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CC23Assignment2

KVM testing on Ubuntu 20.04 via the Phoronix Test Suite.

Test Systems:

t2_micro

Processor: Intel Xeon E5-2686 v4 (1 Core), Motherboard: Xen HVM domU (4.11.amazon BIOS), Chipset: Intel 440FX 82441FX PMC, Memory: 1024MB, Disk: 8GB, Graphics: Cirrus Logic GD 5446

OS: Ubuntu 20.04, Kernel: 5.15.0-1028-aws (x86_64), Vulkan: 1.1.182, Compiler: GCC 9.4.0, File-System: ext4, System Layer: Xen HVM domU 4.11.amazon

Kernel Notes: Transparent Huge Pages: madvise
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --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-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-9-Av3uEd/gcc-9-9.4.0/debian/tmp-nvptx/usr,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-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: CPU Microcode: 0xb000040
Security Notes: itlb_multihit: KVM: Mitigation of VMX unsupported + l1tf: Mitigation of PTE Inversion + mds: Vulnerable: Clear buffers attempted no microcode; SMT Host

state unknown + meltdown: Mitigation of PTI + mmio_stale_data: Vulnerable: Clear buffers attempted no microcode; SMT Host state unknown + retbleed: Not affected + spec_store_bypass: Vulnerable + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Retpolines STIBP: disabled RSB filling PBRSB-eIBRS: Not affected + srbds: Not affected + tsx_async_abort: Not affected

m3_medium

Processor: Intel Xeon E5-2670 v2 (1 Core), Motherboard: Xen HVM domU (4.11.amazon BIOS), Chipset: Intel 440FX 82441FX PMC, Memory: 4096MB, Disk: 8GB, Graphics: Cirrus Logic GD 5446

OS: Ubuntu 20.04, Kernel: 5.15.0-1028-aws (x86_64), Vulkan: 1.1.182, Compiler: GCC 9.4.0, File-System: ext4, System Layer: Xen HVM domU 4.11.amazon

Kernel Notes: Transparent Huge Pages: madvise
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --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-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-9-Av3uEd/gcc-9-9.4.0/debian/tmp-nvptx/usr,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-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: CPU Microcode: 0x42e
Security Notes: itlb_multihit: KVM: Mitigation of VMX unsupported + l1tf: Mitigation of PTE Inversion + mds: Vulnerable: Clear buffers attempted no microcode; SMT Host state unknown + meltdown: Mitigation of PTI + mmio_stale_data: Unknown: No mitigations + retbleed: Not affected + spec_store_bypass: Vulnerable + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Retpolines STIBP: disabled RSB filling PBRSB-eIBRS: Not affected + srbds: Not affected + tsx_async_abort: Not affected

c1_medium

Processor: Intel Xeon E5-2651 v2 (2 Cores), Motherboard: Xen HVM domU (4.2.amazon BIOS), Chipset: Intel 440FX 82441FX PMC, Memory: 2048MB, Disk: 8GB, Graphics: Cirrus Logic GD 5446

OS: Ubuntu 20.04, Kernel: 5.15.0-1028-aws (x86_64), Vulkan: 1.1.182, Compiler: GCC 9.4.0, File-System: ext4, System Layer: Xen HVM domU 4.2.amazon

Kernel Notes: Transparent Huge Pages: madvise
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --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-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-9-Av3uEd/gcc-9-9.4.0/debian/tmp-nvptx/usr,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-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: CPU Microcode: 0x42e
Security Notes: itlb_multihit: KVM: Mitigation of VMX unsupported + l1tf: Mitigation of PTE Inversion + mds: Vulnerable: Clear buffers attempted no microcode; SMT Host state unknown + meltdown: Mitigation of PTI + mmio_stale_data: Unknown: No mitigations + retbleed: Not affected + spec_store_bypass: Vulnerable + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Retpolines STIBP: disabled RSB filling PBRSB-eIBRS: Not affected + srbds: Not affected + tsx_async_abort: Not affected

t3a_medium

Processor: AMD EPYC 7571 (1 Core / 2 Threads), Motherboard: Amazon EC2 t3a.medium (1.0 BIOS), Chipset: Intel 440FX 82441FX PMC, Memory: 4096MB, Disk: 9GB Amazon Elastic Block Store, Network: Amazon Elastic

OS: Ubuntu 20.04, Kernel: 5.15.0-1028-aws (x86_64), Vulkan: 1.1.182, Compiler: GCC 9.4.0, File-System: ext4, System Layer: KVM

Kernel Notes: Transparent Huge Pages: madvise
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --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-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-9-Av3uEd/gcc-9-9.4.0/debian/tmp-nvptx/usr,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-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: CPU Microcode: 0x800126e
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + mmio_stale_data: Not affected + retbleed: Mitigation of untrained return thunk; SMT vulnerable + spec_store_bypass: Vulnerable + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Retpolines STIBP: disabled RSB filling PBRSB-eIBRS: Not affected + srbds: Not affected + tsx_async_abort: Not affected

m6a_large

Processor: AMD EPYC 7R13 (1 Core / 2 Threads), Motherboard: Amazon EC2 m6a.large (1.0 BIOS), Chipset: Intel 440FX 82441FX PMC, Memory: 8GB, Disk: 9GB Amazon Elastic Block Store, Network: Amazon Elastic

OS: Ubuntu 20.04, Kernel: 5.15.0-1028-aws (x86_64), Vulkan: 1.1.182, Compiler: GCC 9.4.0, File-System: ext4, System Layer: KVM

Kernel Notes: Transparent Huge Pages: madvise
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --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-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-9-Av3uEd/gcc-9-9.4.0/debian/tmp-nvptx/usr,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-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: CPU Microcode: 0xa001173
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + mmio_stale_data: Not affected + retbleed: 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 Retpolines IBPB: conditional IBRS_FW STIBP: conditional RSB filling PBRSB-eIBRS: Not affected + srbds: Not affected + tsx_async_abort: Not affected

c6a_large

Processor: AMD EPYC 7R13 (1 Core / 2 Threads), Motherboard: Amazon EC2 c6a.large (1.0 BIOS), Chipset: Intel 440FX 82441FX PMC, Memory: 4096MB, Disk: 9GB Amazon Elastic Block Store, Network: Amazon Elastic

OS: Ubuntu 20.04, Kernel: 5.15.0-1028-aws (x86_64), Vulkan: 1.1.182, Compiler: GCC 9.4.0, File-System: ext4, System Layer: KVM

Kernel Notes: Transparent Huge Pages: madvise
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --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-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-9-Av3uEd/gcc-9-9.4.0/debian/tmp-nvptx/usr,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-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: CPU Microcode: 0xa001173
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + mmio_stale_data: Not affected + retbleed: 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 Retpolines IBPB: conditional IBRS_FW STIBP: conditional RSB filling PBRSB-eIBRS: Not affected + srbds: Not affected + tsx_async_abort: Not affected

t3a_large

Processor: AMD EPYC 7571 (1 Core / 2 Threads), Motherboard: Amazon EC2 t3a.large (1.0 BIOS), Chipset: Intel 440FX 82441FX PMC, Memory: 8GB, Disk: 9GB Amazon Elastic Block Store, Network: Amazon Elastic

OS: Ubuntu 20.04, Kernel: 5.15.0-1028-aws (x86_64), Vulkan: 1.1.182, Compiler: GCC 9.4.0, File-System: ext4, System Layer: KVM

Kernel Notes: Transparent Huge Pages: madvise
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --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-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-9-Av3uEd/gcc-9-9.4.0/debian/tmp-nvptx/usr,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-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: CPU Microcode: 0x800126e
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + mmio_stale_data: Not affected + retbleed: Mitigation of untrained return thunk; SMT vulnerable + spec_store_bypass: Vulnerable + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Retpolines STIBP: disabled RSB filling PBRSB-eIBRS: Not affected + srbds: Not affected + tsx_async_abort: Not affected

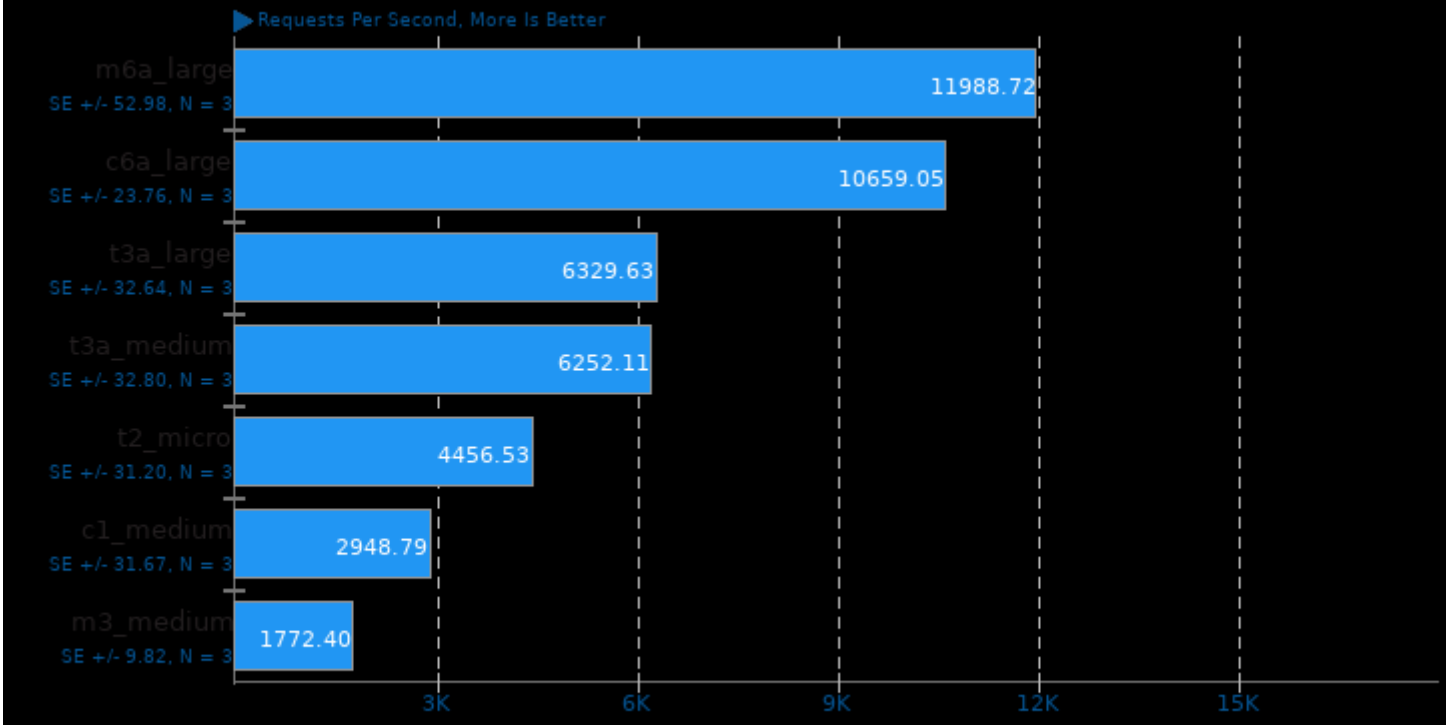
	t2_micro	m3_medium	c1_medium	t3a_medium	m6a_large	c6a_large	t3a_large

CC23Assignment2

Apache Benchmark - S.W.P.S (Reqs/sec)	4457	**1772**	2949	6252	**11989**	10659	6330
Normalized	37.17%	14.78%	24.6%	52.15%	100%	88.91%	52.8%
Standard Deviation	1.2%	1%	1.9%	0.9%	0.8%	0.4%	0.9%
John The Ripper - Blowfish (Real C/S)	1047	**470**	1138	1450	**2058**	1876	1451
Normalized	50.87%	22.84%	55.3%	70.46%	100%	91.16%	70.51%
Standard Deviation			1.7%			0.7%	0.1%
LAME MP3 Encoding - WAV To MP3 (sec)	13.607	**28.607**	23.721	14.025	**7.496**	8.435	13.747
Normalized	55.09%	26.2%	31.6%	53.45%	100%	88.87%	54.53%
Standard Deviation	1.3%	0.3%	2.2%	1.8%	0.1%	13.4%	0.5%
Loopback TCP Network Performance - T.T.T.1.V.L (sec)	23.161	**42.881**	32.615	23.544	**14.082**	15.422	23.058
Normalized	60.8%	32.84%	43.18%	59.81%	100%	91.31%	61.07%
Standard Deviation	1.4%	0.8%	3%	1.2%	2.3%	5.9%	0.7%
OpenSSL - RSA4096 (sign/s)	122.6	**56.7**	137.5	133.4	**258.1**	238.6	136.1
Normalized	47.5%	21.97%	53.27%	51.69%	100%	92.44%	52.73%
Standard Deviation	1.2%	0%	2.2%	6.4%	1.7%	0.3%	0.3%
OpenSSL - RSA4096 (verify/s)	7984	**3661**	8981	8757	**16413**	15613	8834
Normalized	48.65%	22.31%	54.72%	53.36%	100%	95.13%	53.83%
Standard Deviation	0.2%	0.4%	0.9%	2.5%	7.3%	0.8%	0.1%
Stream - Add (MB/s)	9984	**6474**	13795	16045	**30915**	24680	16422
Normalized	32.29%	20.94%	44.62%	51.9%	100%	79.83%	53.12%
Standard Deviation	2.3%	6.1%	0.5%	7.1%	0.1%	2.3%	6.7%

Apache Benchmark 2.4.29

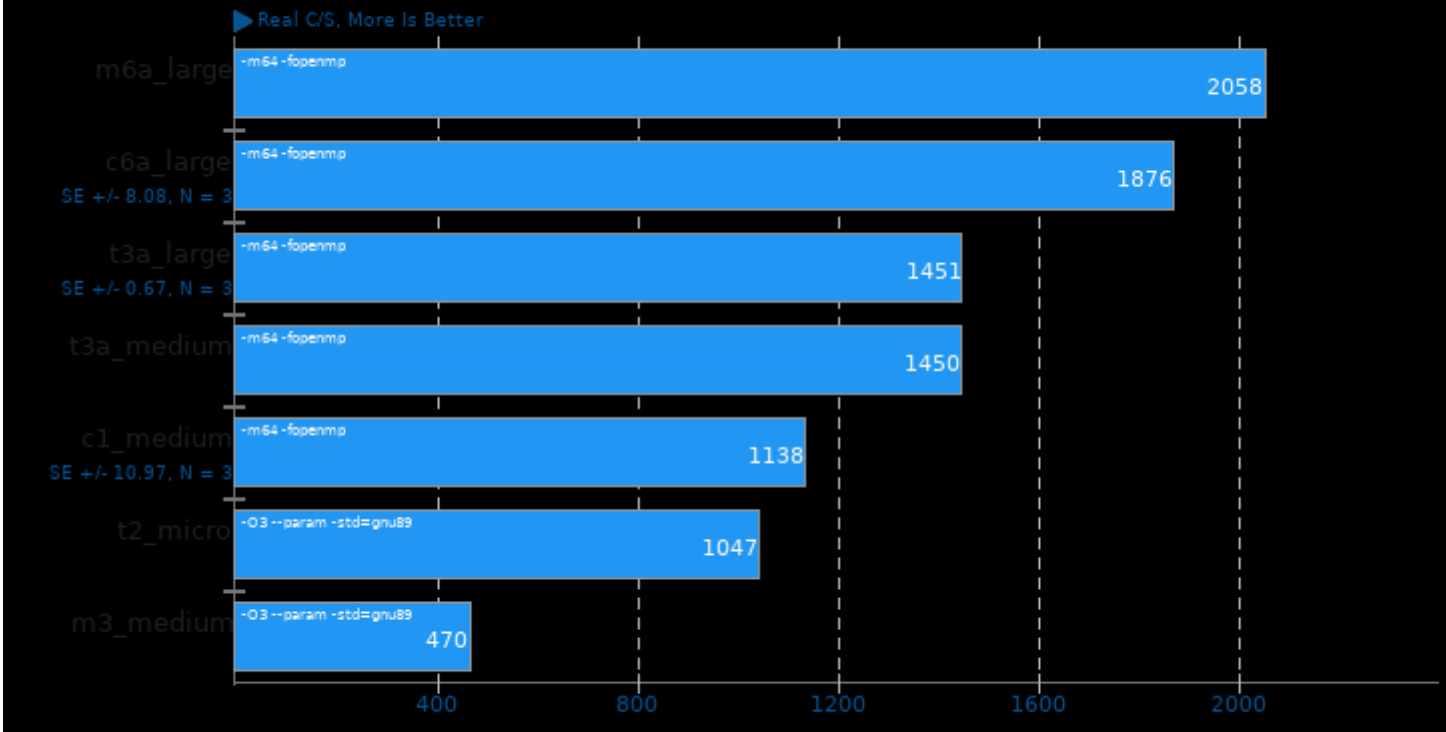
Static Web Page Serving



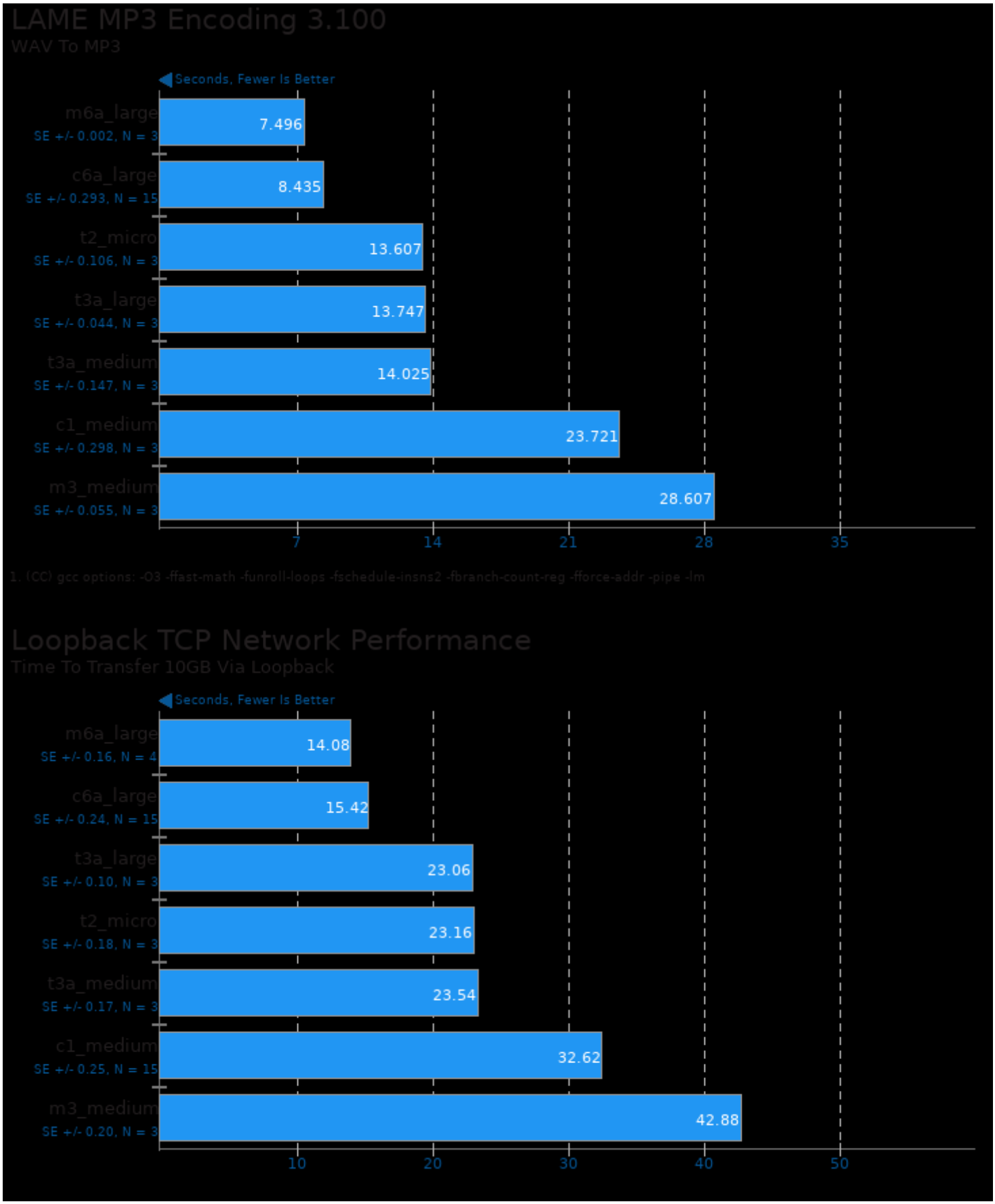
1. (CC) gcc options: -shared -fPIC -O2 -pthread

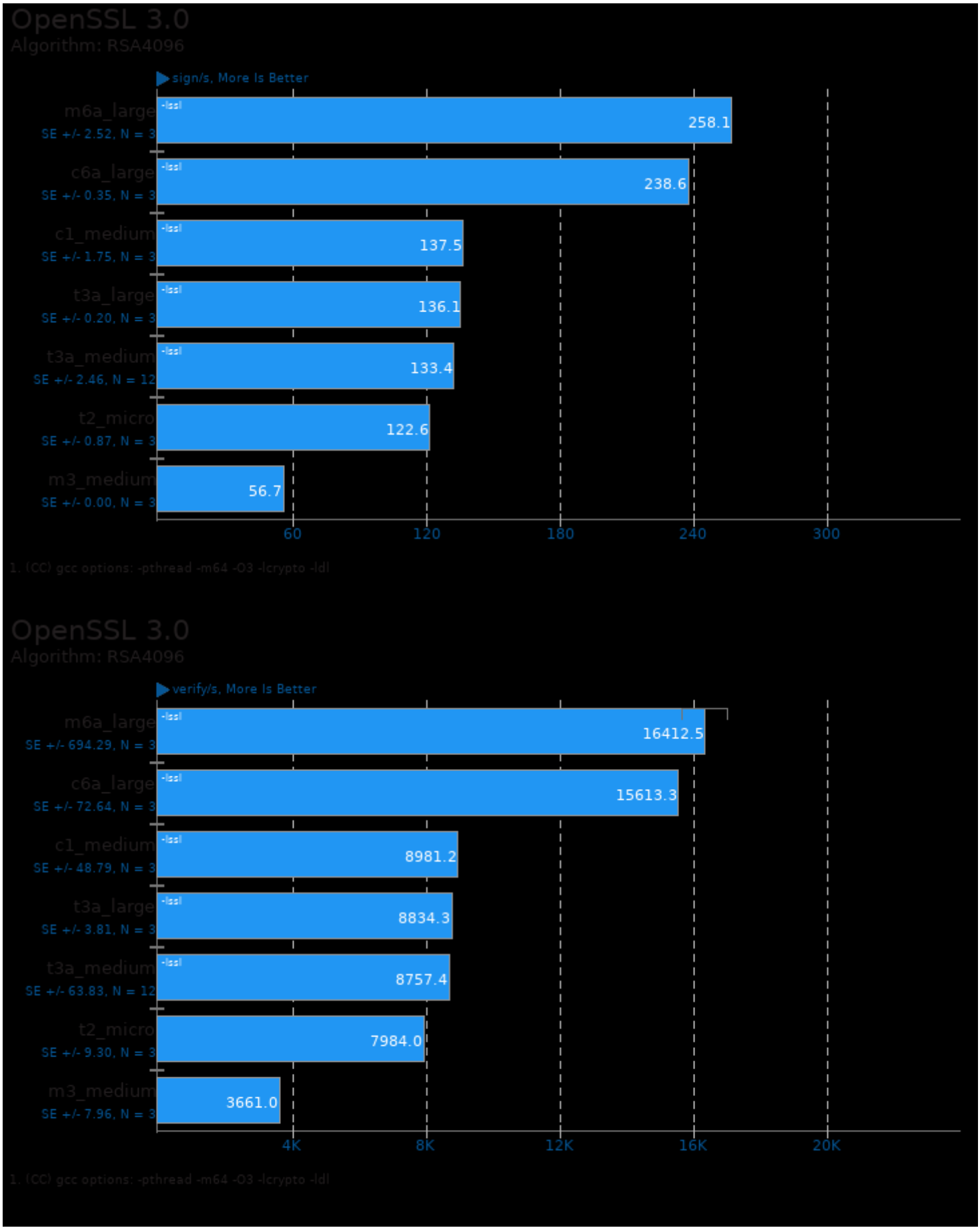
John The Ripper 1.9.0-jumbo-1

Test: Blowfish

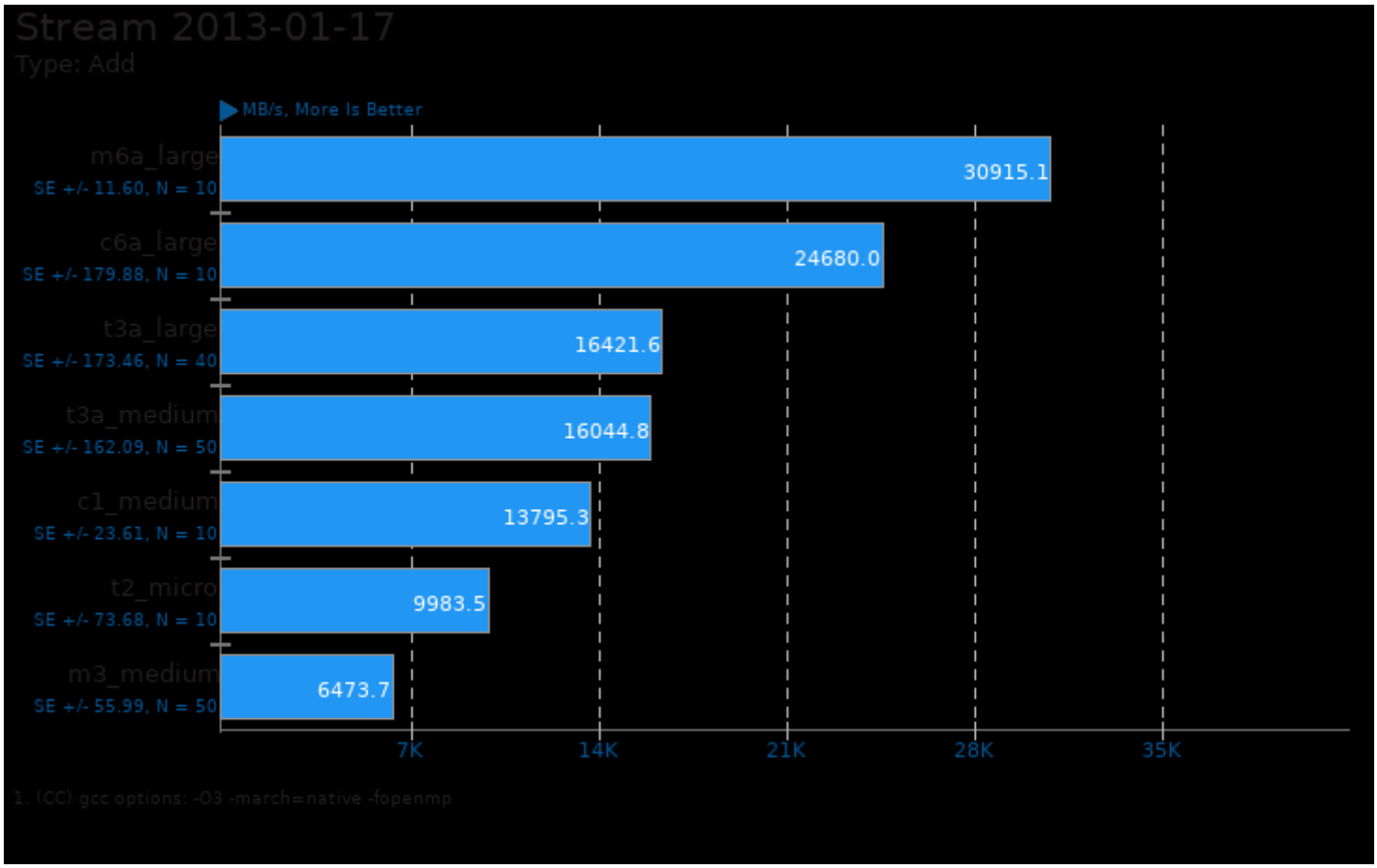


1. (CC) gcc options:


LAME MP3 Encoding 3.100
WAV To MP3
Seconds, Fewer Is Better
m6a_large
SE +/- 0.002, N = 3
7.496
c6a_large
SE +/- 0.293, N = 15
8.435
t2_micro
SE +/- 0.106, N = 3
13.607
t3a_large
SE +/- 0.044, N = 3
13.747
t3a_medium
SE +/- 0.147, N = 3
14.025
c1_medium
SE +/- 0.298, N = 3
23.721
m3_medium
SE +/- 0.055, N = 3
28.607
7
14
21
28
35
1. (CC) gcc options: -O3 -ffast-math -funroll-loops -fschedule-insns2 -fbranch-count-reg -fforce-addr -pipe -lm
Loopback TCP Network Performance
Time To Transfer 10GB Via Loopback
Seconds, Fewer Is Better
m6a_large
SE +/- 0.16, N = 4
14.08
c6a_large
SE +/- 0.24, N = 15
15.42
t3a_large
SE +/- 0.10, N = 3
23.06
t2_micro
SE +/- 0.18, N = 3
23.16
t3a_medium
SE +/- 0.17, N = 3
23.54
c1_medium
SE +/- 0.25, N = 15
32.62
m3_medium
SE +/- 0.20, N = 3
42.88
10
20
30
40
50

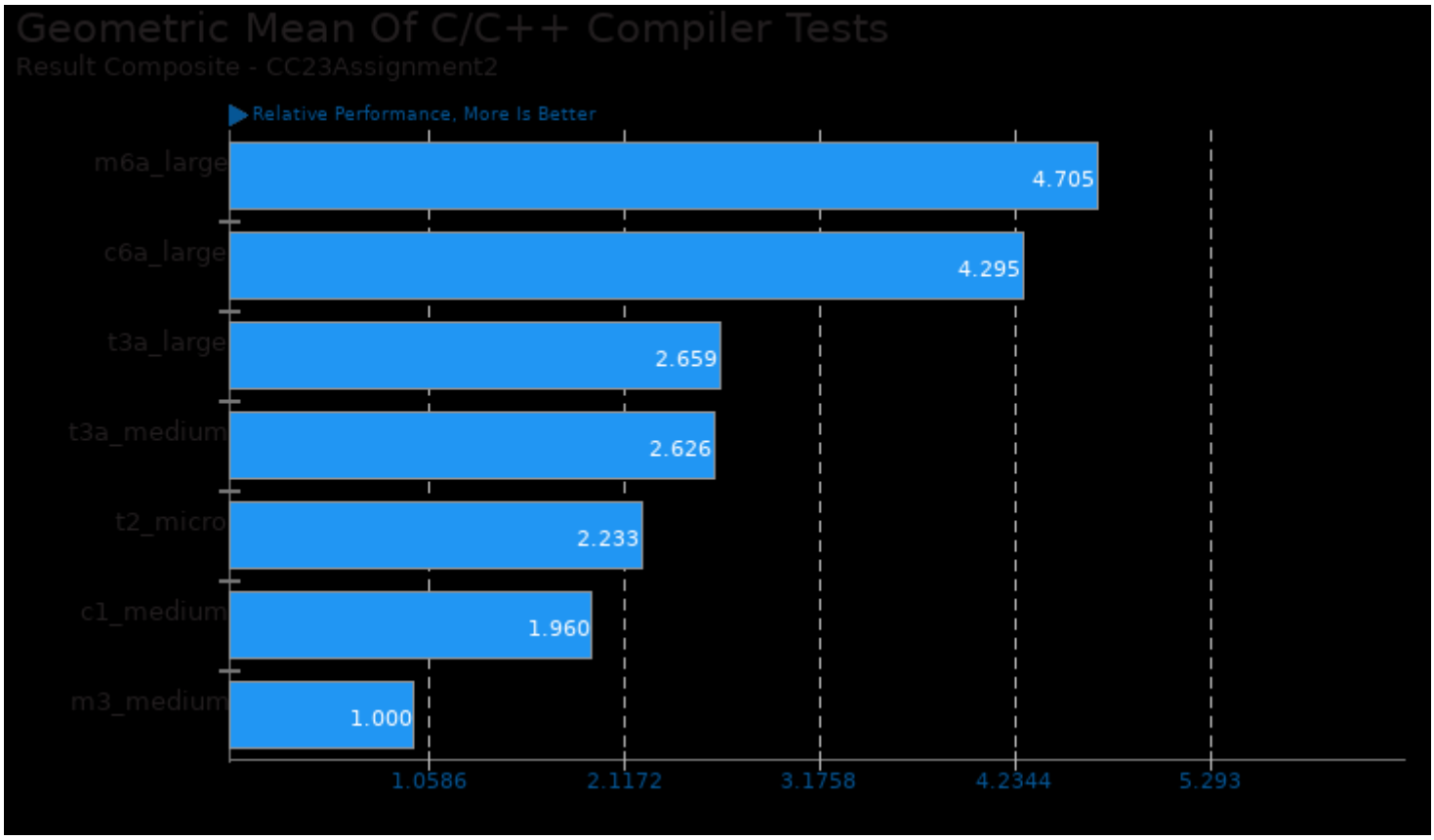

OpenSSL 3.0
Algorithm: RSA4096
sign/s, More Is Better
m6a_large
SE +/- 2.52, N = 3
c6a_large
SE +/- 0.35, N = 3
c1_medium
SE +/- 1.75, N = 3
t3a_large
SE +/- 0.20, N = 3
t3a_medium
SE +/- 2.46, N = 12
t2_micro
SE +/- 0.87, N = 3
m3_medium
SE +/- 0.00, N = 3
-lssl
258.1
238.6
137.5
136.1
133.4
122.6
56.7
60
120
180
240
300
1. (CC) gcc options: -pthread -m64 -O3 -lcrypto -ldl
OpenSSL 3.0
Algorithm: RSA4096
verify/s, More Is Better
m6a_large
SE +/- 694.29, N = 3
c6a_large
SE +/- 72.64, N = 3
c1_medium
SE +/- 48.79, N = 3
t3a_large
SE +/- 3.81, N = 3
t3a_medium
SE +/- 63.83, N = 12
t2_micro
SE +/- 9.30, N = 3
m3_medium
SE +/- 7.96, N = 3
-lssl
16412.5
15613.3
8981.2
8834.3
8757.4
7984.0
3661.0
4K
8K
12K
16K
20K
1. (CC) gcc options: -pthread -m64 -O3 -lcrypto -ldl

CC23Assignment2

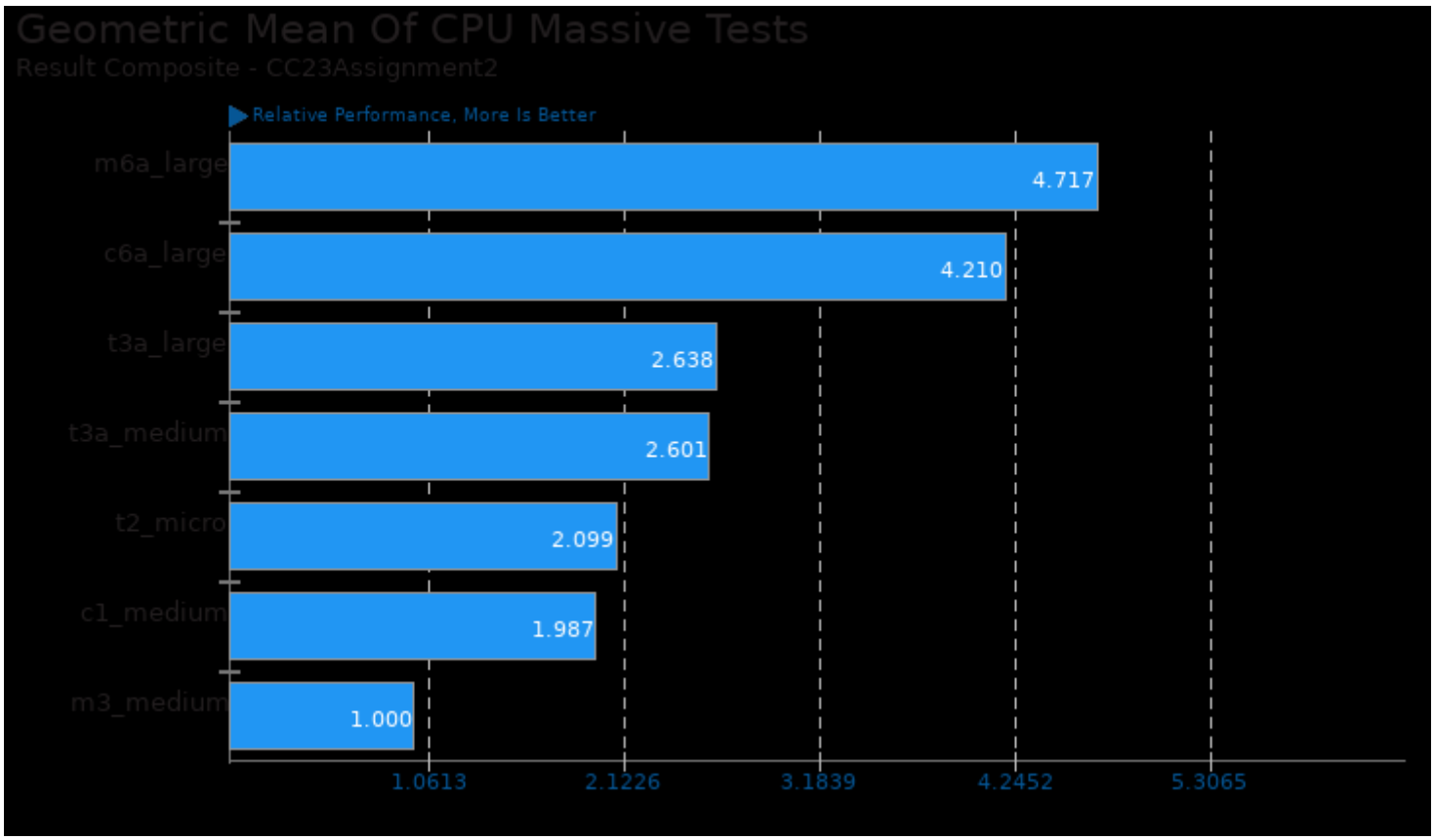


CC23Assignment2

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

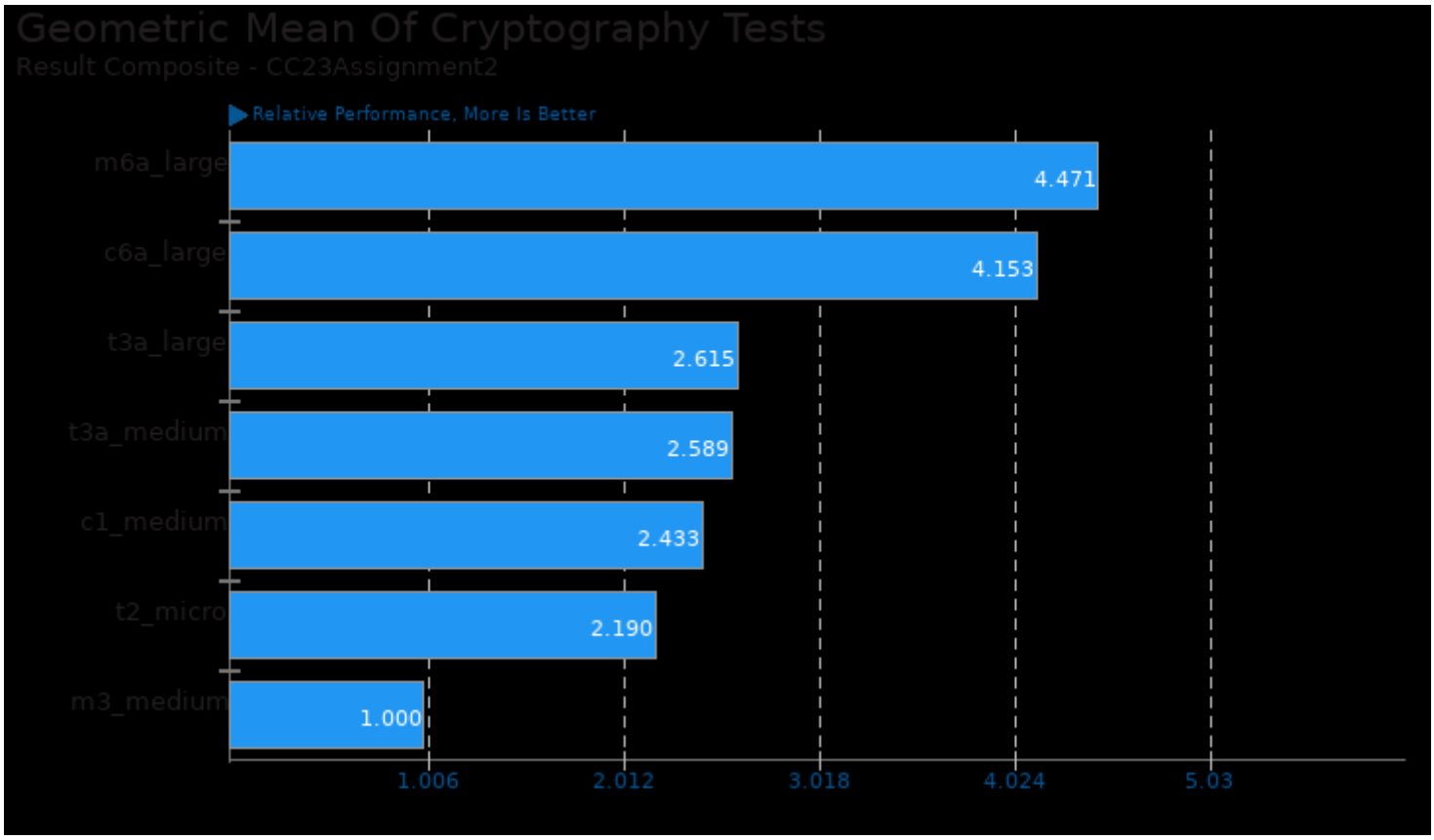


Geometric mean based upon tests: pts/encode-mp3, pts/apache, pts/john-the-ripper and pts/openssl

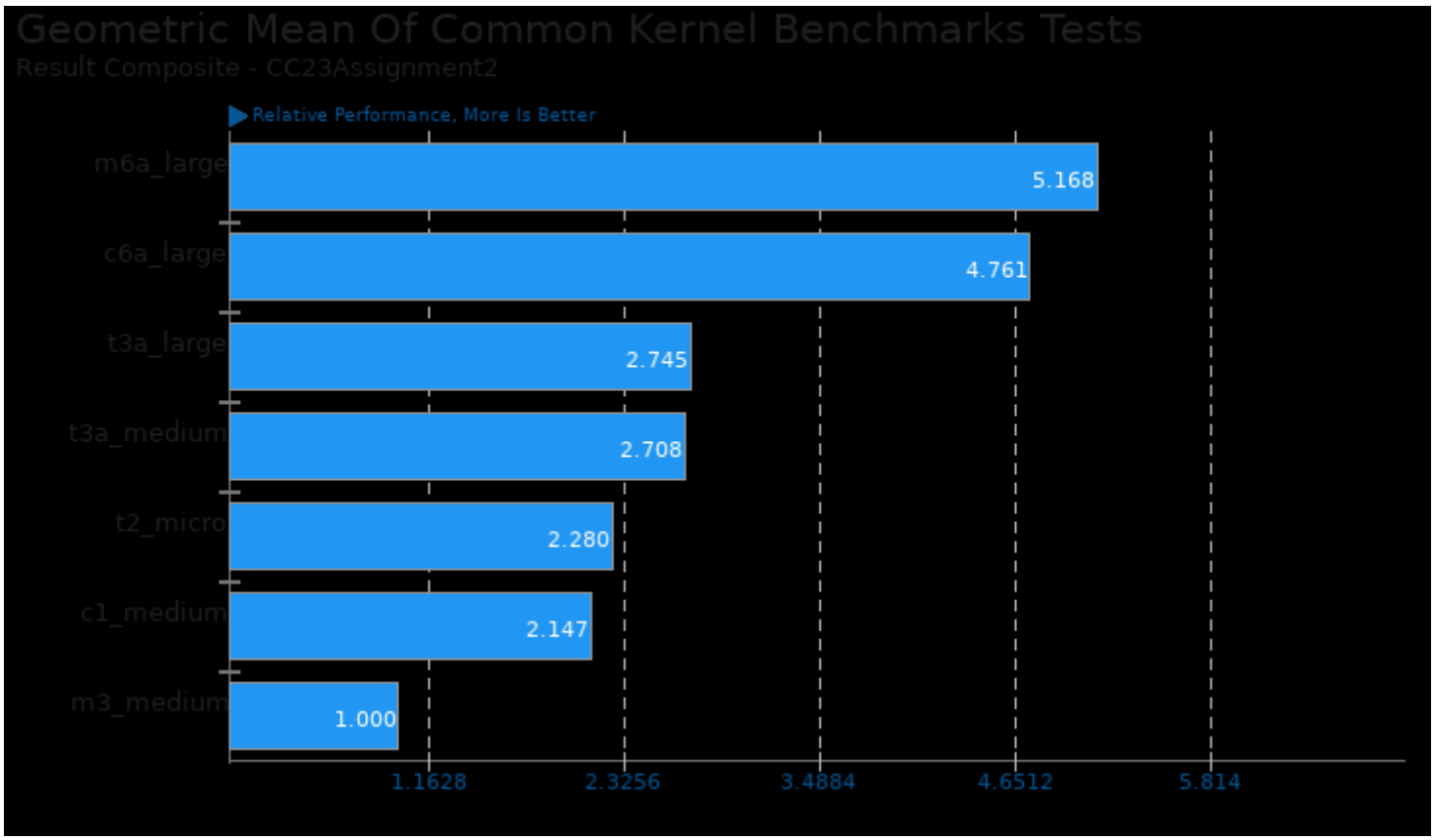


CC23Assignment2

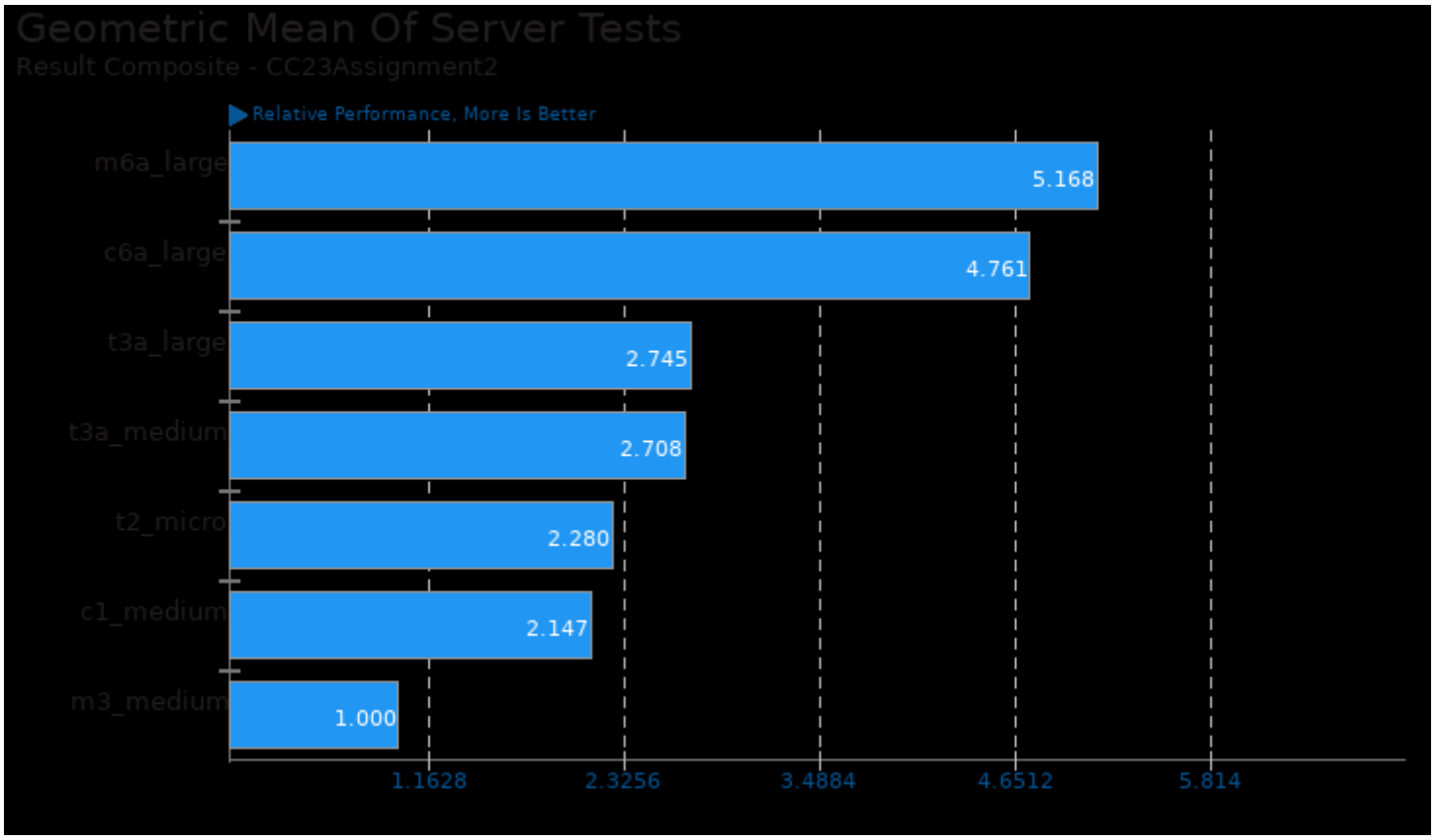
Geometric mean based upon tests: pts/apache, pts/encode-mp3, pts/john-the-ripper, pts/openssl and pts/stream



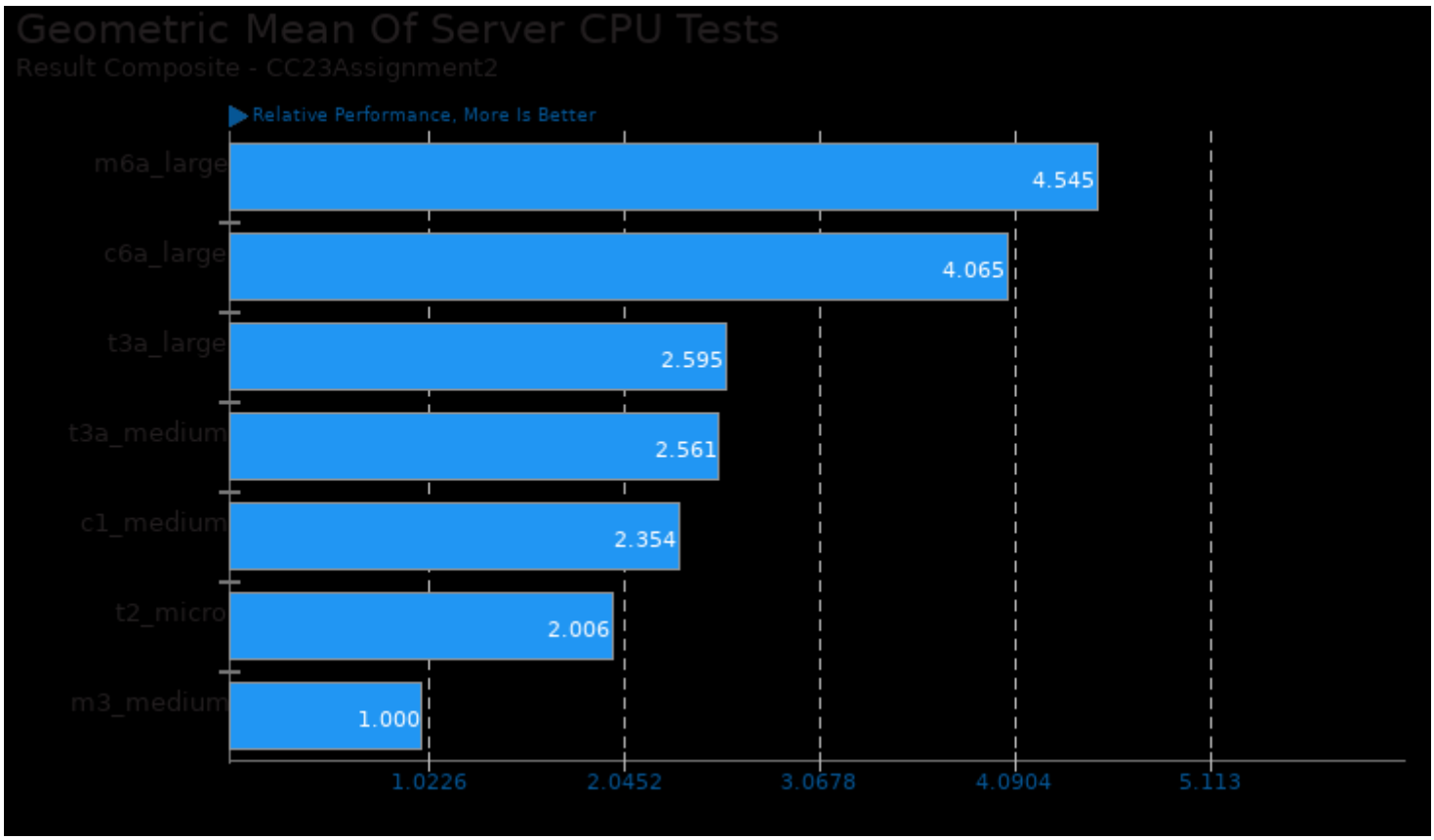
Geometric mean based upon tests: pts/openssl and pts/john-the-ripper



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



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



CC23Assignment2

Geometric mean based upon tests: pts/john-the-ripper, pts/openssl and pts/stream

This file was automatically generated via the Phoronix Test Suite benchmarking software on Thursday, 28 March 2024 14:58.