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20210719e

ARMv8 Neoverse-N1 testing with a GIGABYTE MP32-AR0-00 v01000100 (F13 SCP: 1.4.20210223 BIOS) and ASPEED on Ubuntu 20.04 via the Phoronix Test Suite.

Test Systems:

Ubuntu_Altra_Q80-30

Processor: ARMv8 Neoverse-N1 @ 3.00GHz (80 Cores), Motherboard: GIGABYTE MP32-AR0-00 v01000100 (F13 SCP: 1.4.20210223 BIOS), Chipset: Ampere Computing LLC Device e100, Memory: 16 x 16384 MB DDR4-3200MT/s Samsung M393A2K43DB3-CWE, Disk: 2 x Samsung SSD 980 PRO 500GB + 2 x 32GB V4-CT032V4SSD2, Graphics: ASPEED, Monitor: HL229DPB, Network: 2 x Intel I350

OS: Ubuntu 20.04, Kernel: 5.4.0-77-generic (aarch64), Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 1920x1080

Kernel Notes: Transparent Huge Pages: madvise
Compiler Notes: --build=aarch64-linux-gnu --disable-libquadmath --disable-libquadmath-support --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-fix-cortex-a53-843419 --enable-gnu-unique-object --enable-languages=c,ada,c++,go,d,fortran,objc,obj-c++,gm2 --enable-libstdcxx-debug

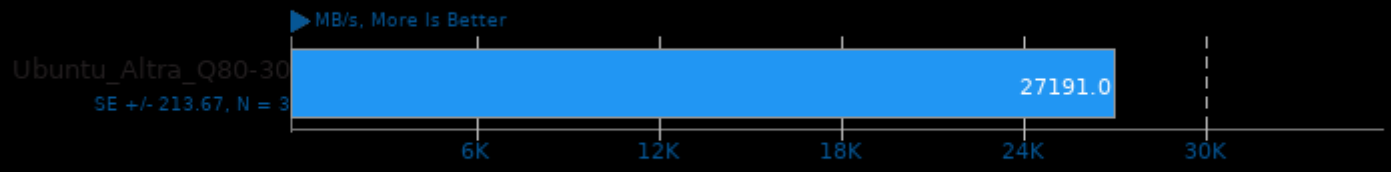
--enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc=auto --enable-plugin --enable-shared --enable-threads=posix --host=aarch64-linux-gnu --program-prefix=aarch64-linux-gnu- --target=aarch64-linux-gnu --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-target-system-zlib=auto -v
Processor Notes: Scaling Governor: cppc_cpufreq performance
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl + spectre_v1: Mitigation of __user pointer sanitization + spectre_v2: Not affected + srbds: Not affected + tsx_async_abort: Not affected

	Ubuntu_Altra_Q80-30
C-Blosc - blosclz (MB/s)	27191
Standard Deviation	1.4%
lzbench - XZ 0 - Compression (MB/s)	34
lzbench - XZ 0 - Decompression (MB/s)	119
Standard Deviation	0.5%
lzbench - Zstd 1 - Compression (MB/s)	410
lzbench - Zstd 1 - Decompression (MB/s)	1289
Standard Deviation	0.1%
lzbench - Zstd 8 - Compression (MB/s)	62
lzbench - Zstd 8 - Decompression (MB/s)	1313
Standard Deviation	0.1%
lzbench - Crush 0 - Compression (MB/s)	79
lzbench - Crush 0 - Decompression (MB/s)	436
lzbench - Brotli 0 - Compression (MB/s)	384
lzbench - Brotli 0 - Decompression (MB/s)	496
Standard Deviation	0.2%
lzbench - Brotli 2 - Compression (MB/s)	163
lzbench - Brotli 2 - Decompression (MB/s)	574
Standard Deviation	2.4%
lzbench - Libdeflate 1 - Compression (MB/s)	176
lzbench - Libdeflate 1 - Decompression (MB/s)	887
LZ4 Compression - 1 - Compression Speed (MB/s)	9802
Standard Deviation	4.5%
LZ4 Compression - 1 - D.S (MB/s)	11552
Standard Deviation	5.5%
LZ4 Compression - 3 - Compression Speed (MB/s)	44.49
Standard Deviation	0.3%
LZ4 Compression - 3 - D.S (MB/s)	10036
Standard Deviation	2.3%
LZ4 Compression - 9 - Compression Speed (MB/s)	42.45
Standard Deviation	0.4%
LZ4 Compression - 9 - D.S (MB/s)	9700
Standard Deviation	1.9%
Zstd Compression - 3 - Compression Speed (MB/s)	5550
Standard Deviation	1.7%
Zstd Compression - 3 - D.S (MB/s)	2862
Standard Deviation	0.7%
Zstd Compression - 8 - Compression Speed (MB/s)	1217
Standard Deviation	0.5%
Zstd Compression - 8 - D.S (MB/s)	2896
Standard Deviation	0.3%
Zstd Compression - 19 - Compression Speed (MB/s)	70.5
Standard Deviation	0.1%

Zstd Compression - 19 - D.S (MB/s)	2393
Standard Deviation	1%
Zstd Compression - 3, Long Mode - Compression Speed (MB/s)	756.1
Standard Deviation	0.1%
Zstd Compression - 3, Long Mode - D.S (MB/s)	3094
Standard Deviation	0.4%
Zstd Compression - 8, Long Mode - Compression Speed (MB/s)	735.5
Standard Deviation	0.1%
Zstd Compression - 8, Long Mode - D.S (MB/s)	3142
Standard Deviation	0.5%
Zstd Compression - 19, Long Mode - Compression Speed (MB/s)	33.6
Standard Deviation	0%
Zstd Compression - 19, Long Mode - D.S (MB/s)	2515
Standard Deviation	0.6%
7-Zip Compression - C.S.T (MIPS)	222971
Standard Deviation	1.8%
Gzip Compression - L.S.T.A.T.t.g (sec)	46.149
Standard Deviation	1.1%
XZ Compression - C.u.1.0.3.s.i.i.C.L.9 (sec)	20.571
Standard Deviation	1.4%
System GZIP Decompression (sec)	3.653
Standard Deviation	0.1%
System XZ Decompression (sec)	3.942
Standard Deviation	0.1%
System ZLIB Decompression (ms)	1969
Standard Deviation	0.2%

C-Blosc 2.0

Compressor: blosclz

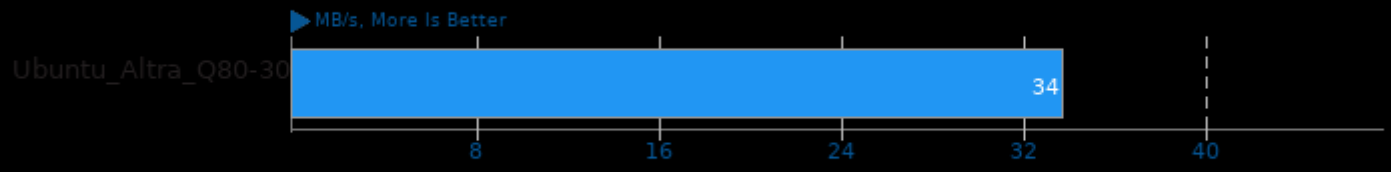


SE +/- 213.67, N = 3

1. (CC) gcc options: -std=gnu99 -O3 -pthread -lrt -lm

lzbench 1.8

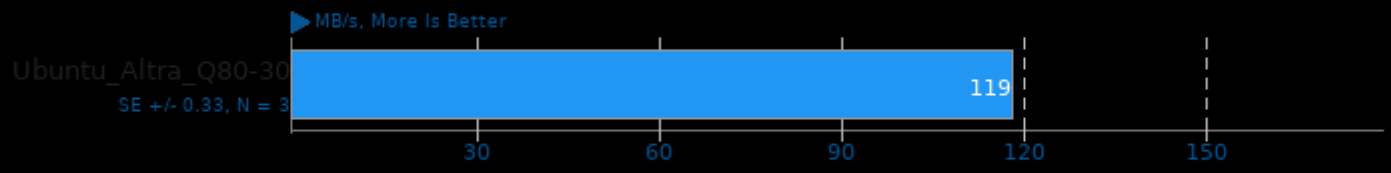
Test: XZ 0 - Process: Compression



1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

lzbench 1.8

Test: XZ 0 - Process: Decompression

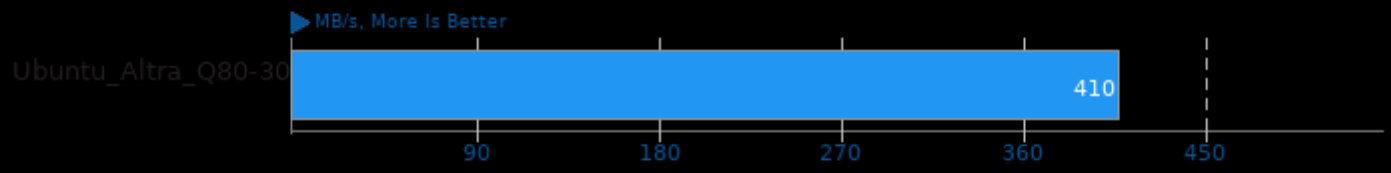


SE +/- 0.33, N = 3

1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

lzbench 1.8

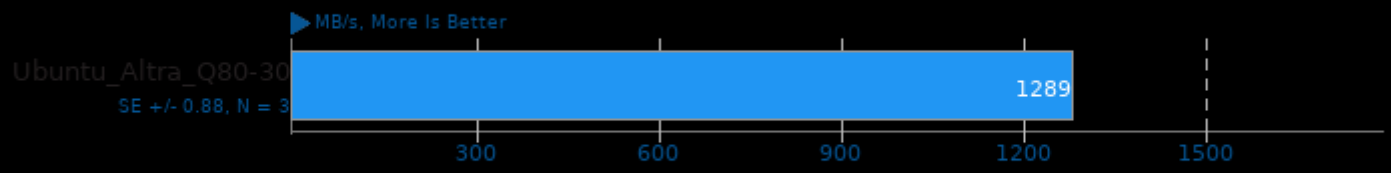
Test: Zstd 1 - Process: Compression



1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

lzbench 1.8

Test: Zstd 1 - Process: Decompression

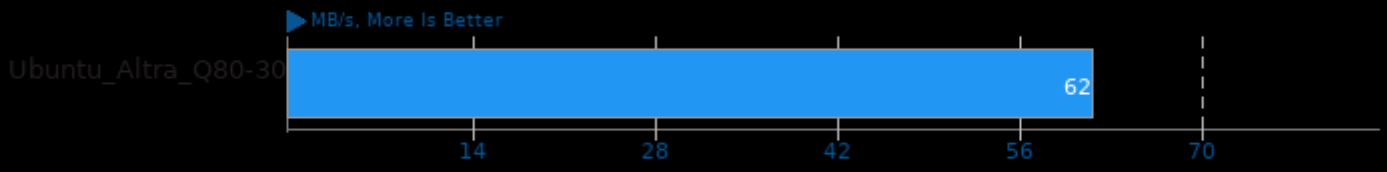


SE +/- 0.88, N = 3

1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

lzbench 1.8

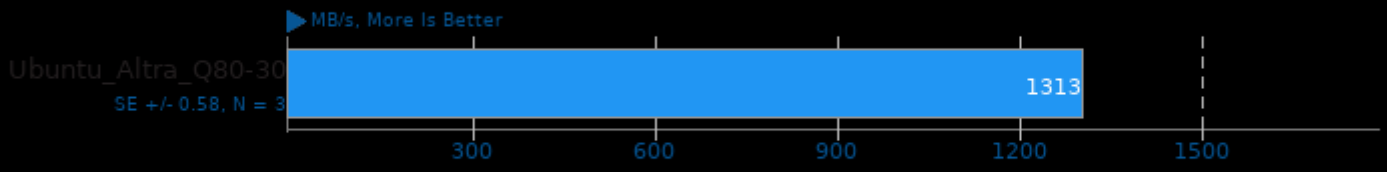
Test: Zstd 8 - Process: Compression



1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

lzbench 1.8

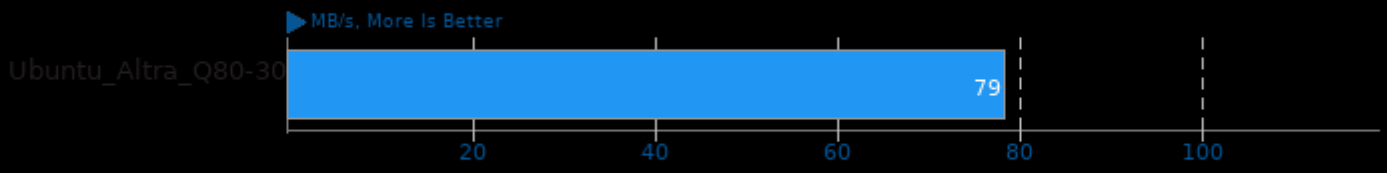
Test: Zstd 8 - Process: Decompression



1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

lzbench 1.8

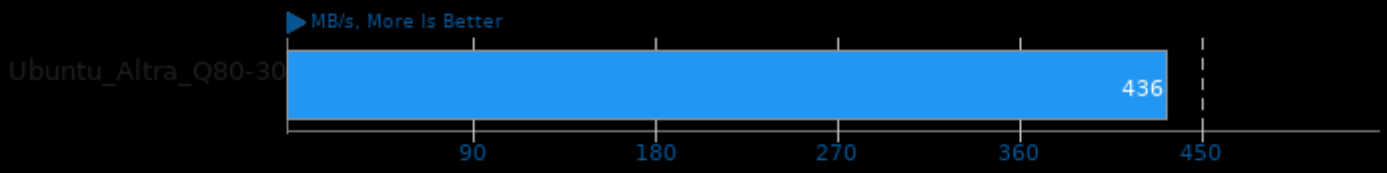
Test: Crush 0 - Process: Compression



1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

lzbench 1.8

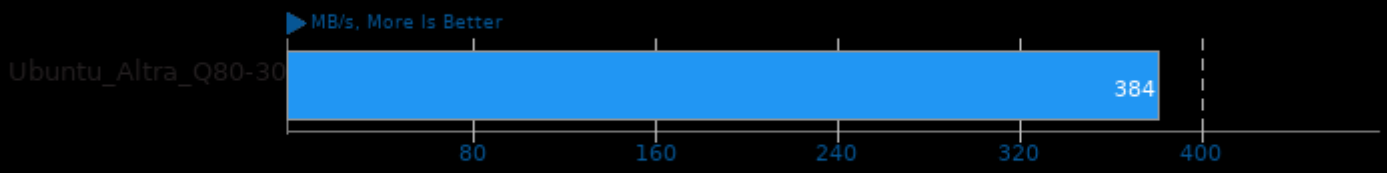
Test: Crush 0 - Process: Decompression



1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

lzbench 1.8

Test: Brotli 0 - Process: Compression



1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

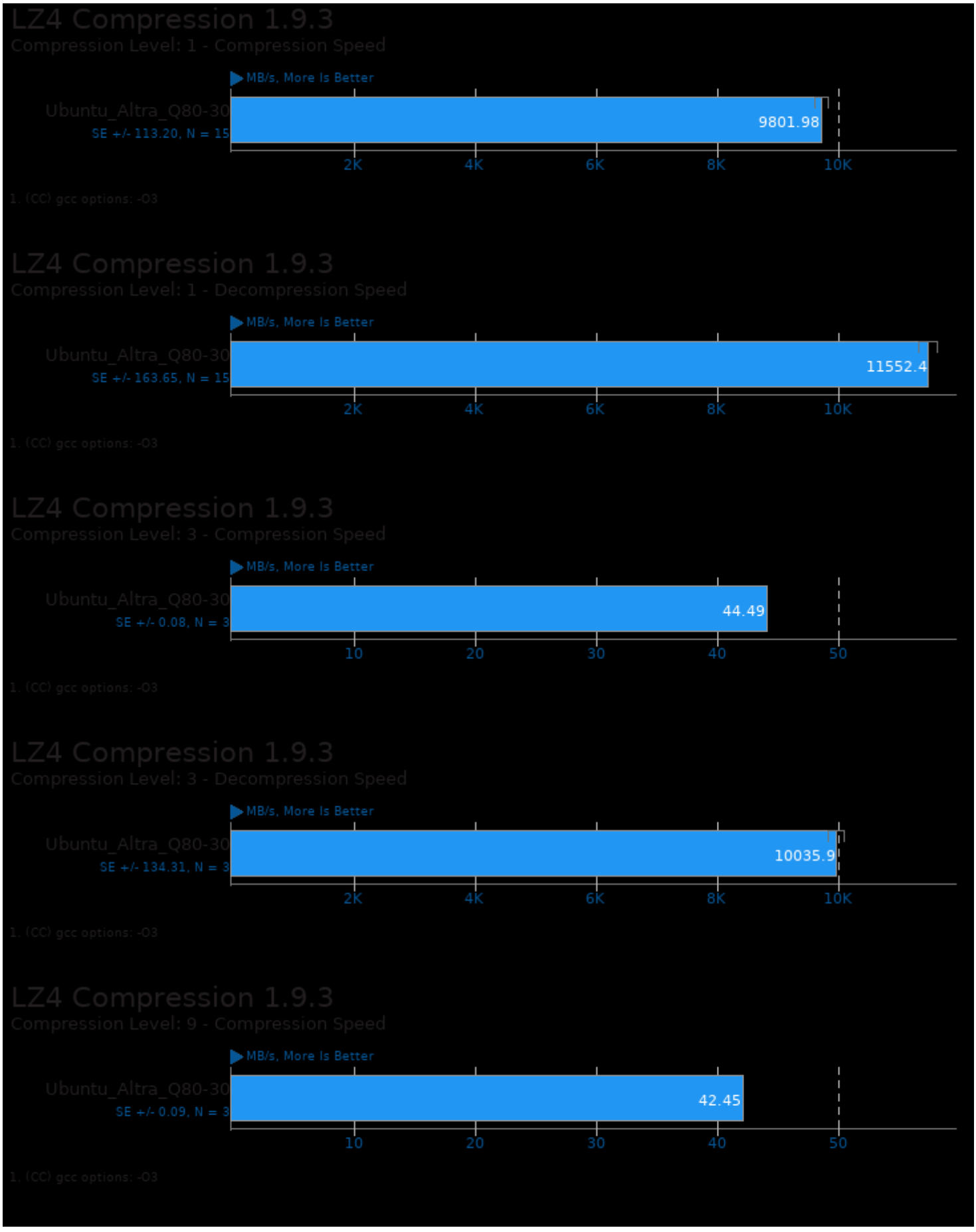
lzbench 1.8
Test: Brotli 0 - Process: Decompression
MB/s, More Is Better
Ubuntu_Altra_Q80-30
SE +/- 0.58, N = 3
496
110 220 330 440 550
1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

lzbench 1.8
Test: Brotli 2 - Process: Compression
MB/s, More Is Better
Ubuntu_Altra_Q80-30
163
40 80 120 160 200
1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

lzbench 1.8
Test: Brotli 2 - Process: Decompression
MB/s, More Is Better
Ubuntu_Altra_Q80-30
SE +/- 8.00, N = 3
574
120 240 360 480 600
1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

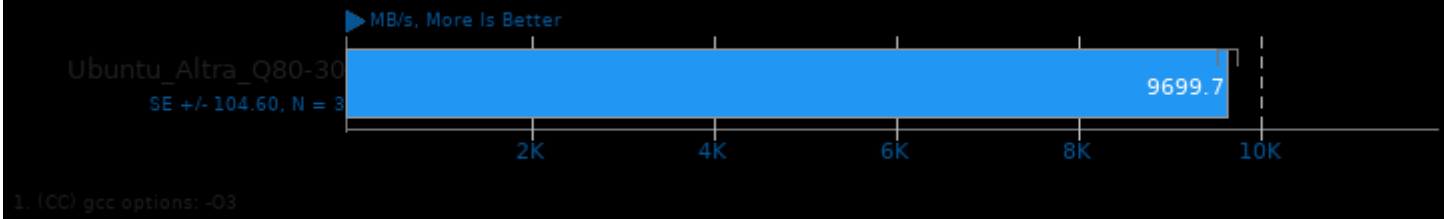
lzbench 1.8
Test: Libdeflate 1 - Process: Compression
MB/s, More Is Better
Ubuntu_Altra_Q80-30
176
40 80 120 160 200
1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

lzbench 1.8
Test: Libdeflate 1 - Process: Decompression
MB/s, More Is Better
Ubuntu_Altra_Q80-30
887
200 400 600 800 1000
1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3


LZ4 Compression 1.9.3
Compression Level: 1 - Compression Speed
MB/s, More Is Better
Ubuntu_Altra_Q80-30
SE +/- 113.20, N = 15
9801.98
2K
4K
6K
8K
10K
1. (CC) gcc options: -O3
LZ4 Compression 1.9.3
Compression Level: 1 - Decompression Speed
MB/s, More Is Better
Ubuntu_Altra_Q80-30
SE +/- 163.65, N = 15
11552.4
2K
4K
6K
8K
10K
1. (CC) gcc options: -O3
LZ4 Compression 1.9.3
Compression Level: 3 - Compression Speed
MB/s, More Is Better
Ubuntu_Altra_Q80-30
SE +/- 0.08, N = 3
44.49
10
20
30
40
50
1. (CC) gcc options: -O3
LZ4 Compression 1.9.3
Compression Level: 3 - Decompression Speed
MB/s, More Is Better
Ubuntu_Altra_Q80-30
SE +/- 134.31, N = 3
10035.9
2K
4K
6K
8K
10K
1. (CC) gcc options: -O3
LZ4 Compression 1.9.3
Compression Level: 9 - Compression Speed
MB/s, More Is Better
Ubuntu_Altra_Q80-30
SE +/- 0.09, N = 3
42.45
10
20
30
40
50
1. (CC) gcc options: -O3

LZ4 Compression 1.9.3

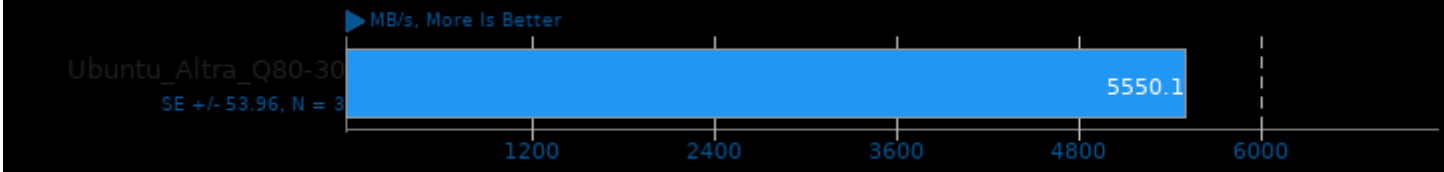
Compression Level: 9 - Decompression Speed



1. (CC) gcc options: -O3

Zstd Compression 1.5.0

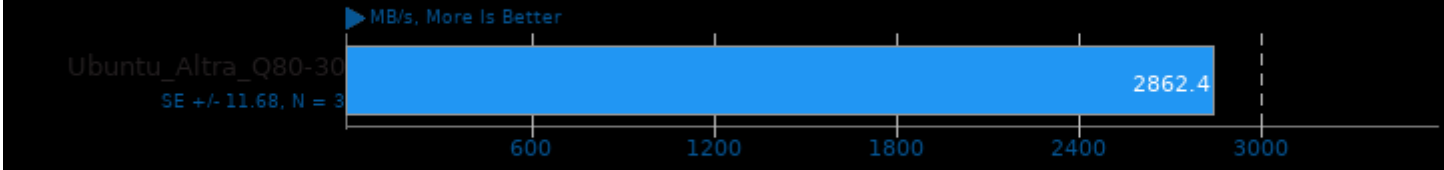
Compression Level: 3 - Compression Speed



1. (CC) gcc options: -O3 -pthread -lz

Zstd Compression 1.5.0

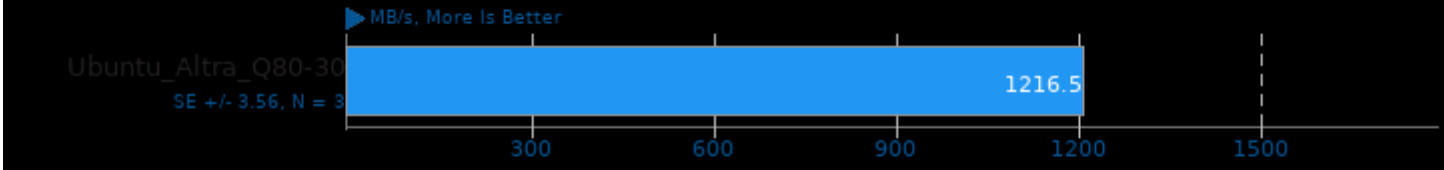
Compression Level: 3 - Decompression Speed



1. (CC) gcc options: -O3 -pthread -lz

Zstd Compression 1.5.0

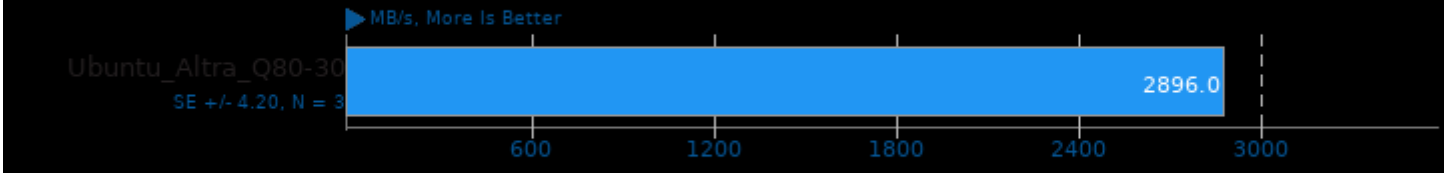
Compression Level: 8 - Compression Speed



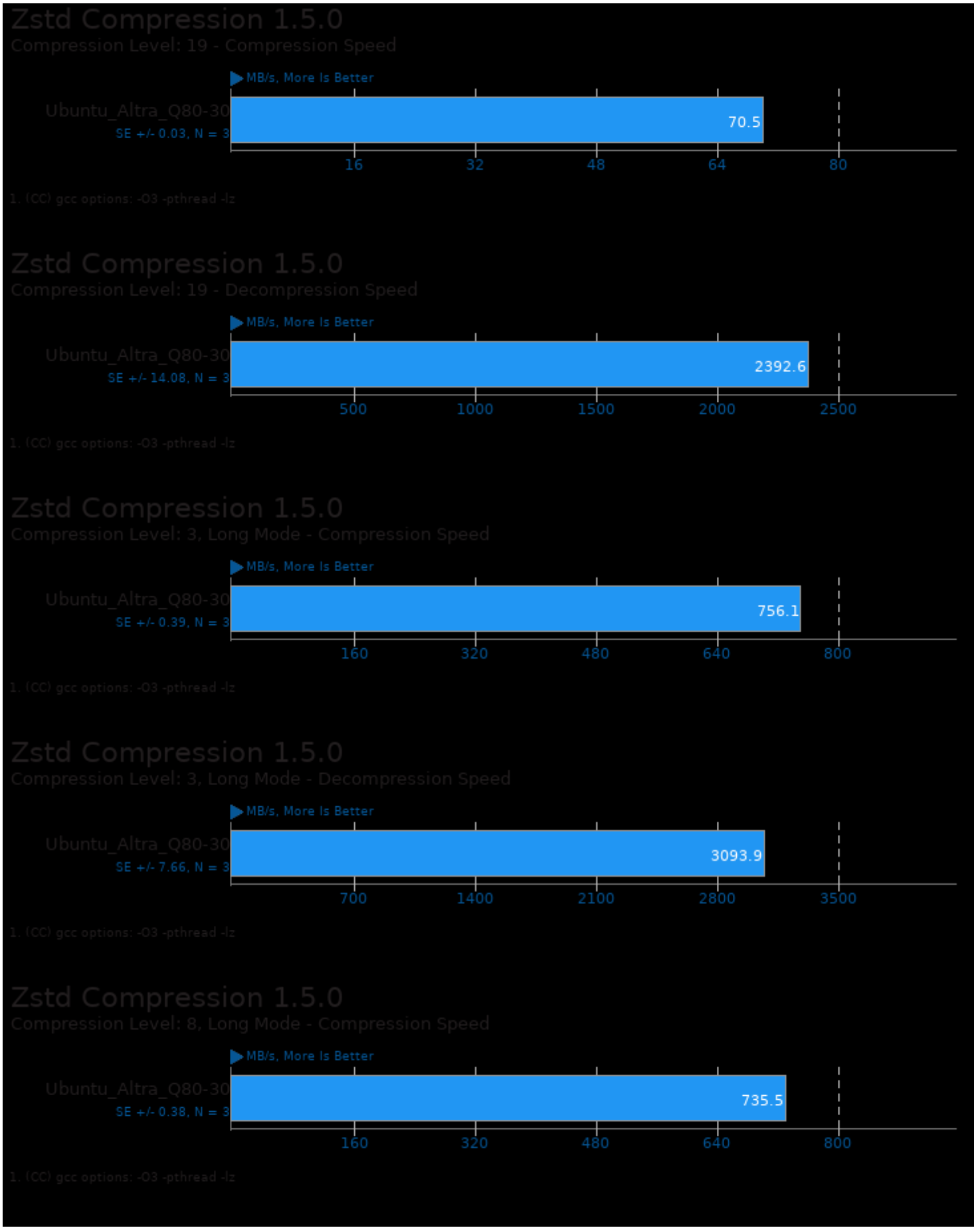
1. (CC) gcc options: -O3 -pthread -lz

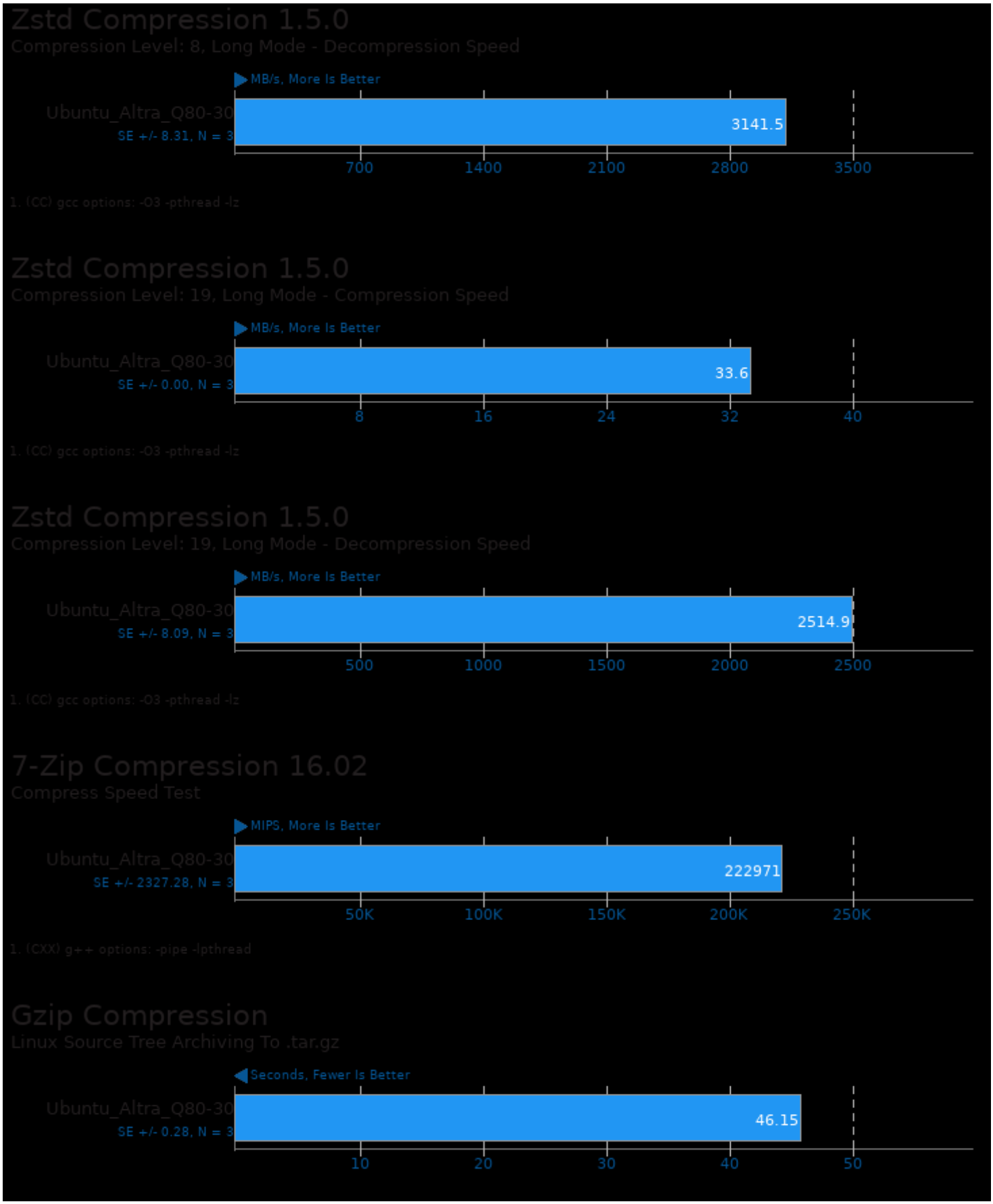
Zstd Compression 1.5.0

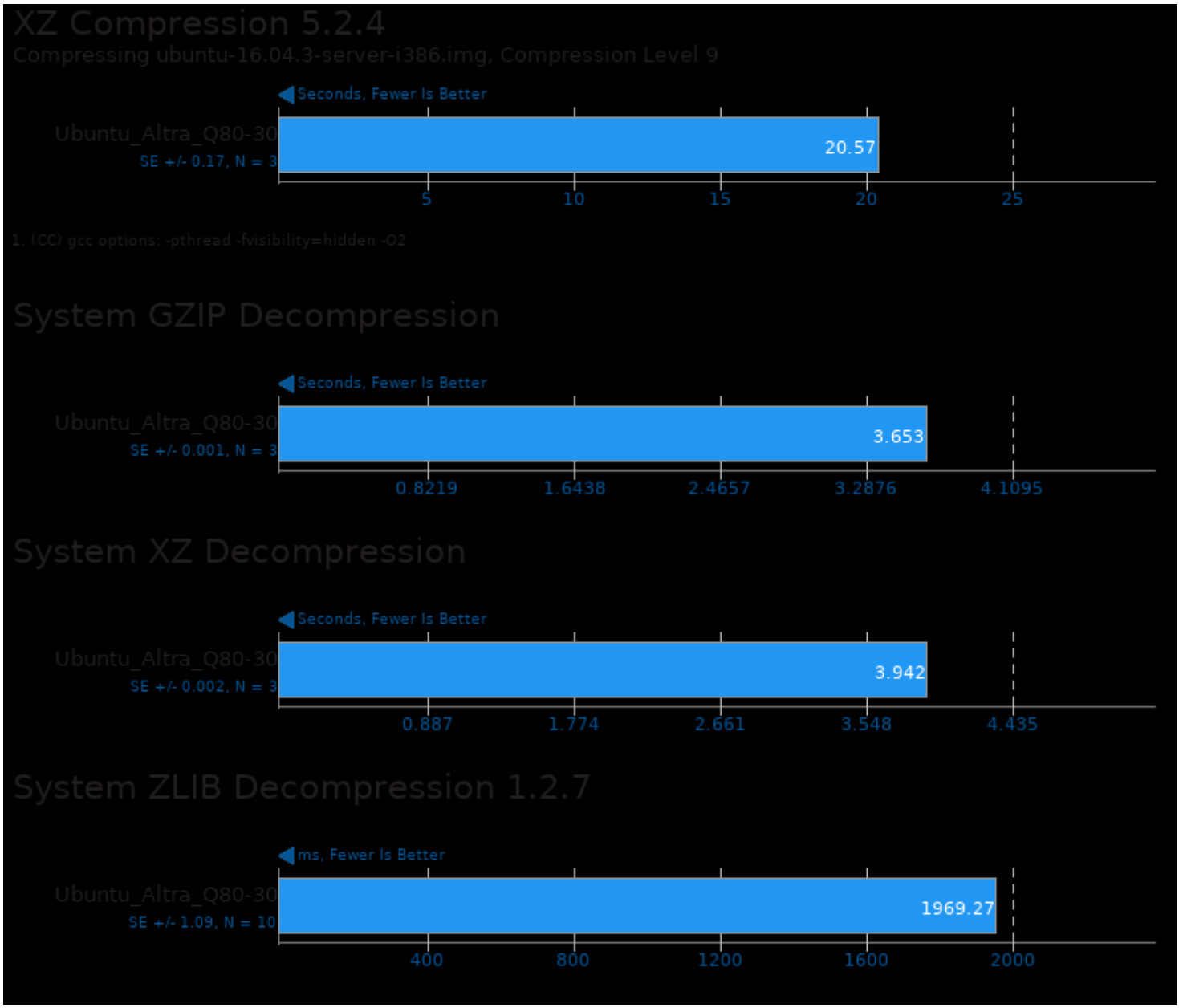
Compression Level: 8 - Decompression Speed



1. (CC) gcc options: -O3 -pthread -lz


Zstd Compression 1.5.0
Compression Level: 19 - Compression Speed
MB/s, More Is Better
Ubuntu_Altra_Q80-30
SE +/- 0.03, N = 3
70.5
16
32
48
64
80
1. (CC) gcc options: -O3 -pthread -lz
Zstd Compression 1.5.0
Compression Level: 19 - Decompression Speed
MB/s, More Is Better
Ubuntu_Altra_Q80-30
SE +/- 14.08, N = 3
2392.6
500
1000
1500
2000
2500
1. (CC) gcc options: -O3 -pthread -lz
Zstd Compression 1.5.0
Compression Level: 3, Long Mode - Compression Speed
MB/s, More Is Better
Ubuntu_Altra_Q80-30
SE +/- 0.39, N = 3
756.1
160
320
480
640
800
1. (CC) gcc options: -O3 -pthread -lz
Zstd Compression 1.5.0
Compression Level: 3, Long Mode - Decompression Speed
MB/s, More Is Better
Ubuntu_Altra_Q80-30
SE +/- 7.66, N = 3
3093.9
700
1400
2100
2800
3500
1. (CC) gcc options: -O3 -pthread -lz
Zstd Compression 1.5.0
Compression Level: 8, Long Mode - Compression Speed
MB/s, More Is Better
Ubuntu_Altra_Q80-30
SE +/- 0.38, N = 3
735.5
160
320
480
640
800
1. (CC) gcc options: -O3 -pthread -lz


Zstd Compression 1.5.0
Compression Level: 8, Long Mode - Decompression Speed
MB/s, More Is Better
Ubuntu_Altra_Q80-30
SE +/- 8.31, N = 3
3141.5
700
1400
2100
2800
3500
1. (CC) gcc options: -O3 -pthread -lz
Zstd Compression 1.5.0
Compression Level: 19, Long Mode - Compression Speed
MB/s, More Is Better
Ubuntu_Altra_Q80-30
SE +/- 0.00, N = 3
33.6
8
16
24
32
40
1. (CC) gcc options: -O3 -pthread -lz
Zstd Compression 1.5.0
Compression Level: 19, Long Mode - Decompression Speed
MB/s, More Is Better
Ubuntu_Altra_Q80-30
SE +/- 8.09, N = 3
2514.9
500
1000
1500
2000
2500
1. (CC) gcc options: -O3 -pthread -lz
7-Zip Compression 16.02
Compress Speed Test
MIPS, More Is Better
Ubuntu_Altra_Q80-30
SE +/- 2327.28, N = 3
222971
50K
100K
150K
200K
250K
1. (CXX) g++ options: -pipe -lpthread
Gzip Compression
Linux Source Tree Archiving To .tar.gz
Seconds, Fewer Is Better
Ubuntu_Altra_Q80-30
SE +/- 0.28, N = 3
46.15
10
20
30
40
50



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