

www.phoronix-test-suite.com

Storage Tests

AMD Ryzen 9 5900X 12-Core testing with a ASUS ROG CROSSHAIR VIII HERO (3501 BIOS) and AMD DIMGREY_CAVEFISH 8GB on Ubuntu 20.04 via the Phoronix Test Suite.

Test Systems:

F2FS: Single

Processor: AMD Ryzen 9 5900X 12-Core @ 3.70GHz (12 Cores / 24 Threads), Motherboard: ASUS ROG CROSSHAIR VIII HERO (3501 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: 1000GB Western Digital WD_BLACK SN850 1TB + 1000GB Western Digital WDS100T1X0E-00AFY0, Graphics: AMD DIMGREY_CAVEFISH 8GB (2900/1000MHz), Audio: AMD Device ab28, Monitor: ASUS VP28U, Network: Realtek RTL8125 2.5GbE + Intel I211

OS: Ubuntu 20.04, Kernel: 5.14.0-051400rc7-generic (x86_64) 20210822, Desktop: GNOME Shell 3.36.9, Display Server: X Server 1.20.11, OpenGL: 4.6 Mesa 21.3.0-devel (git-2b4b310 2021-08-21 focal-oibaf-ppa) (LLVM 12.0.1), Vulkan: 1.2.185, Compiler: GCC 9.3.0, File-System: f2fs, Screen Resolution: 3840x2160

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

Storage Tests

--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 /
acl,active_logs=6,alloc_mode=default,background_gc=on,checkpoint_merge,discard,extent_cache,flush_merge,fsync_mode=posix,inline_data,inline_dentry,inline_xattr,lazytime,mode=adaptive,no_heap,relatime,rw,user_xattr / Block Size: 4096
Processor Notes: Scaling Governor: acpi-cpufreq ondemand (Boost: Enabled) - CPU Microcode: 0xa201009
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 seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline IBPB: conditional IBRS_FW STIBP: always-on RSB filling + srbds: Not affected + tsx_async_abort: Not affected

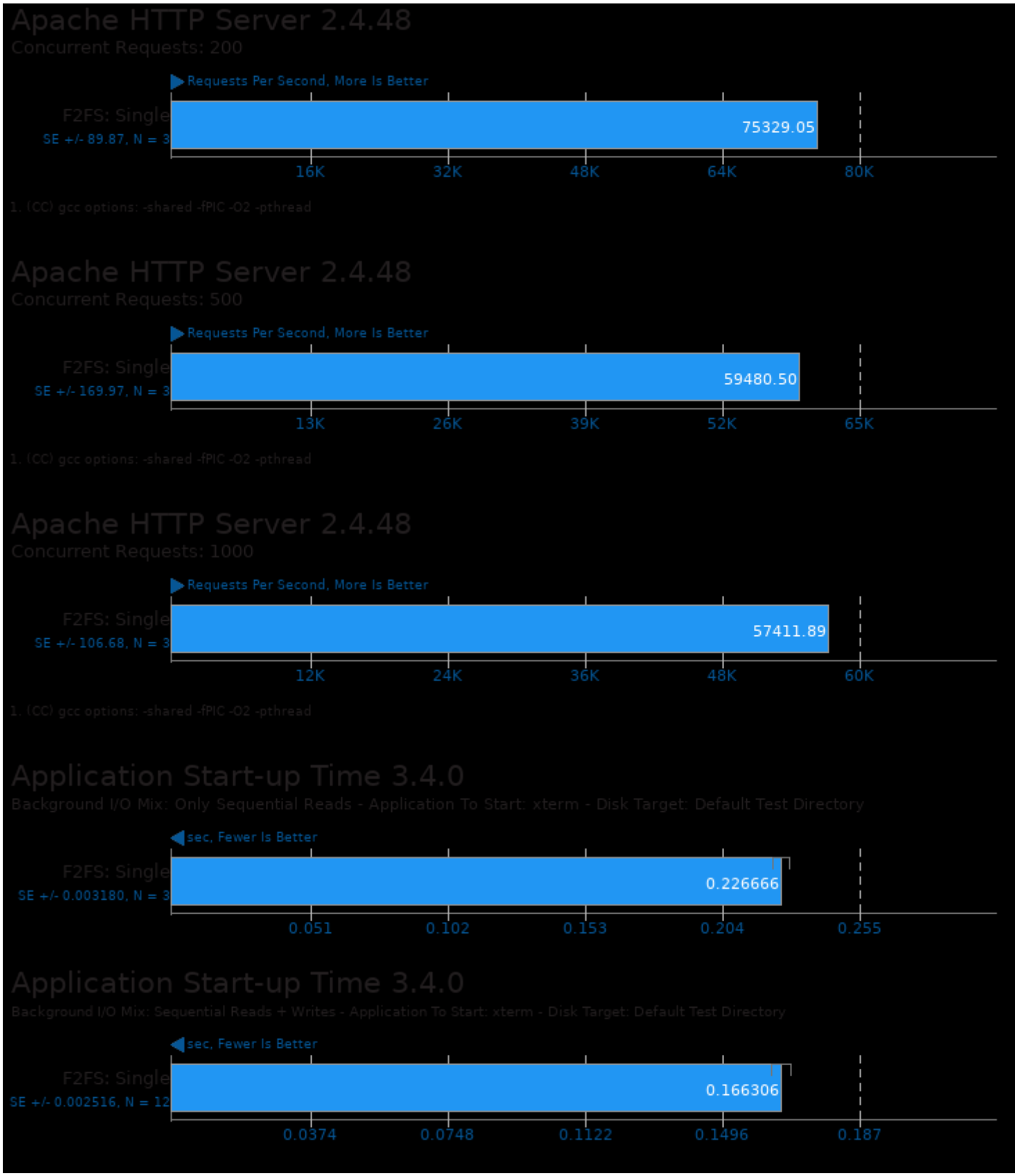
	F2FS: Single
Apache HTTP Server - 200 (Reqs/sec)	75329
Standard Deviation	0.2%
Apache HTTP Server - 500 (Reqs/sec)	59481
Standard Deviation	0.5%
Apache HTTP Server - 1000 (Reqs/sec)	57412
Standard Deviation	0.3%
Application Start-up Time - O.S.R - xterm (sec)	0.226666
Standard Deviation	2.4%
Application Start-up Time - S.R.W - xterm (sec)	0.166306
Standard Deviation	5.2%
Application Start-up Time - O.S.R - GNOME Terminal (sec)	0.587778
Standard Deviation	1.7%
Application Start-up Time - O.S.R - LibreOffice Writer (sec)	0.427750
Standard Deviation	3.6%
Application Start-up Time - S.R.W - GNOME Terminal (sec)	0.377556
Standard Deviation	0.8%
Application Start-up Time - S.R.W - LibreOffice Writer (sec)	0.306667
Standard Deviation	0.8%
Dbench - 1 (MB/s)	1000
Standard Deviation	0.9%
Dbench - 6 (MB/s)	3235
Standard Deviation	8.6%
Flexible IO Tester - Rand Read - IO_uring - No - Yes - 2MB (MB/s)	3593
Flexible IO Tester - Rand Read - IO_uring - No - Yes - 2MB (IOPS)	1793
Flexible IO Tester - Rand Read - IO_uring - No - Yes - 4KB (MB/s)	2943
Standard Deviation	2.1%
Flexible IO Tester - Rand Read - IO_uring - No - Yes - 4KB (IOPS)	753667
Standard Deviation	2.1%
Flexible IO Tester - Rand Write - IO_uring - No - Yes - 2MB (MB/s)	3273
Standard Deviation	0.1%
Flexible IO Tester - Rand Write - IO_uring - No - Yes - 2MB (IOPS)	1633
Standard Deviation	0.1%
Flexible IO Tester - Rand Write - IO_uring - No - Yes - 4KB (MB/s)	1113
Standard Deviation	0.9%
Flexible IO Tester - Rand Write - IO_uring - No - Yes - 4KB (IOPS)	285000
Standard Deviation	0.9%
Flexible IO Tester - Seq Read - IO_uring - No - Yes - 2MB (MB/s)	3591
Flexible IO Tester - Seq Read - IO_uring - No - Yes - 2MB (IOPS)	1792
Flexible IO Tester - Seq Read - IO_uring - No - Yes - 4KB (MB/s)	2087

Storage Tests

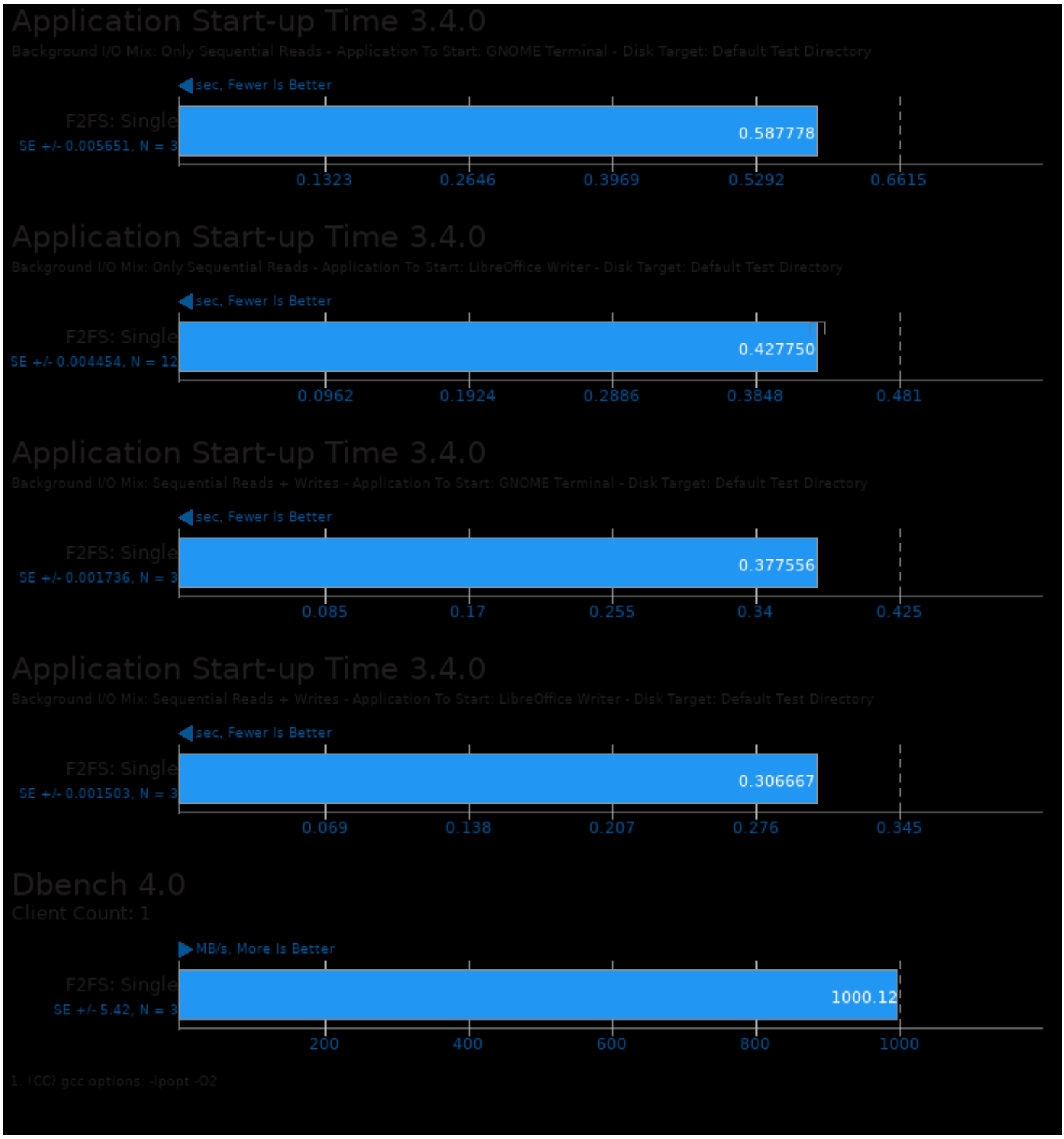
Standard Deviation	0.1%
Flexible IO Tester - Seq Read - IO_uring - No - Yes - 4KB (IOPS)	534333
Standard Deviation	0.1%
Flexible IO Tester - Seq Write - IO_uring - No - Yes - 2MB (MB/s)	3278
Standard Deviation	0%
Flexible IO Tester - Seq Write - IO_uring - No - Yes - 2MB (IOPS)	1635
Standard Deviation	0%
Flexible IO Tester - Seq Write - IO_uring - No - Yes - 4KB (MB/s)	1251
Standard Deviation	2.2%
Flexible IO Tester - Seq Write - IO_uring - No - Yes - 4KB (IOPS)	320333
Standard Deviation	2.3%
FS-Mark - 1.F.1.S (Files/s)	1191
Standard Deviation	0.5%
FS-Mark - 5.F.1.S.4.T (Files/s)	2492
Standard Deviation	0.4%
FS-Mark - 4.F.3.S.D.1.S (Files/s)	1194
Standard Deviation	0.5%
IOR - 2MB (MB/s)	1647
Standard Deviation	2.3%
IOR - 16MB (MB/s)	2291
Standard Deviation	0.8%
IOR - 64MB (MB/s)	2040
Standard Deviation	0.4%
MariaDB - 128 (Queries/sec)	1081
Standard Deviation	1%
MariaDB - 256 (Queries/sec)	841
Standard Deviation	1.3%
MariaDB - 512 (Queries/sec)	779
Standard Deviation	0.1%
nginx - 200 (Reqs/sec)	373344
Standard Deviation	0.3%
nginx - 500 (Reqs/sec)	362843
Standard Deviation	0.1%
nginx - 1000 (Reqs/sec)	353599
Standard Deviation	0.3%
PostgreSQL pgbench - 100 - 50 - Read Only (TPS)	368361
Standard Deviation	0.3%
PostgreSQL pgbench - 100 - 50 - Read Only - Average Latency (ms)	0.136
Standard Deviation	0.4%
PostgreSQL pgbench - 100 - 50 - Read Write (TPS)	41083
Standard Deviation	0.1%
PostgreSQL pgbench - 100 - 50 - Read Write - Average Latency	1.217
Standard Deviation	0.1%
PostgreSQL pgbench - 1000 - 50 - Read Only (TPS)	291011
Standard Deviation	3.7%
PostgreSQL pgbench - 1000 - 50 - Read Only - Average Latency	0.172
Standard Deviation	3.4%
PostgreSQL pgbench - 1000 - 50 - Read Write (TPS)	34439
Standard Deviation	0.4%
PostgreSQL pgbench - 1000 - 50 - Read Write - Average Latency	1.452
Standard Deviation	0.4%
SQLite - 1 (sec)	9.127
Standard Deviation	0.5%

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SQLite - 8 (sec)	18.172
Standard Deviation	1%
SQLite Speedtest - Timed Time - Size 1,000 (sec)	44.862
Standard Deviation	1.7%


Apache HTTP Server 2.4.48
Concurrent Requests: 200
Requests Per Second, More Is Better
F2FS: Single
SE +/- 89.87, N = 3
75329.05
16K
32K
48K
64K
80K
1. (CC) gcc options: -shared -fPIC -O2 -pthread
Apache HTTP Server 2.4.48
Concurrent Requests: 500
Requests Per Second, More Is Better
F2FS: Single
SE +/- 169.97, N = 3
59480.50
13K
26K
39K
52K
65K
1. (CC) gcc options: -shared -fPIC -O2 -pthread
Apache HTTP Server 2.4.48
Concurrent Requests: 1000
Requests Per Second, More Is Better
F2FS: Single
SE +/- 106.68, N = 3
57411.89
12K
24K
36K
48K
60K
1. (CC) gcc options: -shared -fPIC -O2 -pthread
Application Start-up Time 3.4.0
Background I/O Mix: Only Sequential Reads - Application To Start: xterm - Disk Target: Default Test Directory
sec, Fewer Is Better
F2FS: Single
SE +/- 0.003180, N = 3
0.226666
0.051
0.102
0.153
0.204
0.255
Application Start-up Time 3.4.0
Background I/O Mix: Sequential Reads + Writes - Application To Start: xterm - Disk Target: Default Test Directory
sec, Fewer Is Better
F2FS: Single
SE +/- 0.002516, N = 12
0.166306
0.0374
0.0748
0.1122
0.1496
0.187

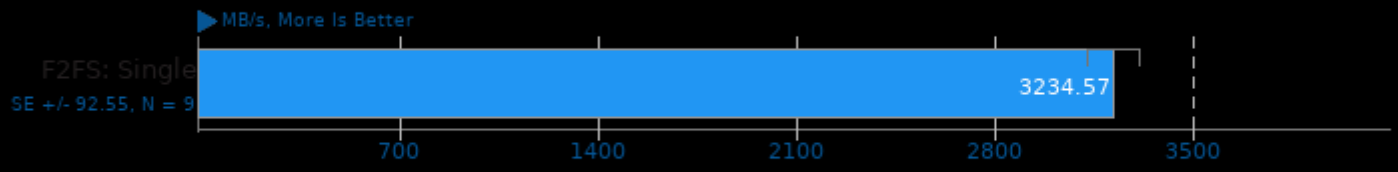
Storage Tests



Storage Tests

Dbench 4.0

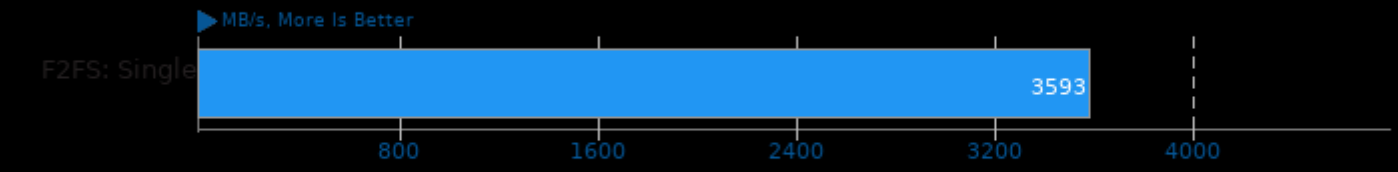
Client Count: 6



1. (CC) gcc options: -lpopt -O2

Flexible IO Tester 3.25

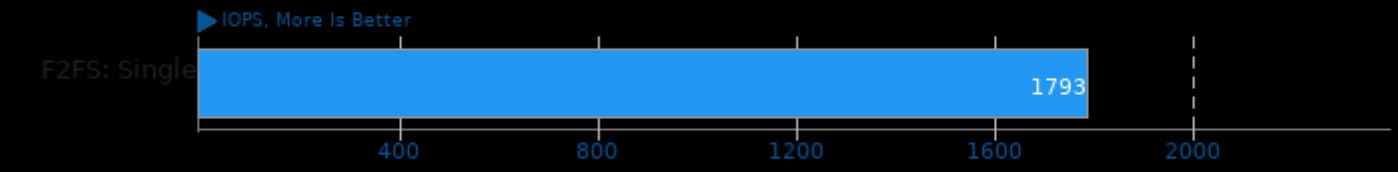
Type: Random Read - Engine: IO_uring - Buffered: No - Direct: Yes - Block Size: 2MB - Disk Target: Default Test Directory



1. (CC) gcc options: -rdynamic -ll -lnuma -lrt -lz -lpthread -lm -ldl -laio -lcurl -lssl -lcrypto -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOU

Flexible IO Tester 3.25

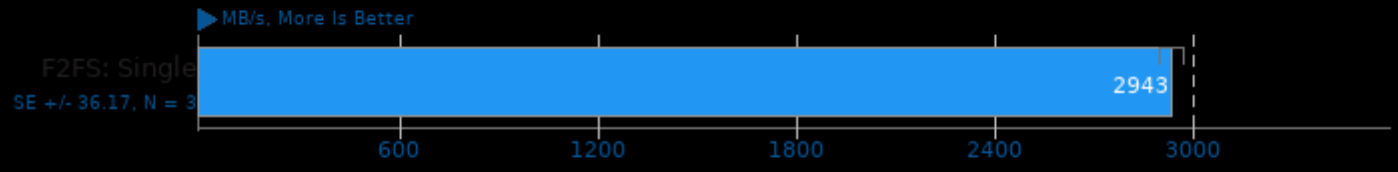
Type: Random Read - Engine: IO_uring - Buffered: No - Direct: Yes - Block Size: 2MB - Disk Target: Default Test Directory



1. (CC) gcc options: -rdynamic -ll -lnuma -lrt -lz -lpthread -lm -ldl -laio -lcurl -lssl -lcrypto -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOU

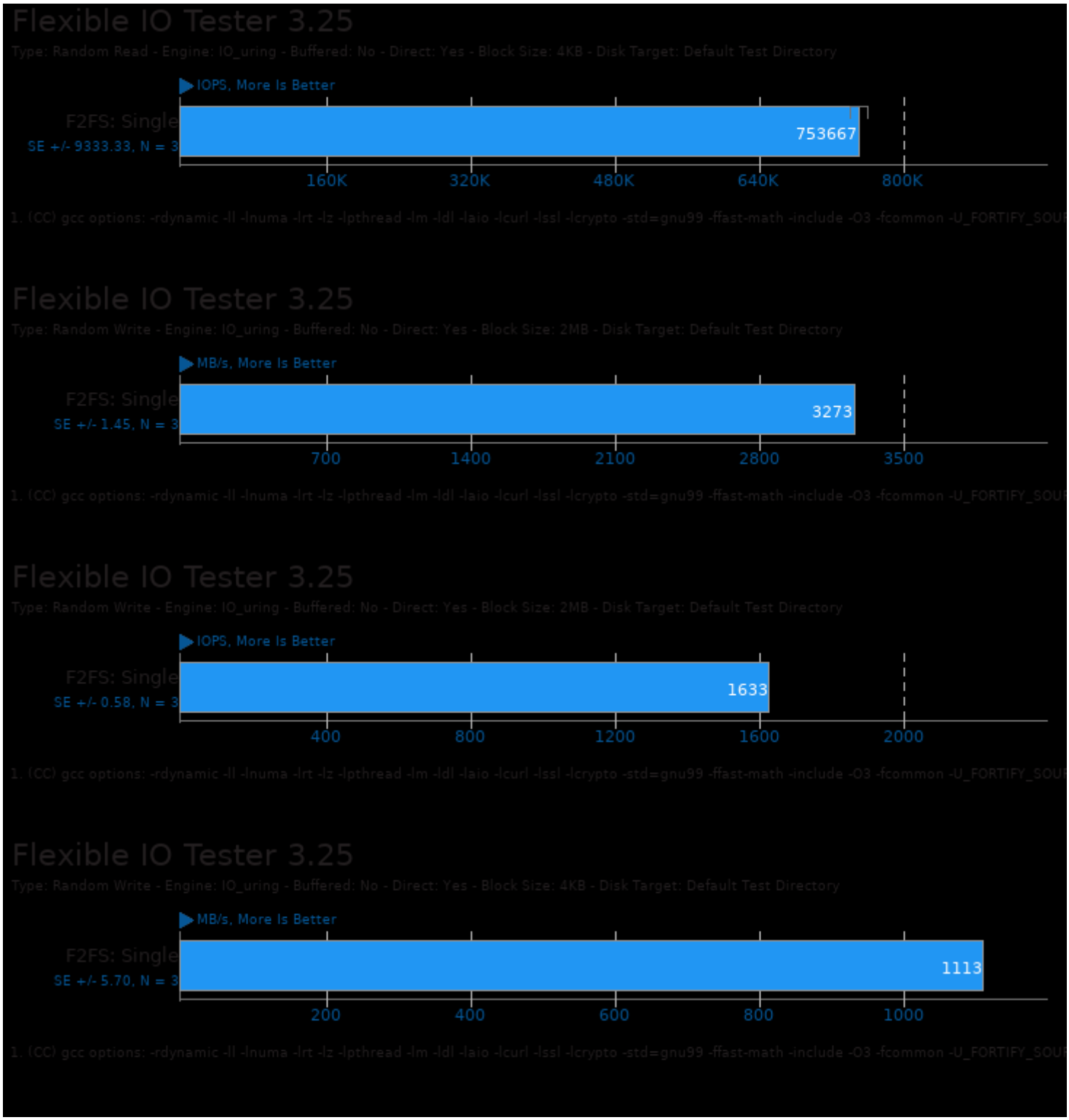
Flexible IO Tester 3.25

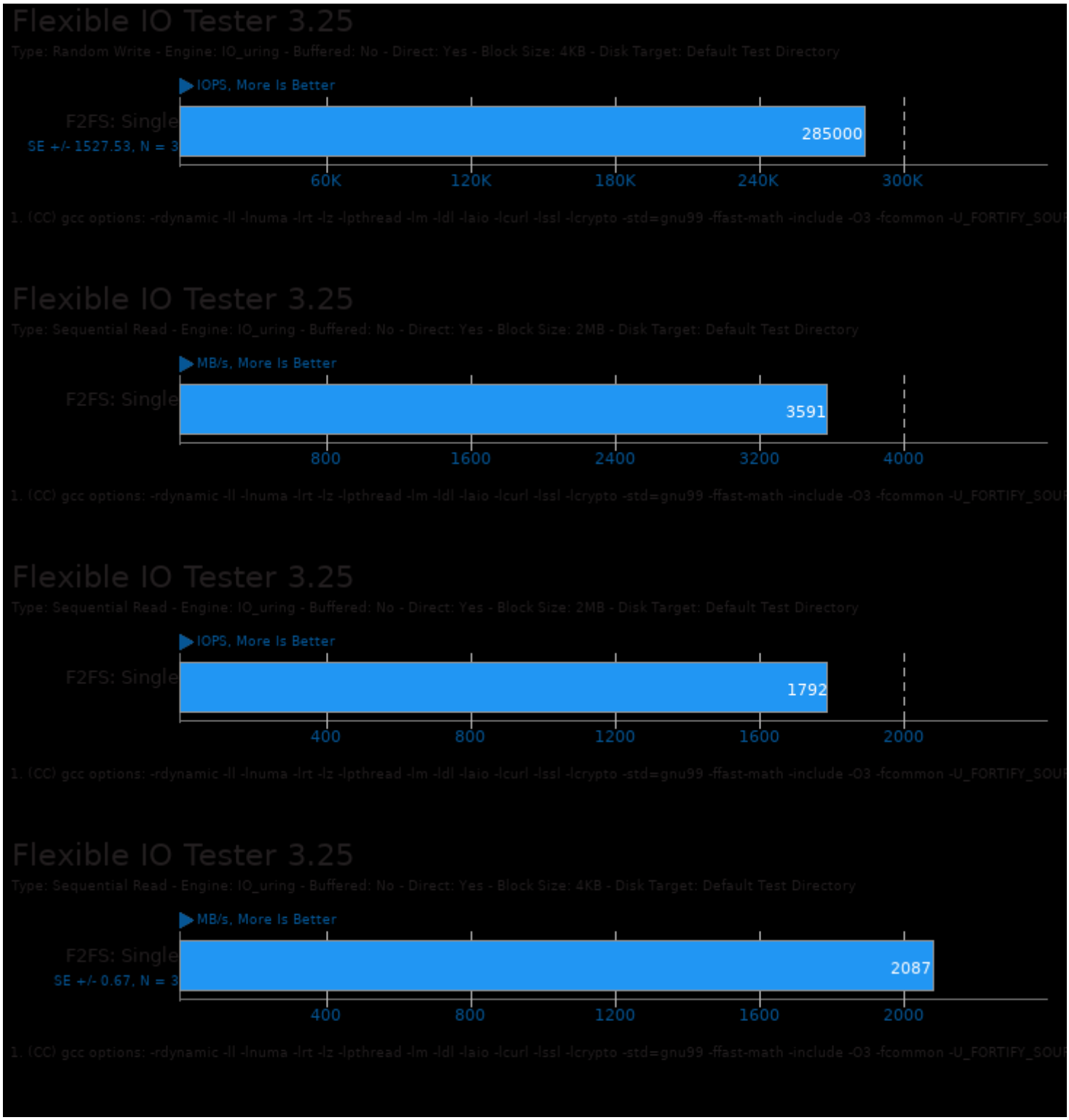
Type: Random Read - Engine: IO_uring - Buffered: No - Direct: Yes - Block Size: 4KB - Disk Target: Default Test Directory



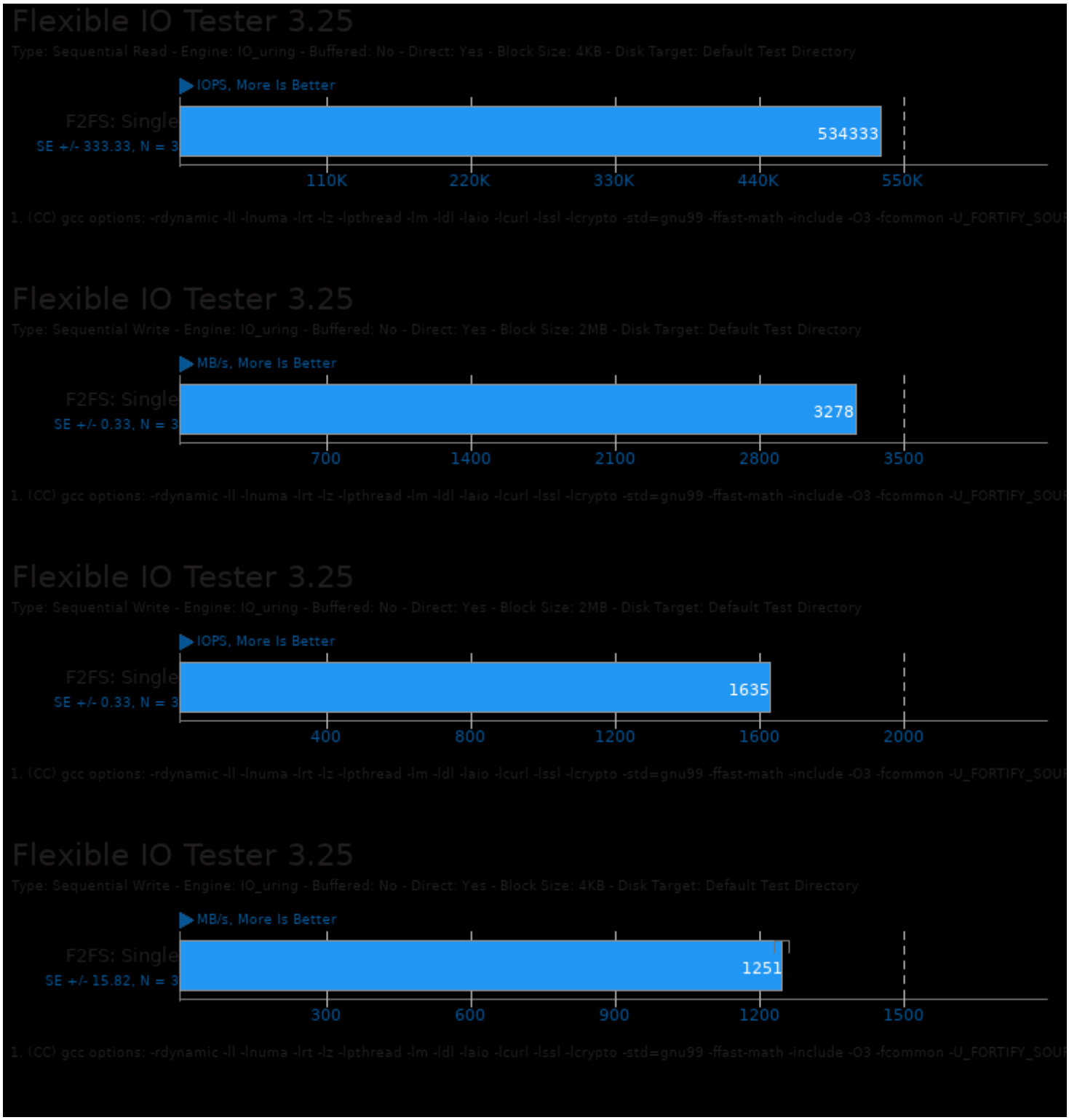
1. (CC) gcc options: -rdynamic -ll -lnuma -lrt -lz -lpthread -lm -ldl -laio -lcurl -lssl -lcrypto -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOU

Storage Tests



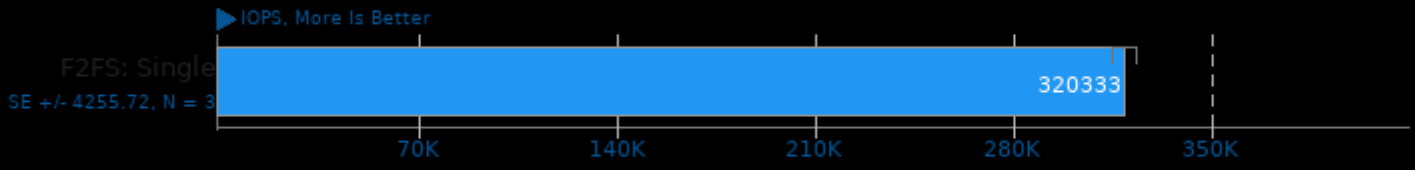

Flexible IO Tester 3.25
Type: Random Write - Engine: IO_uring - Buffered: No - Direct: Yes - Block Size: 4KB - Disk Target: Default Test Directory
IOPS, More Is Better
F2FS: Single
SE +/- 1527.53, N = 3
285000
60K
120K
180K
240K
300K
1. (CC) gcc options: -rdynamic -ll -lnuma -lrt -lz -lpthread -lm -ldl -laio -lcurl -lssl -lcrypto -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOU
Flexible IO Tester 3.25
Type: Sequential Read - Engine: IO_uring - Buffered: No - Direct: Yes - Block Size: 2MB - Disk Target: Default Test Directory
MB/s, More Is Better
F2FS: Single
3591
800
1600
2400
3200
4000
1. (CC) gcc options: -rdynamic -ll -lnuma -lrt -lz -lpthread -lm -ldl -laio -lcurl -lssl -lcrypto -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOU
Flexible IO Tester 3.25
Type: Sequential Read - Engine: IO_uring - Buffered: No - Direct: Yes - Block Size: 2MB - Disk Target: Default Test Directory
IOPS, More Is Better
F2FS: Single
1792
400
800
1200
1600
2000
1. (CC) gcc options: -rdynamic -ll -lnuma -lrt -lz -lpthread -lm -ldl -laio -lcurl -lssl -lcrypto -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOU
Flexible IO Tester 3.25
Type: Sequential Read - Engine: IO_uring - Buffered: No - Direct: Yes - Block Size: 4KB - Disk Target: Default Test Directory
MB/s, More Is Better
F2FS: Single
SE +/- 0.67, N = 3
2087
400
800
1200
1600
2000
1. (CC) gcc options: -rdynamic -ll -lnuma -lrt -lz -lpthread -lm -ldl -laio -lcurl -lssl -lcrypto -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOU

Storage Tests



Flexible IO Tester 3.25

Type: Sequential Write - Engine: IO_uring - Buffered: No - Direct: Yes - Block Size: 4KB - Disk Target: Default Test Directory



1. (CC) gcc options: -rdynamic -ll -lnuma -lrt -lz -lpthread -lm -ldl -laio -lcurl -lssl -lcrypto -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOU

FS-Mark 3.3

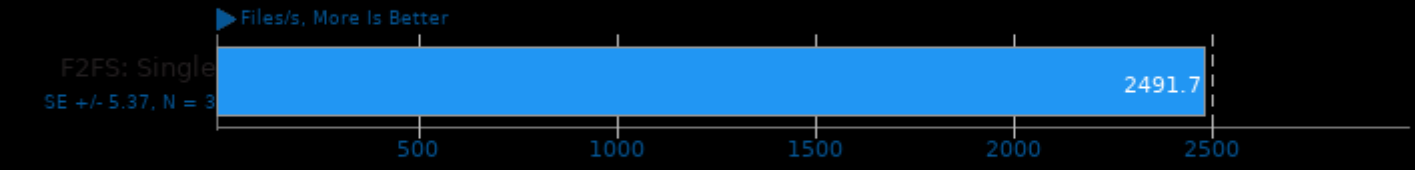
Test: 1000 Files, 1MB Size



1. (CC) gcc options: -static

FS-Mark 3.3

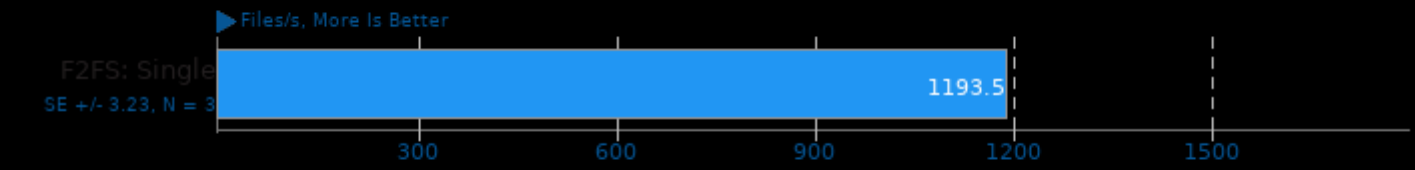
Test: 5000 Files, 1MB Size, 4 Threads



1. (CC) gcc options: -static

FS-Mark 3.3

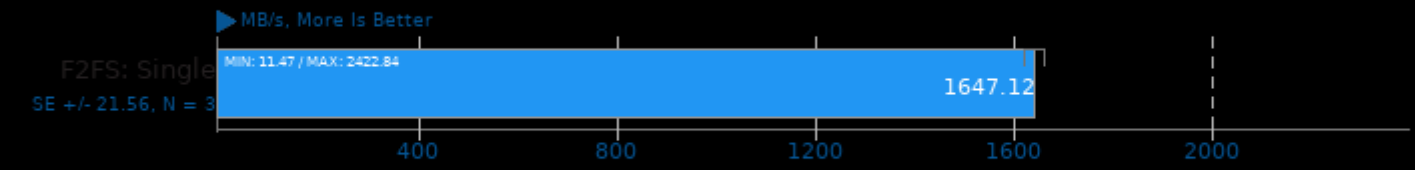
Test: 4000 Files, 32 Sub Dirs, 1MB Size



1. (CC) gcc options: -static

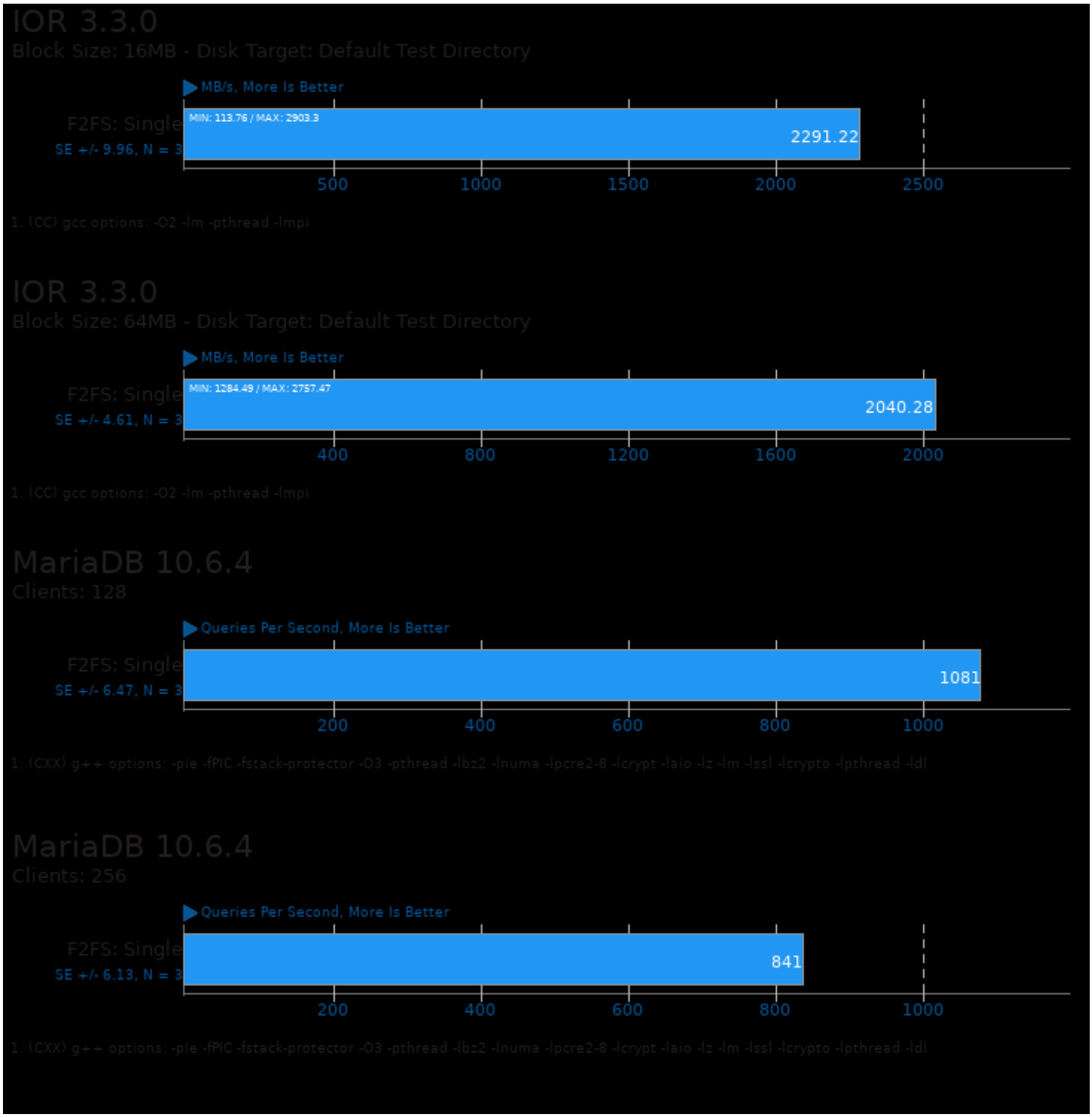
IOR 3.3.0

Block Size: 2MB - Disk Target: Default Test Directory



1. (CC) gcc options: -O2 -lm -pthread -lmpi

Storage Tests



MariaDB 10.6.4

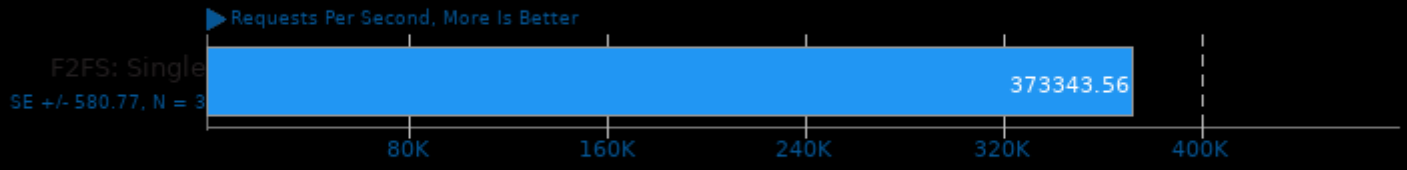
Clients: 512



1. (CXX) g++ options: -pie -fPIC -fstack-protector -O3 -pthread -lbz2 -lnuma -lpcre2-8 -lcrypt -laio -lz -lm -lssl -lcrypto -lpthread -ldl

nginx 1.21.1

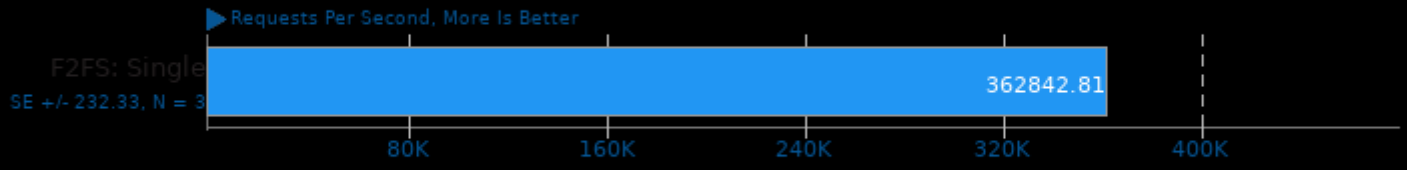
Concurrent Requests: 200



1. (CC) gcc options: -ldl -lpthread -lcrypt -lz -O3 -march=native

nginx 1.21.1

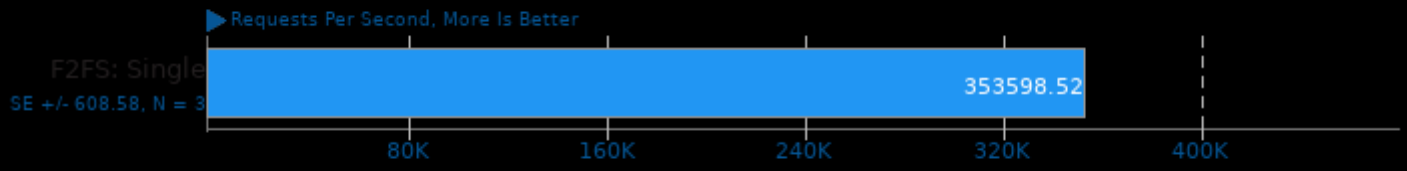
Concurrent Requests: 500



1. (CC) gcc options: -ldl -lpthread -lcrypt -lz -O3 -march=native

nginx 1.21.1

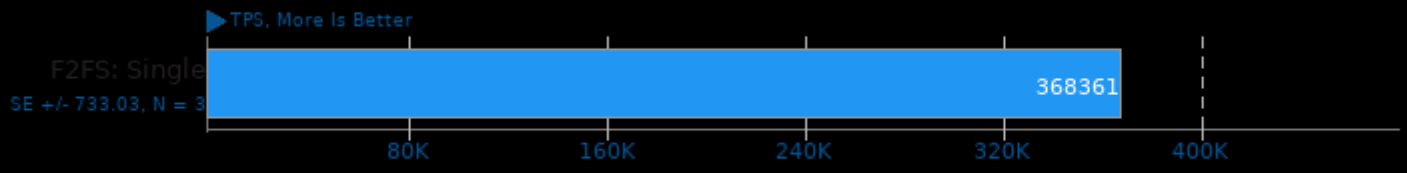
Concurrent Requests: 1000



1. (CC) gcc options: -ldl -lpthread -lcrypt -lz -O3 -march=native

PostgreSQL pgbench 13.0

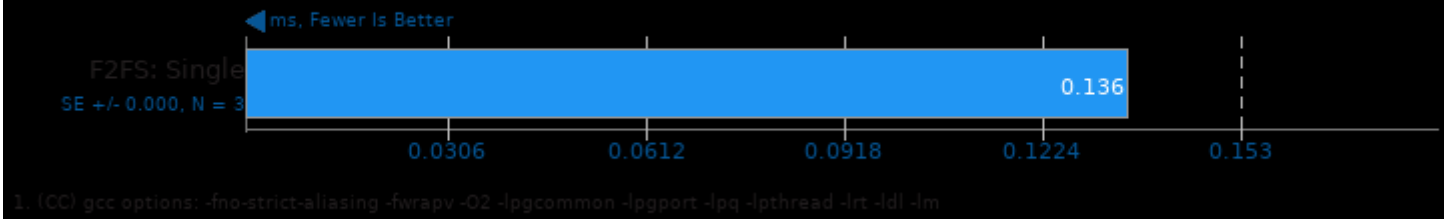
Scaling Factor: 100 - Clients: 50 - Mode: Read Only



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lpthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

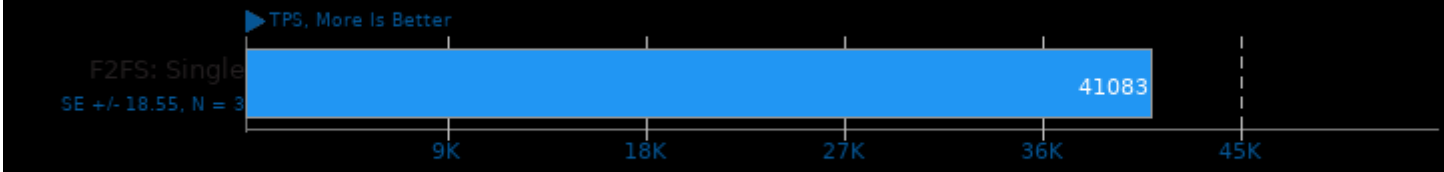
Scaling Factor: 100 - Clients: 50 - Mode: Read Only - Average Latency



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lpthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

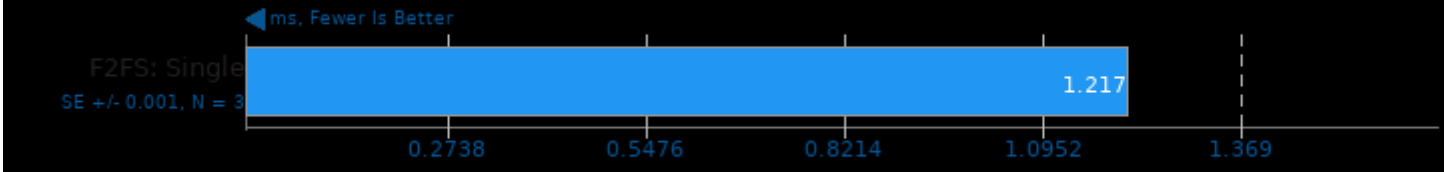
Scaling Factor: 100 - Clients: 50 - Mode: Read Write



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lpthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

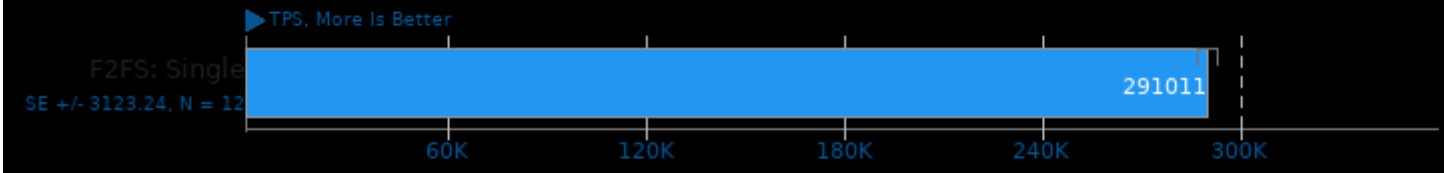
Scaling Factor: 100 - Clients: 50 - Mode: Read Write - Average Latency



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lpthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

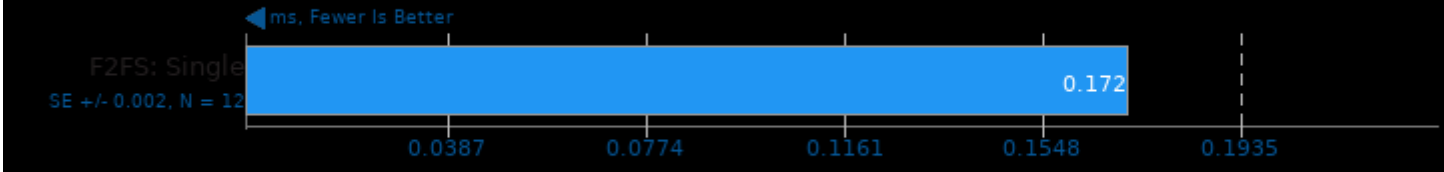
Scaling Factor: 1000 - Clients: 50 - Mode: Read Only



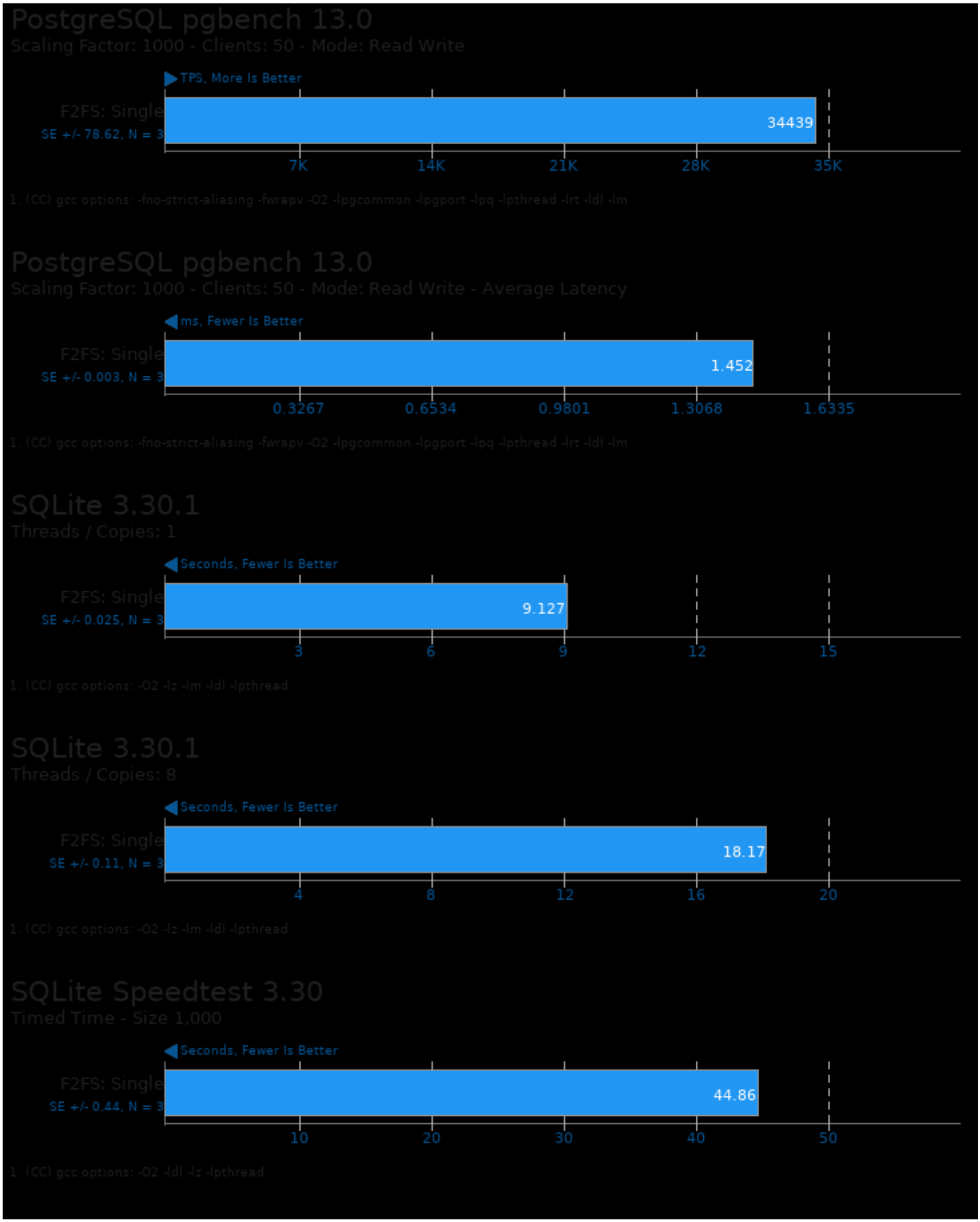
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lpthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

Scaling Factor: 1000 - Clients: 50 - Mode: Read Only - Average Latency



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lpthread -lrt -ldl -lm



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

11:15.