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UP Squared System Applications Comparison

UP Squared N4200 4GB, Jetson Nano 4GB, RPi4 4GB

Automated Executive Summary

UP Squared N4200 4GB had the most wins, coming in first place for 90% of the tests.

Based on the geometric mean of all complete results, the fastest (UP Squared N4200 4GB) was 1.539x the speed of the slowest (Jetson Nano 4GB). RPi4 4GB was 0.665x the speed of UP Squared N4200 4GB and Jetson Nano 4GB was 0.977x the speed of RPi4 4GB.

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

Stream (Type: Copy) at 3.921x
OpenSSL (RSA 4096-bit Performance) at 2.675x
PHPBench (PHP Benchmark Suite) at 2.302x
RAMspeed SMP (Type: Copy - Benchmark: Integer) at 2.248x
perf-bench (Benchmark: Sched Pipe) at 2.211x
Parallel BZIP2 Compression (256MB File Compression) at 2.126x
Java SciMark (Computational Test: Composite) at 2.029x
x264 (H.264 Video Encoding) at 1.941x
PyBench (Total For Average Test Times) at 1.885x

System GZIP Decompression at 1.82x.

Test Systems:

Jetson Nano 4GB

Processor: ARMv8 Cortex-A57 @ 1.48GHz (4 Cores), Motherboard: NVIDIA Jetson Nano Developer Kit, Memory: 4096MB, Disk: 31GB 00000, Graphics: NVIDIA Tegra X1, Monitor: EK240Y, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 18.04, Kernel: 4.9.140-tegra (aarch64), Desktop: GNOME Shell 3.28.4, Display Server: X Server 1.19.6, Display Driver: NVIDIA 32.4.3, OpenGL: 4.6.0, Vulkan: 1.2.131, Compiler: GCC 7.5.0 + CUDA 10.2, File-System: ext4, Screen Resolution: 1920x1080

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++ --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 -v
Processor Notes: Scaling Governor: tegra-cpufreq schedutil
Disk Mount Options Notes: data=ordered,relatime,rw
Java Notes: OpenJDK Runtime Environment (build 11.0.8+10-post-Ubuntu-0ubuntu118.04.1)
Python Notes: Python 2.7.17 + Python 3.6.9

UP Squared N4200 4GB

Processor: Intel Pentium N4200 @ 2.50GHz (4 Cores), Motherboard: AAEON UP-APL01 (UPA1AM50 BIOS), Chipset: Intel Celeron N3350/Pentium, Memory: 4 x 1024 MB LPDDR4, Disk: 31GB Ultra + 31GB DA4032, Graphics: Intel HD 505 3GB (750MHz), Audio: Intel Celeron N3350/Pentium, Monitor: EK240Y, Network: 2 x Realtek RTL8111/8168/8411

OS: Ubuntu 18.04, Kernel: 5.4.0-48-generic (x86_64), Desktop: GNOME Shell 3.28.4, Display Server: X Server, OpenGL: 4.5 Mesa 19.2.8, Compiler: GCC 7.5.0, File-System: ext4, Screen Resolution: 1920x1080

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
Disk Notes: MQ-DEADLINE / errors=remount-ro,relatime,rw
Processor Notes: Scaling Governor: intel_pstate powersave - CPU Microcode: 0x3c
Java Notes: OpenJDK Runtime Environment (build 11.0.8+10-post-Ubuntu-0ubuntu118.04.1)
Python Notes: Python 2.7.17 + Python 3.6.9
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Not affected + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Full generic retpoline IBPB: conditional IBRS_FW STIBP: disabled RSB filling + srbds: Not affected + tsx_async_abort: Not affected

RPi4 4GB

Processor: ARMv8 Cortex-A72 @ 1.50GHz (4 Cores), Motherboard: BCM2835 Raspberry Pi 4 Model B Rev 1.2, Memory: 4096MB, Disk: 32GB SC32G, Graphics: V3D 4.2 4GB, Monitor: PHL 243V7

OS: Ubuntu 18.04, Kernel: 5.4.0-1015-raspi (aarch64), Desktop: Xfce 4.12, Display Server: X Server 1.19.6, Display Driver: modesetting 1.19.6, OpenGL: 2.1 Mesa 20.0.8, Compiler: GCC 7.5.0, File-System: ext4, Screen Resolution: 1920x1080

Environment Notes: COST_PERF_PER_DOLLAR=88

UP Squared System Applications Comparison

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++ --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 -v
Processor Notes: Scaling Governor: cpufreq-dt ondemand
Disk Mount Options Notes: relatime,rw
Java Notes: OpenJDK Runtime Environment (build 11.0.8+10-post-Ubuntu-0ubuntu118.04.1)
Python Notes: Python 2.7.17 + Python 3.6.9
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 + srbds: Not affected + tsx_async_abort: Not affected

	Jetson Nano 4GB	UP Squared N4200 4GB	RPi4 4GB
C-Ray - Total Time - 4.1.R.P.P (sec)	**954.500**	**598.000**	604.536
Normalized	62.65%	100%	98.92%
Standard Deviation	7.5%	0.7%	1%
GnuPG - 2.F.E (sec)	**46.033**	**29.398**	38.412
Normalized	63.86%	100%	76.53%
Standard Deviation	12.9%	0.4%	11.7%
Go Benchmarks - build (ns/op)	**75032734873**	**44911819954**	71596906538
Normalized	59.86%	100%	62.73%
Standard Deviation	2.9%	3.4%	2.7%
GraphicsMagick - HWB Color Space (Iterations/min)	**107**	125	**139**
Normalized	76.98%	89.93%	100%
Standard Deviation	1.1%	0.8%	1.9%
Java SciMark - Composite (Mflops)	**424.68**	**861.48**	495.31
Normalized	49.3%	100%	57.5%
Standard Deviation	0.4%	0.5%	0.6%
LAME MP3 Encoding - WAV To MP3 (sec)	**35.529**	**21.696**	29.924
Normalized	59.72%	97.8%	70.91%
Standard Deviation	1.2%	0.7%	0.7%
libjpeg-turbo tjbench - D.T (Megapixels/sec)	**45.519977**	**74.997661**	48.547681
Normalized	60.7%	100%	64.73%
Standard Deviation	1.3%	0.2%	0.3%
Node.js Octane Benchmark (Score)	**6982**	**11913**	7628
Normalized	58.61%	100%	64.03%
Standard Deviation	0.2%	0.6%	0.7%
OpenSSL - R.4.b.P (Signs/sec)	**87.2**	**229.5**	95.6
Normalized	37.38%	98.37%	40.98%
Standard Deviation	0.4%	2.6%	0.1%
Parallel BZIP2 Compression - 2.F.C (sec)	58.978	**61.982**	**71.631**
Normalized	57.13%	54.36%	47.04%
Standard Deviation	4.4%	0.8%	5.2%
perf-bench - Sched Pipe (ops/sec)	56811	**57712**	**26108**
Normalized	98.44%	100%	45.24%
Standard Deviation	0.2%	0.5%	0.2%
Perl Benchmarks - Pod2html (sec)	**0.72279813**	**0.41782446**	0.66656800
Normalized	57.81%	100%	62.68%
Standard Deviation	1.2%	0.5%	0.4%
PHPBench - P.B.S (Score)	**105196**	**241654**	119435
Normalized	43.45%	99.81%	49.33%
Standard Deviation	1.1%	0.1%	1.3%

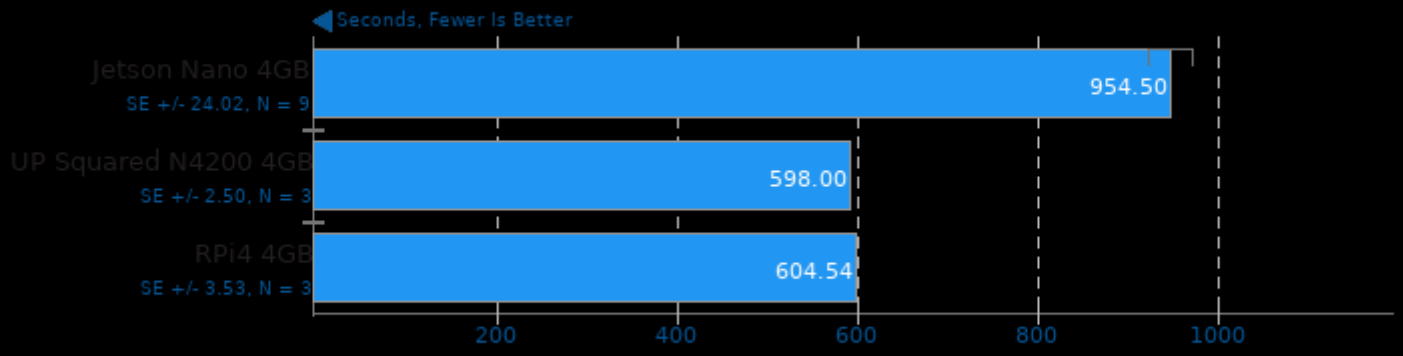
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PyBench - T.F.A.T.T (Milliseconds)	**6733**	**3571**	5794
Normalized	53.04%	100%	61.63%
Standard Deviation	1.2%	0.2%	0.4%
RAMspeed SMP - Copy - Integer (MB/s)	9078	**9879**	**4395**
Normalized	91.9%	100%	44.49%
Standard Deviation	0%	0.1%	1.2%
Rust Prime Benchmark - P.N.T.T.2.0.0 (sec)	156.738	**215.348**	**98.397**
Normalized	62.78%	45.69%	100%
Standard Deviation	1.1%	19.6%	0.1%
SciMark - Composite (Mflops)	**127.24**	**204.40**	144.22
Normalized	62.25%	100%	70.56%
Standard Deviation	0.3%	0.2%	0.5%
Smallpt - G.I.R.1.S (sec)	**186.796**	**145.426**	131.458
Normalized	58.66%	75.34%	83.35%
Standard Deviation	0.1%	2.8%	0.2%
SQLite - 1 (sec)	**103.210**	**30.905**	79.388
Normalized	29.94%	100%	38.93%
Standard Deviation	12.3%	4.1%	0.4%
Stream - Copy (MB/s)	9918	**14277**	**3641**
Normalized	69.47%	100%	25.5%
Standard Deviation	1.1%	0.1%	1.5%
System GZIP Decompression (sec)	**9.500**	**5.220**	9.266
Normalized	54.95%	100%	56.33%
Standard Deviation	1%	2.9%	3.8%
x264 - H.2.V.E (FPS)	**5.07**	**5.35**	5.62
Normalized	51.52%	54.37%	57.11%
Standard Deviation	2.4%	3.5%	2.9%

UP Squared System Applications Comparison

C-Ray 1.1

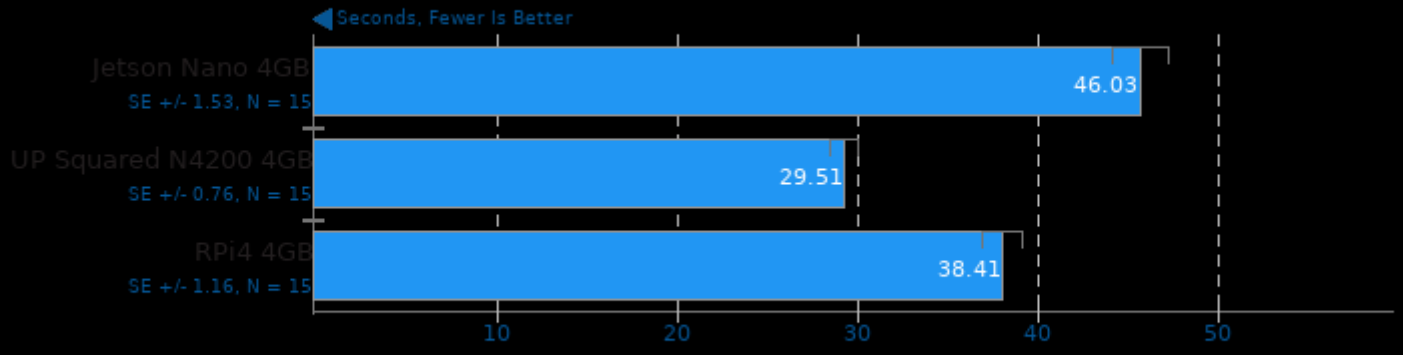
Total Time - 4K, 16 Rays Per Pixel



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

GnuPG 1.4.22

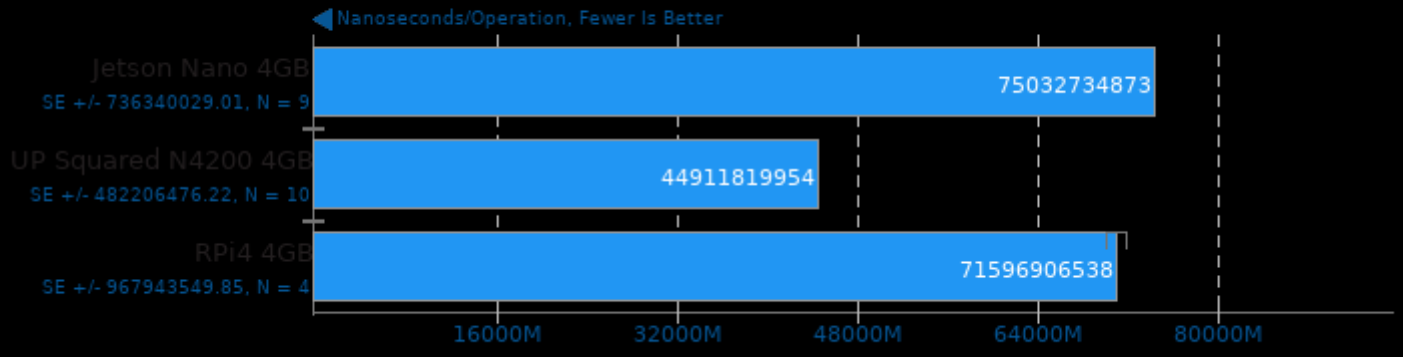
2GB File Encryption



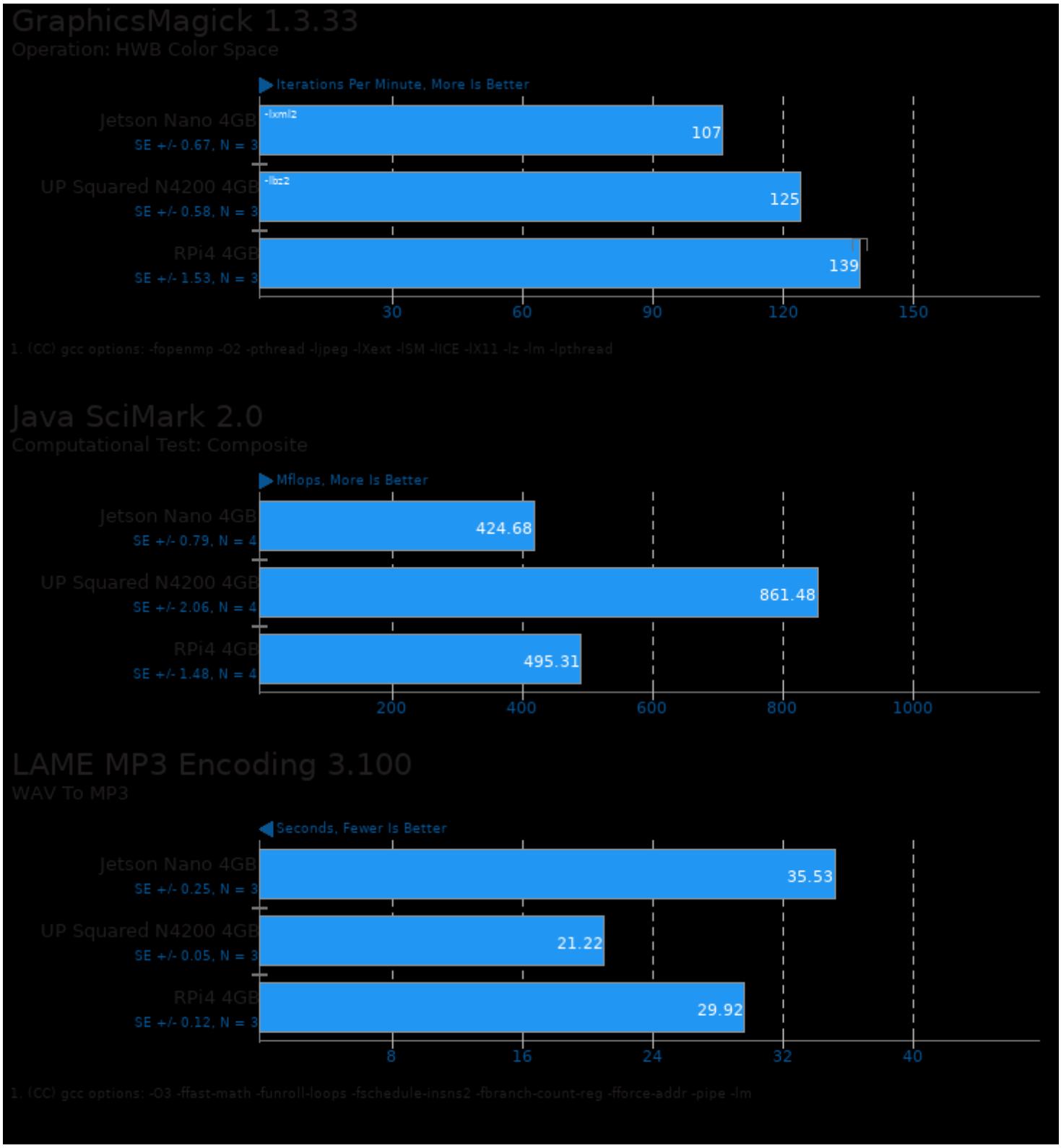
1. (CC) gcc options: -O2 -MT -MD -MP -MF

Go Benchmarks

Test: build



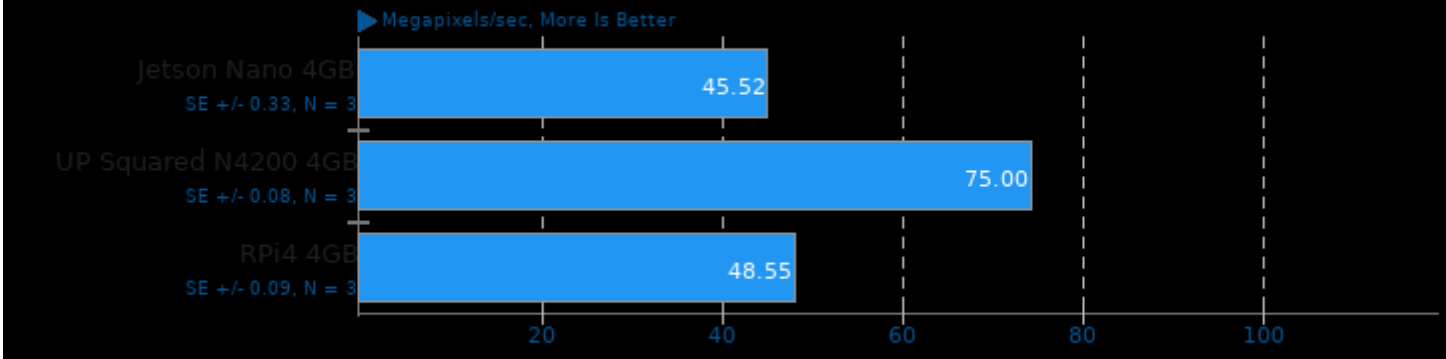
UP Squared System Applications Comparison



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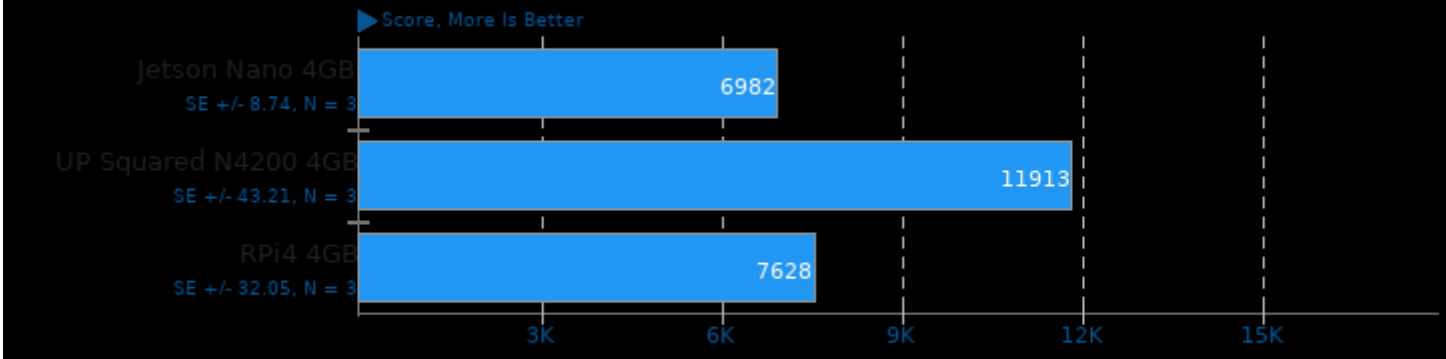
libjpeg-turbo tjbench 2.0.2

Test: Decompression Throughput



1. (CC) gcc options: -O3 -rdynamic

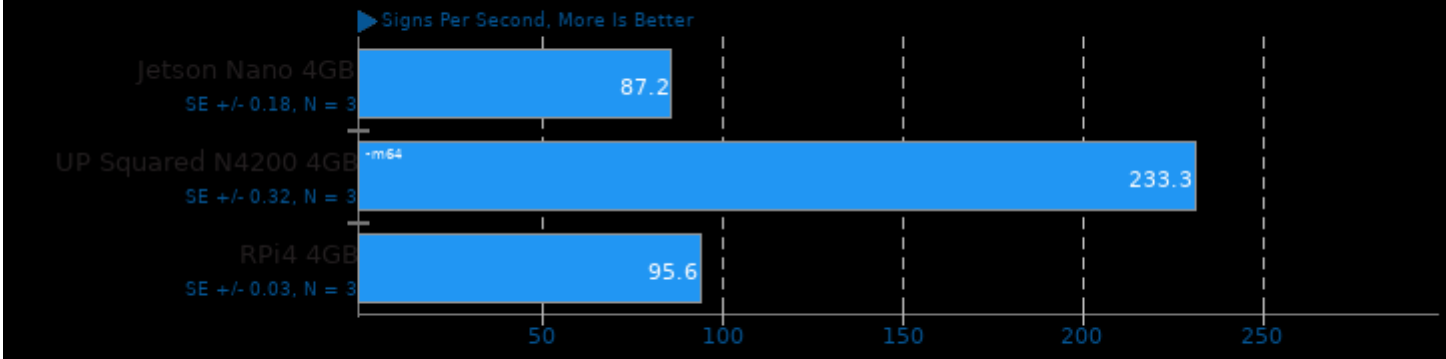
Node.js Octane Benchmark



1. Nodejs v8.10.0

OpenSSL 1.1.1

RSA 4096-bit Performance

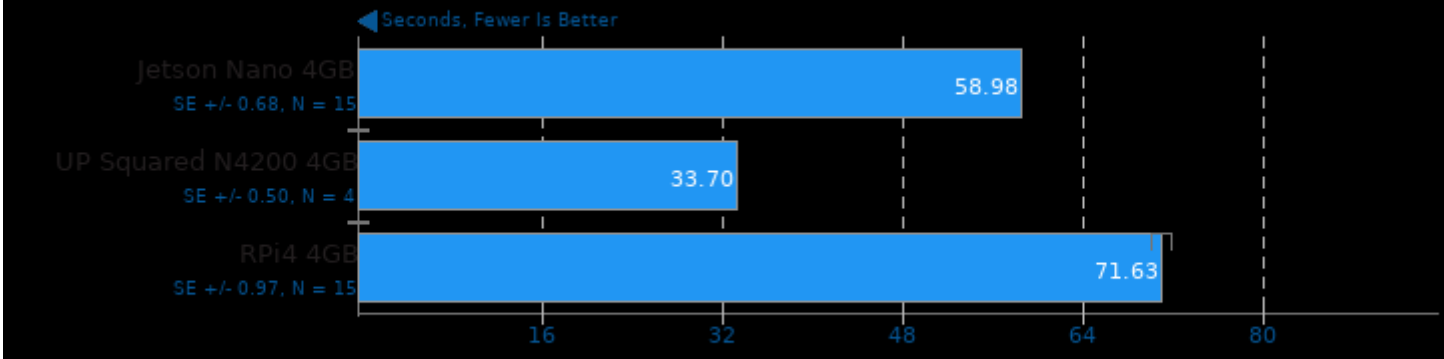


1. (CC) gcc options: -pthread -O3 -lssl -lcrypto -ldl

UP Squared System Applications Comparison

Parallel BZIP2 Compression 1.1.12

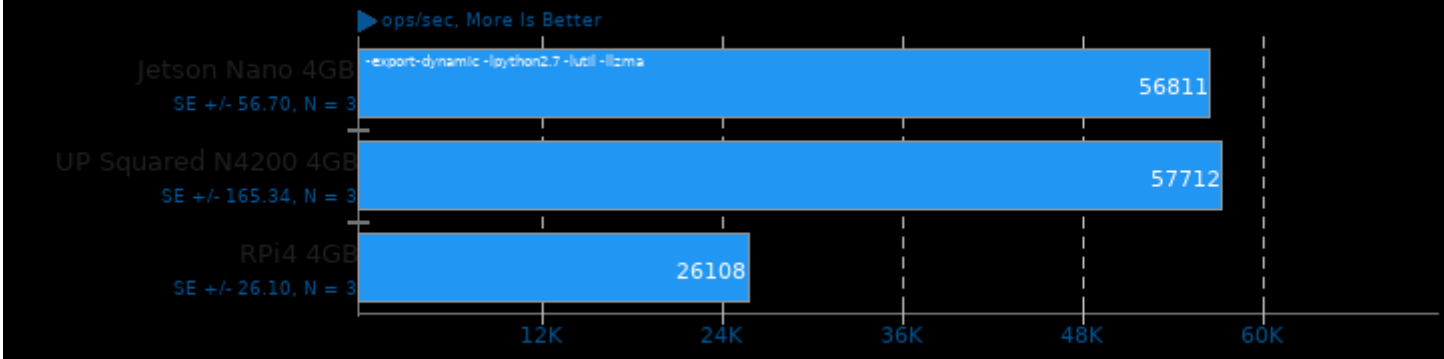
256MB File Compression



1. (CXX) g++ options: -O2 -pthread -lbz2 -lpthread

perf-bench

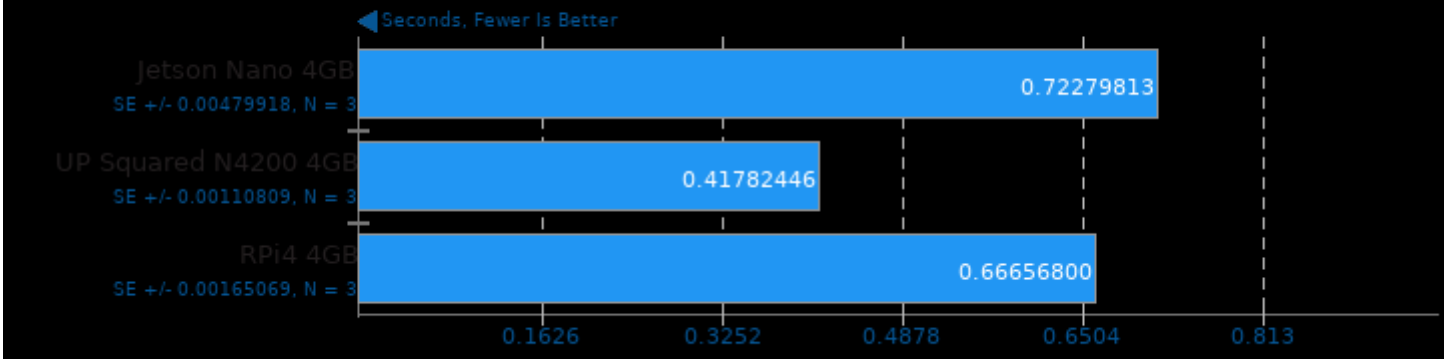
Benchmark: Sched Pipe



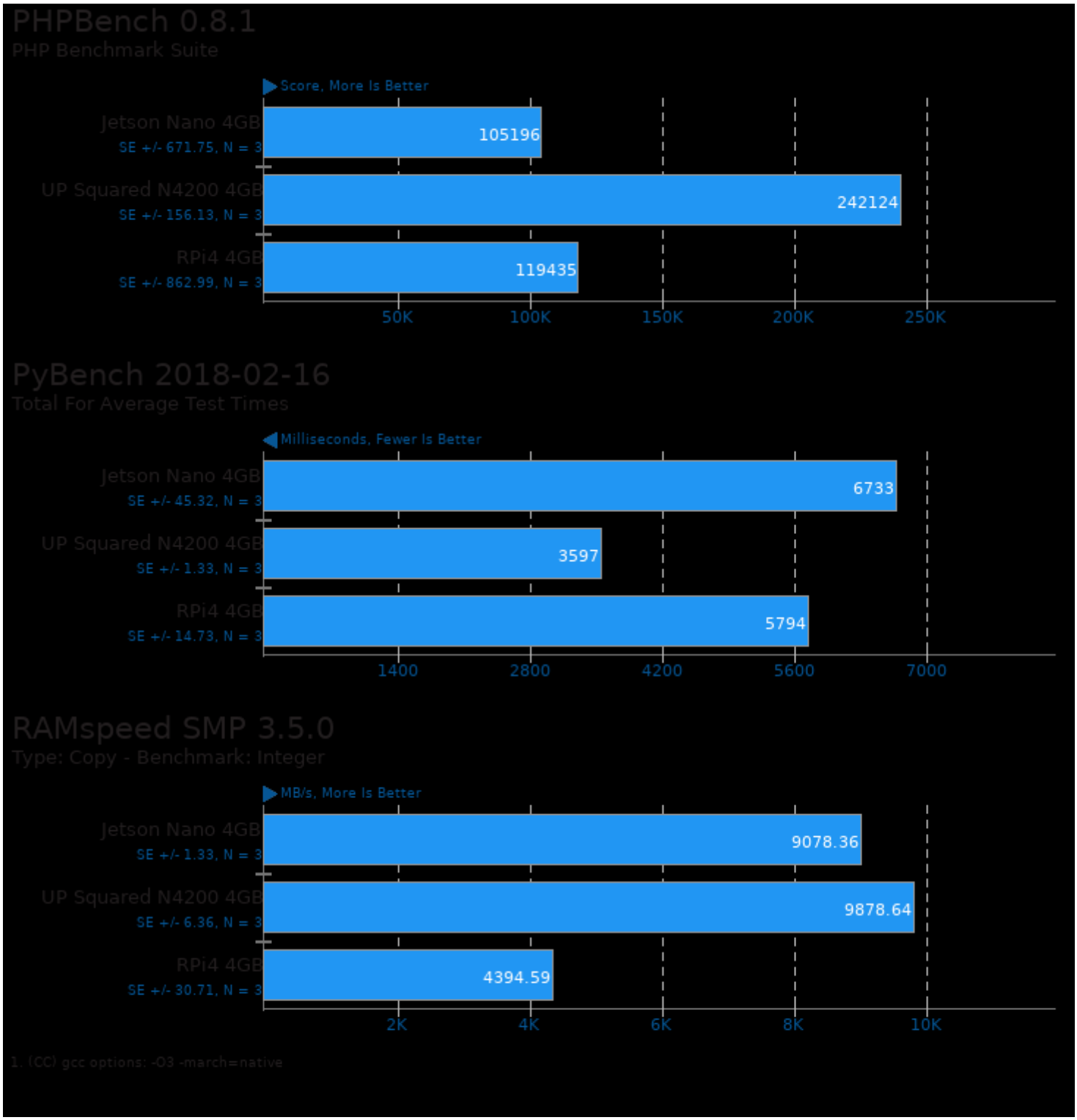
1. (CC) gcc options: -O6 -ggdb3 -funwind-tables -std=gnu99 -Xlinker -lpthread -lrt -lm -ldl -lcrypto -lz

Perl Benchmarks

Test: Pod2html



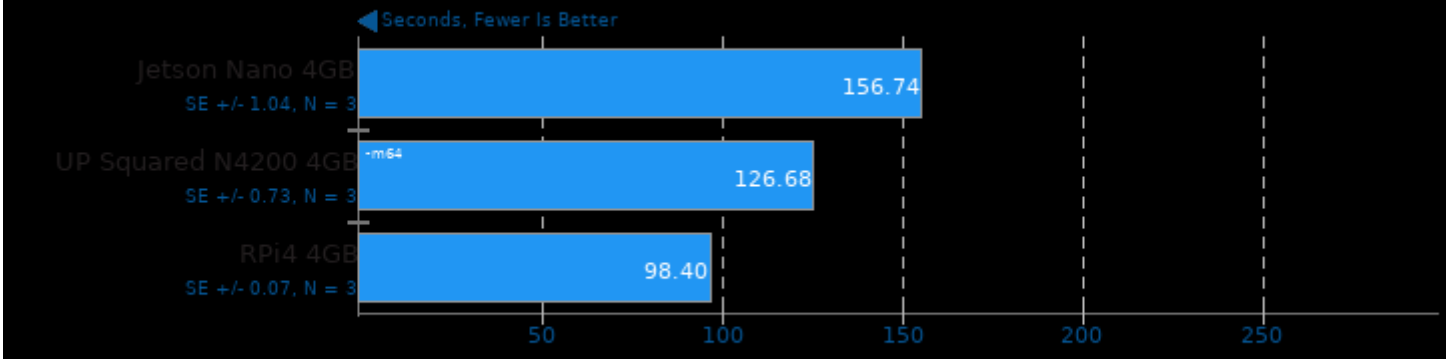
UP Squared System Applications Comparison



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Rust Prime Benchmark

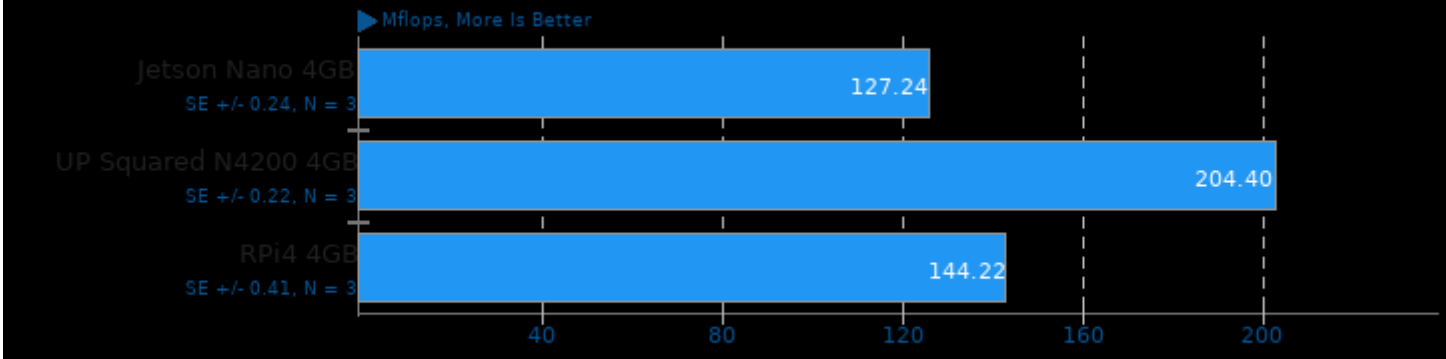
Prime Number Test To 200,000,000



1. (CC) gcc options: -pie -nodefaultlibs -ldl -lrt -lpthread -lgcc_s -lc -lm -lutil

SciMark 2.0

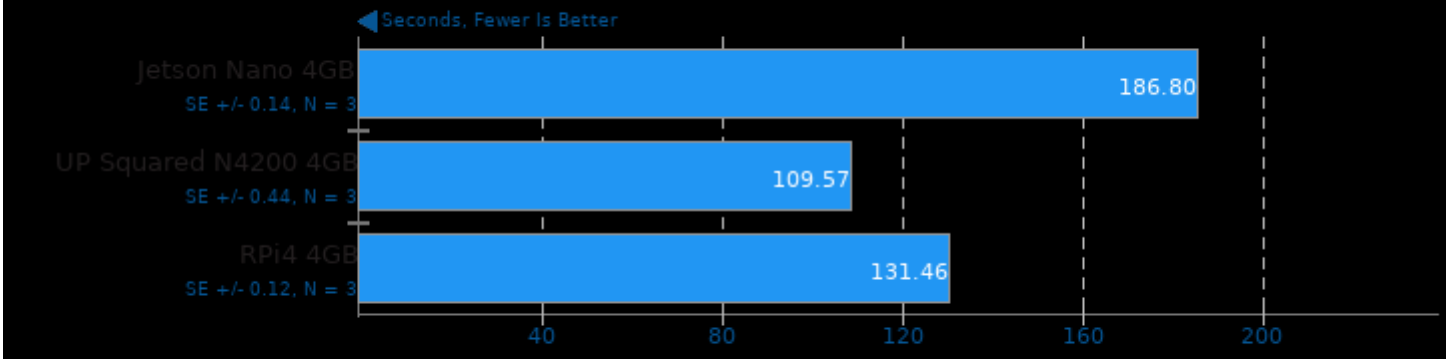
Computational Test: Composite



1. (CC) gcc options: -lm

Smallpt 1.0

Global Illumination Renderer; 128 Samples

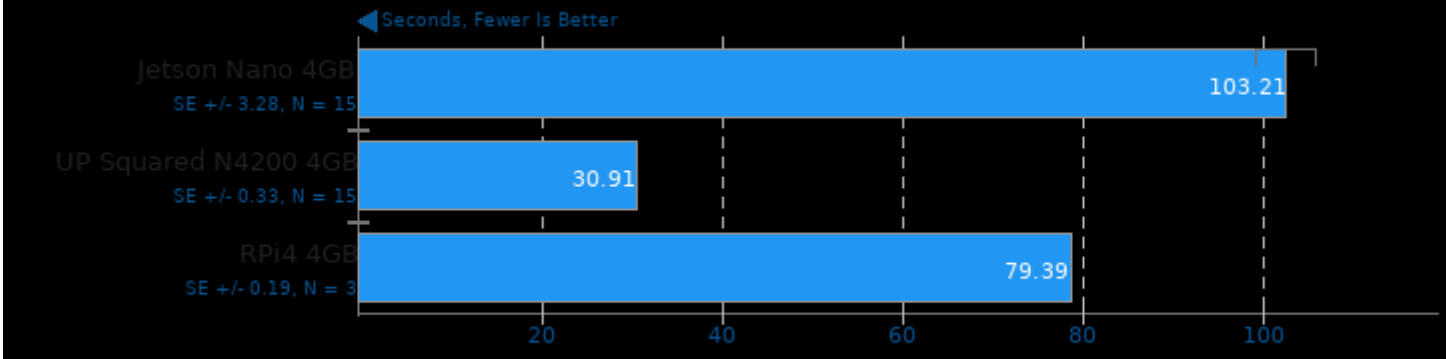


1. (CXX) g++ options: -fopenmp -O3

UP Squared System Applications Comparison

SQLite 3.30.1

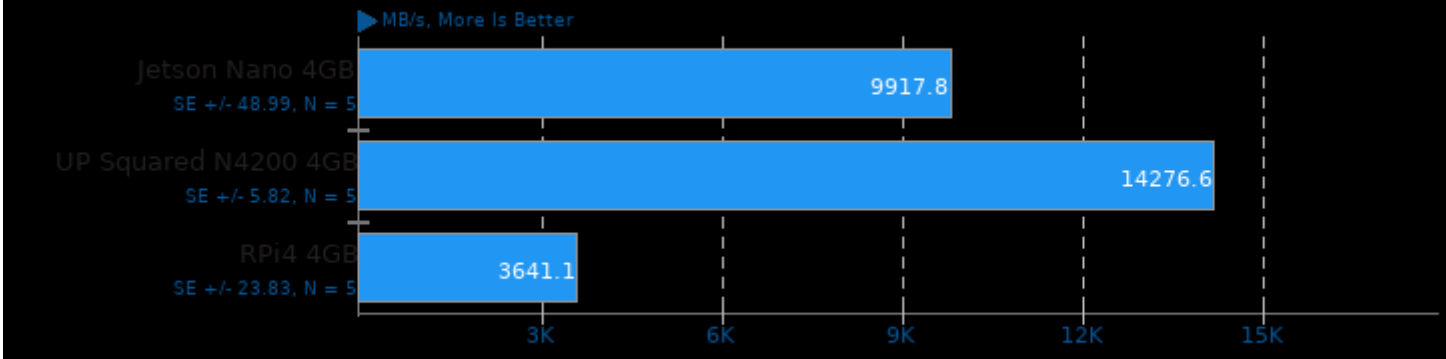
Threads / Copies: 1



1. (CC) gcc options: -O2 -lz -lm -ldl -lpthread

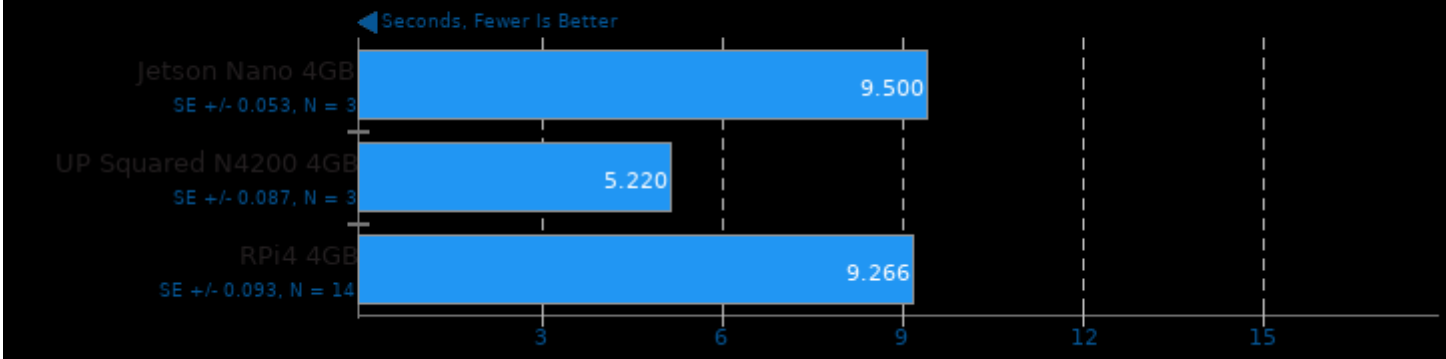
Stream 2013-01-17

Type: Copy

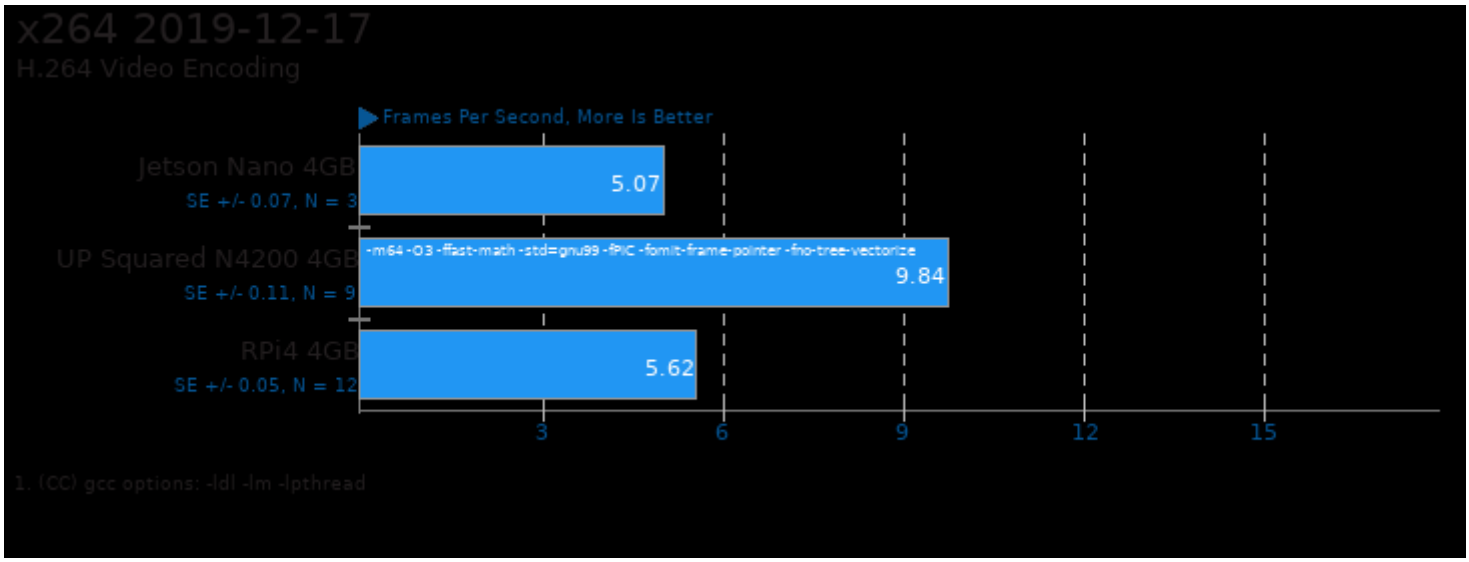


1. (CC) gcc options: -O3 -march=native -fopenmp

System GZIP Decompression

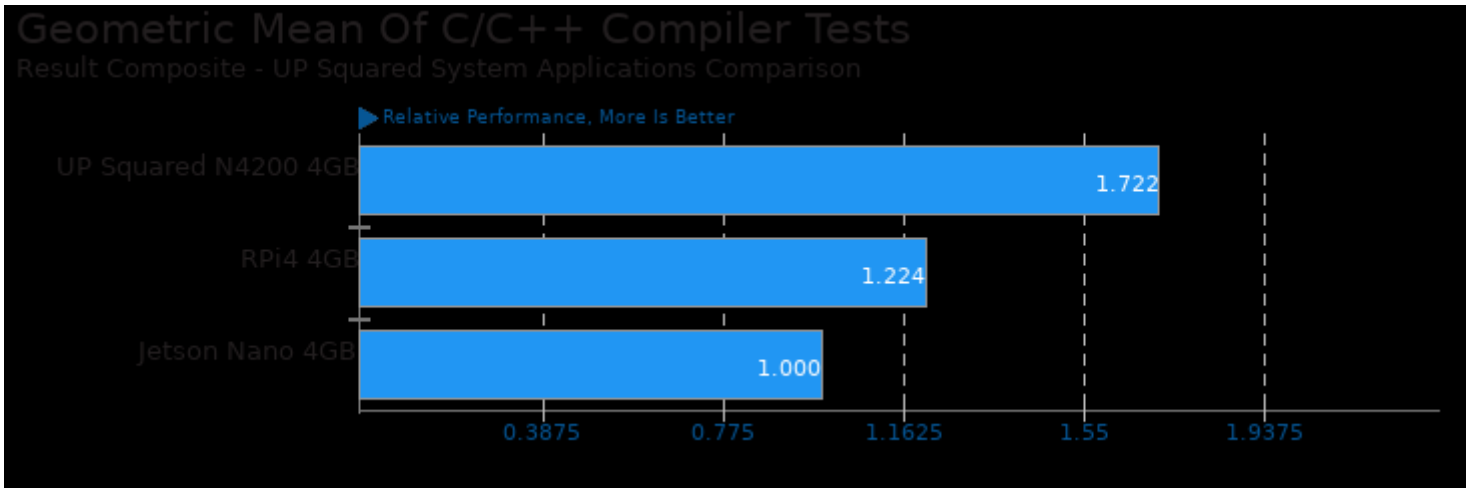


UP Squared System Applications Comparison



UP Squared System Applications Comparison

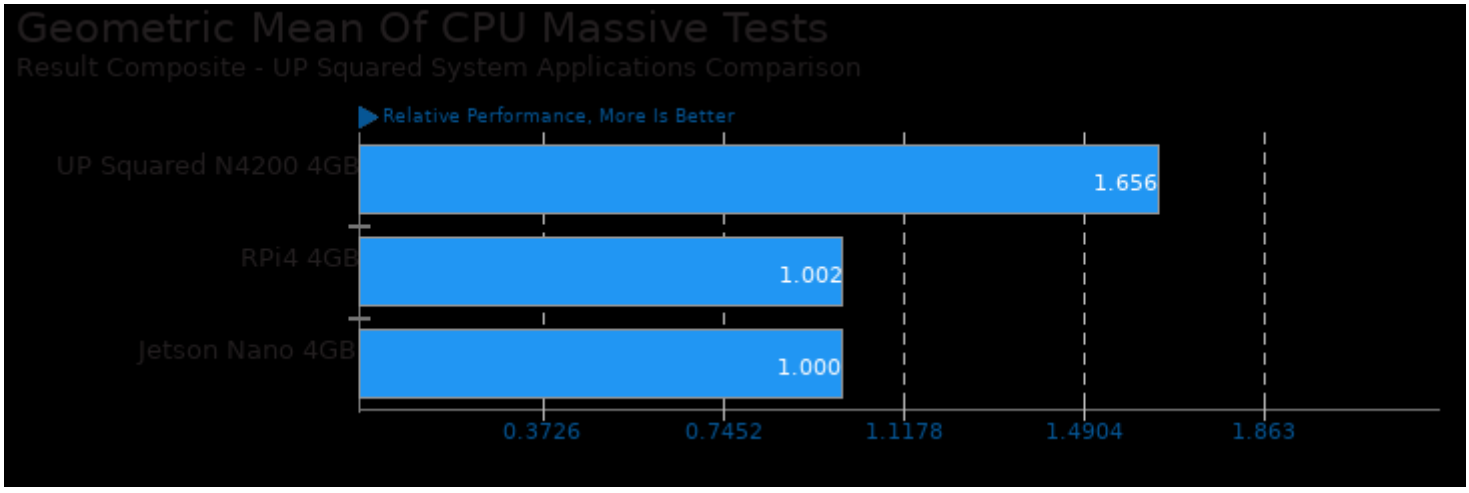
These geometric means are based upon test groupings / test suites for this result file.



Geometric mean based upon tests: pts/scimark2, pts/graphics-magick, pts/c-ray, pts/encode-mp3, pts/x264 and pts/openssl

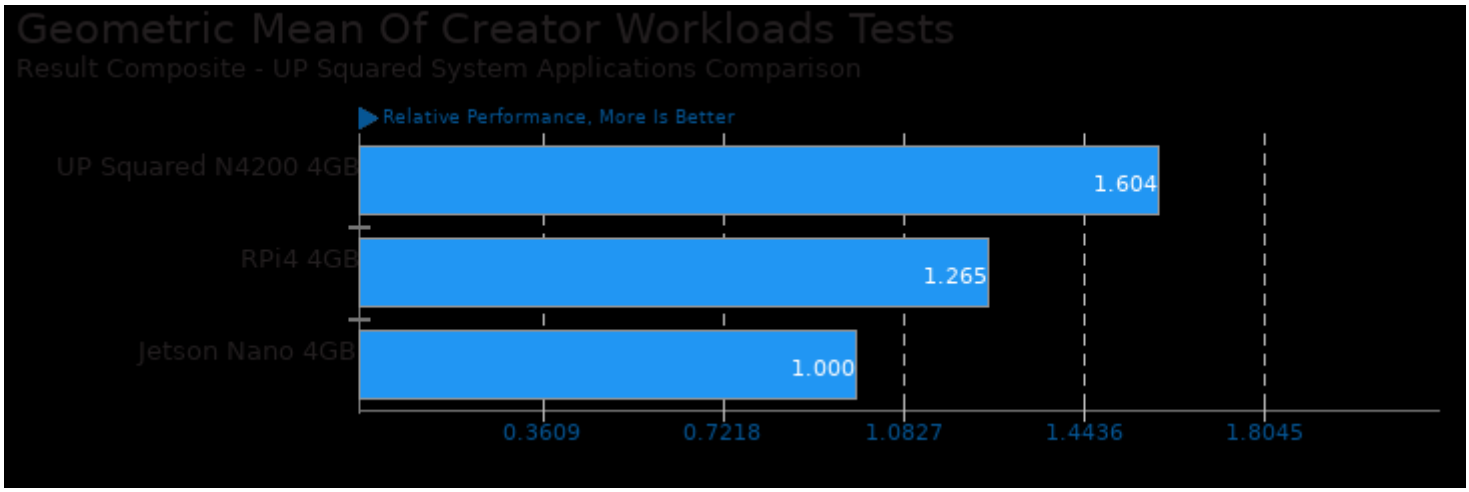


Geometric mean based upon tests: pts/compress-pbzip2 and pts/system-decompress-gzip

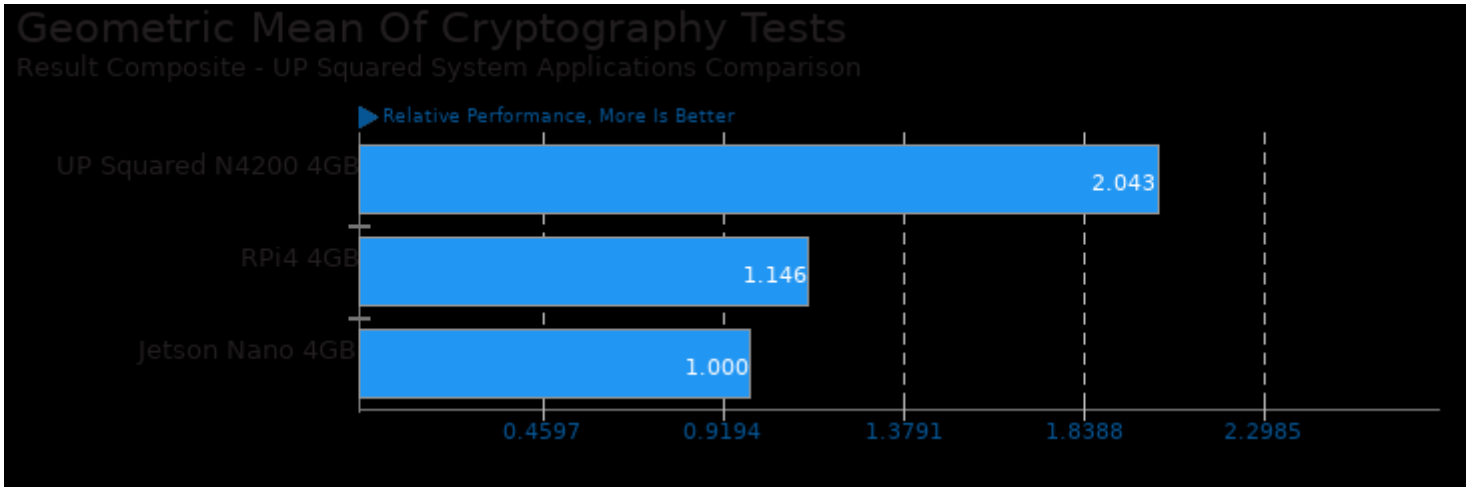


Geometric mean based upon tests: pts/c-ray, pts/compress-pbzip2, pts/x264, pts/encode-mp3, pts/go-benchmark, pts/graphics-magick, pts/java-scimark2, pts/openssl, pts/phpbench, pts/rust-prime, pts/ramspeed, pts/stream and pts/tjbench

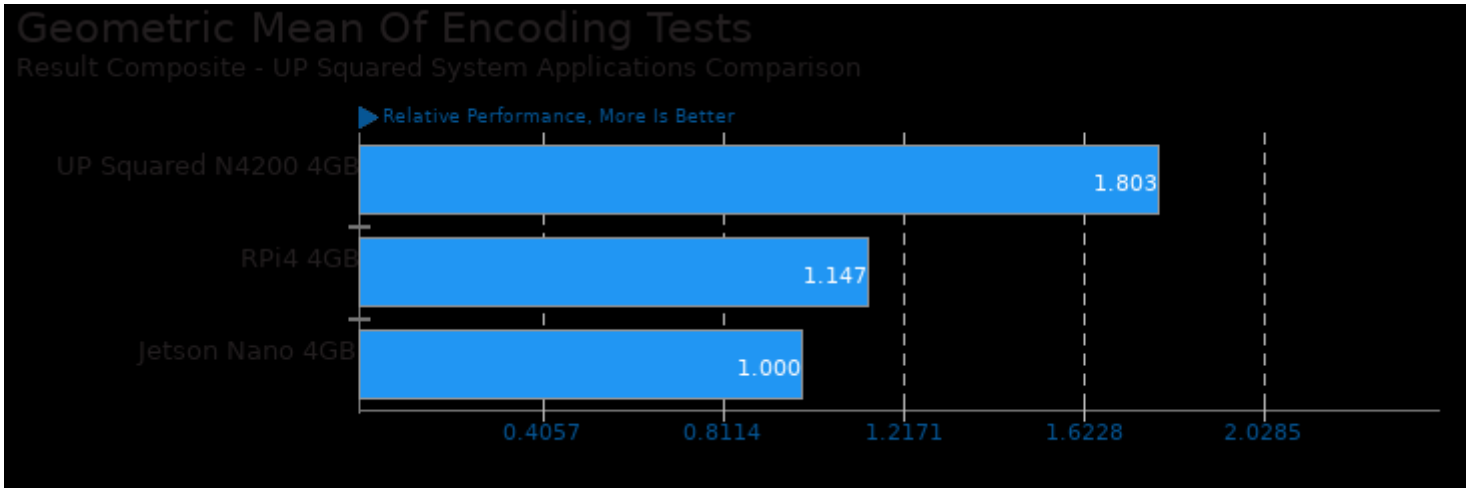
UP Squared System Applications Comparison



Geometric mean based upon tests: pts/c-ray, pts/smallpt, pts/x264, pts/encode-mp3, pts/graphics-magick and pts/tjbench

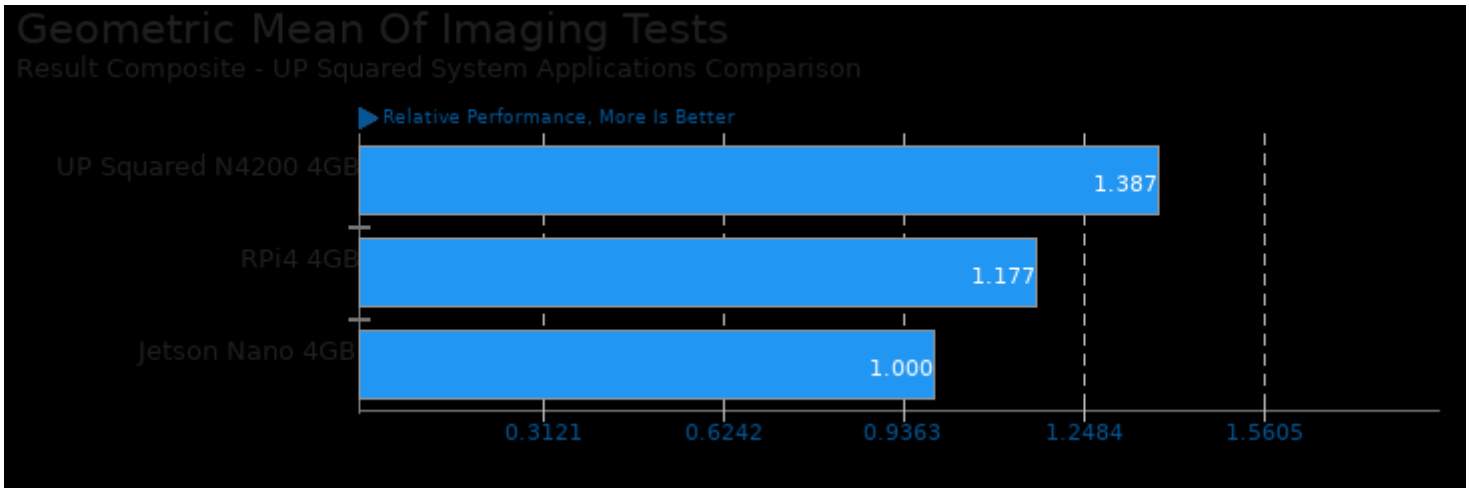


Geometric mean based upon tests: pts/gnupg and pts/openssl

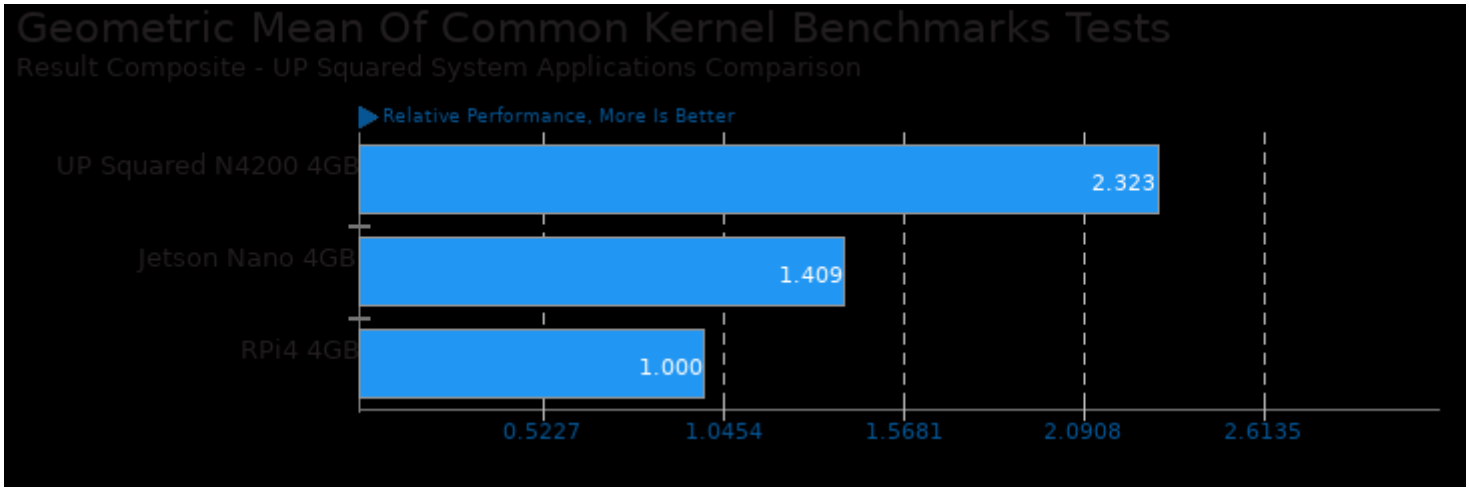


Geometric mean based upon tests: pts/encode-mp3 and pts/x264

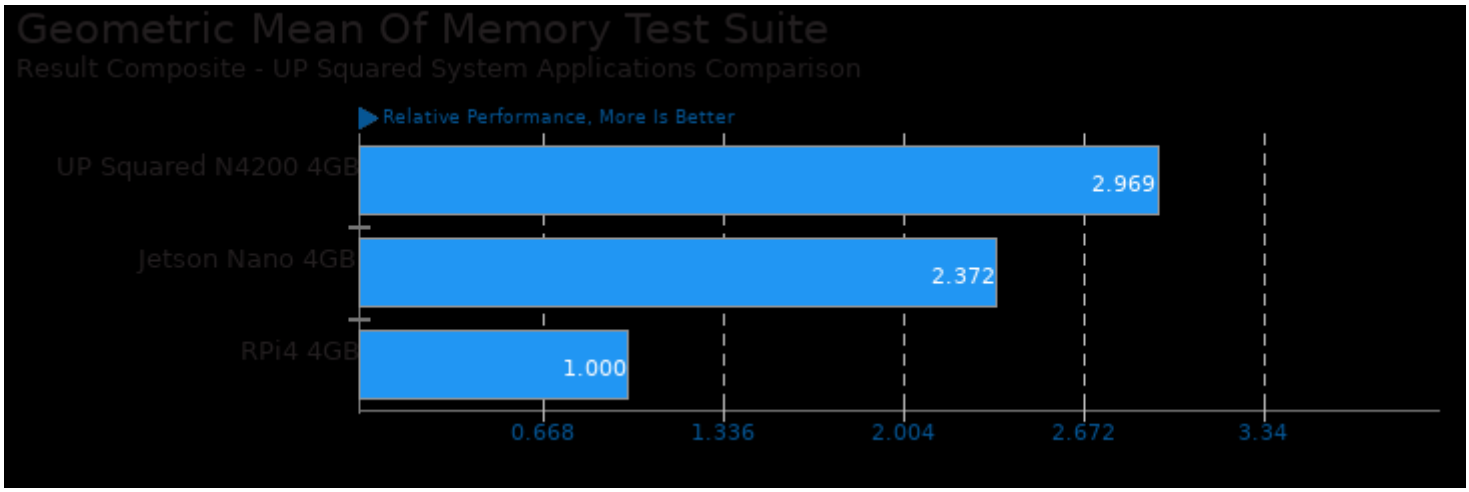
UP Squared System Applications Comparison



Geometric mean based upon tests: pts/graphics-magick and pts/tjbench

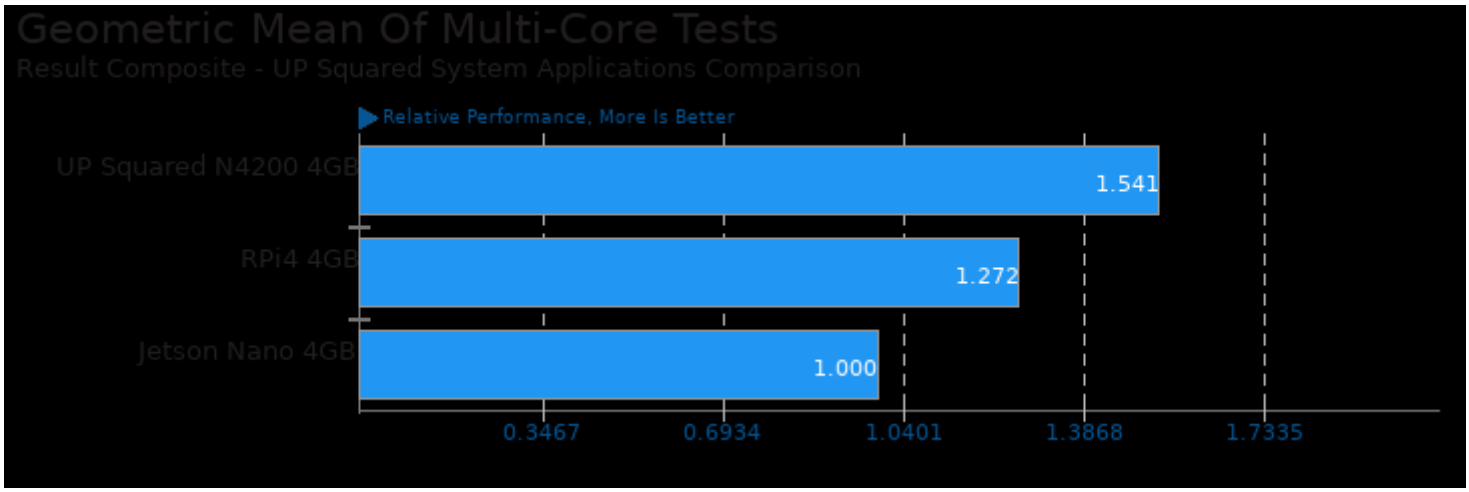


Geometric mean based upon tests: pts/perf-bench and pts/openssl

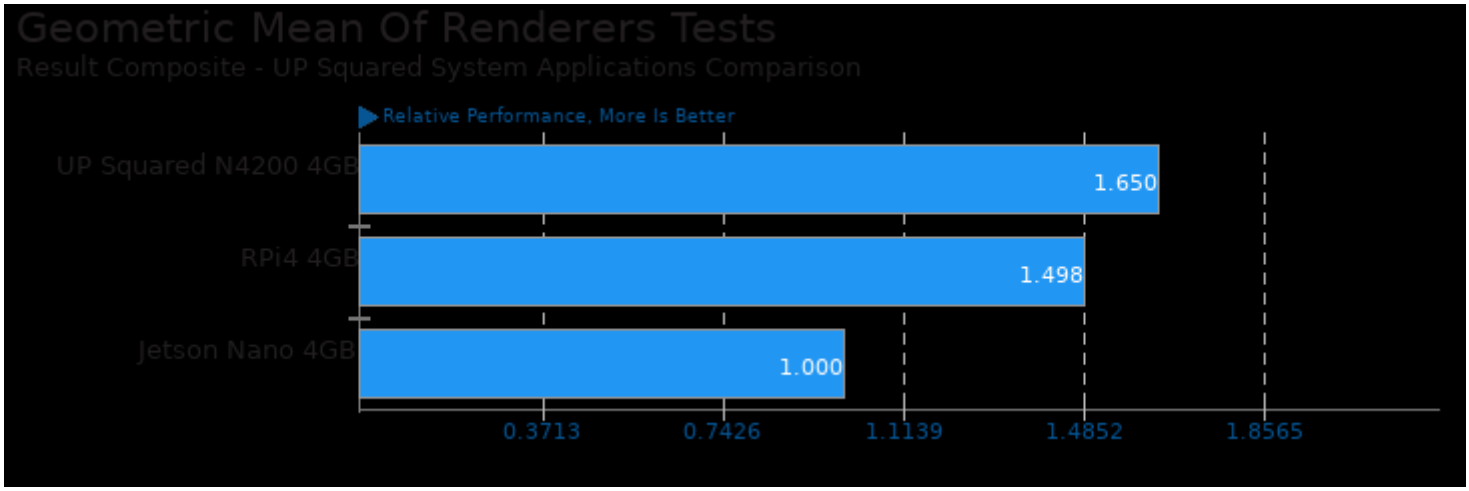


Geometric mean based upon tests: pts/ramspeed and pts/stream

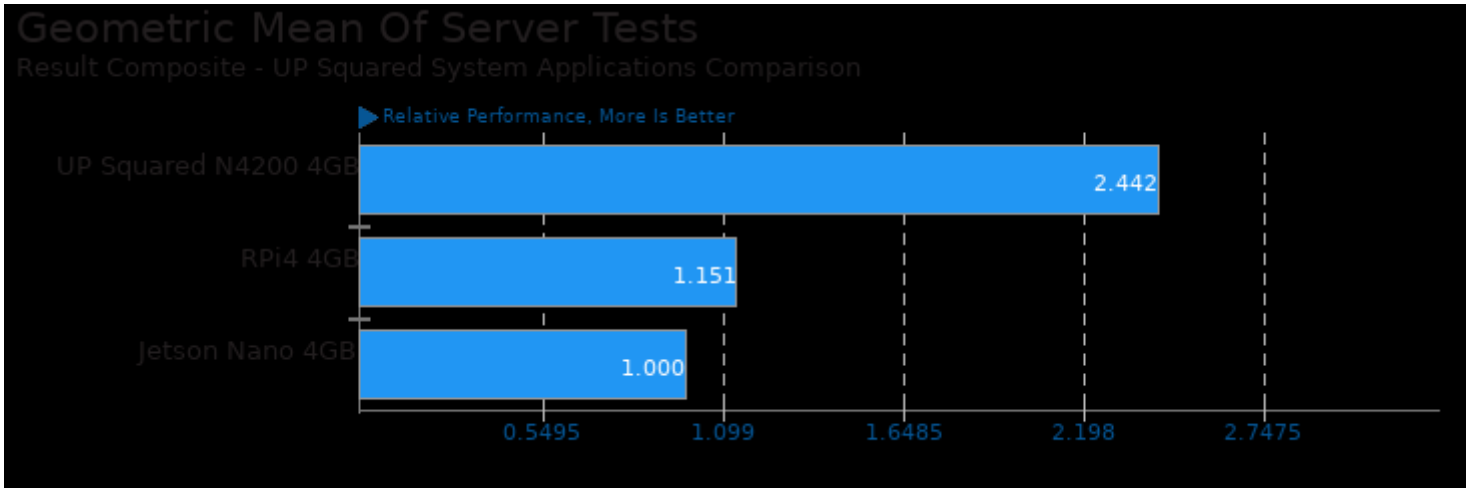
UP Squared System Applications Comparison



Geometric mean based upon tests: pts/c-ray, pts/x264, pts/smallpt, pts/graphics-magick, pts/compress-pbzip2 and pts/rust-prime

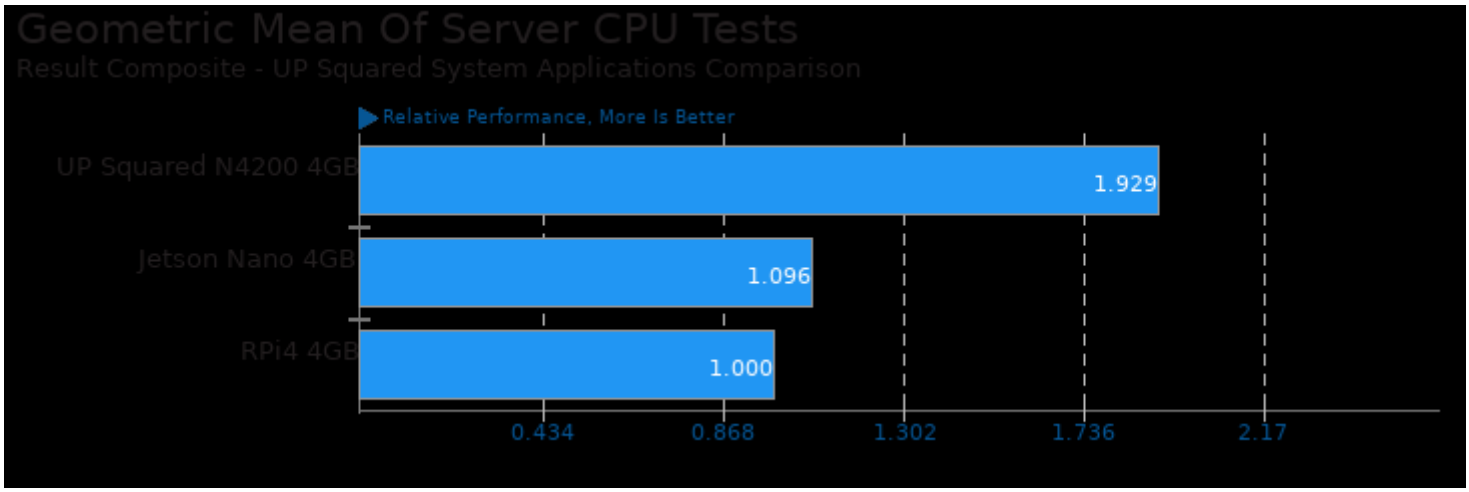


Geometric mean based upon tests: pts/c-ray and pts/smallpt

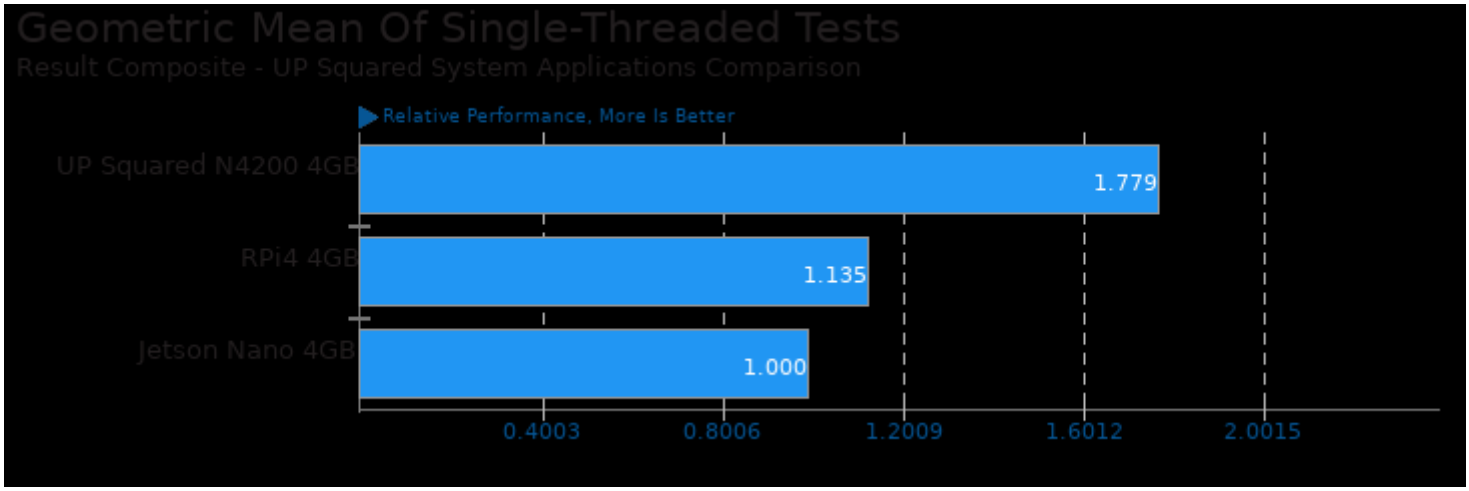


Geometric mean based upon tests: pts/phpbench, pts/openssl, pts/perl-benchmark and pts/sqlite

UP Squared System Applications Comparison



Geometric mean based upon tests: pts/x264, pts/c-ray, pts/openssl, pts/tjbench, pts/pybench, pts/phpbench, pts/ramspeed and pts/stream



Geometric mean based upon tests: pts/java-scimark2, pts/scimark2, pts/node-octane, pts/encode-mp3, pts/gnupg, pts/perl-benchmark, pts/tjbench, pts/pybench and pts/phpbench

This file was automatically generated via the Phoronix Test Suite benchmarking software on Friday, 29 March 2024 10:43.