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Fedora 21 vs. Ubuntu 14.10

Fedora 21 vs. Ubuntu 14.10 x86_64 64-bit Linux benchmarks. Tests by Michael Larabel for a future article on Phoronix.com.

Automated Executive Summary

Ubuntu 14.10 had the most wins, coming in first place for 63% of the tests.

Based on the geometric mean of all complete results, the fastest (Ubuntu 14.10) was 1.014x the speed of the slowest (Fedora 21).

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

FFmpeg (H.264 HD To NTSC DV) at 1.175x
Gcrypt Library (CAMELLIA256-ECB Cipher) at 1.136x
Xonotic (Resolution: 1920 x 1080 - Effects Quality: High) at 1.134x
Parboil (Test: OpenMP Stencil) at 1.124x
Xonotic (Resolution: 1920 x 1080 - Effects Quality: Low) at 1.099x
Rodinia (Test: OpenMP LavaMD) at 1.062x
Rodinia (Test: OpenMP CFD Solver) at 1.058x
Flexible IO Tester (Type: Sequential Write - IO Engine: POSIX AIO - Buffered: No - Block Size: 16KB - Disk Target: Default Test Directory - Result: MB/s) at 1.055x

Parboil (Test: OpenMP LBM) at 1.045x
BLAKE2 (Phoronix Test Suite v5.4.0m6) at 1.044x.

Test Systems:

Fedora 21

Processor: Intel Xeon E5-2687W v3 @ 3.50GHz (20 Cores), Motherboard: MSI X99S SLI PLUS (MS-7885) v1.0, Chipset: Intel Xeon E5 v3/Core, Memory: 16384MB, Disk: 80GB INTEL SSDSCKGW08, Graphics: ASUS AMD Radeon HD 7850 1024MB, Audio: Intel C610/X99, Monitor: VE228, Network: Intel Connection

OS: Fedora 21, Kernel: 3.17.4-300.fc21.x86_64 (x86_64), Desktop: GNOME Shell 3.14.2, Display Server: X Server 1.16.2, Display Driver: radeon 7.5.0, OpenGL: 3.3 Mesa 10.3.3 Gallium 0.4, Compiler: GCC 4.9.2 20141101, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-redhat-linux --disable-libgcj --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-multilib --enable-plugin --enable-shared --enable-threads=posix --mandir=/usr/share/man --with-arch_32=i686 --with-linker-hash-style=gnu --with-tune=generic
Disk Notes: CFQ / data=ordered,relatime,rw,seclabel
Processor Notes: Scaling Governor: intel_pstate powersave
Graphics Notes: EXA
System Notes: Disk Scheduler: CFQ. SELinux: Enabled.

Ubuntu 14.10

Processor: Intel Xeon E5-2687W v3 @ 3.50GHz (20 Cores), Motherboard: MSI X99S SLI PLUS (MS-7885) v1.0, Chipset: Intel Xeon E5 v3/Core, Memory: 16384MB, Disk: 80GB INTEL SSDSCKGW08, Graphics: ASUS AMD Radeon HD 7850 1024MB, Audio: Intel C610/X99, Monitor: VE228, Network: Intel Connection

OS: Ubuntu 14.10, Kernel: 3.16.0-25-generic (x86_64), Desktop: Unity 7.3.1, Display Server: X Server 1.16.0, Display Driver: radeon 7.4.0, OpenGL: 3.3 Mesa 10.3.0 Gallium 0.4, Compiler: GCC 4.9.1, File-System: ext4, Screen Resolution: 1920x1080

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,c++,java,go,d,fortran,objc,obj-c++ --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-multilib-list=m32,m64,mx32 --with-tune=generic -v
Disk Notes: DEADLINE / data=ordered,errors=remount-ro,relatime,rw
Processor Notes: Scaling Governor: intel_pstate powersave
Graphics Notes: GLAMOR
System Notes: Disk Scheduler: DEADLINE.

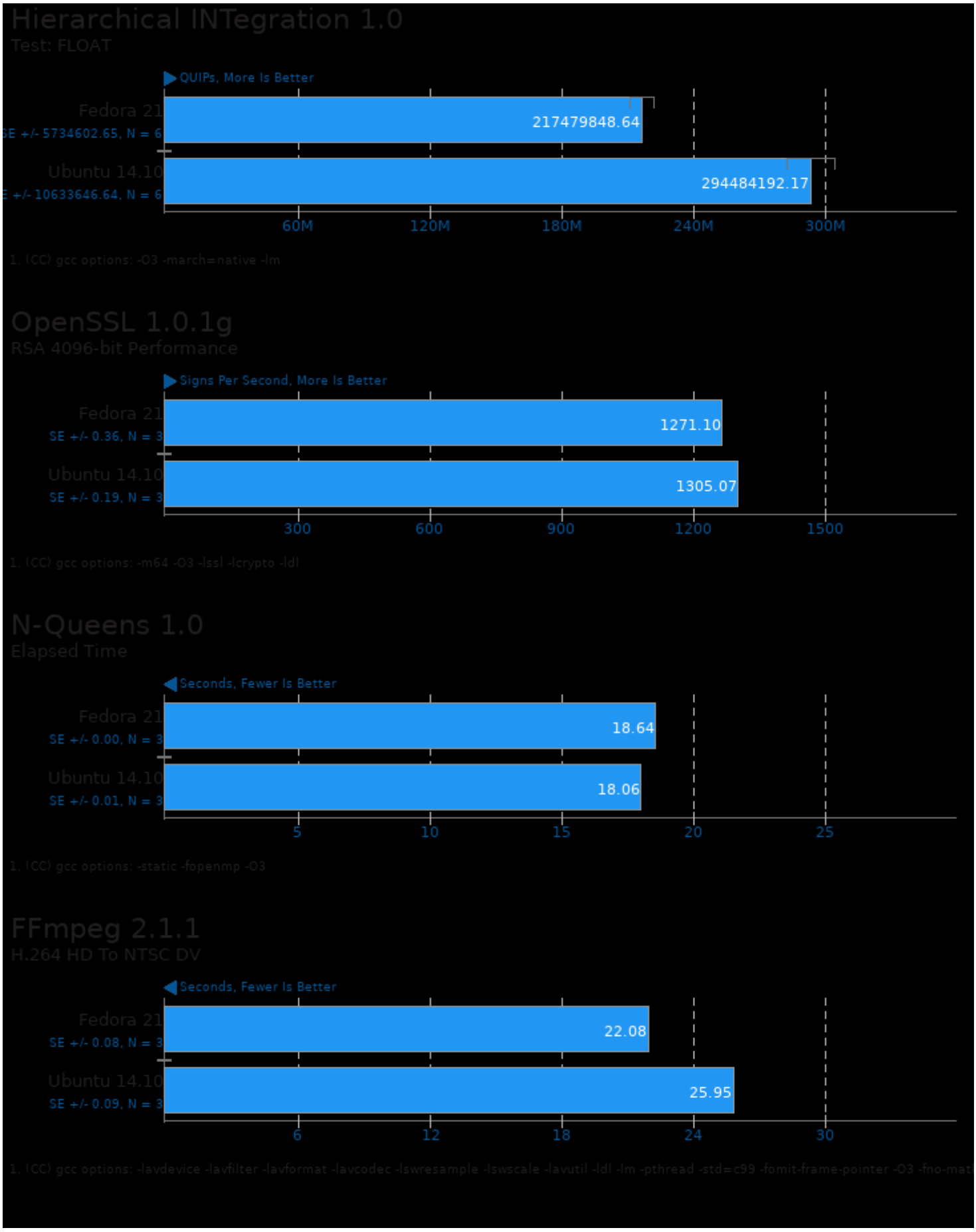
	Fedora 21	Ubuntu 14.10
Hierarchical INTegration - FLOAT (QUIPs)	**217479849**	**294484192**
Normalized	73.85%	100%
Standard Deviation	6.5%	8.8%

Fedora 21 vs. Ubuntu 14.10

OpenSSL - R.4.b.P (Signs/sec)	**1271**	**1305**
Normalized	97.4%	100%
Standard Deviation	0%	0%
N-Queens - Elapsed Time (sec)	**18.64**	**18.06**
Normalized	96.89%	100%
Standard Deviation	0%	0.1%
FFmpeg - H.2.H.T.N.D (sec)	**22.08**	**25.95**
Normalized	100%	85.09%
Standard Deviation	0.7%	0.6%
LAME MP3 Encoding - WAV To MP3 (sec)	**12.37**	**12.63**
Normalized	100%	97.94%
Standard Deviation	0.2%	0.5%
Stockfish - Total Time (ms)	**3686**	**3641**
Normalized	98.78%	100%
Standard Deviation	0.6%	0%
Smallpt - G.I.R.1.S (sec)	37	37
Standard Deviation	1.6%	1.6%
C-Ray - Total Time (sec)	**11.07**	**10.73**
Normalized	96.93%	100%
Standard Deviation	0.1%	0.1%
Timed PHP Compilation - Time To Compile (sec)	**17.58**	**17.67**
Normalized	100%	99.49%
Standard Deviation	1.5%	0.8%
Timed ImageMagick Compilation - Time To Compile	**28.74**	**29.01**
Normalized	100%	99.07%
Standard Deviation	0.8%	0.5%
Himeno Benchmark - P.P.S (MFLOPS)	**1870**	**1879**
Normalized	99.51%	100%
Standard Deviation	0.1%	0.1%
x264 - H.2.V.E (FPS)	**336.84**	**338.63**
Normalized	99.47%	100%
Standard Deviation	2.4%	0.9%
VP8 libvpx Encoding - vpxenc (FPS)	**33.35**	**32.59**
Normalized	100%	97.72%
Standard Deviation	1.3%	2%
Gcrypt Library - C.E.C (us)	**2013**	**2287**
Normalized	100%	88.02%
Standard Deviation	0.6%	0.3%
BLAKE2 - P.T.S.v.4.0 (Cycles/Byte)	**5.95**	**5.70**
Normalized	95.8%	100%
Standard Deviation	0.1%	0.2%
Rodinia - O.S (sec)	**22.24**	**19.05**
Normalized	85.66%	100%
Standard Deviation	10.8%	0.1%
Rodinia - OpenMP CFD Solver (sec)	**38.02**	**35.94**
Normalized	94.53%	100%
Standard Deviation	0.9%	0.8%
Rodinia - OpenMP LavaMD (sec)	**100.89**	**94.97**
Normalized	94.13%	100%
Standard Deviation	0.2%	0.4%
Parboil - O.M.G (sec)	**100.74**	**99.58**
Normalized	98.85%	100%
Standard Deviation	1.7%	2.3%
Parboil - OpenMP Stencil (sec)	**13.52**	**12.03**
Normalized	88.98%	100%

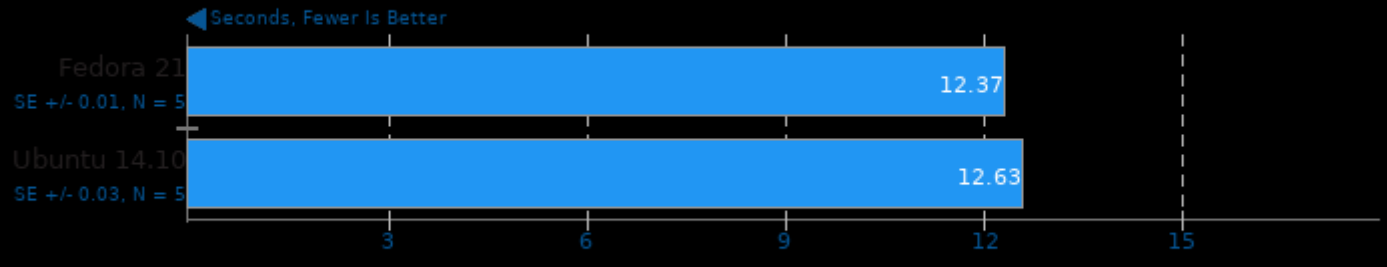
Fedora 21 vs. Ubuntu 14.10

Standard Deviation	0.4%	1.5%
Parboil - OpenMP MRI-Q (sec)	**16.46**	**16.49**
Normalized	100%	99.82%
Standard Deviation	0.5%	0%
Parboil - OpenMP CUTCP (sec)	**7.74**	**7.42**
Normalized	95.87%	100%
Standard Deviation	0.4%	0.8%
Parboil - OpenMP LBM (sec)	**101.79**	**97.45**
Normalized	95.74%	100%
Standard Deviation	1.4%	0.5%
Xonotic - 1920 x 1080 - High (FPS)	**186.21**	**164.16**
Normalized	100%	88.16%
Standard Deviation	1.6%	3.1%
Xonotic - 1920 x 1080 - Low (FPS)	**265.59**	**241.65**
Normalized	100%	90.99%
Standard Deviation	0.5%	4.6%
PostMark - D.T.P (TPS)	**5173**	**5282**
Normalized	97.94%	100%
Standard Deviation	1.2%	1.2%
Flexible IO Tester - Seq Write - POSIX AIO - No - 16KB - MB/s (MB/s)	**95.92**	**90.90**
Normalized	100%	94.77%
Standard Deviation	2.5%	4.8%
Flexible IO Tester - Seq Read - POSIX AIO - No - 16KB - MB/s (MB/s)	**103.32**	**107.18**
Normalized	96.4%	100%
Standard Deviation	0.4%	0.1%
Flexible IO Tester - Rand Write - POSIX AIO - No - 16KB - MB/s (MB/s)	**94.83**	**97.07**
Normalized	97.69%	100%
Standard Deviation	2.5%	1.1%
Flexible IO Tester - Rand Read - POSIX AIO - No - 16KB - MB/s (MB/s)	**73.53**	**75.39**
Normalized	97.53%	100%
Standard Deviation	0.4%	0.2%


Hierarchical INTegration 1.0
Test: FLOAT
QUIPs, More Is Better
Fedora 21
SE +/- 5734602.65, N = 6
217479848.64
Ubuntu 14.10
E +/- 10633646.64, N = 6
294484192.17
60M
120M
180M
240M
300M
1. (CC) gcc options: -O3 -march=native -lm
OpenSSL 1.0.1g
RSA 4096-bit Performance
Signs Per Second, More Is Better
Fedora 21
SE +/- 0.36, N = 3
1271.10
Ubuntu 14.10
SE +/- 0.19, N = 3
1305.07
300
600
900
1200
1500
1. (CC) gcc options: -m64 -O3 -lssl -lcrypto -ldl
N-Queens 1.0
Elapsed Time
Seconds, Fewer Is Better
Fedora 21
SE +/- 0.00, N = 3
18.64
Ubuntu 14.10
SE +/- 0.01, N = 3
18.06
5
10
15
20
25
1. (CC) gcc options: -static -fopenmp -O3
FFmpeg 2.1.1
H.264 HD To NTSC DV
Seconds, Fewer Is Better
Fedora 21
SE +/- 0.08, N = 3
22.08
Ubuntu 14.10
SE +/- 0.09, N = 3
25.95
6
12
18
24
30
1. (CC) gcc options: -lavdevice -lavfilter -lavformat -lavcodec -lswresample -lswscale -lavutil -ldl -lm -pthread -std=c99 -fomit-frame-pointer -O3 -fno-mat

LAME MP3 Encoding 3.99.3

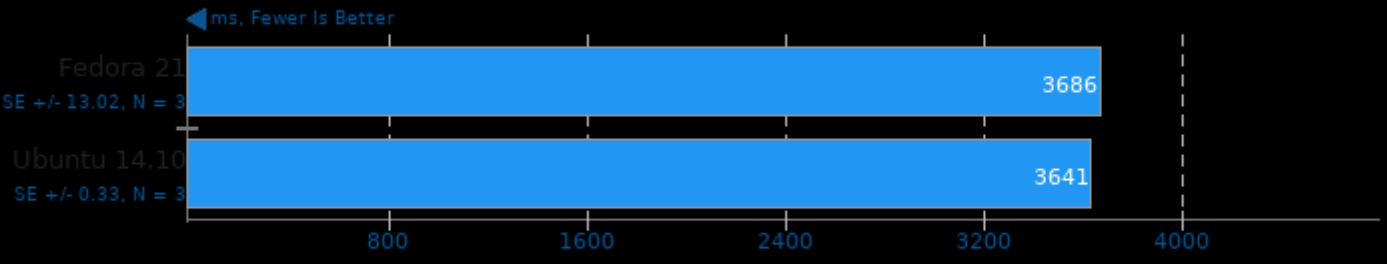
WAV To MP3



1. (CC) gcc options: -O3 -fomit-frame-pointer -ffast-math -pipe -lm

Stockfish 2014-11-26

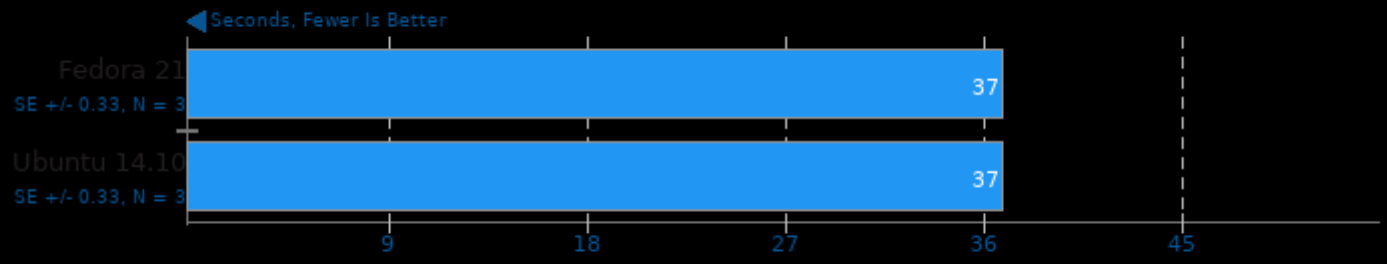
Total Time



1. (CXX) g++ options: -lpthread -fno-exceptions -fno-rtti -ansi -pedantic -O3 -msse -msse3 -mpopcnt -flto

Smallpt 1.0

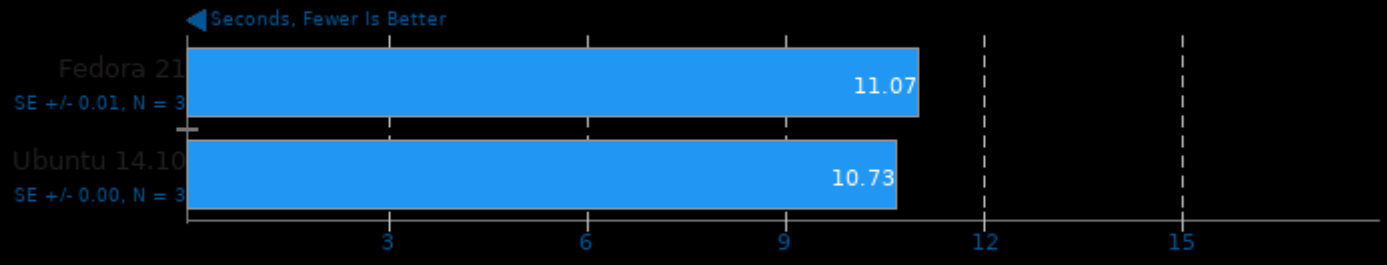
Global Illumination Renderer; 100 Samples



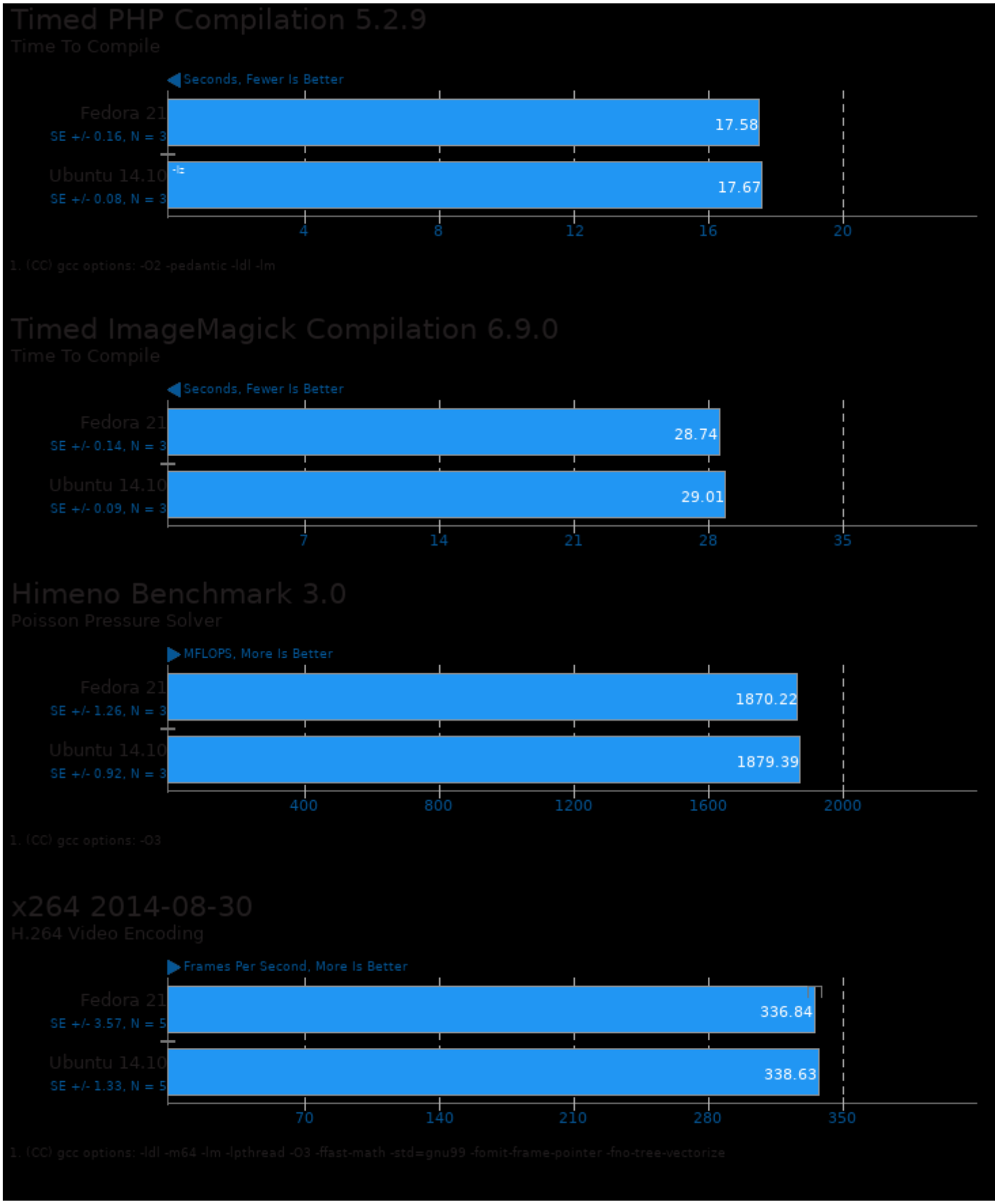
1. (CXX) g++ options: -fopenmp

C-Ray 1.1

Total Time

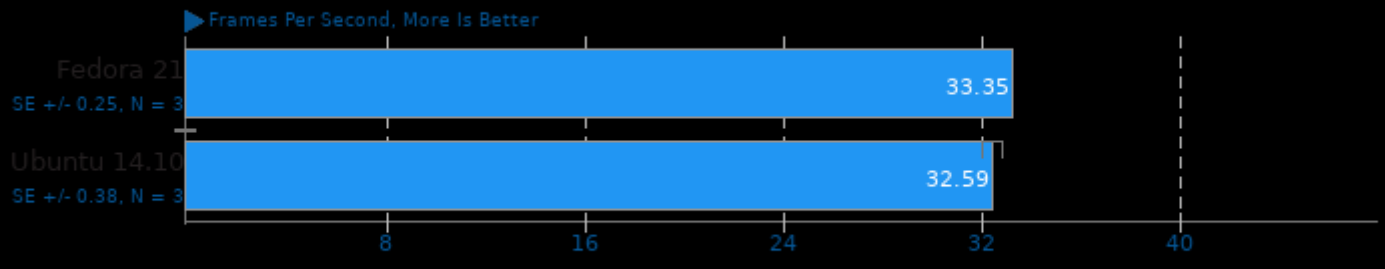


1. (CC) gcc options: -lm -lpthread -O3


Timed PHP Compilation 5.2.9
Time To Compile
Seconds, Fewer Is Better
Fedora 21
SE +/- 0.16, N = 3
17.58
Ubuntu 14.10
SE +/- 0.08, N = 3
17.67
4
8
12
16
20
1. (CC) gcc options: -O2 -pedantic -ldl -lm
Timed ImageMagick Compilation 6.9.0
Time To Compile
Seconds, Fewer Is Better
Fedora 21
SE +/- 0.14, N = 3
28.74
Ubuntu 14.10
SE +/- 0.09, N = 3
29.01
7
14
21
28
35
Himeno Benchmark 3.0
Poisson Pressure Solver
MFLOPS, More Is Better
Fedora 21
SE +/- 1.26, N = 3
1870.22
Ubuntu 14.10
SE +/- 0.92, N = 3
1879.39
400
800
1200
1600
2000
1. (CC) gcc options: -O3
x264 2014-08-30
H.264 Video Encoding
Frames Per Second, More Is Better
Fedora 21
SE +/- 3.57, N = 5
336.84
Ubuntu 14.10
SE +/- 1.33, N = 5
338.63
70
140
210
280
350
1. (CC) gcc options: -ldl -m64 -lm -lpthread -O3 -ffast-math -std=gnu99 -fomit-frame-pointer -fno-tree-vectorize

VP8 libvpx Encoding 1.1.0

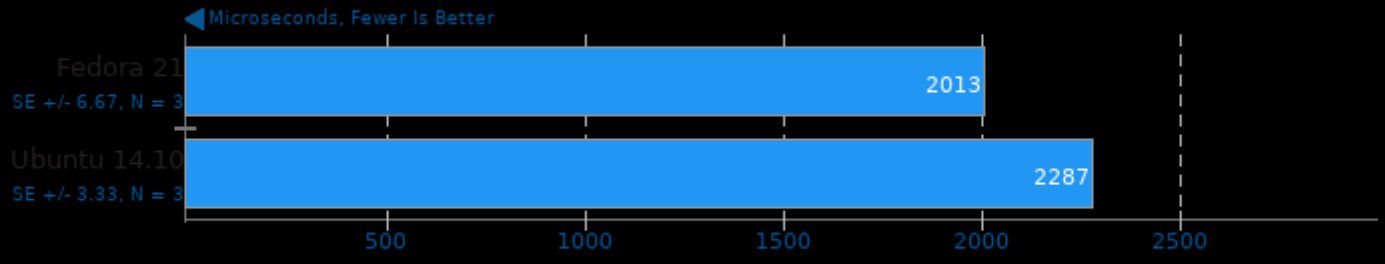
vpxenc



1. (CC) gcc options: -m64 -lvpx -lm -lpthread -fomit-frame-pointer -O3

Gcrypt Library 1.4.4

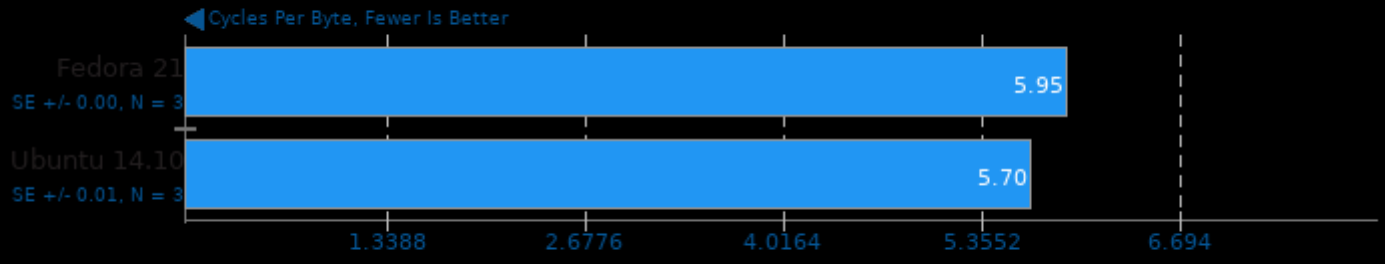
CAMELLIA256-ECB Cipher



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

BLAKE2 20130131

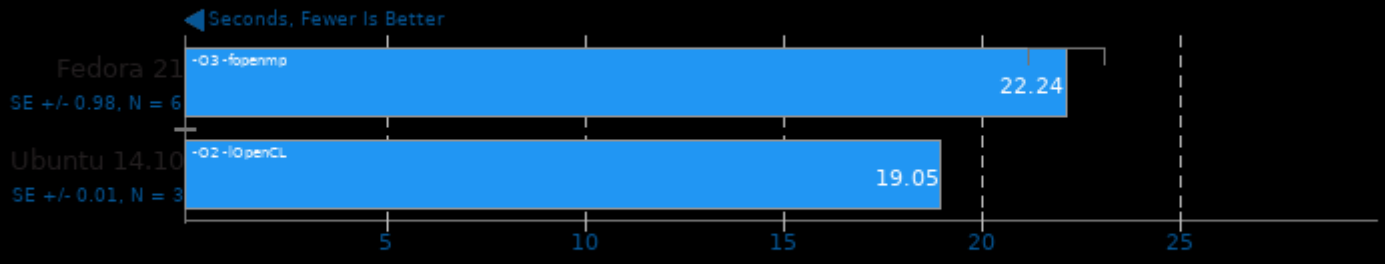
Phoronix Test Suite v5.4.0m6



1. (CC) gcc options: -std=gnu99 -O3 -march=native -lcrypto -lz

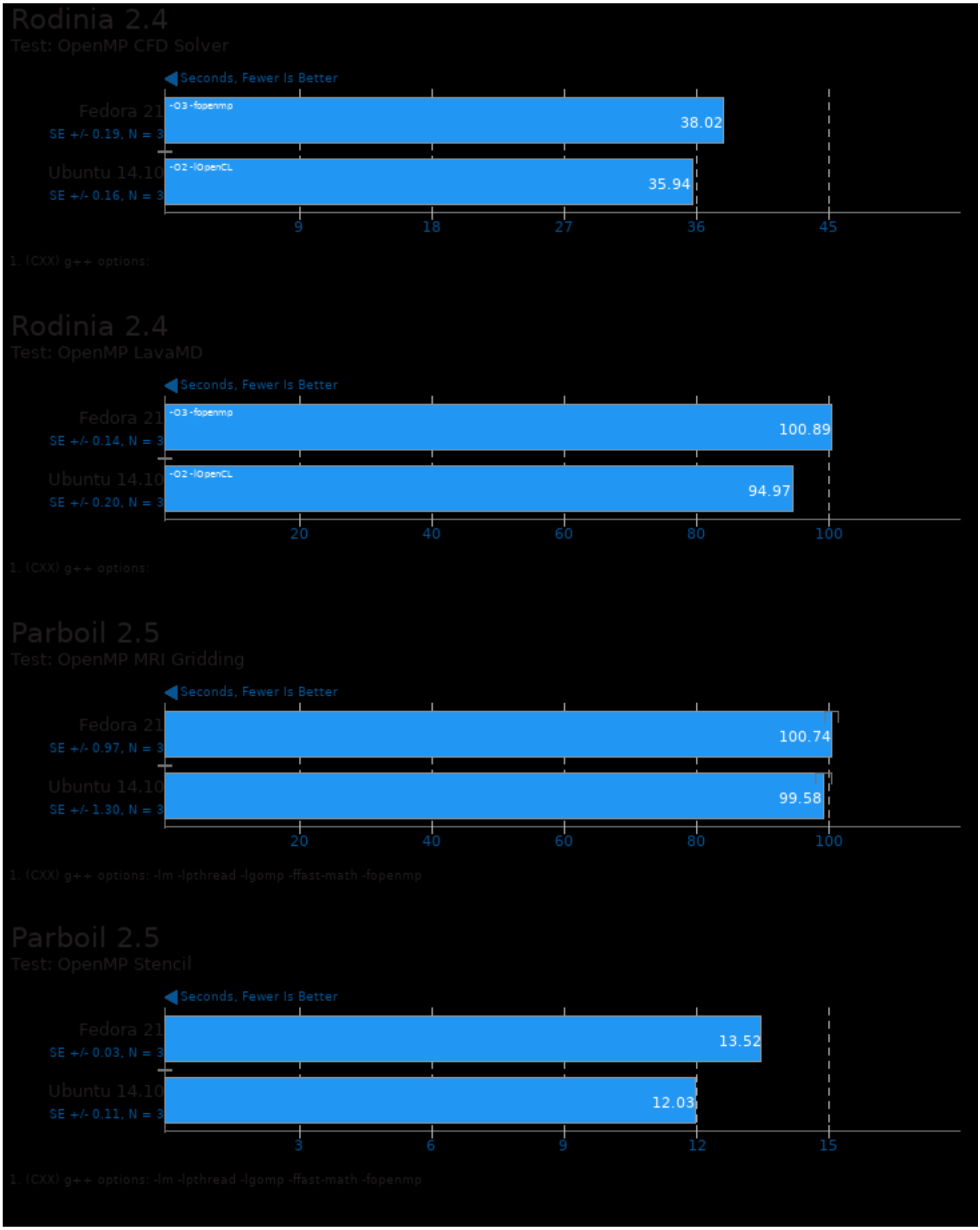
Rodinia 2.4

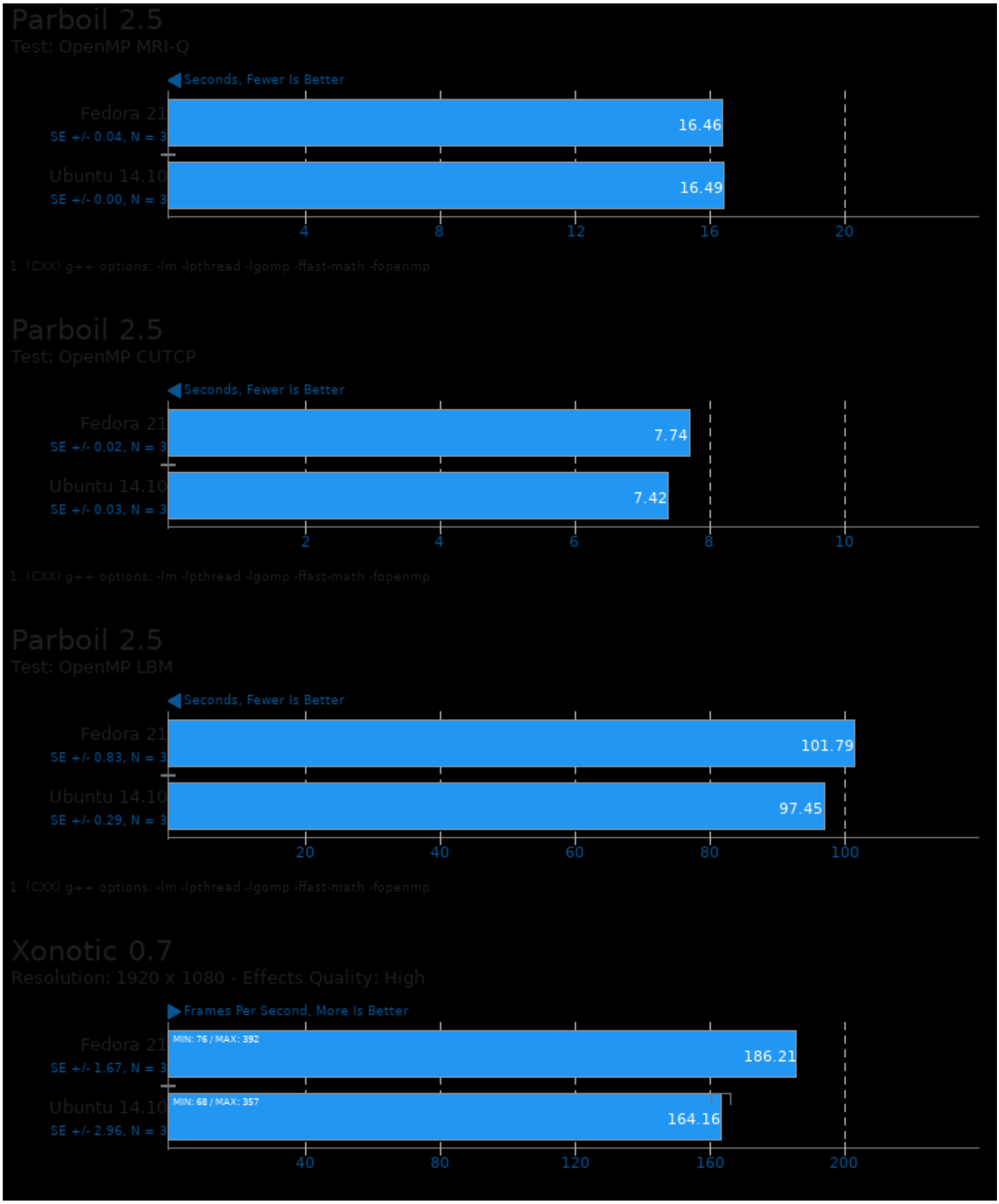
Test: OpenMP Streamcluster



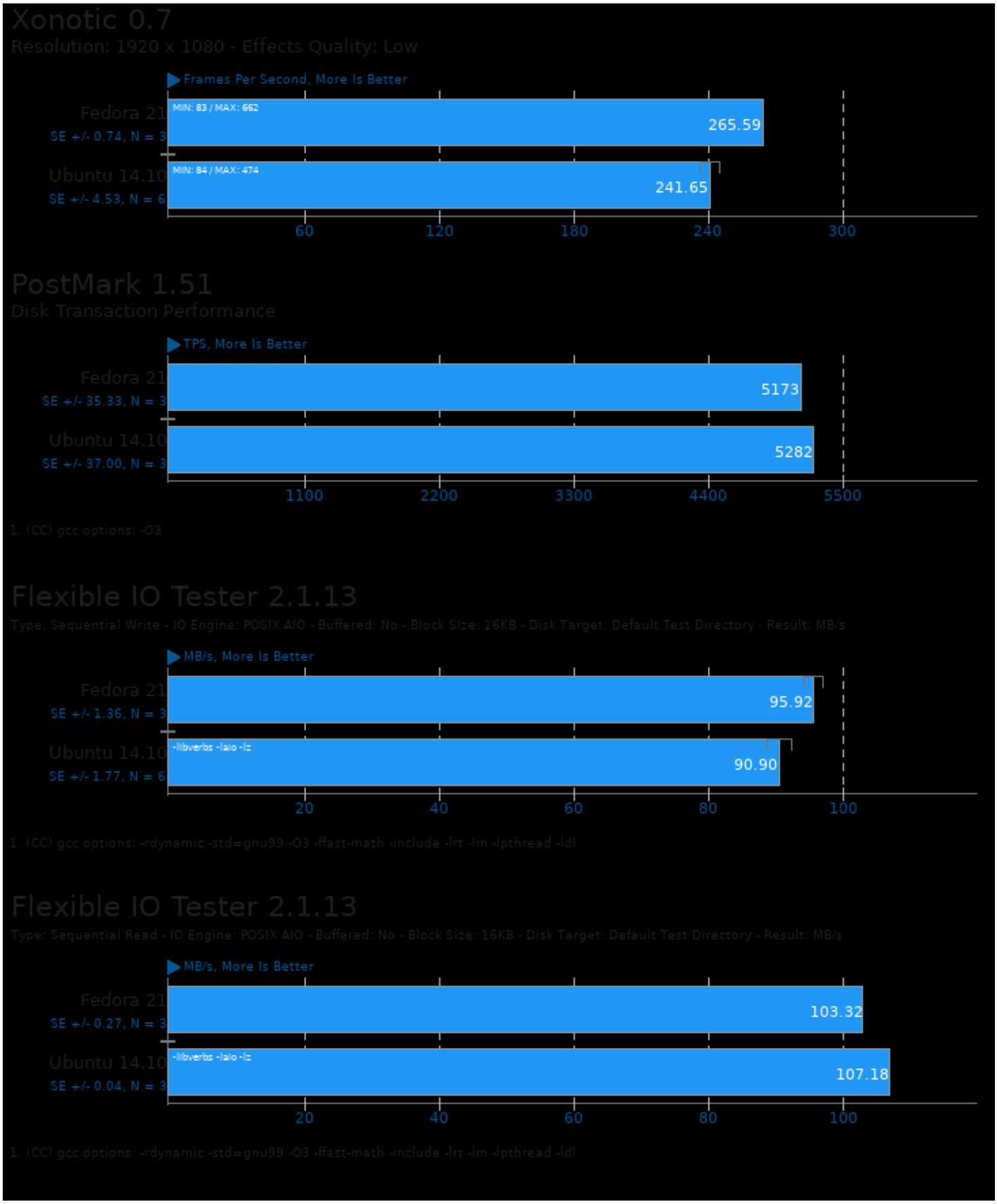
1. (CXX) g++ options:

Fedora 21 vs. Ubuntu 14.10

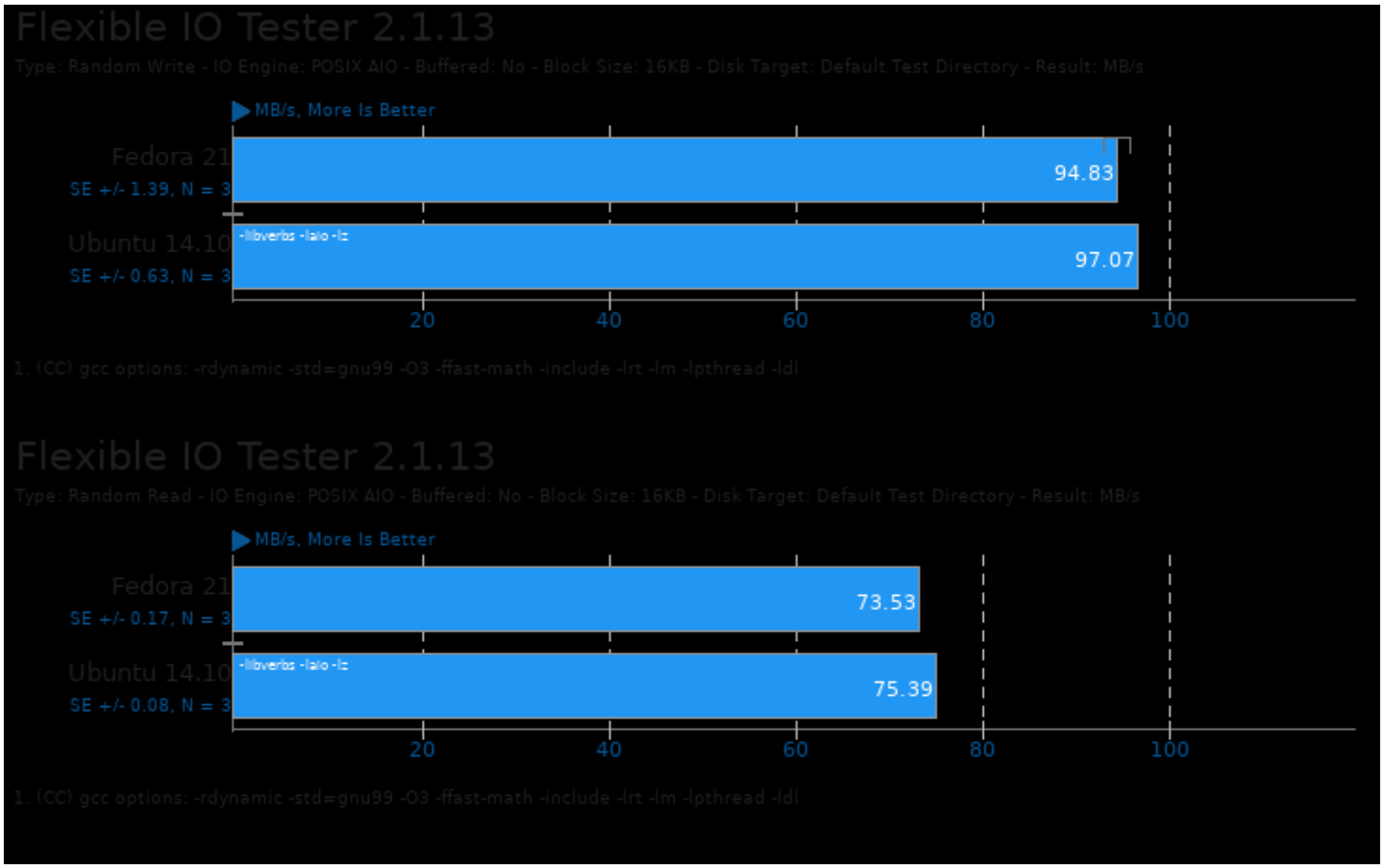



Parboil 2.5
Test: OpenMP MRI-Q
Seconds, Fewer Is Better
Fedora 21
SE +/- 0.04, N = 3
16.46
Ubuntu 14.10
SE +/- 0.00, N = 3
16.49
4
8
12
16
20
1. (CXX) g++ options: -lm -lpthread -lgomp -ffast-math -fopenmp
Parboil 2.5
Test: OpenMP CUTCP
Seconds, Fewer Is Better
Fedora 21
SE +/- 0.02, N = 3
7.74
Ubuntu 14.10
SE +/- 0.03, N = 3
7.42
2
4
6
8
10
1. (CXX) g++ options: -lm -lpthread -lgomp -ffast-math -fopenmp
Parboil 2.5
Test: OpenMP LBM
Seconds, Fewer Is Better
Fedora 21
SE +/- 0.83, N = 3
101.79
Ubuntu 14.10
SE +/- 0.29, N = 3
97.45
20
40
60
80
100
1. (CXX) g++ options: -lm -lpthread -lgomp -ffast-math -fopenmp
Xonotic 0.7
Resolution: 1920 x 1080 - Effects Quality: High
Frames Per Second, More Is Better
Fedora 21
SE +/- 1.67, N = 3
MIN: 76 / MAX: 392
186.21
Ubuntu 14.10
SE +/- 2.96, N = 3
MIN: 68 / MAX: 357
164.16
40
80
120
160
200

Fedora 21 vs. Ubuntu 14.10

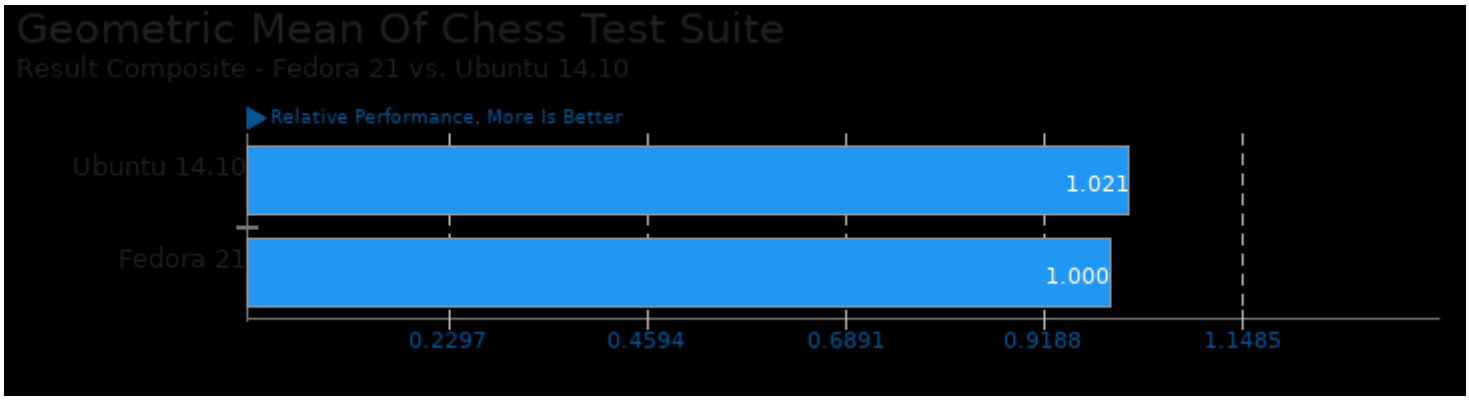


Fedora 21 vs. Ubuntu 14.10

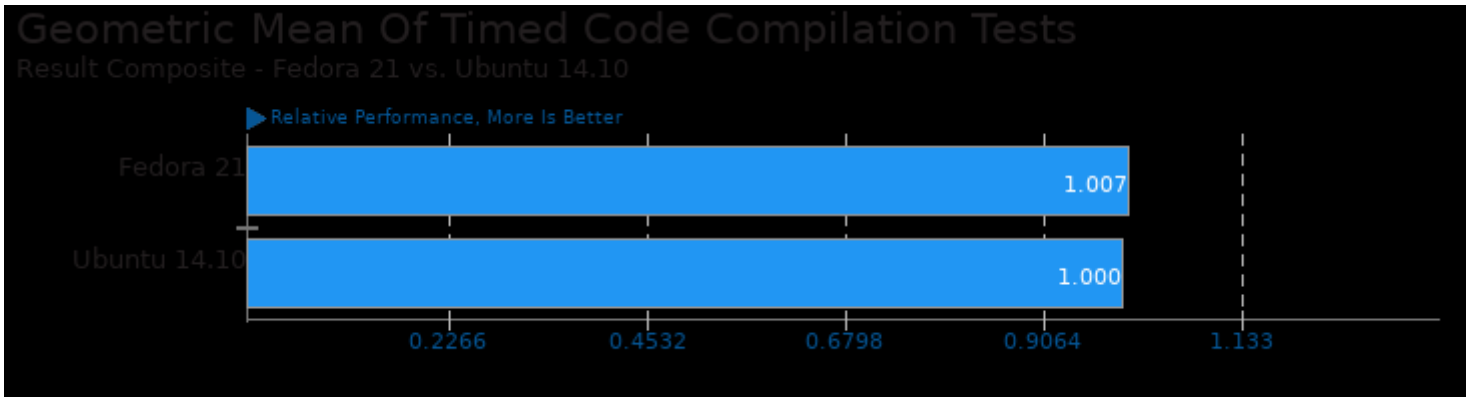


Fedora 21 vs. Ubuntu 14.10

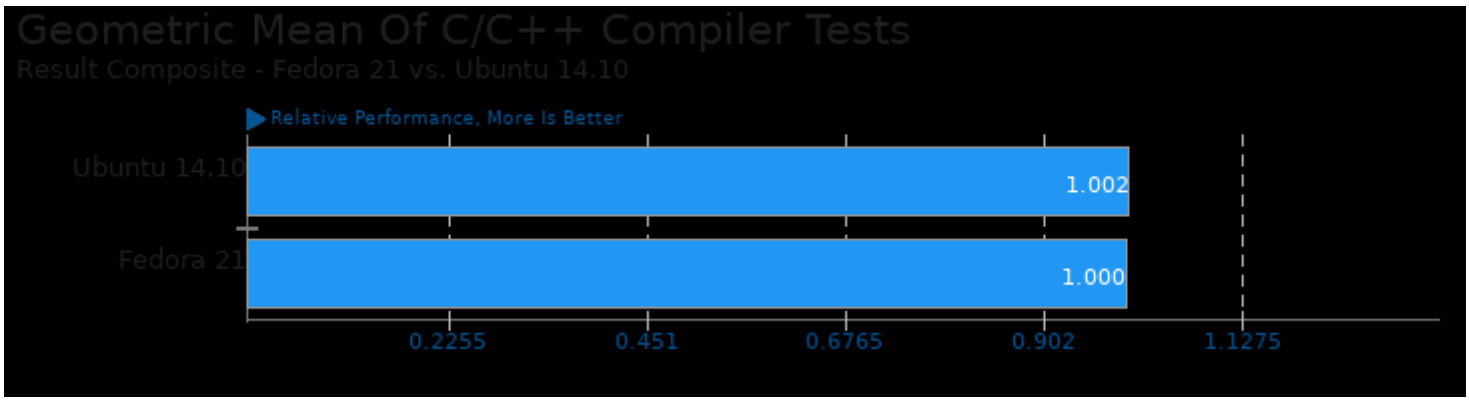
These geometric means are based upon test groupings / test suites for this result file.



Geometric mean based upon tests: pts/stockfish and pts/n-queens

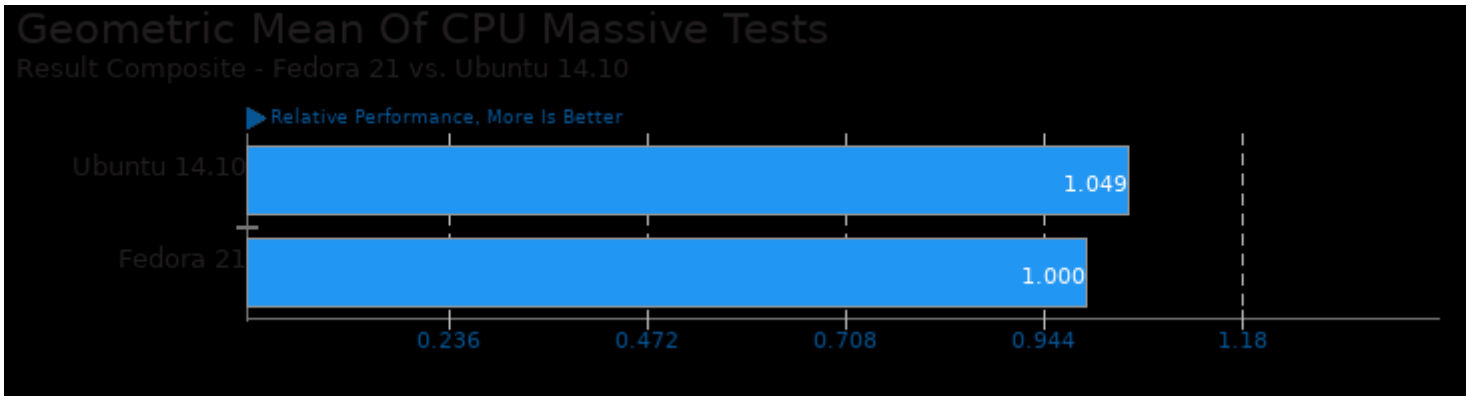


Geometric mean based upon tests: pts/build-php and pts/build-imagemagick



Geometric mean based upon tests: pts/vpxenc, pts/himeno, pts/stockfish, pts/build-php, pts/build-imagemagick, pts/c-ray, pts/encode-mp3, pts/x264 and pts/openssl

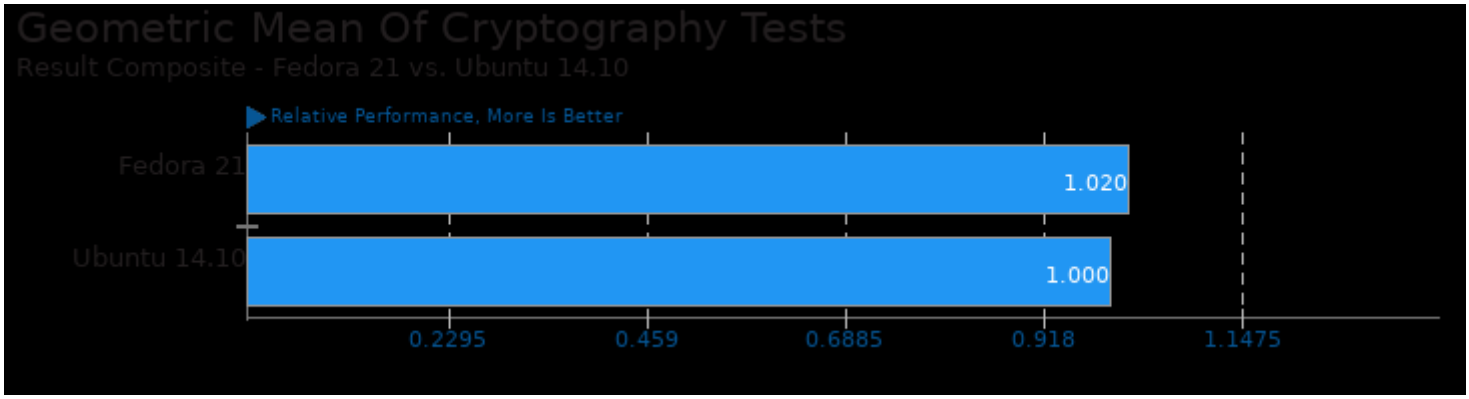
Fedora 21 vs. Ubuntu 14.10



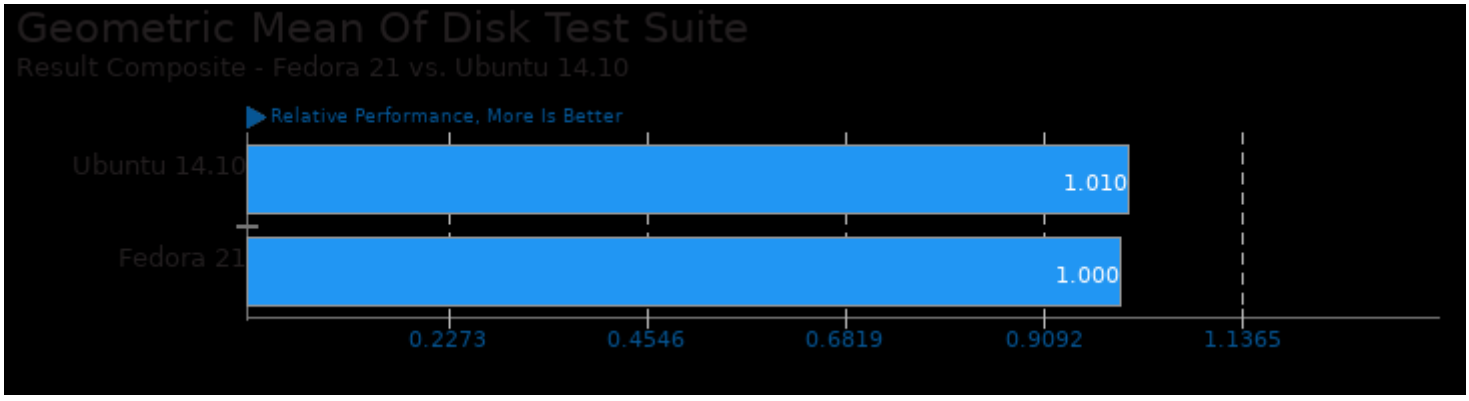
Geometric mean based upon tests: pts/blake2, pts/build-php, pts/c-ray, pts/vpxenc, pts/x264, pts/encode-mp3, pts/himeno, pts/hint, pts/openssl, pts/parboil, pts/rodinia and pts/stockfish



Geometric mean based upon tests: pts/c-ray, pts/smallpt, pts/x264, pts/ffmpeg, pts/vpxenc and pts/encode-mp3

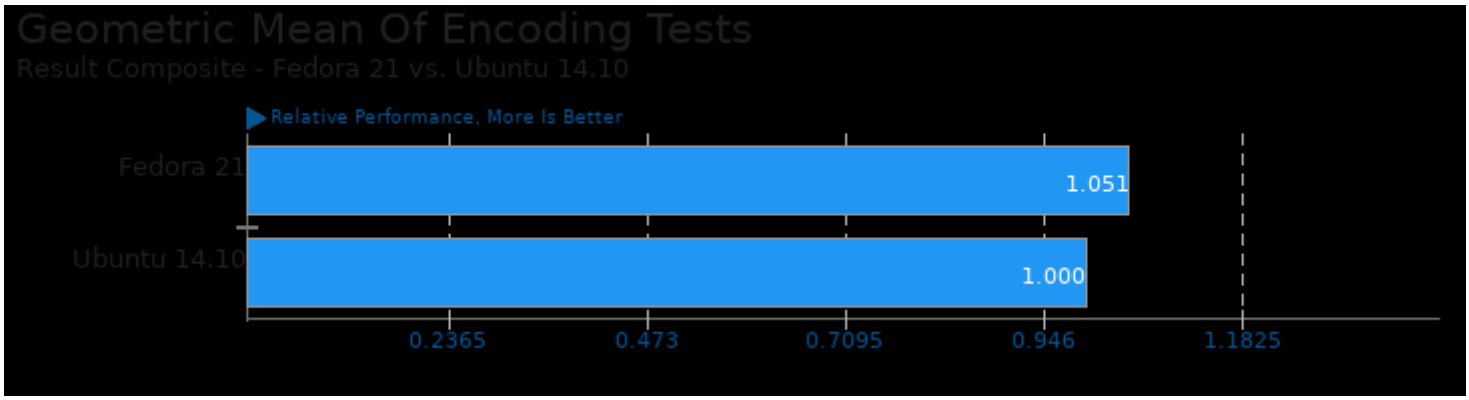


Geometric mean based upon tests: pts/openssl, pts/gcrypt and pts/blake2

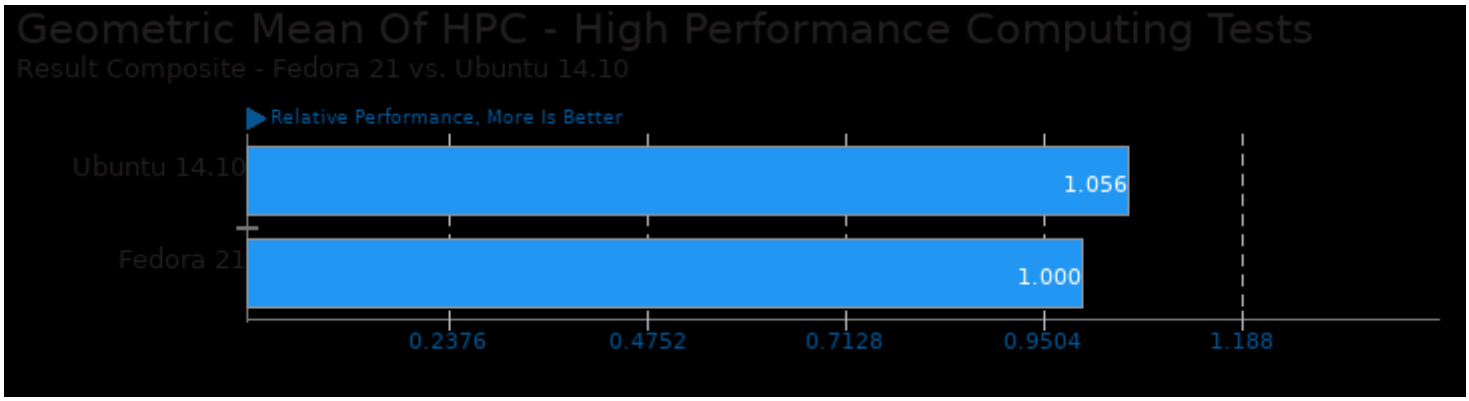


Fedora 21 vs. Ubuntu 14.10

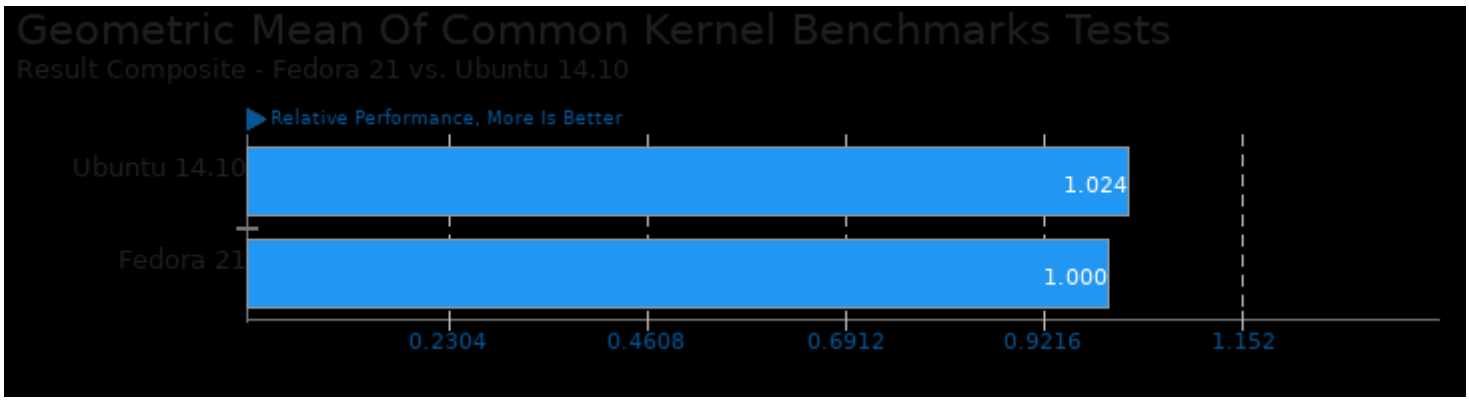
Geometric mean based upon tests: pts/postmark and pts/fio



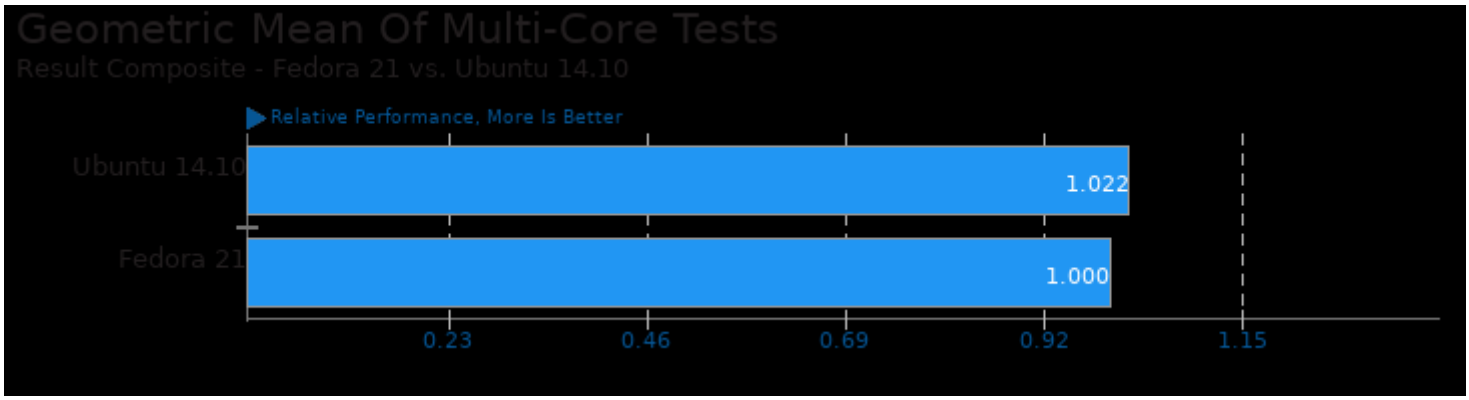
Geometric mean based upon tests: pts/encode-mp3, pts/x264, pts/ffmpeg and pts/vpxenc



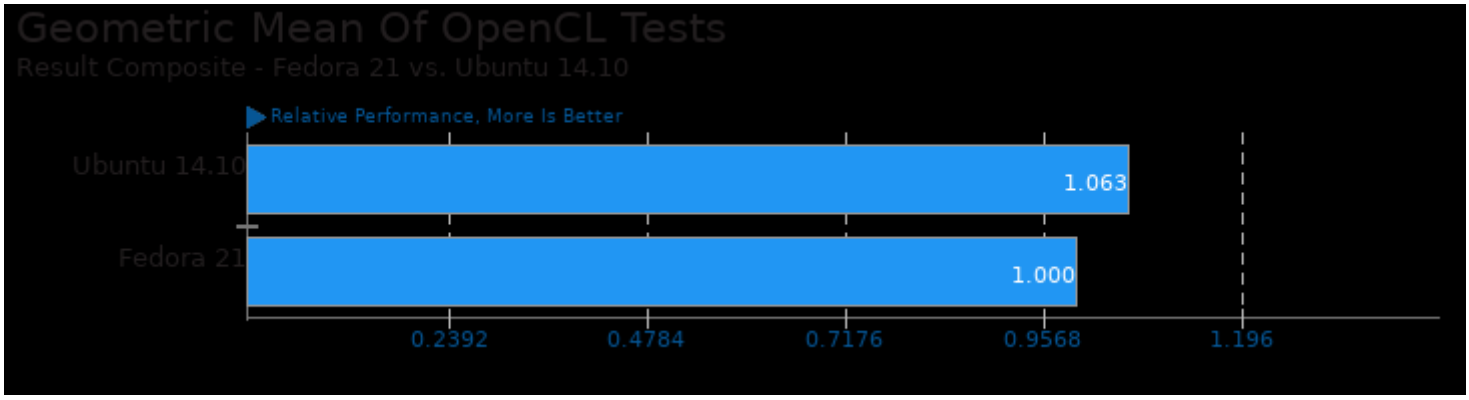
Geometric mean based upon tests: pts/rodinia, pts/parboil and pts/himeno



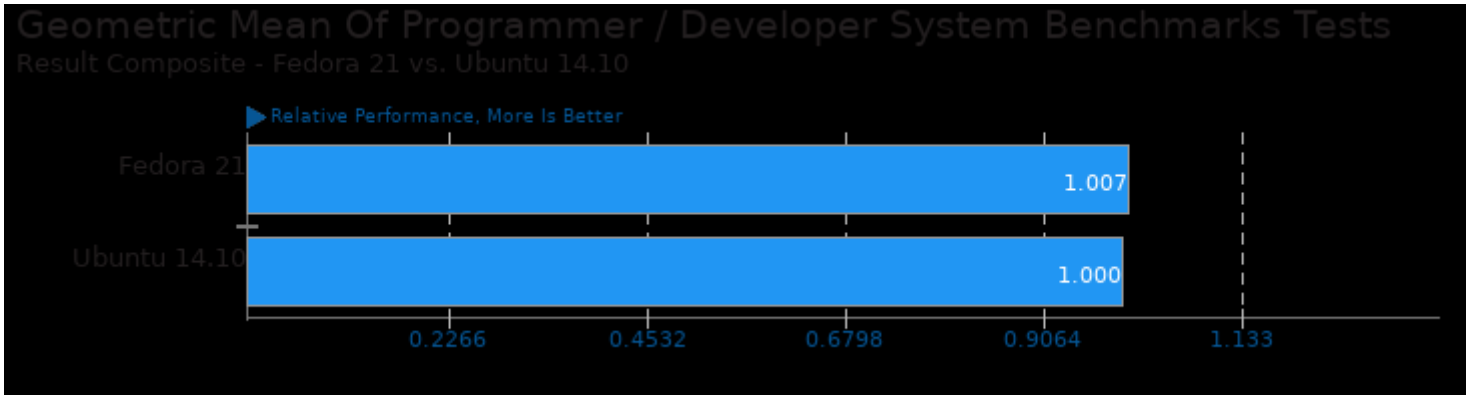
Geometric mean based upon tests: pts/postmark and pts/openssl



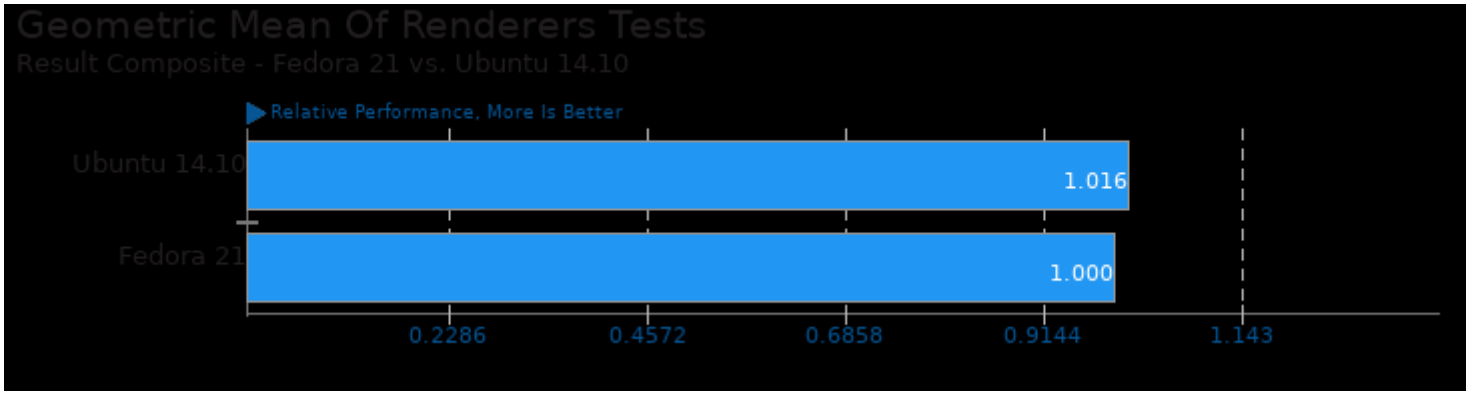
Geometric mean based upon tests: pts/c-ray, pts/stockfish, pts/n-queens, pts/x264, pts/ffmpeg, pts/vpxenc, pts/rodinia, pts/parboil, pts/smallpt, pts/build-php and pts/build-imagemagick



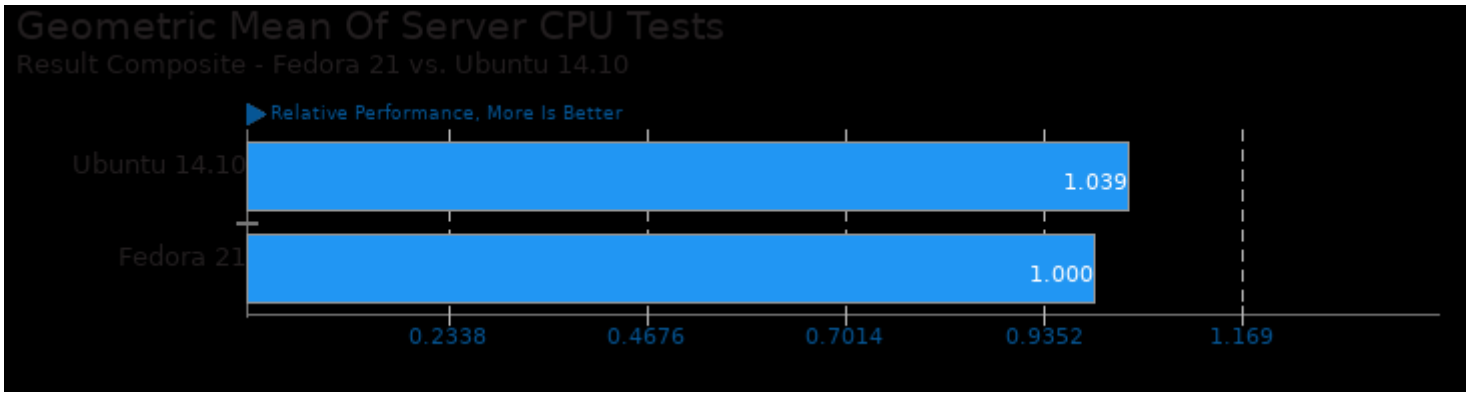
Geometric mean based upon tests: pts/rodinia and pts/parboil



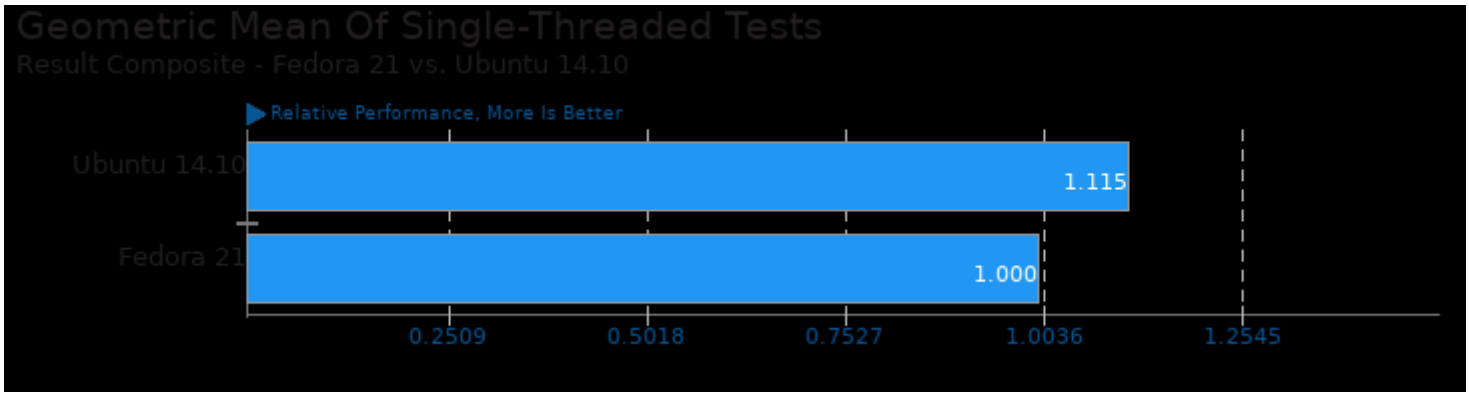
Geometric mean based upon tests: pts/build-php and pts/build-imagemagick



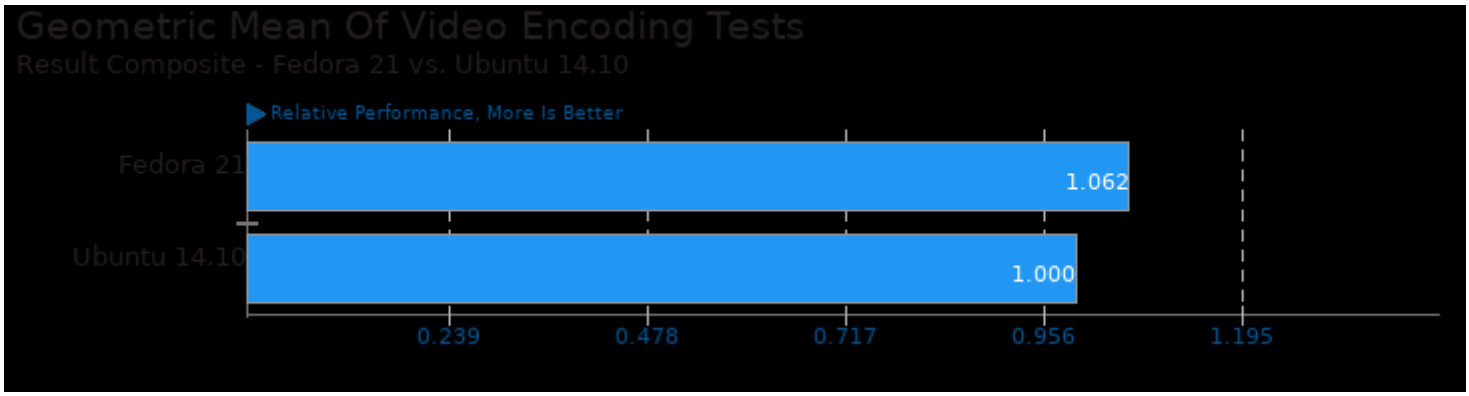
Geometric mean based upon tests: pts/c-ray and pts/smallpt



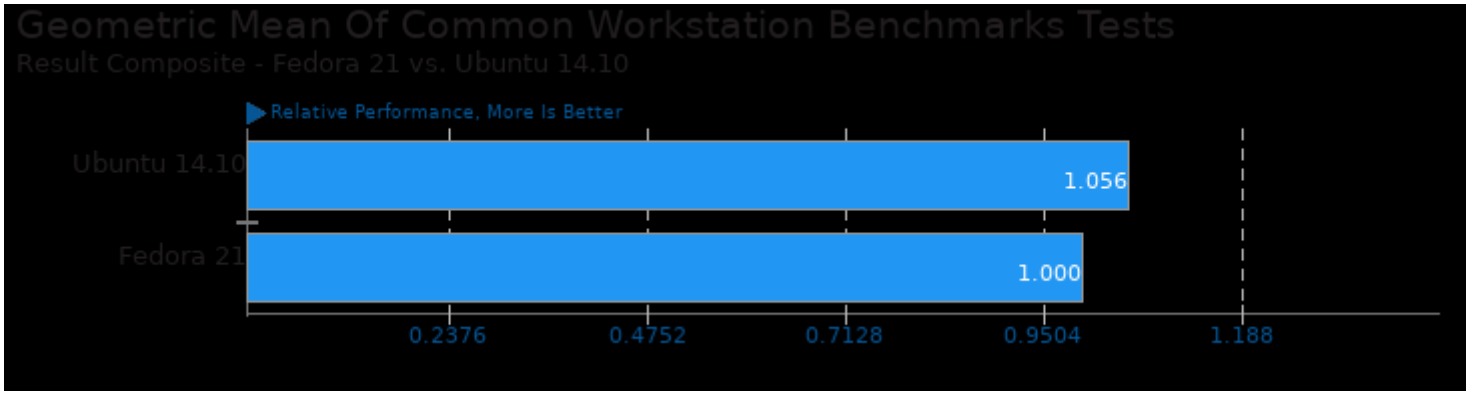
Geometric mean based upon tests: pts/rodinia, pts/x264, pts/himeno, pts/stockfish, pts/build-php, pts/c-ray and pts/openssl



Geometric mean based upon tests: pts/blake2, pts/encode-mp3 and pts/hint



Geometric mean based upon tests: pts/x264, pts/ffmpeg and pts/vpxenc



Geometric mean based upon tests: pts/rodinia, pts/parboil and pts/himeno

Fedora 21 vs. Ubuntu 14.10

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