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memory-2990-ecc

AMD Ryzen Threadripper 2950X 16-Core testing with a ASUS PRIME X399-A (0808 BIOS) and Sapphire AMD Radeon RX Vega 8192MB on Fedora 28 via the Phoronix Test Suite.

Automated Executive Summary

2990WX + GSkill 2933 128gb DFL 3.33A Agesa 1.1.0.2 had the most wins, coming in first place for 40% of the tests.

Test Systems:

2950X + GSkill 3200 32gb

2950X + GSkill 3200 32gb NUMA Mode

Processor: AMD Ryzen Threadripper 2950X 16-Core @ 3.40GHz (16 Cores / 32 Threads), Motherboard: Gigabyte X399 DESIGNARE EX-CF (F10 BIOS), Chipset: AMD Family 17h, Memory: 32768MB, Disk: 480GB INTEL SSDPED1D480GA, Graphics: Sapphire AMD Radeon RX Vega 8192MB, Audio: Realtek ALC1220, Monitor: DP-3412UM + DP_FREESYNC, Network: Intel I211 Gigabit Connection + Intel Wireless 8265 / 8275

OS: Fedora 28, Kernel: 4.17.19-200.trlocal.fc28.x86_64 (x86_64), Desktop: GNOME Shell 3.28.3, Display Driver: modesetting 1.19.6, OpenGL: 4.5 Mesa 18.0.5 (LLVM 6.0.0), Compiler: GCC 8.1.1 20180712 + Clang 6.0.1, File-System: ext4, Screen Resolution: 5760x2160

Compiler Notes: --build=x86_64-redhat-linux --disable-libunwind-exceptions --enable-__cxa_atexit --enable-bootstrap --enable-cet --enable-checking=release --enable-gnu-indirect-function --enable-gnu-unique-object --enable-initfini-array --enable-languages=c,c++,fortran,objc,obj-c++,ada,go,lto --enable-libmpx --enable-multilib --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --mandir=/usr/share/man --with-arch_32=i686 --with-gcc-major-version-only --with-isl --with-linker-hash-style=gnu --with-tune=generic --without-cuda-driver
Processor Notes: Scaling Governor: acpi-cpufreq performance
Security Notes: SELinux + __user pointer sanitization + Full AMD retpoline IBPB Protection

First Run to check Phoronix

Processor: AMD Ryzen Threadripper 2950X 16-Core @ 3.50GHz (16 Cores / 32 Threads), Motherboard: ASRock X399 Taichi (P3.30 BIOS), Chipset: AMD Family 17h, Memory: 129024MB, Disk: 2 x 4001GB Western Digital WD4003FFBX-6 + 4 x 960GB INTEL SSDSC2KG96 + 2 x Samsung SSD 960 PRO 512GB, Graphics: AMD Radeon PRO WX 3100 4096MB, Audio: AMD Device aae0, Monitor: ASUS MG279, Network: Intel I211 Gigabit Connection + Intel Dual Band Wireless-AC 3168NGW

OS: Arch Linux, Kernel: 4.19.2-arch1-1-ARCH (x86_64), Desktop: Xfce 4.12, Display Server: X Server 1.20.1, Display Driver: modesetting 1.20.1, Compiler: GCC 8.2.1 20180831, File-System: ext4, Screen Resolution: 2560x1440

Kernel Notes: kvm.ignore_msrs=1
Compiler Notes: --disable-libssp --disable-libstdcxx-pch --disable-libunwind-exceptions --disable-werror --enable-__cxa_atexit --enable-cet=auto --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-default-ssp --enable-gnu-indirect-function --enable-gnu-unique-object --enable-install-libiberty --enable-languages=c,c++,ada,fortran,go,lto,objc,obj-c++ --enable-libmpx --enable-lto --enable-multilib --enable-plugin --enable-shared --enable-threads=posix --mandir=/usr/share/man --with-isl --with-linker-hash-style=gnu
Processor Notes: Scaling Governor: acpi-cpufreq schedutil
Security Notes: __user pointer sanitization + Full AMD retpoline IBPB + SSB disabled via prctl and seccomp

2990WX + GSKill 2933 128gb

Processor: AMD Ryzen Threadripper 2990X 32-Core @ 3.00GHz (32 Cores / 64 Threads), Motherboard: ASRock X399 Professional Gaming (L3.33 BIOS), Chipset: AMD Family 17h, Memory: 129024MB, Disk: 250GB Samsung SSD 850 + 8GB DataTraveler 2.0 + 480GB INTEL SSDPED1D480GA, Graphics: NV132 11264MB, Audio: NVIDIA GP104 HD Audio, Monitor: DP-3412UM + DP_FREESYNC, Network: Aquantia AQC107 NBase-T/IEEE + Intel Dual Band Wireless-AC 3168NGW

OS: Fedora 28, Kernel: 4.17.19-200.trlocal.fc28.x86_64 (x86_64), Desktop: GNOME Shell 3.28.3, Display Driver: modesetting 1.19.6, OpenGL: 4.3 Mesa 18.0.5, Compiler: GCC 8.1.1 20180712 + Clang 6.0.1, File-System: ext4, Screen Resolution: 2560x1440

Compiler Notes: --build=x86_64-redhat-linux --disable-libunwind-exceptions --enable-__cxa_atexit --enable-bootstrap --enable-cet --enable-checking=release --enable-gnu-indirect-function --enable-gnu-unique-object --enable-initfini-array --enable-languages=c,c++,fortran,objc,obj-c++,ada,go,lto --enable-libmpx --enable-multilib --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --mandir=/usr/share/man --with-arch_32=i686 --with-gcc-major-version-only --with-isl --with-linker-hash-style=gnu --with-tune=generic --without-cuda-driver
Processor Notes: Scaling Governor: acpi-cpufreq performance
Security Notes: SELinux + __user pointer sanitization + Full AMD retpoline IBPB Protection

2990WX + GSkill 2933 128gb BIOS 3.33

Processor: AMD Ryzen Threadripper 2990X 32-Core @ 3.00GHz (32 Cores / 64 Threads), Motherboard: ASRock X399 Professional Gaming (L3.33 BIOS), Chipset: AMD Family 17h, Memory: 129024MB, Disk: 8002GB Western Digital WD80EFZX-68U + 480GB INTEL SSDPED1D480GA, Graphics: AMD Radeon 8192MB, Audio: Realtek ALC1220, Monitor: DP-3412UM + DP_FREESYNC, Network: Aquantia AQC107 NBase-T/IEEE + Intel Dual Band Wireless-AC 3168NGW

OS: Fedora 28, Kernel: 4.18.11-200.fc28.x86_64 (x86_64), Desktop: GNOME Shell 3.28.3, Display Driver: modesetting 1.19.6, OpenGL: 4.5 Mesa 18.0.5 (LLVM 6.0.1), Compiler: GCC 8.1.1 20180712 + Clang 6.0.1, File-System: ext4, Screen Resolution: 1920x1200

Compiler Notes: --build=x86_64-redhat-linux --disable-libunwind-exceptions --enable-__cxa_atexit --enable-bootstrap --enable-cet --enable-checking=release --enable-gnu-indirect-function --enable-gnu-unique-object --enable-initfini-array --enable-languages=c,c++,fortran,objc,obj-c++,ada,go,lto --enable-libmpx --enable-multilib --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --mandir=/usr/share/man --with-arch_32=i686 --with-gcc-major-version-only --with-isl --with-linker-hash-style=gnu --with-tune=generic --without-cuda-driver
Processor Notes: Scaling Governor: acpi-cpufreq performance
Security Notes: SELinux + __user pointer sanitization + Full AMD retpoline IBPB Protection

2990WX + GGSSkill 2933 128gb 3.30 REVERT Agesa

Processor: AMD Ryzen Threadripper 2990X 32-Core @ 3.00GHz (32 Cores / 64 Threads), Motherboard: ASRock X399 Professional Gaming (P3.30 BIOS), Chipset: AMD Family 17h, Memory: 129024MB, Disk: 250GB Samsung SSD 850 + 32GB USB Flash Disk + 480GB INTEL SSDPED1D480GA + Samsung SSD 960 PRO 512GB, Graphics: AMD Radeon 8192MB, Audio: Realtek ALC1220, Monitor: DP-3412UM + DP_FREESYNC, Network: Aquantia AQC107 NBase-T/IEEE + Intel Dual Band Wireless-AC 3168NGW

OS: Fedora 28, Kernel: 4.18.11-200.fc28.x86_64 (x86_64), Desktop: GNOME Shell 3.28.3, Display Driver: modesetting 1.19.6, OpenGL: 4.5 Mesa 18.0.5 (LLVM 6.0.1), Compiler: GCC 8.1.1 20180712 + Clang 6.0.1, File-System: ext4, Screen Resolution: 1024x768

Compiler Notes: --build=x86_64-redhat-linux --disable-libunwind-exceptions --enable-__cxa_atexit --enable-bootstrap --enable-cet --enable-checking=release --enable-gnu-indirect-function --enable-gnu-unique-object --enable-initfini-array --enable-languages=c,c++,fortran,objc,obj-c++,ada,go,lto --enable-libmpx --enable-multilib --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --mandir=/usr/share/man --with-arch_32=i686 --with-gcc-major-version-only --with-isl --with-linker-hash-style=gnu --with-tune=generic --without-cuda-driver
Processor Notes: Scaling Governor: acpi-cpufreq performance
Security Notes: SELinux + __user pointer sanitization + Full AMD retpoline IBPB Protection

2990WX + GSkill 2933 128gb DFL 3.33A Agesa 1.1.0.2

Processor: AMD Ryzen Threadripper 2990X 32-Core @ 3.00GHz (32 Cores / 64 Threads), Motherboard: ASRock X399 Professional Gaming (L3.33A BIOS), Chipset: AMD Family 17h, Memory: 129024MB, Disk: 8002GB Western Digital WD80EFZX-68U + 32GB USB Flash Disk + 480GB INTEL SSDPED1D480GA, Graphics: AMD Radeon 8192MB, Audio: Realtek ALC1220, Monitor: DP-3412UM + DP_FREESYNC, Network: Aquantia AQC107 NBase-T/IEEE + Intel Dual Band Wireless-AC 3168NGW

OS: Fedora 28, Kernel: 4.17.18-200.fc28.x86_64 (x86_64), Desktop: GNOME Shell 3.28.3, Display Driver: modesetting 1.19.6, OpenGL: 4.5 Mesa 18.0.5 (LLVM 6.0.1), Compiler: GCC 8.1.1 20180712 + Clang 6.0.1, File-System: ext4, Screen Resolution: 1280x720

Compiler Notes: --build=x86_64-redhat-linux --disable-libunwind-exceptions --enable-__cxa_atexit --enable-bootstrap --enable-cet --enable-checking=release --enable-gnu-indirect-function --enable-gnu-unique-object --enable-initfini-array --enable-languages=c,c++,fortran,objc,obj-c++,ada,go,lto --enable-libmpx --enable-multilib --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --mandir=/usr/share/man --with-arch_32=i686 --with-gcc-major-version-only --with-isl --with-linker-hash-style=gnu --with-tune=generic --without-cuda-driver
Processor Notes: Scaling Governor: acpi-cpufreq performance
Security Notes: SELinux + __user pointer sanitization + Full AMD retpoline IBPB Protection

2990WX + GSkill 2933 128gb AsRock Timings *CrayZeApe*

Processor: AMD Ryzen Threadripper 2990WX 32-Core @ 3.00GHz (32 Cores / 64 Threads), Motherboard: MSI MEG X399 CREATION (MS-7B92) v1.0 (1.10 BIOS), Chipset: AMD Family 17h, Memory: 8 x 16384 MB DDR4-2933MT/s F4-2933C14-16GFX, Disk: 5 x 1024GB Samsung SSD 970 PRO 1TB, Graphics: ASUS AMD Radeon RX Vega 56/64 8176MB, Audio: Realtek ALC1220, Monitor: C24F390, Network: Intel I211 Gigabit Connection + Intel Wireless-AC 9260

OS: Fedora 28, Kernel: 4.18.12-200.fc28.x86_64 (x86_64), Desktop: GNOME Shell 3.28.3, Compiler: GCC 8.1.1

20180712, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-redhat-linux --disable-libunwind-exceptions --enable-__cxa_atexit --enable-bootstrap --enable-cet --enable-checking=release --enable-gnu-indirect-function --enable-gnu-unique-object --enable-initfini-array --enable-languages=c,c++,fortran,objc,obj-c++,ada,go,lto --enable-libmpx --enable-multilib --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --mandir=/usr/share/man --with-arch_32=i686 --with-gcc-major-version-only --with-isl --with-linker-hash-style=gnu --with-tune=generic --without-cuda-driver
Processor Notes: Scaling Governor: acpi-cpufreq ondemand
Security Notes: SELinux + __user pointer sanitization + Full AMD retpoline IBPB Protection

2950X + GSkill FlareX 32gb Asus X399A

Processor: AMD Ryzen Threadripper 2950X 16-Core @ 3.50GHz (16 Cores / 32 Threads), Motherboard: ASUS PRIME X399-A (0808 BIOS), Chipset: AMD Family 17h, Memory: 32768MB, Disk: 250GB Samsung SSD 850 + 480GB INTEL SSDPED1D480GA, Graphics: Sapphire AMD Radeon RX Vega 8192MB, Audio: Realtek ALC1220, Monitor: DP-3412UM + DP_FREESYNC, Network: Intel I211 Gigabit Connection

OS: Fedora 28, Kernel: 4.18.11-200.fc28.x86_64 (x86_64), Desktop: GNOME Shell 3.28.3, Display Driver: modesetting 1.19.6, OpenGL: 4.5 Mesa 18.0.5 (LLVM 6.0.1), Compiler: GCC 8.1.1 20180712 + Clang 6.0.1, File-System: ext4, Screen Resolution: 3440x1440

Compiler Notes: --build=x86_64-redhat-linux --disable-libunwind-exceptions --enable-__cxa_atexit --enable-bootstrap --enable-cet --enable-checking=release --enable-gnu-indirect-function --enable-gnu-unique-object --enable-initfini-array --enable-languages=c,c++,fortran,objc,obj-c++,ada,go,lto --enable-libmpx --enable-multilib --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --mandir=/usr/share/man --with-arch_32=i686 --with-gcc-major-version-only --with-isl --with-linker-hash-style=gnu --with-tune=generic --without-cuda-driver
Processor Notes: Scaling Governor: acpi-cpufreq performance
Security Notes: SELinux + __user pointer sanitization + Full AMD retpoline IBPB Protection

2950X + GSkill TridentZ 128gb 2933 Asus X399A UMA

2950X + GSkill TridentZ 128gb 2933 Asus X399A UMA run 2

950X + GSkill TridentZ 128gb 2933 Asus X399A NUMA

Processor: AMD Ryzen Threadripper 2950X 16-Core @ 3.50GHz (16 Cores / 32 Threads), Motherboard: ASUS PRIME X399-A (0808 BIOS), Chipset: AMD Family 17h, Memory: 129024MB, Disk: 250GB Samsung SSD 850 + 480GB INTEL SSDPED1D480GA, Graphics: Sapphire AMD Radeon RX Vega 8192MB, Audio: Realtek ALC1220, Monitor: DP-3412UM + DP_FREESYNC, Network: Intel I211 Gigabit Connection

OS: Fedora 28, Kernel: 4.18.11-200.fc28.x86_64 (x86_64), Desktop: GNOME Shell 3.28.3, Display Driver: modesetting 1.19.6, OpenGL: 4.5 Mesa 18.0.5 (LLVM 6.0.1), Compiler: GCC 8.1.1 20180712 + Clang 6.0.1, File-System: ext4, Screen Resolution: 3440x1440

Compiler Notes: --build=x86_64-redhat-linux --disable-libunwind-exceptions --enable-__cxa_atexit --enable-bootstrap --enable-cet --enable-checking=release --enable-gnu-indirect-function --enable-gnu-unique-object --enable-initfini-array --enable-languages=c,c++,fortran,objc,obj-c++,ada,go,lto --enable-libmpx --enable-multilib --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --mandir=/usr/share/man --with-arch_32=i686 --with-gcc-major-version-only --with-isl --with-linker-hash-style=gnu --with-tune=generic --without-cuda-driver
Processor Notes: Scaling Governor: acpi-cpufreq performance
Security Notes: SELinux + __user pointer sanitization + Full AMD retpoline IBPB Protection

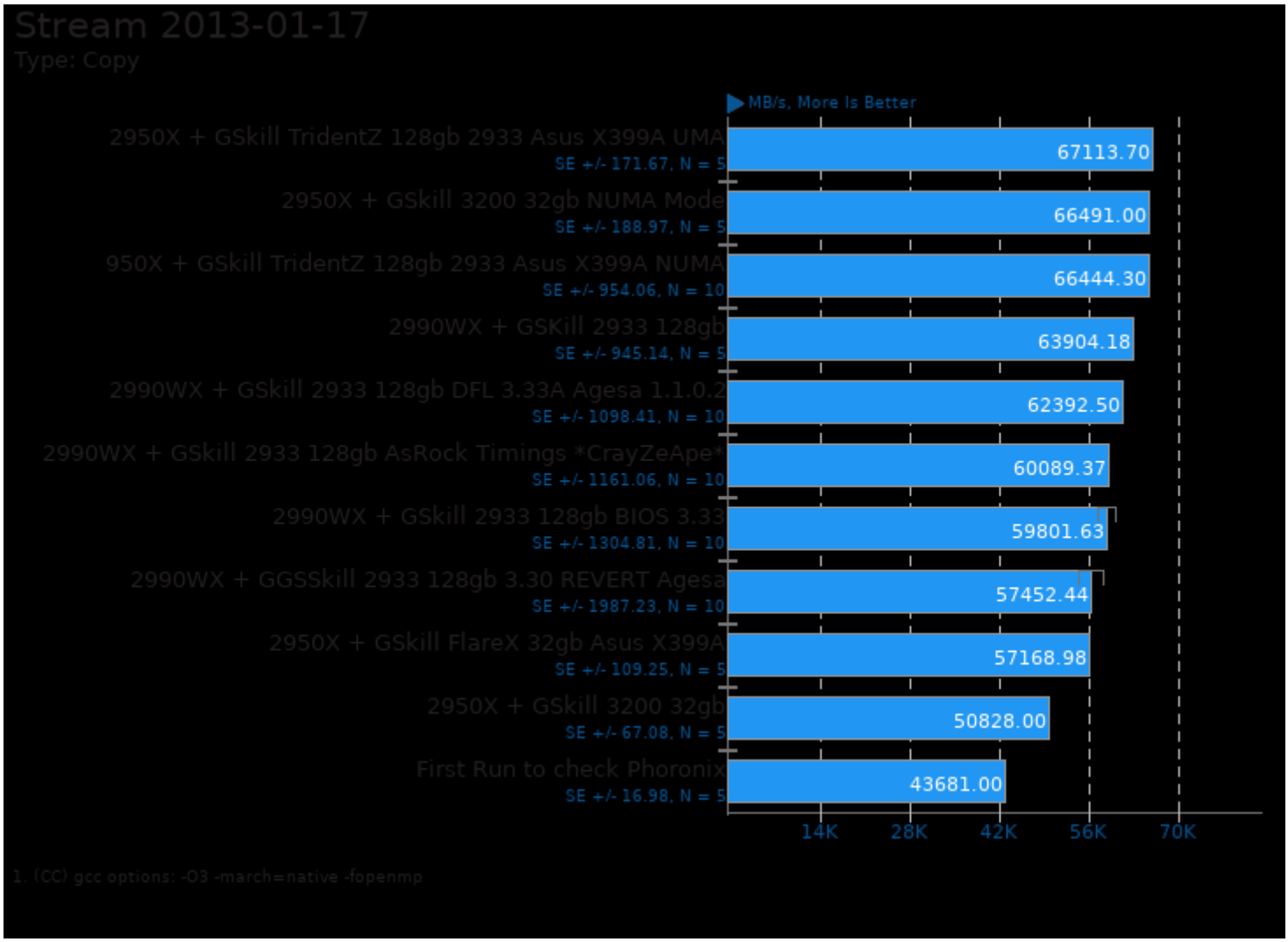
Phoronix Test Suite

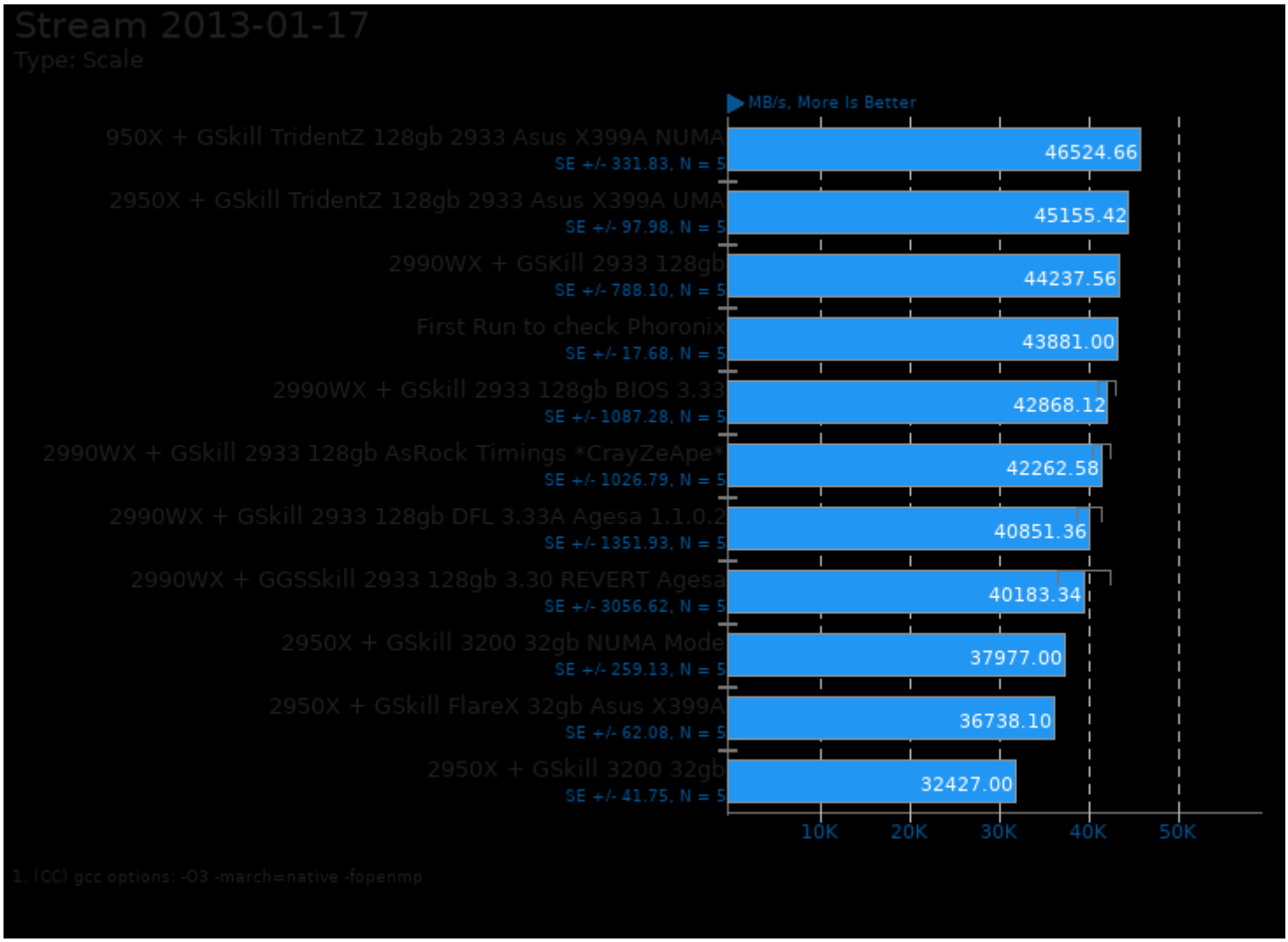
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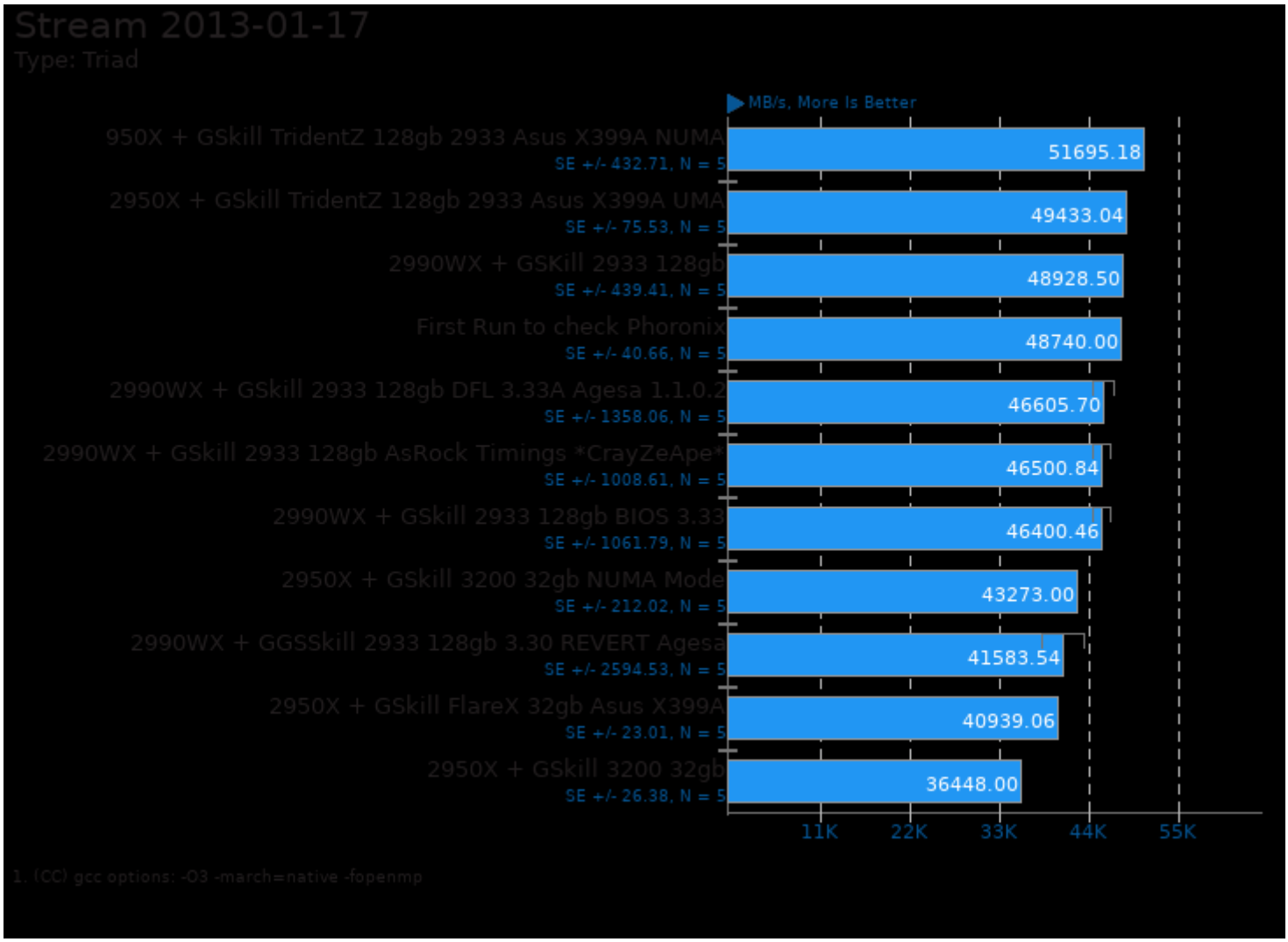
	2950X + GSkill 3200 32gb	2950X + GSkill 3200 32gb NUMA Mode	First Run to check Phoronix	2990WX + GSKill 2933 128gb	2990WX + GSkill 2933 128gb BIOS 3.33	2990WX + GGSSkill 2933 128gb 3.30 REVERT Agesa	2990WX + GSkill 2933 128gb DFL 3.33A Agesa 1.1.0.2	2990WX + GSkill 2933 128gb AsRock Timings *CrayZe	2950X + GSkill FlareX 32gb Asus X399A	2950X + GSkill Trident Z 128gb 2933 Asus X399A UMA	2950X + GSkill Trident Z 128gb 2933 Asus X399A UMA run 2	950X + GSkill Trident Z 128gb 2933 Asus X399A NUMA
Stream - Copy (MB/s)	50828	66491	43681	63904	59802	57452	62393	60089	57169	67114		66444
Normalized	75.73%	99.07%	65.09%	95.22%	89.1%	85.6%	92.97%	89.53%	85.18%	100%		99%
Standard Deviation	0.3%	0.6%	0.1%	3.3%	6.9%	10.9%	5.6%	6.1%	0.4%	0.6%		4.5%
Stream - Scale (MB/s)	32427	37977	43881	44238	42868	40183	40851	42263	36738	45155		46525
Normalized	69.7%	81.63%	94.32%	95.08%	92.14%	86.37%	87.81%	90.84%	78.96%	97.06%		100%
Standard Deviation	0.3%	1.5%	0.1%	4%	5.7%	17%	7.4%	5.4%	0.4%	0.5%		1.6%
Stream - Triad (MB/s)	36448	43273	48740	48929	46400	41584	46606	46501	40939	49433		51695
Normalized	70.51%	83.71%	94.28%	94.65%	89.76%	80.44%	90.15%	89.95%	79.19%	95.62%		100%
Standard Deviation	0.2%	1.1%	0.2%	2%	5.1%	14%	6.5%	4.9%	0.1%	0.3%		1.9%
Stream - Add (MB/s)	36284	43109	48625	48706	46378	42752	45651	46295	40924	49329		51150
Normalized	70.94%	84.28%	95.06%	95.22%	90.67%	83.58%	89.25%	90.51%	80.01%	96.44%		100%
Standard Deviation	0.3%	1.4%	0.1%	2.7%	5.2%	15.2%	6.6%	6.1%	0.2%	0.3%		3%
Tinymembench - Standard Memcpy (MB/s)	11974	14249	9104	11362	11340	17343	17396	16943	14016			17346
Normalized	68.83%	81.91%	52.33%	65.31%	65.19%	99.7%	100%	97.4%	80.57%			99.71%
Standard Deviation	0.4%	0.4%	0.1%	0.2%	0.3%	1.2%	0.5%	0.5%	0.4%			1.1%
Tinymembench - Standard Memset (MB/s)	10677	9773	12595	9855	10143	14271	14239	14245	13297	13467		14641
Normalized	72.93%	66.75%	86.03%	67.31%	69.28%	97.48%	97.25%	97.29%	90.82%	91.98%		100%
Standard Deviation	0.5%	0.6%	0.1%	0.6%	5.3%	0.5%	0.4%	0.4%	0.2%	4.8%		2.6%
MBW - Memory Copy - 128 MiB (MiB/s)	11159	14086	15636	11070	6376	11363	16538	16507	14491	13074		16279
Normalized	67.47%	85.17%	94.54%	66.94%	38.55%	68.71%	100%	99.81%	87.62%	79.05%		98.43%
Standard Deviation	0.2%	1.1%	0.4%	0.6%	0.4%	0.1%	0.5%	0.3%	3.5%	1.6%		1.1%
MBW - Memory Copy - 512 MiB (MiB/s)	11241	14069	15493	11035	8892	16611	16592	16629	14164	13038		16189
Normalized	67.6%	84.61%	93.17%	66.36%	53.47%	99.89%	99.78%	100%	85.18%	78.41%		97.35%
Standard Deviation	0.1%	1%	0.1%	0.4%	0.3%	0.2%	0.1%	0.1%	4.8%	0.7%		1.6%
MBW - Memory Copy - 1024 MiB (MiB/s)	11244	13804	15402	10893	10750	16418	16420	16492	14091	13471		16298
Normalized	68.18%	83.7%	93.39%	66.05%	65.18%	99.55%	99.56%	100%	85.44%	81.68%		98.83%
Standard Deviation	0.1%	0.8%	0.1%	0.2%	0.4%	0.4%	0.1%	0.5%	5%	3.2%		0.5%

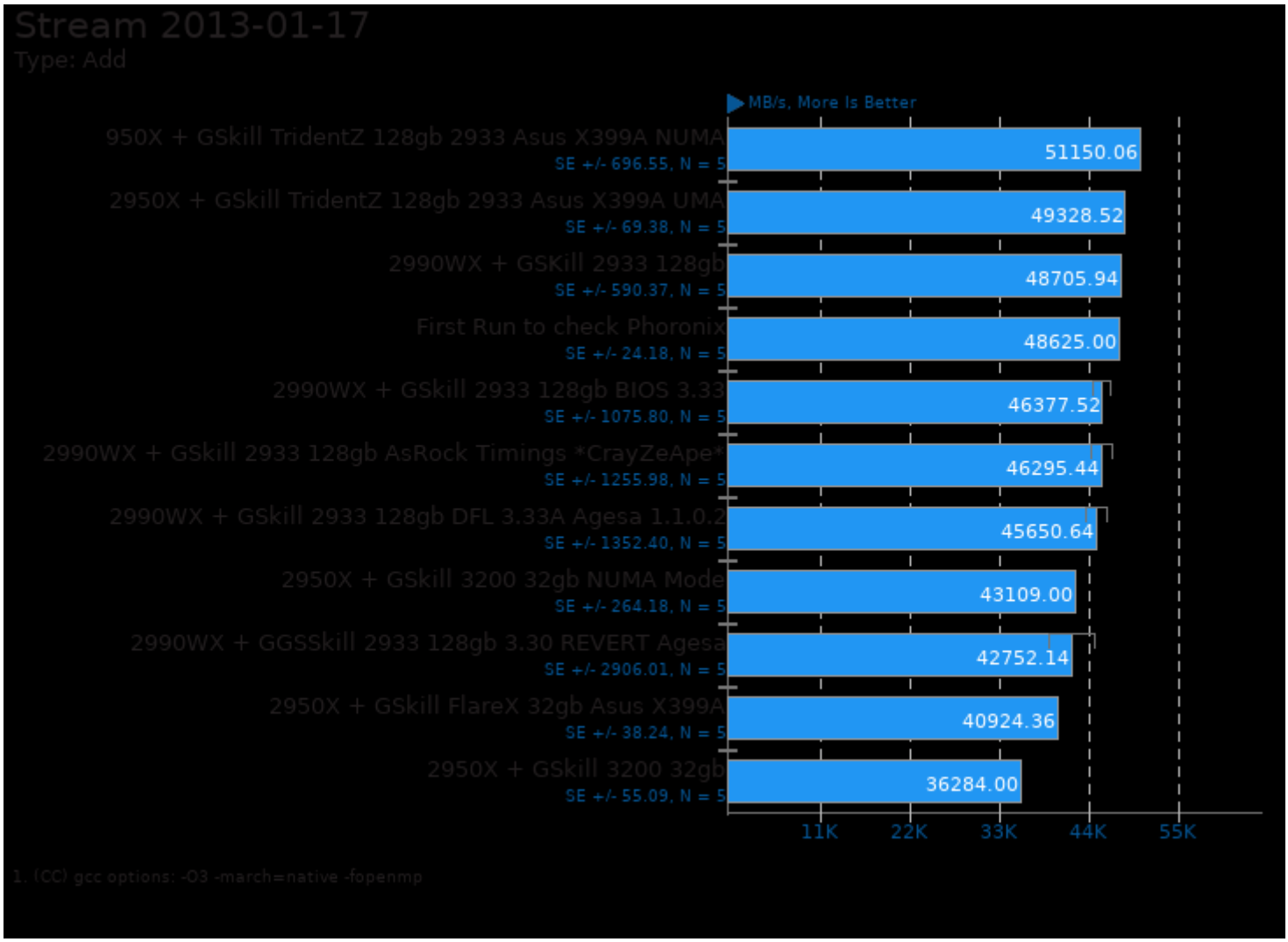
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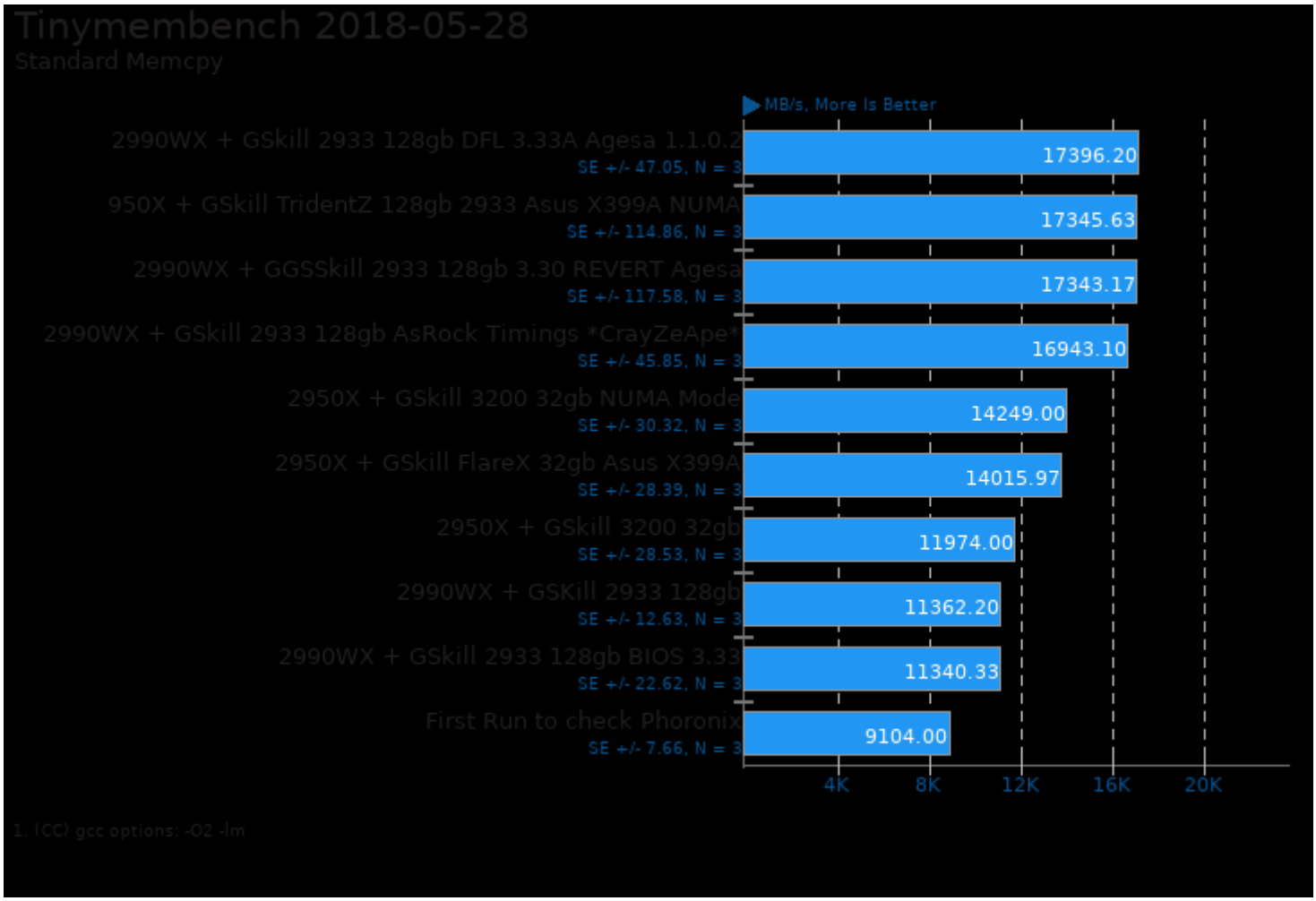
MBW - Memory Copy - 4096 MiB (MiB/s)	11449	14161	15281	10898	**10775**	16082	**16498**	16454	14285	13407	16249
Normalized	69.4%	85.84%	92.63%	66.06%	65.31%	97.48%	100%	99.73%	86.59%	81.27%	98.49%
Standard Deviation	0.9%	1.9%	0.8%	0.9%	0.5%	3.2%	0.3%	0.3%	2.7%	3.5%	0.3%
MBW - Memory Copy - 8192 MiB (MiB/s)	11208	11817	15276	**10595**	10702	15822	**16406**	16305	13750	13394	16279
Normalized	68.32%	72.03%	93.11%	64.58%	65.23%	96.44%	100%	99.39%	83.81%	81.64%	99.23%
Standard Deviation	0.1%	1.9%	1%	0.1%	1.1%	0.1%	0.1%	0.4%	1.1%	6.2%	0.3%
MBW - M.C.F.B.S - 128 MiB (MiB/s)	7926	7142	7856	**6880**	7098	8651	**8866**	8811	8448	8825	8432
Normalized	89.4%	80.56%	88.61%	77.6%	80.06%	97.58%	100%	99.38%	95.28%	99.53%	95.11%
Standard Deviation	0.9%	1.4%	0.1%	0.6%	0.8%	2.6%	2.4%	0.1%	1.5%	3.1%	0.8%
MBW - M.C.F.B.S - 512 MiB (MiB/s)	7767	6902	8984	6877	**6837**	**9155**	9075	9062	8494	8235	8995
Normalized	84.84%	75.39%	98.14%	75.12%	74.68%	100%	99.13%	98.99%	92.78%	89.96%	98.25%
Standard Deviation	3.8%	1.1%	0.1%	1.7%	2.1%	0.7%	0.6%	0.2%	1.8%	6.4%	1.2%
MBW - M.C.F.B.S - 1024 MiB (MiB/s)	7555	6978	8875	**6841**	6845	**9046**	8917	8938	8489	8673	8915
Normalized	83.52%	77.14%	98.11%	75.63%	75.68%	100%	98.58%	98.8%	93.85%	95.88%	98.55%
Standard Deviation	0.5%	1.8%	0.8%	1%	0.4%	0.4%	2%	0.3%	2.1%	4.7%	0.7%
MBW - M.C.F.B.S - 4096 MiB (MiB/s)	7603	6675	8855	6724	**6642**	9050	**9081**	8875	8619	8579	8791
Normalized	83.72%	73.5%	97.51%	74.05%	73.14%	99.66%	100%	97.73%	94.92%	94.47%	96.8%
Standard Deviation	2.4%	2.9%	0.7%	0.1%	2.8%	0.1%	1.4%	2.9%	3.2%	3.4%	4.4%
MBW - M.C.F.B.S - 8192 MiB (MiB/s)	7752	**6110**	8812	6640	6841	8991	8994	**9188**	8428	8226	9071
Normalized	84.37%	66.5%	95.9%	72.26%	74.45%	97.85%	97.88%	100%	91.73%	89.53%	98.72%
Standard Deviation	11.1%	3.1%	0.1%	2.7%	0.9%	0.7%	1.1%	0.8%	3%	1.6%	1.1%

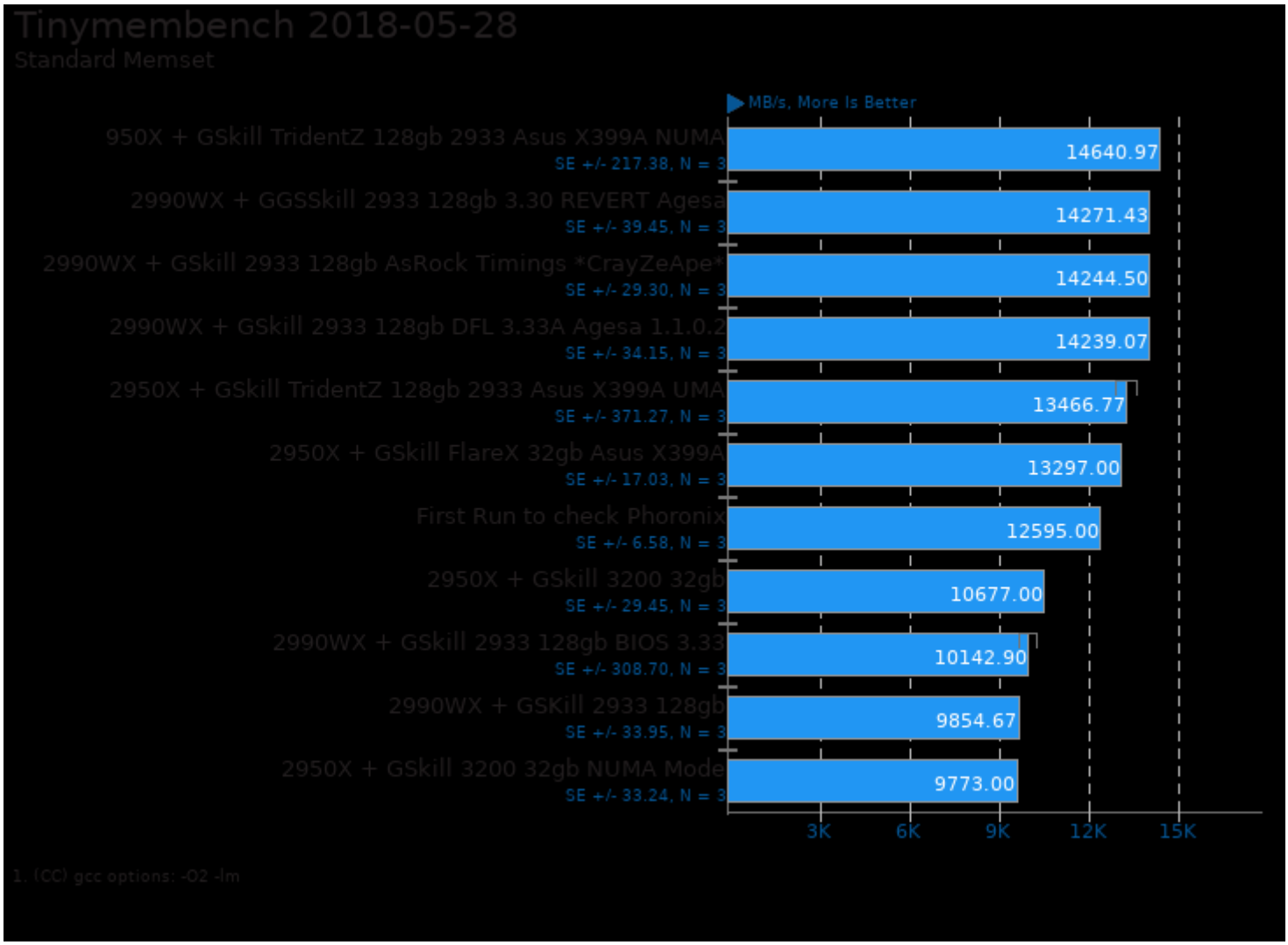

Stream 2013-01-17
Type: Copy
MB/s, More Is Better
2950X + GSkill TridentZ 128gb 2933 Asus X399A UMA
SE +/- 171.67, N = 5
67113.70
2950X + GSkill 3200 32gb NUMA Mode
SE +/- 188.97, N = 5
66491.00
950X + GSkill TridentZ 128gb 2933 Asus X399A NUMA
SE +/- 954.06, N = 10
66444.30
2990WX + GSKill 2933 128gb
SE +/- 945.14, N = 5
63904.18
2990WX + GSkill 2933 128gb DFL 3.33A Agesa 1.1.0.2
SE +/- 1098.41, N = 10
62392.50
2990WX + GSkill 2933 128gb AsRock Timings *CrayZeApe*
SE +/- 1161.06, N = 10
60089.37
2990WX + GSkill 2933 128gb BIOS 3.33
SE +/- 1304.81, N = 10
59801.63
2990WX + GGSSkill 2933 128gb 3.30 REVERT Agesa
SE +/- 1987.23, N = 10
57452.44
2950X + GSkill FlareX 32gb Asus X399A
SE +/- 109.25, N = 5
57168.98
2950X + GSkill 3200 32gb
SE +/- 67.08, N = 5
50828.00
First Run to check Phoronix
SE +/- 16.98, N = 5
43681.00
14K
28K
42K
56K
70K
1. (CC) gcc options: -O3 -march=native -fopenmp

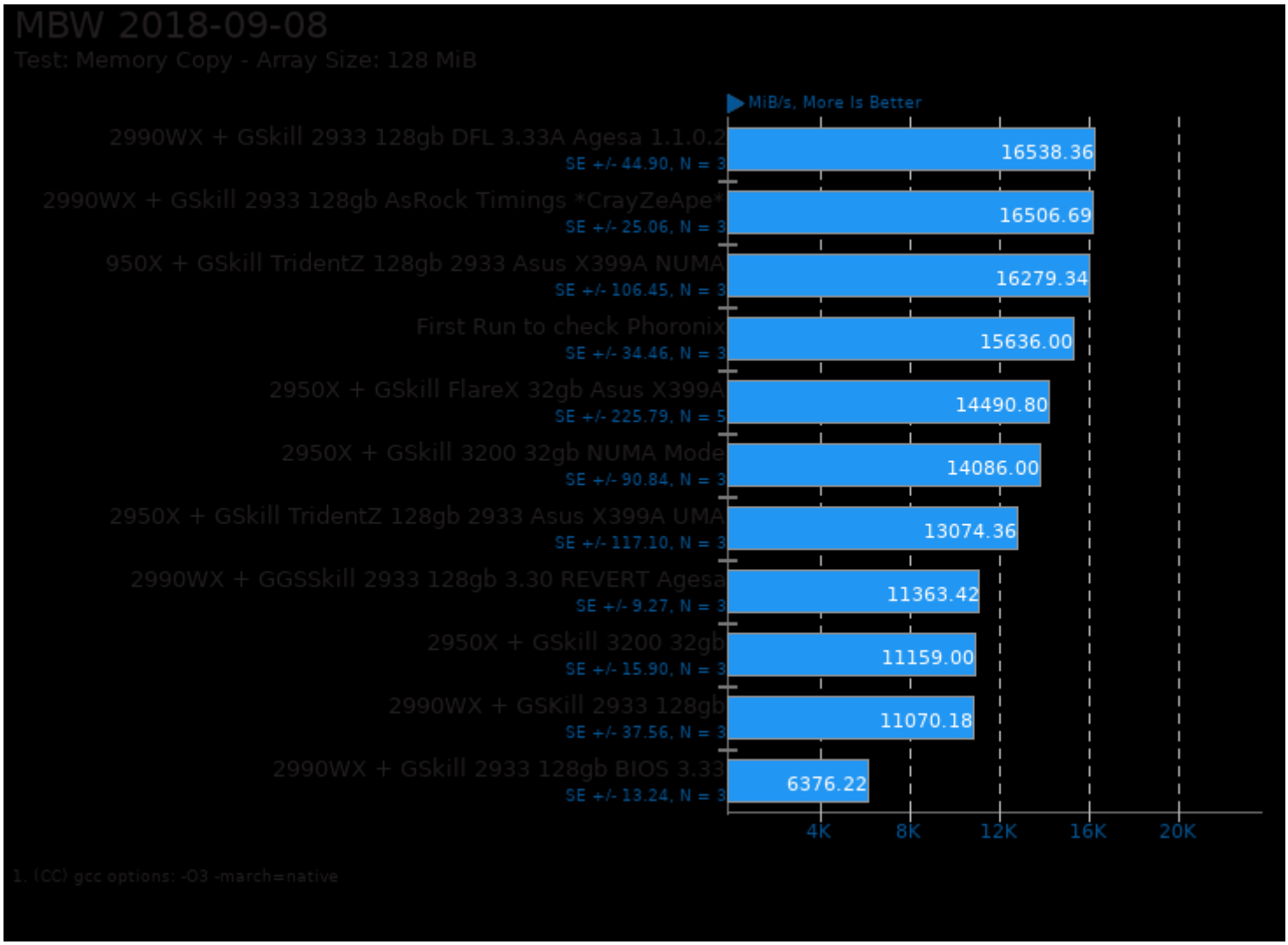

Stream 2013-01-17
Type: Scale
MB/s, More Is Better
950X + GSkill TridentZ 128gb 2933 Asus X399A NUMA
SE +/- 331.83, N = 5
46524.66
2950X + GSkill TridentZ 128gb 2933 Asus X399A UMA
SE +/- 97.98, N = 5
45155.42
2990WX + GSKill 2933 128gb
SE +/- 788.10, N = 5
44237.56
First Run to check Phoronix
SE +/- 17.68, N = 5
43881.00
2990WX + GSkill 2933 128gb BIOS 3.33
SE +/- 1087.28, N = 5
42868.12
2990WX + GSkill 2933 128gb AsRock Timings *CrayZeApe*
SE +/- 1026.79, N = 5
42262.58
2990WX + GSkill 2933 128gb DFL 3.33A Agesa 1.1.0.2
SE +/- 1351.93, N = 5
40851.36
2990WX + GGSSkill 2933 128gb 3.30 REVERT Agesa
SE +/- 3056.62, N = 5
40183.34
2950X + GSkill 3200 32gb NUMA Mode
SE +/- 259.13, N = 5
37977.00
2950X + GSkill FlareX 32gb Asus X399A
SE +/- 62.08, N = 5
36738.10
2950X + GSkill 3200 32gb
SE +/- 41.75, N = 5
32427.00
10K
20K
30K
40K
50K
1. (CC) gcc options: -O3 -march=native -fopenmp

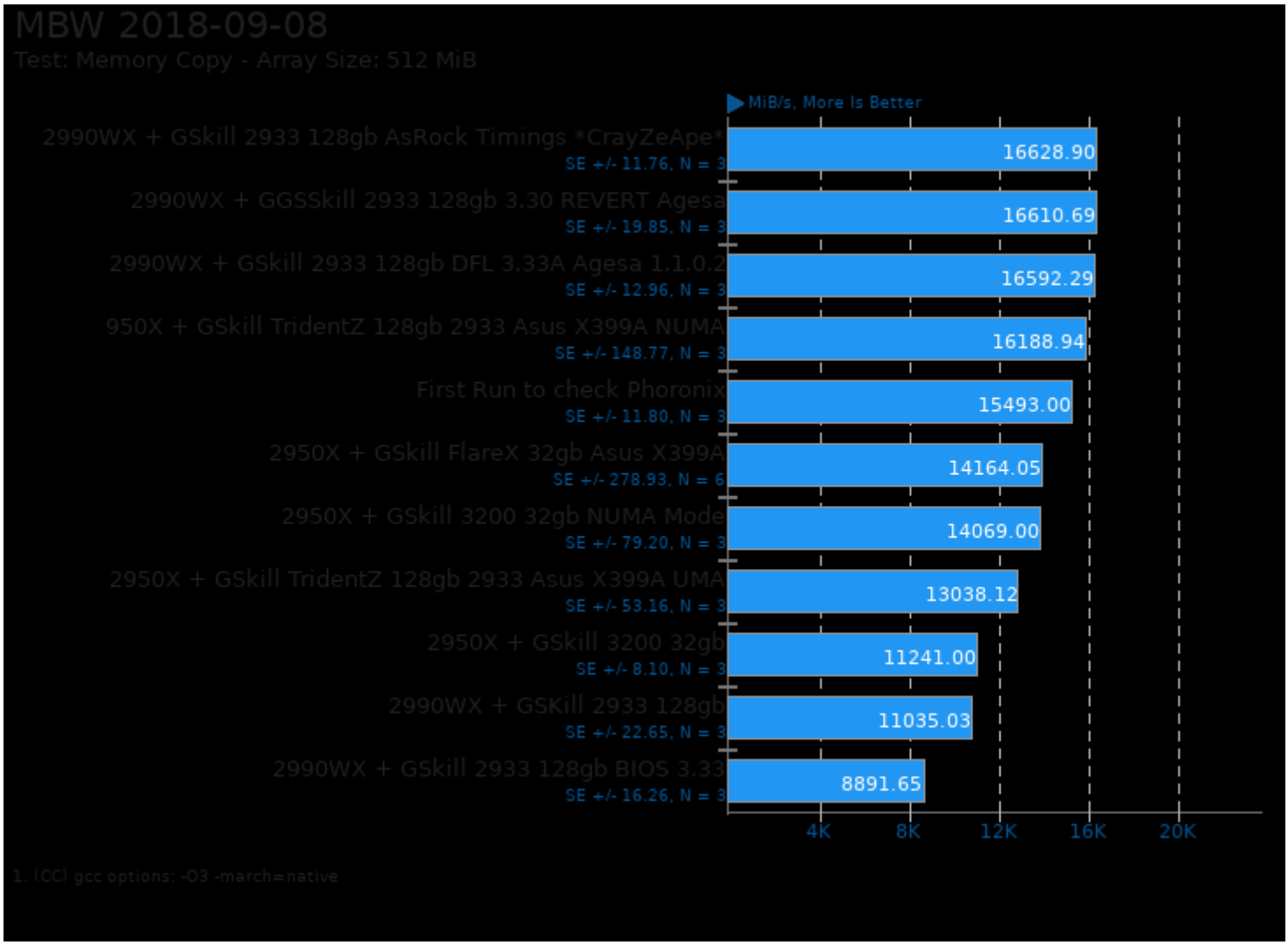

Stream 2013-01-17
Type: Triad
MB/s, More Is Better
950X + GSkill TridentZ 128gb 2933 Asus X399A NUMA
SE +/- 432.71, N = 5
51695.18
2950X + GSkill TridentZ 128gb 2933 Asus X399A UMA
SE +/- 75.53, N = 5
49433.04
2990WX + GSKill 2933 128gb
SE +/- 439.41, N = 5
48928.50
First Run to check Phoronix
SE +/- 40.66, N = 5
48740.00
2990WX + GSkill 2933 128gb DFL 3.33A Agesa 1.1.0.2
SE +/- 1358.06, N = 5
46605.70
2990WX + GSkill 2933 128gb AsRock Timings *CrayZeApe*
SE +/- 1008.61, N = 5
46500.84
2990WX + GSkill 2933 128gb BIOS 3.33
SE +/- 1061.79, N = 5
46400.46
2950X + GSkill 3200 32gb NUMA Mode
SE +/- 212.02, N = 5
43273.00
2990WX + GGSSkill 2933 128gb 3.30 REVERT Agesa
SE +/- 2594.53, N = 5
41583.54
2950X + GSkill FlareX 32gb Asus X399A
SE +/- 23.01, N = 5
40939.06
2950X + GSkill 3200 32gb
SE +/- 26.38, N = 5
36448.00
11K
22K
33K
44K
55K
1. (CC) gcc options: -O3 -march=native -fopenmp

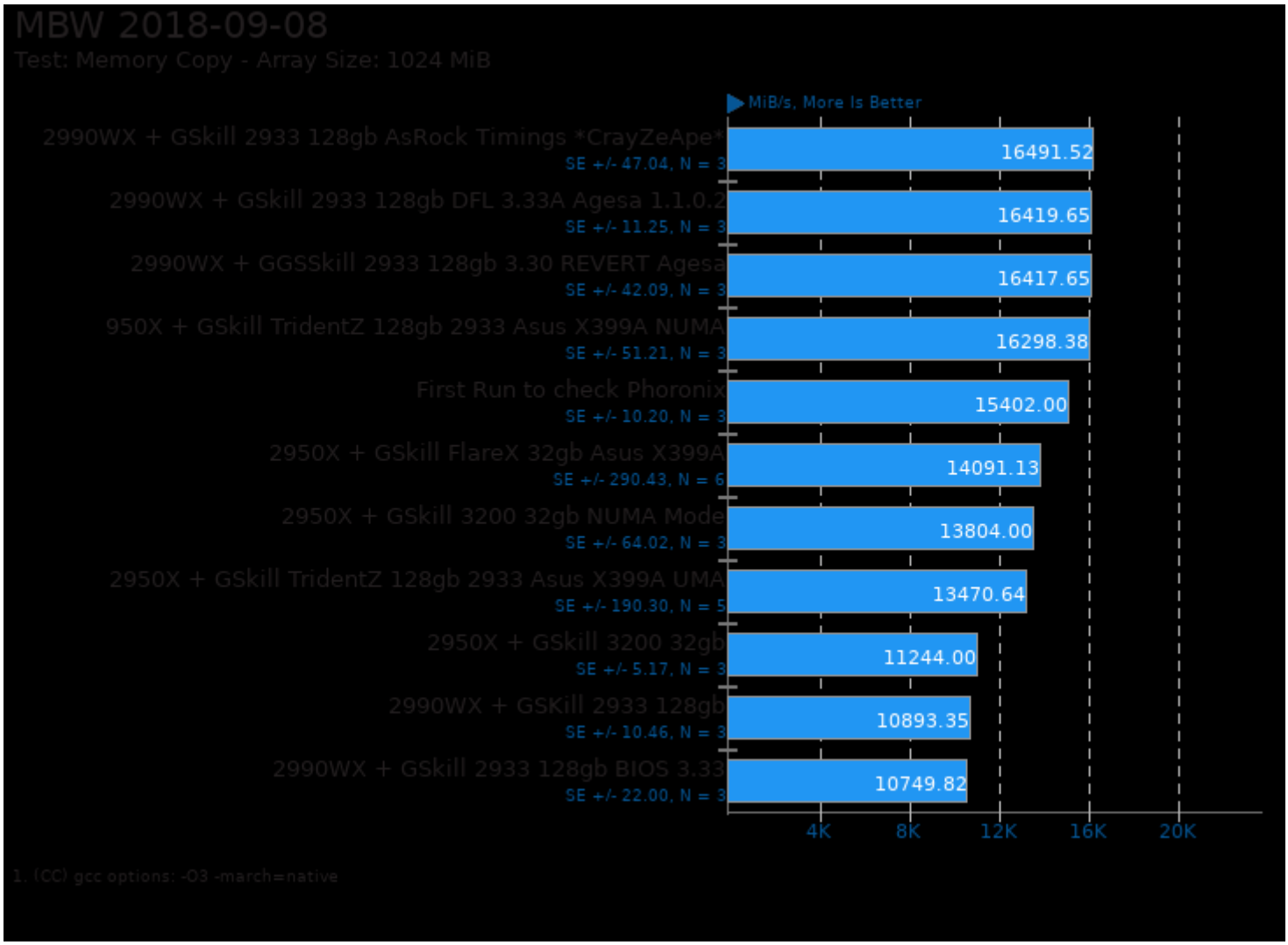

Stream 2013-01-17
Type: Add
MB/s, More Is Better
950X + GSkill TridentZ 128gb 2933 Asus X399A NUMA
SE +/- 696.55, N = 5
51150.06
2950X + GSkill TridentZ 128gb 2933 Asus X399A UMA
SE +/- 69.38, N = 5
49328.52
2990WX + GSKill 2933 128gb
SE +/- 590.37, N = 5
48705.94
First Run to check Phoronix
SE +/- 24.18, N = 5
48625.00
2990WX + GSkill 2933 128gb BIOS 3.33
SE +/- 1075.80, N = 5
46377.52
2990WX + GSkill 2933 128gb AsRock Timings *CrayZeApe*
SE +/- 1255.98, N = 5
46295.44
2990WX + GSkill 2933 128gb DFL 3.33A Agesa 1.1.0.2
SE +/- 1352.40, N = 5
45650.64
2950X + GSkill 3200 32gb NUMA Mode
SE +/- 264.18, N = 5
43109.00
2990WX + GGSSkill 2933 128gb 3.30 REVERT Agesa
SE +/- 2906.01, N = 5
42752.14
2950X + GSkill FlareX 32gb Asus X399A
SE +/- 38.24, N = 5
40924.36
2950X + GSkill 3200 32gb
SE +/- 55.09, N = 5
36284.00
11K
22K
33K
44K
55K
1. (CC) gcc options: -O3 -march=native -fopenmp


Tinymembench 2018-05-28
Standard Memcpy
MB/s, More Is Better
2990WX + GSkill 2933 128gb DFL 3.33A Agesa 1.1.0.2
SE +/- 47.05, N = 3
17396.20
950X + GSkill TridentZ 128gb 2933 Asus X399A NUMA
SE +/- 114.86, N = 3
17345.63
2990WX + GGSSkill 2933 128gb 3.30 REVERT Agesa
SE +/- 117.58, N = 3
17343.17
2990WX + GSkill 2933 128gb AsRock Timings *CrayZeApe*
SE +/- 45.85, N = 3
16943.10
2950X + GSkill 3200 32gb NUMA Mode
SE +/- 30.32, N = 3
14249.00
2950X + GSkill FlareX 32gb Asus X399A
SE +/- 28.39, N = 3
14015.97
2950X + GSkill 3200 32gb
SE +/- 28.53, N = 3
11974.00
2990WX + GSKill 2933 128gb
SE +/- 12.63, N = 3
11362.20
2990WX + GSkill 2933 128gb BIOS 3.33
SE +/- 22.62, N = 3
11340.33
First Run to check Phoronix
SE +/- 7.66, N = 3
9104.00
4K
8K
12K
16K
20K
1. (CC) gcc options: -O2 -lm

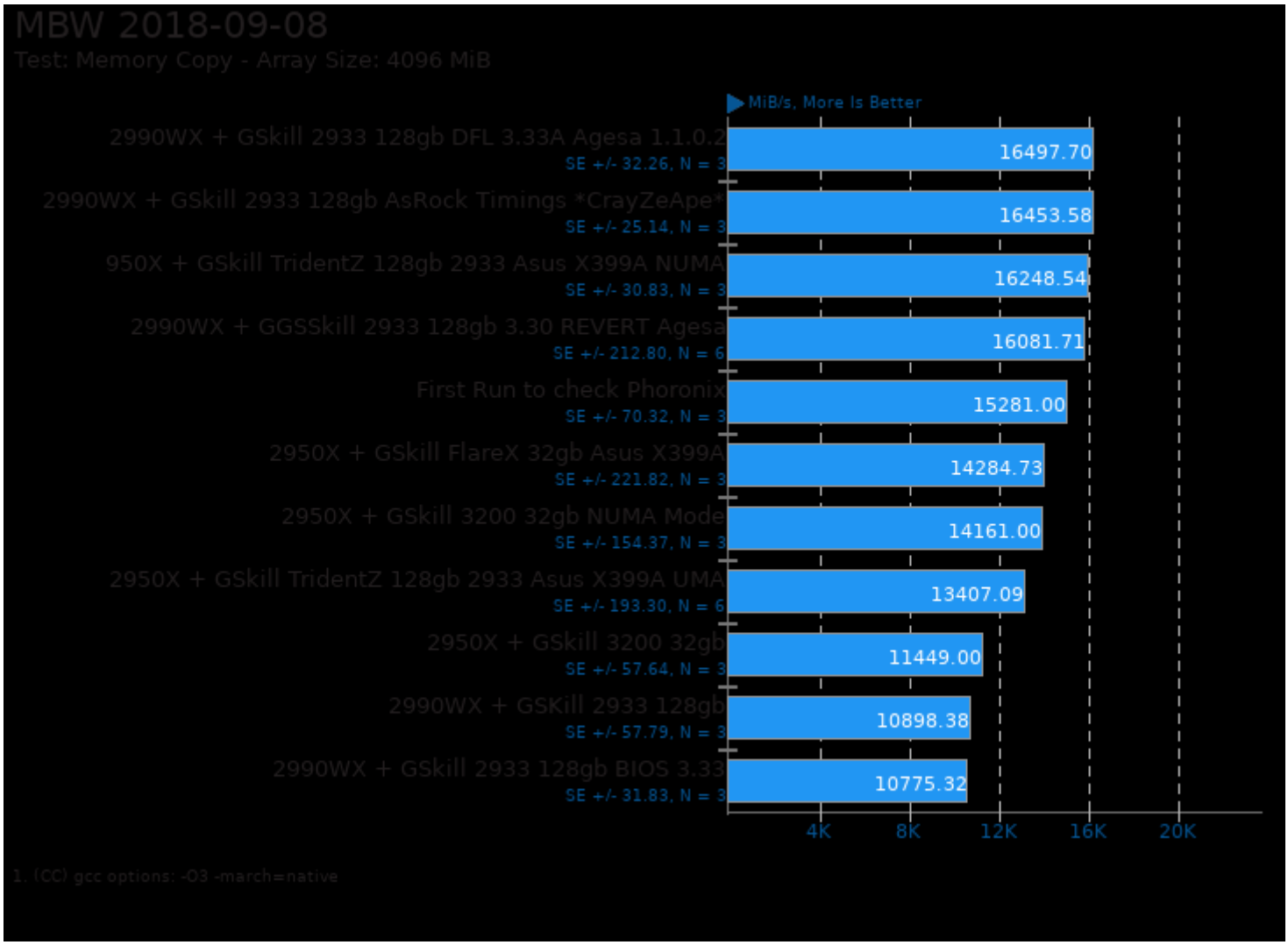

Tinymembench 2018-05-28
Standard Memset
MB/s, More Is Better
950X + GSkill TridentZ 128gb 2933 Asus X399A NUMA
SE +/- 217.38, N = 3
14640.97
2990WX + GGSSkill 2933 128gb 3.30 REVERT Agesa
SE +/- 39.45, N = 3
14271.43
2990WX + GSkill 2933 128gb AsRock Timings *CrayZeApe*
SE +/- 29.30, N = 3
14244.50
2990WX + GSkill 2933 128gb DFL 3.33A Agesa 1.1.0.2
SE +/- 34.15, N = 3
14239.07
2950X + GSkill TridentZ 128gb 2933 Asus X399A UMA
SE +/- 371.27, N = 3
13466.77
2950X + GSkill FlareX 32gb Asus X399A
SE +/- 17.03, N = 3
13297.00
First Run to check Phoronix
SE +/- 6.58, N = 3
12595.00
2950X + GSkill 3200 32gb
SE +/- 29.45, N = 3
10677.00
2990WX + GSkill 2933 128gb BIOS 3.33
SE +/- 308.70, N = 3
10142.90
2990WX + GSKill 2933 128gb
SE +/- 33.95, N = 3
9854.67
2950X + GSkill 3200 32gb NUMA Mode
SE +/- 33.24, N = 3
9773.00
3K
6K
9K
12K
15K
1. (CC) gcc options: -O2 -lm

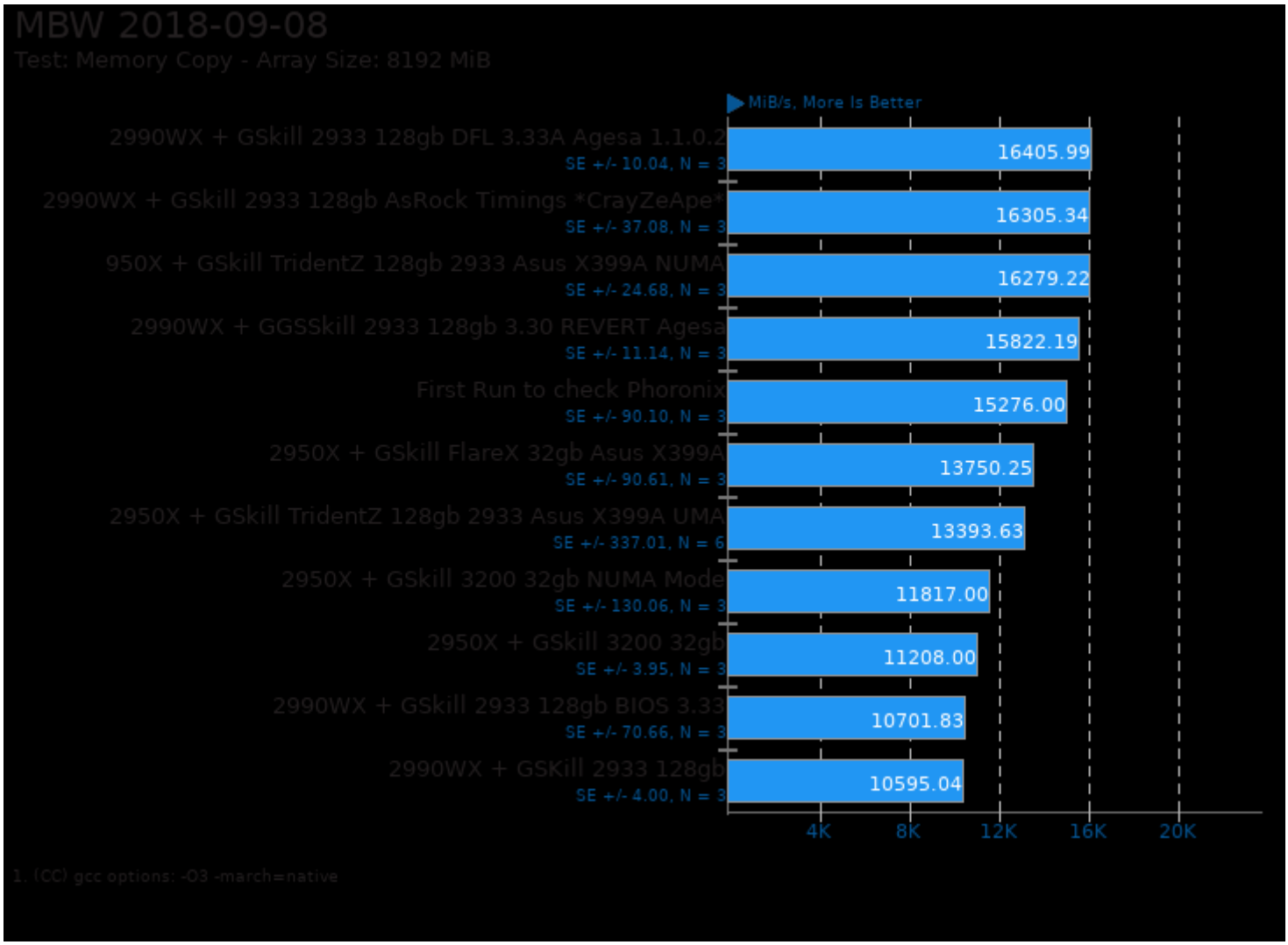

MBW 2018-09-08
Test: Memory Copy - Array Size: 128 MiB
MiB/s, More Is Better
2990WX + GSkill 2933 128gb DFL 3.33A Agesa 1.1.0.2
SE +/- 44.90, N = 3
16538.36
2990WX + GSkill 2933 128gb AsRock Timings *CrayZeApe*
SE +/- 25.06, N = 3
16506.69
950X + GSkill TridentZ 128gb 2933 Asus X399A NUMA
SE +/- 106.45, N = 3
16279.34
First Run to check Phoronix
SE +/- 34.46, N = 3
15636.00
2950X + GSkill FlareX 32gb Asus X399A
SE +/- 225.79, N = 5
14490.80
2950X + GSkill 3200 32gb NUMA Mode
SE +/- 90.84, N = 3
14086.00
2950X + GSkill TridentZ 128gb 2933 Asus X399A UMA
SE +/- 117.10, N = 3
13074.36
2990WX + GGSSkill 2933 128gb 3.30 REVERT Agesa
SE +/- 9.27, N = 3
11363.42
2950X + GSkill 3200 32gb
SE +/- 15.90, N = 3
11159.00
2990WX + GSKill 2933 128gb
SE +/- 37.56, N = 3
11070.18
2990WX + GSkill 2933 128gb BIOS 3.33
SE +/- 13.24, N = 3
6376.22
4K
8K
12K
16K
20K
1. (CC) gcc options: -O3 -march=native

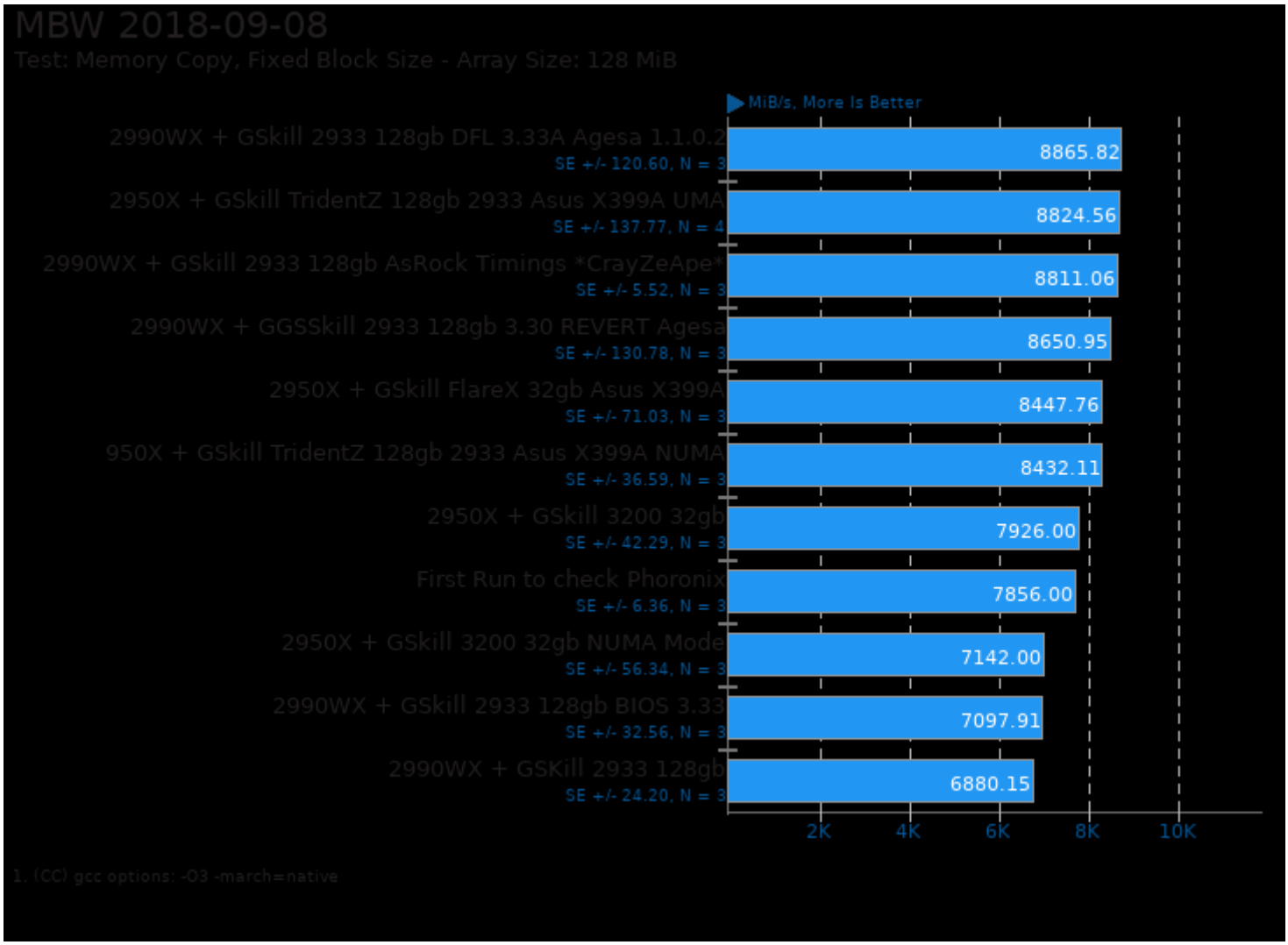

MBW 2018-09-08
Test: Memory Copy - Array Size: 512 MiB
MiB/s, More Is Better
2990WX + GSkill 2933 128gb AsRock Timings *CrayZeApe*
SE +/- 11.76, N = 3
16628.90
2990WX + GGSSkill 2933 128gb 3.30 REVERT Agesa
SE +/- 19.85, N = 3
16610.69
2990WX + GSkill 2933 128gb DFL 3.33A Agesa 1.1.0.2
SE +/- 12.96, N = 3
16592.29
950X + GSkill TridentZ 128gb 2933 Asus X399A NUMA
SE +/- 148.77, N = 3
16188.94
First Run to check Phoronix
SE +/- 11.80, N = 3
15493.00
2950X + GSkill FlareX 32gb Asus X399A
SE +/- 278.93, N = 6
14164.05
2950X + GSkill 3200 32gb NUMA Mode
SE +/- 79.20, N = 3
14069.00
2950X + GSkill TridentZ 128gb 2933 Asus X399A UMA
SE +/- 53.16, N = 3
13038.12
2950X + GSkill 3200 32gb
SE +/- 8.10, N = 3
11241.00
2990WX + GSKill 2933 128gb
SE +/- 22.65, N = 3
11035.03
2990WX + GSkill 2933 128gb BIOS 3.33
SE +/- 16.26, N = 3
8891.65
4K
8K
12K
16K
20K
1. (CC) gcc options: -O3 -march=native

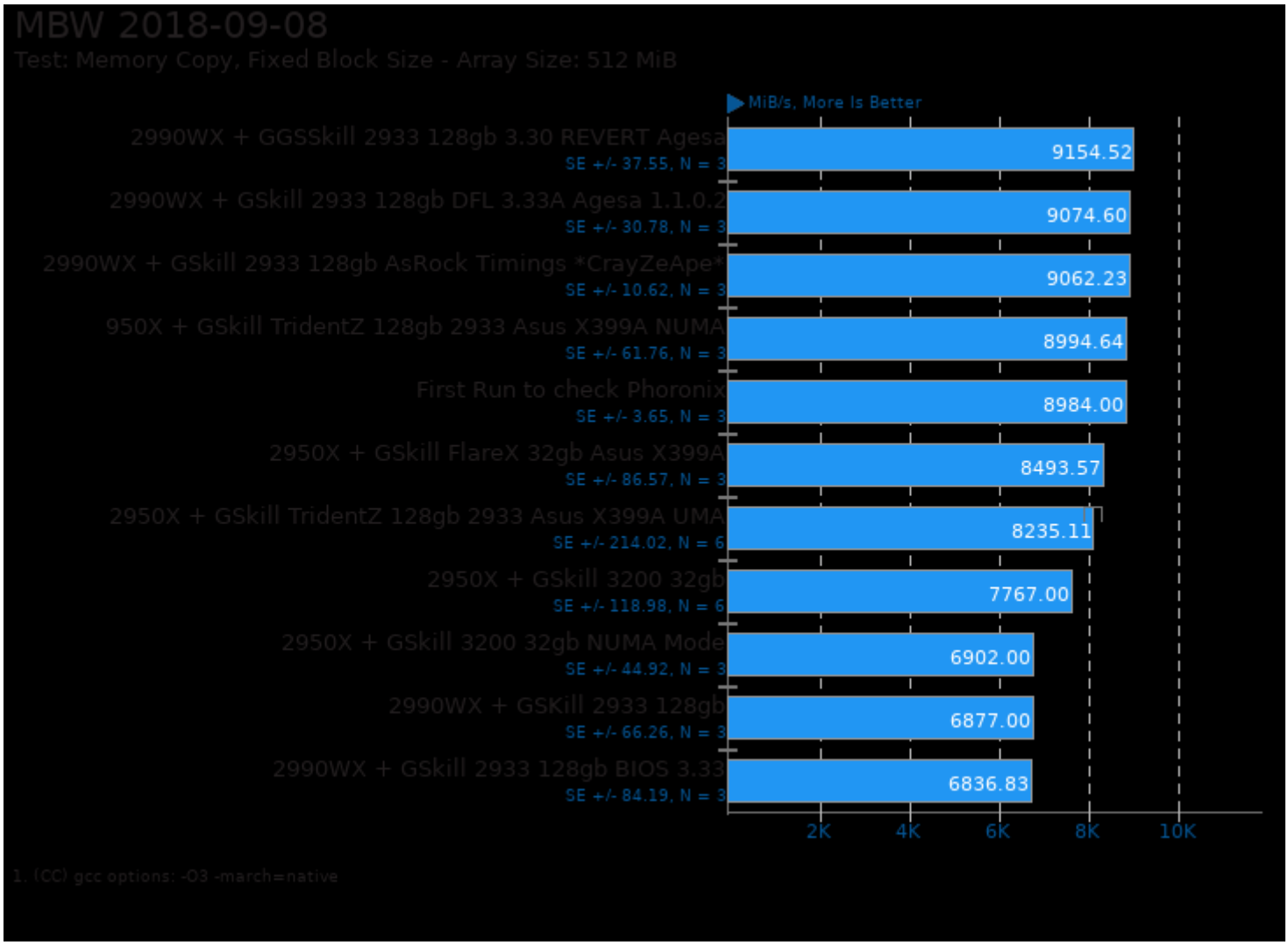

MBW 2018-09-08
Test: Memory Copy - Array Size: 1024 MiB
MiB/s, More Is Better
2990WX + GSkill 2933 128gb AsRock Timings *CrayZeApe*
SE +/- 47.04, N = 3
16491.52
2990WX + GSkill 2933 128gb DFL 3.33A Agesa 1.1.0.2
SE +/- 11.25, N = 3
16419.65
2990WX + GGSSkill 2933 128gb 3.30 REVERT Agesa
SE +/- 42.09, N = 3
16417.65
950X + GSkill TridentZ 128gb 2933 Asus X399A NUMA
SE +/- 51.21, N = 3
16298.38
First Run to check Phoronix
SE +/- 10.20, N = 3
15402.00
2950X + GSkill FlareX 32gb Asus X399A
SE +/- 290.43, N = 6
14091.13
2950X + GSkill 3200 32gb NUMA Mode
SE +/- 64.02, N = 3
13804.00
2950X + GSkill TridentZ 128gb 2933 Asus X399A UMA
SE +/- 190.30, N = 5
13470.64
2950X + GSkill 3200 32gb
SE +/- 5.17, N = 3
11244.00
2990WX + GSKill 2933 128gb
SE +/- 10.46, N = 3
10893.35
2990WX + GSkill 2933 128gb BIOS 3.33
SE +/- 22.00, N = 3
10749.82
4K
8K
12K
16K
20K
1. (CC) gcc options: -O3 -march=native

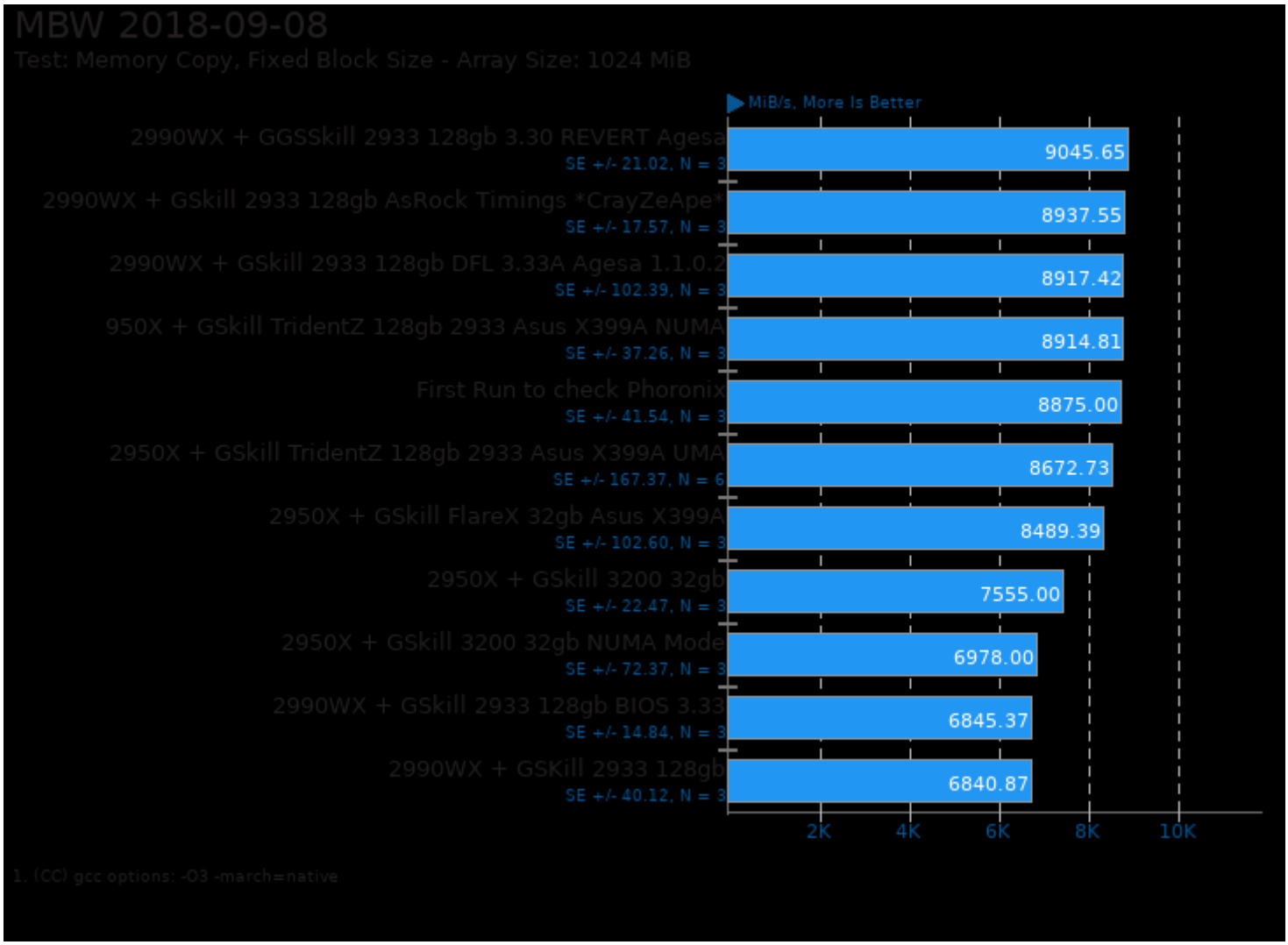
memory-2990-ecc

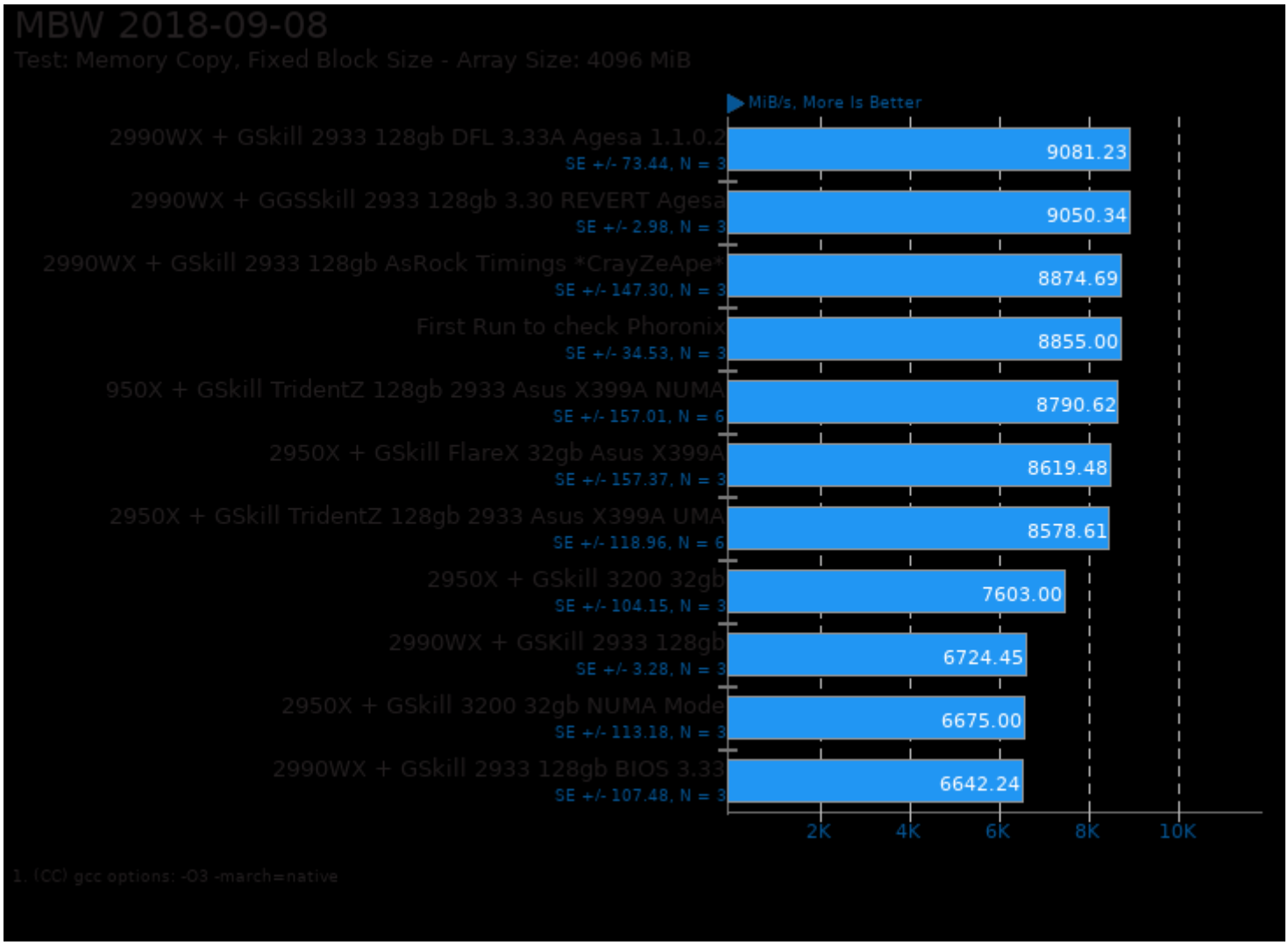


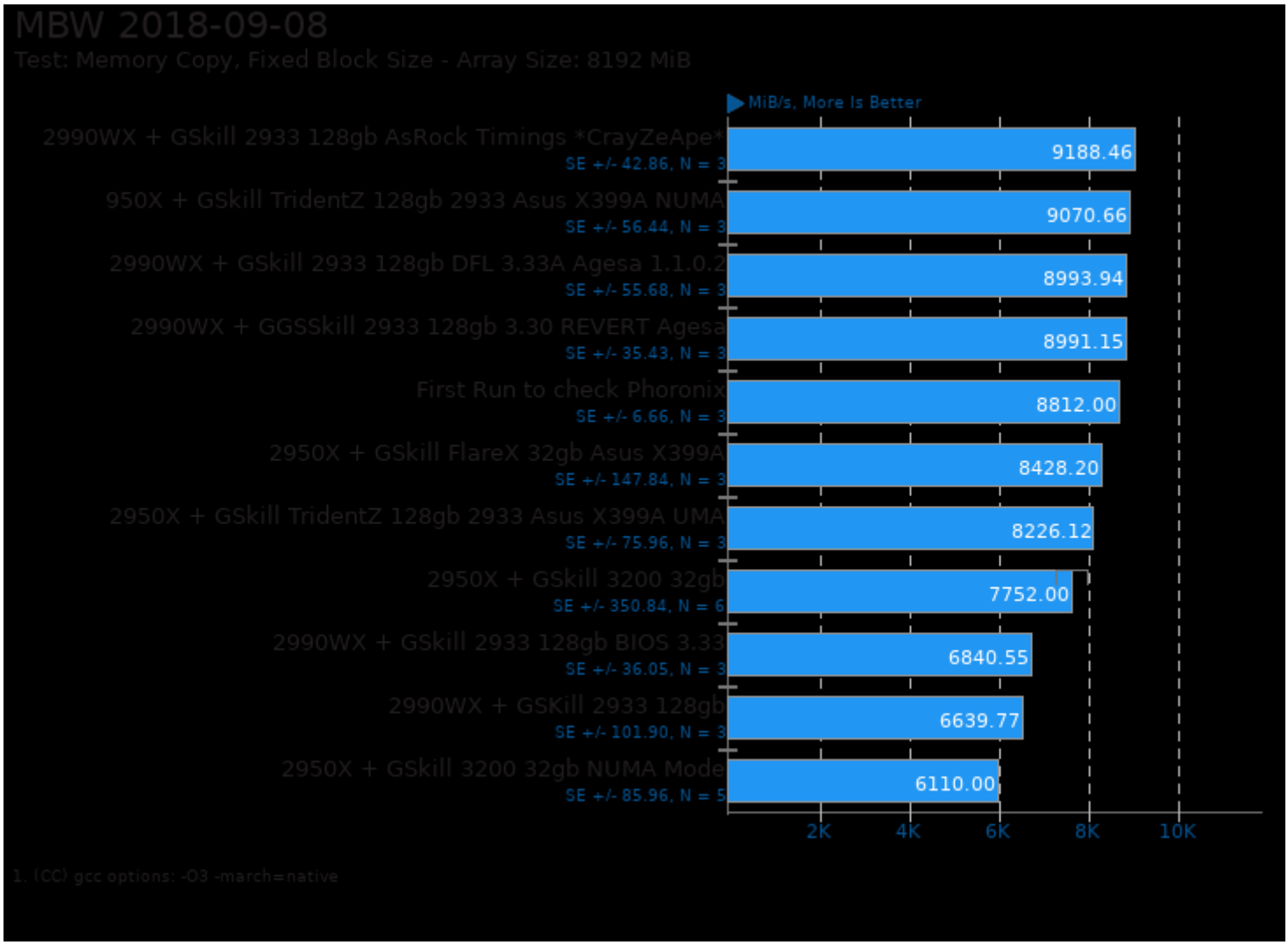

MBW 2018-09-08
Test: Memory Copy - Array Size: 8192 MiB
MiB/s, More Is Better
2990WX + GSkill 2933 128gb DFL 3.33A Agesa 1.1.0.2
SE +/- 10.04, N = 3
16405.99
2990WX + GSkill 2933 128gb AsRock Timings *CrayZeApe*
SE +/- 37.08, N = 3
16305.34
950X + GSkill TridentZ 128gb 2933 Asus X399A NUMA
SE +/- 24.68, N = 3
16279.22
2990WX + GGSSkill 2933 128gb 3.30 REVERT Agesa
SE +/- 11.14, N = 3
15822.19
First Run to check Phoronix
SE +/- 90.10, N = 3
15276.00
2950X + GSkill FlareX 32gb Asus X399A
SE +/- 90.61, N = 3
13750.25
2950X + GSkill TridentZ 128gb 2933 Asus X399A UMA
SE +/- 337.01, N = 6
13393.63
2950X + GSkill 3200 32gb NUMA Mode
SE +/- 130.06, N = 3
11817.00
2950X + GSkill 3200 32gb
SE +/- 3.95, N = 3
11208.00
2990WX + GSkill 2933 128gb BIOS 3.33
SE +/- 70.66, N = 3
10701.83
2990WX + GSKill 2933 128gb
SE +/- 4.00, N = 3
10595.04
4K
8K
12K
16K
20K
1. (CC) gcc options: -O3 -march=native


MBW 2018-09-08
Test: Memory Copy, Fixed Block Size - Array Size: 128 MiB
MiB/s, More Is Better
2990WX + GSkill 2933 128gb DFL 3.33A Agesa 1.1.0.2
SE +/- 120.60, N = 3
8865.82
2950X + GSkill TridentZ 128gb 2933 Asus X399A UMA
SE +/- 137.77, N = 4
8824.56
2990WX + GSkill 2933 128gb AsRock Timings *CrayZeApe*
SE +/- 5.52, N = 3
8811.06
2990WX + GGSSkill 2933 128gb 3.30 REVERT Agesa
SE +/- 130.78, N = 3
8650.95
2950X + GSkill FlareX 32gb Asus X399A
SE +/- 71.03, N = 3
8447.76
950X + GSkill TridentZ 128gb 2933 Asus X399A NUMA
SE +/- 36.59, N = 3
8432.11
2950X + GSkill 3200 32gb
SE +/- 42.29, N = 3
7926.00
First Run to check Phoronix
SE +/- 6.36, N = 3
7856.00
2950X + GSkill 3200 32gb NUMA Mode
SE +/- 56.34, N = 3
7142.00
2990WX + GSkill 2933 128gb BIOS 3.33
SE +/- 32.56, N = 3
7097.91
2990WX + GSKill 2933 128gb
SE +/- 24.20, N = 3
6880.15
2K
4K
6K
8K
10K
1. (CC) gcc options: -O3 -march=native


MBW 2018-09-08
Test: Memory Copy, Fixed Block Size - Array Size: 512 MiB
MiB/s, More Is Better
2990WX + GGSSkill 2933 128gb 3.30 REVERT Agesa
SE +/- 37.55, N = 3
9154.52
2990WX + GSkill 2933 128gb DFL 3.33A Agesa 1.1.0.2
SE +/- 30.78, N = 3
9074.60
2990WX + GSkill 2933 128gb AsRock Timings *CrayZeApe*
SE +/- 10.62, N = 3
9062.23
950X + GSkill TridentZ 128gb 2933 Asus X399A NUMA
SE +/- 61.76, N = 3
8994.64
First Run to check Phoronix
SE +/- 3.65, N = 3
8984.00
2950X + GSkill FlareX 32gb Asus X399A
SE +/- 86.57, N = 3
8493.57
2950X + GSkill TridentZ 128gb 2933 Asus X399A UMA
SE +/- 214.02, N = 6
8235.11
2950X + GSkill 3200 32gb
SE +/- 118.98, N = 6
7767.00
2950X + GSkill 3200 32gb NUMA Mode
SE +/- 44.92, N = 3
6902.00
2990WX + GSKill 2933 128gb
SE +/- 66.26, N = 3
6877.00
2990WX + GSkill 2933 128gb BIOS 3.33
SE +/- 84.19, N = 3
6836.83
2K
4K
6K
8K
10K
1. (CC) gcc options: -O3 -march=native


MBW 2018-09-08
Test: Memory Copy, Fixed Block Size - Array Size: 1024 MiB
MiB/s, More Is Better
2990WX + GGSSkill 2933 128gb 3.30 REVERT Agesa
SE +/- 21.02, N = 3
9045.65
2990WX + GSkill 2933 128gb AsRock Timings *CrayZeApe*
SE +/- 17.57, N = 3
8937.55
2990WX + GSkill 2933 128gb DFL 3.33A Agesa 1.1.0.2
SE +/- 102.39, N = 3
8917.42
950X + GSkill TridentZ 128gb 2933 Asus X399A NUMA
SE +/- 37.26, N = 3
8914.81
First Run to check Phoronix
SE +/- 41.54, N = 3
8875.00
2950X + GSkill TridentZ 128gb 2933 Asus X399A UMA
SE +/- 167.37, N = 6
8672.73
2950X + GSkill FlareX 32gb Asus X399A
SE +/- 102.60, N = 3
8489.39
2950X + GSkill 3200 32gb
SE +/- 22.47, N = 3
7555.00
2950X + GSkill 3200 32gb NUMA Mode
SE +/- 72.37, N = 3
6978.00
2990WX + GSkill 2933 128gb BIOS 3.33
SE +/- 14.84, N = 3
6845.37
2990WX + GSKill 2933 128gb
SE +/- 40.12, N = 3
6840.87
2K
4K
6K
8K
10K
1. (CC) gcc options: -O3 -march=native


MBW 2018-09-08
Test: Memory Copy, Fixed Block Size - Array Size: 4096 MiB
MiB/s, More Is Better
2990WX + GSkill 2933 128gb DFL 3.33A Agesa 1.1.0.2
SE +/- 73.44, N = 3
9081.23
2990WX + GGSSkill 2933 128gb 3.30 REVERT Agesa
SE +/- 2.98, N = 3
9050.34
2990WX + GSkill 2933 128gb AsRock Timings *CrayZeApe*
SE +/- 147.30, N = 3
8874.69
First Run to check Phoronix
SE +/- 34.53, N = 3
8855.00
950X + GSkill TridentZ 128gb 2933 Asus X399A NUMA
SE +/- 157.01, N = 6
8790.62
2950X + GSkill FlareX 32gb Asus X399A
SE +/- 157.37, N = 3
8619.48
2950X + GSkill TridentZ 128gb 2933 Asus X399A UMA
SE +/- 118.96, N = 6
8578.61
2950X + GSkill 3200 32gb
SE +/- 104.15, N = 3
7603.00
2990WX + GSKill 2933 128gb
SE +/- 3.28, N = 3
6724.45
2950X + GSkill 3200 32gb NUMA Mode
SE +/- 113.18, N = 3
6675.00
2990WX + GSkill 2933 128gb BIOS 3.33
SE +/- 107.48, N = 3
6642.24
2K
4K
6K
8K
10K
1. (CC) gcc options: -O3 -march=native



This file was automatically generated via the Phoronix Test Suite benchmarking software on Friday, 29 March 2024 07:15.