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Amazon EC2 Cloud Instance Benchmars

Amazon Elastic Compute Cloud EC2 Benchmarks of various instances of Ubuntu 12.04 LTS x86_64 64-bit for a future article on Phoronix.com by Michael Larabel.

Automated Executive Summary

goren-aj had the most wins, coming in first place for 73% of the tests.

Based on the geometric mean of all complete results, the fastest (goren-aj) was 13.22x the speed of the slowest (m1.small). c1.xlarge was 0.458x the speed of goren-aj, m2.2xlarge was 0.936x the speed of c1.xlarge, m1.xlarge was 0.82x the speed of m2.2xlarge, c1.medium was 0.644x the speed of m1.xlarge, m1.large was 0.749x the speed of c1.medium, m1.medium was 0.889x the speed of m1.large, m1.small was 0.502x the speed of m1.medium.

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

NAS Parallel Benchmarks (Test / Class: EP.B) at 37.865x
NAS Parallel Benchmarks (Test / Class: MG.B) at 35.842x
C-Ray (Total Time) at 35.481x
John The Ripper (Test: Blowfish) at 31.604x
Timed Linux Kernel Compilation (Time To Compile) at 30.37x
NAS Parallel Benchmarks (Test / Class: FT.B) at 29.431x
Parallel BZIP2 Compression (256MB File Compression) at 29.008x

NAS Parallel Benchmarks (Test / Class: LU.A) at 27.466x
x264 (H.264 Video Encoding) at 26.969x
NAS Parallel Benchmarks (Test / Class: UA.A) at 26.122x.

Test Systems:

m1.small

Processor: Intel Xeon E5645 @ 2.00GHz (1 Core), Memory: 2048MB, Disk: 8GB

OS: Ubuntu 12.04, Kernel: 3.2.0-25-virtual (x86_64), Compiler: GCC 4.6, File-System: ext4, System Layer: Xen 3.4.3-2.6.18 Hypervisor

Compiler Notes: --build=x86_64-linux-gnu --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-languages=c,c++,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-arch-32=i686 --with-tune=generic -v
Disk Mount Options Notes: acl,barrier=1,data=ordered,relatime,rw,user_xattr

c1.medium

Processor: Intel Xeon E5410 @ 2.33GHz (2 Cores), Memory: 2048MB, Disk: 8GB

OS: Ubuntu 12.04, Kernel: 3.2.0-25-virtual (x86_64), Compiler: GCC 4.6, File-System: ext4, System Layer: Xen 3.4.3-2.6.18 Hypervisor

Compiler Notes: --build=x86_64-linux-gnu --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-languages=c,c++,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-arch-32=i686 --with-tune=generic -v

m1.medium

Processor: Intel Xeon E5645 @ 2.00GHz (1 Core), Memory: 4096MB, Disk: 8GB

OS: Ubuntu 12.04, Kernel: 3.2.0-25-virtual (x86_64), Compiler: GCC 4.6, File-System: ext4, System Layer: Xen 3.4.3-kaos_droplet Hypervisor

Compiler Notes: --build=x86_64-linux-gnu --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-languages=c,c++,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-arch-32=i686 --with-tune=generic -v

m1.large

Processor: Intel Xeon E5507 @ 2.27GHz (2 Cores), Memory: 8192MB, Disk: 8GB

OS: Ubuntu 12.04, Kernel: 3.2.0-25-virtual (x86_64), Compiler: GCC 4.6, File-System: ext4, System Layer: Xen 3.4.3-2.6.18 Hypervisor

Compiler Notes: --build=x86_64-linux-gnu --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-languages=c,c++,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-arch-32=i686 --with-tune=generic -v

m1.xlarge

Processor: Intel Xeon E5645 @ 2.00GHz (4 Cores), Memory: 15360MB, Disk: 8GB

OS: Ubuntu 12.04, Kernel: 3.2.0-25-virtual (x86_64), Compiler: GCC 4.6, File-System: ext4, System Layer: Xen 3.4.3.amazon Hypervisor

Compiler Notes: --build=x86_64-linux-gnu --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-languages=c,c++,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-arch-32=i686 --with-tune=generic -v

m2.2xlarge

Processor: Intel Xeon X5550 @ 2.67GHz (4 Cores), Memory: 34816MB, Disk: 8GB

OS: Ubuntu 12.04, Kernel: 3.2.0-25-virtual (x86_64), Compiler: GCC 4.6, File-System: ext4, System Layer: Xen 3.4.3-2.6.18 Hypervisor

Compiler Notes: --build=x86_64-linux-gnu --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-languages=c,c++,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-arch-32=i686 --with-tune=generic -v

c1.xlarge

Processor: Intel Xeon E5410 @ 2.33GHz (8 Cores), Memory: 7168MB, Disk: 8GB

OS: Ubuntu 12.04, Kernel: 3.2.0-25-virtual (x86_64), Compiler: GCC 4.6, File-System: ext4, System Layer: Xen 3.4.3-2.6.18 Hypervisor

Compiler Notes: --build=x86_64-linux-gnu --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-languages=c,c++,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-arch-32=i686 --with-tune=generic -v

goren-aj

Processor: Intel Core i7-3930K @ 3.20GHz (12 Cores), Motherboard: ASUS SABERTOOTH X79, Chipset: Intel Xeon E5/Core, Memory: 32768MB, Disk: 128GB M4-CT128M4SSD2, Graphics: Intel HD Family 1024MB, Audio: Realtek ALC892, Monitor: TBD, Network: Intel 82579V Gigabit Connection

OS: Debian testing, Kernel: 3.3.2 (x86_64), Display Server: X Server 1.11.4, OpenGL: 1.2, Compiler: GCC 4.7 + PathScale 4.0.12.1 + Clang 3.0-6 + ICC, File-System: ext4, Screen Resolution: 1600x900

Compiler Notes: --build=x86_64-linux-gnu --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-languages=c,c++,go,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-arch-32=i586 --with-tune=generic -v
Processor Notes: Scaling Governor: ondemand

	m1.small	c1.medium	m1.mediu	m1.large	m1.xlarge	m2.2xlarge	c1.xlarge	goren-aj
GraphicsMagick - Sharpen	**5**	17	9	12	26	34	**46**	
Normalized	10.87%	36.96%	19.57%	26.09%	56.52%	73.91%	100%	
Standard Deviation	0%	0%	0%	0%	0%	0%	1.3%	

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GraphicsMagick - L.A.T (Iterations/min)	**5**	18	9	13	27	35	**45**	
Normalized	11.11%	40%	20%	28.89%	60%	77.78%	100%	
Standard Deviation	0%	0%	0%	0%	0%	0%	0%	
Timed MrBayes Analysis - P.P.A (sec)	**184.18**	91.29	91.00	66.86	32.82	**25.64**	26.84	
Normalized	13.92%	28.09%	28.18%	38.35%	78.12%	100%	95.53%	
Standard Deviation	0.3%	0.3%	0.1%	0.5%	0.3%	2.1%	3.2%	
OpenSSL - R.4.b.P (Signs/sec)	**15.25**	34.18	30.48	24.83	30.80	40.88	34.25	**95.43**
Normalized	15.98%	35.82%	31.94%	26.02%	32.27%	42.84%	35.89%	100%
Standard Deviation	0.8%	0.1%	0.3%	0.4%	0%	0.2%	0.2%	0.4%
GraphicsMagick - Resizing	**15**	49	30	36	61	78	**81**	
Normalized	18.52%	60.49%	37.04%	44.44%	75.31%	96.3%	100%	
Standard Deviation	0%	0%	0%	0%	0%	0%	0.7%	
GraphicsMagick - Blur (Iterations/min)	**11**	36	22	27	45	**59**	**59**	
Normalized	18.64%	61.02%	37.29%	45.76%	76.27%	100%	100%	
Standard Deviation	0%	1.6%	0%	0%	0%	0%	0%	
LAME MP3 Encoding - WAV To MP3 (sec)	**66.41**	28.57	32.96	39.34	32.63	24.66	28.45	**13.20**
Normalized	19.88%	46.2%	40.05%	33.55%	40.45%	53.53%	46.4%	100%
Standard Deviation	0.3%	0.2%	0.6%	0.4%	0.2%	0.3%	0.2%	0.1%
Minion - Solitaire (sec)	**556.24**	204.66	275.50	351.18	278.67	201.83	202.37	**111.32**
Normalized	20.01%	54.39%	40.41%	31.7%	39.95%	55.16%	55.01%	100%
Standard Deviation	0.2%	1.2%	1%	0.4%	2.4%	0.5%	0.1%	1.3%
Minion - Bibd (sec)	**565.81**	233.15	271.63	357.64	273.68	206.03	231.49	**113.90**
Normalized	20.13%	48.85%	41.93%	31.85%	41.62%	55.28%	49.2%	100%
Standard Deviation	0.5%	0.2%	0.6%	0.3%	0.6%	0.3%	0.4%	0.7%
Himeno Benchmark - P.P.S (MFLOPS)	**371.59**	672.37	663.67	555.97	717.94	941.37	727.40	**1751**
Normalized	21.22%	38.39%	37.89%	31.74%	40.99%	53.75%	41.53%	100%
Standard Deviation	0.7%	3.6%	0.3%	0.1%	1.2%	0.9%	0.5%	0.1%
Minion - Quasigroup (sec)	**682.87**	275.21	342.24	422.42	343.51	248.30	277.17	**149.79**
Normalized	21.94%	54.43%	43.77%	35.46%	43.61%	60.33%	54.04%	100%
Standard Deviation	0.5%	0.4%	1.7%	0.3%	3.2%	0.1%	0.5%	0.9%
FFTE - N.6.1.C.F.R (MFLOPS)	**1295**	2963	2618	2098	2603	3465	2863	**5687**
Normalized	22.77%	52.09%	46.04%	36.88%	45.76%	60.93%	50.34%	100%
Standard Deviation	0.3%	0.3%	0.2%	1.6%	0.8%	0.6%	6.1%	0.2%
Minion - Graceful (sec)	**308.33**	131.58	155.95	193.82	151.69	115.01	131.10	**71.04**
Normalized	23.04%	53.99%	45.55%	36.65%	46.83%	61.77%	54.19%	100%
Standard Deviation	0.4%	1.1%	0.2%	0.4%	2.5%	1.1%	0.4%	0.7%
LZMA Compression - 2.F.C (sec)	**484.14**	282.49	244.86	370.07	234.31	208.42	237.12	**119.15**
Normalized	24.61%	42.18%	48.66%	32.2%	50.85%	57.17%	50.25%	100%
Standard Deviation	0.5%	1.1%	0.8%	0.2%	2.3%	0.3%	0.1%	0.2%

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NAS Parallel Benchmarks - EP.B (Mop/s)	**9.36**	39.16	18.94	30.47	75.88	96.42	161.52	**354.42**
Normalized	2.64%	11.05%	5.34%	8.6%	21.41%	27.21%	45.57%	100%
Standard Deviation	1.3%	0.3%	0.5%	0.1%	0.1%	0.1%	1.3%	1.2%
NAS Parallel Benchmarks - MG.B (Mop/s)	**373.96**	1422	756.56	1114	2948	3326	2449	**13403**
Normalized	2.79%	10.61%	5.64%	8.31%	21.99%	24.82%	18.27%	100%
Standard Deviation	0.3%	3.2%	0.2%	0.8%	0.3%	3.6%	3.3%	0.3%
C-Ray - Total Time	**775.61**	194.72	381.11	233.89	95.04	75.92	47.27	**21.86**
Normalized	2.82%	11.23%	5.74%	9.35%	23%	28.79%	46.24%	100%
Standard Deviation	0.3%	0.1%	0.2%	0.2%	0.4%	1.3%	0.3%	0.4%
John The Ripper - Blowfish (Real C/S)	**265**	1176	536	847	2153	2681	4500	**8375**
Normalized	3.16%	14.04%	6.4%	10.11%	25.71%	32.01%	53.73%	100%
Standard Deviation	0.6%	0.8%	0.3%	2.1%	0.1%	2.8%	3%	2.5%
Timed Linux Kernel Compilation - Time To Compile (sec)	**1720**	441.45	848.75	581.88	224.32	184.93	119.26	**56.65**
Normalized	3.29%	12.83%	6.67%	9.74%	25.25%	30.63%	47.5%	100%
Standard Deviation	0.2%	1.1%	0.5%	0.5%	0.9%	1.4%	1.7%	1.7%
GraphicsMagick - HWB Color Space (Iterations/min)	**25**	72	49	52	76	**99**	94	
Normalized	25.25%	72.73%	49.49%	52.53%	76.77%	100%	94.95%	
Standard Deviation	2.3%	0%	0%	0%	0%	0%	0%	
PostgreSQL pgbench - T.B.T.P.S (TPS)	**318.20**	641.33	524.19	942.00	1003	**1178**	967.90	807.89
Normalized	27.02%	54.46%	44.51%	79.99%	85.14%	100%	82.19%	68.61%
Standard Deviation	0.9%	2.6%	2%	1.5%	3.6%	8.3%	1.8%	8.2%
NAS Parallel Benchmarks - FT.B (Mop/s)	**397.97**	1317	808.74	1195	3112	3549	4108	**11713**
Normalized	3.4%	11.24%	6.9%	10.2%	26.57%	30.3%	35.07%	100%
Standard Deviation	0.2%	0.7%	0.1%	0.2%	1%	0.4%	0.8%	0.5%
Parallel BZIP2 Compression - 2.F.C (sec)	**147.36**	34.03	72.81	50.31	18.84	15.91	8.49	**5.08**
Normalized	3.45%	14.93%	6.98%	10.1%	26.96%	31.93%	59.84%	100%
Standard Deviation	0.3%	2.8%	1.6%	1.3%	1.6%	2.2%	3.3%	0.8%
NAS Parallel Benchmarks - LU.A (Mop/s)	**724.34**	2325	1510	1813	5631	6127	7471	**19895**
Normalized	3.64%	11.69%	7.59%	9.11%	28.3%	30.8%	37.55%	100%
Standard Deviation	0.9%	0.8%	0.2%	3%	0.3%	0.8%	3.8%	0.6%
x264 - H.2.V.E (FPS)	**7.84**	25.85	16.01	21.89	54.22	66.13	98.06	**211.44**
Normalized	3.71%	12.23%	7.57%	10.35%	25.64%	31.28%	46.38%	100%
Standard Deviation	0.4%	1.7%	3.8%	1.9%	1.8%	3.5%	5.1%	1%

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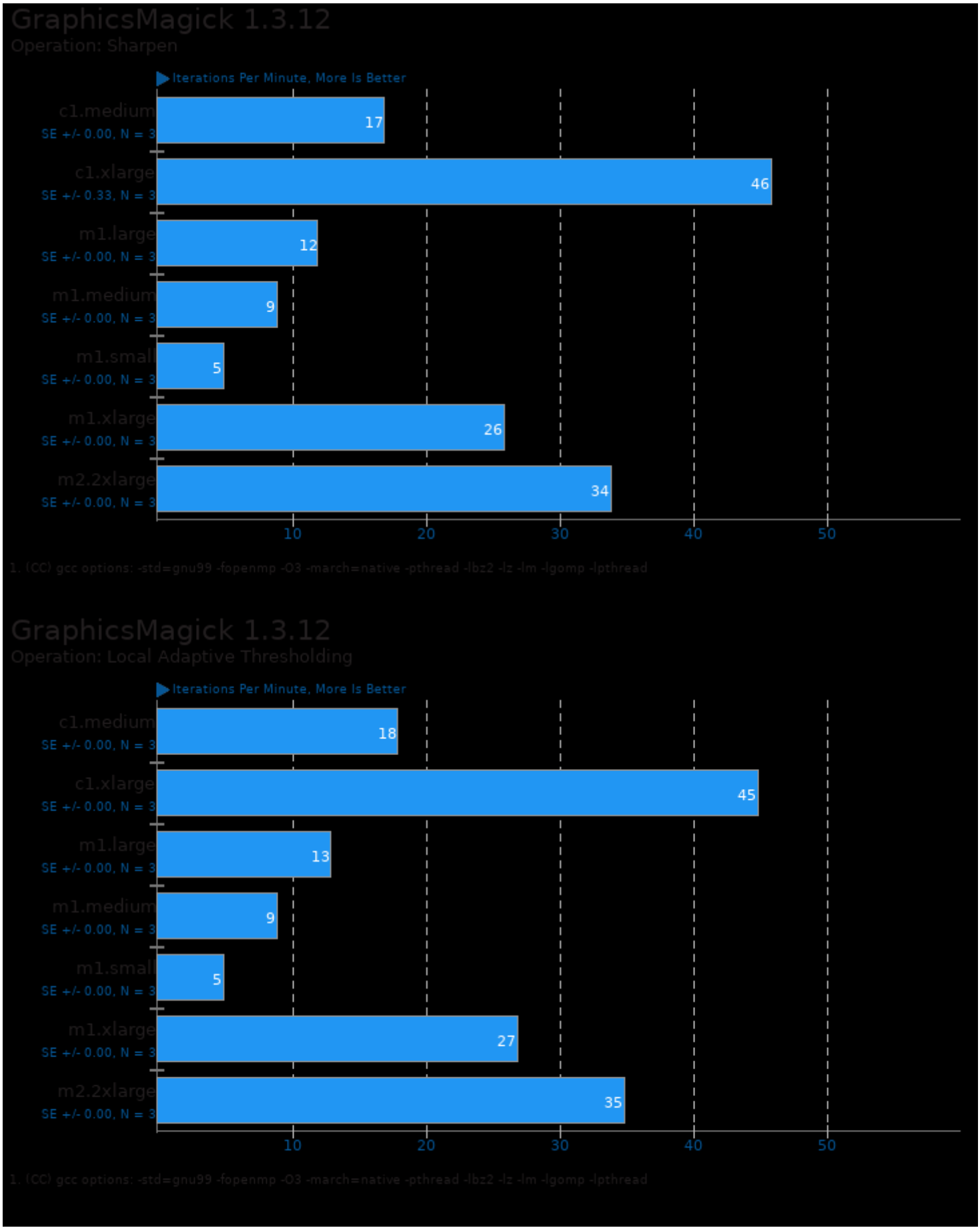
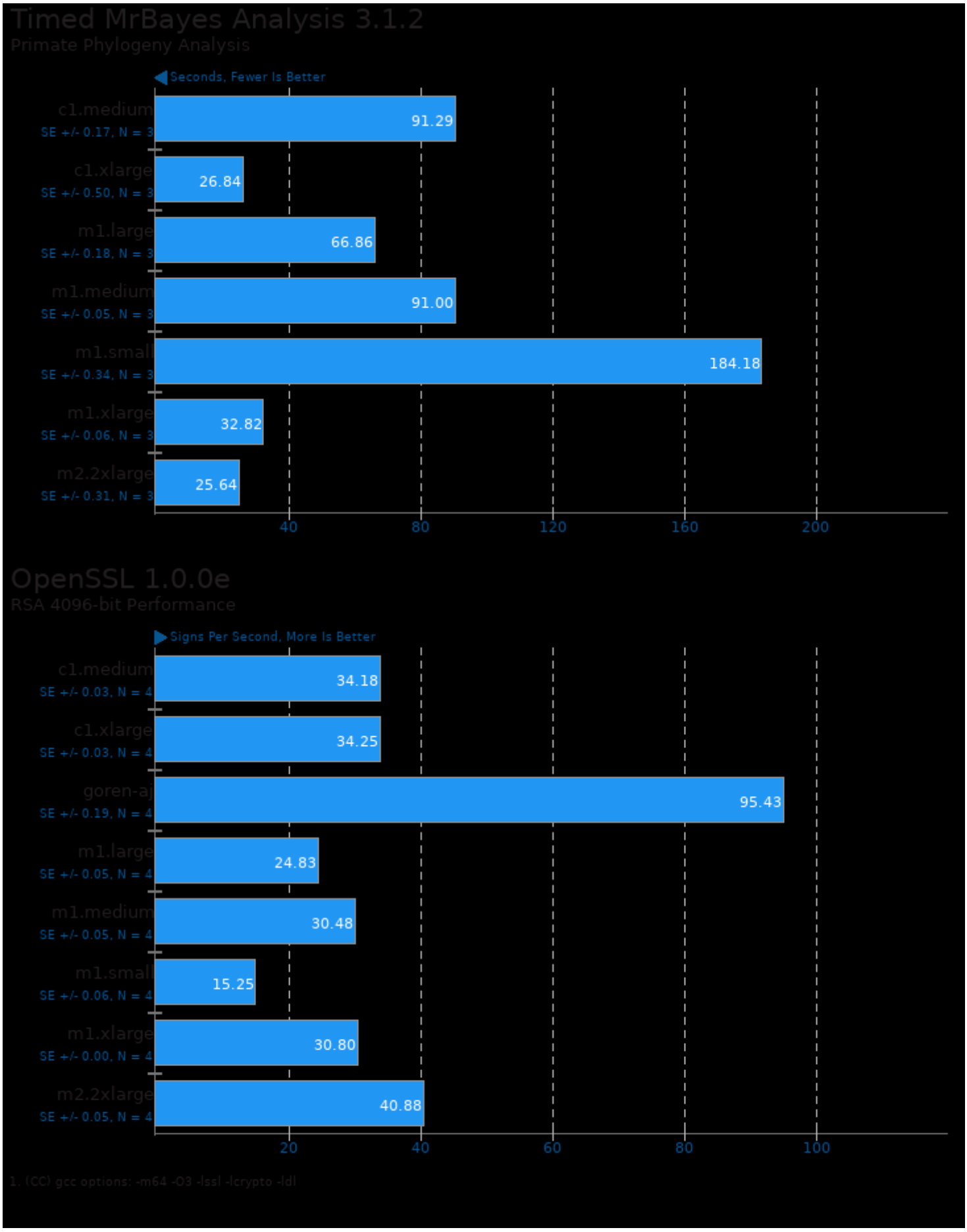
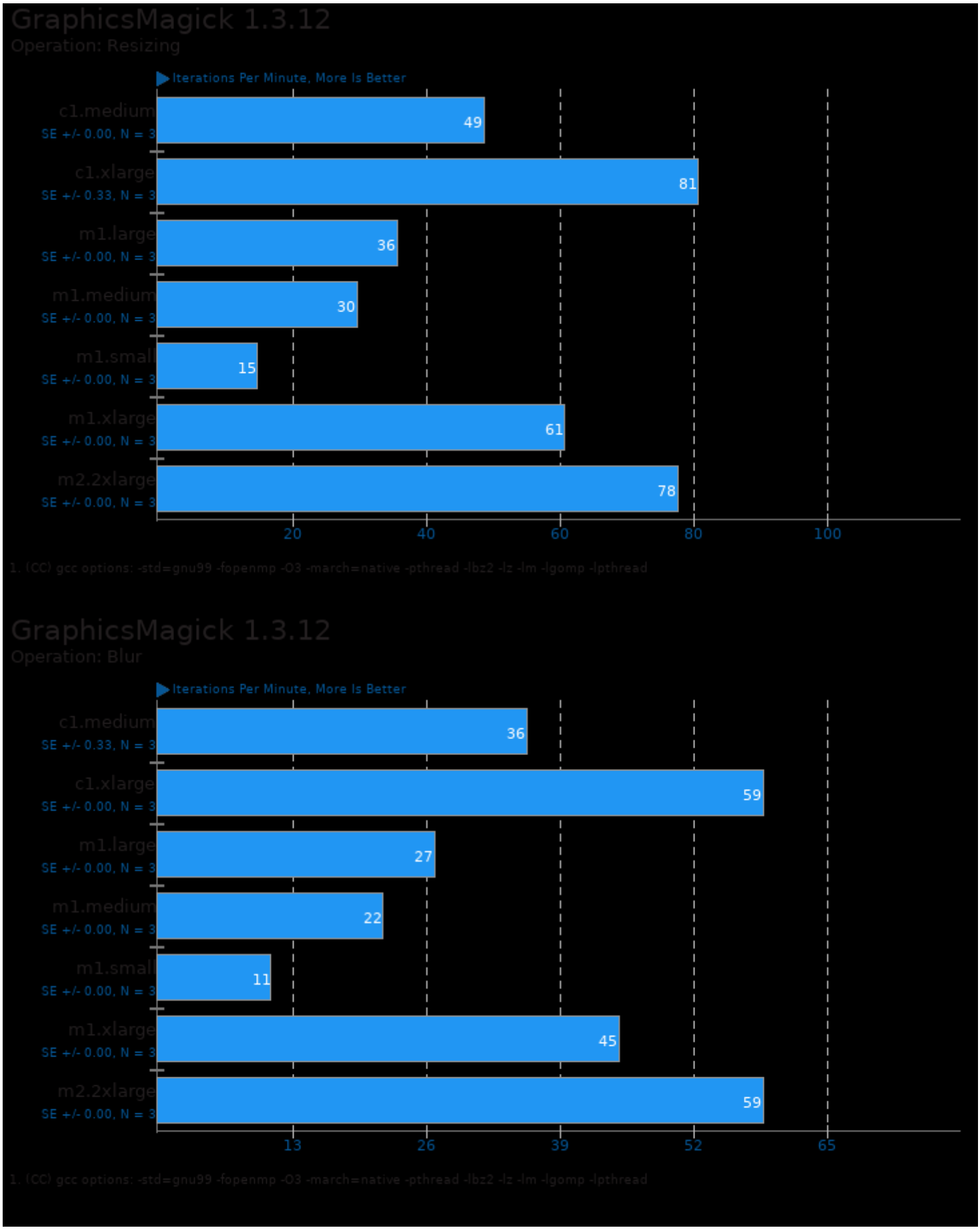
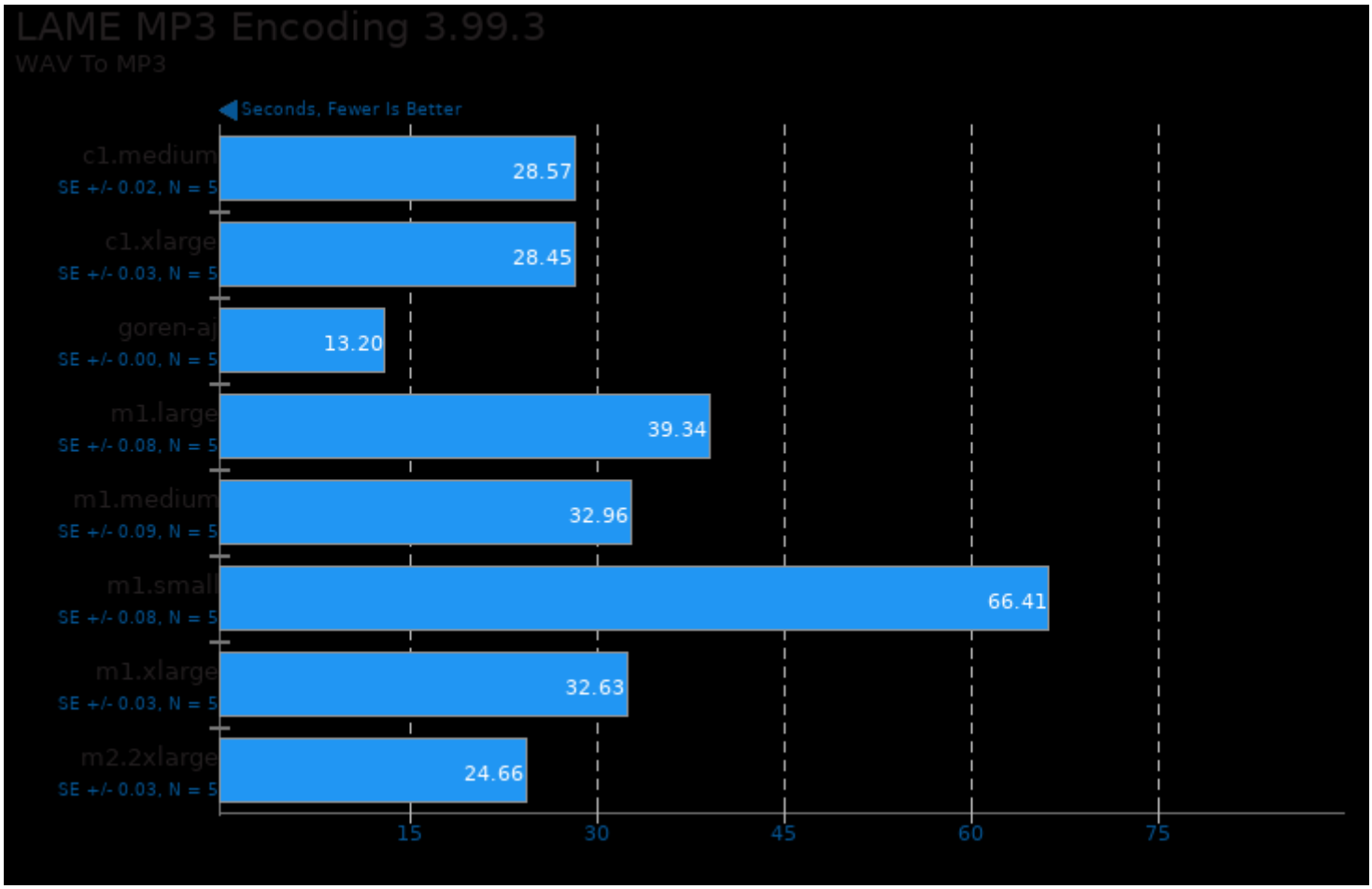
NAS Parallel Benchmarks - UA.A (Mop/s)	**3.44**	8.17	7.11	8.80	26.21	26.48	32.26	**89.86**
Normalized	3.83%	9.09%	7.91%	9.79%	29.17%	29.47%	35.9%	100%
Standard Deviation	0.8%	0.8%	0.5%	0.3%	0.3%	1.6%	1.5%	0.7%
Timed HMMer Search - P.D.S (sec)	**193.95**	53.50	94.96	67.20	25.37	21.02	18.01	**7.58**
Normalized	3.91%	14.17%	7.98%	11.28%	29.88%	36.06%	42.09%	100%
Standard Deviation	0.8%	1.4%	0.9%	1.8%	0.9%	1.2%	5.1%	0.4%
NAS Parallel Benchmarks - CG.B (Mop/s)	**187.33**	569.42	385.85	496.85	1410	1408	933.49	**4511**
Normalized	4.15%	12.62%	8.55%	11.01%	31.25%	31.22%	20.69%	100%
Standard Deviation	0.5%	1.5%	1.8%	0.3%	6.7%	2.5%	1.8%	0.2%
Apache Benchmark - S.W.P.S (Reqs/sec)	**1600**	7070	2877	5042	9776	12737	9313	**38041**
Normalized	4.21%	18.58%	7.56%	13.25%	25.7%	33.48%	24.48%	100%
Standard Deviation	2.6%	0.8%	2.9%	0.9%	0.1%	2%	0.5%	3.2%
NAS Parallel Benchmarks - SP.A (Mop/s)	**511.78**	1424	1043	1356	3875	3849	3711	**11602**
Normalized	4.41%	12.27%	8.99%	11.69%	33.4%	33.17%	31.99%	100%
Standard Deviation	0.2%	0.5%	0.1%	1.2%	0.7%	1.9%	1.8%	0.6%
Timed MAFFT Alignment - M.S.A (sec)	**88.80**	26.50	44.15	33.04	13.97	11.06	9.10	**4.23**
Normalized	4.76%	15.96%	9.58%	12.8%	30.28%	38.25%	46.48%	100%
Standard Deviation	0.3%	4%	0.7%	0.4%	5.1%	0.8%	3.9%	6.5%
LAMMPS Molecular Dynamics Simulator - Rhodopsin Protein (Loop Time)	**189.00**	87.76	92.42	121.40	93.34	**71.77**	84.01	
Normalized	37.97%	81.78%	77.66%	59.12%	76.89%	100%	85.43%	
Standard Deviation	0.3%	1%	0.6%	0.3%	3.3%	1%	0.2%	
Smallpt - G.I.R.1.S (sec)	635	140	315	**649**	78	61	**34**	64
Normalized	5.35%	24.29%	10.79%	5.24%	43.59%	55.74%	100%	53.13%
Standard Deviation	0.2%	0.4%	0.4%	0.1%	0.7%	0.9%	1.7%	0.9%
VP8 libvpx Encoding - vpxenc (FPS)	**2.75**	8.46	5.54	6.03	14.58	18.22	15.97	**29.52**
Normalized	9.32%	28.66%	18.77%	20.43%	49.39%	61.72%	54.1%	100%
Standard Deviation	1.3%	2%	0.1%	3.4%	1.1%	1.8%	2%	2.9%

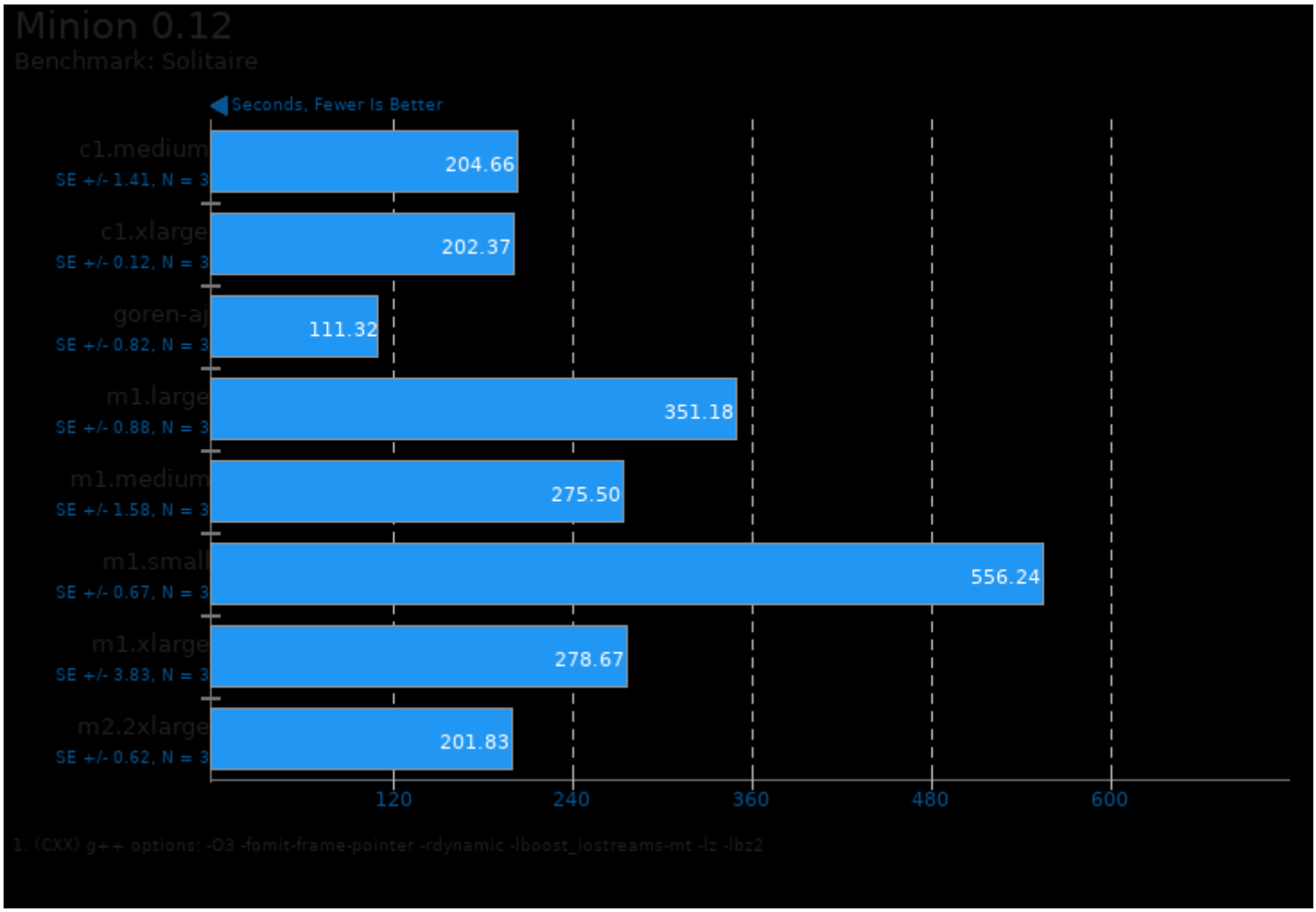

GraphicsMagick 1.3.12
Operation: Sharpen
Iterations Per Minute, More Is Better
c1.medium
SE +/- 0.00, N = 3
17
c1.xlarge
SE +/- 0.33, N = 3
46
m1.large
SE +/- 0.00, N = 3
12
m1.medium
SE +/- 0.00, N = 3
9
m1.small
SE +/- 0.00, N = 3
5
m1.xlarge
SE +/- 0.00, N = 3
26
m2.2xlarge
SE +/- 0.00, N = 3
34
10
20
30
40
50
1. (CC) gcc options: -std=gnu99 -fopenmp -O3 -march=native -pthread -lbz2 -lz -lm -lgomp -lpthread
GraphicsMagick 1.3.12
Operation: Local Adaptive Thresholding
Iterations Per Minute, More Is Better
c1.medium
SE +/- 0.00, N = 3
18
c1.xlarge
SE +/- 0.00, N = 3
45
m1.large
SE +/- 0.00, N = 3
13
m1.medium
SE +/- 0.00, N = 3
9
m1.small
SE +/- 0.00, N = 3
5
m1.xlarge
SE +/- 0.00, N = 3
27
m2.2xlarge
SE +/- 0.00, N = 3
35
10
20
30
40
50
1. (CC) gcc options: -std=gnu99 -fopenmp -O3 -march=native -pthread -lbz2 -lz -lm -lgomp -lpthread

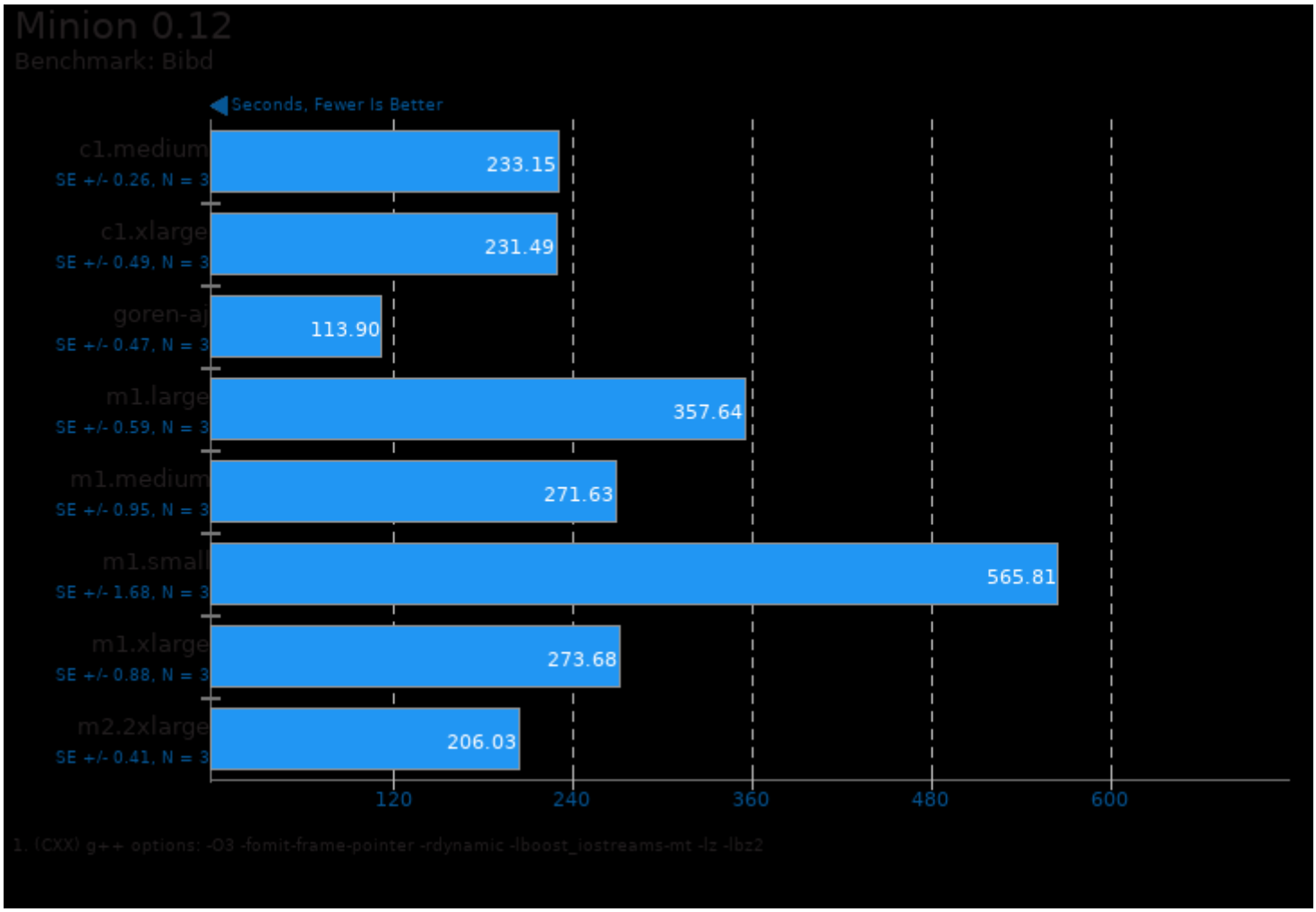

Timed MrBayes Analysis 3.1.2
Primate Phylogeny Analysis
Seconds, Fewer Is Better
c1.medium
SE +/- 0.17, N = 3
91.29
c1.xlarge
SE +/- 0.50, N = 3
26.84
m1.large
SE +/- 0.18, N = 3
66.86
m1.medium
SE +/- 0.05, N = 3
91.00
m1.small
SE +/- 0.34, N = 3
184.18
m1.xlarge
SE +/- 0.06, N = 3
32.82
m2.2xlarge
SE +/- 0.31, N = 3
25.64
40
80
120
160
200
OpenSSL 1.0.0e
RSA 4096-bit Performance
Signs Per Second, More Is Better
c1.medium
SE +/- 0.03, N = 4
34.18
c1.xlarge
SE +/- 0.03, N = 4
34.25
goren-aj
SE +/- 0.19, N = 4
95.43
m1.large
SE +/- 0.05, N = 4
24.83
m1.medium
SE +/- 0.05, N = 4
30.48
m1.small
SE +/- 0.06, N = 4
15.25
m1.xlarge
SE +/- 0.00, N = 4
30.80
m2.2xlarge
SE +/- 0.05, N = 4
40.88
20
40
60
80
100
1. (CC) gcc options: -m64 -O3 -lssl -lcrypto -ldl

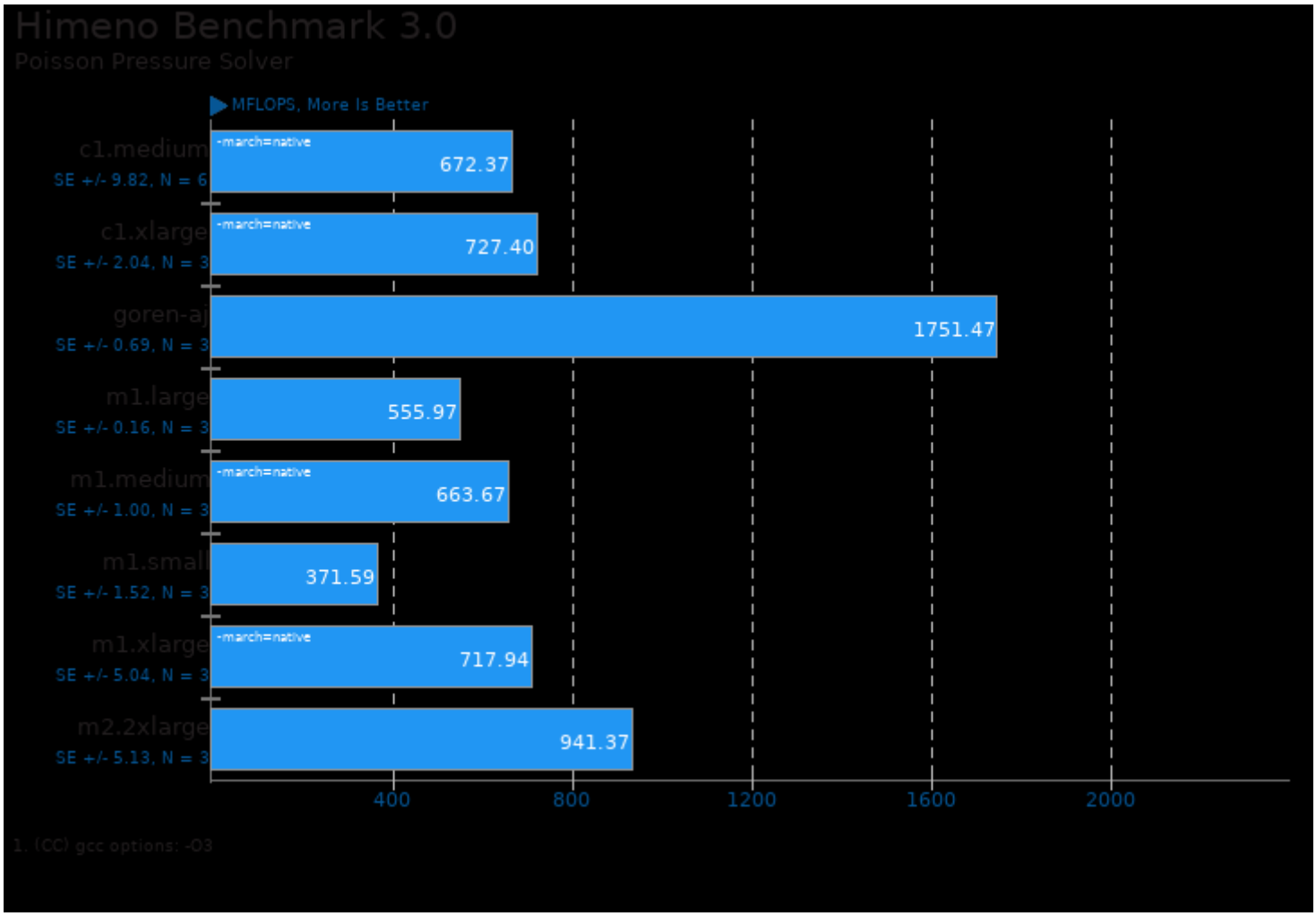

GraphicsMagick 1.3.12
Operation: Resizing
Iterations Per Minute, More Is Better
c1.medium
SE +/- 0.00, N = 3
49
c1.xlarge
SE +/- 0.33, N = 3
81
m1.large
SE +/- 0.00, N = 3
36
m1.medium
SE +/- 0.00, N = 3
30
m1.small
SE +/- 0.00, N = 3
15
m1.xlarge
SE +/- 0.00, N = 3
61
m2.2xlarge
SE +/- 0.00, N = 3
78
20
40
60
80
100
1. (CC) gcc options: -std=gnu99 -fopenmp -O3 -march=native -pthread -lbz2 -lz -lm -lgomp -lpthread
GraphicsMagick 1.3.12
Operation: Blur
Iterations Per Minute, More Is Better
c1.medium
SE +/- 0.33, N = 3
36
c1.xlarge
SE +/- 0.00, N = 3
59
m1.large
SE +/- 0.00, N = 3
27
m1.medium
SE +/- 0.00, N = 3
22
m1.small
SE +/- 0.00, N = 3
11
m1.xlarge
SE +/- 0.00, N = 3
45
m2.2xlarge
SE +/- 0.00, N = 3
59
13
26
39
52
65
1. (CC) gcc options: -std=gnu99 -fopenmp -O3 -march=native -pthread -lbz2 -lz -lm -lgomp -lpthread

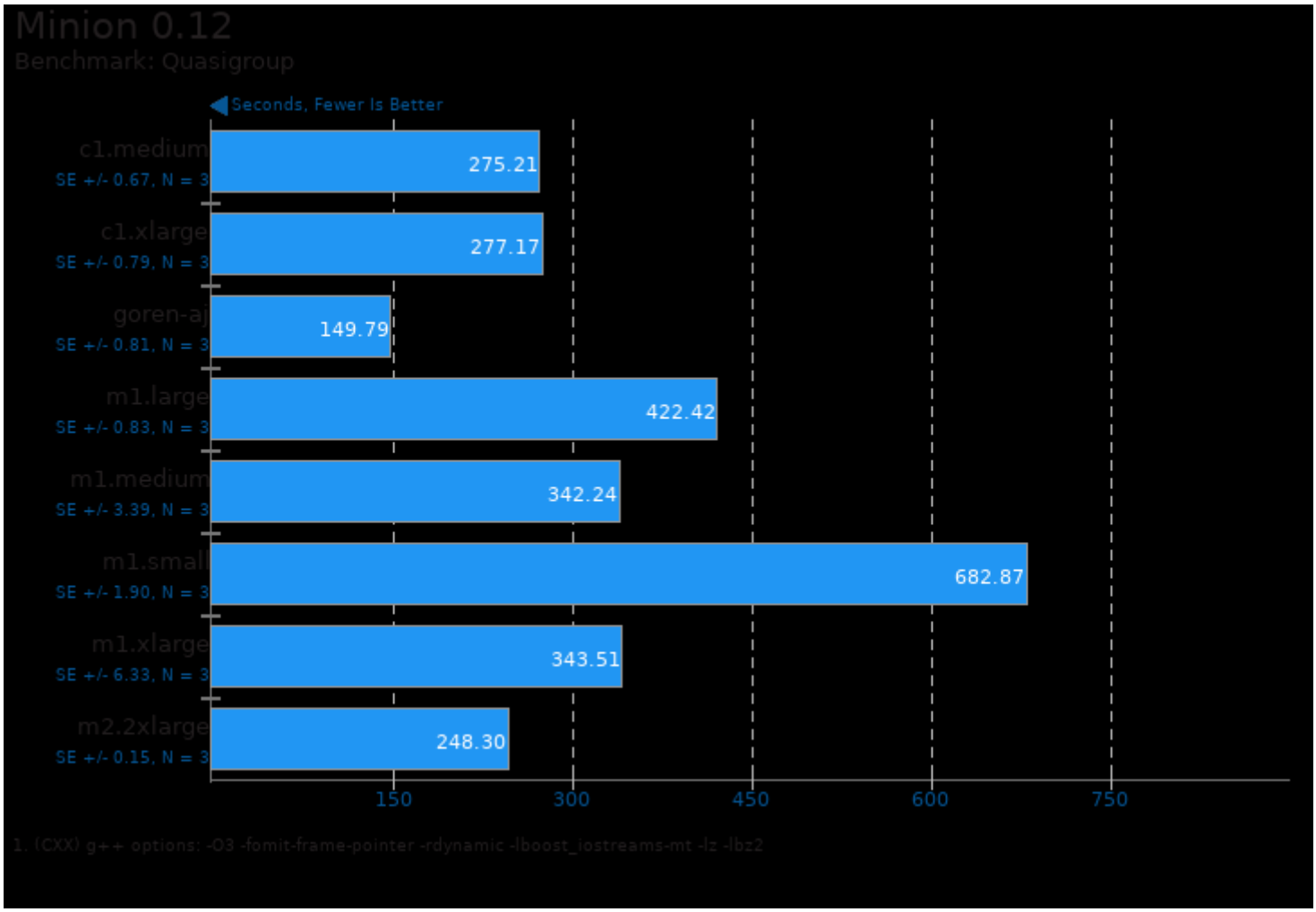

LAME MP3 Encoding 3.99.3
WAV To MP3
Seconds, Fewer Is Better
c1.medium
SE +/- 0.02, N = 5
28.57
c1.xlarge
SE +/- 0.03, N = 5
28.45
goren-aj
SE +/- 0.00, N = 5
13.20
m1.large
SE +/- 0.08, N = 5
39.34
m1.medium
SE +/- 0.09, N = 5
32.96
m1.small
SE +/- 0.08, N = 5
66.41
m1.xlarge
SE +/- 0.03, N = 5
32.63
m2.2xlarge
SE +/- 0.03, N = 5
24.66
15
30
45
60
75

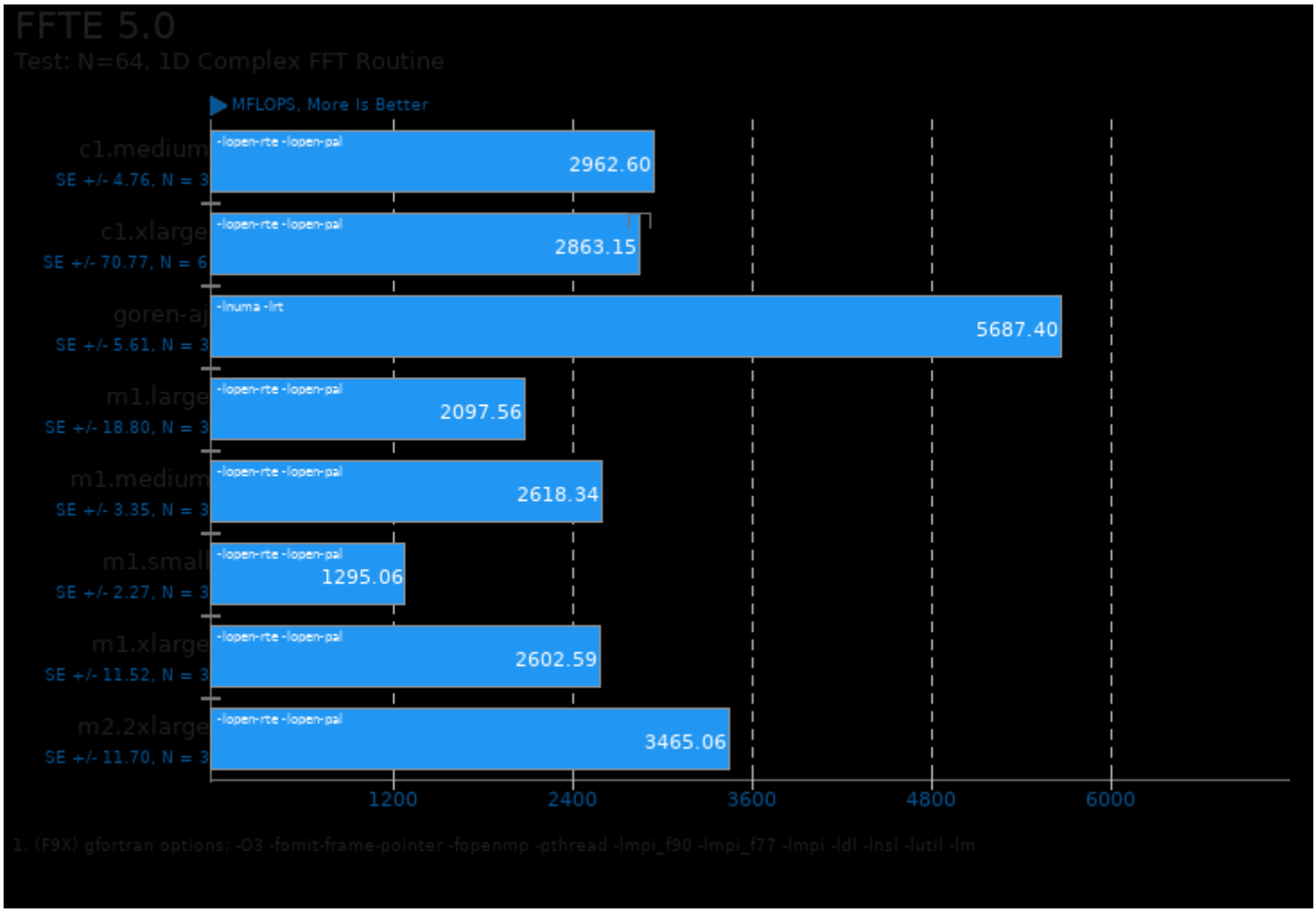
Amazon EC2 Cloud Instance Benchmarks

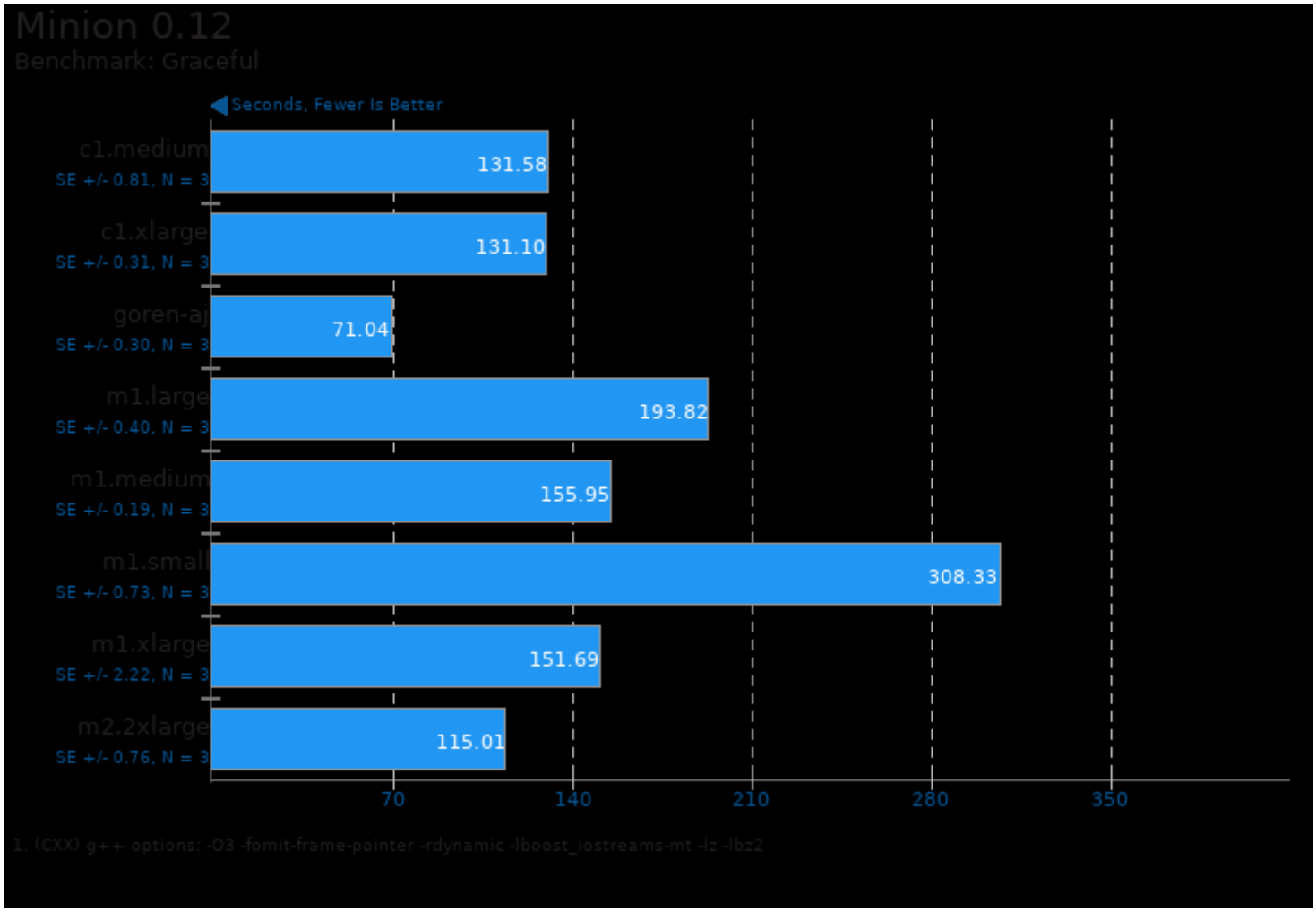



Minion 0.12
Benchmark: Bibd
Seconds, Fewer Is Better
c1.medium
SE +/- 0.26, N = 3
233.15
c1.xlarge
SE +/- 0.49, N = 3
231.49
goren-aj
SE +/- 0.47, N = 3
113.90
m1.large
SE +/- 0.59, N = 3
357.64
m1.medium
SE +/- 0.95, N = 3
271.63
m1.small
SE +/- 1.68, N = 3
565.81
m1.xlarge
SE +/- 0.88, N = 3
273.68
m2.2xlarge
SE +/- 0.41, N = 3
206.03
120
240
360
480
600
1. (CXX) g++ options: -O3 -fomit-frame-pointer -rdynamic -lboost_iostreams-mt -lz -lbz2

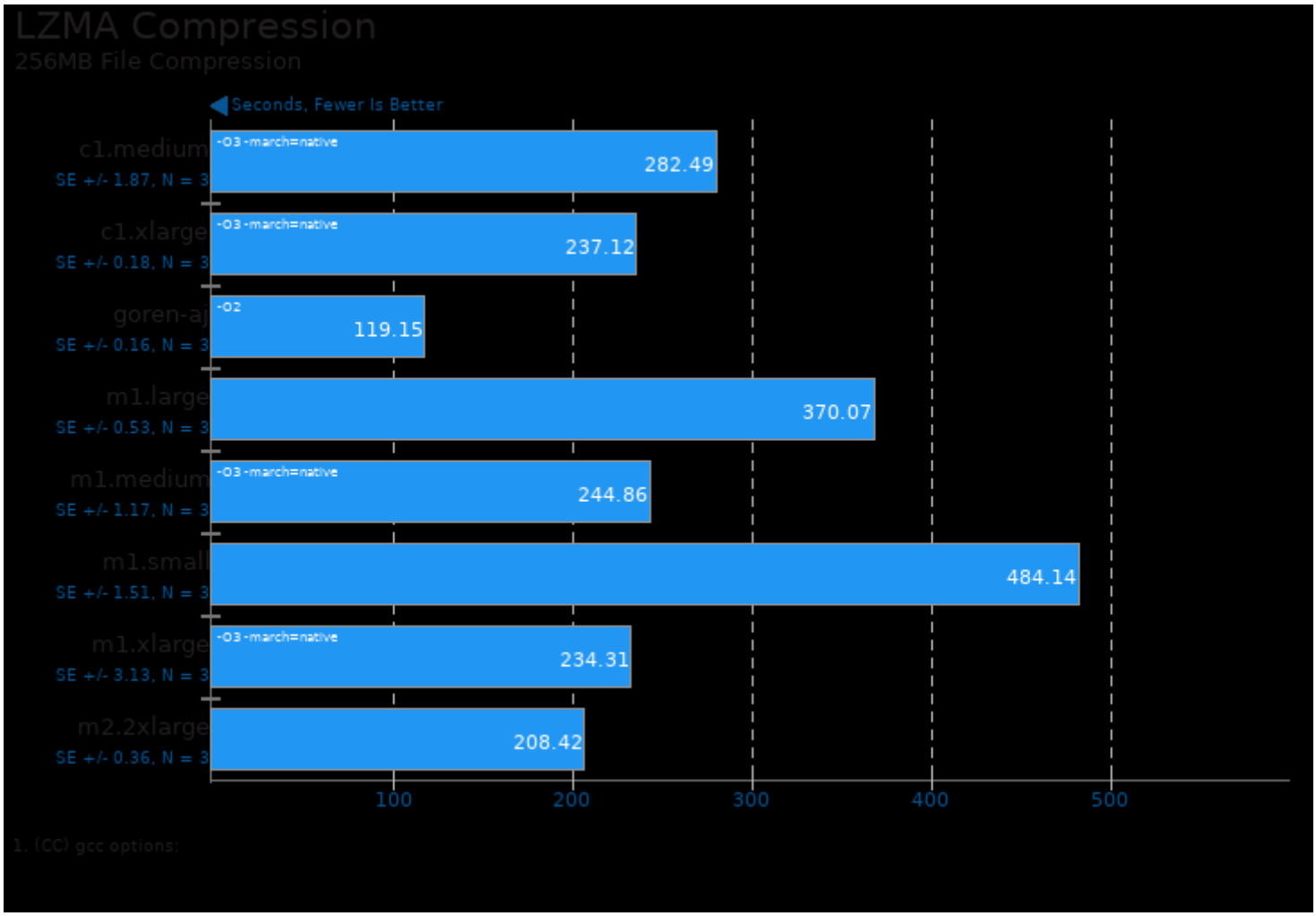

Himeno Benchmark 3.0
Poisson Pressure Solver
MFLOPS, More Is Better
c1.medium
SE +/- 9.82, N = 6
-march=native
672.37
c1.xlarge
SE +/- 2.04, N = 3
-march=native
727.40
goren-aj
SE +/- 0.69, N = 3
1751.47
m1.large
SE +/- 0.16, N = 3
555.97
m1.medium
SE +/- 1.00, N = 3
-march=native
663.67
m1.small
SE +/- 1.52, N = 3
371.59
m1.xlarge
SE +/- 5.04, N = 3
-march=native
717.94
m2.2xlarge
SE +/- 5.13, N = 3
941.37
400
800
1200
1600
2000
1. (CC) gcc options: -O3

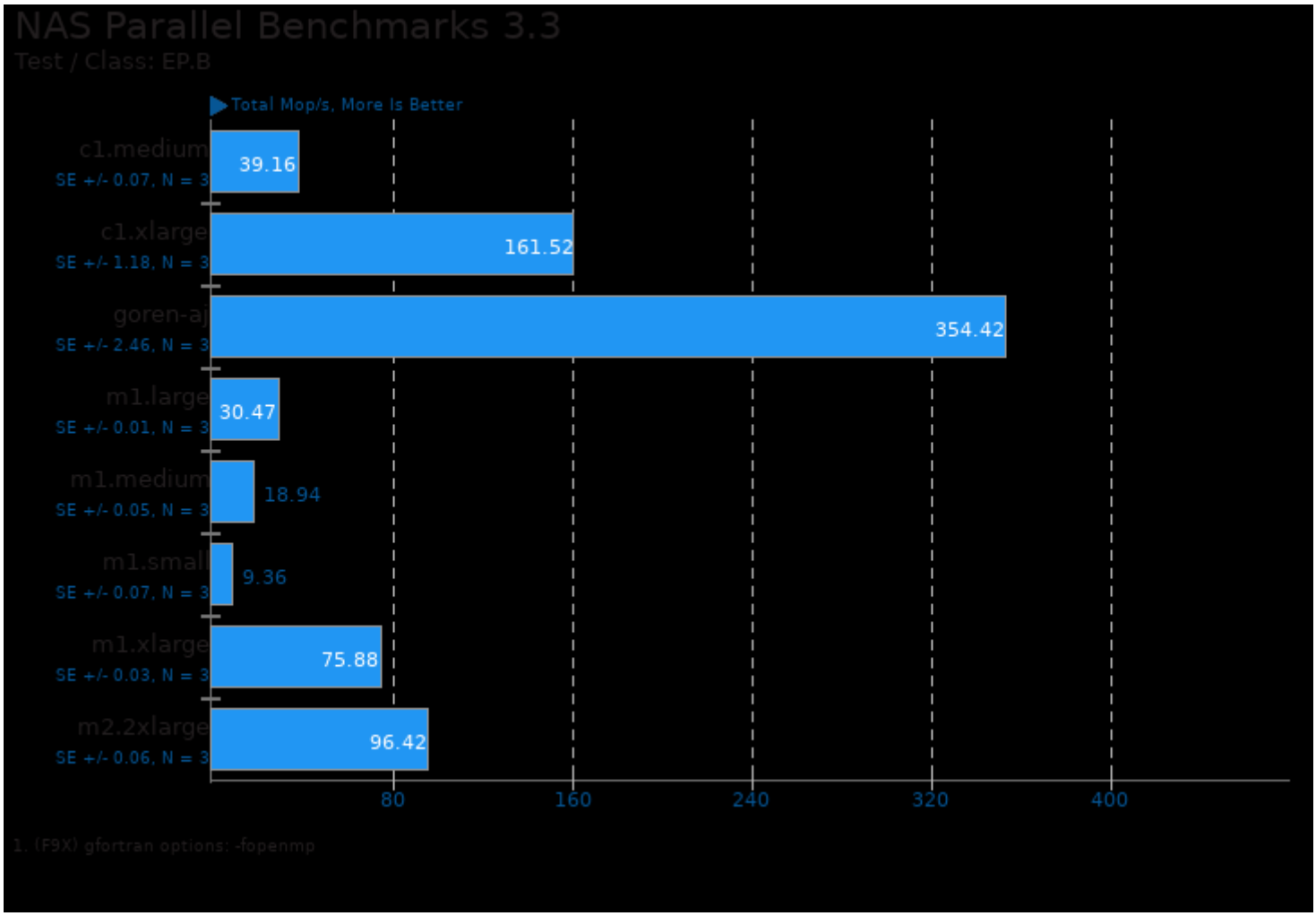

Minion 0.12
Benchmark: Quasigroup
Seconds, Fewer Is Better
c1.medium
SE +/- 0.67, N = 3
275.21
c1.xlarge
SE +/- 0.79, N = 3
277.17
goren-aj
SE +/- 0.81, N = 3
149.79
m1.large
SE +/- 0.83, N = 3
422.42
m1.medium
SE +/- 3.39, N = 3
342.24
m1.small
SE +/- 1.90, N = 3
682.87
m1.xlarge
SE +/- 6.33, N = 3
343.51
m2.2xlarge
SE +/- 0.15, N = 3
248.30
150
300
450
600
750
1. (CXX) g++ options: -O3 -fomit-frame-pointer -rdynamic -lboost_iostreams-mt -lz -lbz2

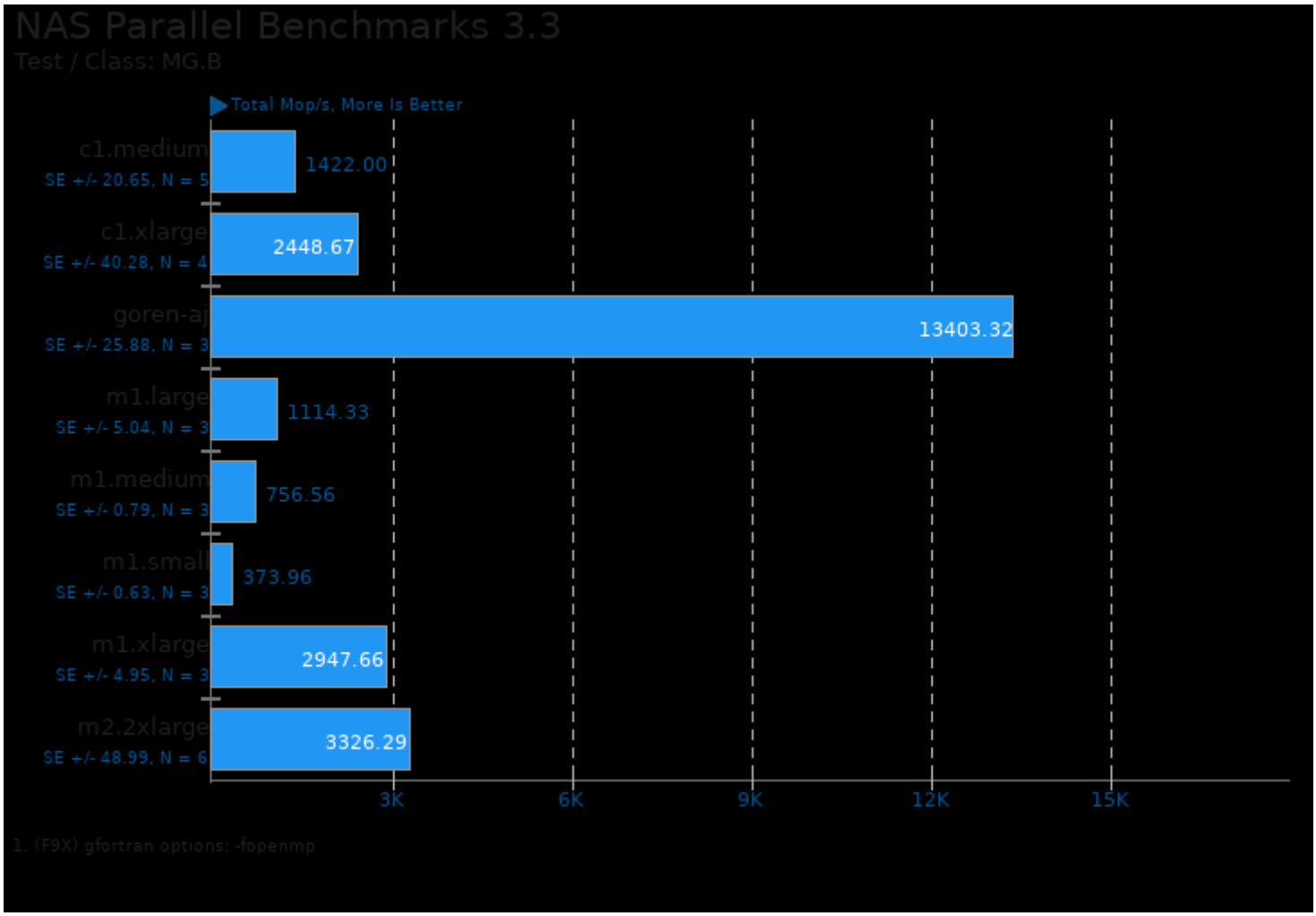

FFTE 5.0
Test: N=64, 1D Complex FFT Routine
MFLOPS, More Is Better
c1.medium
SE +/- 4.76, N = 3
-lopen-rte -lopen-pal
2962.60
c1.xlarge
SE +/- 70.77, N = 6
-lopen-rte -lopen-pal
2863.15
goren-aj
SE +/- 5.61, N = 3
-lnuma -lrt
5687.40
m1.large
SE +/- 18.80, N = 3
-lopen-rte -lopen-pal
2097.56
m1.medium
SE +/- 3.35, N = 3
-lopen-rte -lopen-pal
2618.34
m1.small
SE +/- 2.27, N = 3
-lopen-rte -lopen-pal
1295.06
m1.xlarge
SE +/- 11.52, N = 3
-lopen-rte -lopen-pal
2602.59
m2.2xlarge
SE +/- 11.70, N = 3
-lopen-rte -lopen-pal
3465.06
1200
2400
3600
4800
6000
1. (F9X) gfortran options: -O3 -fomit-frame-pointer -fopenmp -pthread -lmpi_f90 -lmpi_f77 -lmpi -ldl -lnsl -lutil -lm

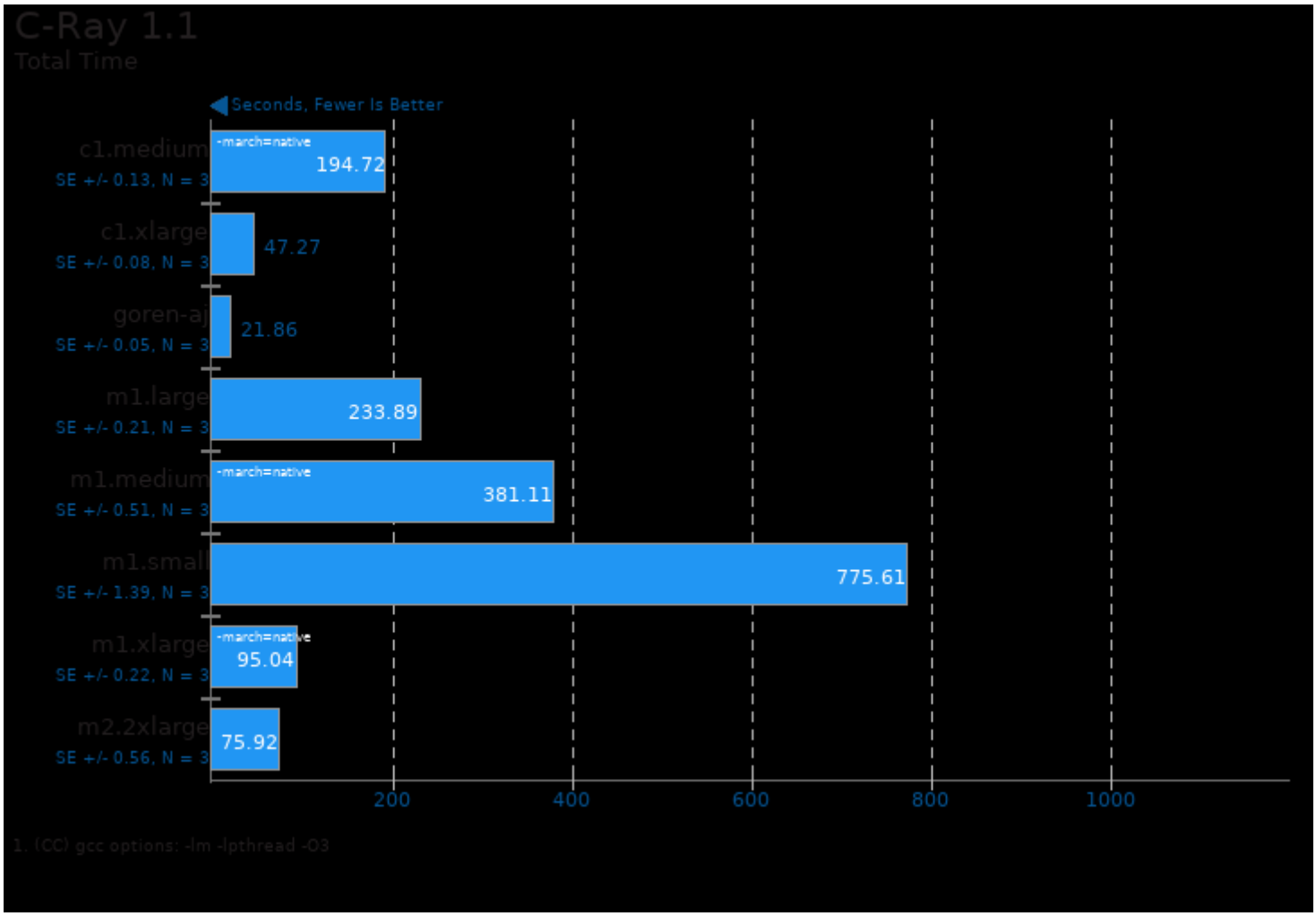

Minion 0.12
Benchmark: Graceful
Seconds, Fewer Is Better
c1.medium
SE +/- 0.81, N = 3
131.58
c1.xlarge
SE +/- 0.31, N = 3
131.10
goren-aj
SE +/- 0.30, N = 3
71.04
m1.large
SE +/- 0.40, N = 3
193.82
m1.medium
SE +/- 0.19, N = 3
155.95
m1.small
SE +/- 0.73, N = 3
308.33
m1.xlarge
SE +/- 2.22, N = 3
151.69
m2.2xlarge
SE +/- 0.76, N = 3
115.01
70
140
210
280
350
1. (CXX) g++ options: -O3 -fomit-frame-pointer -rdynamic -lboost_iostreams-mt -lz -lbz2

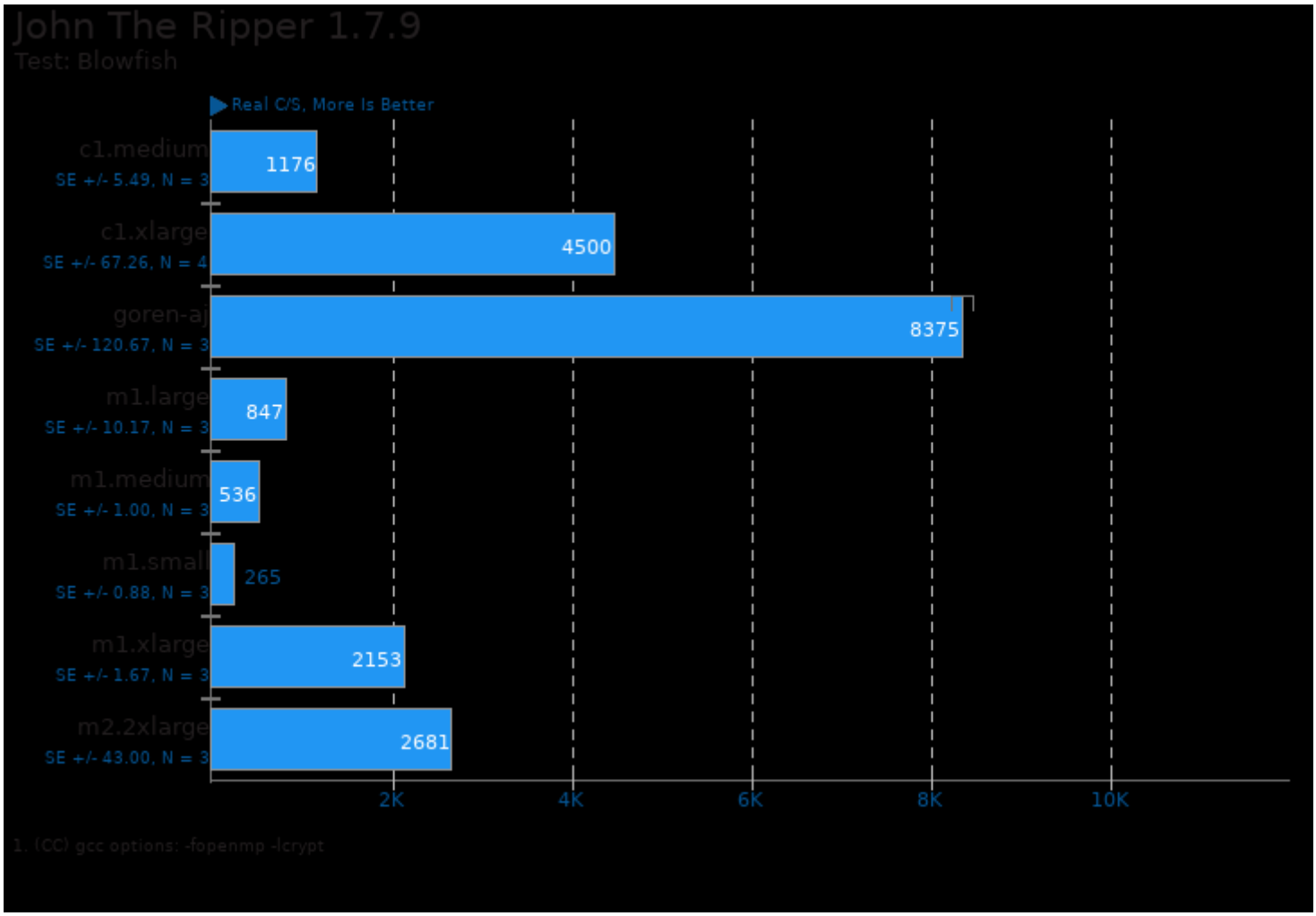
Amazon EC2 Cloud Instance Benchmarks

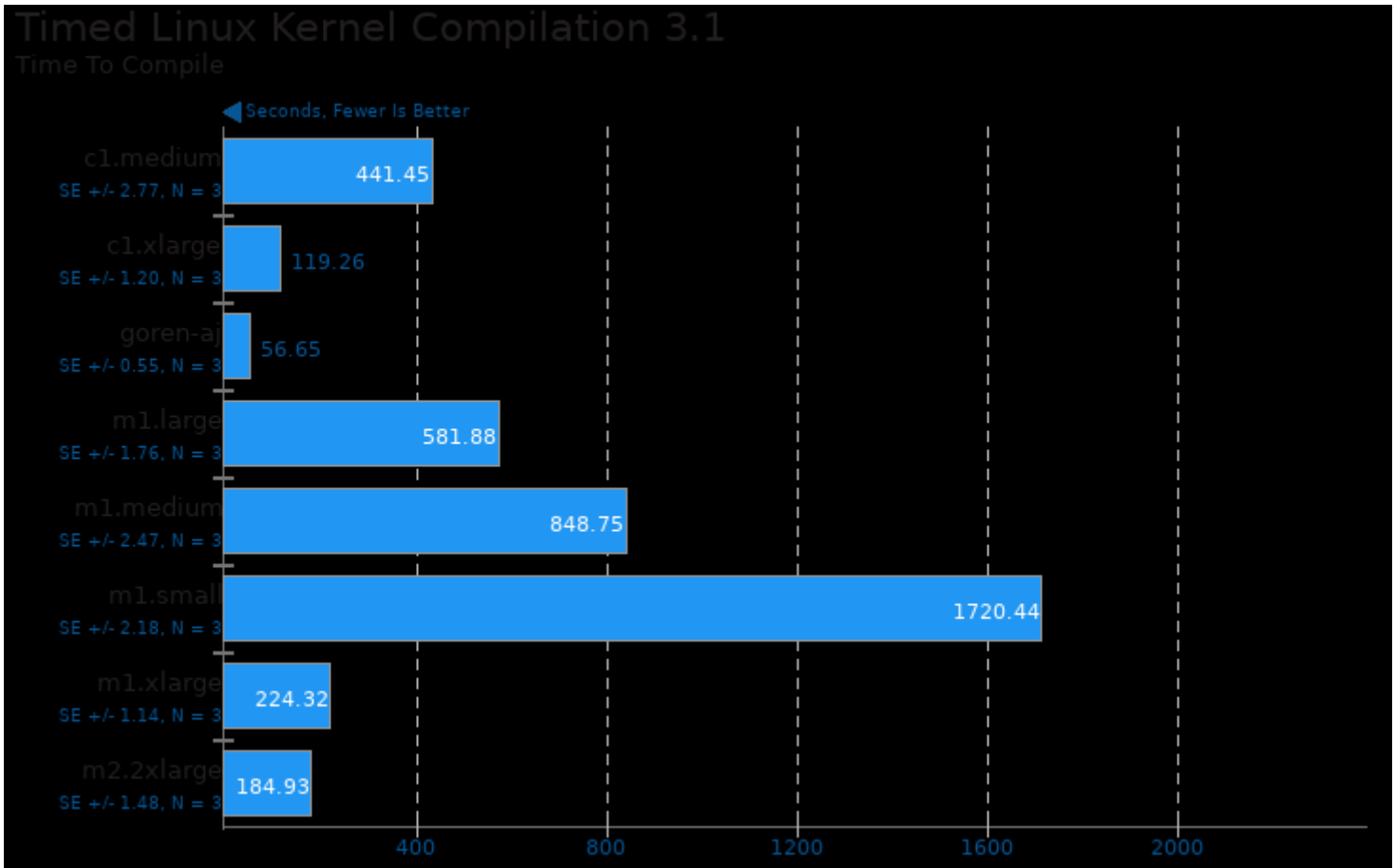


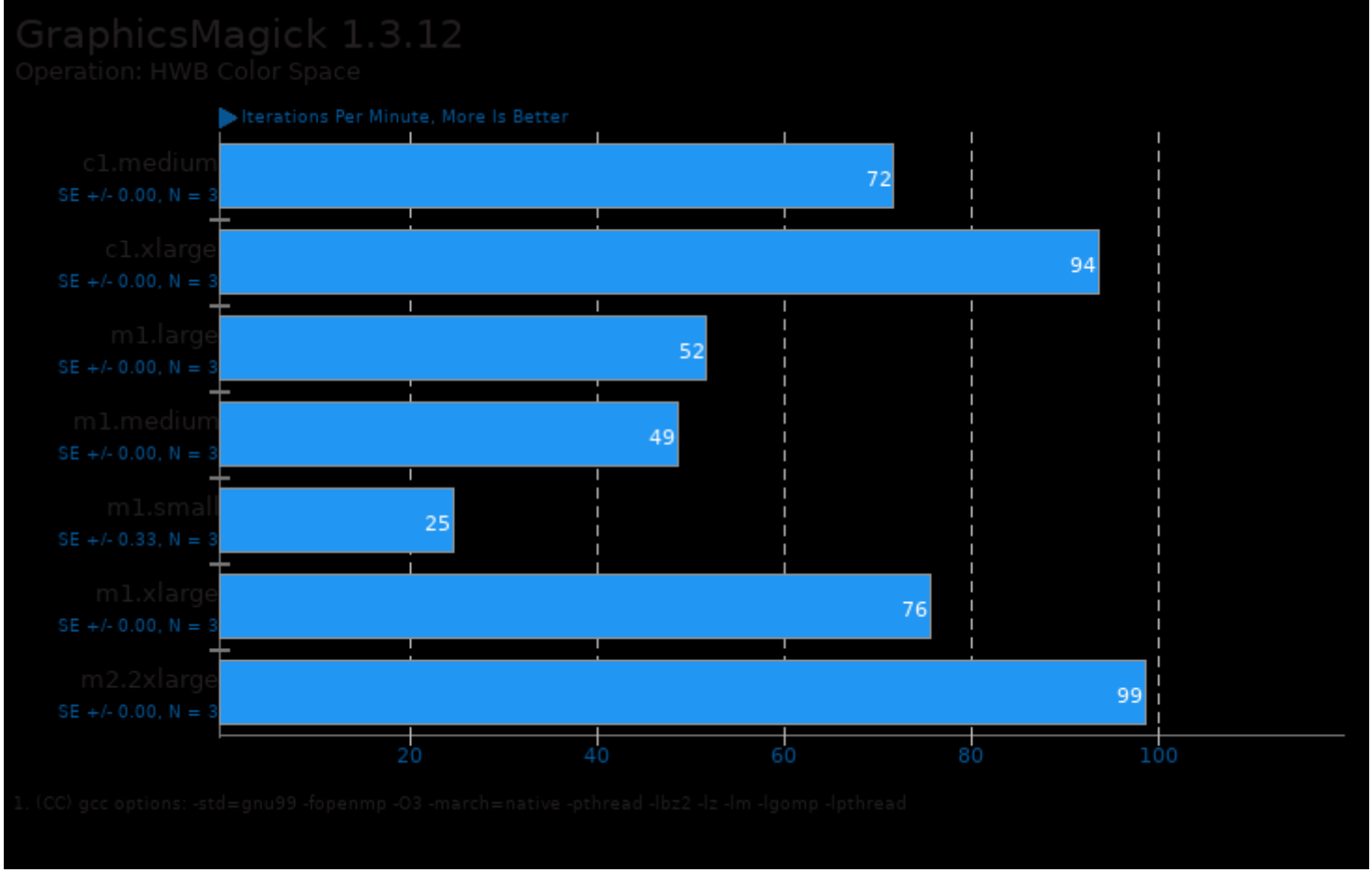

NAS Parallel Benchmarks 3.3
Test / Class: EP.B
Total Mop/s, More Is Better
c1.medium
SE +/- 0.07, N = 3
39.16
c1.xlarge
SE +/- 1.18, N = 3
161.52
goren-aj
SE +/- 2.46, N = 3
354.42
m1.large
SE +/- 0.01, N = 3
30.47
m1.medium
SE +/- 0.05, N = 3
18.94
m1.small
SE +/- 0.07, N = 3
9.36
m1.xlarge
SE +/- 0.03, N = 3
75.88
m2.2xlarge
SE +/- 0.06, N = 3
96.42
80
160
240
320
400
1. (F9X) gfortran options: -fopenmp

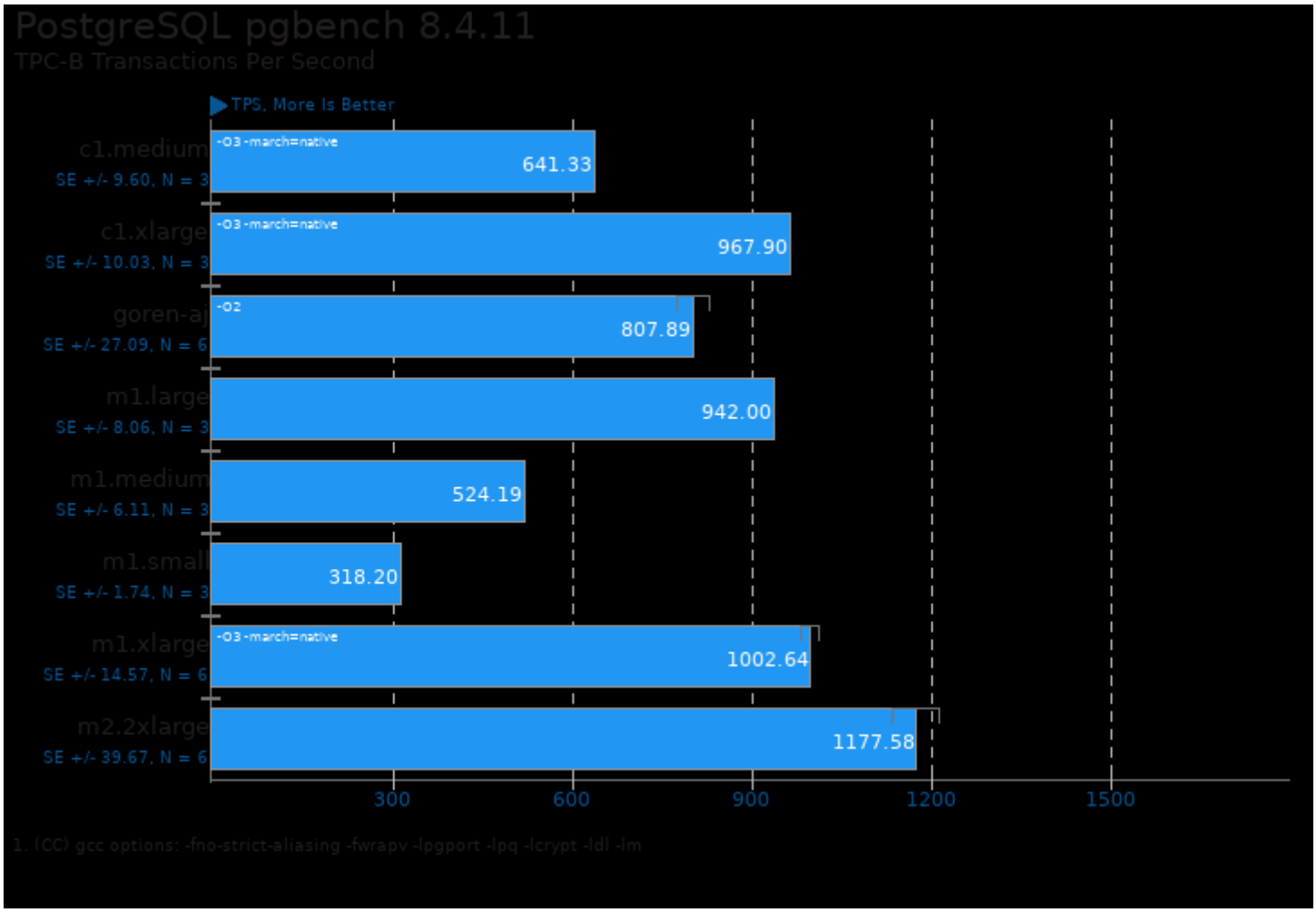

NAS Parallel Benchmarks 3.3
Test / Class: MG.B
Total Mop/s, More Is Better
c1.medium
SE +/- 20.65, N = 5
1422.00
c1.xlarge
SE +/- 40.28, N = 4
2448.67
goren-aj
SE +/- 25.88, N = 3
13403.32
m1.large
SE +/- 5.04, N = 3
1114.33
m1.medium
SE +/- 0.79, N = 3
756.56
m1.small
SE +/- 0.63, N = 3
373.96
m1.xlarge
SE +/- 4.95, N = 3
2947.66
m2.2xlarge
SE +/- 48.99, N = 6
3326.29
3K
6K
9K
12K
15K
1. (F9X) gfortran options: -fopenmp

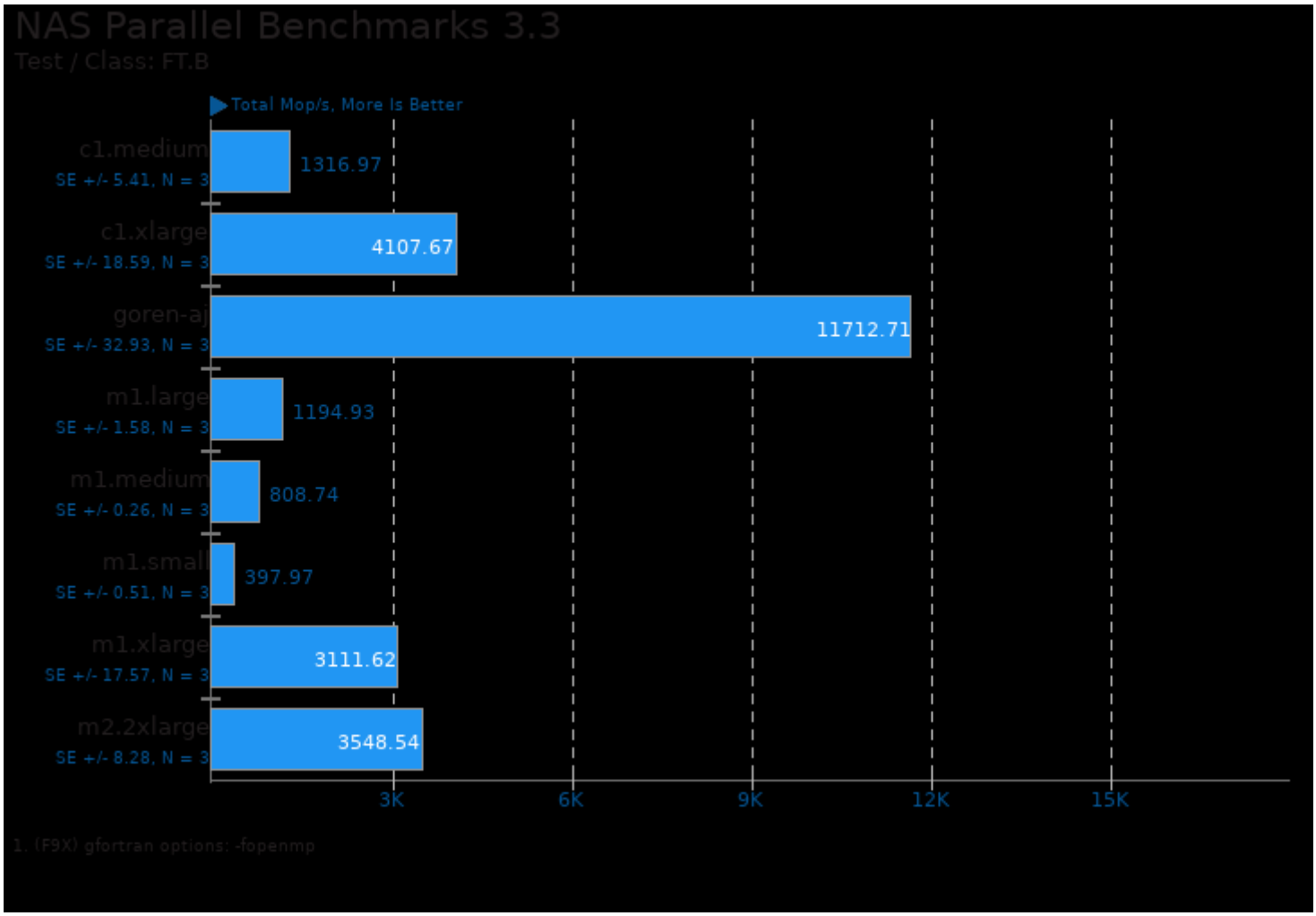

C-Ray 1.1
Total Time
Seconds, Fewer Is Better
c1.medium
-march=native
194.72
SE +/- 0.13, N = 3
c1.xlarge
47.27
SE +/- 0.08, N = 3
goren-aj
21.86
SE +/- 0.05, N = 3
m1.large
233.89
SE +/- 0.21, N = 3
m1.medium
-march=native
381.11
SE +/- 0.51, N = 3
m1.small
775.61
SE +/- 1.39, N = 3
m1.xlarge
-march=native
95.04
SE +/- 0.22, N = 3
m2.2xlarge
75.92
SE +/- 0.56, N = 3
200
400
600
800
1000
1. (CC) gcc options: -lm -lpthread -O3

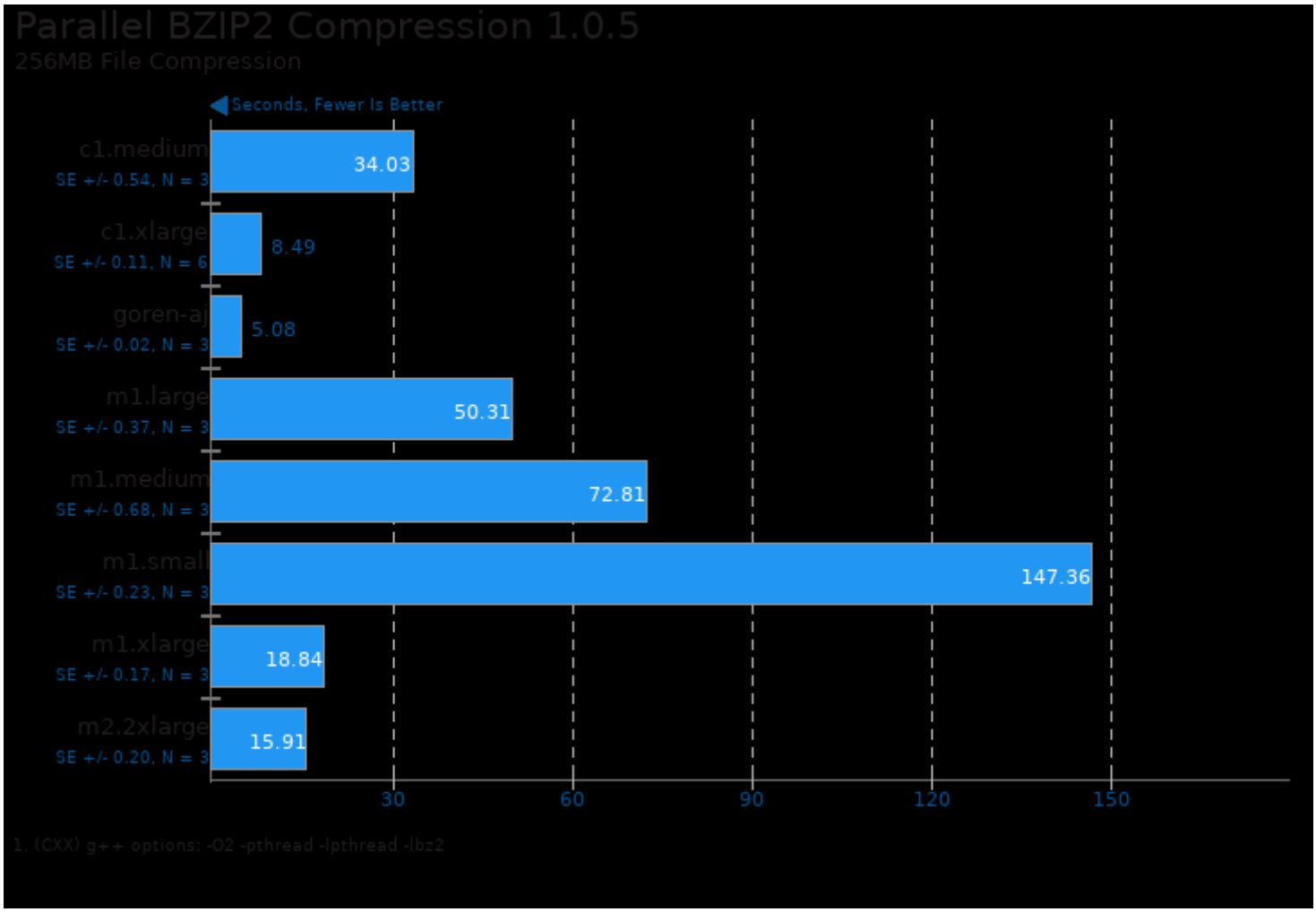

John The Ripper 1.7.9
Test: Blowfish
Real C/S, More Is Better
c1.medium
SE +/- 5.49, N = 3
1176
c1.xlarge
SE +/- 67.26, N = 4
4500
goren-aj
SE +/- 120.67, N = 3
8375
m1.large
SE +/- 10.17, N = 3
847
m1.medium
SE +/- 1.00, N = 3
536
m1.small
SE +/- 0.88, N = 3
265
m1.xlarge
SE +/- 1.67, N = 3
2153
m2.2xlarge
SE +/- 43.00, N = 3
2681
2K
4K
6K
8K
10K
1. (CC) gcc options: -fopenmp -lcrypt

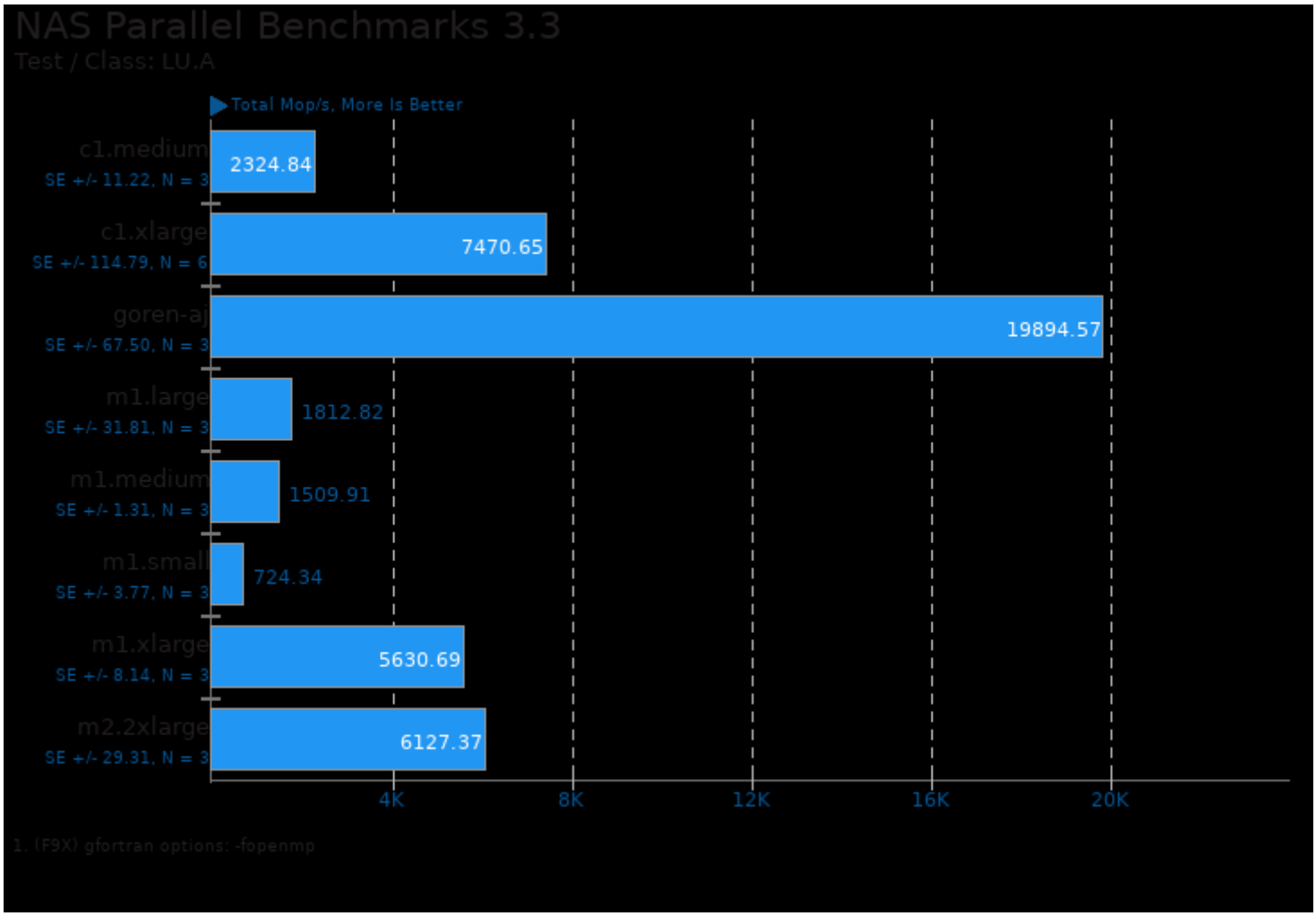

Timed Linux Kernel Compilation 3.1
Time To Compile
Seconds, Fewer Is Better
c1.medium
SE +/- 2.77, N = 3
441.45
c1.xlarge
SE +/- 1.20, N = 3
119.26
goren-aj
SE +/- 0.55, N = 3
56.65
m1.large
SE +/- 1.76, N = 3
581.88
m1.medium
SE +/- 2.47, N = 3
848.75
m1.small
SE +/- 2.18, N = 3
1720.44
m1.xlarge
SE +/- 1.14, N = 3
224.32
m2.2xlarge
SE +/- 1.48, N = 3
184.93
400
800
1200
1600
2000

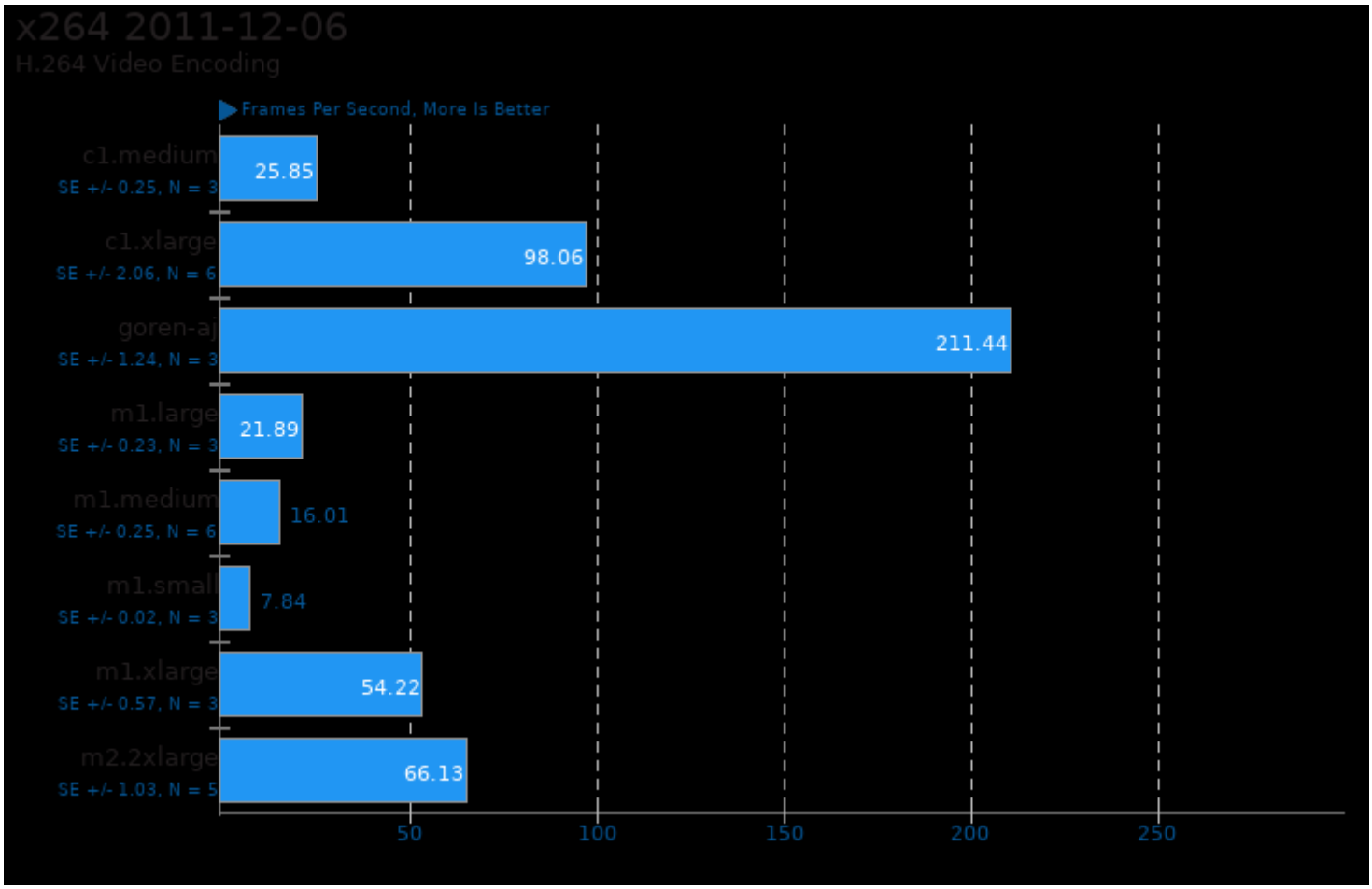

GraphicsMagick 1.3.12
Operation: HWB Color Space
Iterations Per Minute, More Is Better
c1.medium
SE +/- 0.00, N = 3
72
c1.xlarge
SE +/- 0.00, N = 3
94
m1.large
SE +/- 0.00, N = 3
52
m1.medium
SE +/- 0.00, N = 3
49
m1.small
SE +/- 0.33, N = 3
25
m1.xlarge
SE +/- 0.00, N = 3
76
m2.2xlarge
SE +/- 0.00, N = 3
99
20
40
60
80
100
1. (CC) gcc options: -std=gnu99 -fopenmp -O3 -march=native -pthread -lbz2 -lz -lm -lgomp -lpthread

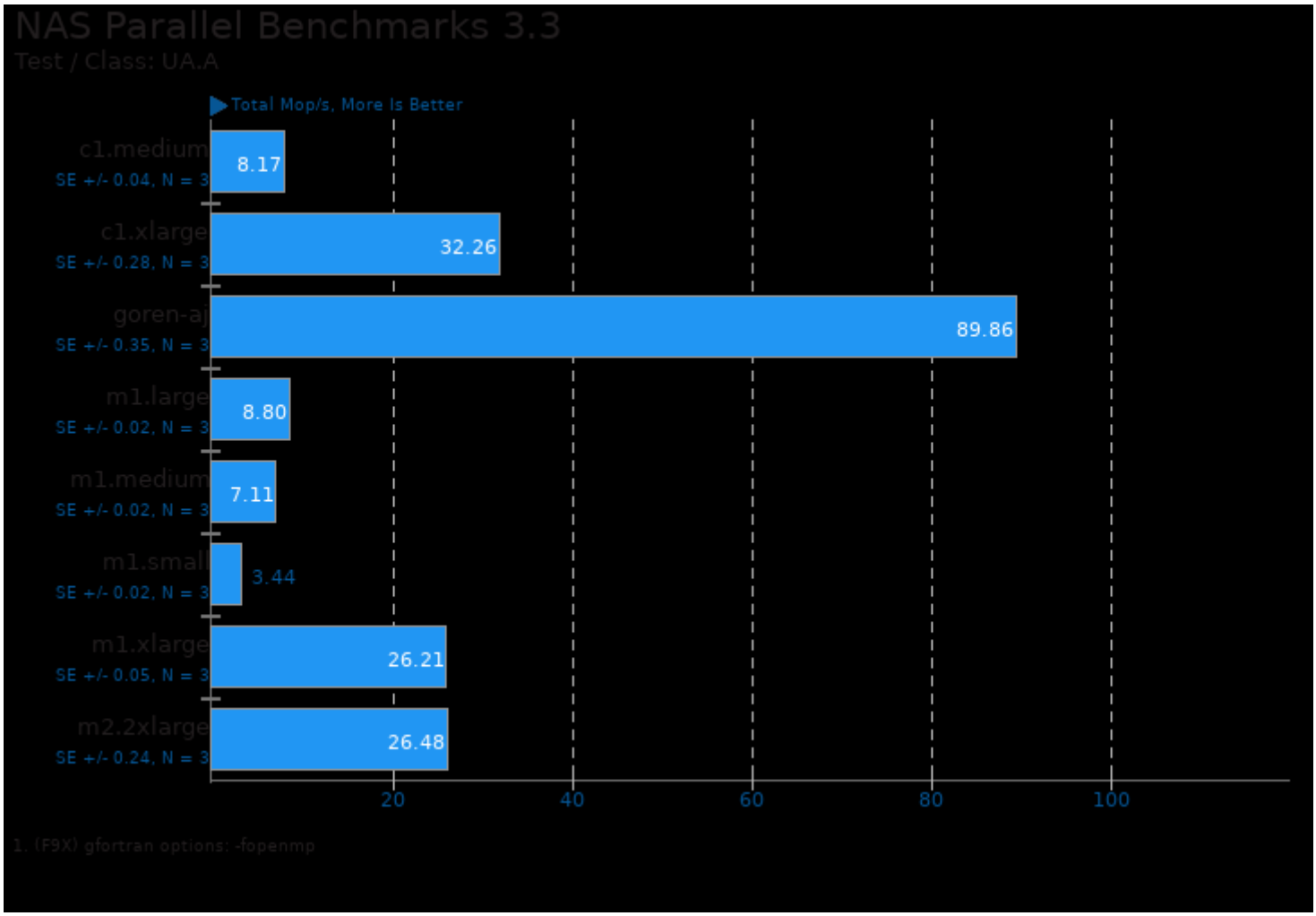

PostgreSQL pgbench 8.4.11
TPC-B Transactions Per Second
TPS, More Is Better
c1.medium
SE +/- 9.60, N = 3
-O3 -march=native
641.33
c1.xlarge
SE +/- 10.03, N = 3
-O3 -march=native
967.90
goren-aj
SE +/- 27.09, N = 6
-O2
807.89
m1.large
SE +/- 8.06, N = 3
942.00
m1.medium
SE +/- 6.11, N = 3
524.19
m1.small
SE +/- 1.74, N = 3
318.20
m1.xlarge
SE +/- 14.57, N = 6
-O3 -march=native
1002.64
m2.2xlarge
SE +/- 39.67, N = 6
1177.58
300
600
900
1200
1500
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -lpgport -lpq -lcrypt -ldl -lm

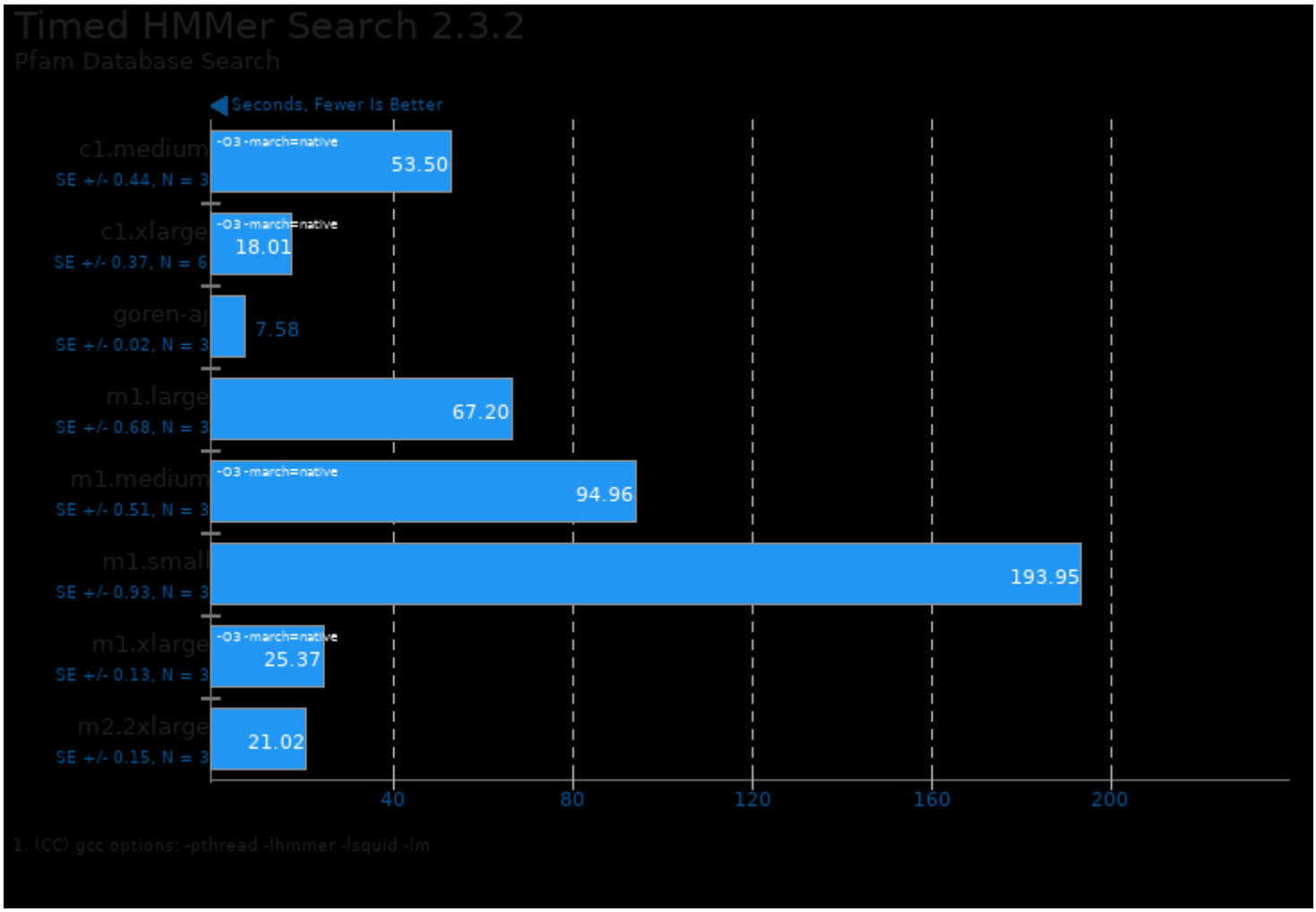

NAS Parallel Benchmarks 3.3
Test / Class: FT.B
Total Mop/s, More Is Better
c1.medium
SE +/- 5.41, N = 3
1316.97
c1.xlarge
SE +/- 18.59, N = 3
4107.67
goren-aj
SE +/- 32.93, N = 3
11712.71
m1.large
SE +/- 1.58, N = 3
1194.93
m1.medium
SE +/- 0.26, N = 3
808.74
m1.small
SE +/- 0.51, N = 3
397.97
m1.xlarge
SE +/- 17.57, N = 3
3111.62
m2.2xlarge
SE +/- 8.28, N = 3
3548.54
3K
6K
9K
12K
15K
1. (F9X) gfortran options: -fopenmp

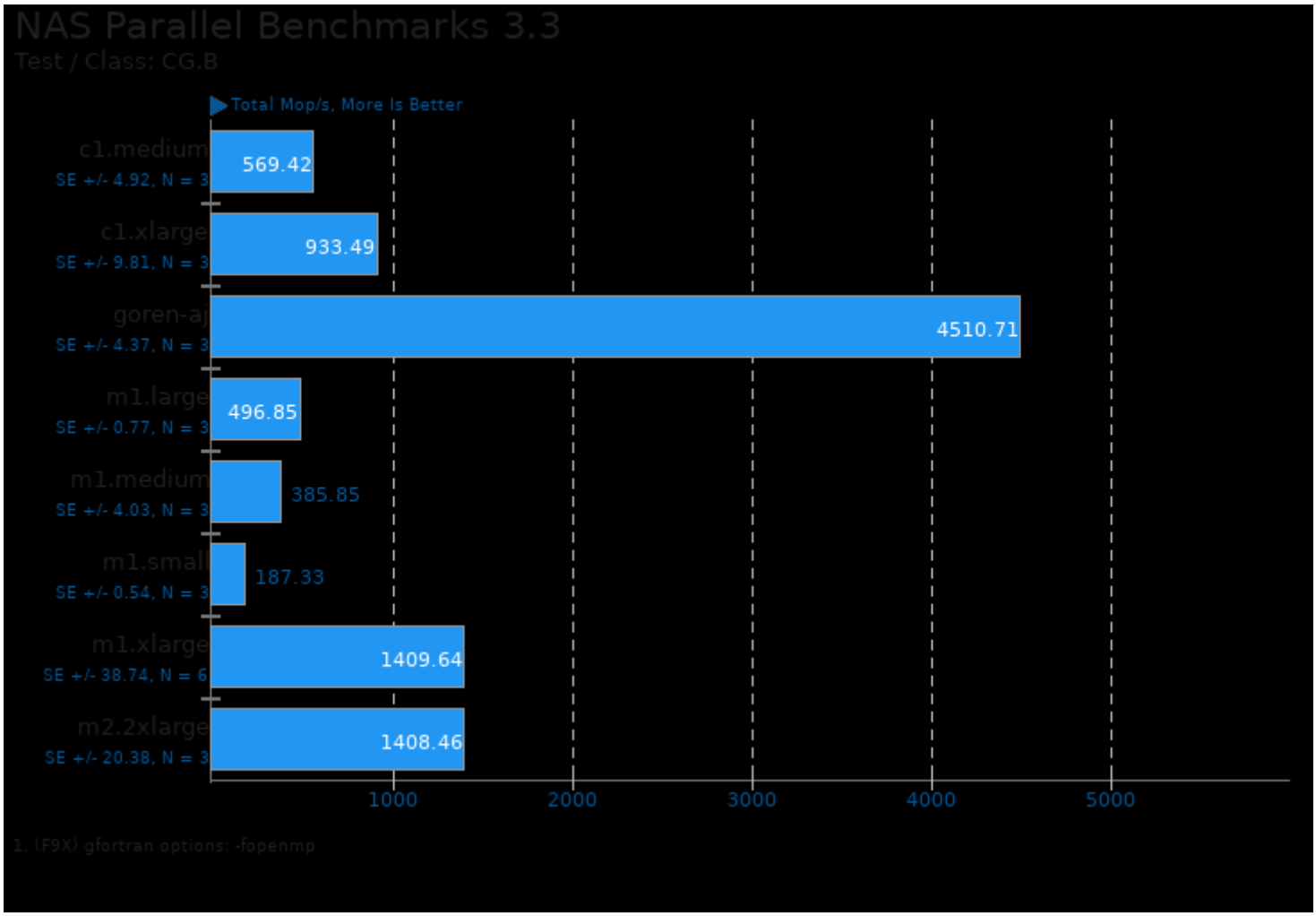

Parallel BZIP2 Compression 1.0.5
256MB File Compression
Seconds, Fewer Is Better
c1.medium
SE +/- 0.54, N = 3
34.03
c1.xlarge
SE +/- 0.11, N = 6
8.49
goren-aj
SE +/- 0.02, N = 3
5.08
m1.large
SE +/- 0.37, N = 3
50.31
m1.medium
SE +/- 0.68, N = 3
72.81
m1.small
SE +/- 0.23, N = 3
147.36
m1.xlarge
SE +/- 0.17, N = 3
18.84
m2.2xlarge
SE +/- 0.20, N = 3
15.91
30
60
90
120
150
1. (CXX) g++ options: -O2 -pthread -lpthread -lbz2


NAS Parallel Benchmarks 3.3
Test / Class: LU.A
Total Mop/s, More Is Better
c1.medium
SE +/- 11.22, N = 3
2324.84
c1.xlarge
SE +/- 114.79, N = 6
7470.65
goren-aj
SE +/- 67.50, N = 3
19894.57
m1.large
SE +/- 31.81, N = 3
1812.82
m1.medium
SE +/- 1.31, N = 3
1509.91
m1.small
SE +/- 3.77, N = 3
724.34
m1.xlarge
SE +/- 8.14, N = 3
5630.69
m2.2xlarge
SE +/- 29.31, N = 3
6127.37
4K
8K
12K
16K
20K
1. (F9X) gfortran options: -fopenmp

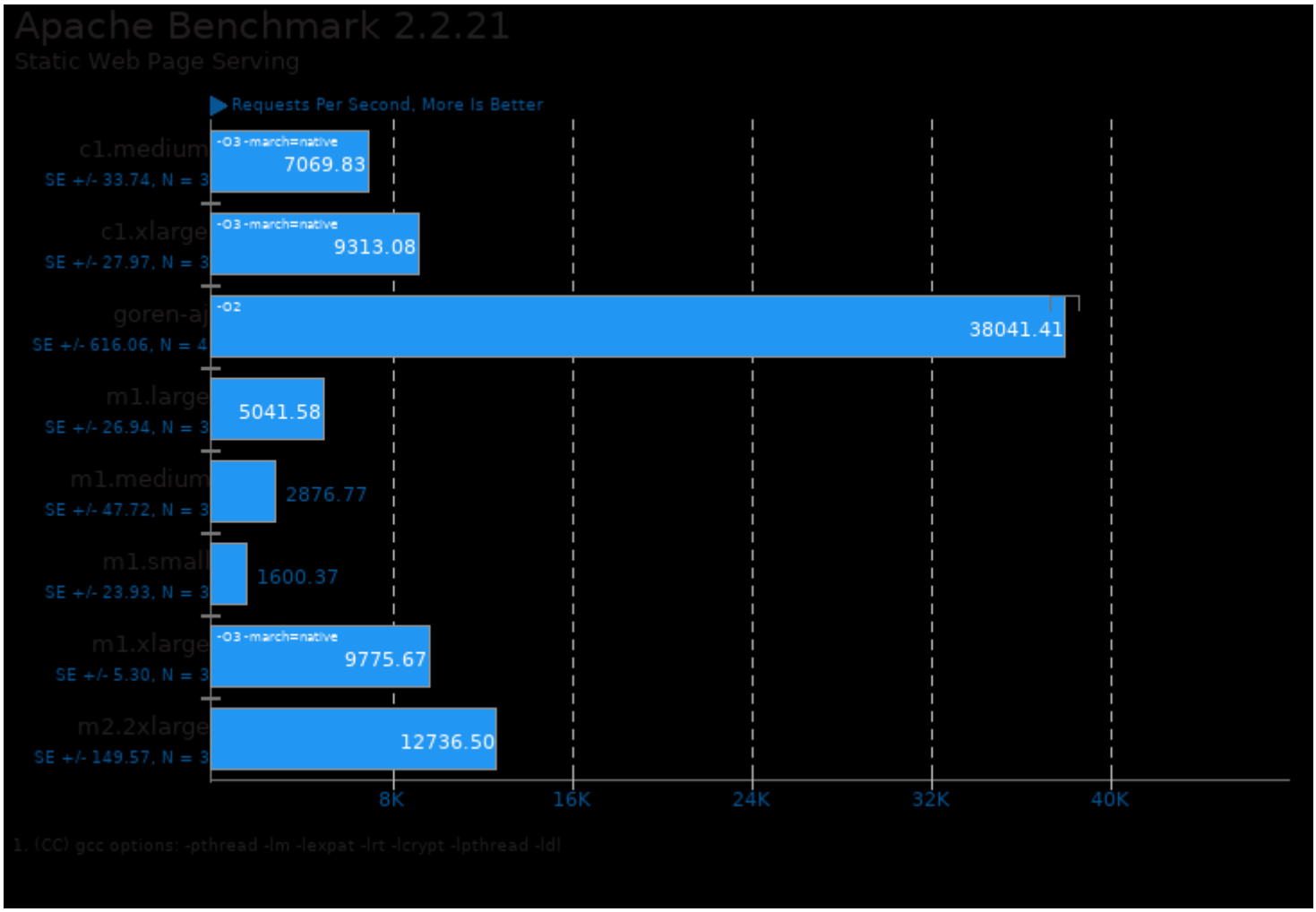

x264 2011-12-06
H.264 Video Encoding
Frames Per Second, More Is Better
c1.medium
SE +/- 0.25, N = 3
25.85
c1.xlarge
SE +/- 2.06, N = 6
98.06
goren-aj
SE +/- 1.24, N = 3
211.44
m1.large
SE +/- 0.23, N = 3
21.89
m1.medium
SE +/- 0.25, N = 6
16.01
m1.small
SE +/- 0.02, N = 3
7.84
m1.xlarge
SE +/- 0.57, N = 3
54.22
m2.2xlarge
SE +/- 1.03, N = 5
66.13
50
100
150
200
250

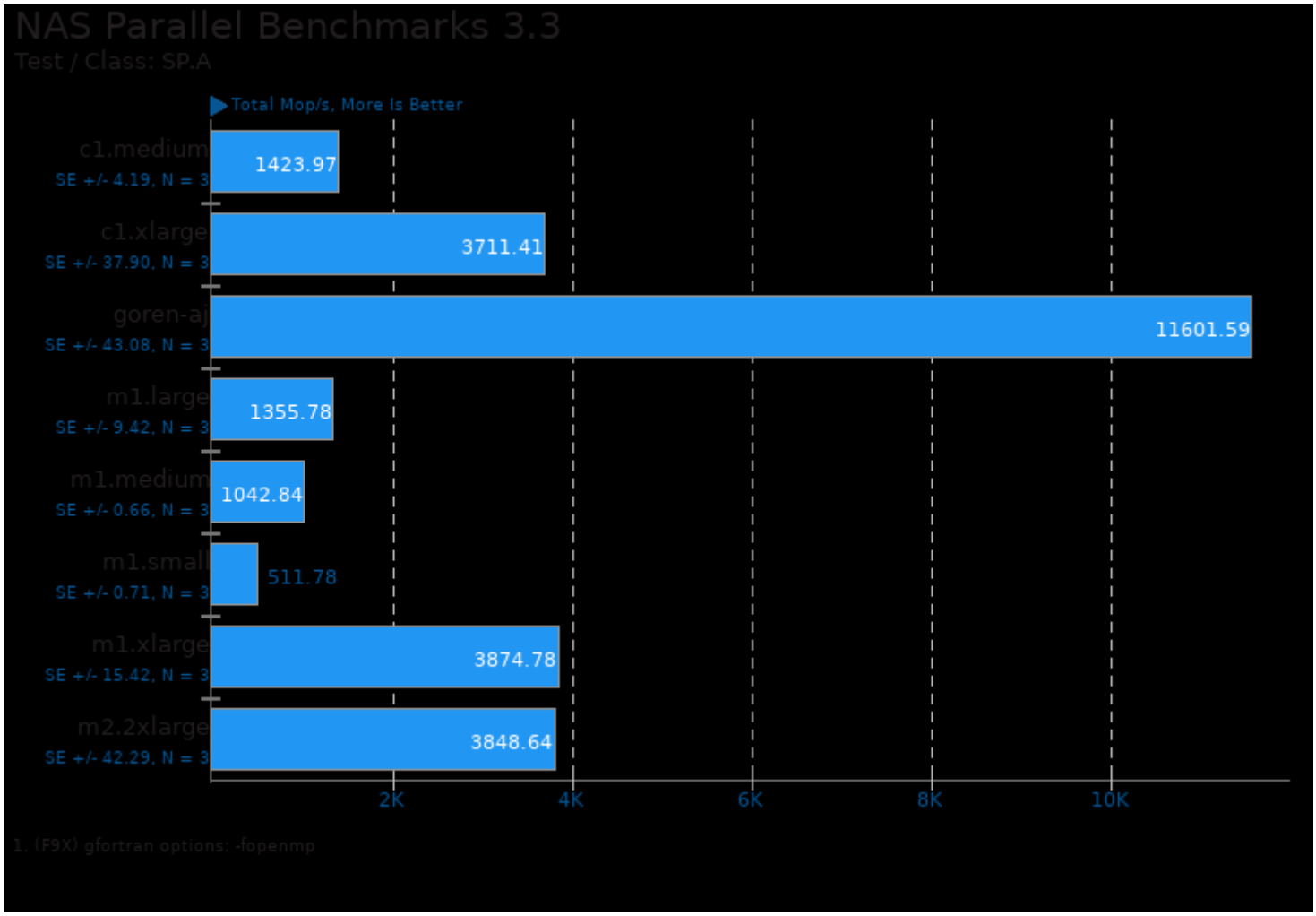

NAS Parallel Benchmarks 3.3
Test / Class: UA.A
Total Mop/s, More Is Better
c1.medium
SE +/- 0.04, N = 3
8.17
c1.xlarge
SE +/- 0.28, N = 3
32.26
goren-aj
SE +/- 0.35, N = 3
89.86
m1.large
SE +/- 0.02, N = 3
8.80
m1.medium
SE +/- 0.02, N = 3
7.11
m1.small
SE +/- 0.02, N = 3
3.44
m1.xlarge
SE +/- 0.05, N = 3
26.21
m2.2xlarge
SE +/- 0.24, N = 3
26.48
20
40
60
80
100
1. (F9X) gfortran options: -fopenmp

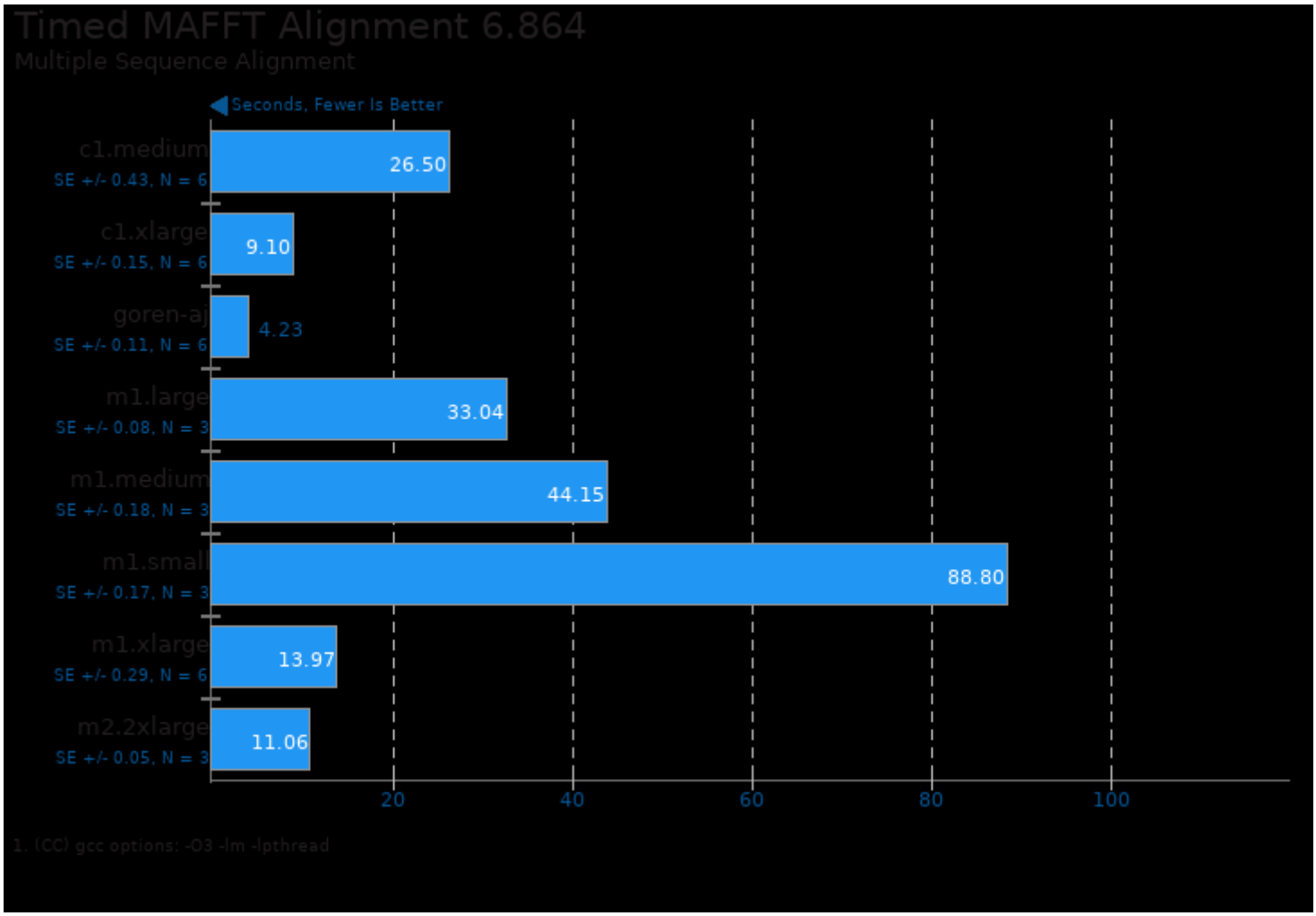

Timed HMMer Search 2.3.2
Pfam Database Search
Seconds, Fewer Is Better
c1.medium
SE +/- 0.44, N = 3
-O3 -march=native
53.50
c1.xlarge
SE +/- 0.37, N = 6
-O3 -march=native
18.01
goren-aj
SE +/- 0.02, N = 3
7.58
m1.large
SE +/- 0.68, N = 3
67.20
m1.medium
SE +/- 0.51, N = 3
-O3 -march=native
94.96
m1.small
SE +/- 0.93, N = 3
193.95
m1.xlarge
SE +/- 0.13, N = 3
-O3 -march=native
25.37
m2.2xlarge
SE +/- 0.15, N = 3
21.02
40
80
120
160
200
1. (CC) gcc options: -pthread -lhmmer -lsquid -lm

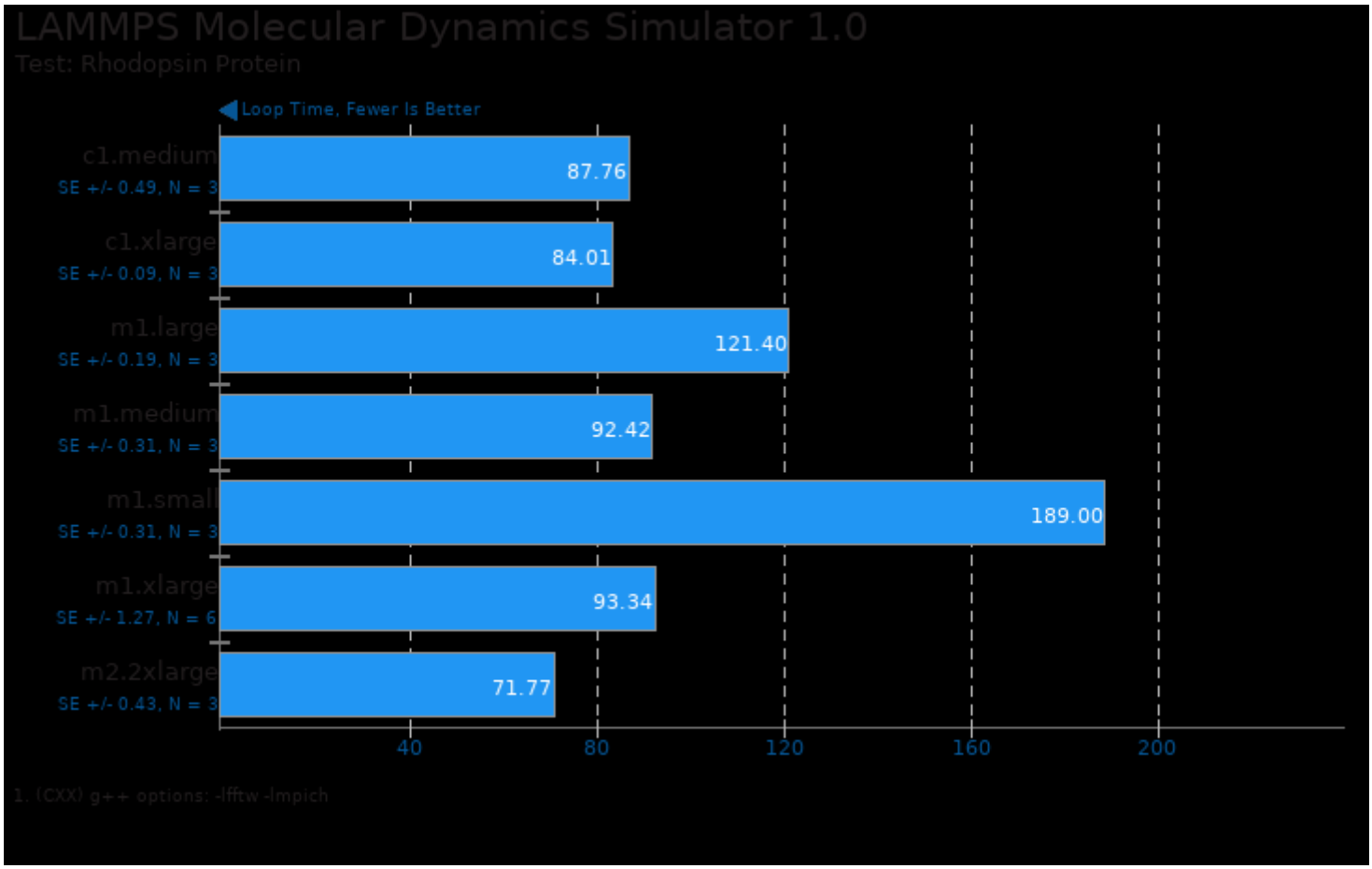

NAS Parallel Benchmarks 3.3
Test / Class: CG.B
Total Mop/s, More Is Better
c1.medium
SE +/- 4.92, N = 3
569.42
c1.xlarge
SE +/- 9.81, N = 3
933.49
goren-aj
SE +/- 4.37, N = 3
4510.71
m1.large
SE +/- 0.77, N = 3
496.85
m1.medium
SE +/- 4.03, N = 3
385.85
m1.small
SE +/- 0.54, N = 3
187.33
m1.xlarge
SE +/- 38.74, N = 6
1409.64
m2.2xlarge
SE +/- 20.38, N = 3
1408.46
1000
2000
3000
4000
5000
1. (F9X) gfortran options: -fopenmp

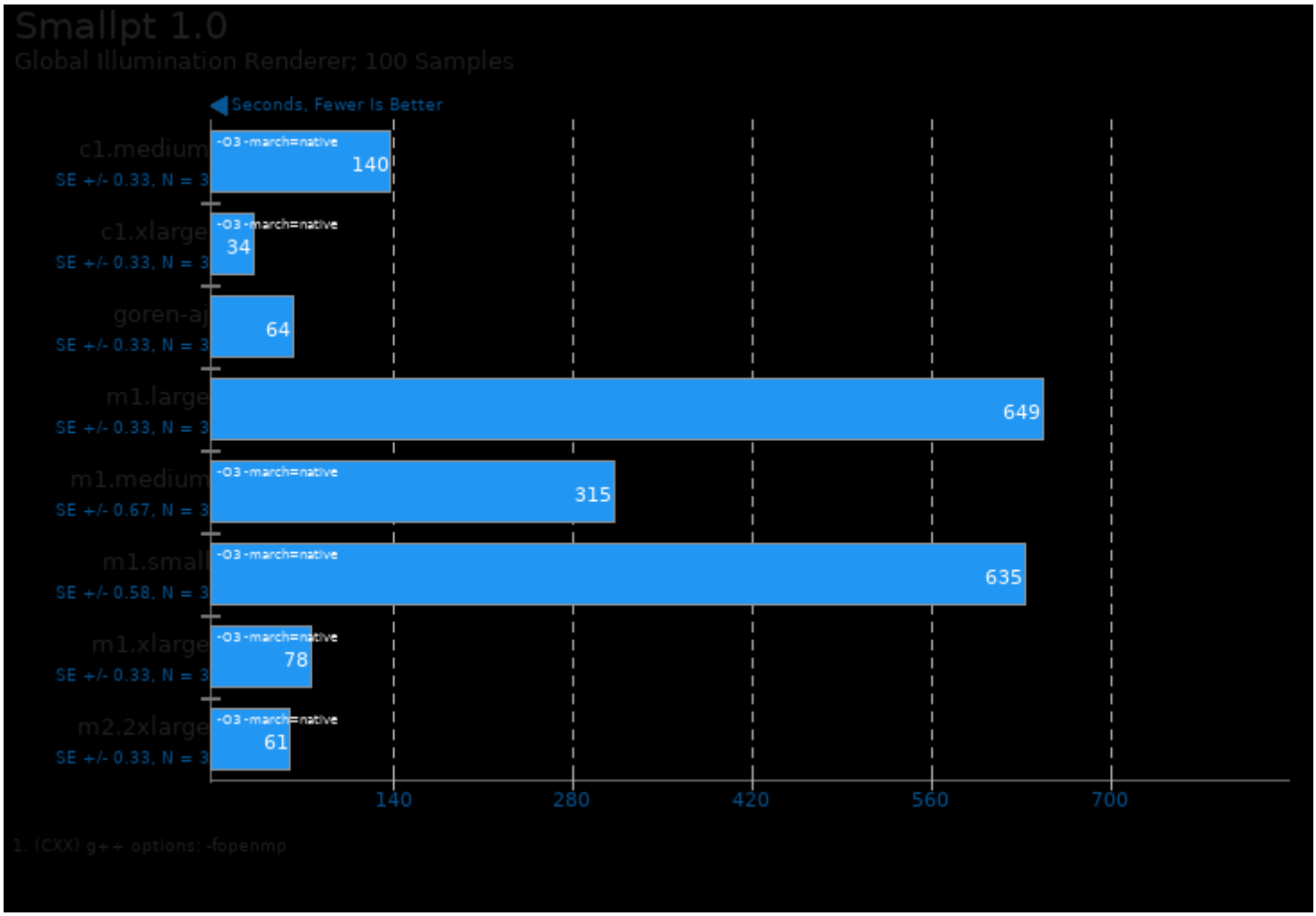
Amazon EC2 Cloud Instance Benchmarks

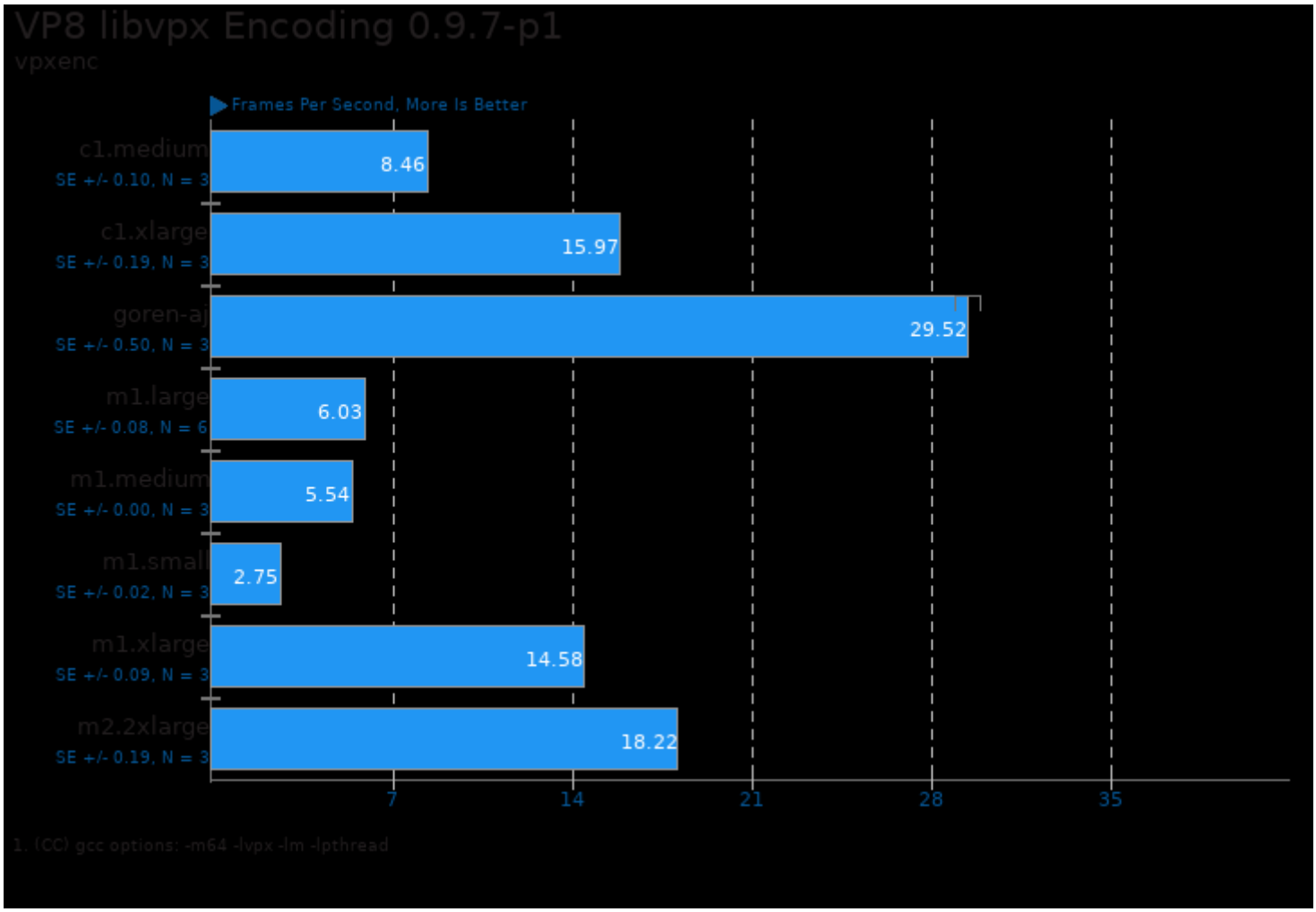



NAS Parallel Benchmarks 3.3
Test / Class: SP.A
Total Mop/s, More Is Better
c1.medium
SE +/- 4.19, N = 3
1423.97
c1.xlarge
SE +/- 37.90, N = 3
3711.41
goren-aj
SE +/- 43.08, N = 3
11601.59
m1.large
SE +/- 9.42, N = 3
1355.78
m1.medium
SE +/- 0.66, N = 3
1042.84
m1.small
SE +/- 0.71, N = 3
511.78
m1.xlarge
SE +/- 15.42, N = 3
3874.78
m2.2xlarge
SE +/- 42.29, N = 3
3848.64
2K
4K
6K
8K
10K
1. (F9X) gfortran options: -fopenmp

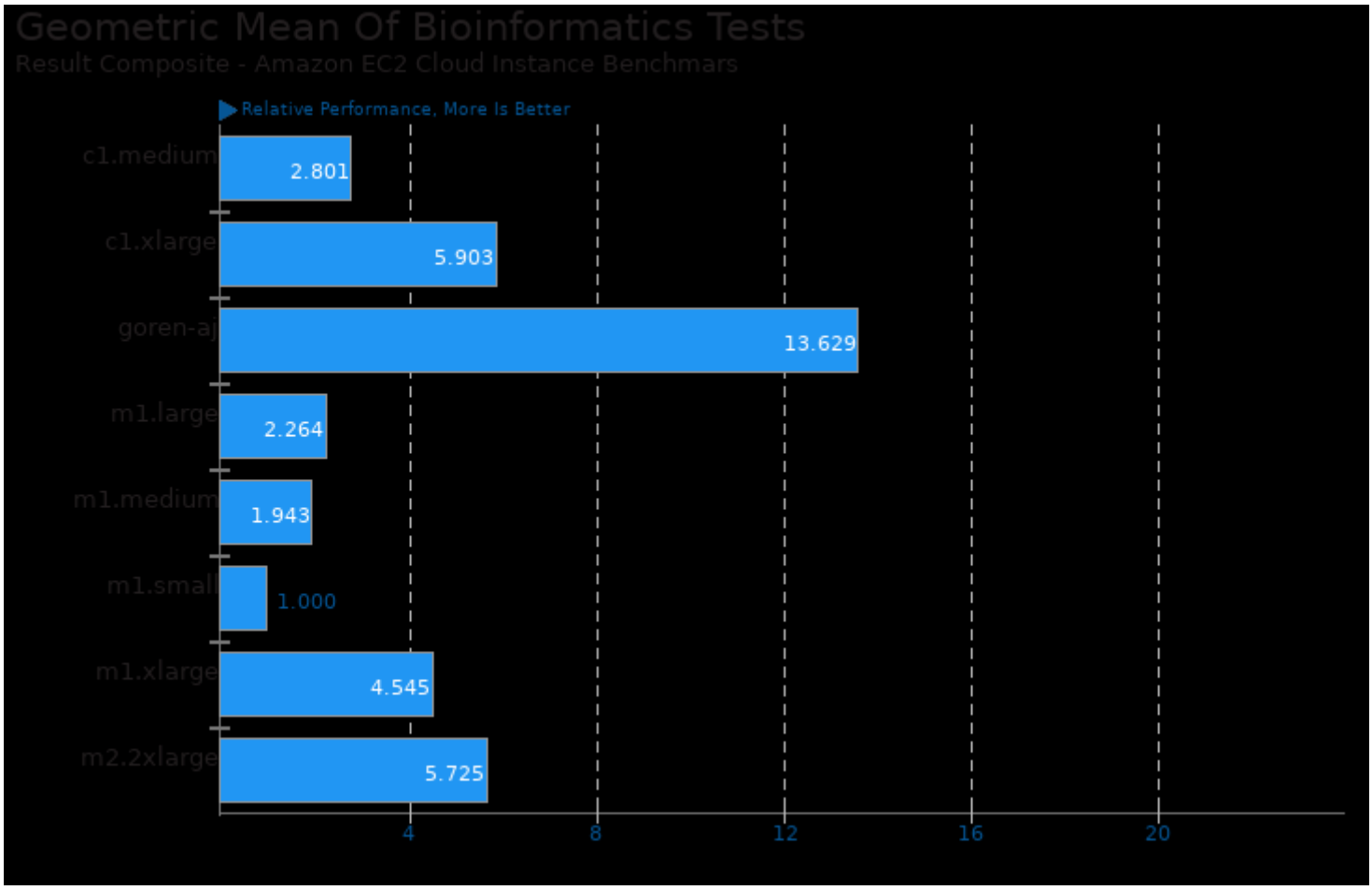

Timed MAFFT Alignment 6.864
Multiple Sequence Alignment
Seconds, Fewer Is Better
c1.medium
SE +/- 0.43, N = 6
26.50
c1.xlarge
SE +/- 0.15, N = 6
9.10
goren-aj
SE +/- 0.11, N = 6
4.23
m1.large
SE +/- 0.08, N = 3
33.04
m1.medium
SE +/- 0.18, N = 3
44.15
m1.small
SE +/- 0.17, N = 3
88.80
m1.xlarge
SE +/- 0.29, N = 6
13.97
m2.2xlarge
SE +/- 0.05, N = 3
11.06
20
40
60
80
100
1. (CC) gcc options: -O3 -lm -lpthread


LAMMPS Molecular Dynamics Simulator 1.0
Test: Rhodopsin Protein
Loop Time, Fewer Is Better
c1.medium
SE +/- 0.49, N = 3
87.76
c1.xlarge
SE +/- 0.09, N = 3
84.01
m1.large
SE +/- 0.19, N = 3
121.40
m1.medium
SE +/- 0.31, N = 3
92.42
m1.small
SE +/- 0.31, N = 3
189.00
m1.xlarge
SE +/- 1.27, N = 6
93.34
m2.2xlarge
SE +/- 0.43, N = 3
71.77
40
80
120
160
200
1. (CXX) g++ options: -lfftw -lmpich

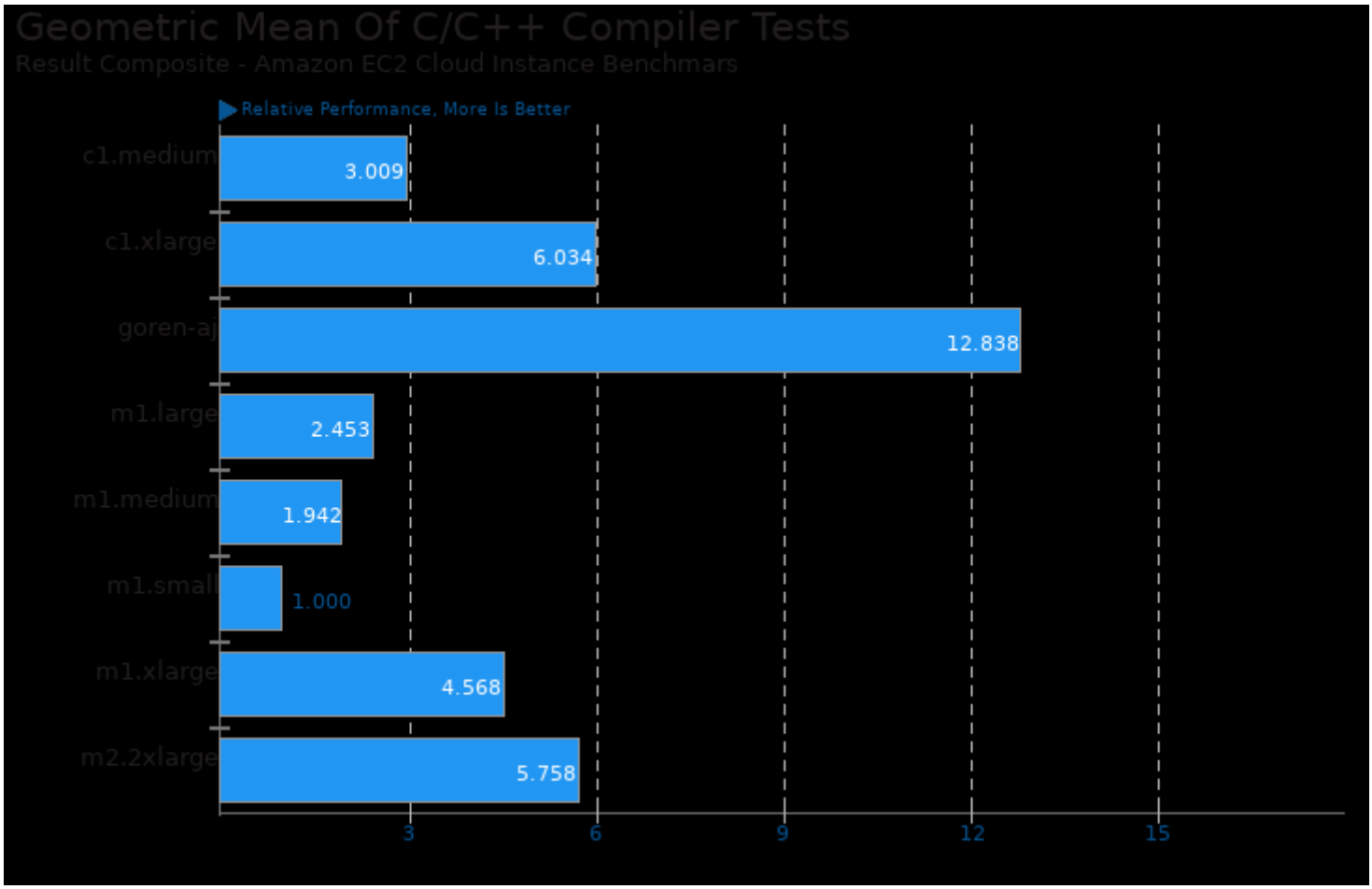

Smallpt 1.0
Global Illumination Renderer; 100 Samples
Seconds, Fewer Is Better
c1.medium
SE +/- 0.33, N = 3
-O3 -march=native
140
c1.xlarge
SE +/- 0.33, N = 3
-O3 -march=native
34
goren-aj
SE +/- 0.33, N = 3
64
m1.large
SE +/- 0.33, N = 3
649
m1.medium
SE +/- 0.67, N = 3
-O3 -march=native
315
m1.small
SE +/- 0.58, N = 3
-O3 -march=native
635
m1.xlarge
SE +/- 0.33, N = 3
-O3 -march=native
78
m2.2xlarge
SE +/- 0.33, N = 3
-O3 -march=native
61
140
280
420
560
700
1. (CXX) g++ options: -fopenmp


VP8 libvpx Encoding 0.9.7-p1
vpxenc
Frames Per Second, More Is Better
c1.medium
SE +/- 0.10, N = 3
8.46
c1.xlarge
SE +/- 0.19, N = 3
15.97
goren-aj
SE +/- 0.50, N = 3
29.52
m1.large
SE +/- 0.08, N = 6
6.03
m1.medium
SE +/- 0.00, N = 3
5.54
m1.small
SE +/- 0.02, N = 3
2.75
m1.xlarge
SE +/- 0.09, N = 3
14.58
m2.2xlarge
SE +/- 0.19, N = 3
18.22
7
14
21
28
35
1. (CC) gcc options: -m64 -lvpx -lm -lpthread

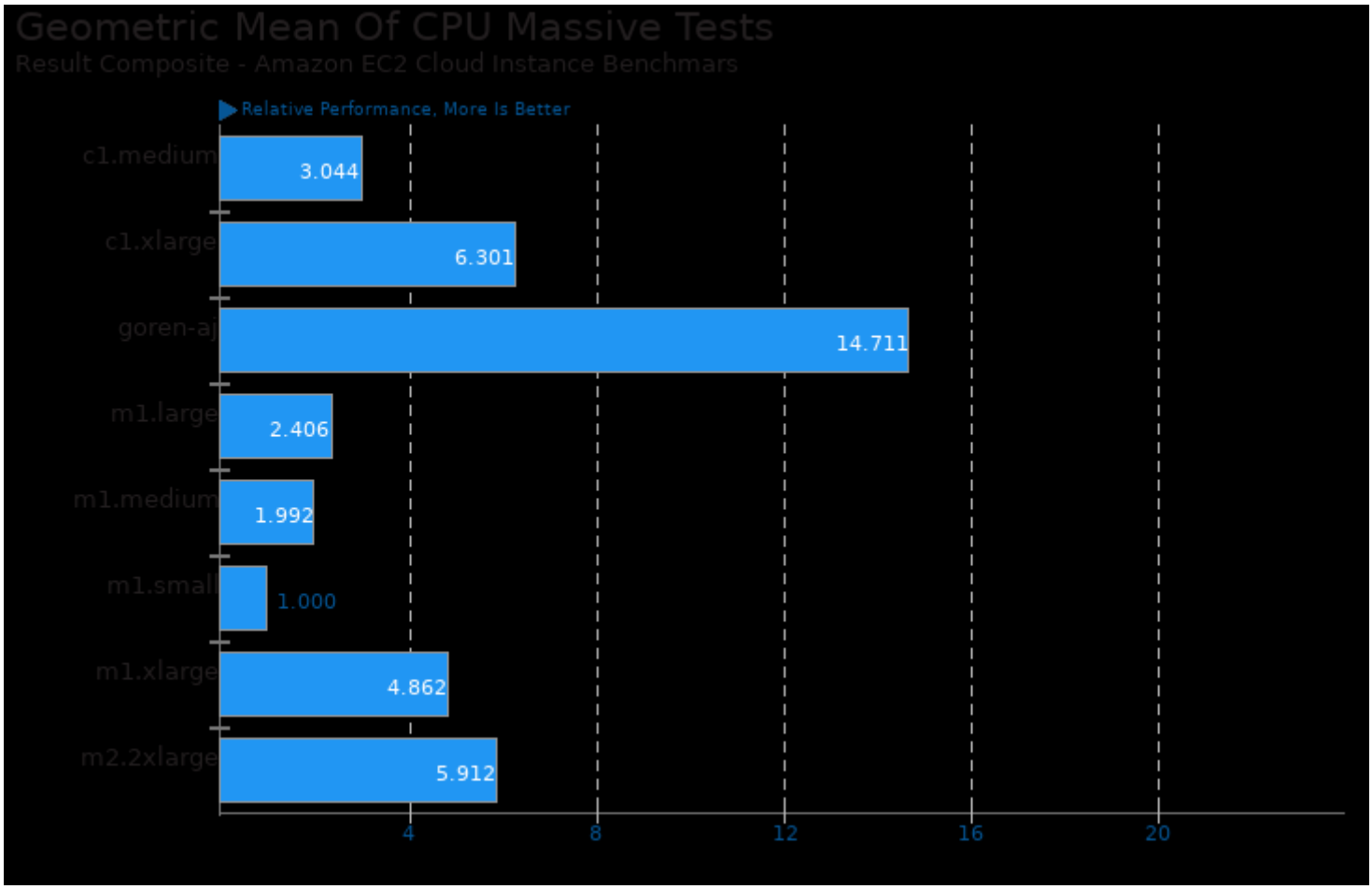
These geometric means are based upon test groupings / test suites for this result file.



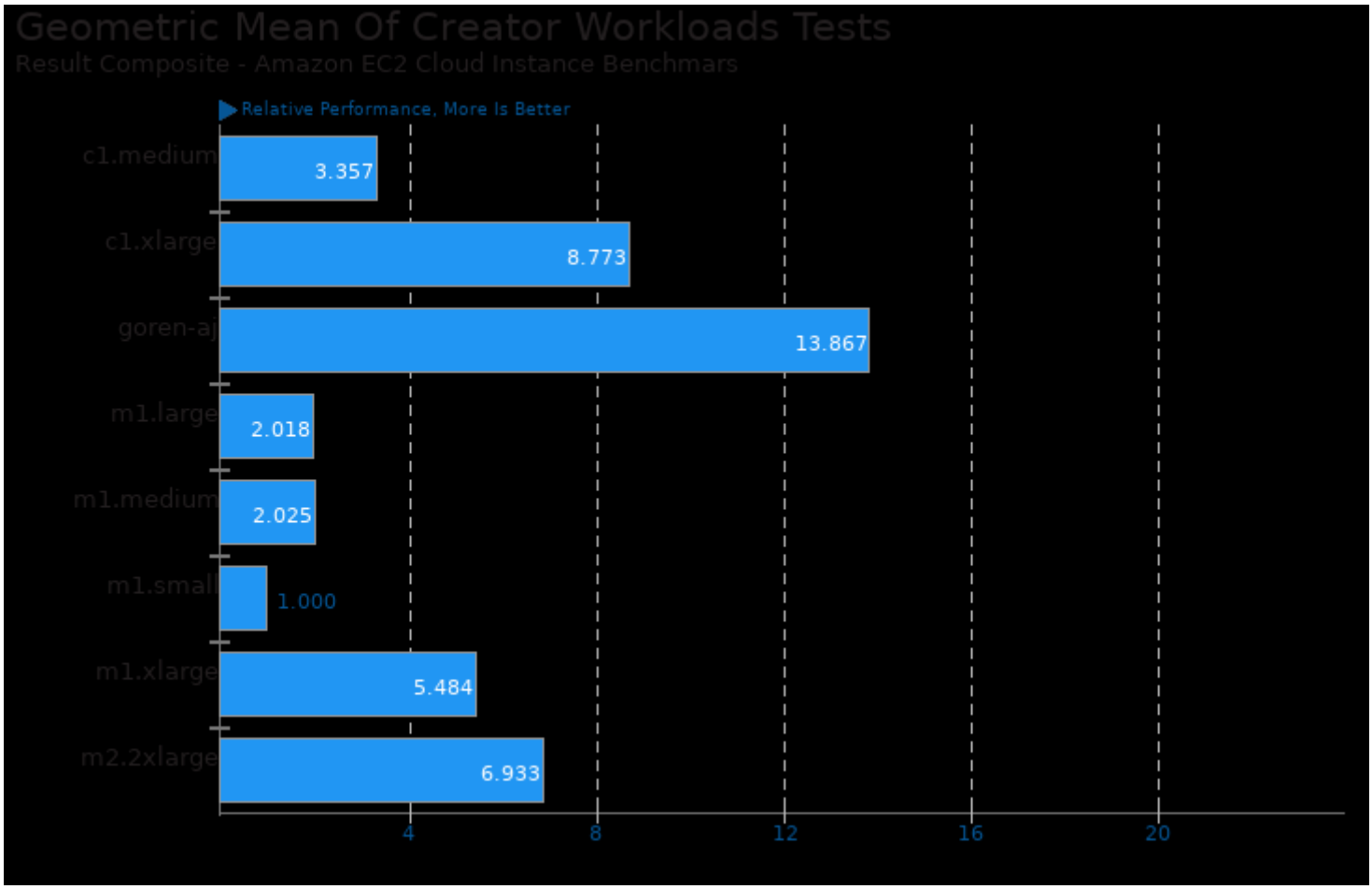
Geometric mean based upon tests: pts/himeno, pts/mrbayes, pts/hmmer and pts/mafft



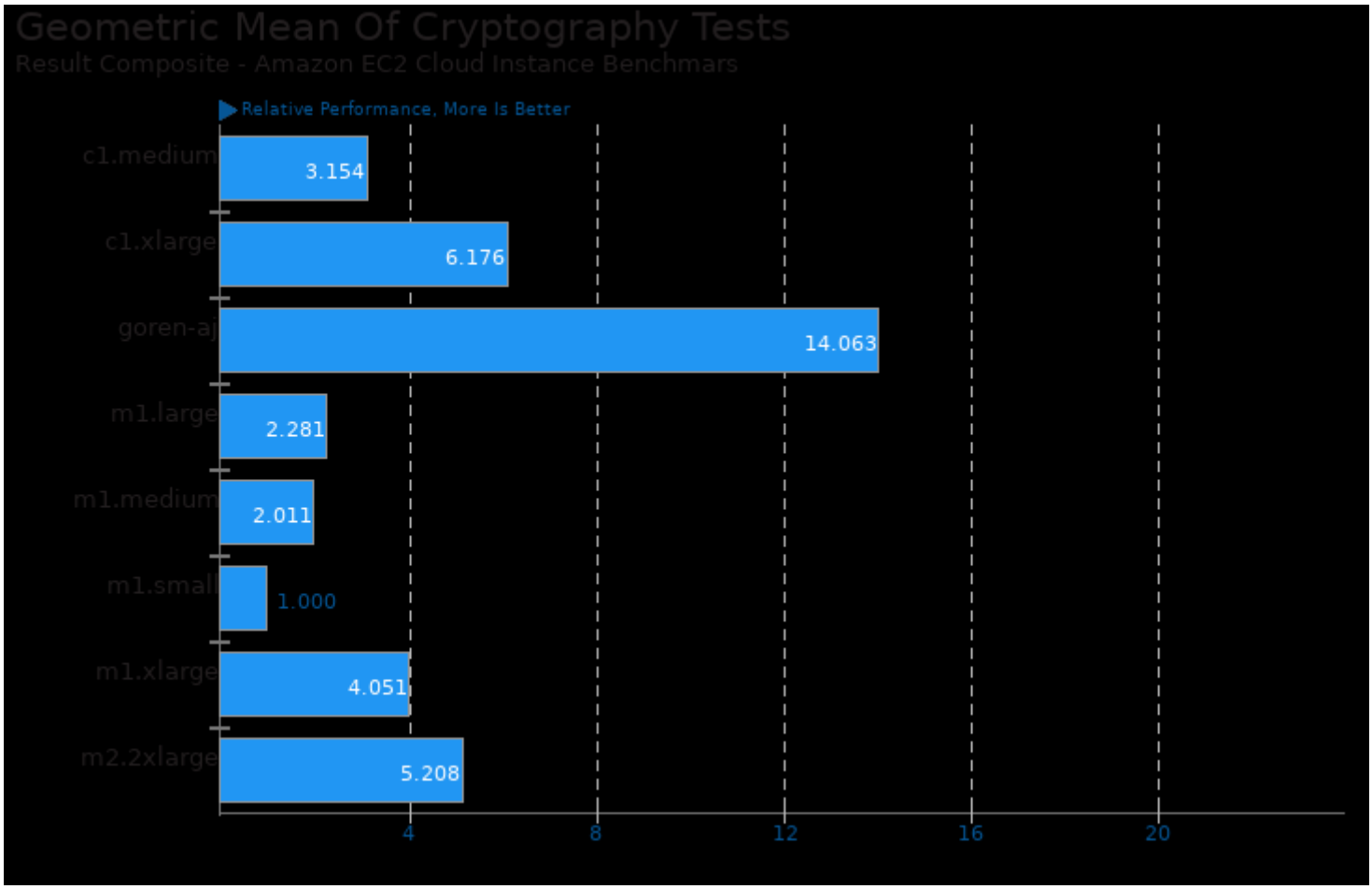
Geometric mean based upon tests: pts/mafft, pts/vpxenc, pts/graphics-magick, pts/himeno, pts/hmmer, pts/c-ray, pts/encode-mp3, pts/pgbench, pts/apache, pts/mrbayes, pts/john-the-ripper, pts/x264, pts/openssl and pts/lammps



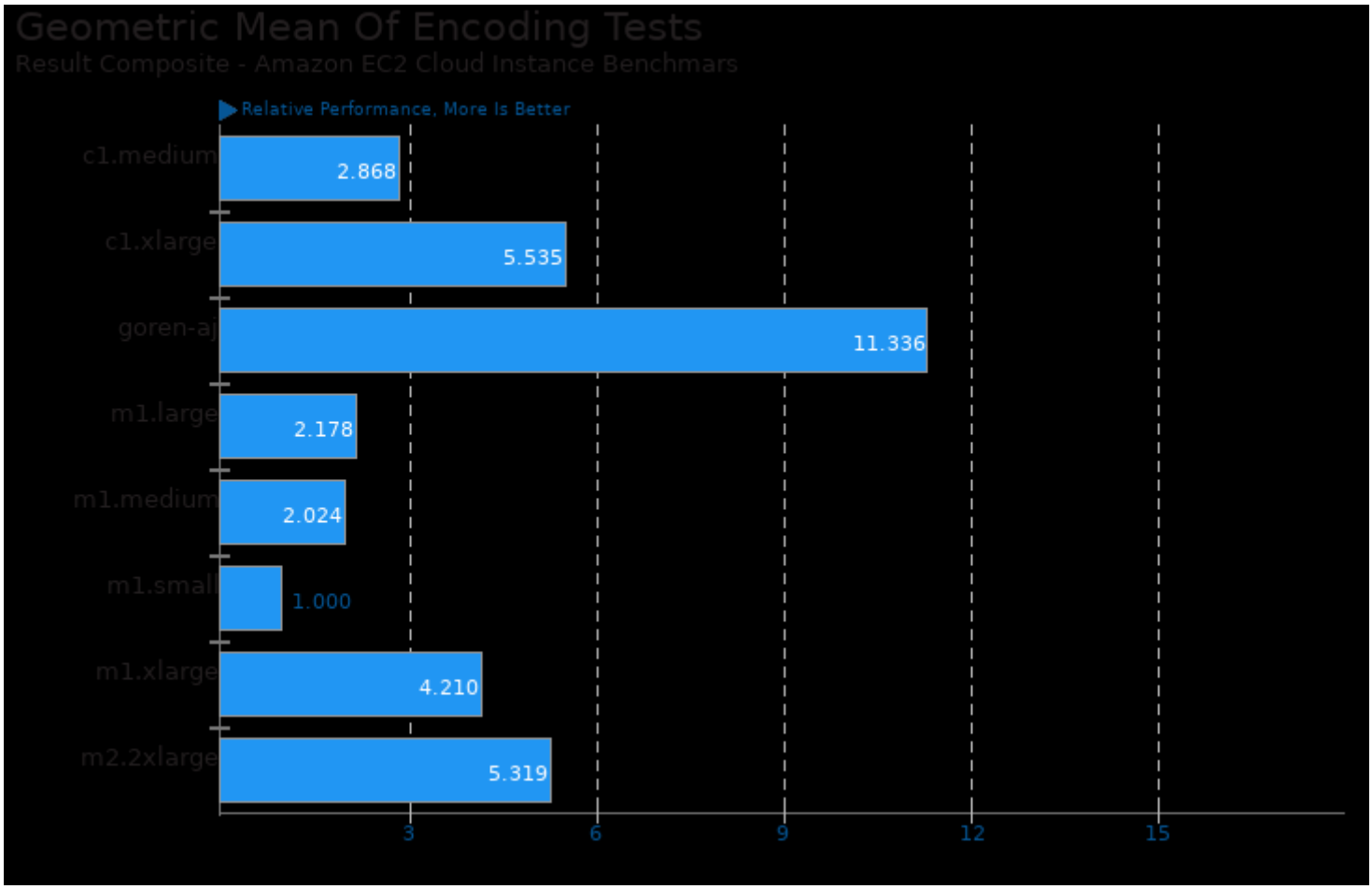
Geometric mean based upon tests: pts/apache, pts/build-linux-kernel, pts/c-ray, pts/compress-pbzip2, pts/vpxenc, pts/x264, pts/encode-mp3, pts/graphics-magick, pts/himeno, pts/hmmer, pts/john-the-ripper, pts/openssl, pts/lammps, pts/mafft, pts/minion, pts/mrbayes, pts/npb and pts/pgbench



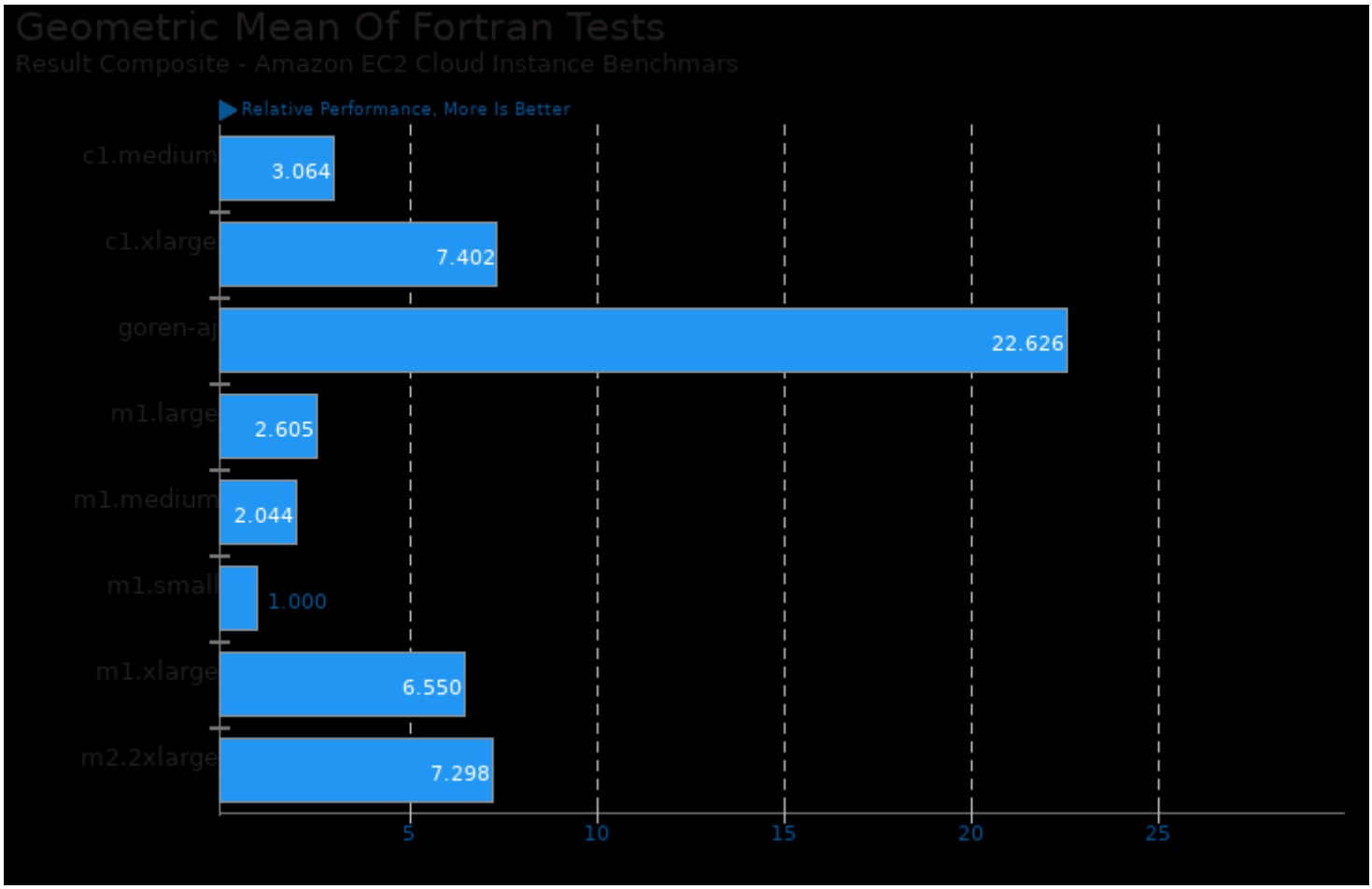
Geometric mean based upon tests: pts/c-ray, pts/smallpt, pts/x264, pts/vpxenc, pts/encode-mp3 and pts/graphics-magick



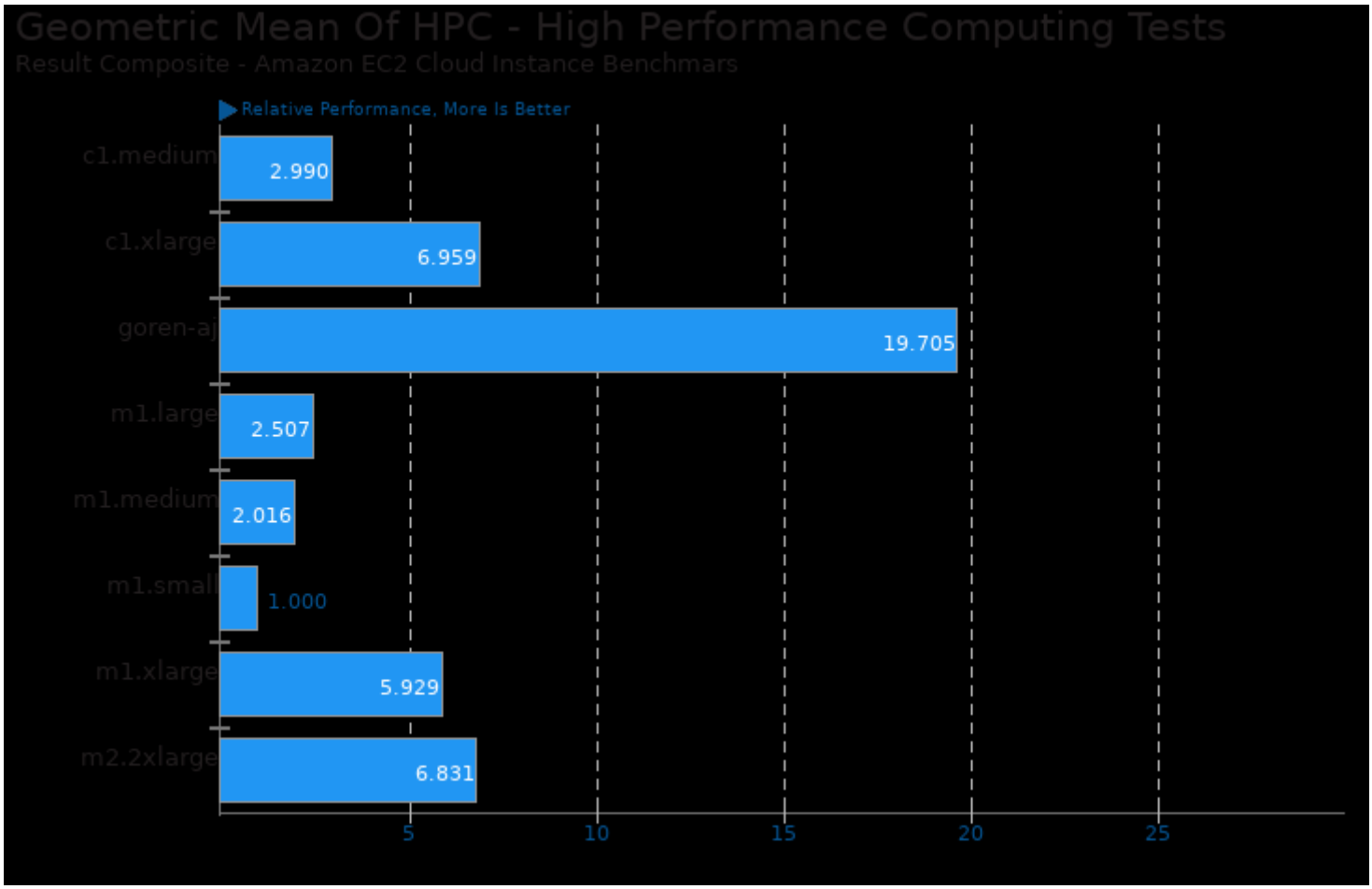
Geometric mean based upon tests: pts/openssl and pts/john-the-ripper



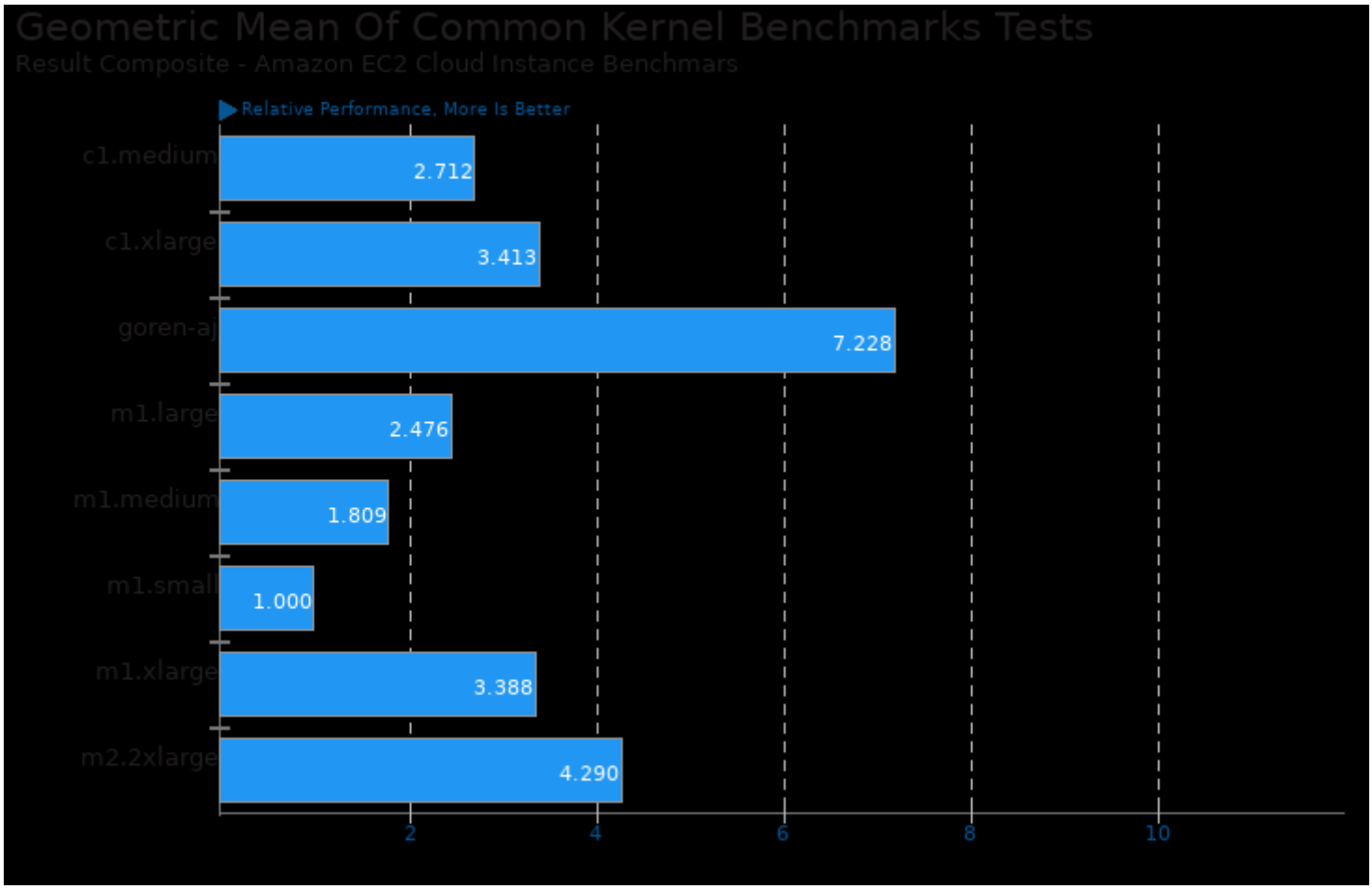
Geometric mean based upon tests: pts/encode-mp3, pts/x264 and pts/vpxenc



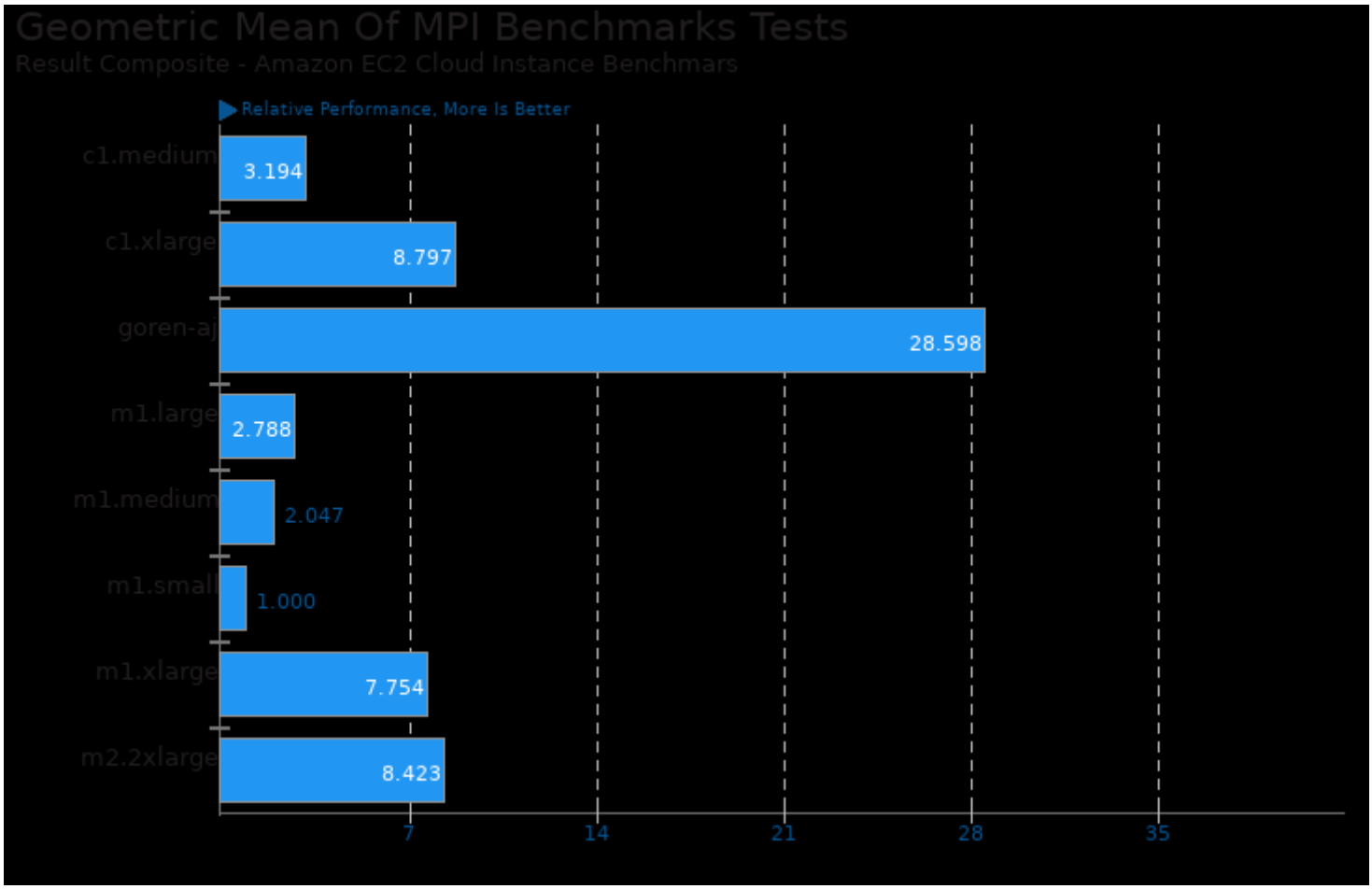
Geometric mean based upon tests: pts/ffte, pts/npb and pts/lammps



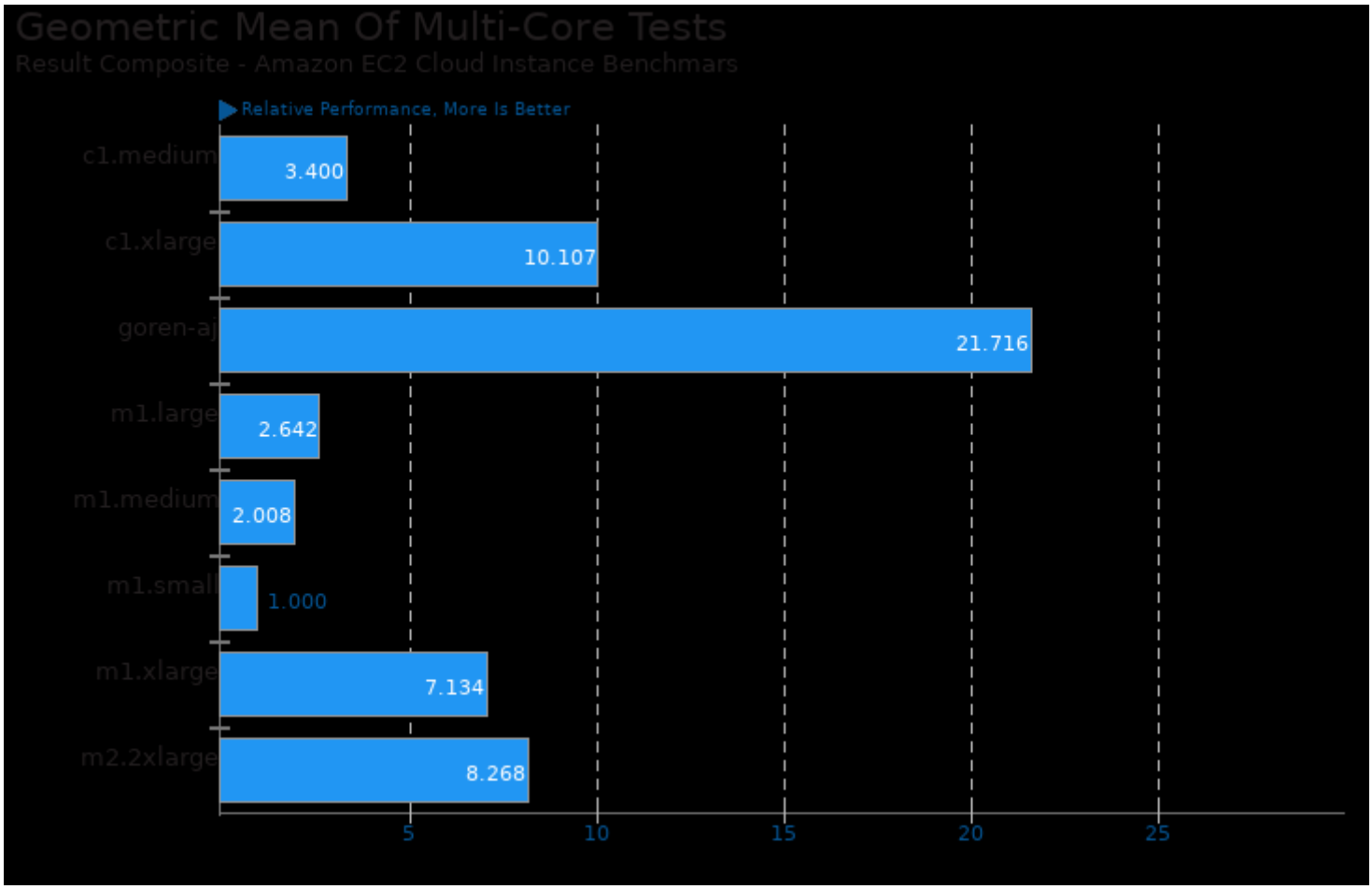
Geometric mean based upon tests: pts/npb, pts/ffte, pts/lammps, pts/himeno, pts/mrbayes, pts/hmmer and pts/mafft



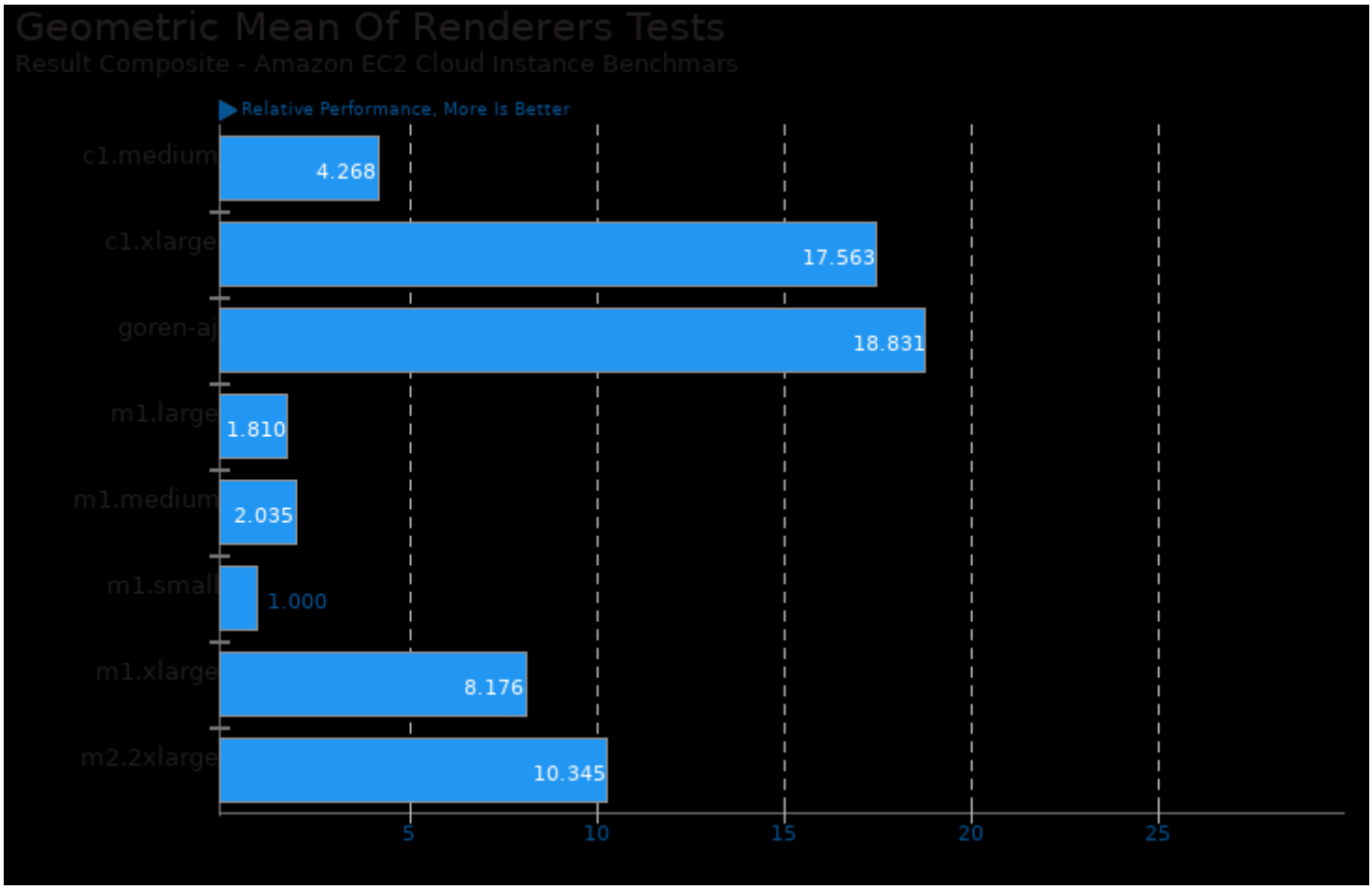
Geometric mean based upon tests: pts/apache, pts/pgbench and pts/openssl



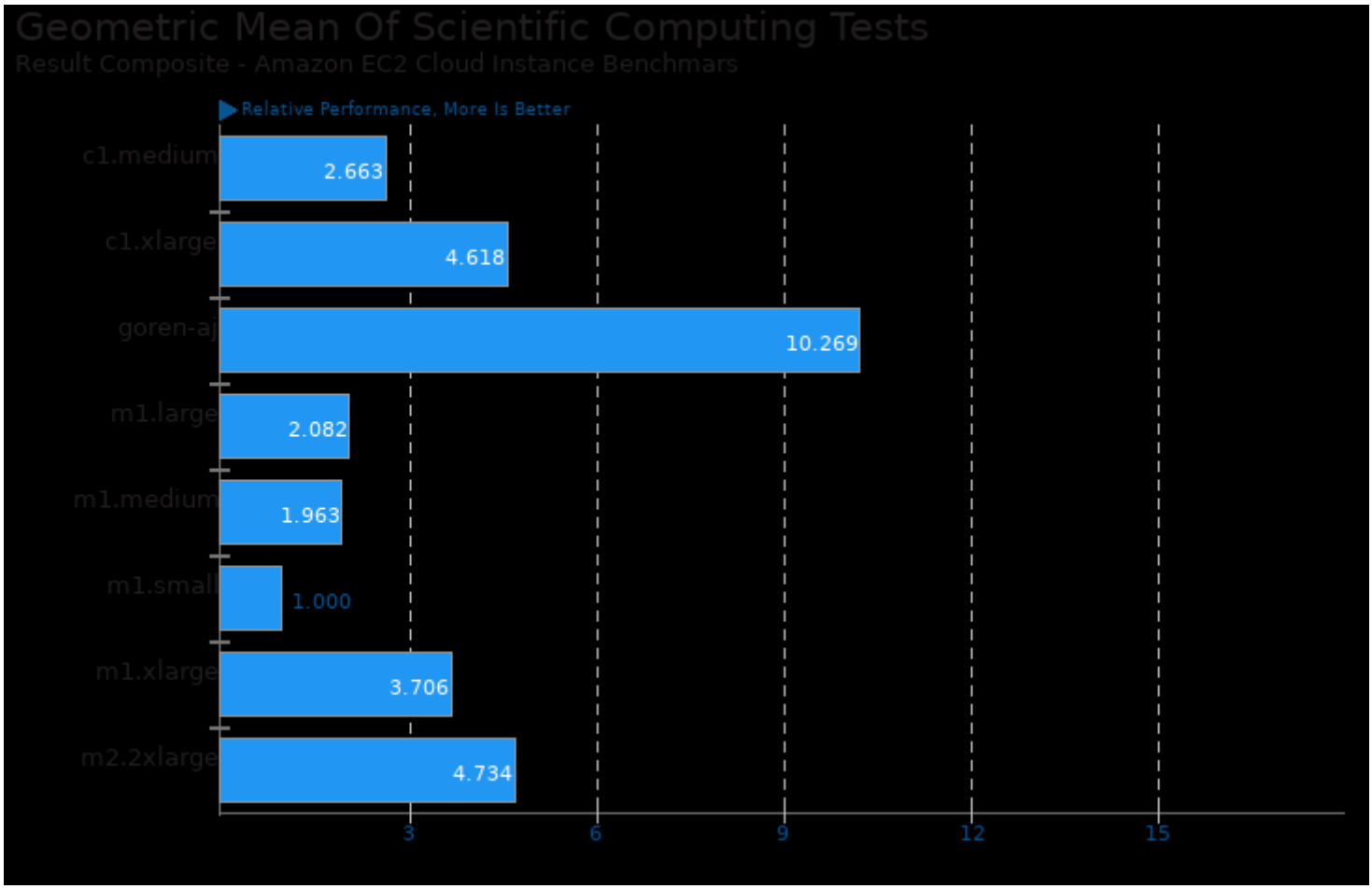
Geometric mean based upon tests: pts/lammps, pts/mrbayes and pts/npb



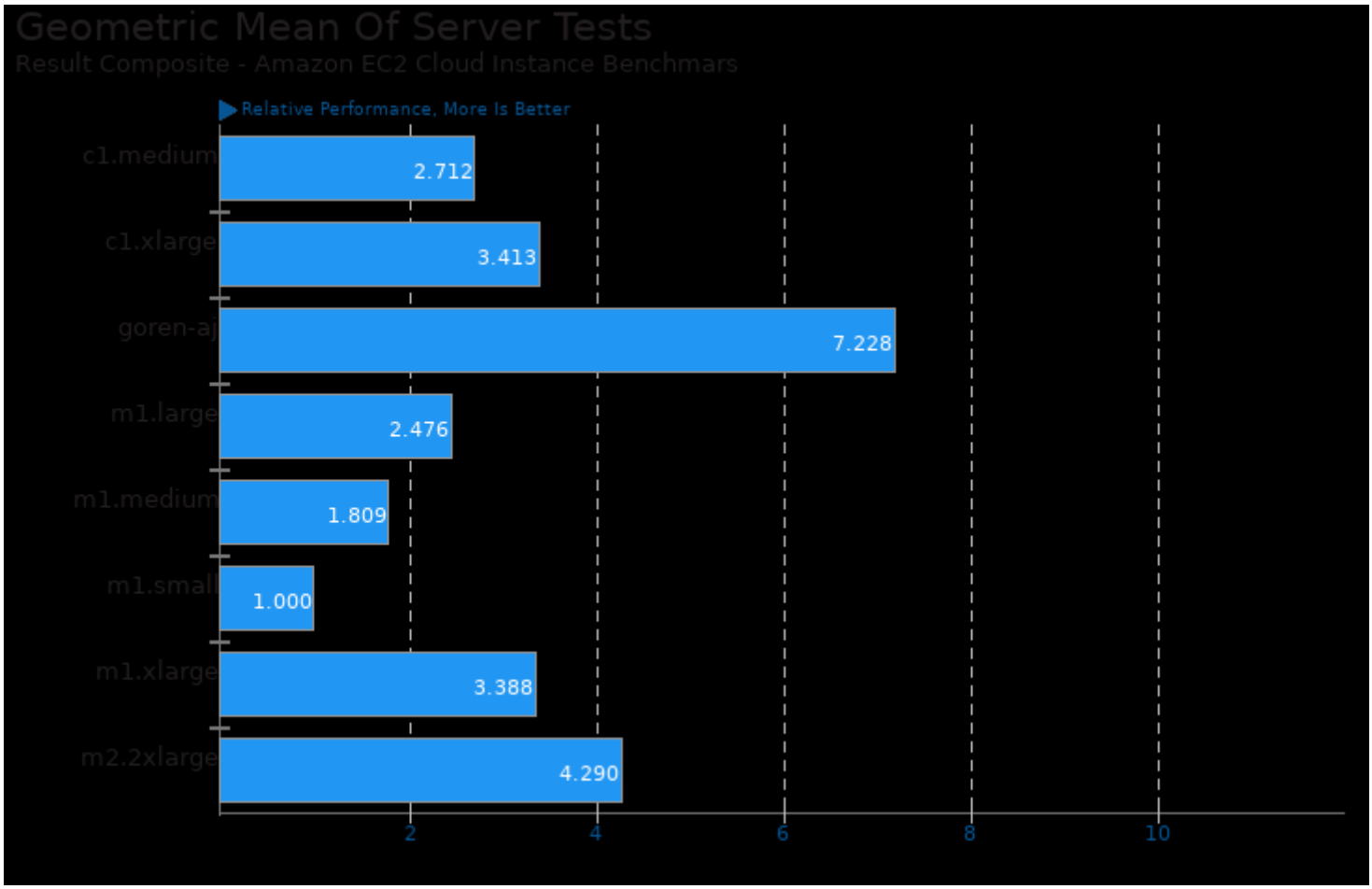
Geometric mean based upon tests: pts/c-ray, pts/x264, pts/vpxenc, pts/npb, pts/john-the-ripper, pts/smallpt, pts/graphics-magick, pts/lammps, pts/compress-pbzip2, pts/build-linux-kernel and pts/pgbench



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

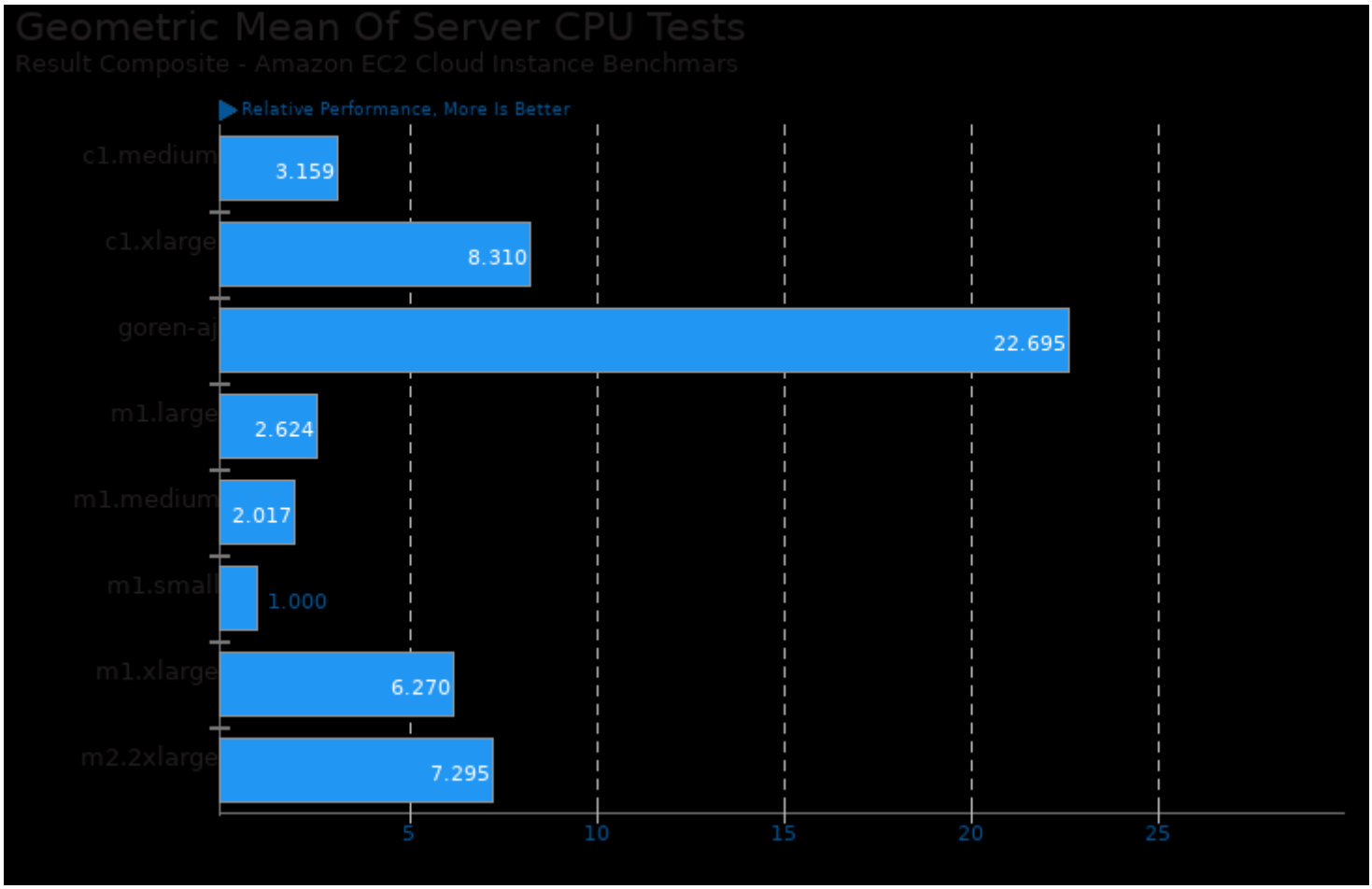


Geometric mean based upon tests: pts/ffte, pts/lammps, pts/himeno, pts/mrbayes, pts/hmmer and pts/mafft

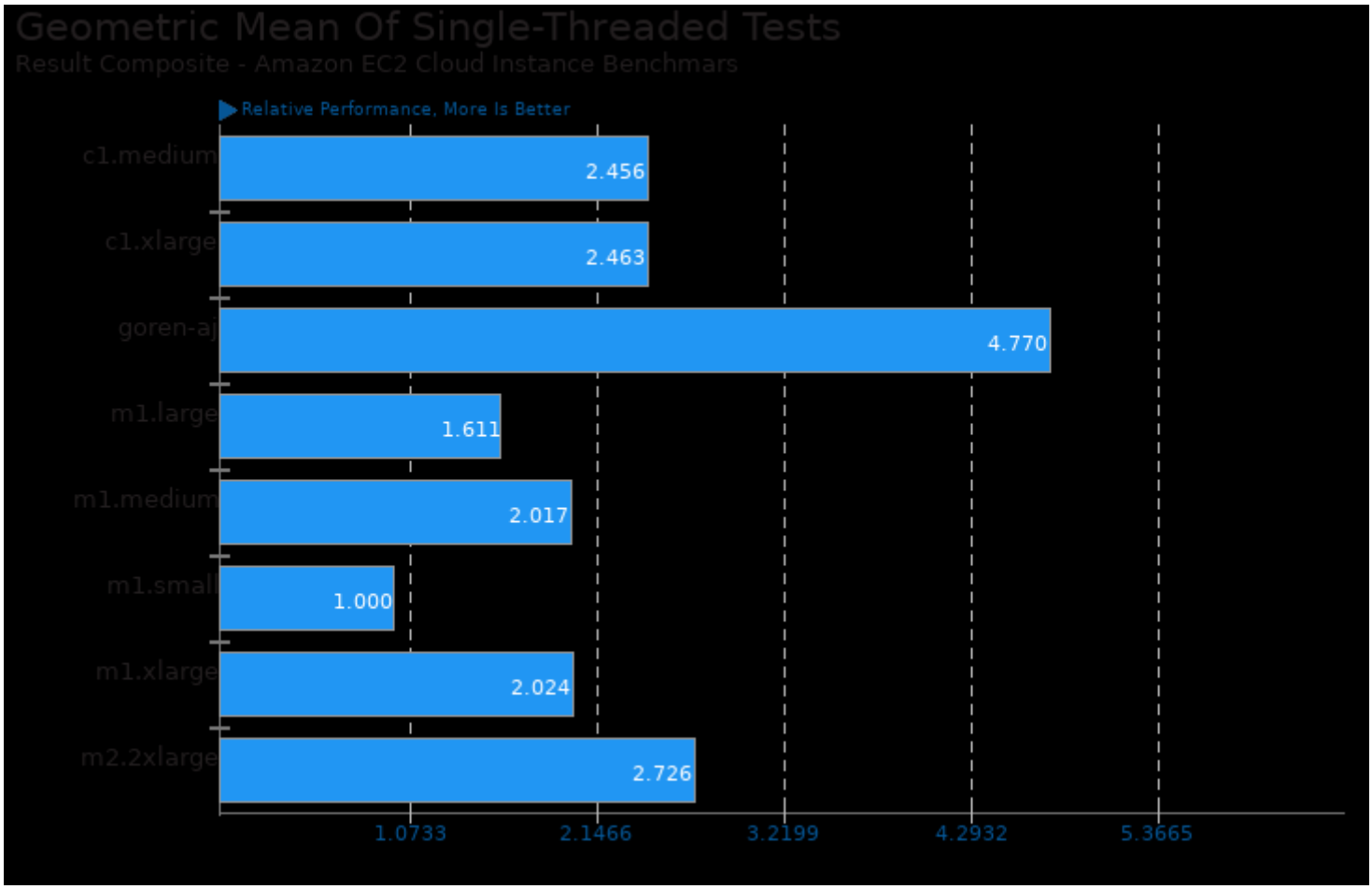


Geometric mean based upon tests: pts/apache, pts/pgbench and pts/openssl

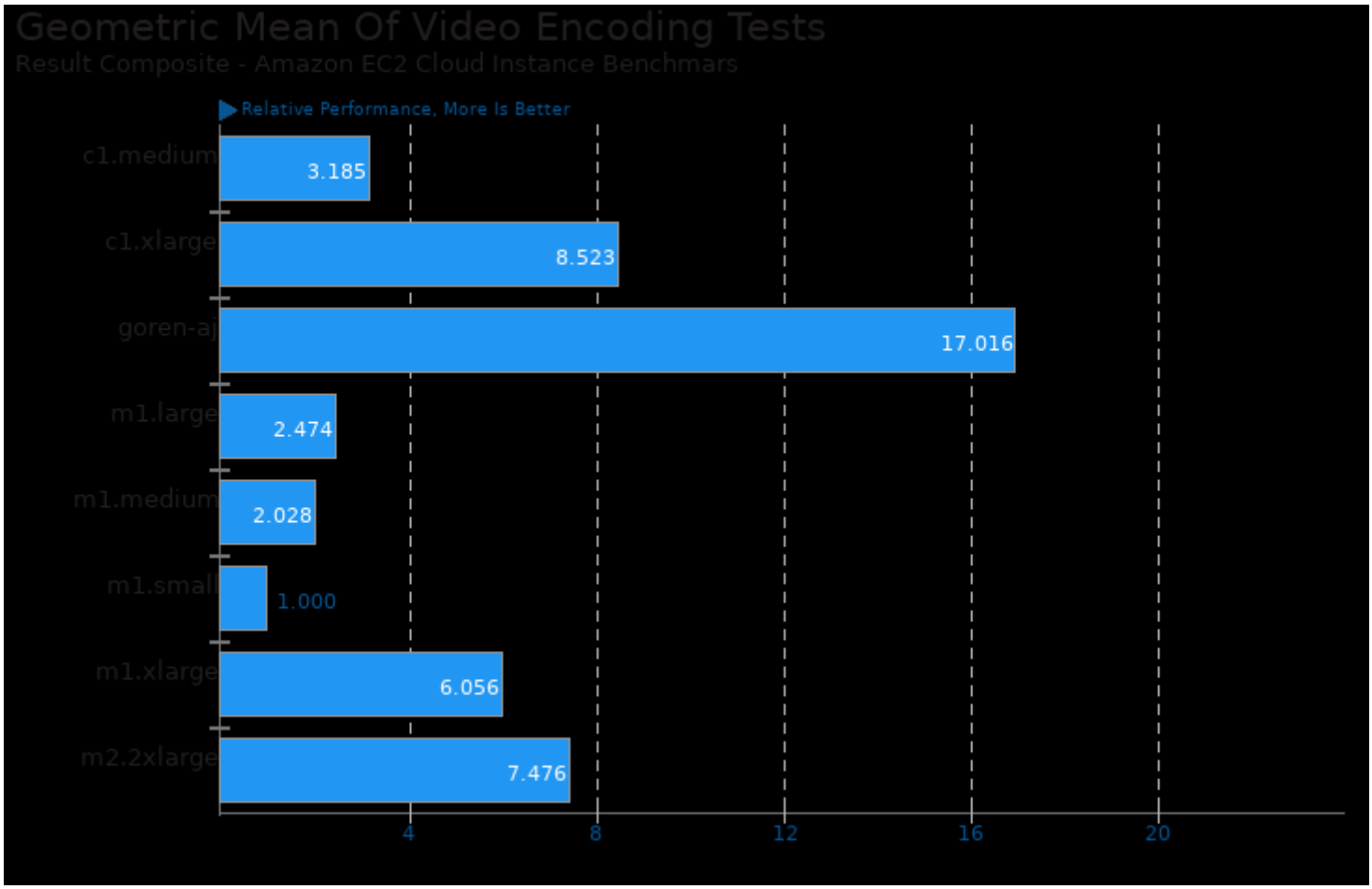
Amazon EC2 Cloud Instance Benchmarks



Geometric mean based upon tests: pts/npb, pts/john-the-ripper, pts/x264, pts/himeno, pts/build-linux-kernel, pts/c-ray and pts/openssl



Geometric mean based upon tests: pts/encode-mp3 and pts/minion



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

This file was automatically generated via the Phoronix Test Suite benchmarking software on Thursday, 28 March 2024 19:05.