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20200113-memorytests

AMD Ryzen Threadripper 3970X 32-Core testing with a Gigabyte TRX40 AORUS XTREME (F3b BIOS) and Gigabyte NVIDIA GeForce RTX 2080 Ti 11GB on Ubuntu 20.04 via the Phoronix Test Suite.

Automated Executive Summary

4 x 3600 Corsair Dominator had the most wins, coming in first place for 78% of the tests.

Based on the geometric mean of all complete results, the fastest (4 x 3600 Corsair Dominator) was 1.227x the speed of the slowest (4 x 3600 GSkill TridentZ Neo). 4 x 3200 OLOy 128GB Kit was 0.947x the speed of 4 x 3600 Corsair Dominator and 4 x 3600 GSkill TridentZ Neo was 0.861x the speed of 4 x 3200 OLOy 128GB Kit.

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

Darktable (Test: Boat - Acceleration: CPU-only) at 1.982x
Darktable (Test: Server Rack - Acceleration: CPU-only) at 1.924x
Stream (Type: Triad) at 1.891x
Stream (Type: Add) at 1.888x
Stream (Type: Copy) at 1.872x
Stream (Type: Scale) at 1.865x
Darktable (Test: Server Room - Acceleration: CPU-only) at 1.595x
RAMspeed SMP (Type: Average - Benchmark: Integer) at 1.36x

RAMspeed SMP (Type: Average - Benchmark: Floating Point) at 1.312x
RAMspeed SMP (Type: Copy - Benchmark: Integer) at 1.299x.

Test Systems:

4 x 3600 GSkill TridentZ Neo

Processor: AMD Ryzen Threadripper 3970X 32-Core @ 3.70GHz (32 Cores / 64 Threads), Motherboard: Gigabyte TRX40 AORUS XTREME (F3b BIOS), Chipset: AMD Starship/Matisse, Memory: 32768MB, Disk: Samsung SSD 970 EVO 500GB, Graphics: Gigabyte NVIDIA GeForce RTX 2080 Ti 11GB (1350/7000MHz), Audio: NVIDIA TU102 HD Audio, Monitor: ASUS XG438, Network: 2 x Intel 10G X550T + Intel Wi-Fi 6 AX200

OS: Ubuntu 20.04, Kernel: 5.4.0-9-generic (x86_64), Desktop: GNOME Shell 3.34.3, Display Server: X Server 1.20.5, Display Driver: NVIDIA 440.44, OpenGL: 4.6.0, Compiler: GCC 9.2.1 20191130, File-System: ext4, Screen Resolution: 3840x2160

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++,gm2 --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-link-mutex --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-build-config=bootstrap-lto-lean --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: 0x8301025
Python Notes: Python 2.7.17 + Python 3.7.6
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 STIBP: conditional RSB filling + tsx_async_abort: Not affected

4 x 3600 Corsair Dominator

Processor: AMD Ryzen Threadripper 3970X 32-Core @ 3.70GHz (32 Cores / 64 Threads), Motherboard: Gigabyte TRX40 AORUS XTREME (F3b BIOS), Chipset: AMD Starship/Matisse, Memory: 64512MB, Disk: Samsung SSD 970 EVO 500GB, Graphics: Gigabyte NVIDIA GeForce RTX 2080 Ti 11GB (435/810MHz), Audio: NVIDIA TU102 HD Audio, Monitor: ASUS XG438, Network: 2 x Intel 10G X550T + Intel Wi-Fi 6 AX200

OS: Ubuntu 20.04, Kernel: 5.4.0-9-generic (x86_64), Desktop: GNOME Shell 3.34.3, Display Server: X Server 1.20.5, Display Driver: NVIDIA 440.44, OpenGL: 4.6.0, Compiler: GCC 9.2.1 20191130, File-System: ext4, Screen Resolution: 3840x2160

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++,gm2 --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-link-mutex --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-build-config=bootstrap-lto-lean --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: 0x8301025
Python Notes: Python 2.7.17 + Python 3.7.6
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 STIBP: conditional RSB filling + tsx_async_abort: Not affected

4 x 3200 OLOy 128GB Kit

Processor: AMD Ryzen Threadripper 3970X 32-Core @ 3.70GHz (32 Cores / 64 Threads), Motherboard: Gigabyte TRX40 AORUS XTREME (F3b BIOS), Chipset: AMD Starship/Matisse, Memory: 129024MB, Disk: Samsung SSD 970

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EVO 500GB, Graphics: Gigabyte NVIDIA GeForce RTX 2080 Ti 11GB (1350/7000MHz), Audio: NVIDIA TU102 HD Audio, Monitor: ASUS XG438, Network: 2 x Intel 10G X550T + Intel Wi-Fi 6 AX200

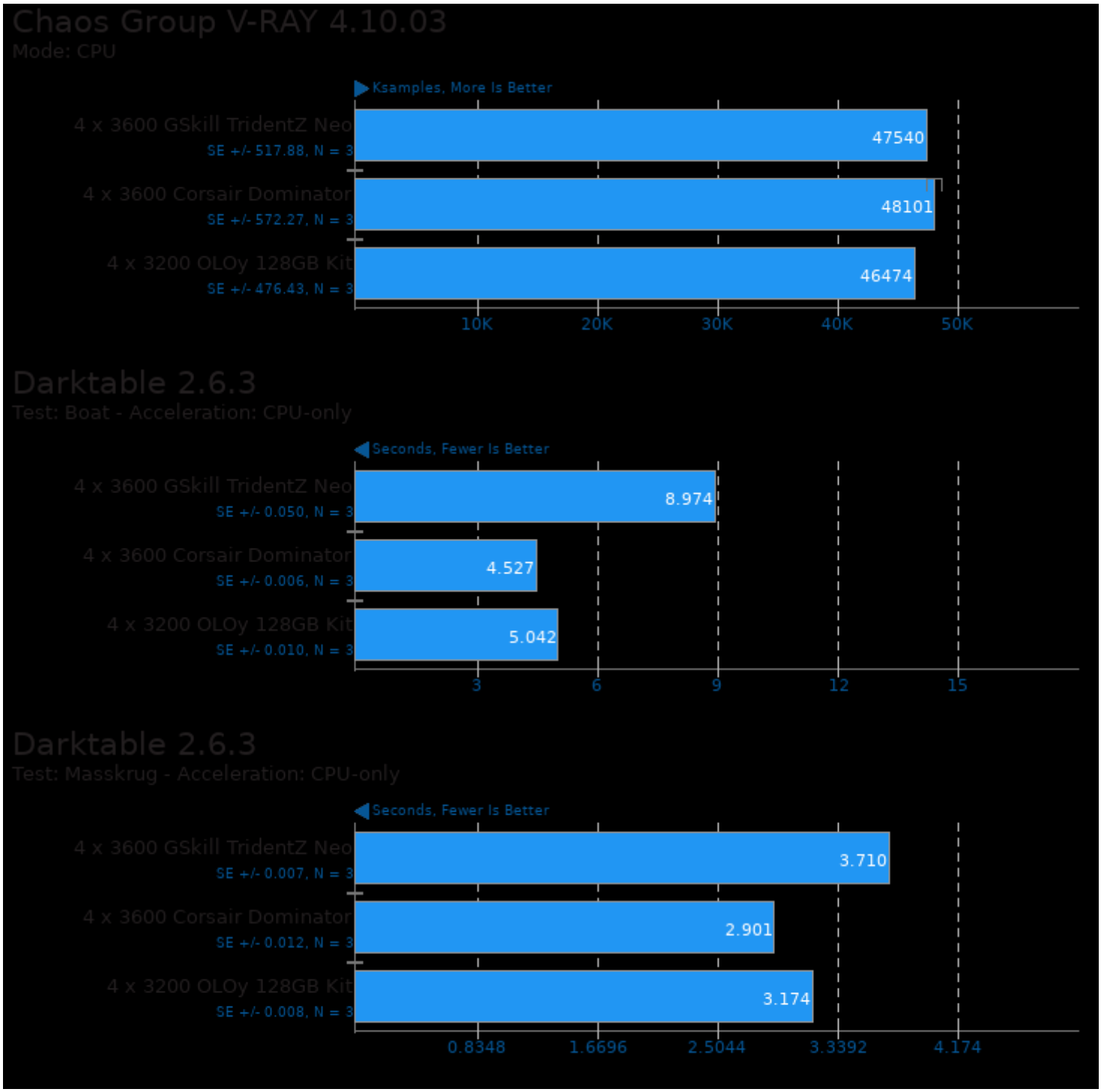
OS: Ubuntu 20.04, Kernel: 5.4.0-9-generic (x86_64), Desktop: GNOME Shell 3.34.3, Display Server: X Server 1.20.5, Display Driver: NVIDIA 440.44, OpenGL: 4.6.0, Compiler: GCC 9.2.1 20191130, File-System: ext4, Screen Resolution: 3840x2160

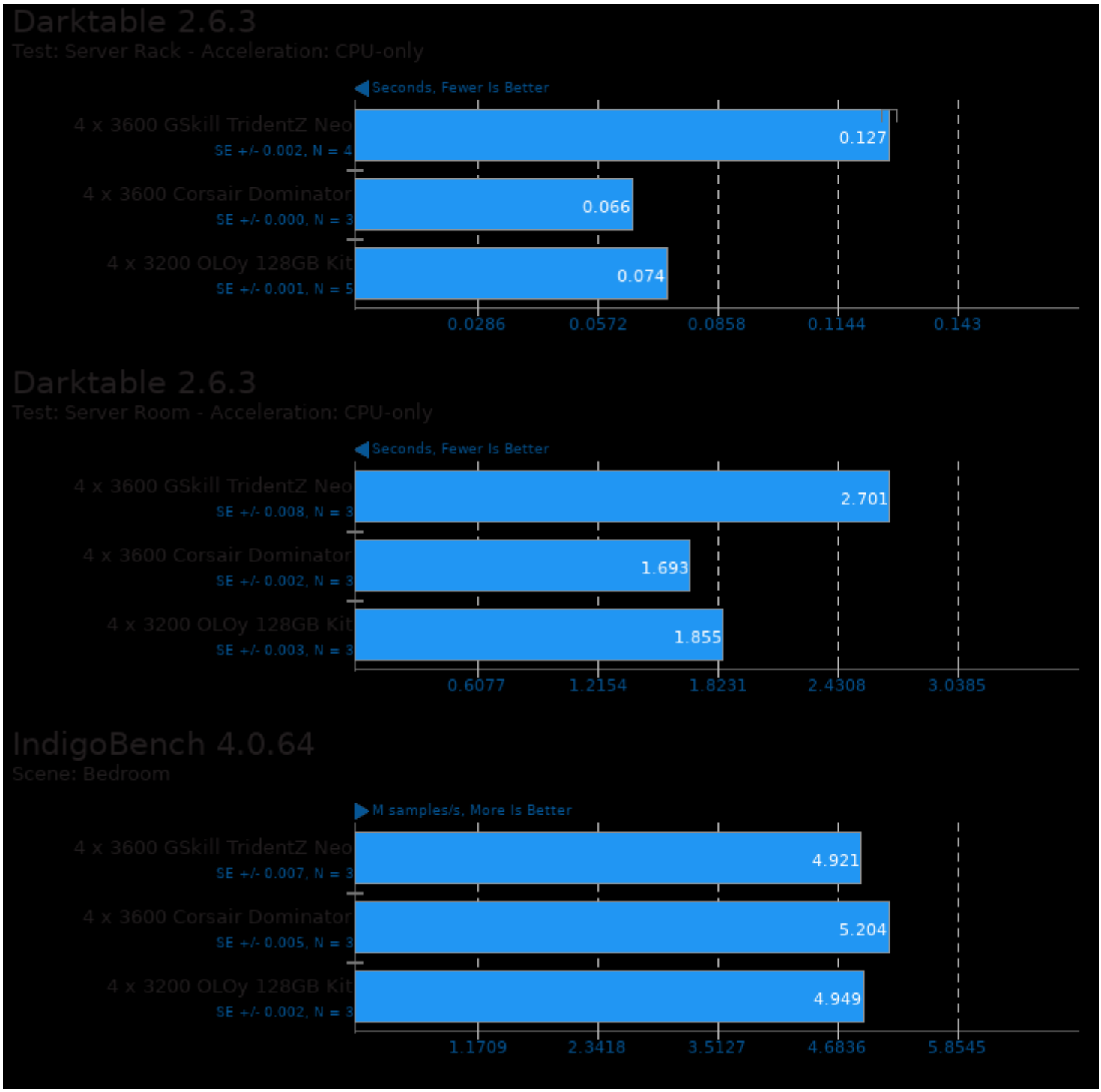
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,gm2 --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-link-mutex --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-build-config=bootstrap-lto-lean --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: 0x8301025
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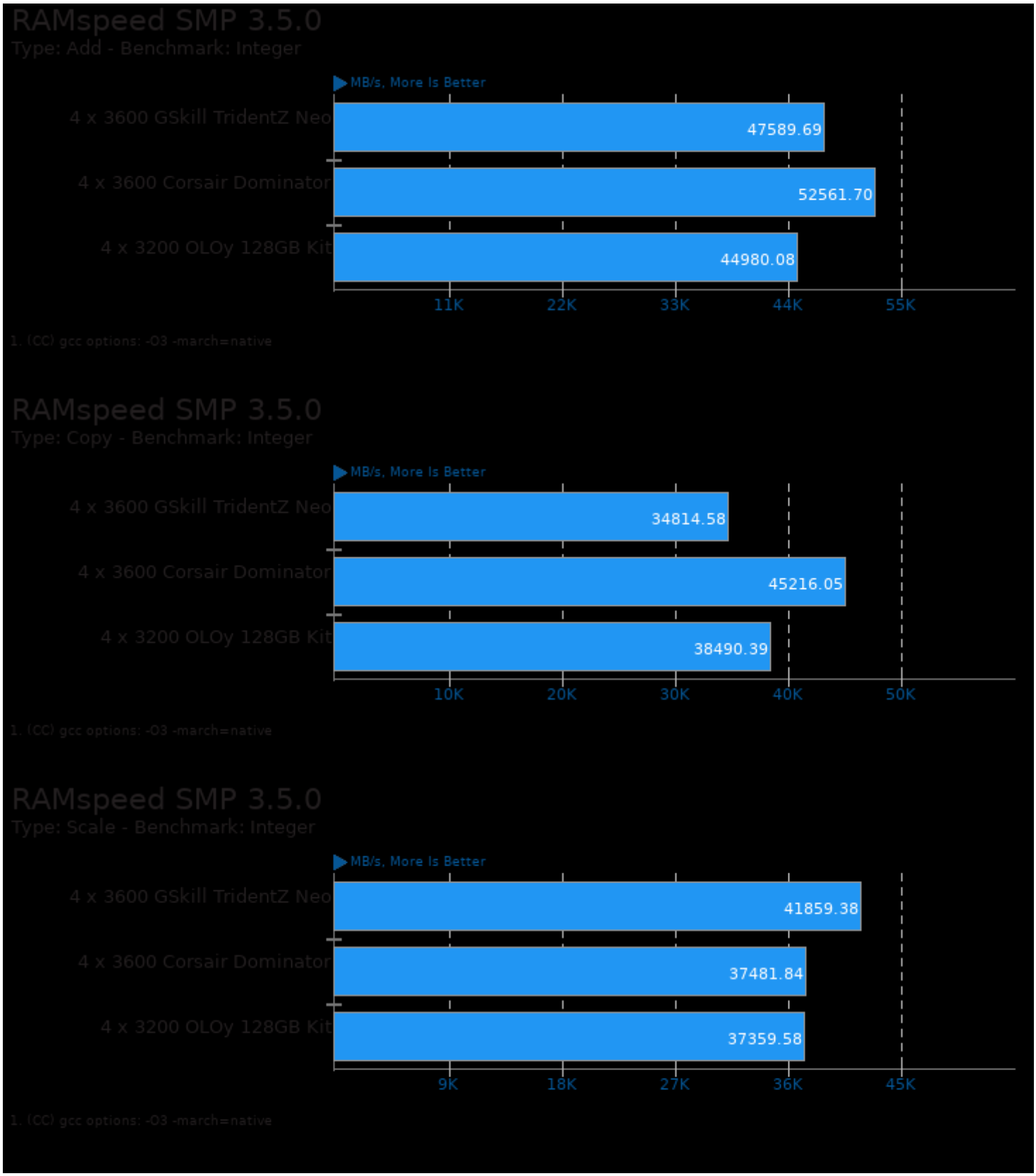
	4 x 3600 GSkill TridentZ Neo	4 x 3600 Corsair Dominator	4 x 3200 OLOy 128GB Kit
Chaos Group V-RAY - CPU (Ksamples)	47540	**48101**	**46474**
Normalized	98.83%	100%	96.62%
Standard Deviation	1.9%	2.1%	1.8%
Darktable - Boat - CPU-only (sec)	**8.974**	**4.527**	5.042
Normalized	50.45%	100%	89.79%
Standard Deviation	1%	0.2%	0.3%
Darktable - Masskrug - CPU-only (sec)	**3.710**	**2.901**	3.174
Normalized	78.19%	100%	91.4%
Standard Deviation	0.3%	0.7%	0.4%
Darktable - Server Rack - CPU-only (sec)	**0.127**	**0.066**	0.074
Normalized	51.97%	100%	89.19%
Standard Deviation	3%	0.9%	2.9%
Darktable - Server Room - CPU-only (sec)	**2.701**	**1.693**	1.855
Normalized	62.68%	100%	91.27%
Standard Deviation	0.5%	0.2%	0.3%
IndigoBench - Bedroom (M samples/s)	**4.921**	**5.204**	4.949
Normalized	94.56%	100%	95.1%
Standard Deviation	0.3%	0.2%	0.1%
RAMspeed SMP - Add - Integer (MB/s)	47590	**52562**	**44980**
Normalized	90.54%	100%	85.58%
RAMspeed SMP - Copy - Integer (MB/s)	**34815**	**45216**	38490
Normalized	77%	100%	85.13%
RAMspeed SMP - Scale - Integer (MB/s)	**41859**	37482	**37360**
Normalized	100%	89.54%	89.25%
RAMspeed SMP - Triad - Integer (MB/s)	**48671**	**40654**	46209
Normalized	100%	83.53%	94.94%
RAMspeed SMP - Average - Integer (MB/s)	**36204**	**49248**	42129
Normalized	73.51%	100%	85.54%
RAMspeed SMP - Add - Floating Point (MB/s)	**47567**	**42718**	44549
Normalized	100%	89.81%	93.65%
RAMspeed SMP - Copy - Floating Point	**40398**	**37170**	38126
Normalized	100%	92.01%	94.38%

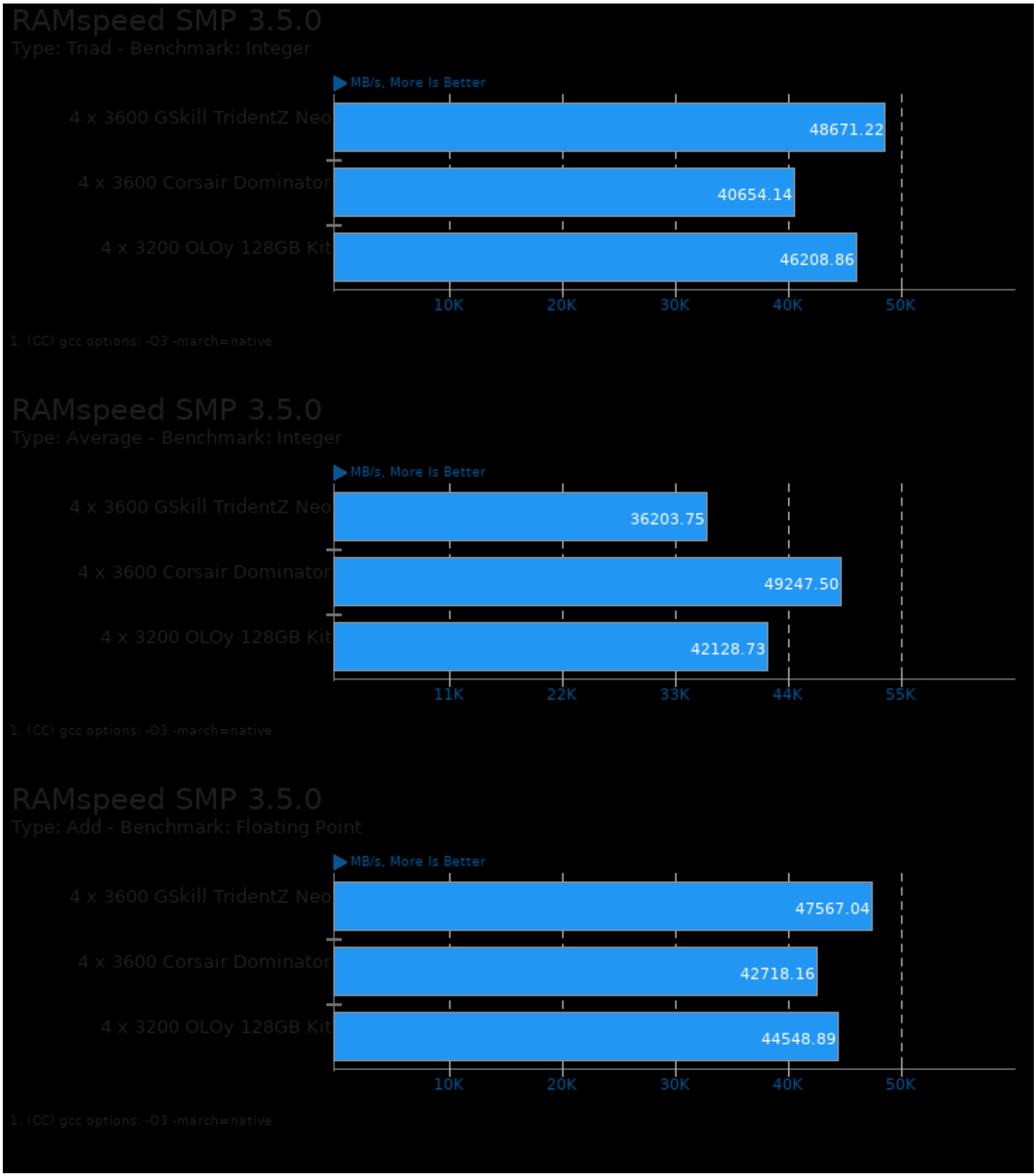
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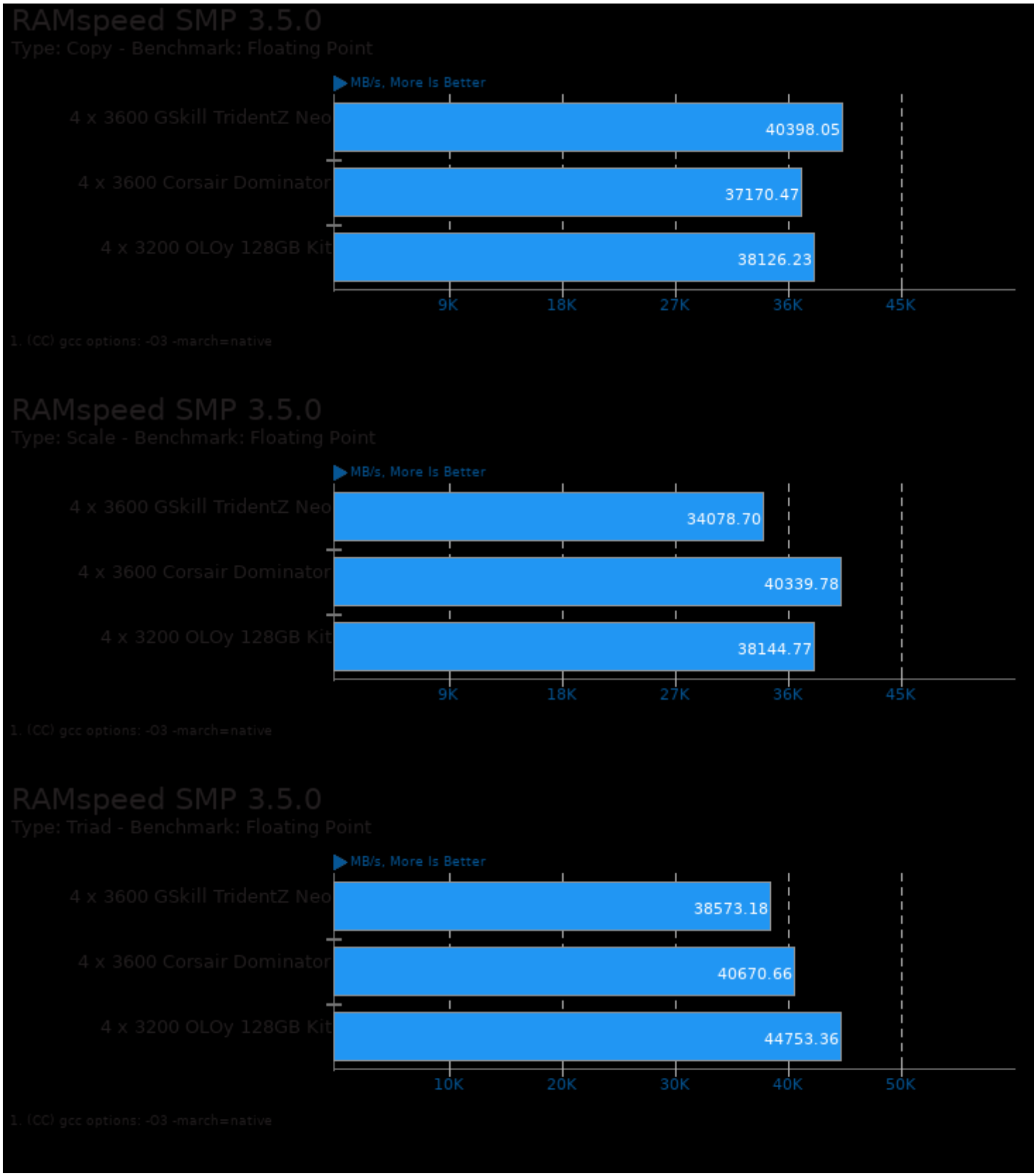
RAMspeed SMP - Scale - Floating Point	**34079**	**40340**	38145
Normalized	84.48%	100%	94.56%
RAMspeed SMP - Triad - Floating Point	**38573**	40671	**44753**
Normalized	86.19%	90.88%	100%
RAMspeed SMP - Average - Floating Point (MB/s)	**35897**	**47091**	41448
Normalized	76.23%	100%	88.02%
Selenium - ARES-6 - Firefox (ms)	49.84	**49.80**	**49.97**
Normalized	99.92%	100%	99.66%
Standard Deviation	0.2%	0.1%	0.9%
Selenium - Octane - Firefox (Geometric	36370	**36672**	**35784**
Normalized	99.18%	100%	97.58%
Standard Deviation	1.2%	0.5%	0.4%
Selenium - WebXPRT - Firefox (Score)	**262**	**267**	263
Normalized	98.13%	100%	98.5%
Standard Deviation	0.2%		
Selenium - Maze Solver - Firefox (sec)	**4.4**	**4.2**	4.3
Normalized	95.45%	100%	97.67%
Standard Deviation	0%	0%	1.4%
Selenium - G.H.C - Firefox (fps)	**62.04**	62.01	**62.00**
Normalized	100%	99.95%	99.94%
Standard Deviation	0.1%	0.2%	0.1%
Stream - Copy (MB/s)	**28572**	**53486**	47190
Normalized	53.42%	100%	88.23%
Standard Deviation	0.2%	0.1%	0.1%
Stream - Scale (MB/s)	**28521**	**53194**	46831
Normalized	53.62%	100%	88.04%
Standard Deviation	0.3%	0.1%	0%
Stream - Triad (MB/s)	**31322**	**59238**	52284
Normalized	52.87%	100%	88.26%
Standard Deviation	0.1%	0.1%	0.1%
Stream - Add (MB/s)	**31131**	**58763**	51895
Normalized	52.98%	100%	88.31%
Standard Deviation	0.2%	0.1%	0.1%
Timed GCC Compilation - Time To Compile (sec)	**576.313**	**533.214**	541.048
Normalized	92.52%	100%	98.55%
Standard Deviation	0.1%	0.1%	0.1%
Timed Linux Kernel Compilation - Time To Compile (sec)	**27.459**	**23.340**	24.337
Normalized	85%	100%	95.9%
Standard Deviation	2.8%	2.9%	2.9%
Timed LLVM Compilation - Time To Compile (sec)	**126.9**	**115.157**	120.548
Normalized	90.75%	100%	95.53%


Chaos Group V-RAY 4.10.03
Mode: CPU
Ksamples, More Is Better
4 x 3600 GSkill TridentZ Neo
SE +/- 517.88, N = 3
47540
4 x 3600 Corsair Dominator
SE +/- 572.27, N = 3
48101
4 x 3200 OLOy 128GB Kit
SE +/- 476.43, N = 3
46474
10K
20K
30K
40K
50K
Darktable 2.6.3
Test: Boat - Acceleration: CPU-only
Seconds, Fewer Is Better
4 x 3600 GSkill TridentZ Neo
SE +/- 0.050, N = 3
8.974
4 x 3600 Corsair Dominator
SE +/- 0.006, N = 3
4.527
4 x 3200 OLOy 128GB Kit
SE +/- 0.010, N = 3
5.042
3
6
9
12
15
Darktable 2.6.3
Test: Masskrug - Acceleration: CPU-only
Seconds, Fewer Is Better
4 x 3600 GSkill TridentZ Neo
SE +/- 0.007, N = 3
3.710
4 x 3600 Corsair Dominator
SE +/- 0.012, N = 3
2.901
4 x 3200 OLOy 128GB Kit
SE +/- 0.008, N = 3
3.174
0.8348
1.6696
2.5044
3.3392
4.174


Darktable 2.6.3
Test: Server Rack - Acceleration: CPU-only
Seconds, Fewer Is Better
4 x 3600 GSkill TridentZ Neo
SE +/- 0.002, N = 4
0.127
4 x 3600 Corsair Dominator
SE +/- 0.000, N = 3
0.066
4 x 3200 OLOy 128GB Kit
SE +/- 0.001, N = 5
0.074
0.0286
0.0572
0.0858
0.1144
0.143
Darktable 2.6.3
Test: Server Room - Acceleration: CPU-only
Seconds, Fewer Is Better
4 x 3600 GSkill TridentZ Neo
SE +/- 0.008, N = 3
2.701
4 x 3600 Corsair Dominator
SE +/- 0.002, N = 3
1.693
4 x 3200 OLOy 128GB Kit
SE +/- 0.003, N = 3
1.855
0.6077
1.2154
1.8231
2.4308
3.0385
IndigoBench 4.0.64
Scene: Bedroom
M samples/s, More Is Better
4 x 3600 GSkill TridentZ Neo
SE +/- 0.007, N = 3
4.921
4 x 3600 Corsair Dominator
SE +/- 0.005, N = 3
5.204
4 x 3200 OLOy 128GB Kit
SE +/- 0.002, N = 3
4.949
1.1709
2.3418
3.5127
4.6836
5.8545

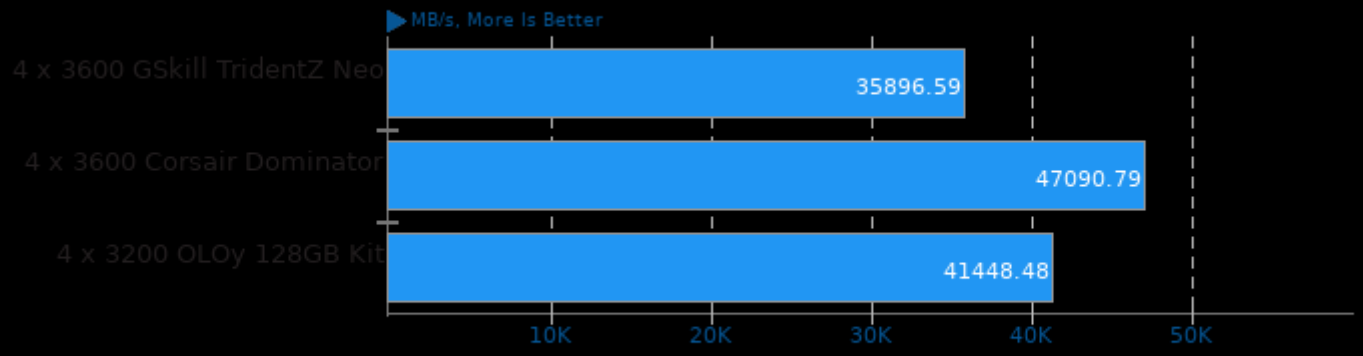

RAMspeed SMP 3.5.0
Type: Add - Benchmark: Integer
MB/s, More Is Better
4 x 3600 GSkill TridentZ Neo
47589.69
4 x 3600 Corsair Dominator
52561.70
4 x 3200 OLOy 128GB Kit
44980.08
11K
22K
33K
44K
55K
1. (CC) gcc options: -O3 -march=native
RAMspeed SMP 3.5.0
Type: Copy - Benchmark: Integer
MB/s, More Is Better
4 x 3600 GSkill TridentZ Neo
34814.58
4 x 3600 Corsair Dominator
45216.05
4 x 3200 OLOy 128GB Kit
38490.39
10K
20K
30K
40K
50K
1. (CC) gcc options: -O3 -march=native
RAMspeed SMP 3.5.0
Type: Scale - Benchmark: Integer
MB/s, More Is Better
4 x 3600 GSkill TridentZ Neo
41859.38
4 x 3600 Corsair Dominator
37481.84
4 x 3200 OLOy 128GB Kit
37359.58
9K
18K
27K
36K
45K
1. (CC) gcc options: -O3 -march=native


RAMspeed SMP 3.5.0
Type: Triad - Benchmark: Integer
MB/s, More Is Better
4 x 3600 GSkill TridentZ Neo
48671.22
4 x 3600 Corsair Dominator
40654.14
4 x 3200 OLOy 128GB Kit
46208.86
10K
20K
30K
40K
50K
1. (CC) gcc options: -O3 -march=native
RAMspeed SMP 3.5.0
Type: Average - Benchmark: Integer
MB/s, More Is Better
4 x 3600 GSkill TridentZ Neo
36203.75
4 x 3600 Corsair Dominator
49247.50
4 x 3200 OLOy 128GB Kit
42128.73
11K
22K
33K
44K
55K
1. (CC) gcc options: -O3 -march=native
RAMspeed SMP 3.5.0
Type: Add - Benchmark: Floating Point
MB/s, More Is Better
4 x 3600 GSkill TridentZ Neo
47567.04
4 x 3600 Corsair Dominator
42718.16
4 x 3200 OLOy 128GB Kit
44548.89
10K
20K
30K
40K
50K
1. (CC) gcc options: -O3 -march=native


RAMspeed SMP 3.5.0
Type: Copy - Benchmark: Floating Point
MB/s, More Is Better
4 x 3600 GSkill TridentZ Neo
40398.05
4 x 3600 Corsair Dominator
37170.47
4 x 3200 OLOy 128GB Kit
38126.23
9K
18K
27K
36K
45K
1. (CC) gcc options: -O3 -march=native
RAMspeed SMP 3.5.0
Type: Scale - Benchmark: Floating Point
MB/s, More Is Better
4 x 3600 GSkill TridentZ Neo
34078.70
4 x 3600 Corsair Dominator
40339.78
4 x 3200 OLOy 128GB Kit
38144.77
9K
18K
27K
36K
45K
1. (CC) gcc options: -O3 -march=native
RAMspeed SMP 3.5.0
Type: Triad - Benchmark: Floating Point
MB/s, More Is Better
4 x 3600 GSkill TridentZ Neo
38573.18
4 x 3600 Corsair Dominator
40670.66
4 x 3200 OLOy 128GB Kit
44753.36
10K
20K
30K
40K
50K
1. (CC) gcc options: -O3 -march=native

RAMspeed SMP 3.5.0

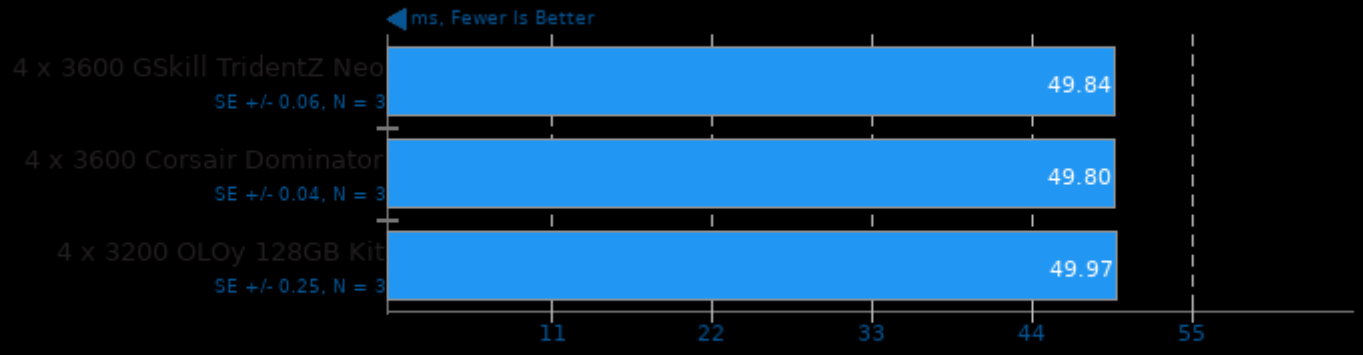
Type: Average - Benchmark: Floating Point



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

Selenium

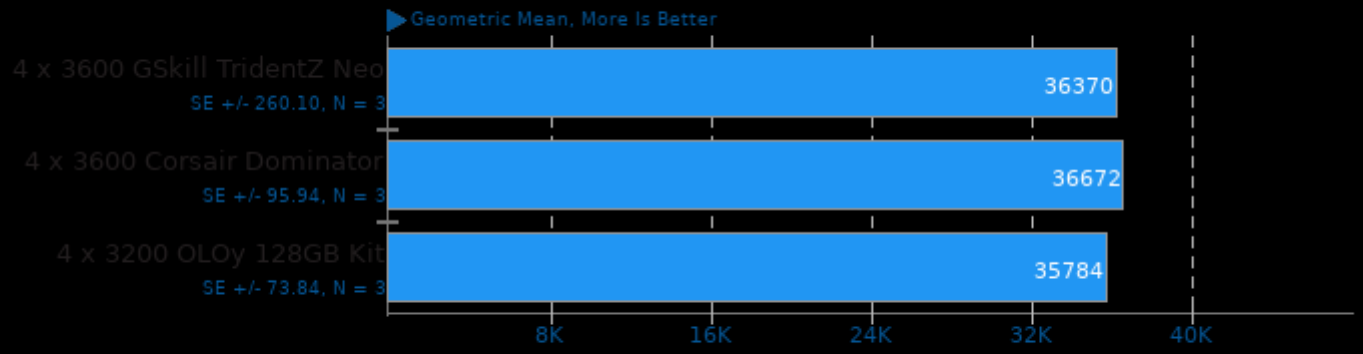
Benchmark: ARES-6 - Browser: Firefox



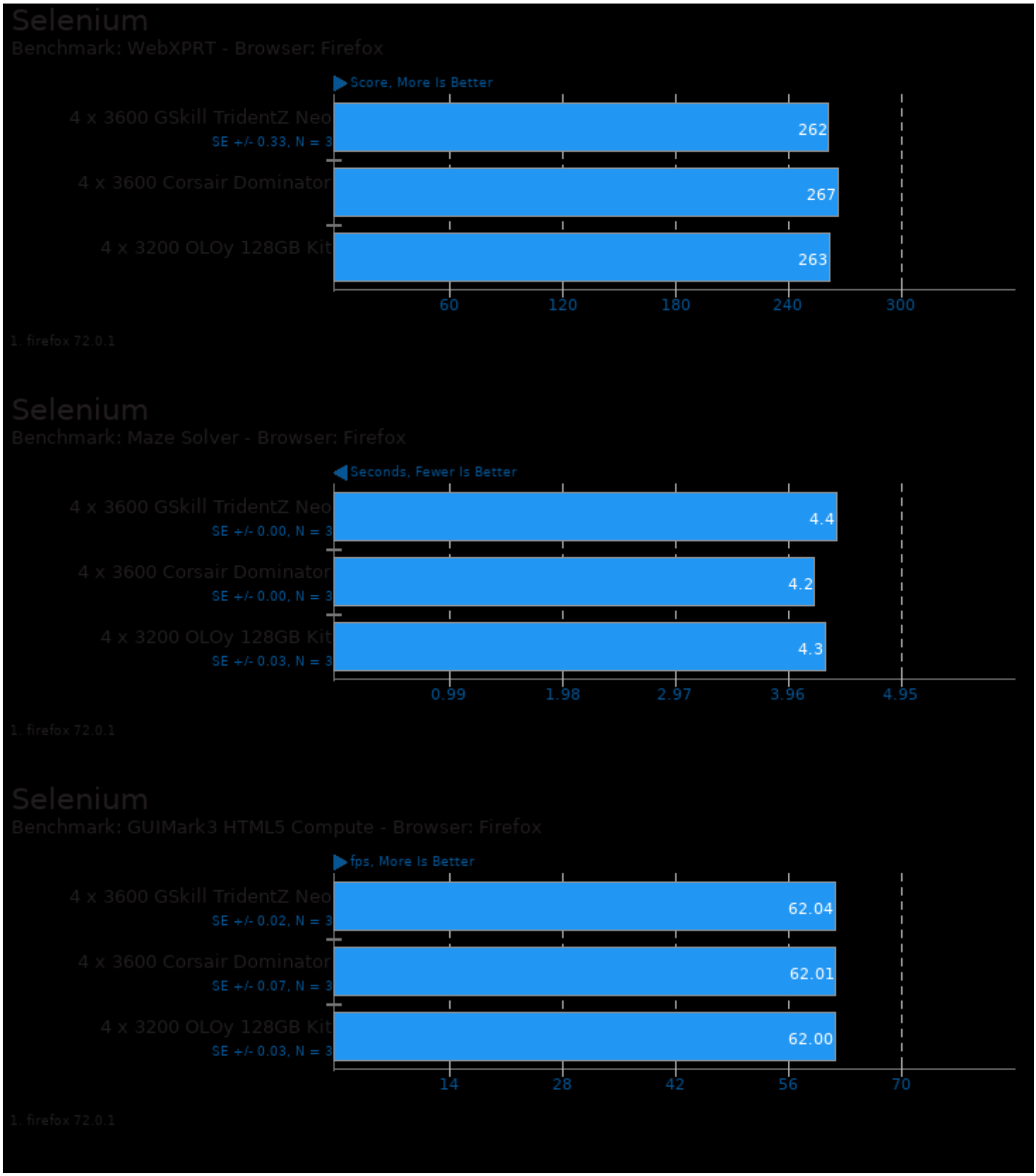
1. firefox 72.0.1

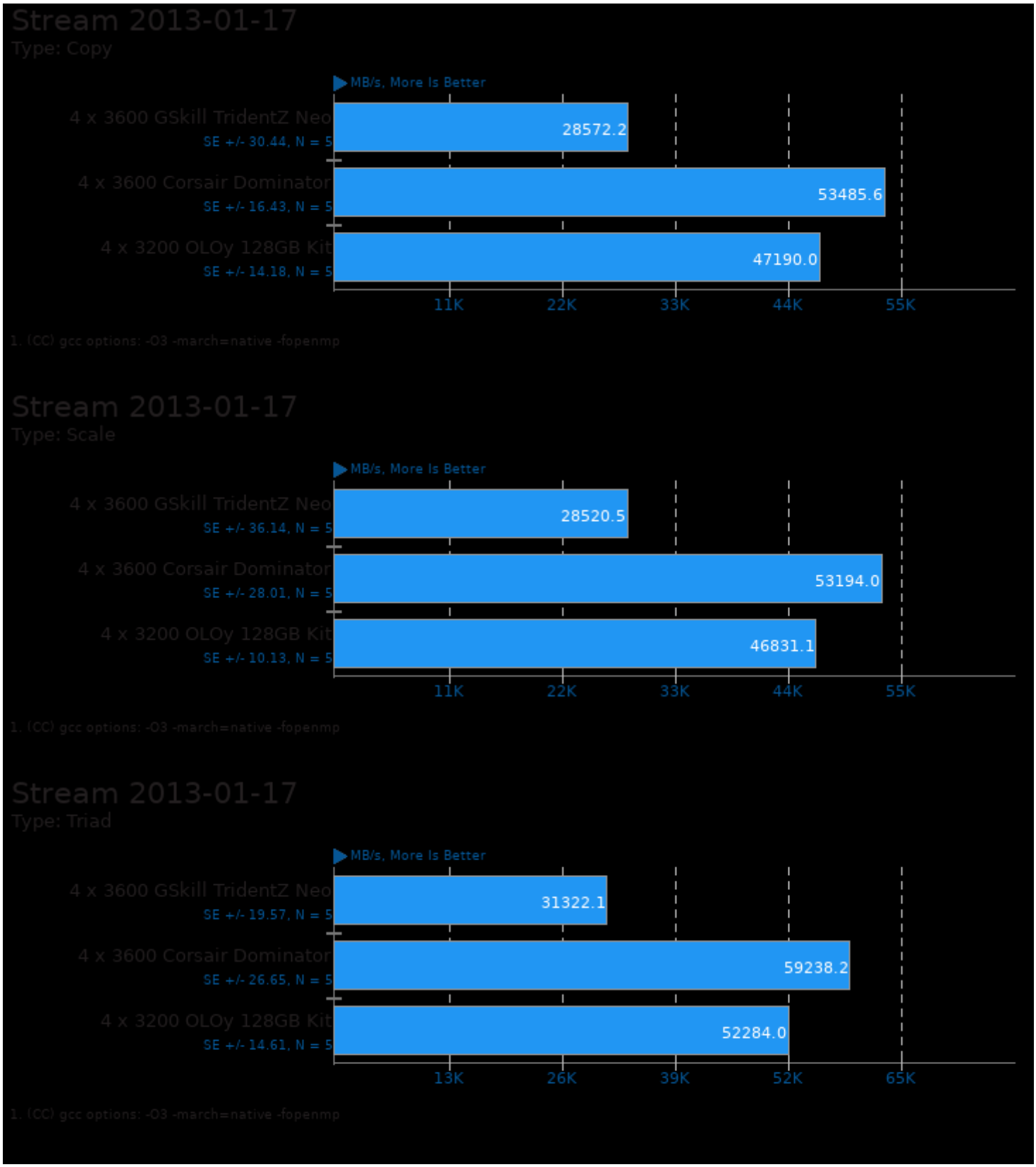
Selenium

Benchmark: Octane - Browser: Firefox



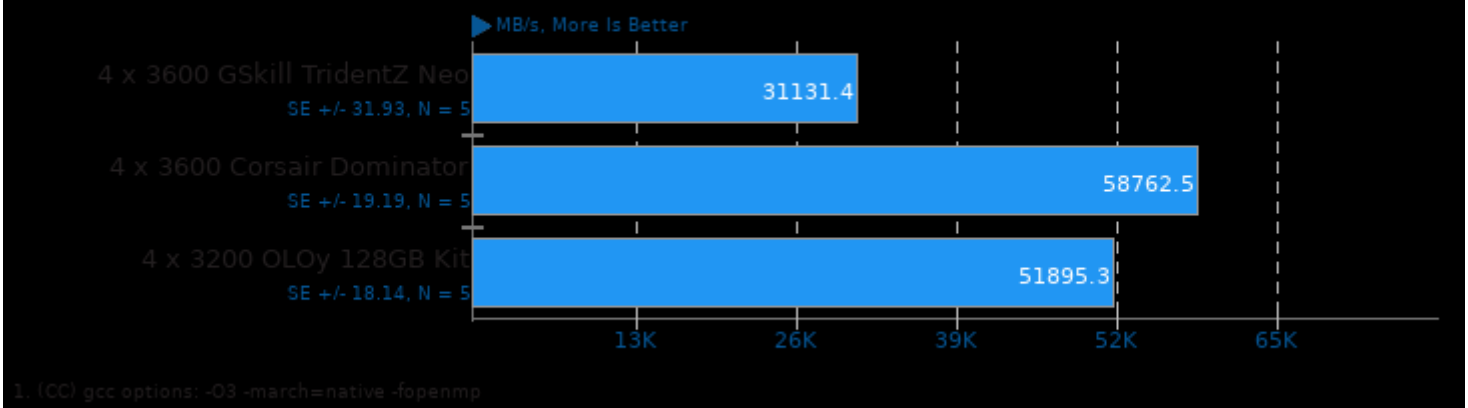
1. firefox 72.0.1


Selenium
Benchmark: WebXPRT - Browser: Firefox
Score, More Is Better
4 x 3600 GSkill TridentZ Neo
SE +/- 0.33, N = 3
262
4 x 3600 Corsair Dominator
267
4 x 3200 OLOy 128GB Kit
263
60
120
180
240
300
1. firefox 72.0.1
Selenium
Benchmark: Maze Solver - Browser: Firefox
Seconds, Fewer Is Better
4 x 3600 GSkill TridentZ Neo
SE +/- 0.00, N = 3
4.4
4 x 3600 Corsair Dominator
SE +/- 0.00, N = 3
4.2
4 x 3200 OLOy 128GB Kit
SE +/- 0.03, N = 3
4.3
0.99
1.98
2.97
3.96
4.95
1. firefox 72.0.1
Selenium
Benchmark: GUIMark3 HTML5 Compute - Browser: Firefox
fps, More Is Better
4 x 3600 GSkill TridentZ Neo
SE +/- 0.02, N = 3
62.04
4 x 3600 Corsair Dominator
SE +/- 0.07, N = 3
62.01
4 x 3200 OLOy 128GB Kit
SE +/- 0.03, N = 3
62.00
14
28
42
56
70
1. firefox 72.0.1


Stream 2013-01-17
Type: Copy
MB/s, More Is Better
4 x 3600 GSkill TridentZ Neo
SE +/- 30.44, N = 5
28572.2
4 x 3600 Corsair Dominator
SE +/- 16.43, N = 5
53485.6
4 x 3200 OLOy 128GB Kit
SE +/- 14.18, N = 5
47190.0
11K
22K
33K
44K
55K
1. (CC) gcc options: -O3 -march=native -fopenmp
Stream 2013-01-17
Type: Scale
MB/s, More Is Better
4 x 3600 GSkill TridentZ Neo
SE +/- 36.14, N = 5
28520.5
4 x 3600 Corsair Dominator
SE +/- 28.01, N = 5
53194.0
4 x 3200 OLOy 128GB Kit
SE +/- 10.13, N = 5
46831.1
11K
22K
33K
44K
55K
1. (CC) gcc options: -O3 -march=native -fopenmp
Stream 2013-01-17
Type: Triad
MB/s, More Is Better
4 x 3600 GSkill TridentZ Neo
SE +/- 19.57, N = 5
31322.1
4 x 3600 Corsair Dominator
SE +/- 26.65, N = 5
59238.2
4 x 3200 OLOy 128GB Kit
SE +/- 14.61, N = 5
52284.0
13K
26K
39K
52K
65K
1. (CC) gcc options: -O3 -march=native -fopenmp

Stream 2013-01-17

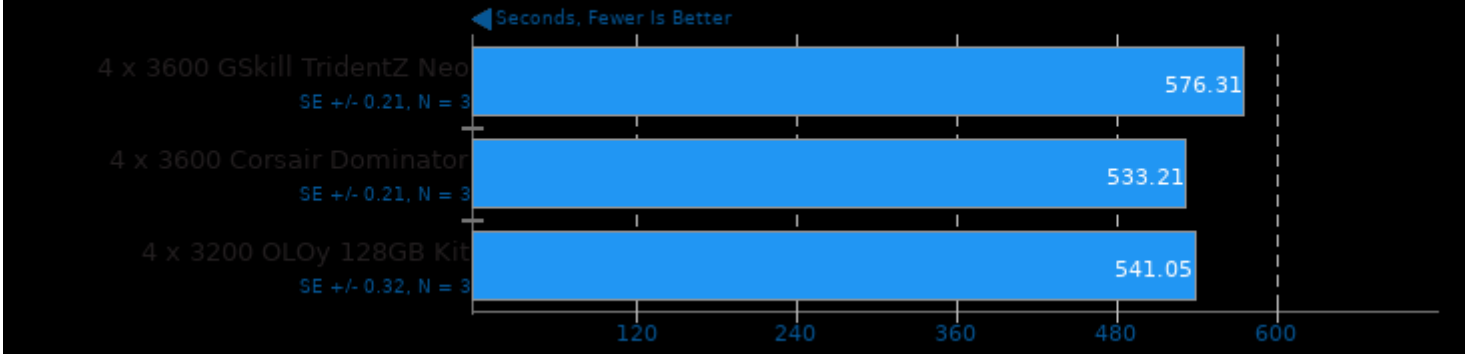
Type: Add



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

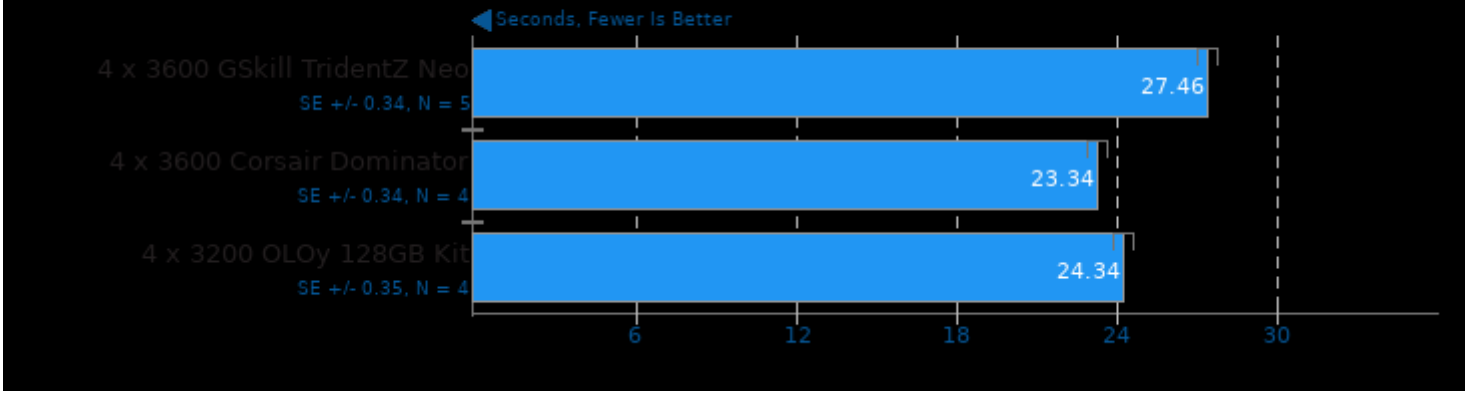
Timed GCC Compilation 8.2

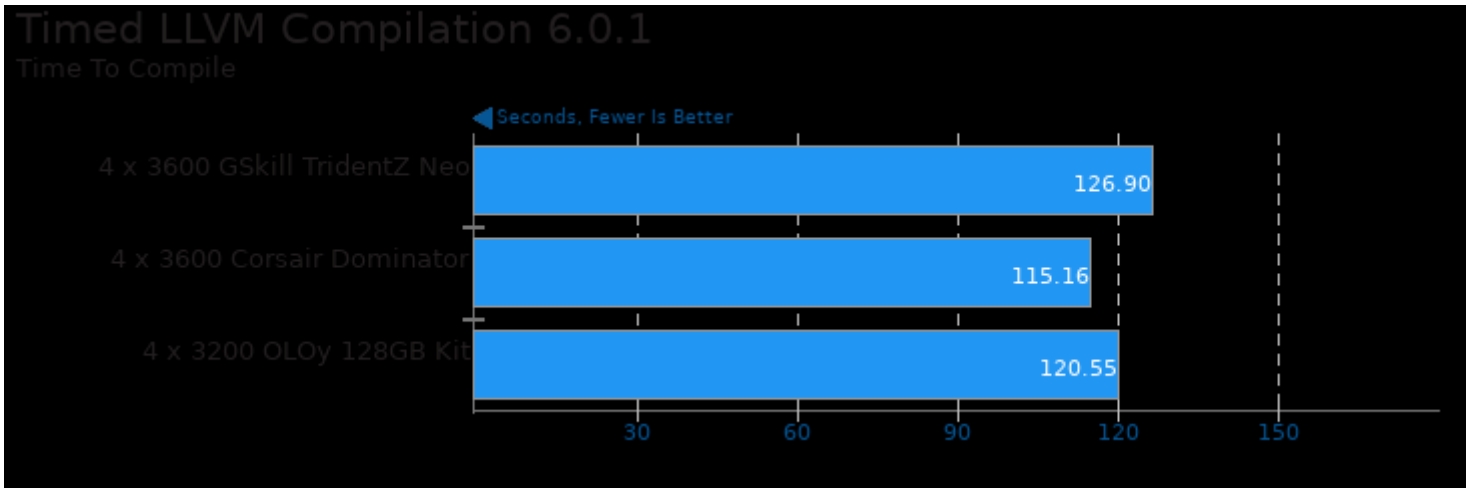
Time To Compile



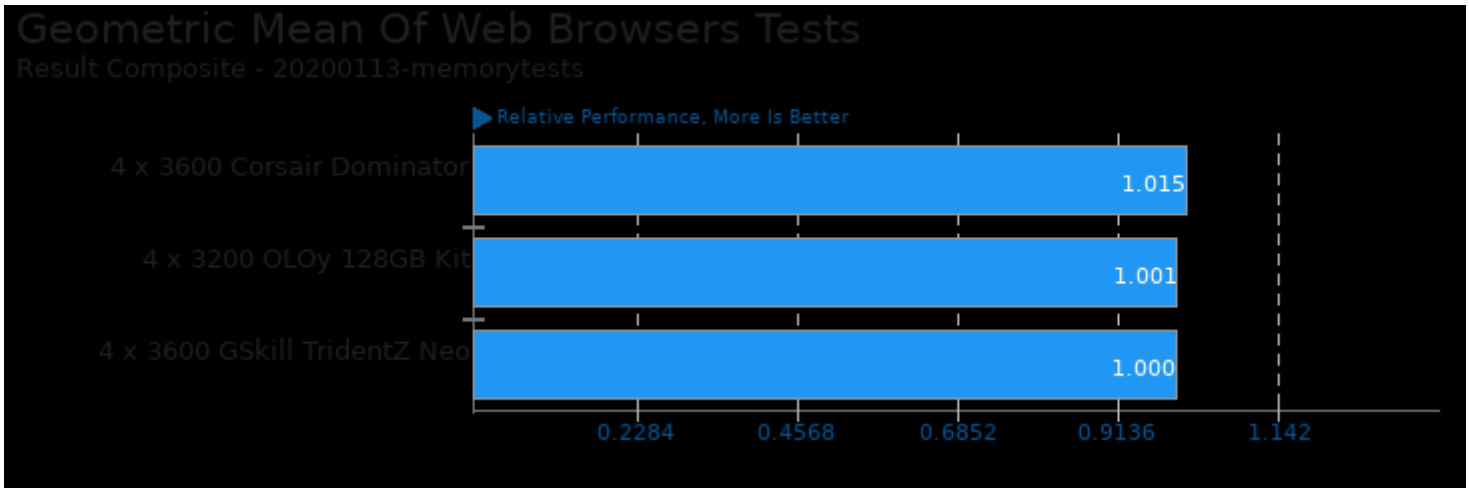
Timed Linux Kernel Compilation 5.4

Time To Compile

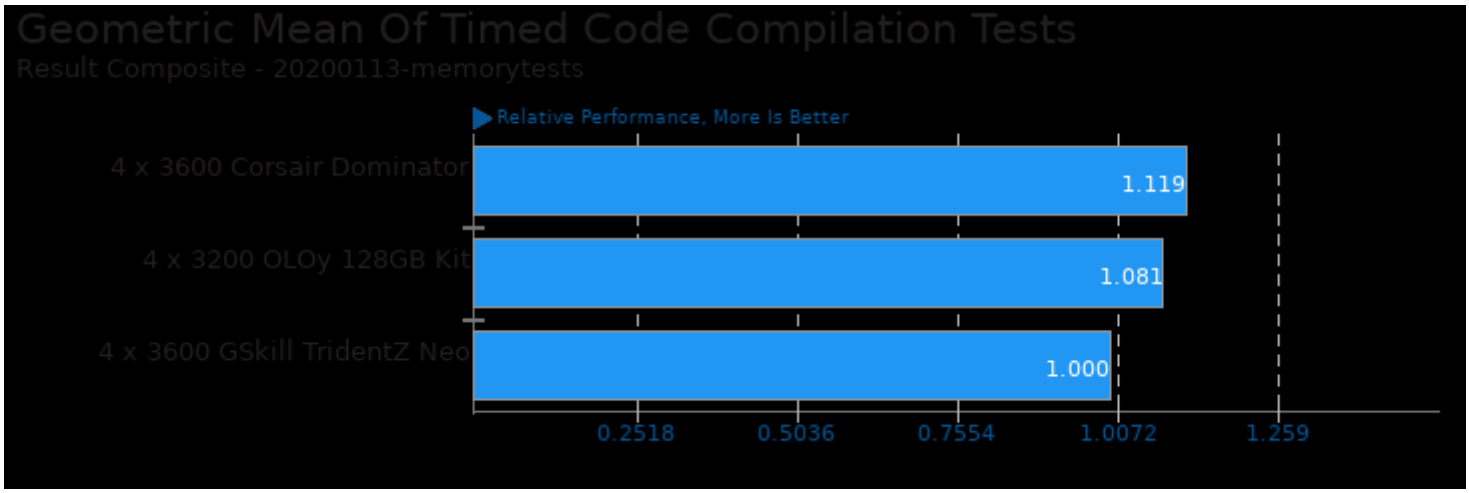



Timed LLVM Compilation 6.0.1
Time To Compile
Seconds, Fewer Is Better
4 x 3600 GSkill TridentZ Neo
126.90
4 x 3600 Corsair Dominator
115.16
4 x 3200 OLOy 128GB Kit
120.55
30
60
90
120
150

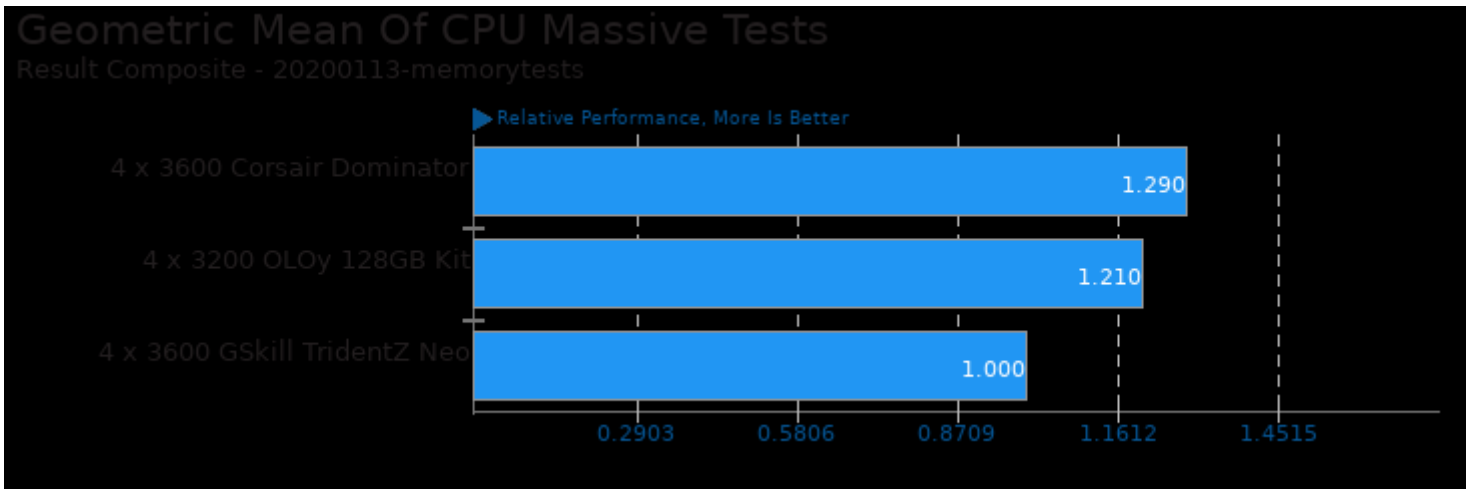
These geometric means are based upon test groupings / test suites for this result file.



Geometric mean based upon tests: system/selenium

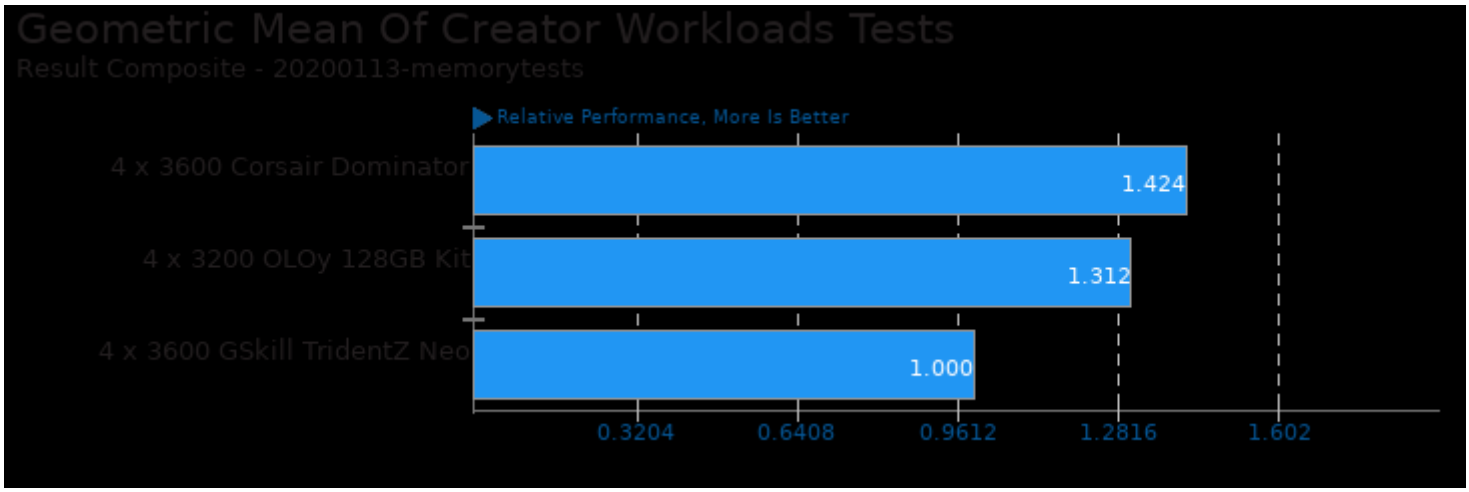


Geometric mean based upon tests: pts/build-linux-kernel, pts/build-gcc and pts/build-llvm



Geometric mean based upon tests: pts/build-gcc, pts/build-llvm, pts/build-linux-kernel, pts/ramspeed, pts/stream, pts/v-ray and system/darktable

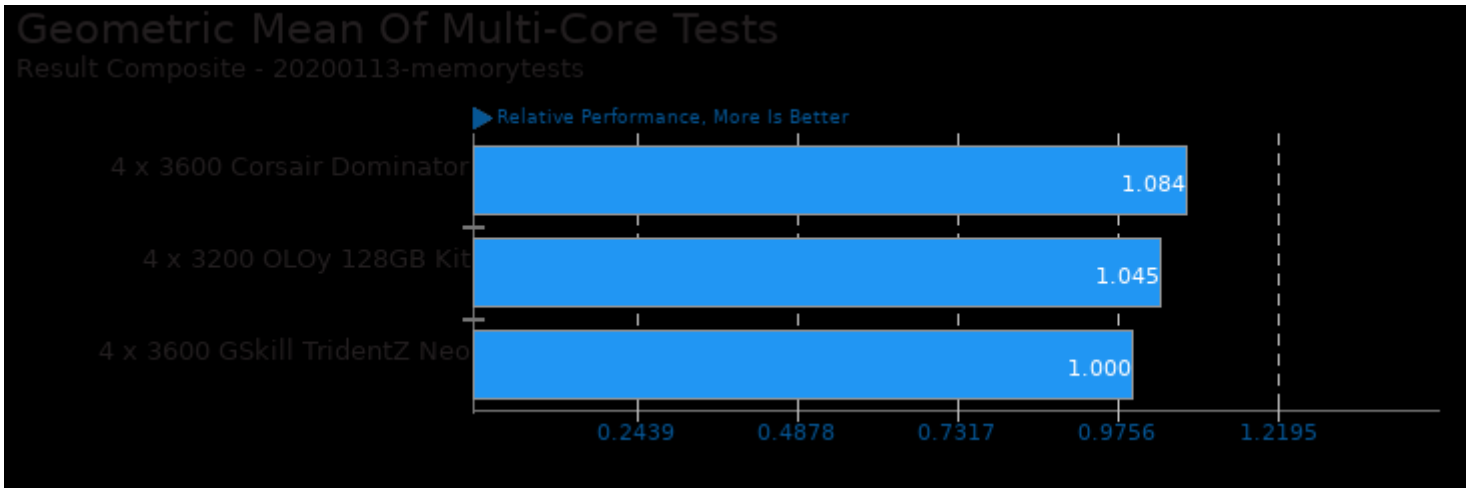
20200113-memorytests



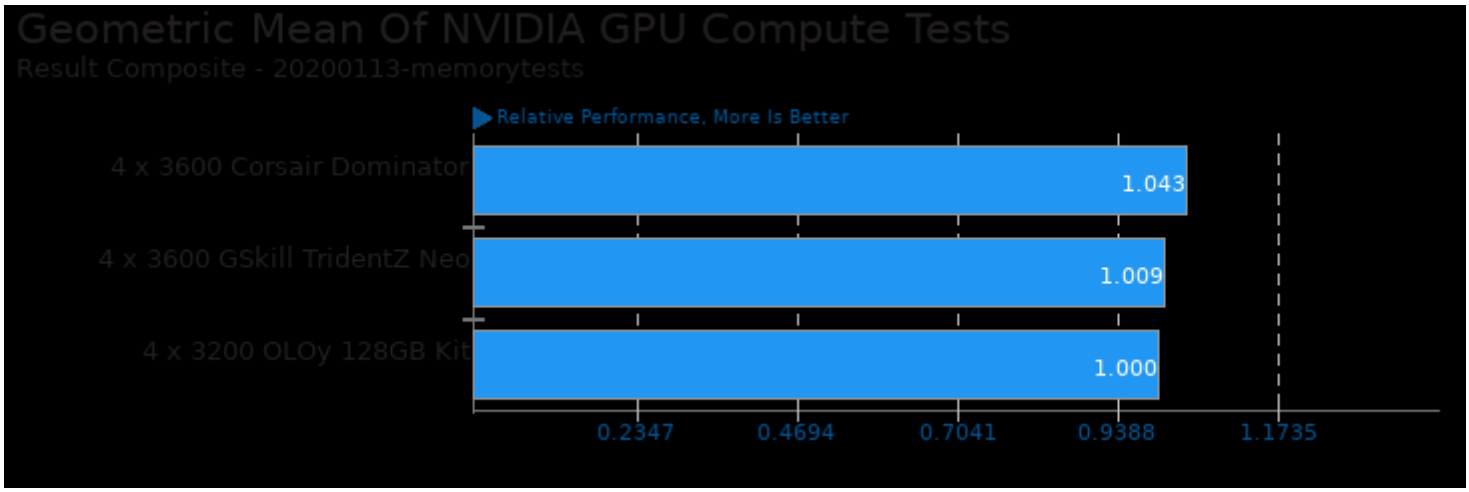
Geometric mean based upon tests: pts/v-ray, pts/indigobench and system/darktable



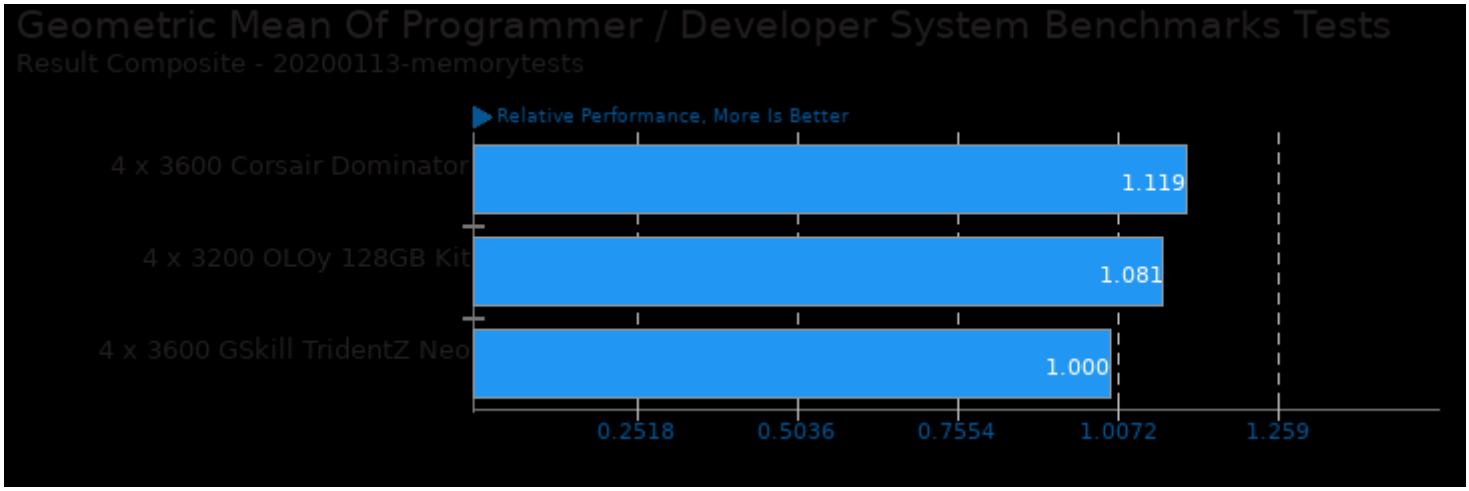
Geometric mean based upon tests: pts/ramspeed and pts/stream



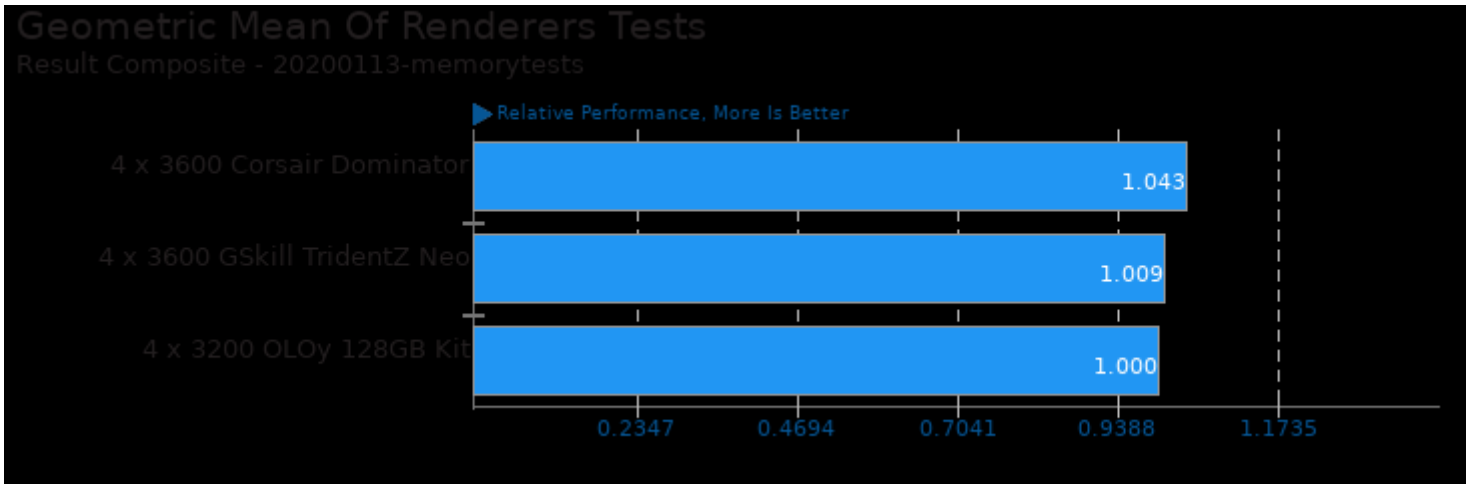
Geometric mean based upon tests: pts/build-linux-kernel, pts/build-gcc, pts/build-llvm, pts/v-ray and pts/indigobench



Geometric mean based upon tests: pts/indigobench and pts/v-ray

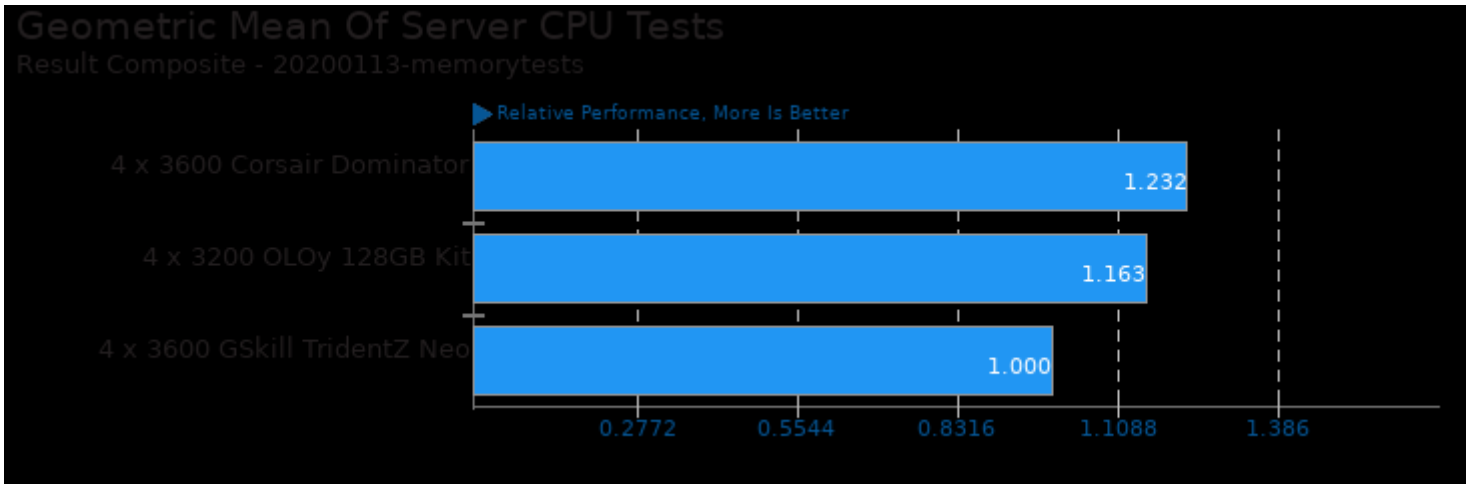


Geometric mean based upon tests: pts/build-linux-kernel, pts/build-gcc and pts/build-llvm



Geometric mean based upon tests: pts/v-ray and pts/indigobench

20200113-memorytests



Geometric mean based upon tests: pts/build-gcc, pts/build-linux-kernel, pts/build-llvm, pts/ramspeed and pts/stream

This file was automatically generated via the Phoronix Test Suite benchmarking software on Thursday, 28 March 2024 09:41.