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20200618_netapp

CSW_DS1_270122

Automated Executive Summary

20201013_netapp had the most wins, coming in first place for 45% of the tests.

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

Flexible IO Tester (Type: Random Read - Engine: POSIX AIO - Buffered: No - Direct: Yes - Block Size: 2MB - Disk Target: Default Test Directory) at 440x
Flexible IO Tester (Type: Random Write - Engine: Sync - Buffered: No - Direct: Yes - Block Size: 2MB - Disk Target: Default Test Directory) at 305x
Flexible IO Tester (Type: Random Write - Engine: POSIX AIO - Buffered: No - Direct: Yes - Block Size: 2MB - Disk Target: Default Test Directory) at 287x
Flexible IO Tester (Type: Random Read - Engine: POSIX AIO - Buffered: Yes - Direct: Yes - Block Size: 2MB - Disk Target: Default Test Directory) at 253x
Flexible IO Tester (Type: Random Read - Engine: Linux AIO - Buffered: Yes - Direct: Yes - Block Size: 2MB - Disk Target: Default Test Directory) at 252x
Flexible IO Tester (Type: Sequential Read - Engine: Sync - Buffered: No - Direct: Yes - Block Size: 2MB - Disk Target: Default Test Directory) at 246.5x
Flexible IO Tester (Type: Sequential Read - Engine: POSIX AIO - Buffered: No - Direct: Yes - Block Size: 2MB - Disk

Target: Default Test Directory) at 218x
Flexible IO Tester (Type: Sequential Read - Engine: Sync - Buffered: No - Direct: Yes - Block Size: 2MB - Disk Target: Default Test Directory) at 197.558x
Flexible IO Tester (Type: Random Write - Engine: Sync - Buffered: No - Direct: Yes - Block Size: 2MB - Disk Target: Default Test Directory) at 149.327x
Flexible IO Tester (Type: Sequential Write - Engine: Sync - Buffered: No - Direct: Yes - Block Size: 2MB - Disk Target: Default Test Directory) at 145.5x.

Test Systems:

20200618_netapp

Processor: 8 x Intel Xeon E5-2680 v3 (15 Cores), Motherboard: Intel 440BX (6.00 BIOS), Chipset: Intel 440BX/ZX/DX, Memory: 1 x 16384 MB DRAM, Disk: 54GB Virtual disk, Graphics: VMware SVGA II, Network: VMware VMXNET3

OS: CentOS Linux 8, Kernel: 4.18.0-147.el8.x86_64 (x86_64), Compiler: GCC 8.3.1 20190507, File-System: xfs, Screen Resolution: 1176x885, System Layer: VMware

Compiler Notes: --build=x86_64-redhat-linux --disable-libmpx --disable-libunwind-exceptions --enable-__cxa_atexit --enable-bootstrap --enable-cet --enable-checking=release --enable-gnu-indirect-function --enable-gnu-unique-object --enable-initfini-array --enable-languages=c,c++,fortran,lto --enable-multilib --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --mandir=/usr/share/man --with-arch_32=x86-64 --with-gcc-major-version-only --with-isl --with-linker-hash-style=gnu --with-tune=generic --without-cuda-driver
Disk Notes: MQ-DEADLINE / attr2,inode64,noquota,relatime,rw,seclabel
Processor Notes: CPU Microcode: 0x43
Security Notes: SELinux + l1tf: Mitigation of PTE Inversion + mds: Mitigation of Clear buffers; 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

20201012_netapp

20201013_netapp

20201029_netapp_vmfs1

20201029_netapp_vmfs1_1

Processor: 4 x Intel Xeon E5-2680 v3 (7 Cores), Motherboard: Intel 440BX (VMW71.00V.13989454.B64.1906190538 BIOS), Chipset: Intel 440BX/ZX/DX, Memory: 1 x 16384 MB DRAM VMW-16384MB, Disk: 21GB Virtual disk, Graphics: VMware SVGA II, Network: VMware VMXNET3

OS: CentOS Linux 8, Kernel: 4.18.0-147.8.1.el8_1.x86_64 (x86_64), Compiler: GCC 8.3.1 20190507, File-System: xfs, Screen Resolution: 1176x885, System Layer: VMware

Compiler Notes: --build=x86_64-redhat-linux --disable-libmpx --disable-libunwind-exceptions --enable-__cxa_atexit --enable-bootstrap --enable-cet --enable-checking=release --enable-gnu-indirect-function --enable-gnu-unique-object --enable-initfini-array --enable-languages=c,c++,fortran,lto --enable-multilib --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --mandir=/usr/share/man --with-arch_32=x86-64 --with-gcc-major-version-only --with-isl --with-linker-hash-style=gnu --with-tune=generic --without-cuda-driver
Disk Notes: MQ-DEADLINE / attr2,inode64,noquota,relatime,rw,seclabel
Processor Notes: CPU Microcode: 0x43
Security Notes: SELinux + itlb_multihit: vulnerable + l1tf: Mitigation of PTE Inversion + mds: Mitigation of Clear buffers; 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 + tsx_async_abort: Not affected

CSW_231220

CSW12_231220

test2_rem_later

test3_rem_later

test6_rem_later

Processor: 8 x Intel Xeon E5-2680 v3 (15 Cores), Motherboard: Intel 440BX (6.00 BIOS), Chipset: Intel 440BX/ZX/DX, Memory: 1 x 16384 MB DRAM, Disk: 54GB Virtual disk, Graphics: VMware SVGA II, Network: VMware VMXNET3

OS: CentOS Linux 8, Kernel: 4.18.0-147.8.1.el8_1.x86_64 (x86_64), Compiler: GCC 8.3.1 20190507, File-System: xfs, Screen Resolution: 1176x885, System Layer: VMware

Compiler Notes: --build=x86_64-redhat-linux --disable-libmpx --disable-libunwind-exceptions --enable-__cxa_atexit --enable-bootstrap --enable-cet --enable-checking=release --enable-gnu-indirect-function --enable-gnu-unique-object --enable-initfini-array --enable-languages=c,c++,fortran,lto --enable-multilib --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --mandir=/usr/share/man --with-arch_32=x86-64 --with-gcc-major-version-only --with-isl --with-linker-hash-style=gnu --with-tune=generic --without-cuda-driver
Disk Notes: MQ-DEADLINE / attr2,inode64,noquota,relatime,rw,seclabel
Processor Notes: CPU Microcode: 0x43
Security Notes: SELinux + itlb_multihit: vulnerable + l1tf: Mitigation of PTE Inversion + mds: Mitigation of Clear buffers; 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 + tsx_async_abort: Not affected

Virtual disk

CSW_DS1_270122

Processor: 8 x Intel Xeon E5-2640 v3 (15 Cores), Motherboard: Intel 440BX (6.00 BIOS), Chipset: Intel 440BX/ZX/DX, Memory: 1 x 16384 MB DRAM, Disk: 54GB Virtual disk, Graphics: VMware SVGA II, Network: VMware VMXNET3

OS: CentOS Linux 8, Kernel: 4.18.0-147.8.1.el8_1.x86_64 (x86_64), Compiler: GCC 8.3.1 20190507, File-System: xfs, Screen Resolution: 1176x885, System Layer: VMware

Compiler Notes: --build=x86_64-redhat-linux --disable-libmpx --disable-libunwind-exceptions --enable-__cxa_atexit --enable-bootstrap --enable-cet --enable-checking=release --enable-gnu-indirect-function --enable-gnu-unique-object --enable-initfini-array --enable-languages=c,c++,fortran,lto --enable-multilib --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --mandir=/usr/share/man --with-arch_32=x86-64 --with-gcc-major-version-only --with-isl --with-linker-hash-style=gnu --with-tune=generic --without-cuda-driver
Disk Notes: MQ-DEADLINE / attr2,inode64,noquota,relatime,rw,seclabel
Processor Notes: CPU Microcode: 0x43
Security Notes: SELinux + itlb_multihit: vulnerable + l1tf: Mitigation of PTE Inversion + mds: Mitigation of Clear buffers; 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 + tsx_async_abort: Not affected

	20200618_netapp	20201012_netapp	20201013_netapp	20201029_netapp_vmfs1	20201029_netapp_vmfs1_1	CSW_231220	CSW12_231220	test2_rem_later	test3_rem_later	test6_rem_later	Virtual disk	CSW_DS1_270122

20200618_netapp

Flexible IO Tester - Seq Read - POSIX AIO - No - Yes -	615	**878**	874	420	**8.834**	472
Normalized	70.05%	100%	99.54%	47.84%	1.01%	53.76%
Standard Deviation		1%	1.6%	2.8%	3.6%	2.9%
Flexible IO Tester - Rand Write - POSIX AIO - No - Yes -	563	578	**580**	283	**7.138**	350
Normalized	97.07%	99.66%	100%	48.79%	1.23%	60.34%
Standard Deviation	1.5%	1.3%	3.2%	2.8%	2.1%	3.6%
Flexible IO Tester - Rand Read - POSIX AIO - Yes - Yes - 2MB (MB/s)	411	509	**512**	295	**7.216**	345
Normalized	80.27%	99.41%	100%	57.62%	1.41%	67.38%
Standard Deviation	1%	2.5%	0.5%	3.2%	2.6%	3.6%
Flexible IO Tester - Seq Write - POSIX AIO - No - Yes -	541	569	**578**	280	**8.692**	527
Normalized	93.6%	98.44%	100%	48.44%	1.5%	91.18%
Standard Deviation	0.6%	0.9%	0.5%	2%	1.1%	6.9%
Flexible IO Tester - Rand Read - Linux AIO - Yes - Yes - 2MB	400	**510**	503	297	**10.21**	348
Normalized	78.43%	100%	98.63%	58.24%	2%	68.24%
Standard Deviation	2.9%	2.9%	3.8%		2.9%	3%
Flexible IO Tester - Rand Read - POSIX AIO - No - Yes -	333	**440**	433	189	**1**	221
Normalized	75.68%	100%	98.41%	42.95%	0.23%	50.23%
Standard Deviation	3%	1.4%		2.7%		6.1%
Flexible IO Tester - Rand Write - Sync - No - Yes - 2MB	291	**305**	303	136	**1**	175
Normalized	95.41%	100%	99.34%	44.59%	0.33%	57.38%
Standard Deviation			0.8%	2.6%	36.1%	3.8%
Flexible IO Tester - Rand Read - Linux AIO - No - Yes - 2MB	**753**	696	691	254	**251**	544
Normalized	100%	92.43%	91.77%	33.73%	33.33%	72.24%
Standard Deviation	2.3%	0.5%	0.2%	5.7%	0.8%	0.4%

Flexible IO Tester - Rand Write - POSIX AIO - No - Yes -	278	285	**287**	138	**1**		171
Normalized	96.86%	99.3%	100%	48.08%	0.35%		59.58%
Standard Deviation	1.6%	1.1%	3.3%	2.8%			3.7%
Flexible IO Tester - Rand Read - POSIX AIO - Yes - Yes - 2MB (IOPS)	202	251	**253**	144	**1**		169
Normalized	79.84%	99.21%	100%	56.92%	0.4%		66.8%
Standard Deviation	1%	2.5%	0.5%	3.2%			3.6%
Flexible IO Tester - Rand Read - Linux AIO - Yes - Yes - 2MB	197	**252**	248	145	**1**		170
Normalized	78.17%	100%	98.41%	57.54%	0.4%		67.46%
Standard Deviation	3%	2.9%	3.9%		37.6%		3%
Flexible IO Tester - Seq Read - Sync - No - Yes - 2MB	343	489	**493**	205	**2**		257
Normalized	69.57%	99.19%	100%	41.58%	0.41%		52.13%
Standard Deviation	2.9%	0.7%	0.9%	1.4%			2.6%
Flexible IO Tester - Seq Read - POSIX AIO - No - Yes -	304	**436**	433	206	**2**		232
Normalized	69.72%	100%	99.31%	47.25%	0.46%		53.21%
Standard Deviation		1.1%	1.5%	2.8%			2.9%
Flexible IO Tester - Rand Read - Linux AIO - No - Yes - 2MB	**1514**	1400	1389	514	**509**		1096
Normalized	100%	92.47%	91.74%	33.95%	33.62%		72.39%
Standard Deviation	2.3%	0.5%	0.2%	5.6%	0.7%		0.3%
Flexible IO Tester - Seq Read - Linux AIO - No - Yes - 2MB	**700**	696	693	255	**252**		545
Normalized	100%	99.43%	99%	36.43%	36%		77.86%
Standard Deviation	0.5%	0.2%	0.1%	4.9%	2.9%		
Flexible IO Tester - Seq Read - Linux AIO - No - Yes - 2MB	**1408**	1400	1394	517	**510**		1098
Normalized	100%	99.43%	99.01%	36.72%	36.22%		77.98%
Standard Deviation	0.5%	0.2%	0.1%	4.8%			

Flexible IO Tester - Seq Read - Linux AIO - Yes - Yes - 2MB	478	**553**	536	320	**231**	391
Normalized	86.44%	100%	96.93%	57.87%	41.77%	70.71%
Standard Deviation	1.5%		3%		1.6%	
Flexible IO Tester - Seq Read - Linux AIO - Yes - Yes - 2MB	963	**1114**	1079	648	**469**	790
Normalized	86.45%	100%	96.86%	58.17%	42.1%	70.92%
Standard Deviation	1.6%	0.3%	2.9%	0.2%	1.7%	
Flexible IO Tester - Seq Read - POSIX AIO - Yes - Yes - 2MB (IOPS)	505	**568**	551	343	**243**	419
Normalized	88.91%	100%	97.01%	60.39%	42.78%	73.77%
Standard Deviation	2.9%	2.8%	1.8%	3.8%	4.1%	1.6%
Flexible IO Tester - Rand Read - Sync - Yes - Yes - 2MB	212	259	**265**	224	**114**	180
Normalized	80%	97.74%	100%	84.53%	43.02%	67.92%
Standard Deviation	0.9%		0.6%	1.4%	1.3%	3.2%
Flexible IO Tester - Rand Read - Sync - Yes - Yes - 2MB	425	519	**531**	449	**229**	360
Normalized	80.04%	97.74%	100%	84.56%	43.13%	67.8%
Standard Deviation	1%		0.7%	1.6%	1.2%	3.2%
Flexible IO Tester - Seq Read - POSIX AIO - Yes - Yes - 2MB (MB/s)	1018	**1142**	1109	693	**494**	846
Normalized	89.14%	100%	97.11%	60.68%	43.26%	74.08%
Standard Deviation	2.9%	2.8%	1.8%	3.8%	4.1%	1.7%
Flexible IO Tester - Rand Write - Linux AIO - No - Yes - 2MB	**427**	407	355	205	**202**	222
Normalized	100%	95.32%	83.14%	48.01%	47.31%	51.99%
Standard Deviation	1.7%	2.7%	15.4%	7.3%	0.9%	4.2%

Flexible IO Tester - Seq Read - Sync - Yes - Yes - 2MB	477	**494**	**494**	288	**235**		373
Normalized	96.56%	100%	100%	58.3%	47.57%		75.51%
Standard Deviation	1.2%	3.3%	0.6%	7.1%	2.6%		
Flexible IO Tester - Seq Read - Sync - Yes - Yes - 2MB	955	988	**990**	578	**471**		746
Normalized	96.46%	99.8%	100%	58.38%	47.58%		75.35%
Standard Deviation	1.2%	3.2%	0.6%	7.2%	2.6%		
Flexible IO Tester - Rand Write - Linux AIO - No - Yes - 2MB	**862**	820	716	416	**411**		452
Normalized	100%	95.13%	83.06%	48.26%	47.68%		52.44%
Standard Deviation	1.7%	2.6%	15.2%	7.1%	0.8%		4.2%
Flexible IO Tester - Seq Read - Sync - No - Yes - 2MB	687	980	**987**	411	**4.996**		515
Normalized	69.6%	99.29%	100%	41.64%	0.51%		52.18%
Standard Deviation	3%	0.7%	0.8%	1.3%	8.7%		2.7%
Flexible IO Tester - Rand Write - Sync - No - Yes - 2MB	582	**610**	608	273	**4.085**		350
Normalized	95.41%	100%	99.67%	44.75%	0.67%		57.38%
Standard Deviation		0.3%	0.8%	2.6%	7.3%		3.8%
Flexible IO Tester - Seq Write - Sync - No - Yes - 2MB	281	288	289	141	**2**		**291**
Normalized	96.56%	98.97%	99.31%	48.45%	0.69%		100%
Standard Deviation	1.6%	2.9%		0.8%			
Flexible IO Tester - Seq Write - POSIX AIO - No - Yes -	266	281	**285**	136	**2**		260
Normalized	93.33%	98.6%	100%	47.72%	0.7%		91.23%
Standard Deviation	0.6%	0.9%	0.5%	2.2%			7%
Flexible IO Tester - Seq Write - Sync - No - Yes - 2MB	563	578	580	282	**4.743**		**583**
Normalized	96.57%	99.14%	99.49%	48.37%	0.81%		100%
Standard Deviation	1.7%	2.9%	1.8%	0.7%	2.2%		

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Flexible IO Tester - Rand Read - POSIX AIO - No - Yes -	674	**888**	874	386	**7.501**	448
Normalized	75.9%	100%	98.42%	43.47%	0.84%	50.45%
Standard Deviation	2.9%	1.3%		2.9%	5.8%	5.9%
Flexible IO Tester - Seq Write - Sync - Yes - Yes - 2MB	560	576	**613**	**308**	431	516
Normalized	91.35%	93.96%	100%	50.24%	70.31%	84.18%
Standard Deviation	3.2%	0.3%	5.9%	7.8%	4.1%	9%
Flexible IO Tester - Seq Write - Sync - Yes - Yes - 2MB	280	287	**306**	**154**	215	257
Normalized	91.5%	93.79%	100%	50.33%	70.26%	83.99%
Standard Deviation	3.2%	0.3%	5.9%	7.8%	4.1%	9%
Flexible IO Tester - Rand Write - POSIX AIO - Yes - Yes - 2MB (IOPS)	288	301	**309**	**157**	212	259
Normalized	93.2%	97.41%	100%	50.81%	68.61%	83.82%
Standard Deviation	2.8%	1.8%	1.1%	5.3%	0.7%	4.3%
Flexible IO Tester - Seq Write - Linux AIO - Yes - Yes - 2MB	274	288	**290**	**149**	204	250
Normalized	94.48%	99.31%	100%	51.38%	70.34%	86.21%
Standard Deviation	1.5%	3.4%	2.9%	5.1%	4.6%	6.2%
Flexible IO Tester - Rand Write - POSIX AIO - Yes - Yes - 2MB (MB/s)	582	609	**624**	**321**	431	526
Normalized	93.27%	97.6%	100%	51.44%	69.07%	84.29%
Standard Deviation	2.8%	1.7%	1.1%	5.1%	0.7%	4.3%
Flexible IO Tester - Seq Write - Linux AIO - Yes - Yes - 2MB	555	584	**587**	**305**	415	507
Normalized	94.55%	99.49%	100%	51.96%	70.7%	86.37%
Standard Deviation	1.6%	3.4%	2.9%	5%	4.6%	6.1%

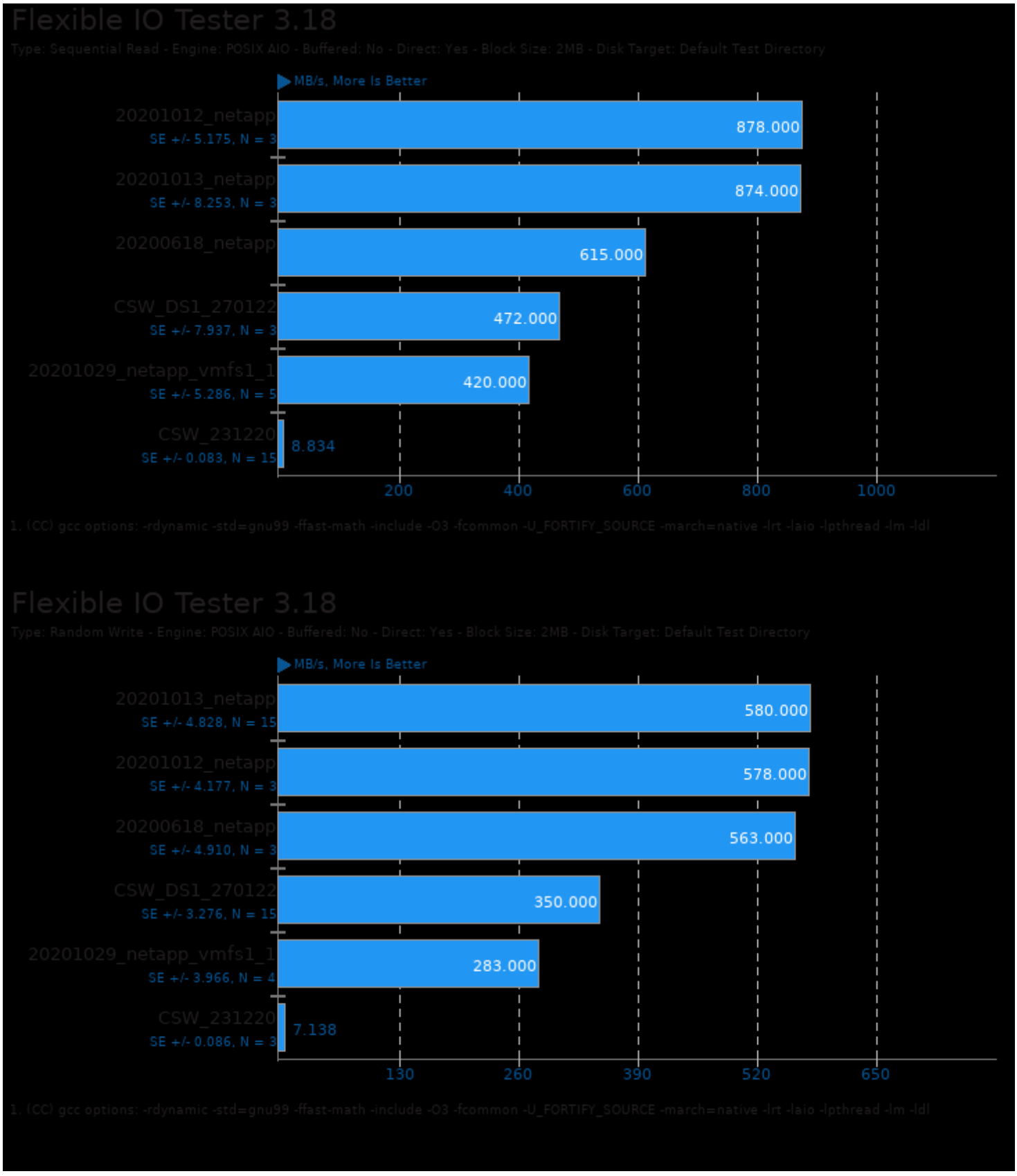
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Flexible IO Tester - Rand Write - Linux AIO - Yes - Yes - 2MB	267	**282**	281	**148**	208	245
Normalized	94.68%	100%	99.65%	52.48%	73.76%	86.88%
Standard Deviation	1.5%	2.5%	1.1%	6.3%	3.5%	4.6%
Flexible IO Tester - Seq Write - POSIX AIO - Yes - Yes - 2MB (IOPS)	281	293	**294**	**155**	201	264
Normalized	95.58%	99.66%	100%	52.72%	68.37%	89.8%
Standard Deviation	3.1%	4.2%	6%	5.5%	0.8%	6%
Flexible IO Tester - Rand Write - Linux AIO - Yes - Yes - 2MB	542	**571**	570	**303**	424	497
Normalized	94.92%	100%	99.82%	53.06%	74.26%	87.04%
Standard Deviation	1.4%	2.4%	1.2%	6.2%	3.5%	4.5%
Flexible IO Tester - Seq Write - Linux AIO - No - Yes - 2MB	**376**	344	348	**200**	290	316
Normalized	100%	91.49%	92.55%	53.19%	77.13%	84.04%
Standard Deviation	2%	8.1%	6%	4.9%	3.1%	3%
Flexible IO Tester - Seq Write - POSIX AIO - Yes - Yes - 2MB (MB/s)	570	**594**	**594**	**318**	410	534
Normalized	95.96%	100%	100%	53.54%	69.02%	89.9%
Standard Deviation	2.9%	4.3%	5.9%	5.4%	0.9%	5.9%
Flexible IO Tester - Seq Write - Linux AIO - No - Yes - 2MB	**760**	695	703	**407**	587	640
Normalized	100%	91.45%	92.5%	53.55%	77.24%	84.21%
Standard Deviation	1.9%	8.1%	6%	4.8%	2.9%	3%
Flexible IO Tester - Rand Write - Sync - Yes - Yes - 2MB	283	290	**293**	**160**	214	257
Normalized	96.59%	98.98%	100%	54.61%	73.04%	87.71%
Standard Deviation	1.1%	5%	4.4%	1.8%	4.2%	8.1%

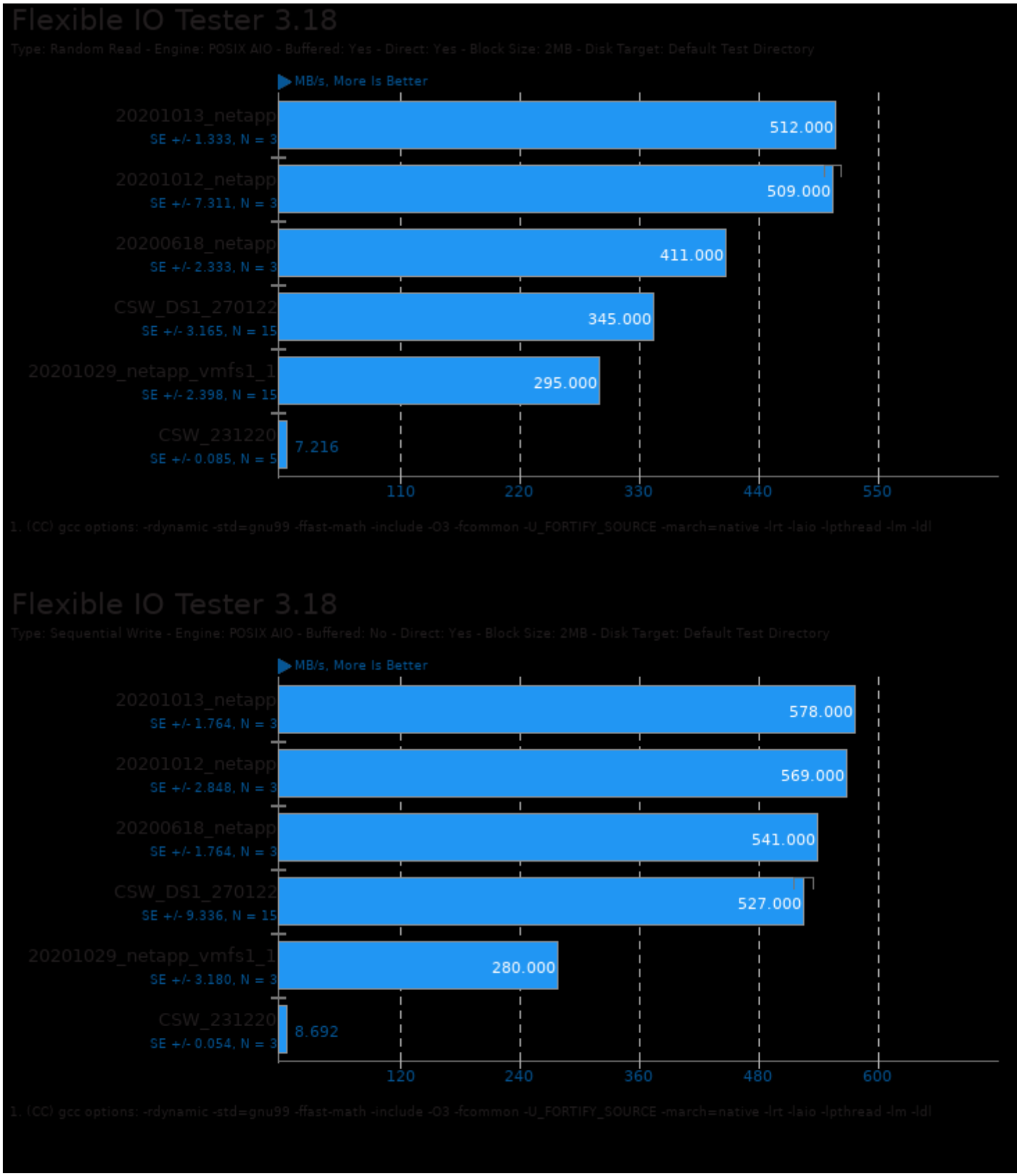
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Flexible IO Tester - Rand Write - Sync - Yes - Yes - 2MB	566	581	**586**	**321**	430				515
Normalized	96.59%	99.15%	100%	54.78%	73.38%				87.88%
Standard Deviation	1.2%	5%	4.4%	2%	4.3%				8.1%
Flexible IO Tester - Rand Read - Sync - No - Yes - 2MB	344	477	**483**	279	128	**1**	**1**	2	257
Normalized	71.22%	98.76%	100%	57.76%	26.5%	0.21%	0.21%	0.41%	53.21%
Standard Deviation	1.8%	10.9%	4.8%	51.4%	5.6%		34.5%		11%
Flexible IO Tester - Rand Read - Sync - No - Yes - 2MB	690	955	**966**	558.5	257	**3.910**	4.146	5.827	515
Normalized	71.43%	98.86%	100%	57.82%	26.6%	0.4%	0.43%	0.6%	53.31%
Standard Deviation	1.8%	10.9%	4.8%	51.3%	5.6%	2.3%	10.5%	99.5%	11%

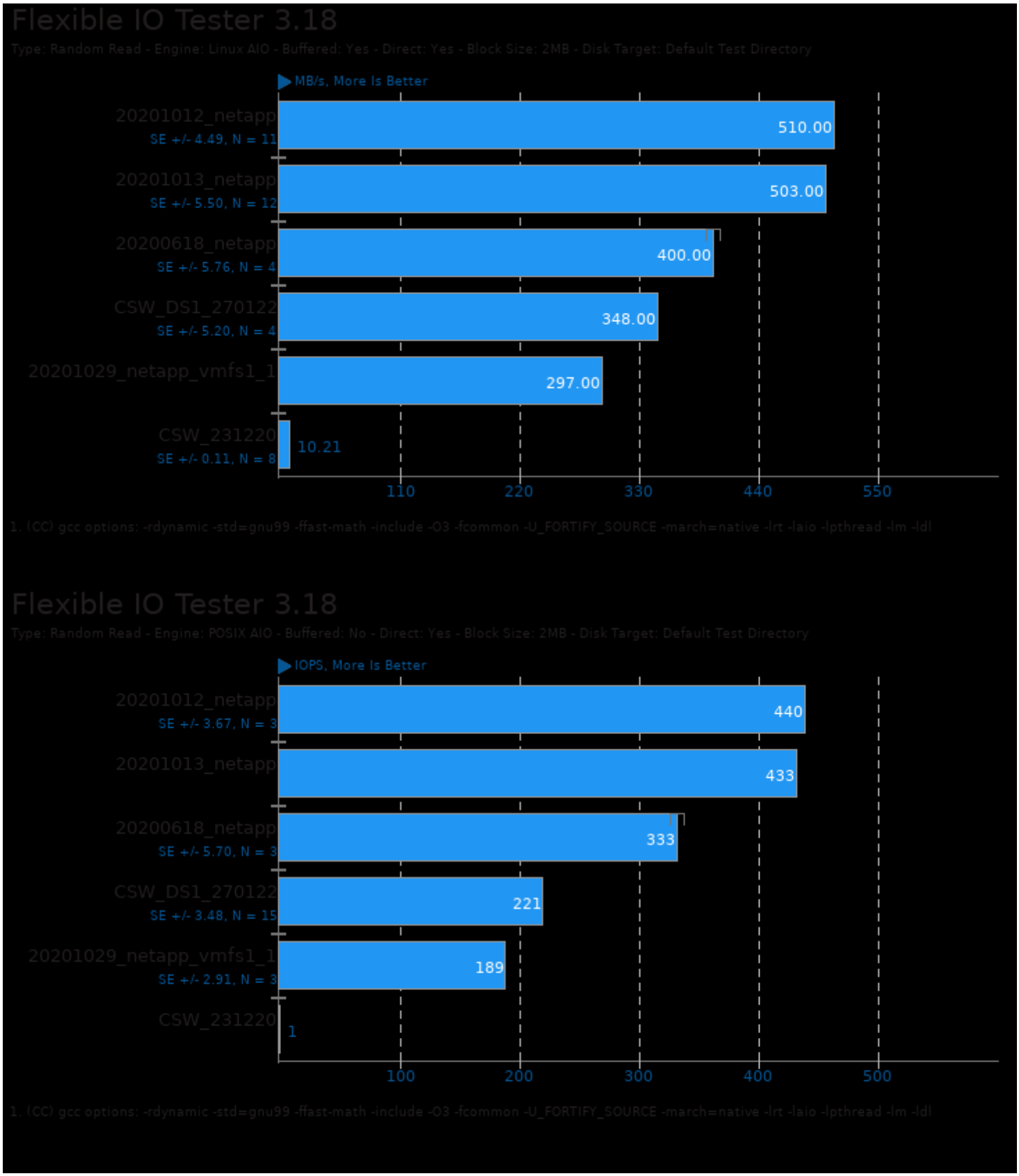
20200618_netapp

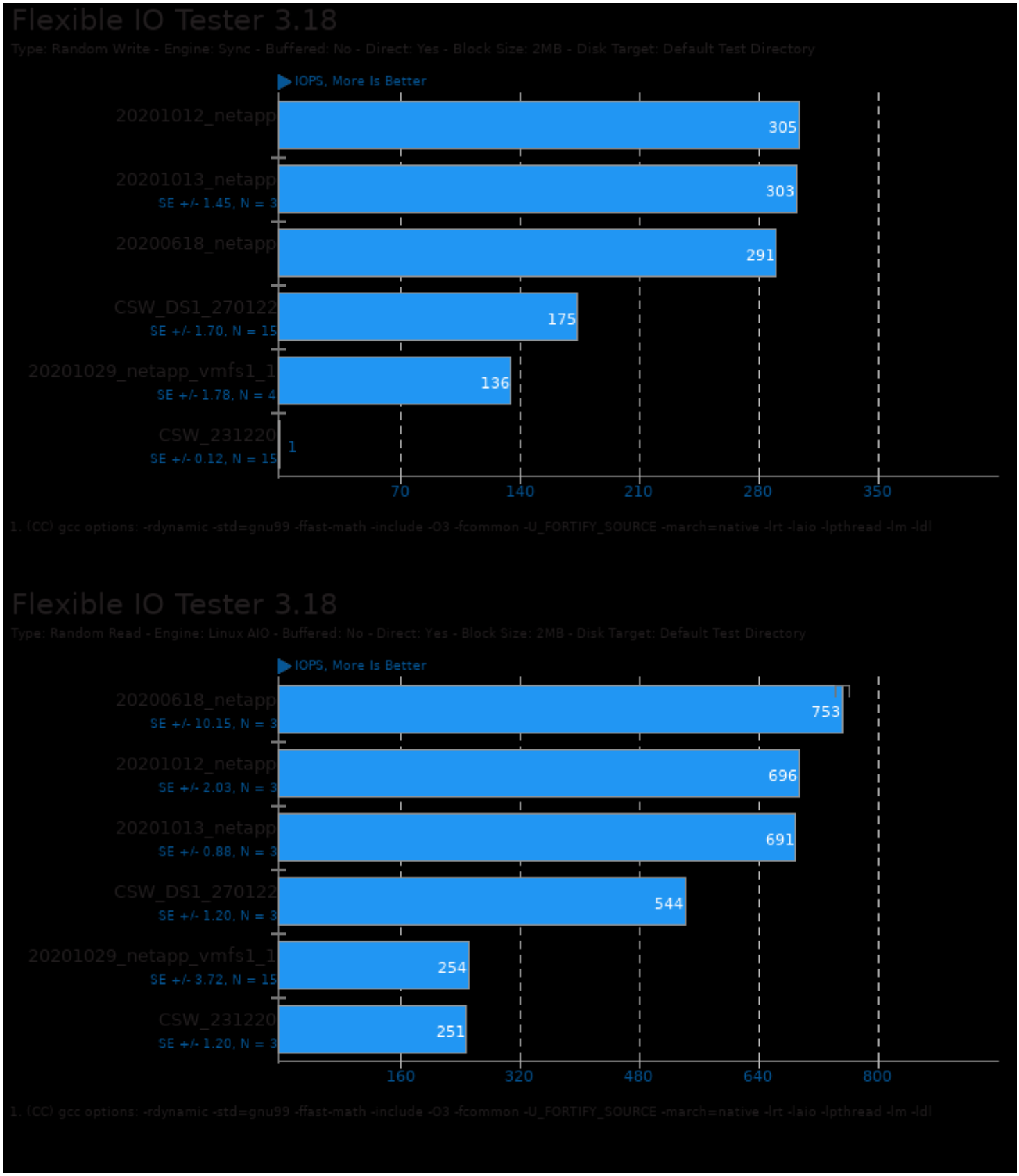


20200618_netapp

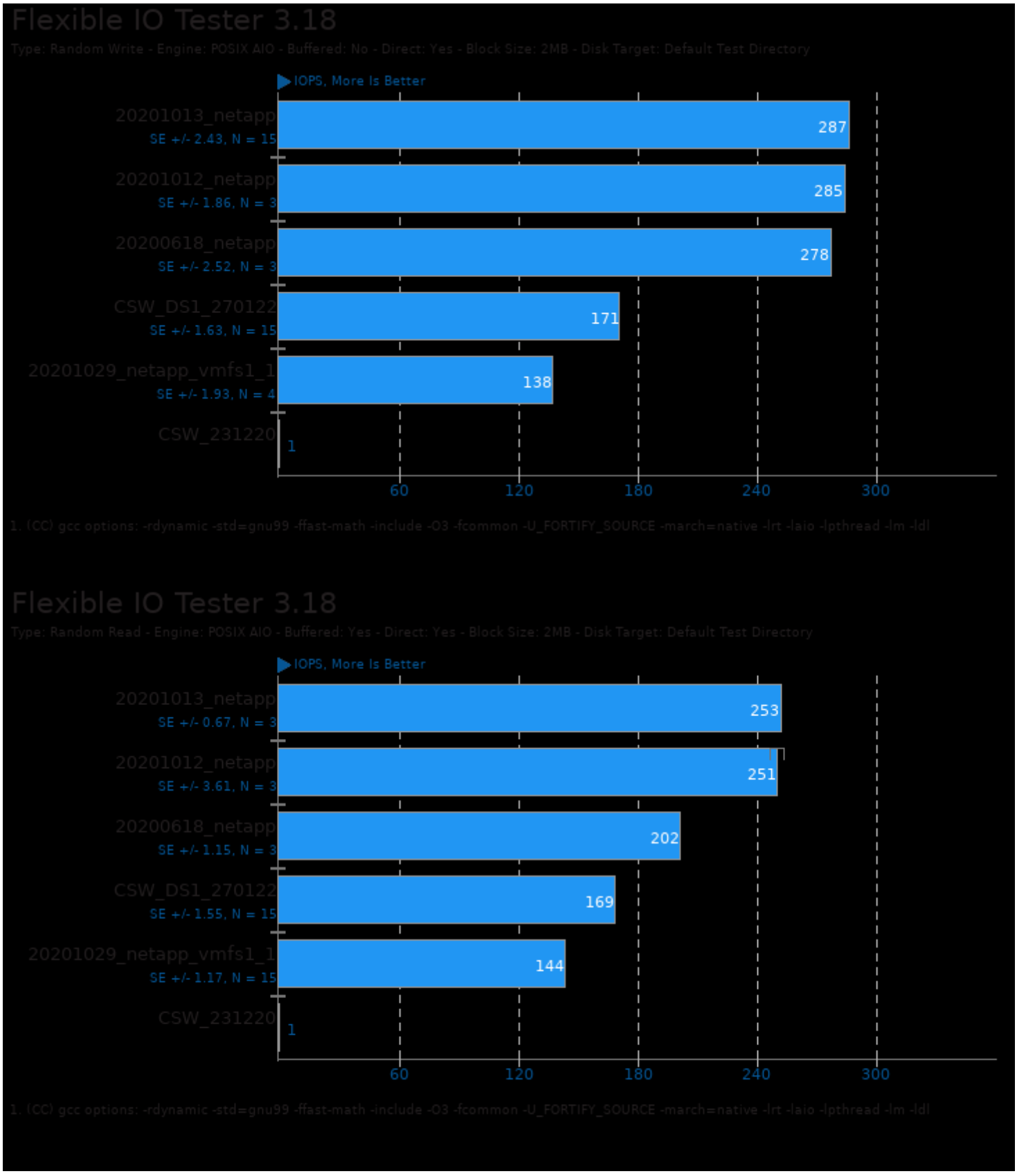


20200618_netapp

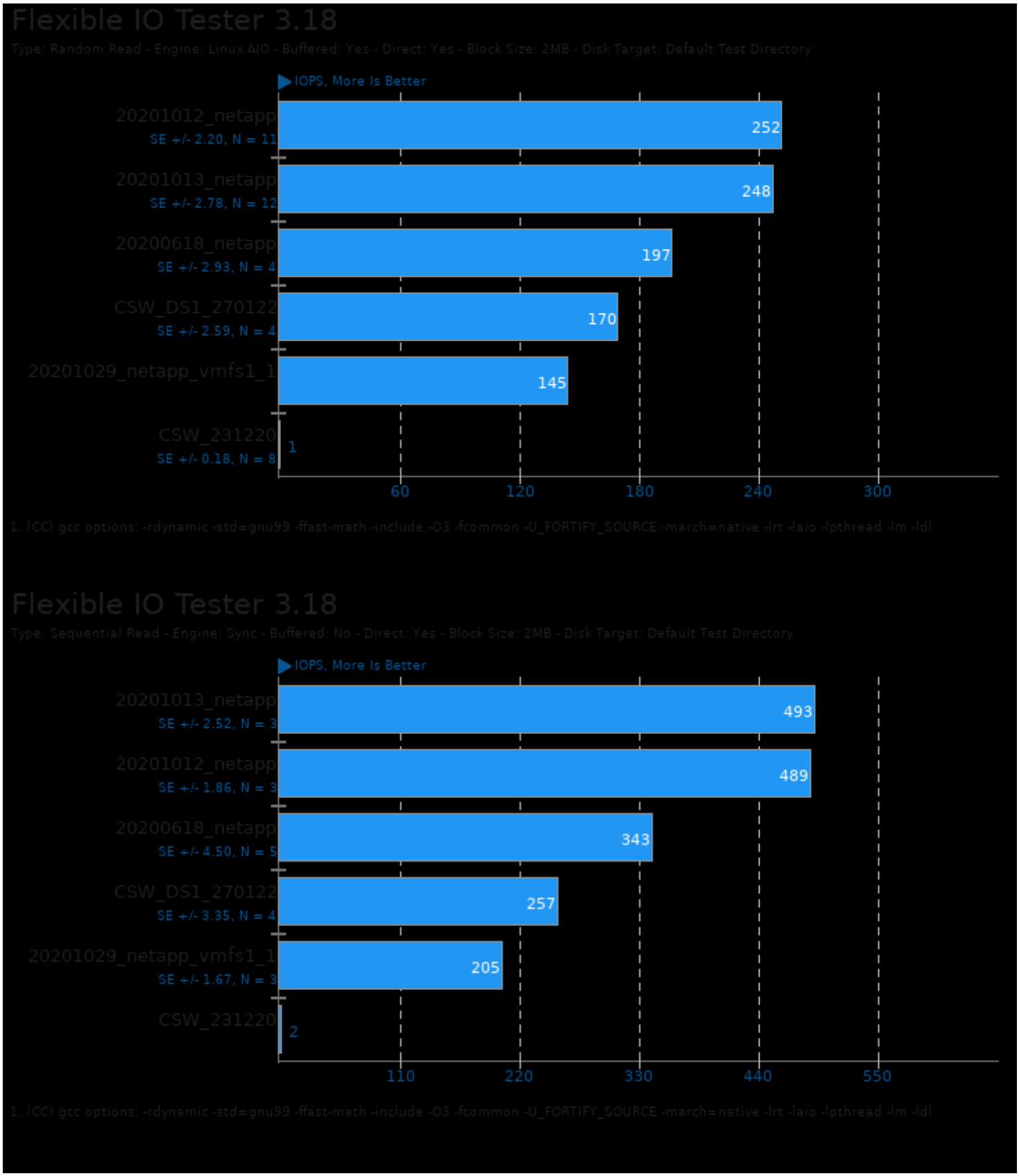


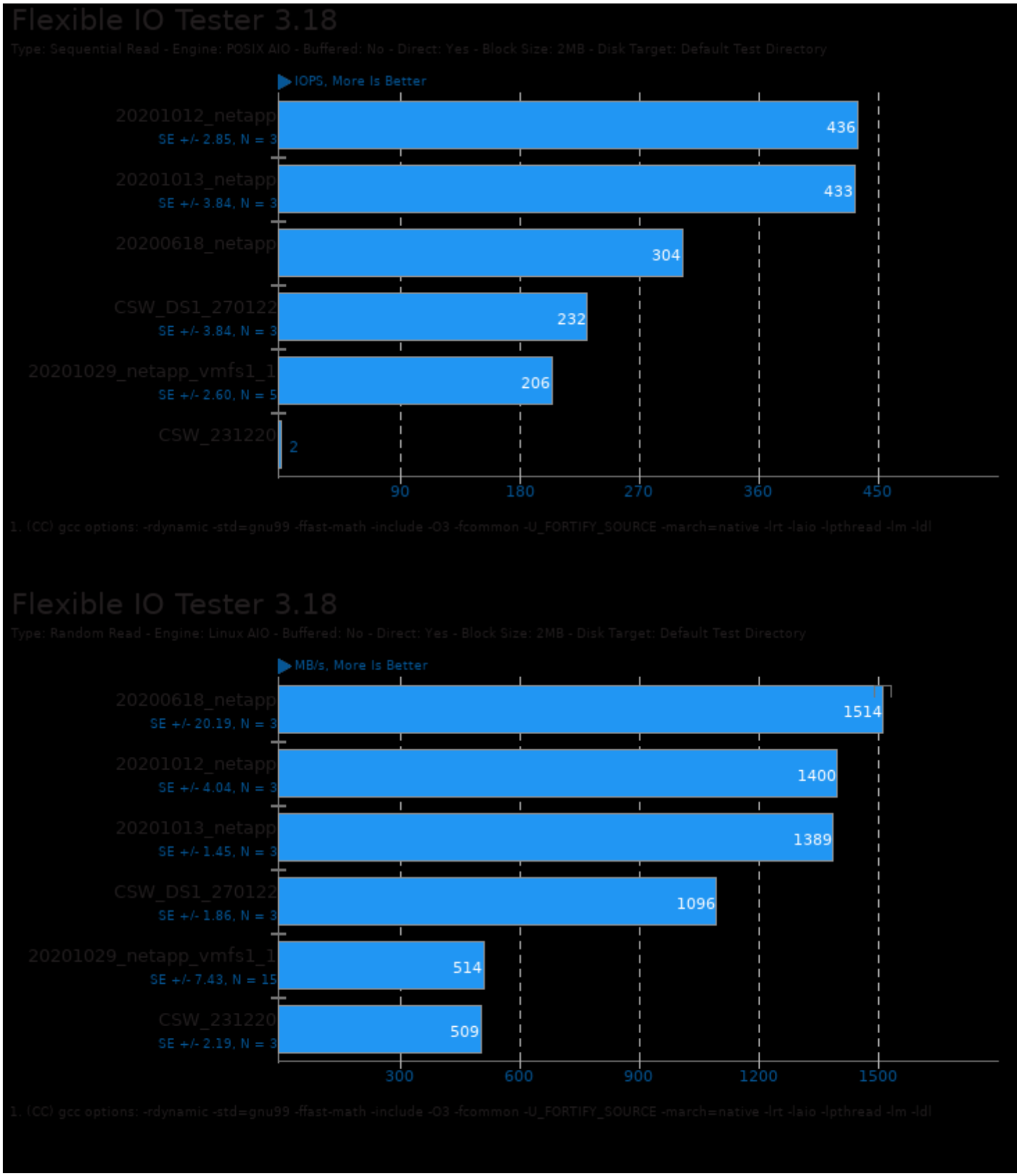

Flexible IO Tester 3.18
Type: Random Write - Engine: Sync - Buffered: No - Direct: Yes - Block Size: 2MB - Disk Target: Default Test Directory
IOPS, More Is Better
20201012_netapp
305
20201013_netapp
SE +/- 1.45, N = 3
303
20200618_netapp
291
CSW_DS1_270122
SE +/- 1.70, N = 15
175
20201029_netapp_vmfs1_1
SE +/- 1.78, N = 4
136
CSW_231220
SE +/- 0.12, N = 15
1
70
140
210
280
350
1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE -march=native -lrt -laio -lpthread -lm -ldl
Flexible IO Tester 3.18
Type: Random Read - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 2MB - Disk Target: Default Test Directory
IOPS, More Is Better
20200618_netapp
SE +/- 10.15, N = 3
753
20201012_netapp
SE +/- 2.03, N = 3
696
20201013_netapp
SE +/- 0.88, N = 3
691
CSW_DS1_270122
SE +/- 1.20, N = 3
544
20201029_netapp_vmfs1_1
SE +/- 3.72, N = 15
254
CSW_231220
SE +/- 1.20, N = 3
251
160
320
480
640
800
1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE -march=native -lrt -laio -lpthread -lm -ldl

20200618_netapp

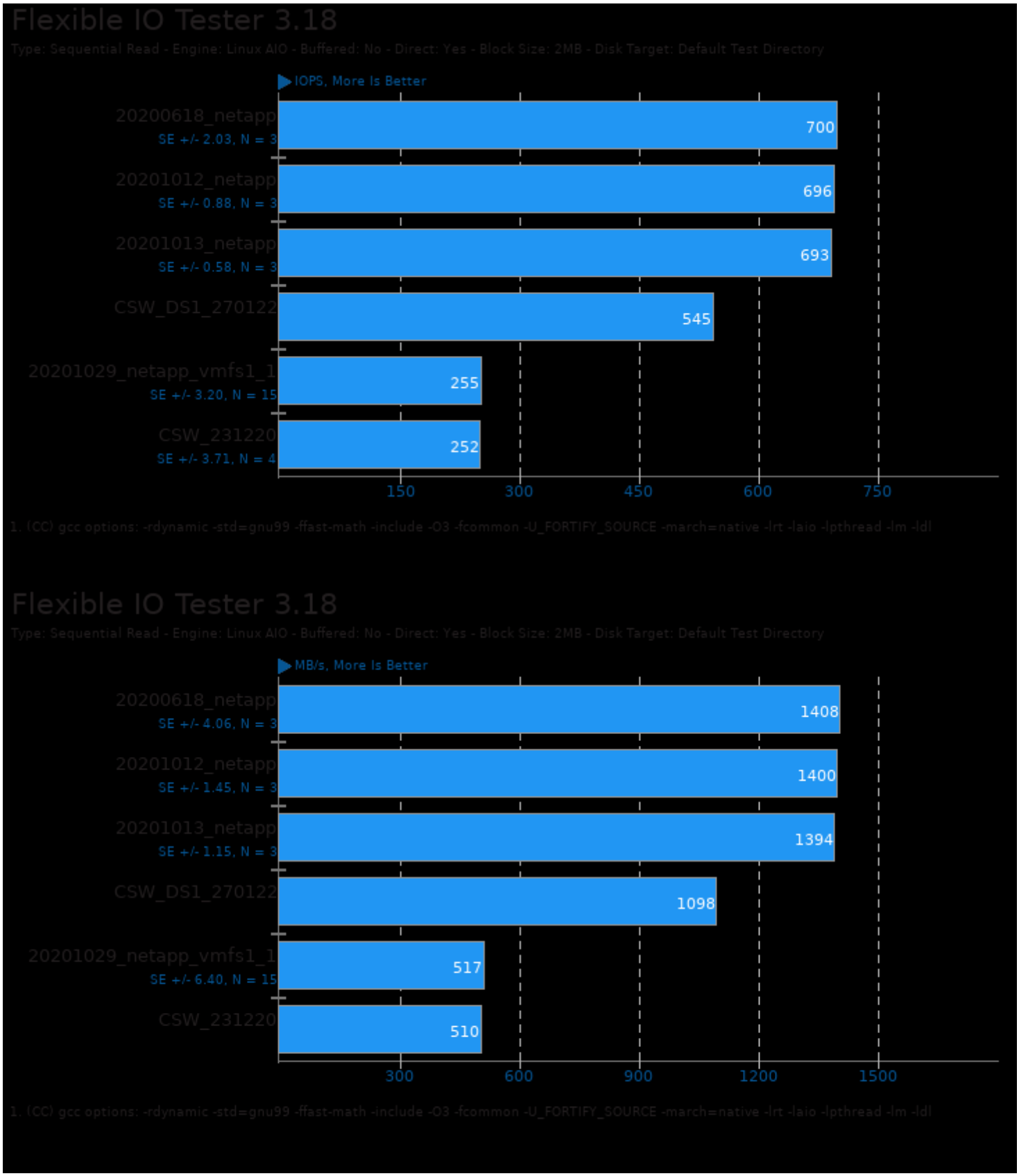


20200618_netapp

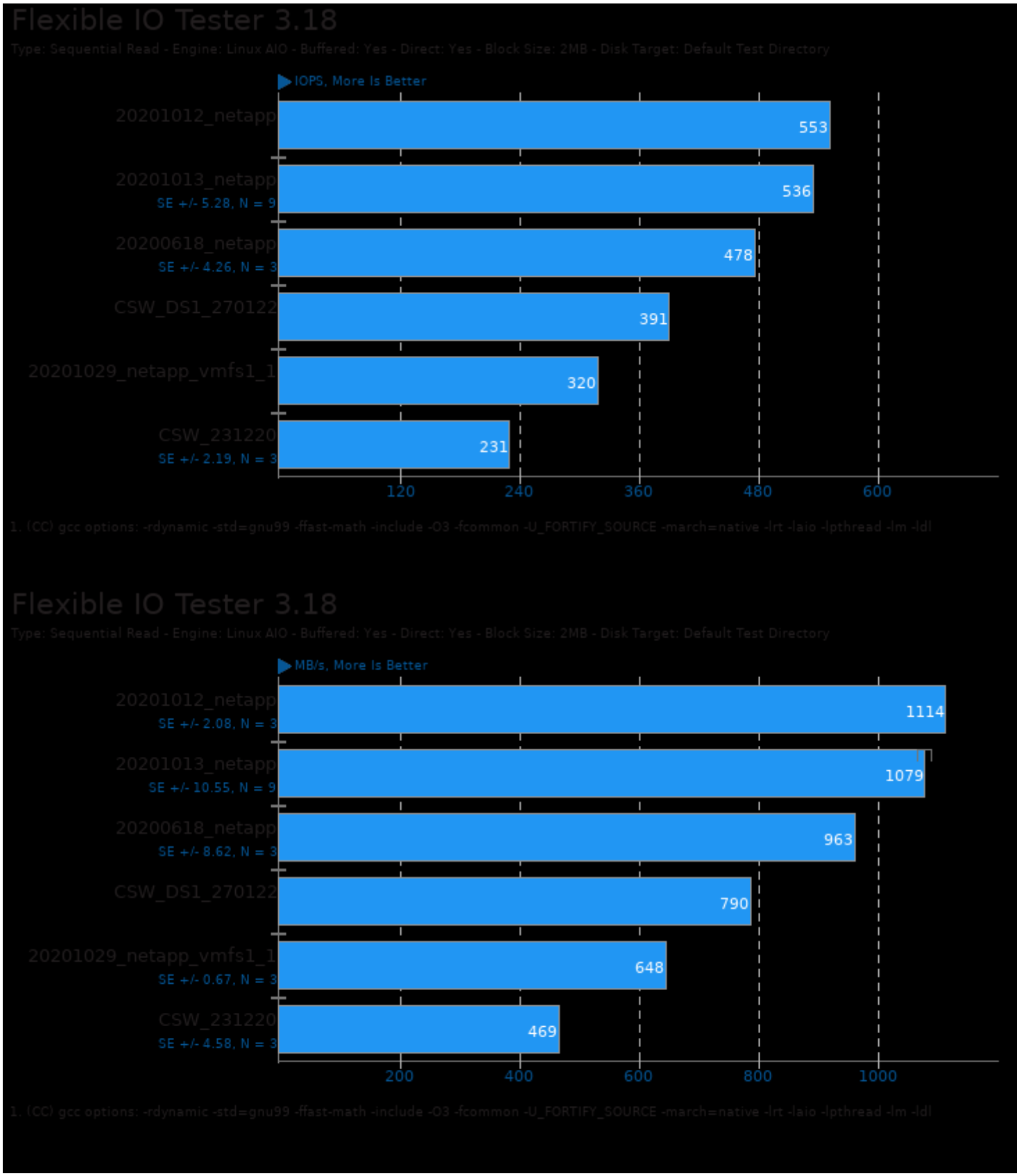



Flexible IO Tester 3.18
Type: Sequential Read - Engine: POSIX AIO - Buffered: No - Direct: Yes - Block Size: 2MB - Disk Target: Default Test Directory
IOPS, More Is Better
20201012_netapp
SE +/- 2.85, N = 3
436
20201013_netapp
SE +/- 3.84, N = 3
433
20200618_netapp
304
CSW_DS1_270122
SE +/- 3.84, N = 3
232
20201029_netapp_vmfs1_1
SE +/- 2.60, N = 5
206
CSW_231220
2
90
180
270
360
450
1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE -march=native -lrt -laio -lpthread -lm -ldl
Flexible IO Tester 3.18
Type: Random Read - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 2MB - Disk Target: Default Test Directory
MB/s, More Is Better
20200618_netapp
SE +/- 20.19, N = 3
1514
20201012_netapp
SE +/- 4.04, N = 3
1400
20201013_netapp
SE +/- 1.45, N = 3
1389
CSW_DS1_270122
SE +/- 1.86, N = 3
1096
20201029_netapp_vmfs1_1
SE +/- 7.43, N = 15
514
CSW_231220
SE +/- 2.19, N = 3
509
300
600
900
1200
1500
1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE -march=native -lrt -laio -lpthread -lm -ldl

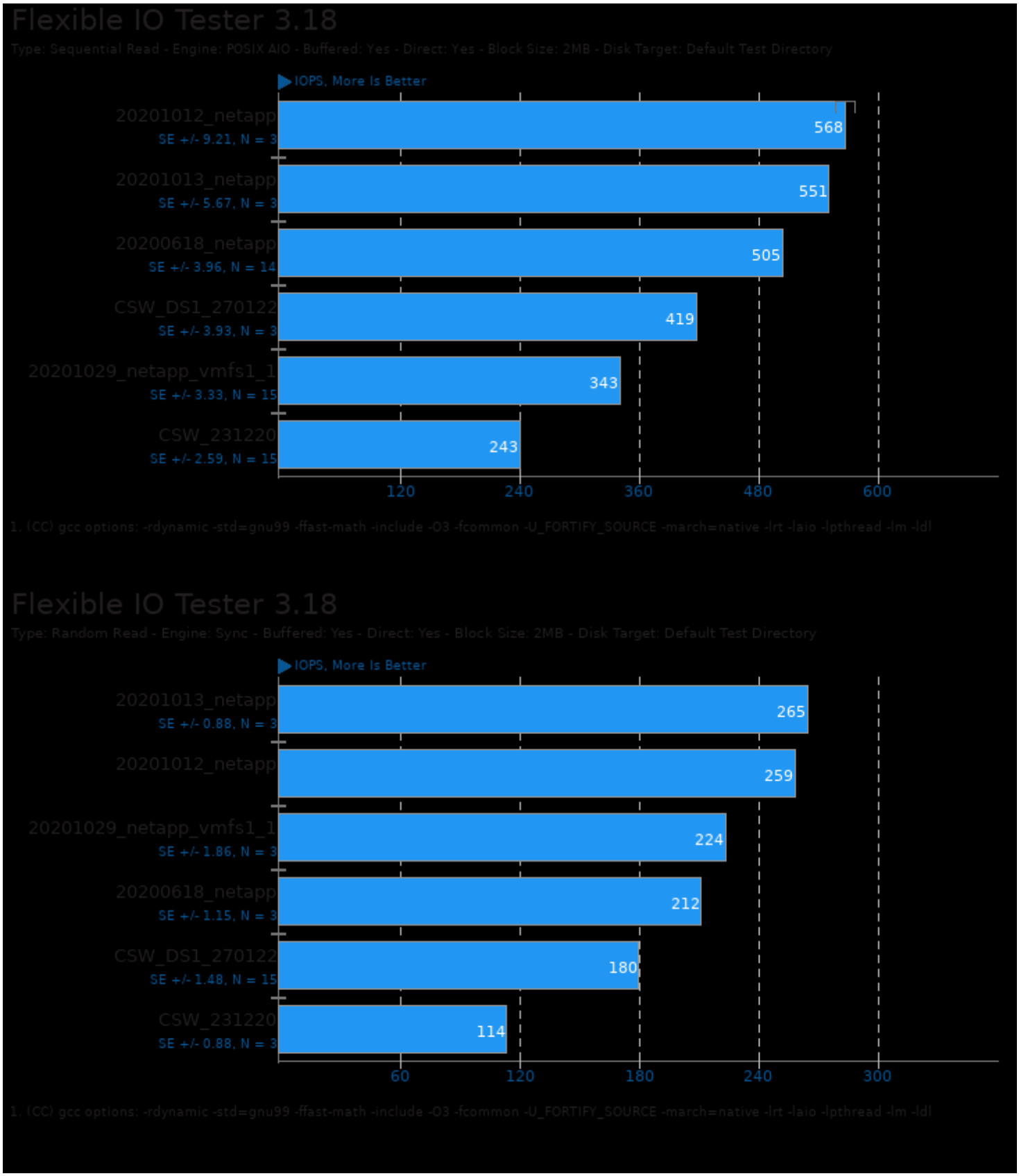
20200618_netapp



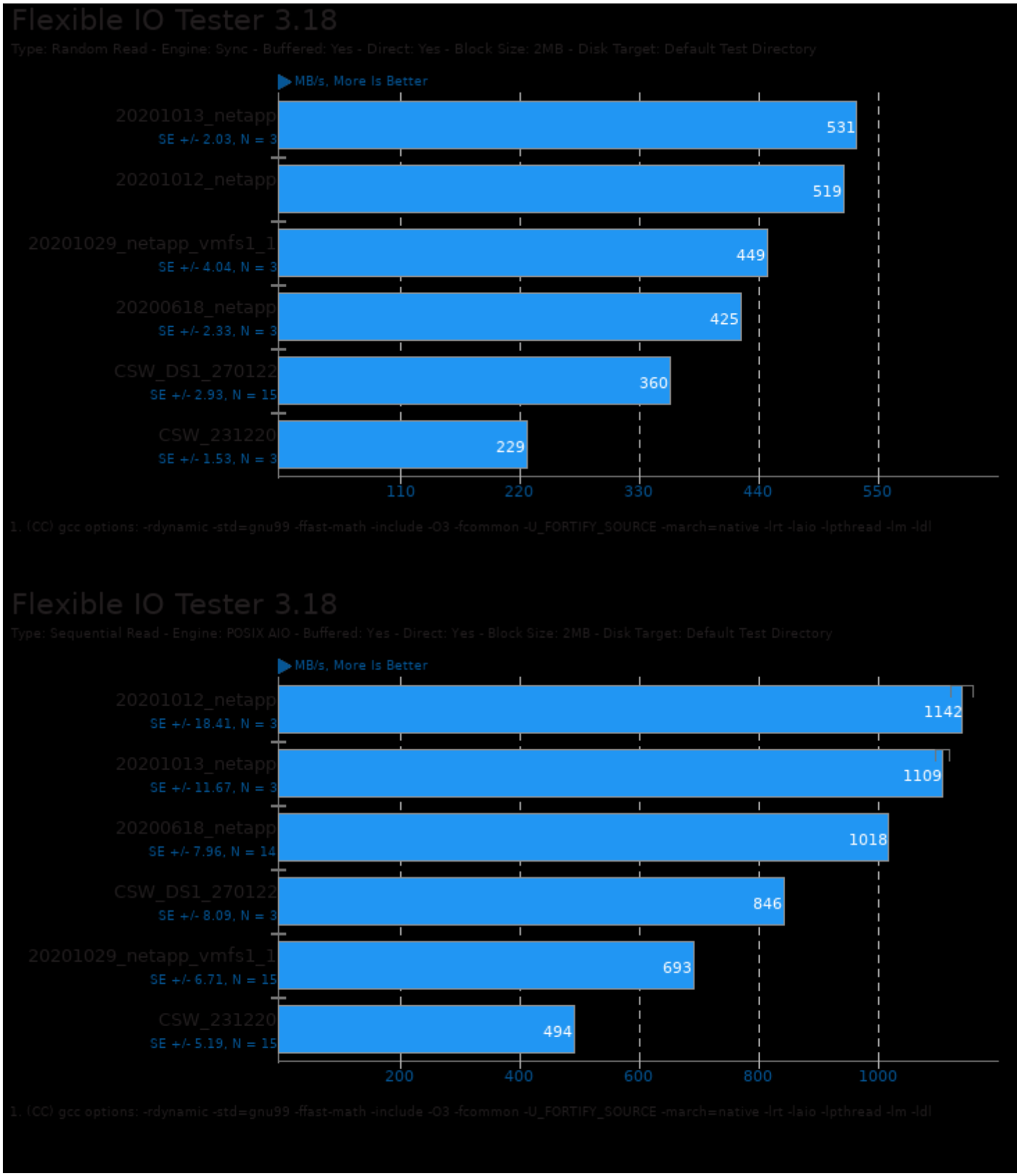
20200618_netapp

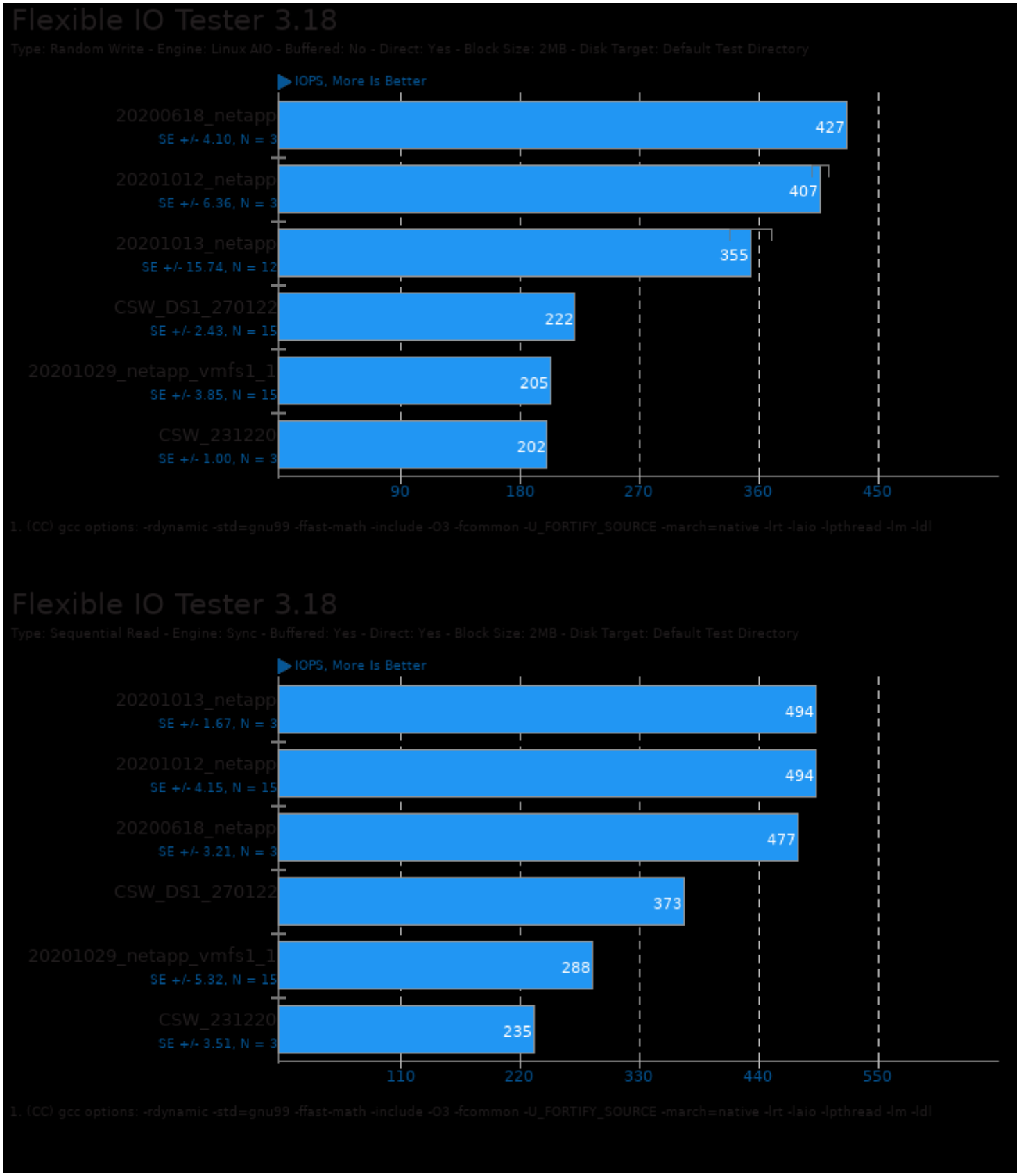


20200618_netapp

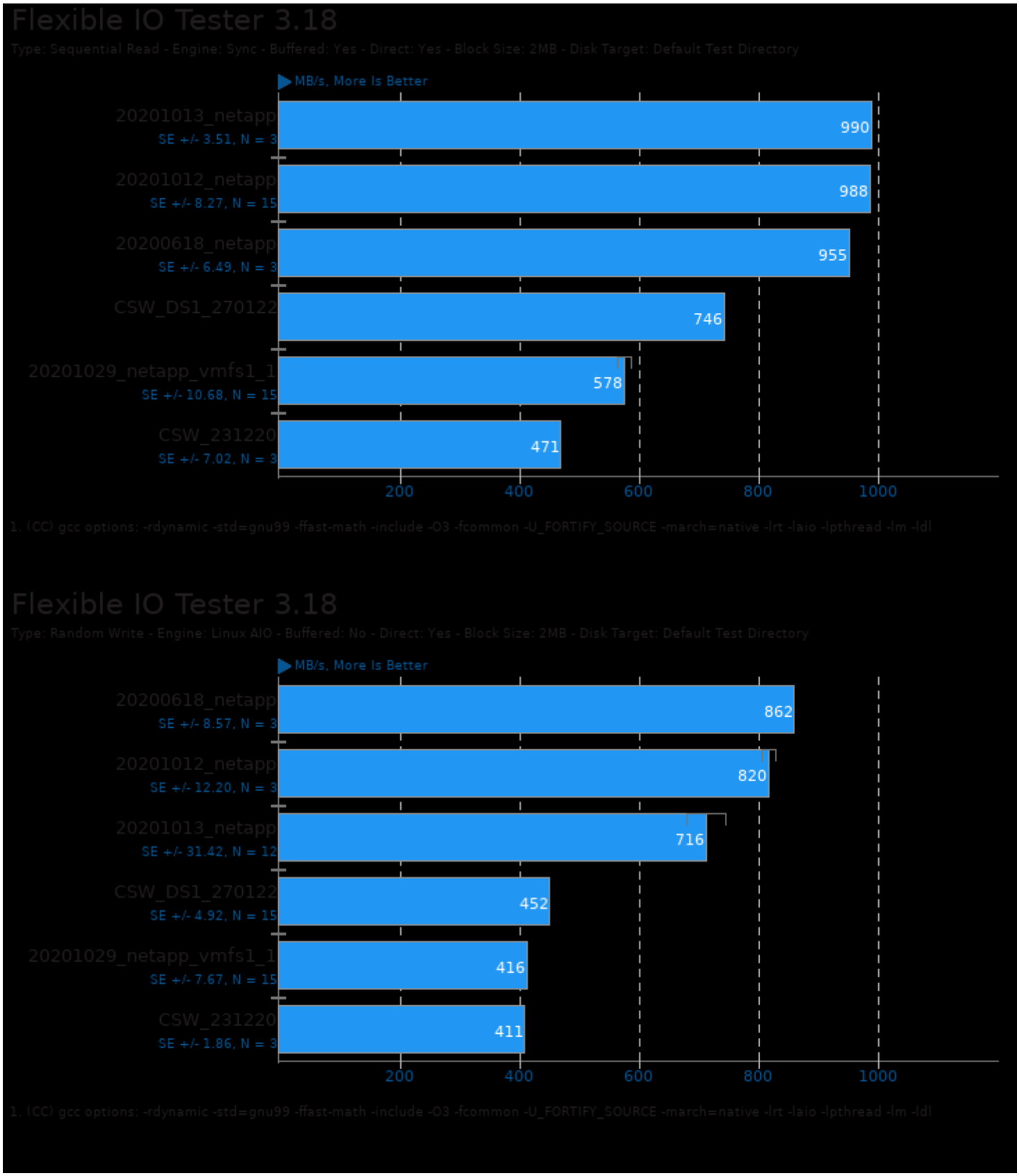


20200618_netapp

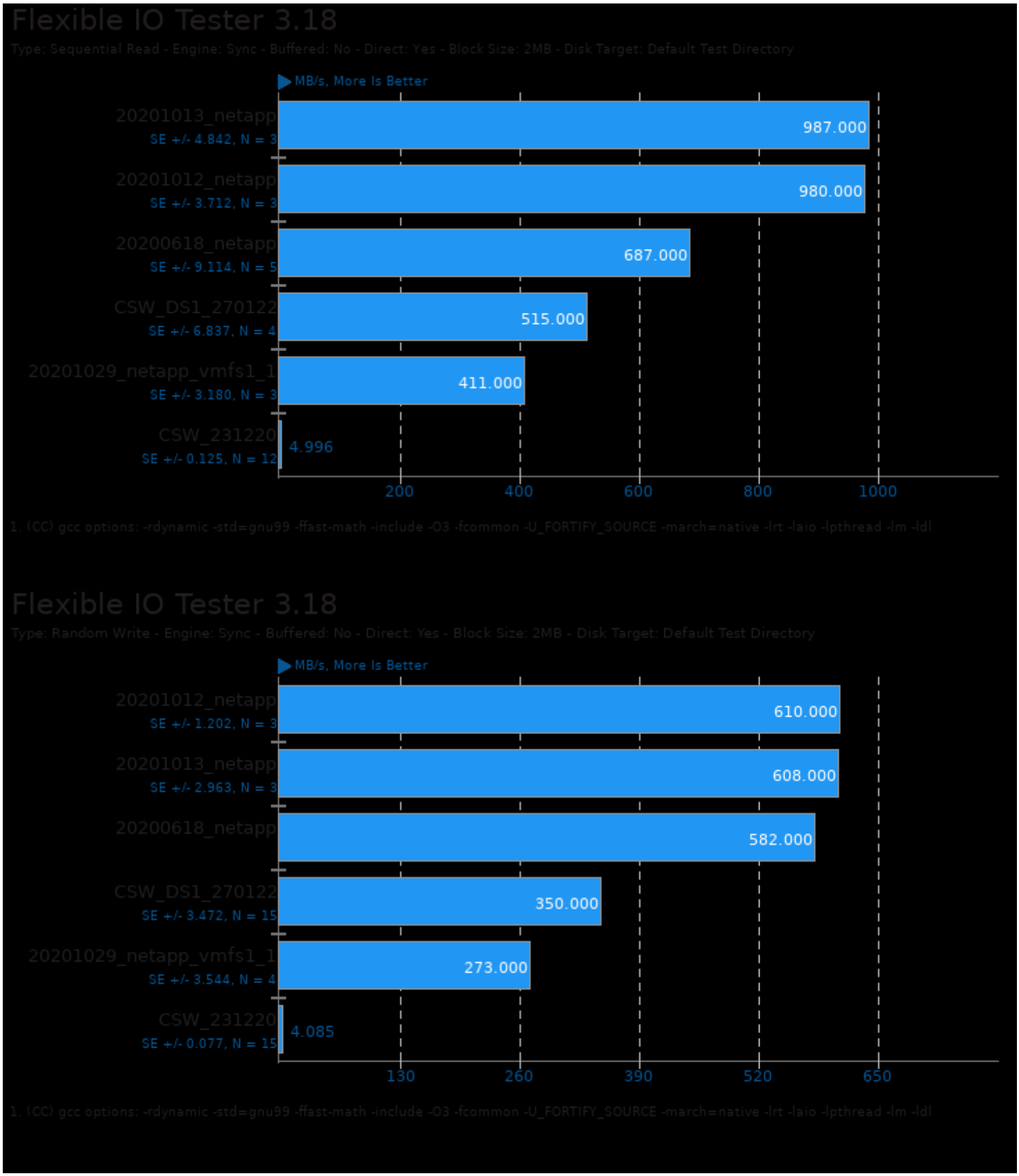


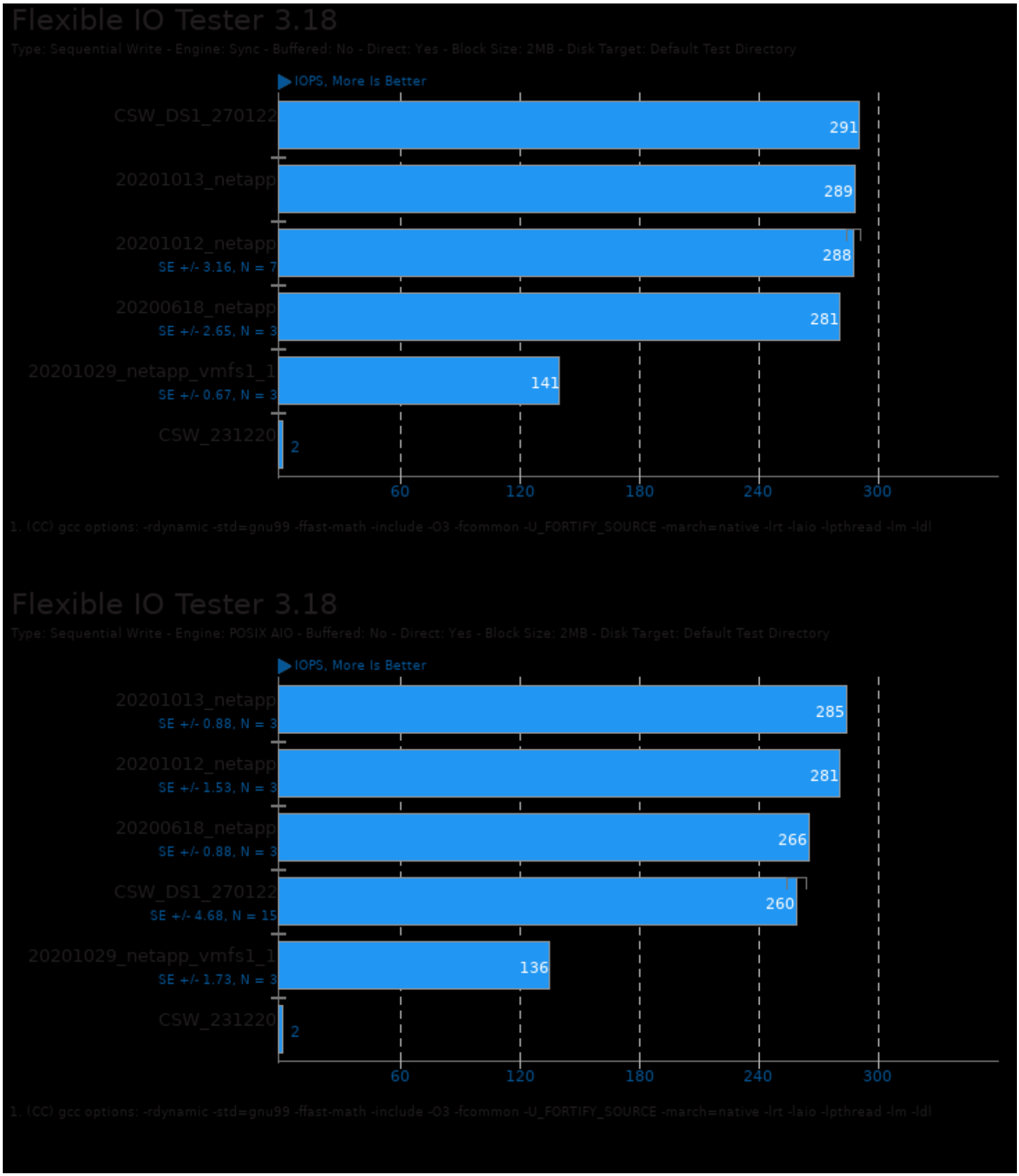

Flexible IO Tester 3.18
Type: Random Write - Engine: Linux AIO - Buffered: No - Direct: Yes - Block Size: 2MB - Disk Target: Default Test Directory
IOPS, More Is Better
20200618_netapp
SE +/- 4.10, N = 3
427
20201012_netapp
SE +/- 6.36, N = 3
407
20201013_netapp
SE +/- 15.74, N = 12
355
CSW_DS1_270122
SE +/- 2.43, N = 15
222
20201029_netapp_vmfs1_1
SE +/- 3.85, N = 15
205
CSW_231220
SE +/- 1.00, N = 3
202
90
180
270
360
450
1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE -march=native -lrt -laio -lpthread -lm -ldl
Flexible IO Tester 3.18
Type: Sequential Read - Engine: Sync - Buffered: Yes - Direct: Yes - Block Size: 2MB - Disk Target: Default Test Directory
IOPS, More Is Better
20201013_netapp
SE +/- 1.67, N = 3
494
20201012_netapp
SE +/- 4.15, N = 15
494
20200618_netapp
SE +/- 3.21, N = 3
477
CSW_DS1_270122
373
20201029_netapp_vmfs1_1
SE +/- 5.32, N = 15
288
CSW_231220
SE +/- 3.51, N = 3
235
110
220
330
440
550
1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE -march=native -lrt -laio -lpthread -lm -ldl

20200618_netapp

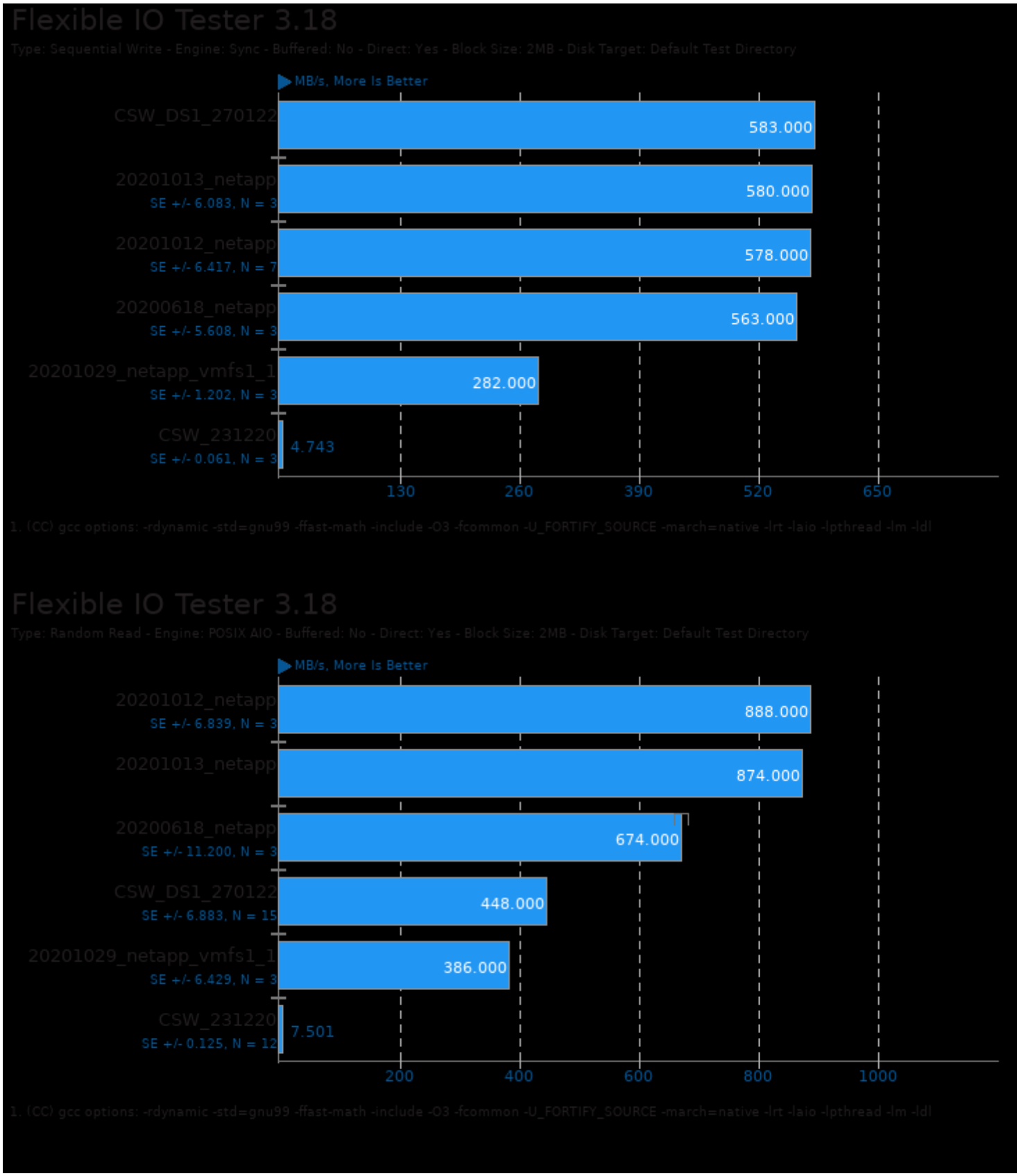


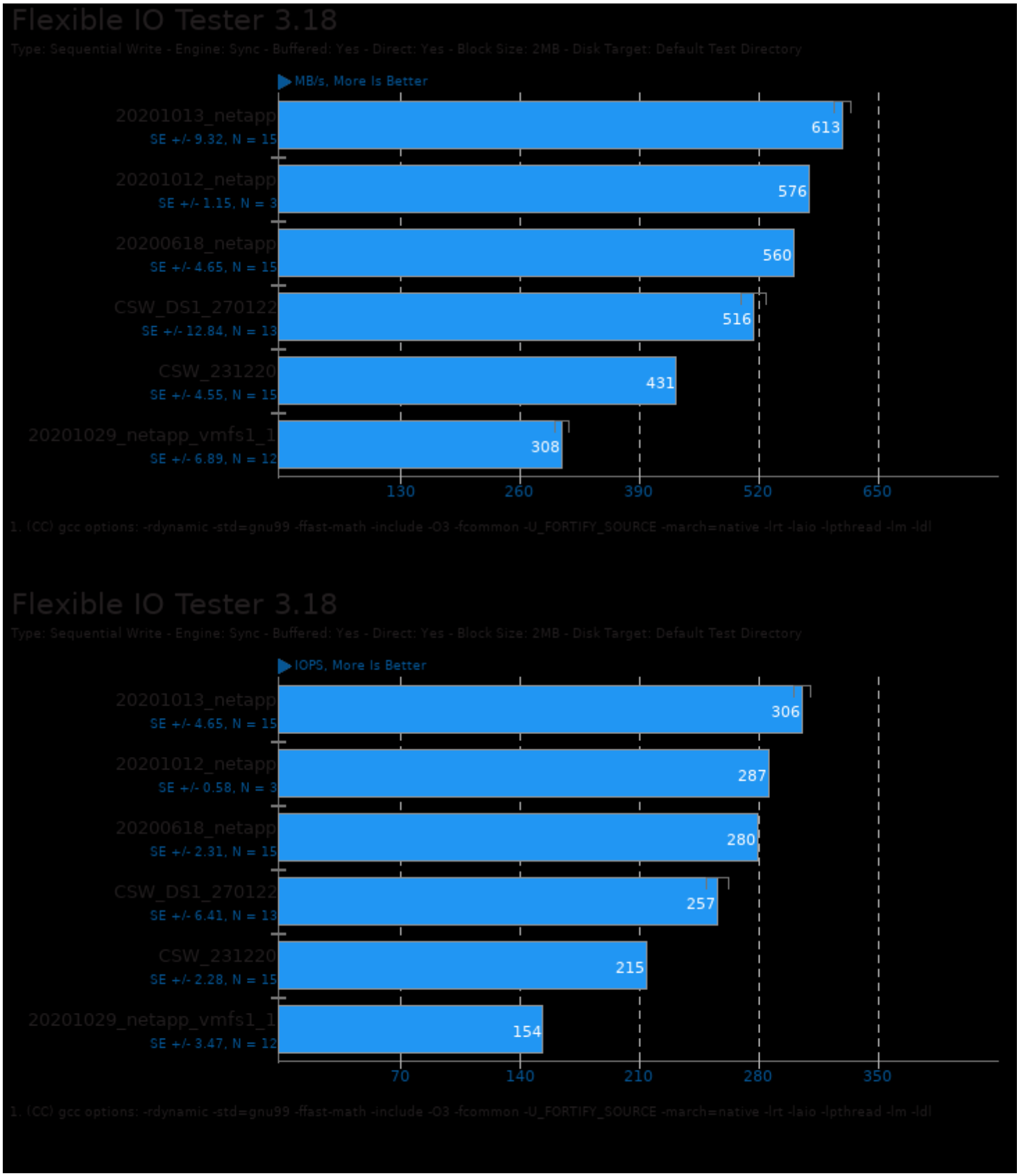
20200618_netapp

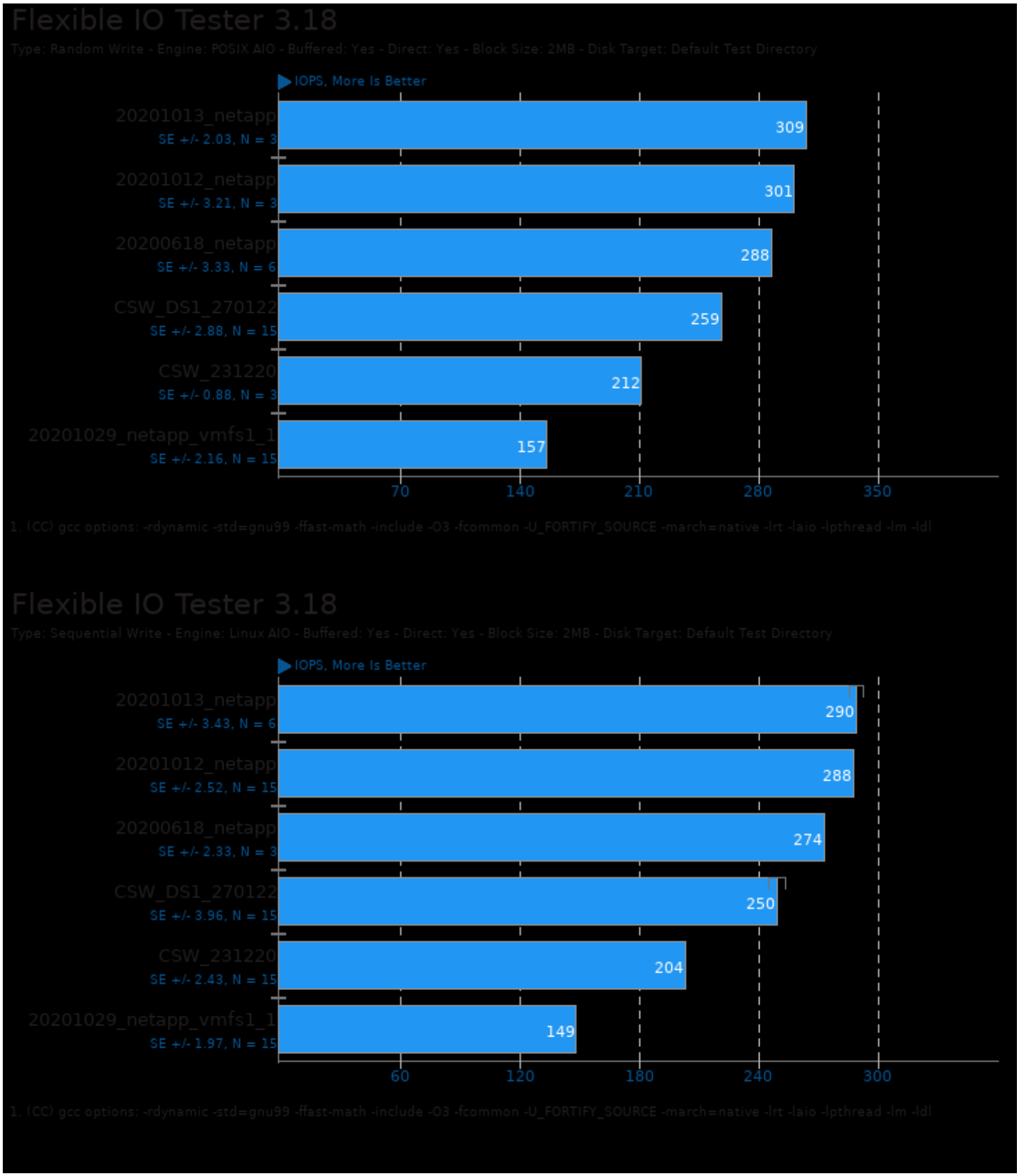



Flexible IO Tester 3.18
Type: Sequential Write - Engine: Sync - Buffered: No - Direct: Yes - Block Size: 2MB - Disk Target: Default Test Directory
IOPS, More Is Better
CSW_DS1_270122
291
20201013_netapp
289
20201012_netapp
SE +/- 3.16, N = 7
288
20200618_netapp
SE +/- 2.65, N = 3
281
20201029_netapp_vmfs1_1
SE +/- 0.67, N = 3
141
CSW_231220
2
60
120
180
240
300
1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE -march=native -lrt -laio -lpthread -lm -ldl
Flexible IO Tester 3.18
Type: Sequential Write - Engine: POSIX AIO - Buffered: No - Direct: Yes - Block Size: 2MB - Disk Target: Default Test Directory
IOPS, More Is Better
20201013_netapp
SE +/- 0.88, N = 3
285
20201012_netapp
SE +/- 1.53, N = 3
281
20200618_netapp
SE +/- 0.88, N = 3
266
CSW_DS1_270122
SE +/- 4.68, N = 15
260
20201029_netapp_vmfs1_1
SE +/- 1.73, N = 3
136
CSW_231220
2
60
120
180
240
300
1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE -march=native -lrt -laio -lpthread -lm -ldl

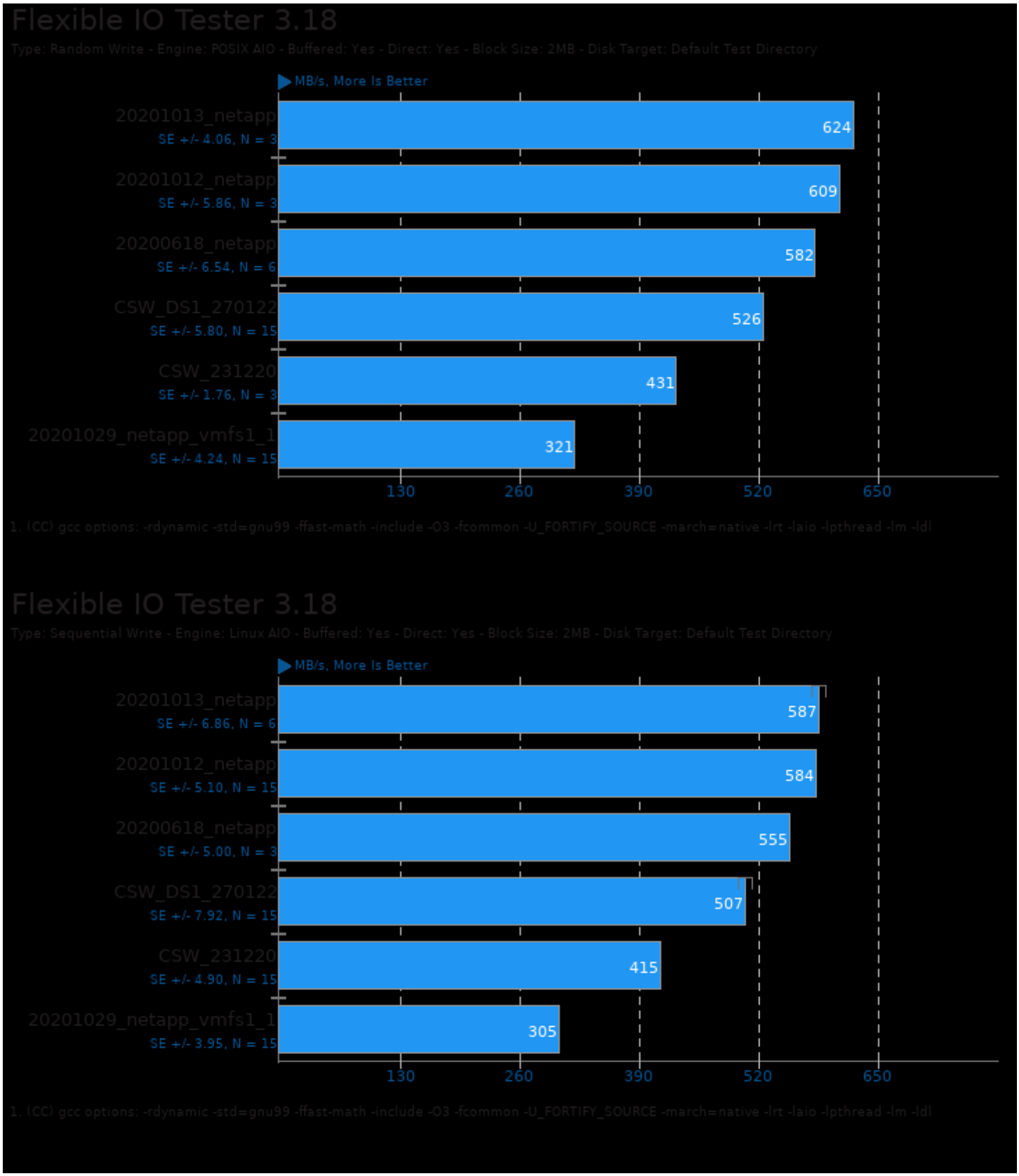
20200618_netapp

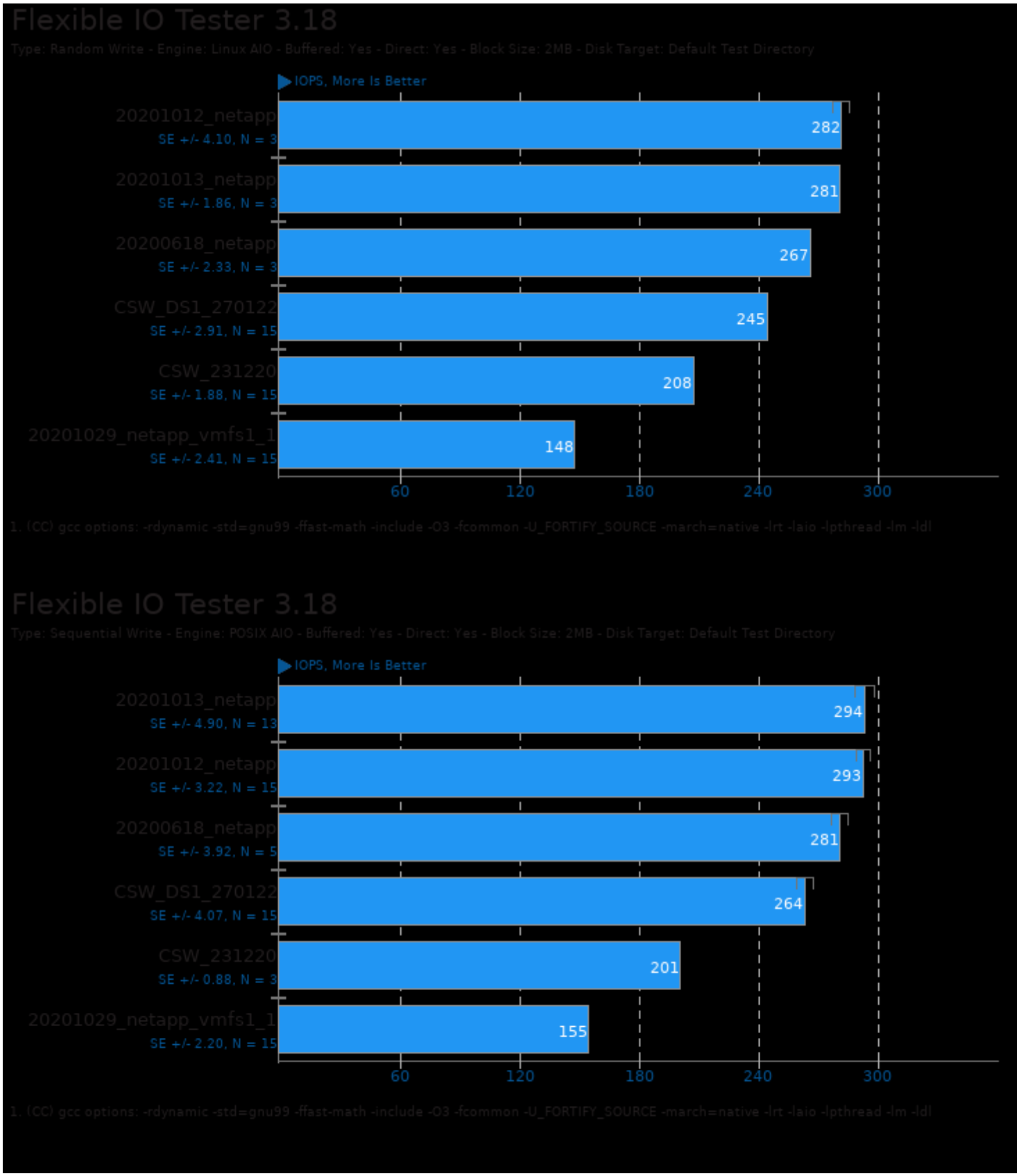



Flexible IO Tester 3.18
Type: Sequential Write - Engine: Sync - Buffered: Yes - Direct: Yes - Block Size: 2MB - Disk Target: Default Test Directory
MB/s, More Is Better
20201013_netapp
SE +/- 9.32, N = 15
613
20201012_netapp
SE +/- 1.15, N = 3
576
20200618_netapp
SE +/- 4.65, N = 15
560
CSW_DS1_270122
SE +/- 12.84, N = 13
516
CSW_231220
SE +/- 4.55, N = 15
431
20201029_netapp_vmfs1_1
SE +/- 6.89, N = 12
308
130
260
390
520
650
1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE -march=native -lrt -laio -lpthread -lm -ldl
Flexible IO Tester 3.18
Type: Sequential Write - Engine: Sync - Buffered: Yes - Direct: Yes - Block Size: 2MB - Disk Target: Default Test Directory
IOPS, More Is Better
20201013_netapp
SE +/- 4.65, N = 15
306
20201012_netapp
SE +/- 0.58, N = 3
287
20200618_netapp
SE +/- 2.31, N = 15
280
CSW_DS1_270122
SE +/- 6.41, N = 13
257
CSW_231220
SE +/- 2.28, N = 15
215
20201029_netapp_vmfs1_1
SE +/- 3.47, N = 12
154
70
140
210
280
350
1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE -march=native -lrt -laio -lpthread -lm -ldl

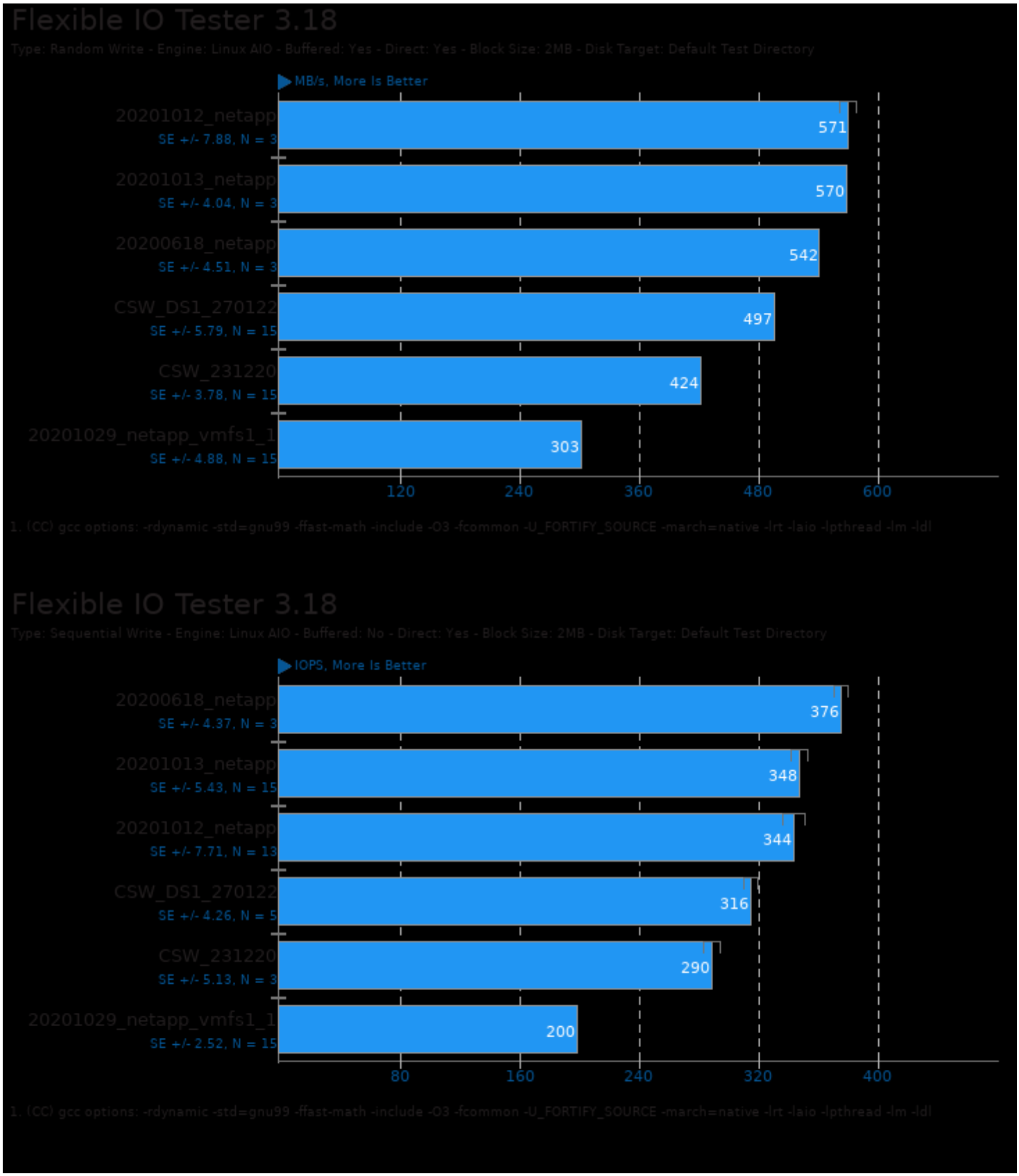

Flexible IO Tester 3.18
Type: Random Write - Engine: POSIX AIO - Buffered: Yes - Direct: Yes - Block Size: 2MB - Disk Target: Default Test Directory
IOPS, More Is Better
20201013_netapp
SE +/- 2.03, N = 3
309
20201012_netapp
SE +/- 3.21, N = 3
301
20200618_netapp
SE +/- 3.33, N = 6
288
CSW_DS1_270122
SE +/- 2.88, N = 15
259
CSW_231220
SE +/- 0.88, N = 3
212
20201029_netapp_vmfs1_1
SE +/- 2.16, N = 15
157
70
140
210
280
350
1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE -march=native -lrt -laio -lpthread -lm -ldl
Flexible IO Tester 3.18
Type: Sequential Write - Engine: Linux AIO - Buffered: Yes - Direct: Yes - Block Size: 2MB - Disk Target: Default Test Directory
IOPS, More Is Better
20201013_netapp
SE +/- 3.43, N = 6
290
20201012_netapp
SE +/- 2.52, N = 15
288
20200618_netapp
SE +/- 2.33, N = 3
274
CSW_DS1_270122
SE +/- 3.96, N = 15
250
CSW_231220
SE +/- 2.43, N = 15
204
20201029_netapp_vmfs1_1
SE +/- 1.97, N = 15
149
60
120
180
240
300
1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE -march=native -lrt -laio -lpthread -lm -ldl

20200618_netapp

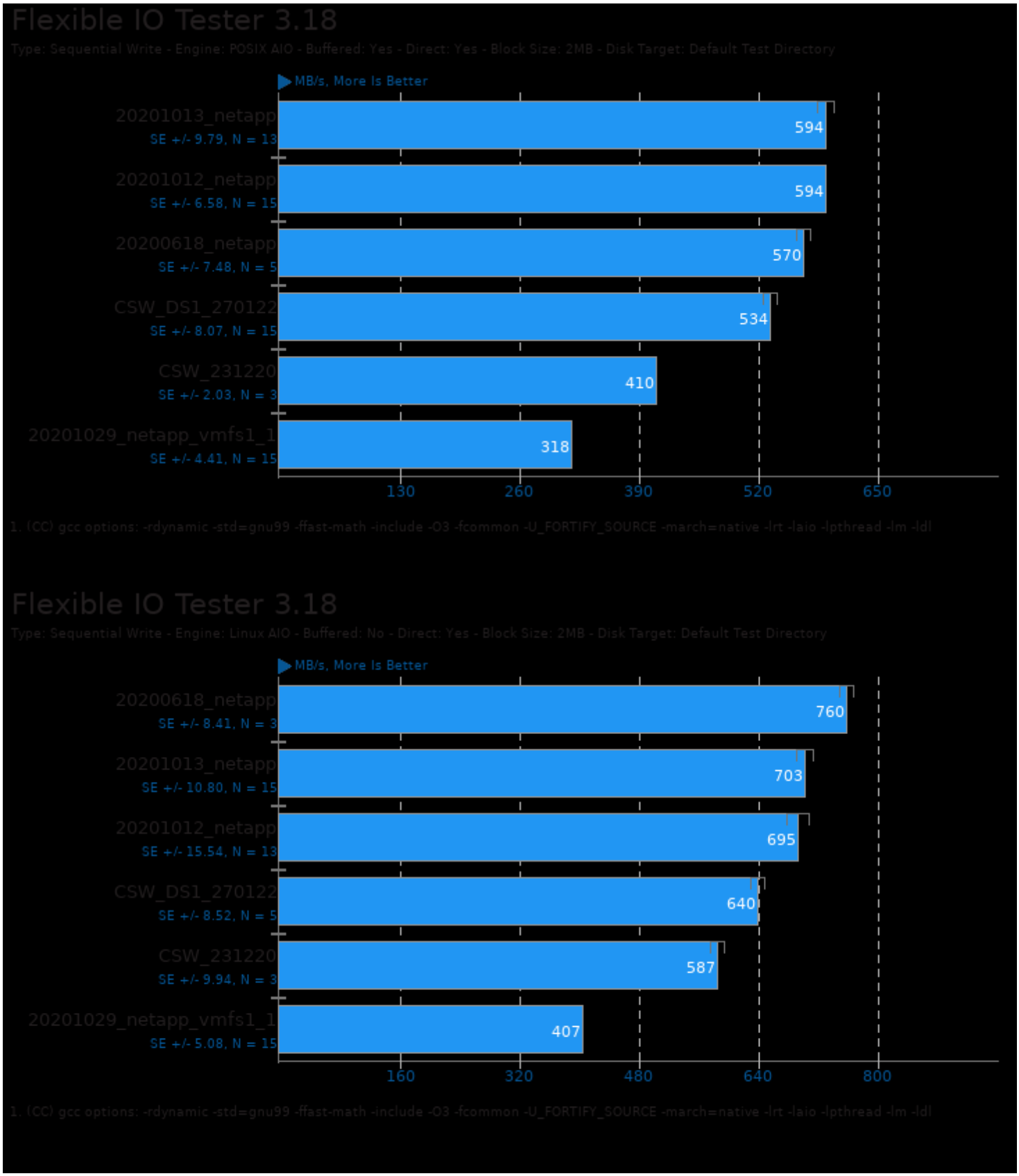


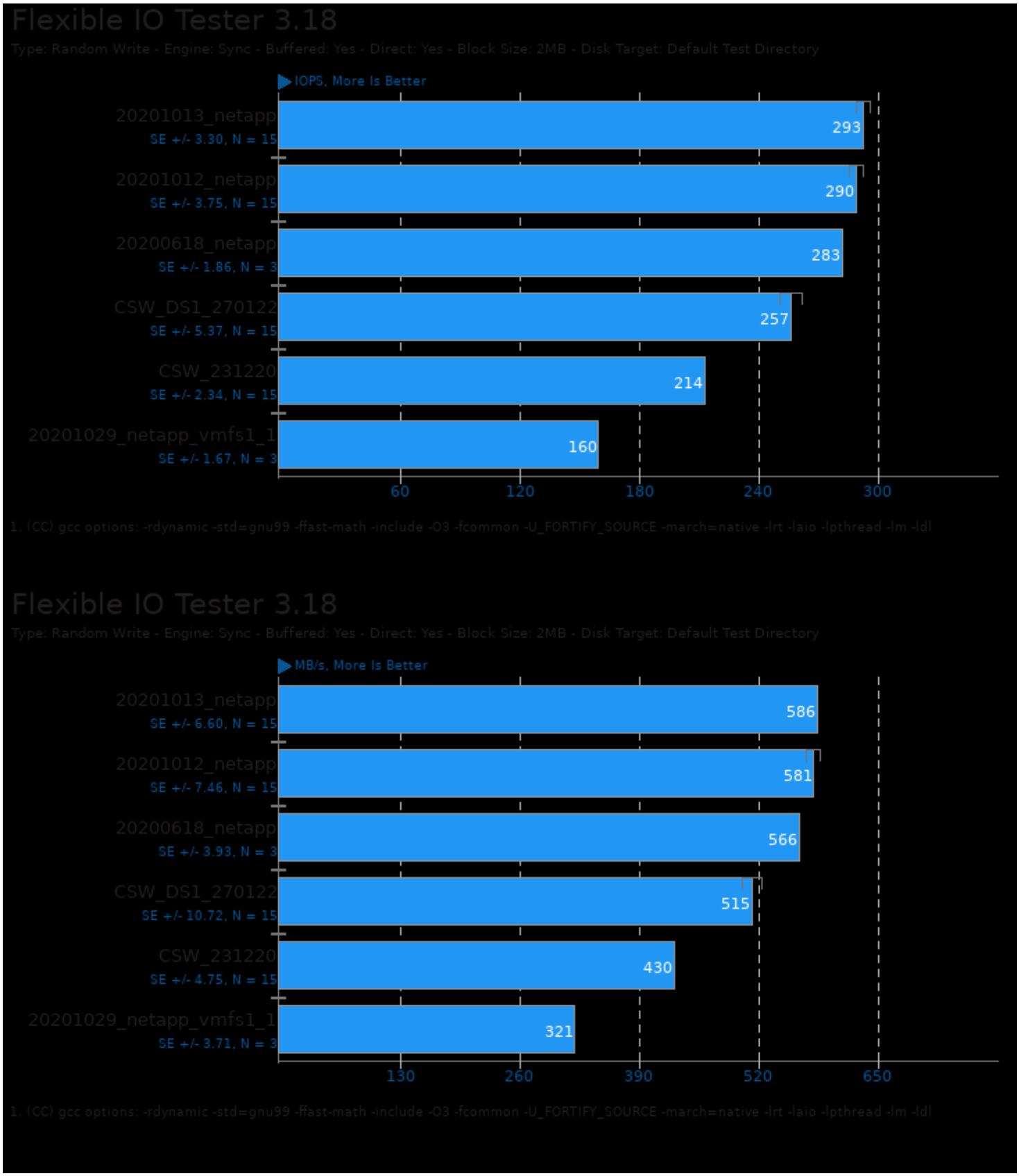

Flexible IO Tester 3.18
Type: Random Write - Engine: Linux AIO - Buffered: Yes - Direct: Yes - Block Size: 2MB - Disk Target: Default Test Directory
IOPS, More Is Better
20201012_netapp
SE +/- 4.10, N = 3
282
20201013_netapp
SE +/- 1.86, N = 3
281
20200618_netapp
SE +/- 2.33, N = 3
267
CSW_DS1_270122
SE +/- 2.91, N = 15
245
CSW_231220
SE +/- 1.88, N = 15
208
20201029_netapp_vmfs1_1
SE +/- 2.41, N = 15
148
60
120
180
240
300
1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE -march=native -lrt -laio -lpthread -lm -ldl
Flexible IO Tester 3.18
Type: Sequential Write - Engine: POSIX AIO - Buffered: Yes - Direct: Yes - Block Size: 2MB - Disk Target: Default Test Directory
IOPS, More Is Better
20201013_netapp
SE +/- 4.90, N = 13
294
20201012_netapp
SE +/- 3.22, N = 15
293
20200618_netapp
SE +/- 3.92, N = 5
281
CSW_DS1_270122
SE +/- 4.07, N = 15
264
CSW_231220
SE +/- 0.88, N = 3
201
20201029_netapp_vmfs1_1
SE +/- 2.20, N = 15
155
60
120
180
240
300
1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE -march=native -lrt -laio -lpthread -lm -ldl

20200618_netapp

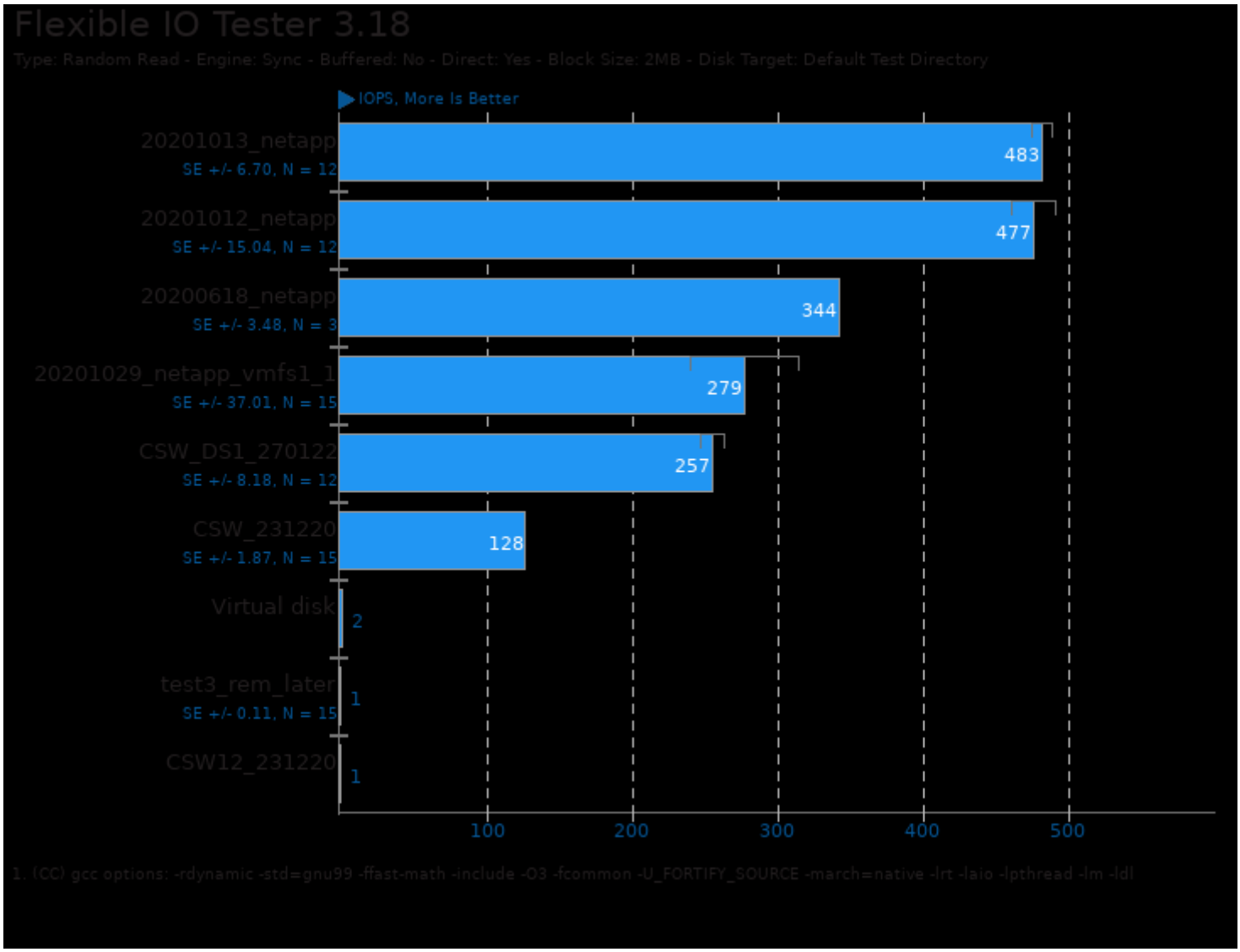


20200618_netapp

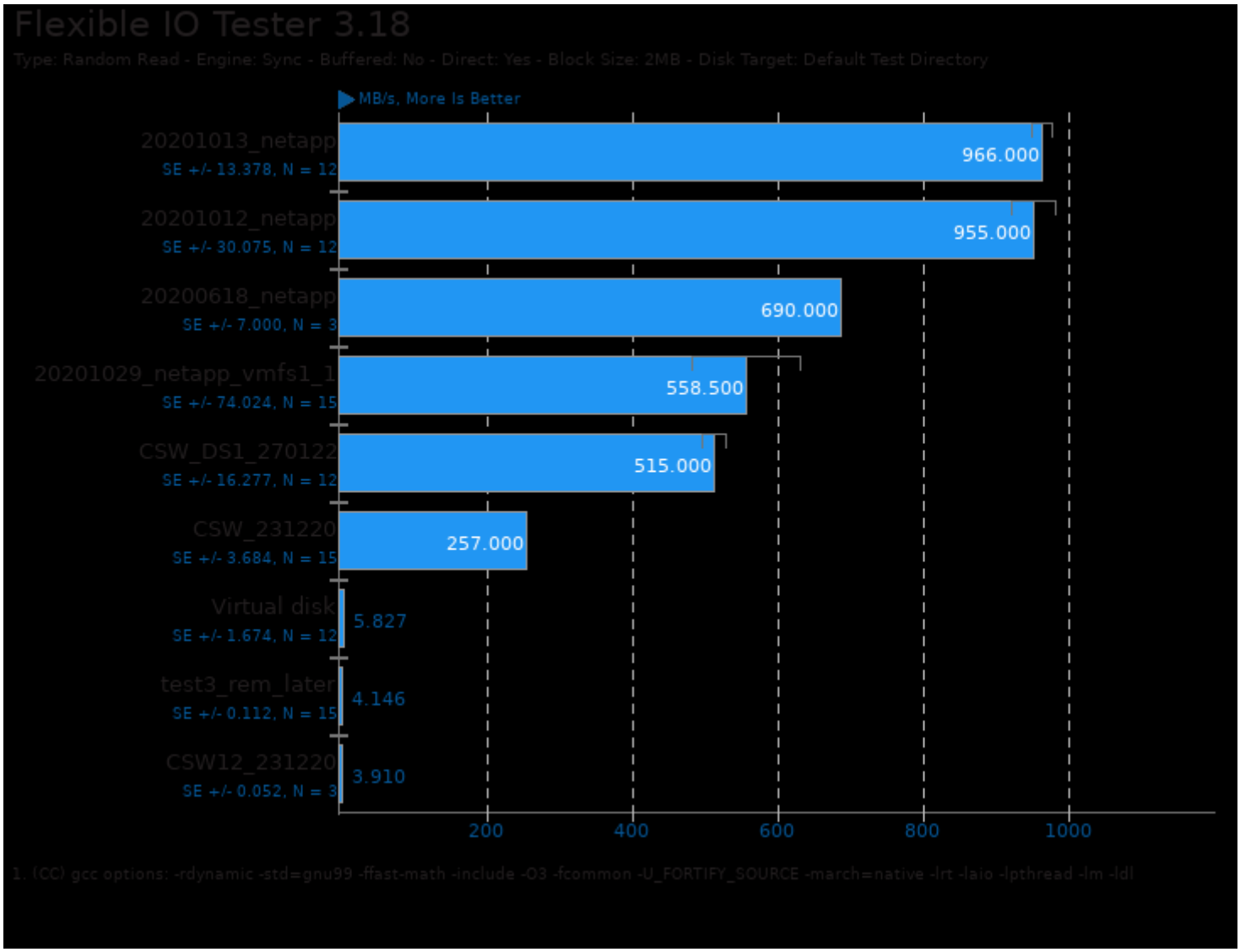



Flexible IO Tester 3.18
Type: Random Write - Engine: Sync - Buffered: Yes - Direct: Yes - Block Size: 2MB - Disk Target: Default Test Directory
IOPS, More Is Better
20201013_netapp
SE +/- 3.30, N = 15
293
20201012_netapp
SE +/- 3.75, N = 15
290
20200618_netapp
SE +/- 1.86, N = 3
283
CSW_DS1_270122
SE +/- 5.37, N = 15
257
CSW_231220
SE +/- 2.34, N = 15
214
20201029_netapp_vmfs1_1
SE +/- 1.67, N = 3
160
60
120
180
240
300
1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE -march=native -lrt -laio -lpthread -lm -ldl
Flexible IO Tester 3.18
Type: Random Write - Engine: Sync - Buffered: Yes - Direct: Yes - Block Size: 2MB - Disk Target: Default Test Directory
MB/s, More Is Better
20201013_netapp
SE +/- 6.60, N = 15
586
20201012_netapp
SE +/- 7.46, N = 15
581
20200618_netapp
SE +/- 3.93, N = 3
566
CSW_DS1_270122
SE +/- 10.72, N = 15
515
CSW_231220
SE +/- 4.75, N = 15
430
20201029_netapp_vmfs1_1
SE +/- 3.71, N = 3
321
130
260
390
520
650
1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE -march=native -lrt -laio -lpthread -lm -ldl

20200618_netapp



20200618_netapp



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