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20200618_netapp

Eiunstellungen wie immer, aber neue Volumes wegen Kompression

Automated Executive Summary

20201013_netapp had the most wins, coming in first place for 37% 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: Sequential Write - Engine: Sync - Buffered: No - Direct: Yes - Block Size: 2MB - Disk Target: Default Test Directory) at 168.5x
Flexible IO Tester (Type: Sequential Write - Engine: POSIX AIO - Buffered: No - Direct: Yes - Block Size: 2MB - Disk Target: Default Test Directory) at 166x.

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

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

CSW11_231220

test_rem_later

test_rem_later4

test5_rem_later

test6_rem_later

CSW-VMFS04_SPSDIESX0401_Bench02

CSL-VMFS01_SPSDIESX0601_Bench02

Processor: 4 x Intel Xeon E5-2640 v3 (7 Cores), Motherboard: Intel 440BX (VMW71.00V.16460286.B64.2006250725 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

SPSDSESX0602_CSL_VMFS03_010221

SPSDSESX0601_CSL_VMFS03_010221_iops

SPSDSESX0601_CSL_VMFS03_010221_iops_precomp

SPSDSESX0601_CSL_VMFS03_080221_iops_postcomp

SPSDSESX0601_CSL_VMFS03_010221_iops_nocomp

SPSDSESX0601_CSL_SYSTEM_VMFS01_180221_iops_newvols

Processor: 4 x Intel Xeon E5-2680 v3 (7 Cores), Motherboard: Intel 440BX (VMW71.00V.16460286.B64.2006250725 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

20200618_netapp

	20200618_netapp	20201012_netapp	20201013_netapp	20201029_netapp_vmfs1	20201029_netapp_vmfs1_1	CSW_231220	CSW11_231220	test_rem_later	test_rem_later4	test5_rem_later	test6_rem_later	CSW-VMFS04_SPSDIESX0401_Bench02	CSL-VMFS01_SPSDIESX0601_Bench02	SPSDSESX0602_CSL_VMFS03_010221	SPSDSESX0601_CSL_VMFS03_010221_iops	SPSDSESX0601_CSL_VMFS03_010221_iops_precomp	SPSDSESX0601_CSL_VMFS03_080221_iops_postcomp	SPSDSESX0601_CSL_VMFS03_010221_iops_nocomp	SPSDSESX0601_CSL_SYSTEM_VMFS01_181022 1_iops_newvols
Flexible IO Tester - Rand Read - Sync - No - Yes - 2MB	690	955	966		558.5	257	767	755	743	757	758	764	845	648	751	752	763	753	788
Normalized	71.43%	98.86%	100%		57.82%	26.6%	79.4%	78.16%	76.92%	78.36%	78.47%	79.09%	87.47%	67.08%	77.74%	77.85%	78.99%	77.95%	81.57%
Standard Deviation	1.8%	10.9%	4.8%		51.3%	5.6%	0.2%	1%	0.6%		0.5%	0.3%	2.7%	0.4%	2.9%	2.2%	0.9%	1.2%	2.8%
Flexible IO Tester - Rand Read - Sync - No - Yes - 2MB	344	477	483		279	128	383	377	371	378	379	382	422	324	375	375	381	376	394
Normalized	71.22%	98.76%	100%		57.76%	26.5%	79.3%	78.05%	76.81%	78.26%	78.47%	79.09%	87.37%	67.08%	77.64%	77.64%	78.88%	77.85%	81.57%
Standard Deviation	1.8%	10.9%	4.8%		51.4%	5.6%	0.3%	0.9%	0.5%		0.5%	0.3%	2.7%	0.5%	3%	2.2%	0.9%	1.2%	2.9%

20200618_netapp

Flexible IO Tester - Rand Read - Sync - Yes - Yes - 2MB (MB/s)	425	519	**531**	449	**229**	488	481	460	471	474	420	470	471	469	468	486
Normalized	80.04%	97.74%	100%	84.56%	43.13%	91.9%	90.58%	86.63%	88.7%	89.27%	79.1%	88.51%	88.7%	88.32%	88.14%	91.53%
Standard Deviation	1%		0.7%	1.6%	1.2%	0.2%	0.6%	1.8%		3%	0.8%	0.3%	0.4%	1.6%	1%	1.1%
Flexible IO Tester - Rand Read - Sync - Yes - Yes - 2MB (IOPS)	212	259	**265**	224	**114**	244	240	229	235	237	209	235	235	234	234	242
Normalized	80%	97.74%	100%	84.53%	43.02%	92.08%	90.57%	86.42%	88.68%	89.43%	78.87%	88.68%	88.68%	88.3%	88.3%	91.32%
Standard Deviation	0.9%		0.6%	1.4%	1.3%	0.2%	0.5%	1.8%		3%		0.4%	0.4%	1.5%	1.1%	1.1%
Flexible IO Tester - Rand Write - Sync - No - Yes - 2MB	582	**610**	608	273	**4.085**	360		359	365	428	502	506	426	432	425	507
Normalized	95.41%	100%	99.67%	44.75%	0.67%	59.02%		58.85%	59.84%	70.16%	82.3%	82.95%	69.84%	70.82%	69.67%	83.11%
Standard Deviation		0.3%	0.8%	2.6%	7.3%	2.7%		1.6%	2.6%	0.8%	0.5%	0.5%	1.2%	0.5%	1.8%	0.5%
Flexible IO Tester - Rand Write - Sync - No - Yes - 2MB	291	**305**	303	136	**1**	179		179	182	213	250	252	212	216	212	253
Normalized	95.41%	100%	99.34%	44.59%	0.33%	58.69%		58.69%	59.67%	69.84%	81.97%	82.62%	69.51%	70.82%	69.51%	82.95%
Standard Deviation			0.8%	2.6%	36.1%	2.6%		1.5%	2.7%	0.5%	0.6%	0.5%	1.4%		1.7%	0.4%

20200618_netapp

Flexible IO Tester - Rand Write - Sync - Yes - Yes - 2MB	566	581	586	321	430	572	572	504	534	511	488	494	486	505
Normalized	96.59%	99.15%	100%	54.78%	73.38%	97.61%	97.61%	86.01%	91.13%	87.2%	83.28%	84.3%	82.94%	86.18%
Standard Deviation	1.2%	5%	4.4%	2%	4.3%	2.9%	2.9%	6.6%	2.8%	1.2%	1.7%	0.5%	3%	3.1%
Flexible IO Tester - Rand Write - Sync - Yes - Yes - 2MB	283	290	293	160	214	285	286	251	266	255	243	246	243	252
Normalized	96.59%	98.98%	100%	54.61%	73.04%	97.27%	97.61%	85.67%	90.78%	87.03%	82.94%	83.96%	82.94%	86.01%
Standard Deviation	1.1%	5%	4.4%	1.8%	4.2%	2.8%	2.9%	6.6%	2.8%	1.2%	1.6%	0.4%	3%	3.1%
Flexible IO Tester - Seq Read - Sync - No - Yes - 2MB (MB/s)	687	980	987	411	4.996	771	756	888	621	765	763	756	759	796
Normalized	69.6%	99.29%	100%	41.64%	0.51%	78.12%	76.6%	89.97%	62.92%	77.51%	77.3%	76.6%	76.9%	80.65%
Standard Deviation	3%	0.7%	0.8%	1.3%	8.7%	0.4%			0.4%	0.4%	0.7%	0.6%	1.3%	0.9%
Flexible IO Tester - Seq Read - Sync - No - Yes - 2MB (IOPS)	343	489	493	205	2	385	377	444	310	382	381	378	379	398
Normalized	69.57%	99.19%	100%	41.58%	0.41%	78.09%	76.47%	90.06%	62.88%	77.48%	77.28%	76.67%	76.88%	80.73%
Standard Deviation	2.9%	0.7%	0.9%	1.4%					0.3%	0.3%	0.7%	0.6%	1.2%	0.8%

20200618_netapp

Flexible IO Tester - Rand Read - Linux AIO - No - Yes - 2MB (MB/s)	**1514**	1400	1389	514	**509**	1127	1125	1410	1172	1175	1175	1175	1175	1175
Normalized	100%	92.47%	91.74%	33.95%	33.62%	74.44%	74.31%	93.13%	77.41%	77.61%	77.61%	77.61%	77.61%	77.61%
Standard Deviation	2.3%	0.5%	0.2%	5.6%	0.7%	0.9%	0.2%	2%						
Flexible IO Tester - Rand Read - Linux AIO - No - Yes - 2MB (IOPS)	**753**	696	691	254	**251**	560	559	701	582	584	584	584	584	584
Normalized	100%	92.43%	91.77%	33.73%	33.33%	74.37%	74.24%	93.09%	77.29%	77.56%	77.56%	77.56%	77.56%	77.56%
Standard Deviation	2.3%	0.5%	0.2%	5.7%	0.8%	0.8%	0.2%	2%						
Flexible IO Tester - Rand Read - POSIX AIO - No - Yes - 2MB (MB/s)	674	**888**	874	386	**7.501**	721	701	801	537	706	703	707	693	737
Normalized	75.9%	100%	98.42%	43.47%	0.84%	81.19%	78.94%	90.2%	60.47%	79.5%	79.17%	79.62%	78.04%	83%
Standard Deviation	2.9%	1.3%		2.9%	5.8%	0.1%	1.7%	0.3%	1%	0.6%	1.4%	1.2%	1.1%	0.5%

20200618_netapp

Flexible IO Tester - Rand Read - POSIX AIO - No - Yes - 2MB (IOPS)	333	**440**	433	189	**1**	357	347	397	265	349	348	350	343	365
Normalized	75.68%	100%	98.41%	42.95%	0.23%	81.14%	78.86%	90.23%	60.23%	79.32%	79.09%	79.55%	77.95%	82.95%
Standard Deviation	3%	1.4%		2.7%		0.2%	1.7%	0.3%	1.1%	0.7%	1.4%	1.3%	1.2%	0.5%
Flexible IO Tester - Seq Read - Sync - Yes - Yes - 2MB (MB/s)	955	988	990	578	**471**	889	886	**1018**	879	979	975	983	975	989
Normalized	93.81%	97.05%	97.25%	56.78%	46.27%	87.33%	87.03%	100%	86.35%	96.17%	95.78%	96.56%	95.78%	97.15%
Standard Deviation	1.2%	3.2%	0.6%	7.2%	2.6%	0.2%		0.5%	0.2%		0.6%	0.7%	0.7%	1.6%
Flexible IO Tester - Seq Read - Sync - Yes - Yes - 2MB (IOPS)	477	494	494	288	**235**	444	443	**509**	439	489	487	491	487	494
Normalized	93.71%	97.05%	97.05%	56.58%	46.17%	87.23%	87.03%	100%	86.25%	96.07%	95.68%	96.46%	95.68%	97.05%
Standard Deviation	1.2%	3.3%	0.6%	7.1%	2.6%			0.5%			0.6%	0.6%	0.6%	1.6%
Flexible IO Tester - Seq Write - Sync - No - Yes - 2MB	563	578	580	282	**4.743**	**676**	671	389	487	488	414	416	408	483
Normalized	83.28%	85.5%	85.8%	41.72%	0.7%	100%	99.26%	57.54%	72.04%	72.19%	61.24%	61.54%	60.36%	71.45%
Standard Deviation	1.7%	2.9%	1.8%	0.7%	2.2%	0.3%	1.2%	1.2%	0.7%	0.7%	1.6%	1.9%		0.2%

20200618_netapp

Flexible IO Tester - Seq Write - Sync - No - Yes - 2MB	281	288	289	141	2	337	335	194	243	243	207	207	204	241
Normalized	83.38%	85.46%	85.76%	41.84%	0.59%	100%	99.41%	57.57%	72.11%	72.11%	61.42%	61.42%	60.53%	71.51%
Standard Deviation	1.6%	2.9%		0.8%			1.2%	1.4%	0.6%	0.7%	1.6%	1.9%		
Flexible IO Tester - Rand Read - Linux AIO - Yes - Yes - 2MB (MB/s)	400	510	503	297	10.21	473	458	484	387	449	457	451	450	462
Normalized	78.43%	100%	98.63%	58.24%	2%	92.75%	89.8%	94.9%	75.88%	88.04%	89.61%	88.43%	88.24%	90.59%
Standard Deviation	2.9%	2.9%	3.8%		2.9%		0.4%	2.9%	1.7%	2.9%	0.7%	1.8%	0.9%	2.4%
Flexible IO Tester - Rand Read - Linux AIO - Yes - Yes - 2MB (IOPS)	197	252	248	145	1	233	226	238	190	221	225	222	221	227
Normalized	78.17%	100%	98.41%	57.54%	0.4%	92.46%	89.68%	94.44%	75.4%	87.7%	89.29%	88.1%	87.7%	90.08%
Standard Deviation	3%	2.9%	3.9%		37.6%		0.3%	2.8%	1.7%	3%	0.8%	1.6%	0.9%	2.4%
Flexible IO Tester - Rand Read - POSIX AIO - Yes - Yes - 2MB	411	509	512	295	7.216	475	461	485	378	455	455	452	454	437
Normalized	80.27%	99.41%	100%	57.62%	1.41%	92.77%	90.04%	94.73%	73.83%	88.87%	88.87%	88.28%	88.67%	85.35%
Standard Deviation	1%	2.5%	0.5%	3.2%	2.6%	0.6%	0.7%	0.9%	1.2%	0.9%	0.8%	0.5%	1.1%	1.1%

20200618_netapp

Flexible IO Tester - Rand Read - POSIX AIO - Yes - Yes - 2MB	202	251	**253**	144	**1**	234	227	239	185	224	224	222	223	215
Normalized	79.84%	99.21%	100%	56.92%	0.4%	92.49%	89.72%	94.47%	73.12%	88.54%	88.54%	87.75%	88.14%	84.98%
Standard Deviation	1%	2.5%	0.5%	3.2%		0.7%	0.9%	0.9%	1.1%	0.9%	0.8%	0.5%	1%	1%
Flexible IO Tester - Rand Write - Linux AIO - No - Yes - 2MB	862	820	716	416	**411**	496	516	645	**871**	856	769	771	758	848
Normalized	98.97%	94.14%	82.2%	47.76%	47.19%	56.95%	59.24%	74.05%	100%	98.28%	88.29%	88.52%	87.03%	97.36%
Standard Deviation	1.7%	2.6%	15.2%	7.1%	0.8%	2.9%	2.7%	6.9%	1.8%	1.3%	2.9%	1.4%	0.2%	0.9%
Flexible IO Tester - Rand Write - Linux AIO - No - Yes - 2MB	427	407	355	205	**202**	245	255	319	**432**	425	381	382	376	420
Normalized	98.84%	94.21%	82.18%	47.45%	46.76%	56.71%	59.03%	73.84%	100%	98.38%	88.19%	88.43%	87.04%	97.22%
Standard Deviation	1.7%	2.7%	15.4%	7.3%	0.9%	2.9%	2.8%	7%	1.8%	1.3%	3%	1.3%	0.2%	0.9%
Flexible IO Tester - Rand Write - POSIX AIO - No - Yes - 2MB	563	578	**580**	283	**7.138**	361	363	422	488	493	427	424	421	498
Normalized	97.07%	99.66%	100%	48.79%	1.23%	62.24%	62.59%	72.76%	84.14%	85%	73.62%	73.1%	72.59%	85.86%
Standard Deviation	1.5%	1.3%	3.2%	2.8%	2.1%	1.7%	1%	1.1%	0.8%	0.6%	1%	0.5%	1.2%	0.9%

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Flexible IO Tester - Rand Write - POSIX AIO - No - Yes - 2MB	278	285	**287**	138	**1**	177	178	208	240	243	209	208	207	245
Normalized	96.86 %	99.3 %	100%	48.08 %	0.35 %	61.67 %	62.02 %	72.47 %	83.62 %	84.67 %	72.82 %	72.47 %	72.13 %	85.37 %
Standard Deviation	1.6%	1.1%	3.3%	2.8%		1.7%	1.1%	1.2%	0.9%	0.5%	1%	0.6%	1.3%	0.8%
Flexible IO Tester - Seq Write - Sync - Yes - Yes - 2MB (MB/s)	560	576	**613**	**308**	431	590	594	490	506	497	482	485	473	499
Normalized	91.35 %	93.96 %	100%	50.24 %	70.31 %	96.25 %	96.9 %	79.93 %	82.54 %	81.08 %	78.63 %	79.12 %	77.16 %	81.4 %
Standard Deviation	3.2%	0.3%	5.9%	7.8%	4.1%	1.2%	1.4%	2.8%	1%	0.1%	3.9%	3.6%	2.8%	1%
Flexible IO Tester - Seq Write - Sync - Yes - Yes - 2MB (IOPS)	280	287	**306**	**154**	215	294	296	245	252	248	241	242	236	249
Normalized	91.5 %	93.79 %	100%	50.33 %	70.26 %	96.08 %	96.73 %	80.07 %	82.35 %	81.05 %	78.76 %	79.08 %	77.12 %	81.37 %
Standard Deviation	3.2%	0.3%	5.9%	7.8%	4.1%	1.3%		2.8%		0.2%	4%	3.5%	3%	1.1%
Flexible IO Tester - Rand Write - Linux AIO - Yes - Yes - 2MB	542	**571**	570	**303**	424	558	556	485	497	494	472	468	465	491
Normalized	94.92 %	100%	99.82 %	53.06 %	74.26 %	97.72 %	97.37 %	84.94 %	87.04 %	86.51 %	82.66 %	81.96 %	81.44 %	85.99 %
Standard Deviation	1.4%	2.4%	1.2%	6.2%	3.5%	1.2%	0.1%	1.9%	2.2%	2%	1.2%	2.8%	2.8%	

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Flexible IO Tester - Rand Write - Linux AIO - Yes - Yes - 2MB	267	**282**	281	**148**	208	275	275	239	245	244	232	231	229	242
Normalized	94.68%	100%	99.65%	52.48%	73.76%	97.52%	97.52%	84.75%	86.88%	86.52%	82.27%	81.91%	81.21%	85.82%
Standard Deviation	1.5%	2.5%	1.1%	6.3%	3.5%	1.2%		1.9%	2.1%	2%	1.1%	2.8%	2.7%	
Flexible IO Tester - Rand Write - POSIX AIO - Yes - Yes -	582	609	**624**	**321**	431	604	601	515	522	536	490	487	493	528
Normalized	93.27%	97.6%	100%	51.44%	69.07%	96.79%	96.31%	82.53%	83.65%	85.9%	78.53%	78.04%	79.01%	84.62%
Standard Deviation	2.8%	1.7%	1.1%	5.1%	0.7%	1.7%		4.8%	2.2%	2%	0.7%	0.7%	2.8%	2.9%
Flexible IO Tester - Rand Write - POSIX AIO - Yes - Yes -	288	301	**309**	**157**	212	298	297	254	257	264	242	240	243	261
Normalized	93.2%	97.41%	100%	50.81%	68.61%	96.44%	96.12%	82.2%	83.17%	85.44%	78.32%	77.67%	78.64%	84.47%
Standard Deviation	2.8%	1.8%	1.1%	5.3%	0.7%	1.7%		4.9%	2.2%	2.1%	0.9%	0.6%	2.7%	3%
Flexible IO Tester - Seq Read - Linux AIO - No - Yes - 2MB (MB/s)	140	140	139	517	**510**	111	112	**143**	117	117	117	117	117	117
Normalized	97.98%	97.43%	97.01%	35.98%	35.49%	77.45%	78.01%	100%	81.63%	81.77%	81.77%	81.63%	81.56%	81.77%
Standard Deviation	0.5%	0.2%	0.1%	4.8%		0.5%	0.5%	1.9%				0.3%	0.3%	

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Flexible IO Tester - Seq Read - Linux AIO - No - Yes - 2MB (IOPS)	700	696	693	255	252	553	557	715	583	584	584	583	583	584
Normalized	97.9%	97.34%	96.92%	35.66%	35.24%	77.34%	77.9%	100%	81.54%	81.68%	81.68%	81.54%	81.54%	81.68%
Standard Deviation	0.5%	0.2%	0.1%	4.9%	2.9%	0.7%	0.5%	2%				0.4%	0.4%	
Flexible IO Tester - Seq Read - POSIX AIO - No - Yes - 2MB (MB/s)	615	878	874	420	8.834	695	710	819	567	707	692	702	709	684
Normalized	70.05%	100%	99.54%	47.84%	1.01%	79.16%	80.87%	93.28%	64.58%	80.52%	78.82%	79.95%	80.75%	77.9%
Standard Deviation		1%	1.6%	2.8%	3.6%	0.7%	0.6%	0.9%	0.8%	1.6%	1.9%	1.9%	1.4%	1.2%
Flexible IO Tester - Seq Read - POSIX AIO - No - Yes - 2MB (IOPS)	304	436	433	206	2	344	351	406	280	350	342	347	351	338
Normalized	69.72%	100%	99.31%	47.25%	0.46%	78.9%	80.5%	93.12%	64.22%	80.28%	78.44%	79.59%	80.5%	77.52%
Standard Deviation		1.1%	1.5%	2.8%		0.8%	0.7%	0.9%	0.8%		2%	1.9%	1.3%	1.1%
Flexible IO Tester - Seq Read - Linux AIO - Yes - Yes - 2MB	963	1114	1079	648	469	881	895	1004	879	1001	999	1001	992	1021
Normalized	86.45%	100%	96.86%	58.17%	42.1%	79.08%	80.34%	90.13%	78.9%	89.86%	89.68%	89.86%	89.05%	91.65%
Standard Deviation	1.6%	0.3%	2.9%	0.2%	1.7%	0.2%	0.5%	3.1%	2%	0.4%	1.1%	0.3%	0.8%	2.2%

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Flexible IO Tester - Seq Read - Linux AIO - Yes - Yes - 2MB	478	**553**	536	320	**231**	437	444	498	436	497	496	497	492	507
Normalized	86.44%	100%	96.93%	57.87%	41.77%	79.02%	80.29%	90.05%	78.84%	89.87%	89.69%	89.87%	88.97%	91.68%
Standard Deviation	1.5%		3%		1.6%	0.3%	0.5%	3.1%	2.1%	0.5%	1.1%	0.3%	0.8%	2.3%
Flexible IO Tester - Seq Read - POSIX AIO - Yes - Yes - 2MB	1018	**1142**	1109	693	**494**	911	918	1019	892	993	977	981	980	992
Normalized	89.14%	100%	97.11%	60.68%	43.26%	79.77%	80.39%	89.23%	78.11%	86.95%	85.55%	85.9%	85.81%	86.87%
Standard Deviation	2.9%	2.8%	1.8%	3.8%	4.1%	3.7%	3.4%	2.7%	3.6%	3%	0.3%	0.3%	0.7%	3%
Flexible IO Tester - Seq Read - POSIX AIO - Yes - Yes - 2MB	505	**568**	551	343	**243**	452	455	506	442	493	485	487	487	493
Normalized	88.91%	100%	97.01%	60.39%	42.78%	79.58%	80.11%	89.08%	77.82%	86.8%	85.39%	85.74%	85.74%	86.8%
Standard Deviation	2.9%	2.8%	1.8%	3.8%	4.1%	3.8%	3.4%	2.8%	3.6%	3%	0.3%	0.3%	0.8%	3%
Flexible IO Tester - Seq Write - Linux AIO - No - Yes - 2MB (MB/s)	760	695	703	**407**	587	928	**943**	576	811	783	689	695	679	798
Normalized	80.59%	73.7%	74.55%	43.16%	62.25%	98.41%	100%	61.08%	86%	83.03%	73.06%	73.7%	72%	84.62%
Standard Deviation	1.9%	8.1%	6%	4.8%	2.9%	3%	1.8%	7.3%		1.4%	1%	1.2%	1.3%	

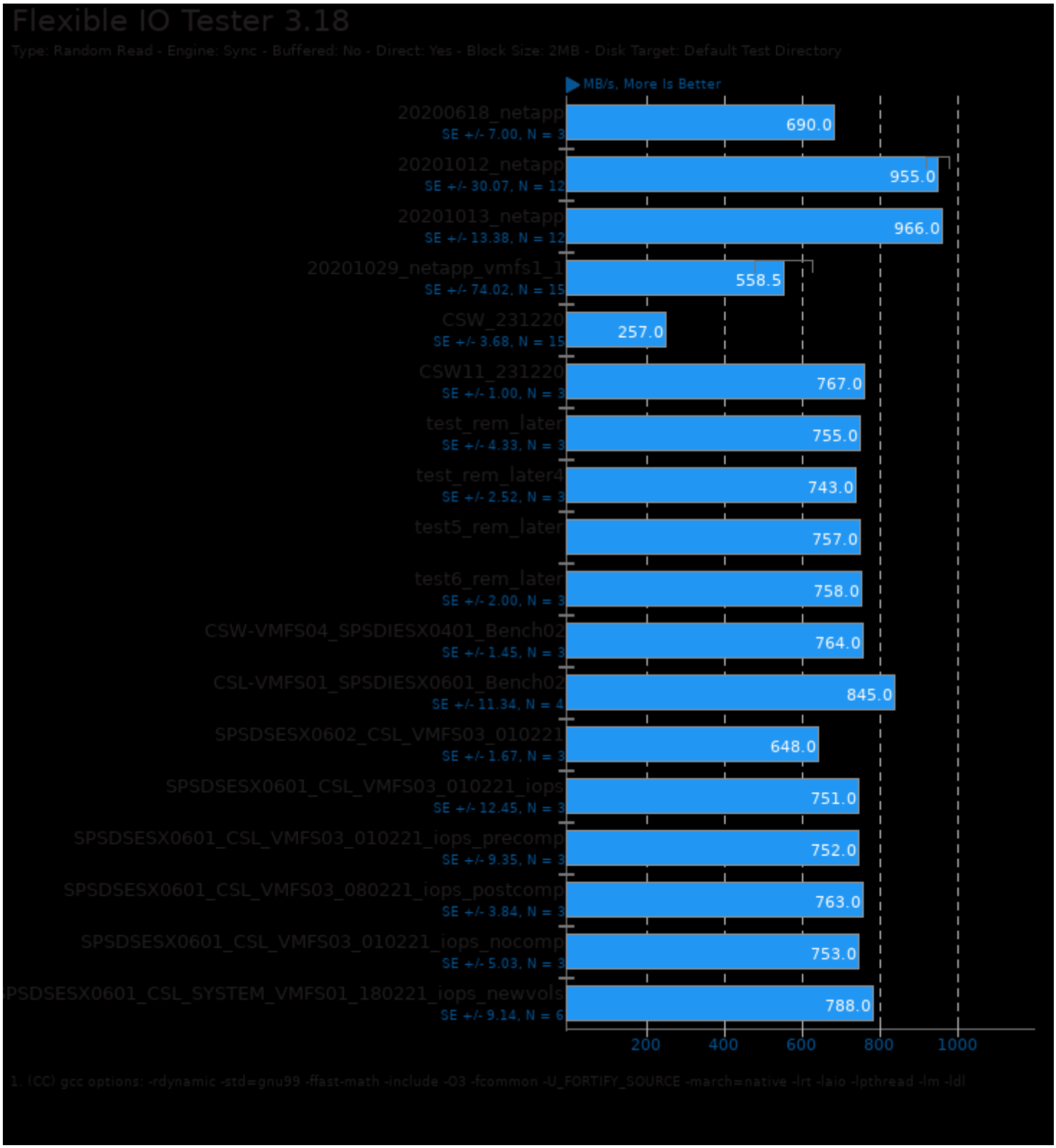
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Flexible IO Tester - Seq Write - Linux AIO - No - Yes - 2MB (IOPS)	376	344	348	200	290	461	468	284	402	388	341	344	336	395
Normalized	80.34%	73.5%	74.36%	42.74%	61.97%	98.5%	100%	60.68%	85.9%	82.91%	72.86%	73.5%	71.79%	84.4%
Standard Deviation	2%	8.1%	6%	4.9%	3.1%	3%	1.8%	7.4%		1.4%	1%	1.3%	1.3%	
Flexible IO Tester - Seq Write - POSIX AIO - No - Yes - 2MB (MB/s)	541	569	578	280	8.692	671	660	390	468	470	412	407	408	488
Normalized	80.63%	84.8%	86.14%	41.73%	1.3%	100%	98.36%	58.12%	69.75%	70.04%	61.4%	60.66%	60.8%	72.73%
Standard Deviation	0.6%	0.9%	0.5%	2%	1.1%	0.5%	0.5%	1.3%	0.4%	0.7%	1.1%		1.9%	0.6%
Flexible IO Tester - Seq Write - POSIX AIO - No - Yes - 2MB (IOPS)	266	281	285	136	2	332	326	191	230	231	202	200	200	241
Normalized	80.12%	84.64%	85.84%	40.96%	0.6%	100%	98.19%	57.53%	69.28%	69.58%	60.84%	60.24%	60.24%	72.59%
Standard Deviation	0.6%	0.9%	0.5%	2.2%				1.3%	0.5%	0.9%	1%		1.9%	
Flexible IO Tester - Seq Write - Linux AIO - Yes - Yes - 2MB	555	584	587	305	415	551	554	479	486	495	473	479	472	490
Normalized	94.55%	99.49%	100%	51.96%	70.7%	93.87%	94.38%	81.6%	82.79%	84.33%	80.58%	81.6%	80.41%	83.48%
Standard Deviation	1.6%	3.4%	2.9%	5%	4.6%	1.5%	1.6%	2.1%	3%	1.1%	3.8%	2.8%	3.5%	3.5%

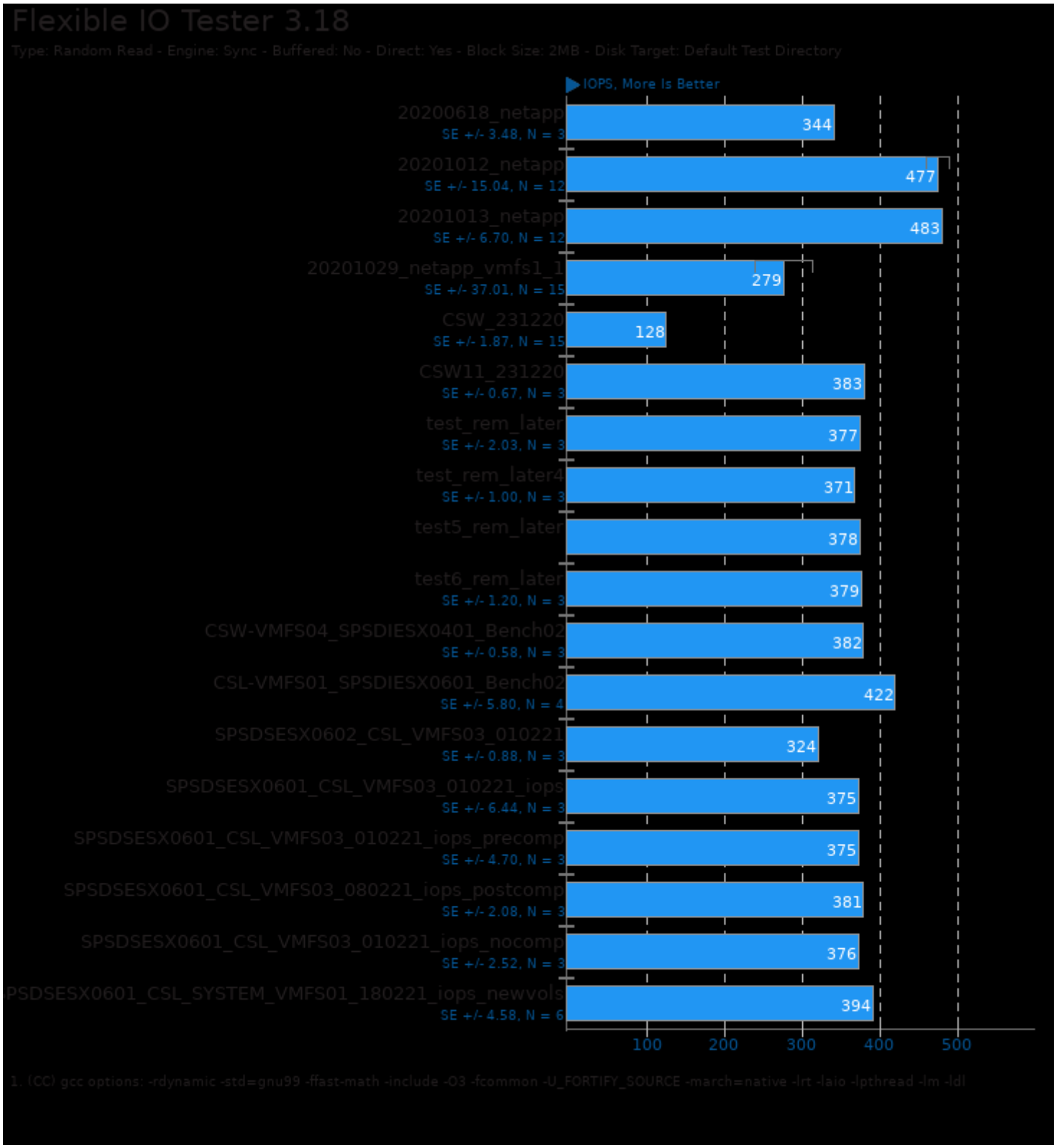
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Flexible IO Tester - Seq Write - Linux AIO - Yes - Yes - 2MB	274	288	290	149	204	272	273	236	240	244	233	236	232	242
Normalized	94.48%	99.31%	100%	51.38%	70.34%	93.79%	94.14%	81.38%	82.76%	84.14%	80.34%	81.38%	80%	83.45%
Standard Deviation	1.5%	3.4%	2.9%	5.1%	4.6%	1.5%	1.5%	2.4%	3%	1%	3.9%	2.7%	3.5%	3.6%
Flexible IO Tester - Seq Write - POSIX AIO - Yes - Yes - 2MB	570	594	594	318	410	603	604	489	521	510	496	499	485	511
Normalized	94.37%	98.34%	98.34%	52.65%	67.88%	99.83%	100%	80.96%	86.26%	84.44%	82.12%	82.62%	80.3%	84.6%
Standard Deviation	2.9%	4.3%	5.9%	5.4%	0.9%	1.5%	2.6%		1.1%	1.1%	1.2%	2.3%	2.1%	2.9%
Flexible IO Tester - Seq Write - POSIX AIO - Yes - Yes - 2MB	281	293	294	155	201	298	298	241	257	251	245	246	239	252
Normalized	94.3%	98.32%	98.66%	52.01%	67.45%	100%	100%	80.87%	86.24%	84.23%	82.21%	82.55%	80.2%	84.56%
Standard Deviation	3.1%	4.2%	6%	5.5%	0.8%	1.5%	2.6%		1.3%	1.2%		2.2%	2.2%	2.8%

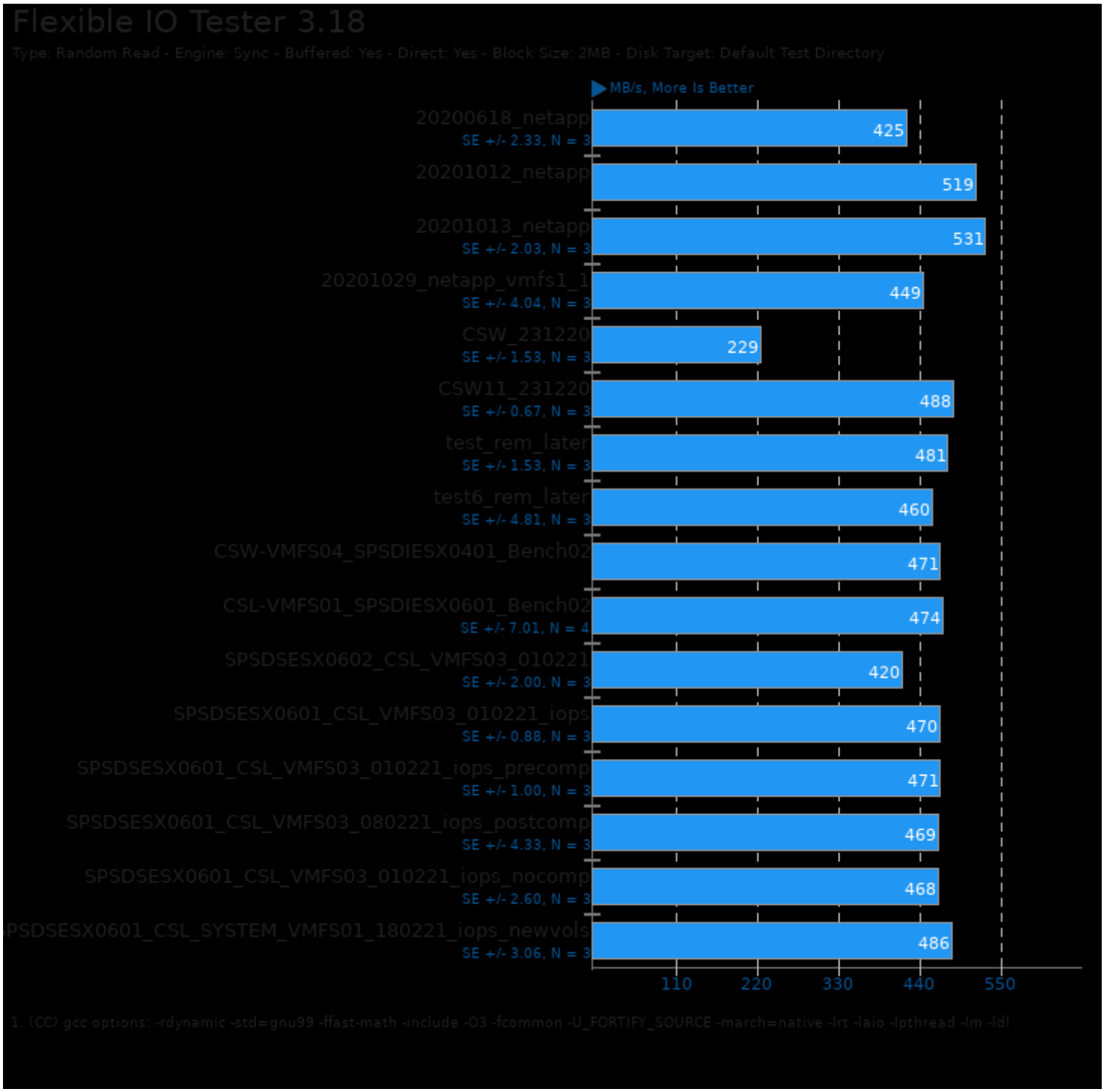
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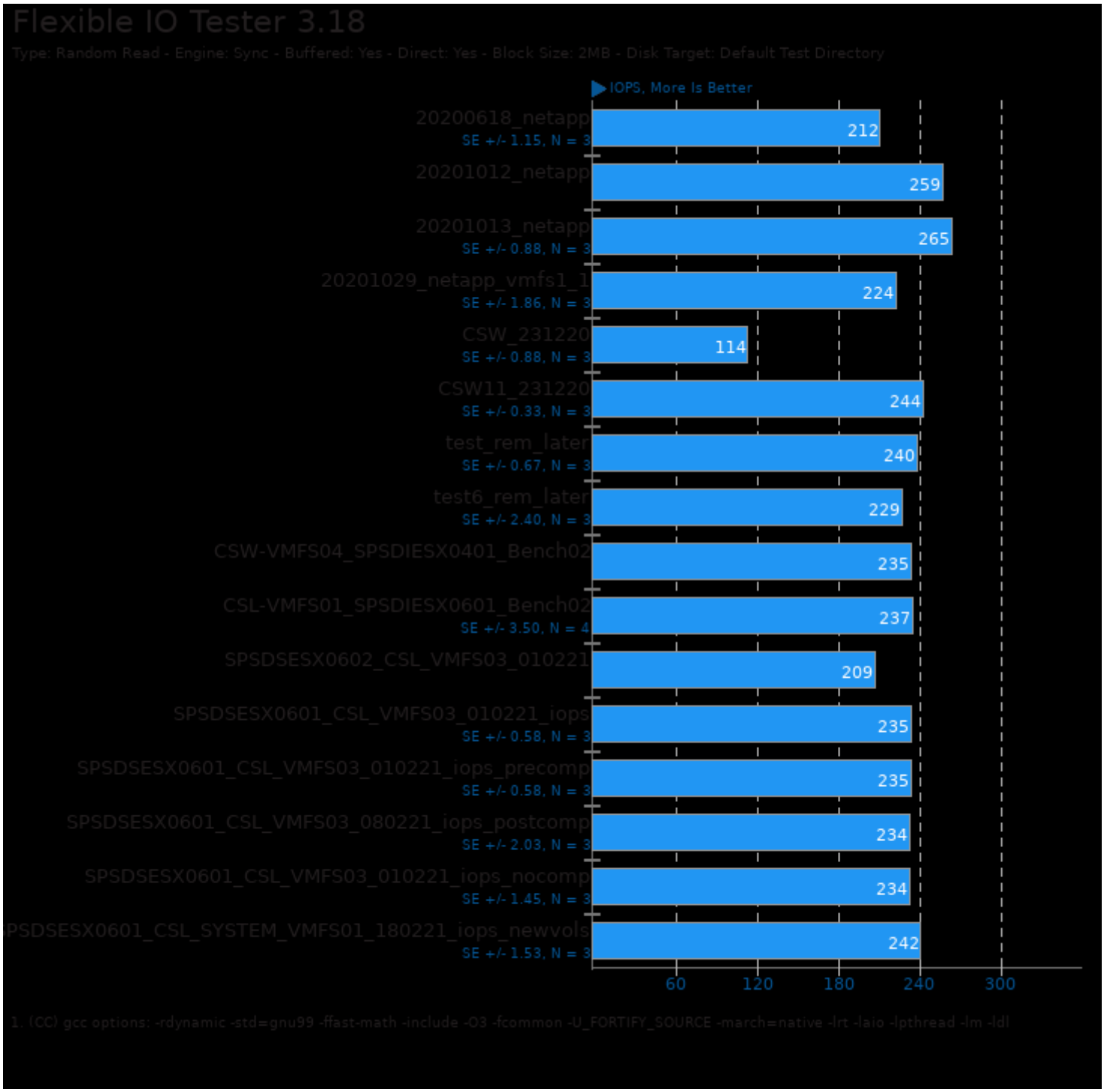
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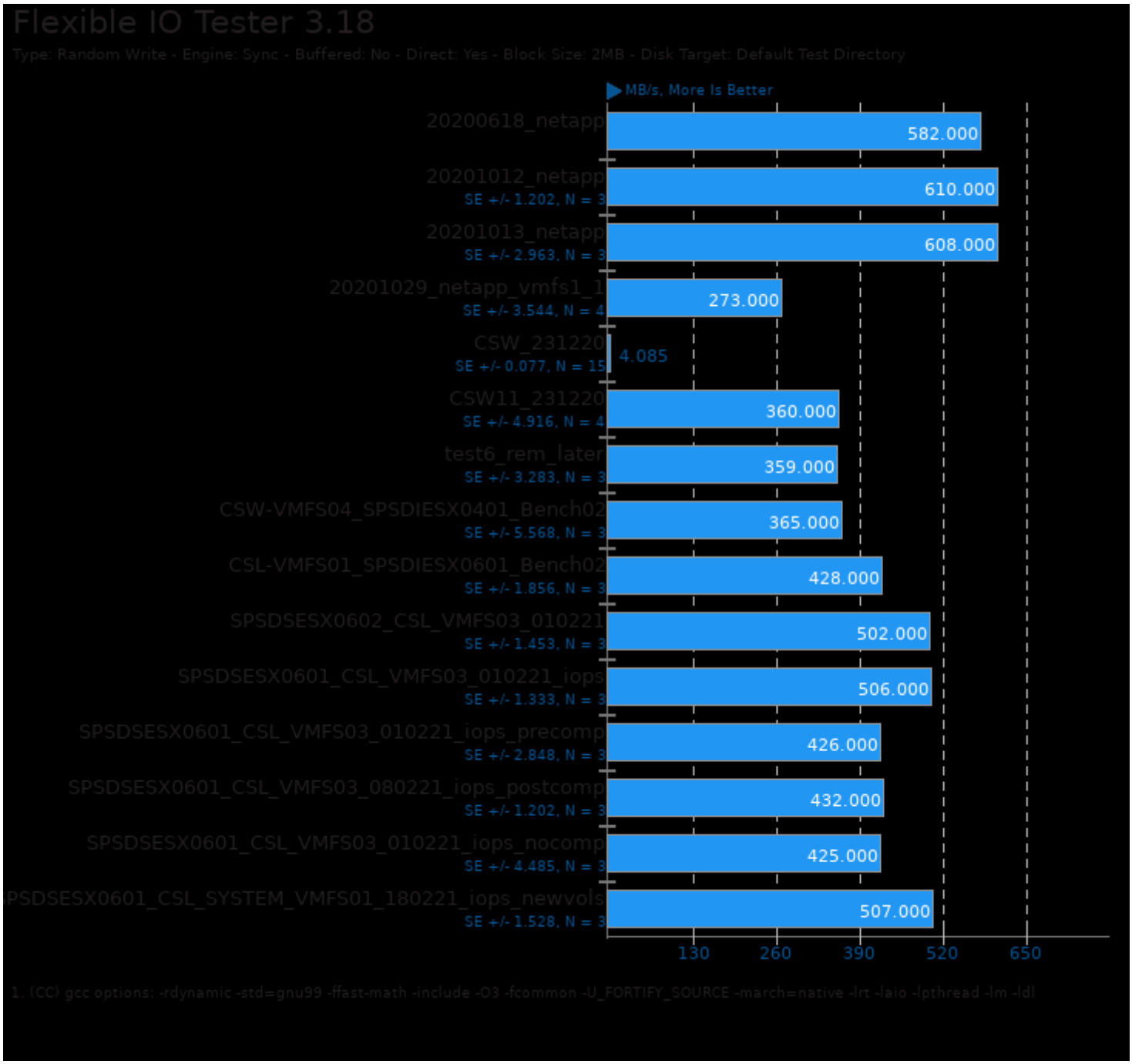


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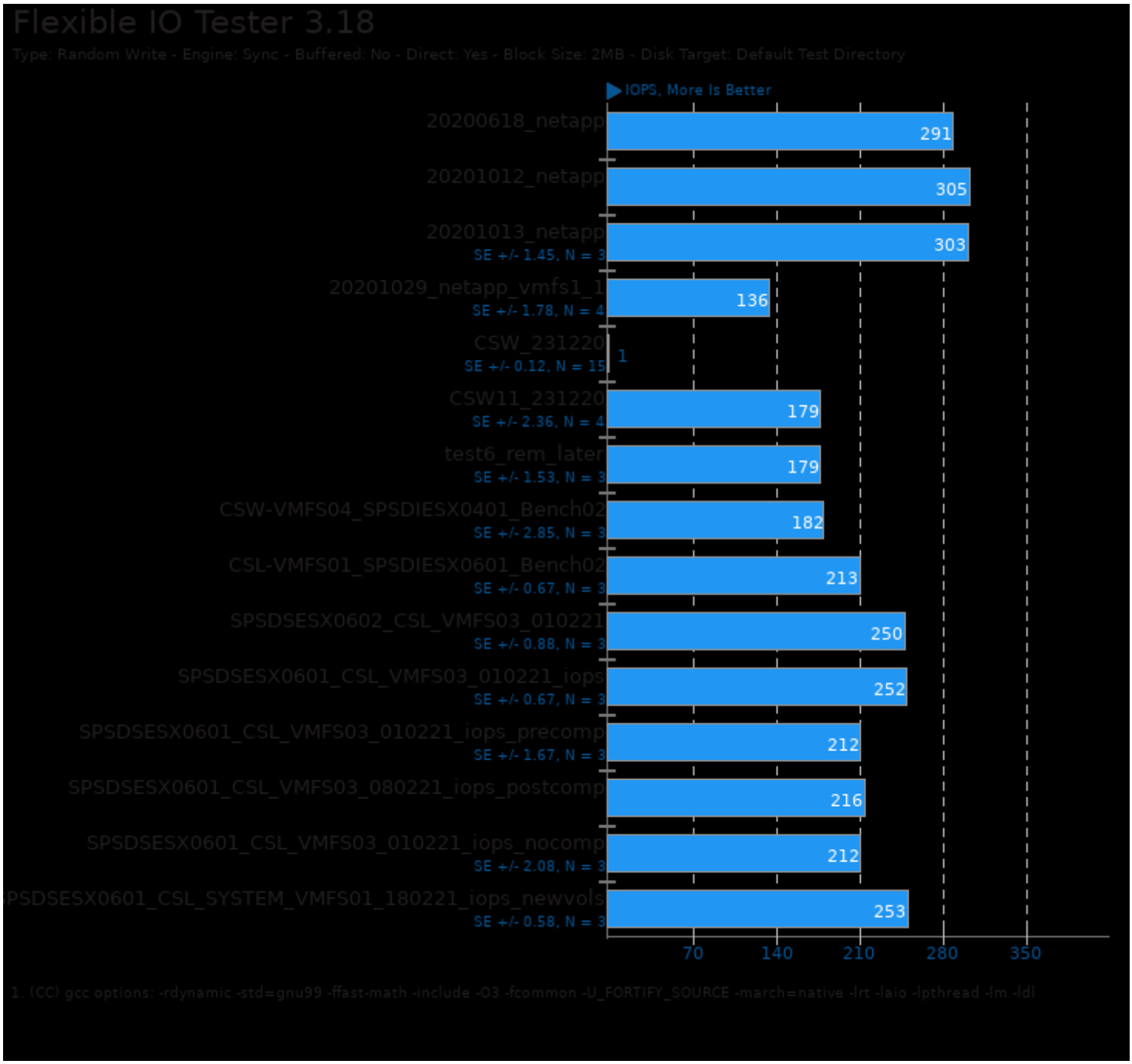


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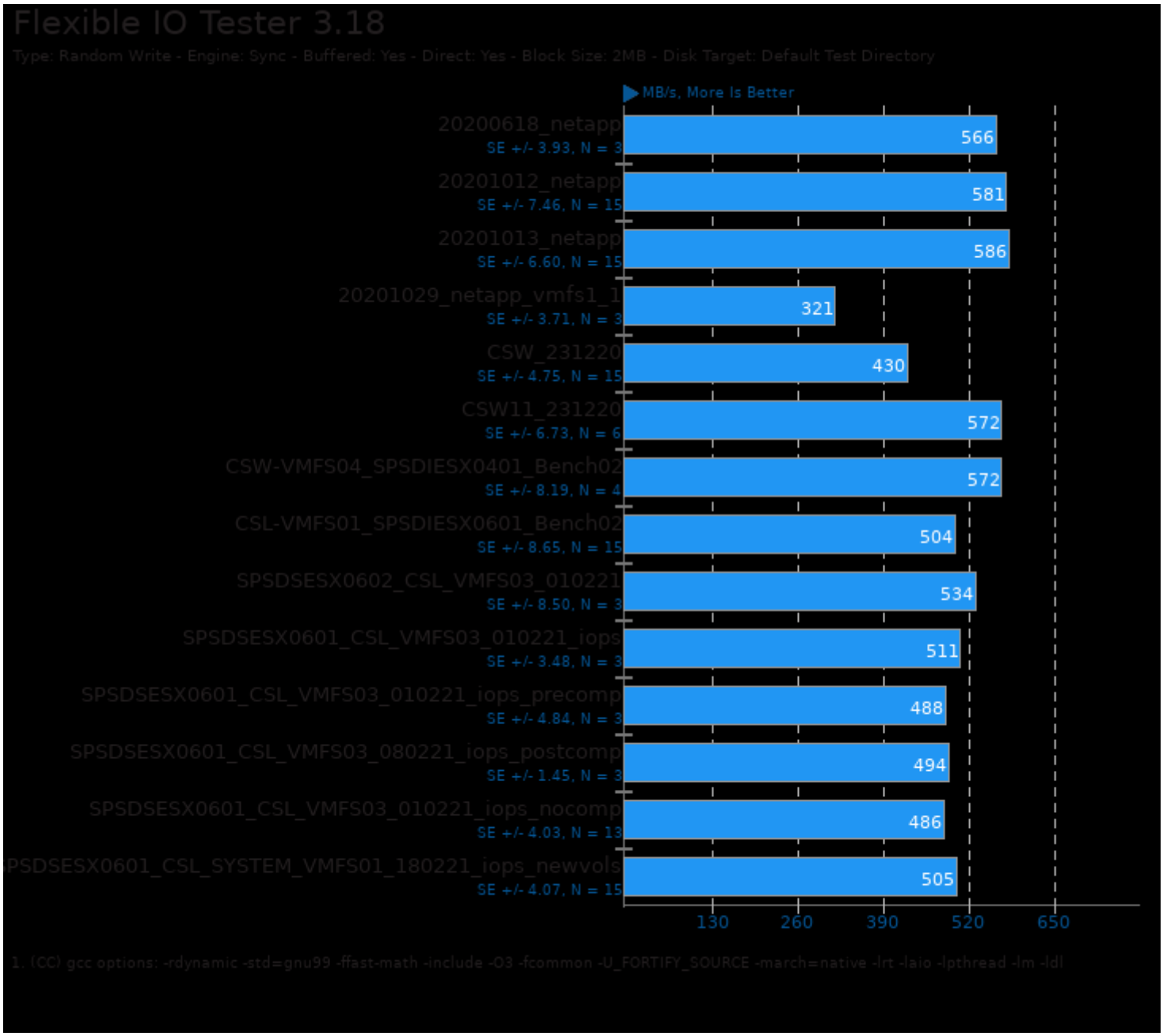



Flexible IO Tester 3.18
Type: Random Write - Engine: Sync - Buffered: No - Direct: Yes - Block Size: 2MB - Disk Target: Default Test Directory
MB/s, More Is Better
20200618_netapp
582.000
20201012_netapp
SE +/- 1.202, N = 3
610.000
20201013_netapp
SE +/- 2.963, N = 3
608.000
20201029_netapp_vmfs1_1
SE +/- 3.544, N = 4
273.000
CSW_231220
SE +/- 0.077, N = 15
4.085
CSW11_231220
SE +/- 4.916, N = 4
360.000
test6_rem_later
SE +/- 3.283, N = 3
359.000
CSW-VMFS04_SPSDIESX0401_Bench02
SE +/- 5.568, N = 3
365.000
CSL-VMFS01_SPSDIESX0601_Bench02
SE +/- 1.856, N = 3
428.000
SPSDSESX0602_CSL_VMFS03_010221
SE +/- 1.453, N = 3
502.000
SPSDSESX0601_CSL_VMFS03_010221_iops
SE +/- 1.333, N = 3
506.000
SPSDSESX0601_CSL_VMFS03_010221_iops_precomp
SE +/- 2.848, N = 3
426.000
SPSDSESX0601_CSL_VMFS03_080221_iops_postcomp
SE +/- 1.202, N = 3
432.000
SPSDSESX0601_CSL_VMFS03_010221_iops_nocomp
SE +/- 4.485, N = 3
425.000
PSDSESX0601_CSL_SYSTEM_VMFS01_180221_iops_newvols
SE +/- 1.528, N = 3
507.000
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

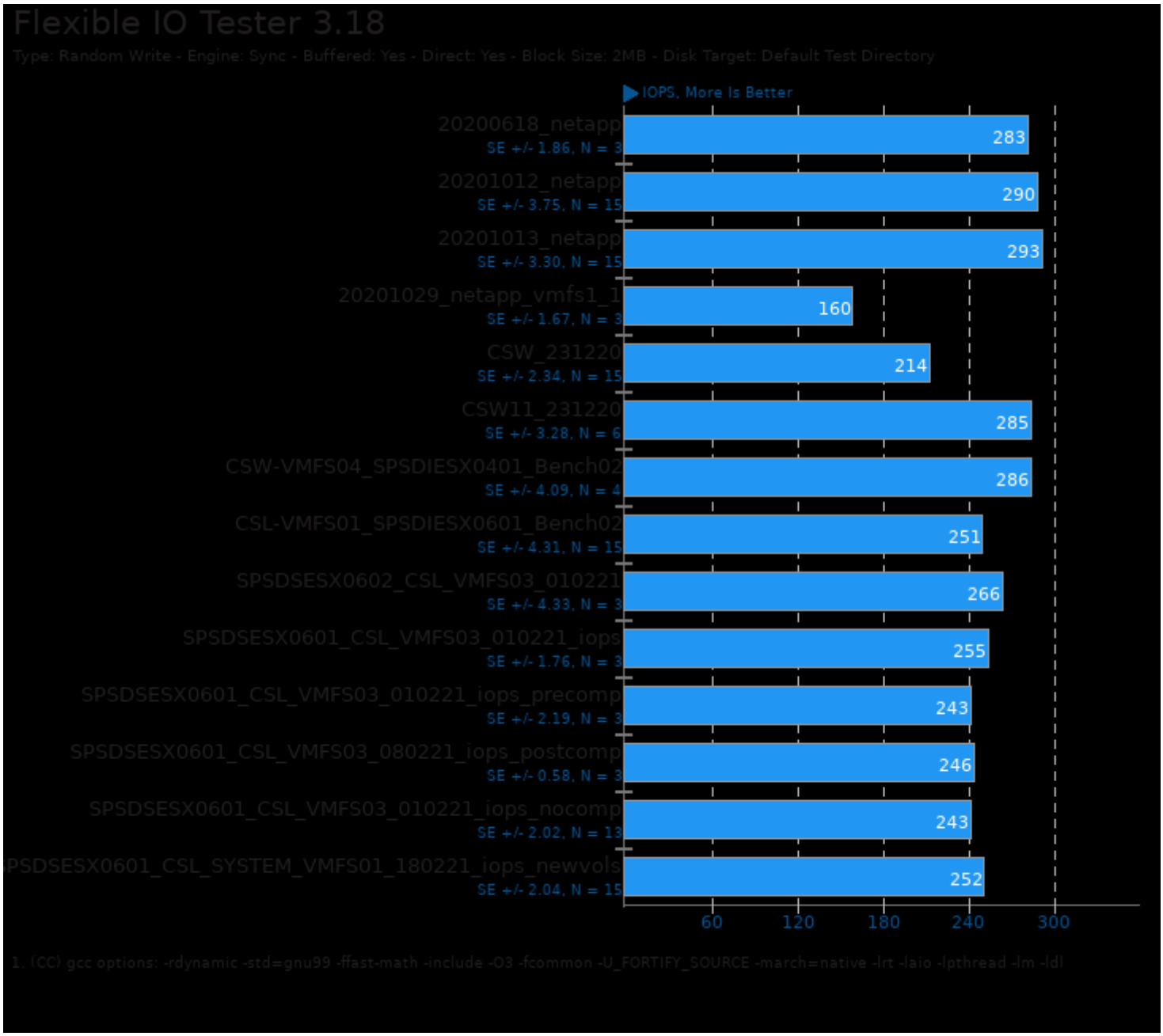
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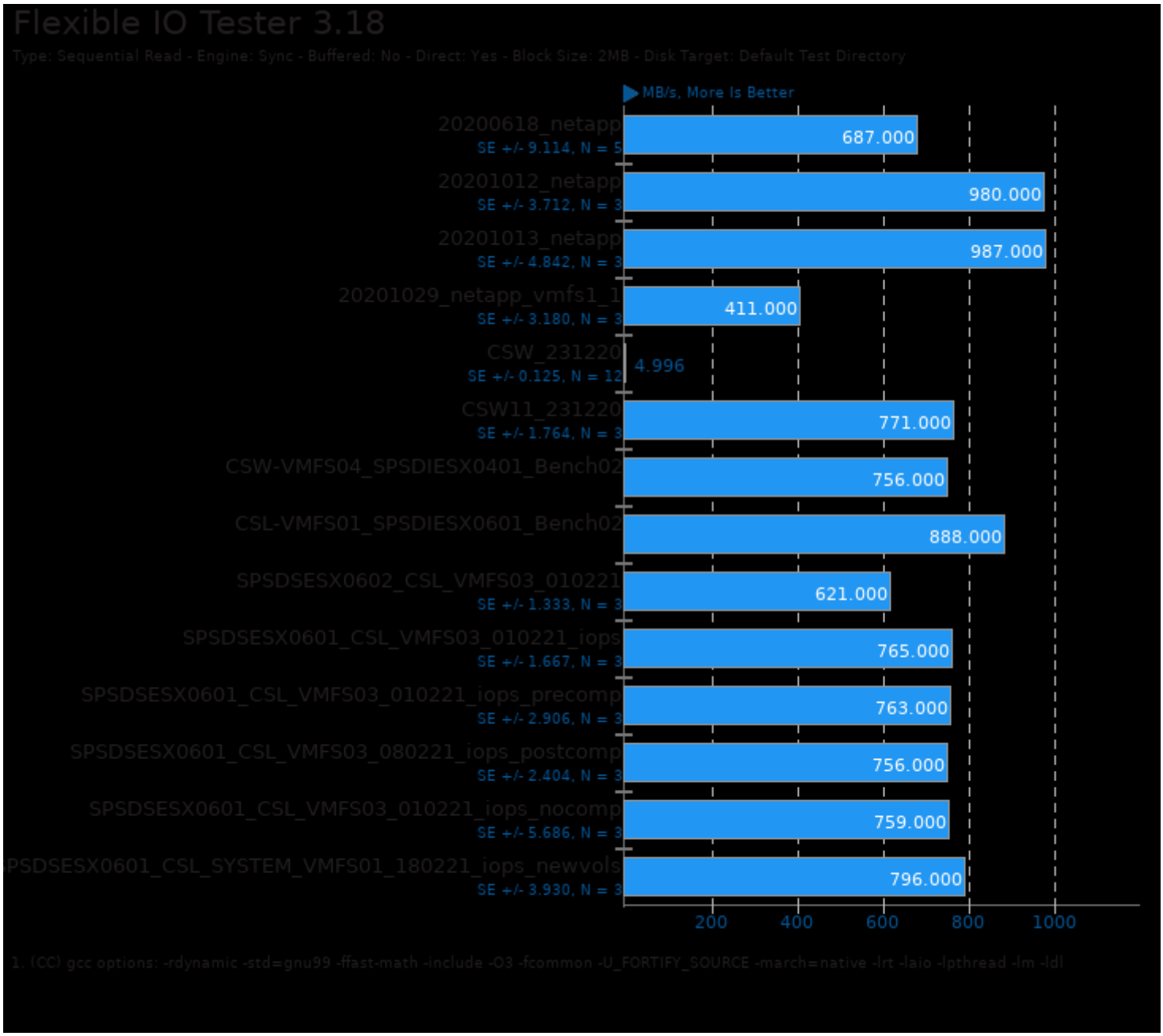
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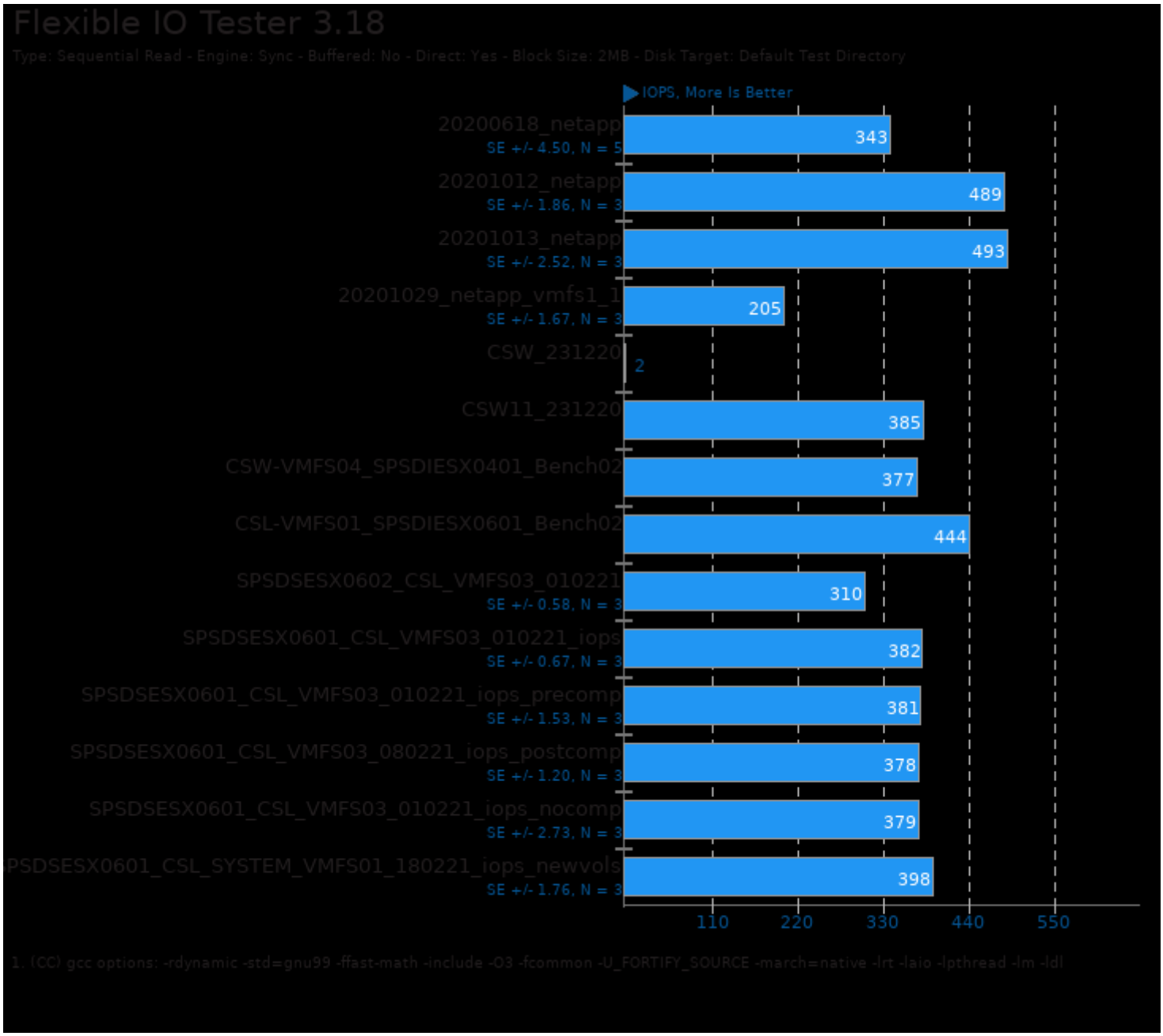
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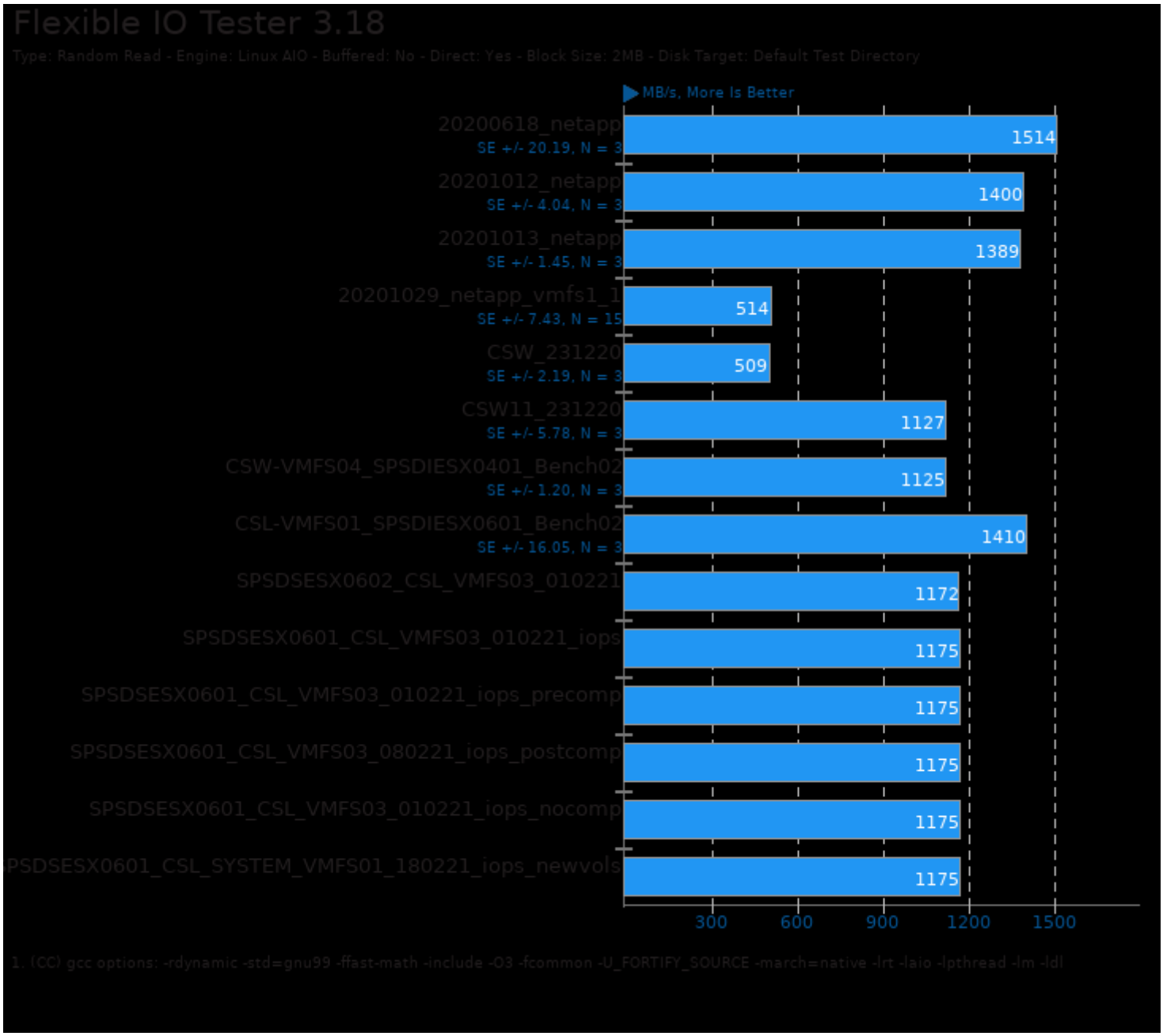
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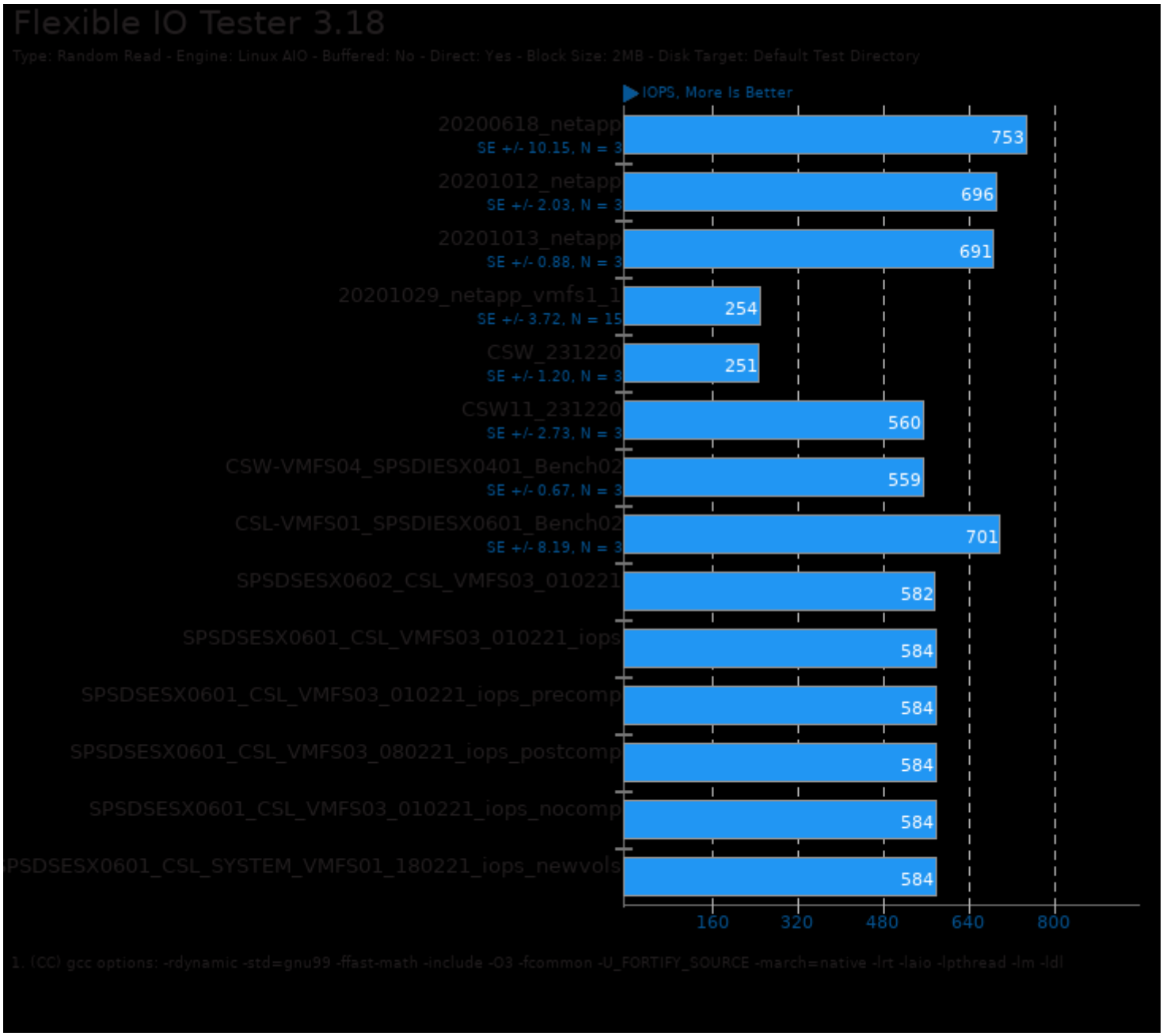
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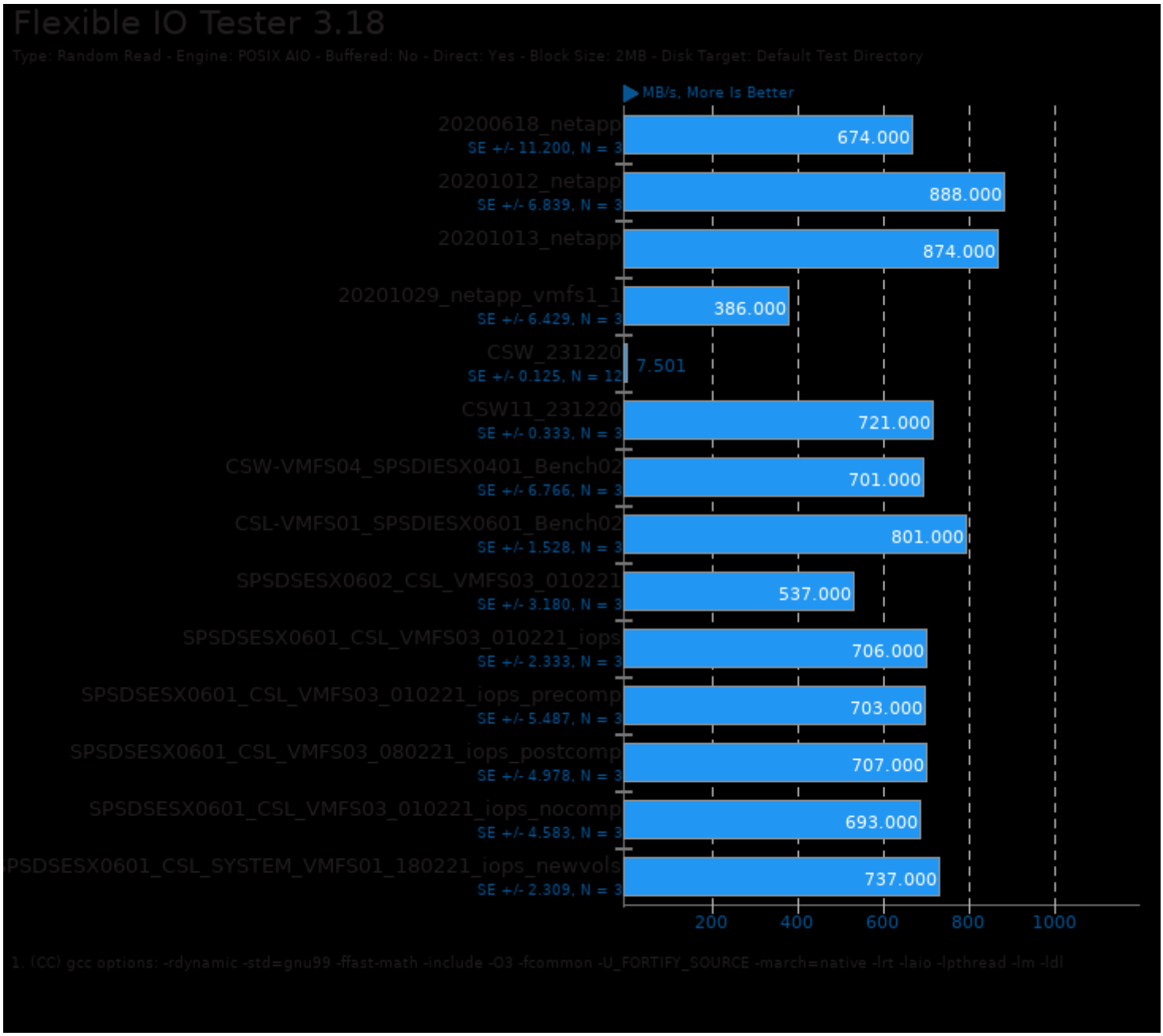
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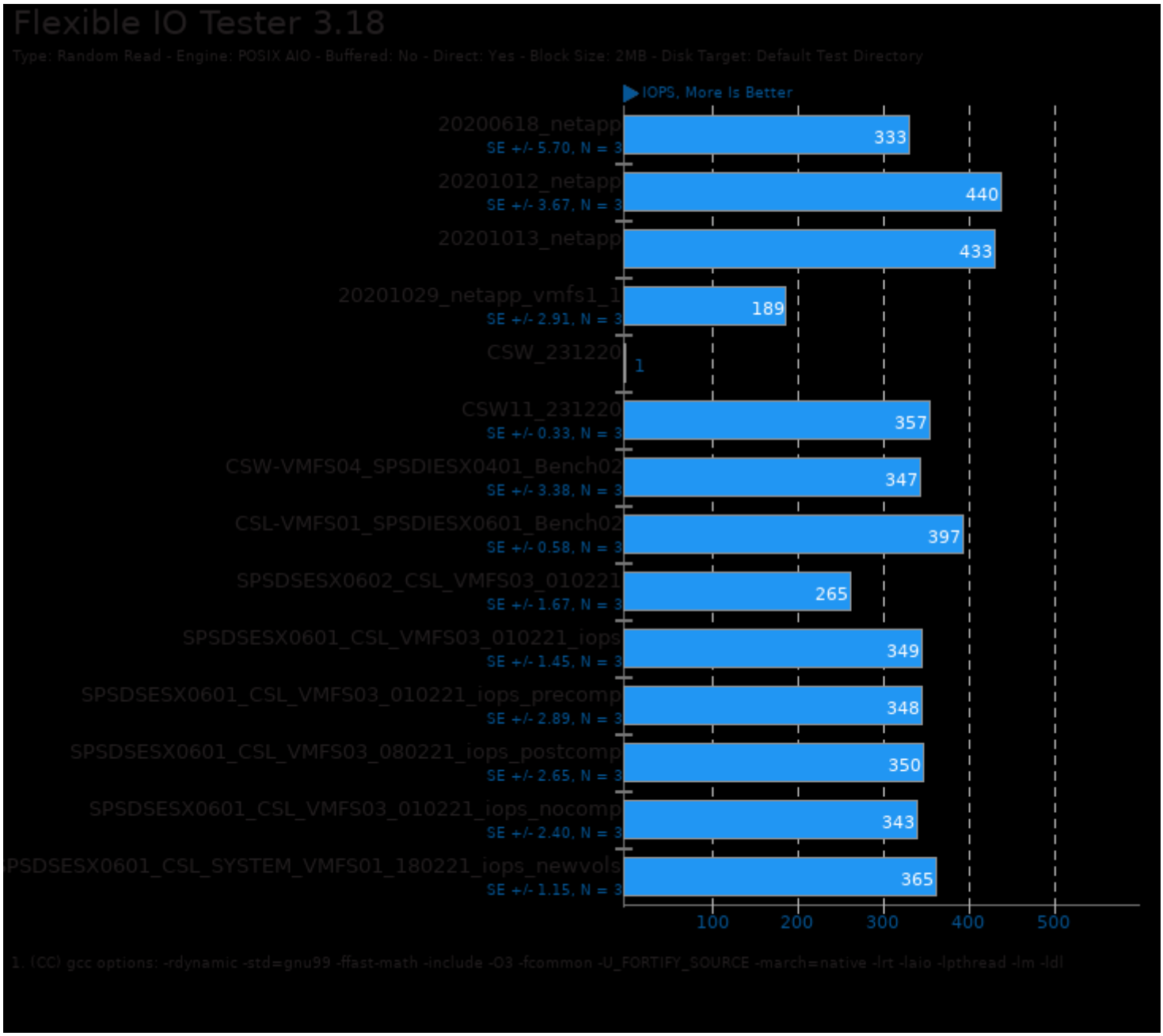
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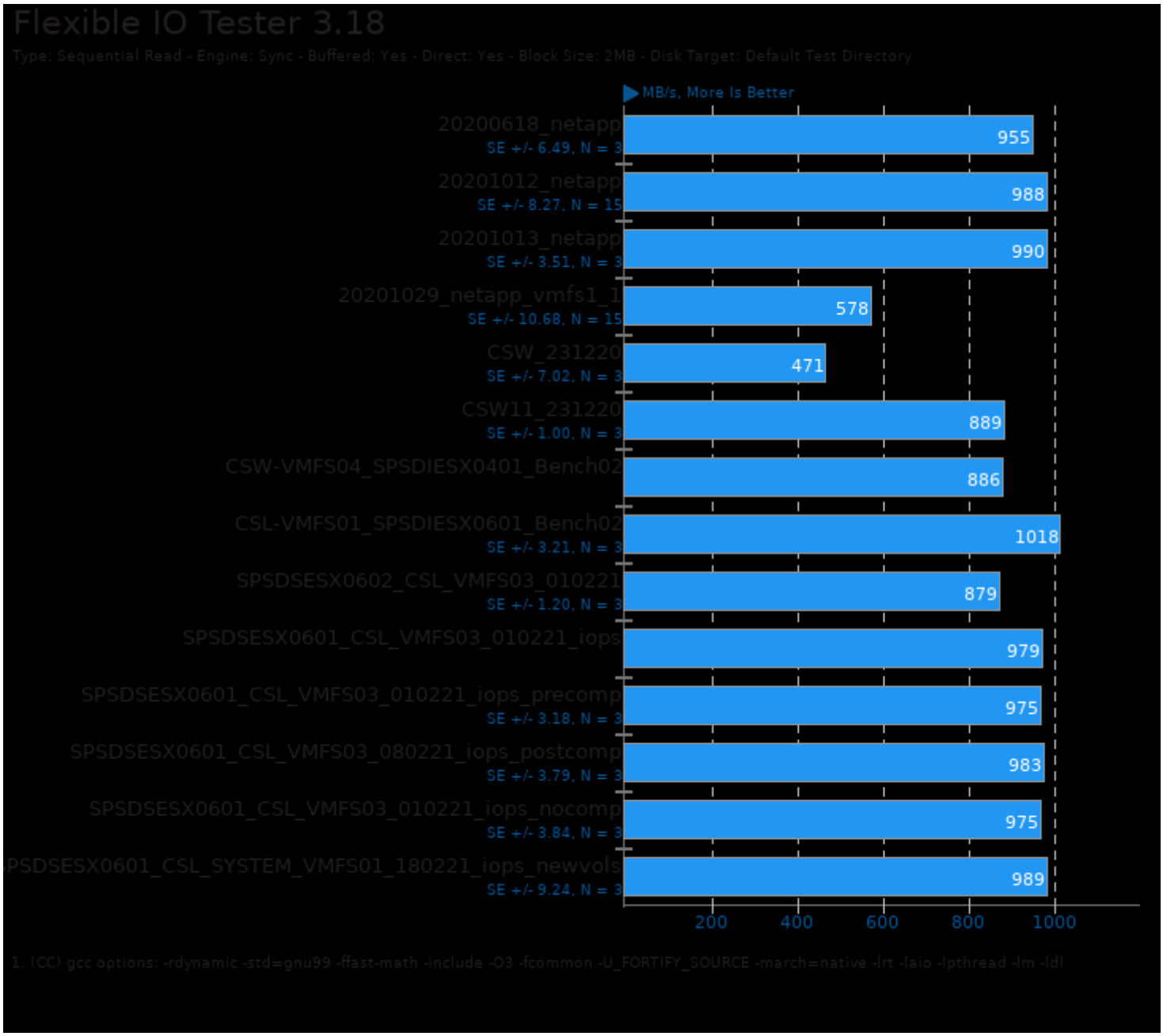
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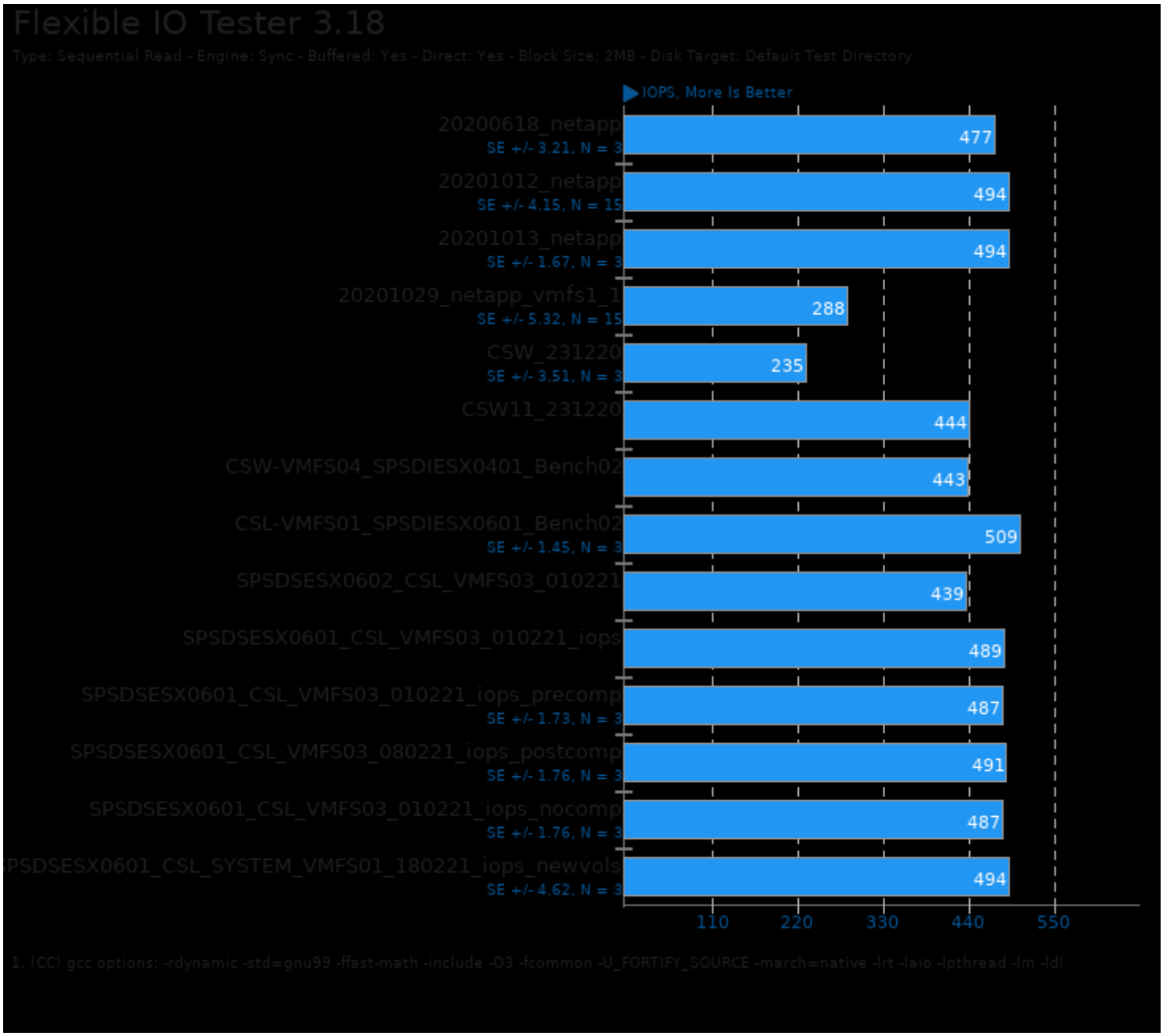
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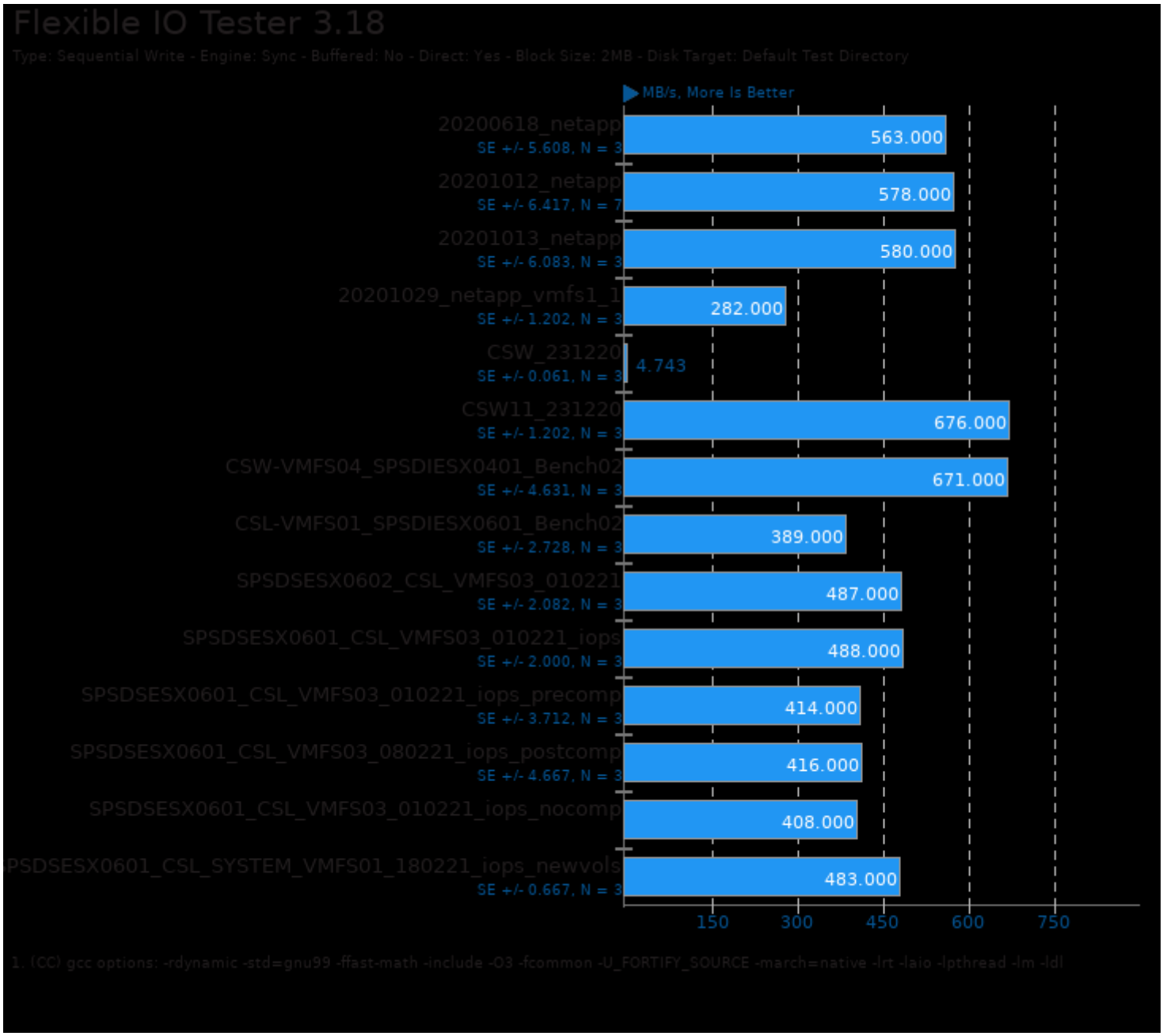
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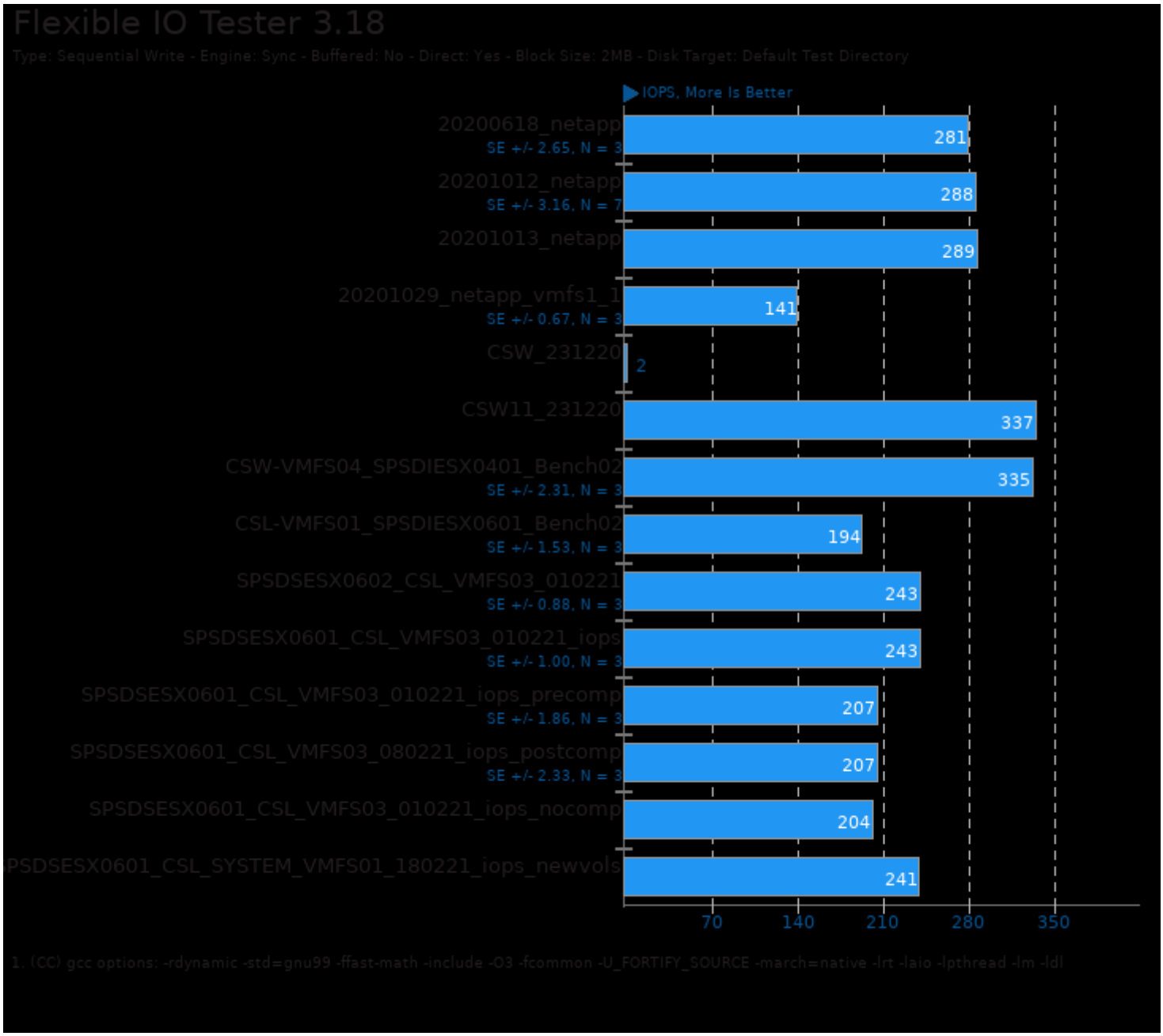
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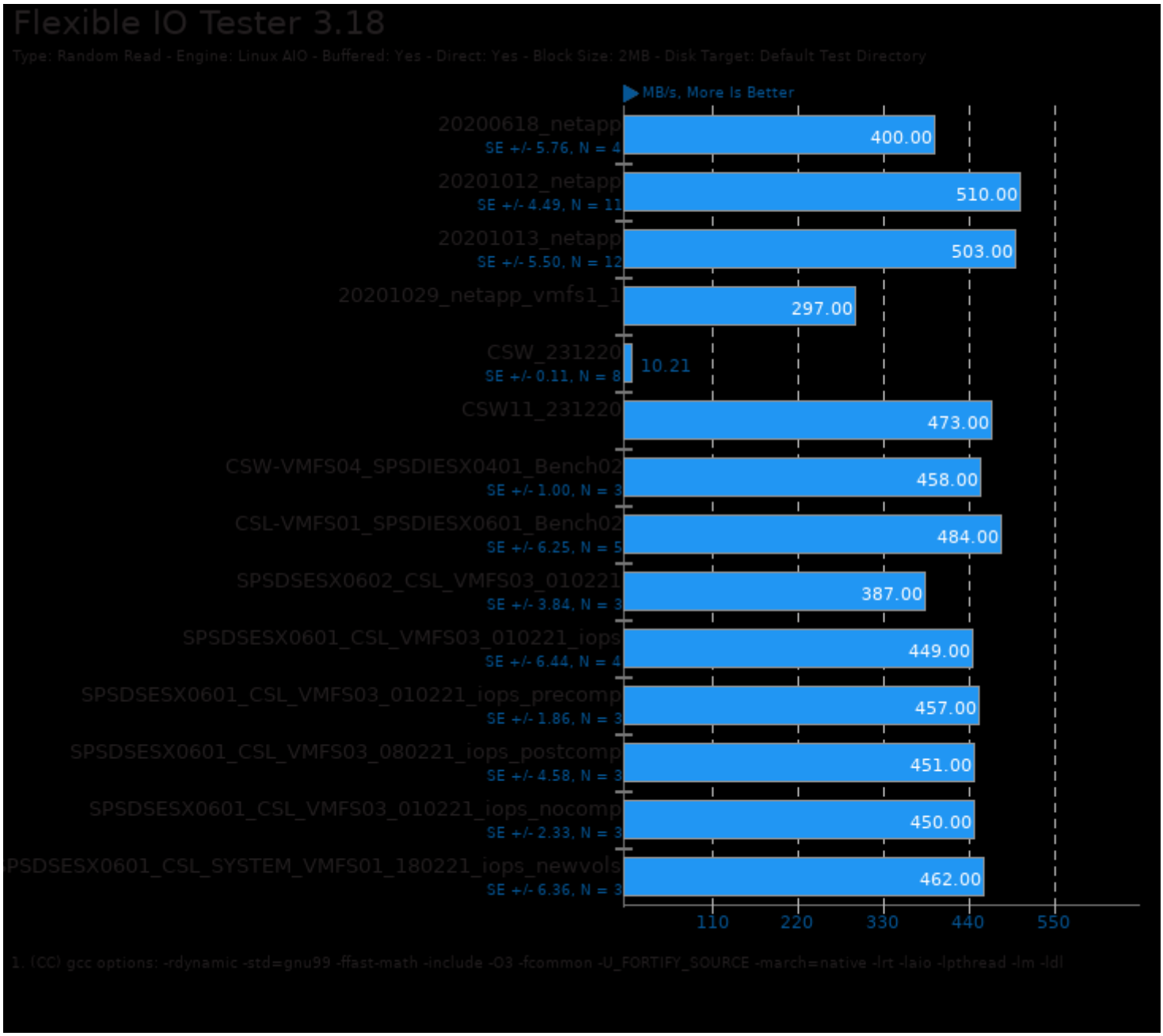
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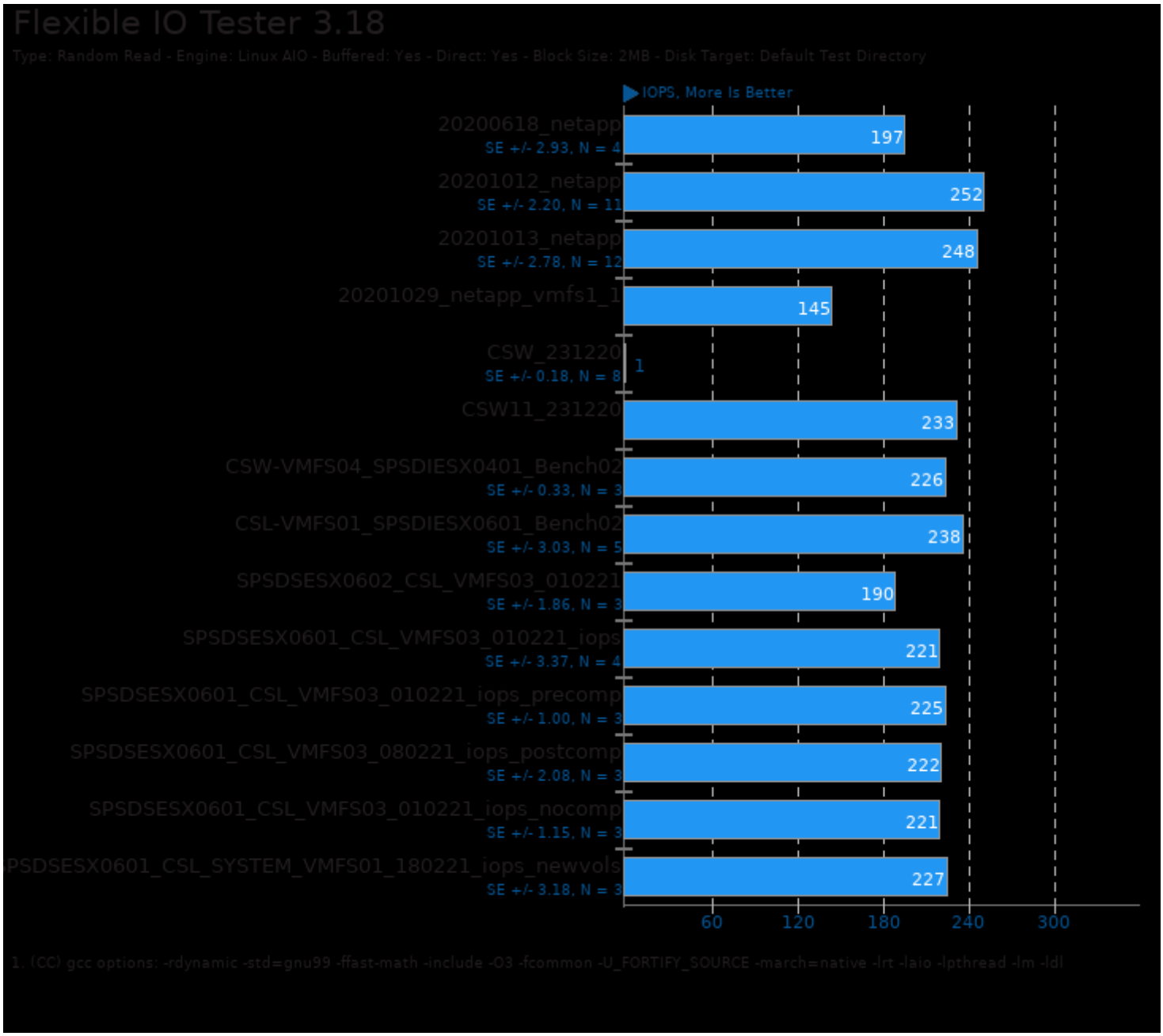
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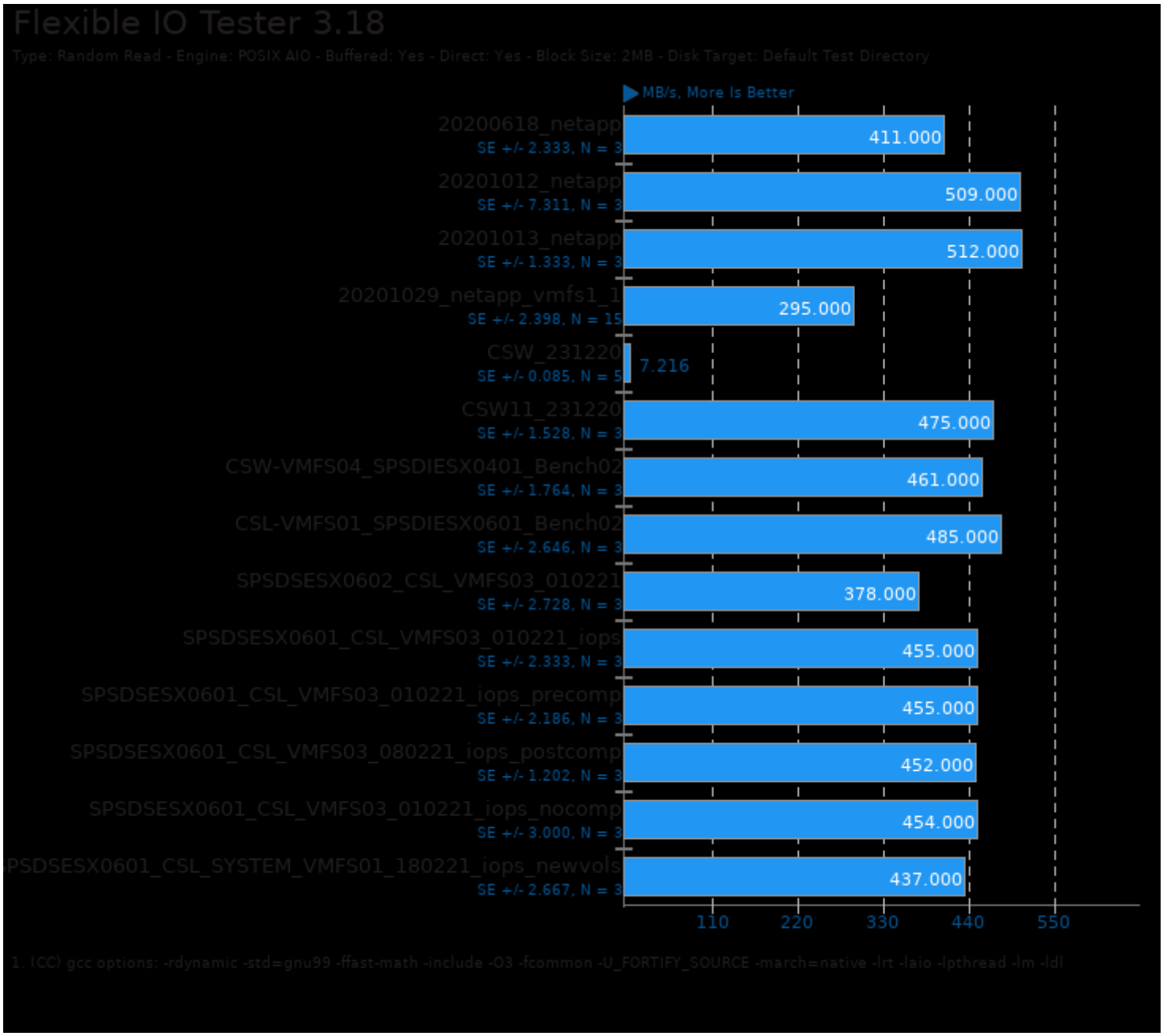
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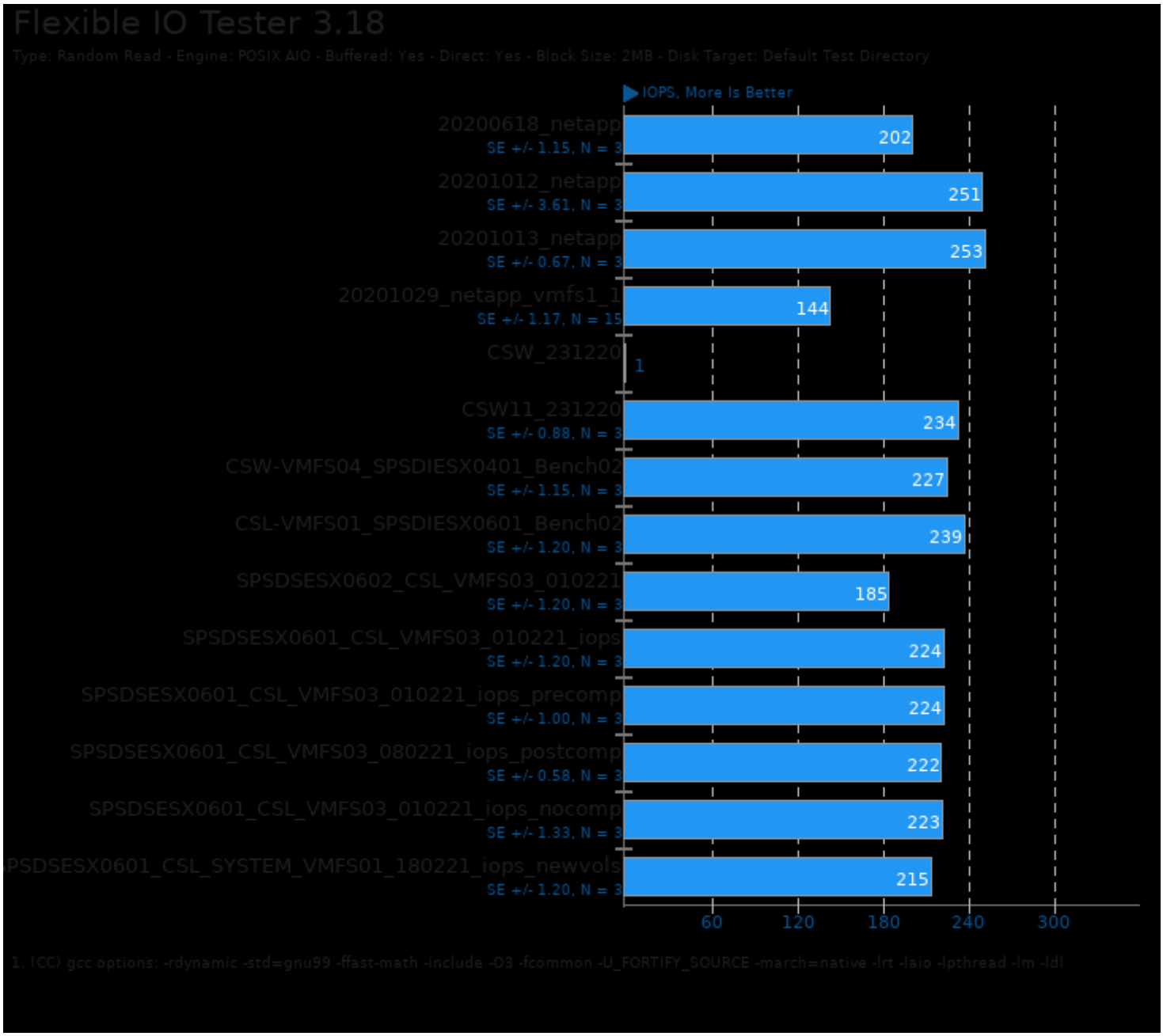
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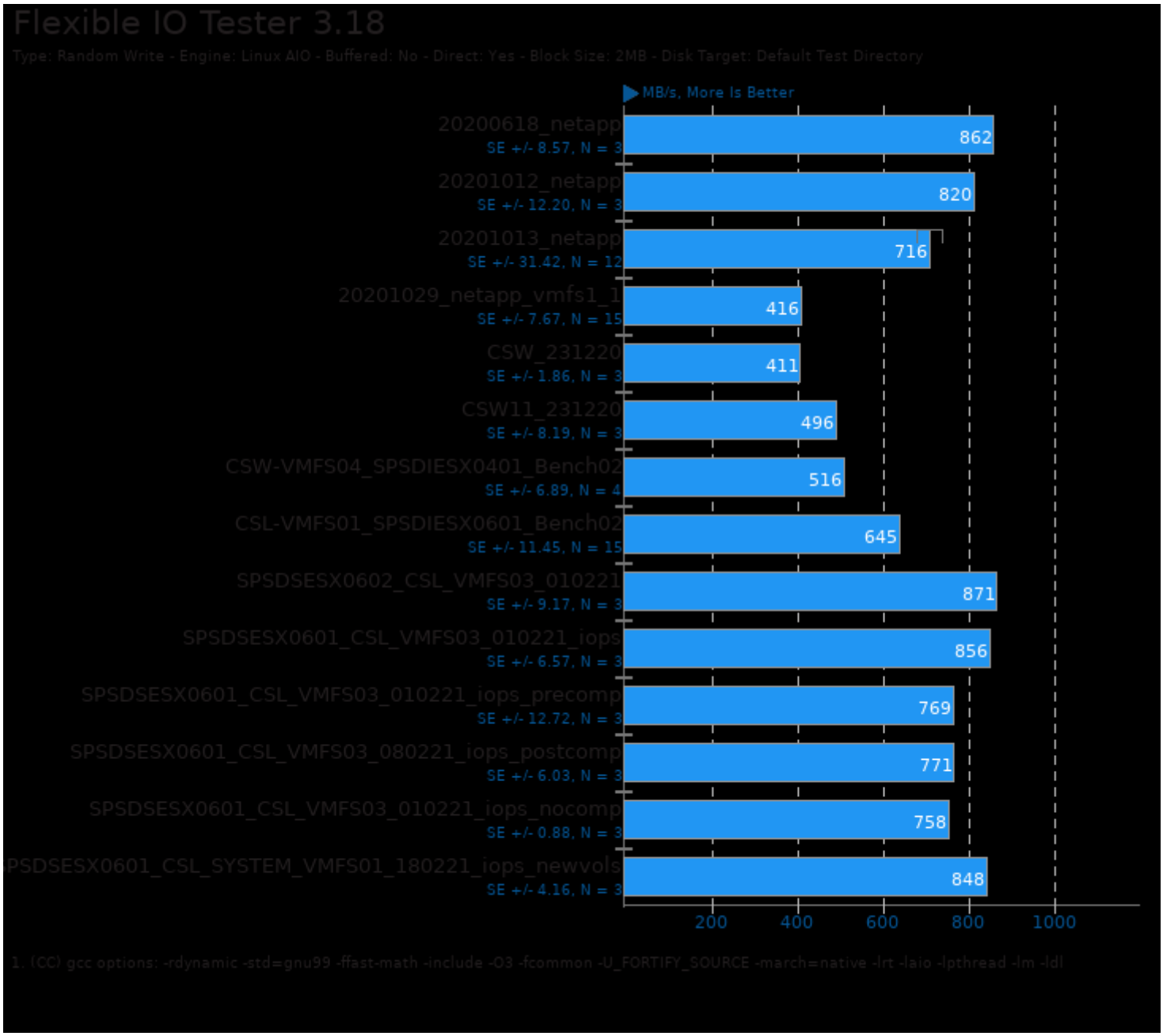
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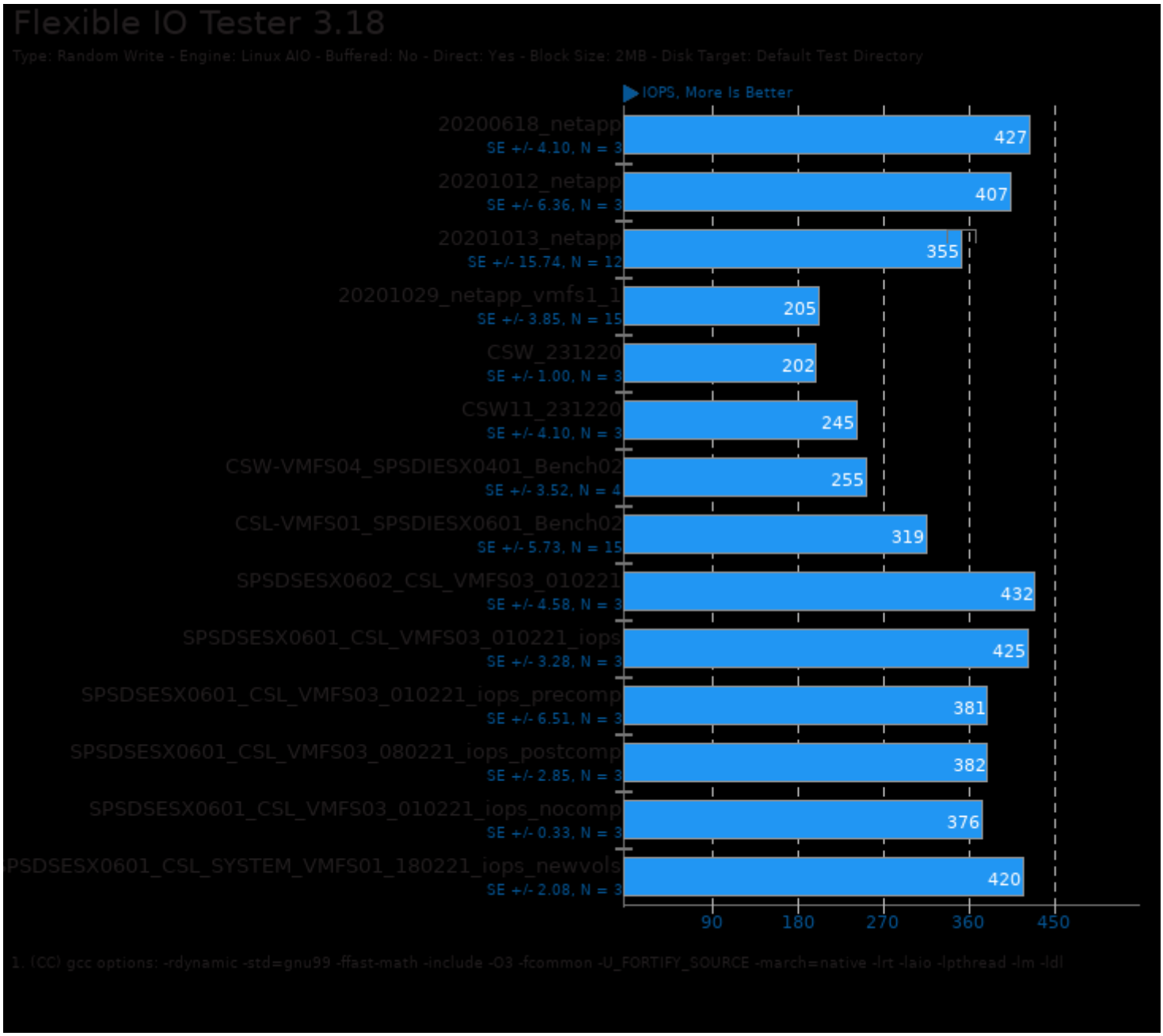
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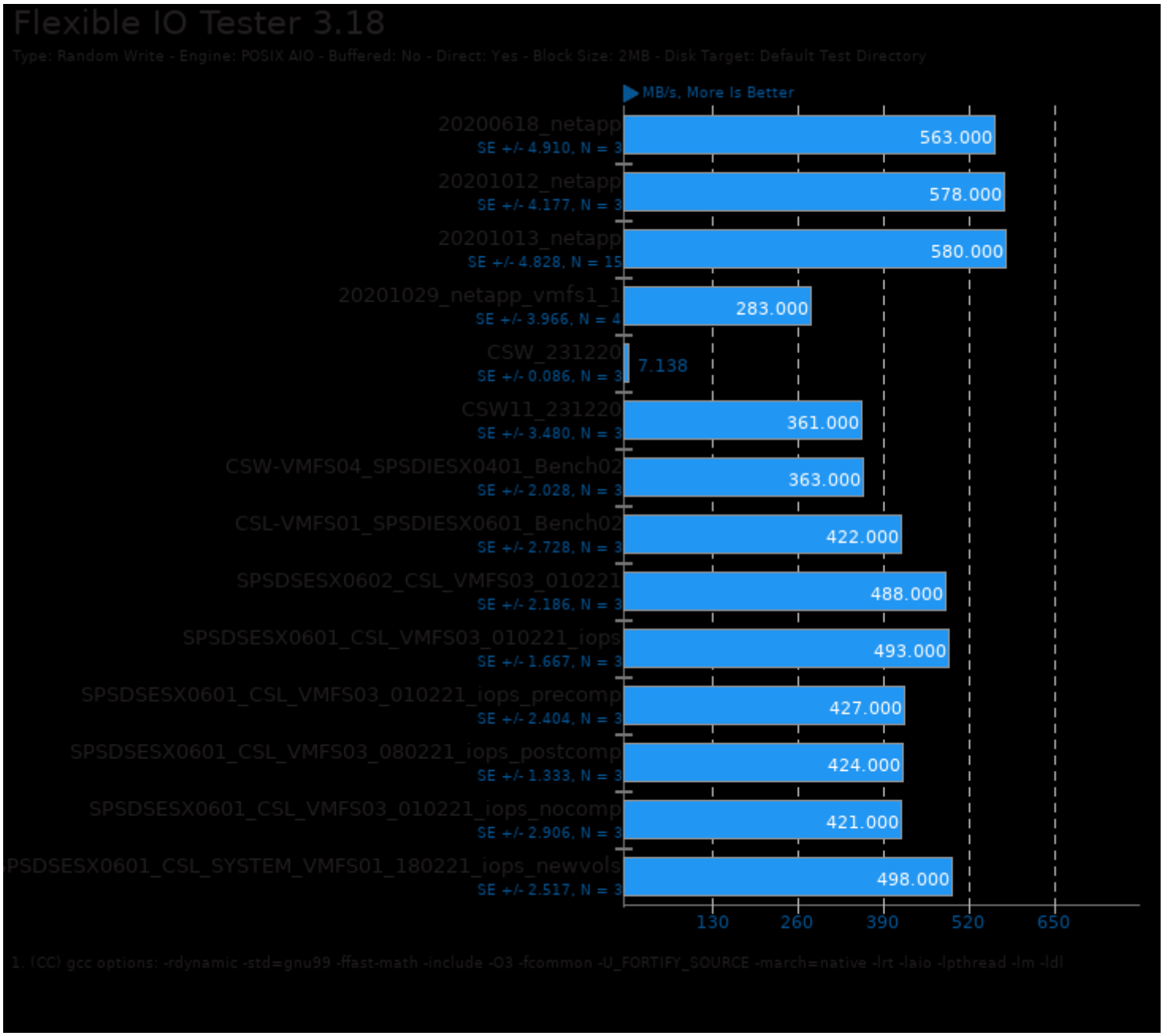
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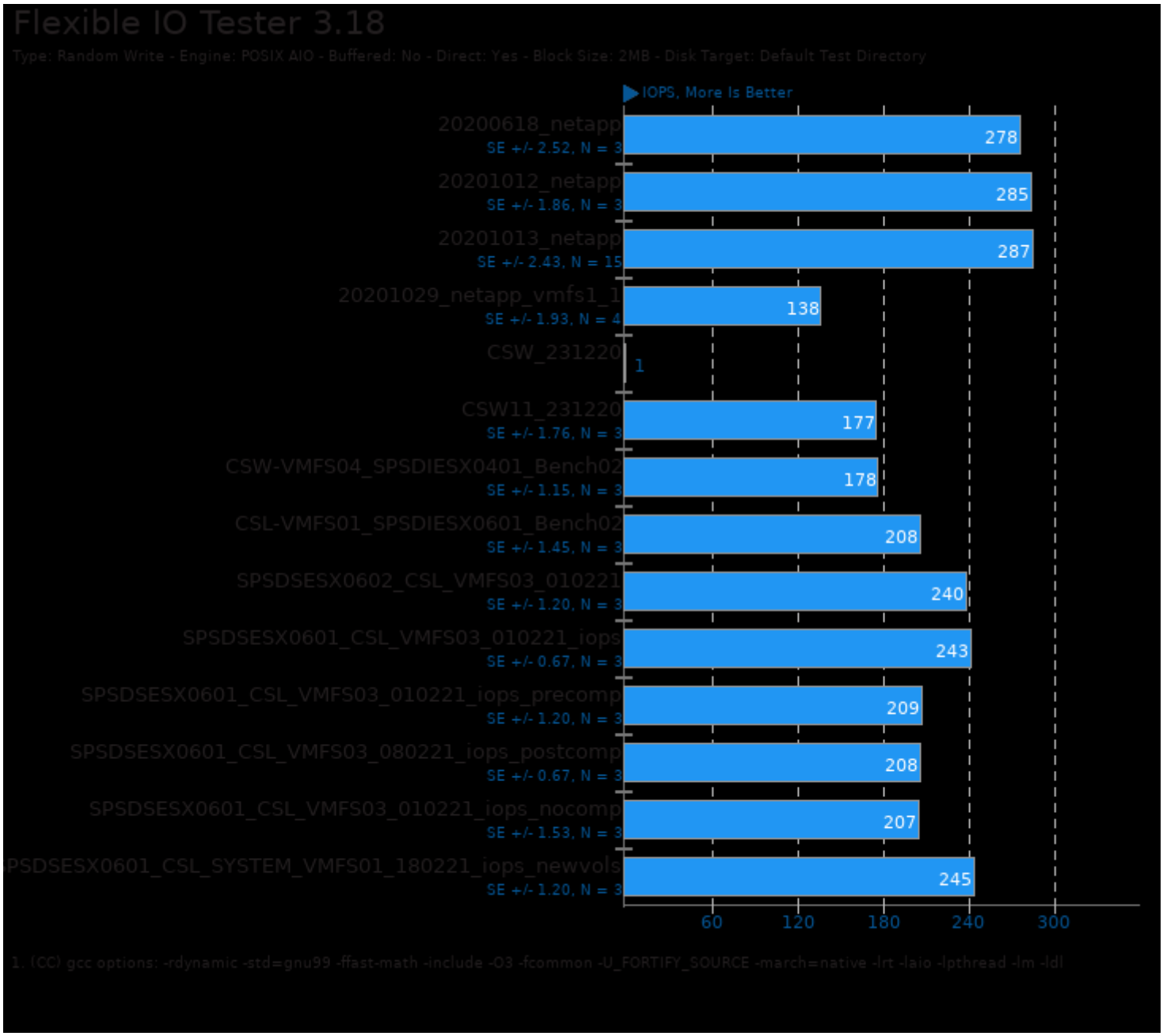
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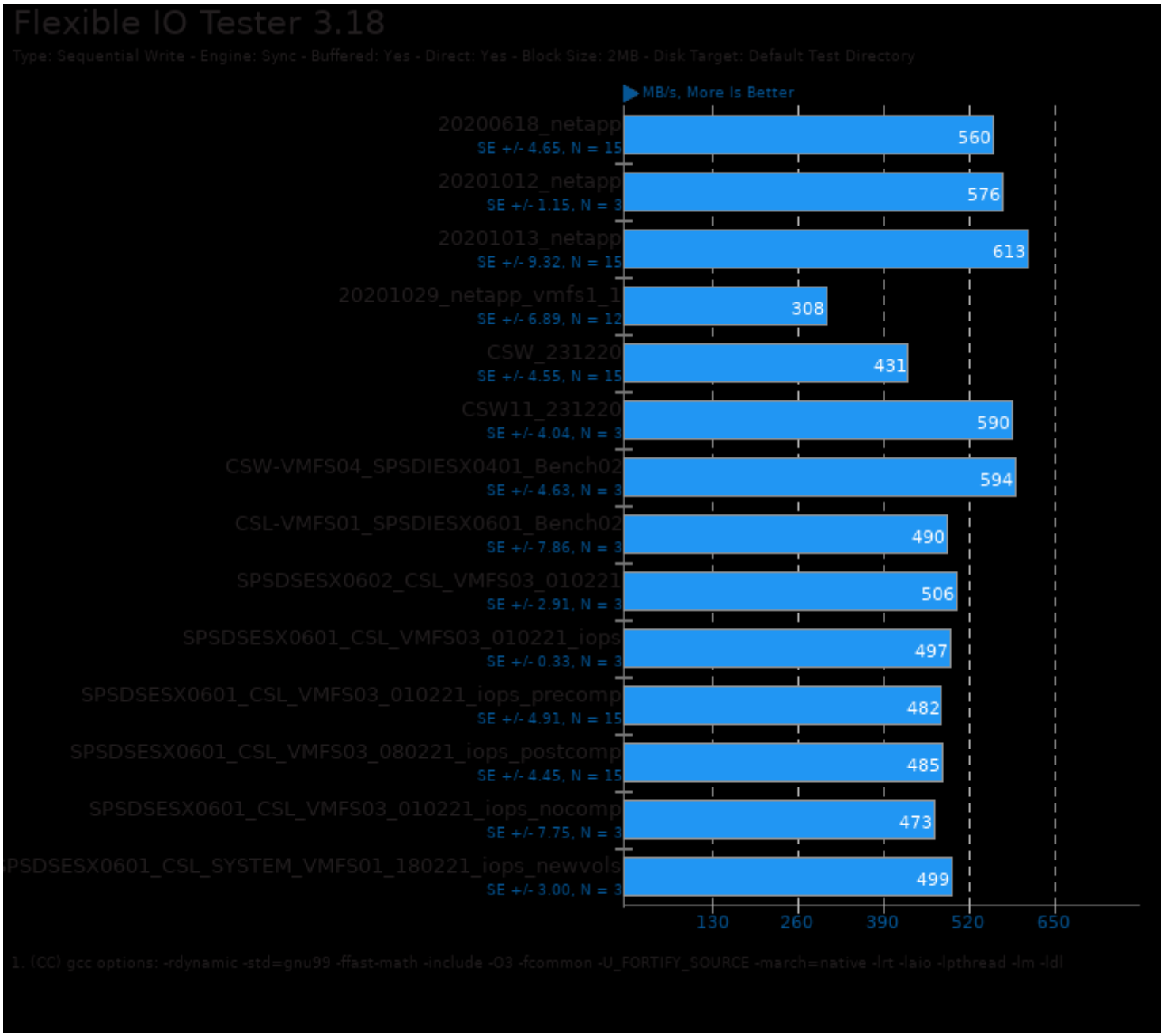
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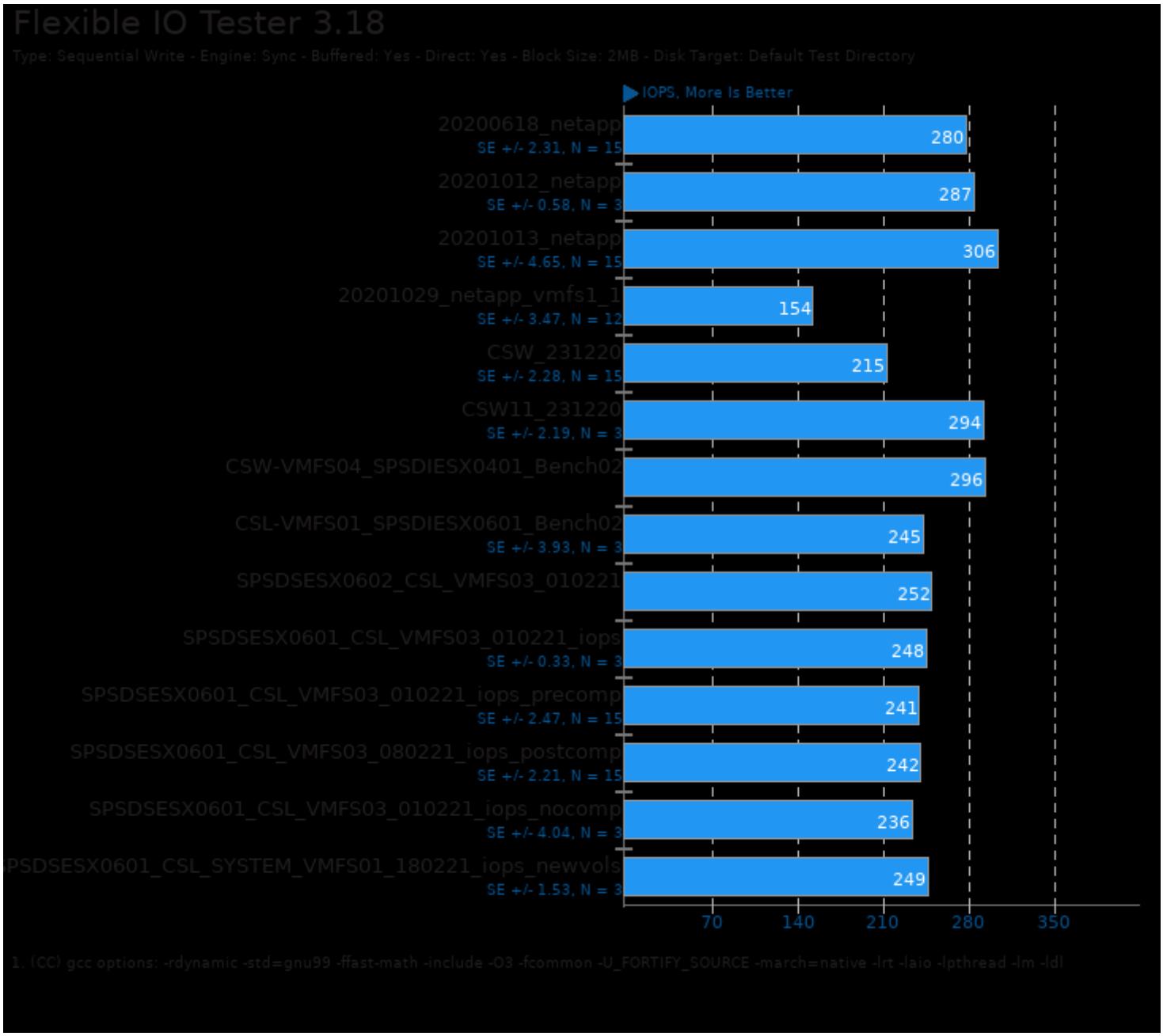
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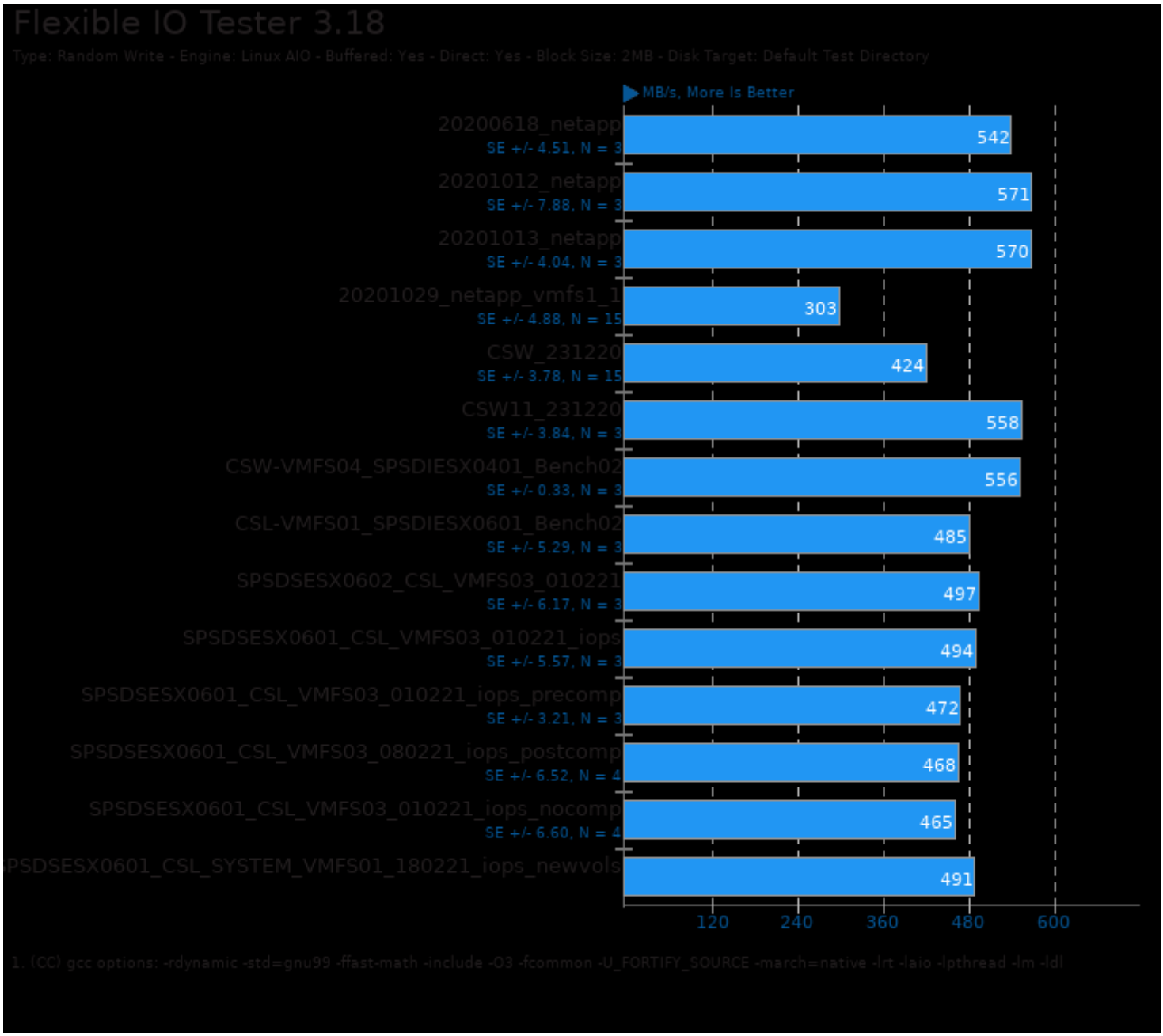
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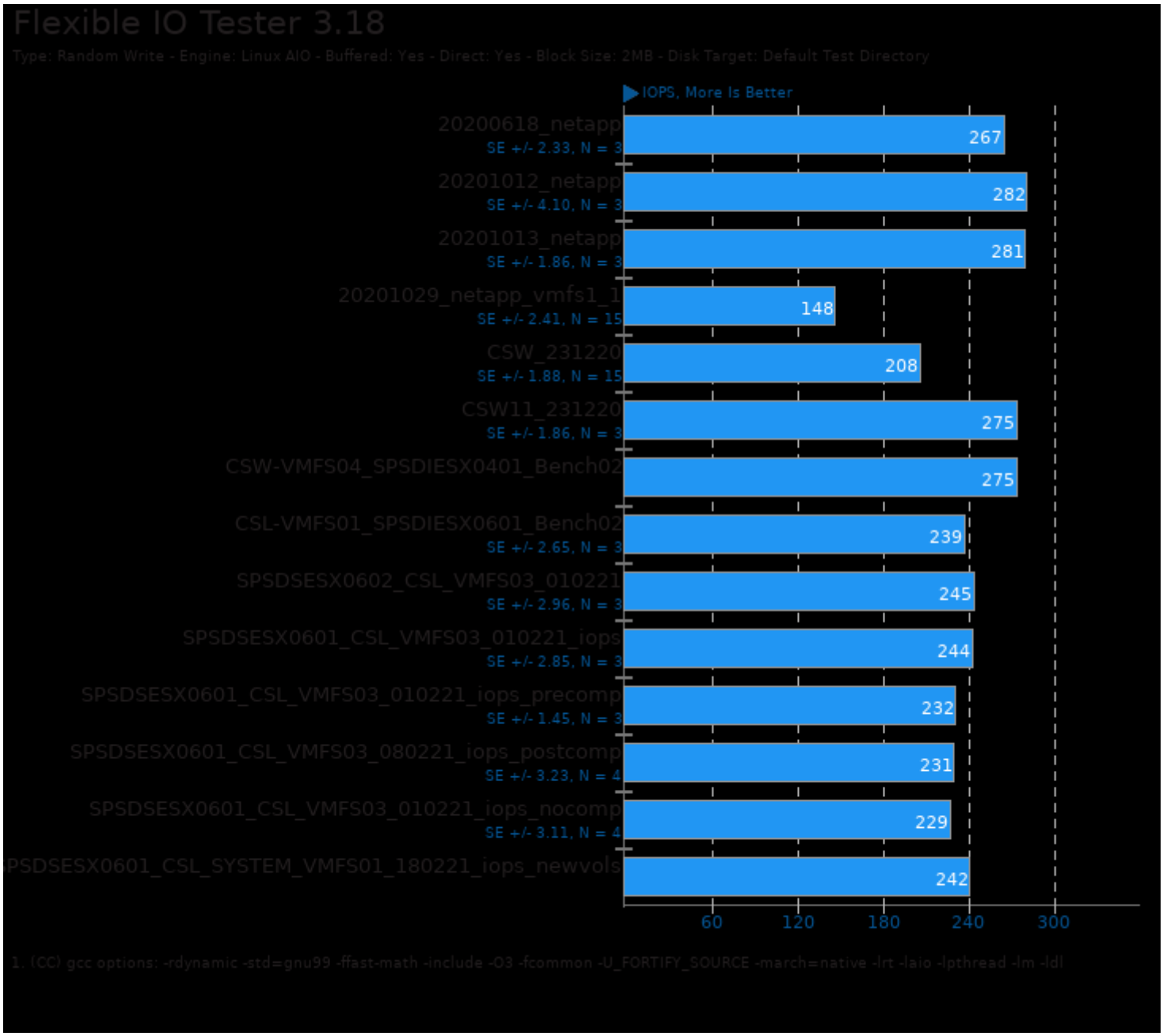
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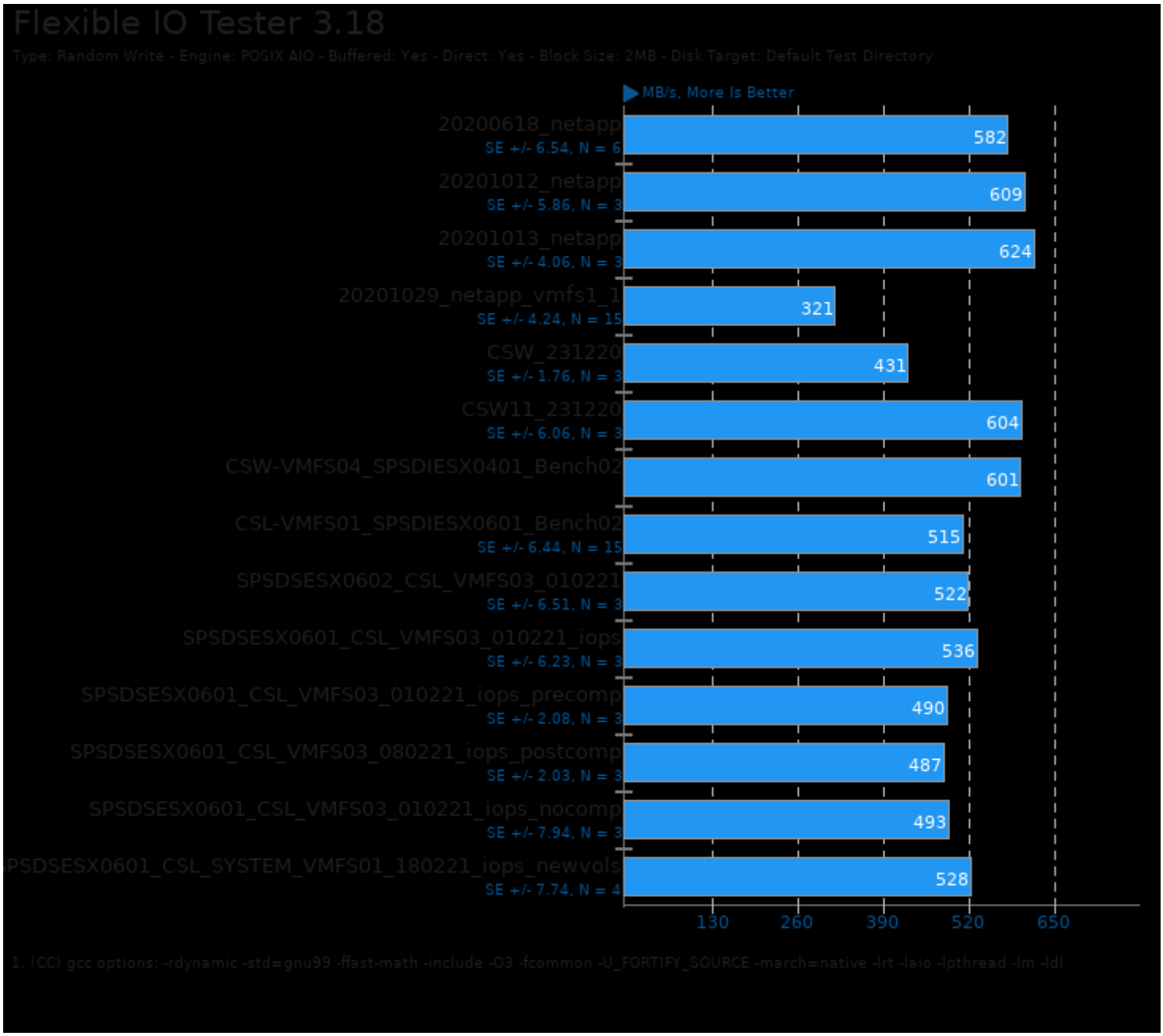
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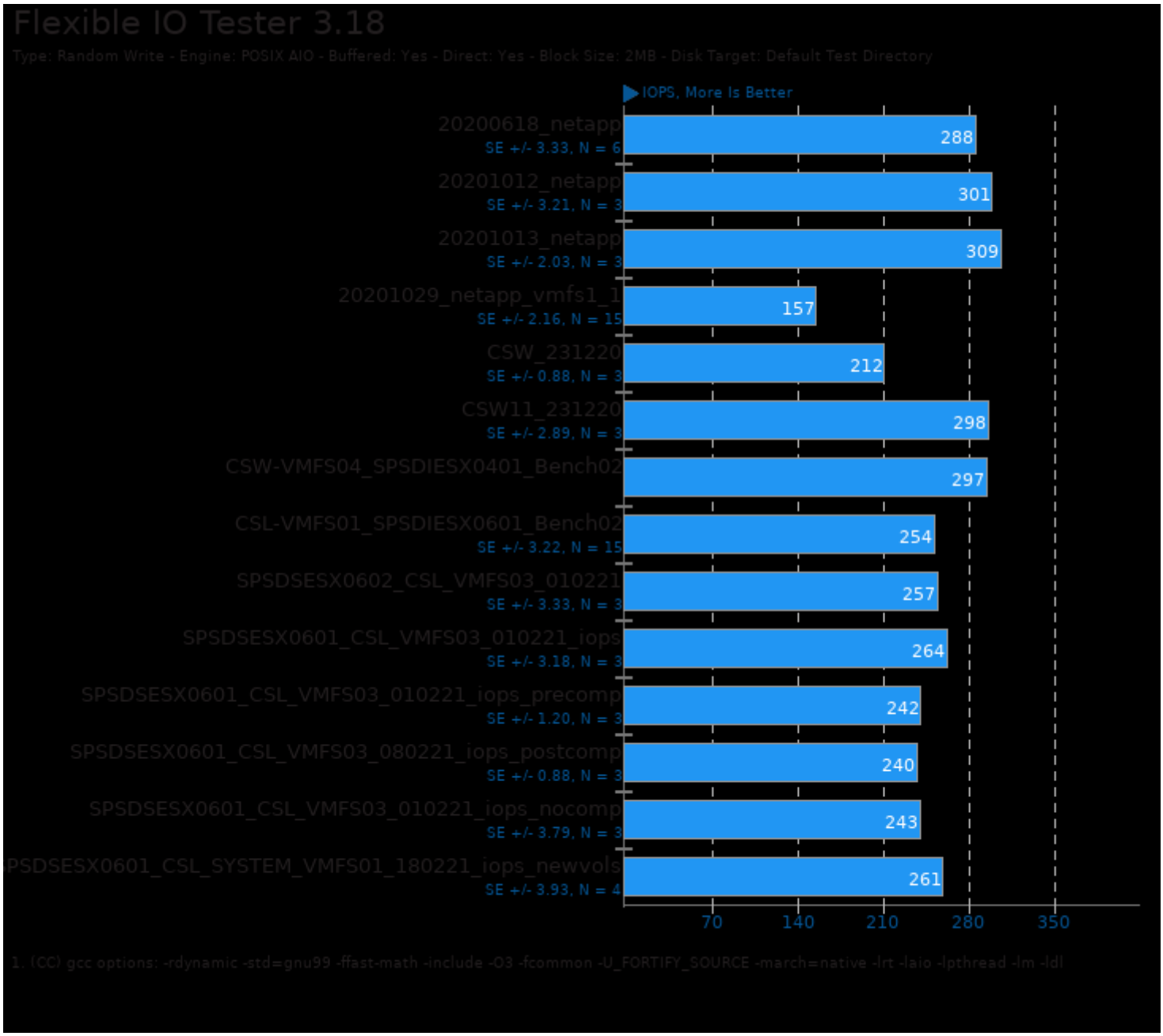
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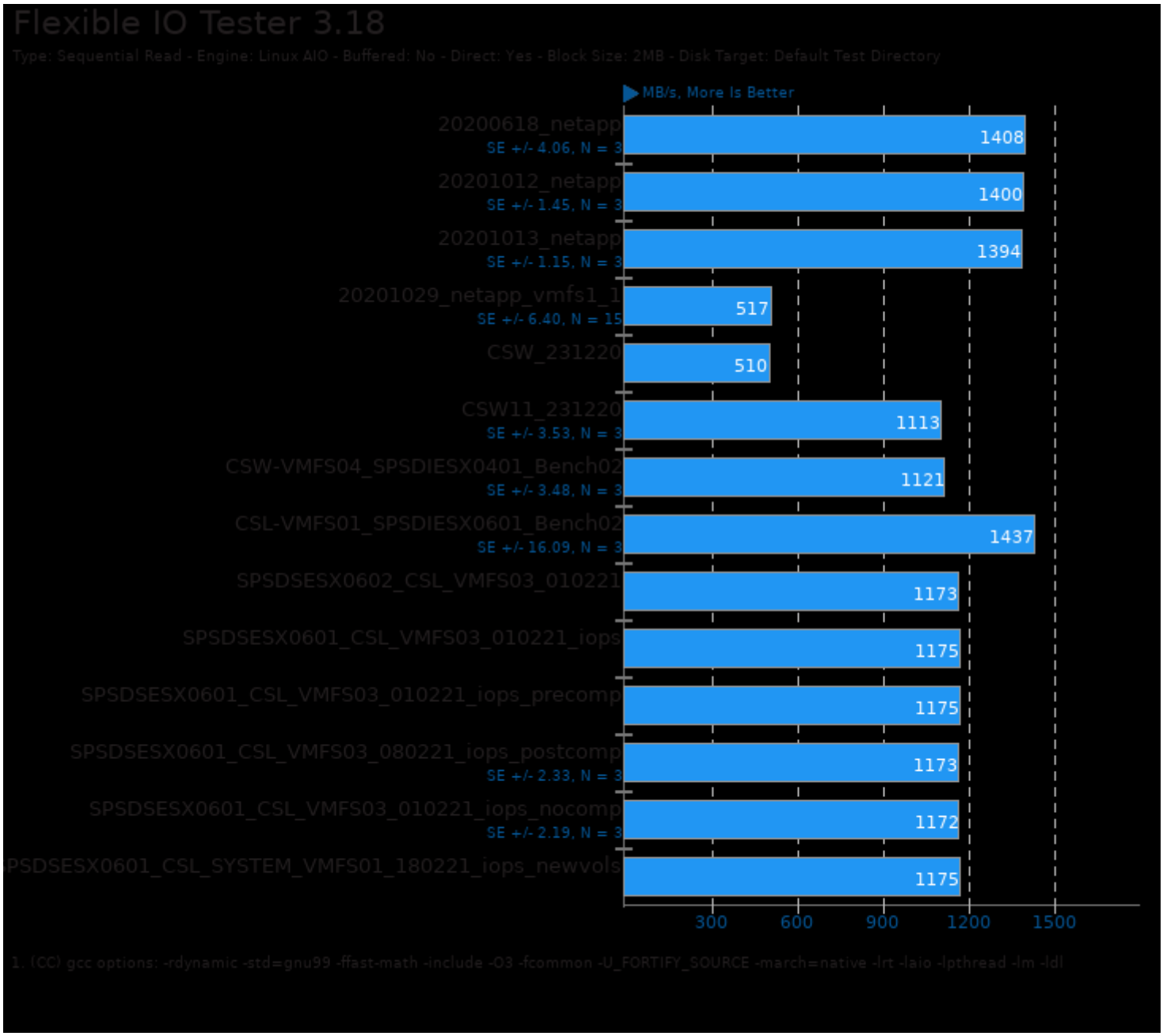
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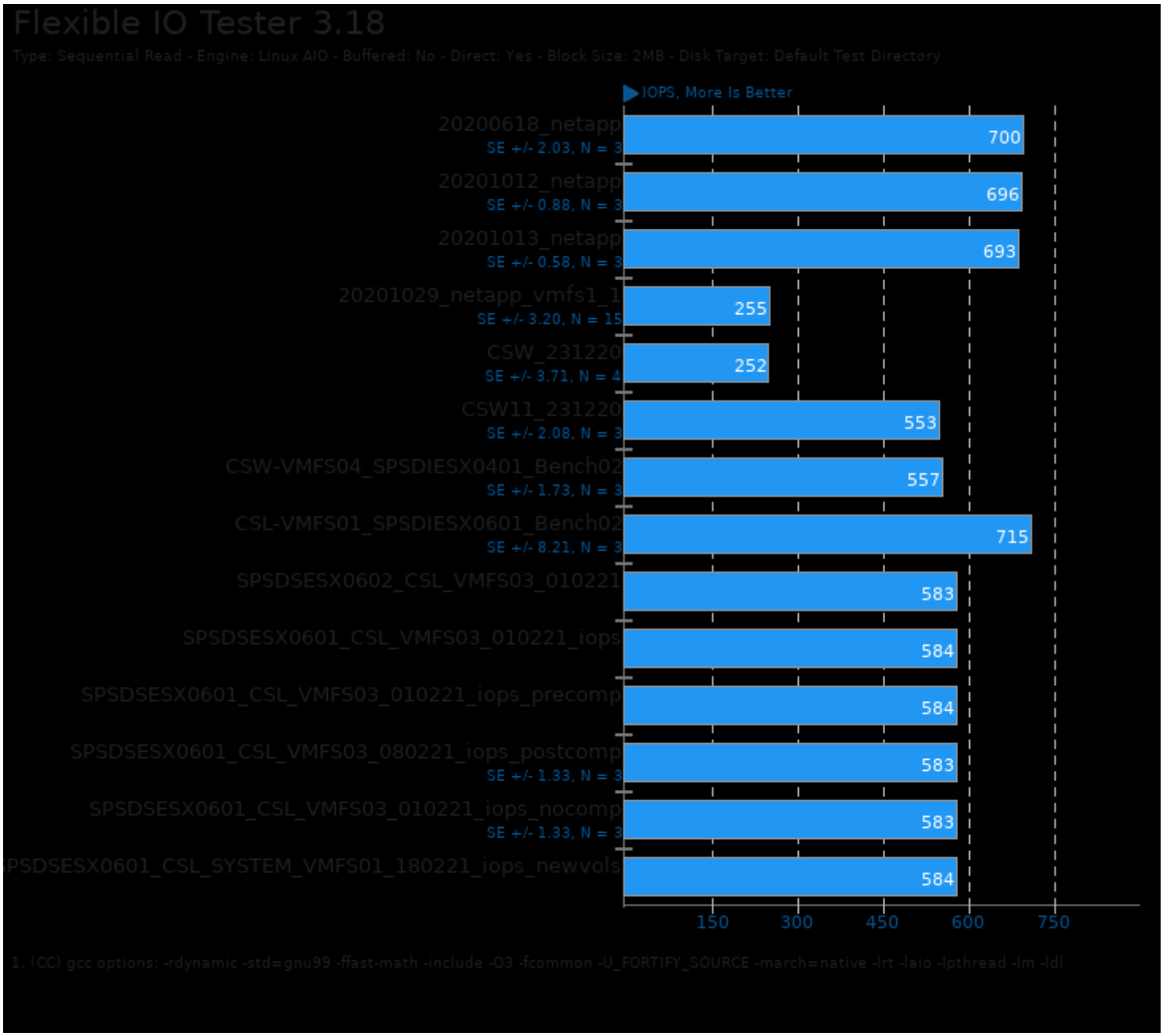
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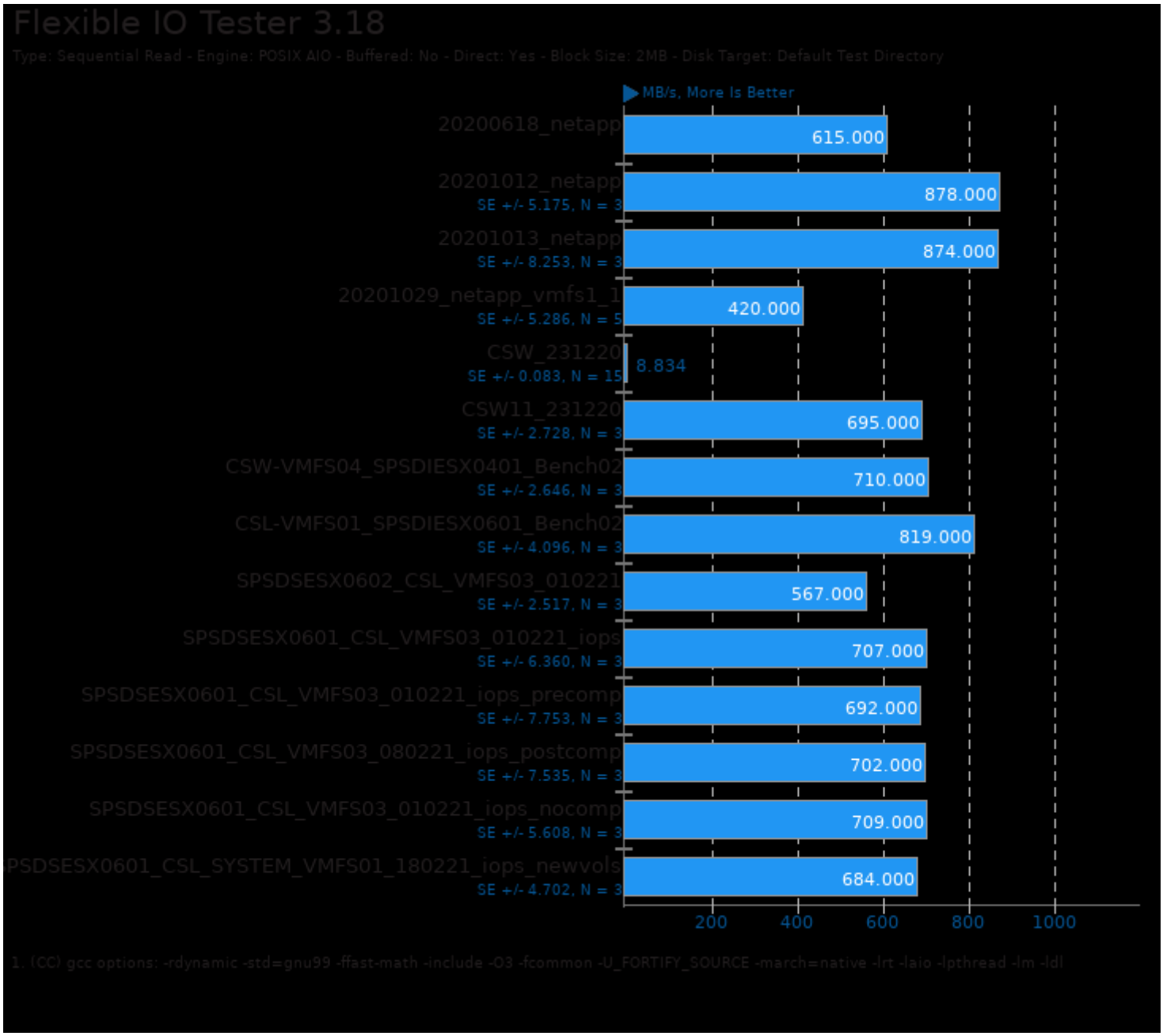
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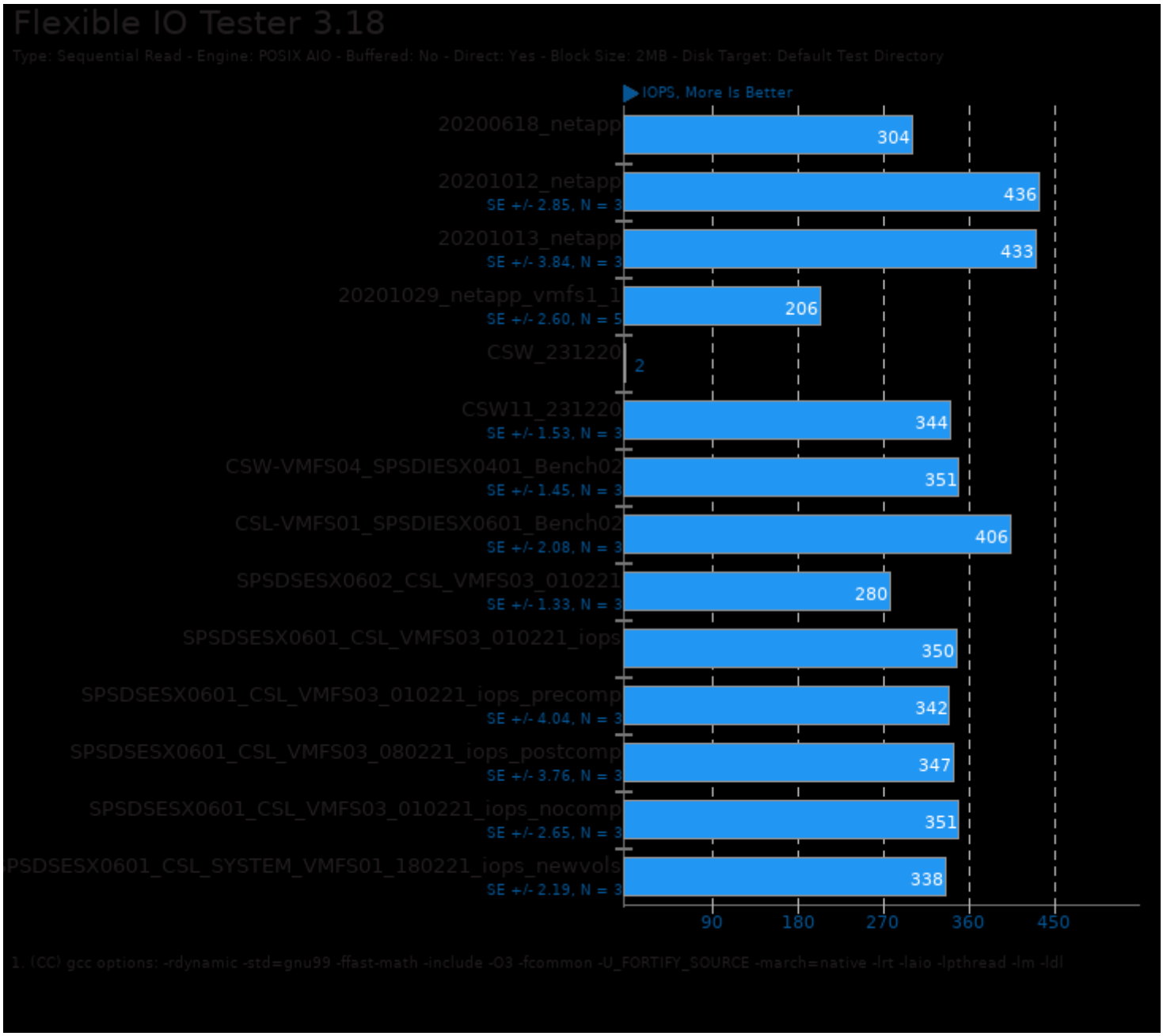
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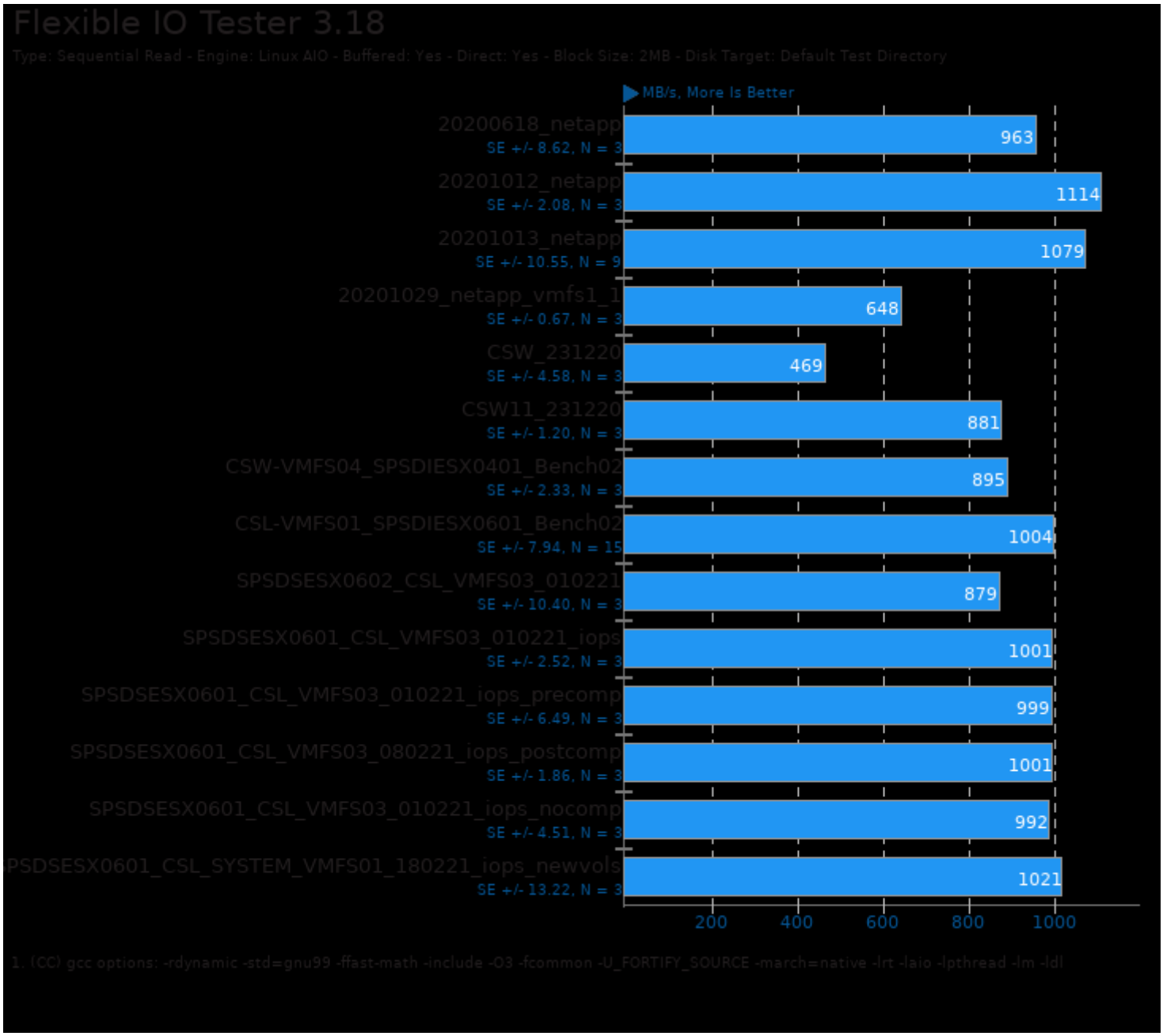
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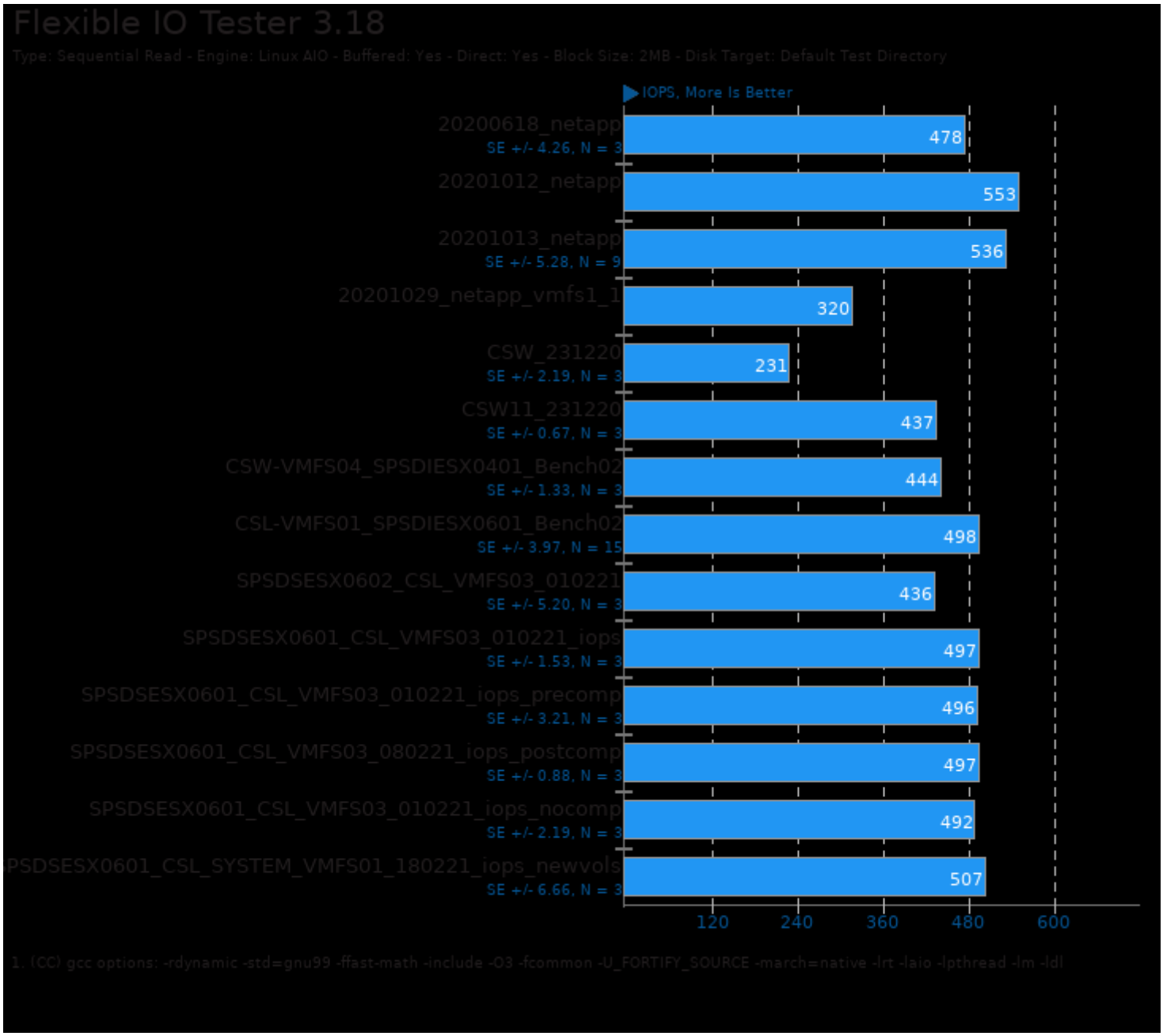
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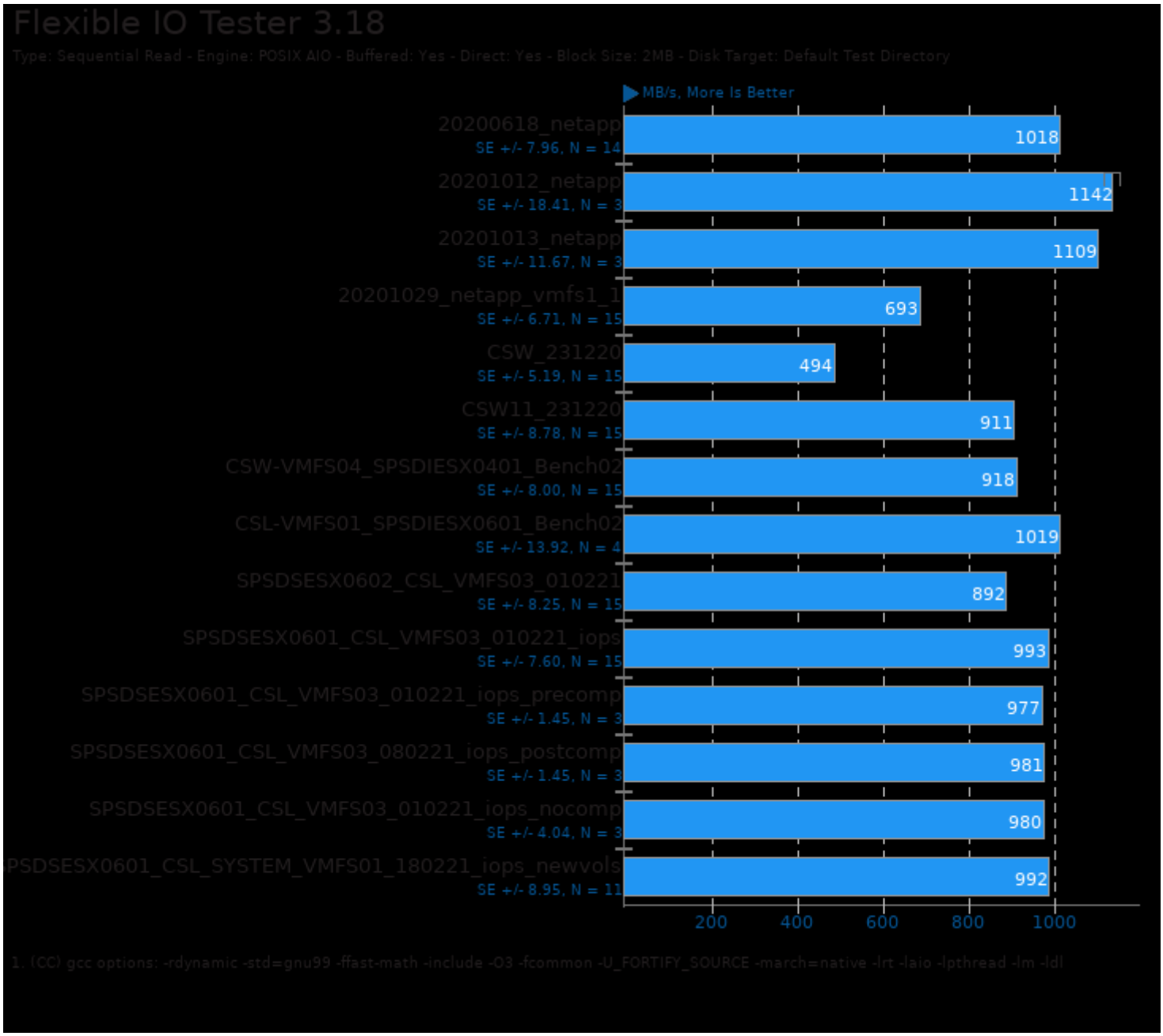
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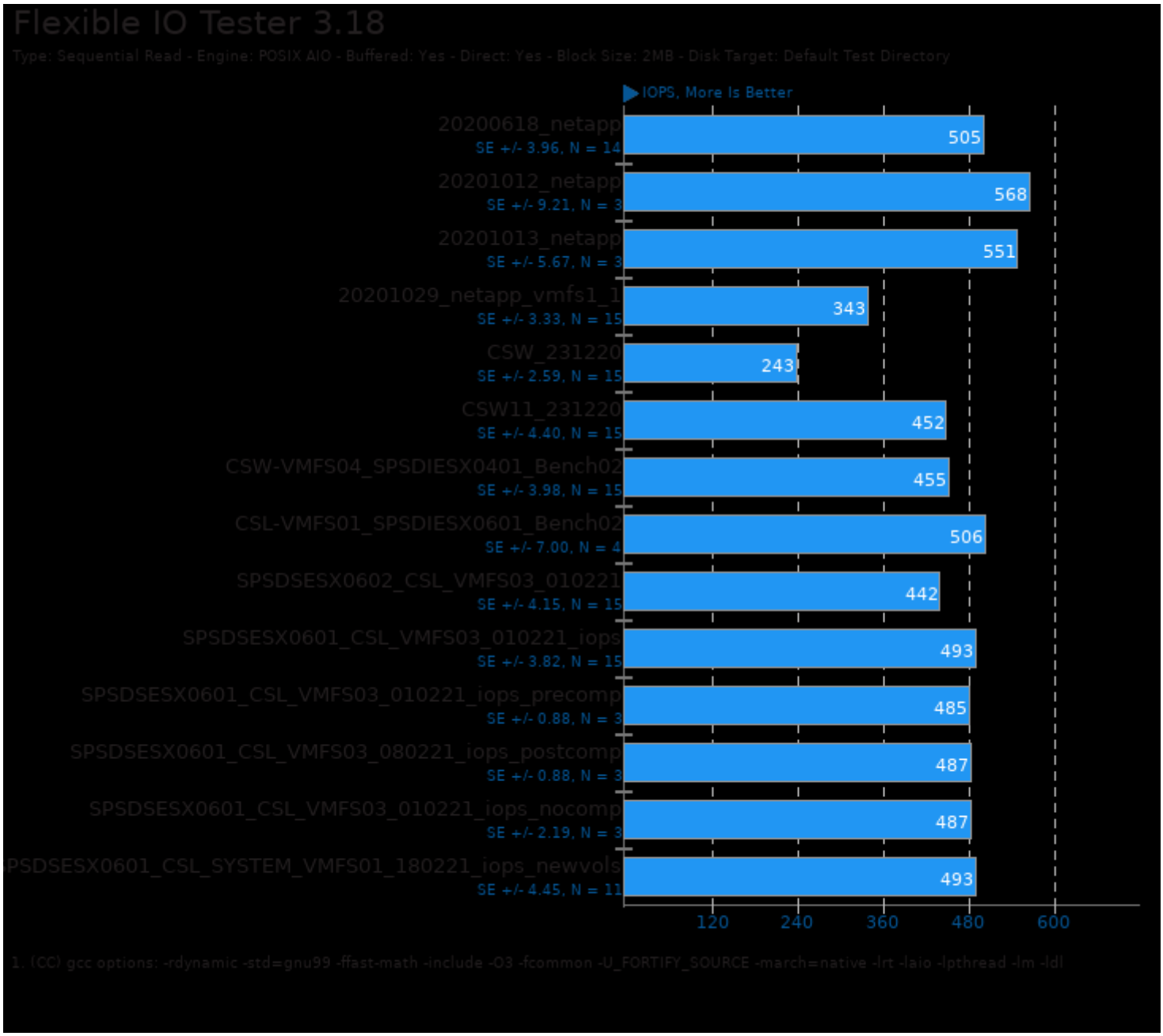
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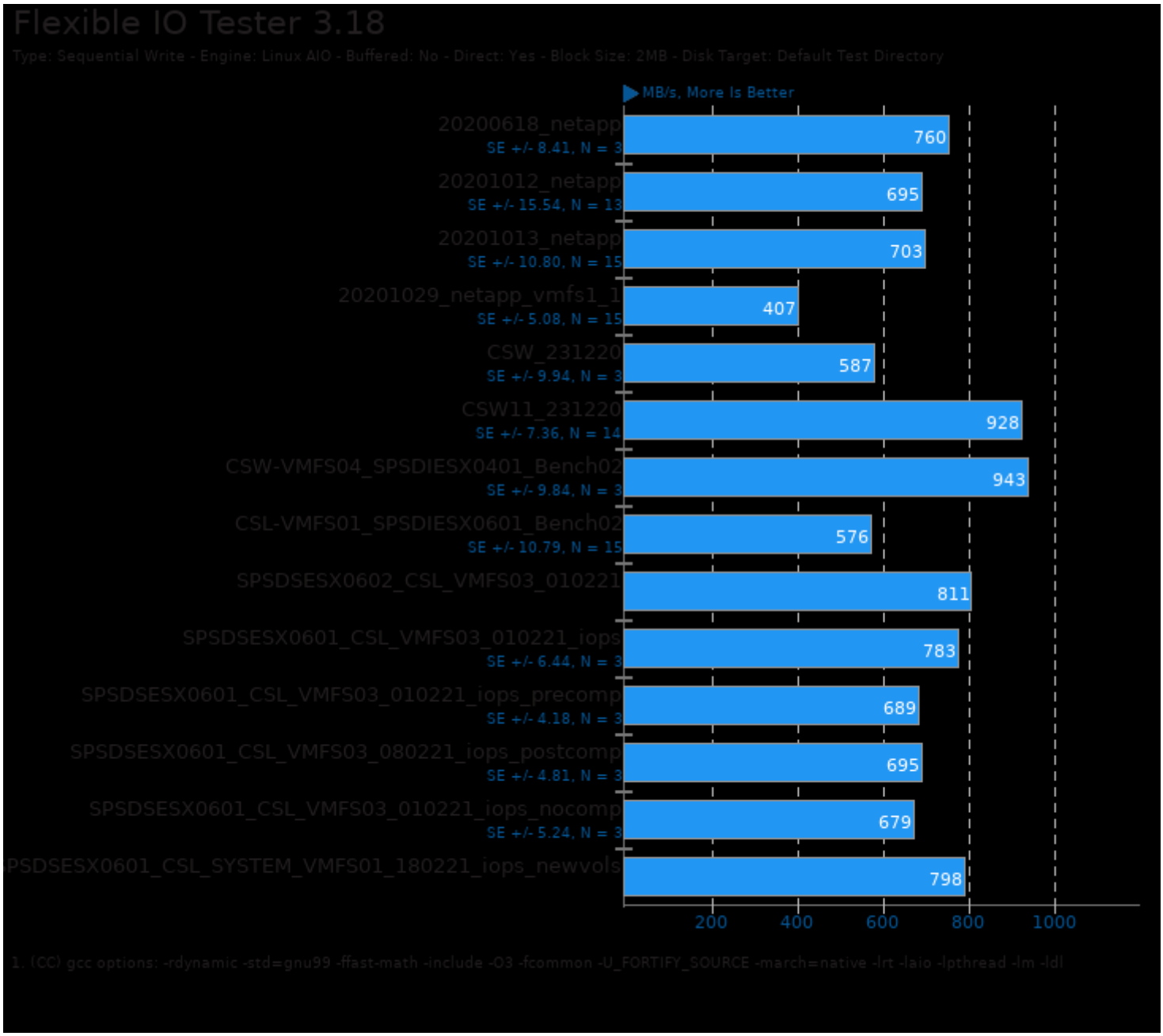
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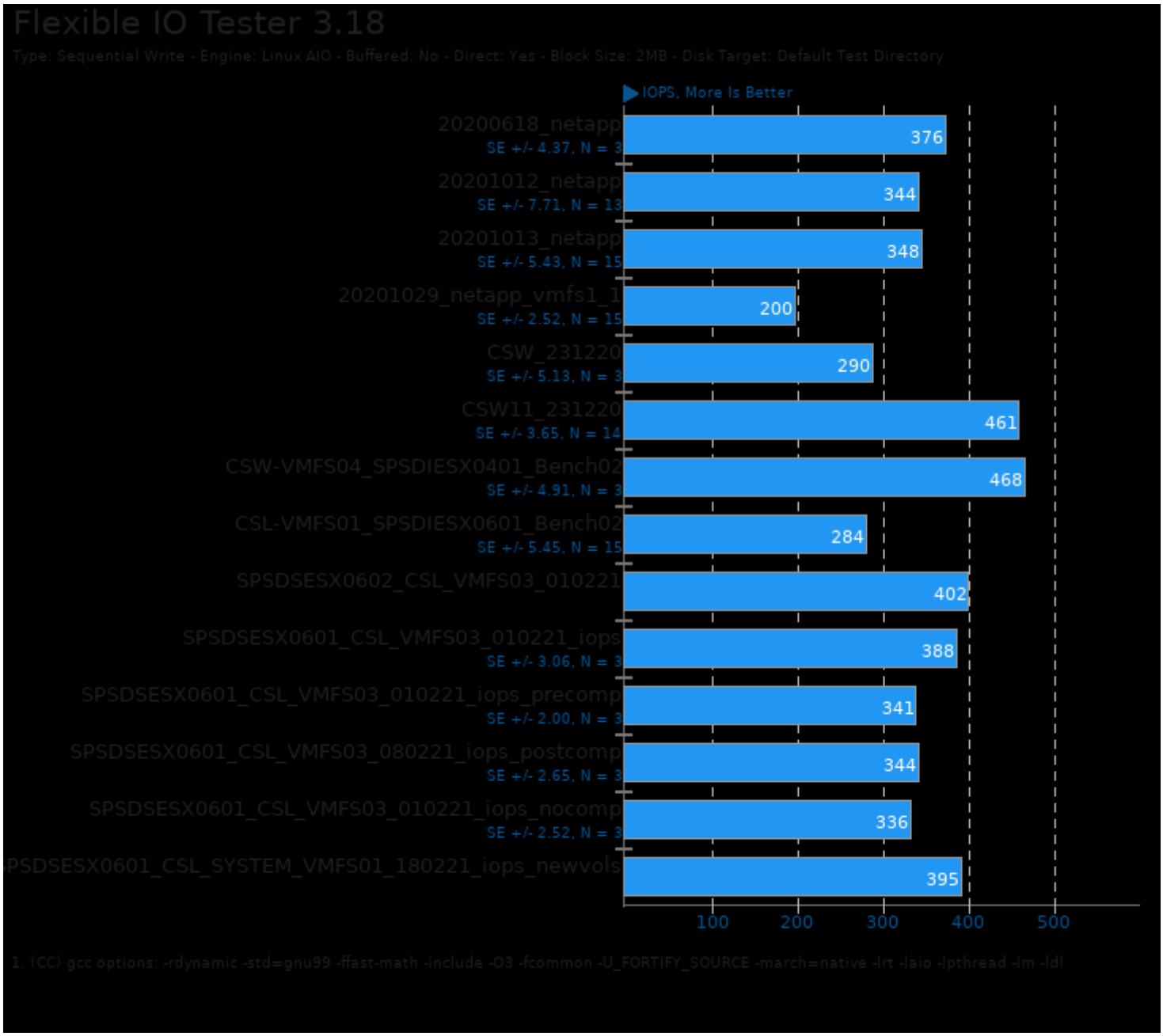
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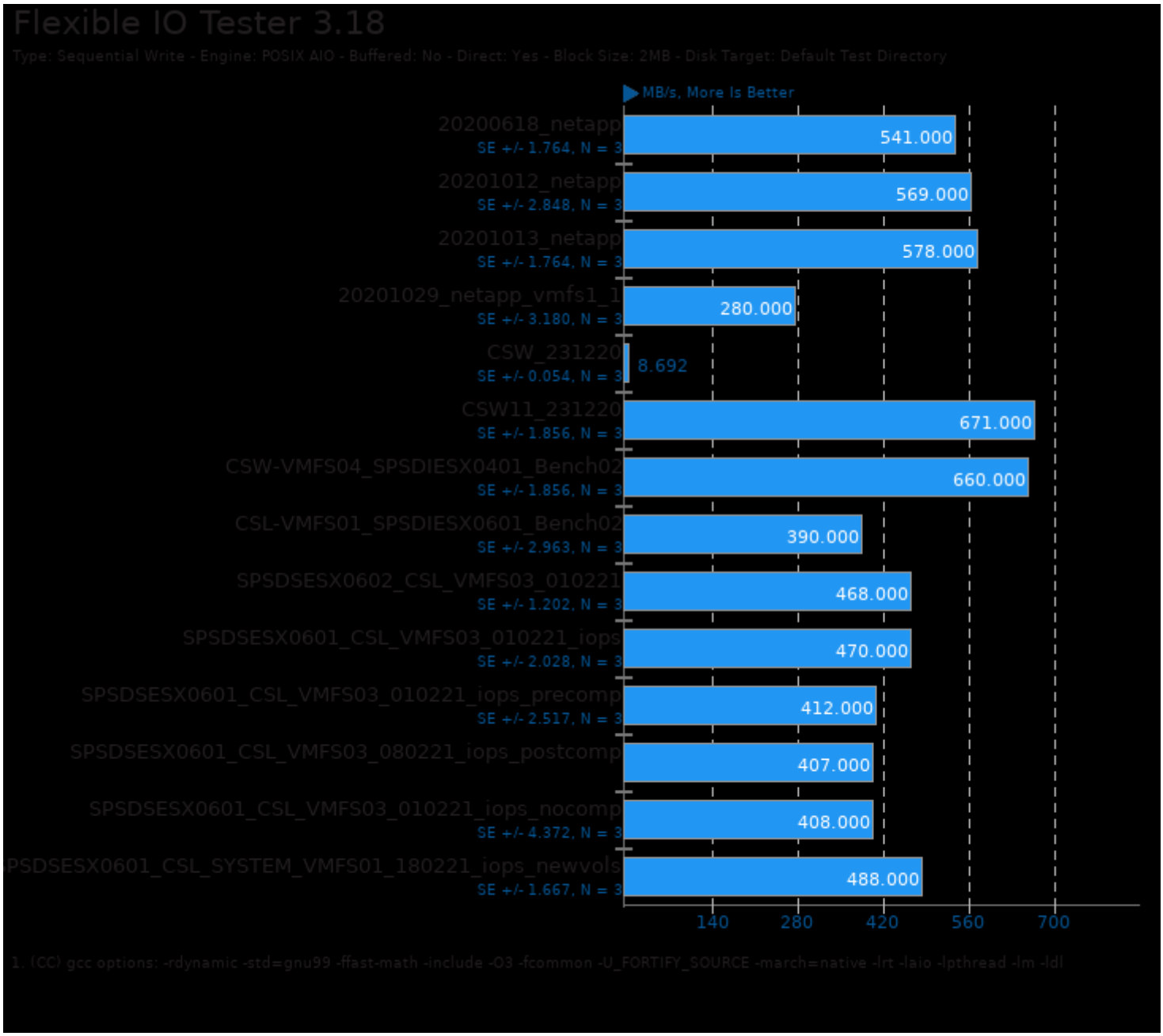
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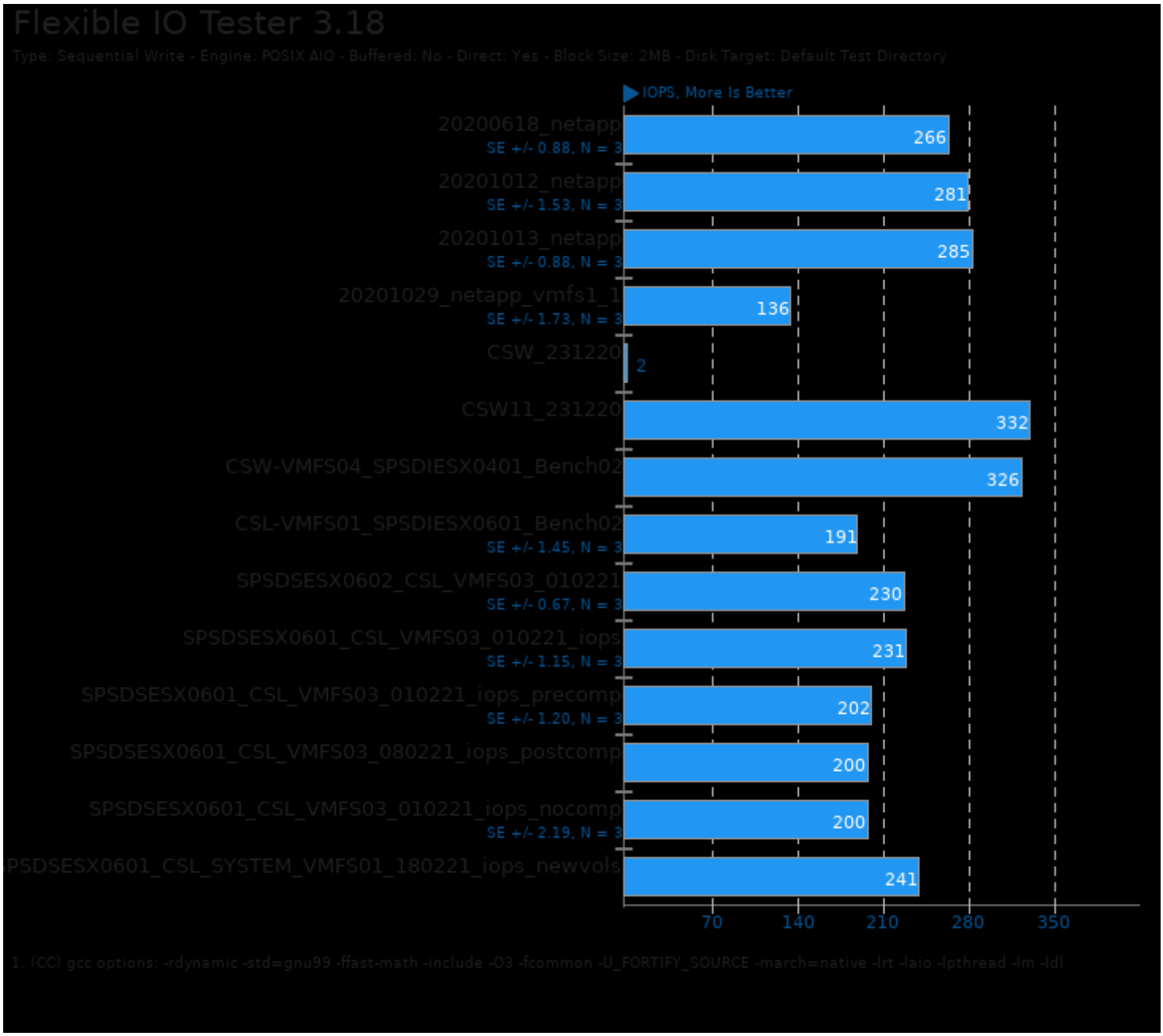
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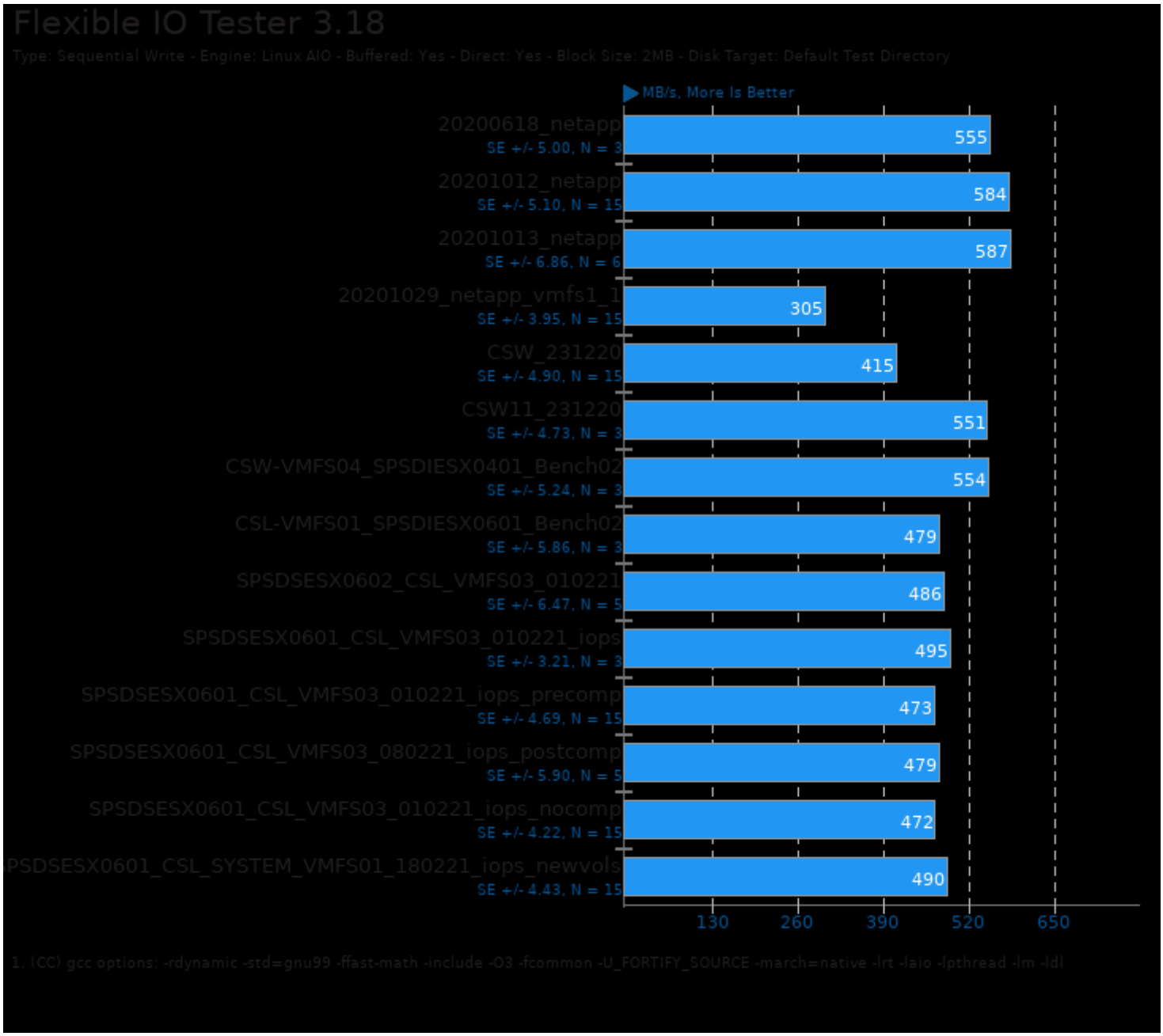
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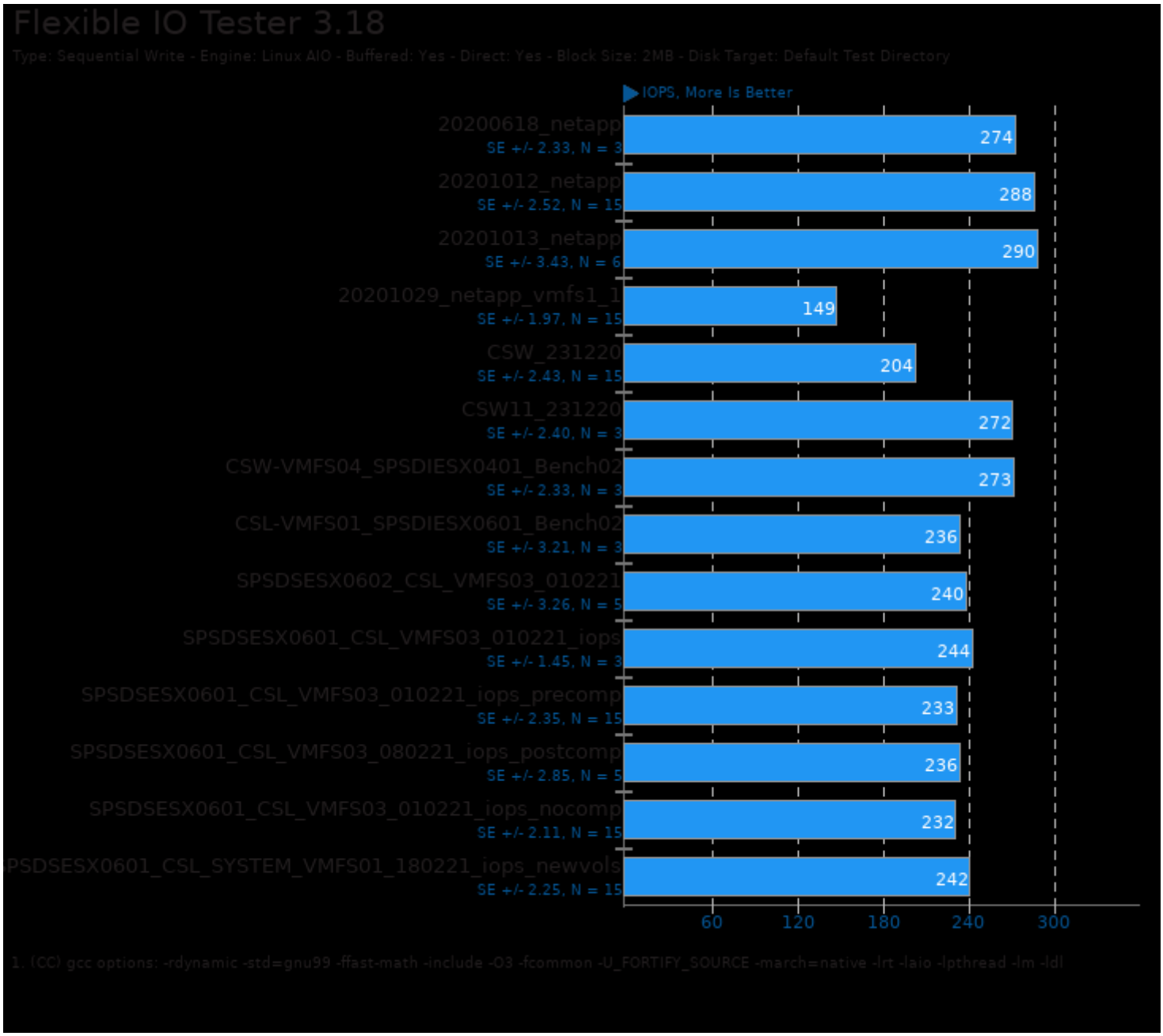
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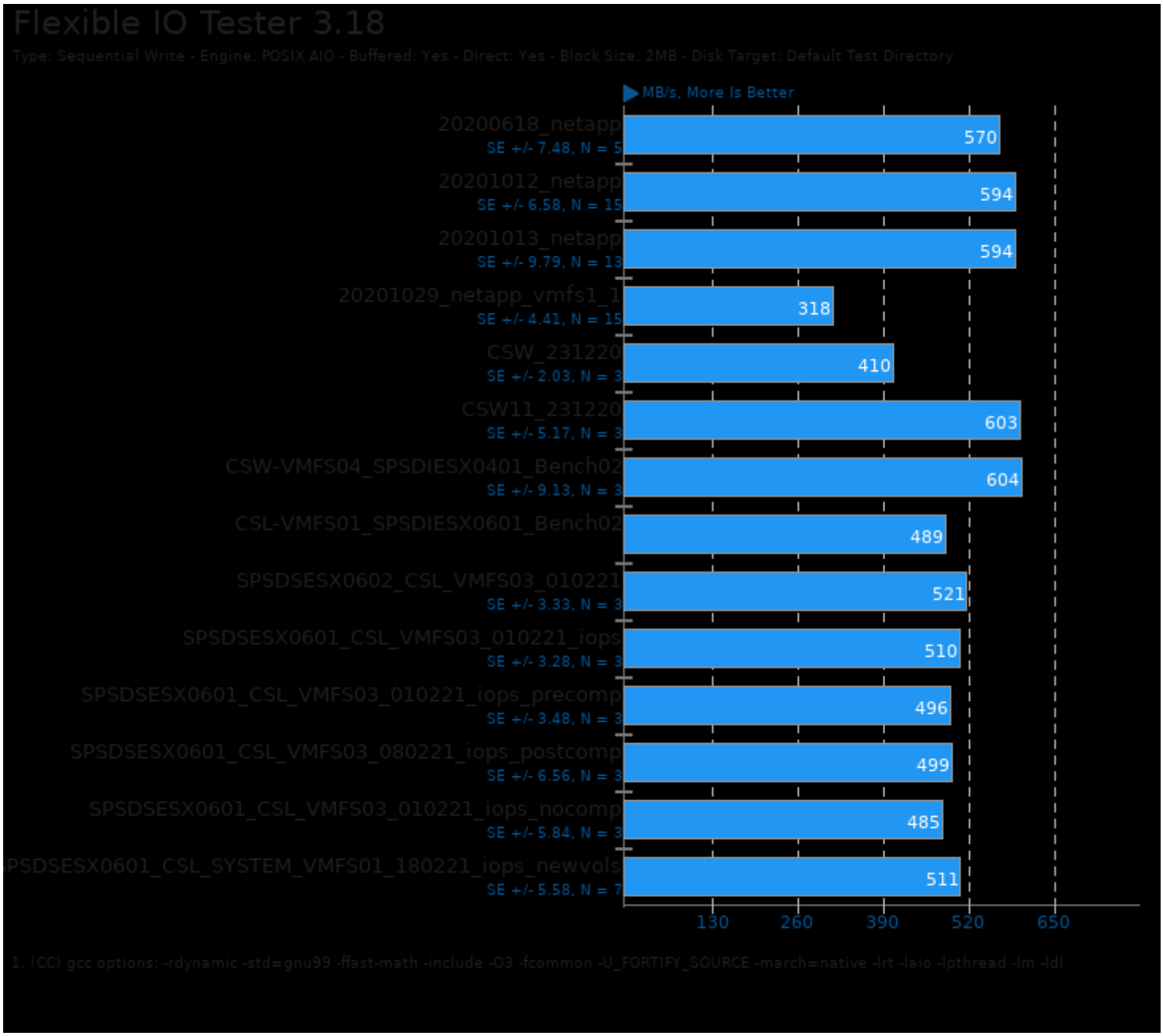
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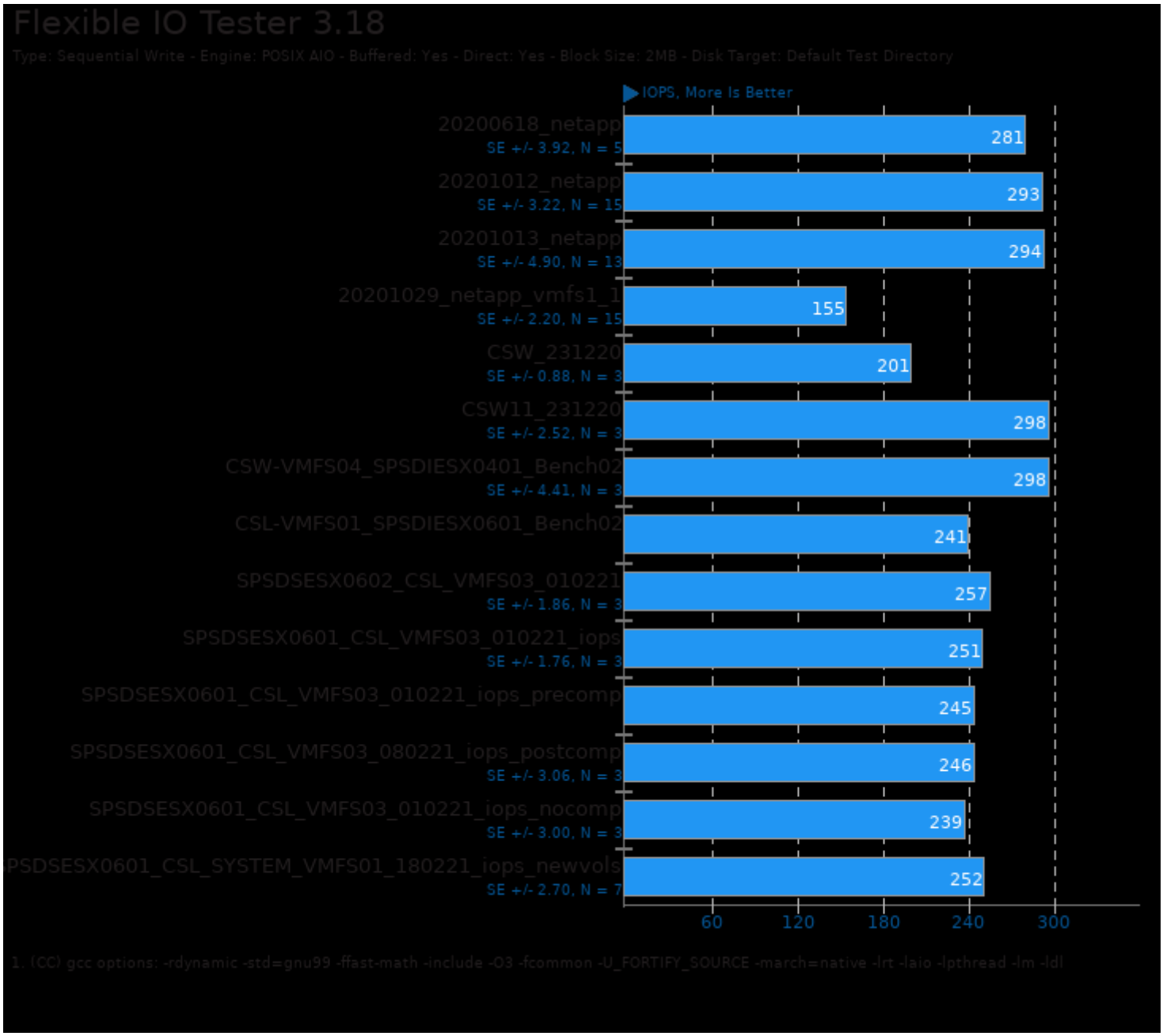
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