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jetson

ARMv8 rev 0 testing with a NVIDIA Jetson Xavier NX Developer Kit and NVIDIA TEGRA on Ubuntu 18.04 via the Phoronix Test Suite.

Automated Executive Summary

msata had the most wins, coming in first place for 75% of the tests.

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

Flexible IO Tester (Type: Sequential Read - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 8MB - Disk Target: Default Test Directory) at 14.667x
Flexible IO Tester (Type: Sequential Read - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 8MB - Disk Target: Default Test Directory) at 7.24x
Flexible IO Tester (Type: Sequential Read - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 4KB - Disk Target: Default Test Directory) at 5.54x
Flexible IO Tester (Type: Sequential Read - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 4KB - Disk Target: Default Test Directory) at 5.528x
Flexible IO Tester (Type: Sequential Write - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 4KB - Disk Target: Default Test Directory) at 3.551x
Flexible IO Tester (Type: Sequential Write - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 4KB - Disk Target: Default Test Directory) at 3.549x

Stress-NG (Test: Forking) at 1x
Stress-NG (Test: CPU Stress) at 1x
Stress-NG (Test: Matrix Math) at 1x
Stress-NG (Test: Vector Math) at 1x.

Test Systems:

msata

usb3.0

emmc

sd

usb2.0

cpu

mem

Processor: ARMv8 rev 0 @ 1.42GHz (6 Cores), Motherboard: NVIDIA Jetson Xavier NX Developer Kit, Memory: 16GB, Disk: 128GB TS128GMSA452T-I + 16GB USB Drive 3ME + 16GB DG4016 + 15GB i-TF, Graphics: NVIDIA TEGRA, Monitor: XZ242Q

OS: Ubuntu 18.04, Kernel: 4.9.253 (aarch64), Desktop: LXDE 0.9.3, Display Server: X Server 1.19.6, Vulkan: 1.2.131, Compiler: GCC 7.5.0 + CUDA 10.2, File-System: ext4, Screen Resolution: 1920x1080

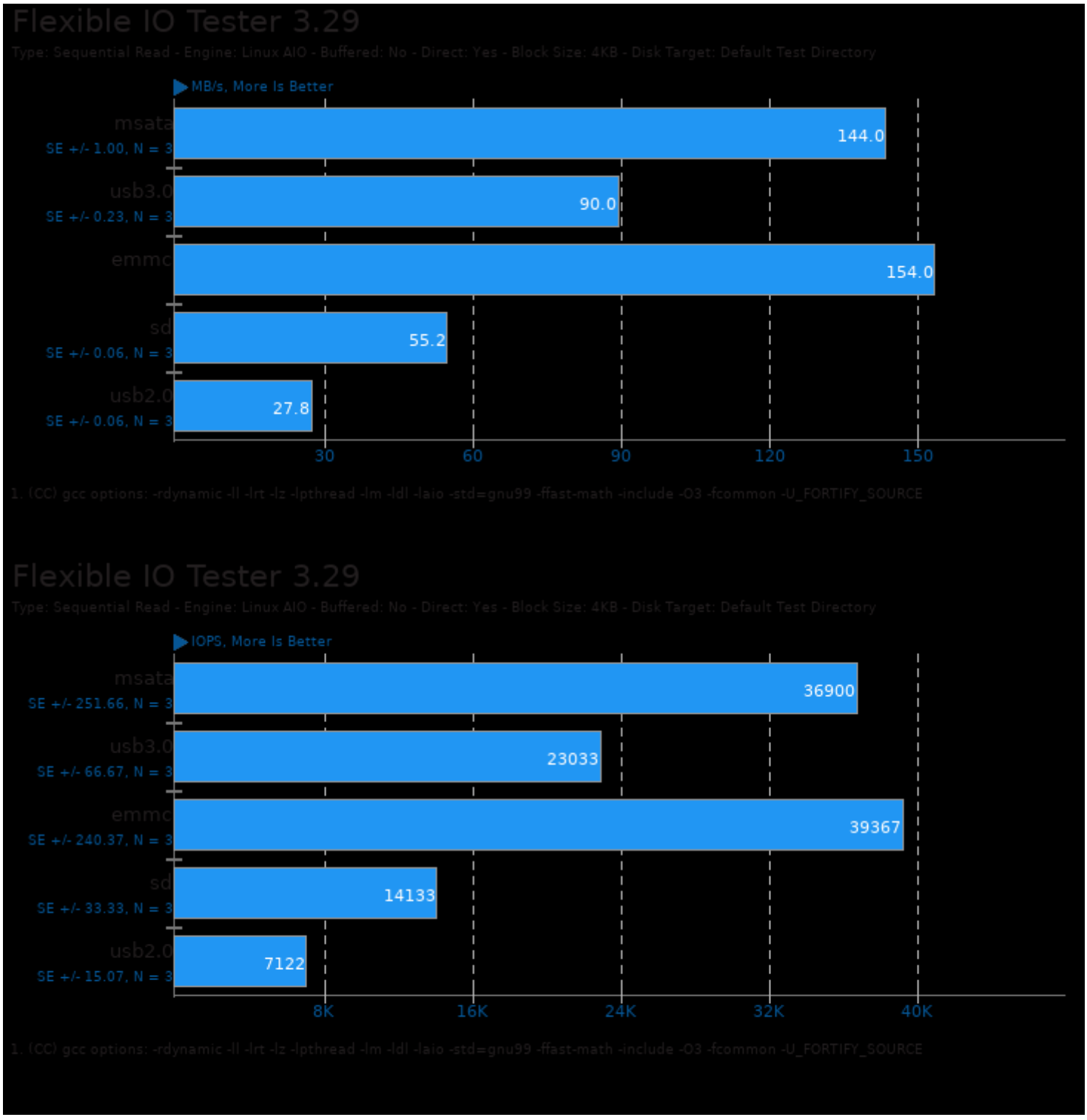
Kernel Notes: Transparent Huge Pages: always
Compiler Notes: --build=aarch64-linux-gnu --disable-libquadmath --disable-libquadmath-support --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-fix-cortex-a53-843419 --enable-gnu-unique-object --enable-languages=c,ada,c++,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --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 -v
Processor Notes: Scaling Governor: tegra_cpufreq schedutil

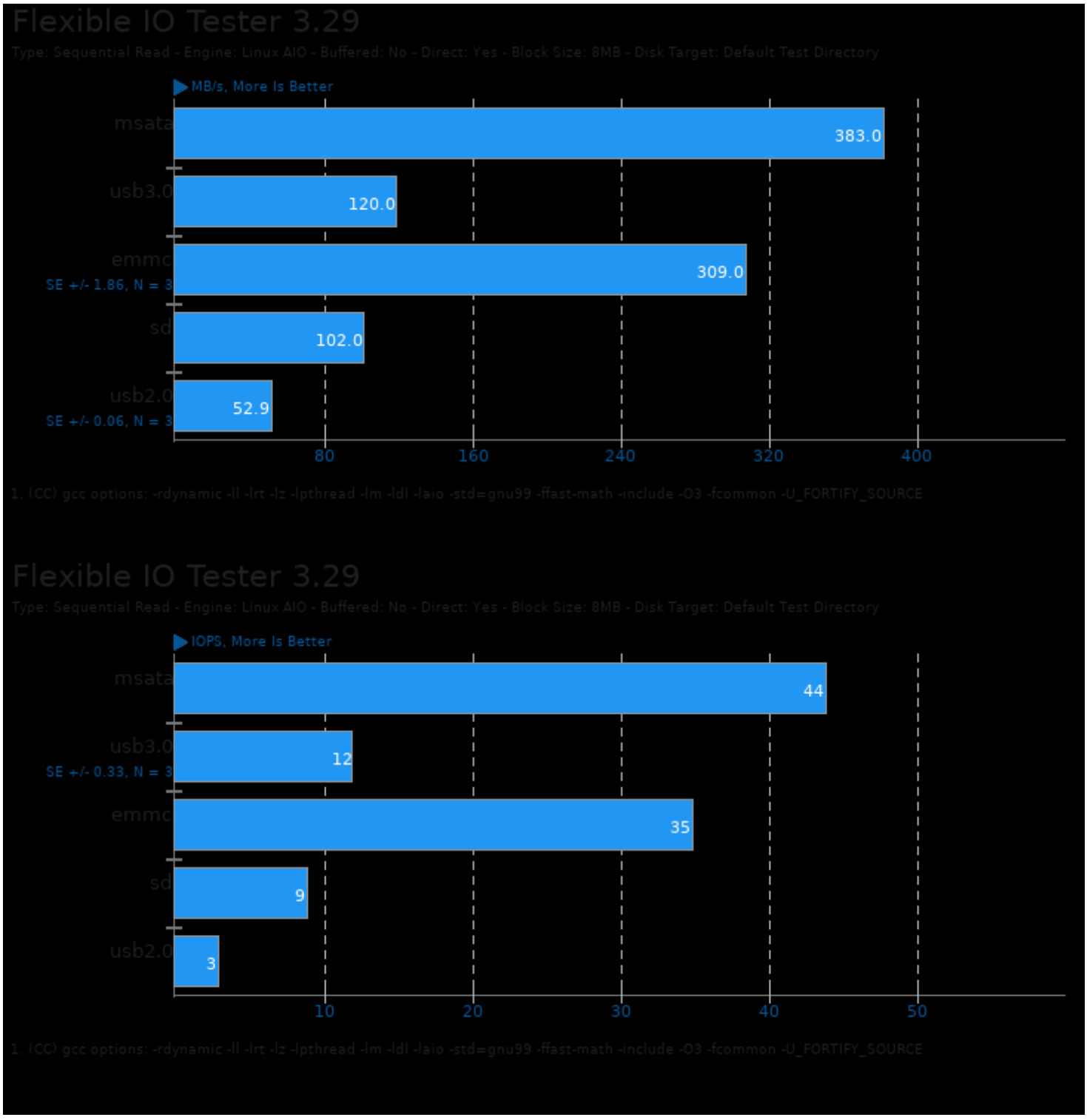
	msata	usb3.0	emmc	sd	usb2.0	cpu	mem
Flexible IO Tester - Seq Read - Linux AIO - No - Yes - 4KB (MB/s)	144	90.0	**154**	55.2	**27.8**		
Normalized	93.51%	58.44%	100%	35.84%	18.05%		
Standard Deviation	1.2%	0.4%		0.2%	0.4%		

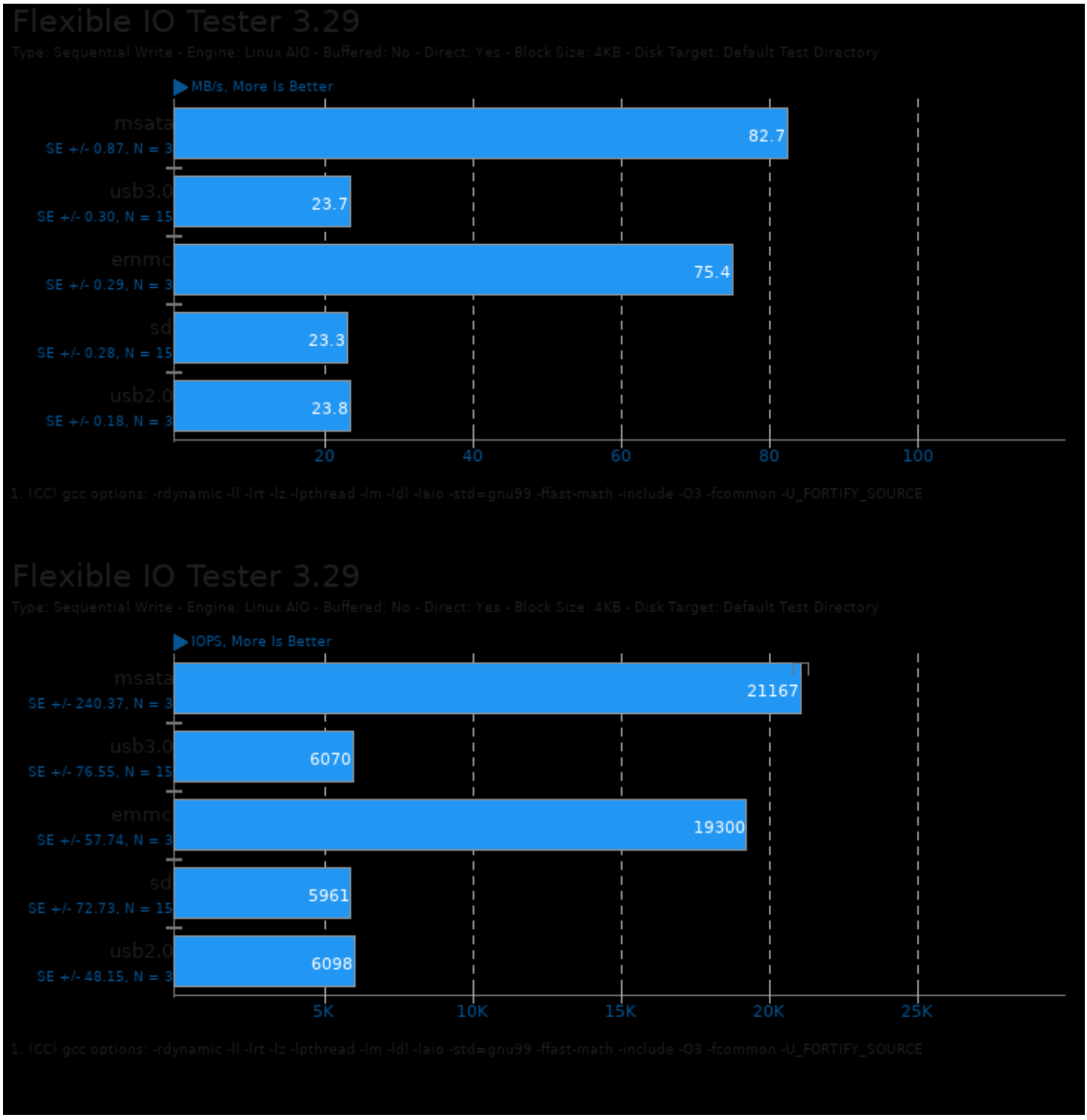
Flexible IO Tester - Seq Read - Linux AIO - No - Yes - 4KB (IOPS)	36900	23033	39367	14133	7122	
Normalized	93.73%	58.51%	100%	35.9%	18.09%	
Standard Deviation	1.2%	0.5%	1.1%	0.4%	0.4%	
Flexible IO Tester - Seq Read - Linux AIO - No - Yes - 8MB (MB/s)	383	120	309	102	52.9	
Normalized	100%	31.33%	80.68%	26.63%	13.81%	
Standard Deviation			1%		0.2%	
Flexible IO Tester - Seq Read - Linux AIO - No - Yes - 8MB (IOPS)	44	12	35	9	3	
Normalized	100%	27.27%	79.55%	20.45%	6.82%	
Standard Deviation		4.9%				
Flexible IO Tester - Seq Write - Linux AIO - No - Yes - 4KB (MB/s)	82.7	23.7	75.4	23.3	23.8	
Normalized	100%	28.66%	91.17%	28.17%	28.78%	
Standard Deviation	1.8%	4.9%	0.7%	4.7%	1.3%	
Flexible IO Tester - Seq Write - Linux AIO - No - Yes - 4KB (IOPS)	21167	6070	19300	5961	6098	
Normalized	100%	28.68%	91.18%	28.16%	28.81%	
Standard Deviation	2%	4.9%	0.5%	4.7%	1.4%	
Flexible IO Tester - Seq Write - Linux AIO - No - Yes - 8MB (MB/s)	289	39.0	102	66.0	49.4	
Normalized	100%	13.49%	35.29%	22.84%	17.09%	
Standard Deviation	13.3%	1%	1%	2.4%	0.5%	
Flexible IO Tester - Seq Write - Linux AIO - No - Yes - 8MB (IOPS)	33	2	9	5	3	
Normalized	100%	6.06%	27.27%	15.15%	9.09%	
Standard Deviation	15.2%					
Stress-NG - Crypto (Bogo Ops/s)						3123
Standard Deviation						6.6%
Stress-NG - Forking (Bogo Ops/s)						3260
Standard Deviation						5.7%
Stress-NG - CPU Stress (Bogo Ops/s)						841.13
Standard Deviation						3.2%
Stress-NG - Matrix Math (Bogo Ops/s)						6055
Standard Deviation						0.4%
Stress-NG - Vector Math (Bogo Ops/s)						9200
Standard Deviation						2.3%

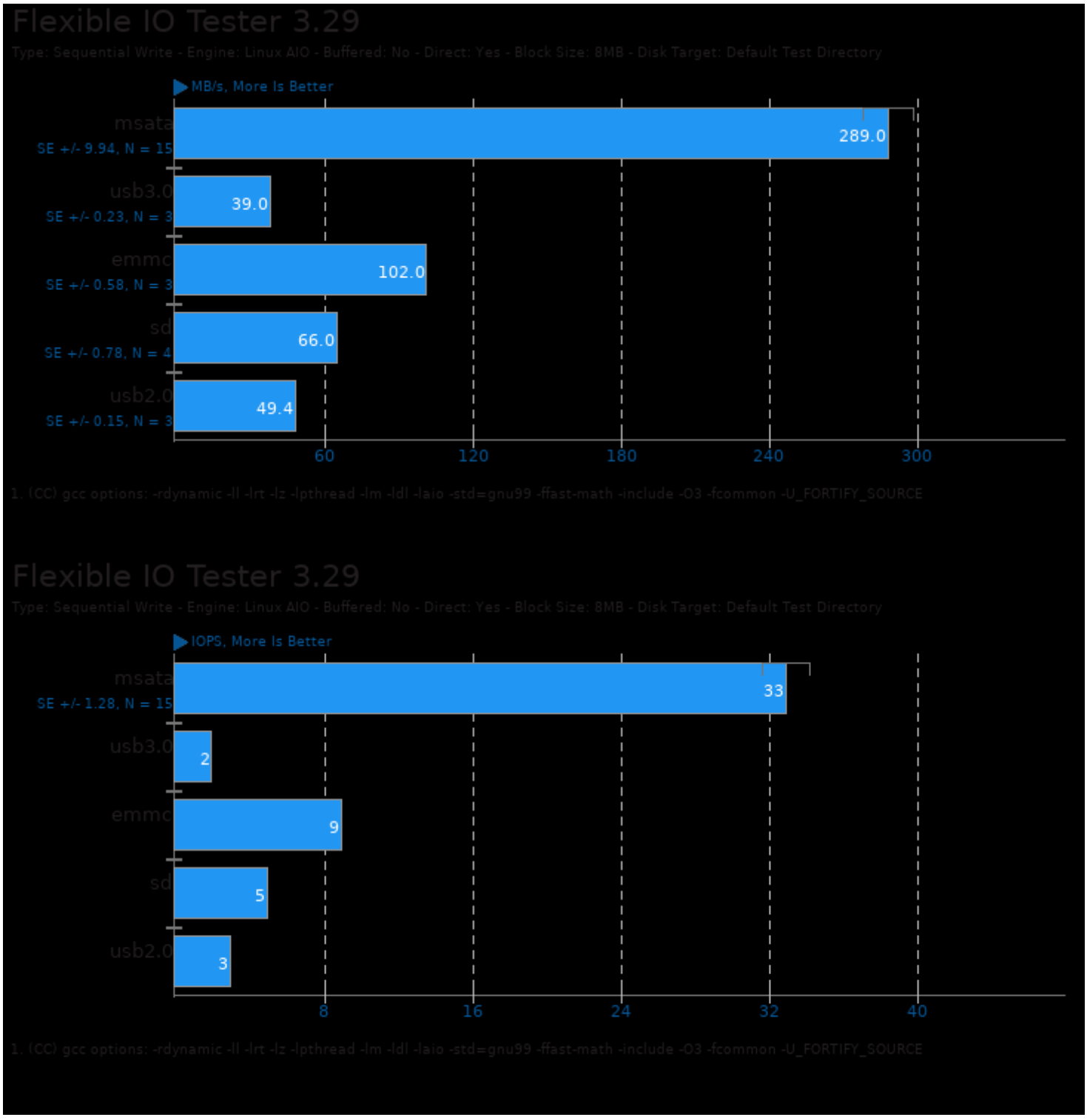
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Stress-NG - Memory Copying (Bogo Ops/s)	992.38	
Standard Deviation	0.4%	
Stress-NG - G.C.S.F (Bogo Ops/s)	108384	
Standard Deviation	2.4%	
Stress-NG - G.Q.D.S (Bogo Ops/s)	19.87	
Standard Deviation	4.3%	
Stream - Copy (MB/s)		27733
Standard Deviation		0.9%
Stream - Scale (MB/s)		33078
Standard Deviation		0.6%
Stream - Triad (MB/s)		30840
Standard Deviation		0.5%
Stream - Add (MB/s)		31080
Standard Deviation		1.2%


Flexible IO Tester 3.29
Type: Sequential Read - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 4KB - Disk Target: Default Test Directory
MB/s, More Is Better
msata
SE +/- 1.00, N = 3
144.0
usb3.0
SE +/- 0.23, N = 3
90.0
emmc
154.0
sd
SE +/- 0.06, N = 3
55.2
usb2.0
SE +/- 0.06, N = 3
27.8
30
60
90
120
150
1. (CC) gcc options: -rdynamic -ll -lrt -lz -lpthread -lm -ldl -laio -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE
Flexible IO Tester 3.29
Type: Sequential Read - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 4KB - Disk Target: Default Test Directory
IOPS, More Is Better
msata
SE +/- 251.66, N = 3
36900
usb3.0
SE +/- 66.67, N = 3
23033
emmc
SE +/- 240.37, N = 3
39367
sd
SE +/- 33.33, N = 3
14133
usb2.0
SE +/- 15.07, N = 3
7122
8K
16K
24K
32K
40K
1. (CC) gcc options: -rdynamic -ll -lrt -lz -lpthread -lm -ldl -laio -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE

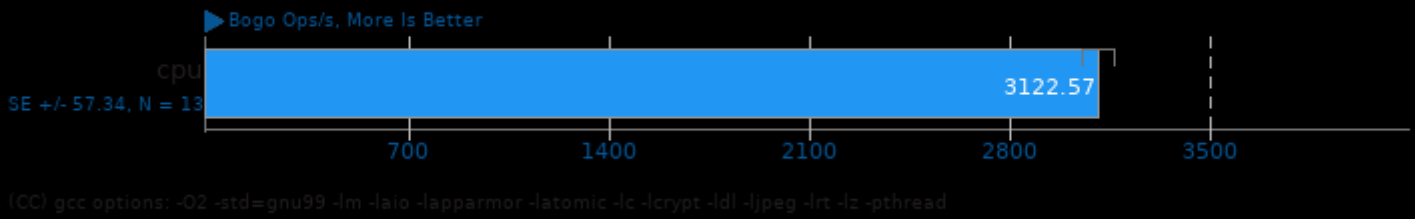

Flexible IO Tester 3.29
Type: Sequential Read - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 8MB - Disk Target: Default Test Directory
MB/s, More Is Better
msata
383.0
usb3.0
120.0
emmc
309.0
SE +/- 1.86, N = 3
sd
102.0
usb2.0
52.9
SE +/- 0.06, N = 3
80
160
240
320
400
1. (CC) gcc options: -rdynamic -ll -lrt -lz -lpthread -lm -ldl -laio -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE
Flexible IO Tester 3.29
Type: Sequential Read - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 8MB - Disk Target: Default Test Directory
IOPS, More Is Better
msata
44
usb3.0
12
SE +/- 0.33, N = 3
emmc
35
sd
9
usb2.0
3
10
20
30
40
50
1. (CC) gcc options: -rdynamic -ll -lrt -lz -lpthread -lm -ldl -laio -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE


Flexible IO Tester 3.29
Type: Sequential Write - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 4KB - Disk Target: Default Test Directory
MB/s, More Is Better
msata
SE +/- 0.87, N = 3
82.7
usb3.0
SE +/- 0.30, N = 15
23.7
emmc
SE +/- 0.29, N = 3
75.4
sd
SE +/- 0.28, N = 15
23.3
usb2.0
SE +/- 0.18, N = 3
23.8
20
40
60
80
100
1. (CC) gcc options: -rdynamic -ll -lrt -lz -lpthread -lm -ldl -laio -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE
Flexible IO Tester 3.29
Type: Sequential Write - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 4KB - Disk Target: Default Test Directory
IOPS, More Is Better
msata
SE +/- 240.37, N = 3
21167
usb3.0
SE +/- 76.55, N = 15
6070
emmc
SE +/- 57.74, N = 3
19300
sd
SE +/- 72.73, N = 15
5961
usb2.0
SE +/- 48.15, N = 3
6098
5K
10K
15K
20K
25K
1. (CC) gcc options: -rdynamic -ll -lrt -lz -lpthread -lm -ldl -laio -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE


Flexible IO Tester 3.29
Type: Sequential Write - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 8MB - Disk Target: Default Test Directory
MB/s, More Is Better
msata
SE +/- 9.94, N = 15
289.0
usb3.0
SE +/- 0.23, N = 3
39.0
emmc
SE +/- 0.58, N = 3
102.0
sd
SE +/- 0.78, N = 4
66.0
usb2.0
SE +/- 0.15, N = 3
49.4
60
120
180
240
300
1. (CC) gcc options: -rdynamic -ll -lrt -lz -lpthread -lm -ldl -laio -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE
Flexible IO Tester 3.29
Type: Sequential Write - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 8MB - Disk Target: Default Test Directory
IOPS, More Is Better
msata
SE +/- 1.28, N = 15
33
usb3.0
2
emmc
9
sd
5
usb2.0
3
8
16
24
32
40
1. (CC) gcc options: -rdynamic -ll -lrt -lz -lpthread -lm -ldl -laio -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE

Stress-NG 0.14

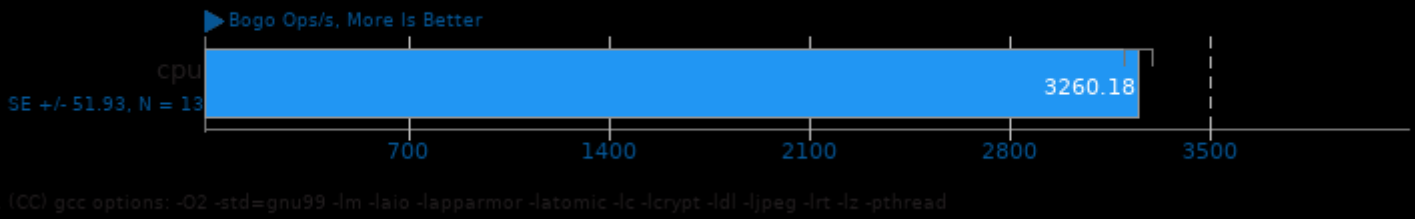
Test: Crypto



1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lapparmor -latomic -lc -lcrypt -ldl -ljpeg -lrt -lz -pthread

Stress-NG 0.14

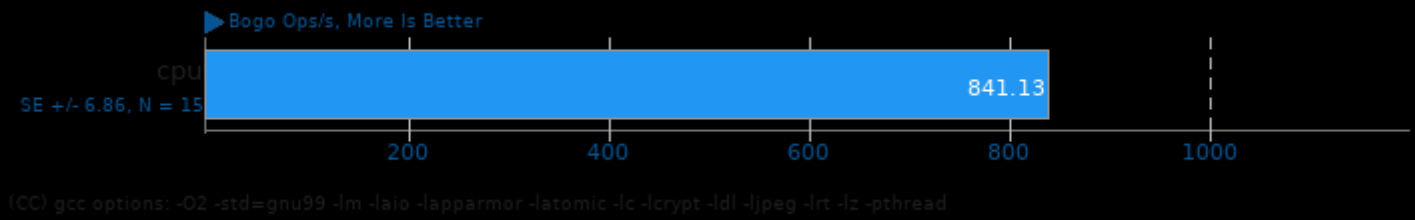
Test: Forking



1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lapparmor -latomic -lc -lcrypt -ldl -ljpeg -lrt -lz -pthread

Stress-NG 0.14

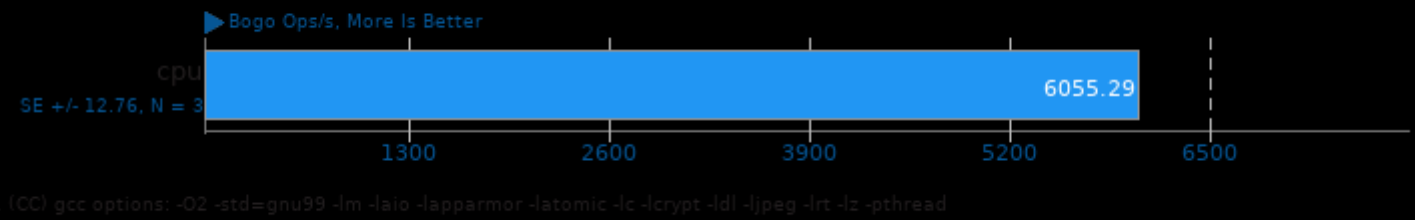
Test: CPU Stress



1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lapparmor -latomic -lc -lcrypt -ldl -ljpeg -lrt -lz -pthread

Stress-NG 0.14

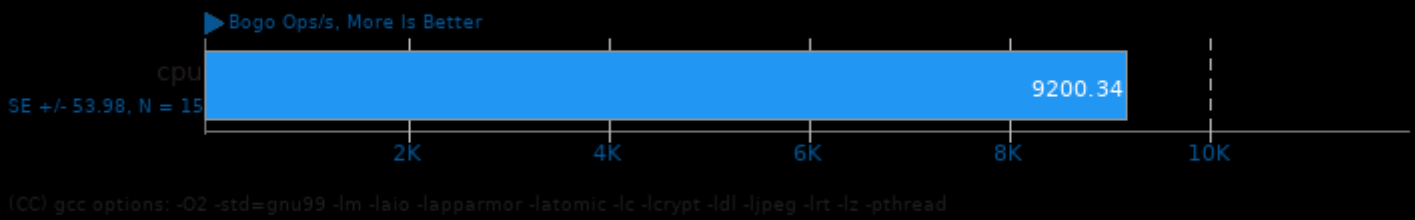
Test: Matrix Math



1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lapparmor -latomic -lc -lcrypt -ldl -ljpeg -lrt -lz -pthread

Stress-NG 0.14

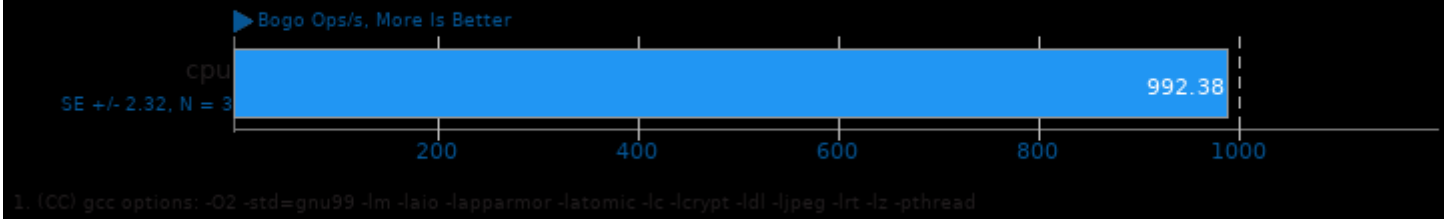
Test: Vector Math



1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lapparmor -latomic -lc -lcrypt -ldl -ljpeg -lrt -lz -pthread

Stress-NG 0.14

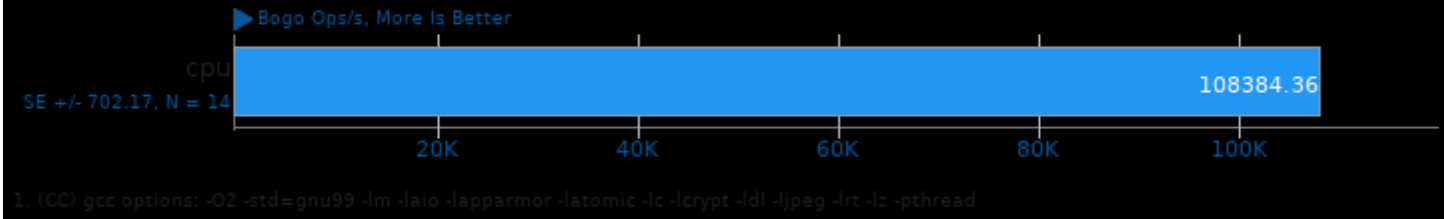
Test: Memory Copying



1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lapparmor -latomic -lc -lcrypt -ldl -ljpeg -lrt -lz -pthread

Stress-NG 0.14

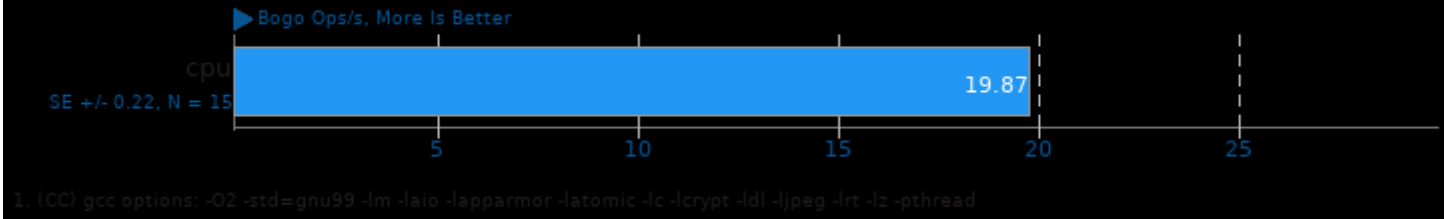
Test: Glibc C String Functions



1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lapparmor -latomic -lc -lcrypt -ldl -ljpeg -lrt -lz -pthread

Stress-NG 0.14

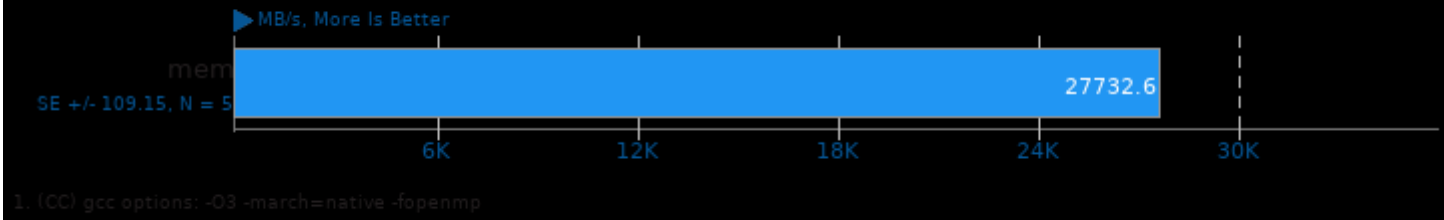
Test: Glibc Qsort Data Sorting



1. (CC) gcc options: -O2 -std=gnu99 -lm -laio -lapparmor -latomic -lc -lcrypt -ldl -ljpeg -lrt -lz -pthread

Stream 2013-01-17

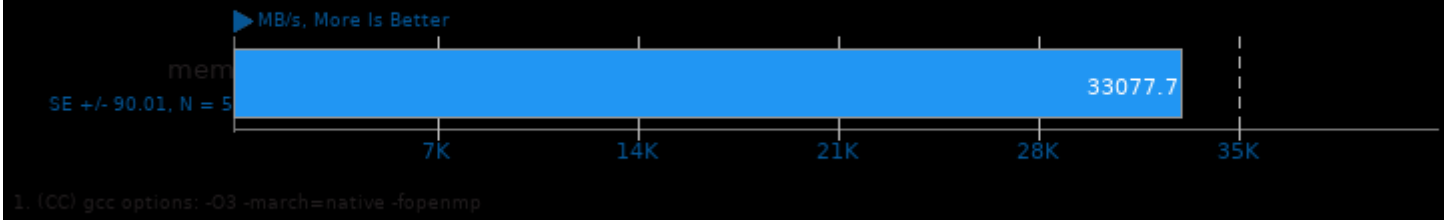
Type: Copy



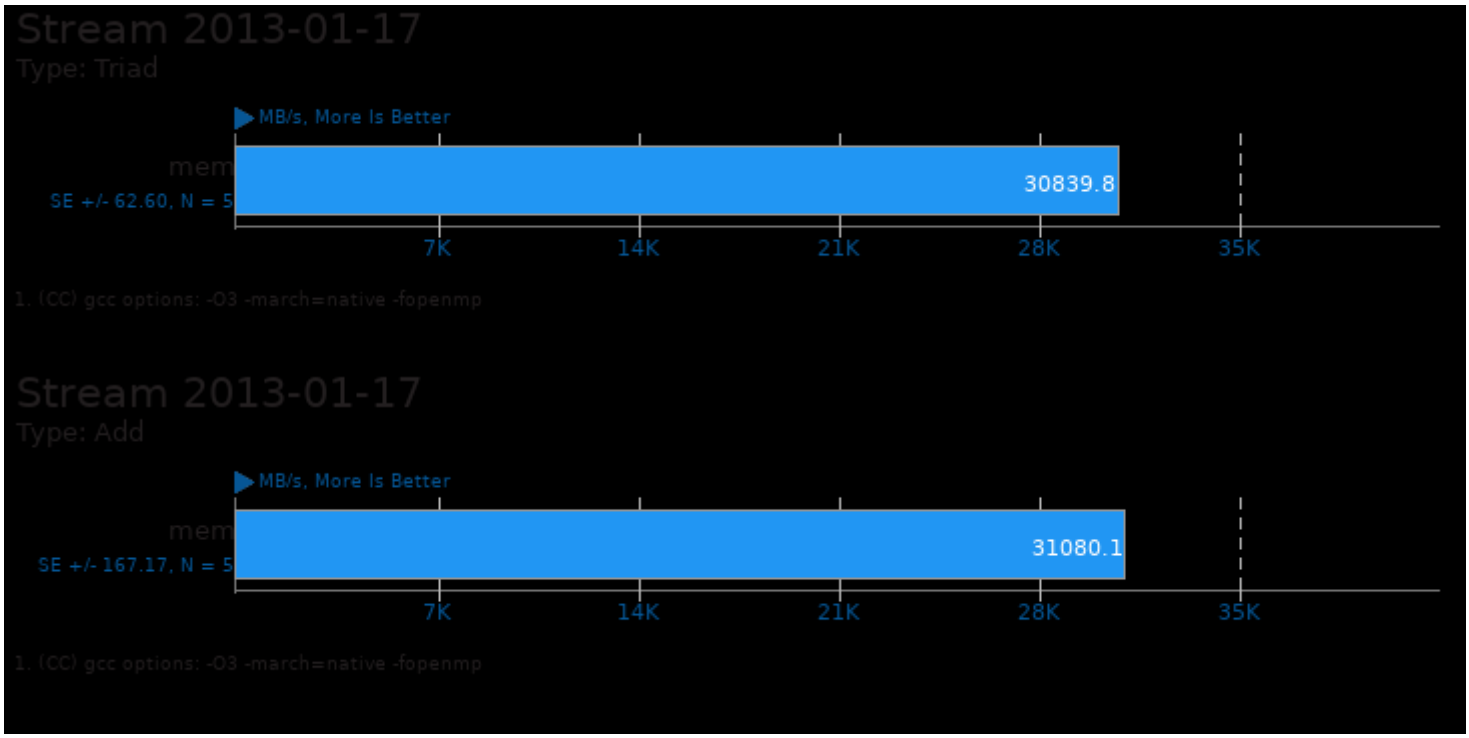
1. (CC) gcc options: -O3 -march=native -fopenmp

Stream 2013-01-17

Type: Scale



1. (CC) gcc options: -O3 -march=native -fopenmp



This file was automatically generated via the Phoronix Test Suite benchmarking software on Friday, 29 March 2024 03:01.