www.phoronix-test-suite.com

Linux 5.11 Invariance Regression Test

AMD EPYC 7702 64-Core testing with a ASRockRack EPYCD8 (P2.10 BIOS) and llvmpipe on Ubuntu 20.10 via the Phoronix Test Suite.

Automated Executive Summary

Linux 5.11 Git + Patch had the most wins, coming in first place for 78% of the tests.

Based on the geometric mean of all complete results, the fastest (Linux 5.11 Git + Patch) was 1.138x the speed of the slowest (Linux 5.11 Git). Linux 5.10 was 0.941x the speed of Linux 5.11 Git + Patch and Linux 5.11 Git was 0.934x the speed of Linux 5.10.

Test Systems:

Linux 5.10

Processor: AMD EPYC 7702 64-Core @ 2.00GHz (64 Cores / 128 Threads), Motherboard: ASRockRack EPYCD8 (P2.10 BIOS), Chipset: AMD Starship/Matisse, Memory: 126GB, Disk: 280GB INTEL SSDPED1D280GA, Graphics:

ASPEED, Audio: AMD Starship/Matisse, Monitor: VE228, Network: 2 x Intel I350

OS: Ubuntu 20.10, Kernel: 5.10.2-051002-generic (x86_64), Desktop: GNOME Shell 3.38.1, Display Server: X Server 1.20.9, Display Driver: modesetting 1.20.9, Compiler: GCC 10.2.0, 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++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-nvptx/usr,amdgcn-amdhsa=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-gcn/usr,hsa --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: acpi-cpufreq schedutil (Boost: Enabled) - CPU Microcode: 0x830101c
Python Notes: Python 3.8.6
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline IBPB: conditional IBRS_FW STIBP: always-on RSB filling + srbds: Not affected + tsx_async_abort: Not affected

Linux 5.11 Git

Processor: AMD EPYC 7702 64-Core @ 2.00GHz (64 Cores / 128 Threads), Motherboard: ASRockRack EPYCD8 (P2.10 BIOS), Chipset: AMD Starship/Matisse, Memory: 126GB, Disk: 280GB INTEL SSDPED1D280GA, Graphics: ASPEED, Audio: AMD Starship/Matisse, Monitor: VE228, Network: 2 x Intel I350

OS: Ubuntu 20.10, Kernel: 5.11.0-051100rc4daily20210121-generic (x86_64) 20210120, Desktop: GNOME Shell 3.38.1, Display Server: X Server 1.20.9, Display Driver: modesetting 1.20.9, Compiler: GCC 10.2.0, 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++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-nvptx/usr,amdgcn-amdhsa=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-gcn/usr,hsa --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: acpi-cpufreq schedutil (Boost: Enabled) - CPU Microcode: 0x830101c
Python Notes: Python 3.8.6
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline IBPB: conditional IBRS_FW STIBP: always-on RSB filling + srbds: Not affected + tsx_async_abort: Not affected

Linux 5.11 Git + Patch

Processor: AMD EPYC 7702 64-Core @ 2.00GHz (64 Cores / 128 Threads), Motherboard: ASRockRack EPYCD8 (P2.10 BIOS), Chipset: AMD Starship/Matisse, Memory: 126GB, Disk: 280GB INTEL SSDPED1D280GA, Graphics: llvmpipe, Audio: AMD Starship/Matisse, Network: 2 x Intel I350

OS: Ubuntu 20.10, Kernel: 5.11.0-rc4-max-boost-inv-patch (x86_64) 20210121, Desktop: GNOME Shell 3.38.1, Display Server: X Server 1.20.9, Display Driver: modesetting 1.20.9, Compiler: GCC 10.2.0, File-System: ext4, Screen Resolution: 1024x768

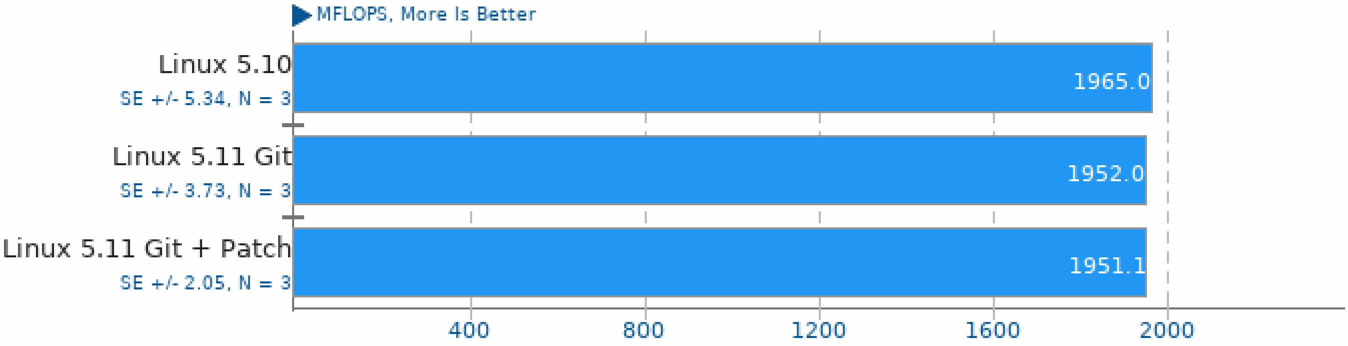
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-nvptx/usr,amdgcn-amdhsa=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-gcn/usr,hsa --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: acpi-cpufreq schedutil (Boost: Enabled) - CPU Microcode: 0x830101c
Python Notes: Python 3.8.6
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline IBPB: conditional IBRS_FW STIBP: always-on RSB filling + srbds: Not affected + tsx_async_abort: Not affected

Phoronix Test Suite

Linux 5.11 Invariance Regression Test

	Linux 5.10	Linux 5.11 Git	Linux 5.11 Git +
QuantLib (MFLOPS)	1965	1952	1951
Normalized	100%	99.34%	99.29%
Standard Deviation	0.5%	0.3%	0.2%
Etcpak - ETC1 (Mpx/s)	242.092	241.538	241.473
Normalized	100%	99.77%	99.74%
Standard Deviation	0.1%	0%	0%
OpenFOAM - Motorbike 30M (sec)	22.91	22.92	22.85
Normalized	99.74%	99.69%	100%
Standard Deviation	0.3%	0.7%	0.7%
Zstd Compression - 3 (MB/s)	8162	7863	8250
Normalized	98.94%	95.31%	100%
Standard Deviation	0.7%	0.8%	0.2%
OSPray - San Miguel - SciVis (FPS)	55.56	44.87	55.56
Normalized	100%	80.76%	100%
Standard Deviation	0%	4.9%	0%
x265 - Bosphorus 4K (FPS)	17.92	15.73	23.16
Normalized	77.37%	67.92%	100%
Standard Deviation	0.4%	0.3%	0.6%
Intel Open Image Denoise - Memorial (Images / Sec)	27.23	20.02	28.22
Normalized	96.49%	70.94%	100%
Standard Deviation	0.4%	0.5%	0.2%
Timed Godot Game Engine Compilation - Time To Compile (sec)	65.933	66.101	63.069
Normalized	95.66%	95.41%	100%
Standard Deviation	0.6%	0.6%	0.2%
FinanceBench - Repo OpenMP (ms)	42065	42326	42043
Normalized	99.95%	99.33%	100%
Standard Deviation	0%	0.7%	0%
AI Benchmark Alpha - D.I.S (Score)	1725	1654	1835
Normalized	94.01%	90.14%	100%
AI Benchmark Alpha - D.T.S (Score)	991	957	1023
Normalized	96.87%	93.55%	100%
AI Benchmark Alpha - Device AI Score	2716	2611	2858
Normalized	95.03%	91.36%	100%
InfluxDB - 4 - 10000 - 2,5000,1 - 10000	621169	575221	811352
Normalized	76.56%	70.9%	100%
Standard Deviation	0.7%	0.2%	0.5%
InfluxDB - 64 - 10000 - 2,5000,1 - 10000 (val/sec)	1059730	996333	1167156
Normalized	90.8%	85.36%	100%
Standard Deviation	0.8%	1.8%	0.7%

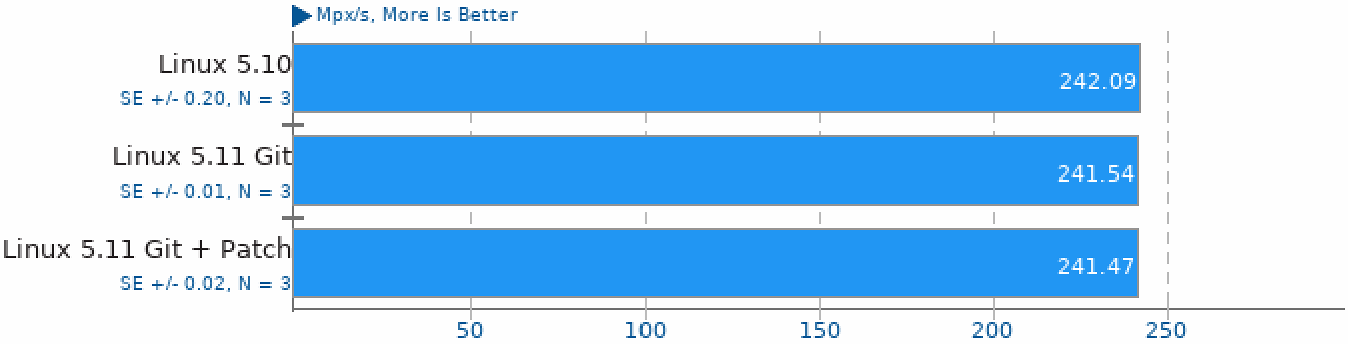
QuantLib 1.21



1. (CXX) g++ options: -O3 -march=native -rdynamic

Etcpak 0.7

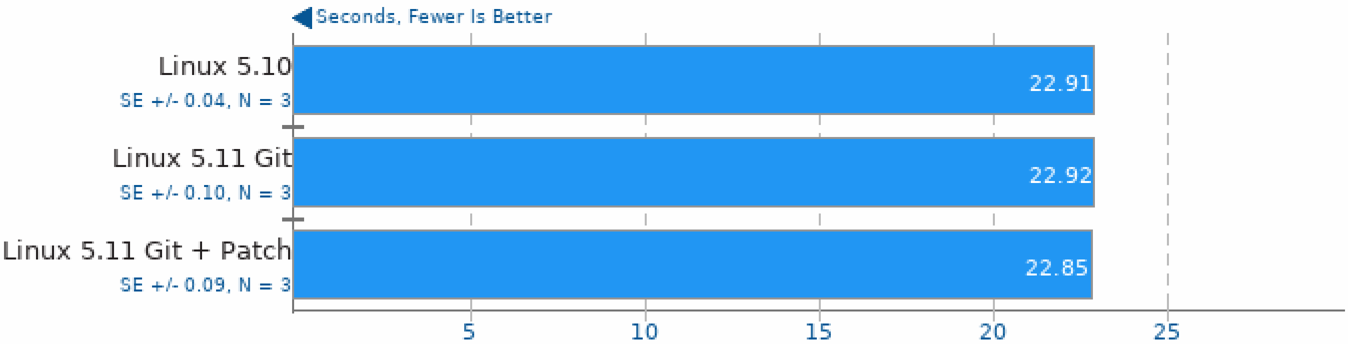
Configuration: ETC1



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

OpenFOAM 8

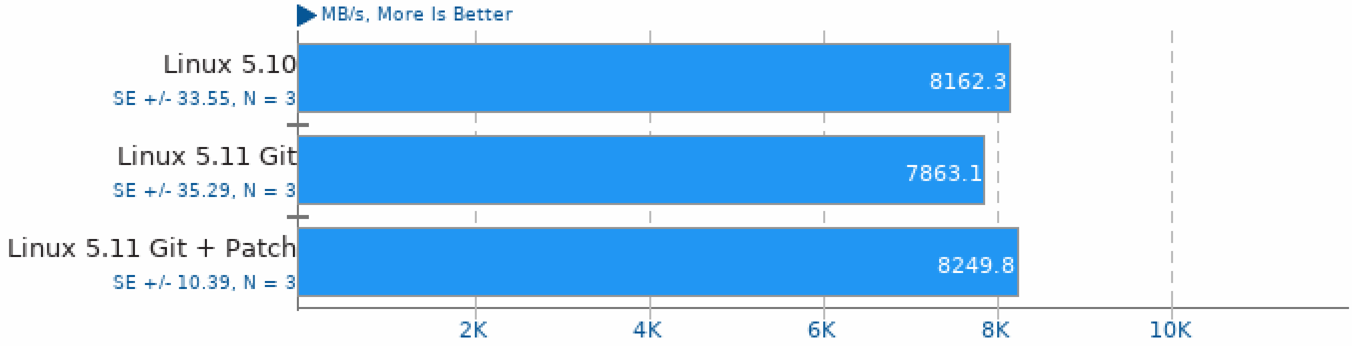
Input: Motorbike 30M



1. (CXX) g++ options: -std=c++11 -m64 -O3 -ftemplate-depth-100 -fPIC -fuse-ld=bfd -Xlinker --add-needed --no-as-needed -ldynamicMesh -ldecompose -

Zstd Compression 1.4.5

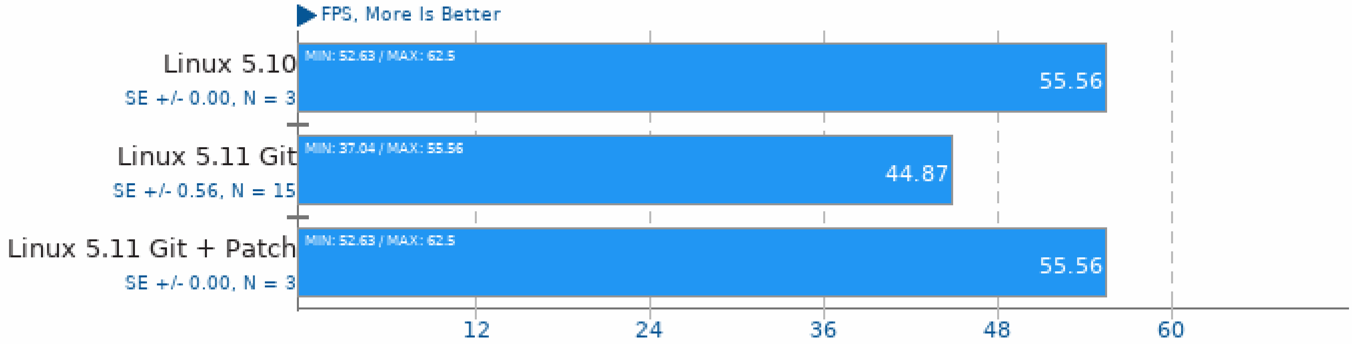
Compression Level: 3



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

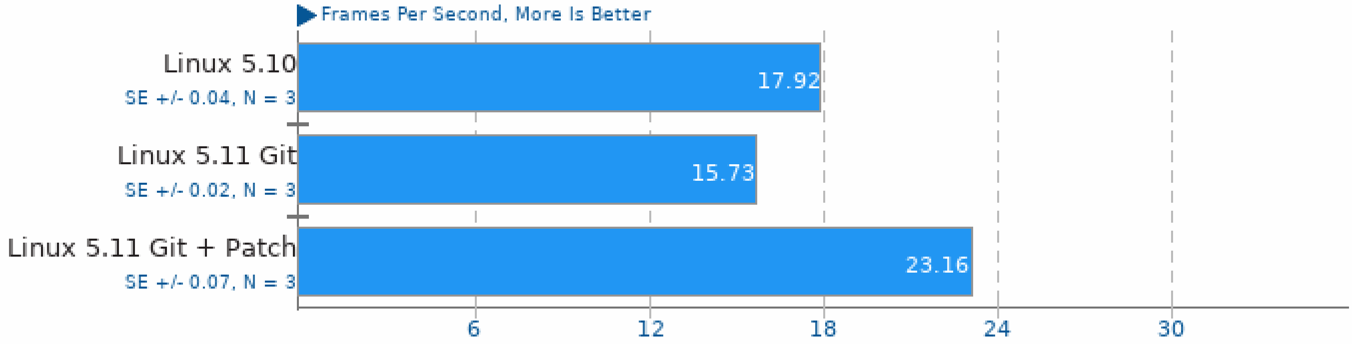
OSPray 1.8.5

Demo: San Miguel - Renderer: SciVis



x265 3.4

Video Input: Bosphorus 4K

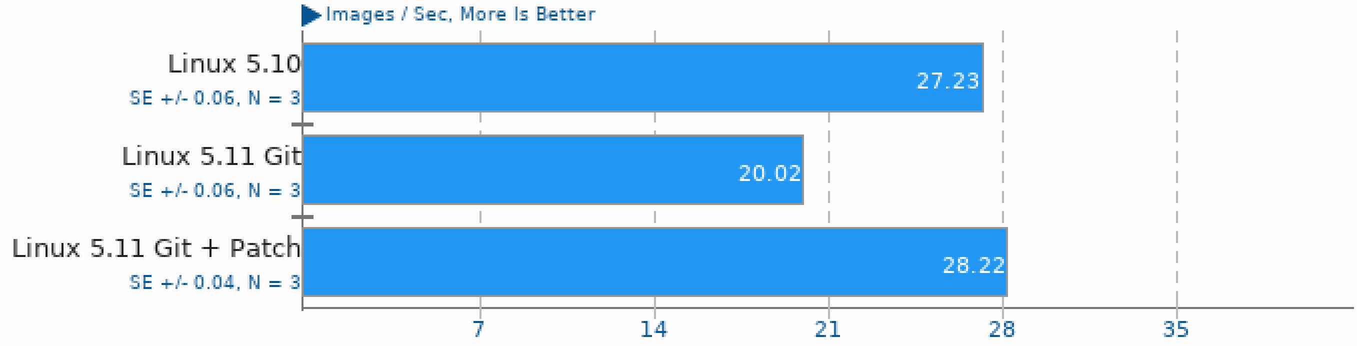


1. (CXX) g++ options: -O3 -rdynamic -lpthread -lrt -ldl -lnuma

Linux 5.11 Invariance Regression Test

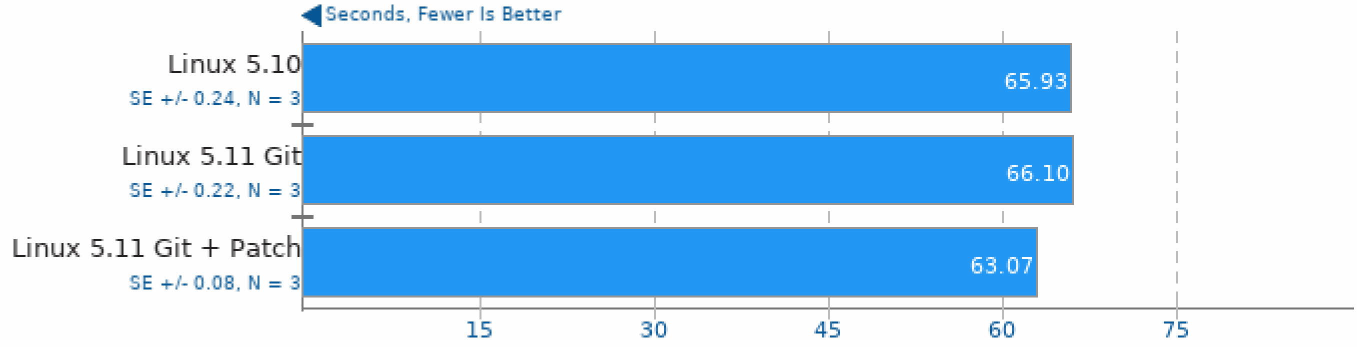
Intel Open Image Denoise 1.2.0

Scene: Memorial



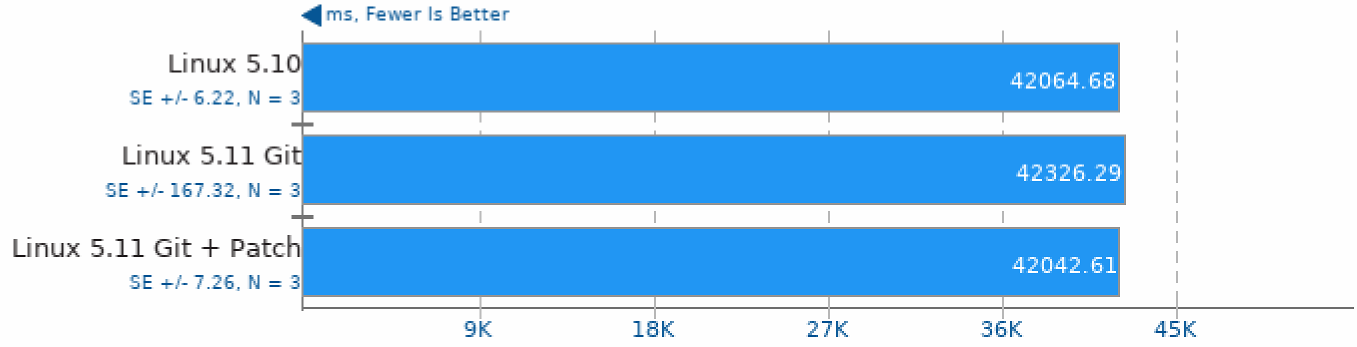
Timed Godot Game Engine Compilation 3.2.3

Time To Compile



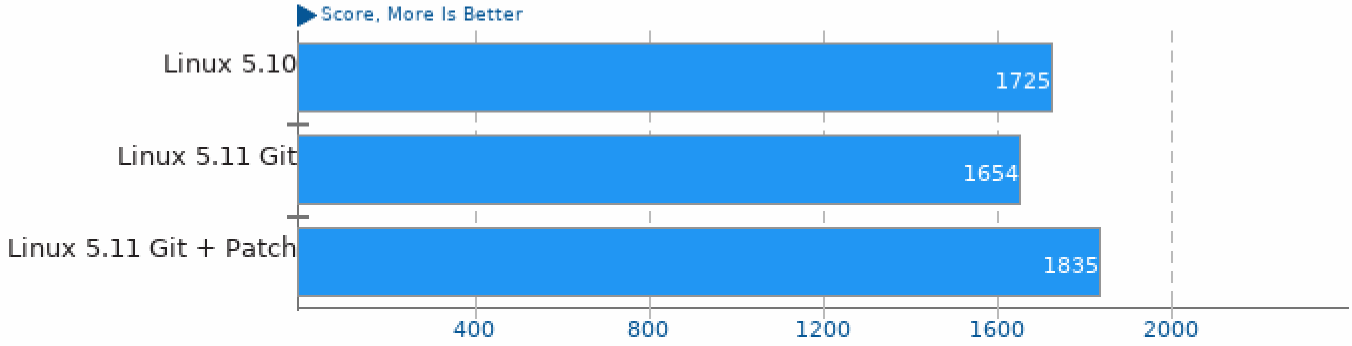
FinanceBench 2016-07-25

Benchmark: Repo OpenMP

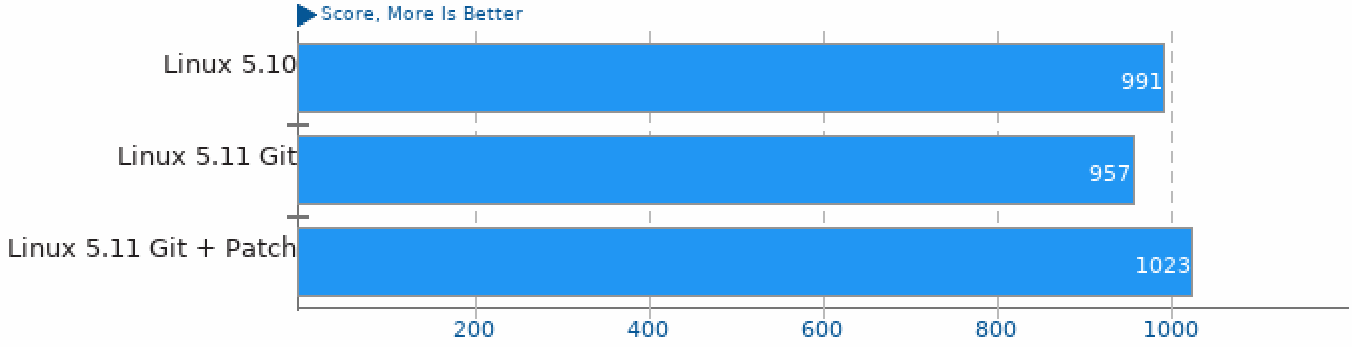


1. (CXX) g++ options: -O3 -march=native -fopenmp

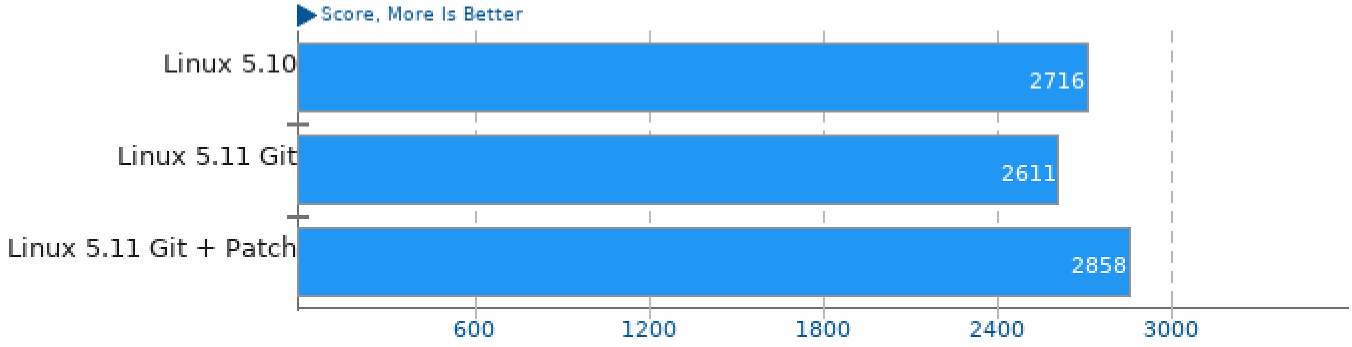
AI Benchmark Alpha 0.1.2
Device Inference Score



AI Benchmark Alpha 0.1.2
Device Training Score

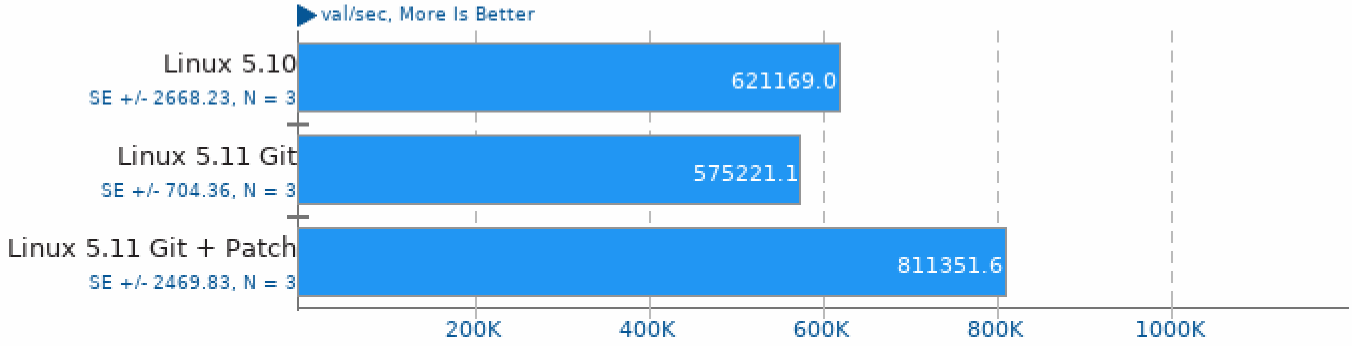


AI Benchmark Alpha 0.1.2
Device AI Score



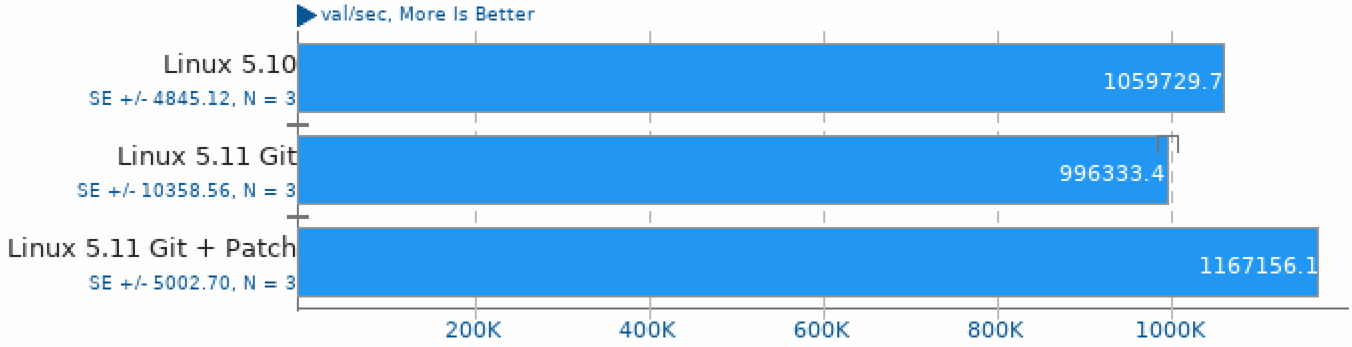
InfluxDB 1.8.2

Concurrent Streams: 4 - Batch Size: 10000 - Tags: 2,5000,1 - Points Per Series: 10000

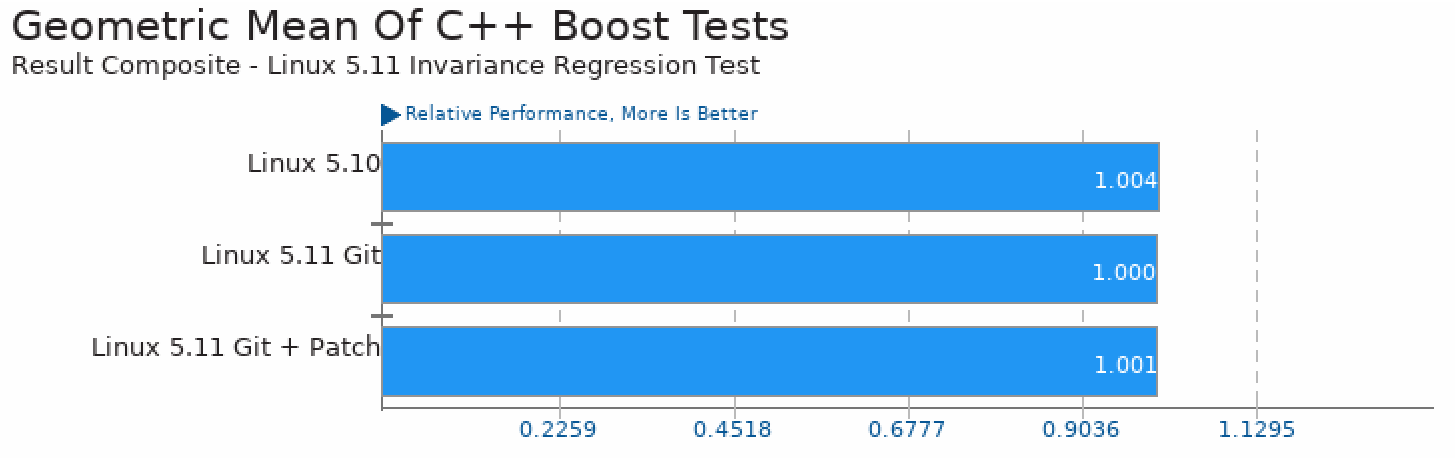


InfluxDB 1.8.2

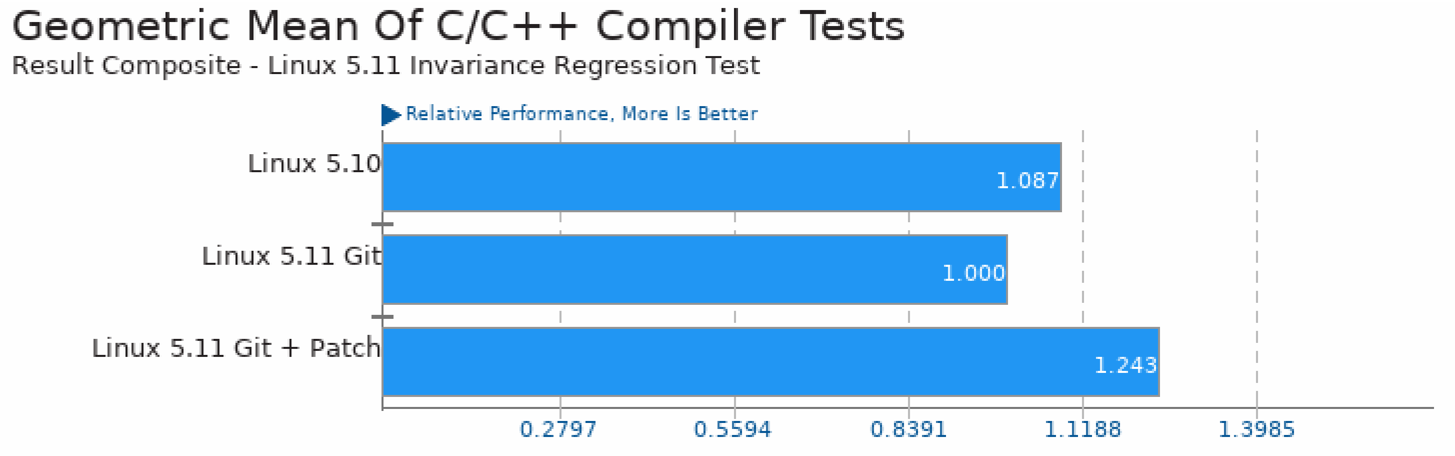
Concurrent Streams: 64 - Batch Size: 10000 - Tags: 2,5000,1 - Points Per Series: 10000



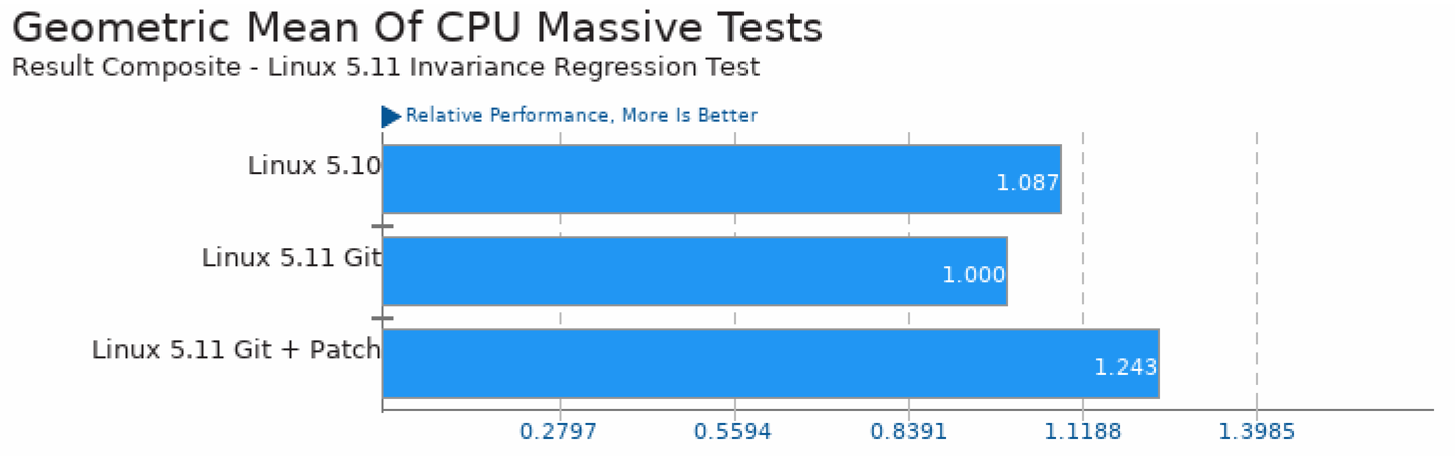
These geometric means are based upon test groupings / test suites for this result file.



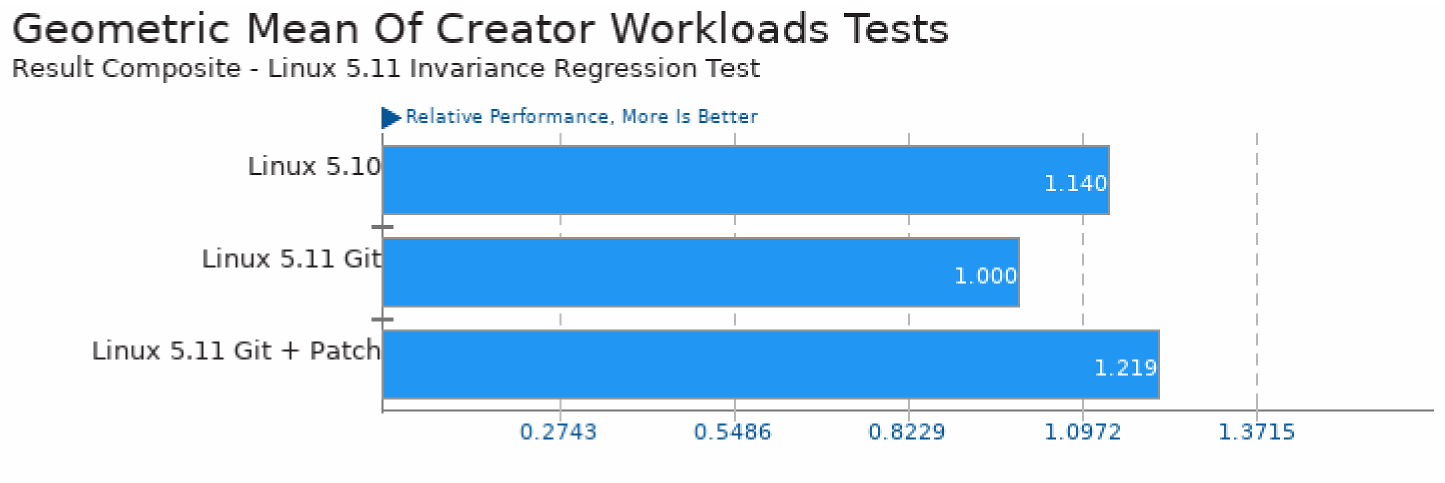
Geometric mean based upon tests: pts/quantlib and pts/openfoam



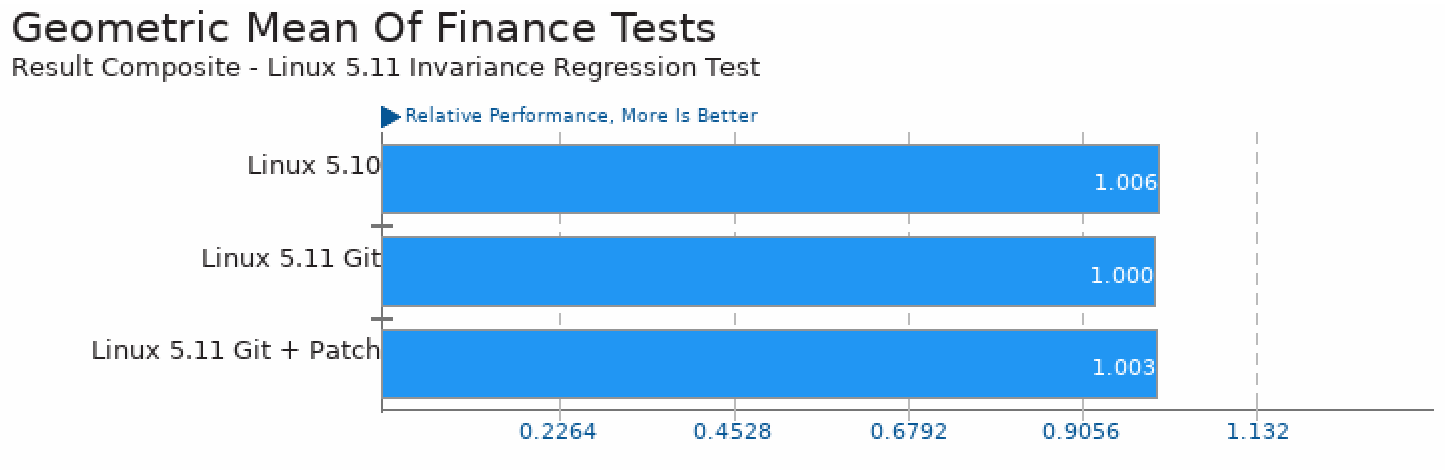
Geometric mean based upon tests: pts/x265 and pts/compress-zstd



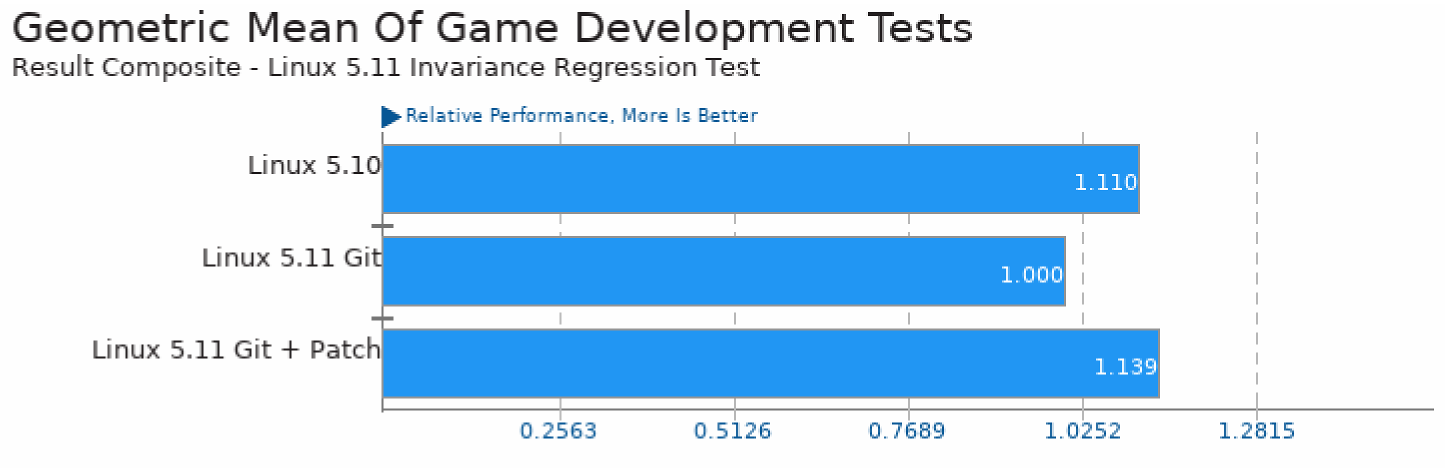
Geometric mean based upon tests: pts/compress-zstd and pts/x265



Geometric mean based upon tests: pts/ospray, pts/x265, pts/oidn, pts/etcpak and pts/build-godot



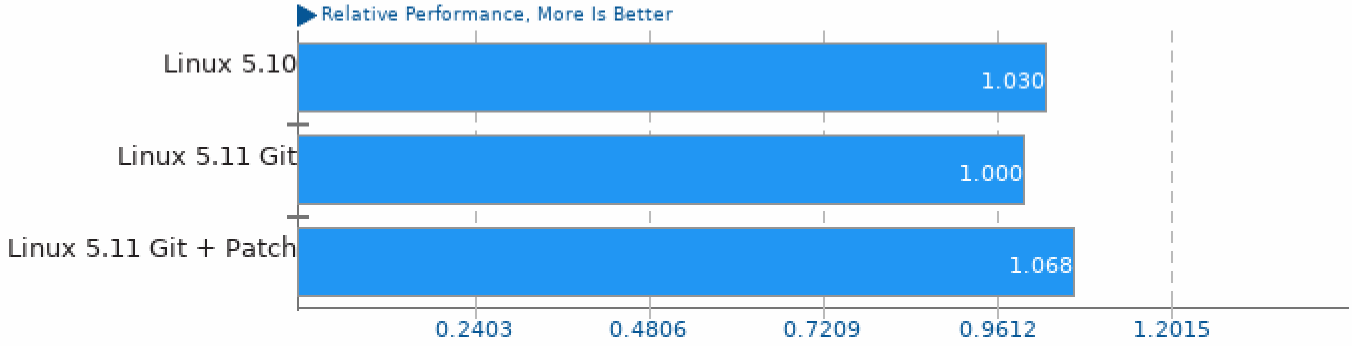
Geometric mean based upon tests: pts/financebench and pts/quantlib



Geometric mean based upon tests: pts/etcpak, pts/build-godot and pts/oidn

Geometric Mean Of HPC - High Performance Computing Tests

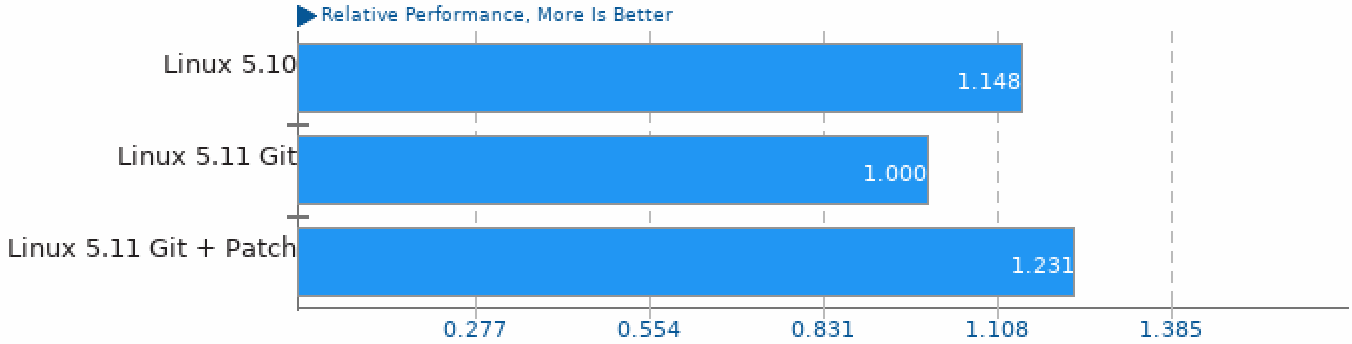
Result Composite - Linux 5.11 Invariance Regression Test



Geometric mean based upon tests: pts/openfoam and pts/ai-benchmark

Geometric Mean Of Multi-Core Tests

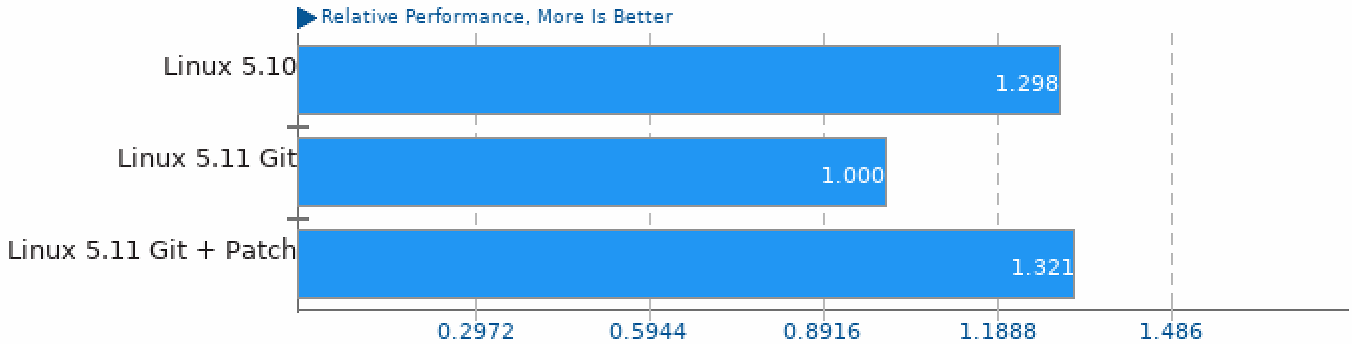
Result Composite - Linux 5.11 Invariance Regression Test



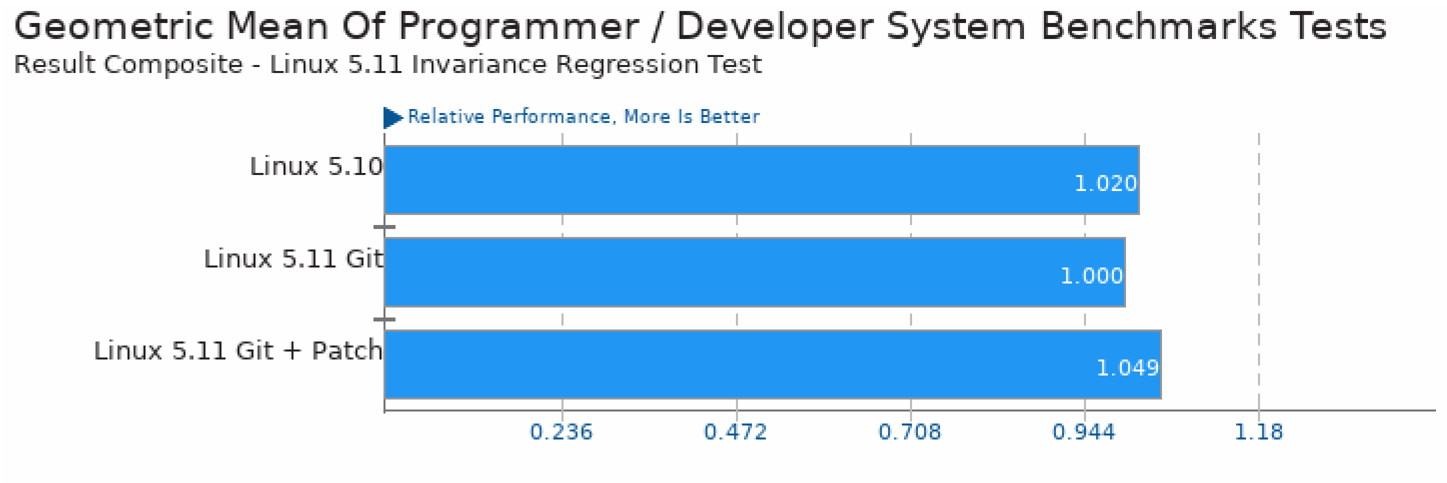
Geometric mean based upon tests: pts/ospray, pts/x265, pts/compress-zstd, pts/build-godot and pts/oidn

Geometric Mean Of Intel oneAPI Tests

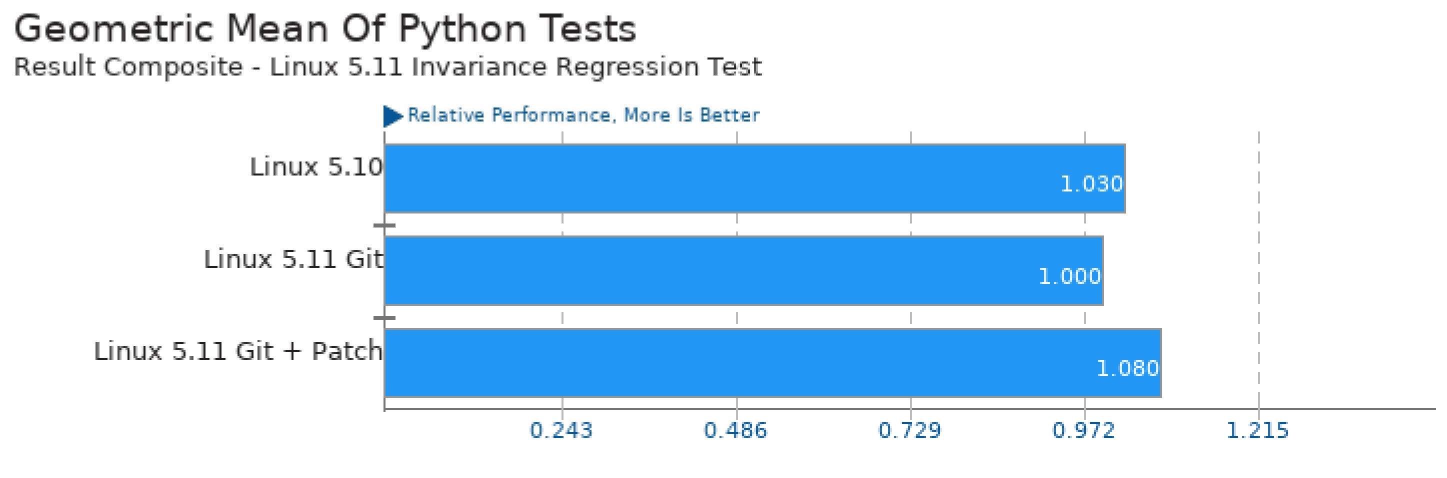
Result Composite - Linux 5.11 Invariance Regression Test



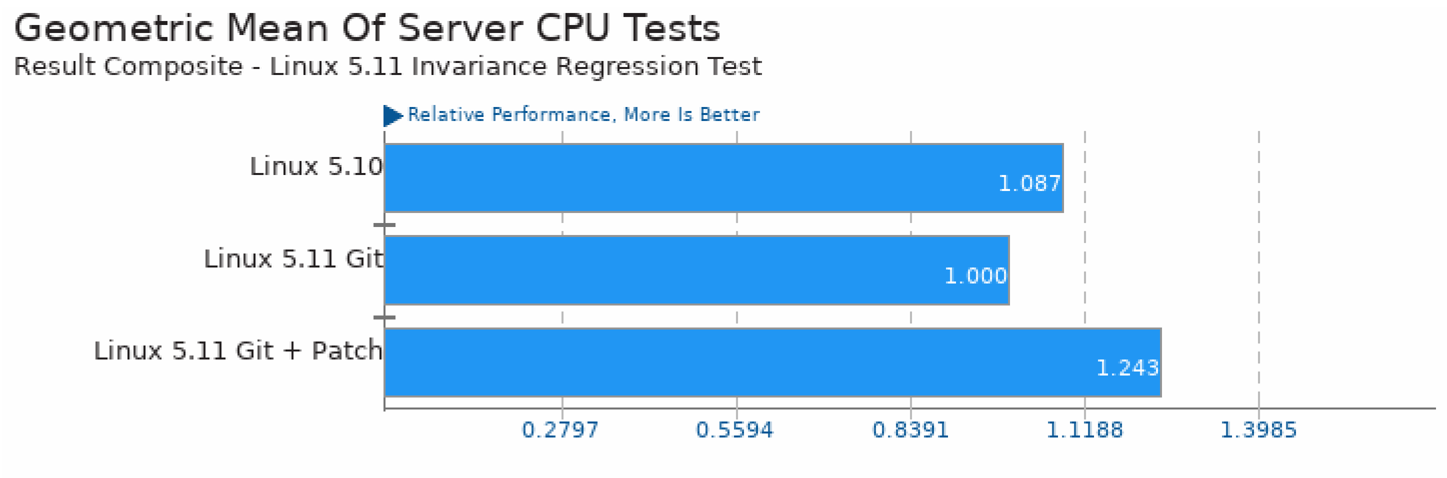
Geometric mean based upon tests: pts/oidn and pts/ospray



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



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



Geometric mean based upon tests: pts/x265 and pts/compress-zstd

This file was automatically generated via the Phoronix Test Suite benchmarking software on Wednesday, 26 January 2022 07:17.