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Synology_RS3621XS_Plus

Xen HVM domU 4.13 testing on Debian 11 via the Phoronix Test Suite.

Automated Executive Summary

Raid F1 had the most wins, coming in first place for 66% of the tests.

Based on the geometric mean of all complete results, the fastest (Raid F1) was 2.299x the speed of the slowest (debian c2).

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

Flexible IO Tester (Type: Sequential Write - Engine: POSIX AIO - Buffered: No - Direct: Yes - Block Size: 64KB - Disk Target: Default Test Directory) at 6.484x
Flexible IO Tester (Type: Sequential Write - Engine: POSIX AIO - Buffered: No - Direct: Yes - Block Size: 64KB - Disk Target: Default Test Directory) at 6.474x
Flexible IO Tester (Type: Sequential Write - Engine: POSIX AIO - Buffered: No - Direct: Yes - Block Size: 4KB - Disk Target: Default Test Directory) at 6.443x
Flexible IO Tester (Type: Sequential Write - Engine: POSIX AIO - Buffered: No - Direct: Yes - Block Size: 4KB - Disk Target: Default Test Directory) at 6.419x
Flexible IO Tester (Type: Random Write - Engine: POSIX AIO - Buffered: No - Direct: Yes - Block Size: 64KB - Disk Target: Default Test Directory) at 5.733x

Flexible IO Tester (Type: Random Write - Engine: POSIX AIO - Buffered: No - Direct: Yes - Block Size: 64KB - Disk Target: Default Test Directory) at 5.733x
Flexible IO Tester (Type: Sequential Write - Engine: POSIX AIO - Buffered: No - Direct: Yes - Block Size: 1MB - Disk Target: Default Test Directory) at 4.847x
Flexible IO Tester (Type: Sequential Write - Engine: POSIX AIO - Buffered: No - Direct: Yes - Block Size: 1MB - Disk Target: Default Test Directory) at 4.823x
Flexible IO Tester (Type: Sequential Read - Engine: POSIX AIO - Buffered: No - Direct: Yes - Block Size: 4KB - Disk Target: Default Test Directory) at 1.68x
Flexible IO Tester (Type: Sequential Read - Engine: POSIX AIO - Buffered: No - Direct: Yes - Block Size: 4KB - Disk Target: Default Test Directory) at 1.676x.

Test Systems:

Raid F1

Processor: Intel Xeon D-1541 (12 Cores), Motherboard: QEMU Standard PC (i440FX + PIIX 1996) (Virtualization-2.5.1-9619-200306-0-gb56c451 BIOS), Chipset: Intel 440FX 82441FX PMC, Memory: 4096MB, Disk: 107GB iSCSI Storage, Graphics: VMware SVGA II, Network: Red Hat Virtio device

OS: Ubuntu 20.04, Kernel: 5.4.0-89-generic (x86_64), Vulkan: 1.0.2, Compiler: GCC 9.3.0, File-System: ext4, System Layer: microsoft VMware

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
Disk Notes: NONE / relatime,rw / Block Size: 4096
Processor Notes: CPU Microcode: 0x1
Security Notes: itlb_multihit: KVM: Vulnerable + l1tf: Mitigation of PTE Inversion + mds: Vulnerable: Clear buffers attempted no microcode; SMT Host state unknown + meltdown: Mitigation of PTI + 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 Full generic retpoline IBPB: conditional IBRS_FW STIBP: disabled RSB filling + srbds: Not affected + tsx_async_abort: Vulnerable: Clear buffers attempted no microcode; SMT Host state unknown

debian c2

Processor: AMD EPYC 7502 32-Core (8 Cores), Motherboard: Xen HVM domU v4.13, Chipset: Intel 440FX 82441FX PMC, Memory: 16GB, Disk: 15GB, Graphics: bochs-drmdrmfb

OS: Debian 11, Kernel: 5.10.0-9-amd64 (x86_64), Vulkan: 1.0.2, Compiler: GCC 10.2.1 20210110, File-System: ext4, Screen Resolution: 1024x768, System Layer: Xen HVM domU 4.13

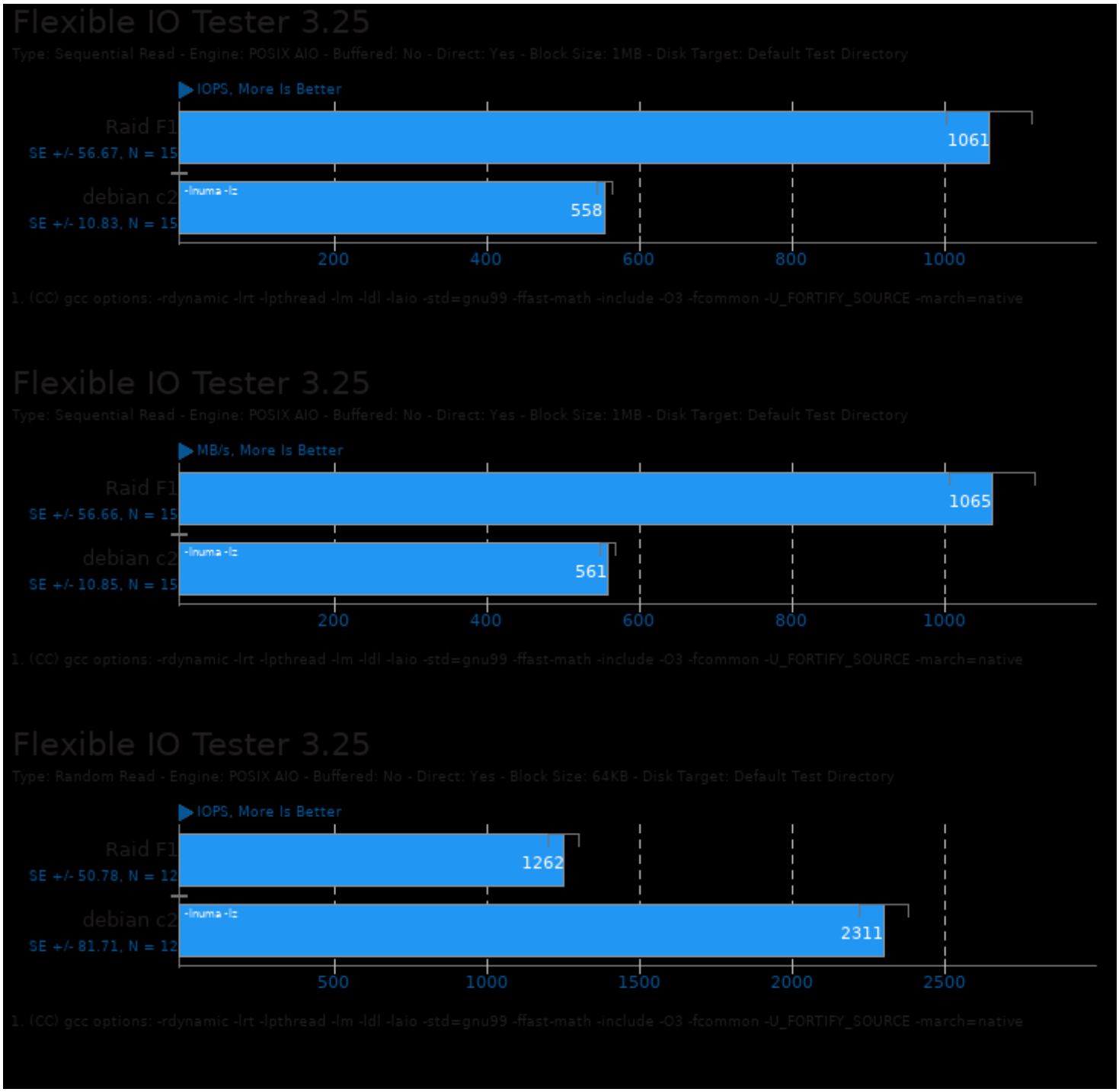
Kernel Notes: Transparent Huge Pages: always
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-link-mutex --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-10-Km9U7s/gcc-10-10.2.1/debian/tmp-nvptx/usr,amdgcn-amdhsa=/build/gcc-10-Km9U7s/gcc-10-10.2.1/debian/tmp-gcn/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-build-config=bootstrap-lto-lean --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: 0x830104d
Disk Mount Options Notes: errors=remount-ro,relatime,rw
Disk Details Notes: Block Size: 4096
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and

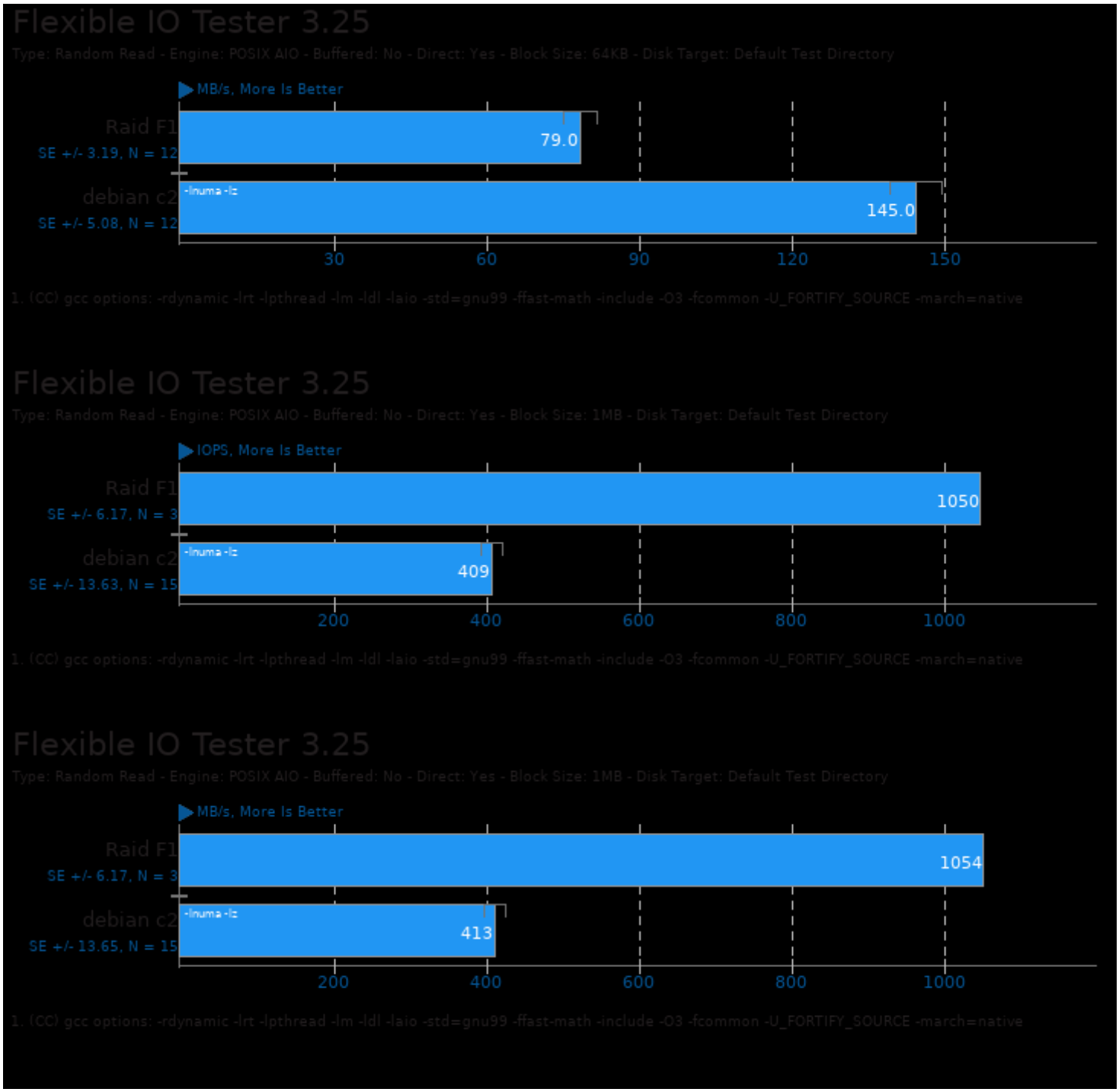
Synology_RS3621XS_Plus

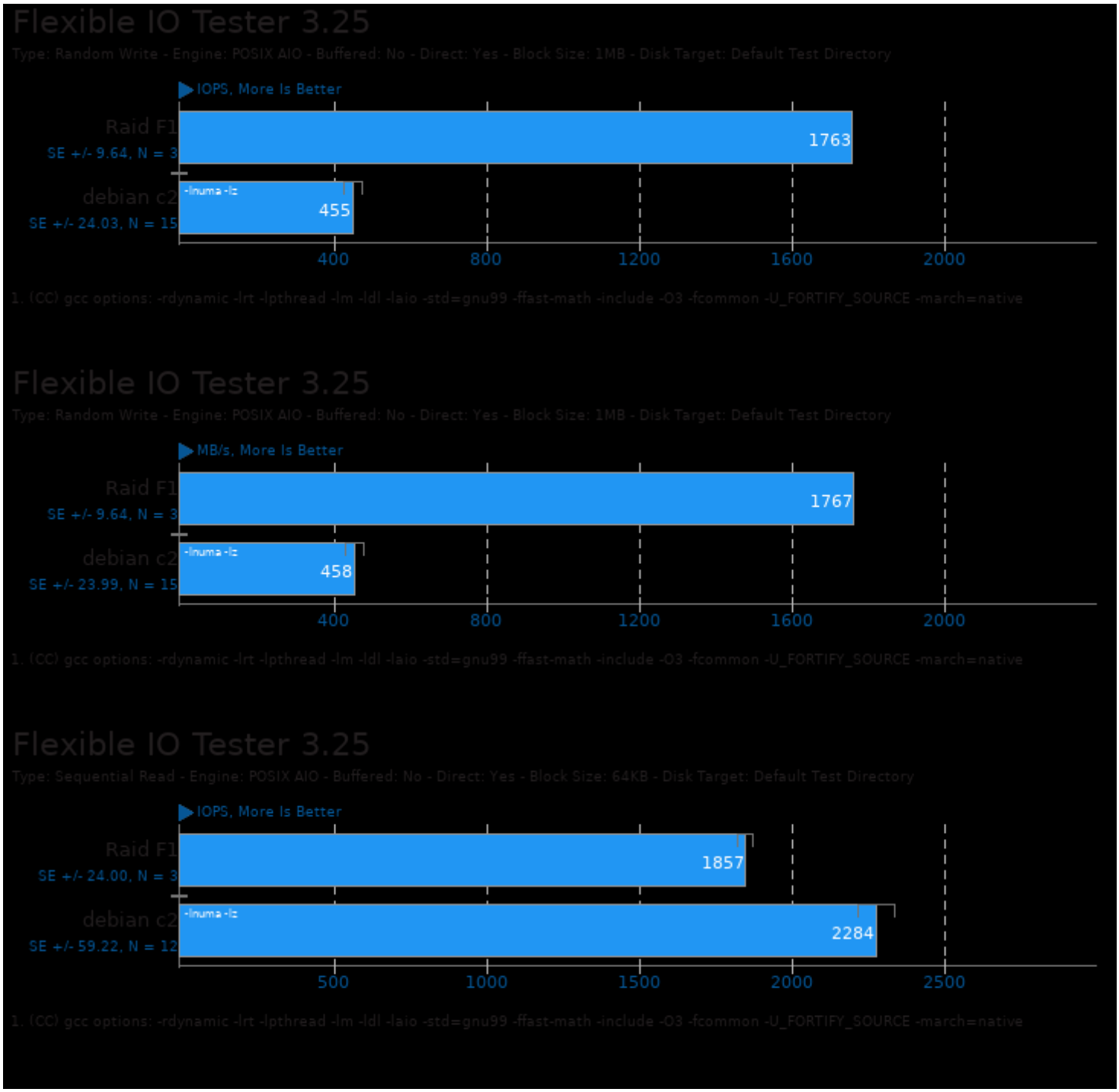
seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline IBPB: conditional STIBP: disabled RSB filling + srbds: Not affected + tsx_async_abort: Not affected

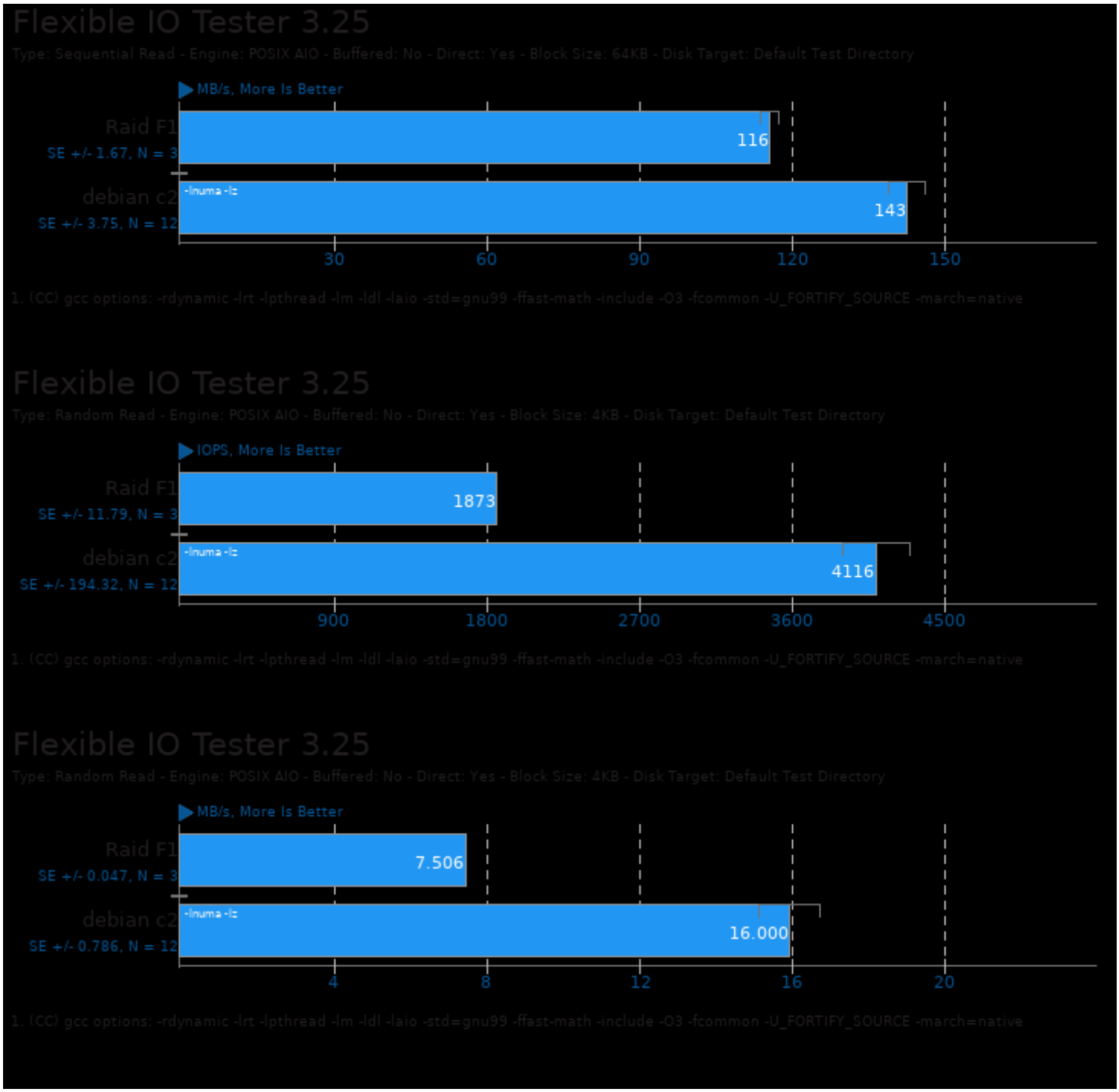
	Raid F1	debian c2
Flexible IO Tester - Seq Read - POSIX AIO - No - Yes - 1MB (IOPS)	**1061**	**558**
Normalized	100%	52.59%
Standard Deviation	20.7%	7.5%
Flexible IO Tester - Seq Read - POSIX AIO - No - Yes - 1MB (MB/s)	**1065**	**561**
Normalized	100%	52.68%
Standard Deviation	20.6%	7.5%
Flexible IO Tester - Rand Read - POSIX AIO - No - Yes - 64KB (IOPS)	**1262**	**2311**
Normalized	54.61%	100%
Standard Deviation	13.9%	12.3%
Flexible IO Tester - Rand Read - POSIX AIO - No - Yes - 64KB (MB/s)	**79.0**	**145**
Normalized	54.48%	100%
Standard Deviation	14%	12.2%
Flexible IO Tester - Rand Read - POSIX AIO - No - Yes - 1MB (IOPS)	**1050**	**409**
Normalized	100%	38.95%
Standard Deviation	1%	12.9%
Flexible IO Tester - Rand Read - POSIX AIO - No - Yes - 1MB (MB/s)	**1054**	**413**
Normalized	100%	39.18%
Standard Deviation	1%	12.8%
Flexible IO Tester - Rand Write - POSIX AIO - No - Yes - 1MB (IOPS)	**1763**	**455**
Normalized	100%	25.81%
Standard Deviation	0.9%	20.5%
Flexible IO Tester - Rand Write - POSIX AIO - No - Yes - 1MB (MB/s)	**1767**	**458**
Normalized	100%	25.92%
Standard Deviation	0.9%	20.3%
Flexible IO Tester - Seq Read - POSIX AIO - No - Yes - 64KB (IOPS)	**1857**	**2284**
Normalized	81.3%	100%
Standard Deviation	2.2%	9%
Flexible IO Tester - Seq Read - POSIX AIO - No - Yes - 64KB (MB/s)	**116**	**143**
Normalized	81.12%	100%
Standard Deviation	2.5%	9.1%
Flexible IO Tester - Rand Read - POSIX AIO - No - Yes - 4KB (IOPS)	**1873**	**4116**
Normalized	45.51%	100%
Standard Deviation	1.1%	16.4%

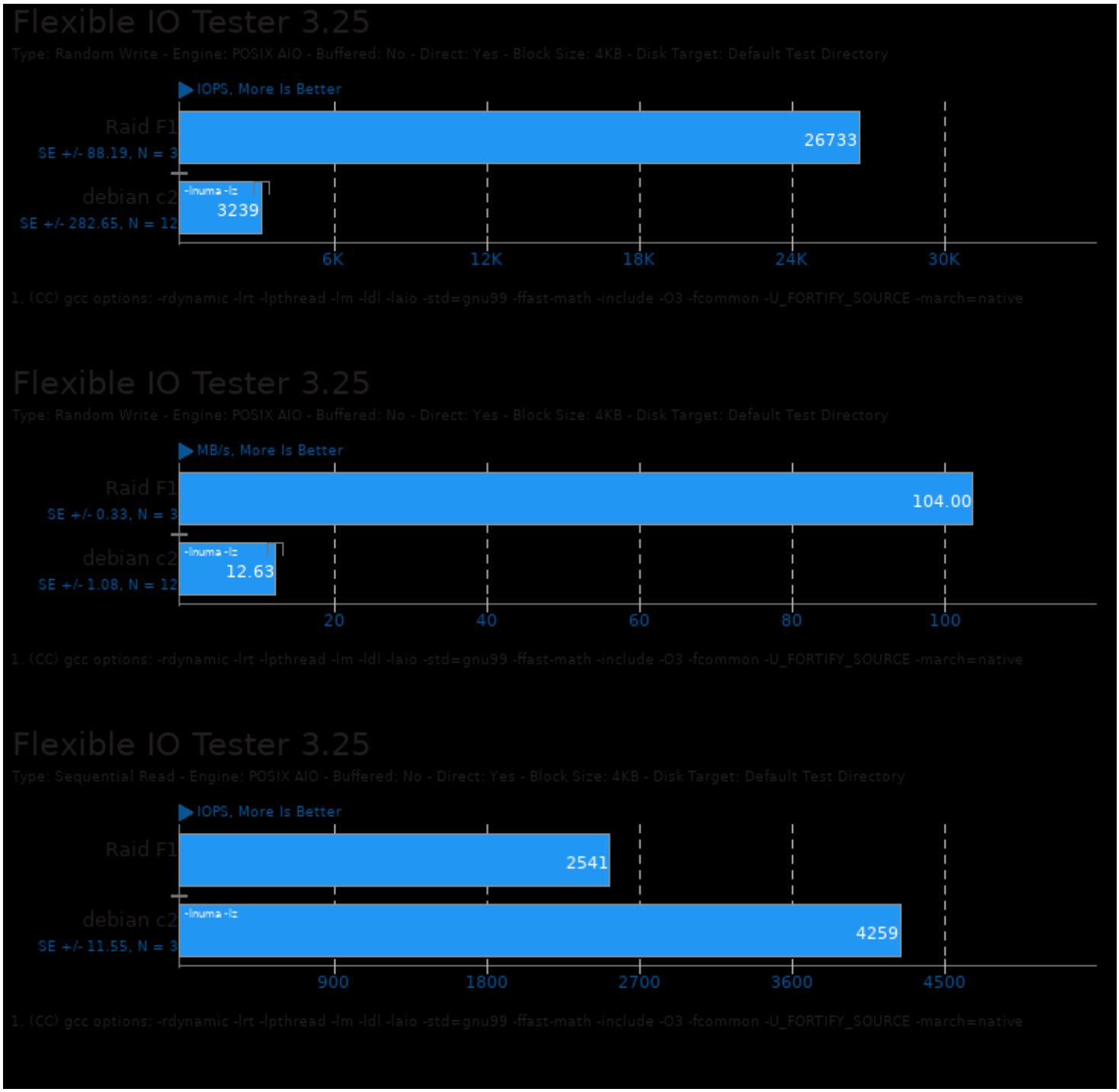
Flexible IO Tester - Rand Read - POSIX AIO - No - Yes - 4KB (MB/s)	**7.506**	**16.0**
Normalized	46.91%	100%
Standard Deviation	1.1%	17%
Flexible IO Tester - Rand Write - POSIX AIO - No - Yes - 4KB (IOPS)	**26733**	**3239**
Normalized	100%	12.12%
Standard Deviation	0.6%	30.2%
Flexible IO Tester - Rand Write - POSIX AIO - No - Yes - 4KB (MB/s)	**104**	**12.626**
Normalized	100%	12.14%
Standard Deviation	0.6%	29.6%
Flexible IO Tester - Seq Read - POSIX AIO - No - Yes - 4KB (IOPS)	**2541**	**4259**
Normalized	59.66%	100%
Standard Deviation		0.5%
Flexible IO Tester - Seq Read - POSIX AIO - No - Yes - 4KB (MB/s)	**9.94**	**16.7**
Normalized	59.52%	100%
Standard Deviation	0.1%	0.3%
Flexible IO Tester - Seq Write - POSIX AIO - No - Yes - 1MB (IOPS)	**2118**	**437**
Normalized	100%	20.63%
Standard Deviation	1.1%	0.8%
Flexible IO Tester - Seq Write - POSIX AIO - No - Yes - 1MB (MB/s)	**2122**	**440**
Normalized	100%	20.74%
Standard Deviation	1.1%	0.8%
Flexible IO Tester - Rand Write - POSIX AIO - No - Yes - 64KB (IOPS)	**12033**	**2099**
Normalized	100%	17.44%
Standard Deviation	1.3%	1.9%
Flexible IO Tester - Rand Write - POSIX AIO - No - Yes - 64KB (MB/s)	**751**	**131**
Normalized	100%	17.44%
Standard Deviation	1.3%	2.2%
Flexible IO Tester - Seq Write - POSIX AIO - No - Yes - 64KB (IOPS)	**17700**	**2730**
Normalized	100%	15.42%
Standard Deviation	0.6%	1.8%
Flexible IO Tester - Seq Write - POSIX AIO - No - Yes - 64KB (MB/s)	**1107**	**171**
Normalized	100%	15.45%
Standard Deviation	0.5%	1.9%
Flexible IO Tester - Seq Write - POSIX AIO - No - Yes - 4KB (IOPS)	**31833**	**4959**
Normalized	100%	15.58%
Standard Deviation	0.4%	1.8%
Flexible IO Tester - Seq Write - POSIX AIO - No - Yes - 4KB (MB/s)	**125**	**19.4**
Normalized	100%	15.52%
Standard Deviation	0.5%	1.9%

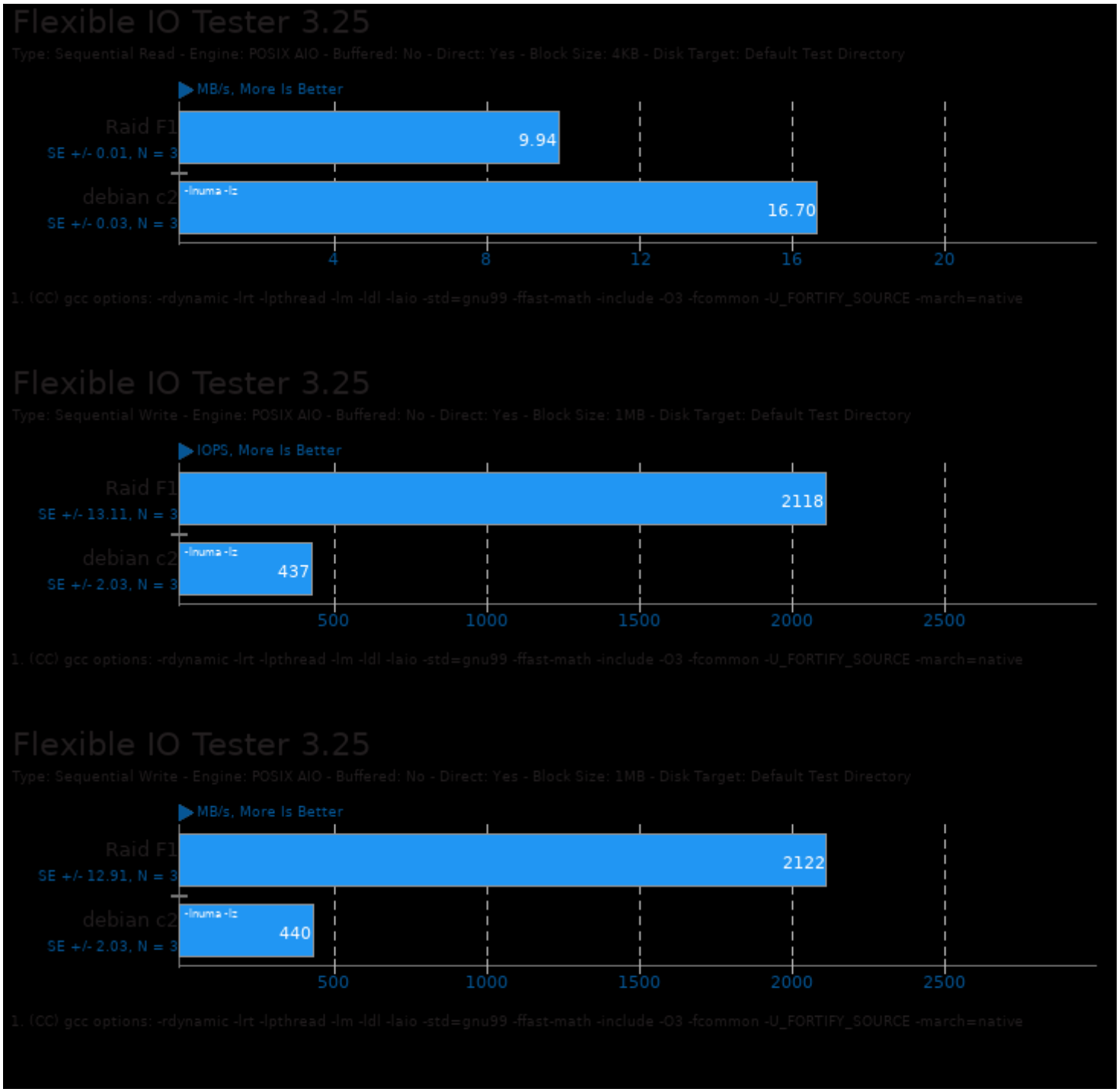

Flexible IO Tester 3.25
Type: Sequential Read - Engine: POSIX AIO - Buffered: No - Direct: Yes - Block Size: 1MB - Disk Target: Default Test Directory
IOPS, More Is Better
Raid F1
SE +/- 56.67, N = 15
1061
debian c2
SE +/- 10.83, N = 15
-linuma -lz
558
200
400
600
800
1000
1. (CC) gcc options: -rdynamic -lrt -lpthread -lm -ldl -laio -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE -march=native
Flexible IO Tester 3.25
Type: Sequential Read - Engine: POSIX AIO - Buffered: No - Direct: Yes - Block Size: 1MB - Disk Target: Default Test Directory
MB/s, More Is Better
Raid F1
SE +/- 56.66, N = 15
1065
debian c2
SE +/- 10.85, N = 15
-linuma -lz
561
200
400
600
800
1000
1. (CC) gcc options: -rdynamic -lrt -lpthread -lm -ldl -laio -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE -march=native
Flexible IO Tester 3.25
Type: Random Read - Engine: POSIX AIO - Buffered: No - Direct: Yes - Block Size: 64KB - Disk Target: Default Test Directory
IOPS, More Is Better
Raid F1
SE +/- 50.78, N = 12
1262
debian c2
SE +/- 81.71, N = 12
-linuma -lz
2311
500
1000
1500
2000
2500
1. (CC) gcc options: -rdynamic -lrt -lpthread -lm -ldl -laio -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE -march=native

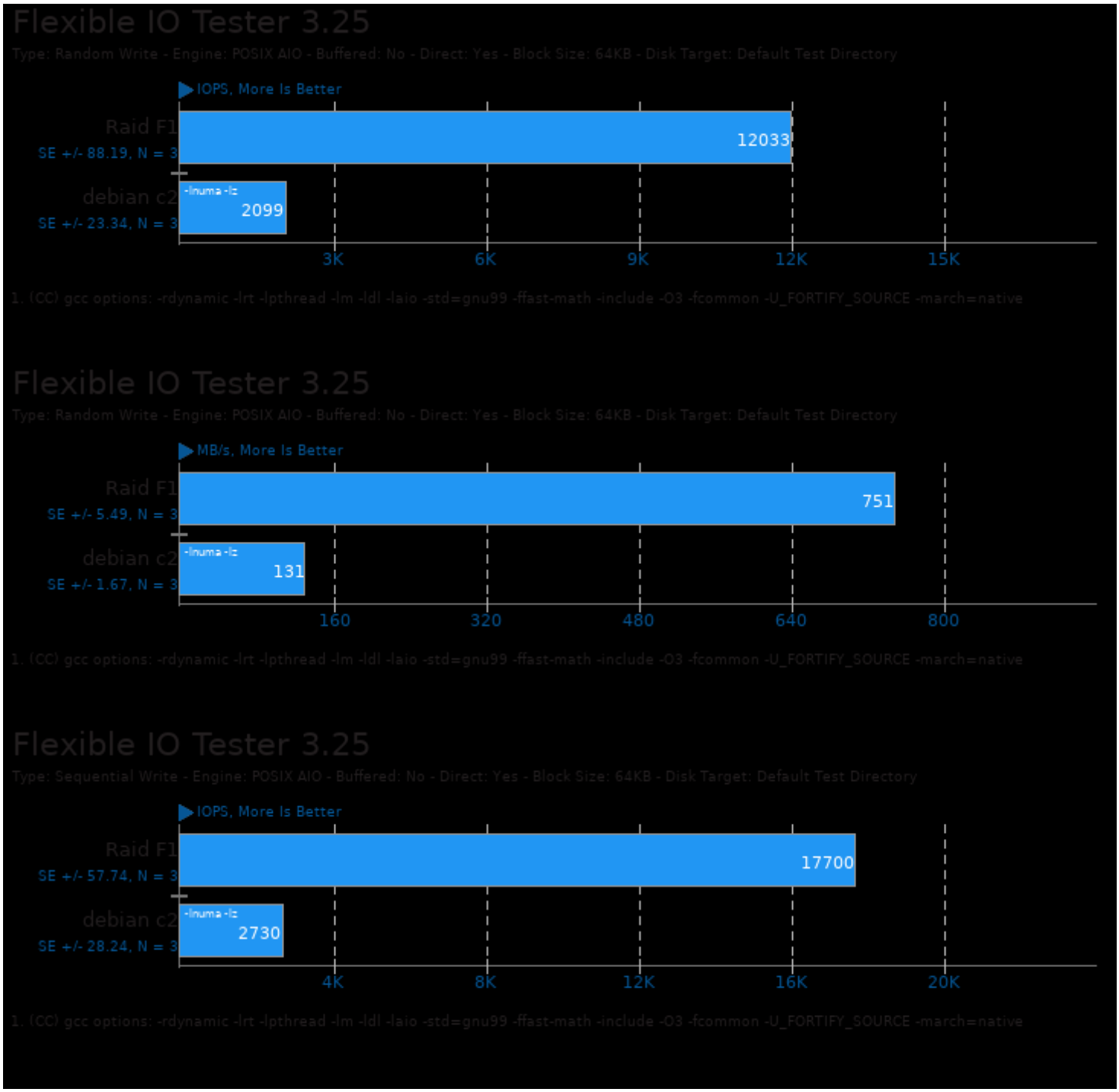

Flexible IO Tester 3.25
Type: Random Read - Engine: POSIX AIO - Buffered: No - Direct: Yes - Block Size: 64KB - Disk Target: Default Test Directory
MB/s, More Is Better
Raid F1
SE +/- 3.19, N = 12
79.0
debian c2
SE +/- 5.08, N = 12
-linuma -lz
145.0
30
60
90
120
150
1. (CC) gcc options: -rdynamic -lrt -lpthread -lm -ldl -laio -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE -march=native
Flexible IO Tester 3.25
Type: Random Read - Engine: POSIX AIO - Buffered: No - Direct: Yes - Block Size: 1MB - Disk Target: Default Test Directory
IOPS, More Is Better
Raid F1
SE +/- 6.17, N = 3
1050
debian c2
SE +/- 13.63, N = 15
-linuma -lz
409
200
400
600
800
1000
1. (CC) gcc options: -rdynamic -lrt -lpthread -lm -ldl -laio -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE -march=native
Flexible IO Tester 3.25
Type: Random Read - Engine: POSIX AIO - Buffered: No - Direct: Yes - Block Size: 1MB - Disk Target: Default Test Directory
MB/s, More Is Better
Raid F1
SE +/- 6.17, N = 3
1054
debian c2
SE +/- 13.65, N = 15
-linuma -lz
413
200
400
600
800
1000
1. (CC) gcc options: -rdynamic -lrt -lpthread -lm -ldl -laio -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE -march=native

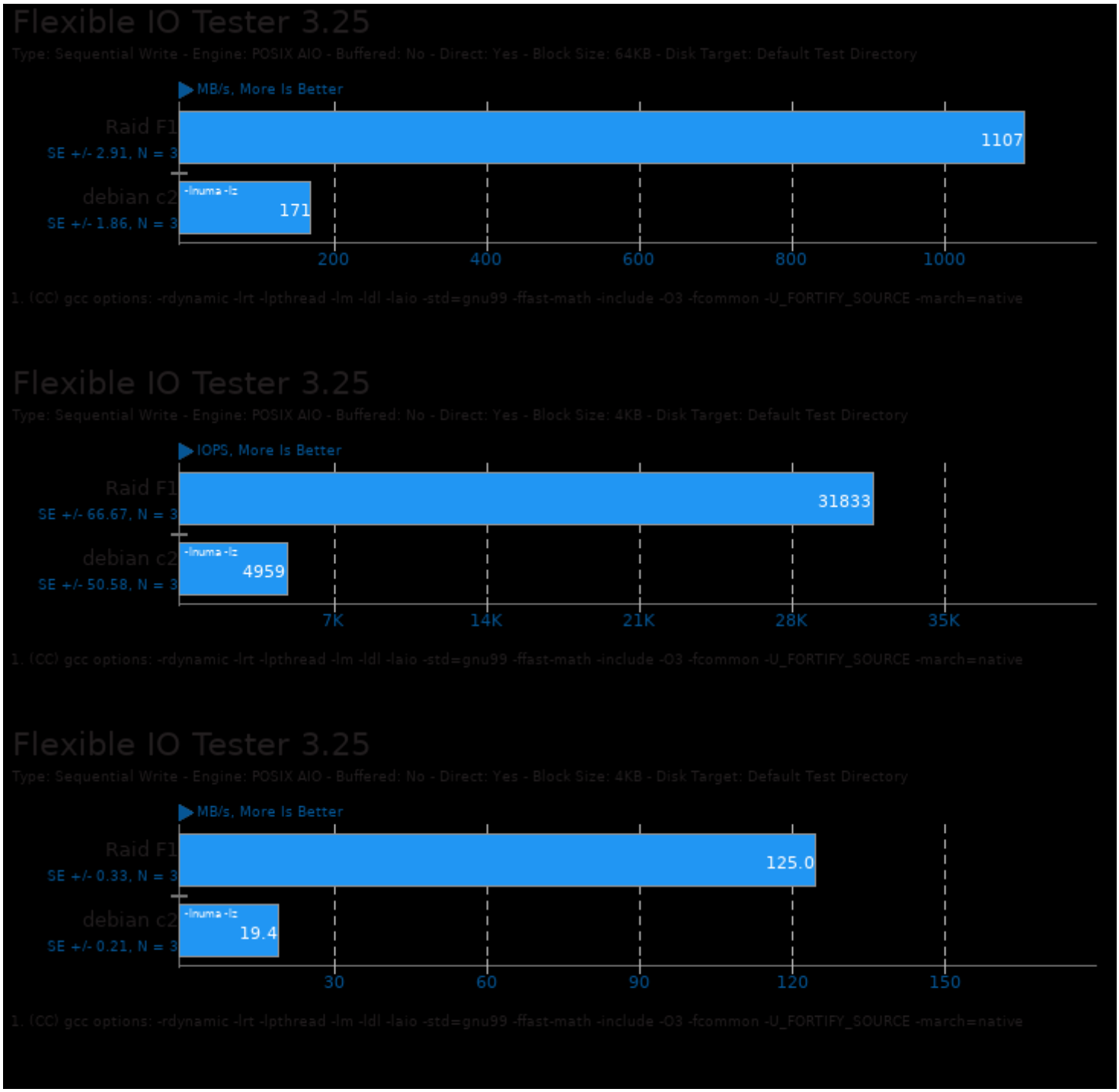

Flexible IO Tester 3.25
Type: Random Write - Engine: POSIX AIO - Buffered: No - Direct: Yes - Block Size: 1MB - Disk Target: Default Test Directory
IOPS, More Is Better
Raid F1
SE +/- 9.64, N = 3
1763
debian c2
SE +/- 24.03, N = 15
-lnuma -lz
455
400
800
1200
1600
2000
1. (CC) gcc options: -rdynamic -lrt -lpthread -lm -ldl -laio -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE -march=native
Flexible IO Tester 3.25
Type: Random Write - Engine: POSIX AIO - Buffered: No - Direct: Yes - Block Size: 1MB - Disk Target: Default Test Directory
MB/s, More Is Better
Raid F1
SE +/- 9.64, N = 3
1767
debian c2
SE +/- 23.99, N = 15
-lnuma -lz
458
400
800
1200
1600
2000
1. (CC) gcc options: -rdynamic -lrt -lpthread -lm -ldl -laio -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE -march=native
Flexible IO Tester 3.25
Type: Sequential Read - Engine: POSIX AIO - Buffered: No - Direct: Yes - Block Size: 64KB - Disk Target: Default Test Directory
IOPS, More Is Better
Raid F1
SE +/- 24.00, N = 3
1857
debian c2
SE +/- 59.22, N = 12
-lnuma -lz
2284
500
1000
1500
2000
2500
1. (CC) gcc options: -rdynamic -lrt -lpthread -lm -ldl -laio -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE -march=native


Flexible IO Tester 3.25
Type: Sequential Read - Engine: POSIX AIO - Buffered: No - Direct: Yes - Block Size: 64KB - Disk Target: Default Test Directory
MB/s, More Is Better
Raid F1
SE +/- 1.67, N = 3
116
debian c2
-linuma -lz
SE +/- 3.75, N = 12
143
30
60
90
120
150
1. (CC) gcc options: -rdynamic -lrt -lpthread -lm -ldl -laio -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE -march=native
Flexible IO Tester 3.25
Type: Random Read - Engine: POSIX AIO - Buffered: No - Direct: Yes - Block Size: 4KB - Disk Target: Default Test Directory
IOPS, More Is Better
Raid F1
SE +/- 11.79, N = 3
1873
debian c2
-linuma -lz
SE +/- 194.32, N = 12
4116
900
1800
2700
3600
4500
1. (CC) gcc options: -rdynamic -lrt -lpthread -lm -ldl -laio -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE -march=native
Flexible IO Tester 3.25
Type: Random Read - Engine: POSIX AIO - Buffered: No - Direct: Yes - Block Size: 4KB - Disk Target: Default Test Directory
MB/s, More Is Better
Raid F1
SE +/- 0.047, N = 3
7.506
debian c2
-linuma -lz
SE +/- 0.786, N = 12
16.000
4
8
12
16
20
1. (CC) gcc options: -rdynamic -lrt -lpthread -lm -ldl -laio -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE -march=native


Flexible IO Tester 3.25
Type: Random Write - Engine: POSIX AIO - Buffered: No - Direct: Yes - Block Size: 4KB - Disk Target: Default Test Directory
IOPS, More Is Better
Raid F1
SE +/- 88.19, N = 3
26733
debian c2
SE +/- 282.65, N = 12
-linuma -lz
3239
6K
12K
18K
24K
30K
1. (CC) gcc options: -rdynamic -lrt -lpthread -lm -ldl -laio -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE -march=native
Flexible IO Tester 3.25
Type: Random Write - Engine: POSIX AIO - Buffered: No - Direct: Yes - Block Size: 4KB - Disk Target: Default Test Directory
MB/s, More Is Better
Raid F1
SE +/- 0.33, N = 3
104.00
debian c2
SE +/- 1.08, N = 12
-linuma -lz
12.63
20
40
60
80
100
1. (CC) gcc options: -rdynamic -lrt -lpthread -lm -ldl -laio -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE -march=native
Flexible IO Tester 3.25
Type: Sequential Read - Engine: POSIX AIO - Buffered: No - Direct: Yes - Block Size: 4KB - Disk Target: Default Test Directory
IOPS, More Is Better
Raid F1
2541
debian c2
SE +/- 11.55, N = 3
-linuma -lz
4259
900
1800
2700
3600
4500
1. (CC) gcc options: -rdynamic -lrt -lpthread -lm -ldl -laio -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE -march=native


Flexible IO Tester 3.25
Type: Sequential Read - Engine: POSIX AIO - Buffered: No - Direct: Yes - Block Size: 4KB - Disk Target: Default Test Directory
MB/s, More Is Better
Raid F1
SE +/- 0.01, N = 3
9.94
debian c2
SE +/- 0.03, N = 3
-linuma -lz
16.70
4
8
12
16
20
1. (CC) gcc options: -rdynamic -lrt -lpthread -lm -ldl -laio -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE -march=native
Flexible IO Tester 3.25
Type: Sequential Write - Engine: POSIX AIO - Buffered: No - Direct: Yes - Block Size: 1MB - Disk Target: Default Test Directory
IOPS, More Is Better
Raid F1
SE +/- 13.11, N = 3
2118
debian c2
SE +/- 2.03, N = 3
-linuma -lz
437
500
1000
1500
2000
2500
1. (CC) gcc options: -rdynamic -lrt -lpthread -lm -ldl -laio -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE -march=native
Flexible IO Tester 3.25
Type: Sequential Write - Engine: POSIX AIO - Buffered: No - Direct: Yes - Block Size: 1MB - Disk Target: Default Test Directory
MB/s, More Is Better
Raid F1
SE +/- 12.91, N = 3
2122
debian c2
SE +/- 2.03, N = 3
-linuma -lz
440
500
1000
1500
2000
2500
1. (CC) gcc options: -rdynamic -lrt -lpthread -lm -ldl -laio -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE -march=native


Flexible IO Tester 3.25
Type: Random Write - Engine: POSIX AIO - Buffered: No - Direct: Yes - Block Size: 64KB - Disk Target: Default Test Directory
IOPS, More Is Better
Raid F1
SE +/- 88.19, N = 3
12033
debian c2
SE +/- 23.34, N = 3
-lnuma -lz
2099
3K
6K
9K
12K
15K
1. (CC) gcc options: -rdynamic -lrt -lpthread -lm -ldl -laio -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE -march=native
Flexible IO Tester 3.25
Type: Random Write - Engine: POSIX AIO - Buffered: No - Direct: Yes - Block Size: 64KB - Disk Target: Default Test Directory
MB/s, More Is Better
Raid F1
SE +/- 5.49, N = 3
751
debian c2
SE +/- 1.67, N = 3
-lnuma -lz
131
160
320
480
640
800
1. (CC) gcc options: -rdynamic -lrt -lpthread -lm -ldl -laio -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE -march=native
Flexible IO Tester 3.25
Type: Sequential Write - Engine: POSIX AIO - Buffered: No - Direct: Yes - Block Size: 64KB - Disk Target: Default Test Directory
IOPS, More Is Better
Raid F1
SE +/- 57.74, N = 3
17700
debian c2
SE +/- 28.24, N = 3
-lnuma -lz
2730
4K
8K
12K
16K
20K
1. (CC) gcc options: -rdynamic -lrt -lpthread -lm -ldl -laio -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE -march=native



This file was automatically generated via the Phoronix Test Suite benchmarking software on Friday, 29 March 2024 10:03.