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WD_BLACK SN850 Linux NVMe SSD Benchmarks

sn850_ubuntu_pcie4.0

Automated Executive Summary

Intel Optane 900p 280GB had the most wins, coming in first place for 57% of the tests.

Based on the geometric mean of all complete results, the fastest (Intel Optane 900p 280GB) was 7.922x the speed of the slowest (Samsung 980 PRO 1TB). WD_BLACK SN850 1TB was 0.593x the speed of Intel Optane 900p 280GB, sn850_ubuntu_pcie4.0 was 0.995x the speed of WD_BLACK SN850 1TB, sn850_test was 0.972x the speed of sn850_ubuntu_pcie4.0, Sabrent Rocket 4.0 1TB was 0.696x the speed of sn850_test, Corsair Force MP600 1TB was 0.994x the speed of Sabrent Rocket 4.0 1TB, Crucial P2 500GB was 0.325x the speed of Corsair Force MP600 1TB, Samsung 980 PRO 1TB was 0.978x the speed of Crucial P2 500GB.

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

SQLite (Threads / Copies: 8) at 89.729x
Facebook RocksDB (Test: Random Fill Sync) at 81.058x
LevelDB (Benchmark: Fill Sync) at 59.44x
LevelDB (Benchmark: Fill Sync) at 46x
MariaDB (Clients: 4) at 37.611x
MariaDB (Clients: 1) at 27.824x

Dbench (Client Count: 6) at 21.35x
PostgreSQL pgbench (Scaling Factor: 100 - Clients: 1 - Mode: Read Write) at 10.867x
PostgreSQL pgbench (Scaling Factor: 100 - Clients: 1 - Mode: Read Write - Average Latency) at 10.846x
SQLite (Threads / Copies: 1) at 10.66x.

Test Systems:

Crucial P2 500GB

Processor: AMD Ryzen 7 5800X 8-Core @ 3.80GHz (8 Cores / 16 Threads), Motherboard: ASRock X570 Pro4 (P3.40 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: 500GB CT500P2SSD8, Graphics: Sapphire AMD Radeon RX 470/480/570/570X/580/580X/590 8GB (1560/2100MHz), Audio: AMD Ellesmere HDMI Audio, Monitor: G237HL, Network: Intel I211

OS: Ubuntu 20.10, Kernel: 5.8.0-29-generic (x86_64), Desktop: GNOME Shell 3.38.1, Display Server: X Server 1.20.9, Display Driver: modesetting 1.20.9, OpenGL: 4.6 Mesa 20.2.1 (LLVM 11.0.0), Vulkan: 1.2.131, Compiler: GCC 10.2.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-nvptx/usr,amdgcn-amdhsa=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-gcn/usr,hsa --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-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 / errors=remount-ro,relatime,rw / Block Size: 4096
Processor Notes: Scaling Governor: acpi-cpufreq ondemand - CPU Microcode: 0xa201009
Python Notes: Python 3.8.6
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

Samsung 980 PRO 1TB

Processor: AMD Ryzen 7 5800X 8-Core @ 3.80GHz (8 Cores / 16 Threads), Motherboard: ASRock X570 Pro4 (P3.40 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: 1000GB Samsung SSD 980 PRO 1TB, Graphics: Sapphire AMD Radeon RX 470/480/570/570X/580/580X/590 8GB (1560/2100MHz), Audio: AMD Ellesmere HDMI Audio, Monitor: G237HL, Network: Intel I211

OS: Ubuntu 20.10, Kernel: 5.8.0-29-generic (x86_64), Desktop: GNOME Shell 3.38.1, Display Server: X Server 1.20.9, Display Driver: modesetting 1.20.9, OpenGL: 4.6 Mesa 20.2.1 (LLVM 11.0.0), Vulkan: 1.2.131, Compiler: GCC 10.2.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-nvptx/usr,amdgcn-amdhsa=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-gcn/usr,hsa --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-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 / errors=remount-ro,relatime,rw / Block Size: 4096
Processor Notes: Scaling Governor: acpi-cpufreq ondemand - CPU Microcode: 0xa201009
Python Notes: Python 3.8.6
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

Sabrent Rocket 4.0 1TB

Processor: AMD Ryzen 7 5800X 8-Core @ 3.80GHz (8 Cores / 16 Threads), Motherboard: ASRock X570 Pro4 (P3.40 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: 1000GB Sabrent Rocket 4.0 1TB, Graphics: Sapphire AMD Radeon RX 470/480/570/570X/580/580X/590 8GB (1560/2100MHz), Audio: AMD Ellesmere HDMI Audio, Monitor: G237HL, Network: Intel I211

OS: Ubuntu 20.10, Kernel: 5.8.0-29-generic (x86_64), Desktop: GNOME Shell 3.38.1, Display Server: X Server 1.20.9, Display Driver: modesetting 1.20.9, OpenGL: 4.6 Mesa 20.2.1 (LLVM 11.0.0), Vulkan: 1.2.131, Compiler: GCC 10.2.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-nvptx/usr,amdgcn-amdhsa=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-gcn/usr,hsa --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-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 / errors=remount-ro,relatime,rw / Block Size: 4096
Processor Notes: Scaling Governor: acpi-cpufreq ondemand - CPU Microcode: 0xa201009
Python Notes: Python 3.8.6
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

Corsair Force MP600 1TB

Processor: AMD Ryzen 7 5800X 8-Core @ 3.80GHz (8 Cores / 16 Threads), Motherboard: ASRock X570 Pro4 (P3.40 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: 1000GB Corsair Force MP600, Graphics: Sapphire AMD Radeon RX 470/480/570/570X/580/580X/590 8GB (1560/2100MHz), Audio: AMD Ellesmere HDMI Audio, Monitor: G237HL, Network: Intel I211

OS: Ubuntu 20.10, Kernel: 5.8.0-29-generic (x86_64), Desktop: GNOME Shell 3.38.1, Display Server: X Server 1.20.9, Display Driver: modesetting 1.20.9, OpenGL: 4.6 Mesa 20.2.1 (LLVM 11.0.0), Vulkan: 1.2.131, Compiler: GCC 10.2.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-nvptx/usr,amdgcn-amdhsa=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-gcn/usr,hsa --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-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 / errors=remount-ro,relatime,rw / Block Size: 4096
Processor Notes: Scaling Governor: acpi-cpufreq ondemand - 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

Intel Optane 900p 280GB

Processor: AMD Ryzen 7 5800X 8-Core @ 3.80GHz (8 Cores / 16 Threads), Motherboard: ASRock X570 Pro4 (P3.40 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: 280GB INTEL SSDPED1D280GA, Graphics: Sapphire AMD Radeon RX 470/480/570/570X/580/580X/590 8GB (1560/2100MHz), Audio: AMD Ellesmere HDMI Audio, Monitor: G237HL, Network: Intel I211

OS: Ubuntu 20.10, Kernel: 5.8.0-29-generic (x86_64), Desktop: GNOME Shell 3.38.1, Display Server: X Server 1.20.9, Display Driver: modesetting 1.20.9, OpenGL: 4.6 Mesa 20.2.1 (LLVM 11.0.0), Vulkan: 1.2.131, Compiler: GCC 10.2.0,

File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-nvptx/usr,amdgcn-amdhsa=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-gcn/usr,hsa --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-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 / errors=remount-ro,relatime,rw / Block Size: 4096
Processor Notes: Scaling Governor: acpi-cpufreq ondemand - 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

WD_BLACK SN850 1TB

Processor: AMD Ryzen 7 5800X 8-Core @ 3.80GHz (8 Cores / 16 Threads), Motherboard: ASRock X570 Pro4 (P3.40 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: 1000GB Western Digital WD_BLACK SN850 1TB, Graphics: Sapphire AMD Radeon RX 470/480/570/570X/580/580X/590 8GB (1560/2100MHz), Audio: AMD Ellesmere HDMI Audio, Monitor: G237HL, Network: Intel I211

OS: Ubuntu 20.10, Kernel: 5.8.0-29-generic (x86_64), Desktop: GNOME Shell 3.38.1, Display Server: X Server 1.20.9, Display Driver: modesetting 1.20.9, OpenGL: 4.6 Mesa 20.2.1 (LLVM 11.0.0), Vulkan: 1.2.131, Compiler: GCC 10.2.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-nvptx/usr,amdgcn-amdhsa=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-gcn/usr,hsa --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-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 / errors=remount-ro,relatime,rw / Block Size: 4096
Processor Notes: Scaling Governor: acpi-cpufreq ondemand - 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

sn850_test

Processor: AMD Ryzen 9 5900X 12-Core @ 3.70GHz (12 Cores / 24 Threads), Motherboard: Gigabyte X570 AORUS MASTER (F33j BIOS), Chipset: AMD Starship/Matisse, Memory: 64GB, Disk: 3 x 1000GB Western Digital WDS100T1X0E-00AFY0, Graphics: MSI NVIDIA GeForce GT 1030 2GB, Audio: NVIDIA GP108 HD Audio, Monitor: AG271QG4, Network: Intel I211 + Realtek RTL8125 2.5GbE + Intel Wi-Fi 6 AX200

OS: Ubuntu 21.04, Kernel: 5.11.0-18-generic (x86_64), Desktop: GNOME Shell 3.38.4, Display Server: X Server 1.20.11, Display Driver: NVIDIA 460.80, OpenGL: 4.6.0, Compiler: GCC 10.3.0, File-System: ext4, Screen Resolution: 5120x1440

Kernel Notes: Transparent Huge Pages: madvise
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-link-mutex --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-10-gDeRY6/gcc-10-10.3.0/debian/tmp-nvptx/usr,amdgcn-amdhsa=/build/gcc-10-gDeRY6/gcc-10-10.3.0/debian/tmp-gcn/usr,hsa --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-build-config=bootstrap-lto-lean --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic --without-cuda-driver -v
Disk Notes: NONE / errors=remount-ro,relatime,rw / Block Size: 4096
Processor Notes: Scaling Governor: acpi-cpufreq schedutil (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

WD_BLACK SN850 Linux NVMe SSD Benchmarks

sn850_ubuntu_pcie4.0

Processor: AMD Ryzen 9 5900X 12-Core @ 3.70GHz (12 Cores / 24 Threads), Motherboard: Gigabyte X570 AORUS MASTER (F33j BIOS), Chipset: AMD Starship/Matisse, Memory: 64GB, Disk: 3 x 1000GB Western Digital WDS100T1X0E-00AFY0, Graphics: MSI NVIDIA GeForce GT 1030 2GB, Audio: NVIDIA GP108 HD Audio, Monitor: AG271QG4, Network: Intel I211 + Realtek RTL8125 2.5GbE + Intel Wi-Fi 6 AX200

OS: Ubuntu 21.04, Kernel: 5.11.0-18-generic (x86_64), Desktop: GNOME Shell 3.38.4, Display Server: X Server 1.20.11, Display Driver: NVIDIA 460.80, OpenGL: 4.6.0, Vulkan: 1.2.155, Compiler: GCC 10.3.0, File-System: ext4, Screen Resolution: 5120x1440

Kernel Notes: Transparent Huge Pages: madvise
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-link-mutex --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-10-gDeRY6/gcc-10-10.3.0/debian/tmp-nvptx/usr,amdgcn-amdhsa=/build/gcc-10-gDeRY6/gcc-10-10.3.0/debian/tmp-gcn/usr, hsa --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-build-config=bootstrap-lto-lean --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic --without-cuda-driver -v
Disk Notes: NONE / errors=remount-ro,relatime,rw / Block Size: 4096
Processor Notes: Scaling Governor: acpi-cpufreq schedutil (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

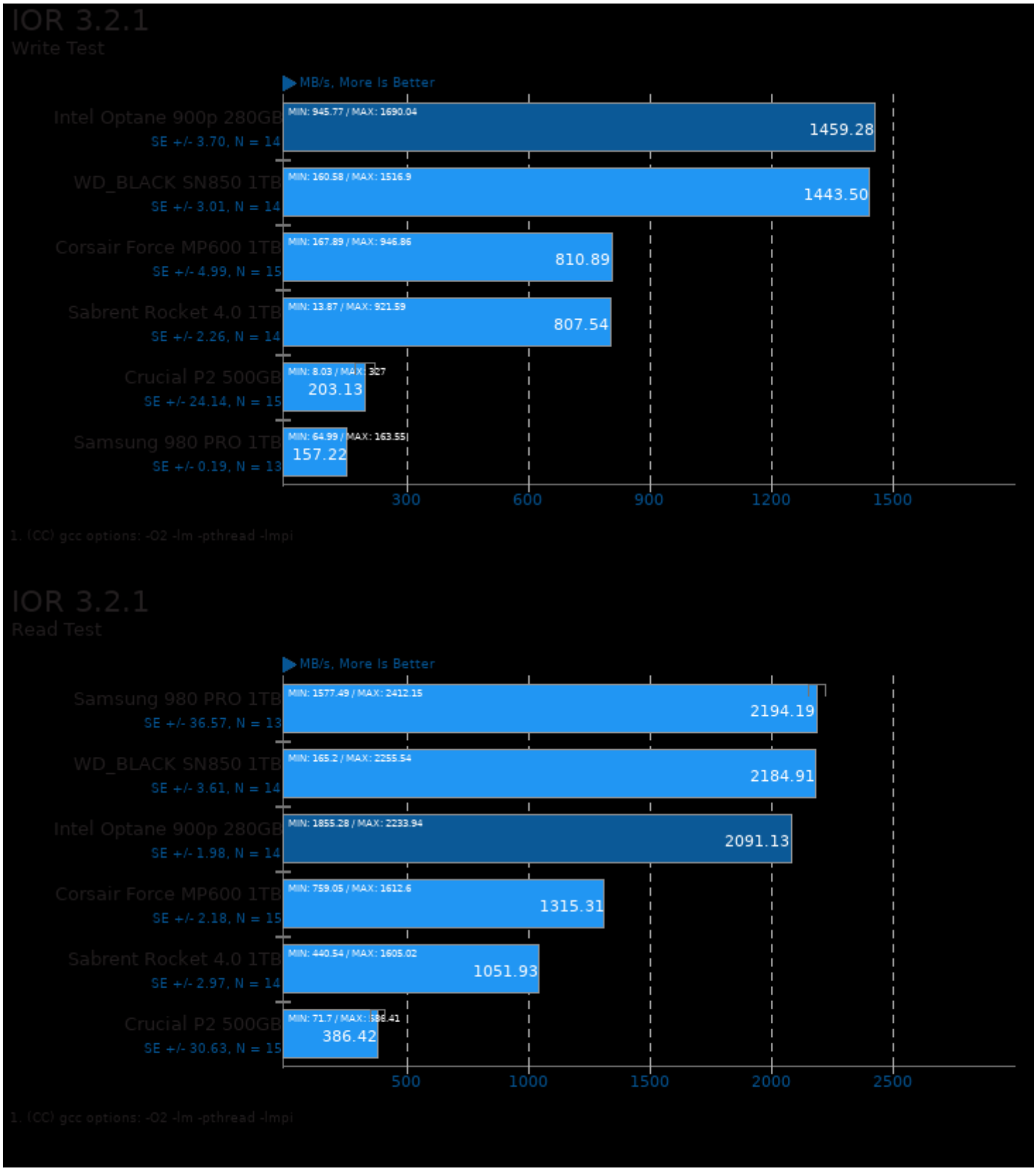
	Crucial P2 500GB	Samsung 980 PRO 1TB	Sabrent Rocket 4.0 1TB	Corsair Force MP600 1TB	Intel Optane 900p 280GB	WD_BLACK SN850 1TB	sn850_test	sn850_ubuntu_pcie4.0
IOR - Write Test (MB/s)	203.13	157.22	807.54	810.89	1459	1444		
Normalized	13.92%	10.77%	55.34%	55.57%	100%	98.92%		
Standard Deviation	46%	0.4%	1%	2.4%	0.9%	0.8%		
IOR - Read Test (MB/s)	386.42	2194	1052	1315	2091	2185		
Normalized	17.61%	100%	47.94%	59.95%	95.3%	99.58%		
Standard Deviation	30.7%	6%	1.1%	0.6%	0.4%	0.6%		
Flexible IO Tester - Rand Read - IO_uring - No - Yes - 4KB (IOPS)	317000	424400	458333	460667	439000	596000	481333	380533
Normalized	53.19%	71.21%	76.9%	77.29%	73.66%	100%	80.76%	63.85%
Standard Deviation	0.9%	12.3%	0.9%	0.5%	0.5%	0.3%	1.9%	4.7%
Flexible IO Tester - Rand Write - IO_uring - No - Yes - 4KB (IOPS)	273667	263923	504667	490333	302667	520667	432667	438333
Normalized	52.56%	50.69%	96.93%	94.17%	58.13%	100%	83.1%	84.19%
Standard Deviation	0.6%	3.5%	0.6%	0.2%	0.5%	0.1%	1.9%	1.7%
Flexible IO Tester - Seq Read - IO_uring - No - Yes - 2MB (MB/s)	2233	2746	2443	2802	2504	3316	3213	4182
Normalized	53.4%	65.66%	58.42%	67%	59.88%	79.29%	76.83%	100%
Standard Deviation	0.3%	0%	2.8%	3.6%	0%	17.7%		0.1%

WD_BLACK SN850 Linux NVMe SSD Benchmarks

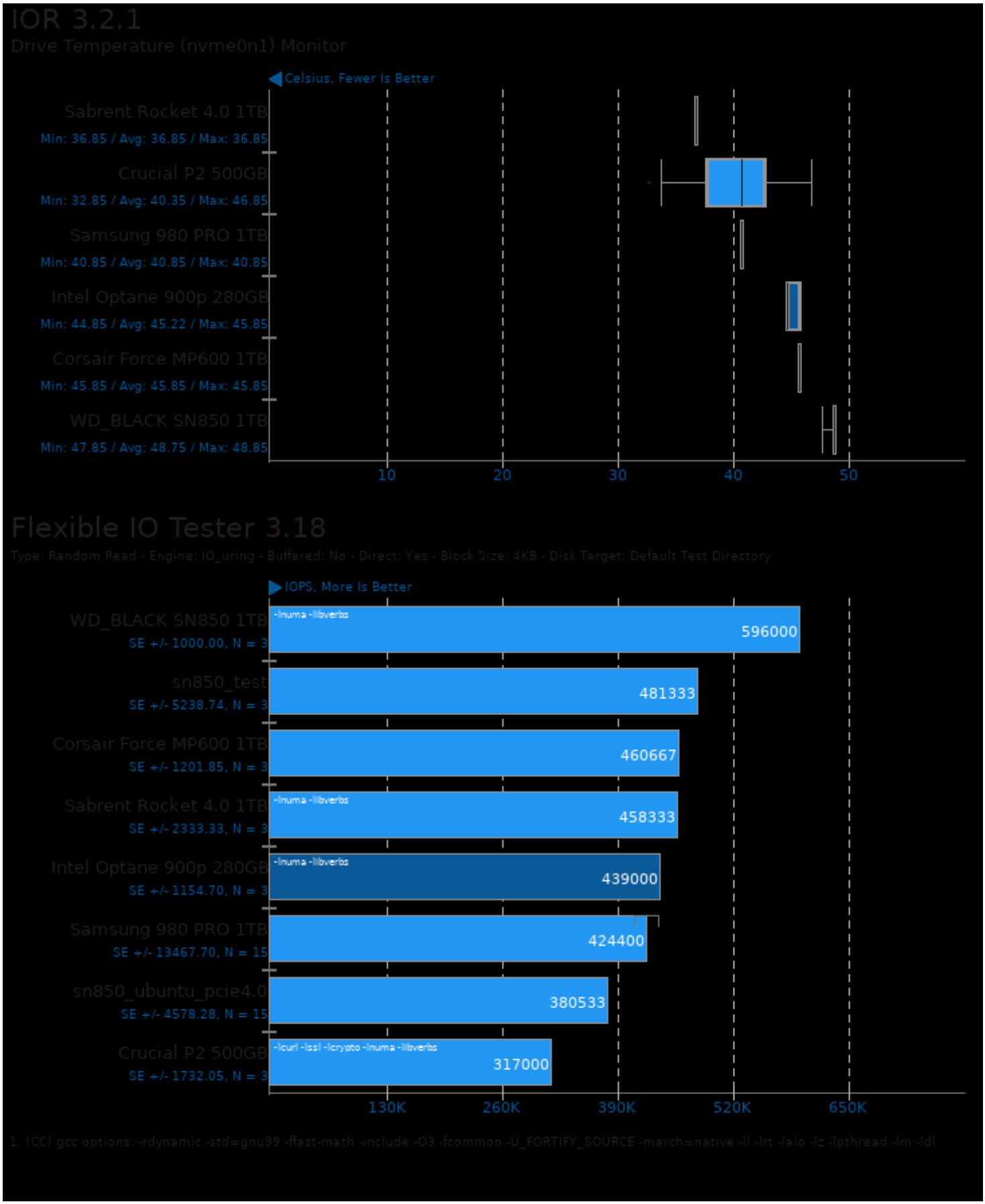
Flexible IO Tester - Seq Write - IO_uring - No - Yes - 2MB (MB/s)	**1151**	**4726**	4087	4078	1977	4526	2659	3122
Normalized	24.36%	100%	86.48%	86.29%	41.83%	95.77%	56.26%	66.06%
Standard Deviation	64%	0.3%	0.1%	0.1%	0.4%	5.8%	1.2%	0.7%
FS-Mark - 1.F.1.S (Files/s)	207.3	**145.3**	613.3	629.0	774.2	851.7	836.2	**864.4**
Normalized	23.98%	16.81%	70.95%	72.77%	89.57%	98.53%	96.74%	100%
Standard Deviation	12.8%	0.1%	1.2%	1.5%	4.1%	0.4%	0.9%	1.6%
FS-Mark - 5.F.1.S.4.T (Files/s)	609.9	**329.3**	1282	1287	1412	**2266**	884.8	885.6
Normalized	26.91%	14.53%	56.56%	56.76%	62.28%	100%	39.04%	39.08%
Standard Deviation	0.1%	0.2%	1.8%	0.7%	5.1%	0.4%	9.4%	8.7%
FS-Mark - 4.F.3.S.D.1.S (Files/s)	236.8	**144.5**	633.2	633.4	843.7	**849.9**	729.7	838.3
Normalized	27.86%	17%	74.5%	74.53%	99.27%	100%	85.86%	98.64%
Standard Deviation	1.4%	0.1%	0.8%	0.5%	0.4%	0.5%	17.9%	18.4%
Dbench - 6 (MB/s)	486.529	**218.878**	1361	1366	**4673**	2299	2210	2233
Normalized	10.41%	4.68%	29.13%	29.24%	100%	49.19%	47.29%	47.79%
Standard Deviation	0.1%	0.6%	0%	0.1%	0.8%	0.1%	0.9%	0.5%
PostgreSQL pgbench - 100 - 1 - Read Write (TPS)	**384**	456	1245	1195	**4173**	1716	2351	2393
Normalized	9.2%	10.93%	29.83%	28.64%	100%	41.12%	56.34%	57.34%
Standard Deviation	0.1%	0.4%	0.4%	1.3%	0.3%	0.9%	0.4%	1.3%
PostgreSQL pgbench - 100 - 1 - Read Write - Average Latency (ms)	**2.603**	2.192	0.804	0.837	**0.240**	0.583	0.425	0.418
Normalized	9.22%	10.95%	29.85%	28.67%	100%	41.17%	56.47%	57.42%
Standard Deviation	0.1%	0.4%	0.4%	1.2%	0.2%	0.9%	0.4%	1.2%
PostgreSQL pgbench - 100 - 50 - Read Write (TPS)	**7503**	9446	30363	29517	**40228**	38462	38722	39530
Normalized	18.65%	23.48%	75.48%	73.37%	100%	95.61%	96.26%	98.26%
Standard Deviation	0.2%	1.1%	0.7%	3.9%	0.6%	0.3%	1.2%	1.5%
PostgreSQL pgbench - 100 - 50 - Read Write - Average Latency (ms)	**6.665**	5.294	1.647	1.697	**1.243**	1.300	1.292	1.265
Normalized	18.65%	23.48%	75.47%	73.25%	100%	95.62%	96.21%	98.26%
Standard Deviation	0.2%	1.1%	0.7%	4.3%	0.6%	0.3%	1.2%	1.6%
MariaDB - 1 (Queries/sec)	**680**	849	3061	3036	**18920**	5185	5964	6000
Normalized	3.59%	4.49%	16.18%	16.05%	100%	27.4%	31.52%	31.71%
Standard Deviation	9.2%	0.4%	0.9%	0.2%	0.7%	0.2%	0.7%	0.3%
MariaDB - 4 (Queries/sec)	**368**	468	1869	1830	**13841**	3745	3817	3815
Normalized	2.66%	3.38%	13.5%	13.22%	100%	27.06%	27.58%	27.56%
Standard Deviation	2.9%	0.5%	0.2%	0.4%	0.7%	0%	1.6%	2.2%
SQLite - 1 (sec)	64.403	**74.035**	14.541	14.424		7.354	7.008	**6.945**
Normalized	10.78%	9.38%	47.76%	48.15%		94.44%	99.1%	100%
Standard Deviation	10.5%	0.5%	0.3%	0.3%		0.1%	0.8%	0.4%
SQLite - 8 (sec)	**333.973**	196.849	38.221	39.872	**3.722**	28.573	29.573	29.364
Normalized	1.11%	1.89%	9.74%	9.33%	100%	13.03%	12.59%	12.68%

WD_BLACK SN850 Linux NVMe SSD Benchmarks

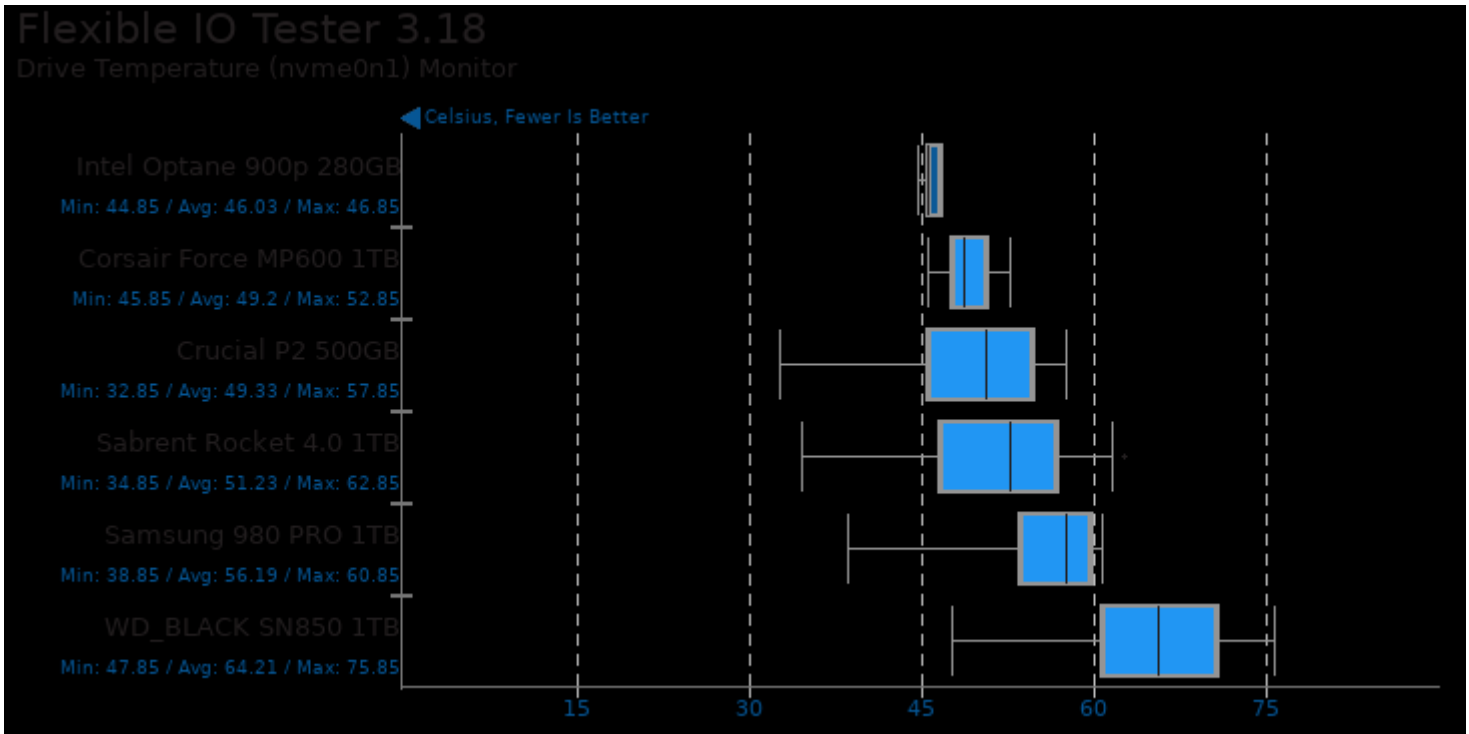
Standard Deviation	0.4%	1.1%	0%	0.2%	1%	0.5%	1.1%	0.4%
LevelDB - Fill Sync (MB/s)	0.3	**0.2**	1	1	**9.2**	2	2.9	3
Normalized	3.26%	2.17%	10.87%	10.87%	100%	21.74%	31.52%	32.61%
Standard Deviation	0%	29.3%			0.7%		2%	
LevelDB - Fill Sync (us/Op)	6412	**11253**	1697	1768	**189.322**	865.758	898.954	889.351
Normalized	2.95%	1.68%	11.16%	10.71%	100%	21.87%	21.06%	21.29%
Standard Deviation	2.8%	3.7%	0.5%	0.5%	0.5%	0.4%	0.7%	0.3%
Facebook RocksDB - Rand Fill Sync (Op/s)	2748	**1194**	8680	8756	**96783**	17932	26602	26641
Normalized	2.84%	1.23%	8.97%	9.05%	100%	18.53%	27.49%	27.53%
Standard Deviation	0.4%	1.9%	0.9%	0.8%	0.3%		0.6%	0.2%
Flexible IO Tester - Rand Read - IO_uring - No - Yes - 4KB (MB/s)							**1879**	**1487**
Normalized							100%	79.14%
Standard Deviation							1.9%	4.6%
Flexible IO Tester - Rand Write - IO_uring - No - Yes - 4KB (MB/s)							**1689**	**1713**
Normalized							98.6%	100%
Standard Deviation							1.8%	1.7%
Flexible IO Tester - Seq Read - IO_uring - No - Yes - 2MB (IOPS)							**1603**	**2087**
Normalized							76.81%	100%
Standard Deviation								0.1%
Flexible IO Tester - Seq Write - IO_uring - No - Yes - 2MB (IOPS)							**1326**	**1557**
Normalized							85.16%	100%
Standard Deviation							1.2%	0.6%

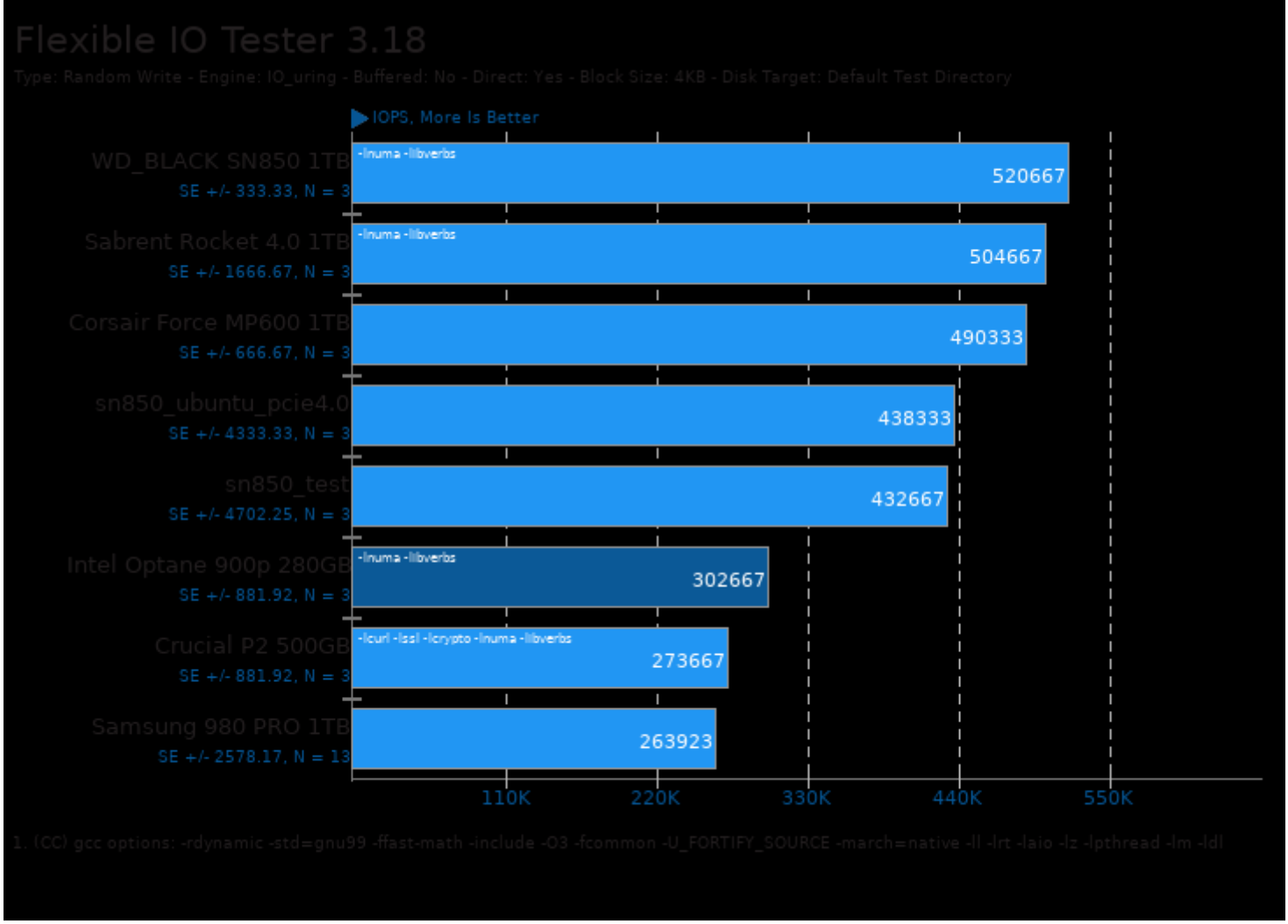

IOR 3.2.1
Write Test
MB/s, More Is Better
Intel Optane 900p 280GB
SE +/- 3.70, N = 14
MIN: 945.77 / MAX: 1690.04
1459.28
WD_BLACK SN850 1TB
SE +/- 3.01, N = 14
MIN: 160.58 / MAX: 1516.9
1443.50
Corsair Force MP600 1TB
SE +/- 4.99, N = 15
MIN: 167.89 / MAX: 946.86
810.89
Sabrent Rocket 4.0 1TB
SE +/- 2.26, N = 14
MIN: 13.87 / MAX: 921.59
807.54
Crucial P2 500GB
SE +/- 24.14, N = 15
MIN: 8.03 / MAX: 327
203.13
Samsung 980 PRO 1TB
SE +/- 0.19, N = 13
MIN: 64.99 / MAX: 163.55
157.22
300
600
900
1200
1500
1. (CC) gcc options: -O2 -lm -pthread -lmpi
IOR 3.2.1
Read Test
MB/s, More Is Better
Samsung 980 PRO 1TB
SE +/- 36.57, N = 13
MIN: 1577.49 / MAX: 2412.15
2194.19
WD_BLACK SN850 1TB
SE +/- 3.61, N = 14
MIN: 165.2 / MAX: 2255.54
2184.91
Intel Optane 900p 280GB
SE +/- 1.98, N = 14
MIN: 1855.28 / MAX: 2233.94
2091.13
Corsair Force MP600 1TB
SE +/- 2.18, N = 15
MIN: 759.05 / MAX: 1612.6
1315.31
Sabrent Rocket 4.0 1TB
SE +/- 2.97, N = 14
MIN: 440.54 / MAX: 1605.02
1051.93
Crucial P2 500GB
SE +/- 30.63, N = 15
MIN: 71.7 / MAX: 388.41
386.42
500
1000
1500
2000
2500
1. (CC) gcc options: -O2 -lm -pthread -lmpi

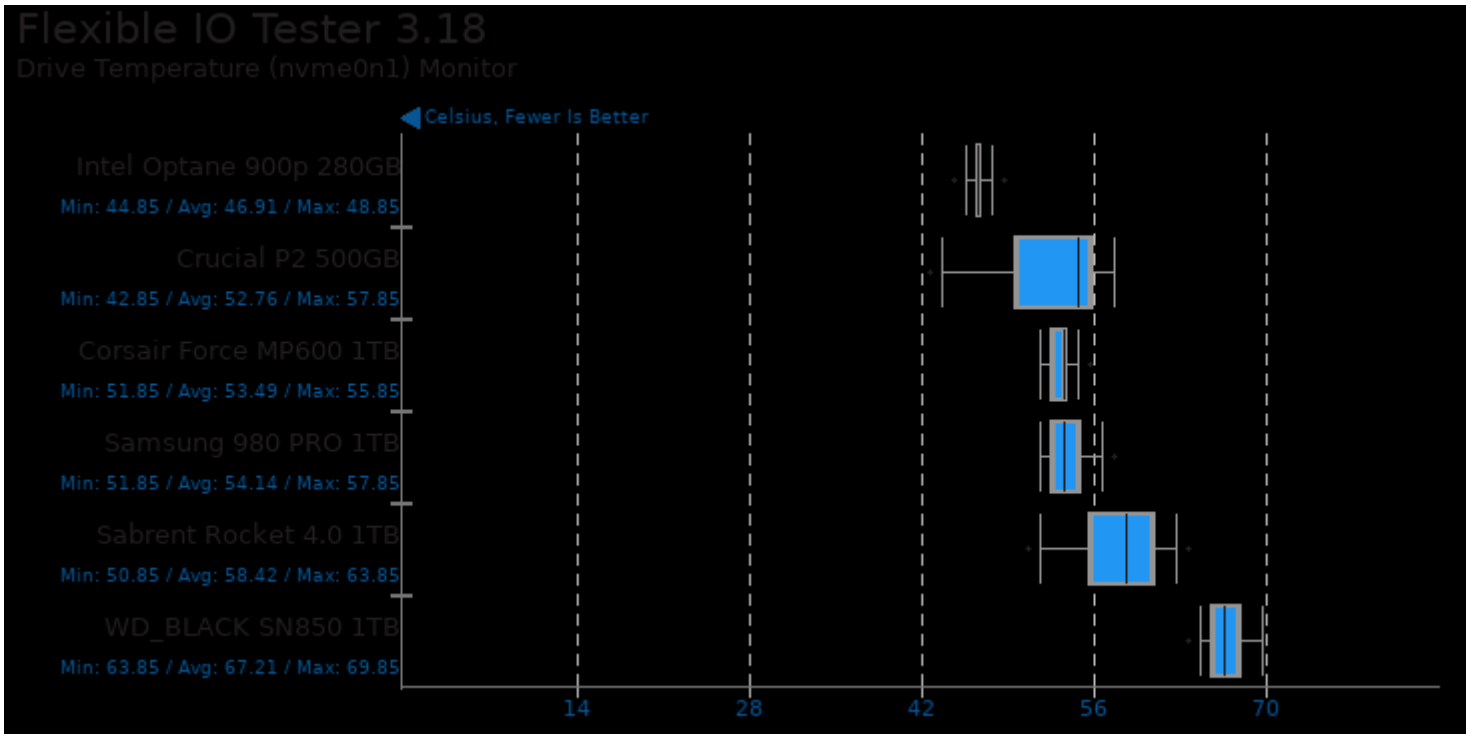
WD_BLACK SN850 Linux NVMe SSD Benchmarks

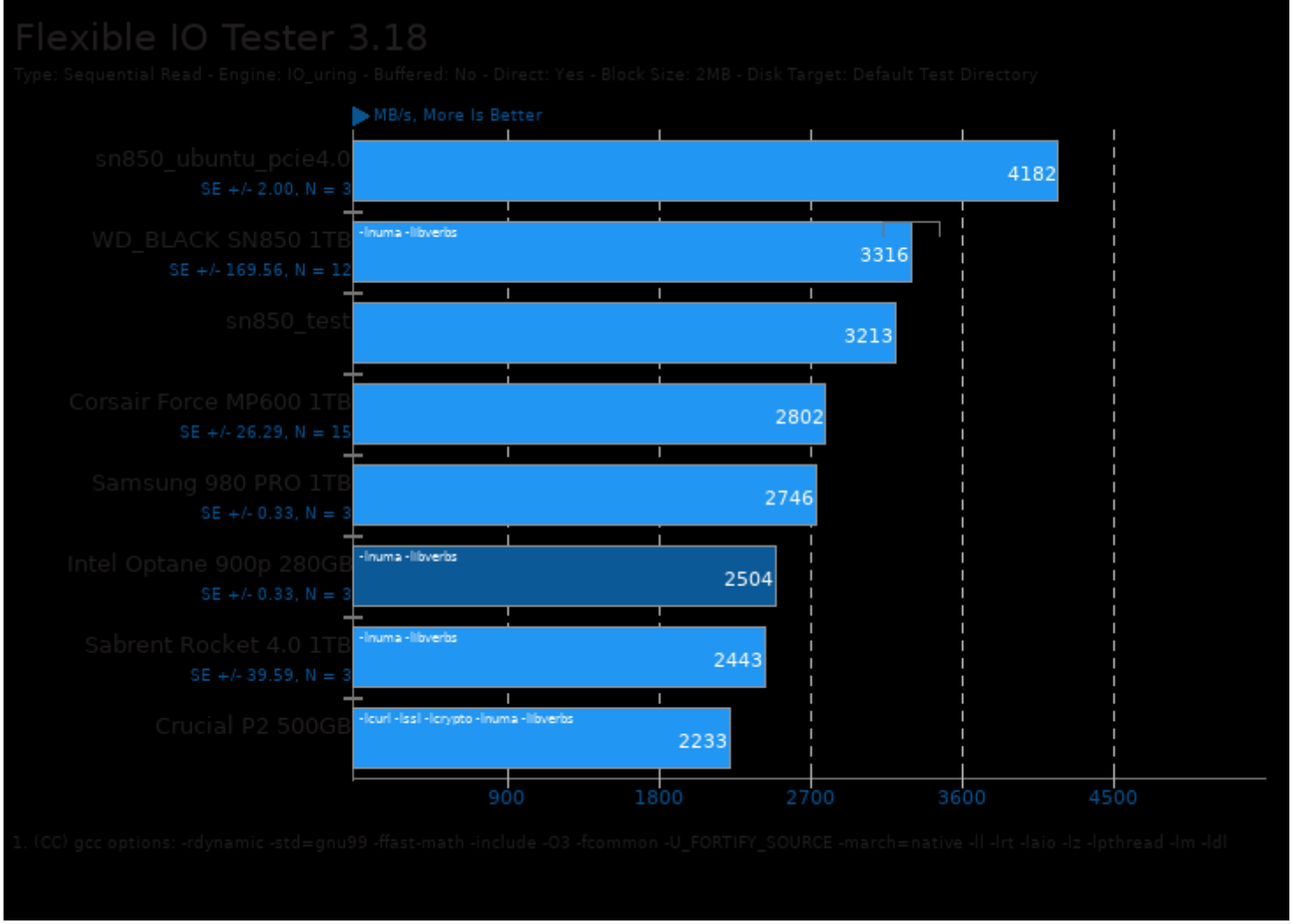


WD_BLACK SN850 Linux NVMe SSD Benchmarks

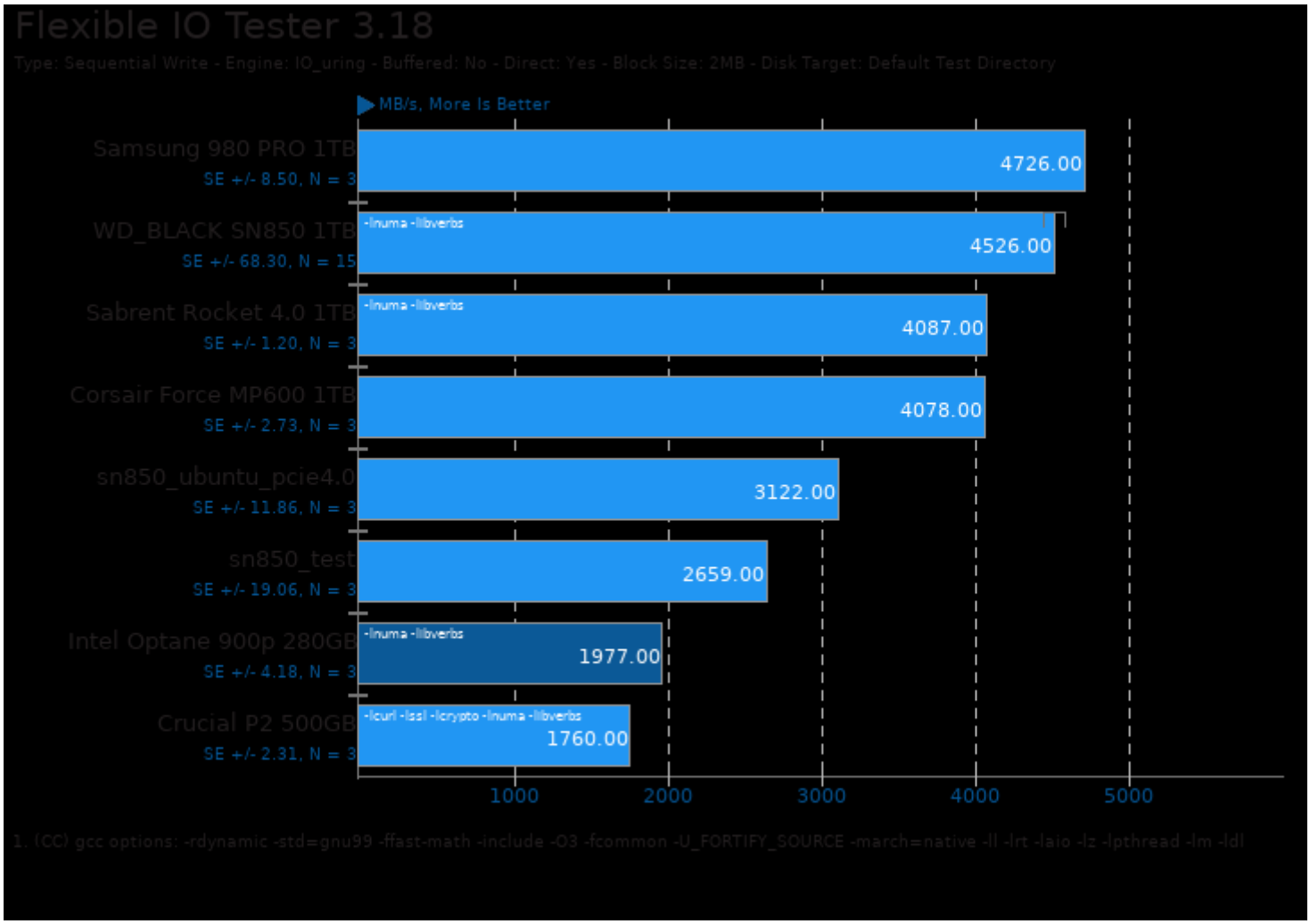




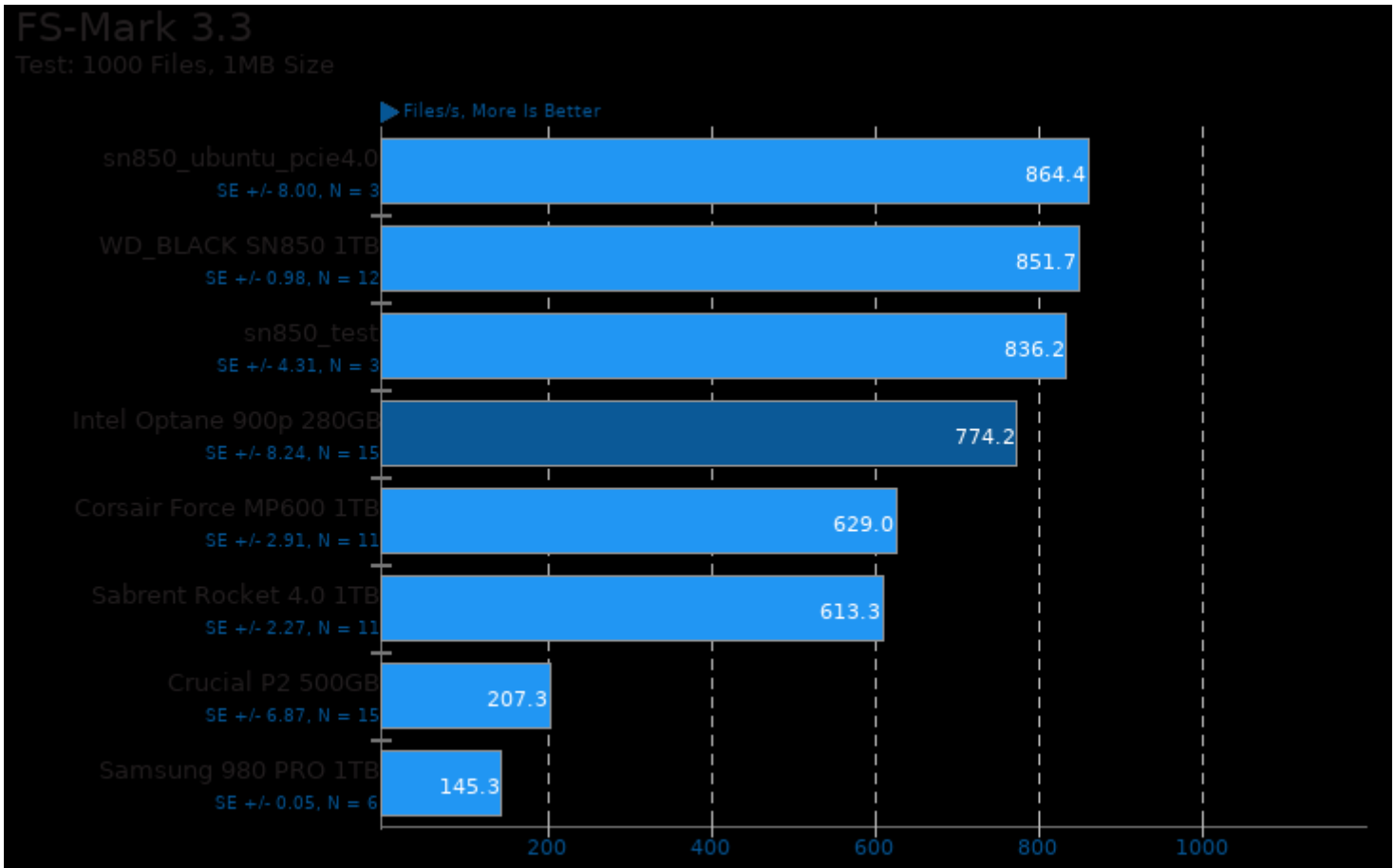

Flexible IO Tester 3.18
Drive Temperature (nvme0n1) Monitor
Celsius, Fewer Is Better
Intel Optane 900p 280GB
Min: 44.85 / Avg: 46.91 / Max: 48.85
Crucial P2 500GB
Min: 42.85 / Avg: 52.76 / Max: 57.85
Corsair Force MP600 1TB
Min: 51.85 / Avg: 53.49 / Max: 55.85
Samsung 980 PRO 1TB
Min: 51.85 / Avg: 54.14 / Max: 57.85
Sabrent Rocket 4.0 1TB
Min: 50.85 / Avg: 58.42 / Max: 63.85
WD_BLACK SN850 1TB
Min: 63.85 / Avg: 67.21 / Max: 69.85
14
28
42
56
70

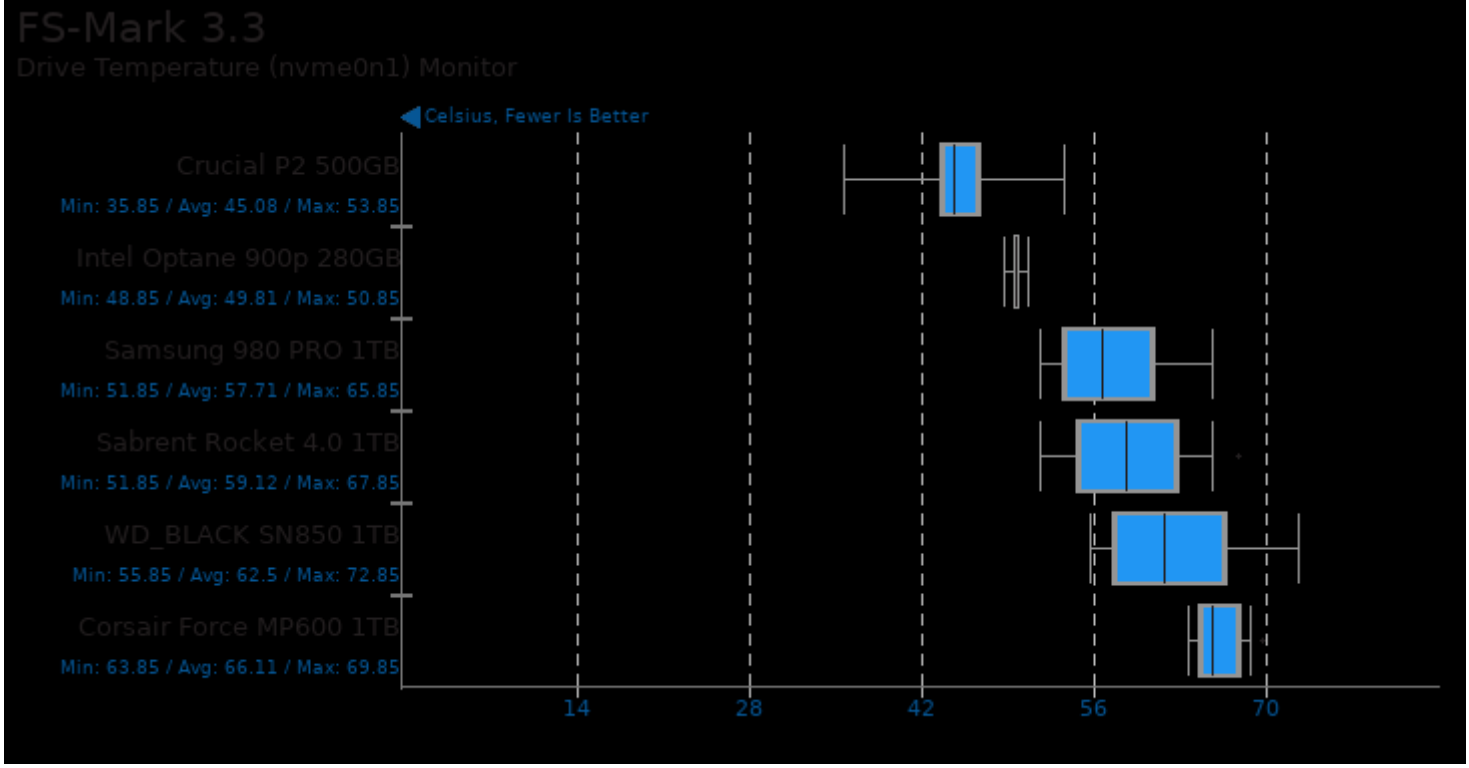

Flexible IO Tester 3.18
Type: Sequential Read - Engine: IO_uring - Buffered: No - Direct: Yes - Block Size: 2MB - Disk Target: Default Test Directory
MB/s, More Is Better
sn850_ubuntu_pcie4.0
SE +/- 2.00, N = 3
4182
WD_BLACK SN850 1TB
SE +/- 169.56, N = 12
-lnuma -libverbs
3316
sn850_test
3213
Corsair Force MP600 1TB
SE +/- 26.29, N = 15
2802
Samsung 980 PRO 1TB
SE +/- 0.33, N = 3
2746
Intel Optane 900p 280GB
SE +/- 0.33, N = 3
-lnuma -libverbs
2504
Sabrent Rocket 4.0 1TB
SE +/- 39.59, N = 3
-lnuma -libverbs
2443
Crucial P2 500GB
-lcurl -lssl -lcrypto -lnuma -libverbs
2233
900
1800
2700
3600
4500
1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE -march=native -ll -lrt -laio -lz -lpthread -lm -ldl

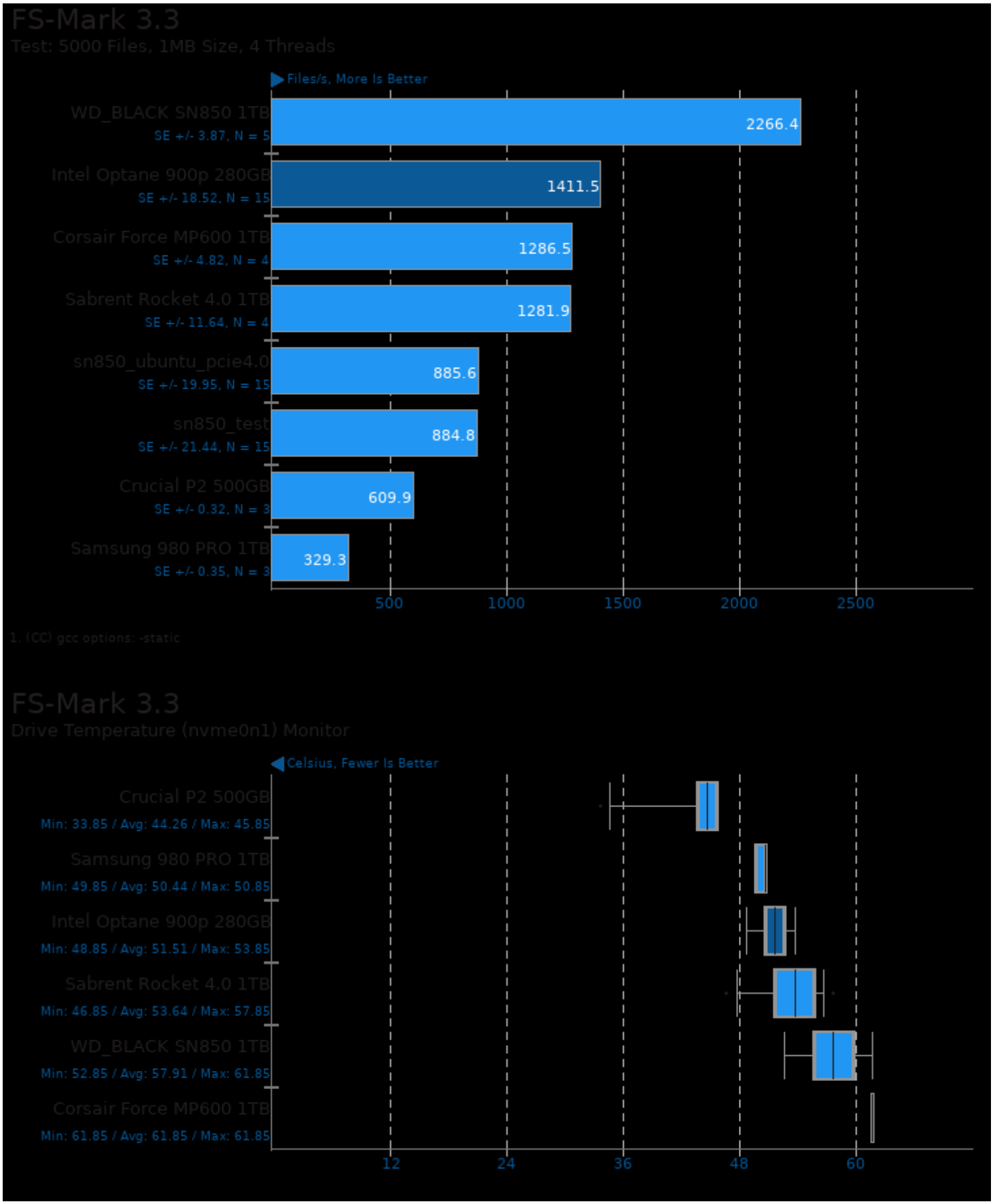
WD_BLACK SN850 Linux NVMe SSD Benchmarks



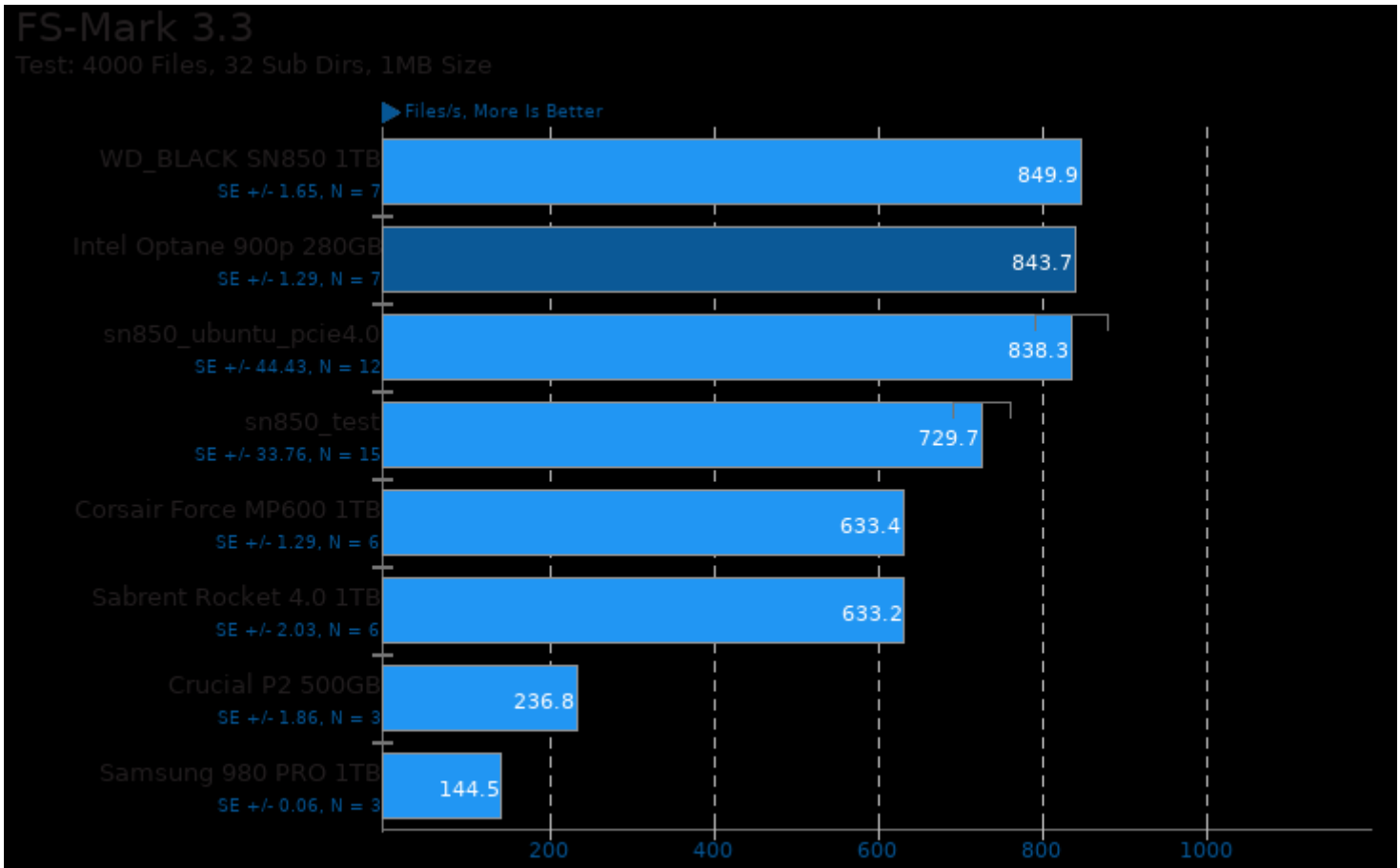
WD_BLACK SN850 Linux NVMe SSD Benchmarks

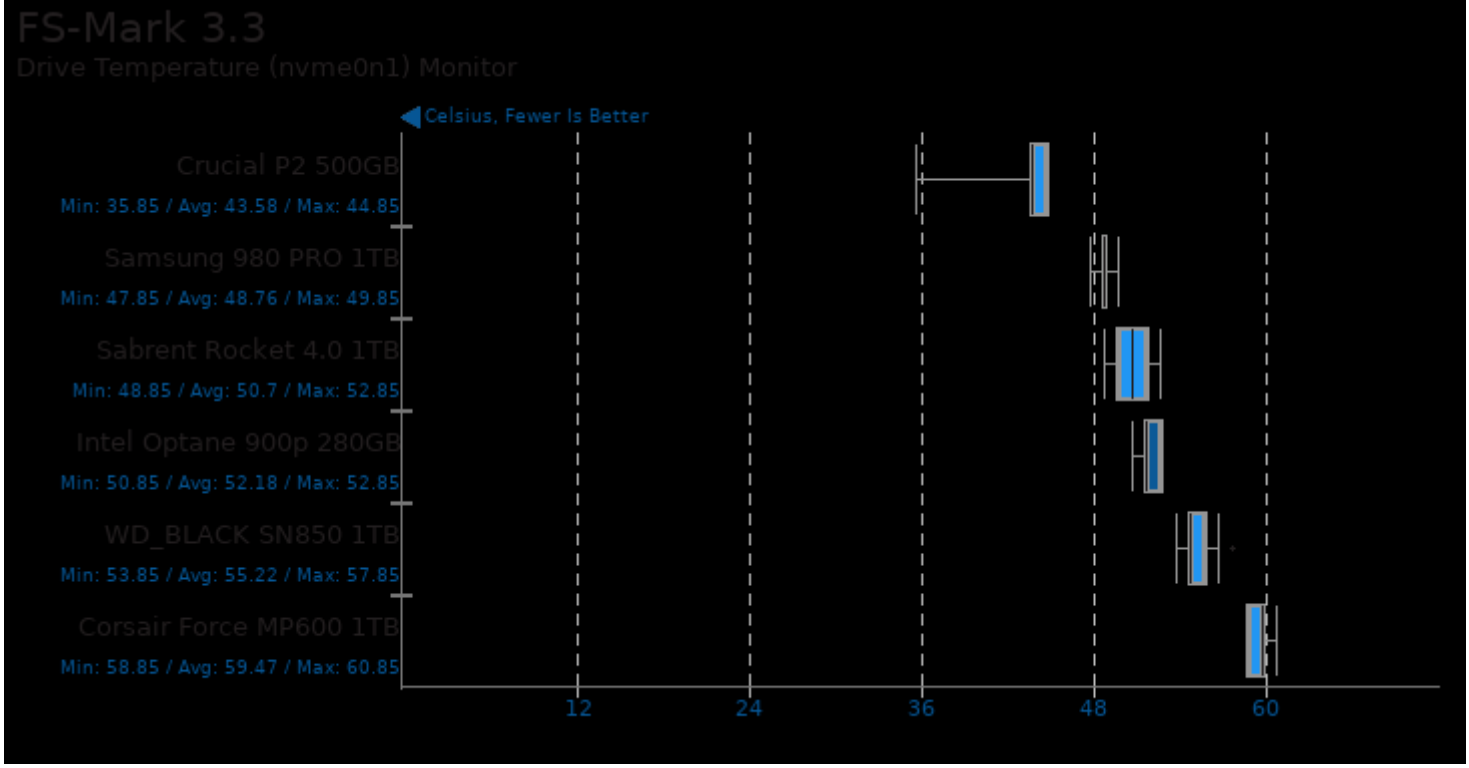


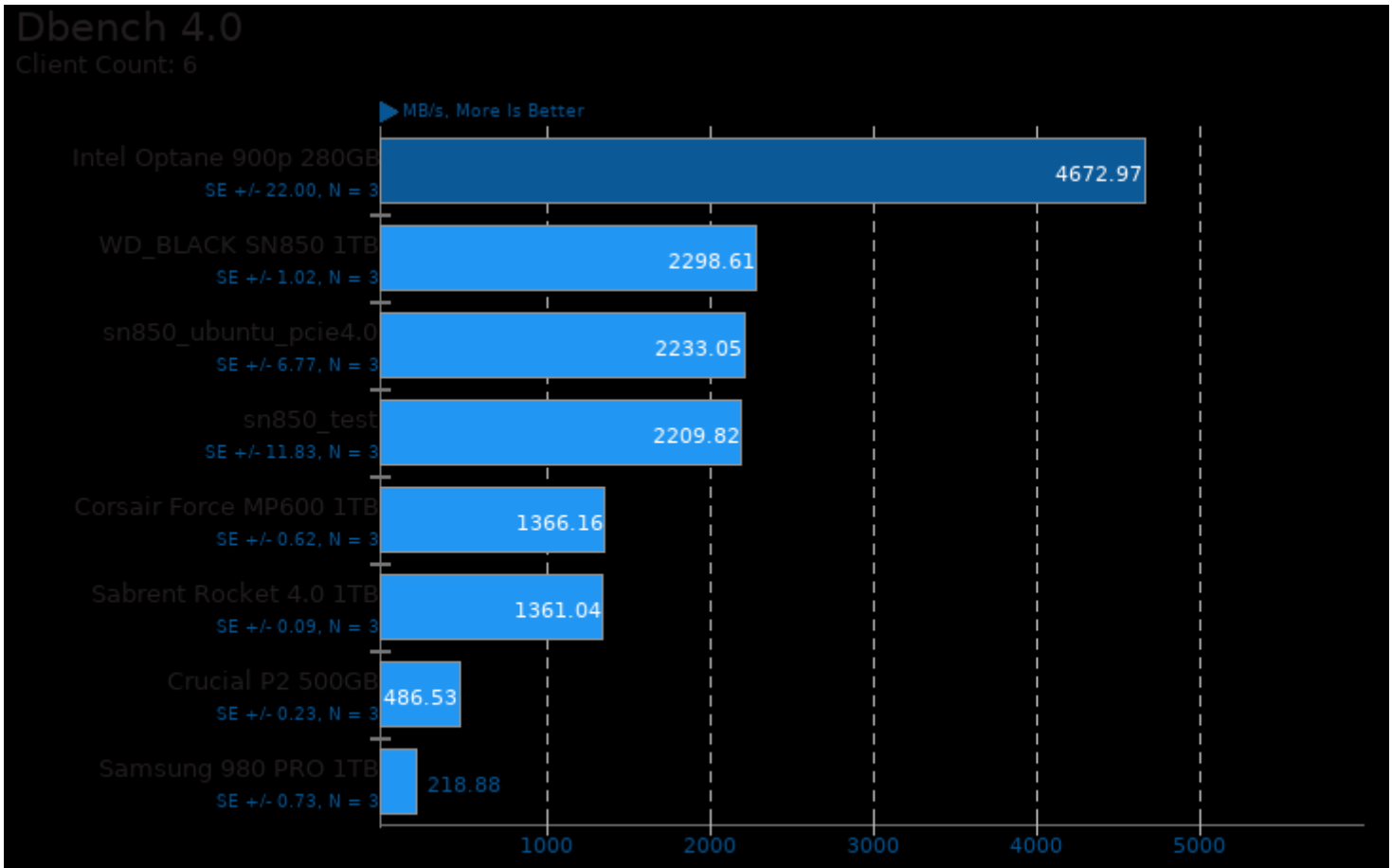


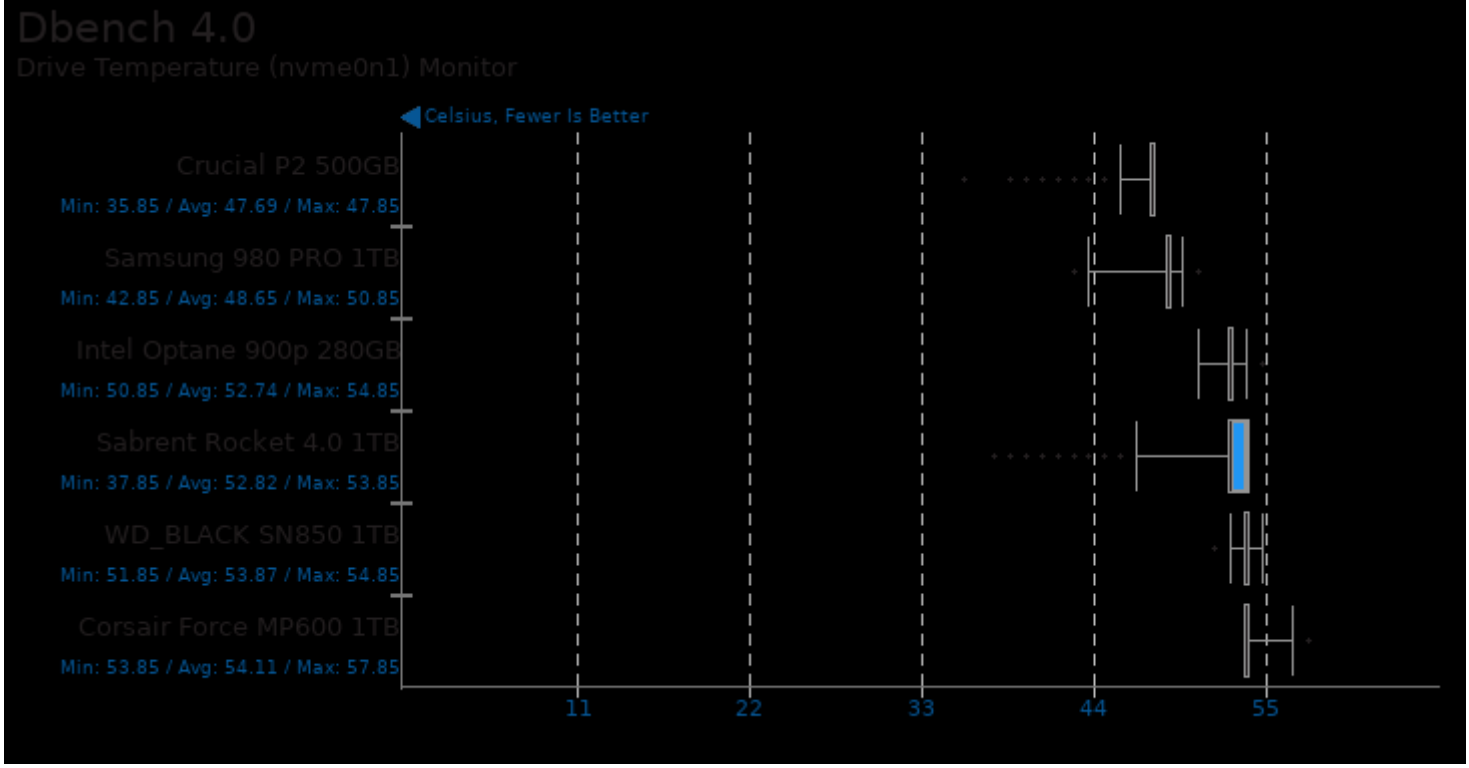

FS-Mark 3.3
Test: 5000 Files, 1MB Size, 4 Threads
Files/s, More Is Better
WD_BLACK SN850 1TB
SE +/- 3.87, N = 5
2266.4
Intel Optane 900p 280GB
SE +/- 18.52, N = 15
1411.5
Corsair Force MP600 1TB
SE +/- 4.82, N = 4
1286.5
Sabrent Rocket 4.0 1TB
SE +/- 11.64, N = 4
1281.9
sn850_ubuntu_pcie4.0
SE +/- 19.95, N = 15
885.6
sn850_test
SE +/- 21.44, N = 15
884.8
Crucial P2 500GB
SE +/- 0.32, N = 3
609.9
Samsung 980 PRO 1TB
SE +/- 0.35, N = 3
329.3
500
1000
1500
2000
2500
1. (CC) gcc options: -static

FS-Mark 3.3
Drive Temperature (nvme0n1) Monitor
Celsius, Fewer Is Better
Crucial P2 500GB
Min: 33.85 / Avg: 44.26 / Max: 45.85
Samsung 980 PRO 1TB
Min: 49.85 / Avg: 50.44 / Max: 50.85
Intel Optane 900p 280GB
Min: 48.85 / Avg: 51.51 / Max: 53.85
Sabrent Rocket 4.0 1TB
Min: 46.85 / Avg: 53.64 / Max: 57.85
WD_BLACK SN850 1TB
Min: 52.85 / Avg: 57.91 / Max: 61.85
Corsair Force MP600 1TB
Min: 61.85 / Avg: 61.85 / Max: 61.85
12
24
36
48
60

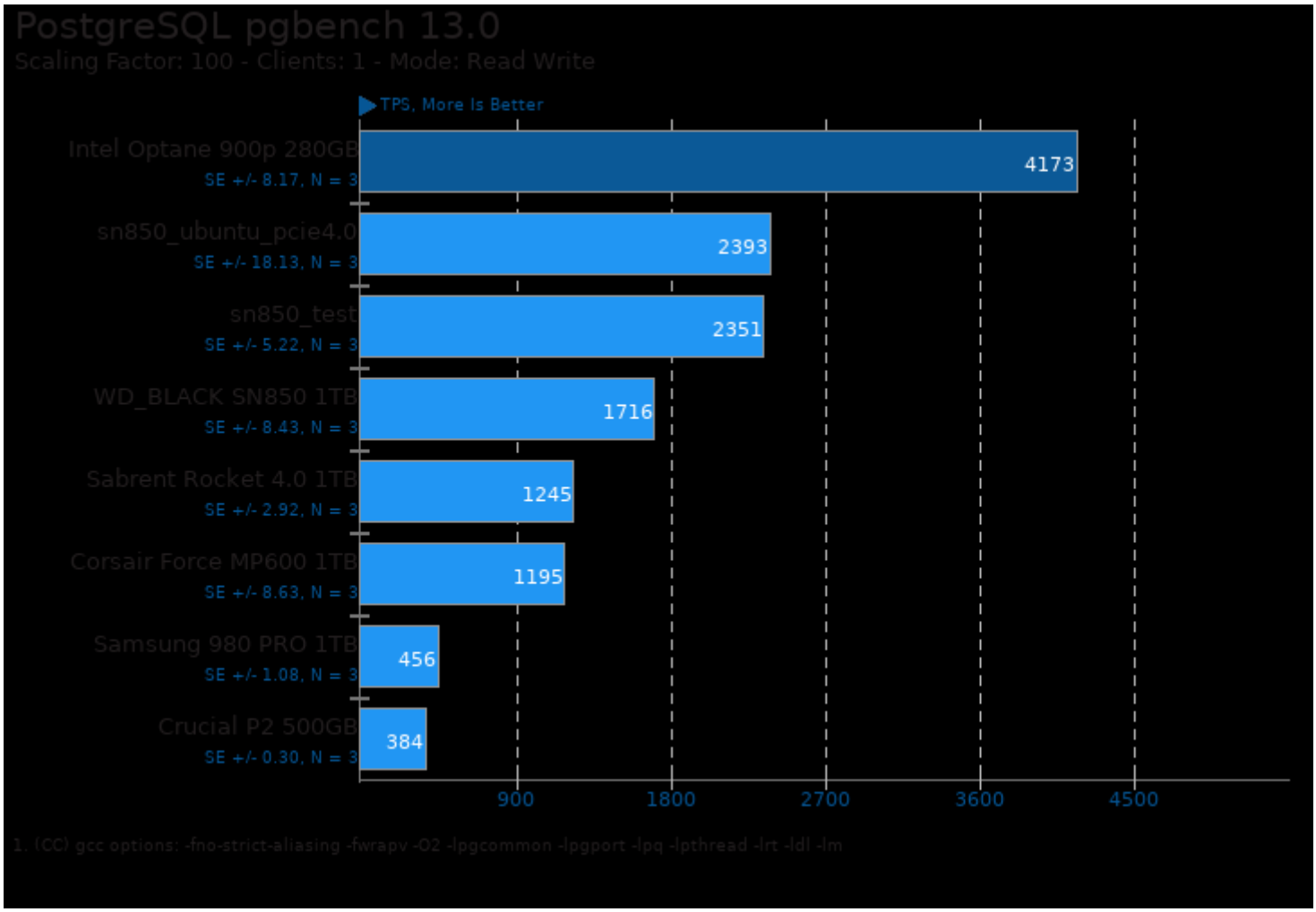

FS-Mark 3.3
Test: 4000 Files, 32 Sub Dirs, 1MB Size
Files/s, More Is Better
WD_BLACK SN850 1TB
SE +/- 1.65, N = 7
849.9
Intel Optane 900p 280GB
SE +/- 1.29, N = 7
843.7
sn850_ubuntu_pcie4.0
SE +/- 44.43, N = 12
838.3
sn850_test
SE +/- 33.76, N = 15
729.7
Corsair Force MP600 1TB
SE +/- 1.29, N = 6
633.4
Sabrent Rocket 4.0 1TB
SE +/- 2.03, N = 6
633.2
Crucial P2 500GB
SE +/- 1.86, N = 3
236.8
Samsung 980 PRO 1TB
SE +/- 0.06, N = 3
144.5
200
400
600
800
1000
1. (CC) gcc options: -static

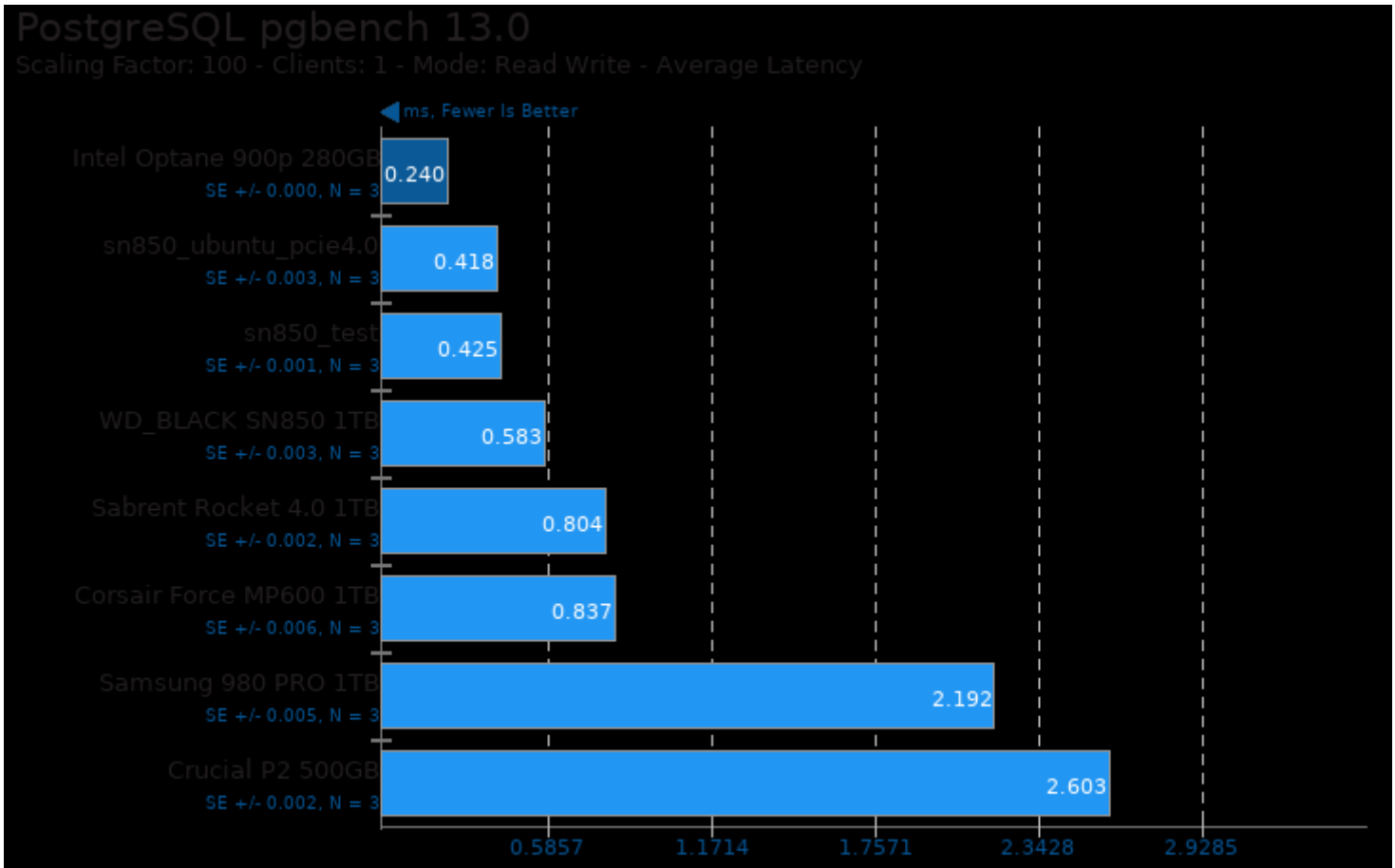

FS-Mark 3.3
Drive Temperature (nvme0n1) Monitor
Celsius, Fewer Is Better
Crucial P2 500GB
Min: 35.85 / Avg: 43.58 / Max: 44.85
Samsung 980 PRO 1TB
Min: 47.85 / Avg: 48.76 / Max: 49.85
Sabrent Rocket 4.0 1TB
Min: 48.85 / Avg: 50.7 / Max: 52.85
Intel Optane 900p 280GB
Min: 50.85 / Avg: 52.18 / Max: 52.85
WD_BLACK SN850 1TB
Min: 53.85 / Avg: 55.22 / Max: 57.85
Corsair Force MP600 1TB
Min: 58.85 / Avg: 59.47 / Max: 60.85
12
24
36
48
60

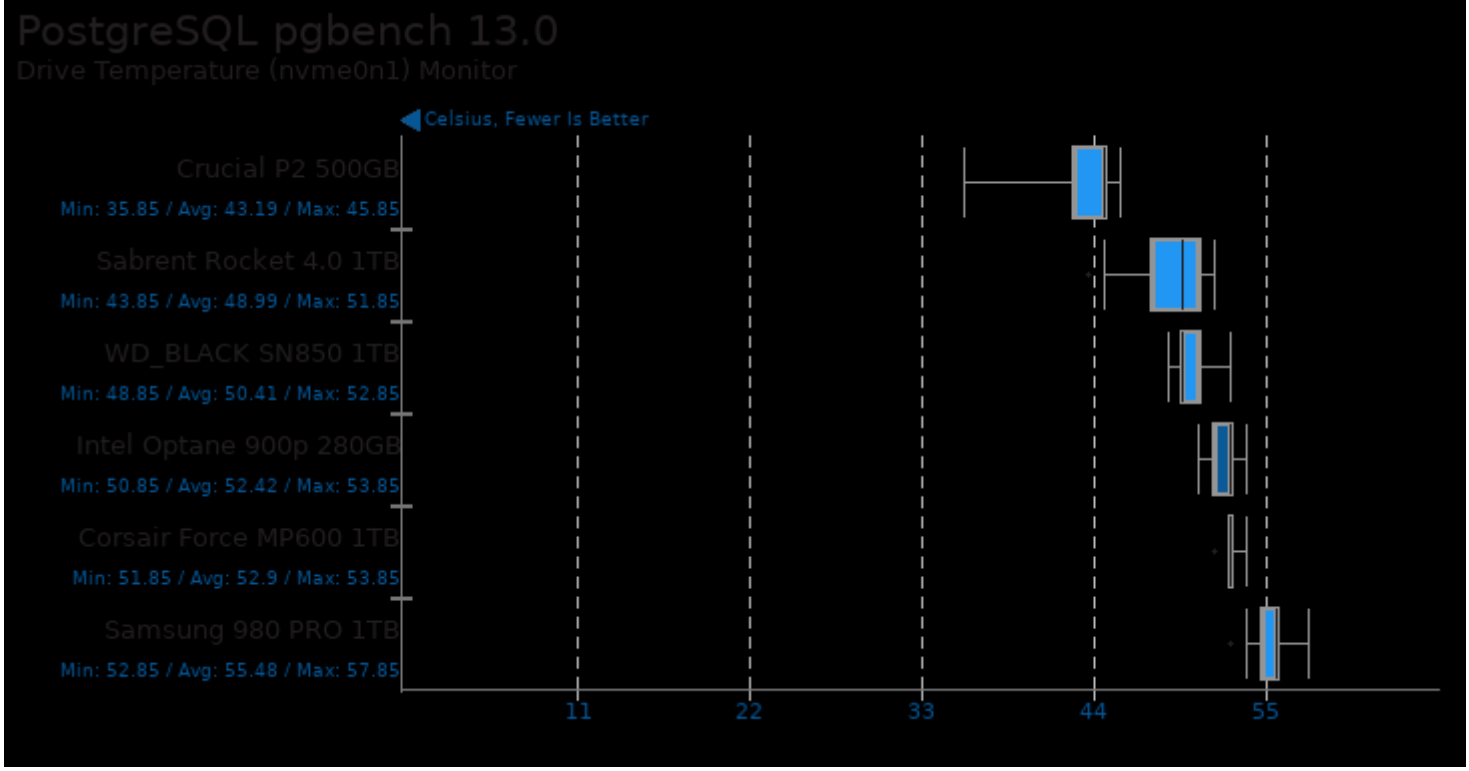

Dbench 4.0
Client Count: 6
MB/s, More Is Better
Intel Optane 900p 280GB
SE +/- 22.00, N = 3
4672.97
WD_BLACK SN850 1TB
SE +/- 1.02, N = 3
2298.61
sn850_ubuntu_pcie4.0
SE +/- 6.77, N = 3
2233.05
sn850_test
SE +/- 11.83, N = 3
2209.82
Corsair Force MP600 1TB
SE +/- 0.62, N = 3
1366.16
Sabrent Rocket 4.0 1TB
SE +/- 0.09, N = 3
1361.04
Crucial P2 500GB
SE +/- 0.23, N = 3
486.53
Samsung 980 PRO 1TB
SE +/- 0.73, N = 3
218.88
1000
2000
3000
4000
5000
1. (CC) gcc options: -lpopt -O2


Dbench 4.0
Drive Temperature (nvme0n1) Monitor
Celsius, Fewer Is Better
Crucial P2 500GB
Min: 35.85 / Avg: 47.69 / Max: 47.85
Samsung 980 PRO 1TB
Min: 42.85 / Avg: 48.65 / Max: 50.85
Intel Optane 900p 280GB
Min: 50.85 / Avg: 52.74 / Max: 54.85
Sabrent Rocket 4.0 1TB
Min: 37.85 / Avg: 52.82 / Max: 53.85
WD_BLACK SN850 1TB
Min: 51.85 / Avg: 53.87 / Max: 54.85
Corsair Force MP600 1TB
Min: 53.85 / Avg: 54.11 / Max: 57.85
11
22
33
44
55

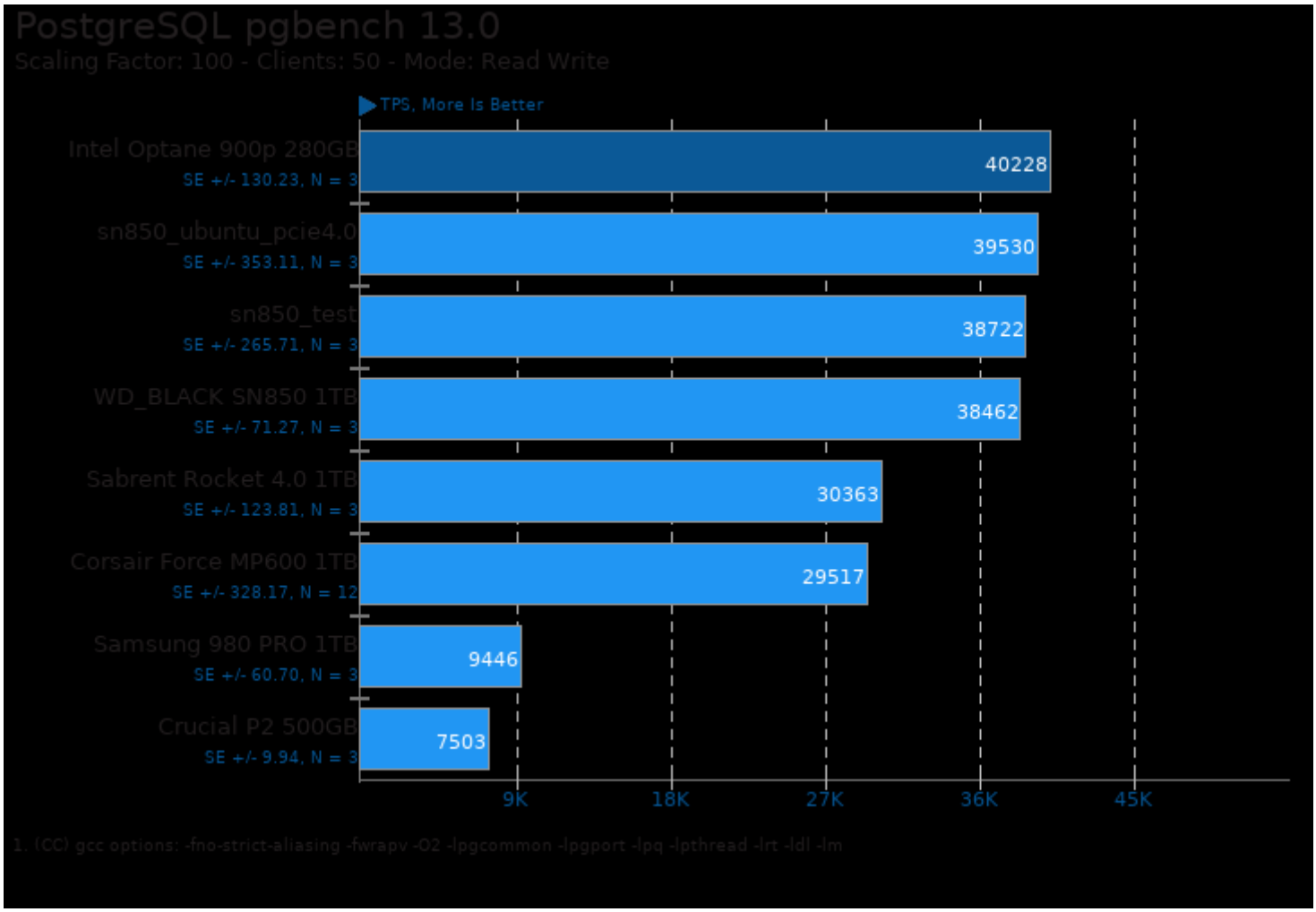
WD_BLACK SN850 Linux NVMe SSD Benchmarks

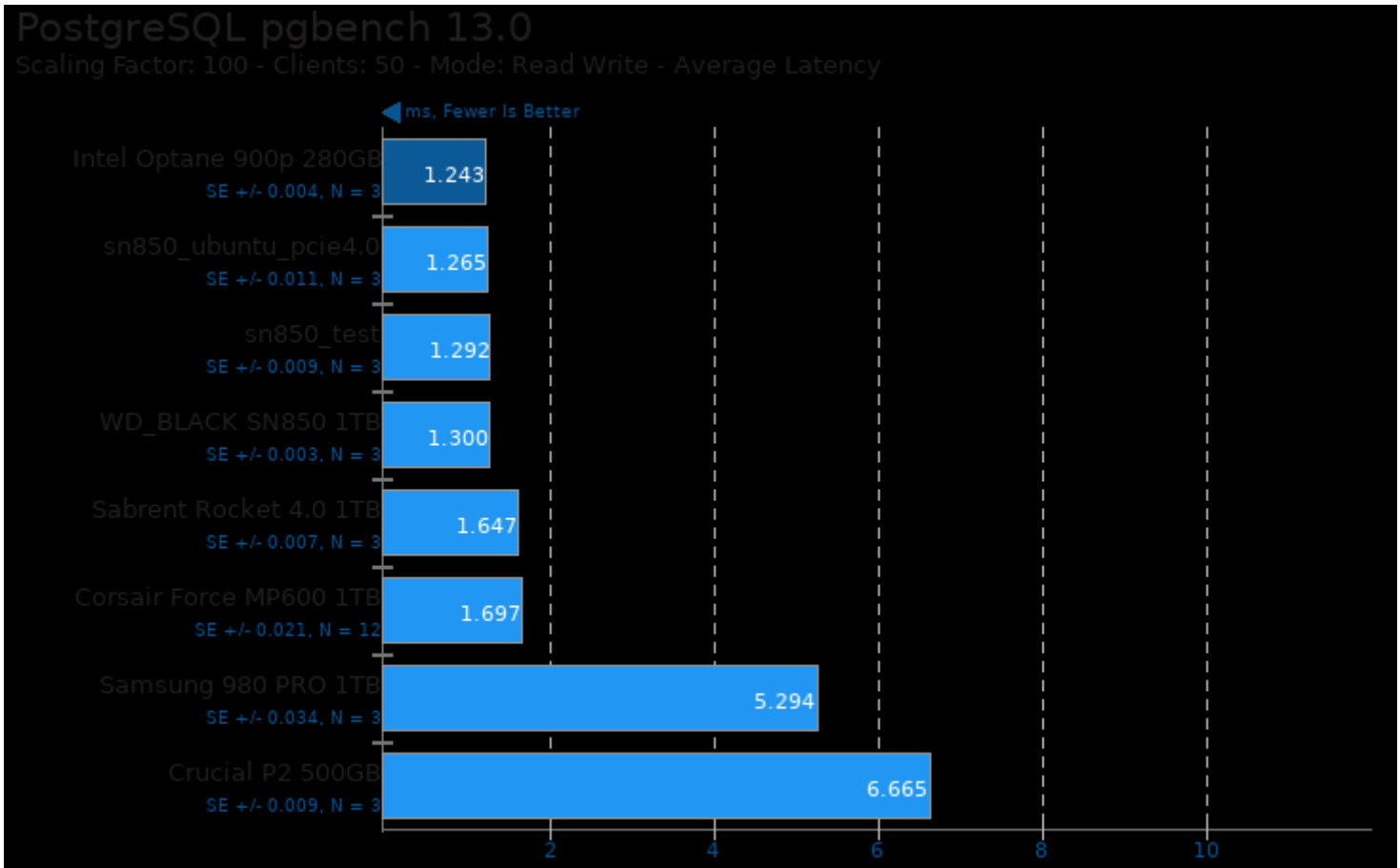


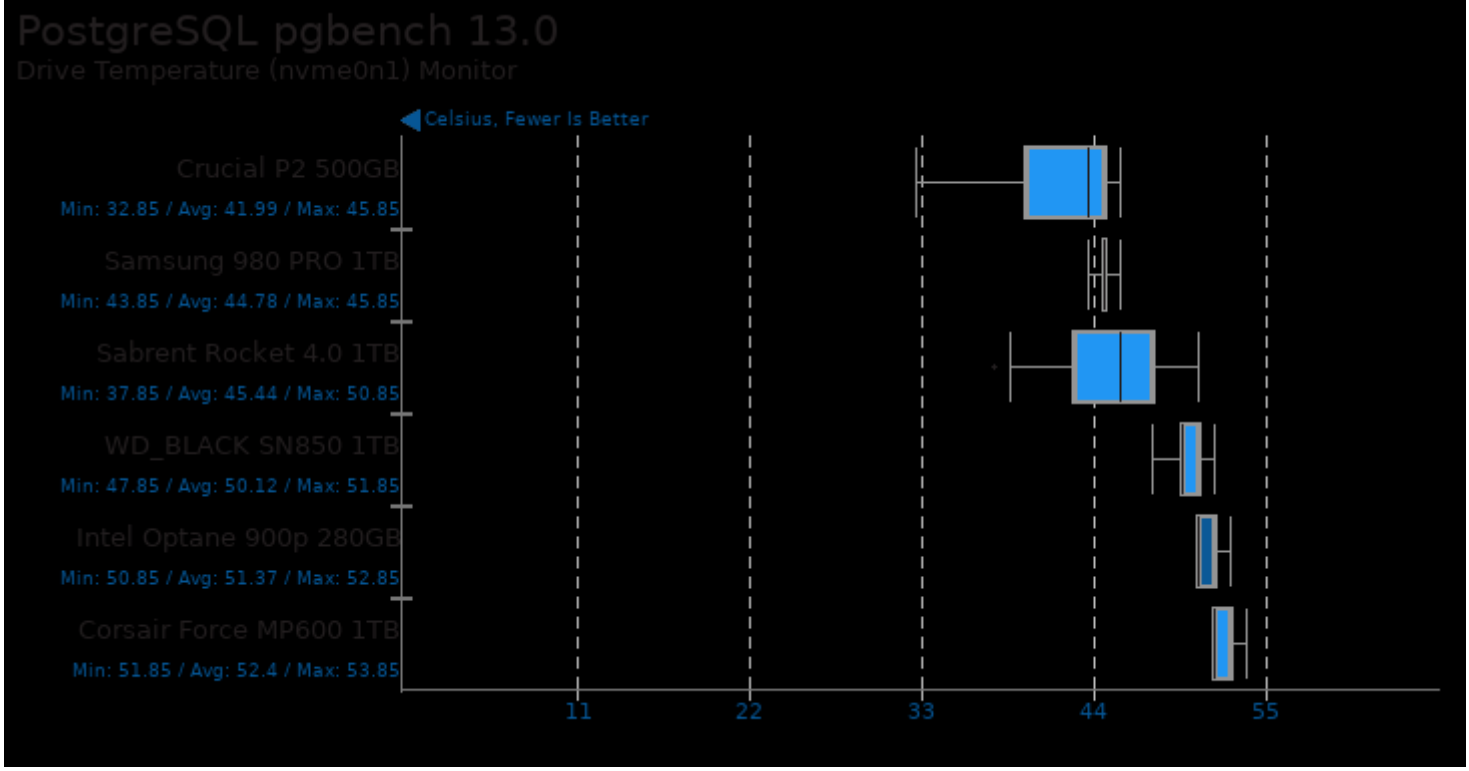

PostgreSQL pgbench 13.0
Scaling Factor: 100 - Clients: 1 - Mode: Read Write - Average Latency
ms, Fewer Is Better
Intel Optane 900p 280GB
SE +/- 0.000, N = 3
0.240
sn850_ubuntu_pcie4.0
SE +/- 0.003, N = 3
0.418
sn850_test
SE +/- 0.001, N = 3
0.425
WD_BLACK SN850 1TB
SE +/- 0.003, N = 3
0.583
Sabrent Rocket 4.0 1TB
SE +/- 0.002, N = 3
0.804
Corsair Force MP600 1TB
SE +/- 0.006, N = 3
0.837
Samsung 980 PRO 1TB
SE +/- 0.005, N = 3
2.192
Crucial P2 500GB
SE +/- 0.002, N = 3
2.603
0.5857
1.1714
1.7571
2.3428
2.9285
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lpthread -lrt -ldl -lm

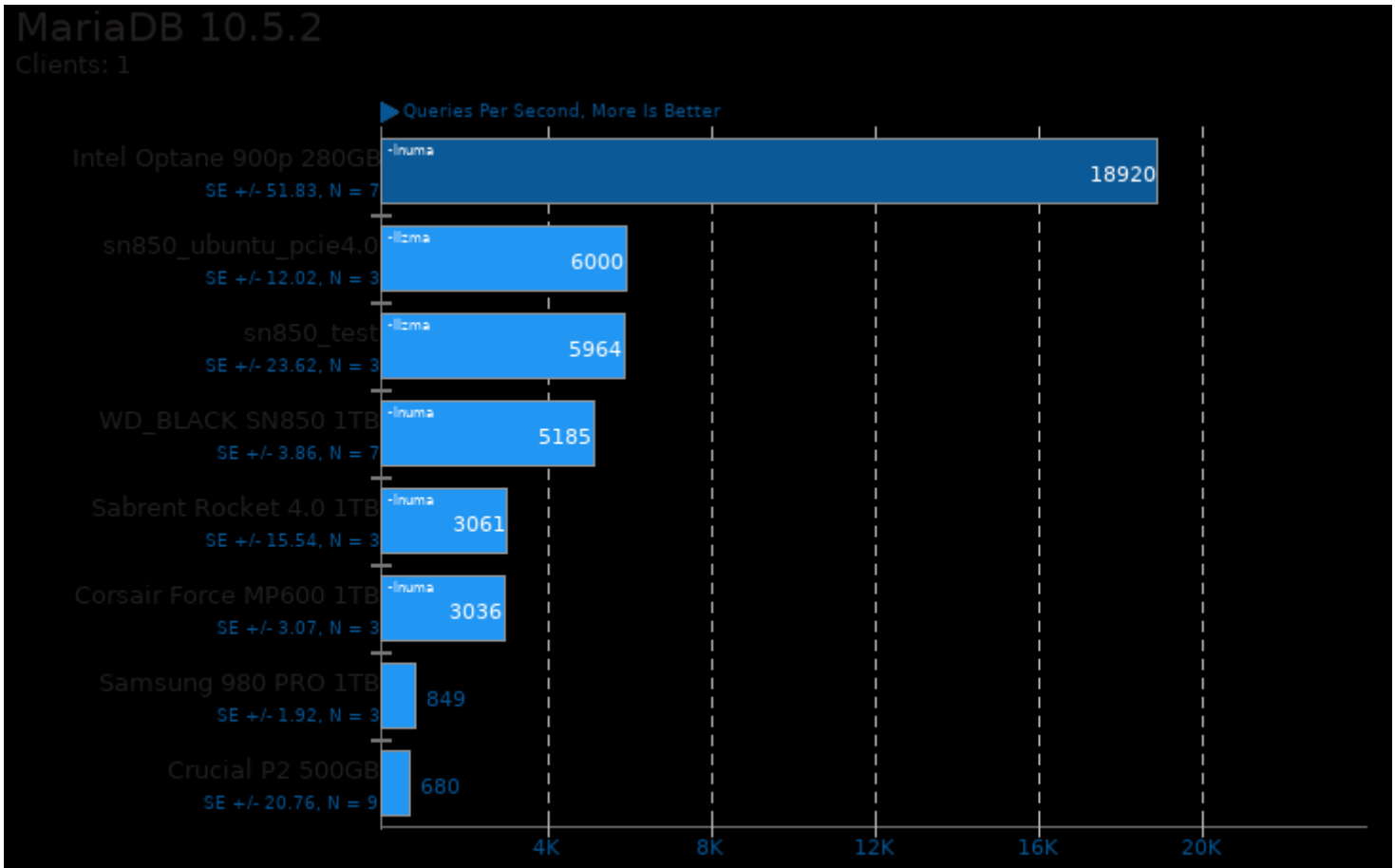

PostgreSQL pgbench 13.0
Drive Temperature (nvme0n1) Monitor
Celsius, Fewer Is Better
Crucial P2 500GB
Min: 35.85 / Avg: 43.19 / Max: 45.85
Sabrent Rocket 4.0 1TB
Min: 43.85 / Avg: 48.99 / Max: 51.85
WD_BLACK SN850 1TB
Min: 48.85 / Avg: 50.41 / Max: 52.85
Intel Optane 900p 280GB
Min: 50.85 / Avg: 52.42 / Max: 53.85
Corsair Force MP600 1TB
Min: 51.85 / Avg: 52.9 / Max: 53.85
Samsung 980 PRO 1TB
Min: 52.85 / Avg: 55.48 / Max: 57.85
11
22
33
44
55

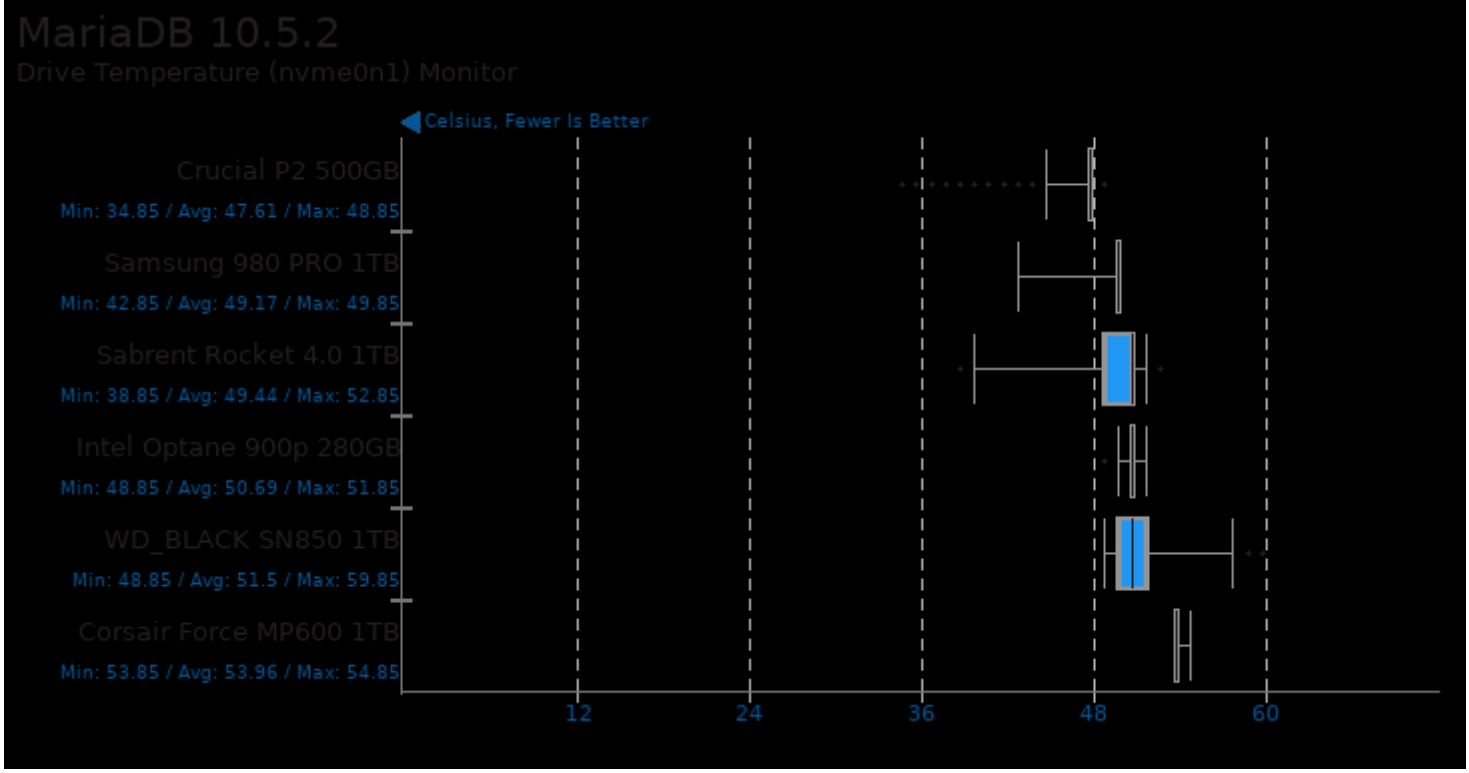
WD_BLACK SN850 Linux NVMe SSD Benchmarks

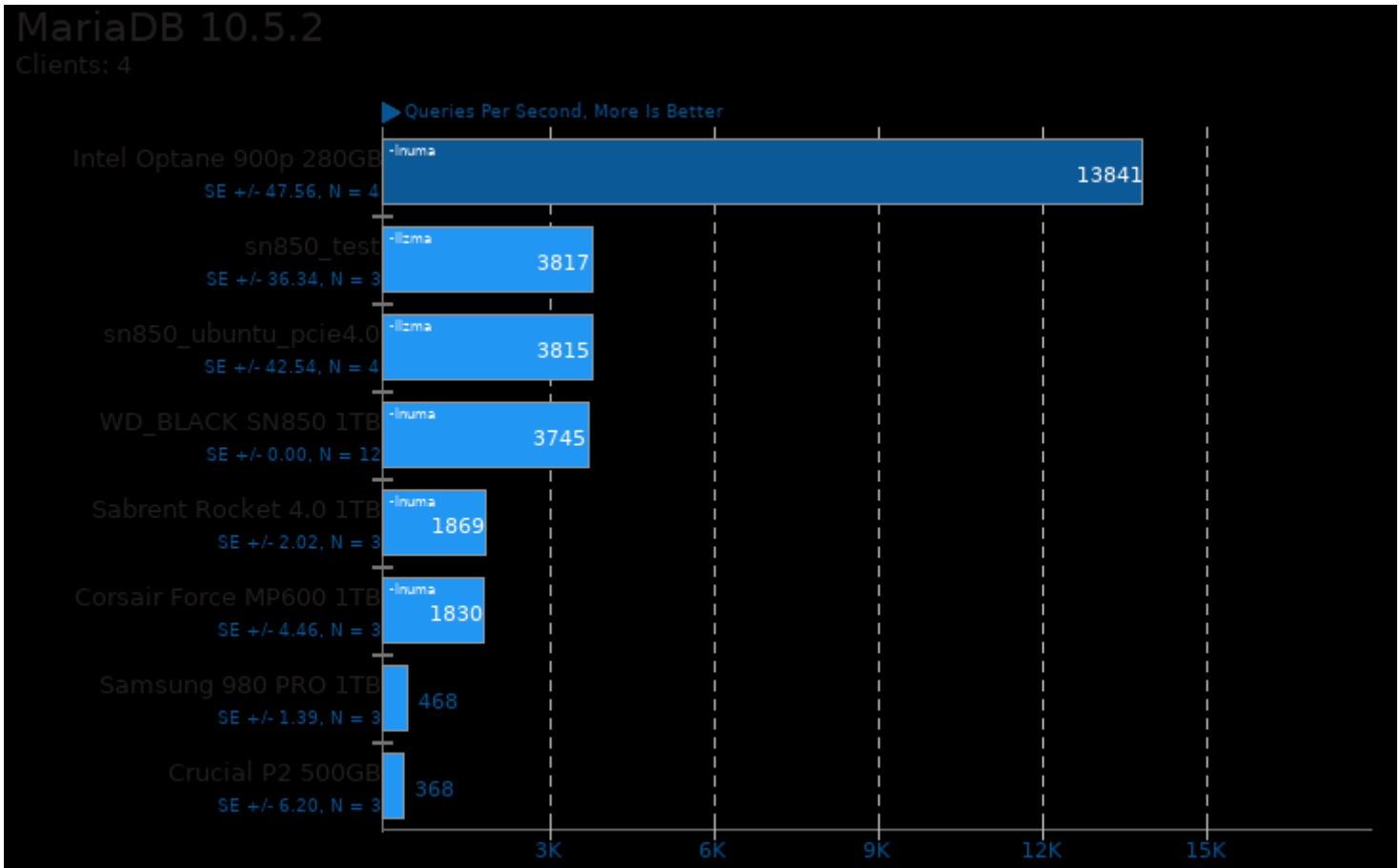


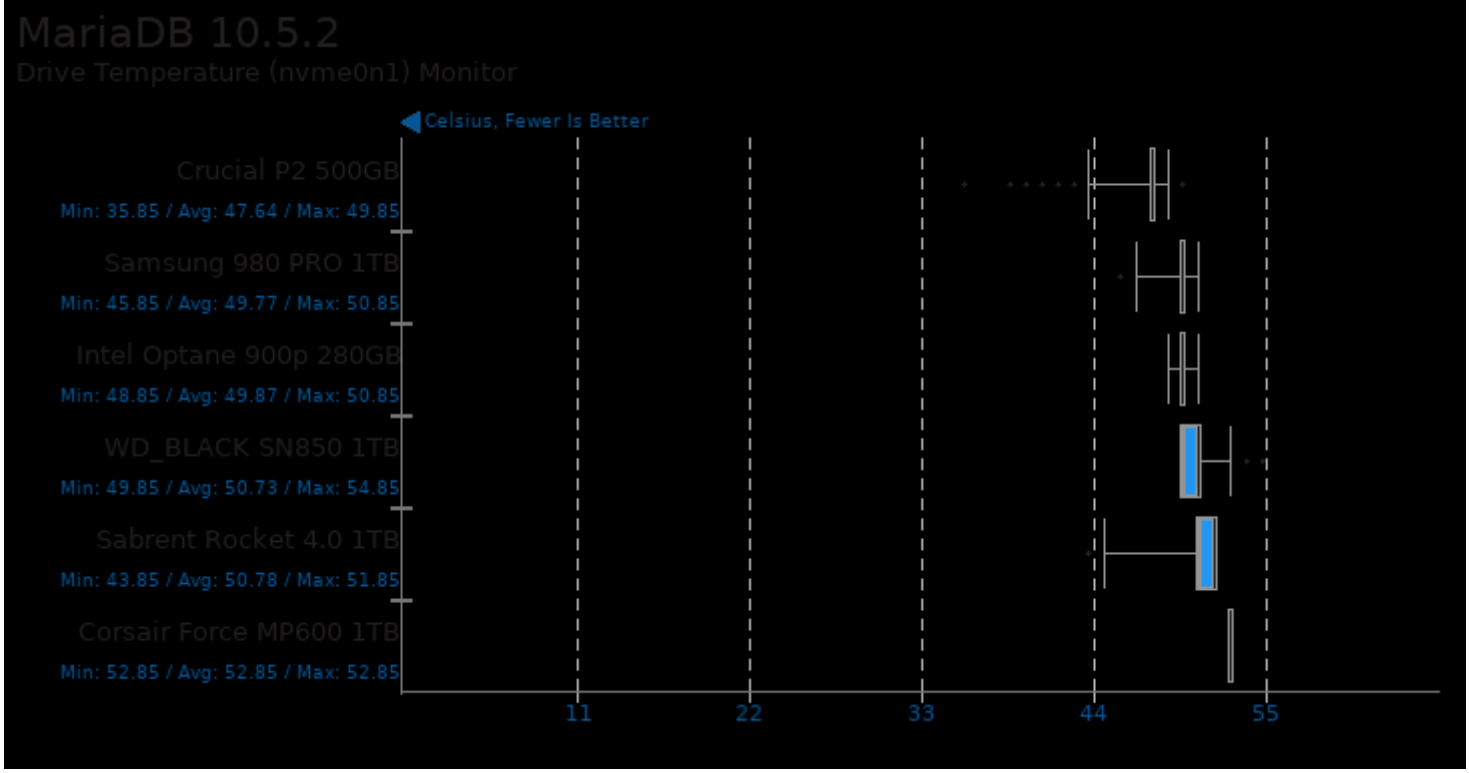

PostgreSQL pgbench 13.0
Scaling Factor: 100 - Clients: 50 - Mode: Read Write - Average Latency
ms, Fewer Is Better
Intel Optane 900p 280GB
SE +/- 0.004, N = 3
1.243
sn850_ubuntu_pcie4.0
SE +/- 0.011, N = 3
1.265
sn850_test
SE +/- 0.009, N = 3
1.292
WD_BLACK SN850 1TB
SE +/- 0.003, N = 3
1.300
Sabrent Rocket 4.0 1TB
SE +/- 0.007, N = 3
1.647
Corsair Force MP600 1TB
SE +/- 0.021, N = 12
1.697
Samsung 980 PRO 1TB
SE +/- 0.034, N = 3
5.294
Crucial P2 500GB
SE +/- 0.009, N = 3
6.665
2
4
6
8
10
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lpthread -lrt -ldl -lm

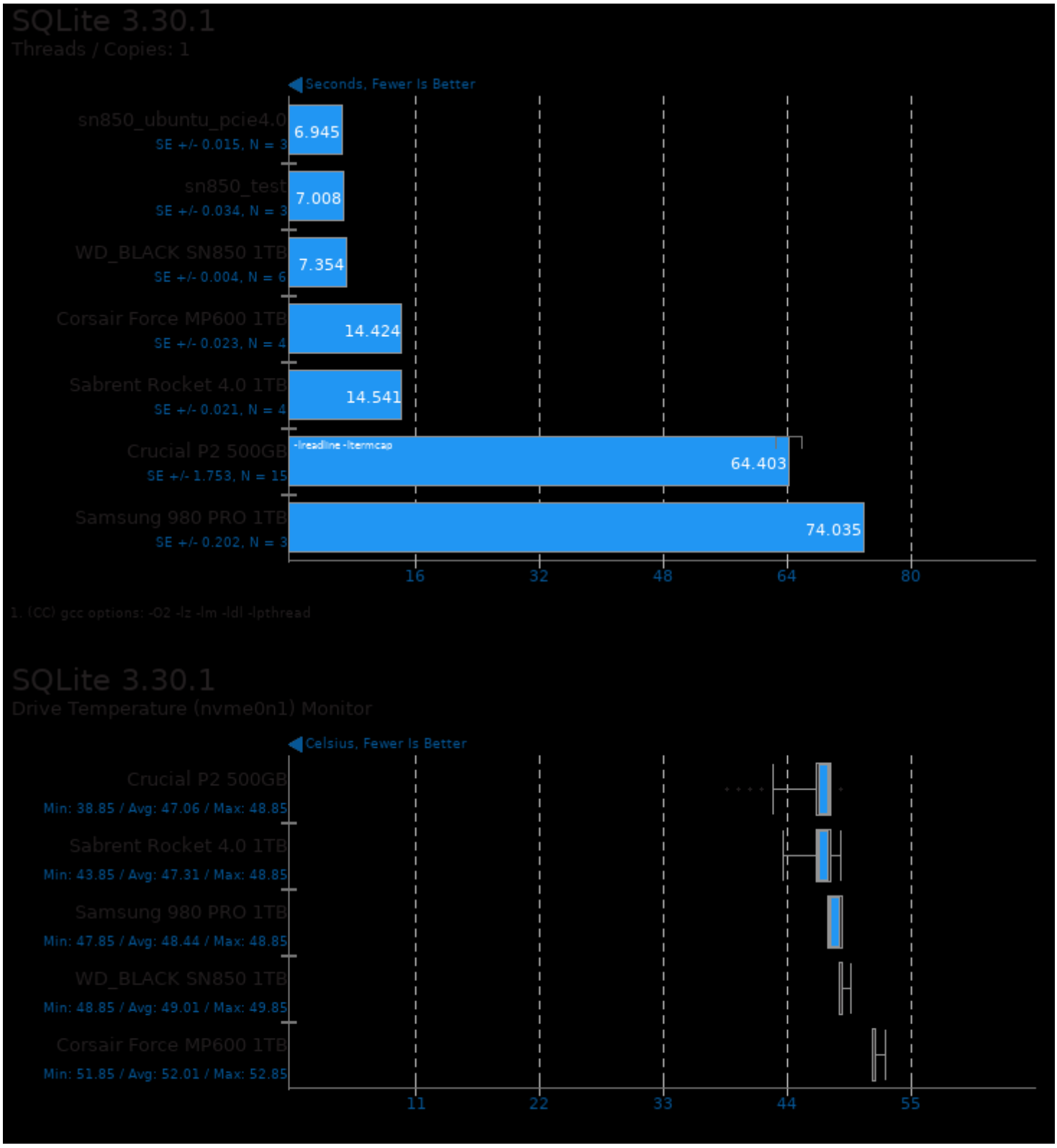

PostgreSQL pgbench 13.0
Drive Temperature (nvme0n1) Monitor
Celsius, Fewer Is Better
Crucial P2 500GB
Min: 32.85 / Avg: 41.99 / Max: 45.85
Samsung 980 PRO 1TB
Min: 43.85 / Avg: 44.78 / Max: 45.85
Sabrent Rocket 4.0 1TB
Min: 37.85 / Avg: 45.44 / Max: 50.85
WD_BLACK SN850 1TB
Min: 47.85 / Avg: 50.12 / Max: 51.85
Intel Optane 900p 280GB
Min: 50.85 / Avg: 51.37 / Max: 52.85
Corsair Force MP600 1TB
Min: 51.85 / Avg: 52.4 / Max: 53.85
11
22
33
44
55

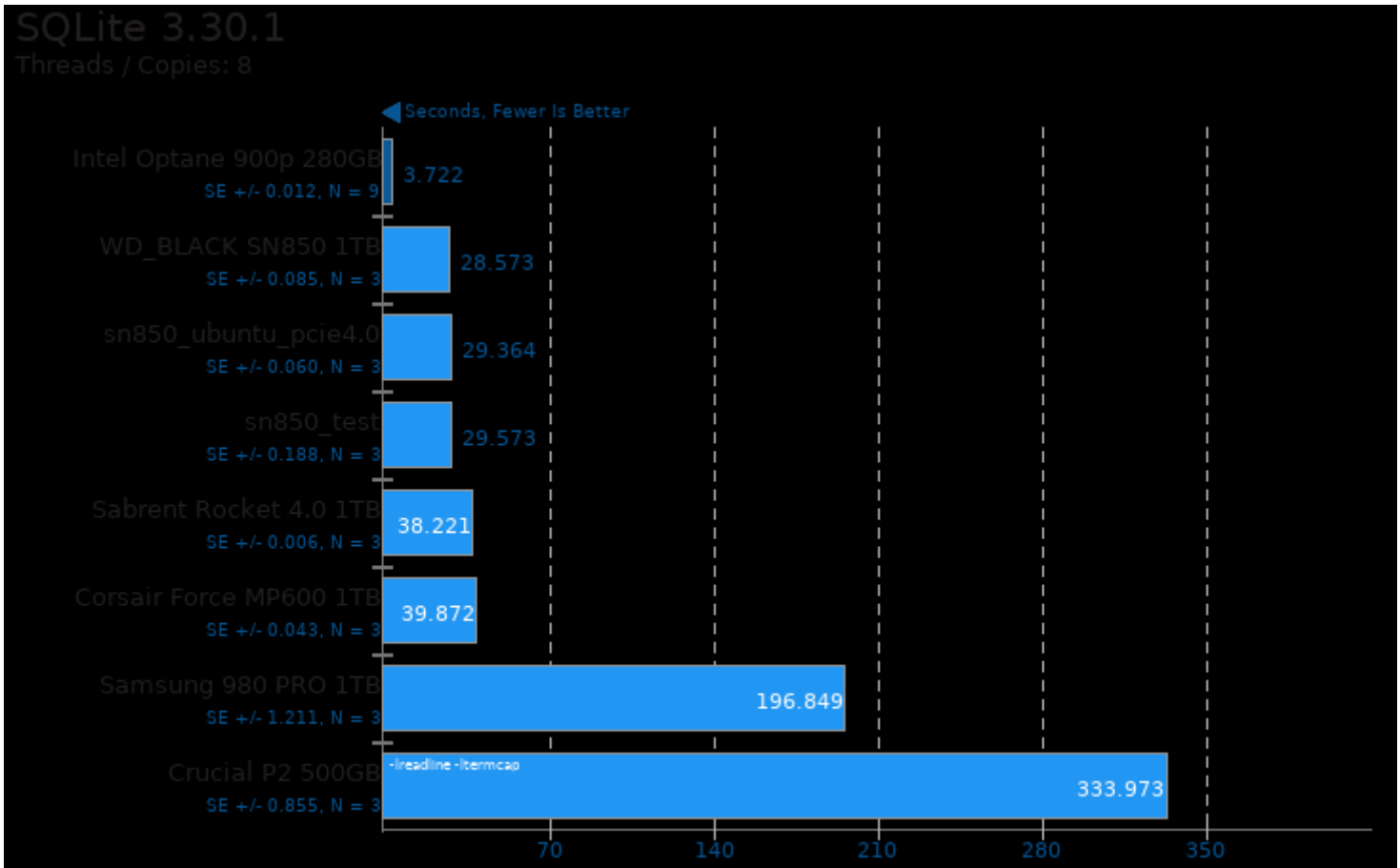

MariaDB 10.5.2
Clients: 1
Queries Per Second, More Is Better
Intel Optane 900p 280GB
SE +/- 51.83, N = 7
-lnuma
18920
sn850_ubuntu_pcie4.0
SE +/- 12.02, N = 3
-llzma
6000
sn850_test
SE +/- 23.62, N = 3
-llzma
5964
WD_BLACK SN850 1TB
SE +/- 3.86, N = 7
-lnuma
5185
Sabrent Rocket 4.0 1TB
SE +/- 15.54, N = 3
-lnuma
3061
Corsair Force MP600 1TB
SE +/- 3.07, N = 3
-lnuma
3036
Samsung 980 PRO 1TB
SE +/- 1.92, N = 3
849
Crucial P2 500GB
SE +/- 20.76, N = 9
680
4K
8K
12K
16K
20K
1. (CXX) g++ options: -pie -fPIC -fstack-protector -O2 -lpthread -lsnappy -laio -lcrypt -lz -lm -lssl -lcrypto -ldl

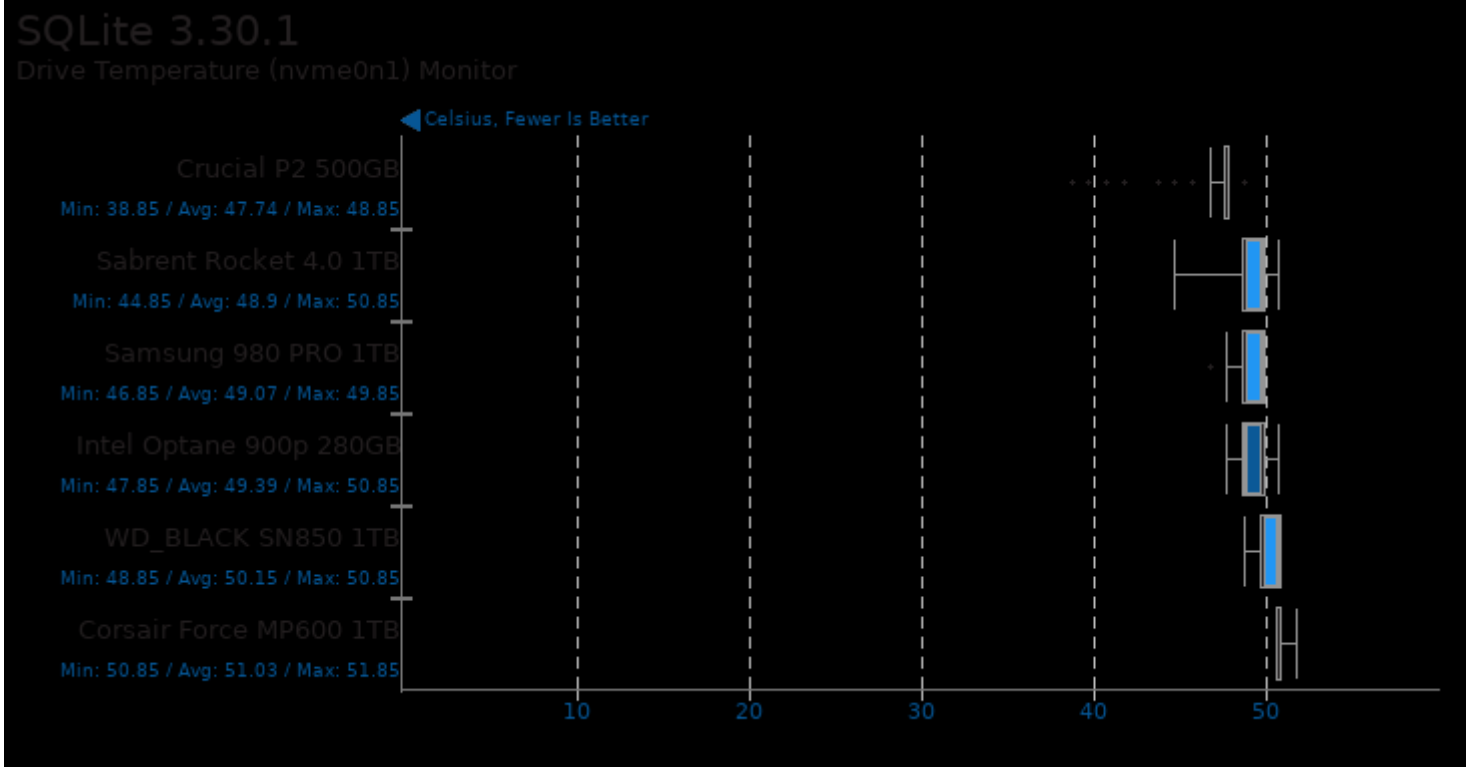

MariaDB 10.5.2
Drive Temperature (nvme0n1) Monitor
Celsius, Fewer Is Better
Crucial P2 500GB
Min: 34.85 / Avg: 47.61 / Max: 48.85
Samsung 980 PRO 1TB
Min: 42.85 / Avg: 49.17 / Max: 49.85
Sabrent Rocket 4.0 1TB
Min: 38.85 / Avg: 49.44 / Max: 52.85
Intel Optane 900p 280GB
Min: 48.85 / Avg: 50.69 / Max: 51.85
WD_BLACK SN850 1TB
Min: 48.85 / Avg: 51.5 / Max: 59.85
Corsair Force MP600 1TB
Min: 53.85 / Avg: 53.96 / Max: 54.85
12
24
36
48
60

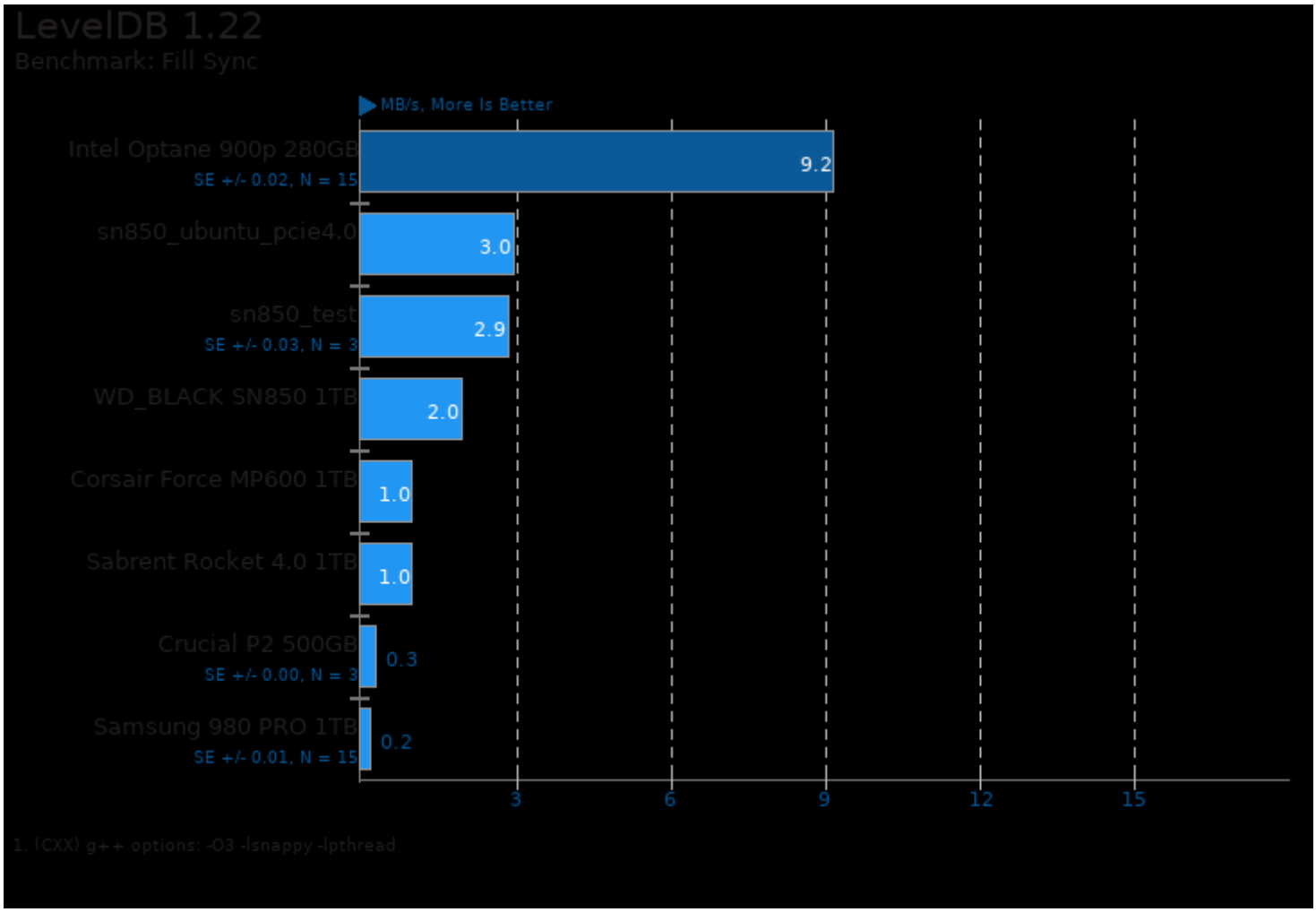

MariaDB 10.5.2
Clients: 4
Queries Per Second, More Is Better
Intel Optane 900p 280GB
SE +/- 47.56, N = 4
-lnuma
13841
sn850_test
SE +/- 36.34, N = 3
-llzma
3817
sn850_ubuntu_pcie4.0
SE +/- 42.54, N = 4
-llzma
3815
WD_BLACK SN850 1TB
SE +/- 0.00, N = 12
-lnuma
3745
Sabrent Rocket 4.0 1TB
SE +/- 2.02, N = 3
-lnuma
1869
Corsair Force MP600 1TB
SE +/- 4.46, N = 3
-lnuma
1830
Samsung 980 PRO 1TB
SE +/- 1.39, N = 3
468
Crucial P2 500GB
SE +/- 6.20, N = 3
368
3K
6K
9K
12K
15K
1. (CXX) g++ options: -pie -fPIC -fstack-protector -O2 -lpthread -lsnappy -laio -lcrypt -lz -lm -lssl -lcrypto -ldl

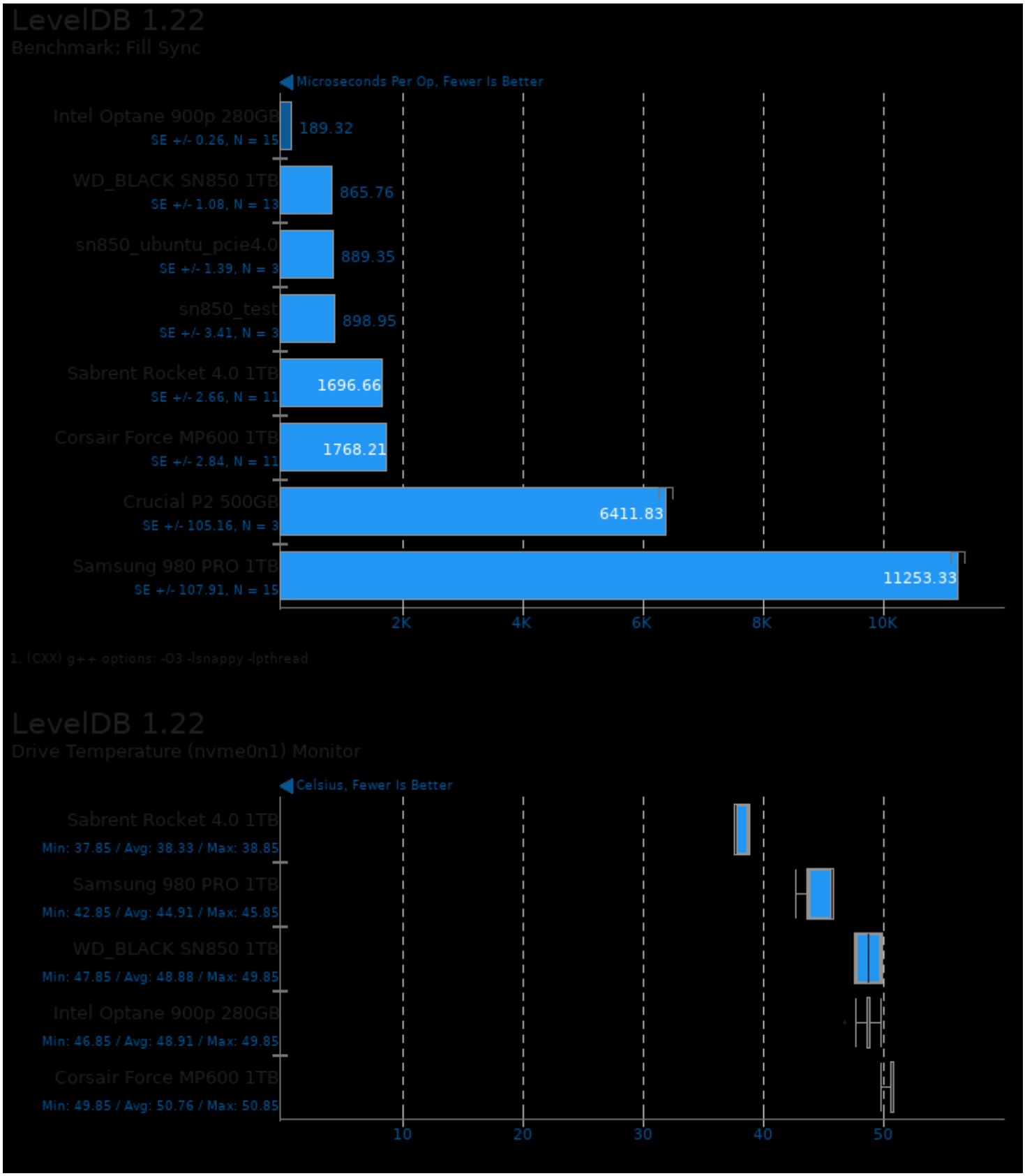

MariaDB 10.5.2
Drive Temperature (nvme0n1) Monitor
Celsius, Fewer Is Better
Crucial P2 500GB
Min: 35.85 / Avg: 47.64 / Max: 49.85
Samsung 980 PRO 1TB
Min: 45.85 / Avg: 49.77 / Max: 50.85
Intel Optane 900p 280GB
Min: 48.85 / Avg: 49.87 / Max: 50.85
WD_BLACK SN850 1TB
Min: 49.85 / Avg: 50.73 / Max: 54.85
Sabrent Rocket 4.0 1TB
Min: 43.85 / Avg: 50.78 / Max: 51.85
Corsair Force MP600 1TB
Min: 52.85 / Avg: 52.85 / Max: 52.85
11
22
33
44
55

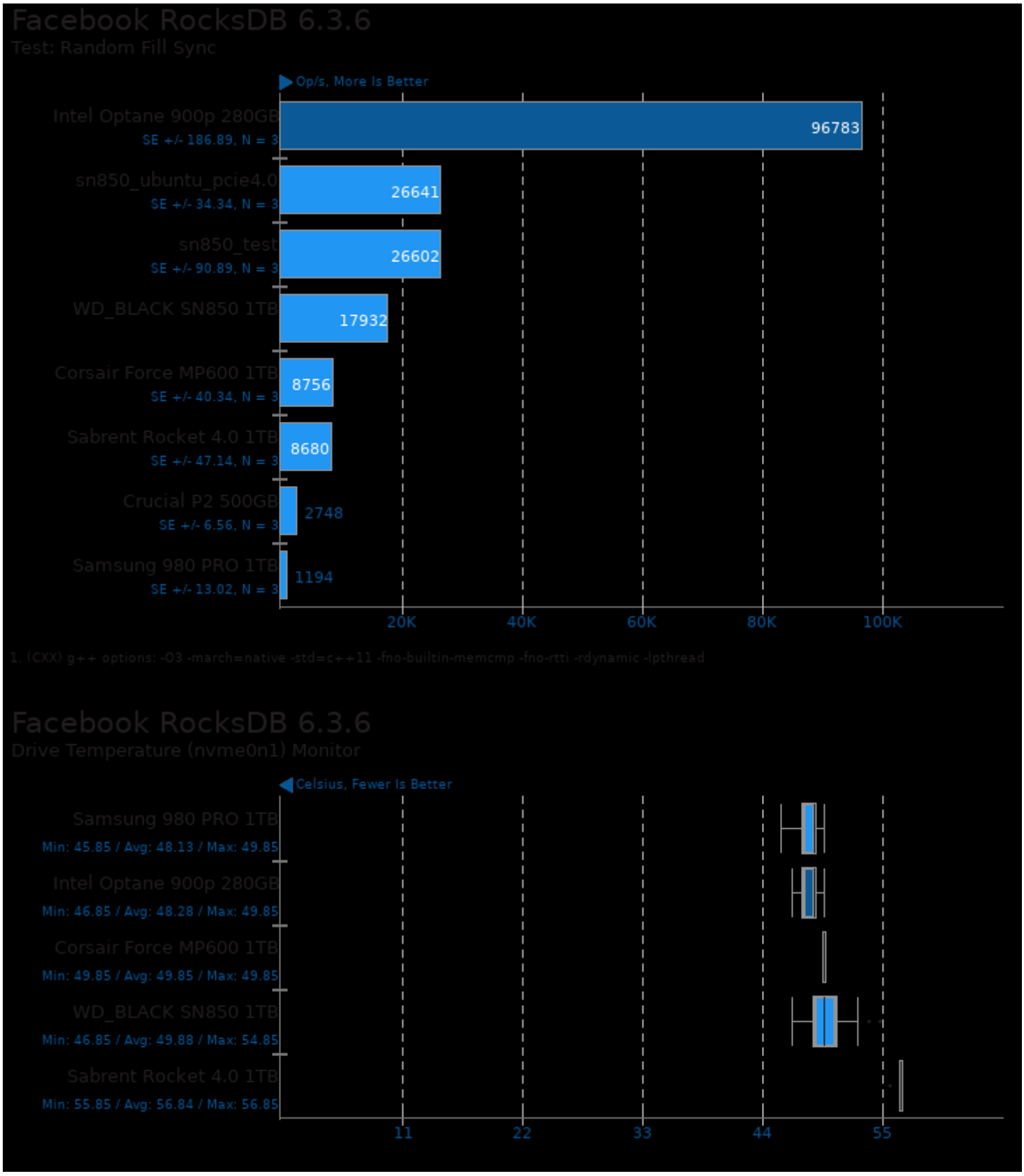

SQLite 3.30.1
Threads / Copies: 1
Seconds, Fewer Is Better
sn850_ubuntu_pcie4.0
SE +/- 0.015, N = 3
6.945
sn850_test
SE +/- 0.034, N = 3
7.008
WD_BLACK SN850 1TB
SE +/- 0.004, N = 6
7.354
Corsair Force MP600 1TB
SE +/- 0.023, N = 4
14.424
Sabrent Rocket 4.0 1TB
SE +/- 0.021, N = 4
14.541
Crucial P2 500GB
SE +/- 1.753, N = 15
-lreadline -ltermcap
64.403
Samsung 980 PRO 1TB
SE +/- 0.202, N = 3
74.035
16
32
48
64
80
1. (CC) gcc options: -O2 -lz -lm -ldl -lpthread
SQLite 3.30.1
Drive Temperature (nvme0n1) Monitor
Celsius, Fewer Is Better
Crucial P2 500GB
Min: 38.85 / Avg: 47.06 / Max: 48.85
Sabrent Rocket 4.0 1TB
Min: 43.85 / Avg: 47.31 / Max: 48.85
Samsung 980 PRO 1TB
Min: 47.85 / Avg: 48.44 / Max: 48.85
WD_BLACK SN850 1TB
Min: 48.85 / Avg: 49.01 / Max: 49.85
Corsair Force MP600 1TB
Min: 51.85 / Avg: 52.01 / Max: 52.85
11
22
33
44
55

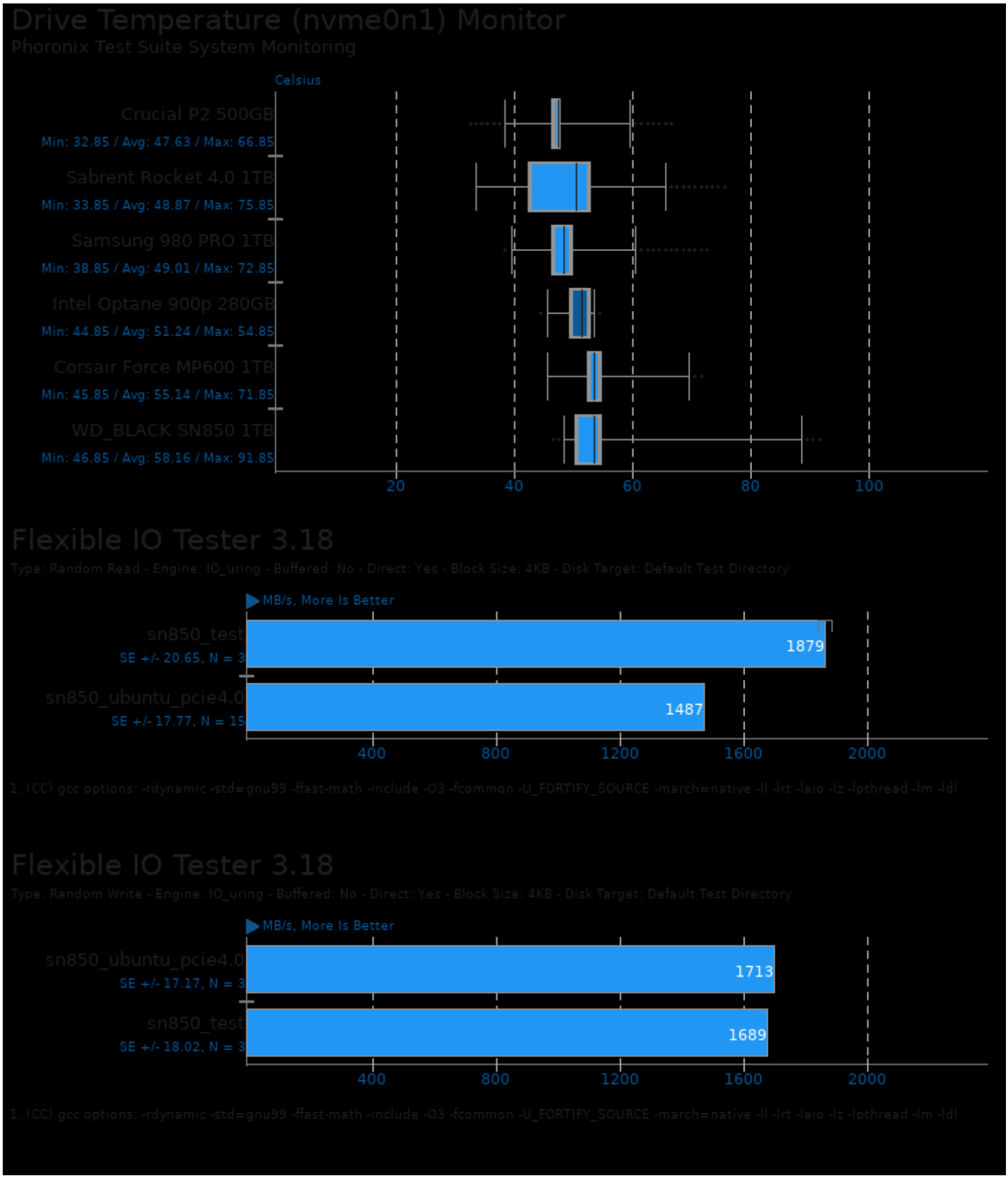

SQLite 3.30.1
Threads / Copies: 8
Seconds, Fewer Is Better
Intel Optane 900p 280GB
SE +/- 0.012, N = 9
3.722
WD_BLACK SN850 1TB
SE +/- 0.085, N = 3
28.573
sn850_ubuntu_pcie4.0
SE +/- 0.060, N = 3
29.364
sn850_test
SE +/- 0.188, N = 3
29.573
Sabrent Rocket 4.0 1TB
SE +/- 0.006, N = 3
38.221
Corsair Force MP600 1TB
SE +/- 0.043, N = 3
39.872
Samsung 980 PRO 1TB
SE +/- 1.211, N = 3
196.849
Crucial P2 500GB
SE +/- 0.855, N = 3
-lreadline -ltermcap
333.973
70
140
210
280
350
1. (CC) gcc options: -O2 -lz -lm -ldl -lpthread


SQLite 3.30.1
Drive Temperature (nvme0n1) Monitor
Celsius, Fewer Is Better
Crucial P2 500GB
Min: 38.85 / Avg: 47.74 / Max: 48.85
Sabrent Rocket 4.0 1TB
Min: 44.85 / Avg: 48.9 / Max: 50.85
Samsung 980 PRO 1TB
Min: 46.85 / Avg: 49.07 / Max: 49.85
Intel Optane 900p 280GB
Min: 47.85 / Avg: 49.39 / Max: 50.85
WD_BLACK SN850 1TB
Min: 48.85 / Avg: 50.15 / Max: 50.85
Corsair Force MP600 1TB
Min: 50.85 / Avg: 51.03 / Max: 51.85
10
20
30
40
50

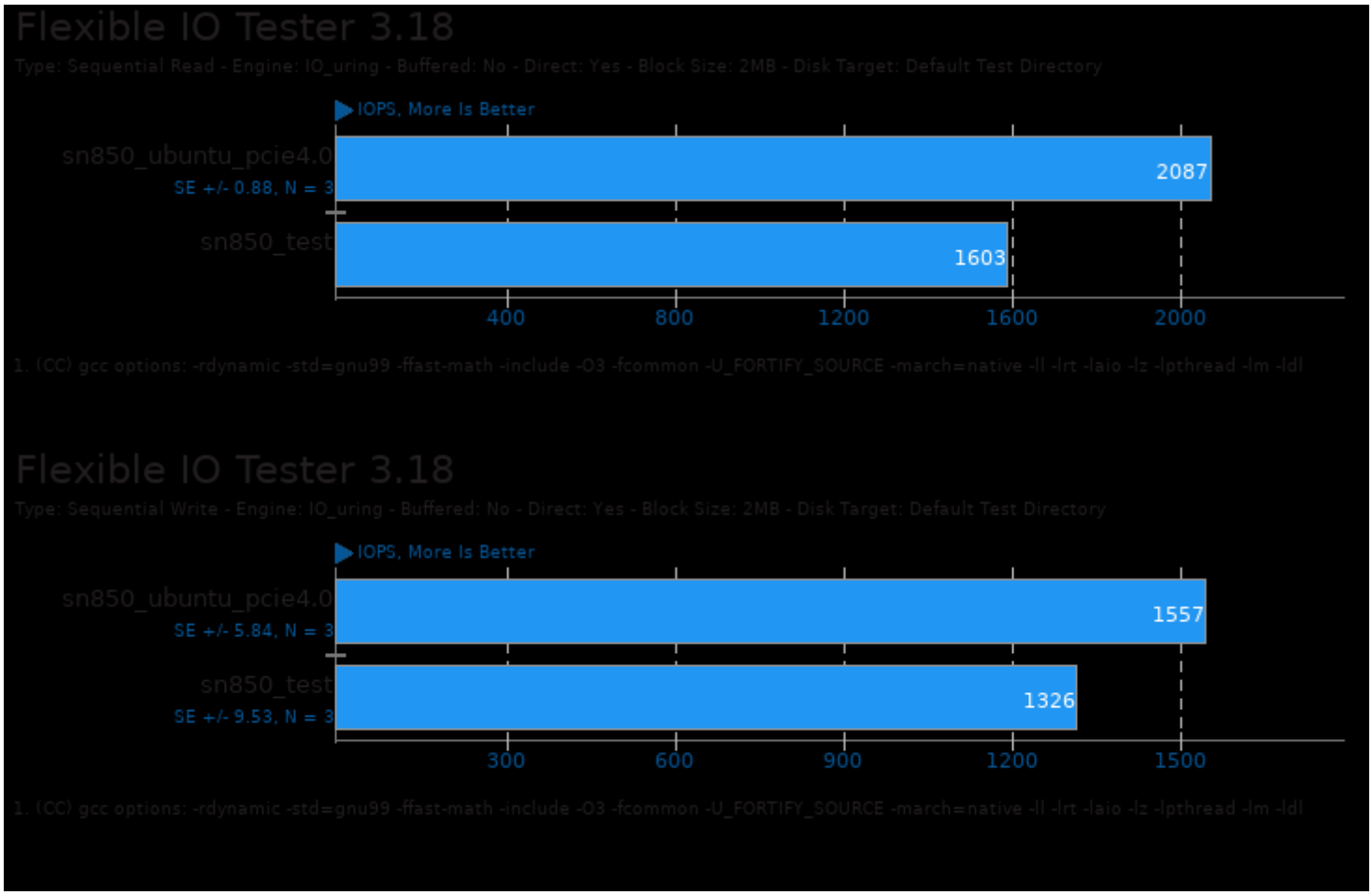

LevelDB 1.22
Benchmark: Fill Sync
MB/s, More Is Better
Intel Optane 900p 280GB
SE +/- 0.02, N = 15
9.2
sn850_ubuntu_pcie4.0
3.0
sn850_test
SE +/- 0.03, N = 3
2.9
WD_BLACK SN850 1TB
2.0
Corsair Force MP600 1TB
1.0
Sabrent Rocket 4.0 1TB
1.0
Crucial P2 500GB
SE +/- 0.00, N = 3
0.3
Samsung 980 PRO 1TB
SE +/- 0.01, N = 15
0.2
3
6
9
12
15
1. (CXX) g++ options: -O3 -lsnappy -lpthread


LevelDB 1.22
Benchmark: Fill Sync
Microseconds Per Op, Fewer Is Better
Intel Optane 900p 280GB
SE +/- 0.26, N = 15
189.32
WD_BLACK SN850 1TB
SE +/- 1.08, N = 13
865.76
sn850_ubuntu_pcie4.0
SE +/- 1.39, N = 3
889.35
sn850_test
SE +/- 3.41, N = 3
898.95
Sabrent Rocket 4.0 1TB
SE +/- 2.66, N = 11
1696.66
Corsair Force MP600 1TB
SE +/- 2.84, N = 11
1768.21
Crucial P2 500GB
SE +/- 105.16, N = 3
6411.83
Samsung 980 PRO 1TB
SE +/- 107.91, N = 15
11253.33
2K
4K
6K
8K
10K
1. (CXX) g++ options: -O3 -lsnappy -lpthread
LevelDB 1.22
Drive Temperature (nvme0n1) Monitor
Celsius, Fewer Is Better
Sabrent Rocket 4.0 1TB
Min: 37.85 / Avg: 38.33 / Max: 38.85
Samsung 980 PRO 1TB
Min: 42.85 / Avg: 44.91 / Max: 45.85
WD_BLACK SN850 1TB
Min: 47.85 / Avg: 48.88 / Max: 49.85
Intel Optane 900p 280GB
Min: 46.85 / Avg: 48.91 / Max: 49.85
Corsair Force MP600 1TB
Min: 49.85 / Avg: 50.76 / Max: 50.85
10
20
30
40
50

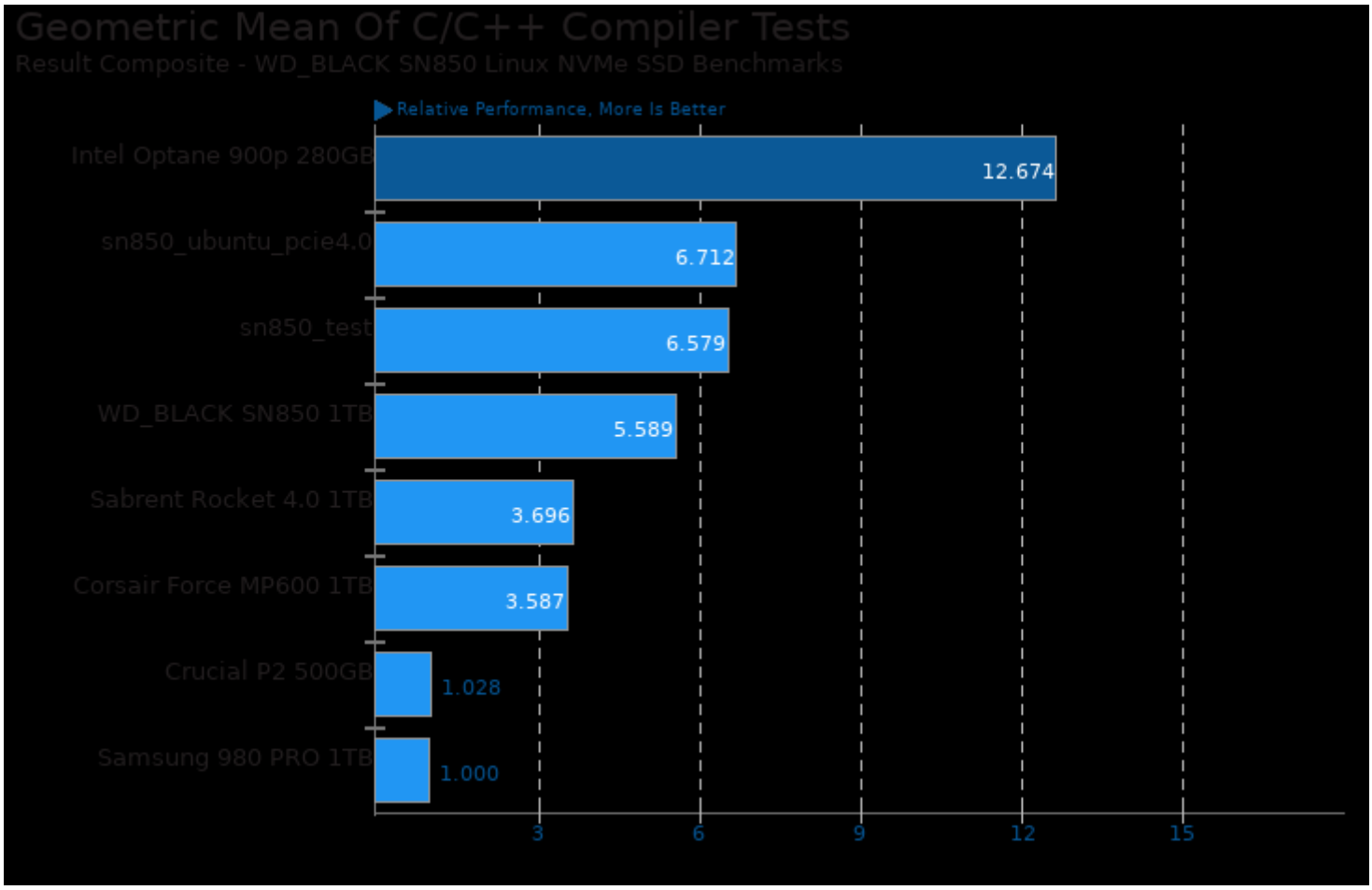

Facebook RocksDB 6.3.6
Test: Random Fill Sync
Op/s, More Is Better
Intel Optane 900p 280GB
SE +/- 186.89, N = 3
96783
sn850_ubuntu_pcie4.0
SE +/- 34.34, N = 3
26641
sn850_test
SE +/- 90.89, N = 3
26602
WD_BLACK SN850 1TB
17932
Corsair Force MP600 1TB
SE +/- 40.34, N = 3
8756
Sabrent Rocket 4.0 1TB
SE +/- 47.14, N = 3
8680
Crucial P2 500GB
SE +/- 6.56, N = 3
2748
Samsung 980 PRO 1TB
SE +/- 13.02, N = 3
1194
20K
40K
60K
80K
100K
1. (CXX) g++ options: -O3 -march=native -std=c++11 -fno-builtin-memcmp -fno-rtti -rdynamic -lpthread
Facebook RocksDB 6.3.6
Drive Temperature (nvme0n1) Monitor
Celsius, Fewer Is Better
Samsung 980 PRO 1TB
Min: 45.85 / Avg: 48.13 / Max: 49.85
Intel Optane 900p 280GB
Min: 46.85 / Avg: 48.28 / Max: 49.85
Corsair Force MP600 1TB
Min: 49.85 / Avg: 49.85 / Max: 49.85
WD_BLACK SN850 1TB
Min: 46.85 / Avg: 49.88 / Max: 54.85
Sabrent Rocket 4.0 1TB
Min: 55.85 / Avg: 56.84 / Max: 56.85
11
22
33
44
55


Drive Temperature (nvme0n1) Monitor
Phoronix Test Suite System Monitoring
Celsius
Crucial P2 500GB
Min: 32.85 / Avg: 47.63 / Max: 66.85
Sabrent Rocket 4.0 1TB
Min: 33.85 / Avg: 48.87 / Max: 75.85
Samsung 980 PRO 1TB
Min: 38.85 / Avg: 49.01 / Max: 72.85
Intel Optane 900p 280GB
Min: 44.85 / Avg: 51.24 / Max: 54.85
Corsair Force MP600 1TB
Min: 45.85 / Avg: 55.14 / Max: 71.85
WD_BLACK SN850 1TB
Min: 46.85 / Avg: 58.16 / Max: 91.85
20
40
60
80
100
Flexible IO Tester 3.18
Type: Random Read - Engine: IO_uring - Buffered: No - Direct: Yes - Block Size: 4KB - Disk Target: Default Test Directory
MB/s, More Is Better
sn850_test
SE +/- 20.65, N = 3
1879
sn850_ubuntu_pcie4.0
SE +/- 17.77, N = 15
1487
400
800
1200
1600
2000
1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE -march=native -ll -lrt -laio -lz -lpthread -lm -ldl
Flexible IO Tester 3.18
Type: Random Write - Engine: IO_uring - Buffered: No - Direct: Yes - Block Size: 4KB - Disk Target: Default Test Directory
MB/s, More Is Better
sn850_ubuntu_pcie4.0
SE +/- 17.17, N = 3
1713
sn850_test
SE +/- 18.02, N = 3
1689
400
800
1200
1600
2000
1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -fcommon -U_FORTIFY_SOURCE -march=native -ll -lrt -laio -lz -lpthread -lm -ldl

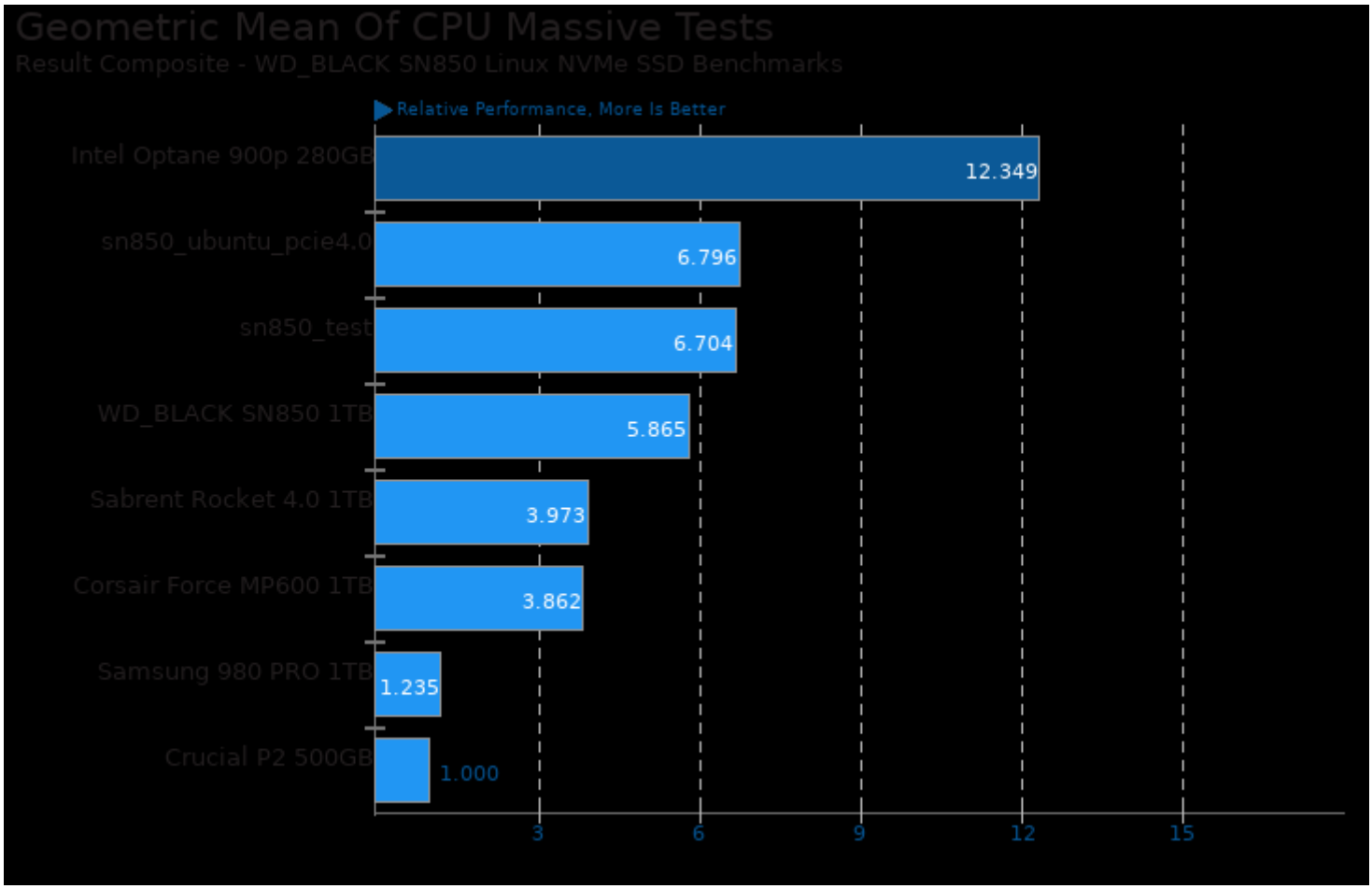
WD_BLACK SN850 Linux NVMe SSD Benchmarks



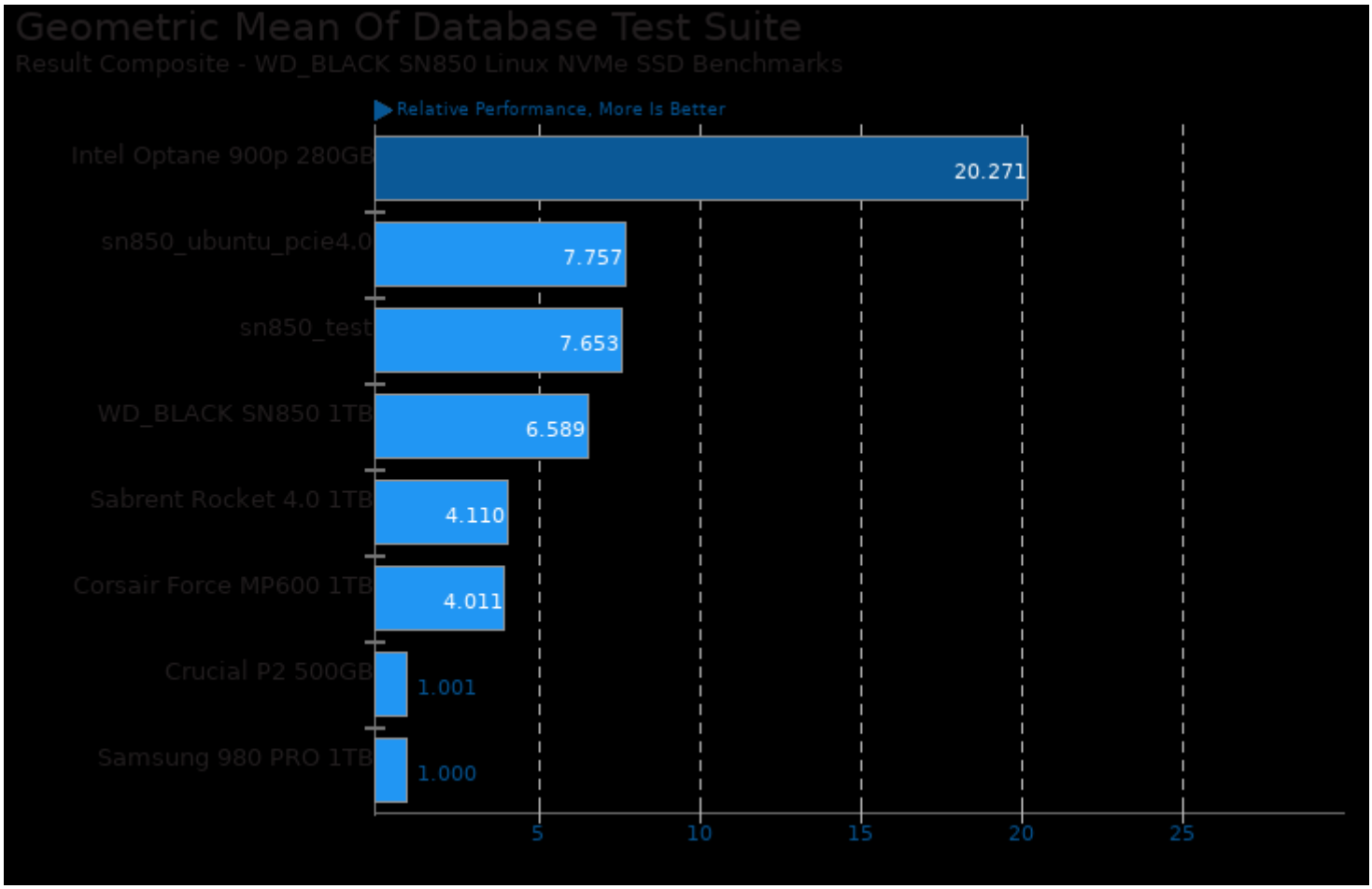
These geometric means are based upon test groupings / test suites for this result file.



Geometric mean based upon tests: pts/pgbench and pts/leveldb

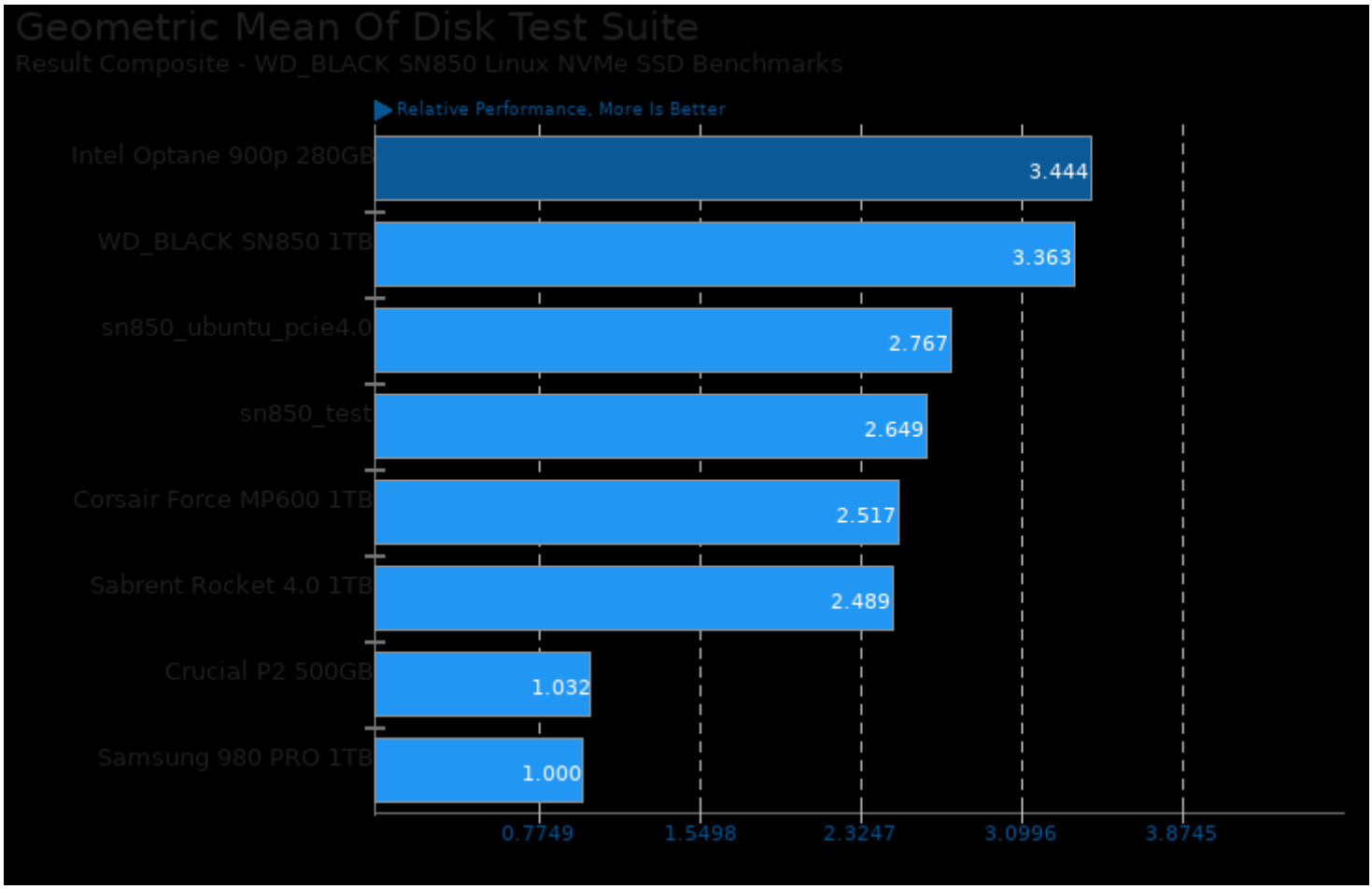


Geometric mean based upon tests: pts/mysqlslap and pts/pgbench



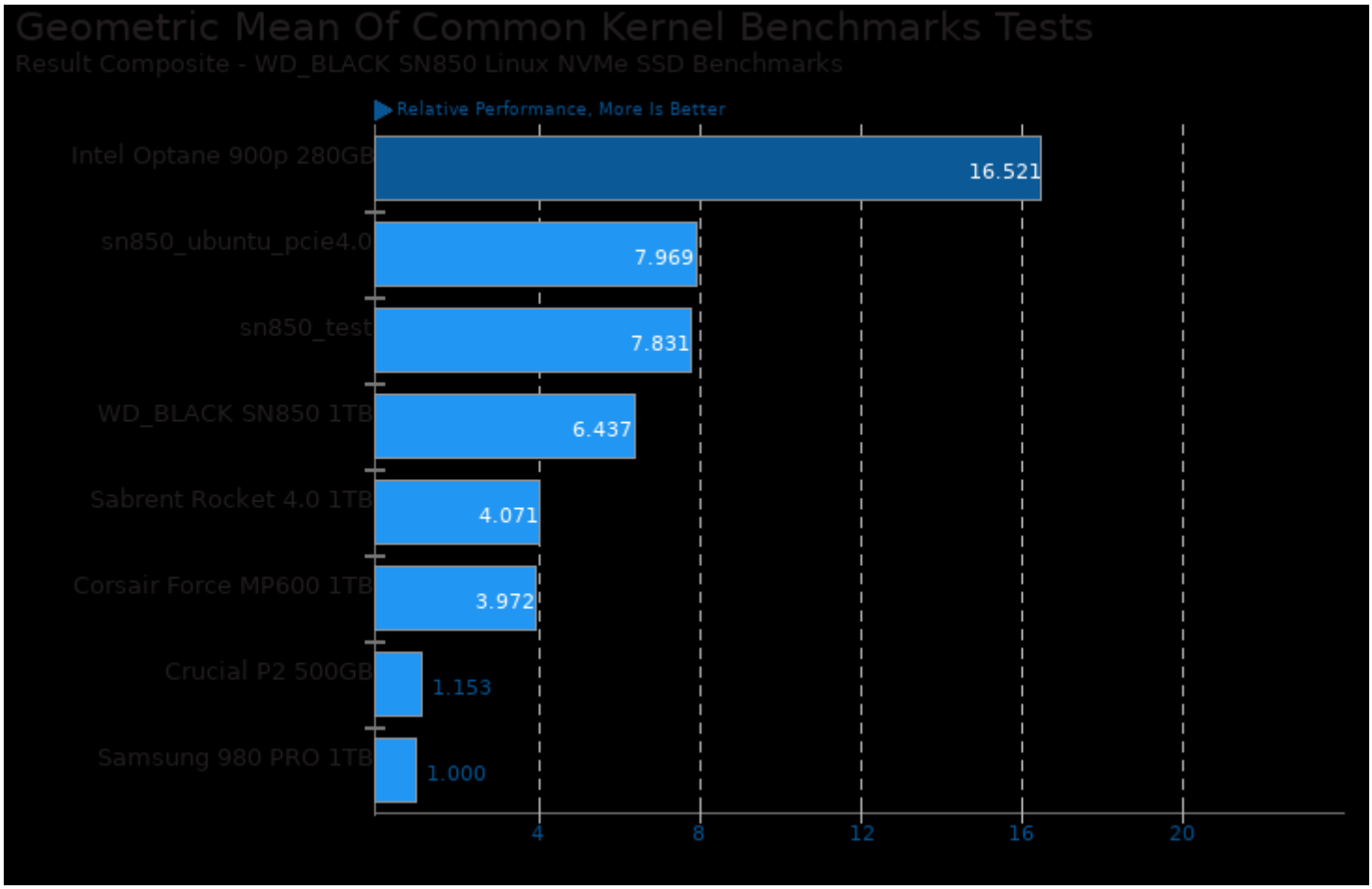
Geometric mean based upon tests: pts/sqlite, pts/leveldb, pts/rocksdb, pts/pgbench and pts/mysqlslap

WD_BLACK SN850 Linux NVMe SSD Benchmarks

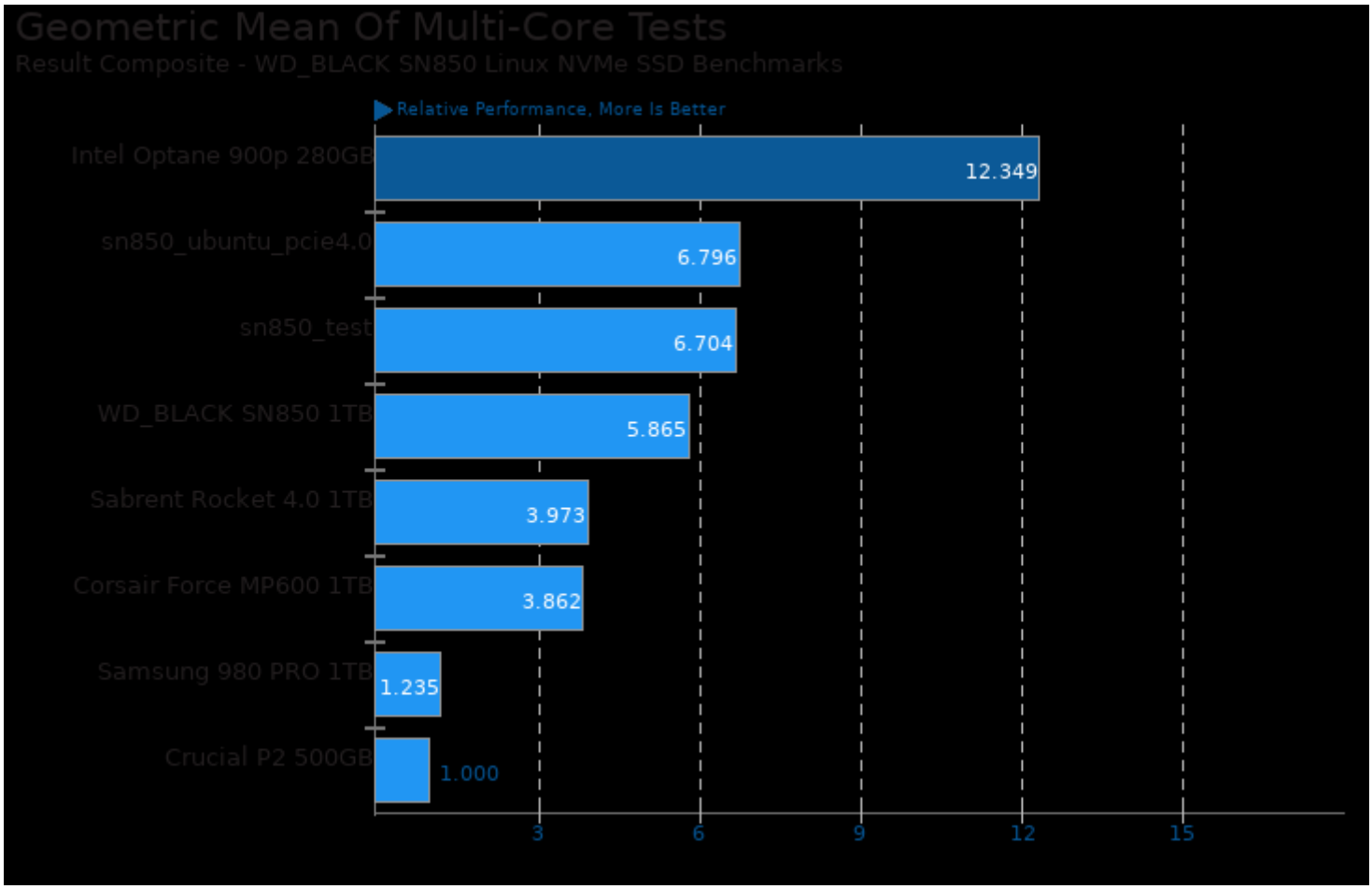


Geometric mean based upon tests: pts/sqlite, pts/fs-mark, pts/dbench and pts/fio

WD_BLACK SN850 Linux NVMe SSD Benchmarks

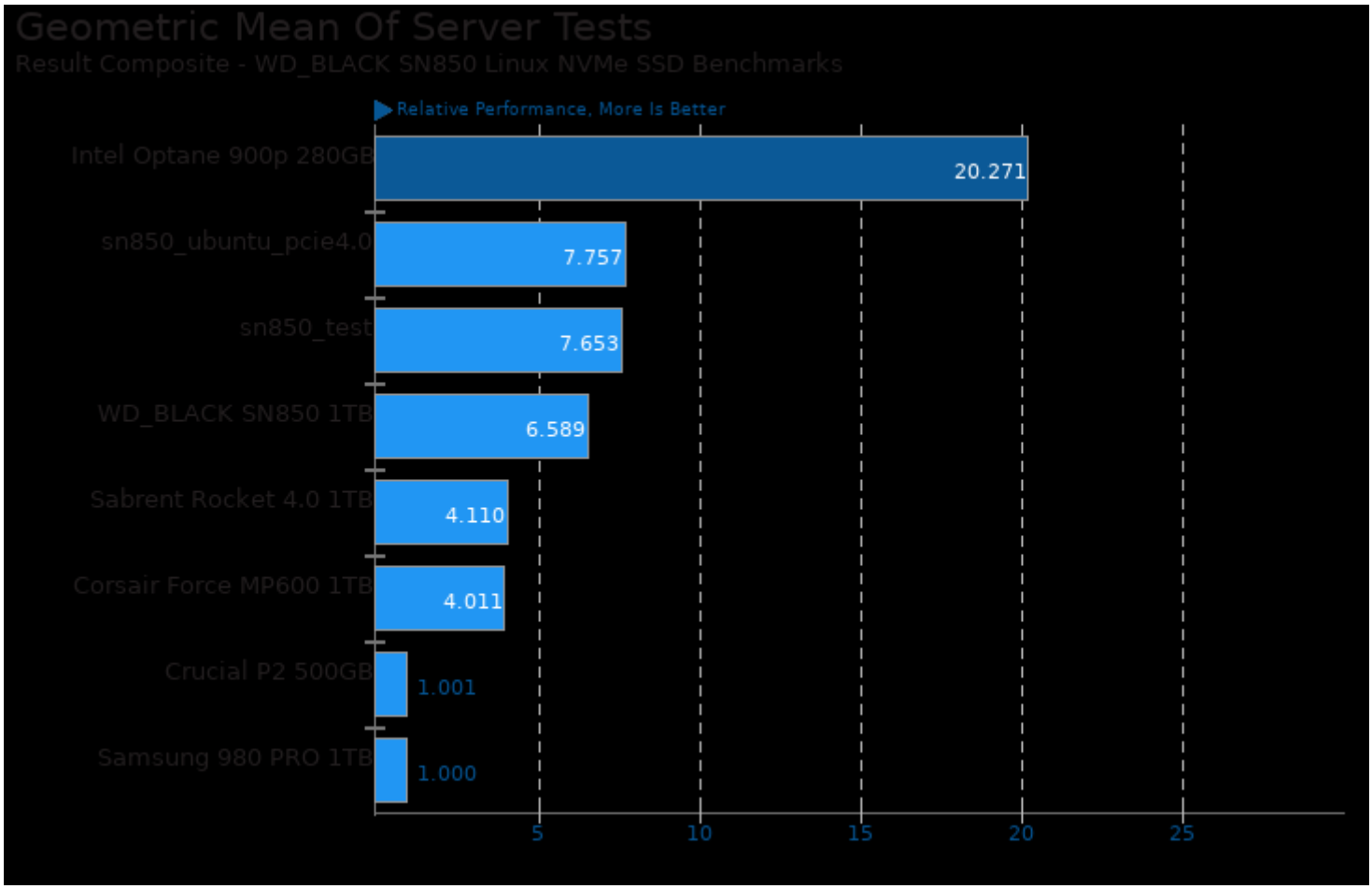


Geometric mean based upon tests: pts/pgbench, pts/rocksdb and pts/leveldb



Geometric mean based upon tests: pts/mysqlslap and pts/pgbench

WD_BLACK SN850 Linux NVMe SSD Benchmarks



Geometric mean based upon tests: pts/mysqlslap, pts/pgbench, pts/rocksdb, pts/sqlite and pts/leveldb

This file was automatically generated via the Phoronix Test Suite benchmarking software on Thursday, 28 March 2024 07:25.