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Gentoo Kernel Tuning Patch Benchmarks

Tests for a future article.

Automated Executive Summary

i9-7980XE: Tuned had the most wins, coming in first place for 21% of the tests.

Based on the geometric mean of all complete results, the fastest (i9-7980XE: Stock) was 1.321x the speed of the slowest (2700X: Stock). i9-7980XE: Tuned was 0.998x the speed of i9-7980XE: Stock, 2700X: Stock was 0.759x the speed of i9-7980XE: Tuned, 2700X: Tuned was 1.001x the speed of 2700X: Stock, 2990WX: Stock was 1.251x the speed of 2700X: Tuned, 2990WX: Tuned was 1.012x the speed of 2990WX: Stock.

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

OpenArena (Resolution: 2560 x 1440 - Total Frame Time) at 32x
SVT-VP9 (1080p 8-bit YUV To VP9 Video Encode) at 5.959x
Stress-NG (Test: Crypto) at 3.425x
OpenSSL (RSA 4096-bit Performance) at 3.424x
C-Ray (Total Time - 4K, 16 Rays Per Pixel) at 3.276x
Rodinia (Test: OpenMP LavaMD) at 3.175x
PostgreSQL pgbench (Scaling: Buffer Test - Test: Normal Load - Mode: Read Write) at 3.159x
NAMD (ATPase Simulation - 327,506 Atoms) at 3.047x

BRL-CAD (VGR Performance Metric) at 2.937x
Blender (Blend File: BMW27 - Compute: CPU-Only) at 2.872x.

Test Systems:

i9-7980XE: Stock

Processor: Intel Core i9-7980XE @ 4.20GHz (18 Cores / 36 Threads), Motherboard: ASUS PRIME X299-A (1602 BIOS), Chipset: Intel Sky Lake-E DMI3 Registers, Memory: 16384MB, Disk: Samsung SSD 970 EVO 500GB, Graphics: NVIDIA NV120 12GB, Audio: Realtek ALC1220, Monitor: ASUS PB278, Network: Intel I219-V

OS: Ubuntu 18.10, Kernel: 5.0.0-rc7-stock (x86_64) 20190224, Desktop: GNOME Shell 3.30.1, Display Server: X Server 1.20.1, Display Driver: modesetting 1.20.1, OpenGL: 4.3 Mesa 18.2.2, Compiler: GCC 8.2.0, File-System: ext4, Screen Resolution: 2560x1440

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++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --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 --with-tune=generic --without-cuda-driver -v
Disk Notes: NONE / errors=remount-ro,relatime,rw
Processor Notes: Scaling Governor: intel_pstate powersave
Python Notes: Python 2.7.15+ + Python 3.6.7
Security Notes: KPTI + __user pointer sanitization + Full generic retpoline IBPB: conditional IBRS_FW STIBP: conditional RSB filling + SSB disabled via prctl and seccomp + PTE Inversion; VMX: conditional cache flushes SMT vulnerable

i9-7980XE: Tuned

Processor: Intel Core i9-7980XE @ 4.20GHz (18 Cores / 36 Threads), Motherboard: ASUS PRIME X299-A (1602 BIOS), Chipset: Intel Sky Lake-E DMI3 Registers, Memory: 16384MB, Disk: Samsung SSD 970 EVO 500GB, Graphics: NVIDIA NV120 12GB, Audio: Realtek ALC1220, Monitor: ASUS PB278, Network: Intel I219-V

OS: Ubuntu 18.10, Kernel: 5.0.0-rc7-skylakex (x86_64) 20190224, Desktop: GNOME Shell 3.30.1, Display Server: X Server 1.20.1, Display Driver: modesetting 1.20.1, OpenGL: 4.3 Mesa 18.2.2, Compiler: GCC 8.2.0, File-System: ext4, Screen Resolution: 2560x1440

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++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --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 --with-tune=generic --without-cuda-driver -v
Disk Notes: NONE / errors=remount-ro,relatime,rw
Processor Notes: Scaling Governor: intel_pstate powersave
Python Notes: Python 2.7.15+ + Python 3.6.7
Security Notes: KPTI + __user pointer sanitization + Full generic retpoline IBPB: conditional IBRS_FW STIBP: conditional RSB filling + SSB disabled via prctl and seccomp + PTE Inversion; VMX: conditional cache flushes SMT vulnerable

2700X: Stock

Processor: AMD Ryzen 7 2700X Eight-Core @ 3.70GHz (8 Cores / 16 Threads), Motherboard: ASUS ROG CROSSHAIR VII HERO (WI-FI) (1001 BIOS), Chipset: AMD Family 17h, Memory: 16384MB, Disk: Samsung SSD 970 EVO 250GB, Graphics: Sapphire AMD Radeon RX 470/480/570/570X/580/580X 4GB (1260/1750MHz), Audio: AMD Ellesmere, Monitor: ASUS PB278, Network: Intel I211 + Realtek RTL8822BE 802.11a/b/g/n/ac

OS: Ubuntu 18.10, Kernel: 5.0.0-rc7-stock (x86_64) 20190224, Desktop: GNOME Shell 3.30.1, Display Server: X Server 1.20.1, Display Driver: modesetting 1.20.1, OpenGL: 4.5 Mesa 18.2.2 (LLVM 7.0.0), Compiler: GCC 8.2.0, File-System: ext4, Screen Resolution: 2560x1440

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++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --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 --with-tune=generic --without-cuda-driver -v
Disk Notes: NONE / errors=remount-ro,relatime,rw
Processor Notes: Scaling Governor: acpi-cpufreq ondemand
Python Notes: Python 2.7.15+ + Python 3.6.7
Security Notes: __user pointer sanitization + Full AMD retpoline IBPB: conditional STIBP: disabled RSB filling + SSB disabled via prctl and seccomp

2700X: Tuned

Processor: AMD Ryzen 7 2700X Eight-Core @ 3.70GHz (8 Cores / 16 Threads), Motherboard: ASUS ROG CROSSHAIR VII HERO (WI-FI) (1001 BIOS), Chipset: AMD Family 17h, Memory: 16384MB, Disk: Samsung SSD 970 EVO 250GB, Graphics: Sapphire AMD Radeon RX 470/480/570/570X/580/580X 4GB (1260/1750MHz), Audio: AMD Ellesmere, Monitor: ASUS PB278, Network: Intel I211 + Realtek RTL8822BE 802.11a/b/g/n/ac

OS: Ubuntu 18.10, Kernel: 5.0.0-rc7-znver1 (x86_64) 20190224, Desktop: GNOME Shell 3.30.1, Display Server: X Server 1.20.1, Display Driver: modesetting 1.20.1, OpenGL: 4.5 Mesa 18.2.2 (LLVM 7.0.0), Compiler: GCC 8.2.0, File-System: ext4, Screen Resolution: 2560x1440

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++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --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 --with-tune=generic --without-cuda-driver -v
Disk Notes: NONE / errors=remount-ro,relatime,rw
Processor Notes: Scaling Governor: acpi-cpufreq ondemand
Python Notes: Python 2.7.15+ + Python 3.6.7
Security Notes: __user pointer sanitization + Full AMD retpoline IBPB: conditional STIBP: disabled RSB filling + SSB disabled via prctl and seccomp

2990WX: Stock

Processor: AMD Ryzen Threadripper 2990WX 32-Core @ 3.00GHz (32 Cores / 64 Threads), Motherboard: ASUS ROG ZENITH EXTREME (1601 BIOS), Chipset: AMD Family 17h, Memory: 32768MB, Disk: Samsung SSD 970 EVO 500GB, Graphics: AMD Radeon RX 64 8GB (1630/945MHz), Audio: Realtek ALC1220, Monitor: ASUS VP28U, Network: Intel I211 + Qualcomm Atheros QCA6174 802.11ac + Wilocity Wil6200 802.11ad

OS: Ubuntu 18.10, Kernel: 5.0.0-rc7-stock (x86_64) 20190224, Desktop: GNOME Shell 3.30.1, Display Server: X Server 1.20.1, Display Driver: amdgpu 18.1.0, OpenGL: 4.5 Mesa 18.2.2 (LLVM 7.0.0), Compiler: GCC 8.2.0, File-System: ext4, Screen Resolution: 3840x2160

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++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --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 --with-tune=generic --without-cuda-driver -v
Disk Notes: NONE / errors=remount-ro,relatime,rw
Processor Notes: Scaling Governor: acpi-cpufreq ondemand
Graphics Notes: GLAMOR
Python Notes: Python 2.7.15+ + Python 3.6.7
Security Notes: __user pointer sanitization + Full AMD retpoline IBPB: conditional STIBP: disabled RSB filling + SSB disabled via prctl and seccomp

2990WX: Tuned

Processor: AMD Ryzen Threadripper 2990WX 32-Core @ 3.00GHz (32 Cores / 64 Threads), Motherboard: ASUS ROG ZENITH EXTREME (1601 BIOS), Chipset: AMD Family 17h, Memory: 32768MB, Disk: Samsung SSD 970 EVO 500GB,

Gentoo Kernel Tuning Patch Benchmarks

Graphics: AMD Radeon RX 64 8GB (1630/945MHz), Audio: Realtek ALC1220, Monitor: ASUS VP28U, Network: Intel I211 + Qualcomm Atheros QCA6174 802.11ac + Wilocity Wil6200 802.11ad

OS: Ubuntu 18.10, Kernel: 5.0.0-rc7-znver1 (x86_64) 20190224, Desktop: GNOME Shell 3.30.1, Display Server: X Server 1.20.1, Display Driver: amdgpu 18.1.0, OpenGL: 4.5 Mesa 18.2.2 (LLVM 7.0.0), Compiler: GCC 8.2.0, File-System: ext4, Screen Resolution: 3840x2160

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++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --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 --with-tune=generic --without-cuda-driver -v
Disk Notes: NONE / errors=remount-ro,relatime,rw
Processor Notes: Scaling Governor: acpi-cpufreq ondemand
Graphics Notes: GLAMOR
Python Notes: Python 2.7.15+ + Python 3.6.7
Security Notes: __user pointer sanitization + Full AMD retpoline IBPB: conditional STIBP: disabled RSB filling + SSB disabled via prctl and seccomp

	i9-7980XE: Stock	i9-7980XE: Tuned	2700X: Stock	2700X: Tuned	2990WX: Stock	2990WX: Tuned
SQLite - T.S.I (sec)	39.57	**39.73**	36.33	36.40	**35.68**	36.06
Normalized	90.17%	89.81%	98.21%	98.02%	100%	98.95%
Standard Deviation	0%	0.2%	0%	0.3%	0.2%	0.3%
Flexible IO Tester - Rand Read - Linux AIO - Yes - No - 2MB (MB/s)	7670	7783	**8442**	8389	**7645**	7873
Normalized	90.86%	92.19%	100%	99.37%	90.56%	93.26%
Standard Deviation	0.5%	0.7%	1.2%	0.8%	1%	0.5%
Flexible IO Tester - Rand Write - Linux AIO - Yes - No - 2MB (MB/s)	4782	4847	4860	**4876**	**4594**	4649
Normalized	98.07%	99.41%	99.67%	100%	94.22%	95.34%
Standard Deviation	1.4%	0.9%	0.8%	0.6%	1.6%	0.7%
Flexible IO Tester - Seq Read - Linux AIO - Yes - No - 2MB (MB/s)	7689	**7445**	8419	**8459**	7599	7940
Normalized	90.9%	88.01%	99.53%	100%	89.83%	93.86%
Standard Deviation	0.5%	4.5%	0.3%	0.7%	1.4%	1%
Flexible IO Tester - Seq Write - Linux AIO - Yes - No - 2MB (MB/s)	4726	4749	**4796**	4792	**4449**	4688
Normalized	98.54%	99.02%	100%	99.92%	92.76%	97.75%
Standard Deviation	2.6%	1.8%	3.4%	3.4%	3.2%	1.3%
FS-Mark - 1.F.1.S (Files/s)	**189**	190	226	224	**234**	232
Normalized	80.77%	81.2%	96.58%	95.73%	100%	99.15%
Standard Deviation	2.4%	2.6%	0.3%	0.1%	0.7%	0.8%
FS-Mark - 4.F.3.S.D.1.S (Files/s)	113	113	131	**103**	230	**233**
Normalized	48.5%	48.5%	56.22%	44.21%	98.71%	100%
Standard Deviation	17.2%	17.1%	47.7%	15.8%	0.5%	0.5%

Gentoo Kernel Tuning Patch Benchmarks

Compile Bench - Compile (MB/s)	1466	1525	**916**	965	1919	**2033**
Normalized	72.11%	75.01%	45.06%	47.47%	94.39%	100%
Standard Deviation	3.2%	0.9%	6.8%	11%	1.1%	1%
Compile Bench - Initial Create (MB/s)	665	**686**	525	522	515	**502**
Normalized	96.94%	100%	76.53%	76.09%	75.07%	73.18%
Standard Deviation	4%	2.5%	0.4%	1.4%	1.6%	1.1%
Tinymembench - Standard Memcpy (MB/s)	10298	10358	16689	**16704**	9715	**9700**
Normalized	61.65%	62.01%	99.91%	100%	58.16%	58.07%
Standard Deviation	0.7%	0%	0.2%	0.1%	0%	0.1%
Tinymembench - Standard Memset (MB/s)	28545	**28698**	12789	12781	**12674**	12691
Normalized	99.47%	100%	44.56%	44.54%	44.16%	44.22%
Standard Deviation	0.9%	0.1%	0.2%	0.1%	0.2%	0.1%
MBW - Memory Copy - 4096 MiB (MiB/s)	**10539**	10545	16171	16177	14228	**16373**
Normalized	64.37%	64.4%	98.77%	98.8%	86.9%	100%
Standard Deviation	0%	0.5%	0.2%	0.1%	0.3%	3.5%
MBW - M.C.F.B.S - 4096 MiB (MiB/s)	9969	**10057**	9584	9577	**8856**	9336
Normalized	99.12%	100%	95.3%	95.23%	88.06%	92.83%
Standard Deviation	0.7%	0%	0.1%	0.6%	0.2%	2.1%
Sockperf - Throughput (Messages/sec)	**303563**	304632	510316	559386	550536	**586863**
Normalized	51.73%	51.91%	86.96%	95.32%	93.81%	100%
Standard Deviation	2.6%	2.5%	2.7%	2.8%	3.4%	2.7%
Sockperf - Latency Ping Pong (usec)	4.60	4.40	**4.20**	4.25	**4.83**	4.76
Normalized	91.3%	95.45%	100%	98.82%	86.96%	88.24%
Standard Deviation	7%	2.2%	0.6%	1.3%	0.7%	0.7%
Sockperf - Latency Under Load (usec)	**36.56**	39.68	**106.96**	106.65	100.07	95.40
Normalized	100%	92.14%	34.18%	34.28%	36.53%	38.32%
Standard Deviation	25.7%	1.5%	34.5%	40.6%	31.1%	13.8%
Parboil - OpenMP LBM (sec)	73.01	**72.90**	**138.03**	137.98	92.55	91.62
Normalized	99.85%	100%	52.81%	52.83%	78.77%	79.57%
Standard Deviation	0.1%	0%	0%	0%	7.8%	2.9%
Parboil - OpenMP CUTCP (sec)	2.38	2.38	3.23	**3.28**	**1.54**	1.57
Normalized	64.71%	64.71%	47.68%	46.95%	100%	98.09%
Standard Deviation	1%	0.6%	1.2%	0.7%	2.2%	1%
CloverLeaf - L.E.H (sec)	2.43	2.40	**5.06**	5.03	2.29	**2.01**
Normalized	82.72%	83.75%	39.72%	39.96%	87.77%	100%
Standard Deviation	0.7%	0.4%	0.1%	0%	21.8%	2.6%
Rodinia - OpenMP LavaMD (sec)	20.54	20.25	**37.56**	37.47	11.87	**11.83**
Normalized	57.59%	58.42%	31.5%	31.57%	99.66%	100%
Standard Deviation	2.4%	0.3%	0.2%	0.3%	0.4%	0.4%
Rodinia - OpenMP CFD Solver (sec)	11.58	11.56	**26.89**	26.78	**9.88**	10.37
Normalized	85.32%	85.47%	36.74%	36.89%	100%	95.27%

Gentoo Kernel Tuning Patch Benchmarks

Standard Deviation	0.3%	0.5%	0.2%	0.4%	8.7%	8.6%
Rodinia - O.S (sec)	**13.87**	14.18	18.90	18.86	28.74	**29.24**
Normalized	100%	97.81%	73.39%	73.54%	48.26%	47.44%
Standard Deviation	0.2%	3.5%	0.1%	0%	1.9%	1.5%
NAMD - ATPase Simulation - 327,506 Atoms (days/ns)	0.98351	0.98252	**2.29339**	2.29314	**0.75270**	0.75823
Normalized	76.53%	76.61%	32.82%	32.82%	100%	99.27%
Standard Deviation	0.6%	0.1%	0.1%	0.1%	0.1%	0.5%
DaCapo Benchmark - H2 (msec)	**6068**	5973	**3530**	3665	4976	4839
Normalized	58.17%	59.1%	100%	96.32%	70.94%	72.95%
Standard Deviation	0.9%	1.6%	3.4%	2%	3.2%	2.5%
DaCapo Benchmark - Jython (msec)	**3591**	3661	5169	5038	**5170**	5140
Normalized	100%	98.09%	69.47%	71.28%	69.46%	69.86%
Standard Deviation	0.7%	1.7%		1.2%	2.3%	0.9%
DaCapo Benchmark - Tradesoap (msec)	4826	**4807**	5860	5836	**6043**	5774
Normalized	99.61%	100%	82.03%	82.37%	79.55%	83.25%
Standard Deviation	1.4%	0.5%	1.9%	2%	1.4%	2.2%
DaCapo Benchmark - Tradebeans (msec)	**8812**	8741	**4392**	4409	6624	6587
Normalized	49.84%	50.25%	100%	99.61%	66.3%	66.68%
Standard Deviation	0.6%	0.6%	0.9%	2%	3.2%	3.3%
LuaJIT - Composite (Mflops)	1622	**1627**	1537	1518	1494	**1486**
Normalized	99.69%	100%	94.47%	93.3%	91.83%	91.33%
Standard Deviation	0.1%	0.1%	0.3%	0.3%	0.6%	0.4%
Node.js Express HTTP Load Test (Reqs/sec)	9536	**9590**	8336	8180	7601	**7542**
Normalized	99.44%	100%	86.92%	85.3%	79.26%	78.64%
Standard Deviation	0.1%	0.5%	1.4%	3.2%	1.8%	1.8%
TTSIOD 3D Renderer - P.R.W.S.S.M (FPS)	708	**709**	**363**	364	529	545
Normalized	99.86%	100%	51.2%	51.34%	74.61%	76.87%
Standard Deviation	0.6%	0.3%	0.3%	0.3%	3.4%	6.4%
SVT-HEVC - 1.8.b.Y.T.H.V.E (FPS)	309	**310**	**150**	**150**	184	180
Normalized	99.68%	100%	48.39%	48.39%	59.35%	58.06%
Standard Deviation	2.2%	2.3%	0.6%	0.8%	12.9%	3.4%
SVT-VP9 - 1.8.b.Y.T.V.V.E (FPS)	309	**315**	52.93	**52.86**	97.88	102.23
Normalized	98.1%	100%	16.8%	16.78%	31.07%	32.45%
Standard Deviation	2.7%	3.1%	0.3%	0.2%	1%	3.1%
VP9 libvpx Encoding - v.V.1.V.E (FPS)	22.84	**22.80**	**26.60**	26.54	26.12	26.51
Normalized	85.86%	85.71%	100%	99.77%	98.2%	99.66%
Standard Deviation	0.3%	0.5%	1.7%	2.5%	2.4%	0.2%
GraphicsMagick - Resizing (Iterations/min)	247	247	256	**257**	**237**	**237**
Normalized	96.11%	96.11%	99.61%	100%	92.22%	92.22%
Standard Deviation					0.6%	0.4%

Gentoo Kernel Tuning Patch Benchmarks

Himeno Benchmark - P.P.S (MFLOPS)	**3102**	3093	1334	1357	1326	**1323**
Normalized	100%	99.71%	43%	43.75%	42.75%	42.65%
Standard Deviation	0.3%	0.1%	0.9%	0.2%	0.6%	0.4%
7-Zip Compression - C.S.T (MIPS)	94645	**94958**	**40730**	41000	79608	80068
Normalized	99.67%	100%	42.89%	43.18%	83.83%	84.32%
Standard Deviation	0.6%	0.5%	2.1%	0.3%	3.3%	3.5%
Timed Linux Kernel Compilation - Time To Compile (sec)	45.70	45.65	86.52	**86.91**	37.02	**36.03**
Normalized	78.84%	78.93%	41.64%	41.46%	97.33%	100%
Standard Deviation	3.2%	3.4%	1.9%	1.5%	3.3%	3.4%
Timed LLVM Compilation - Time To Compile (sec)	233	234	527	**534**	**216**	227
Normalized	92.7%	92.31%	40.99%	40.45%	100%	95.15%
C-Ray - Total Time - 4.1.R.P.P (sec)	42.42	42.39	**66.11**	66.08	**20.18**	**20.18**
Normalized	47.57%	47.61%	30.52%	30.54%	100%	100%
Standard Deviation	0%	0%	0.1%	0.2%	0.4%	0.2%
Node.js Octane Benchmark (Score)	**45426**	45197	40771	40723	38912	**38883**
Normalized	100%	99.5%	89.75%	89.65%	85.66%	85.6%
Standard Deviation	0.2%	0.5%	0.2%	0.6%	1.2%	1.2%
XZ Compression - C.u.1.0.3.s.i.i.C.L.9 (sec)	**84.96**	85.11	88.86	88.74	102.33	**108.74**
Normalized	100%	99.82%	95.61%	95.74%	83.03%	78.13%
Standard Deviation	0.5%	0.4%	0.3%	0.2%	4.5%	2%
Zstd Compression - C.u.1.0.3.s.i.i.C.L.1 (sec)	**10.44**	**10.44**	**28.37**	**28.37**	18.03	19.26
Normalized	100%	100%	36.8%	36.8%	57.9%	54.21%
Standard Deviation	0.4%	0.7%	0.4%	0.2%	9.5%	10.5%
Cython benchmark (sec)	**20.43**	**20.45**				
Normalized	100%	99.9%				
Standard Deviation	1%	0.3%				
Hackbench - 4 - Thread (sec)	9.08	8.82	**14.39**	13.96	7.70	**7.66**
Normalized	84.36%	86.85%	53.23%	54.87%	99.48%	100%
Standard Deviation	0.5%	0.5%	3.4%	6.5%	0.9%	0.5%
Hackbench - 8 - Thread (sec)	20.11	20.79	**25.45**	23.57	14.41	**14.32**
Normalized	71.21%	68.88%	56.27%	60.76%	99.38%	100%
Standard Deviation	3.3%	2.1%	1.4%	11.5%	0.3%	0.9%
Hackbench - 16 - Thread	36.36	35.16	**38.75**	37.53	26.18	**26.00**
Normalized	71.51%	73.95%	67.1%	69.28%	99.31%	100%
Standard Deviation	16.4%	17.7%	6.3%	4.9%	0.7%	0.6%
Hackbench - 4 - Process	**6.64**	6.65	**11.45**	10.96	6.94	6.91
Normalized	100%	99.85%	57.99%	60.58%	95.68%	96.09%
Standard Deviation	0.2%	0.3%	10.9%	15.8%	0.6%	1.7%
Hackbench - 8 - Process	**12.23**	13.58	**18.13**	16.48	12.64	12.31
Normalized	100%	90.06%	67.46%	74.21%	96.76%	99.35%
Standard Deviation	5%	21.2%	14.3%	0.7%	0.1%	0.8%
Hackbench - 16 - Process (sec)	**22.45**	23.56	**36.86**	36.23	23.01	22.78
Normalized	100%	95.29%	60.91%	61.97%	97.57%	98.55%
Standard Deviation	4.8%	4.5%	1.2%	5.7%	1.2%	1.5%

Gentoo Kernel Tuning Patch Benchmarks

Hackbench - 32 - Process (sec)	43.36	43.27	**77.14**	77.05	**42.28**	**42.28**
Normalized	97.51%	97.71%	54.81%	54.87%	100%	100%
Standard Deviation	2.7%	0.4%	3.4%	2.8%	2.4%	2.1%
OpenCV Benchmark (sec)	79.84	79.70	74.27	**73.86**	**90.41**	89.05
Normalized	92.51%	92.67%	99.45%	100%	81.69%	82.94%
Standard Deviation	0.9%	0.6%	0.3%	0.6%	0.4%	1.6%
Radiance Benchmark - SMP Parallel (sec)	239	237	**243**	241	**236**	239
Normalized	98.74%	99.58%	97.12%	97.93%	100%	98.74%
R Benchmark (sec)	**0.2928**	**0.2915**				
Normalized	99.56%	100%				
Standard Deviation	0.6%	0.6%				
OpenSSL - R.4.b.P	4689	4690	**1702**	1705	5825	**5828**
Normalized	80.46%	80.47%	29.2%	29.26%	99.95%	100%
Standard Deviation	0.1%	0.2%	0.2%	0.4%	0.1%	0%
Cryptsetup - PBKDF2-sha512	1661085	**1671601**	1256293	1234877	1233622	**1231693**
Normalized	99.27%	99.9%	75.08%	73.8%	73.73%	73.61%
Standard Deviation	1.3%	1%	0.4%	3.1%	0.2%	0.3%
Cryptsetup - PBKDF2-whirlpool (Iterations/sec)	**983654**	**983654**	**823169**	846308	827388	826954
Normalized	100%	100%	83.68%	86.04%	84.11%	84.07%
Standard Deviation			4.2%	0.1%	0.1%	0.2%
PostgreSQL pgbench - Buffer Test - Normal Load - Read Only (TPS)	**472297**	469329	**189687**	191178	285644	424687
Normalized	100%	99.37%	40.16%	40.48%	60.48%	89.92%
Standard Deviation	0.4%	0.2%	0.6%	0.1%	86.4%	1.2%
PostgreSQL pgbench - Buffer Test - Normal Load - Read Write (TPS)	5449	5470	5711	**5350**	16866	**16903**
Normalized	32.24%	32.36%	33.79%	31.65%	99.78%	100%
Standard Deviation	0.2%	1.3%	3.3%	3%	1.6%	1.2%
GNU Octave Benchmark	**17.68**	17.65	14.69	**14.63**	17.62	17.17
Normalized	82.75%	82.89%	99.59%	100%	83.03%	85.21%
Standard Deviation	0.4%	0.6%	0.8%	0.4%	3.4%	2%
Stress-NG - Crypto (Bogo Ops/s)	3575	3578	**2208**	2209	**7563**	
Normalized	47.27%	47.31%	29.19%	29.21%	100%	
Standard Deviation	0%	0.1%	0.1%	0.1%	0%	
Stress-NG - Forking (Bogo Ops/s)	105603	**105655**	54253	**54104**		
Normalized	99.95%	100%	51.35%	51.21%		
Standard Deviation	0.5%	0.6%	0.4%	0.7%		
Stress-NG - Semaphores (Bogo Ops/s)	**3023293**	3228754	**4409946**	4389305		
Normalized	68.56%	73.22%	100%	99.53%		
Standard Deviation	0.5%	0.2%	1.5%	0.4%		
Stress-NG - Vector Math (Bogo Ops/s)	**41008**	41002	**23616**	23718		
Normalized	100%	99.99%	57.59%	57.84%		

Gentoo Kernel Tuning Patch Benchmarks

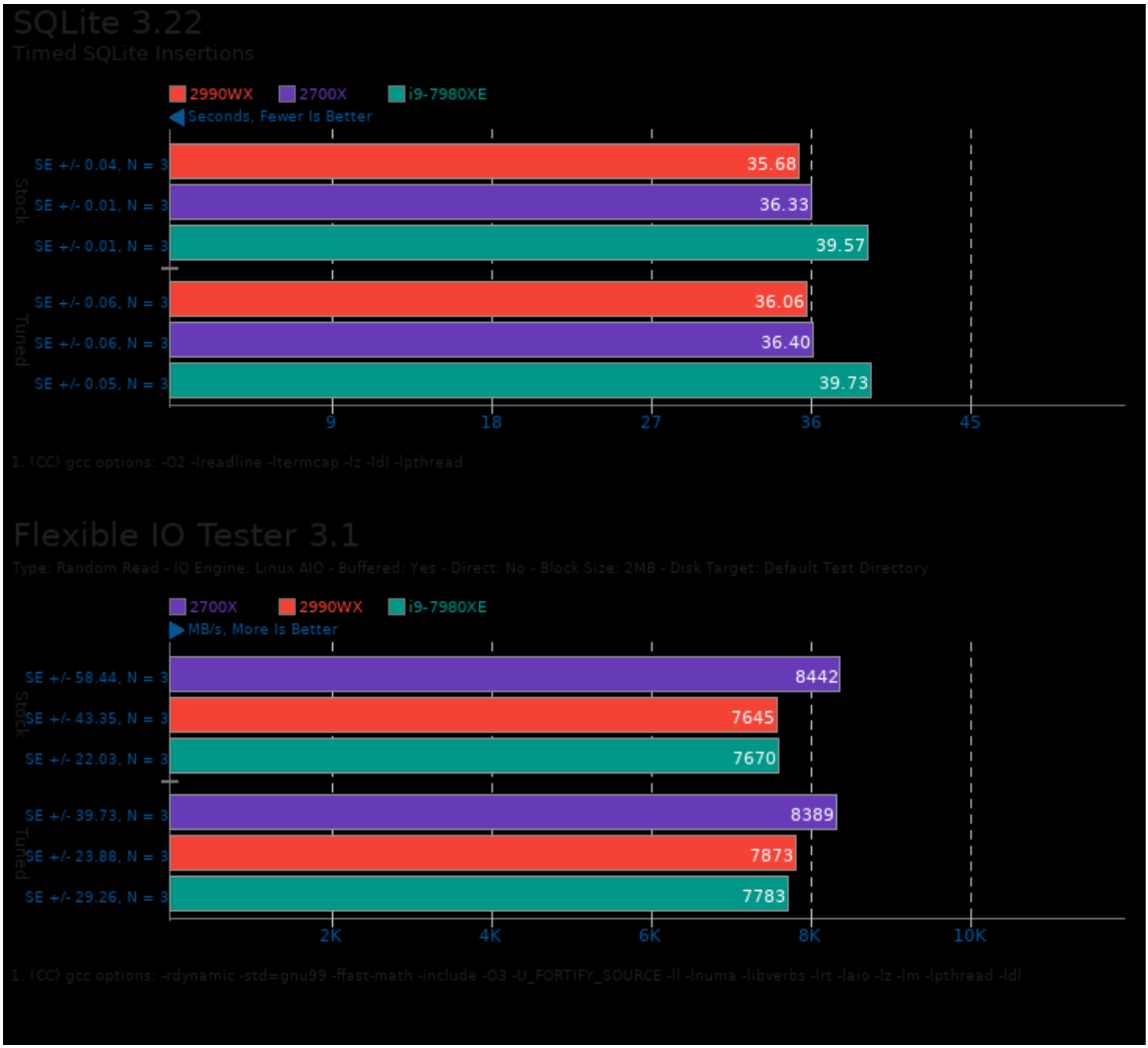
Standard Deviation	0%	0%	0.1%	0%		
Stress-NG - Socket Activity (Bogo Ops/s)	15571	15637	7399	7715		
Normalized	99.58%	100%	47.32%	49.34%		
Standard Deviation	9.9%	0.5%	1.1%	0.5%		
Stress-NG - Context Switching (Bogo Ops/s)	20723337	20720973	3880010	3700685		
Normalized	100%	99.99%	18.72%	17.86%		
Standard Deviation	0.4%	0.3%	12.7%	0.4%		
Stress-NG - S.V.M.P (Bogo Ops/s)	7890690	7743369	11628479	11581693		
Normalized	67.86%	66.59%	100%	99.6%		
Standard Deviation	0.1%	0.1%	0.5%	0.4%		
ctx_clock - C.S.T (Clocks)	372	372	185	185	150	150
Normalized	40.32%	40.32%	81.08%	81.08%	100%	100%
Blender - BMW27 - CPU-Only (sec)	116	116	230	230	80.07	80.07
Normalized	69.03%	69.03%	34.81%	34.81%	100%	100%
PyBench - T.F.A.T.T (Milliseconds)	948	949	1129	1131	1151	1151
Normalized	100%	99.89%	83.97%	83.82%	82.36%	82.36%
Standard Deviation	0.3%	0.3%	0.4%	0.6%		0.6%
NGINX Benchmark - S.W.P.S (Reqs/sec)	35324	35619	34671	34957	30027	28730
Normalized	99.17%	100%	97.34%	98.14%	84.3%	80.66%
Standard Deviation	0.6%	0.9%	1%	1.3%	0.6%	1.3%
Apache Siege - 10 (Transactions/sec)	25338	24166	26972	28304		19833
Normalized	89.52%	85.38%	95.29%	100%		70.07%
Standard Deviation	0.4%	2.6%	4.4%	1.1%		3.3%
Apache Siege - 50 (Transactions/sec)	35305	35384	29026	27389	23874	21815
Normalized	99.78%	100%	82.03%	77.41%	67.47%	61.65%
Standard Deviation	2.8%	2.5%	3.4%	1.9%	0.2%	0.5%
Apache Siege - 100 (Transactions/sec)	43448	43840	32145	24877	23654	23139
Normalized	99.11%	100%	73.32%	56.74%	53.96%	52.78%
Standard Deviation	3.3%	3.4%	4%	2.1%	1.1%	0.9%
Apache Siege - 200 (Transactions/sec)	38182	36038	24403	31160	23277	23088
Normalized	100%	94.38%	63.91%	81.61%	60.96%	60.47%
Standard Deviation	14.1%	1.6%	0.8%	11.8%	0.2%	0.5%
Apache Siege - 250 (Transactions/sec)	46175	40011	34025	34231	25236	25333
Normalized	100%	86.65%	73.69%	74.13%	54.65%	54.86%
Standard Deviation	2.4%	1.5%	12%	15.3%	3.8%	4.5%
PHPBench - P.B.S (Score)	705214	705433	539407	541769	523501	531850
Normalized	99.97%	100%	76.46%	76.8%	74.21%	75.39%
Standard Deviation	0.3%	0.1%	0.3%	0.7%	1.7%	0.2%
Git - T.T.C.C.G.C (sec)	5.41	5.40	5.32	5.32	5.48	5.41
Normalized	98.34%	98.52%	100%	100%	97.08%	98.34%
Standard Deviation	0.7%	0.8%	1.7%	1.7%	0.1%	2%
Scikit-Learn (sec)	13.60	13.60	14.30	14.18	24.83	25.44

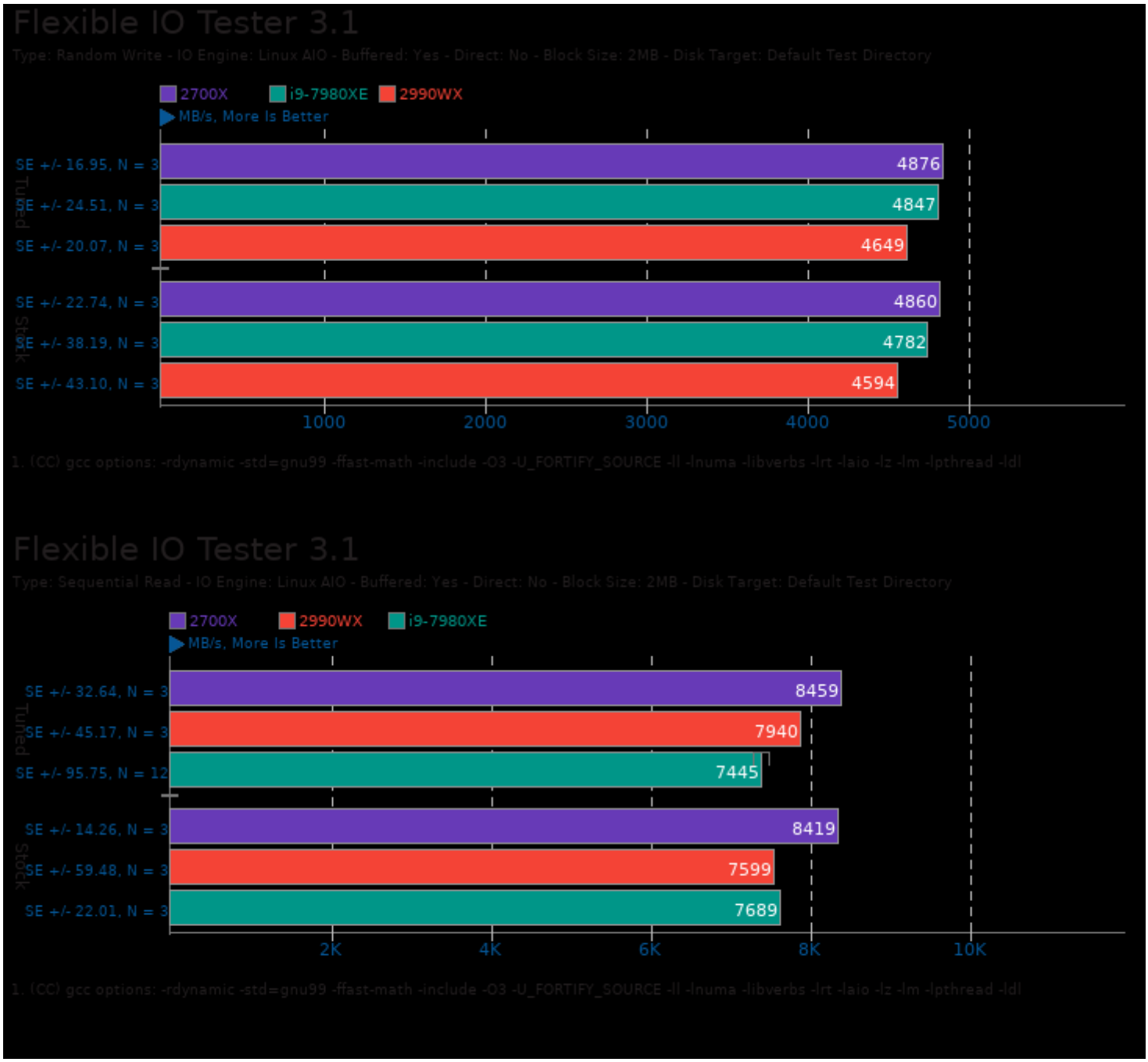
Gentoo Kernel Tuning Patch Benchmarks

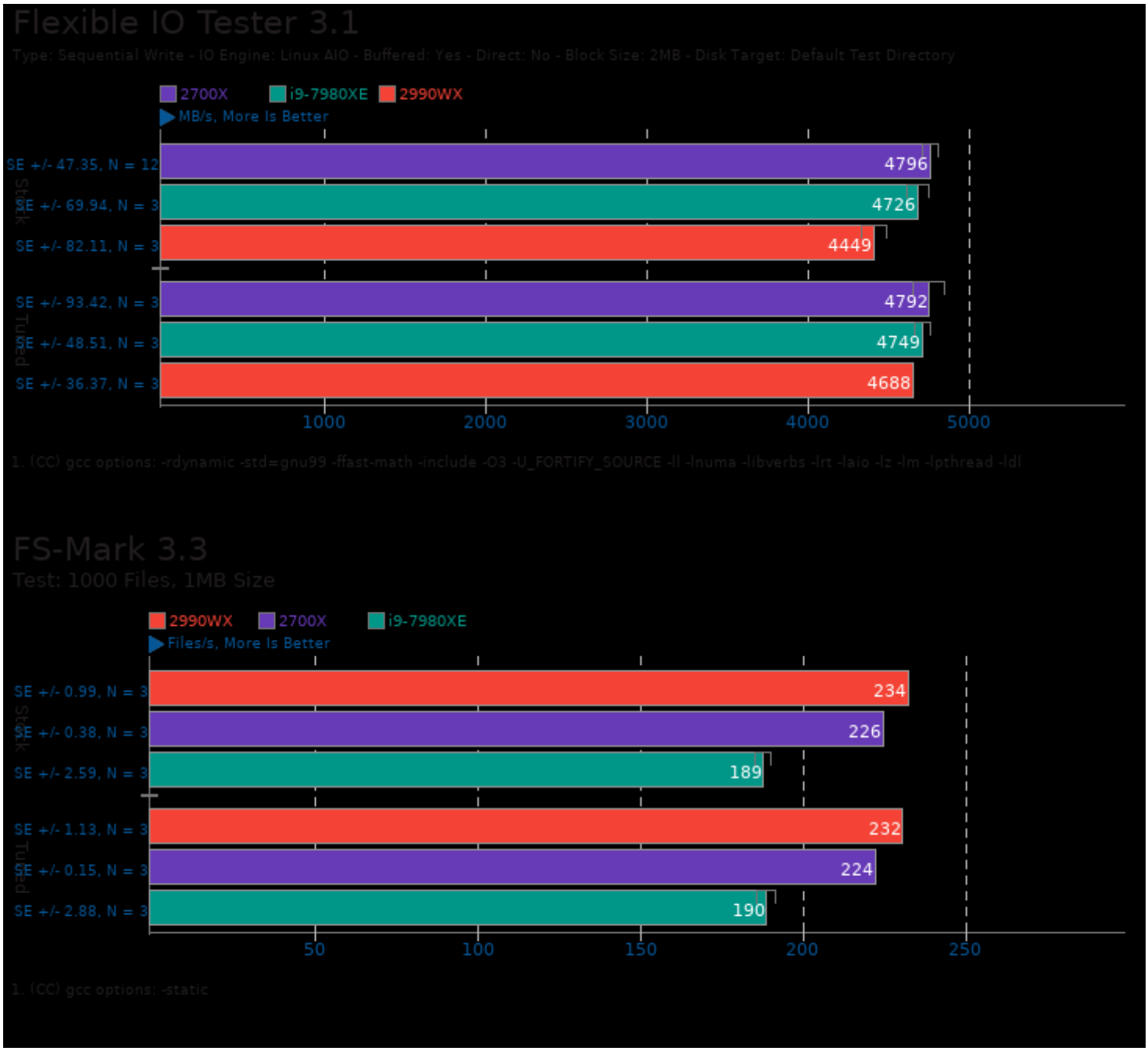
Normalized	100%	100%	95.1%	95.91%	54.77%	53.46%
Standard Deviation	0.6%	0.6%	1.5%	0.1%	5.5%	12.7%
Sunflow Rendering System - G.I.I.S (sec)	1.01	0.98	**1.46**	1.45	**0.91**	**0.91**
Normalized	90.1%	92.86%	62.33%	62.76%	100%	100%
Standard Deviation	8.6%	6.7%	5.2%	4.5%	4.6%	3.4%
Tesseract OCR - T.T.O.7.I (sec)	26.49	**26.37**	28.86	28.77	**33.82**	33.30
Normalized	99.55%	100%	91.37%	91.66%	77.97%	79.19%
Standard Deviation	0.3%	0.6%	0.4%	0.3%	0.5%	0.7%
BRL-CAD - V.P.M (VGR Performance Metric)	210187	210634	101629	**100880**	295609	**296326**
Normalized	70.93%	71.08%	34.3%	34.04%	99.76%	100%
Cryptsetup - PBKDF2-whirlpool (Iterations/sec)		**981223**	846080	844719	**822663**	825870
Normalized		100%	86.23%	86.09%	83.84%	84.17%
Standard Deviation		0.6%	0.1%	0.2%	0.8%	0.2%
ET: Legacy - Renderer2 - 2560 x 1440 (FPS)			**211**	209	181	**179**
Normalized			100%	99.05%	85.78%	84.83%
Standard Deviation			0.6%	0.9%	1.5%	1%
OpenArena - 2560 x 1440 (FPS)			**271**	269	245	**238**
Normalized			100%	99.26%	90.41%	87.82%
Standard Deviation			0.3%	0.3%	1.4%	2.4%
Tesseract - 2560 x 1440			**341**	339	300	**295**
Normalized			100%	99.41%	87.98%	86.51%
Standard Deviation			2.6%	0.7%	2.6%	3.1%
Xonotic - 2560 x 1440 - Ultra (FPS)			**325**	316	**203**	205
Normalized			100%	97.23%	62.46%	63.08%
Standard Deviation			0.6%	2%	0.6%	1%
Xonotic - 2560 x 1440 - Ultimate (FPS)			**258**	252	**182**	**182**
Normalized			100%	97.67%	70.54%	70.54%
Standard Deviation			0.6%	0.7%	0.5%	1.9%
ParaView - Many Spheres - 2560 x 1440 (Frames / Sec)			**32.98**	33.05	40.62	**40.91**
Normalized			80.62%	80.79%	99.29%	100%
Standard Deviation			0.1%	0.1%	0.3%	0.5%
ParaView - Many Spheres - 2560 x 1440 (MiPolys / Sec)			**3306**	3314	4073	**4102**
Normalized			80.59%	80.79%	99.29%	100%
Standard Deviation			0.1%	0.1%	0.3%	0.4%
ParaView - Wavelet Volume - 2560 x 1440 (Frames / Sec)			149	150	**152**	**146**
Normalized			98.03%	98.68%	100%	96.05%
Standard Deviation			0.3%	0.7%	3.4%	1.9%
ParaView - Wavelet Volume - 2560 x 1440 (MiVoxels / Sec)			2391	2397	**2428**	**2342**
Normalized			98.48%	98.72%	100%	96.46%
Standard Deviation			0.3%	0.7%	3.4%	1.9%

Gentoo Kernel Tuning Patch Benchmarks

ParaView - Wavelet Contour - 2560 x 1440 (Frames / Sec)	**133**	**133**	**199**	198
Normalized	66.83%	66.83%	100%	99.5%
Standard Deviation	0.1%	0.3%	1.7%	2.7%
ParaView - Wavelet Contour - 2560 x 1440 (MiPolys / Sec)	1387	**1384**	**2076**	2059
Normalized	66.81%	66.67%	100%	99.18%
Standard Deviation	0.1%	0.3%	1.7%	2.7%
GLmark2 - 2560 x 1440 (Score)	**2730**	2732	4826	**4827**
Normalized	56.56%	56.6%	99.98%	100%

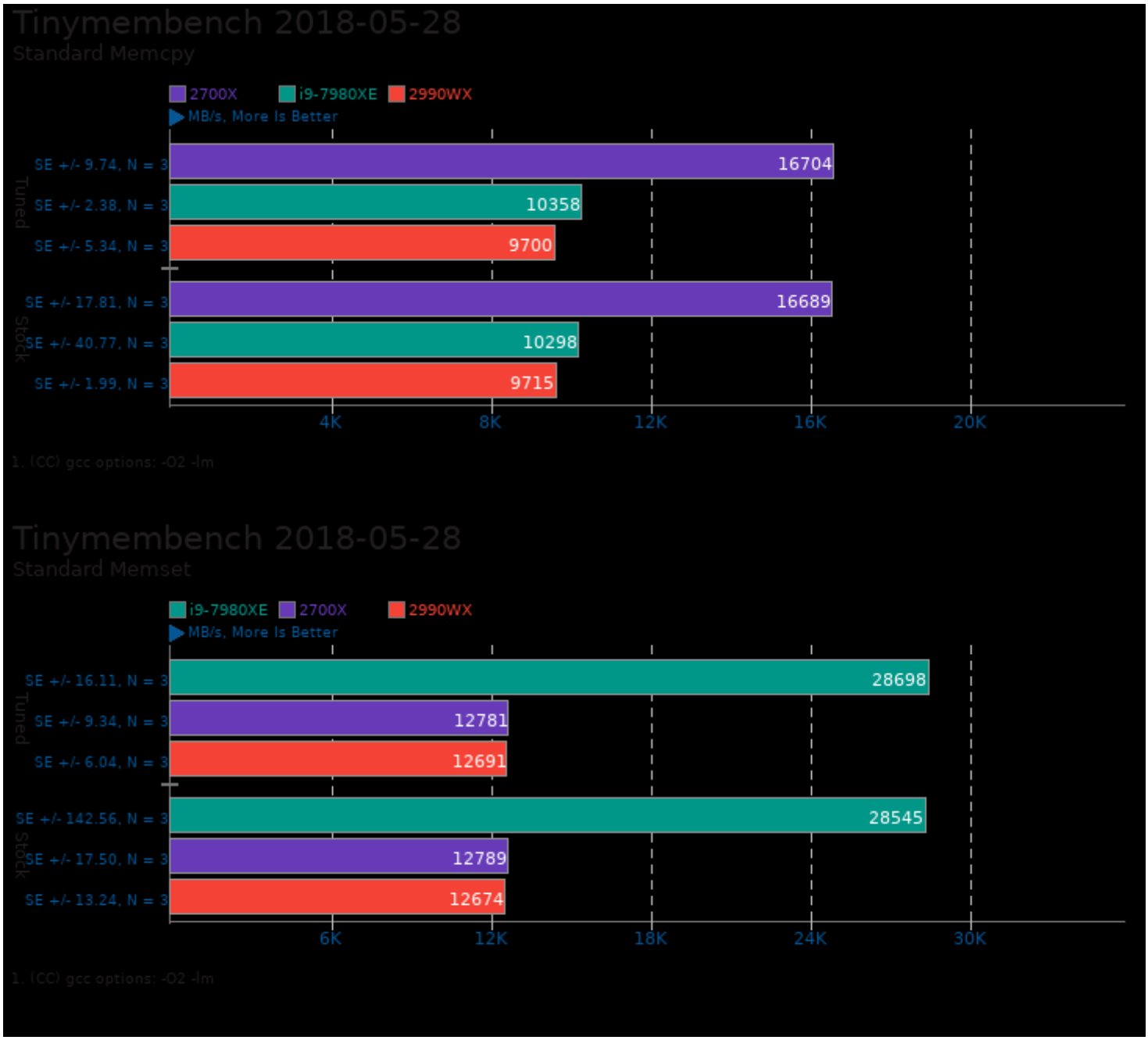

SQLite 3.22
Timed SQLite Insertions
2990WX
2700X
i9-7980XE
Seconds, Fewer Is Better
SE +/- 0.04, N = 3
35.68
SE +/- 0.01, N = 3
36.33
SE +/- 0.01, N = 3
39.57
Stock
SE +/- 0.06, N = 3
36.06
SE +/- 0.06, N = 3
36.40
SE +/- 0.05, N = 3
39.73
Tuned
9
18
27
36
45
1. (CC) gcc options: -O2 -lreadline -ltermcap -lz -ldl -lpthread
Flexible IO Tester 3.1
Type: Random Read - IO Engine: Linux AIO - Buffered: Yes - Direct: No - Block Size: 2MB - Disk Target: Default Test Directory
2700X
2990WX
i9-7980XE
MB/s, More Is Better
SE +/- 58.44, N = 3
8442
SE +/- 43.35, N = 3
7645
SE +/- 22.03, N = 3
7670
Stock
SE +/- 39.73, N = 3
8389
SE +/- 23.88, N = 3
7873
SE +/- 29.26, N = 3
7783
Tuned
2K
4K
6K
8K
10K
1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -U_FORTIFY_SOURCE -ll -lnuma -libverbs -lrt -laio -lz -lm -lpthread -ldl


Flexible IO Tester 3.1
Type: Random Write - IO Engine: Linux AIO - Buffered: Yes - Direct: No - Block Size: 2MB - Disk Target: Default Test Directory
2700X
i9-7980XE
2990WX
MB/s, More Is Better
Tuned
Stock
SE +/- 16.95, N = 3
SE +/- 24.51, N = 3
SE +/- 20.07, N = 3
SE +/- 22.74, N = 3
SE +/- 38.19, N = 3
SE +/- 43.10, N = 3
4876
4847
4649
4860
4782
4594
1000
2000
3000
4000
5000
1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -U_FORTIFY_SOURCE -ll -lnuma -libverbs -lrt -laio -lz -lm -lpthread -ldl
Flexible IO Tester 3.1
Type: Sequential Read - IO Engine: Linux AIO - Buffered: Yes - Direct: No - Block Size: 2MB - Disk Target: Default Test Directory
2700X
2990WX
i9-7980XE
MB/s, More Is Better
Tuned
Stock
SE +/- 32.64, N = 3
SE +/- 45.17, N = 3
SE +/- 95.75, N = 12
SE +/- 14.26, N = 3
SE +/- 59.48, N = 3
SE +/- 22.01, N = 3
8459
7940
7445
8419
7599
7689
2K
4K
6K
8K
10K
1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -U_FORTIFY_SOURCE -ll -lnuma -libverbs -lrt -laio -lz -lm -lpthread -ldl

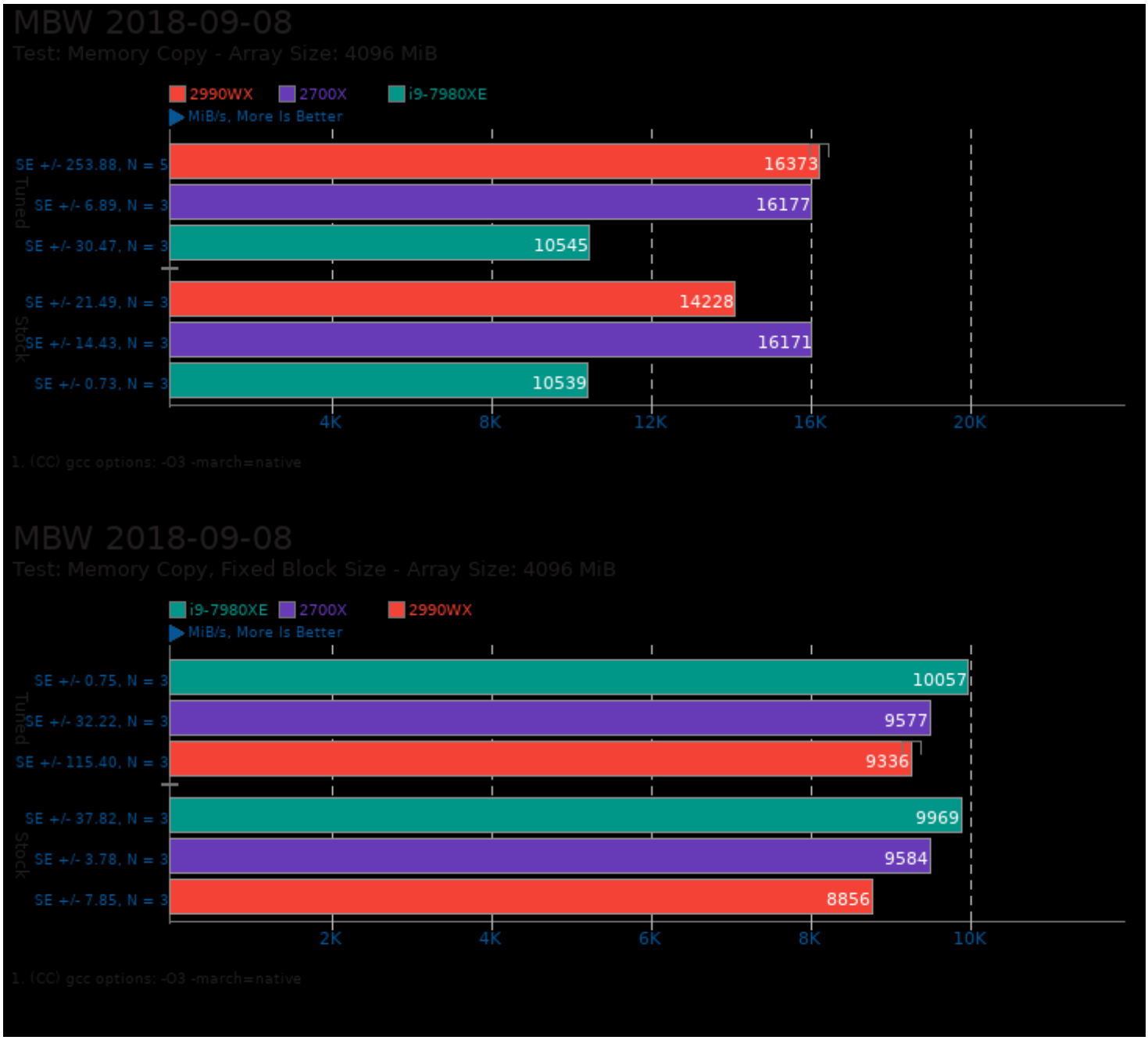

Flexible IO Tester 3.1
Type: Sequential Write - IO Engine: Linux AIO - Buffered: Yes - Direct: No - Block Size: 2MB - Disk Target: Default Test Directory
2700X
i9-7980XE
2990WX
MB/s, More Is Better
SE +/- 47.35, N = 12
SE +/- 69.94, N = 3
SE +/- 82.11, N = 3
SE +/- 93.42, N = 3
SE +/- 48.51, N = 3
SE +/- 36.37, N = 3
4796
4726
4449
4792
4749
4688
1000
2000
3000
4000
5000
1. (CC) gcc options: -rdynamic -std=gnu99 -ffast-math -include -O3 -U_FORTIFY_SOURCE -ll -lnuma -libverbs -lrt -laio -lz -lm -lpthread -ldl
FS-Mark 3.3
Test: 1000 Files, 1MB Size
2990WX
2700X
i9-7980XE
Files/s, More Is Better
SE +/- 0.99, N = 3
SE +/- 0.38, N = 3
SE +/- 2.59, N = 3
SE +/- 1.13, N = 3
SE +/- 0.15, N = 3
SE +/- 2.88, N = 3
234
226
189
232
224
190
50
100
150
200
250
1. (CC) gcc options: -static

Gentoo Kernel Tuning Patch Benchmarks

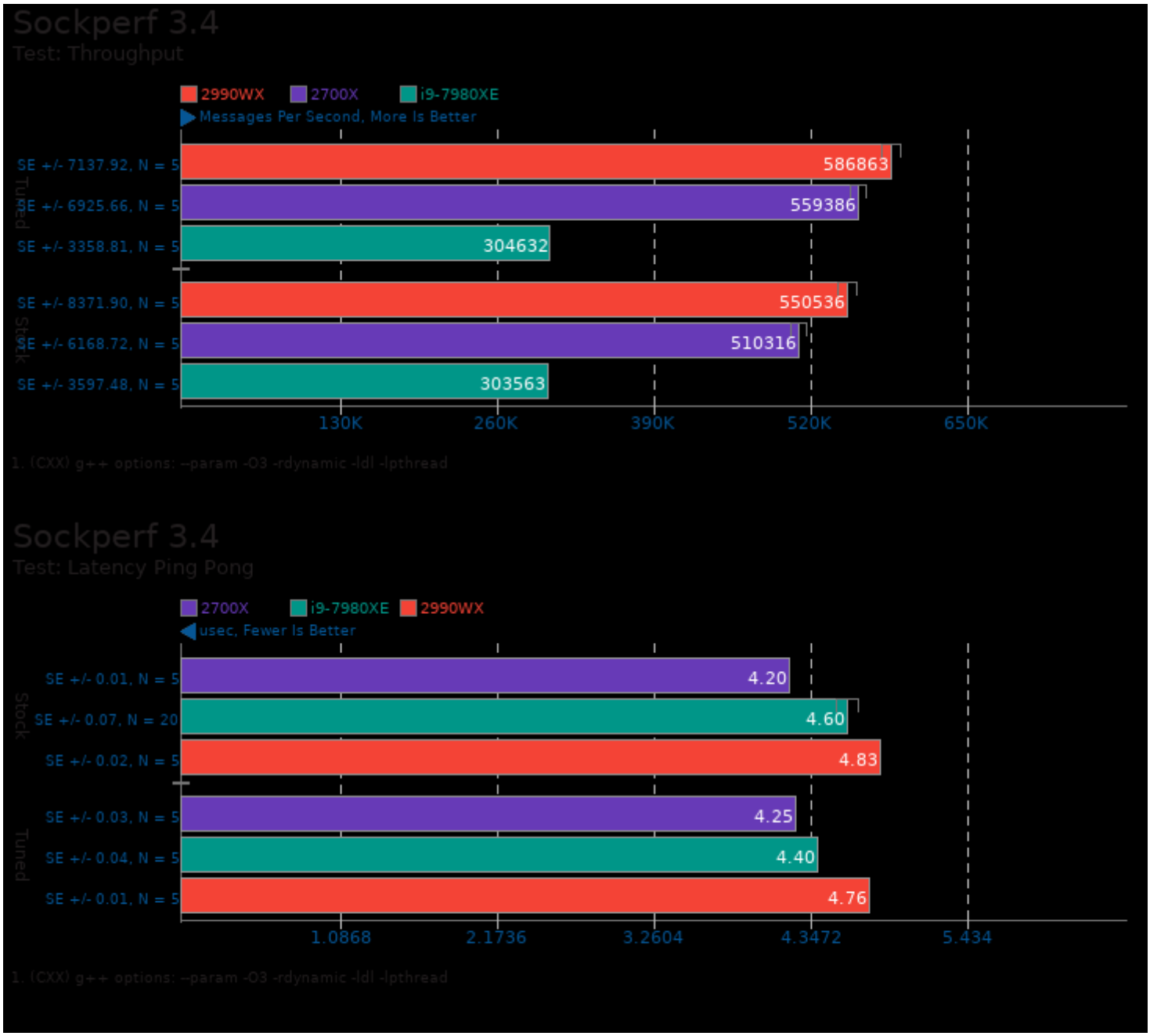



Tinymembench 2018-05-28
Standard Memcpy
2700X
i9-7980XE
2990WX
MB/s, More Is Better
SE +/- 9.74, N = 3
16704
SE +/- 2.38, N = 3
10358
SE +/- 5.34, N = 3
9700
Tuned
SE +/- 17.81, N = 3
16689
SE +/- 40.77, N = 3
10298
SE +/- 1.99, N = 3
9715
Stock
4K
8K
12K
16K
20K
1. (CC) gcc options: -O2 -lm
Tinymembench 2018-05-28
Standard Memset
i9-7980XE
2700X
2990WX
MB/s, More Is Better
SE +/- 16.11, N = 3
28698
SE +/- 9.34, N = 3
12781
SE +/- 6.04, N = 3
12691
Tuned
SE +/- 142.56, N = 3
28545
SE +/- 17.50, N = 3
12789
SE +/- 13.24, N = 3
12674
Stock
6K
12K
18K
24K
30K
1. (CC) gcc options: -O2 -lm

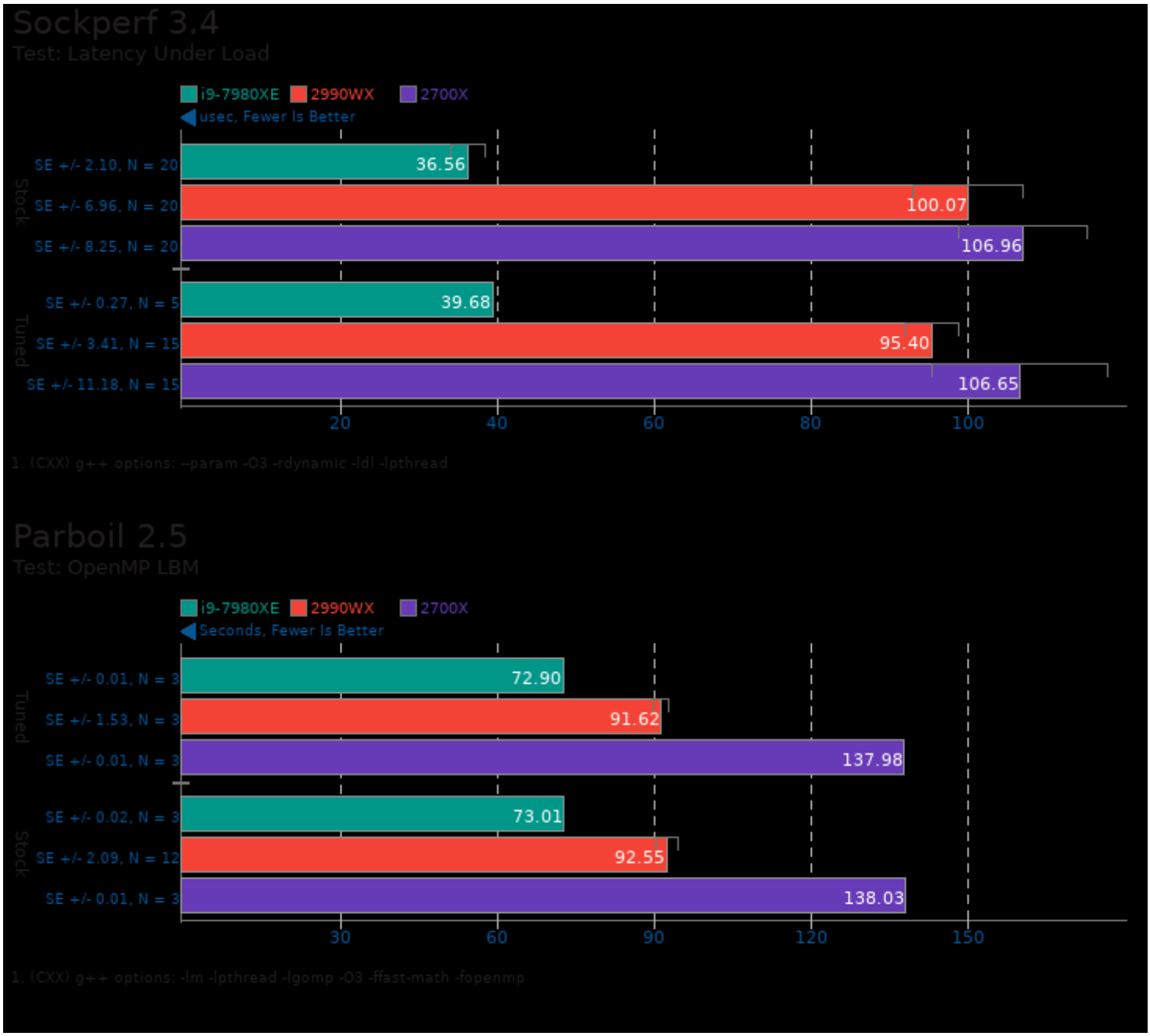
Gentoo Kernel Tuning Patch Benchmarks



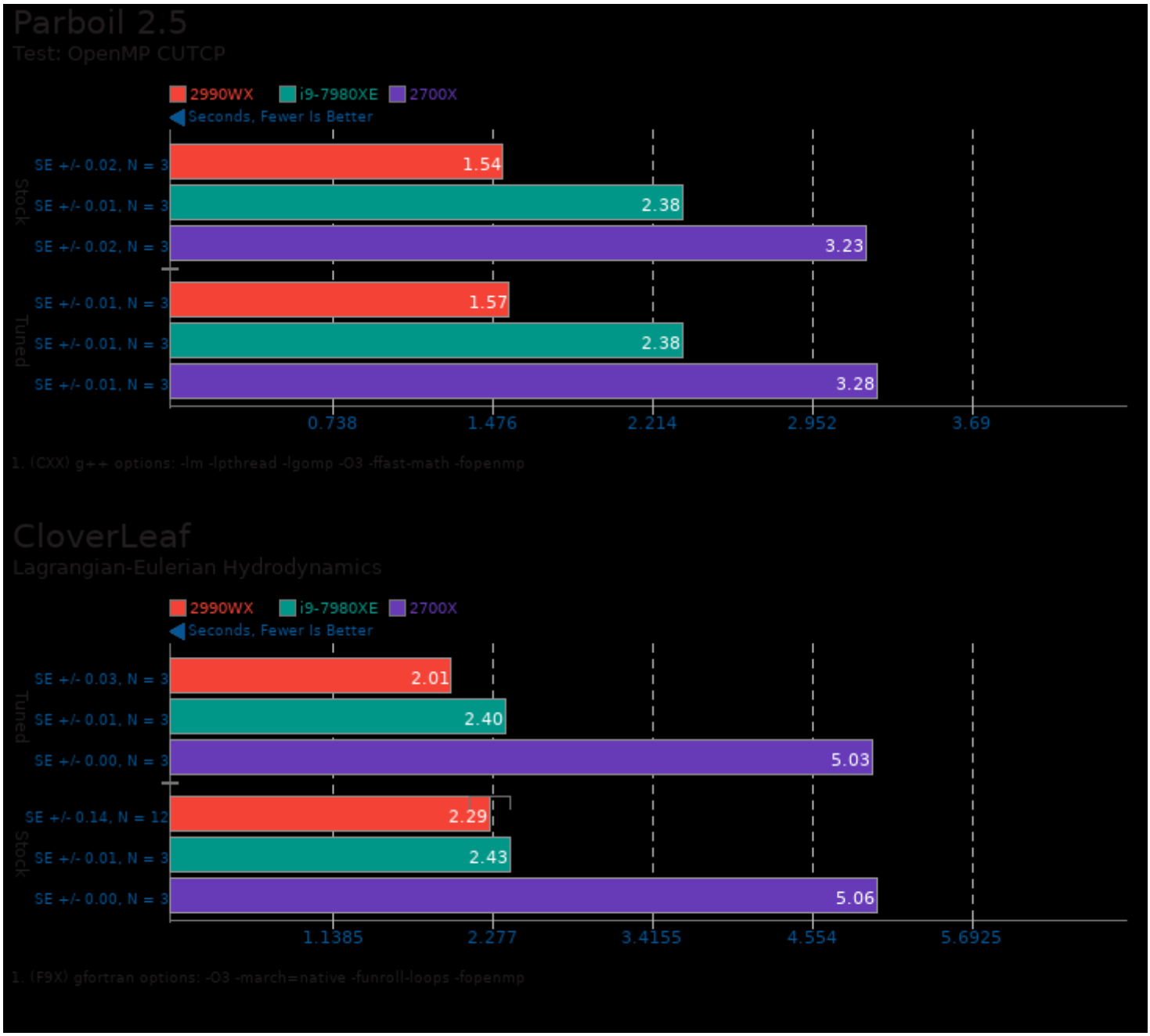
Gentoo Kernel Tuning Patch Benchmarks



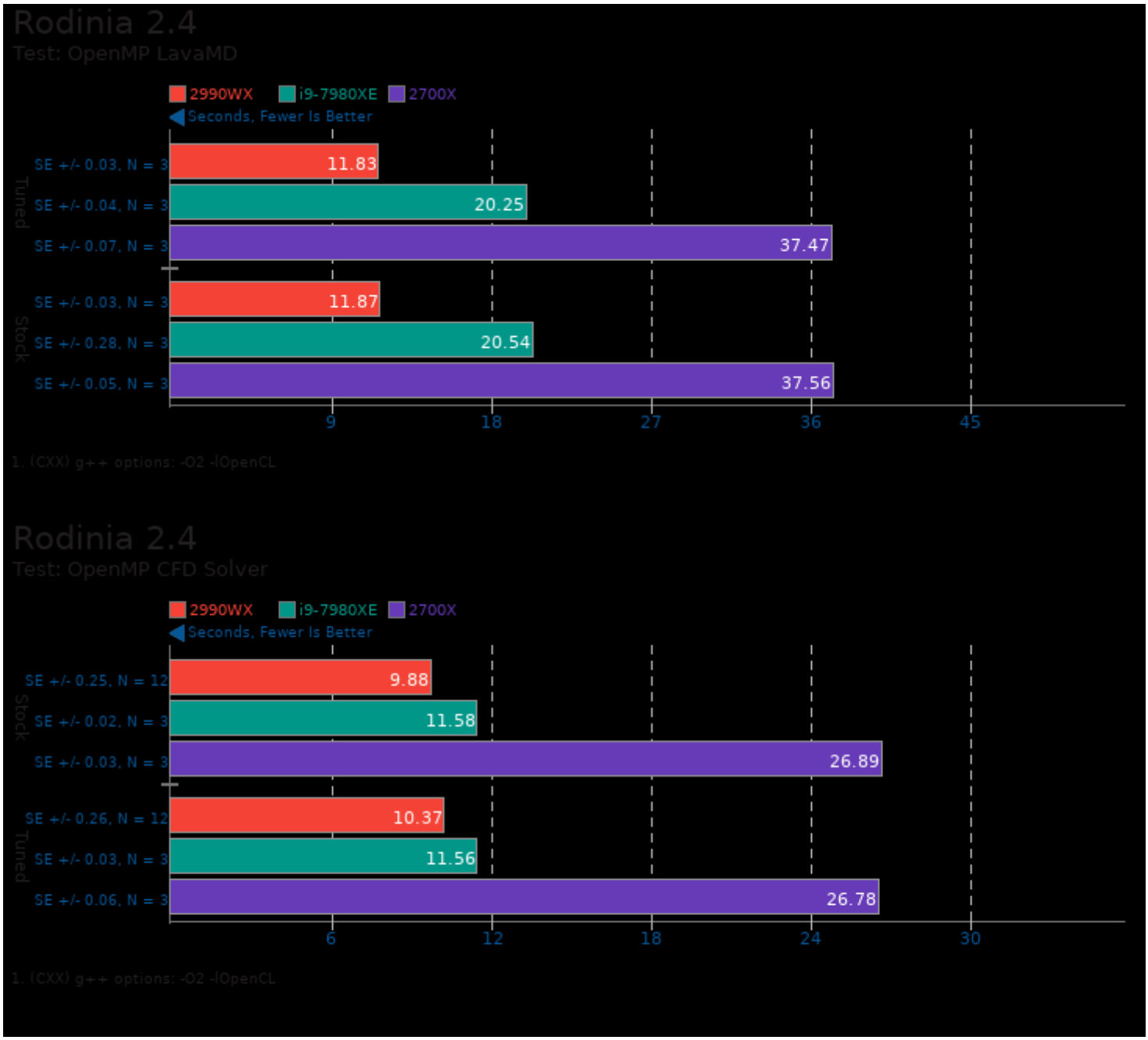
Gentoo Kernel Tuning Patch Benchmarks



Gentoo Kernel Tuning Patch Benchmarks



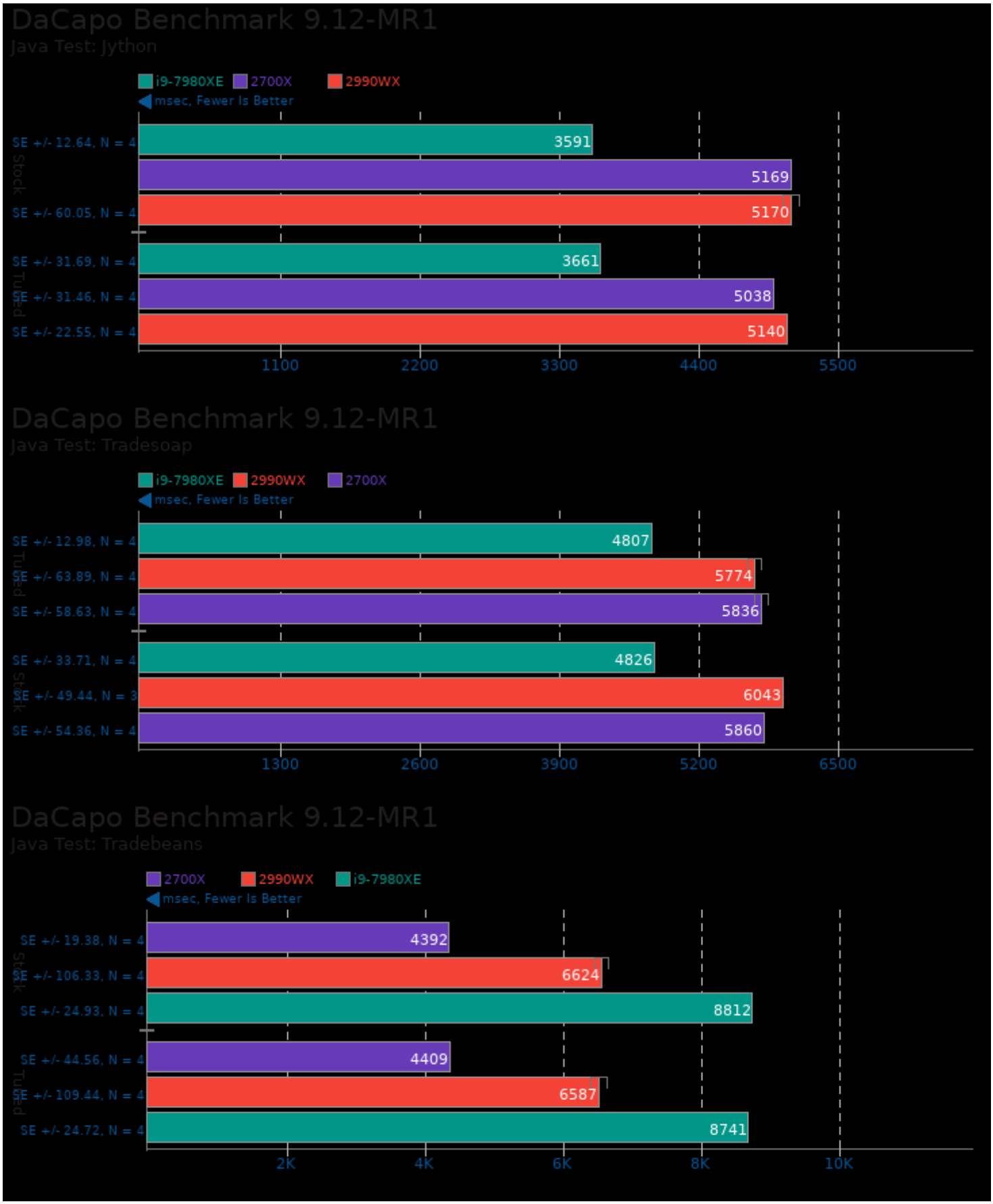
Gentoo Kernel Tuning Patch Benchmarks

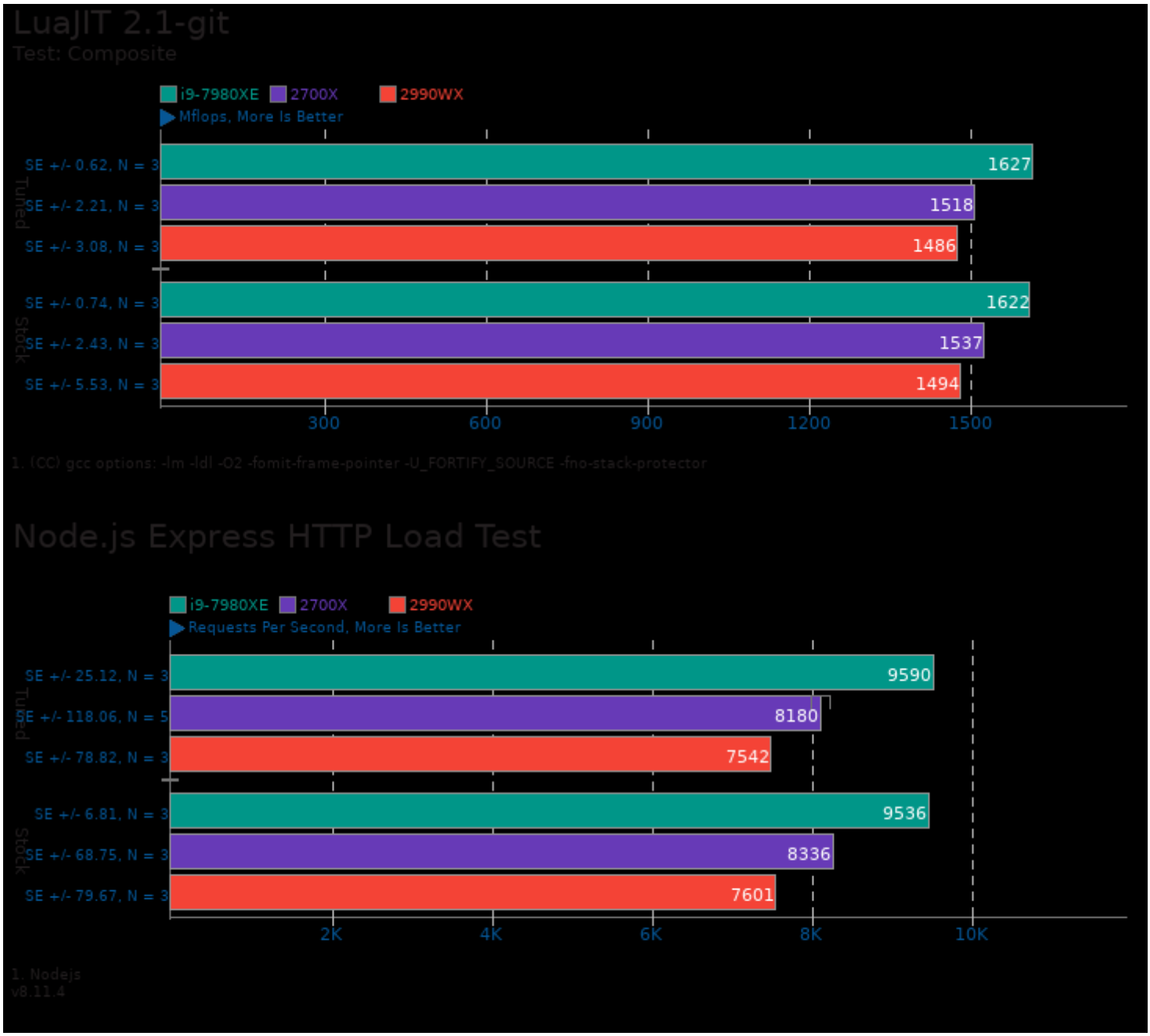


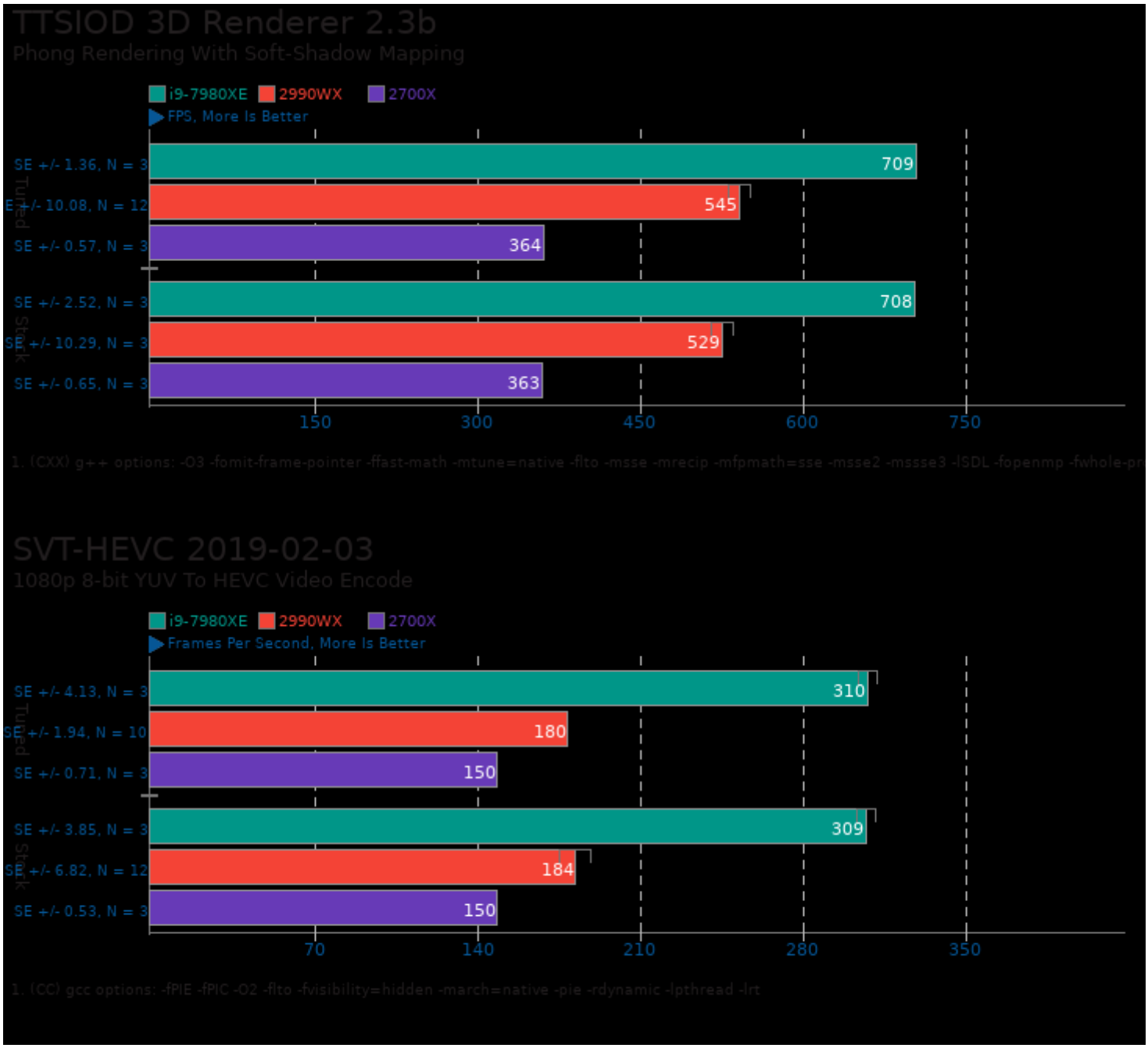
Gentoo Kernel Tuning Patch Benchmarks

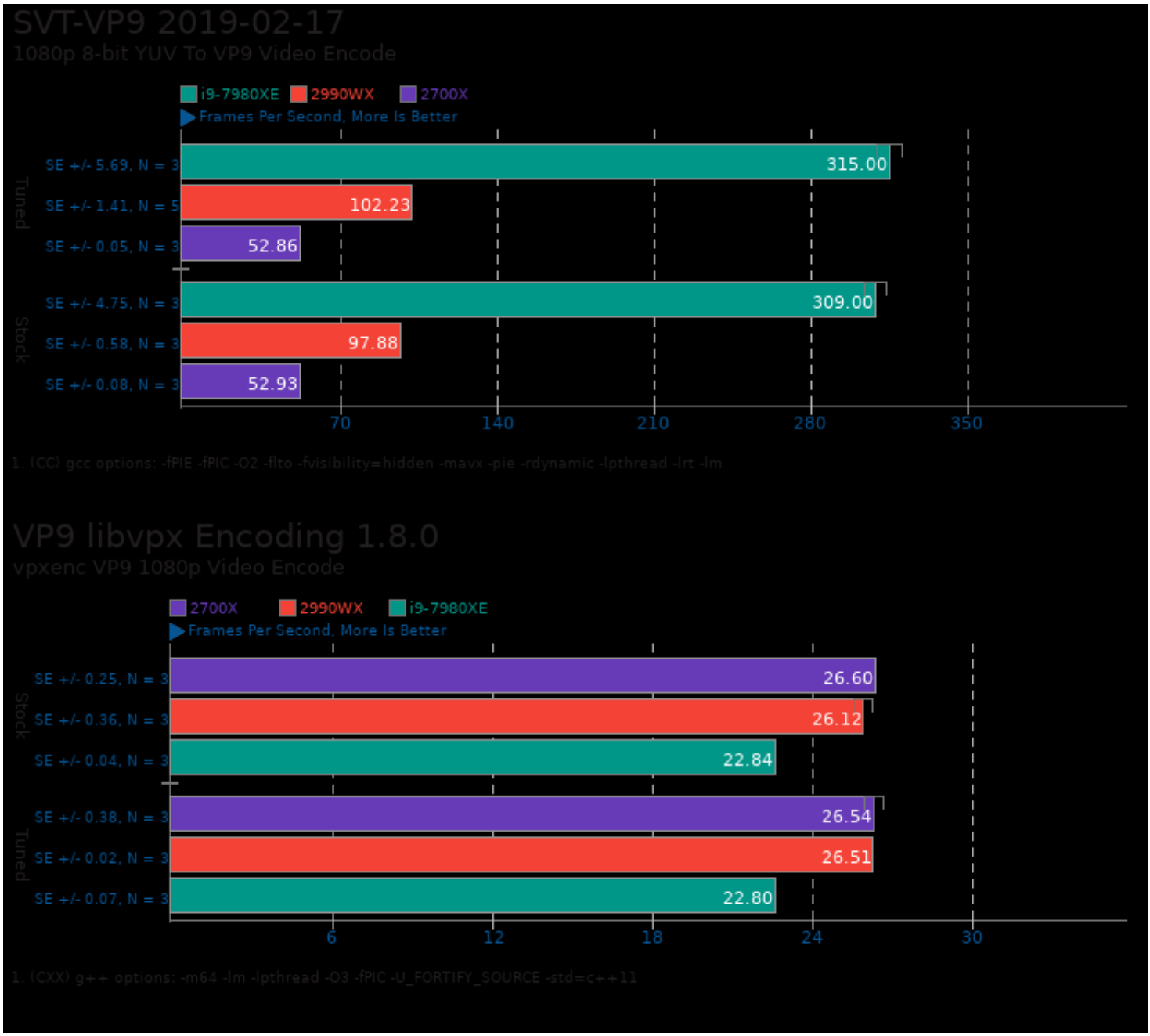


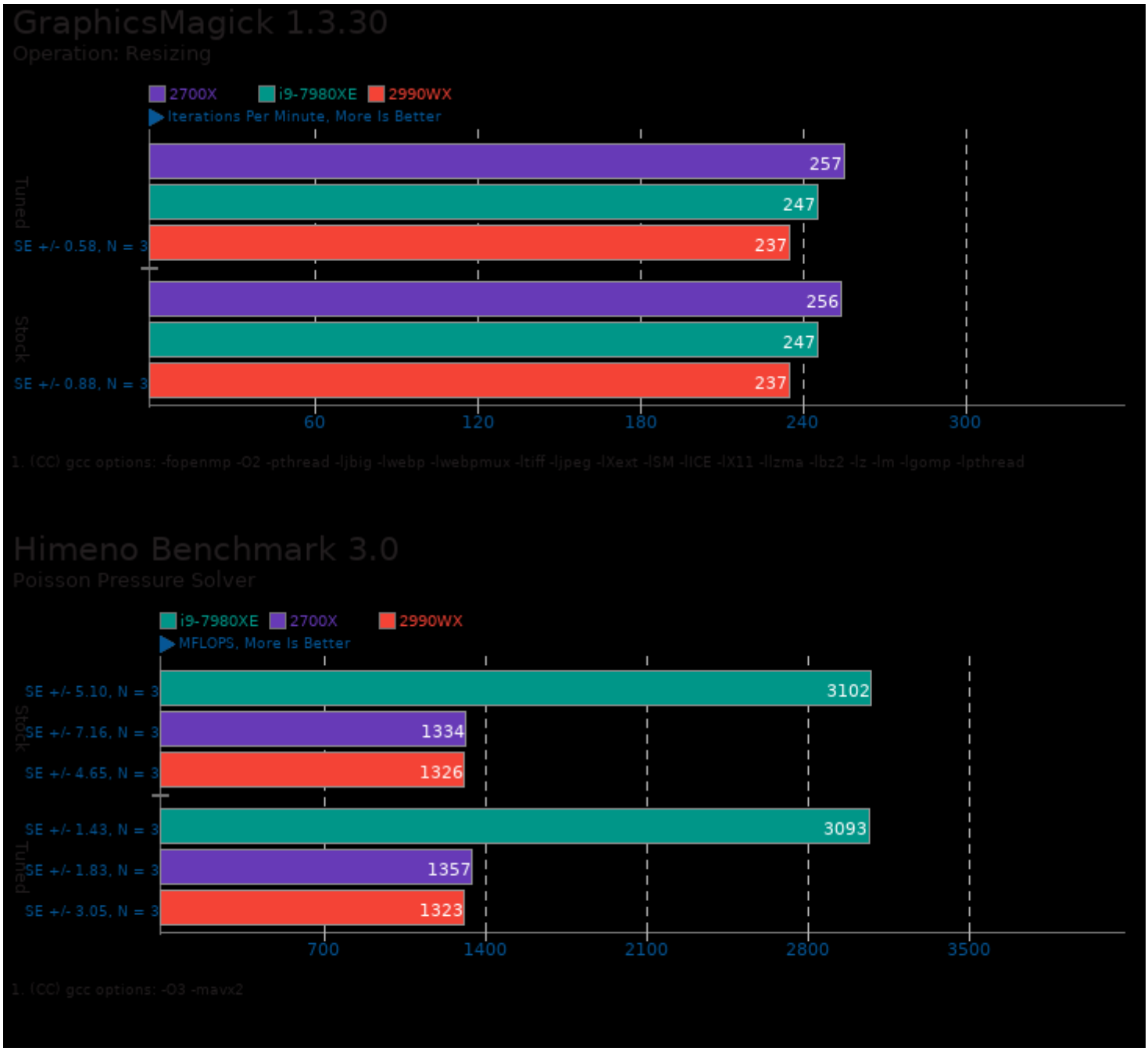
Gentoo Kernel Tuning Patch Benchmarks



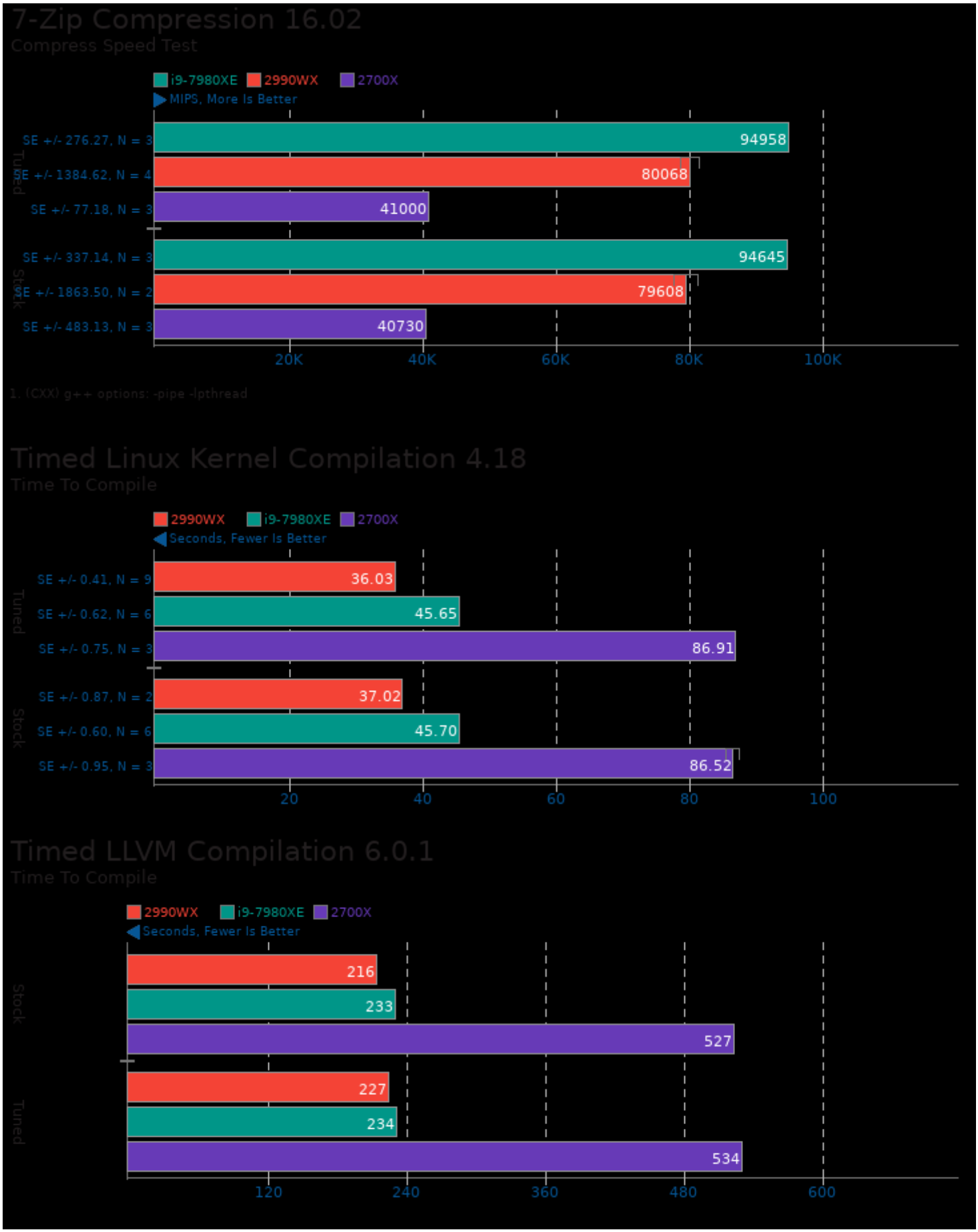

LuaJIT 2.1-git
Test: Composite
i9-7980XE
2700X
2990WX
Mflops, More Is Better
SE +/- 0.62, N = 3
1627
SE +/- 2.21, N = 3
1518
SE +/- 3.08, N = 3
1486
Tuned
SE +/- 0.74, N = 3
1622
SE +/- 2.43, N = 3
1537
SE +/- 5.53, N = 3
1494
Stock
300
600
900
1200
1500
1. (CC) gcc options: -lm -ldl -O2 -fomit-frame-pointer -U_FORTIFY_SOURCE -fno-stack-protector
Node.js Express HTTP Load Test
i9-7980XE
2700X
2990WX
Requests Per Second, More Is Better
SE +/- 25.12, N = 3
9590
SE +/- 118.06, N = 5
8180
SE +/- 78.82, N = 3
7542
Tuned
SE +/- 6.81, N = 3
9536
SE +/- 68.75, N = 3
8336
SE +/- 79.67, N = 3
7601
Stock
2K
4K
6K
8K
10K
1. Nodejs
v8.11.4

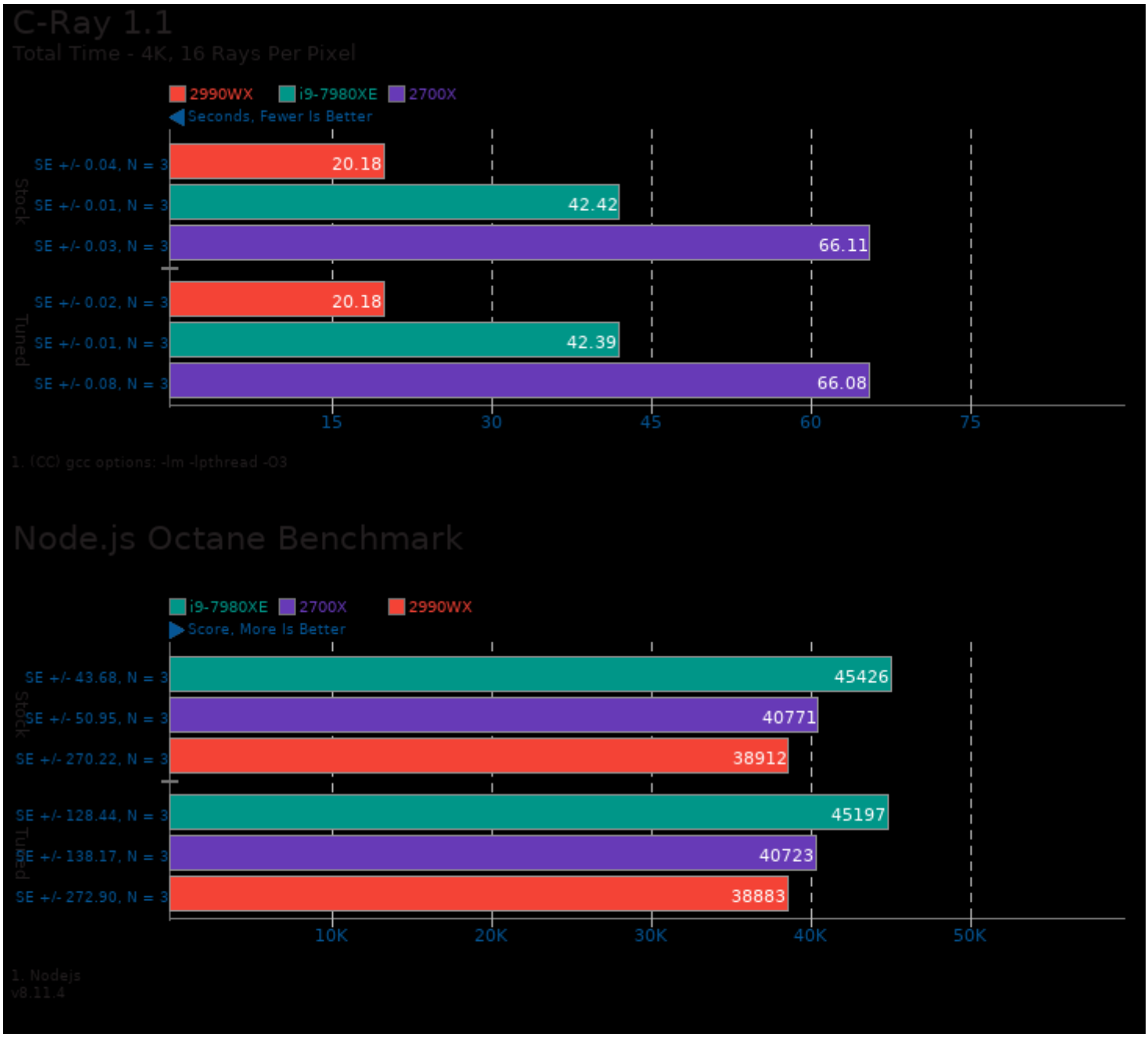

TTSIOD 3D Renderer 2.3b
Phong Rendering With Soft-Shadow Mapping
i9-7980XE
2990WX
2700X
FPS, More Is Better
SE +/- 1.36, N = 3
SE +/- 10.08, N = 12
SE +/- 0.57, N = 3
SE +/- 2.52, N = 3
SE +/- 10.29, N = 3
SE +/- 0.65, N = 3
709
545
364
708
529
363
Tuned
Stock
150
300
450
600
750
1. (CXX) g++ options: -O3 -fomit-frame-pointer -ffast-math -mtune=native -flto -msse -mrecip -mfpmath=sse -msse2 -mssse3 -lSDL -fopenmp -fwhole-pr
SVT-HEVC 2019-02-03
1080p 8-bit YUV To HEVC Video Encode
i9-7980XE
2990WX
2700X
Frames Per Second, More Is Better
SE +/- 4.13, N = 3
SE +/- 1.94, N = 10
SE +/- 0.71, N = 3
SE +/- 3.85, N = 3
SE +/- 6.82, N = 12
SE +/- 0.53, N = 3
310
180
150
309
184
150
Tuned
Stock
70
140
210
280
350
1. (CC) gcc options: -fPIE -fPIC -O2 -flto -fvisibility=hidden -march=native -pie -rdynamic -lpthread -lrt


SVT-VP9 2019-02-17
1080p 8-bit YUV To VP9 Video Encode
i9-7980XE
2990WX
2700X
Frames Per Second, More Is Better
Tuned
SE +/- 5.69, N = 3
315.00
SE +/- 1.41, N = 5
102.23
SE +/- 0.05, N = 3
52.86
Stock
SE +/- 4.75, N = 3
309.00
SE +/- 0.58, N = 3
97.88
SE +/- 0.08, N = 3
52.93
70
140
210
280
350
1. (CC) gcc options: -fPIE -fPIC -O2 -flto -fvisibility=hidden -mavx -pie -rdynamic -lpthread -lrt -lm
VP9 libvpx Encoding 1.8.0
vpxenc VP9 1080p Video Encode
2700X
2990WX
i9-7980XE
Frames Per Second, More Is Better
Stock
SE +/- 0.25, N = 3
26.60
SE +/- 0.36, N = 3
26.12
SE +/- 0.04, N = 3
22.84
Tuned
SE +/- 0.38, N = 3
26.54
SE +/- 0.02, N = 3
26.51
SE +/- 0.07, N = 3
22.80
6
12
18
24
30
1. (CXX) g++ options: -m64 -lm -lpthread -O3 -fPIC -U_FORTIFY_SOURCE -std=c++11

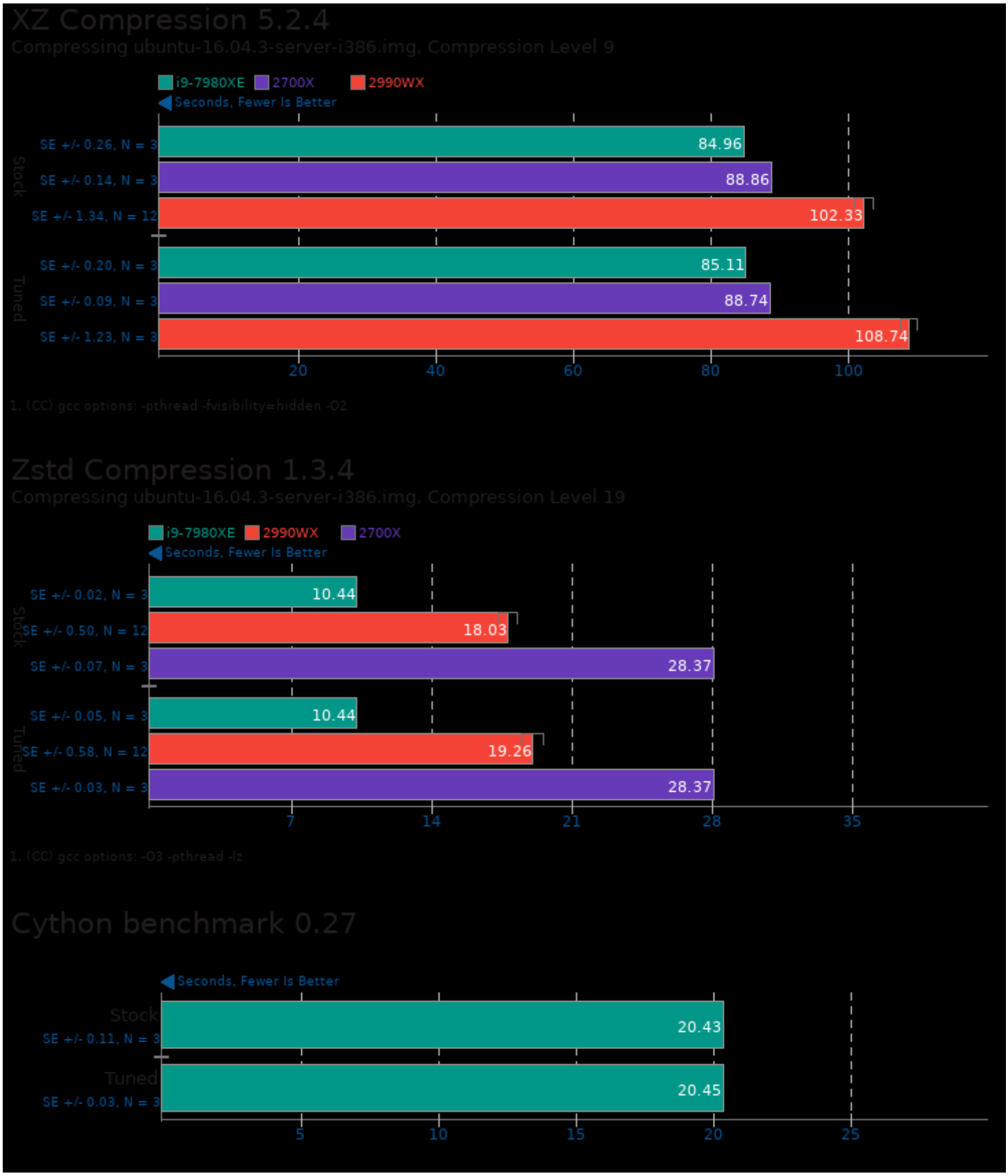

GraphicsMagick 1.3.30
Operation: Resizing
2700X
i9-7980XE
2990WX
Iterations Per Minute, More Is Better
Tuned
SE +/- 0.58, N = 3
257
247
237
Stock
SE +/- 0.88, N = 3
256
247
237
60
120
180
240
300
1. (CC) gcc options: -fopenmp -O2 -pthread -ljbig -lwebp -lwebpmux -ltiff -ljpeg -lXext -lSM -lICE -lX11 -llzma -lbz2 -lz -lm -lgomp -lpthread
Himeno Benchmark 3.0
Poisson Pressure Solver
i9-7980XE
2700X
2990WX
MFLOPS, More Is Better
Stock
SE +/- 5.10, N = 3
3102
SE +/- 7.16, N = 3
1334
SE +/- 4.65, N = 3
1326
Tuned
SE +/- 1.43, N = 3
3093
SE +/- 1.83, N = 3
1357
SE +/- 3.05, N = 3
1323
700
1400
2100
2800
3500
1. (CC) gcc options: -O3 -mavx2

Gentoo Kernel Tuning Patch Benchmarks

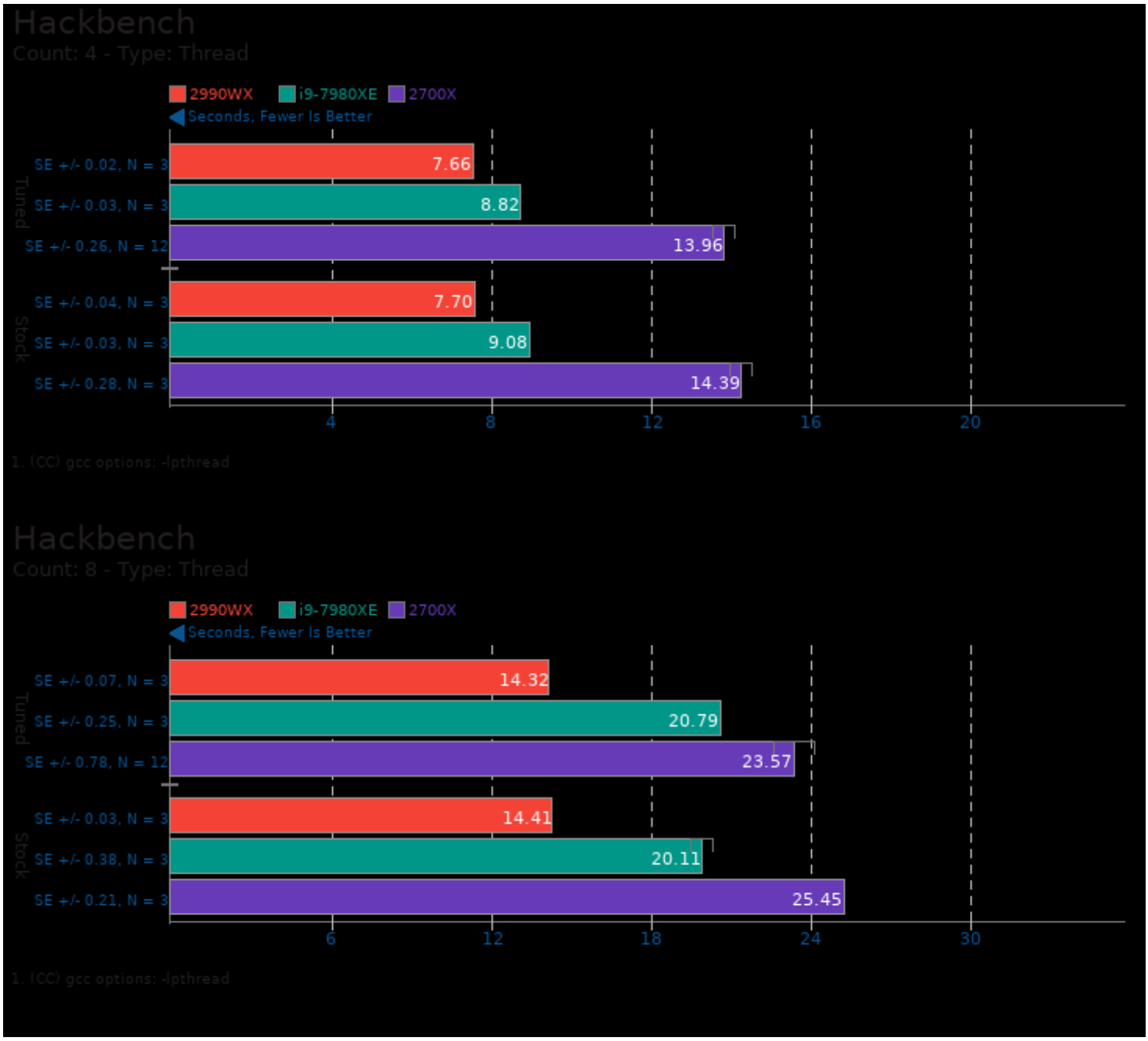



C-Ray 1.1
Total Time - 4K, 16 Rays Per Pixel
2990WX
i9-7980XE
2700X
Seconds, Fewer Is Better
Stock
SE +/- 0.04, N = 3
20.18
SE +/- 0.01, N = 3
42.42
SE +/- 0.03, N = 3
66.11
Tuned
SE +/- 0.02, N = 3
20.18
SE +/- 0.01, N = 3
42.39
SE +/- 0.08, N = 3
66.08
15
30
45
60
75
1. (CC) gcc options: -lm -lpthread -O3
Node.js Octane Benchmark
i9-7980XE
2700X
2990WX
Score, More Is Better
Stock
SE +/- 43.68, N = 3
45426
SE +/- 50.95, N = 3
40771
SE +/- 270.22, N = 3
38912
Tuned
SE +/- 128.44, N = 3
45197
SE +/- 138.17, N = 3
40723
SE +/- 272.90, N = 3
38883
10K
20K
30K
40K
50K
1. Nodejs
v8.11.4

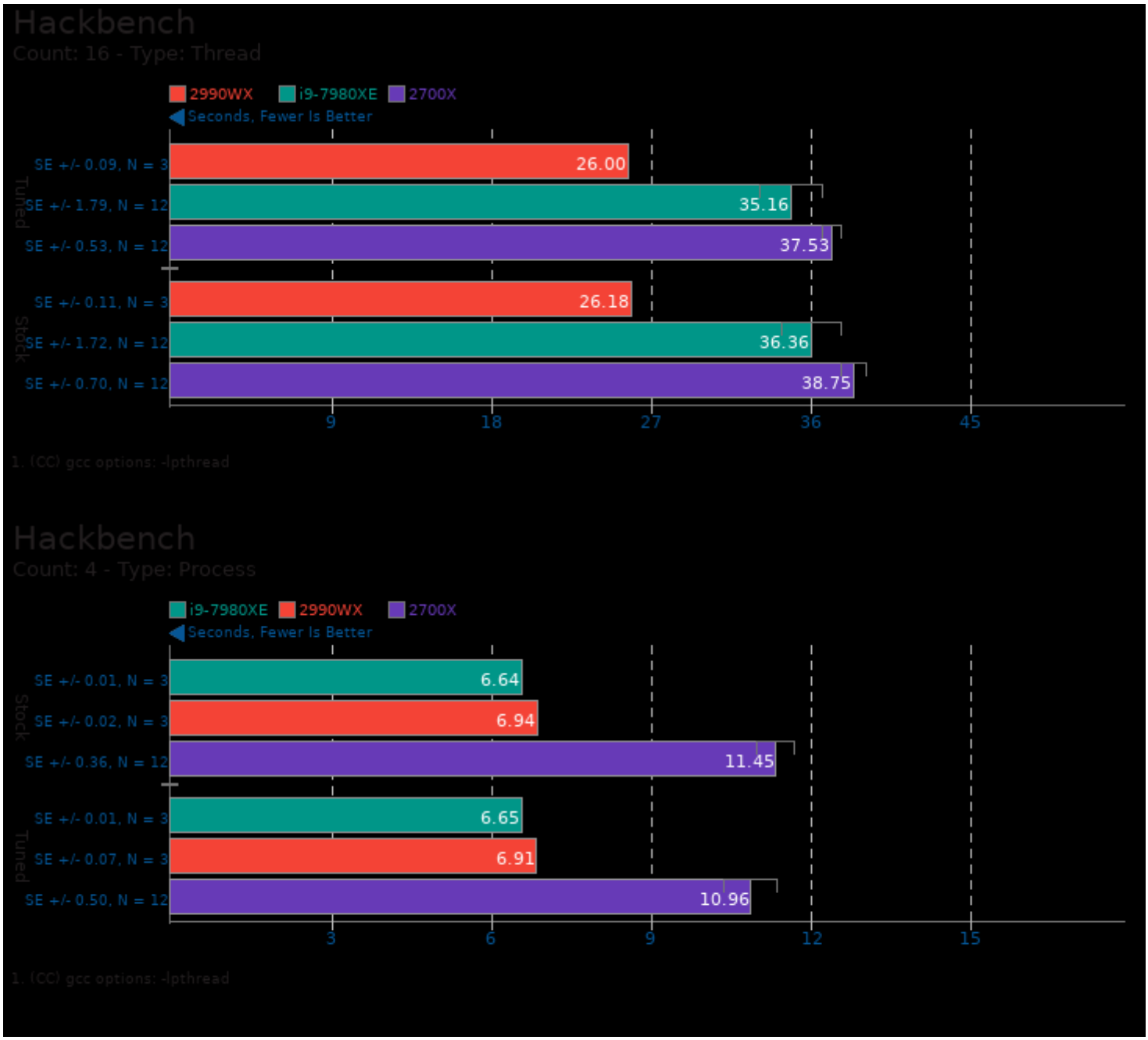
Gentoo Kernel Tuning Patch Benchmarks



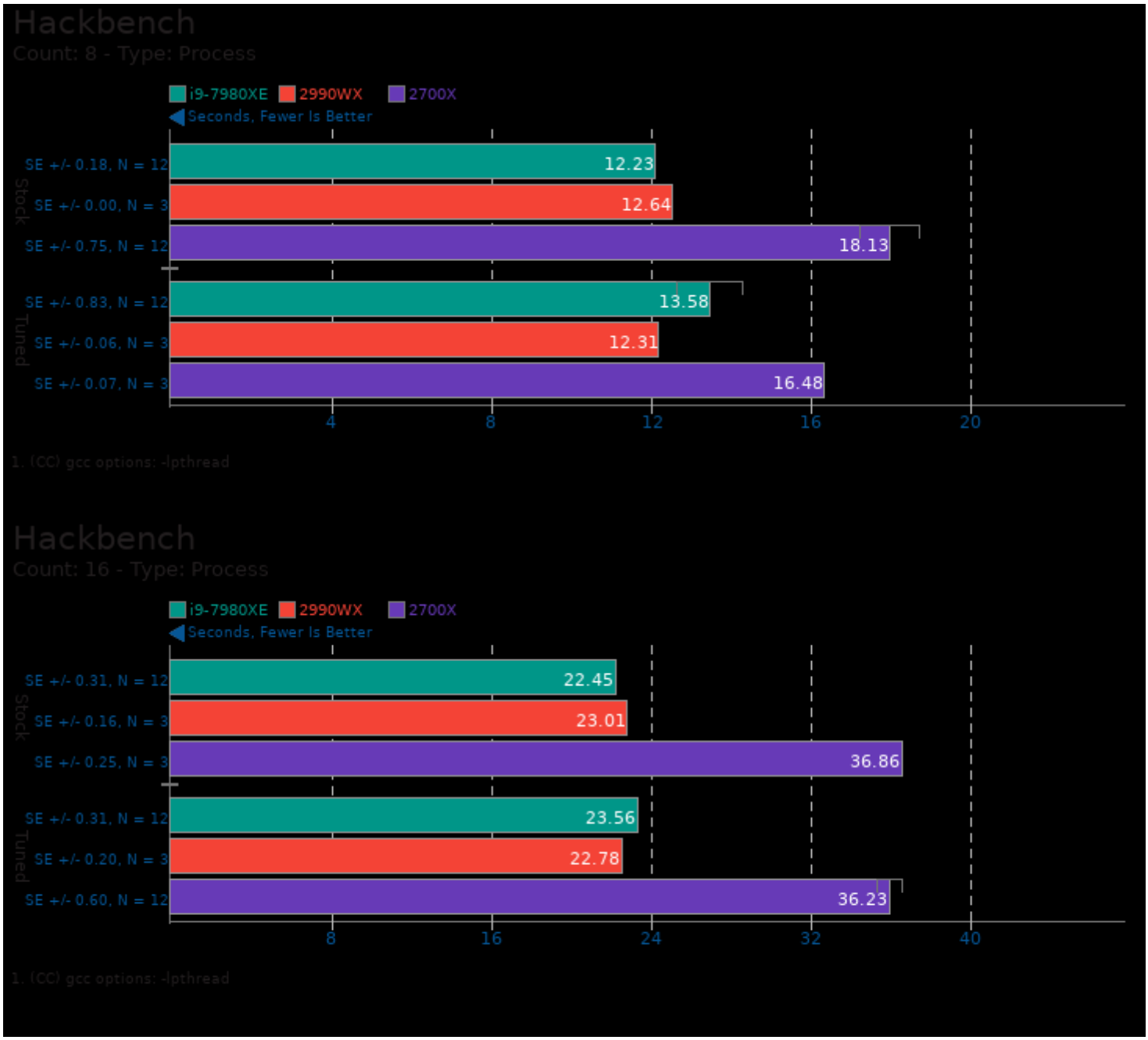
Gentoo Kernel Tuning Patch Benchmarks



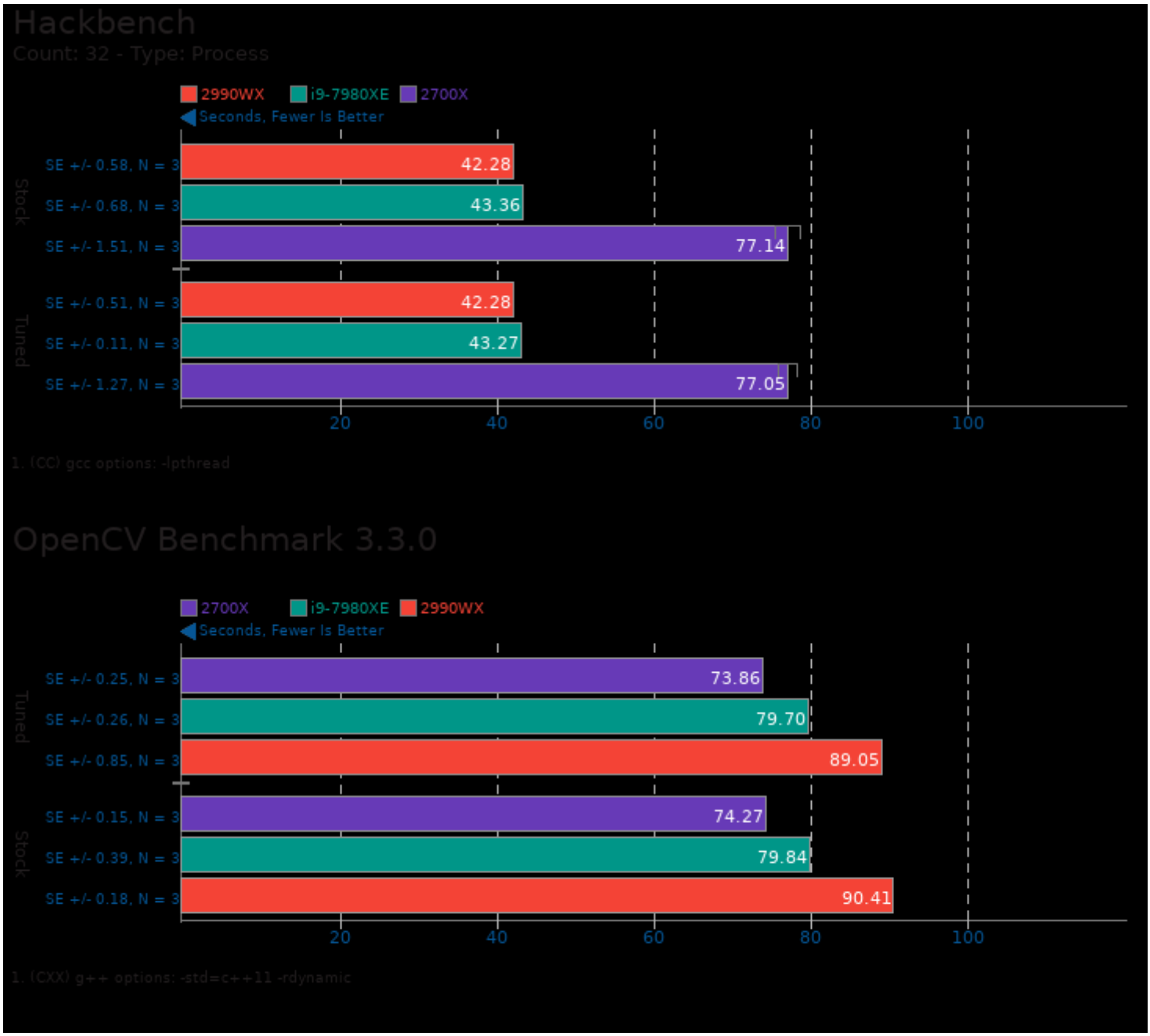
Gentoo Kernel Tuning Patch Benchmarks



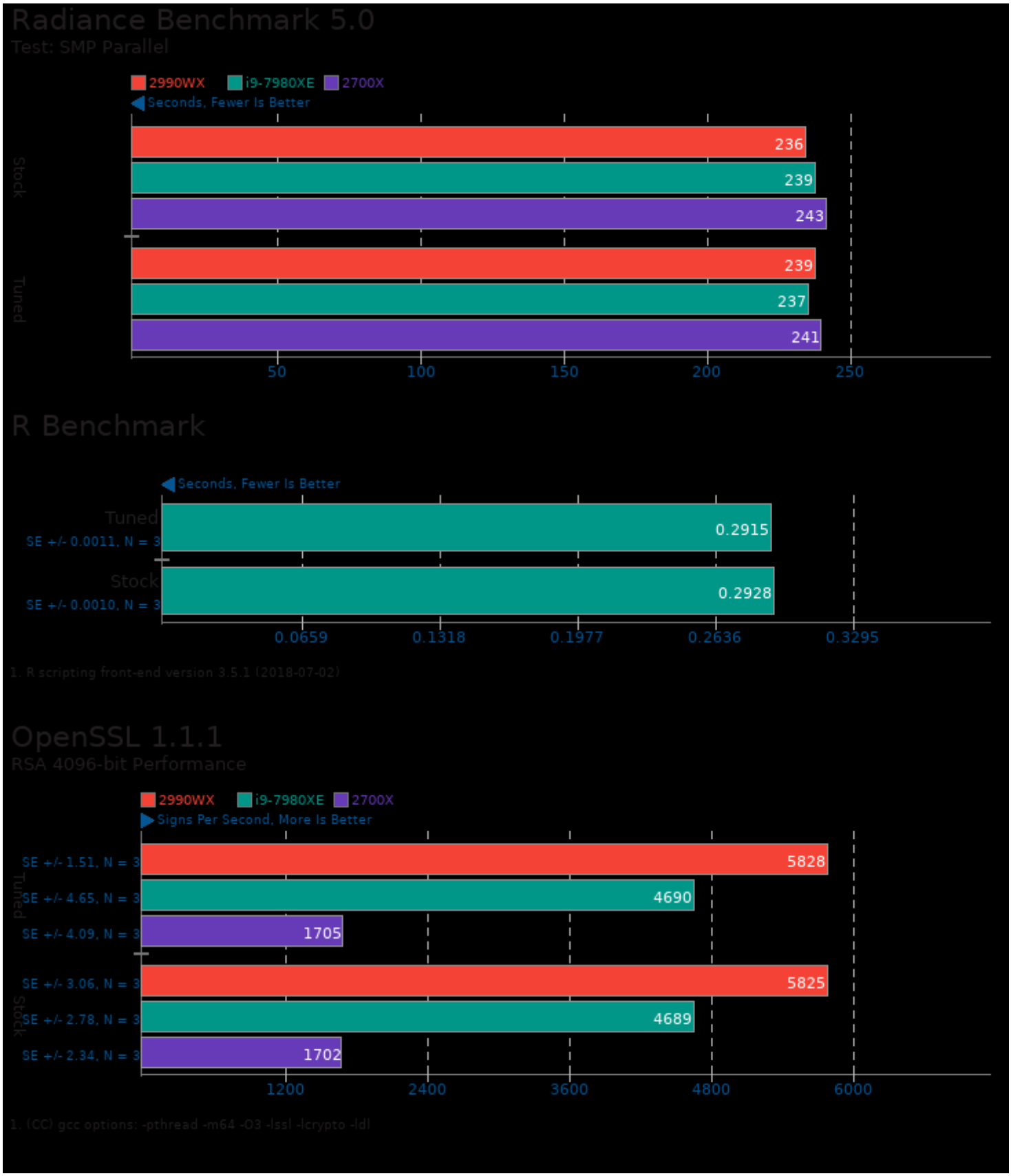
Gentoo Kernel Tuning Patch Benchmarks



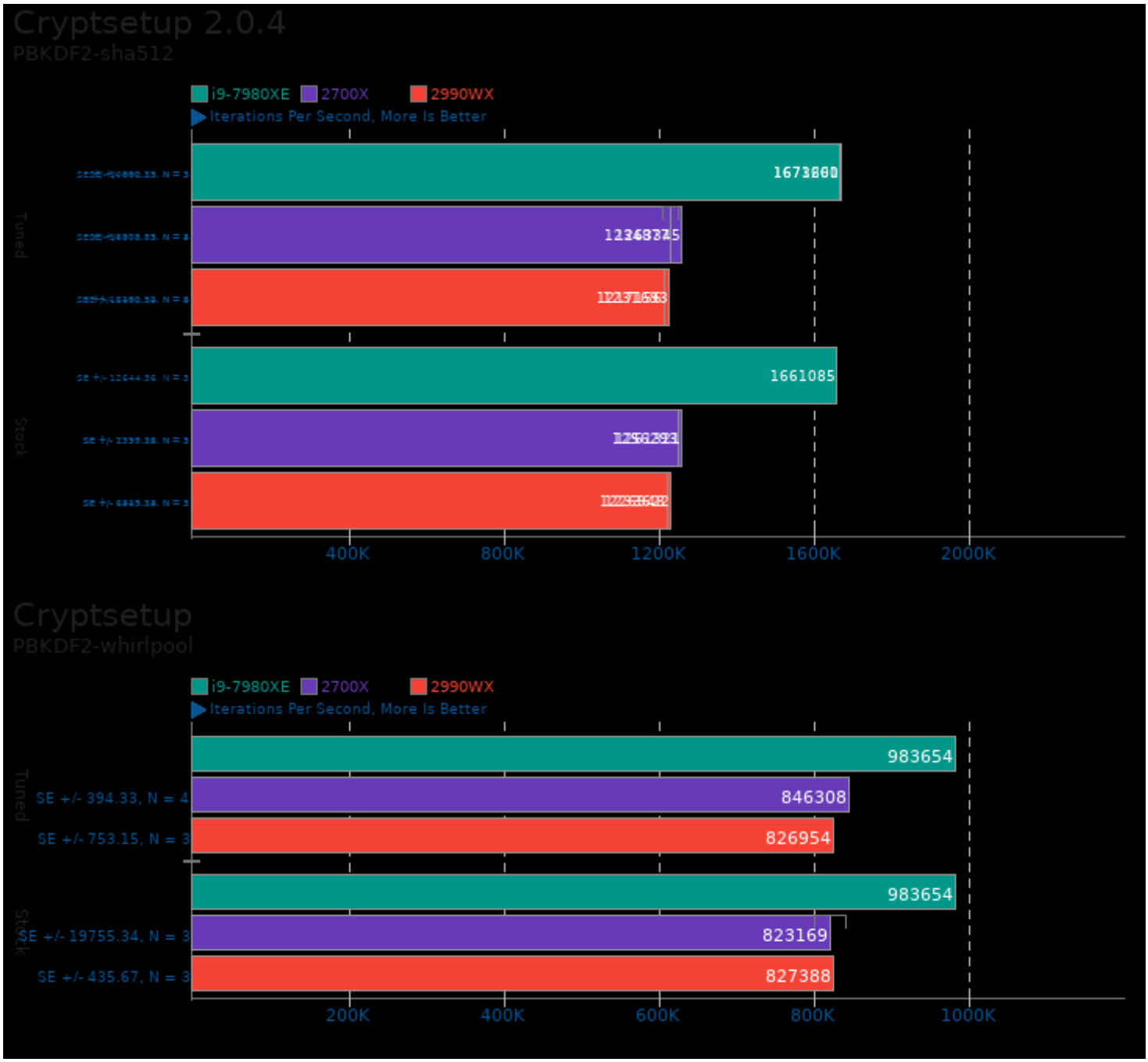
Gentoo Kernel Tuning Patch Benchmarks

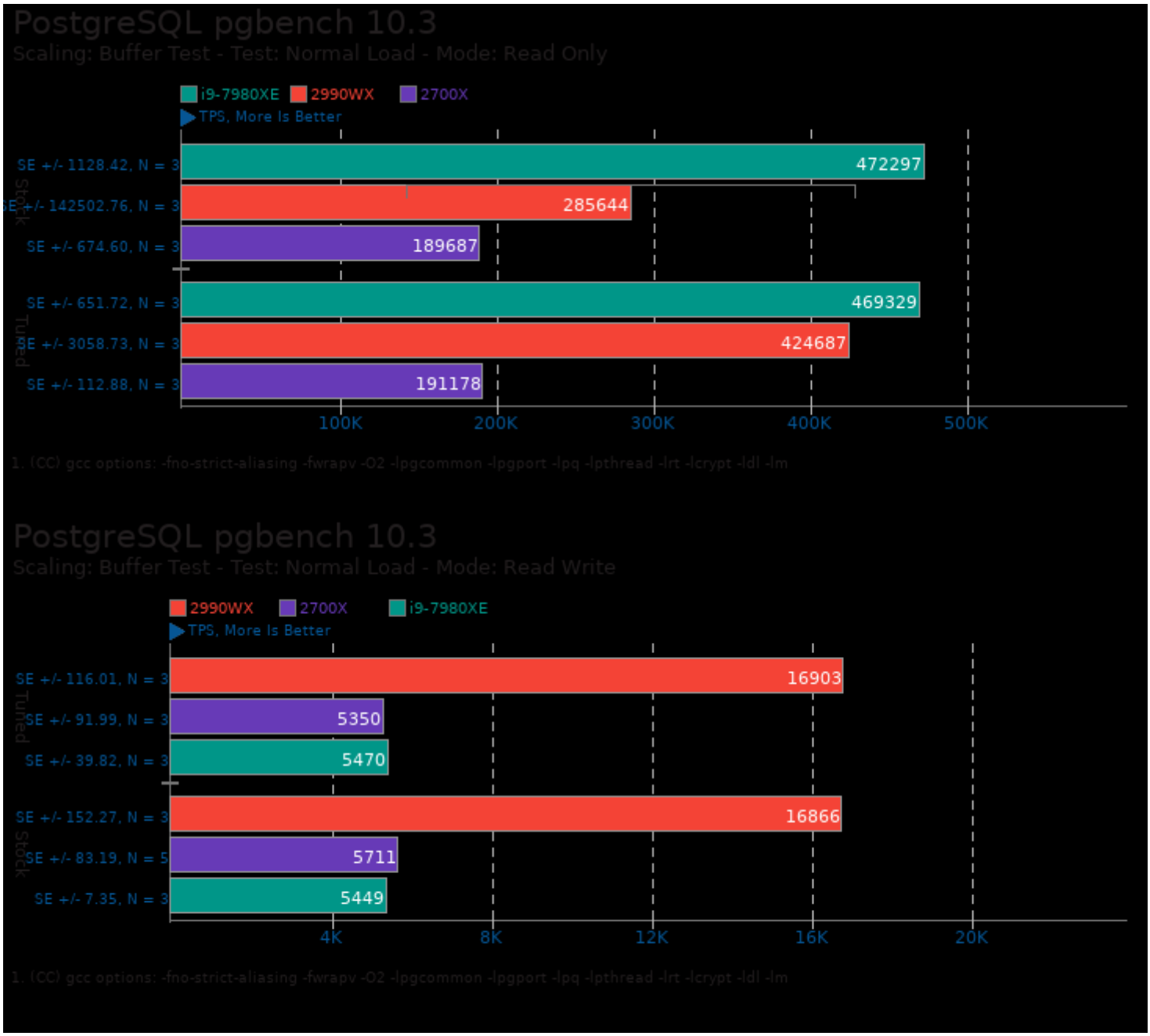


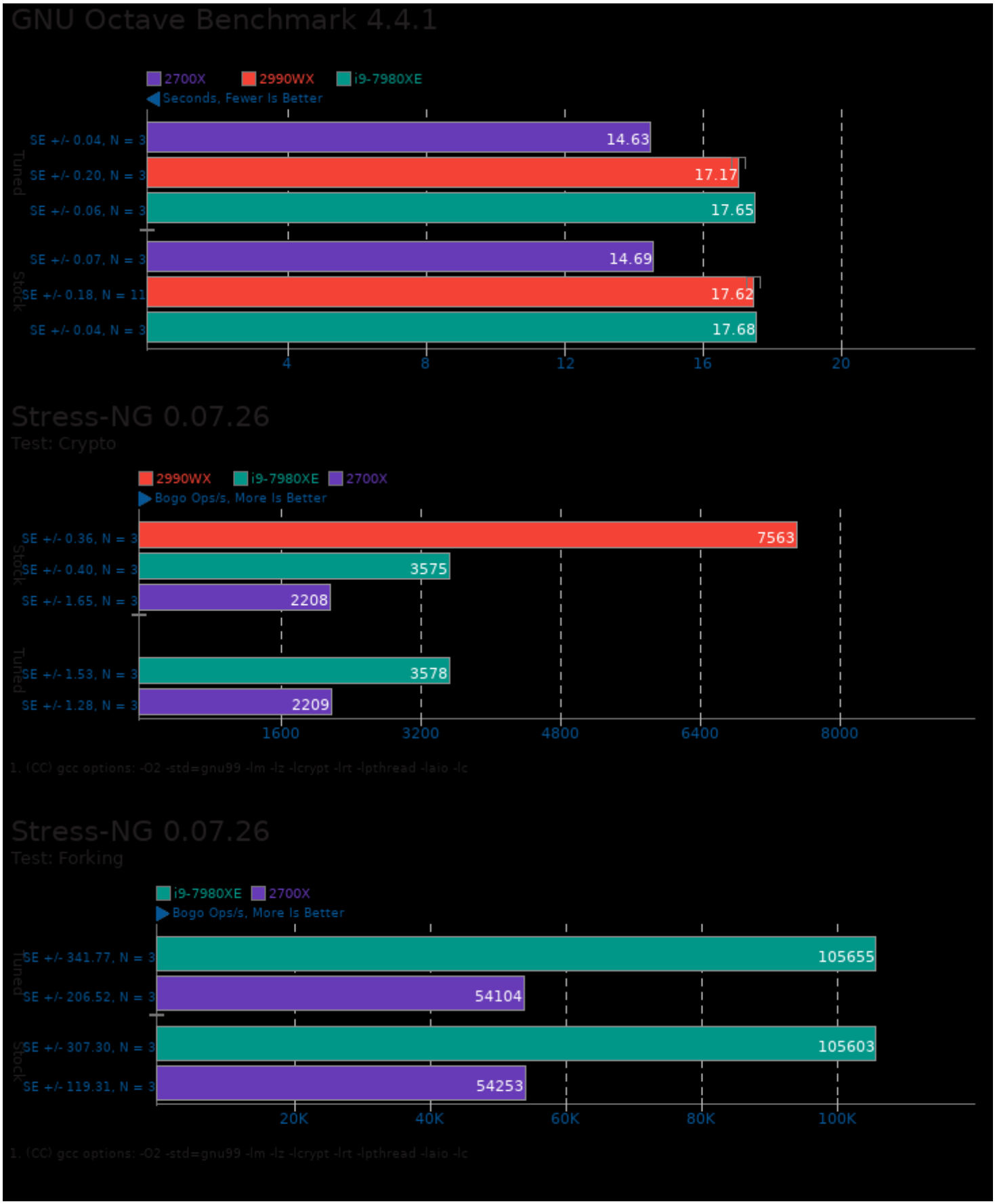
Gentoo Kernel Tuning Patch Benchmarks



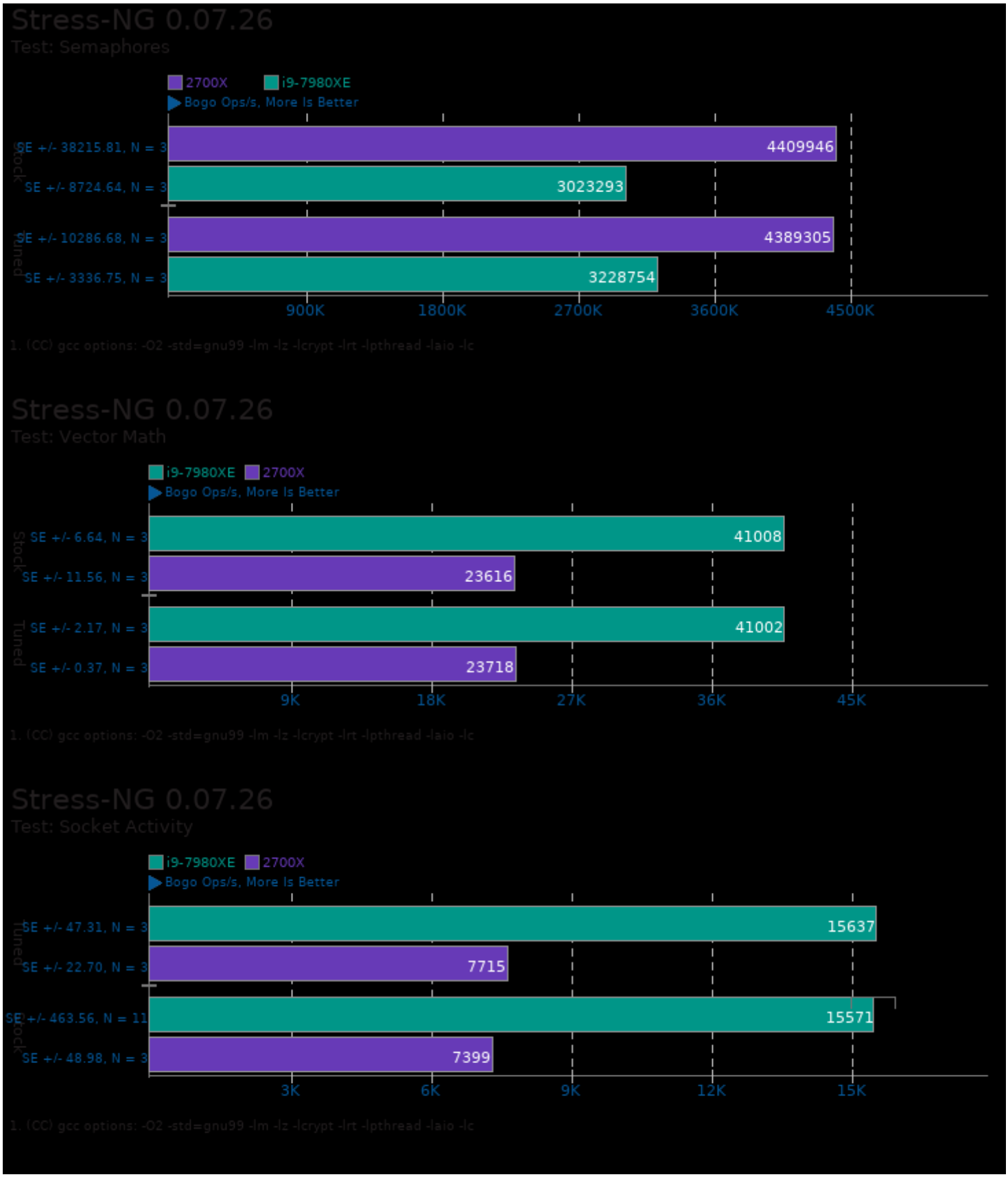
Gentoo Kernel Tuning Patch Benchmarks

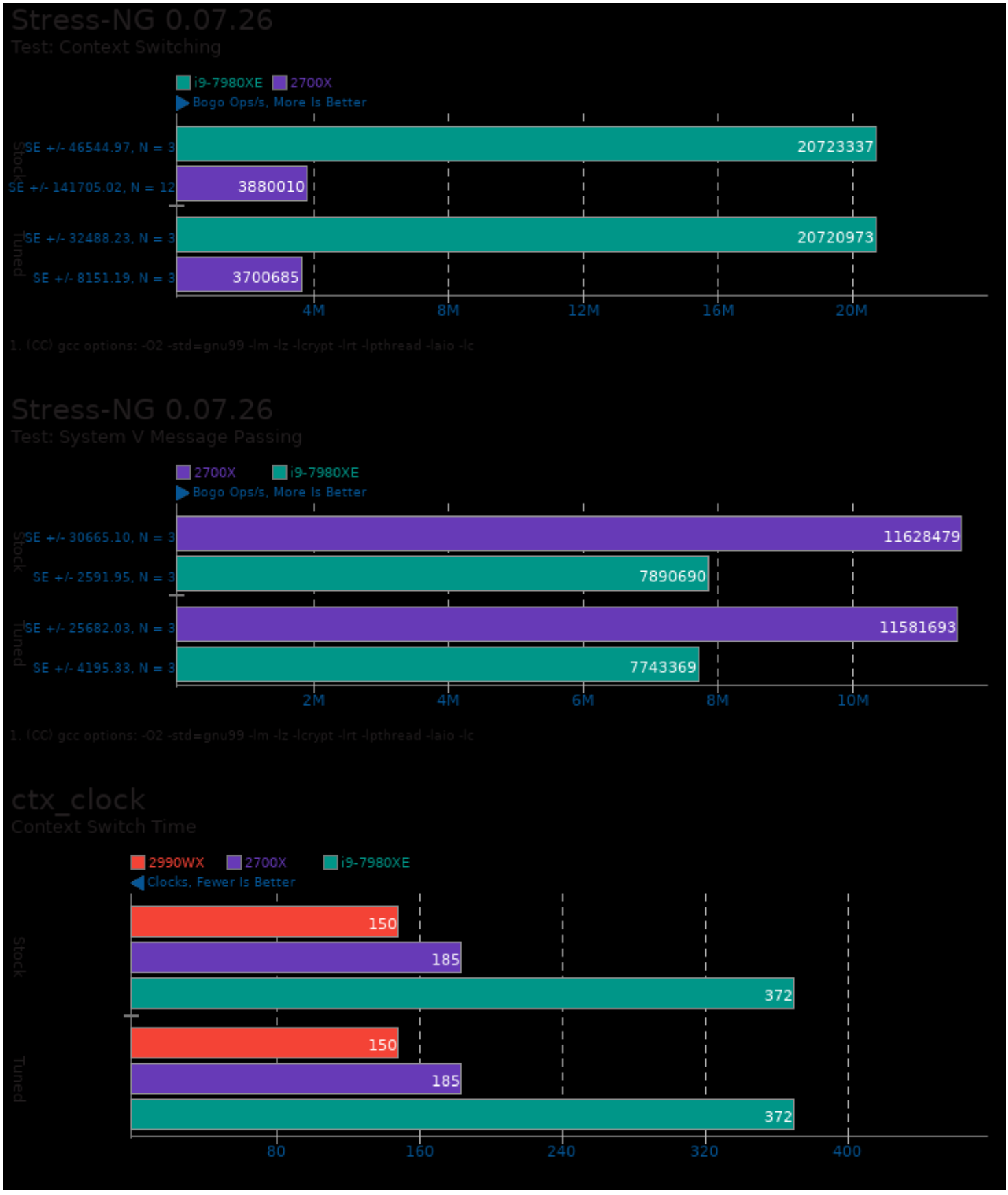



PostgreSQL pgbench 10.3
Scaling: Buffer Test - Test: Normal Load - Mode: Read Only
i9-7980XE
2990WX
2700X
TPS, More Is Better
SE +/- 1128.42, N = 3
472297
SE +/- 142502.76, N = 3
285644
SE +/- 674.60, N = 3
189687
SE +/- 651.72, N = 3
469329
SE +/- 3058.73, N = 3
424687
SE +/- 112.88, N = 3
191178
Stock
Tuned
100K
200K
300K
400K
500K
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lpthread -lrt -lcrypt -ldl -lm
PostgreSQL pgbench 10.3
Scaling: Buffer Test - Test: Normal Load - Mode: Read Write
2990WX
2700X
i9-7980XE
TPS, More Is Better
SE +/- 116.01, N = 3
16903
SE +/- 91.99, N = 3
5350
SE +/- 39.82, N = 3
5470
SE +/- 152.27, N = 3
16866
SE +/- 83.19, N = 5
5711
SE +/- 7.35, N = 3
5449
Tuned
Stock
4K
8K
12K
16K
20K
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lpthread -lrt -lcrypt -ldl -lm

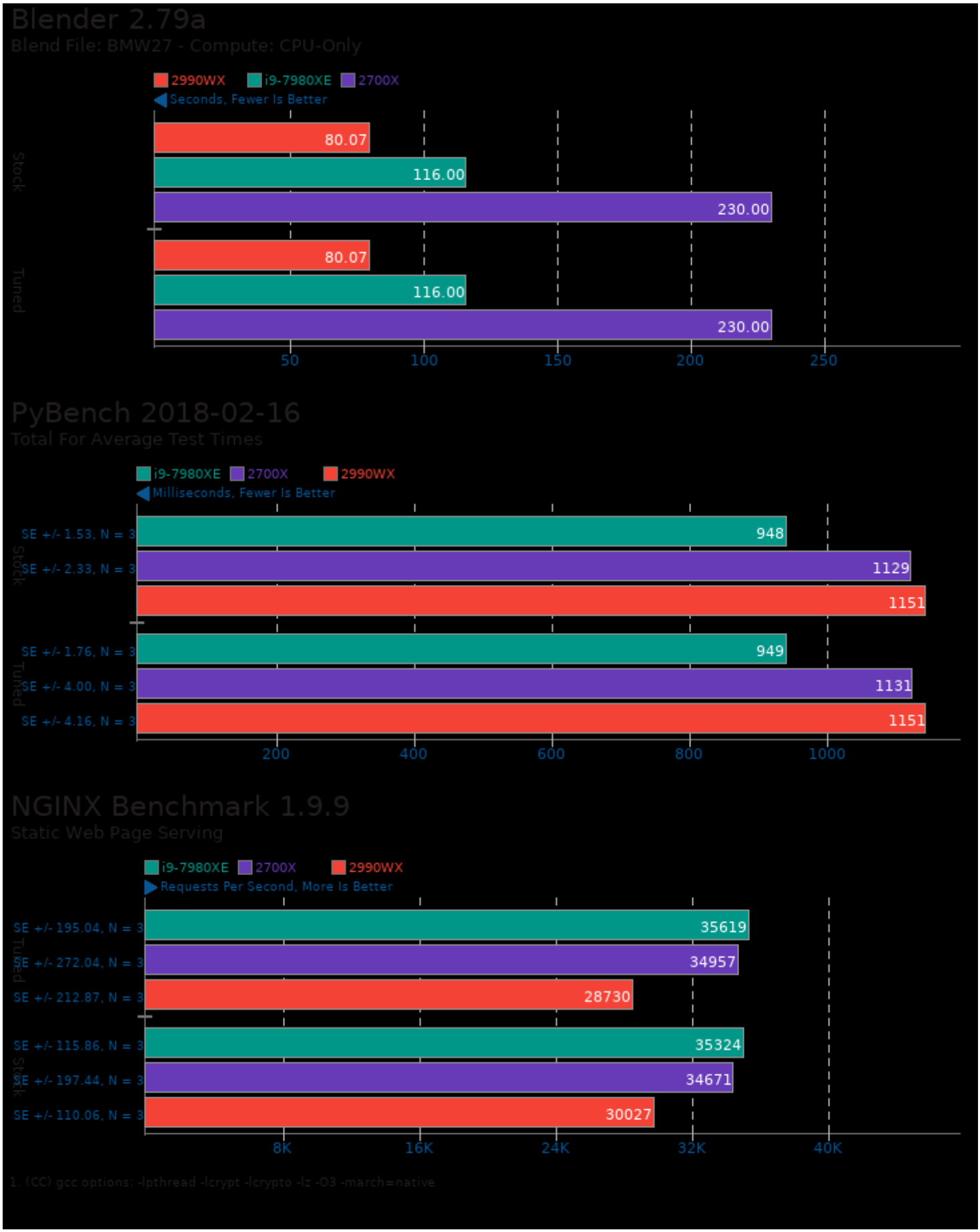

GNU Octave Benchmark 4.4.1
2700X
2990WX
i9-7980XE
Seconds, Fewer Is Better
Tuned
Stock
SE +/- 0.04, N = 3
14.63
SE +/- 0.20, N = 3
17.17
SE +/- 0.06, N = 3
17.65
SE +/- 0.07, N = 3
14.69
SE +/- 0.18, N = 11
17.62
SE +/- 0.04, N = 3
17.68
4
8
12
16
20
Stress-NG 0.07.26
Test: Crypto
2990WX
i9-7980XE
2700X
Bogo Ops/s, More Is Better
Stock
SE +/- 0.36, N = 3
7563
SE +/- 0.40, N = 3
3575
SE +/- 1.65, N = 3
2208
Tuned
SE +/- 1.53, N = 3
3578
SE +/- 1.28, N = 3
2209
1600
3200
4800
6400
8000
1. (CC) gcc options: -O2 -std=gnu99 -lm -lz -lcrypt -lrt -lpthread -laio -lc
Stress-NG 0.07.26
Test: Forking
i9-7980XE
2700X
Bogo Ops/s, More Is Better
Tuned
SE +/- 341.77, N = 3
105655
SE +/- 206.52, N = 3
54104
Stock
SE +/- 307.30, N = 3
105603
SE +/- 119.31, N = 3
54253
20K
40K
60K
80K
100K
1. (CC) gcc options: -O2 -std=gnu99 -lm -lz -lcrypt -lrt -lpthread -laio -lc

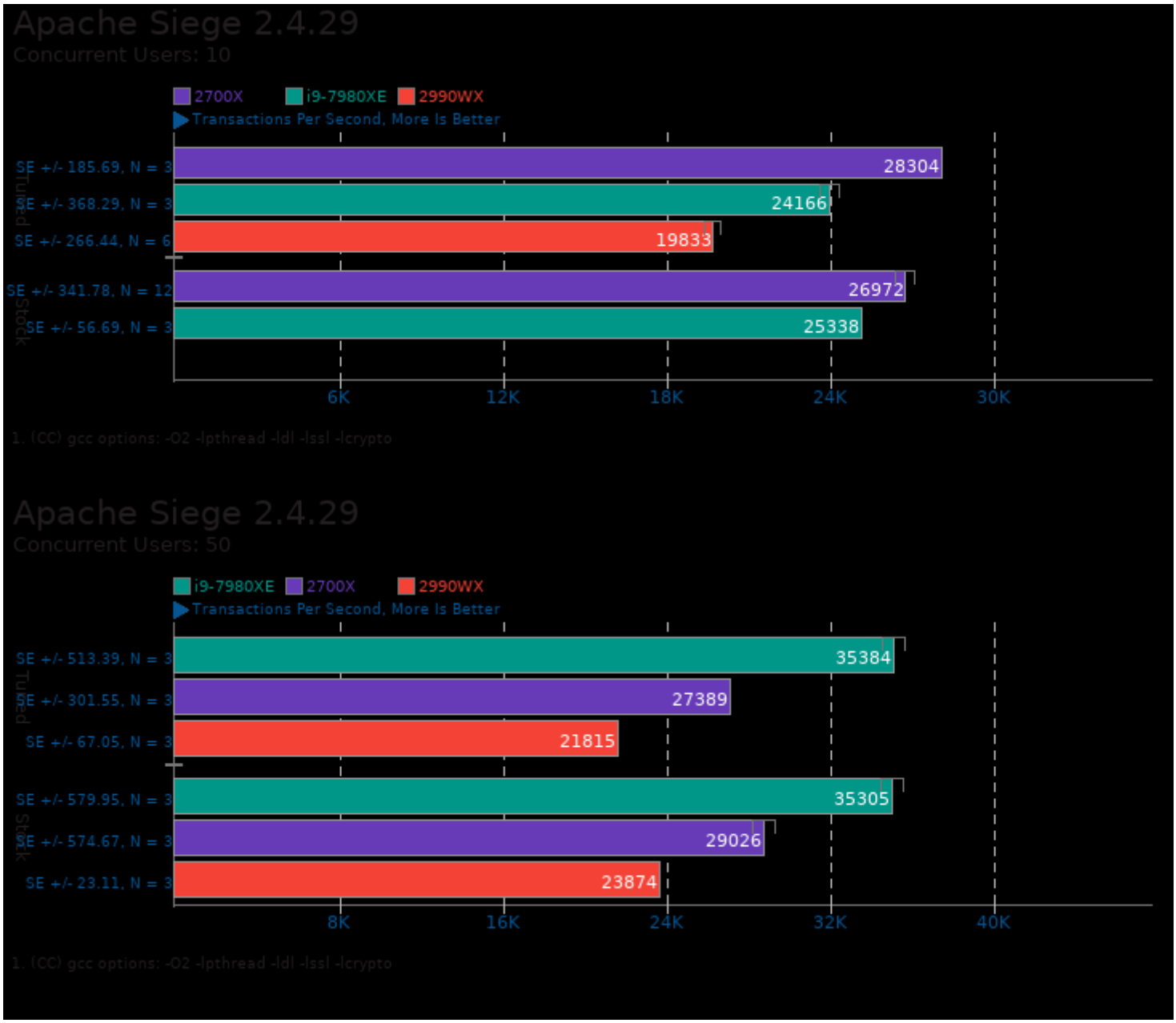
Gentoo Kernel Tuning Patch Benchmarks

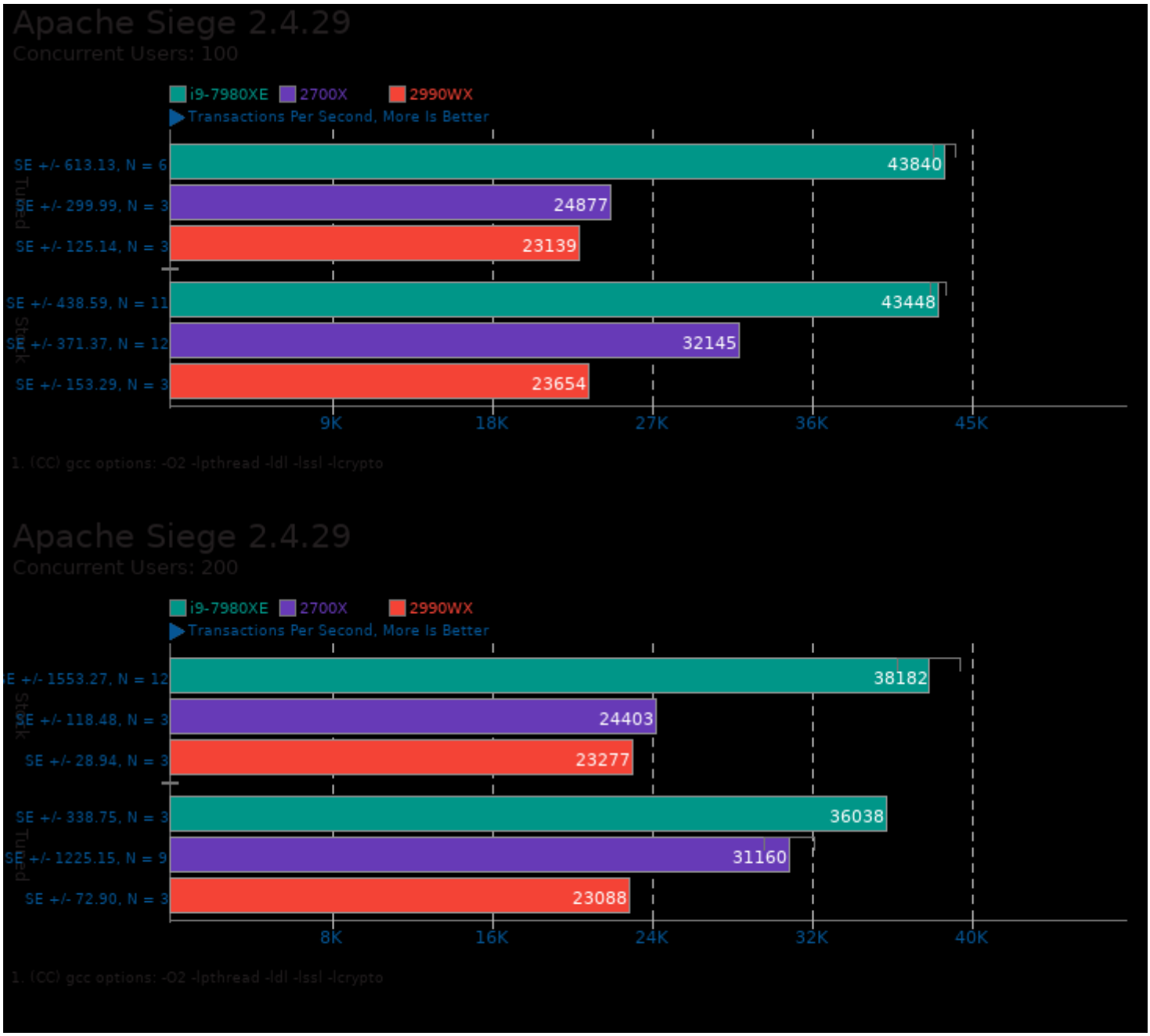


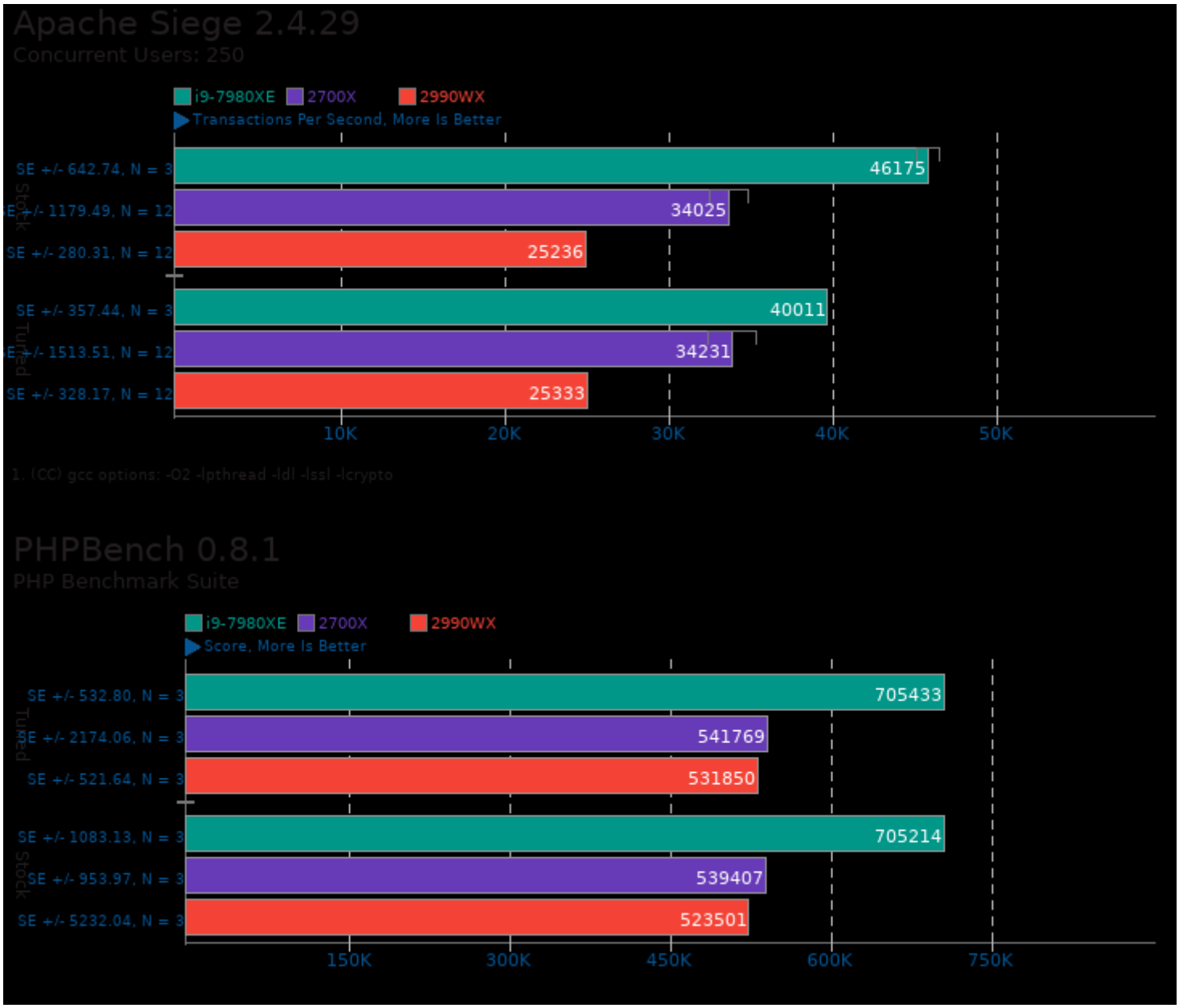

Stress-NG 0.07.26
Test: Context Switching
i9-7980XE
2700X
Bogo Ops/s, More Is Better
Stock
Tuned
SE +/- 46544.97, N = 3
20723337
SE +/- 141705.02, N = 12
3880010
SE +/- 32488.23, N = 3
20720973
SE +/- 8151.19, N = 3
3700685
4M
8M
12M
16M
20M
1. (CC) gcc options: -O2 -std=gnu99 -lm -lz -lcrypt -lrt -lpthread -laio -lc
Stress-NG 0.07.26
Test: System V Message Passing
2700X
i9-7980XE
Bogo Ops/s, More Is Better
Stock
Tuned
SE +/- 30665.10, N = 3
11628479
SE +/- 2591.95, N = 3
7890690
SE +/- 25682.03, N = 3
11581693
SE +/- 4195.33, N = 3
7743369
2M
4M
6M
8M
10M
1. (CC) gcc options: -O2 -std=gnu99 -lm -lz -lcrypt -lrt -lpthread -laio -lc
ctx_clock
Context Switch Time
2990WX
2700X
i9-7980XE
Clocks, Fewer Is Better
Stock
Tuned
150
185
372
150
185
372
80
160
240
320
400

Gentoo Kernel Tuning Patch Benchmarks



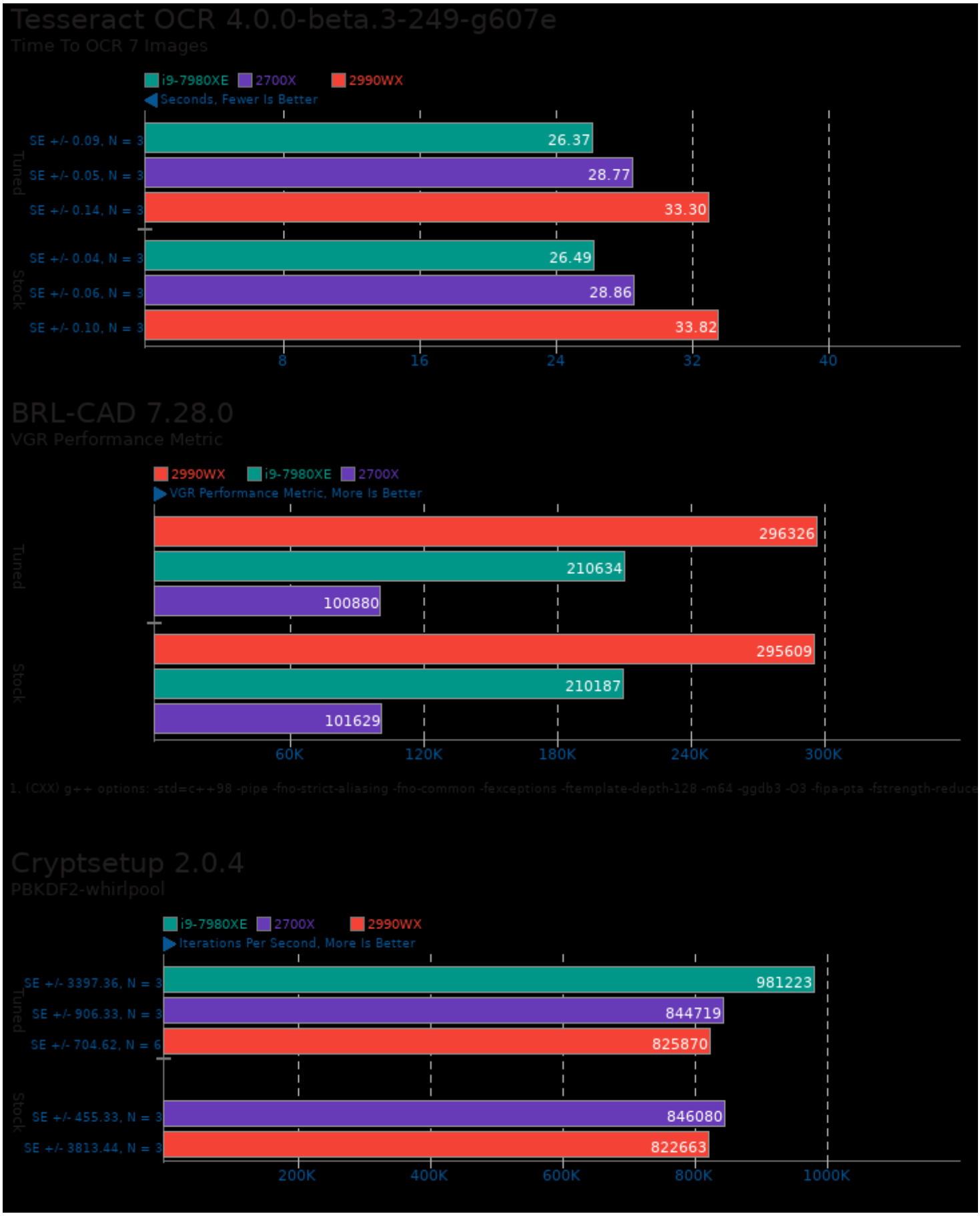

Apache Siege 2.4.29
Concurrent Users: 10
2700X
i9-7980XE
2990WX
Transactions Per Second, More Is Better
Tuned
Stock
SE +/- 185.69, N = 3
SE +/- 368.29, N = 3
SE +/- 266.44, N = 6
SE +/- 341.78, N = 12
SE +/- 56.69, N = 3
28304
24166
19833
26972
25338
6K
12K
18K
24K
30K
1. (CC) gcc options: -O2 -lpthread -ldl -lssl -lcrypto
Apache Siege 2.4.29
Concurrent Users: 50
i9-7980XE
2700X
2990WX
Transactions Per Second, More Is Better
Tuned
Stock
SE +/- 513.39, N = 3
SE +/- 301.55, N = 3
SE +/- 67.05, N = 3
SE +/- 579.95, N = 3
SE +/- 574.67, N = 3
SE +/- 23.11, N = 3
35384
27389
21815
35305
29026
23874
8K
16K
24K
32K
40K
1. (CC) gcc options: -O2 -lpthread -ldl -lssl -lcrypto

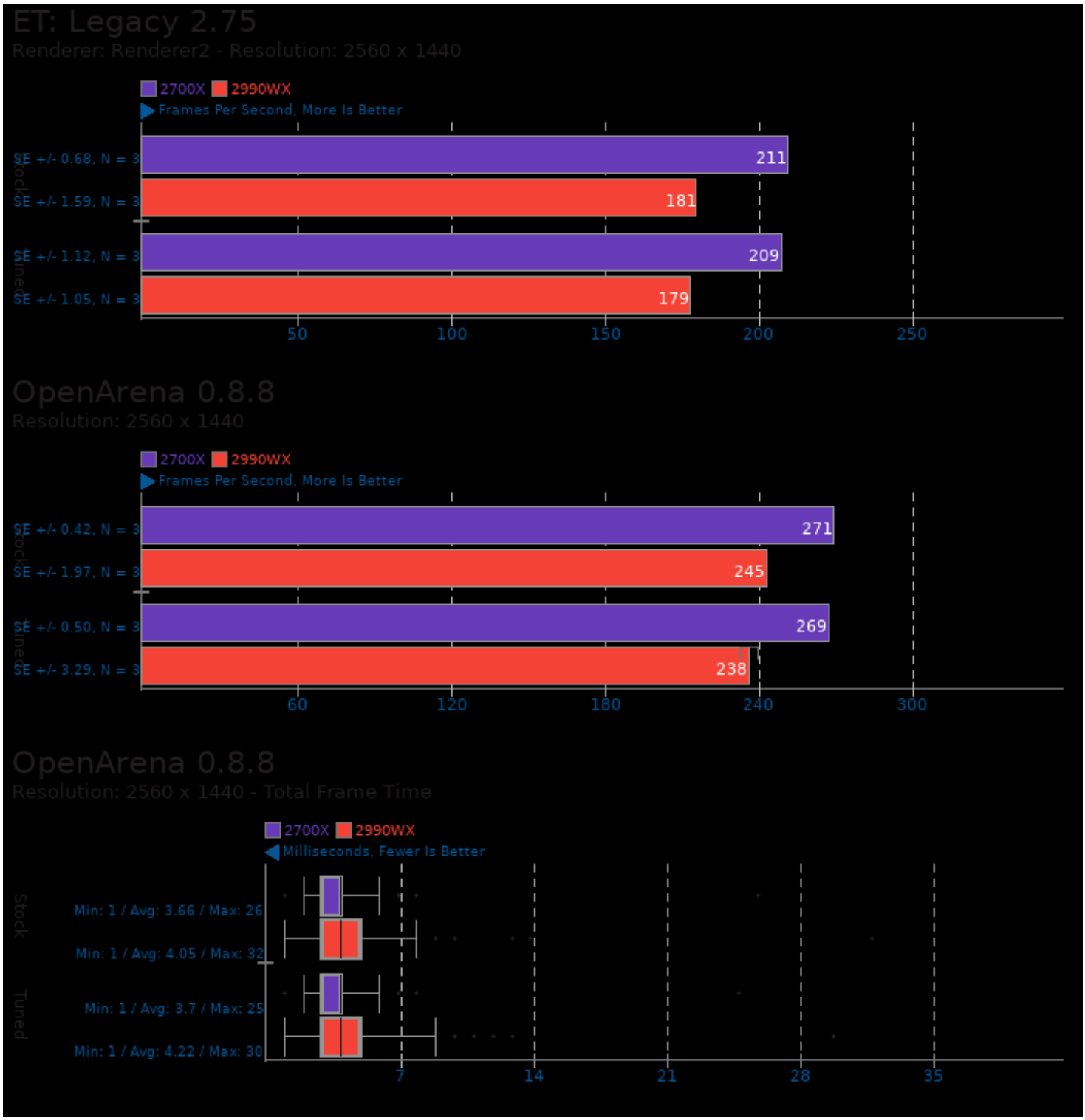

Apache Siege 2.4.29
Concurrent Users: 100
i9-7980XE
2700X
2990WX
Transactions Per Second, More Is Better
SE +/- 613.13, N = 6
SE +/- 299.99, N = 3
SE +/- 125.14, N = 3
SE +/- 438.59, N = 11
SE +/- 371.37, N = 12
SE +/- 153.29, N = 3
43840
24877
23139
43448
32145
23654
9K
18K
27K
36K
45K
1. (CC) gcc options: -O2 -lpthread -ldl -lssl -lcrypto
Apache Siege 2.4.29
Concurrent Users: 200
i9-7980XE
2700X
2990WX
Transactions Per Second, More Is Better
E +/- 1553.27, N = 12
SE +/- 118.48, N = 3
SE +/- 28.94, N = 3
SE +/- 338.75, N = 3
SE +/- 1225.15, N = 9
SE +/- 72.90, N = 3
38182
24403
23277
36038
31160
23088
8K
16K
24K
32K
40K
1. (CC) gcc options: -O2 -lpthread -ldl -lssl -lcrypto


Apache Siege 2.4.29
Concurrent Users: 250
i9-7980XE
2700X
2990WX
Transactions Per Second, More Is Better
SE +/- 642.74, N = 3
46175
SE +/- 1179.49, N = 12
34025
SE +/- 280.31, N = 12
25236
SE +/- 357.44, N = 3
40011
SE +/- 1513.51, N = 12
34231
SE +/- 328.17, N = 12
25333
Stock
Tuned
10K
20K
30K
40K
50K
1. (CC) gcc options: -O2 -lpthread -ldl -lssl -lcrypto
PHPBench 0.8.1
PHP Benchmark Suite
i9-7980XE
2700X
2990WX
Score, More Is Better
SE +/- 532.80, N = 3
705433
SE +/- 2174.06, N = 3
541769
SE +/- 521.64, N = 3
531850
SE +/- 1083.13, N = 3
705214
SE +/- 953.97, N = 3
539407
SE +/- 5232.04, N = 3
523501
Tuned
Stock
150K
300K
450K
600K
750K

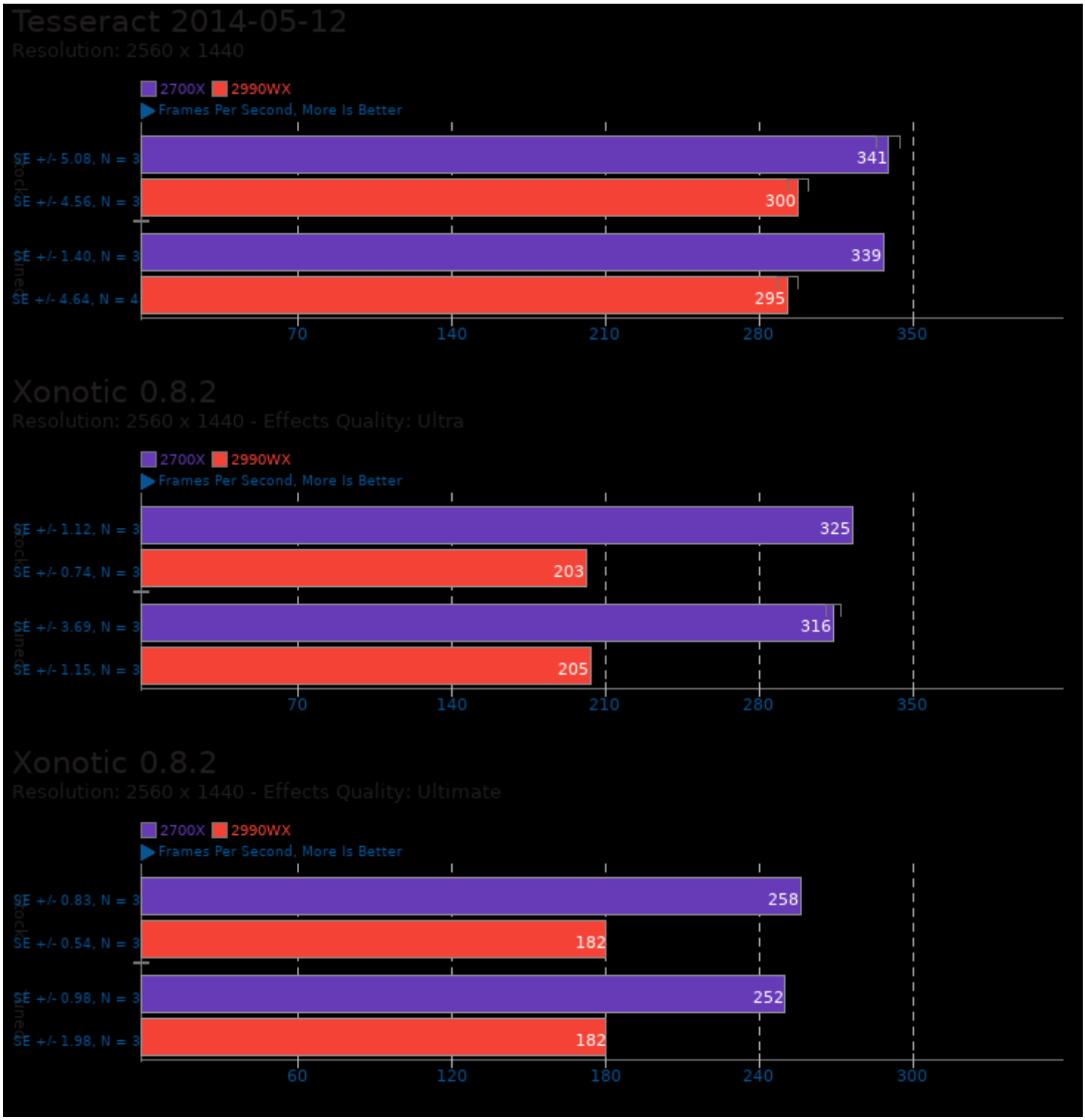

Git
Time To Complete Common Git Commands
2700X
i9-7980XE
2990WX
Seconds, Fewer Is Better
Stock
SE +/- 0.05, N = 3
5.32
SE +/- 0.02, N = 3
5.41
SE +/- 0.00, N = 3
5.48
Tuned
SE +/- 0.05, N = 3
5.32
SE +/- 0.02, N = 3
5.40
SE +/- 0.06, N = 3
5.41
1.233
2.466
3.699
4.932
6.165
1. git version 2.19.1
Scikit-Learn 0.17.1
i9-7980XE
2700X
2990WX
Seconds, Fewer Is Better
Stock
SE +/- 0.04, N = 3
13.60
SE +/- 0.13, N = 3
14.30
SE +/- 0.40, N = 12
24.83
Tuned
SE +/- 0.04, N = 3
13.60
SE +/- 0.01, N = 3
14.18
SE +/- 0.93, N = 12
25.44
6
12
18
24
30
Sunflow Rendering System 0.07.2
Global Illumination + Image Synthesis
2990WX
i9-7980XE
2700X
Seconds, Fewer Is Better
Stock
SE +/- 0.01, N = 12
0.91
SE +/- 0.03, N = 12
1.01
SE +/- 0.02, N = 12
1.46
Tuned
SE +/- 0.01, N = 9
0.91
SE +/- 0.02, N = 12
0.98
SE +/- 0.02, N = 12
1.45
0.3285
0.657
0.9855
1.314
1.6425

Gentoo Kernel Tuning Patch Benchmarks

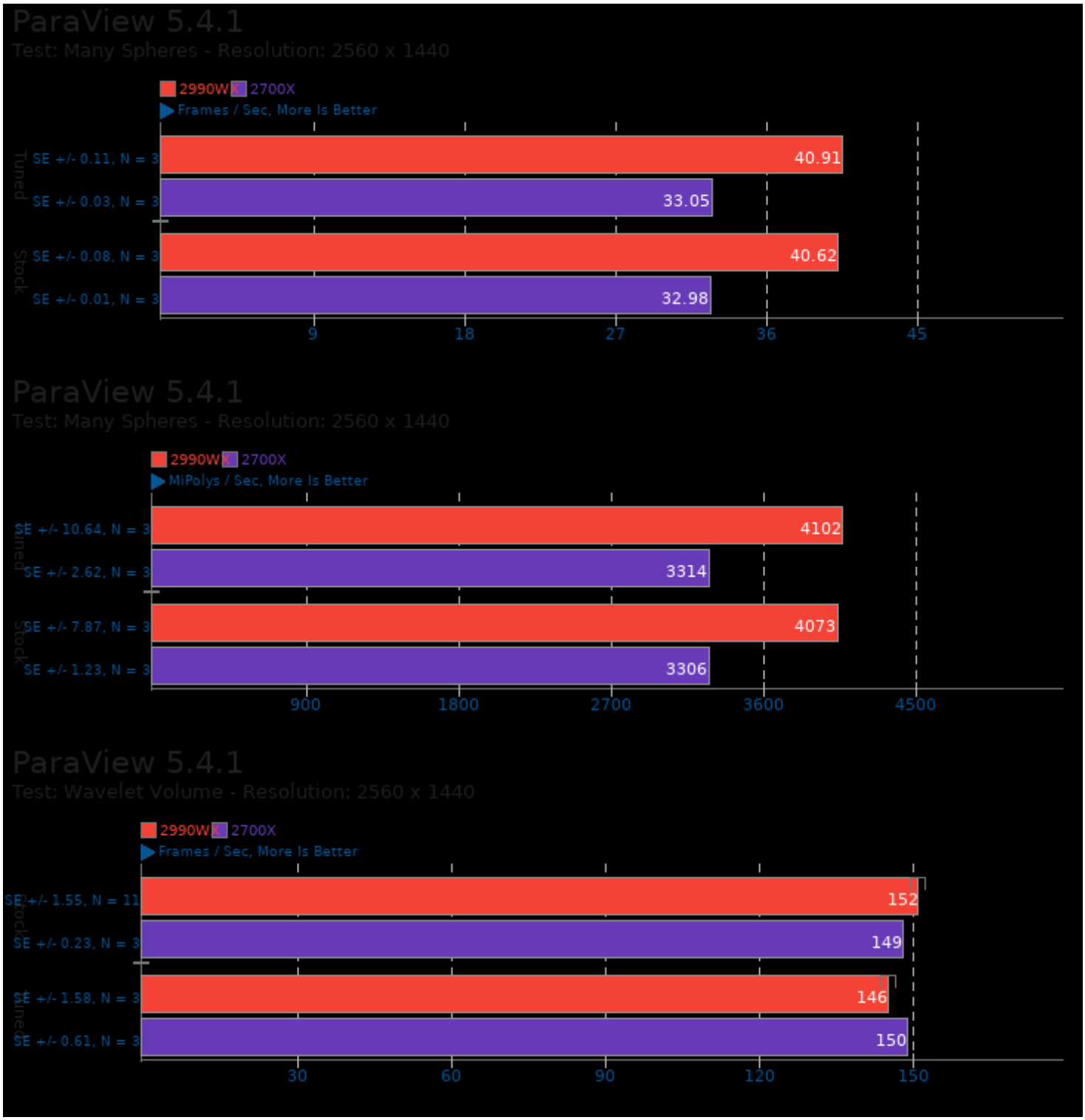


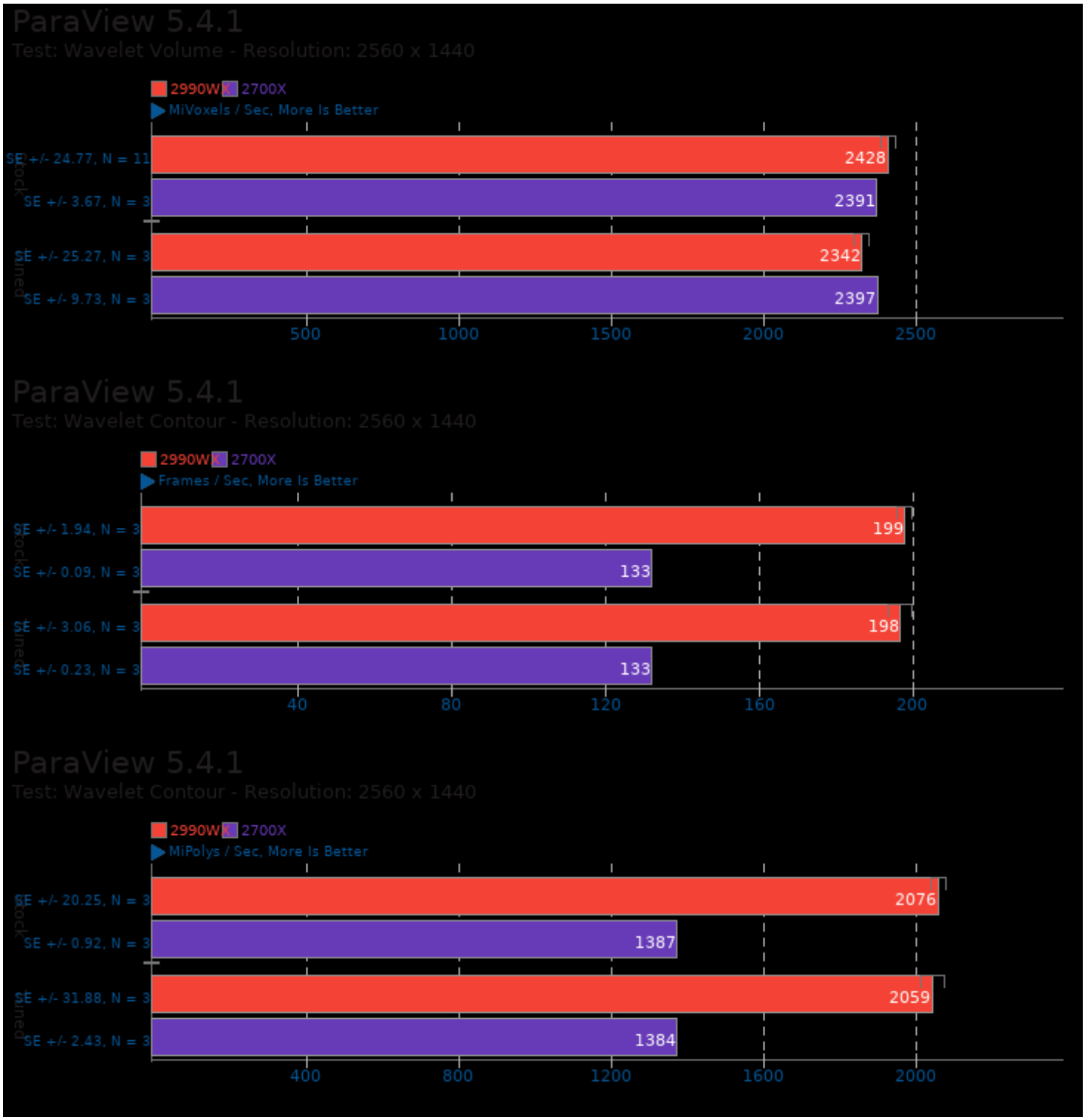

ET: Legacy 2.75
Renderer: Renderer2 - Resolution: 2560 x 1440
2700X
2990WX
Frames Per Second, More Is Better
SE +/- 0.68, N = 3
SE +/- 1.59, N = 3
SE +/- 1.12, N = 3
SE +/- 1.05, N = 3
211
181
209
179
50
100
150
200
250
OpenArena 0.8.8
Resolution: 2560 x 1440
2700X
2990WX
Frames Per Second, More Is Better
SE +/- 0.42, N = 3
SE +/- 1.97, N = 3
SE +/- 0.50, N = 3
SE +/- 3.29, N = 3
271
245
269
238
60
120
180
240
300
OpenArena 0.8.8
Resolution: 2560 x 1440 - Total Frame Time
2700X
2990WX
Milliseconds, Fewer Is Better
Min: 1 / Avg: 3.66 / Max: 26
Min: 1 / Avg: 4.05 / Max: 32
Min: 1 / Avg: 3.7 / Max: 25
Min: 1 / Avg: 4.22 / Max: 30
7
14
21
28
35

Gentoo Kernel Tuning Patch Benchmarks

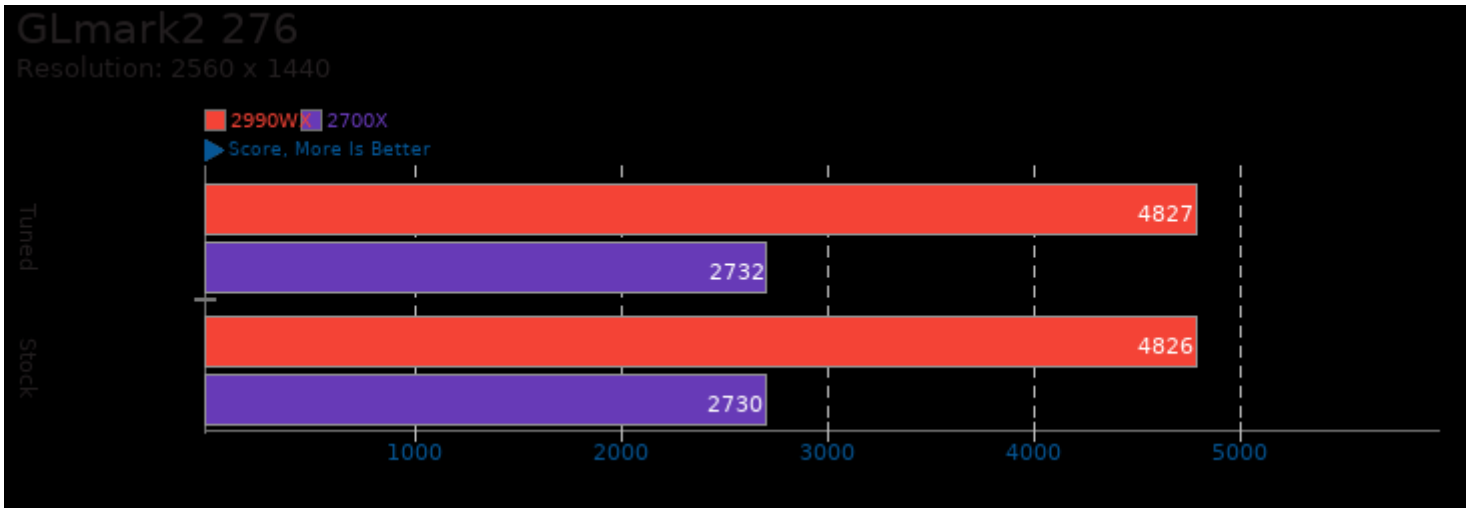


Gentoo Kernel Tuning Patch Benchmarks



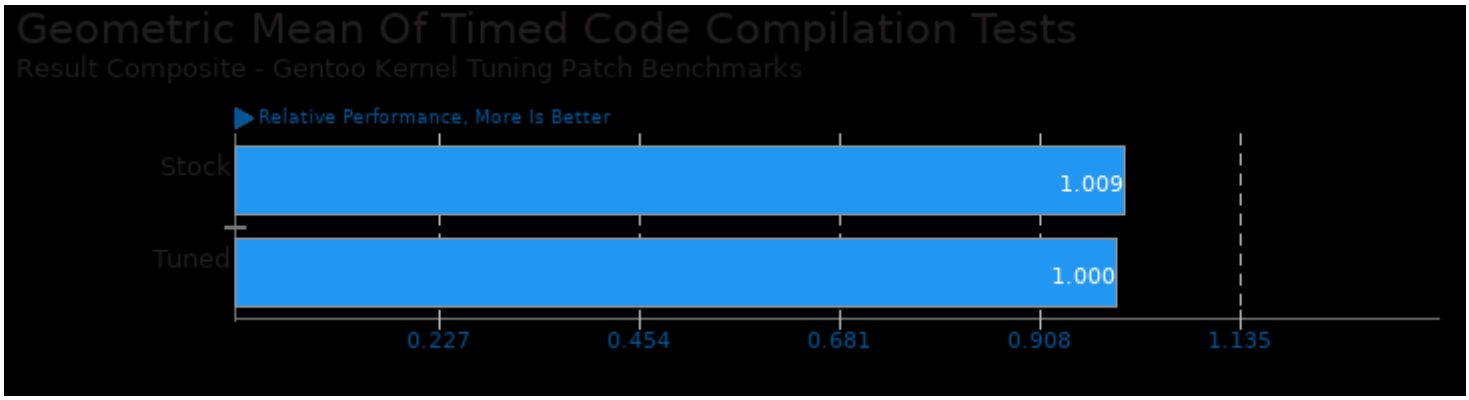

ParaView 5.4.1
Test: Wavelet Volume - Resolution: 2560 x 1440
2990WX
2700X
MiVoxels / Sec, More Is Better
Stock
Tuned
SE +/- 24.77, N = 11
SE +/- 3.67, N = 3
SE +/- 25.27, N = 3
SE +/- 9.73, N = 3
2428
2391
2342
2397
500
1000
1500
2000
2500
ParaView 5.4.1
Test: Wavelet Contour - Resolution: 2560 x 1440
2990WX
2700X
Frames / Sec, More Is Better
Stock
Tuned
SE +/- 1.94, N = 3
SE +/- 0.09, N = 3
SE +/- 3.06, N = 3
SE +/- 0.23, N = 3
199
133
198
133
40
80
120
160
200
ParaView 5.4.1
Test: Wavelet Contour - Resolution: 2560 x 1440
2990WX
2700X
MiPolys / Sec, More Is Better
Stock
Tuned
SE +/- 20.25, N = 3
SE +/- 0.92, N = 3
SE +/- 31.88, N = 3
SE +/- 2.43, N = 3
2076
1387
2059
1384
400
800
1200
1600
2000

Gentoo Kernel Tuning Patch Benchmarks

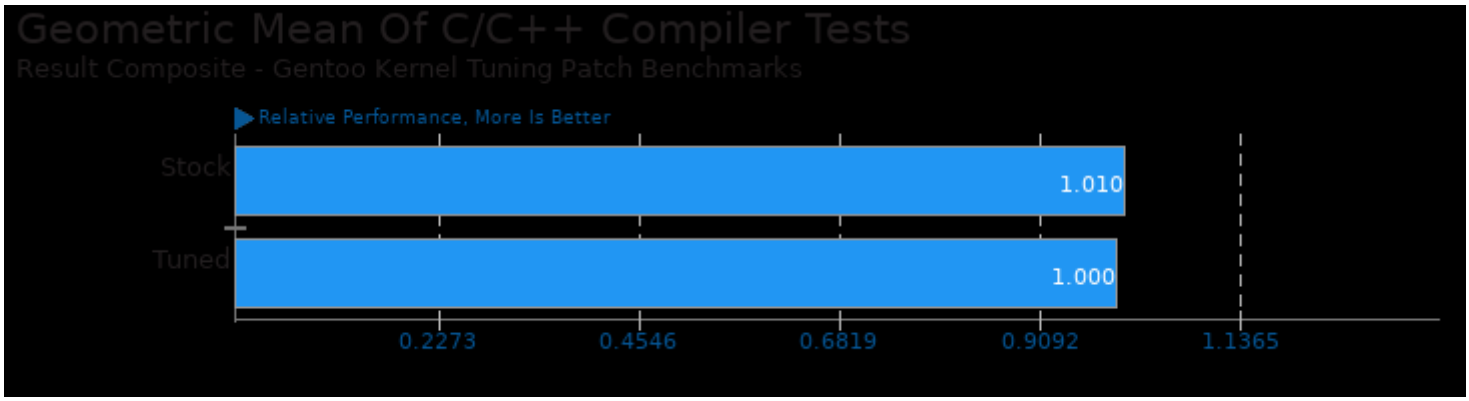


Gentoo Kernel Tuning Patch Benchmarks

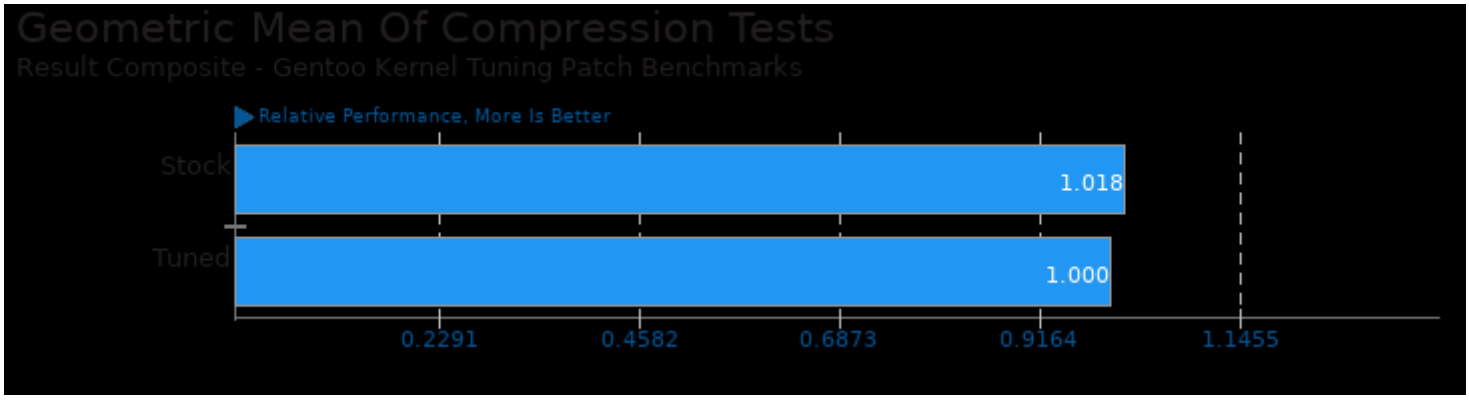
These geometric means are based upon test groupings / test suites for this result file.



Geometric mean based upon tests: pts/build-linux-kernel and pts/build-llvm

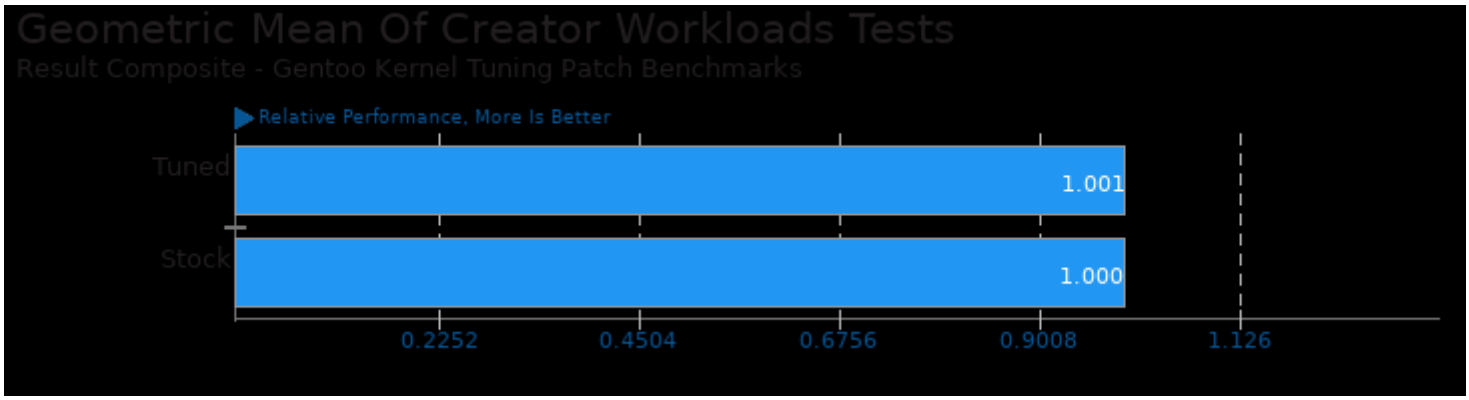


Geometric mean based upon tests: pts/vpxenc, pts/graphics-magick, pts/himeno, pts/build-llvm, pts/c-ray, pts/compress-7zip, pts/pgbench, pts/compress-xz, pts/compress-zstd, pts/openssl, pts/nginx and pts/svt-vp9

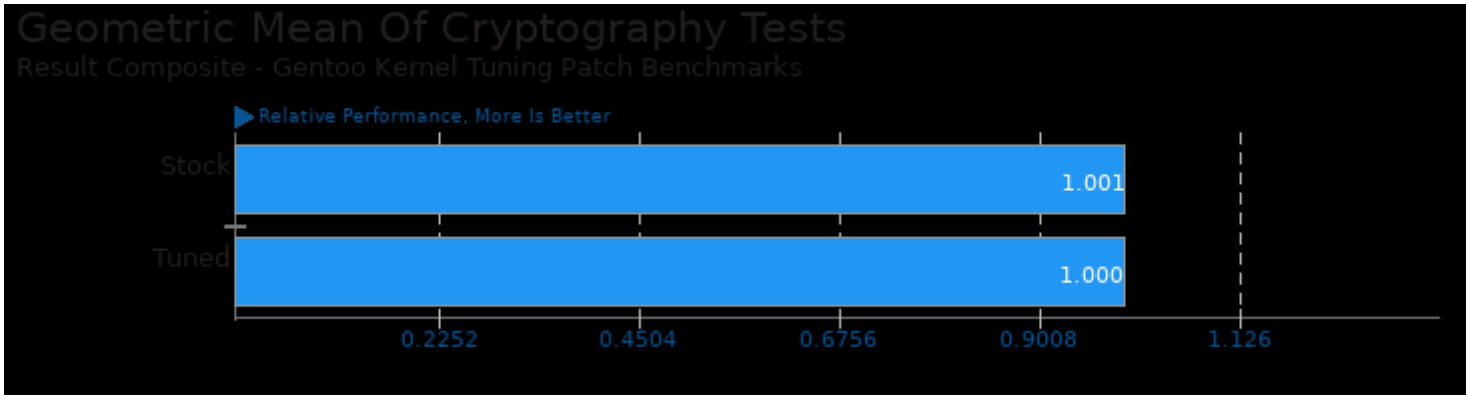


Geometric mean based upon tests: pts/compress-7zip, pts/compress-zstd and pts/compress-xz

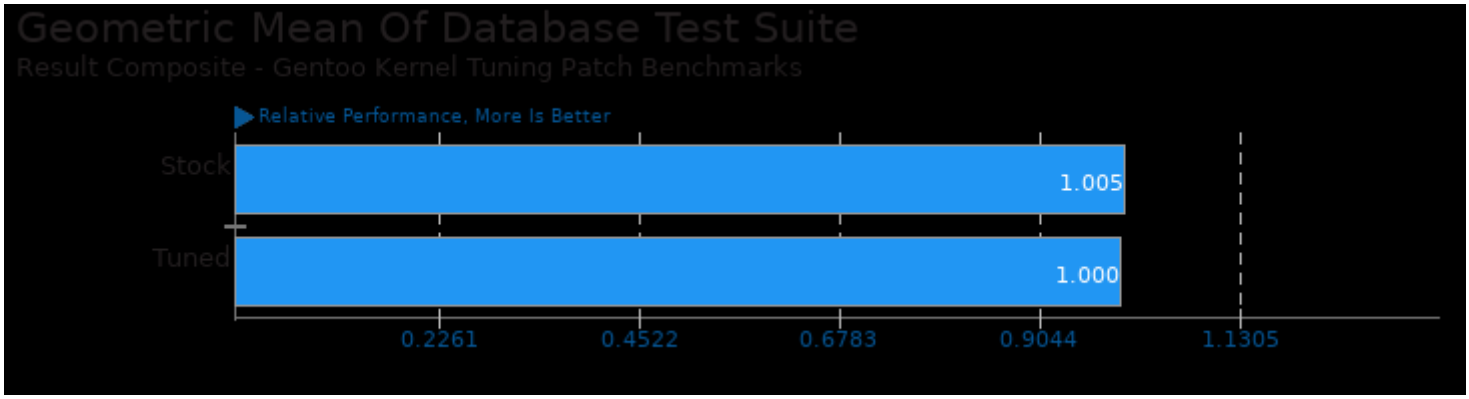
Gentoo Kernel Tuning Patch Benchmarks



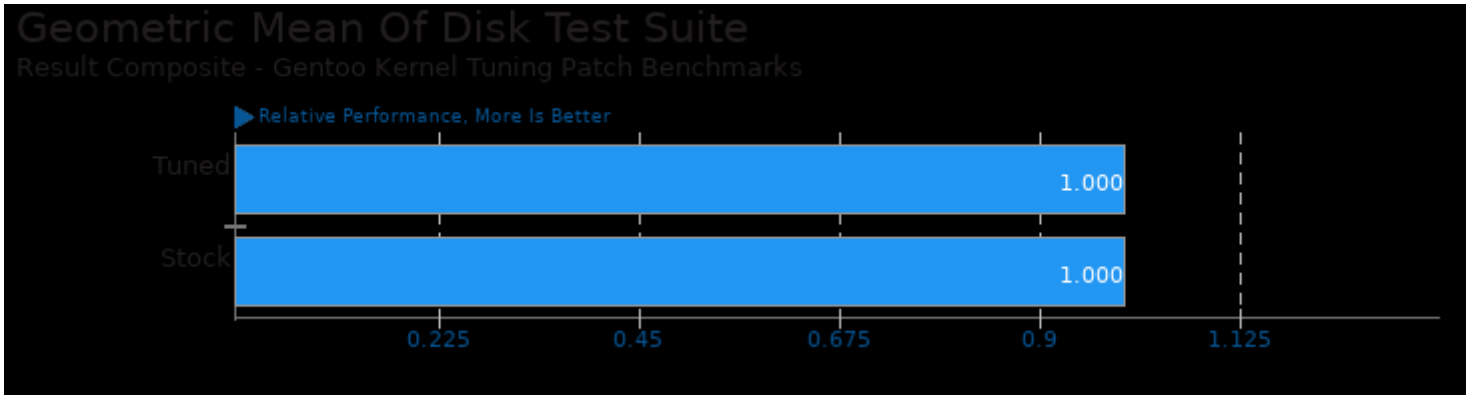
Geometric mean based upon tests: pts/c-ray, pts/blender, pts/radiance, pts/ttsiod-renderer, system/tesseract-ocr, pts/svt-vp9, pts/svt-hevc, pts/vpxenc, pts/graphics-magick, pts/luajit and pts/brl-cad



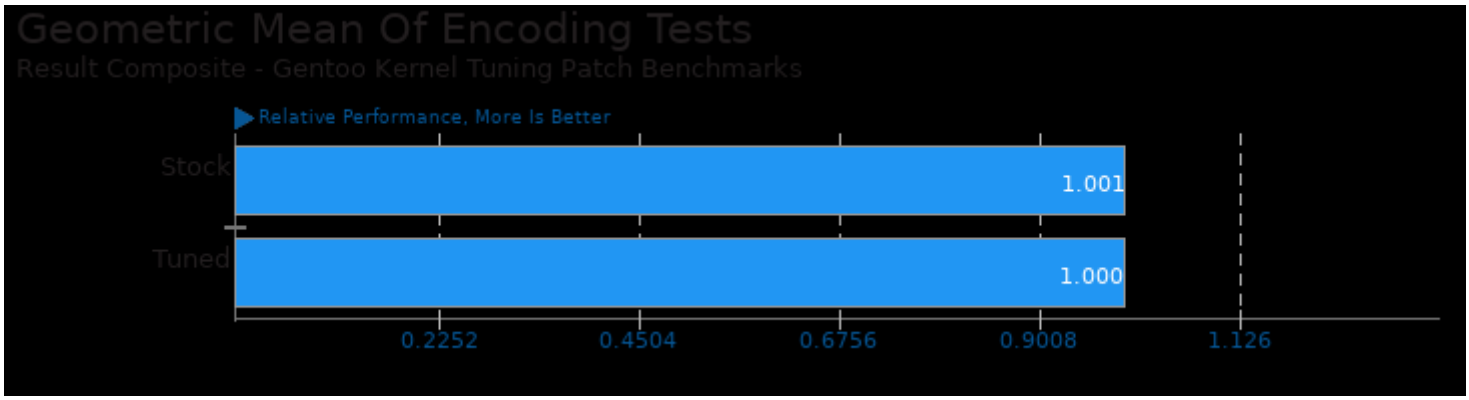
Geometric mean based upon tests: pts/openssl and system/cryptsetup



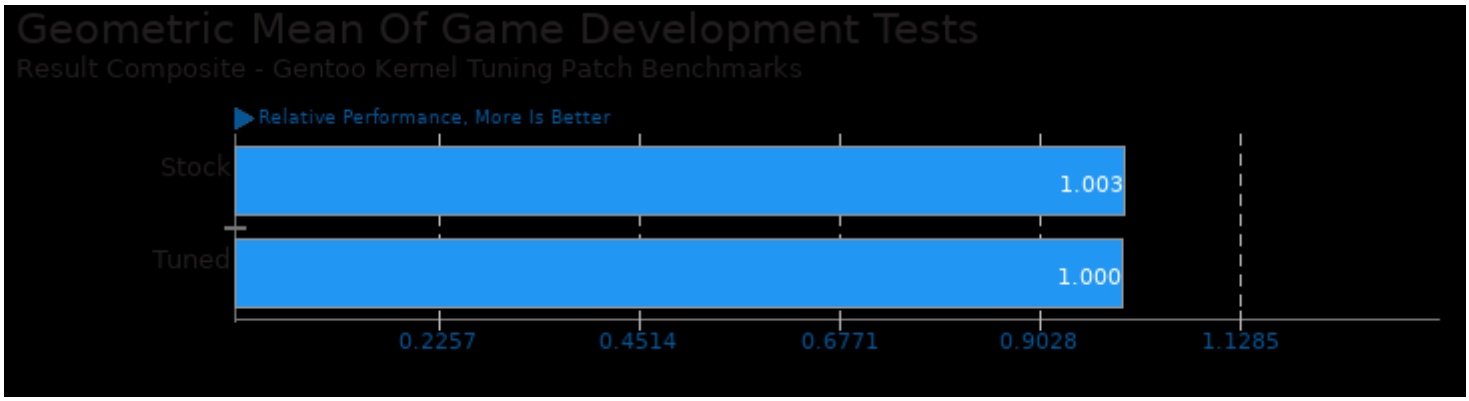
Geometric mean based upon tests: pts/sqlite and pts/pgbench



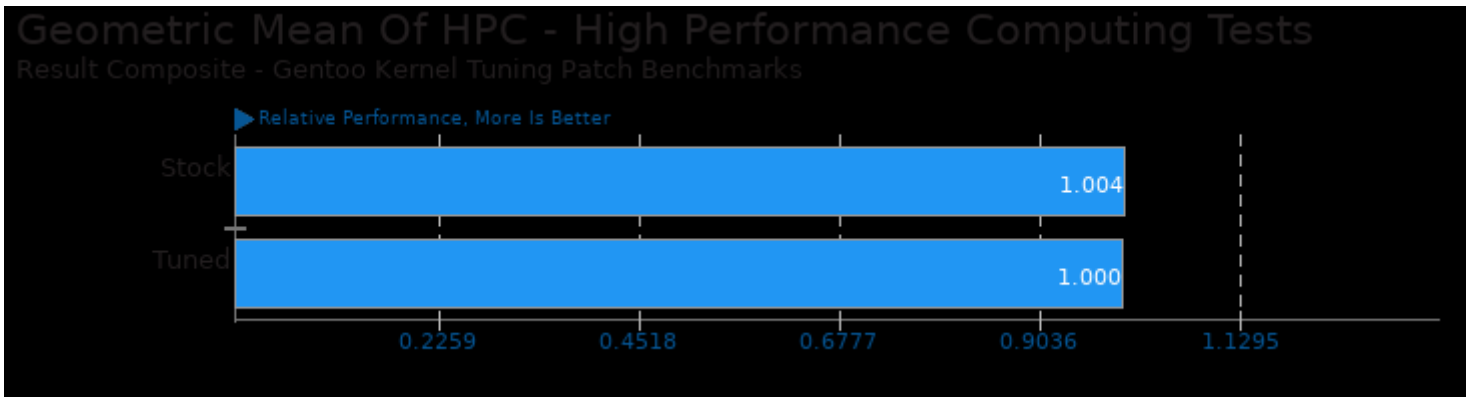
Geometric mean based upon tests: pts/sqlite, pts/fs-mark, pts/compilebench and pts/fio



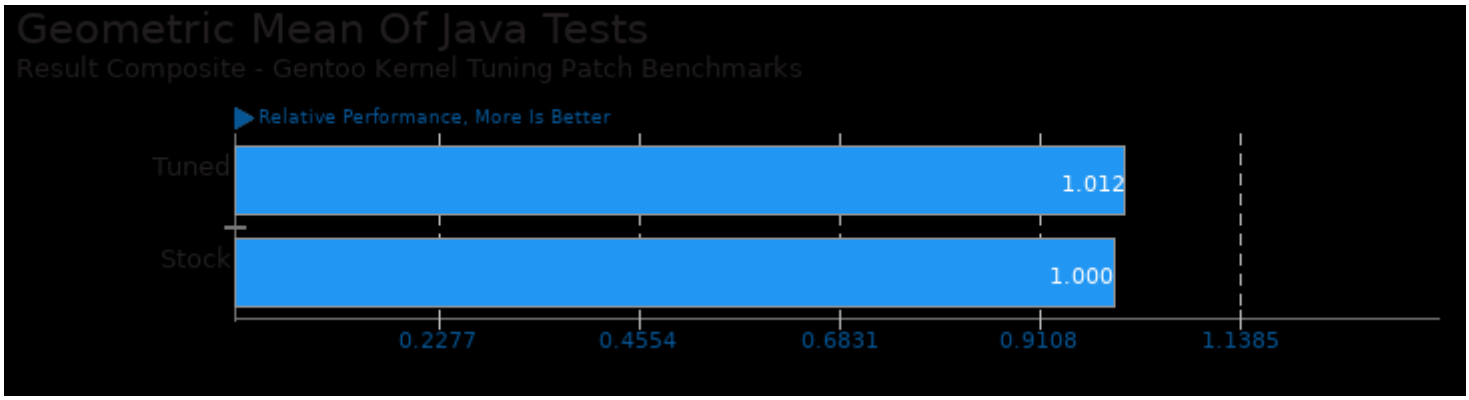
Geometric mean based upon tests: pts/svt-vp9, pts/svt-hevc and pts/vpxenc



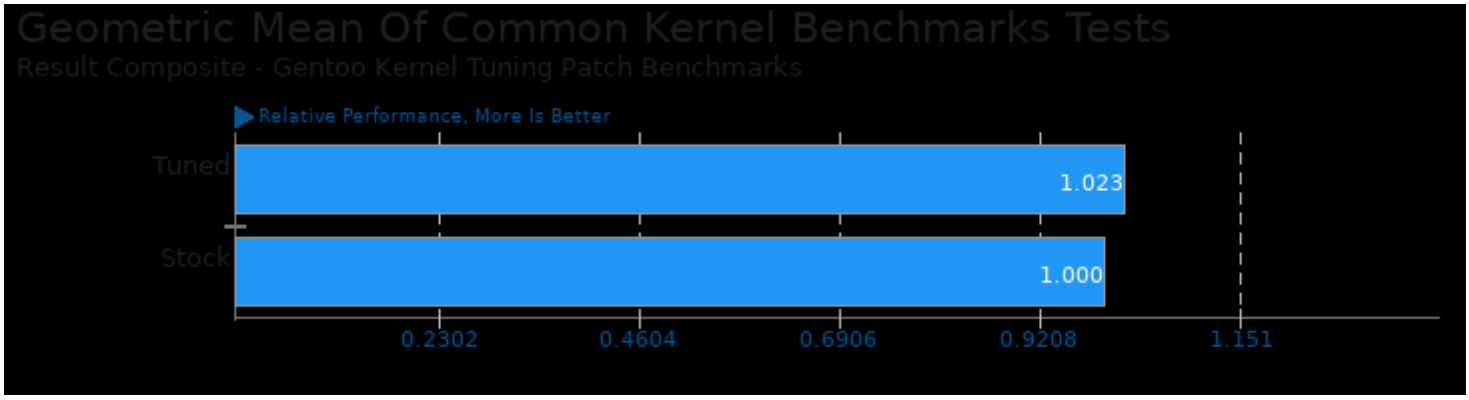
Geometric mean based upon tests: pts/luajit and pts/blender



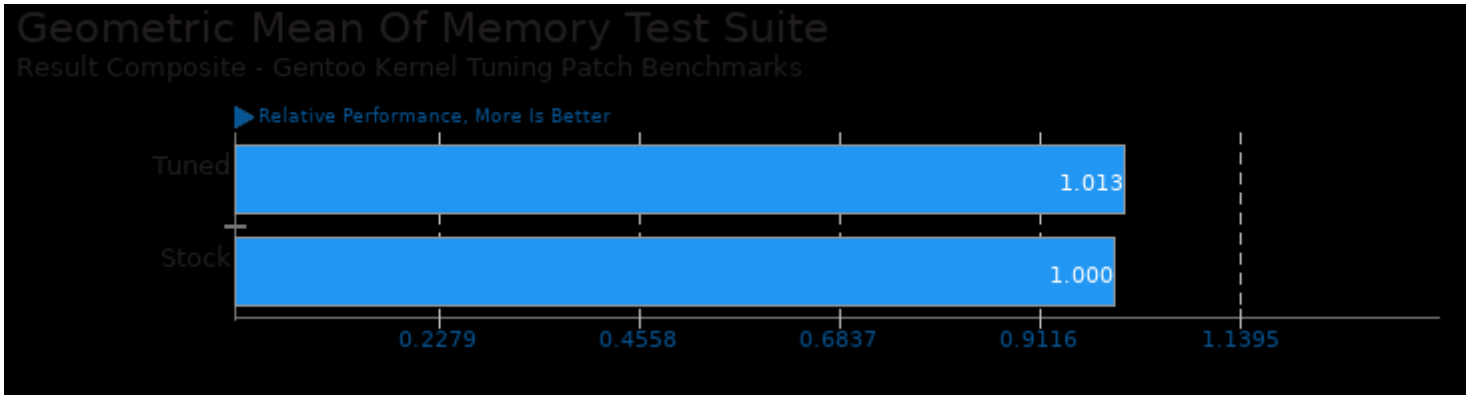
Geometric mean based upon tests: pts/rodinia, pts/parboil, system/octave-benchmark, pts/namd, pts/cloverleaf, pts/himeno, pts/rbenchmark and pts/scikit-learn



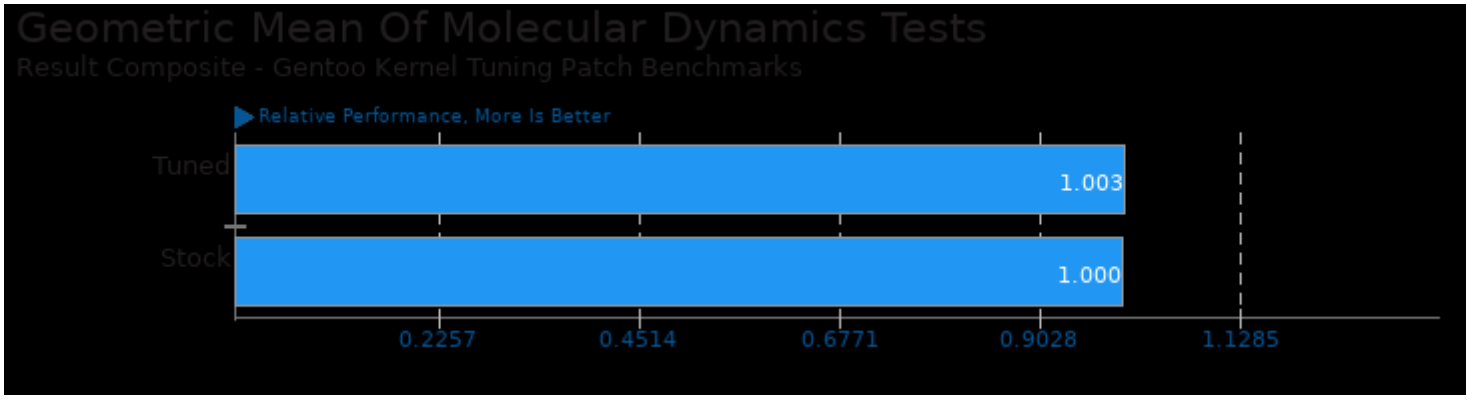
Geometric mean based upon tests: pts/sunflow and pts/dacapobench



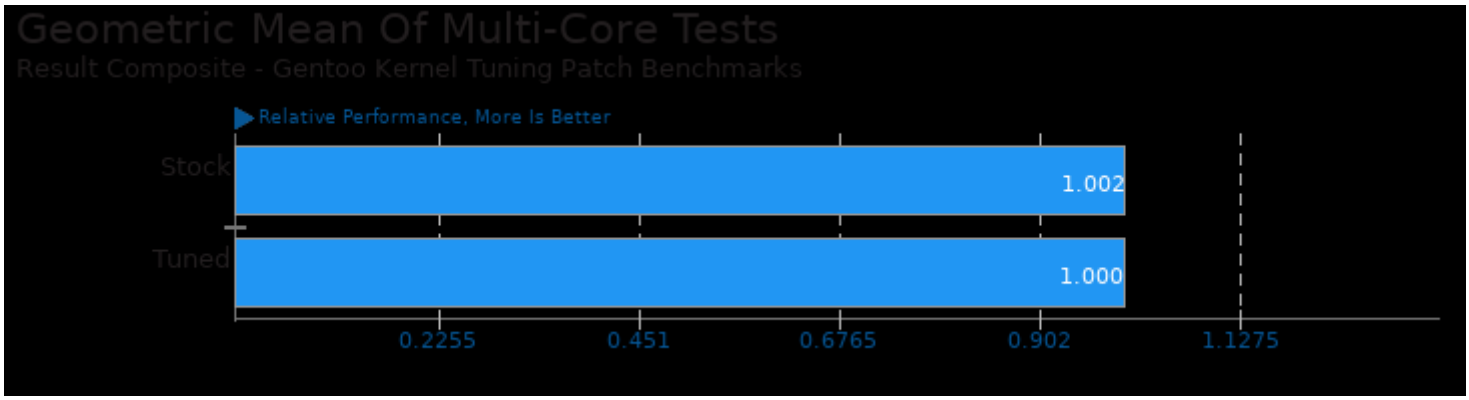
Geometric mean based upon tests: pts/pgbench, pts/tinymembench, pts/mbw, pts/openssl, pts/ctx-clock, pts/hackbench and pts/stress-ng



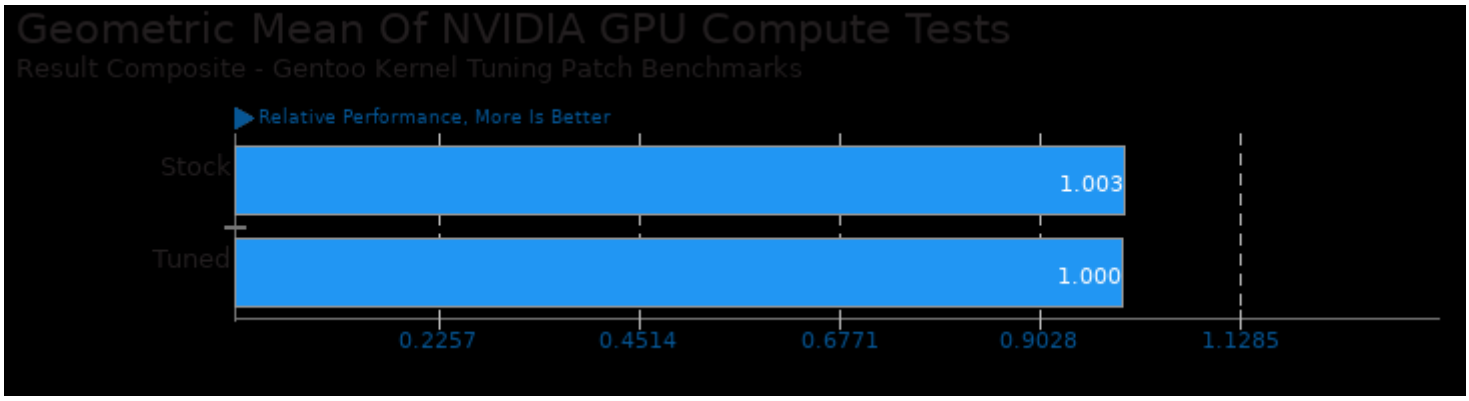
Geometric mean based upon tests: pts/tinymembench and pts/mbw



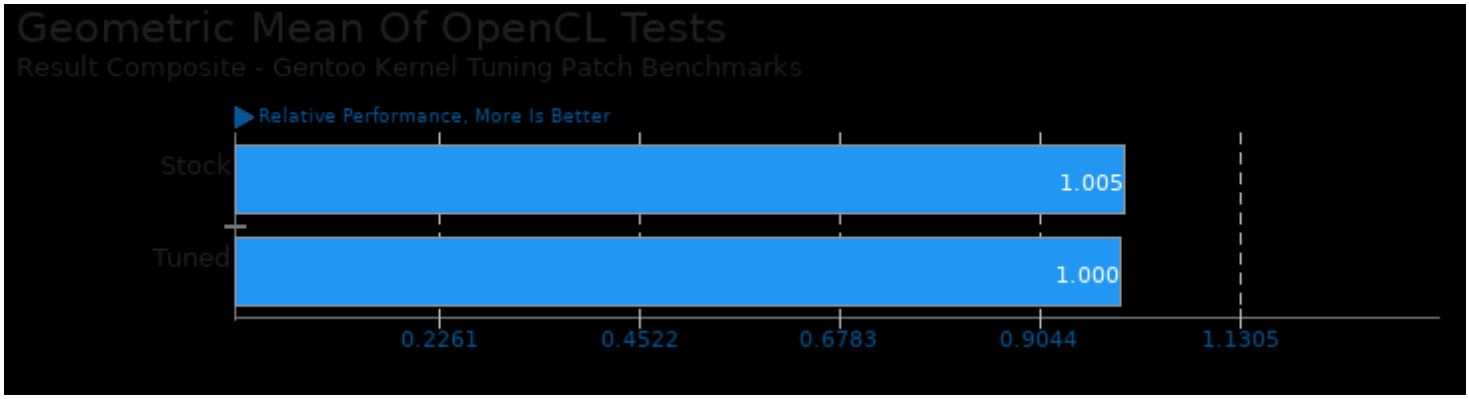
Geometric mean based upon tests: pts/namd and pts/cloverleaf



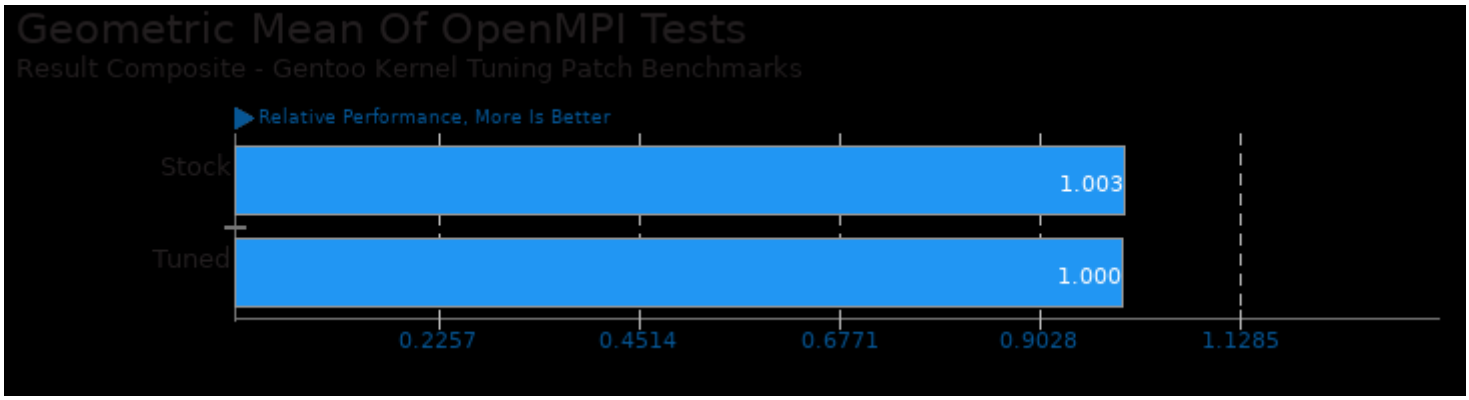
Geometric mean based upon tests: pts/blender, pts/c-ray, pts/svt-vp9, pts/svt-hevc, pts/vpxenc, pts/rodinia, pts/parboil, pts/namd, pts/graphics-magick, pts/compress-7zip, pts/compress-zstd, pts/build-linux-kernel, pts/build-llvm, pts/radiance, pts/ttsiod-renderer and pts/pgbench



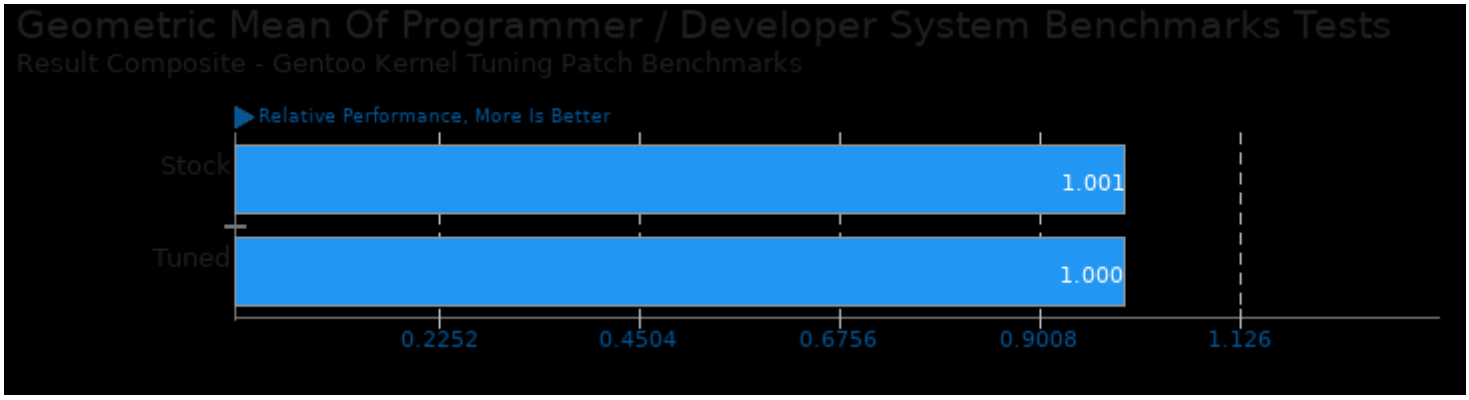
Geometric mean based upon tests: pts/rodinia and pts/blender



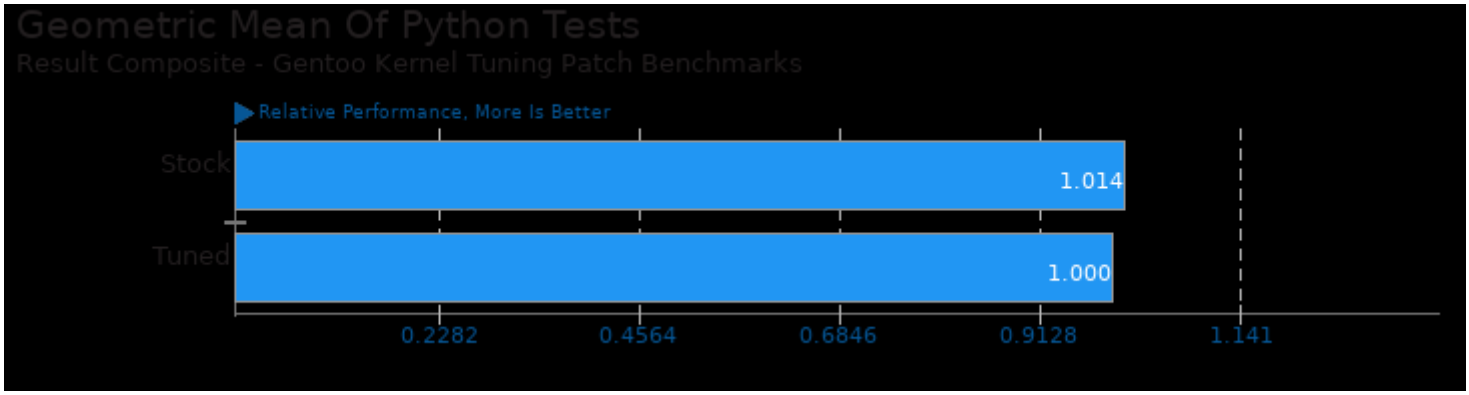
Geometric mean based upon tests: pts/rodinia and pts/parboil



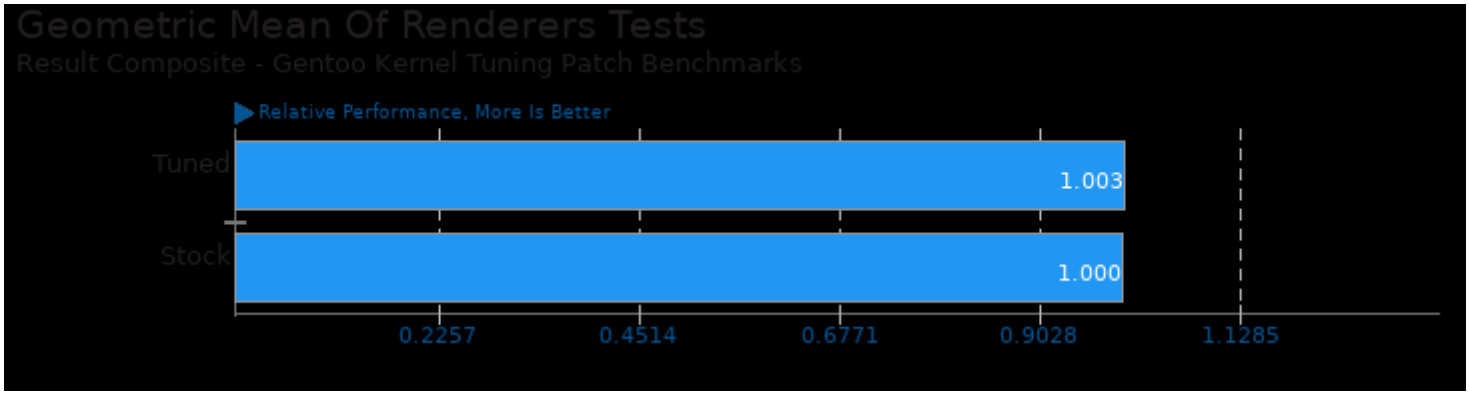
Geometric mean based upon tests: pts/parboil, pts/cloverleaf and pts/rodinia



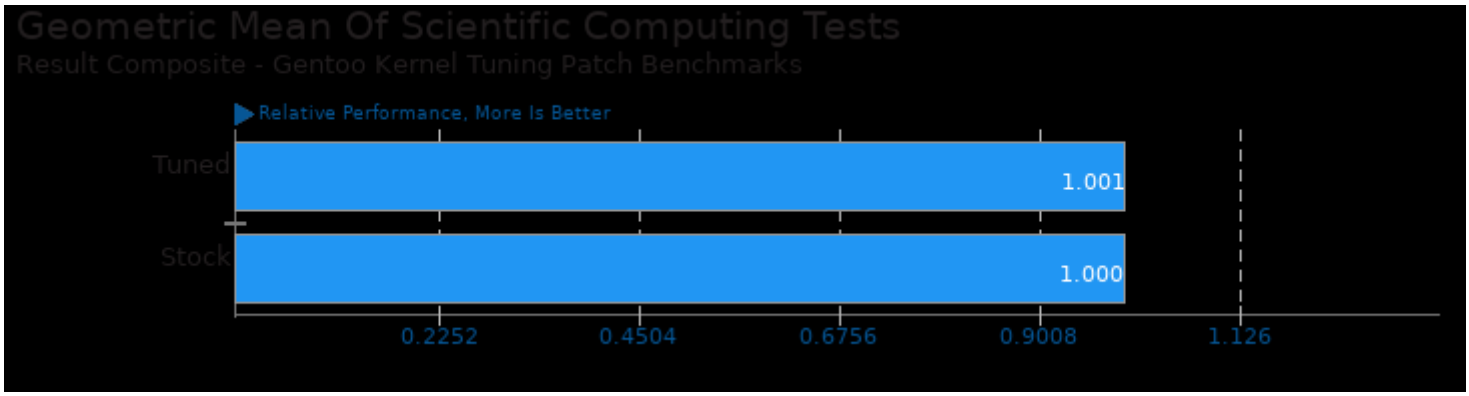
Geometric mean based upon tests: pts/git, pts/compress-zstd, pts/pybench, system/cryptsetup, pts/build-linux-kernel and pts/build-llvm



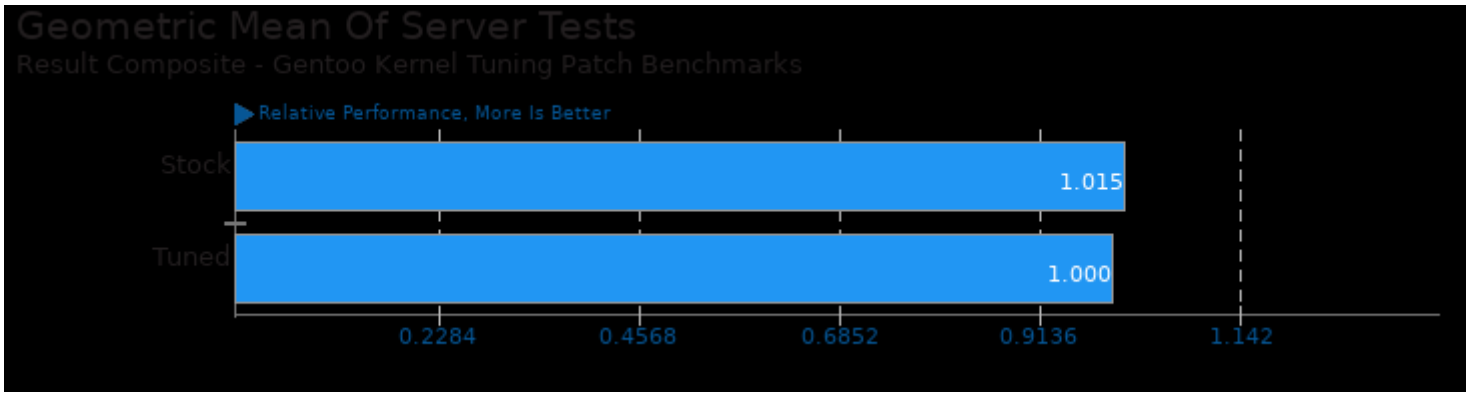
Geometric mean based upon tests: pts/pybench, pts/cython-bench and pts/scikit-learn



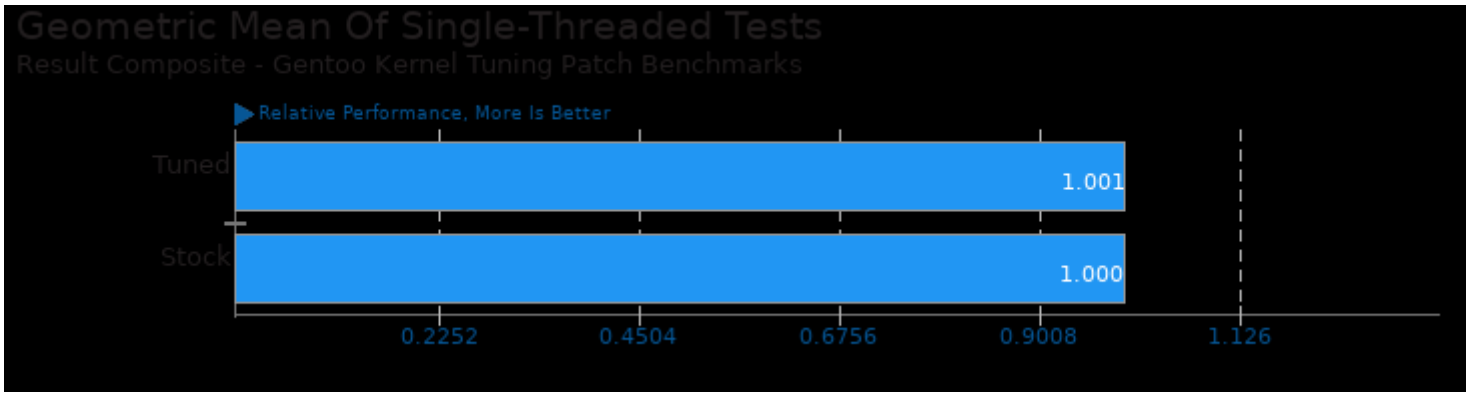
Geometric mean based upon tests: pts/c-ray, pts/blender, pts/radiance and pts/ttsiod-renderer



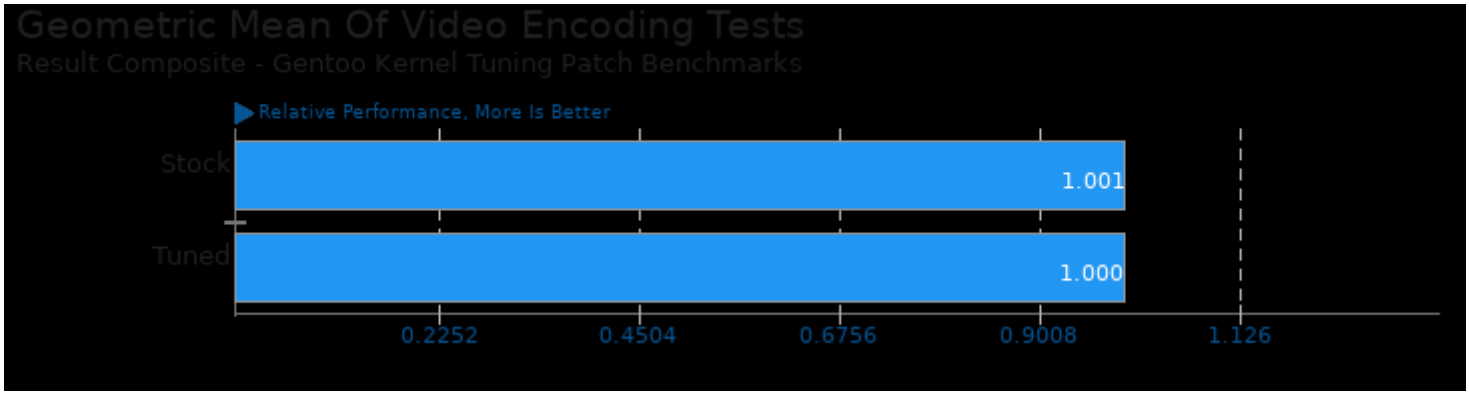
Geometric mean based upon tests: system/octave-benchmark, pts/namd, pts/cloverleaf and pts/himeno



Geometric mean based upon tests: pts/nginx, pts/apache-siege, pts/pgbench, pts/phpbench, pts/node-express-loadtest, pts/openssl and pts/sqlite

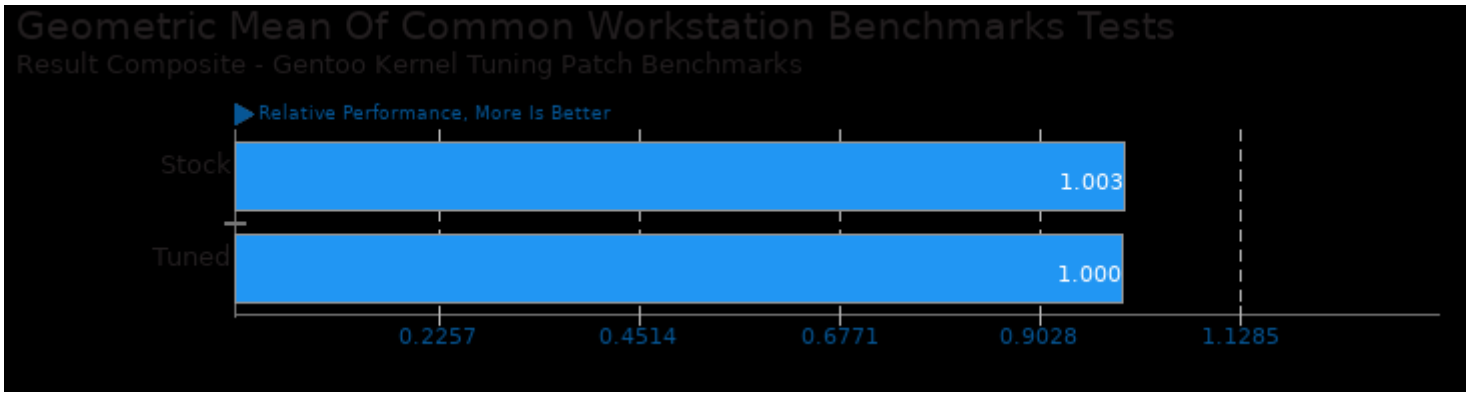


Geometric mean based upon tests: pts/luajit, pts/node-express-loadtest, pts/node-octane, pts/opencv-bench, pts/radiance, pts/rbenchmark, pts/pybench, pts/phpbench, pts/nginx, pts/git and system/tesseract-ocr



Gentoo Kernel Tuning Patch Benchmarks

Geometric mean based upon tests: pts/svt-vp9, pts/svt-hevc and pts/vpxenc



Geometric mean based upon tests: pts/blender, pts/rodinia, pts/parboil, pts/himeno, pts/brl-cad, pts/paraview and pts/git

This file was automatically generated via the Phoronix Test Suite benchmarking software on Thursday, 28 March 2024 20:57.