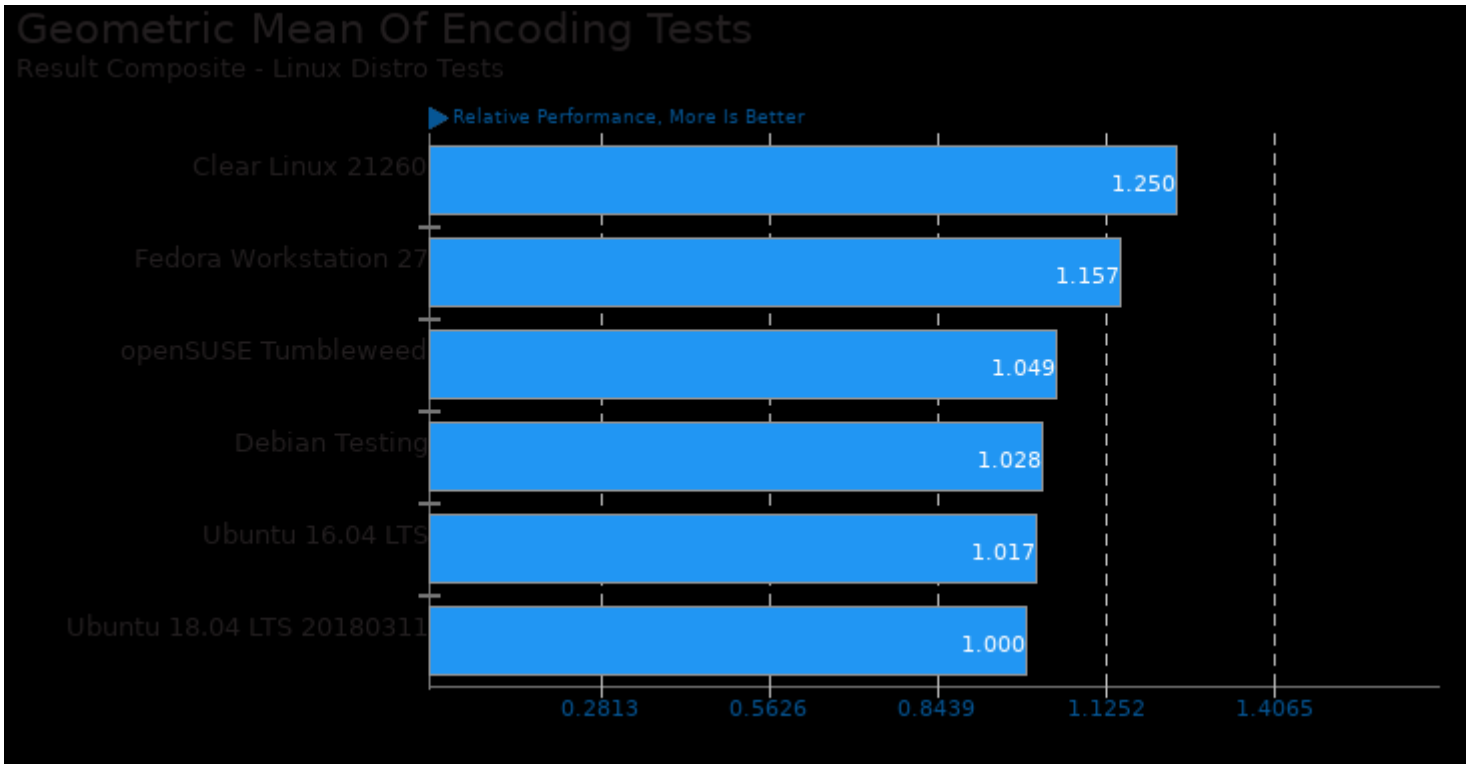
Geometric mean based upon tests: pts/x264, pts/ffmpeg, pts/encode-flac, pts/graphics-magick and pts/tjbench



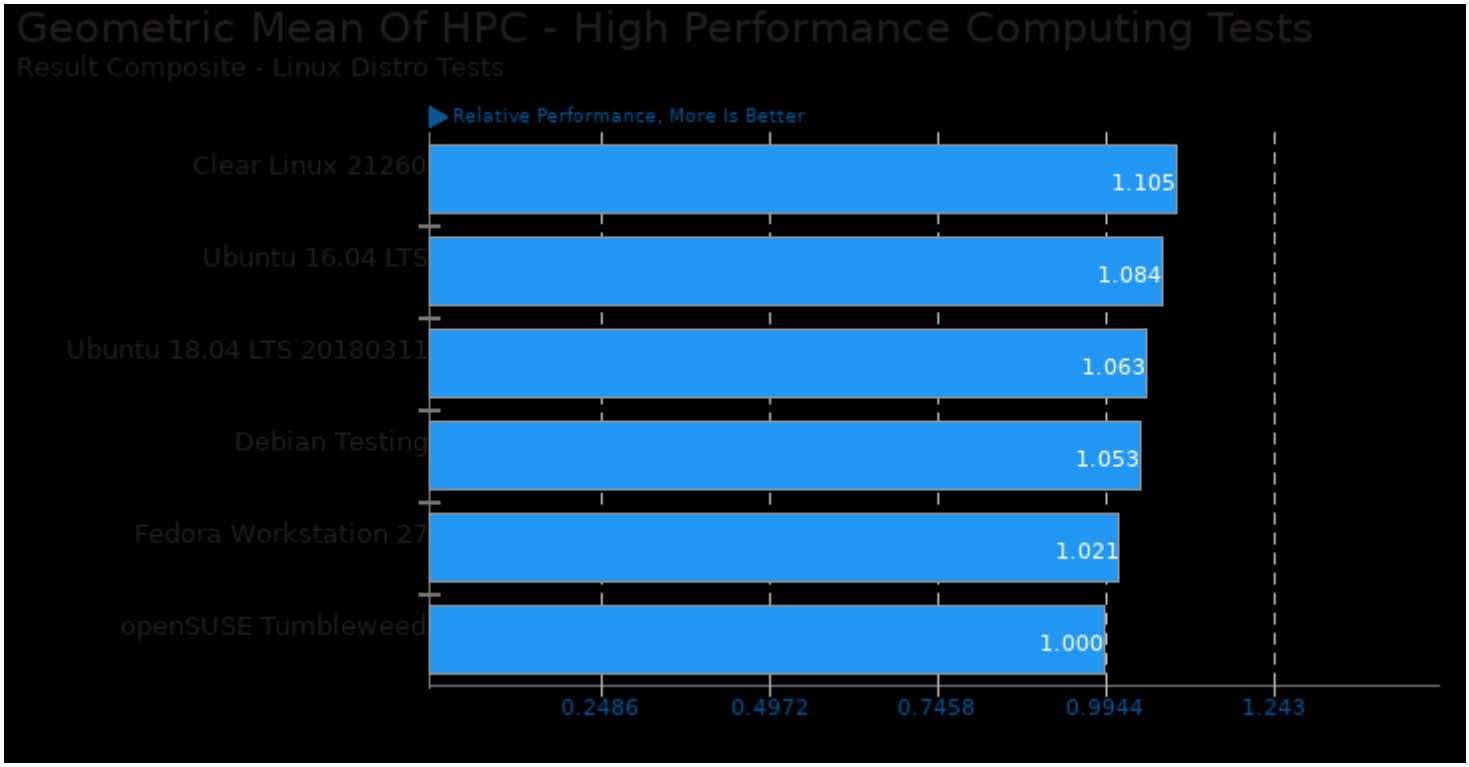
Geometric mean based upon tests: pts/sqlite and pts/redis



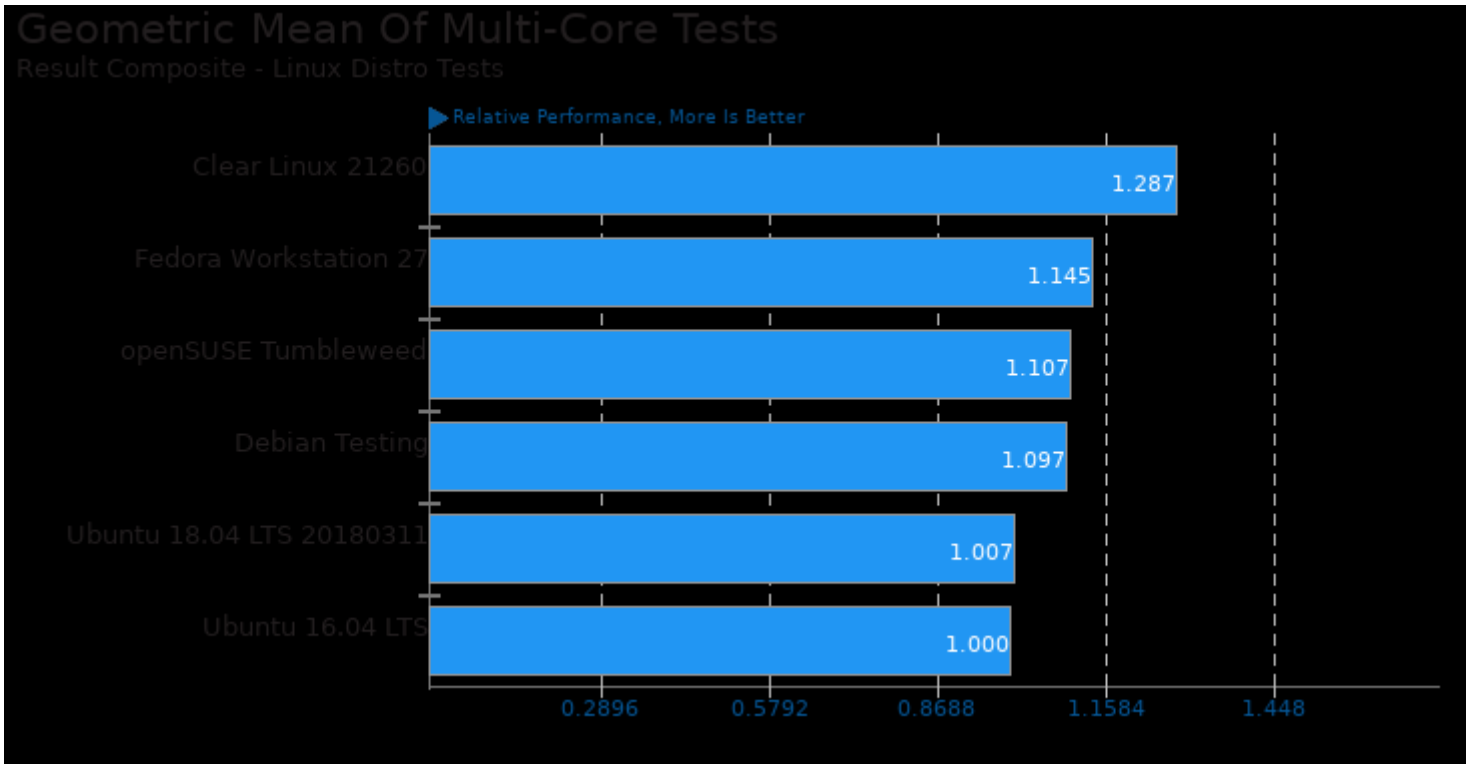
Geometric mean based upon tests: pts/sqlite, pts/compilebench and pts/fio



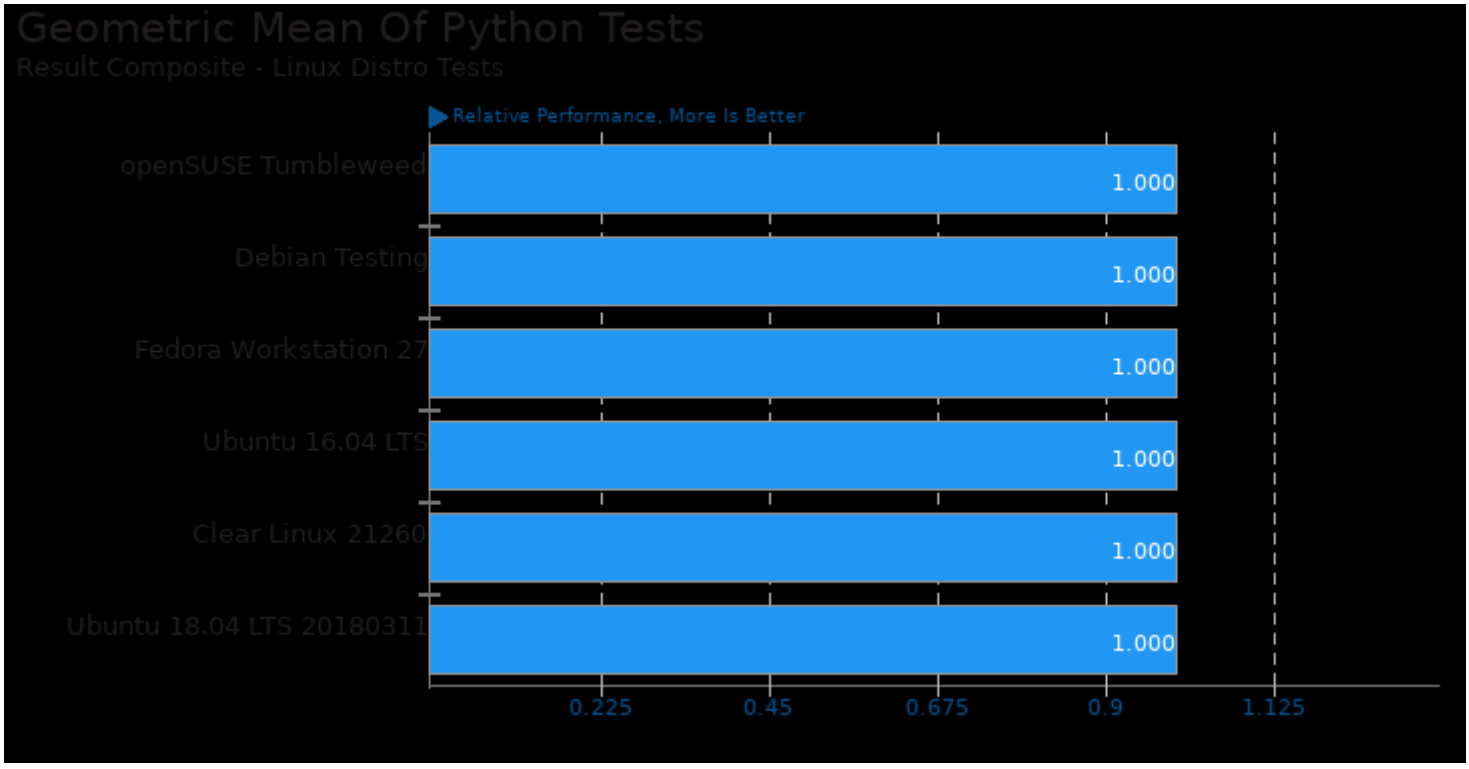
Geometric mean based upon tests: pts/encode-flac, pts/x264 and pts/ffmpeg



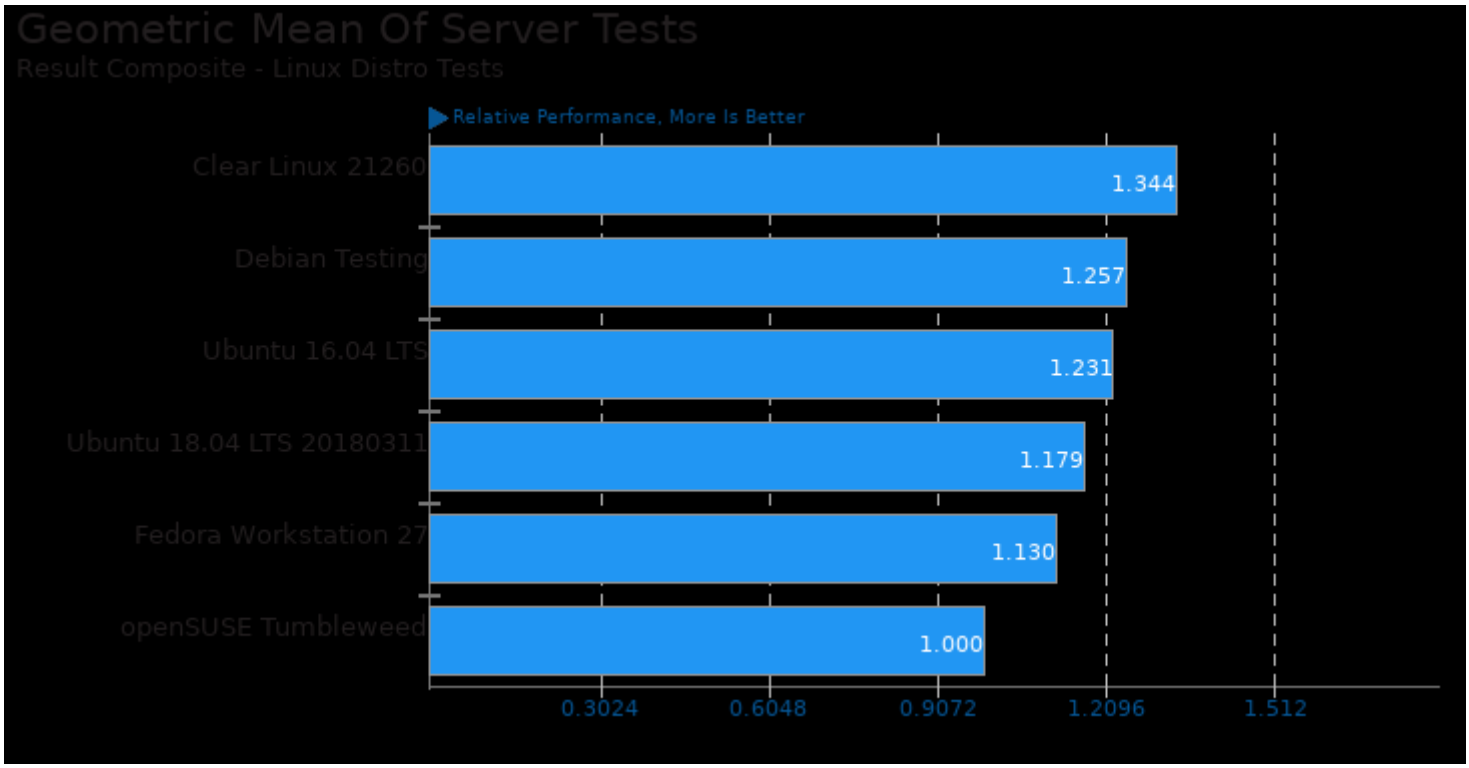
Geometric mean based upon tests: pts/himeno, pts/mafft, pts/rbenchmark, pts/numpy and pts/scikit-learn



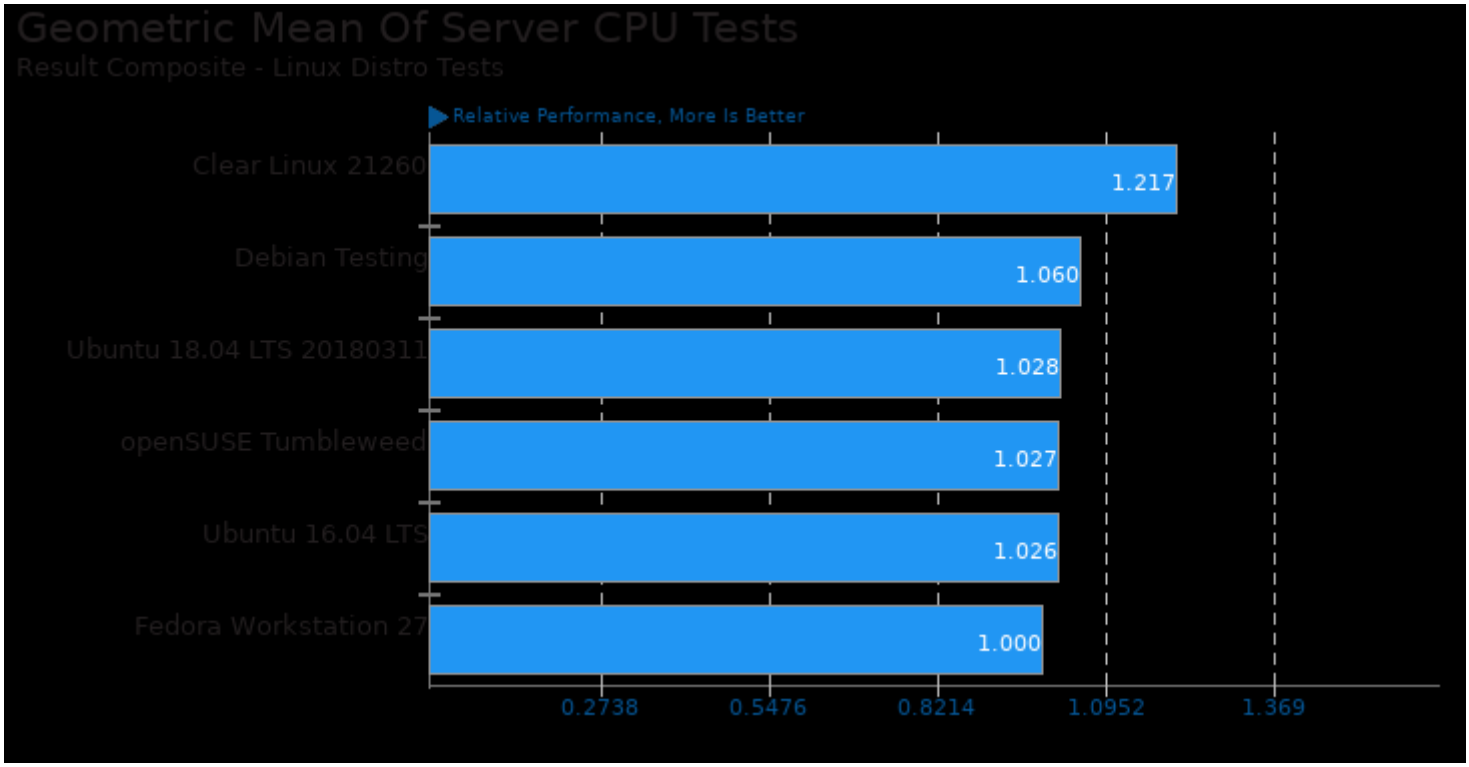
Geometric mean based upon tests: pts/x264, pts/ffmpeg, pts/graphics-magick and pts/compress-7zip



Geometric mean based upon tests: pts/pybench, pts/numpy and pts/scikit-learn

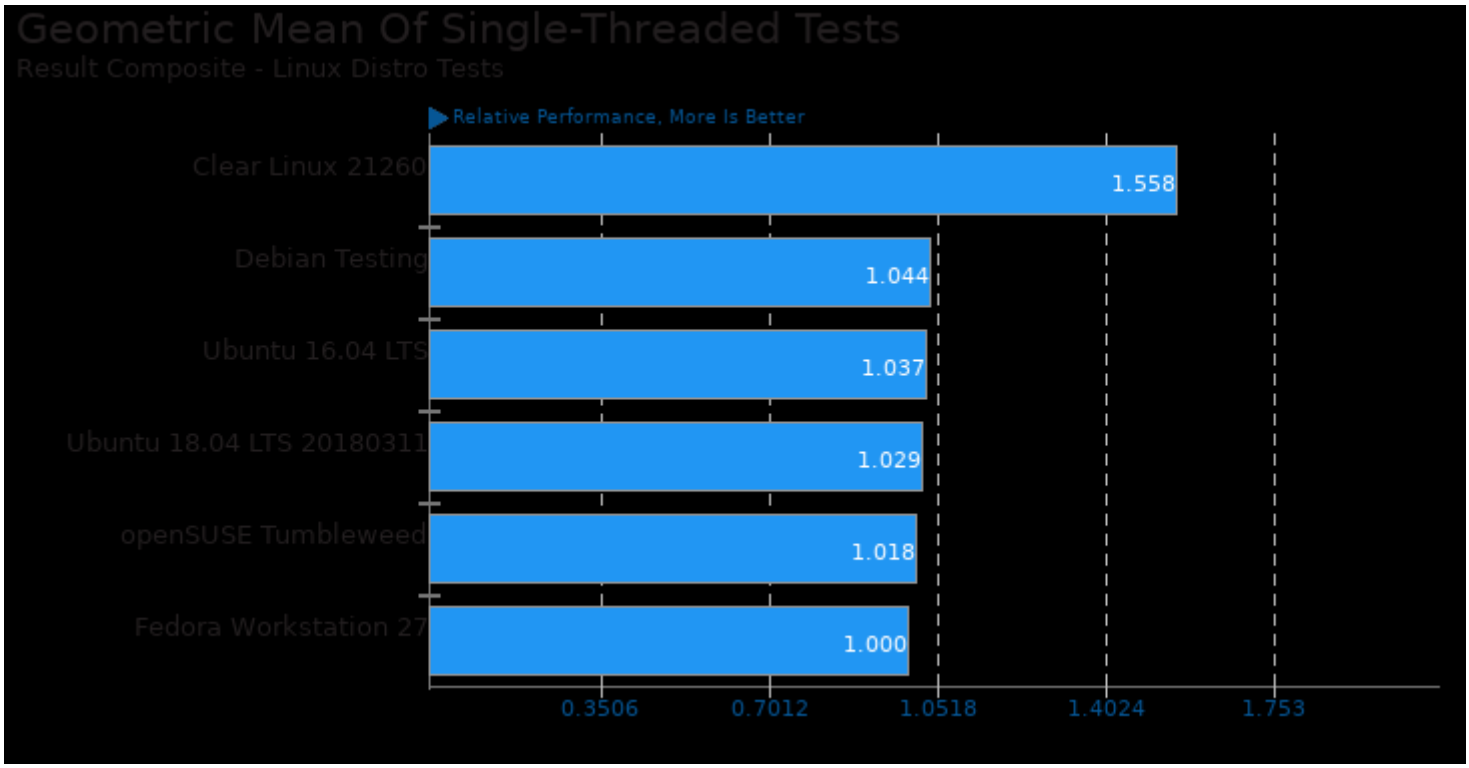


Geometric mean based upon tests: pts/apache, pts/blogbench, pts/redis, pts/phpbench, pts/perl-benchmark and pts/sqlite



Geometric mean based upon tests: pts/x264, pts/himeno, pts/compress-7zip, pts/tjbench, pts/redis, pts/pybench, pts/numpy, pts/phpbench and pts/scikit-learn

Linux Distro Tests



Geometric mean based upon tests: pts/numpy, pts/compress-gzip, pts/encode-flac, pts/perl-benchmark, pts/rbenchmark, pts/tjbench, pts/redis, pts/pybench and pts/phpbench

This file was automatically generated via the Phoronix Test Suite benchmarking software on Friday, 29 March 2024 04:42.