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test-rw

Intel Core i7-9750H testing with a Dell 0F7T8V (1.14.0 BIOS) and Intel UHD 630 CFL GT2 on Ubuntu 22.04 via the Phoronix Test Suite.

Automated Executive Summary

RW SO-Dimm 2666 had the most wins, coming in first place for 86% of the tests.

Based on the geometric mean of all complete results, the fastest (RW SO-Dimm 2666) was 1.117x the speed of the slowest (RW SO-Dimm 3200).

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

Stream (Type: Copy) at 1.21x
RAMspeed SMP (Type: Add - Benchmark: Integer) at 1.184x
Stream (Type: Triad) at 1.184x
Stream (Type: Add) at 1.173x
RAMspeed SMP (Type: Triad - Benchmark: Integer) at 1.157x
Tinymembench (Standard Memcpy) at 1.156x
RAMspeed SMP (Type: Copy - Benchmark: Integer) at 1.154x
RAMspeed SMP (Type: Average - Benchmark: Floating Point) at 1.153x
RAMspeed SMP (Type: Scale - Benchmark: Integer) at 1.151x

Stream (Type: Scale) at 1.15x.

Test Systems:

RW SO-Dimm 2666

Processor: Intel Core i7-9750H @ 4.50GHz (6 Cores / 12 Threads), Motherboard: Dell 0F7T8V (1.14.0 BIOS), Chipset: Intel Cannon Lake PCH, Memory: 16GB, Disk: SK hynix BC501 NVMe 512GB, Graphics: Intel CoffeeLake-H GT2 [UHD 630] (1150MHz), Audio: Realtek ALC3204, Network: Realtek Device 2502 + Intel Cannon Lake PCH CNVi WiFi

OS: Ubuntu 22.04, Kernel: 5.15.0-40-generic (x86_64), Desktop: GNOME Shell 42.0, Display Server: X Server + Wayland, Vulkan: 1.2.204, Compiler: GCC 11.2.0, File-System: ext4, Screen Resolution: 1920x1080

Kernel Notes: Transparent Huge Pages: madvise
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --enable-cet --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-link-serialization=2 --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-11-gBFGDP/gcc-11-11.2.0/debian/tmp-nvptx/usr,amdgcn-amdhsa=/build/gcc-11-gBFGDP/gcc-11-11.2.0/debian/tmp-gcn/usr --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: intel_pstate powersave (EPP: balance_performance) - CPU Microcode: 0xea - Thermald 2.4.9
Security Notes: itlb_multihit: KVM: Mitigation of VMX disabled + l1tf: Mitigation of PTE Inversion; VMX: conditional cache flushes SMT vulnerable + mds: Mitigation of Clear buffers; SMT vulnerable + meltdown: Mitigation of PTI + mmio_stale_data: Mitigation of Clear buffers; SMT vulnerable + 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 Retpolines IBPB: conditional IBRS_FW STIBP: conditional RSB filling + srbds: Mitigation of Microcode + tsx_async_abort: Not affected

RW SO-Dimm 3200

Processor: Intel Core i7-9750H @ 4.50GHz (6 Cores / 12 Threads), Motherboard: Dell 0F7T8V (1.14.0 BIOS), Chipset: Intel Cannon Lake PCH, Memory: 16GB, Disk: SK hynix BC501 NVMe 512GB, Graphics: Intel UHD 630 CFL GT2 (1150MHz), Audio: Realtek ALC3204, Network: Realtek Device 2502 + Intel Cannon Lake PCH CNVi WiFi

OS: Ubuntu 22.04, Kernel: 5.15.0-40-generic (x86_64), Desktop: GNOME Shell 42.0, Display Server: X Server + Wayland, OpenGL: 4.6 Mesa 22.0.1, Vulkan: 1.2.204, Compiler: GCC 11.2.0, File-System: ext4, Screen Resolution: 1920x1080

Kernel Notes: Transparent Huge Pages: madvise
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --enable-cet --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-link-serialization=2 --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-11-gBFGDP/gcc-11-11.2.0/debian/tmp-nvptx/usr,amdgcn-amdhsa=/build/gcc-11-gBFGDP/gcc-11-11.2.0/debian/tmp-gcn/usr --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: intel_pstate powersave (EPP: balance_performance) - CPU Microcode: 0xea - Thermald 2.4.9
Security Notes: itlb_multihit: KVM: Mitigation of VMX disabled + l1tf: Mitigation of PTE Inversion; VMX: conditional cache flushes SMT vulnerable + mds: Mitigation of Clear buffers; SMT vulnerable + meltdown: Mitigation of PTI + mmio_stale_data: Mitigation of Clear buffers; SMT vulnerable + 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 Retpolines IBPB: conditional IBRS_FW STIBP: conditional RSB filling + srbds: Mitigation of Microcode + tsx_async_abort: Not affected

test-rw

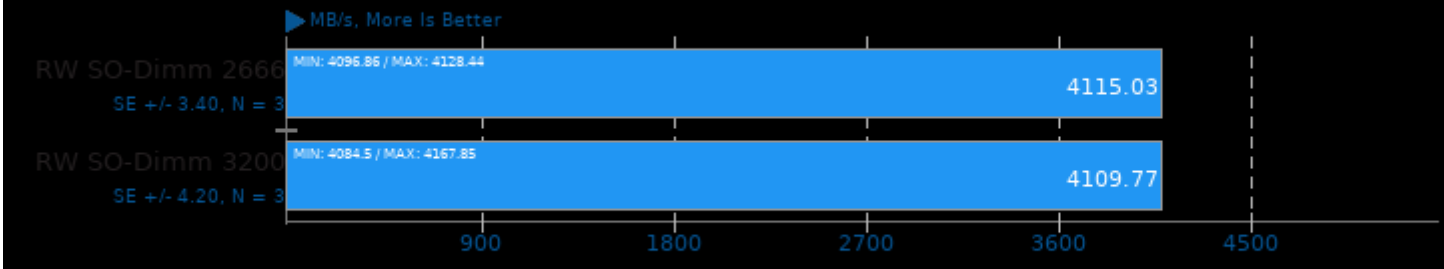
	RW SO-Dimm 2666	RW SO-Dimm 3200
CacheBench - Read Cache (MB/s)	**4115**	**4110**
Normalized	100%	99.87%
Standard Deviation	0.1%	0.2%
CacheBench - Write Cache (MB/s)	**30182**	**30342**
Normalized	99.47%	100%
Standard Deviation	0.5%	0.6%
MBW - Memory Copy - 1024 MiB (MiB/s)	**15360**	**14293**
Normalized	100%	93.05%
Standard Deviation	2.2%	1.9%
MBW - M.C.F.B.S - 1024 MiB (MiB/s)	**10946**	**9929**
Normalized	100%	90.71%
Standard Deviation	1%	1.1%
RAMspeed SMP - Add - Integer (MB/s)	**26326**	**22232**
Normalized	100%	84.45%
Standard Deviation	0.3%	3.2%
RAMspeed SMP - Copy - Integer (MB/s)	**23383**	**20261**
Normalized	100%	86.65%
Standard Deviation	0.7%	0.1%
RAMspeed SMP - Scale - Integer (MB/s)	**23484**	**20398**
Normalized	100%	86.86%
Standard Deviation	0.5%	0.6%
RAMspeed SMP - Triad - Integer (MB/s)	**25881**	**22372**
Normalized	100%	86.44%
Standard Deviation	0.3%	0.1%
RAMspeed SMP - Average - Integer (MB/s)	**24507**	**21415**
Normalized	100%	87.38%
Standard Deviation	0.2%	0.7%
RAMspeed SMP - Add - Floating Point (MB/s)	**25866**	**22514**
Normalized	100%	87.04%
Standard Deviation	0.2%	0.5%
RAMspeed SMP - Copy - Floating Point (MB/s)	**23242**	**20237**
Normalized	100%	87.07%
Standard Deviation	0.1%	0.2%
RAMspeed SMP - Scale - Floating Point (MB/s)	**23405**	**20369**
Normalized	100%	87.03%
Standard Deviation	0.4%	0.4%
RAMspeed SMP - Triad - Floating Point (MB/s)	**25720**	**22510**
Normalized	100%	87.52%
Standard Deviation	0.2%	0.2%
RAMspeed SMP - Average - Floating Point (MB/s)	**24659**	**21389**
Normalized	100%	86.74%
Standard Deviation	0.7%	0.2%
Stream - Copy (MB/s)	**31509**	**26041**
Normalized	100%	82.65%
Standard Deviation	0.1%	0.5%
Stream - Scale (MB/s)	**21253**	**18475**
Normalized	100%	86.93%
Standard Deviation	0.1%	0.8%
Stream - Triad (MB/s)	**23547**	**19889**
Normalized	100%	84.46%
Standard Deviation	0%	0.6%
Stream - Add (MB/s)	**23561**	**20080**
Normalized	100%	85.22%
Standard Deviation	0.1%	0.7%

test-rw

t-test1 - 1 (sec)	**19.780**	**19.522**
Normalized	98.7%	100%
Standard Deviation	2.4%	0.2%
t-test1 - 2 (sec)	**6.801**	**6.668**
Normalized	98.04%	100%
Standard Deviation	0.9%	1.7%
Tinymembench - Standard Memcpy (MB/s)	**18351**	**15873**
Normalized	100%	86.5%
Standard Deviation	1.2%	0.5%
Tinymembench - Standard Memset (MB/s)	**34108**	**31676**
Normalized	100%	92.87%
Standard Deviation	0.2%	0.4%

CacheBench

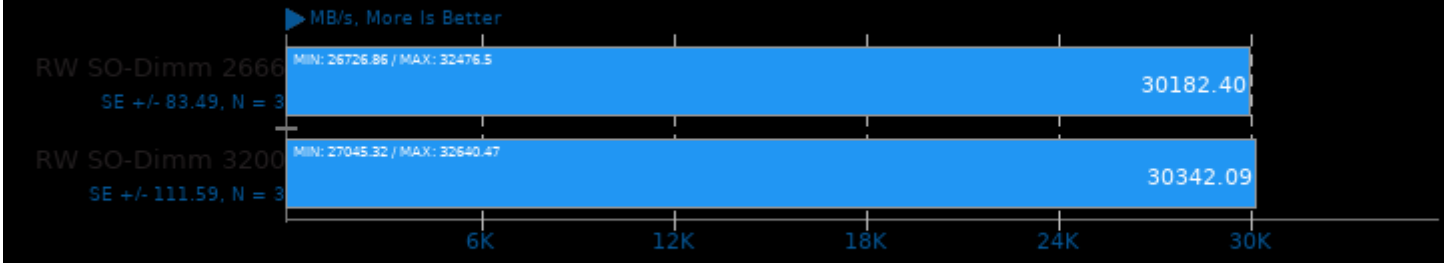
Read Cache



1. (CC) gcc options: -lrt

CacheBench

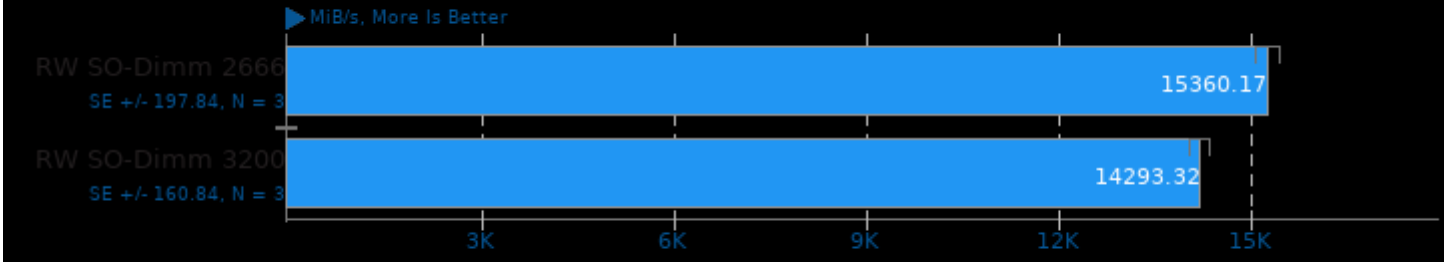
Write Cache



1. (CC) gcc options: -lrt

MBW 2018-09-08

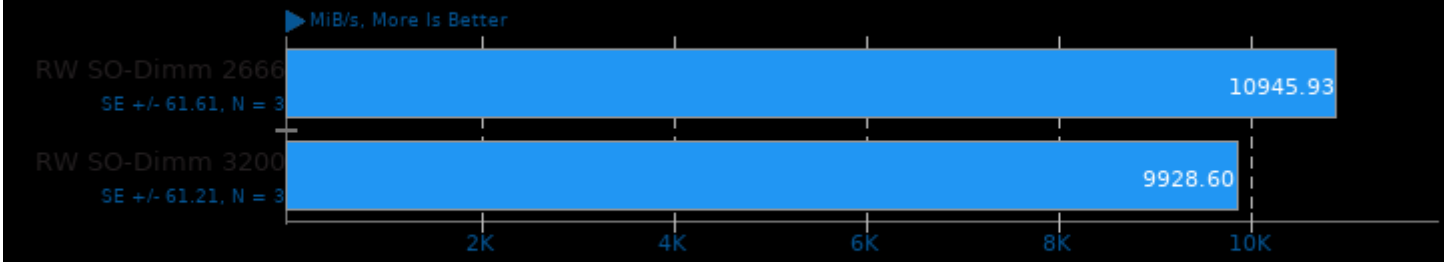
Test: Memory Copy - Array Size: 1024 MiB



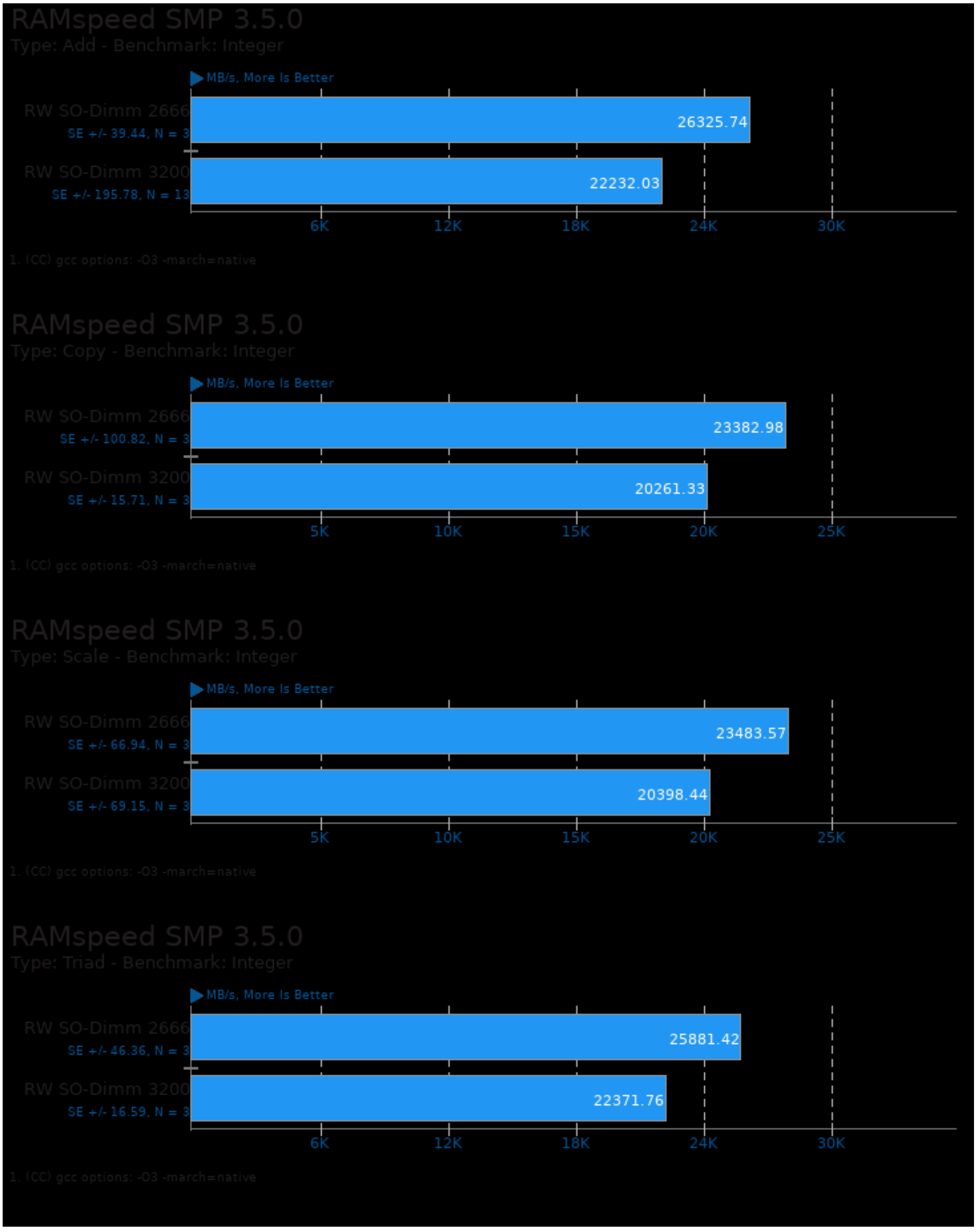
1. (CC) gcc options: -O3 -march=native

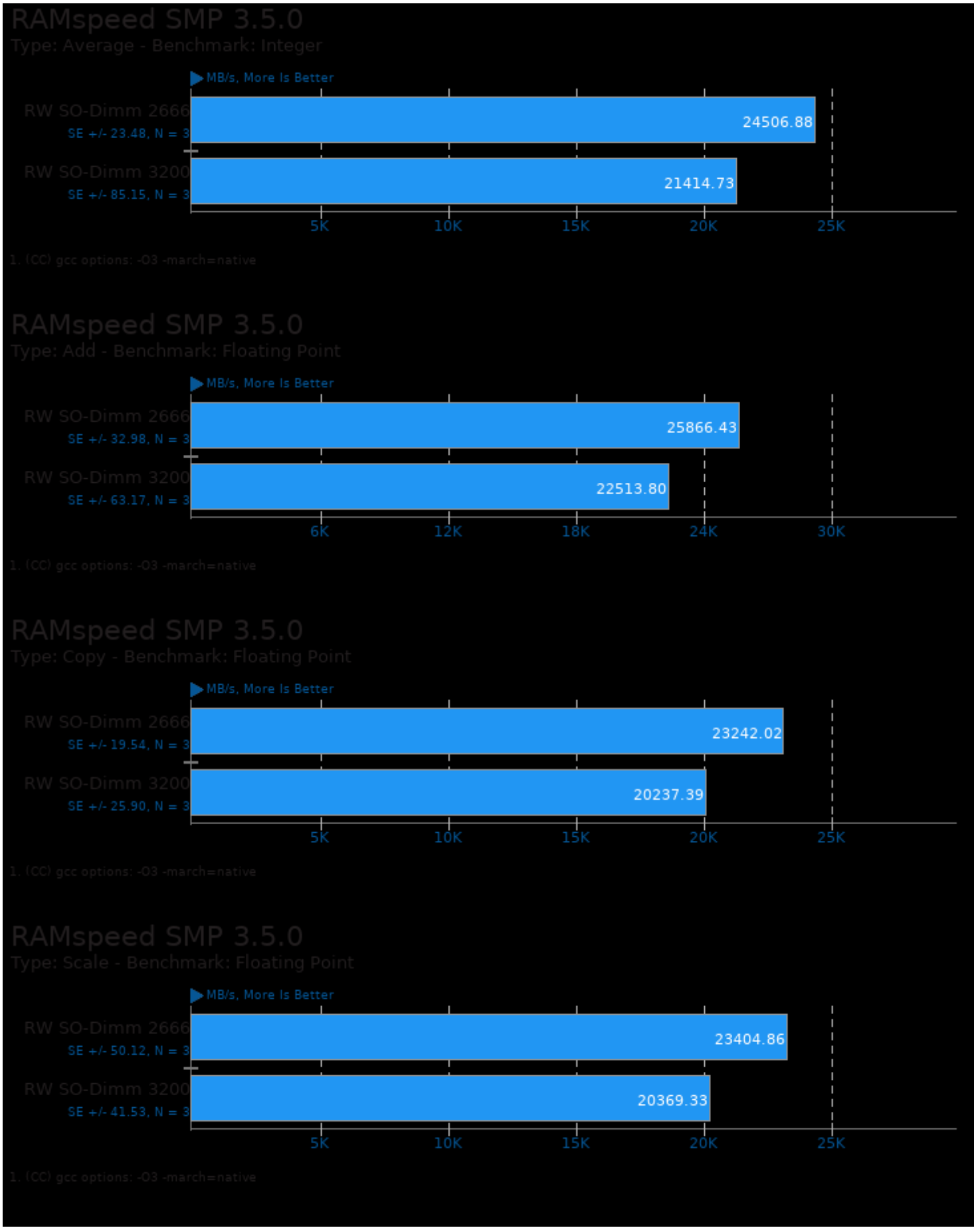
MBW 2018-09-08

Test: Memory Copy, Fixed Block Size - Array Size: 1024 MiB



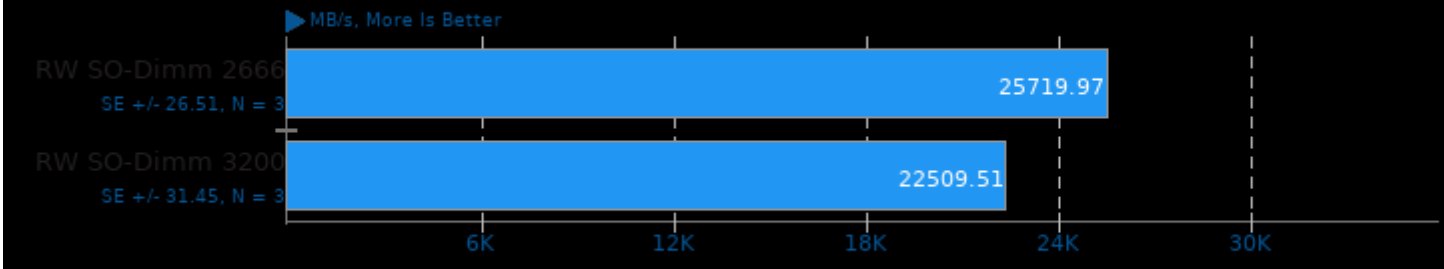
1. (CC) gcc options: -O3 -march=native


RAMspeed SMP 3.5.0
Type: Add - Benchmark: Integer
MB/s, More Is Better
RW SO-Dimm 2666
SE +/- 39.44, N = 3
26325.74
RW SO-Dimm 3200
SE +/- 195.78, N = 13
22232.03
6K
12K
18K
24K
30K
1. (CC) gcc options: -O3 -march=native
RAMspeed SMP 3.5.0
Type: Copy - Benchmark: Integer
MB/s, More Is Better
RW SO-Dimm 2666
SE +/- 100.82, N = 3
23382.98
RW SO-Dimm 3200
SE +/- 15.71, N = 3
20261.33
5K
10K
15K
20K
25K
1. (CC) gcc options: -O3 -march=native
RAMspeed SMP 3.5.0
Type: Scale - Benchmark: Integer
MB/s, More Is Better
RW SO-Dimm 2666
SE +/- 66.94, N = 3
23483.57
RW SO-Dimm 3200
SE +/- 69.15, N = 3
20398.44
5K
10K
15K
20K
25K
1. (CC) gcc options: -O3 -march=native
RAMspeed SMP 3.5.0
Type: Triad - Benchmark: Integer
MB/s, More Is Better
RW SO-Dimm 2666
SE +/- 46.36, N = 3
25881.42
RW SO-Dimm 3200
SE +/- 16.59, N = 3
22371.76
6K
12K
18K
24K
30K
1. (CC) gcc options: -O3 -march=native


RAMspeed SMP 3.5.0
Type: Average - Benchmark: Integer
MB/s, More Is Better
RW SO-Dimm 2666
SE +/- 23.48, N = 3
24506.88
RW SO-Dimm 3200
SE +/- 85.15, N = 3
21414.73
5K
10K
15K
20K
25K
1. (CC) gcc options: -O3 -march=native
RAMspeed SMP 3.5.0
Type: Add - Benchmark: Floating Point
MB/s, More Is Better
RW SO-Dimm 2666
SE +/- 32.98, N = 3
25866.43
RW SO-Dimm 3200
SE +/- 63.17, N = 3
22513.80
6K
12K
18K
24K
30K
1. (CC) gcc options: -O3 -march=native
RAMspeed SMP 3.5.0
Type: Copy - Benchmark: Floating Point
MB/s, More Is Better
RW SO-Dimm 2666
SE +/- 19.54, N = 3
23242.02
RW SO-Dimm 3200
SE +/- 25.90, N = 3
20237.39
5K
10K
15K
20K
25K
1. (CC) gcc options: -O3 -march=native
RAMspeed SMP 3.5.0
Type: Scale - Benchmark: Floating Point
MB/s, More Is Better
RW SO-Dimm 2666
SE +/- 50.12, N = 3
23404.86
RW SO-Dimm 3200
SE +/- 41.53, N = 3
20369.33
5K
10K
15K
20K
25K
1. (CC) gcc options: -O3 -march=native

RAMspeed SMP 3.5.0

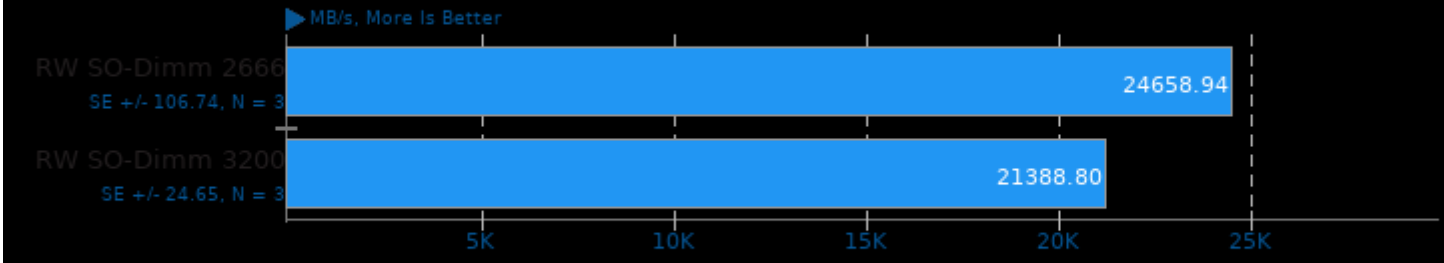
Type: Triad - Benchmark: Floating Point



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

RAMspeed SMP 3.5.0

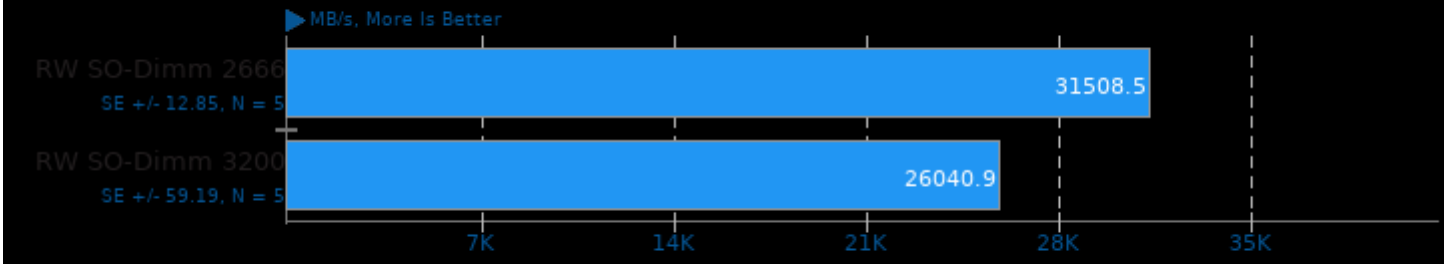
Type: Average - Benchmark: Floating Point



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

Stream 2013-01-17

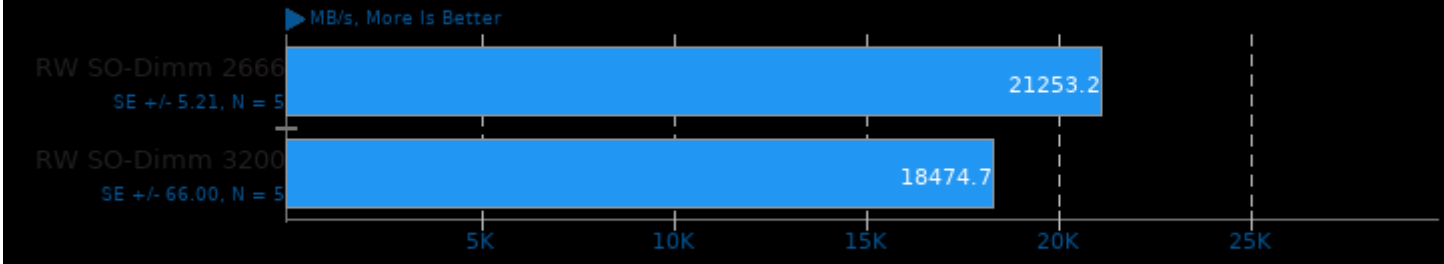
Type: Copy



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

Stream 2013-01-17

Type: Scale

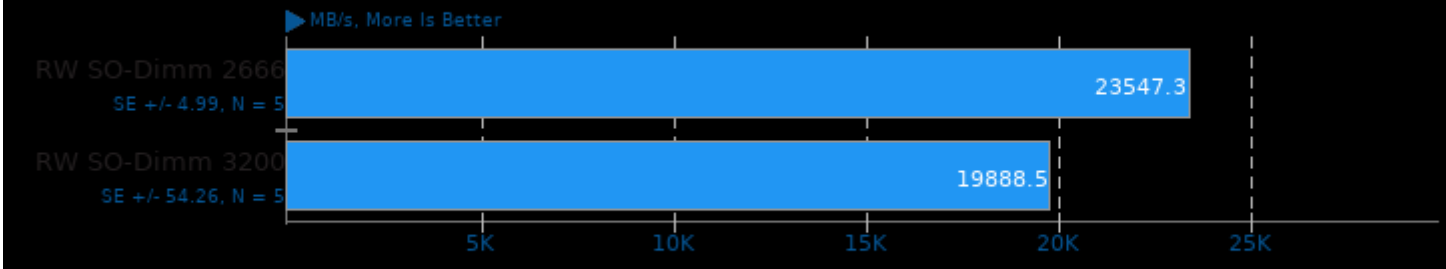


1. (CC) gcc options: -O3 -march=native -fopenmp

test-rw

Stream 2013-01-17

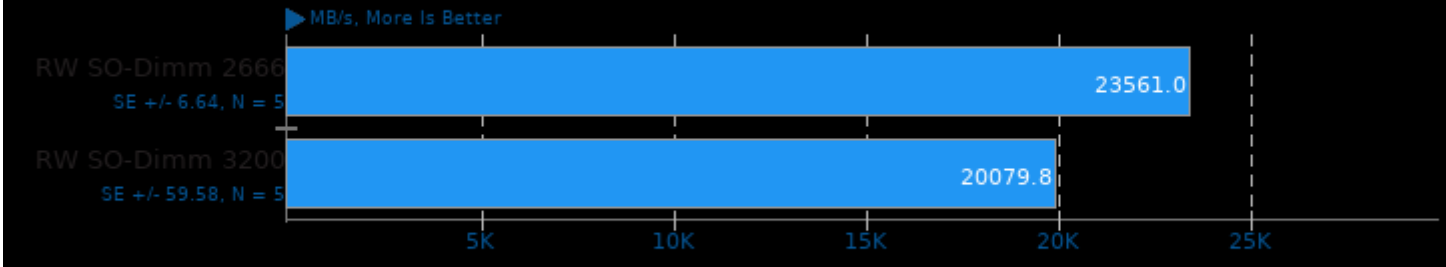
Type: Triad



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

Stream 2013-01-17

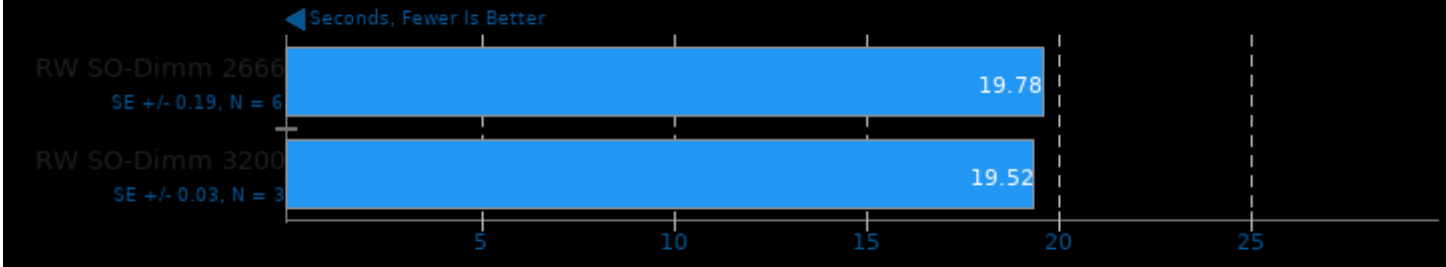
Type: Add



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

t-test1 2017-01-13

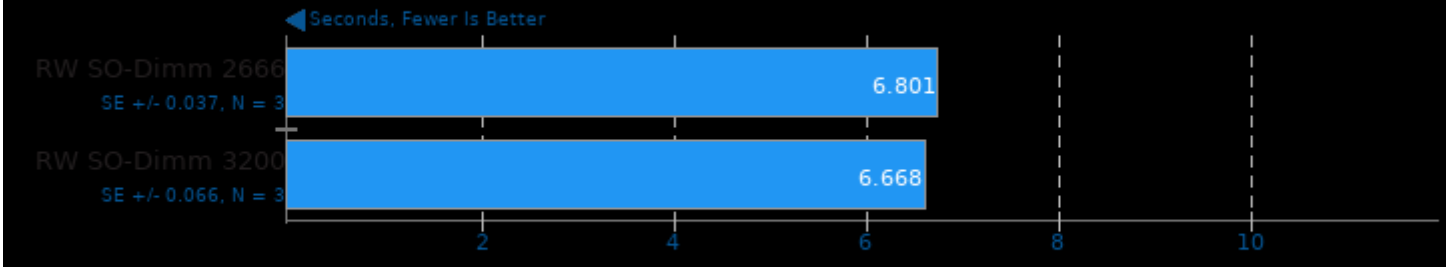
Threads: 1



1. (CC) gcc options: -pthread

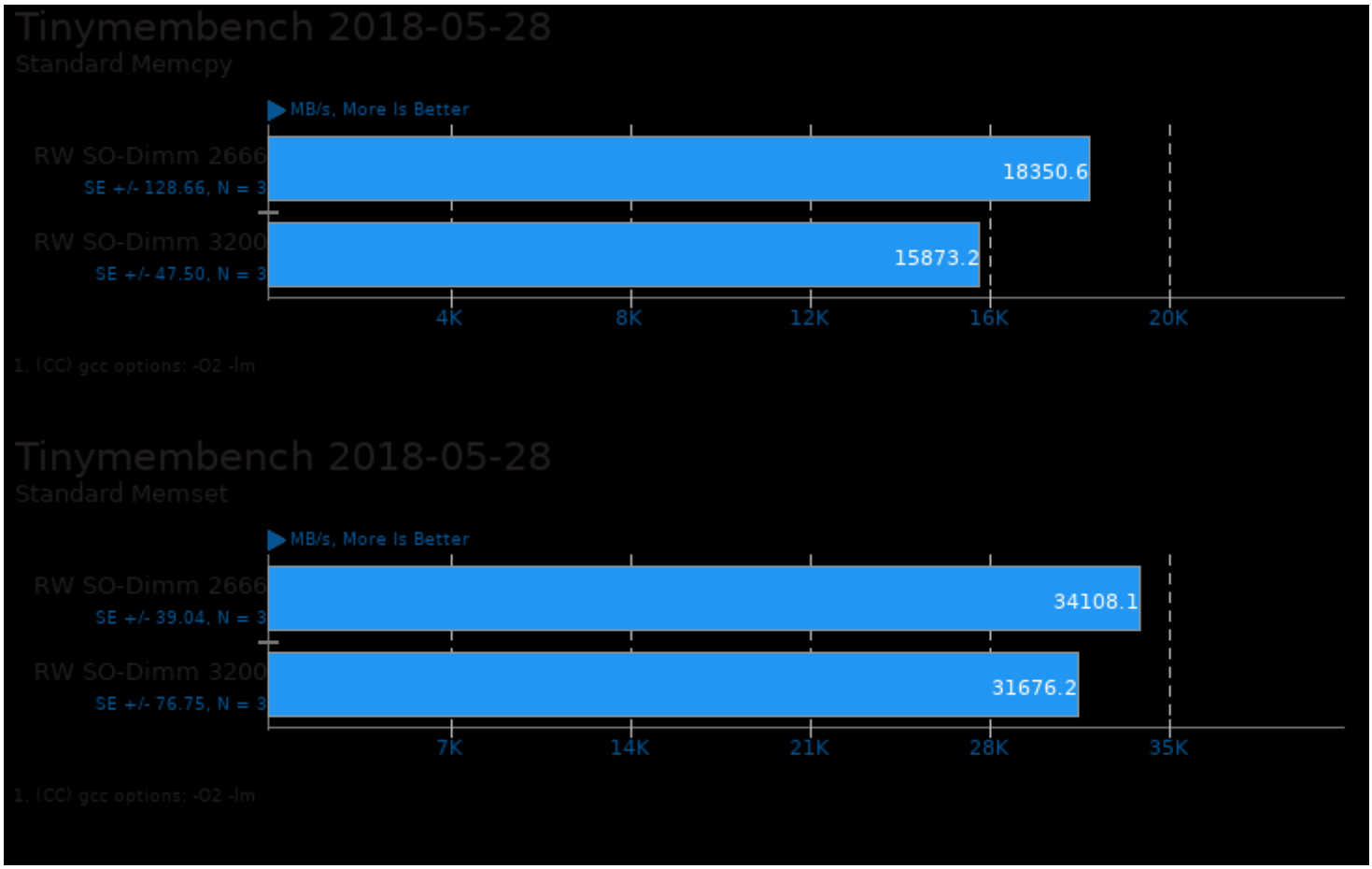
t-test1 2017-01-13

Threads: 2



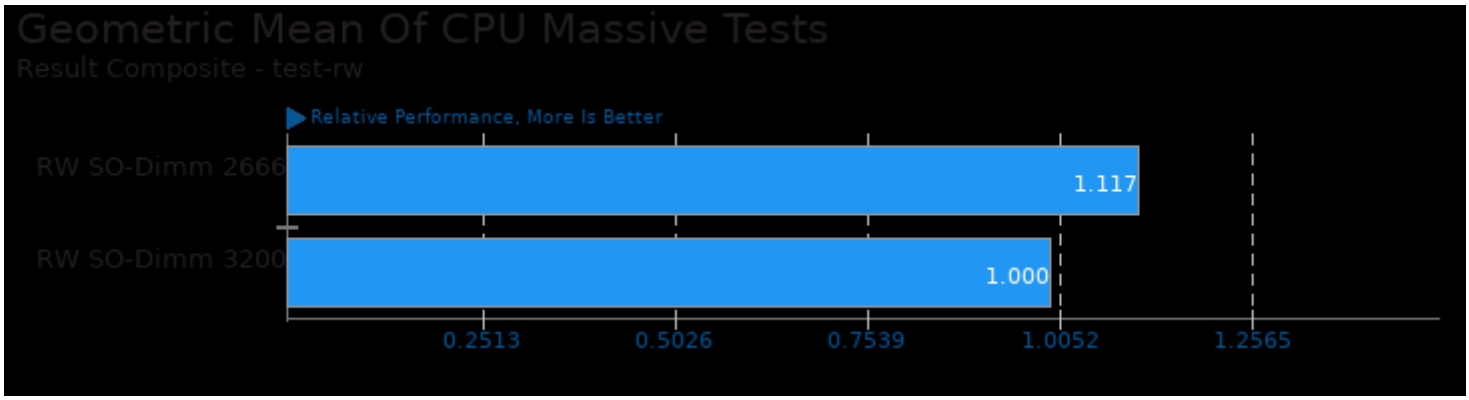
1. (CC) gcc options: -pthread

test-rw

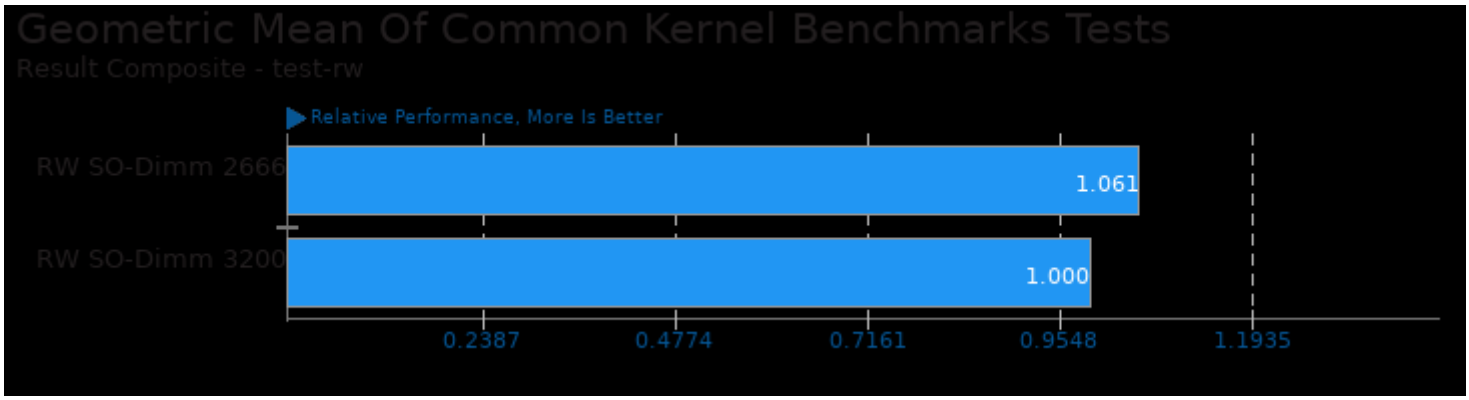

Tinymembench 2018-05-28
Standard Memcpy
MB/s, More Is Better
RW SO-Dimm 2666
SE +/- 128.66, N = 3
18350.6
RW SO-Dimm 3200
SE +/- 47.50, N = 3
15873.2
4K
8K
12K
16K
20K
1. (CC) gcc options: -O2 -lm
Tinymembench 2018-05-28
Standard Memset
MB/s, More Is Better
RW SO-Dimm 2666
SE +/- 39.04, N = 3
34108.1
RW SO-Dimm 3200
SE +/- 76.75, N = 3
31676.2
7K
14K
21K
28K
35K
1. (CC) gcc options: -O2 -lm

test-rw

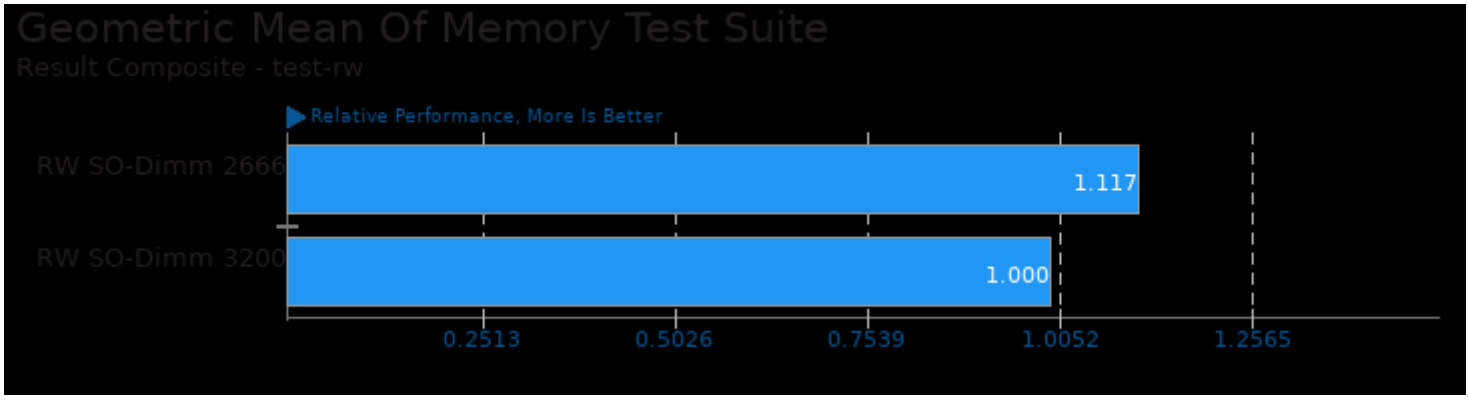
These geometric means are based upon test groupings / test suites for this result file.



Geometric mean based upon tests: pts/cachebench, pts/mbw, pts/ramspeed, pts/stream, pts/t-test1 and pts/tinymembench

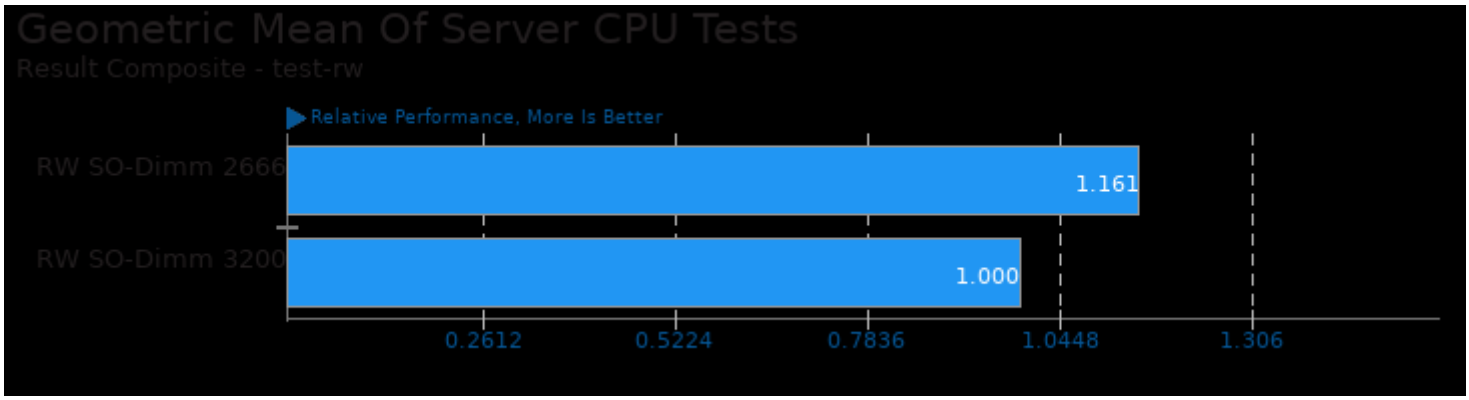


Geometric mean based upon tests: pts/tinymembench, pts/mbw and pts/t-test1



Geometric mean based upon tests: pts/ramspeed, pts/stream, pts/t-test1, pts/cachebench, pts/tinymembench and pts/mbw

test-rw



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

This file was automatically generated via the Phoronix Test Suite benchmarking software on Thursday, 28 March 2024 06:30.