



## rpi4-ubuntu-64-bit

AMD G-T56N testing with a HP 17E2 (K30 v01.16 BIOS) and AMD Radeon HD 6320 384MB on Ubuntu 20.04 via the Phoronix Test Suite.

### Automated Executive Summary

*HP\_T610\_4GB\_SSD\_UbuntuFocal came in first place for 9% of the tests.*

*Based on the geometric mean of all complete results, the fastest (UDOOX86-Ultra) was 1.407x the speed of the slowest (HP\_T610\_4GB\_SSD\_UbuntuFocal). ARMv8 Cortex-A72 was 0.95x the speed of UDOOX86-Ultra, rpi4-raspbian was 0.931x the speed of ARMv8 Cortex-A72, rpi4-raspbian-next was 0.98x the speed of rpi4-raspbian, HP\_T610\_4GB\_SSD\_UbuntuFocal was 0.82x the speed of rpi4-raspbian-next.*

### Test Systems:

#### ARMv8 Cortex-A72

Processor: ARMv8 Cortex-A72 @ 1.50GHz (4 Cores), Motherboard: BCM2835 Raspberry Pi 4 Model B Rev 1.2,

Memory: 4096MB, Disk: 32GB SP32G

OS: Ubuntu 19.10, Kernel: 5.3.0-1022-raspi2 (aarch64), Compiler: GCC 9.2.1 20191008, File-System: ext4

Compiler Notes: --build=aarch64-linux-gnu --disable-libquadmath --disable-libquadmath-support --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-fix-cortex-a53-843419 --enable-gnu-unique-object --enable-languages=c,ada,c++,go,d,fortran,objc,obj-c++,gm2 --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-plugin --enable-shared --enable-threads=posix --host=aarch64-linux-gnu --program-prefix=aarch64-linux-gnu --target=aarch64-linux-gnu --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-target-system-zlib=auto -v  
Processor Notes: Scaling Governor: BCM2835 Freq ondemand  
Python Notes: + Python 3.7.5  
Security Notes: itlb\_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec\_store\_bypass: Vulnerable + spectre\_v1: Mitigation of \_\_user pointer sanitization + spectre\_v2: Vulnerable + tsx\_async\_abort: Not affected

## rpi4-raspbian

Processor: ARMv7 Cortex-A72 @ 1.50GHz (4 Cores), Motherboard: BCM2835 Raspberry Pi 4 Model B Rev 1.2, Memory: 4096MB, Disk: 32GB SP32G

OS: Raspbian 10, Kernel: 4.19.97-v7l+ (armv7l), Compiler: GCC 8.3.0, File-System: ext4

Compiler Notes: --build=arm-linux-gnueabi --disable-libitm --disable-libquadmath --disable-libquadmath-support --disable-sjlj-exceptions --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-languages=c,ada,c++,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc=auto --enable-plugin --enable-shared --enable-threads=posix --host=arm-linux-gnueabi --program-prefix=arm-linux-gnueabi --target=arm-linux-gnueabi --with-arch=armv6 --with-default-libstdcxx-abi=new --with-float=hard --with-fpu=vfp --with-gcc-major-version-only --with-target-system-zlib -v  
Processor Notes: Scaling Governor: cpufreq-dt ondemand  
Python Notes: Python 2.7.16 + Python 3.7.3

## rpi4-raspbian-next

Processor: ARMv7 Cortex-A72 @ 1.50GHz (4 Cores), Motherboard: BCM2711 Raspberry Pi 4 Model B Rev 1.2, Memory: 4096MB, Disk: 32GB SP32G

OS: Raspbian 10, Kernel: 5.4.32-v7l+ (armv7l), Compiler: GCC 8.3.0, File-System: ext4

Compiler Notes: --build=arm-linux-gnueabi --disable-libitm --disable-libquadmath --disable-libquadmath-support --disable-sjlj-exceptions --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-languages=c,ada,c++,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc=auto --enable-plugin --enable-shared --enable-threads=posix --host=arm-linux-gnueabi --program-prefix=arm-linux-gnueabi --target=arm-linux-gnueabi --with-arch=armv6 --with-default-libstdcxx-abi=new --with-float=hard --with-fpu=vfp --with-gcc-major-version-only --with-target-system-zlib -v  
Processor Notes: Scaling Governor: cpufreq-dt ondemand  
Python Notes: Python 2.7.16 + Python 3.7.3

## UDOOX86-Ultra

Processor: Intel Celeron N3160 @ 2.24GHz (4 Cores), Motherboard: SECO UDOO x86, Chipset: Intel Atom/Celeron/Pentium, Memory: 4096MB, Disk: 128GB TS128GMTS600 + 31GB DF4032, Graphics: Intel Atom/Celeron/Pentium x5-E8000/J3xxx/N3xxx IGP, Audio: Realtek ALC283, Monitor: LG TV, Network: Realtek RTL8111/8168/8411 + Intel Dual Band Wireless-AC 3168NGW

OS: Ubuntu 18.04, Kernel: 5.3.0-46-generic (x86\_64), Display Driver: modesetting 1.19.6, File-System: ext4

Compiler Notes: --build=x86\_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --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  
Processor Notes: Scaling Governor: intel\_pstate powersave  
System Notes: Python 2.7.17.

## HP\_T610\_4GB\_SSD\_UbuntuFocal

Processor: AMD G-T56N @ 1.65GHz (2 Cores), Motherboard: HP 17E2 (K30 v01.16 BIOS), Chipset: AMD 14h Root Complex, Memory: 3584MB, Disk: 16GB SATA Flash + 128GB ADATA SP900, Graphics: AMD Radeon HD 6320 384MB, Audio: AMD Wrestler HDMI Audio, Network: Broadcom NetLink BCM57781 PCIe

OS: Ubuntu 20.04, Kernel: 5.4.0-42-generic (x86\_64), Compiler: GCC 9.3.0, File-System: ext4

Compiler Notes: --build=x86\_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,gm2 --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none,hsa --enable-plugin --enable-shared --enable-threads=posix --host=x86\_64-linux-gnu --program-prefix=x86\_64-linux-gnu- --target=x86\_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic --without-cuda-driver -v

Processor Notes: Scaling Governor: acpi-cpufreq ondemand - CPU Microcode: 0x5000119

Python Notes: Python 3.8.2

Security Notes: itlb\_multihit: Not affected + 11tf: Not affected + mds: Not affected + meltdown: Not affected + spec\_store\_bypass: Vulnerable + spectre\_v1: Mitigation of usercopy/swaps barriers and \_\_user pointer sanitization + spectre\_v2: Mitigation of Full AMD retpoline STIBP: disabled RSB filling + srbds: Not affected + tsx\_async\_abort: Not affected

	ARMv8 Cortex-A72	rpi4-raspbian	rpi4-raspbian-n ext	UDOOX86-Ultra	HP_T610_4GB_ SSD_UbuntuFo cal
<b>SciMark - Composite (Mflops)</b>	143.37	144.09	<b>144.52</b>	<b>119.35</b>	119.50
Normalized	119.97%	120.58%	120.94%	99.87%	100%
Standard Deviation	0.7%	1.2%	1%	0%	0.1%
<b>GraphicsMagick - Rotate (Iterations/min)</b>	<b>98</b>	94	87	86	<b>64</b>
Normalized	153.13%	146.88%	135.94%	134.38%	100%
Standard Deviation	3.8%		2%	5.5%	
<b>Smallpt - G.I.R.1.S (sec)</b>	<b>123.615</b>	128.670	129.727	174.39	<b>357.325</b>
Normalized	289.06%	277.71%	275.44%	204.9%	100%
Standard Deviation	0.3%	0.1%	1.4%	0%	1%
<b>XZ Compression - C.u.1.0.3.s.i.i.C.L.9 (sec)</b>	415.380	381.244	383.010	<b>226.07</b>	<b>538.020</b>
Normalized	129.52%	141.12%	140.47%	237.99%	100%
Standard Deviation	1%	2.2%	2.9%	0.1%	0.1%
<b>Zstd Compression - C.u.1.0.3.s.i.i.C.L.1 (sec)</b>	268.893	260.524	269.193	<b>225.85</b>	<b>428.752</b>
Normalized	159.45%	164.57%	159.27%	189.84%	100%
Standard Deviation	0.7%	2.4%	0.4%	0.7%	0.1%
<b>FLAC Audio Encoding - WAV To FLAC (sec)</b>	83.682	104.440	<b>105.209</b>	<b>48.56</b>	95.908
Normalized	114.61%	91.83%	91.16%	197.5%	100%
Standard Deviation	0.9%	0.6%	1.3%	0.1%	0.2%
<b>LAME MP3 Encoding - WAV To MP3 (sec)</b>	<b>28.567</b>	41.383	<b>41.448</b>	32.79	
Normalized	100%	69.03%	68.92%	87.12%	
Standard Deviation	0.4%	0.1%	0.1%	0%	
<b>Perl Benchmarks - Pod2html</b>	<b>0.62609330</b>	0.63089197	0.65644636	0.69325936	<b>0.81746693</b>
Normalized	130.57%	129.57%	124.53%	117.92%	100%
Standard Deviation	0.5%	0.8%	1.7%	0.5%	0.8%
<b>Perl Benchmarks - Interpreter</b>	0.00664281	0.00836769	<b>0.00875708</b>	0.00692660	<b>0.00618627</b>
Normalized	93.13%	73.93%	70.64%	89.31%	100%
Standard Deviation	0.8%	0.3%	2.1%	8.4%	0.2%

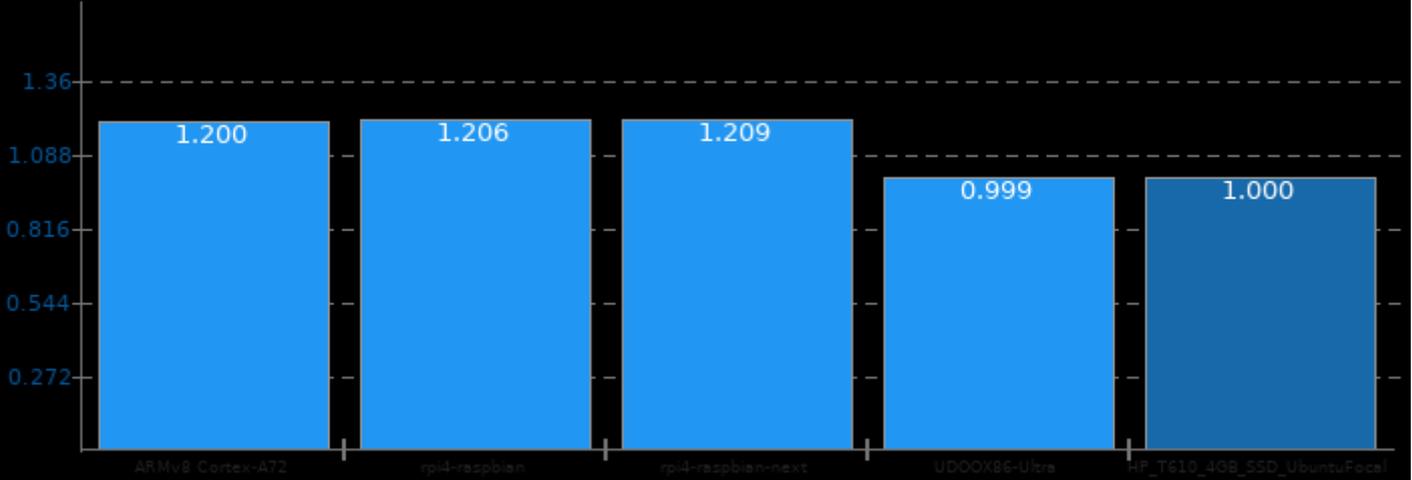
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<b>PyBench - T.F.A.T.T</b>	<b>4599</b>	5253	5210	5307	<b>5615</b>
<b>Normalized</b>	122.09%	106.89%	107.77%	105.8%	100%
<b>Standard Deviation</b>	0.6%	0.5%	0.4%	0.2%	0.3%
<b>PHPBench - P.B.S (Score)</b>	120077	<b>102054</b>	102263	<b>137551</b>	123757
<b>Normalized</b>	97.03%	82.46%	82.63%	111.15%	100%
<b>Standard Deviation</b>	0.8%	0.5%	0.2%	0.2%	1.9%

### SciMark 2.0

Computational Test: Composite

▲ Relative Performance, More Is Better

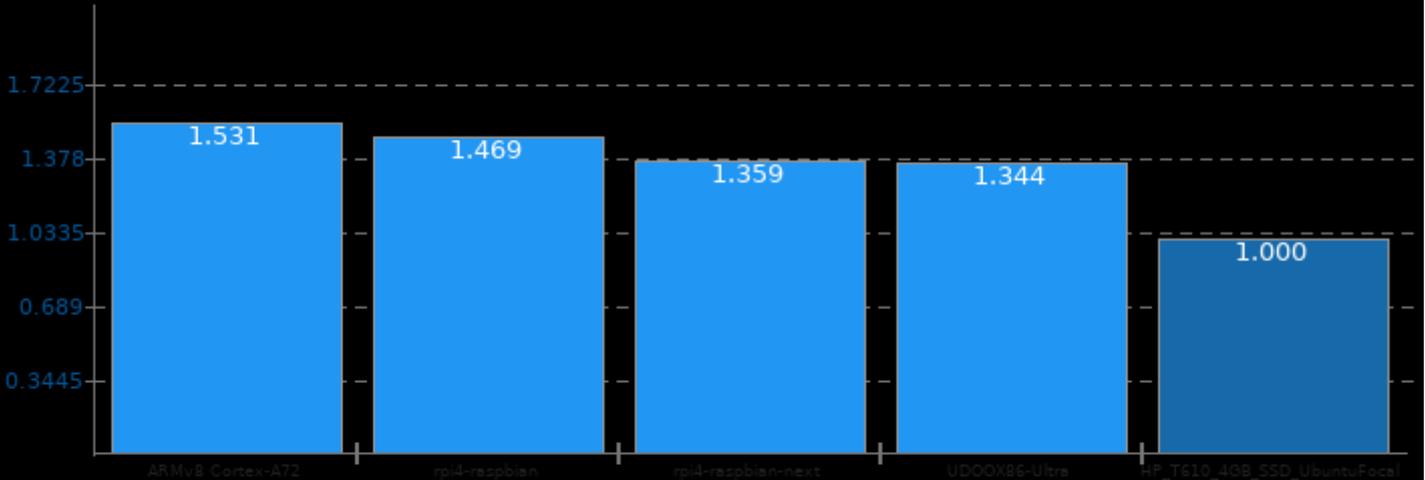


1. (CC) gcc options: -lm

### GraphicsMagick 1.3.33

Operation: Rotate

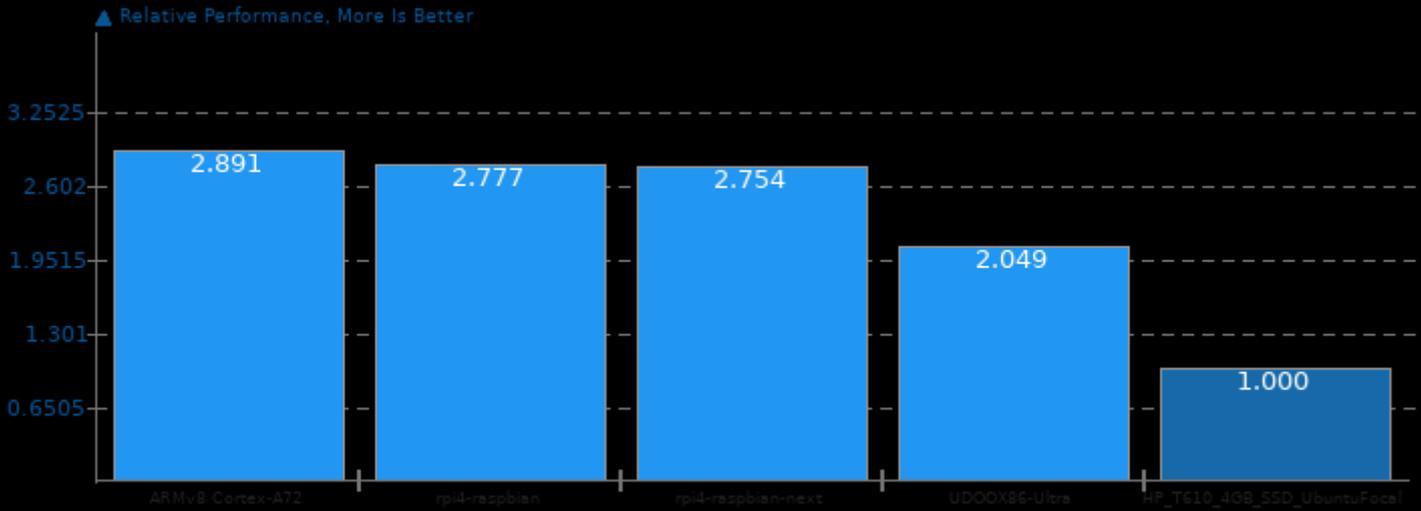
▲ Relative Performance, More Is Better



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

### Smallpt 1.0

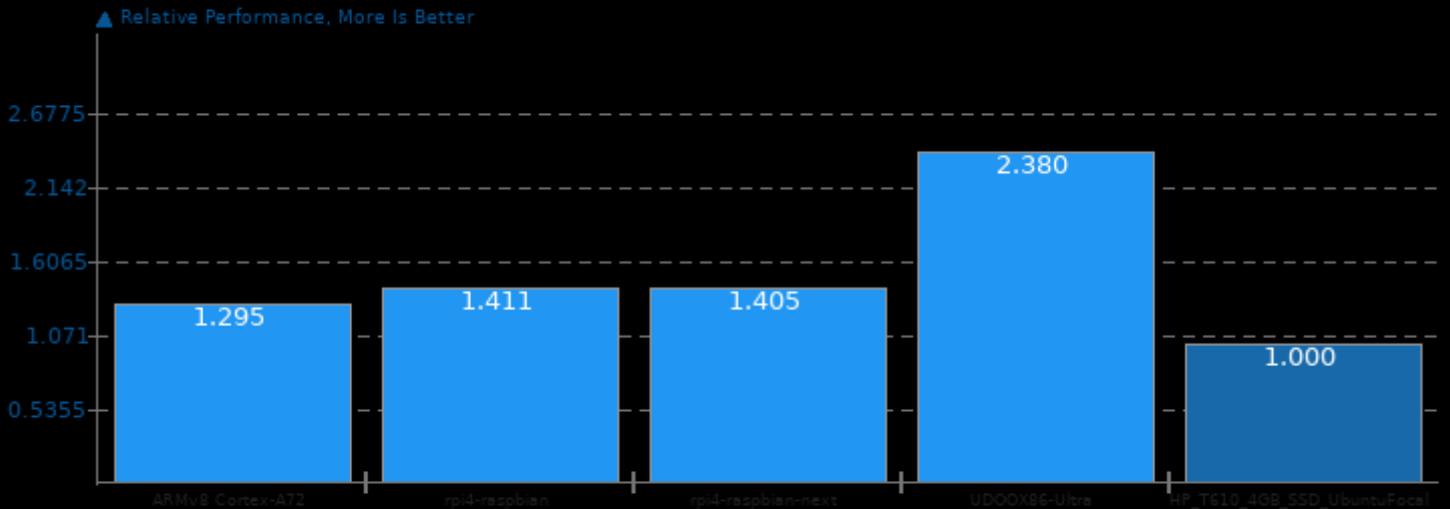
Global Illumination Renderer; 128 Samples



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

### XZ Compression 5.2.4

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

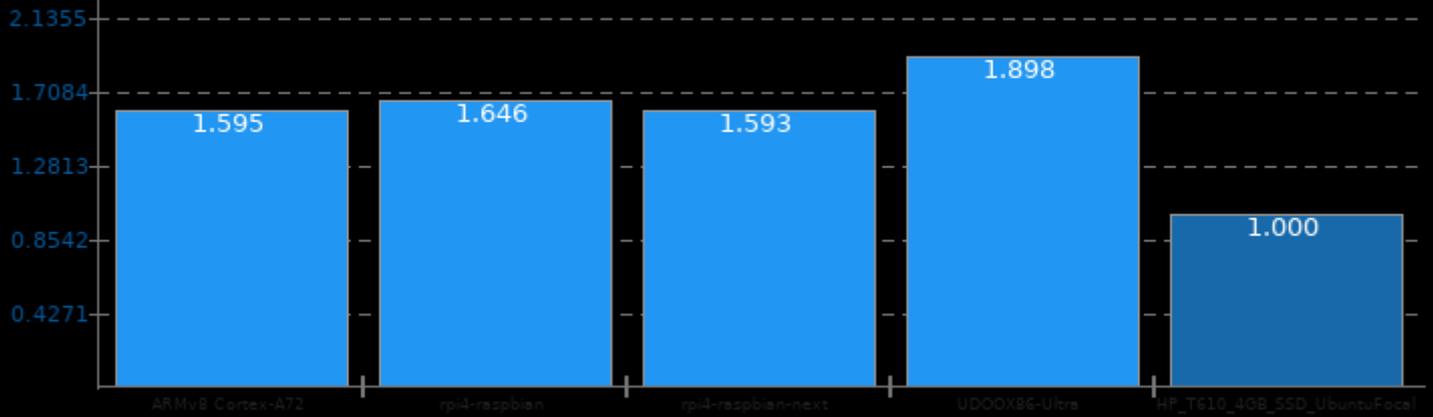


1. (CC) gcc options: -pthread -fvisibility=hidden -O2

### Zstd Compression 1.3.4

Compressing ubuntu-16.04.3-server-i386.img, Compression Level 19

▲ Relative Performance, More Is Better

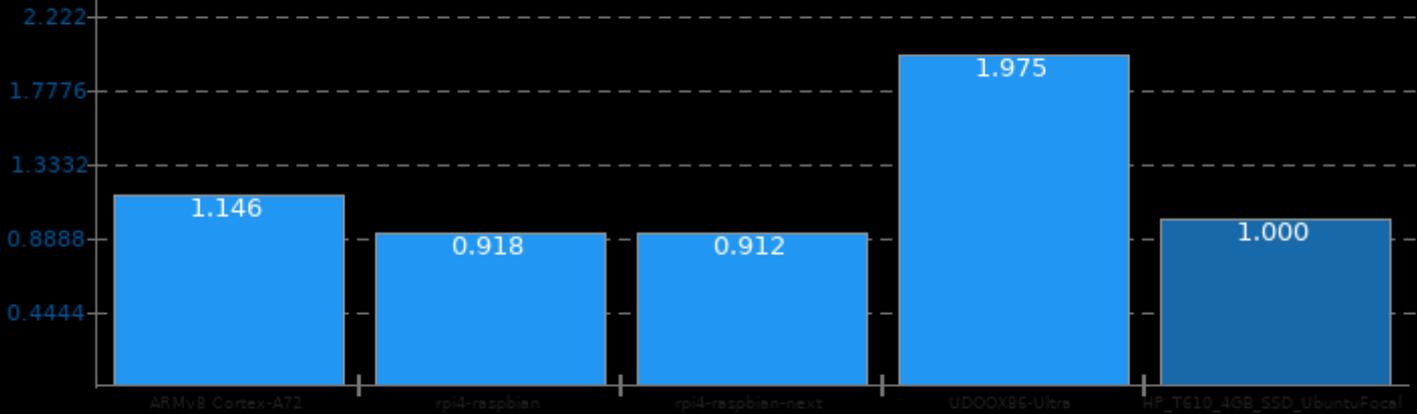


1. (CC) gcc options: -O3 -pthread -lz

### FLAC Audio Encoding 1.3.2

WAV To FLAC

▲ Relative Performance, More Is Better

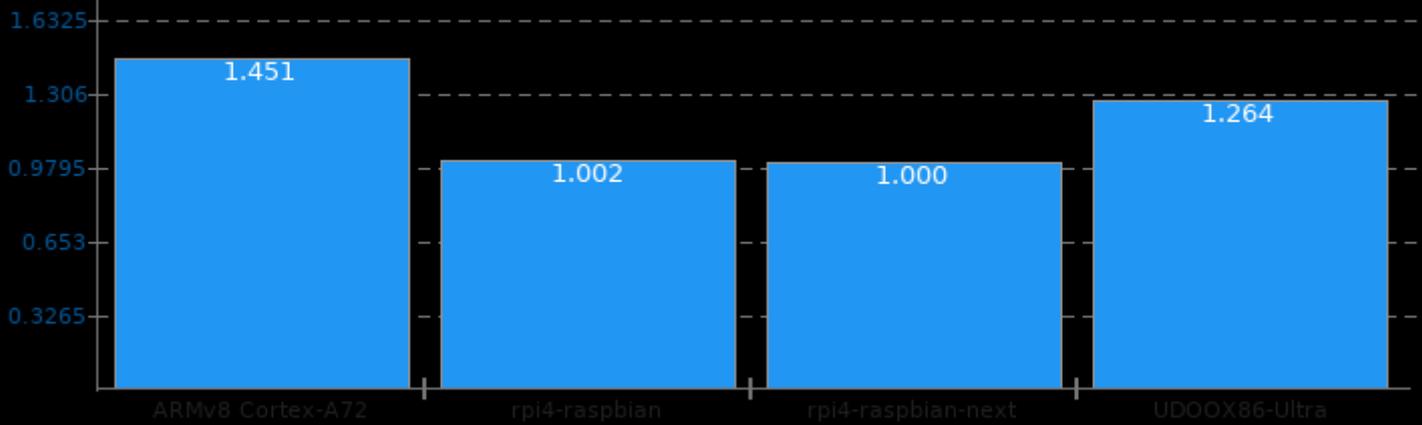


1. (CXX) g++ options: -O2 -fvisibility=hidden -lm

## LAME MP3 Encoding 3.100

WAV To MP3

▲ Relative Performance, More Is Better

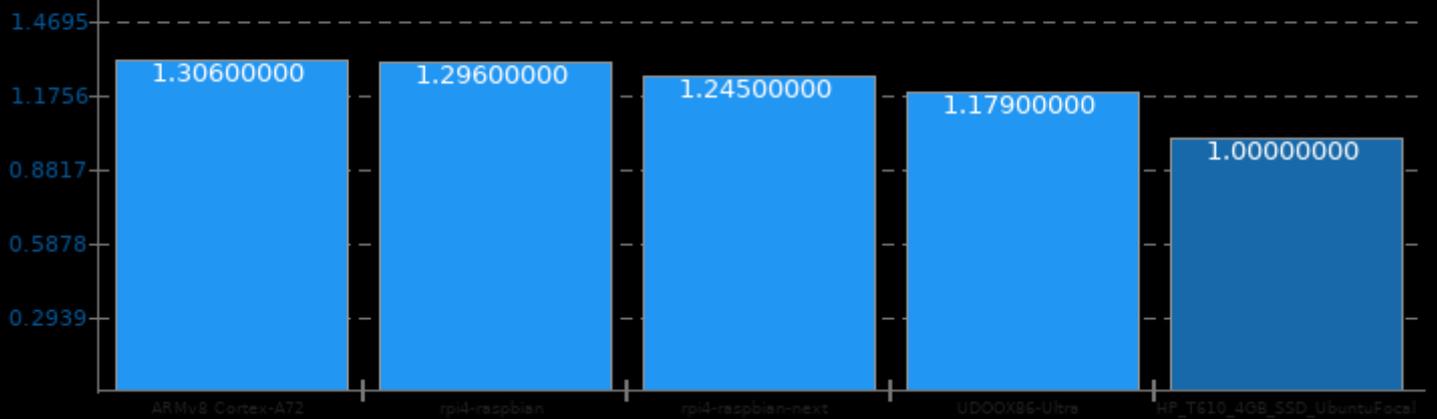


1. (C) gcc options: -O3 -ffast-math -funroll-loops -fschedule-insns2 -fbranch-count-reg -fforce-addr -pipe -lm

## Perl Benchmarks

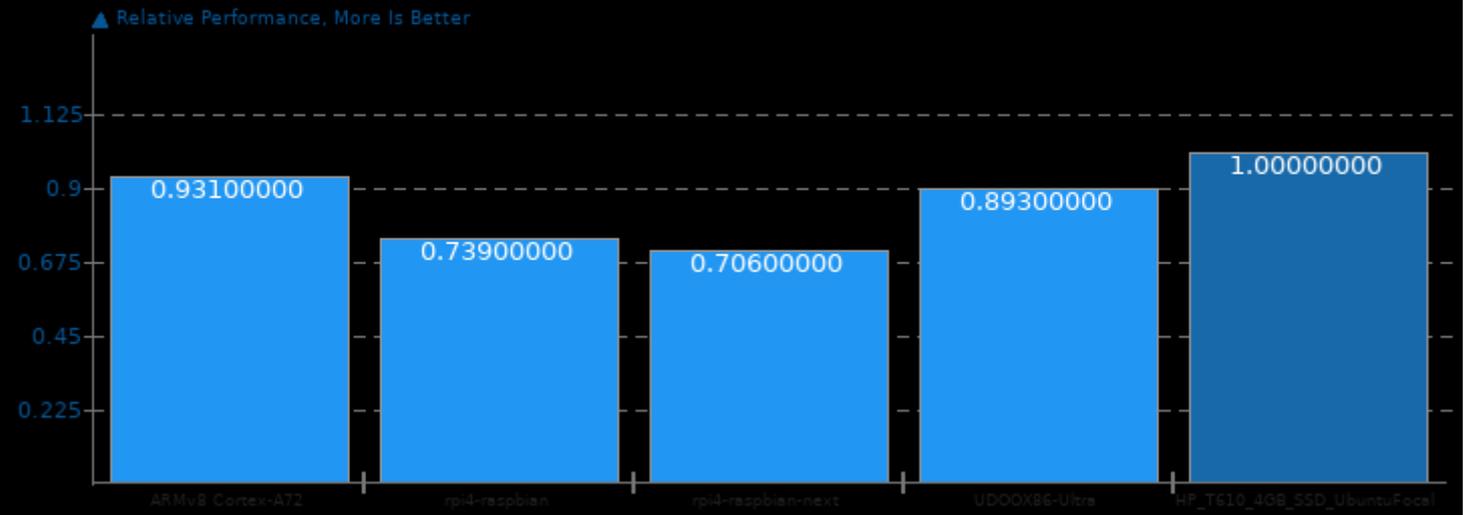
Test: Pod2html

▲ Relative Performance, More Is Better



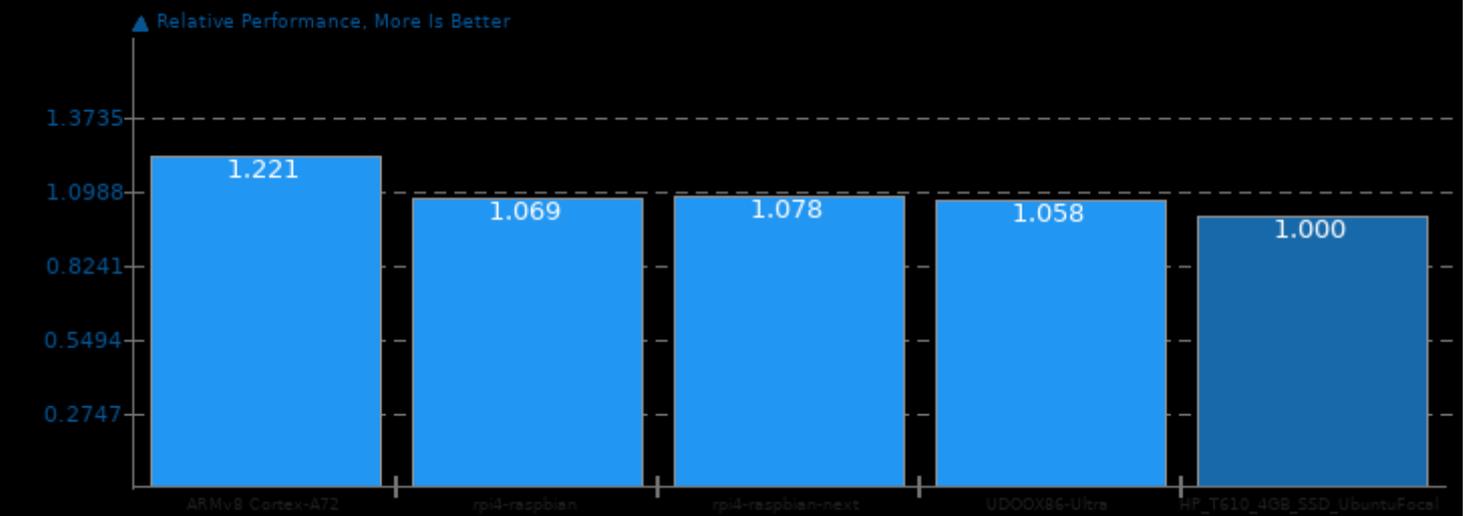
## Perl Benchmarks

Test: Interpreter



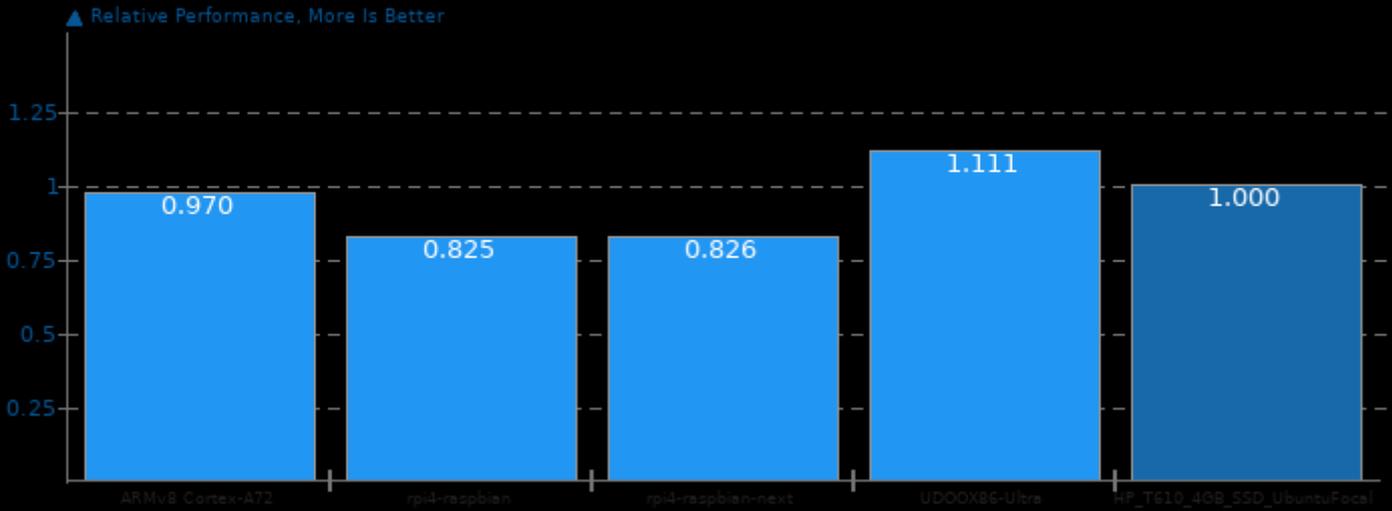
## PyBench 2018-02-16

Total For Average Test Times



# PHPBench 0.8.1

PHP Benchmark Suite



## Number Of First Place Finishes

Wins - 11 Tests

ARMv8 Cortex-A72	5 [45.5%]	UDOOX86-Ultra	4 [36.4%]
rpi4-raspbian-next	1 [9.1%]	HP_T610_4GB_SSD_UbuntuFocal	1 [9.1%]

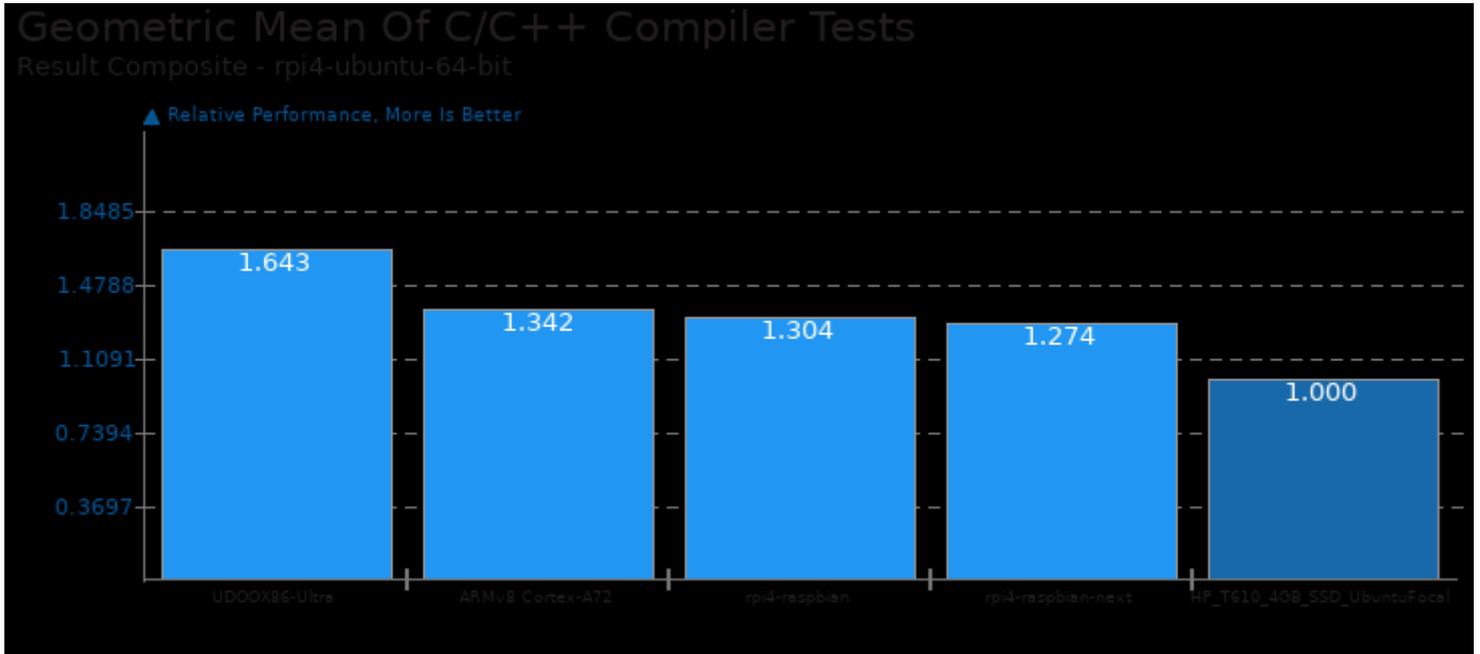
## Number Of Last Place Finishes

Losses - 11 Tests

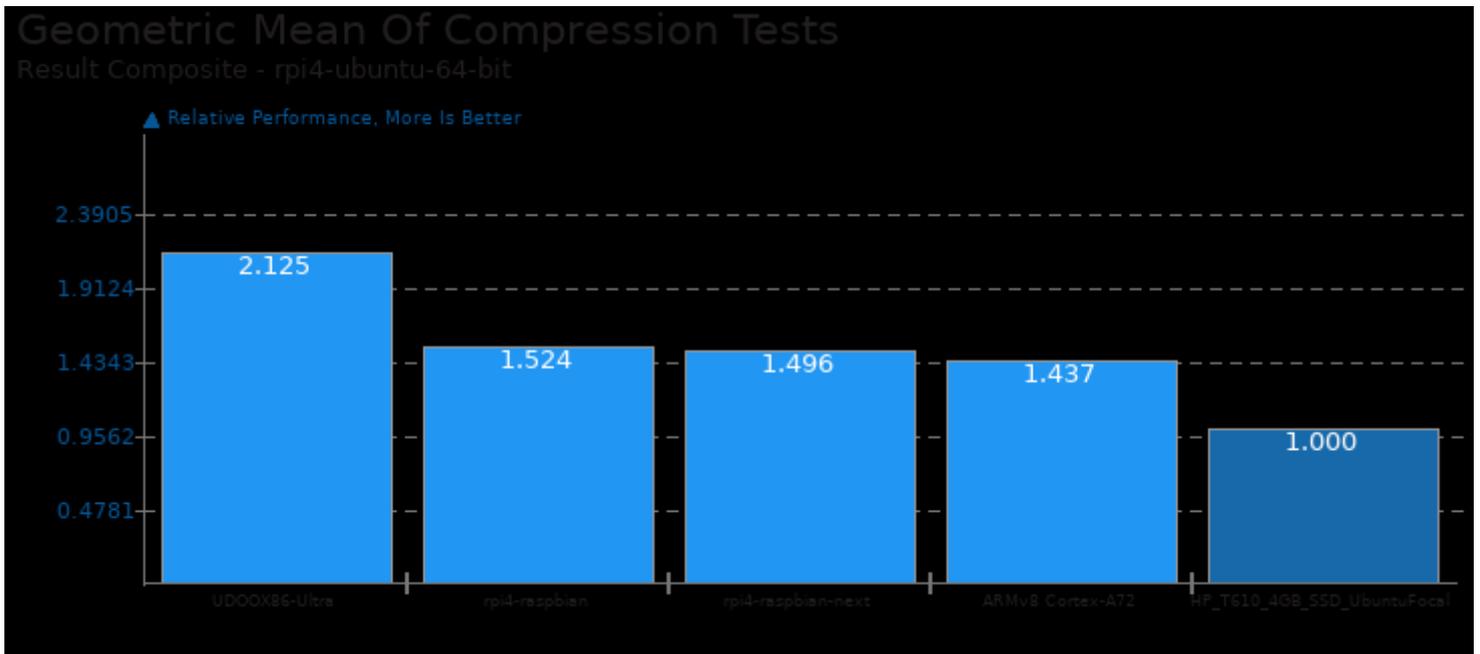
■ HP_T610_4GB_SSD_UbuntuFoca6 [54.5%]	■ rpi4-raspbian-next	3 [27.3%]
■ UDOOX86-Ultra 1 [9.1%]	■ rpi4-raspbian	1 [9.1%]

[OpenBenchmarking.org](https://www.openbenchmarking.org)

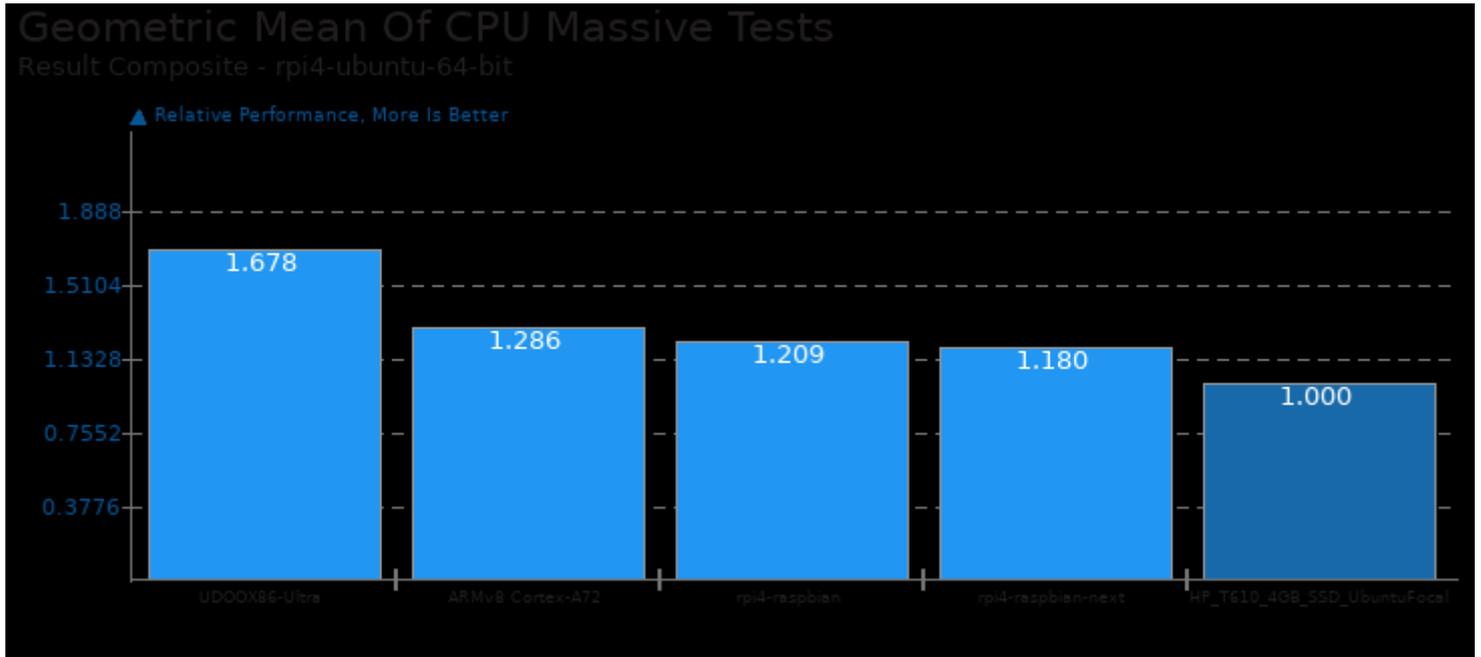
These geometric means are based upon test groupings / test suites for this result file.



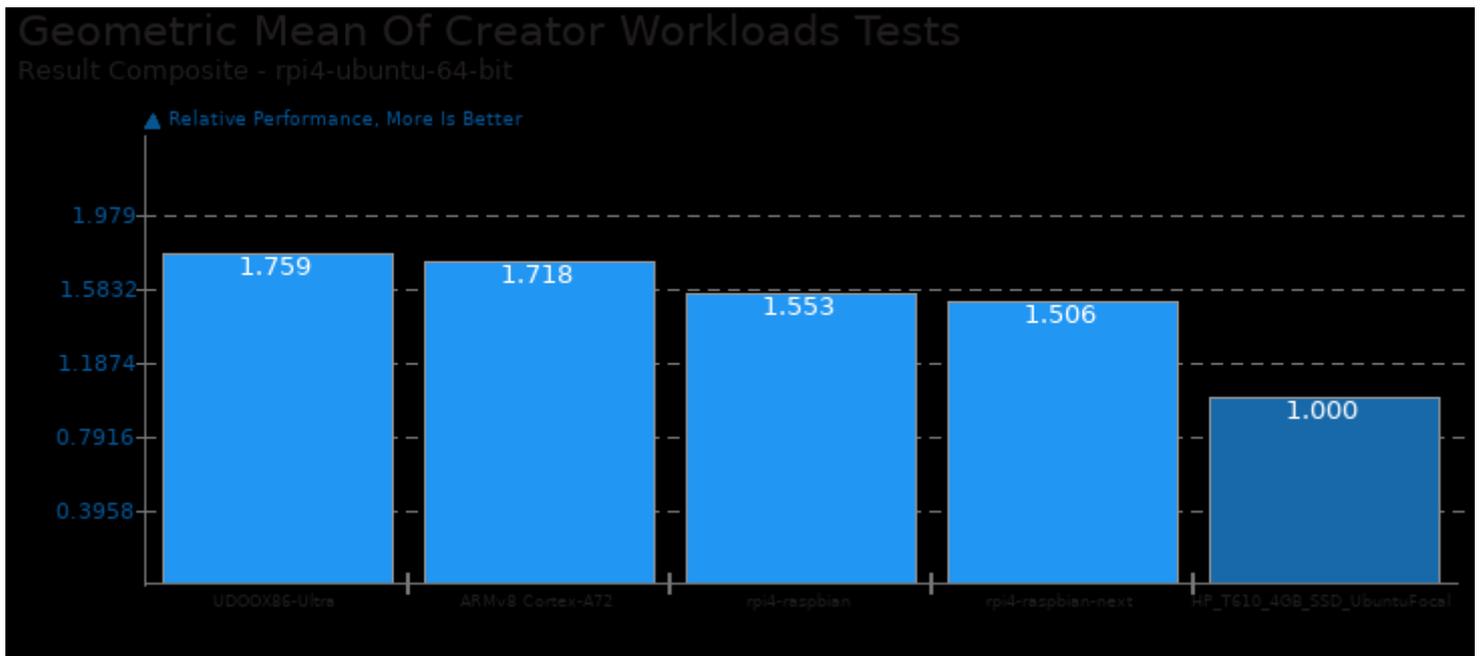
Geometric mean based upon tests: pts/scimark2, pts/graphics-magick, pts/encode-mp3, pts/encode-flac, pts/compress-xz and pts/compress-zstd



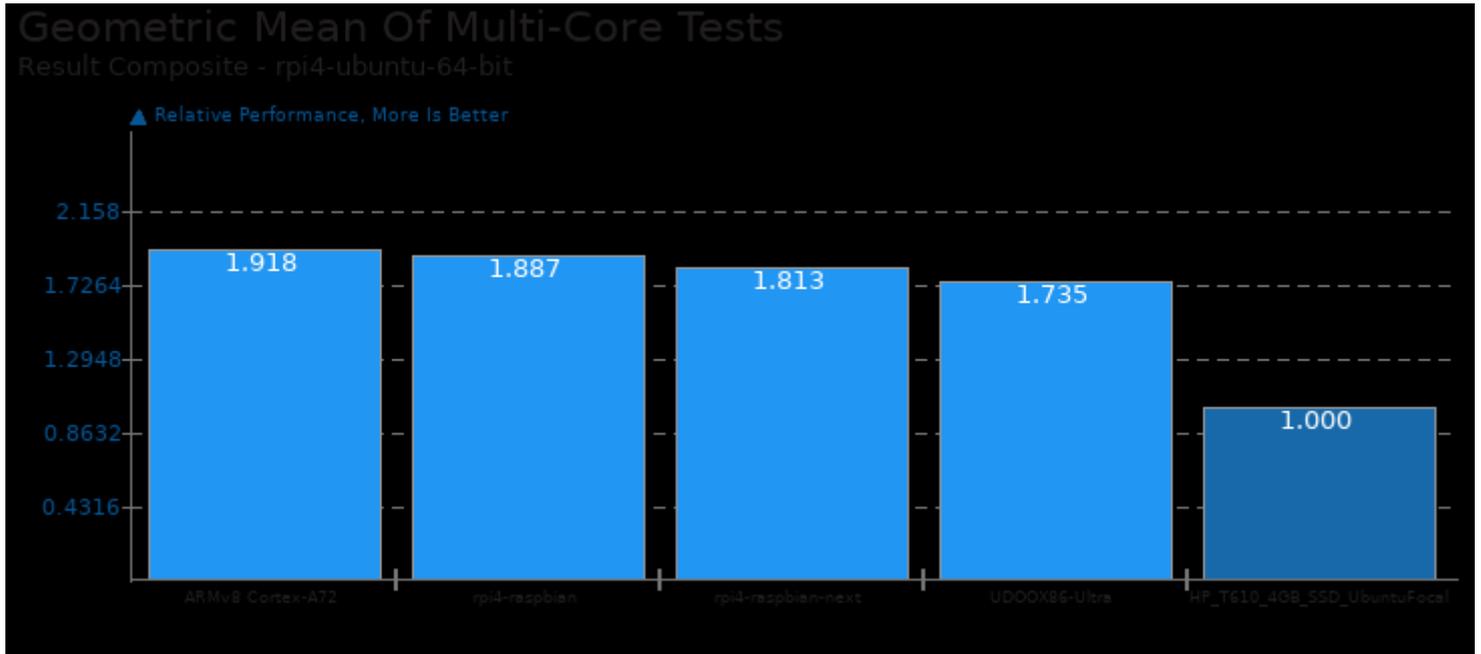
Geometric mean based upon tests: pts/compress-zstd and pts/compress-xz



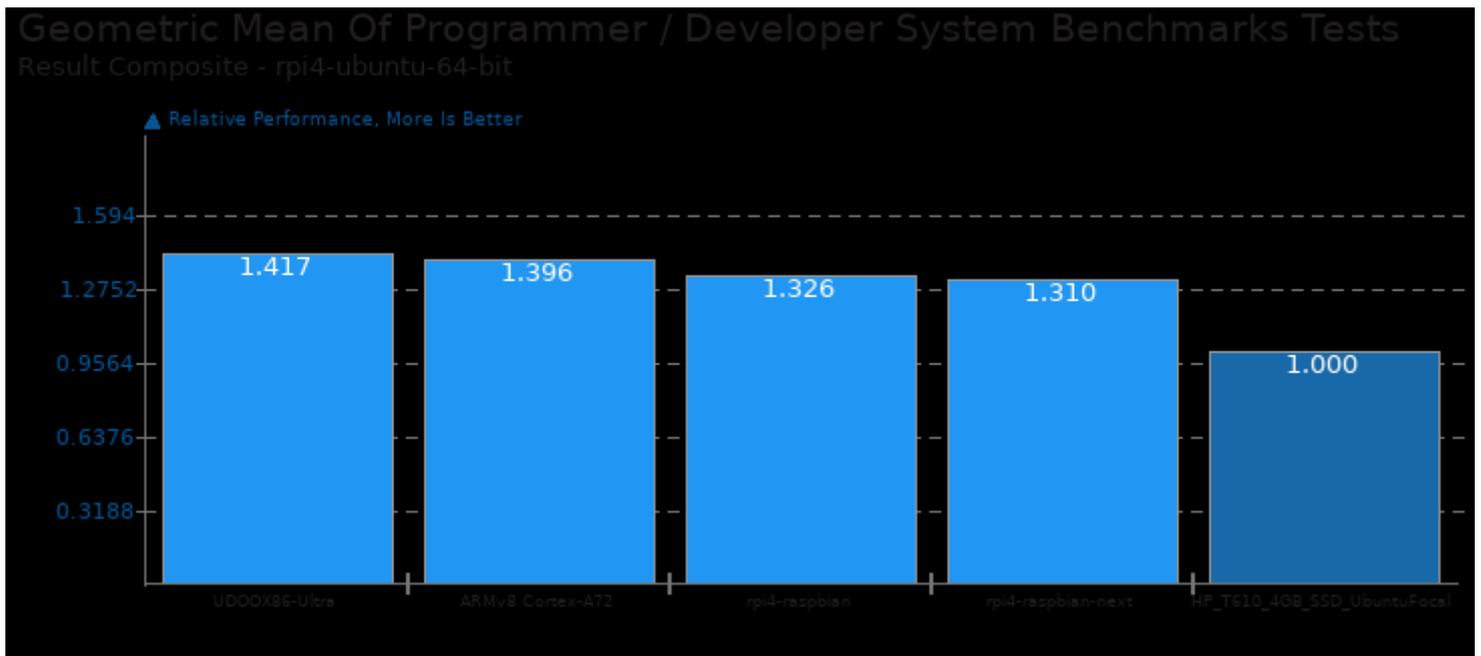
Geometric mean based upon tests: pts/compress-xz, pts/compress-zstd, pts/encode-flac, pts/encode-mp3, pts/graphics-magick and pts/phpbench



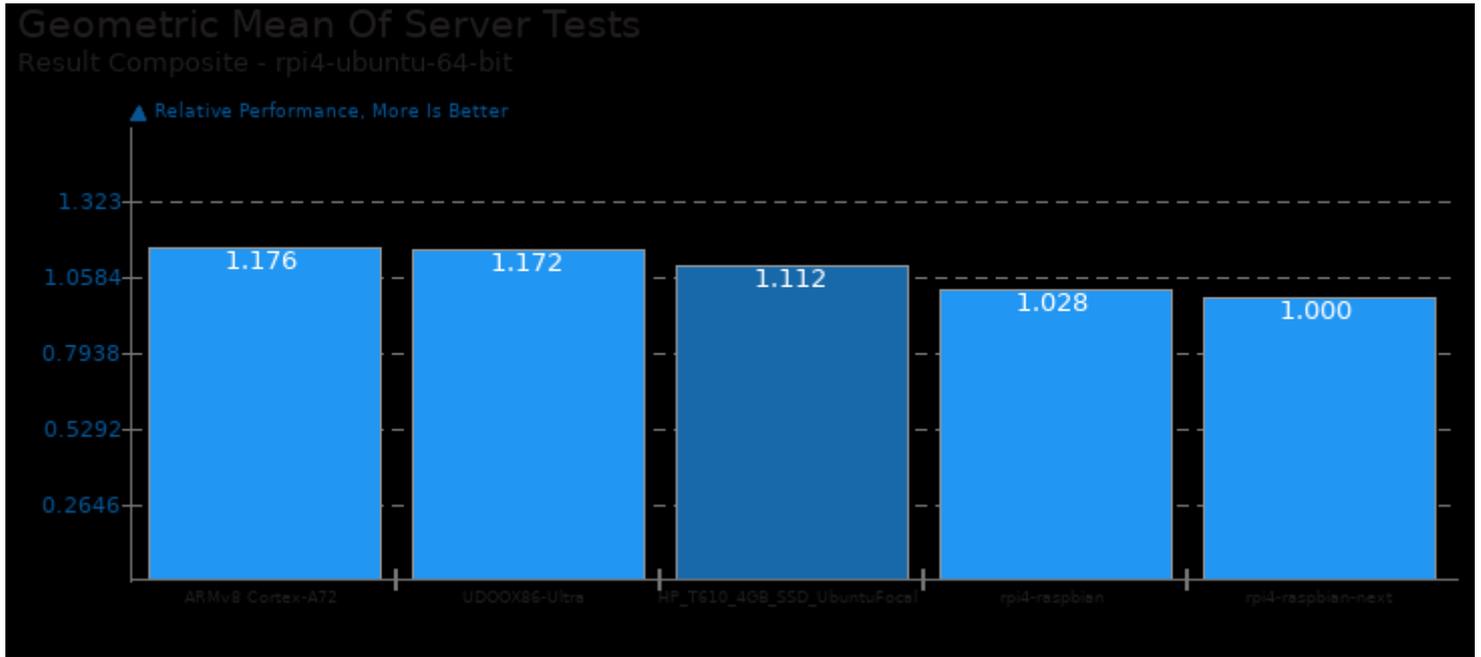
Geometric mean based upon tests: pts/smallpt, pts/encode-mp3, pts/encode-flac and pts/graphics-magick



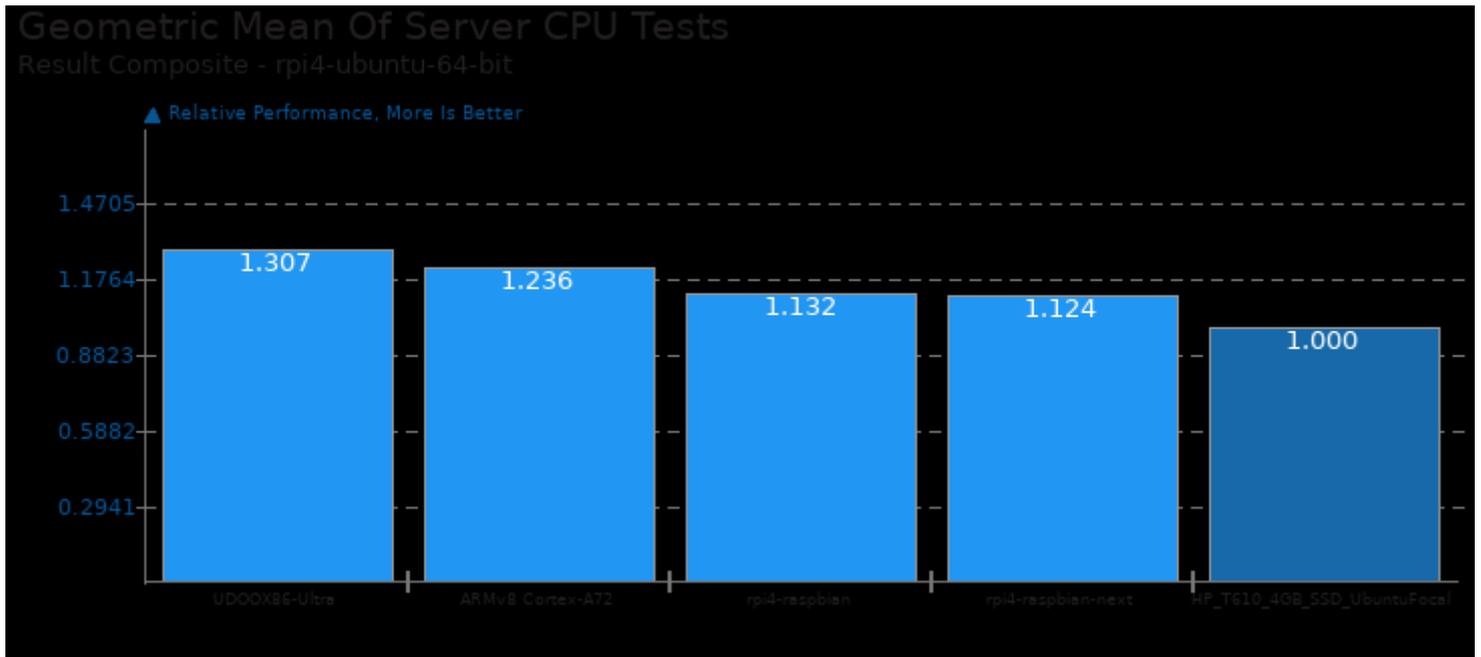
Geometric mean based upon tests: pts/smallpt, pts/graphics-magick and pts/compress-zstd



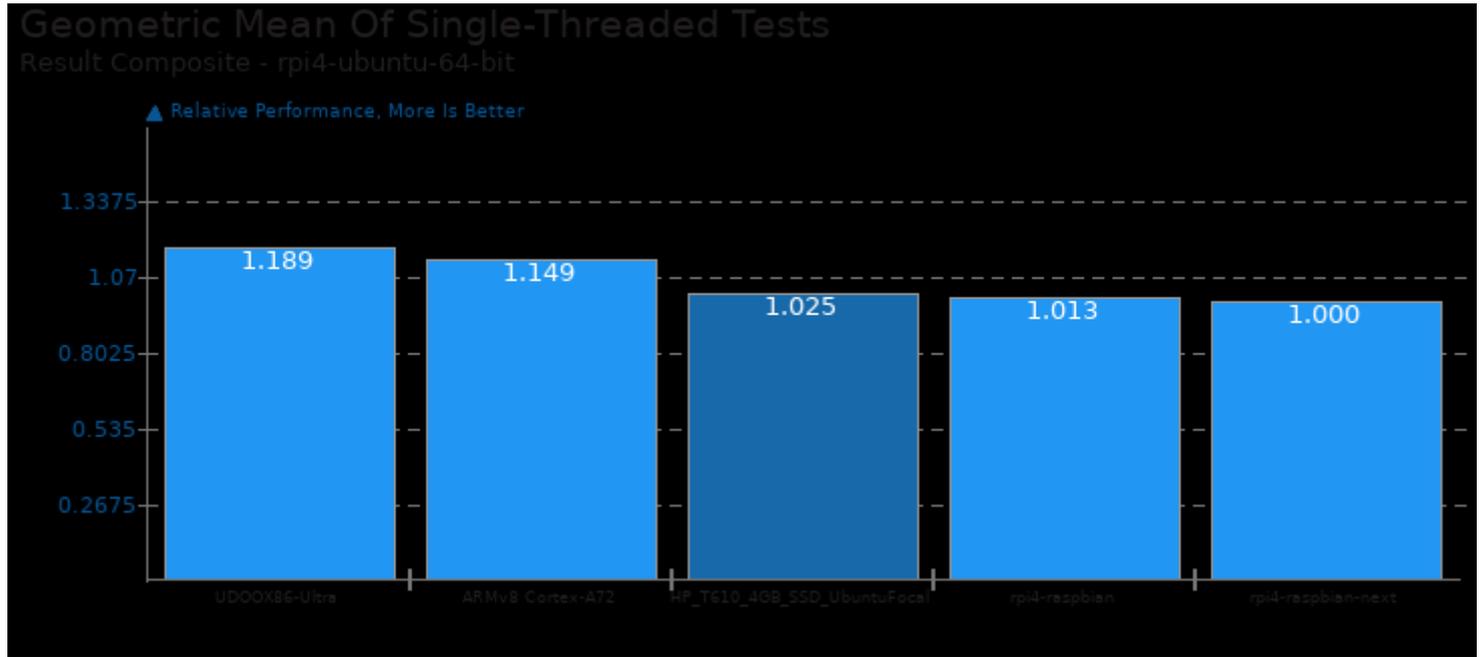
Geometric mean based upon tests: pts/compress-zstd and pts/pybench



Geometric mean based upon tests: pts/phpbench and pts/perl-benchmark



Geometric mean based upon tests: pts/compress-zstd, pts/pybench and pts/phpbench



Geometric mean based upon tests: pts/scimark2, pts/encode-flac, pts/encode-mp3, pts/perl-benchmark, pts/pybench and pts/phpbench

*This file was automatically generated via the Phoronix Test Suite benchmarking software on Thursday, 28 March 2024 04:11.*