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zstd kernel cascade lake x

Intel Core i9-10980XE testing with a ASRock X299 Steel Legend (P1.30 BIOS) and llvmpipe on Ubuntu 20.04 via the Phoronix Test Suite.

Automated Executive Summary

6 had the most wins, coming in first place for 30% of the tests.

Based on the geometric mean of all complete results, the fastest (7) was 1.004x the speed of the slowest (3). 6 was 1x the speed of 7, 2 was 1x the speed of 6, 4 was 0.998x the speed of 2, 5 was 1x the speed of 4, 1 was 1x the speed of 5, 3 was 1x the speed of 1.

Test Systems:

1

2

zstd kernel cascade lake x

3

4

5

6

7

Processor: Intel Core i9-10980XE @ 4.80GHz (18 Cores / 36 Threads), Motherboard: ASRock X299 Steel Legend (P1.30 BIOS), Chipset: Intel Sky Lake-E DMI3 Registers, Memory: 32GB, Disk: Samsung SSD 970 PRO 512GB, Graphics: llvmpipe, Audio: Realtek ALC1220, Network: Intel I219-V + Intel I211

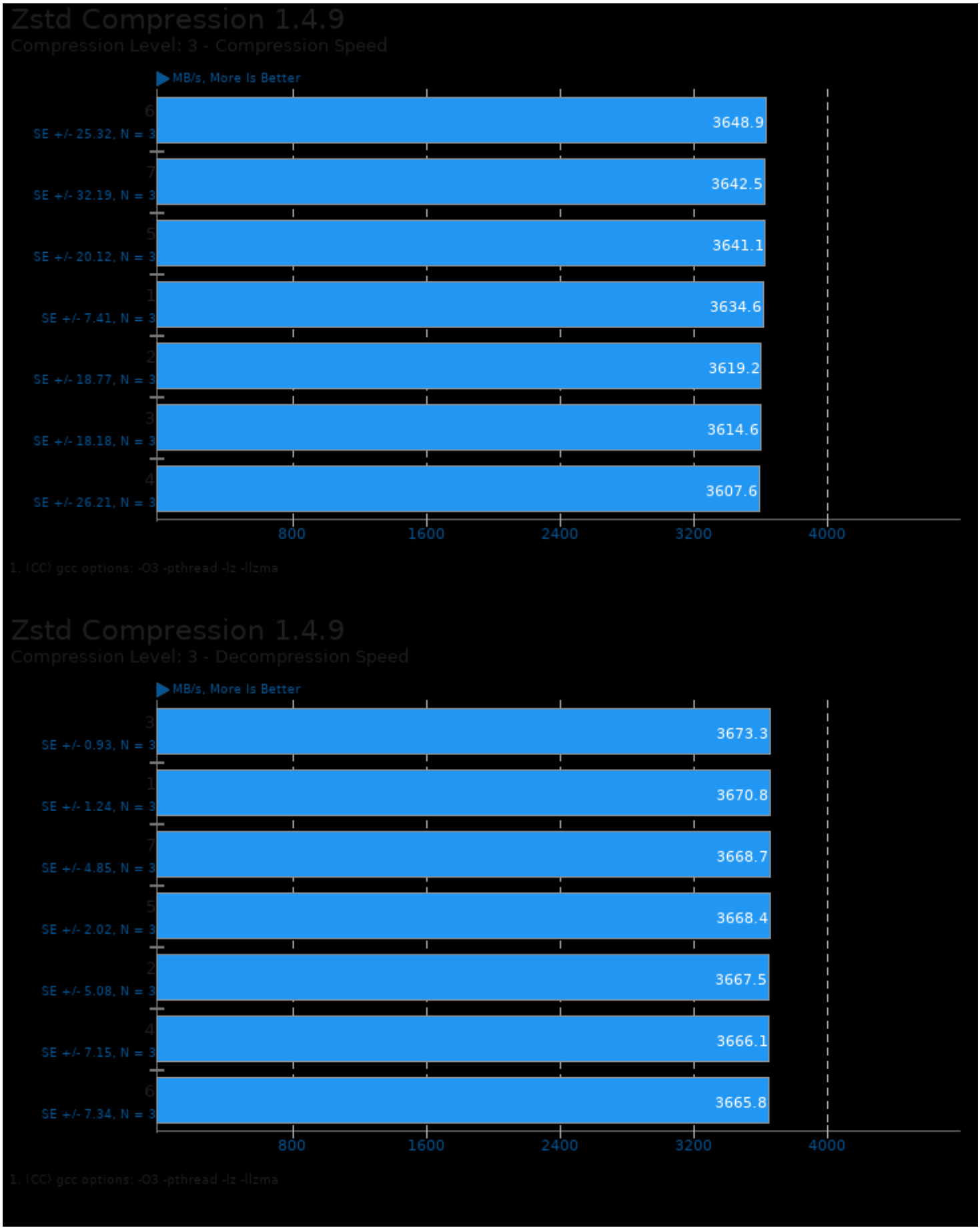
OS: Ubuntu 20.04, Kernel: 5.11.0-rc2-phx (x86_64) 20210109, Desktop: GNOME Shell 3.36.4, Display Server: X Server 1.20.9, OpenGL: 3.3 Mesa 20.0.8 (LLVM 10.0.0 256 bits), Compiler: GCC 9.3.0 + CUDA 11.1, File-System: ext4, Screen Resolution: 1024x768

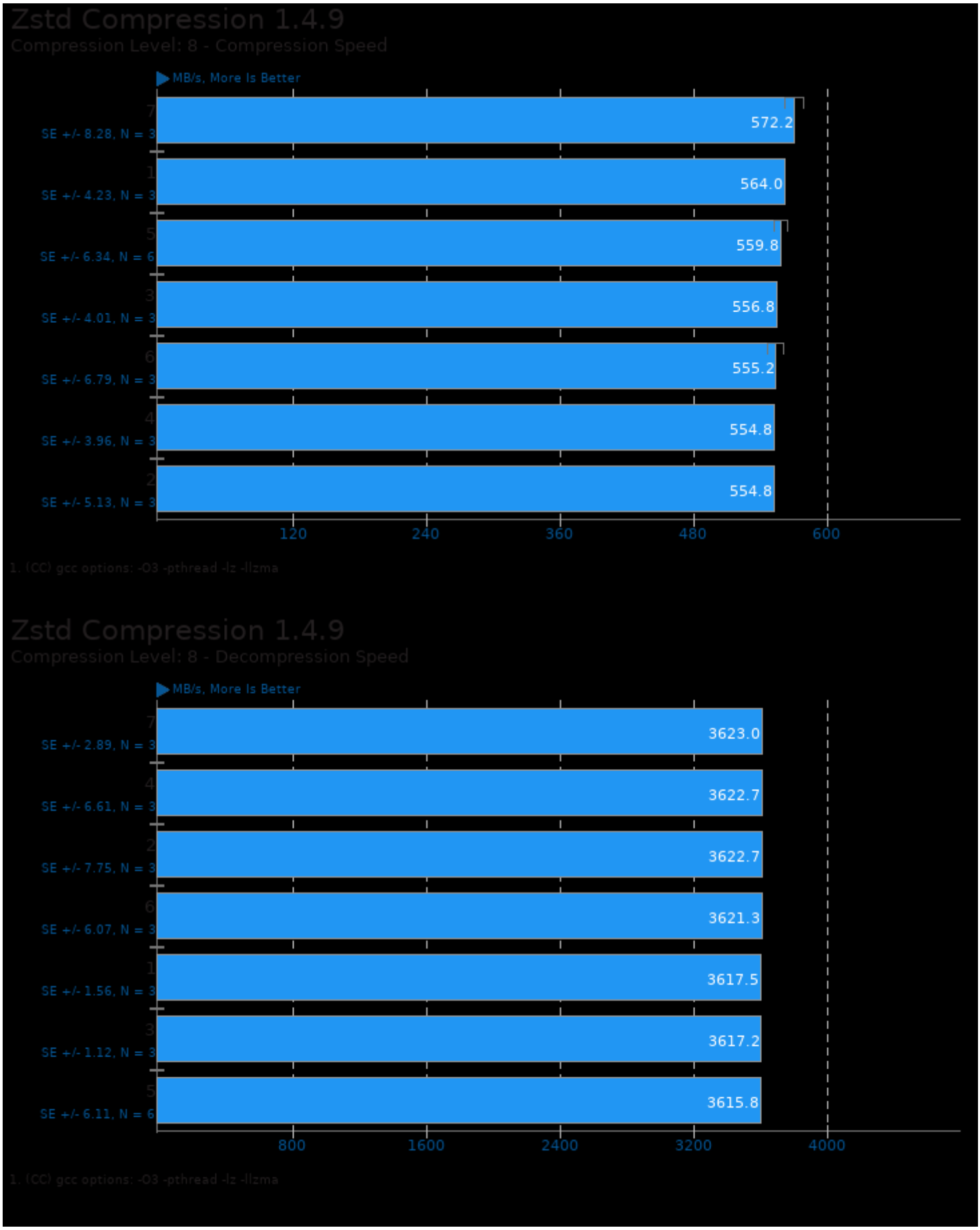
Kernel Notes: Transparent Huge Pages: madvise
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,gm2 --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-9-HskZEa/gcc-9-9.3.0/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: Scaling Governor: intel_cpufreq ondemand - CPU Microcode: 0x5003003
Security Notes: itlb_multihit: KVM: Mitigation of VMX disabled + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Enhanced IBRS IBPB: conditional RSB filling + srbds: Not affected + tsx_async_abort: Mitigation of TSX disabled

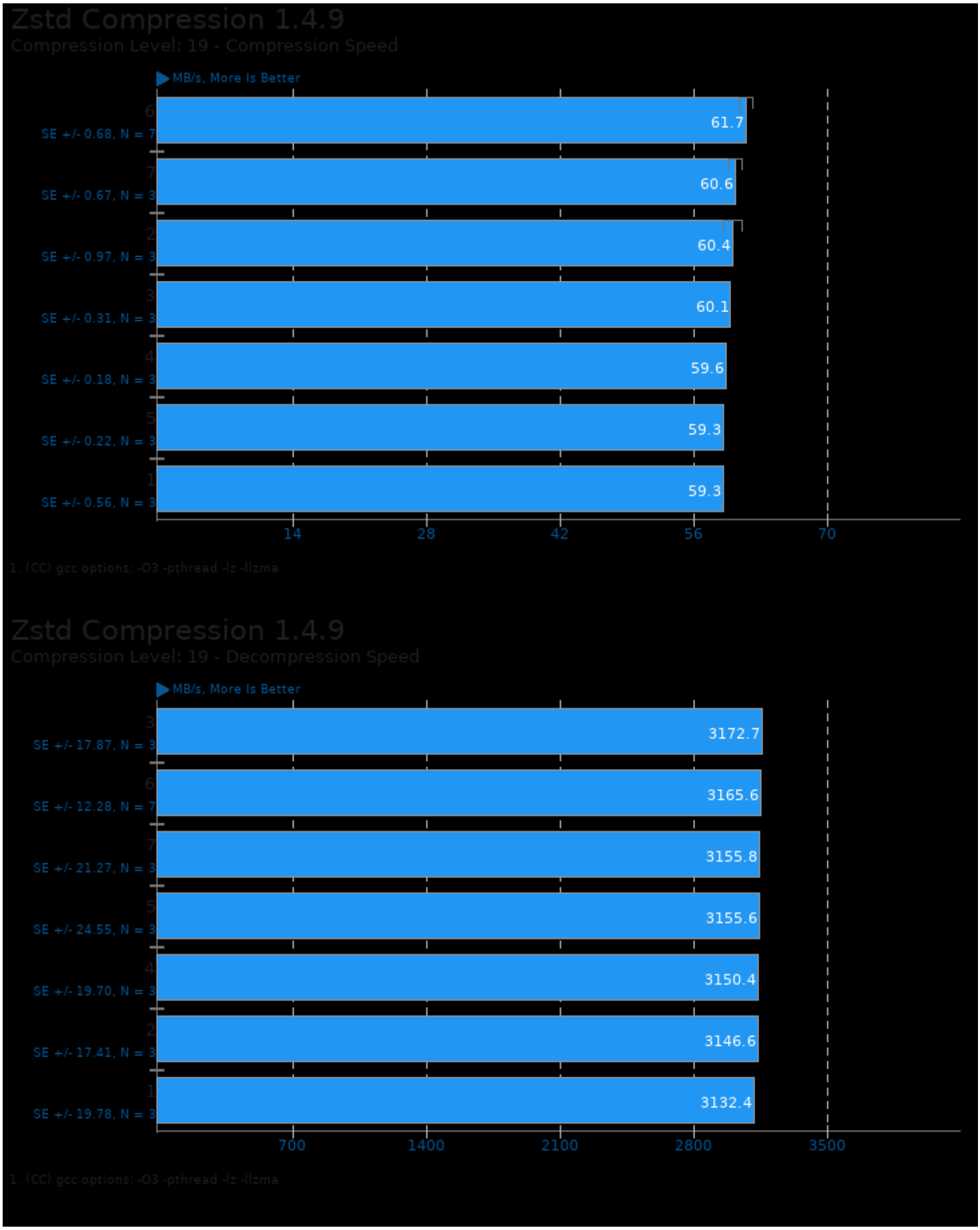
	1	2	3	4	5	6	7
Zstd Compression - 3 - Compression Speed	3635	3619	3615	**3608**	3641	**3649**	3643
Normalized	99.61%	99.19%	99.06%	98.87%	99.79%	100%	99.82%
Standard Deviation	0.4%	0.9%	0.9%	1.3%	1%	1.2%	1.5%
Zstd Compression - 3 - D.S (MB/s)	3671	3668	**3673**	3666	3668	**3666**	3669
Normalized	99.93%	99.84%	100%	99.8%	99.87%	99.8%	99.87%
Standard Deviation	0.1%	0.2%	0%	0.3%	0.1%	0.3%	0.2%
Zstd Compression - 8 - Compression Speed	564.0	**554.8**	556.8	**554.8**	559.8	555.2	**572.2**
Normalized	98.57%	96.96%	97.31%	96.96%	97.83%	97.03%	100%
Standard Deviation	1.3%	1.6%	1.2%	1.2%	2.8%	2.1%	2.5%
Zstd Compression - 8 - D.S (MB/s)	3618	3623	3617	3623	**3616**	3621	**3623**
Normalized	99.85%	99.99%	99.84%	99.99%	99.8%	99.95%	100%
Standard Deviation	0.1%	0.4%	0.1%	0.3%	0.4%	0.3%	0.1%
Zstd Compression - 19 - Compression Speed	**59.3**	60.4	60.1	59.6	**59.3**	**61.7**	60.6
Normalized	96.11%	97.89%	97.41%	96.6%	96.11%	100%	98.22%
Standard Deviation	1.6%	2.8%	0.9%	0.5%	0.6%	2.9%	1.9%

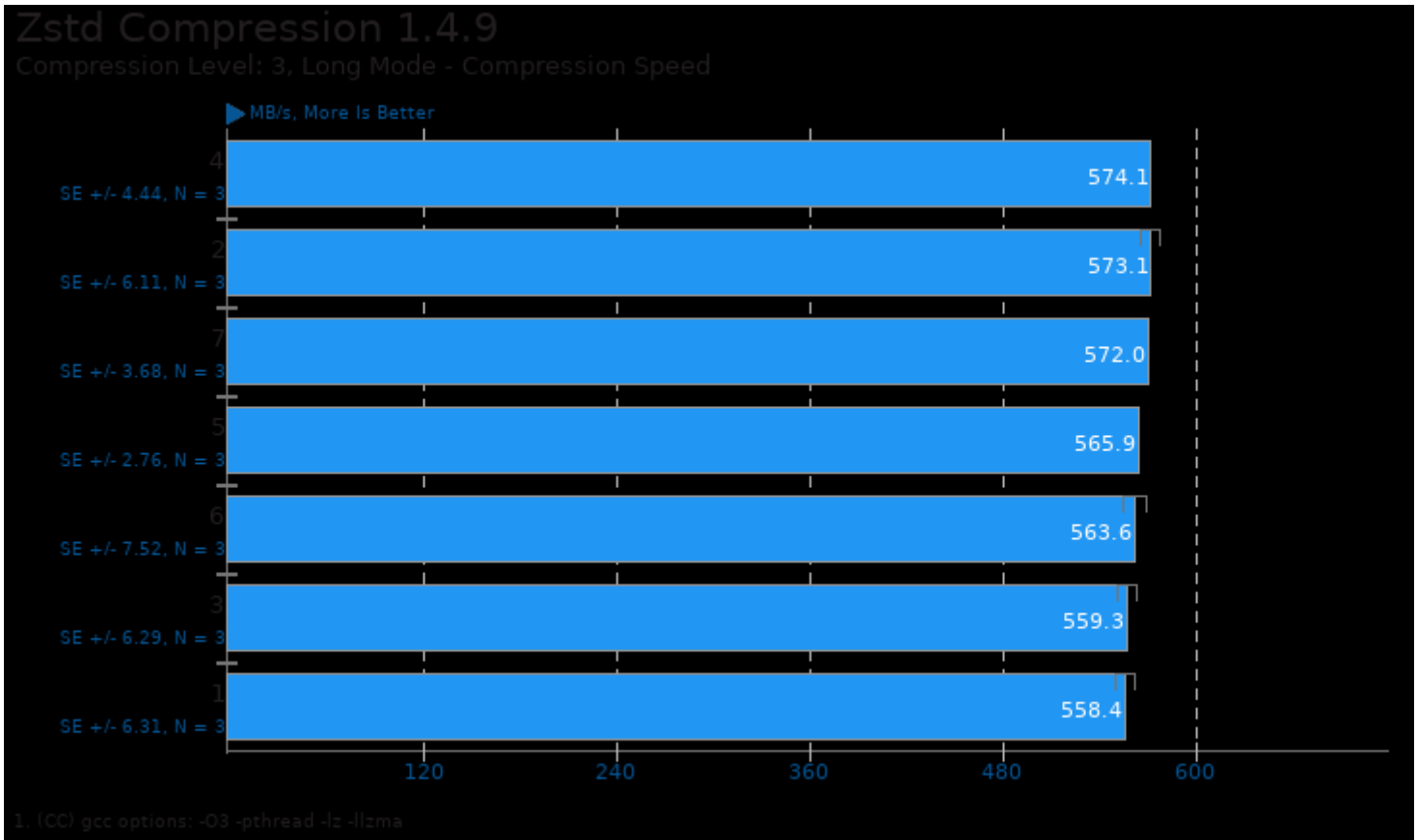
zstd kernel cascade lake x

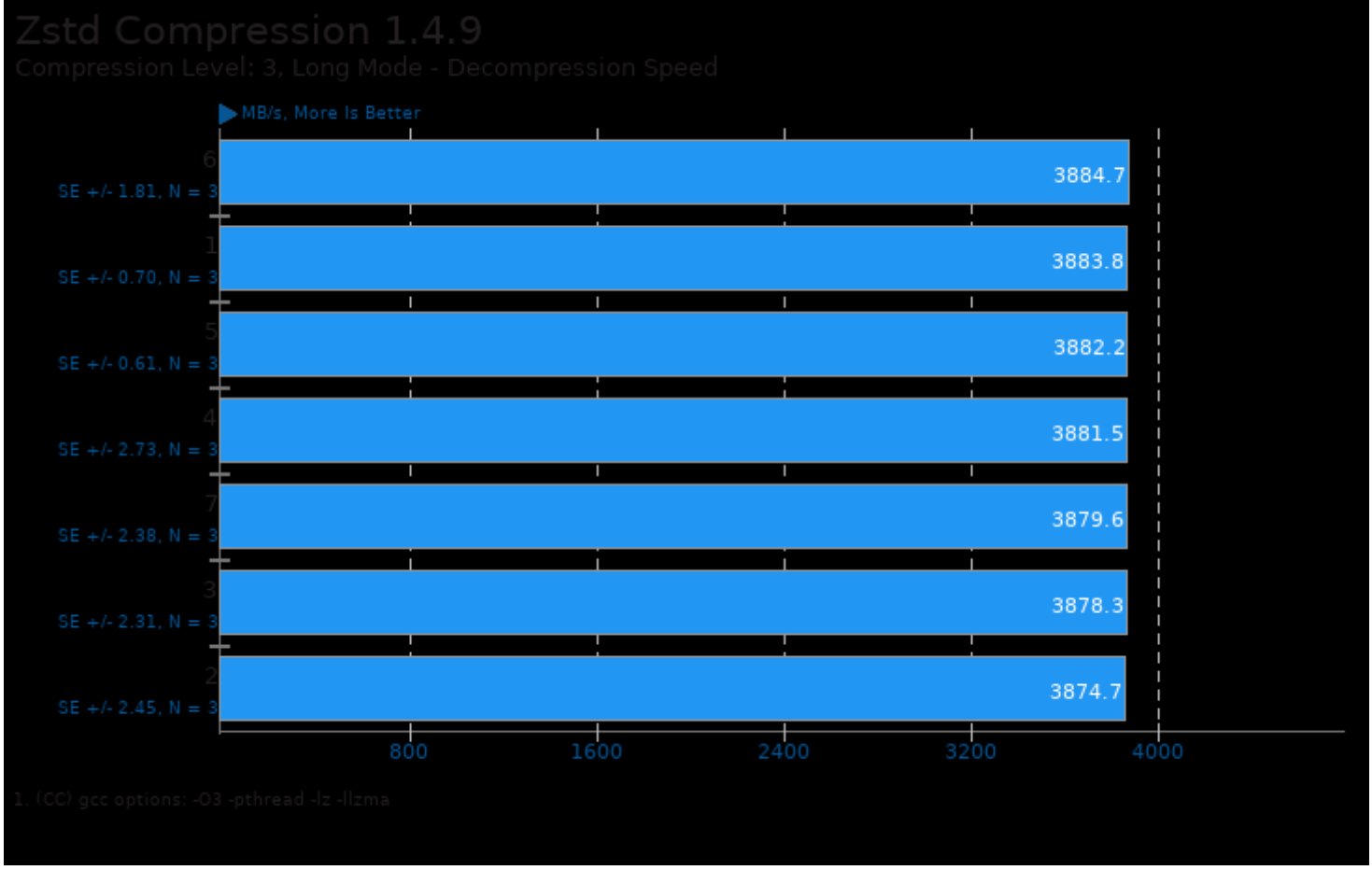
Zstd Compression - 19 - D.S (MB/s)	3132	3147	3173	3150	3156	3166	3156
Normalized	98.73%	99.18%	100%	99.3%	99.46%	99.78%	99.47%
Standard Deviation	1.1%	1%	1%	1.1%	1.3%	1%	1.2%
Zstd Compression - 3, Long Mode - Compression Speed	558.4	573.1	559.3	574.1	565.9	563.6	572.0
Normalized	97.27%	99.83%	97.42%	100%	98.57%	98.17%	99.63%
Standard Deviation	2%	1.8%	1.9%	1.3%	0.8%	2.3%	1.1%
Zstd Compression - 3, Long Mode - D.S (MB/s)	3884	3875	3878	3882	3882	3885	3880
Normalized	99.98%	99.74%	99.84%	99.92%	99.94%	100%	99.87%
Standard Deviation	0%	0.1%	0.1%	0.1%	0%	0.1%	0.1%
Zstd Compression - 8, Long Mode - Compression Speed	531.4	541.3	535.0	531.2	535.1	536.5	535.9
Normalized	98.17%	100%	98.84%	98.13%	98.85%	99.11%	99%
Standard Deviation	0.9%	1%	1.8%	1.2%	0.6%	1%	0.8%
Zstd Compression - 8, Long Mode - D.S (MB/s)	3804	3819	3816	3809	3810	3805	3819
Normalized	99.59%	99.98%	99.91%	99.73%	99.75%	99.64%	100%
Standard Deviation	0.4%	0.5%	0.1%	0.2%	0.3%	0.5%	0.3%
Zstd Compression - 19, Long Mode - Compression Speed	43.9	43.5	42.6	43.4	43.5	43.2	42.3
Normalized	100%	99.09%	97.04%	98.86%	99.09%	98.41%	96.36%
Standard Deviation	0.6%	0.2%	1.4%	1.2%	1%	2%	1.7%
Zstd Compression - 19, Long Mode - D.S (MB/s)	3202	3208	3215	3211	3171	3219	3219
Normalized	99.48%	99.65%	99.85%	99.75%	98.49%	100%	99.98%
Standard Deviation	1%	1.1%	0.6%	0.7%	0.4%	0.4%	0.2%
Timed Linux Kernel Compilation - Time To Compile (sec)	53.588	53.664	53.483	53.526	53.529	53.704	53.612
Normalized	99.8%	99.66%	100%	99.92%	99.91%	99.59%	99.76%
Standard Deviation	2.9%	2.6%	2.7%	2.9%	2.9%	2.8%	2.8%

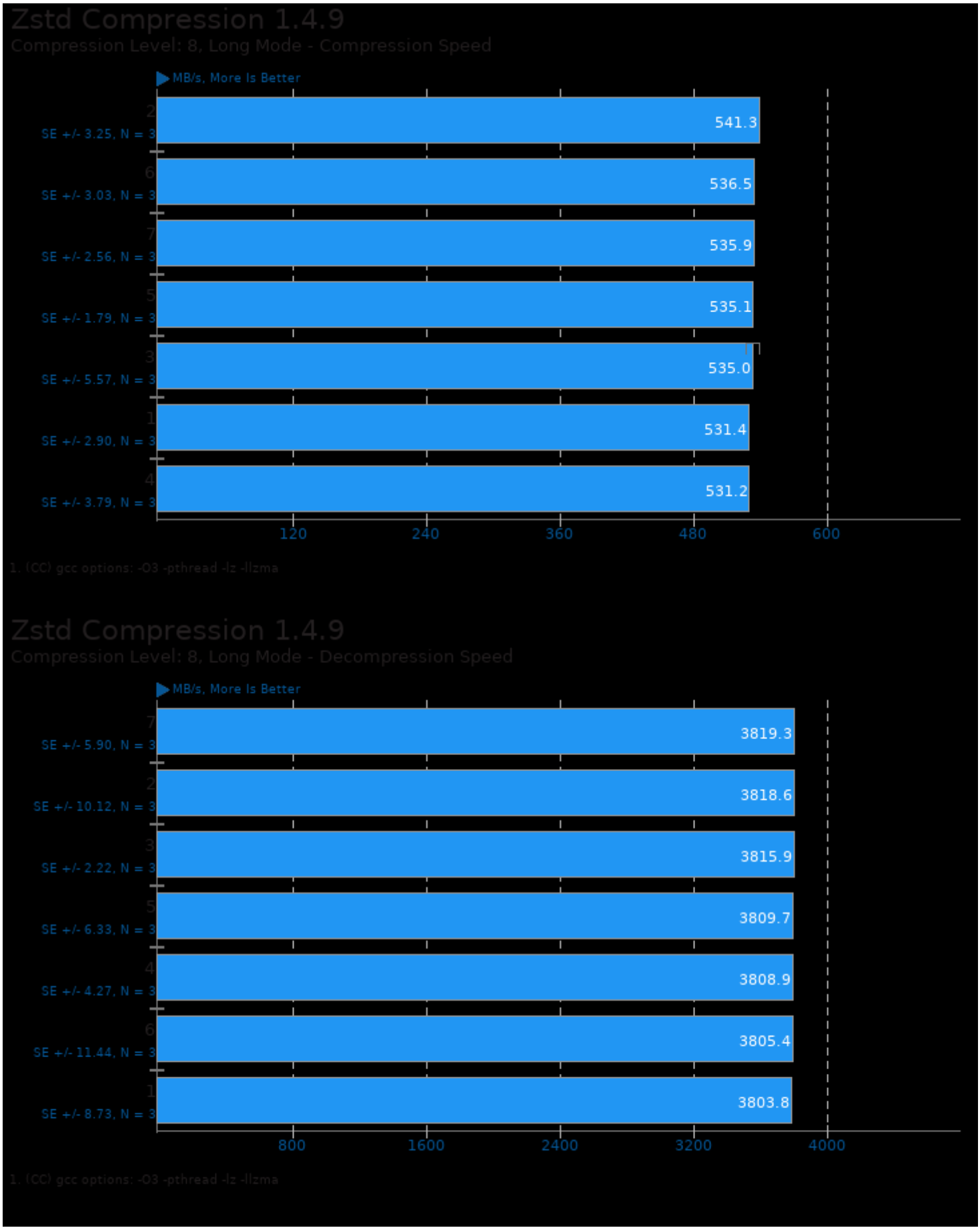

Zstd Compression 1.4.9
Compression Level: 3 - Compression Speed
MB/s, More Is Better
6
SE +/- 25.32, N = 3
3648.9
7
SE +/- 32.19, N = 3
3642.5
5
SE +/- 20.12, N = 3
3641.1
1
SE +/- 7.41, N = 3
3634.6
2
SE +/- 18.77, N = 3
3619.2
3
SE +/- 18.18, N = 3
3614.6
4
SE +/- 26.21, N = 3
3607.6
800
1600
2400
3200
4000
1. (CC) gcc options: -O3 -pthread -lz -llzma
Zstd Compression 1.4.9
Compression Level: 3 - Decompression Speed
MB/s, More Is Better
3
SE +/- 0.93, N = 3
3673.3
1
SE +/- 1.24, N = 3
3670.8
7
SE +/- 4.85, N = 3
3668.7
5
SE +/- 2.02, N = 3
3668.4
2
SE +/- 5.08, N = 3
3667.5
4
SE +/- 7.15, N = 3
3666.1
6
SE +/- 7.34, N = 3
3665.8
800
1600
2400
3200
4000
1. (CC) gcc options: -O3 -pthread -lz -llzma

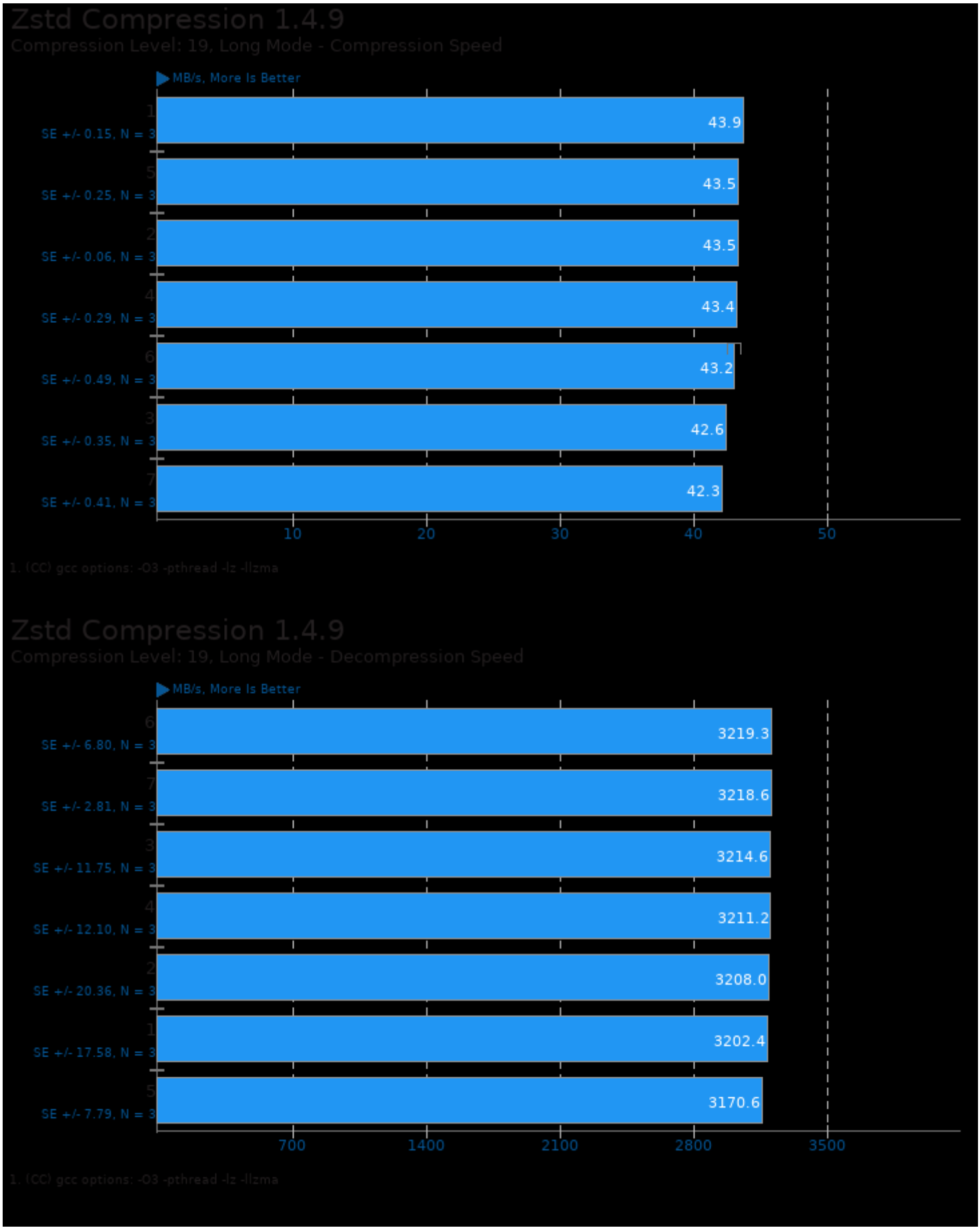

Zstd Compression 1.4.9
Compression Level: 8 - Compression Speed
MB/s, More Is Better
572.2
564.0
559.8
556.8
555.2
554.8
554.8
SE +/- 8.28, N = 3
SE +/- 4.23, N = 3
SE +/- 6.34, N = 6
SE +/- 4.01, N = 3
SE +/- 6.79, N = 3
SE +/- 3.96, N = 3
SE +/- 5.13, N = 3
120
240
360
480
600
1. (CC) gcc options: -O3 -pthread -lz -llzma
Zstd Compression 1.4.9
Compression Level: 8 - Decompression Speed
MB/s, More Is Better
3623.0
3622.7
3622.7
3621.3
3617.5
3617.2
3615.8
SE +/- 2.89, N = 3
SE +/- 6.61, N = 3
SE +/- 7.75, N = 3
SE +/- 6.07, N = 3
SE +/- 1.56, N = 3
SE +/- 1.12, N = 3
SE +/- 6.11, N = 6
800
1600
2400
3200
4000
1. (CC) gcc options: -O3 -pthread -lz -llzma


Zstd Compression 1.4.9
Compression Level: 19 - Compression Speed
MB/s, More Is Better
6
SE +/- 0.68, N = 7
61.7
7
SE +/- 0.67, N = 3
60.6
2
SE +/- 0.97, N = 3
60.4
3
SE +/- 0.31, N = 3
60.1
4
SE +/- 0.18, N = 3
59.6
5
SE +/- 0.22, N = 3
59.3
1
SE +/- 0.56, N = 3
59.3
14
28
42
56
70
1. (CC) gcc options: -O3 -pthread -lz -llzma
Zstd Compression 1.4.9
Compression Level: 19 - Decompression Speed
MB/s, More Is Better
3
SE +/- 17.87, N = 3
3172.7
6
SE +/- 12.28, N = 7
3165.6
7
SE +/- 21.27, N = 3
3155.8
5
SE +/- 24.55, N = 3
3155.6
4
SE +/- 19.70, N = 3
3150.4
2
SE +/- 17.41, N = 3
3146.6
1
SE +/- 19.78, N = 3
3132.4
700
1400
2100
2800
3500
1. (CC) gcc options: -O3 -pthread -lz -llzma

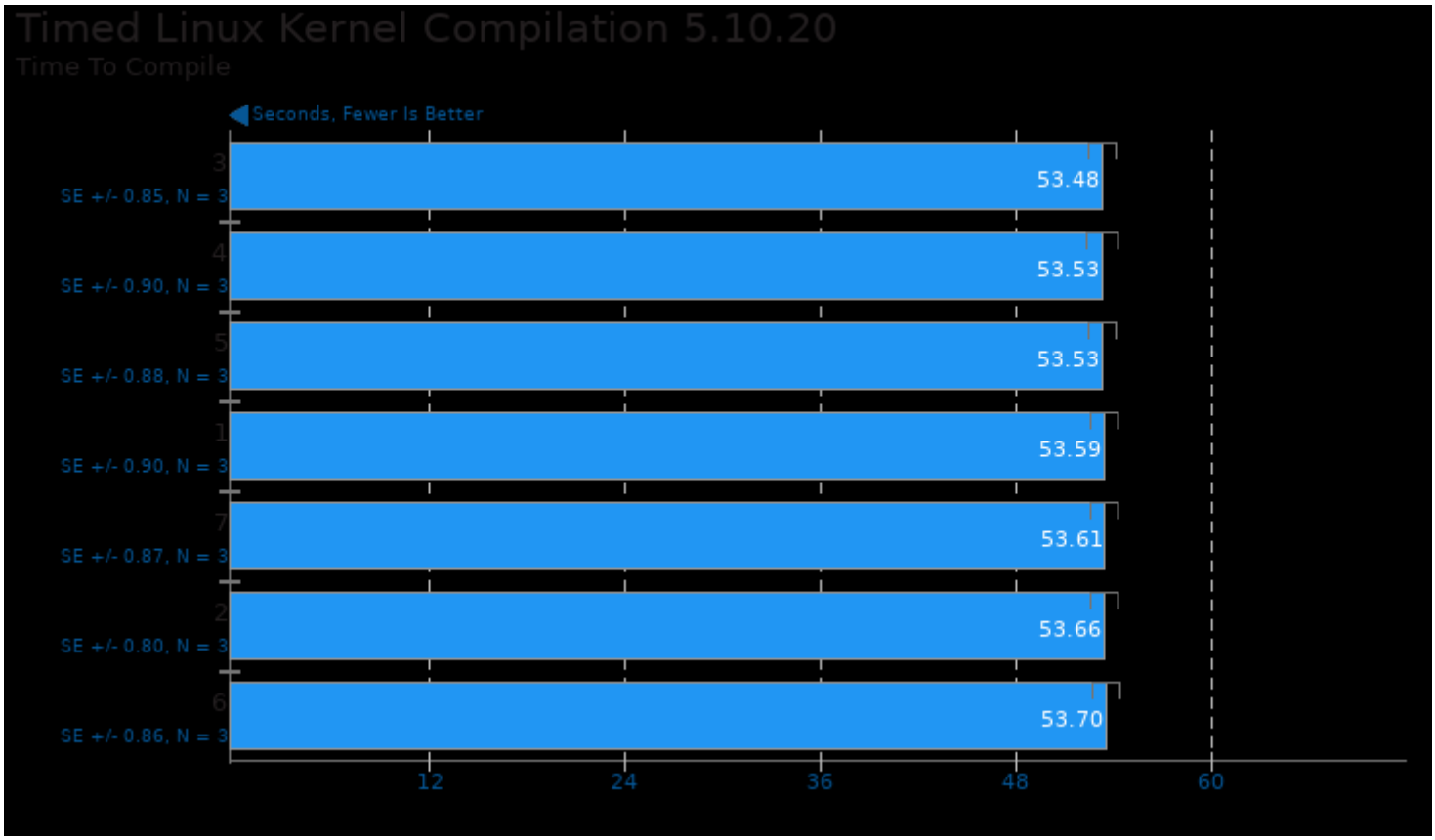

Zstd Compression 1.4.9
Compression Level: 3, Long Mode - Compression Speed
MB/s, More Is Better
4
SE +/- 4.44, N = 3
574.1
2
SE +/- 6.11, N = 3
573.1
7
SE +/- 3.68, N = 3
572.0
5
SE +/- 2.76, N = 3
565.9
6
SE +/- 7.52, N = 3
563.6
3
SE +/- 6.29, N = 3
559.3
1
SE +/- 6.31, N = 3
558.4
120
240
360
480
600
1. (CC) gcc options: -O3 -pthread -lz -llzma


Zstd Compression 1.4.9
Compression Level: 3, Long Mode - Decompression Speed
MB/s, More Is Better
6
SE +/- 1.81, N = 3
3884.7
1
SE +/- 0.70, N = 3
3883.8
5
SE +/- 0.61, N = 3
3882.2
4
SE +/- 2.73, N = 3
3881.5
7
SE +/- 2.38, N = 3
3879.6
3
SE +/- 2.31, N = 3
3878.3
2
SE +/- 2.45, N = 3
3874.7
800
1600
2400
3200
4000
1. (CC) gcc options: -O3 -pthread -lz -llzma


Zstd Compression 1.4.9
Compression Level: 8, Long Mode - Compression Speed
MB/s, More Is Better
2
SE +/- 3.25, N = 3
541.3
6
SE +/- 3.03, N = 3
536.5
7
SE +/- 2.56, N = 3
535.9
5
SE +/- 1.79, N = 3
535.1
3
SE +/- 5.57, N = 3
535.0
1
SE +/- 2.90, N = 3
531.4
4
SE +/- 3.79, N = 3
531.2
120
240
360
480
600
1. (CC) gcc options: -O3 -pthread -lz -llzma
Zstd Compression 1.4.9
Compression Level: 8, Long Mode - Decompression Speed
MB/s, More Is Better
7
SE +/- 5.90, N = 3
3819.3
2
SE +/- 10.12, N = 3
3818.6
3
SE +/- 2.22, N = 3
3815.9
5
SE +/- 6.33, N = 3
3809.7
4
SE +/- 4.27, N = 3
3808.9
6
SE +/- 11.44, N = 3
3805.4
1
SE +/- 8.73, N = 3
3803.8
800
1600
2400
3200
4000
1. (CC) gcc options: -O3 -pthread -lz -llzma

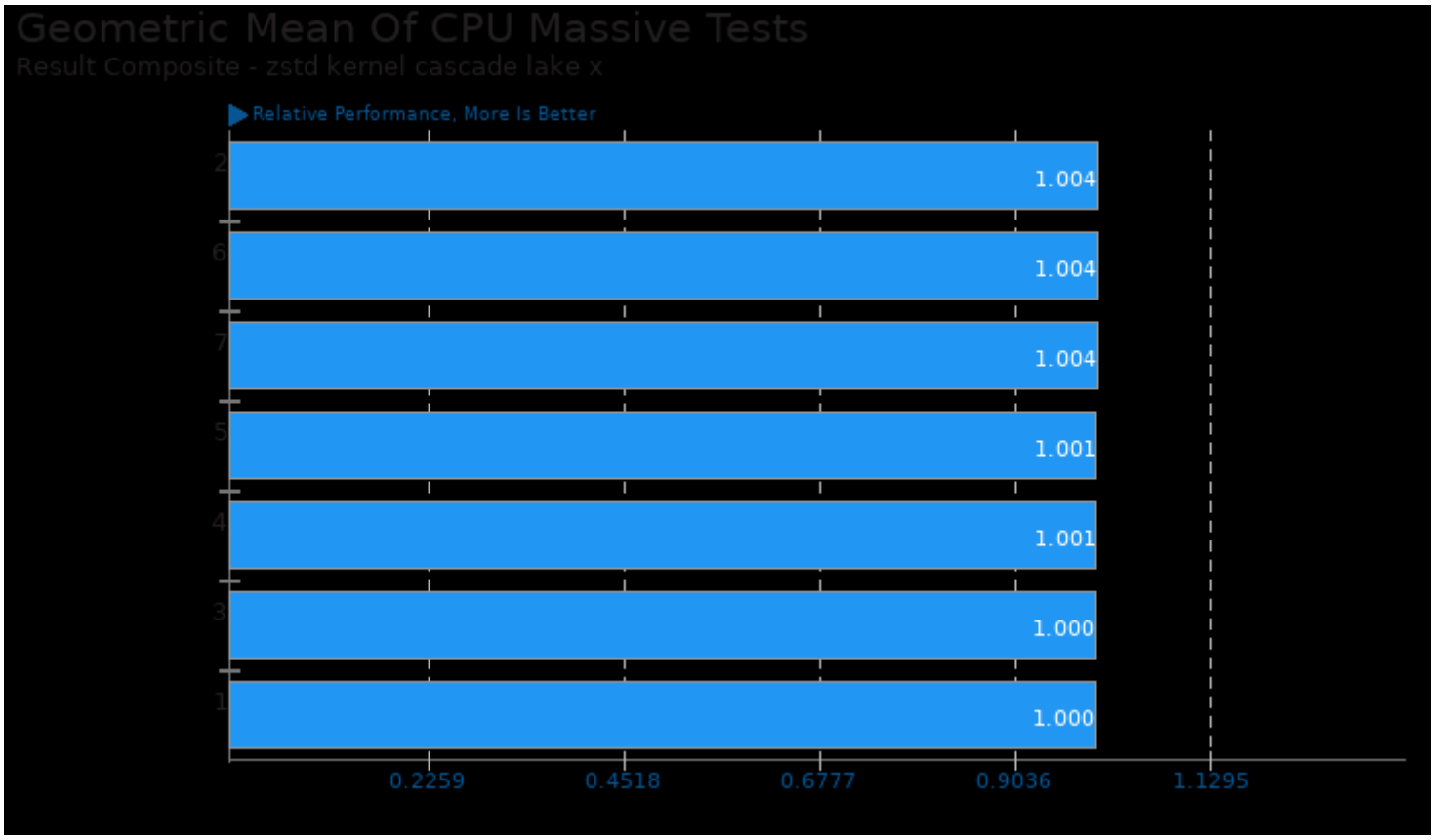

Zstd Compression 1.4.9
Compression Level: 19, Long Mode - Compression Speed
MB/s, More Is Better
1
SE +/- 0.15, N = 3
43.9
5
SE +/- 0.25, N = 3
43.5
2
SE +/- 0.06, N = 3
43.5
4
SE +/- 0.29, N = 3
43.4
6
SE +/- 0.49, N = 3
43.2
3
SE +/- 0.35, N = 3
42.6
7
SE +/- 0.41, N = 3
42.3
10
20
30
40
50
1. (CC) gcc options: -O3 -pthread -lz -llzma
Zstd Compression 1.4.9
Compression Level: 19, Long Mode - Decompression Speed
MB/s, More Is Better
6
SE +/- 6.80, N = 3
3219.3
7
SE +/- 2.81, N = 3
3218.6
3
SE +/- 11.75, N = 3
3214.6
4
SE +/- 12.10, N = 3
3211.2
2
SE +/- 20.36, N = 3
3208.0
1
SE +/- 17.58, N = 3
3202.4
5
SE +/- 7.79, N = 3
3170.6
700
1400
2100
2800
3500
1. (CC) gcc options: -O3 -pthread -lz -llzma

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

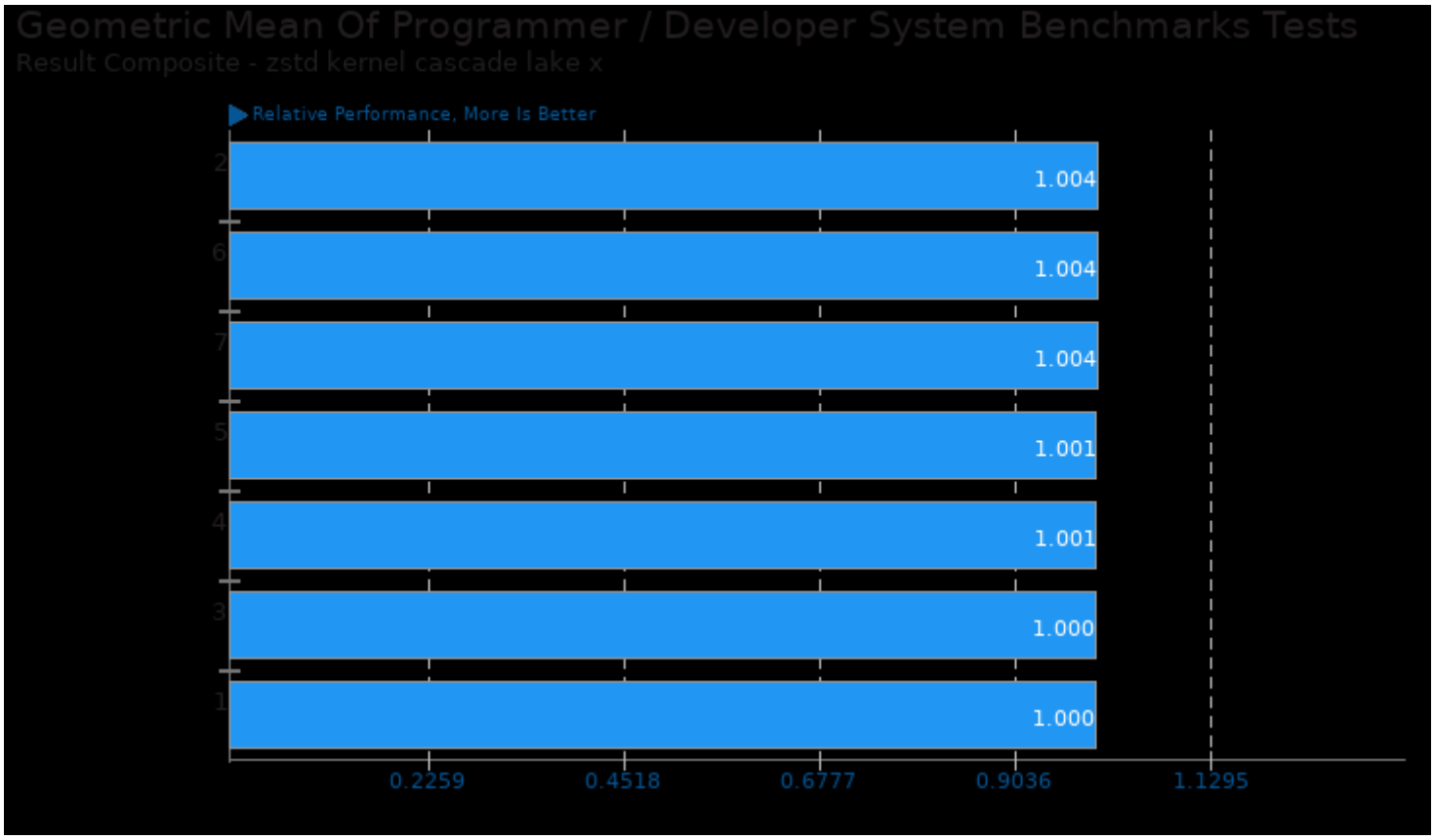


Geometric mean based upon tests: pts/build-linux-kernel and pts/compress-zstd

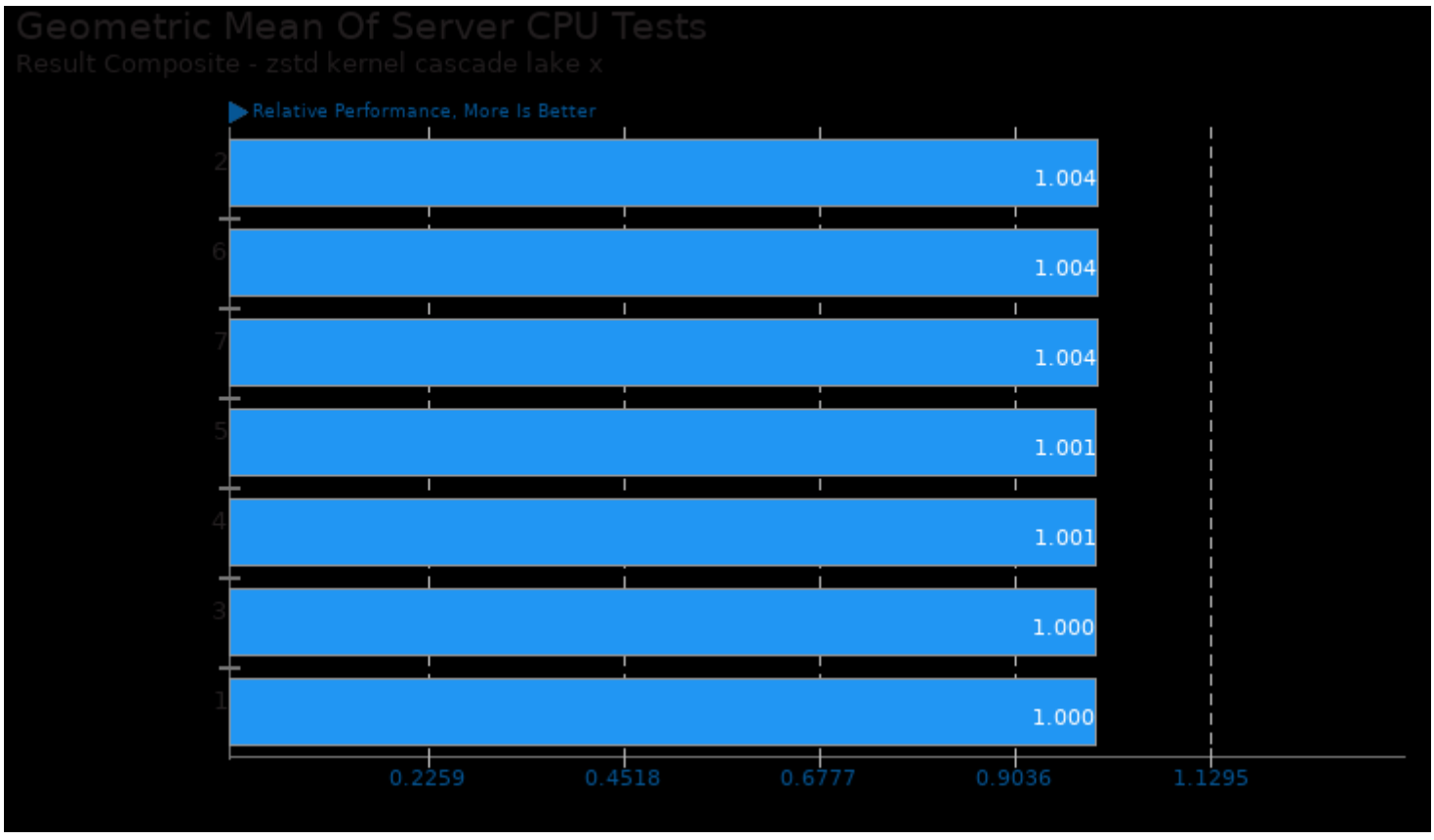


zstd kernel cascade lake x

Geometric mean based upon tests: pts/compress-zstd and pts/build-linux-kernel



Geometric mean based upon tests: pts/compress-zstd and pts/build-linux-kernel



zstd kernel cascade lake x

Geometric mean based upon tests: pts/build-linux-kernel and pts/compress-zstd

This file was automatically generated via the Phoronix Test Suite benchmarking software on Thursday, 28 March 2024 06:11.