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Xeon & EPYC Tests

Various Server CPU benchmarks

Automated Executive Summary

2 x Xeon Platinum 8375C NUMA off had the most wins, coming in first place for 35% of the tests.

Based on the geometric mean of all complete results, the fastest (2 x Xeon Platinum 8375C NUMA off) was 1.742x the speed of the slowest (Xeon Platinum 8259CL).

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

MKL-DNN DNNL (Harness: Deconvolution Batch deconv_1d - Data Type: u8s8f32) at 3777.068x
MKL-DNN DNNL (Harness: Convolution Batch conv_googlenet_v3 - Data Type: u8s8f32) at 154.866x
MKL-DNN DNNL (Harness: Convolution Batch conv_alexnet - Data Type: u8s8f32) at 118.651x
MKL-DNN DNNL (Harness: IP Batch All - Data Type: u8s8f32) at 103.268x
MKL-DNN DNNL (Harness: Convolution Batch conv_all - Data Type: u8s8f32) at 10.592x
ArrayFire (Test: BLAS CPU) at 6.39x
NAS Parallel Benchmarks (Test / Class: SP.B) at 4.626x
MKL-DNN DNNL (Harness: IP Batch 1D - Data Type: f32) at 3.918x
NAS Parallel Benchmarks (Test / Class: BT.C) at 3.624x
NAS Parallel Benchmarks (Test / Class: EP.D) at 3.488x.

Test Systems:

EPYC 2 7R32

Processor: AMD EPYC 7R32 48-Core @ 2.80GHz (48 Cores / 96 Threads), Motherboard: Supermicro H11SSL-i v2.00 (2.1 BIOS), Chipset: AMD Starship/Matisse, Memory: 8 x 16384 MB DDR4-3200MT/s HMA82GR7CJR8N-XN, Disk: 32GB Mass Storage + 256GB TOSHIBA THNSNJ25 + 600GB INTEL SSDSC2BB60 + 6001GB HGST HUS726060AL, Graphics: llvmpipe 126GB, Monitor: Crystal View, Network: 2 x Intel I210

OS: Ubuntu 19.10, Kernel: 5.3.0-64-generic (x86_64), Desktop: GNOME Shell 3.34.1, Display Server: X Server, OpenGL: 3.3 Mesa 19.2.8 (LLVM 9.0 128 bits), Compiler: GCC 9.2.1 20191008, File-System: ext4, Screen Resolution: 800x600

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++,gm2 --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-offload-targets=nvptx-none,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
Processor Notes: Scaling Governor: acpi-cpufreq ondemand - CPU Microcode: 0x8301034
Java Notes: OpenJDK Runtime Environment (build 11.0.7+10-post-Ubuntu-2ubuntu219.10)
Python Notes: Python 2.7.17 + Python 3.7.5
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: conditional RSB filling + srbds: Not affected + tsx_async_abort: Not affected

Xeon W-3275M

Processor: Intel Xeon W-3275M @ 4.60GHz (28 Cores / 56 Threads), Motherboard: Supermicro X11SPA-T v1.01 (3.1 BIOS), Chipset: Intel Sky Lake-E DMI3 Registers, Memory: 188GB, Disk: 2 x 1024GB Samsung SSD 970 PRO 1TB, Graphics: eVGA NVIDIA GeForce RTX 2080 Ti 11GB (1350/7000MHz), Audio: Realtek ALC888-VD, Monitor: BenQ SW271, Network: Intel I210 + Aquantia AQC107 NBase-T/IEEE

OS: Ubuntu 19.10, Kernel: 5.3.0-46-generic (x86_64), Desktop: GNOME Shell 3.34.3, Display Server: X Server 1.20.5, Display Driver: NVIDIA 430.50, OpenGL: 4.6.0, Compiler: GCC 9.2.1 20191008 + CUDA 10.1, File-System: ext4, Screen Resolution: 3840x2160

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++,gm2 --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-offload-targets=nvptx-none,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
Processor Notes: Scaling Governor: intel_pstate powersave - CPU Microcode: 0x500002c
OpenCL Notes: GPU Compute Cores: 4352
Java Notes: OpenJDK Runtime Environment (build 11.0.6+10-post-Ubuntu-1ubuntu119.10.1)
Python Notes: Python 2.7.17 + Python 3.7.5
Security Notes: itlb_multihit: KVM: Mitigation of Split huge pages + 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 Enhanced IBRS IBPB: conditional RSB filling + tsx_async_abort: Mitigation of TSX disabled

Xeon Platinum 8259CL

Processor: Intel Xeon Platinum 8259L @ 3.50GHz (24 Cores / 48 Threads), Motherboard: ASRockRack EP2C621D16-4LP (P2.20 BIOS), Chipset: Intel Sky Lake-E DMI3 Registers, Memory: 6 x 16384 MB DDR4-3200MT/s Hynix HMA82GR7CJR8N-XN, Disk: 256GB TOSHIBA THNSNJ25, Graphics: llvmpipe 93GB, Audio: NVIDIA Device 10f8, Monitor: DELL UP2516D, Network: 4 x Intel X722 for 1GbE

OS: Ubuntu 19.10, Kernel: 5.3.0-64-generic (x86_64), Desktop: GNOME Shell 3.34.1, Display Server: X Server, OpenGL: 3.3 Mesa 19.2.8 (LLVM 9.0 256 bits), Compiler: GCC 9.2.1 20191008, File-System: ext4, Screen Resolution: 2560x1440

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++,gm2 --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-offload-targets=nvptx-none,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
Processor Notes: Scaling Governor: intel_pstate powersave - CPU Microcode: 0x4002f01
Java Notes: OpenJDK Runtime Environment (build 11.0.7+10-post-Ubuntu-2ubuntu219.10)
Python Notes: Python 2.7.17 + Python 3.7.5
Security Notes: itlb_multihit: KVM: Mitigation of Split huge pages + 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 Enhanced IBRS IBPB: conditional RSB filling + srbds: Not affected + tsx_async_abort: Mitigation of TSX disabled

2 x Xeon Platinum 8259CL NUMA off

2 x Xeon Platinum 8259CL

Processor: 2 x Intel Xeon Platinum 8259L @ 3.50GHz (48 Cores / 96 Threads), Motherboard: ASRockRack EP2C621D16-4LP (P2.20 BIOS), Chipset: Intel Sky Lake-E DMI3 Registers, Memory: 12 x 16384 MB DDR4-3200MT/s Hynix HMA82GR7CJR8N-XN, Disk: 256GB TOSHIBA THNSNJ25, Graphics: llvmpipe 188GB, Audio: NVIDIA Device 10f8, Monitor: DELL UP2516D, Network: 4 x Intel X722 for 1GbE

OS: Ubuntu 19.10, Kernel: 5.3.0-64-generic (x86_64), Desktop: GNOME Shell 3.34.1, Display Server: X Server, OpenGL: 3.3 Mesa 19.2.8 (LLVM 9.0 256 bits), Compiler: GCC 9.2.1 20191008, File-System: ext4, Screen Resolution: 2560x1440

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++,gm2 --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-offload-targets=nvptx-none,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
Processor Notes: Scaling Governor: intel_pstate powersave - CPU Microcode: 0x4002f01
Java Notes: OpenJDK Runtime Environment (build 11.0.7+10-post-Ubuntu-2ubuntu219.10)
Python Notes: Python 2.7.17 + Python 3.7.5
Security Notes: itlb_multihit: KVM: Mitigation of Split huge pages + 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 Enhanced IBRS IBPB: conditional RSB filling + srbds: Not affected + tsx_async_abort: Mitigation of TSX disabled

Xeon Platinum 8272CL

Processor: Intel Xeon Platinum 8272CL @ 3.70GHz (26 Cores / 52 Threads), Motherboard: ASRockRack EP2C621D16-4LP (P2.20 BIOS), Chipset: Intel Sky Lake-E DMI3 Registers, Memory: 6 x 16384 MB DDR4-3200MT/s Hynix HMA82GR7CJR8N-XN, Disk: 256GB TOSHIBA THNSNJ25, Graphics: llvmpipe 93GB, Audio: NVIDIA Device 10f8, Monitor: DELL UP2516D, Network: 4 x Intel X722 for 1GbE

OS: Ubuntu 19.10, Kernel: 5.3.0-64-generic (x86_64), Desktop: GNOME Shell 3.34.1, Display Server: X Server, OpenGL: 3.3 Mesa 19.2.8 (LLVM 9.0 256 bits), Compiler: GCC 9.2.1 20191008, File-System: ext4, Screen Resolution: 2560x1440

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++,gm2 --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-offload-targets=nvptx-none,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
Processor Notes: Scaling Governor: intel_pstate powersave - CPU Microcode: 0x5002f01
Java Notes: OpenJDK Runtime Environment (build 11.0.7+10-post-Ubuntu-2ubuntu219.10)
Python Notes: Python 2.7.17 + Python 3.7.5
Security Notes: itlb_multihit: KVM: Mitigation of Split huge pages + 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 Enhanced IBRS IBPB: conditional RSB filling + srbds: Not affected + tsx_async_abort: Mitigation of TSX disabled

2 x Xeon Platinum 8272CL NUMA off

Processor: 2 x Intel Xeon Platinum 8272CL @ 3.70GHz (52 Cores / 104 Threads), Motherboard: ASRockRack

EP2C621D16-4LP (P2.20 BIOS), Chipset: Intel Sky Lake-E DMI3 Registers, Memory: 12 x 16384 MB DDR4-3200MT/s Hynix HMA82GR7CJR8N-XN, Disk: 600GB INTEL SSDSC2BB60 + 10001GB Seagate ST10000NM0016-1T + 256GB TOSHIBA THNSNJ25, Graphics: llvmpipe 188GB, Audio: NVIDIA Device 10f8, Monitor: DELL UP2516D, Network: 4 x Intel X722 for 1GbE

OS: Ubuntu 19.10, Kernel: 5.3.0-64-generic (x86_64), Desktop: GNOME Shell 3.34.1, Display Server: X Server, OpenGL: 3.3 Mesa 19.2.8 (LLVM 9.0 256 bits), Compiler: GCC 9.2.1 20191008, File-System: ext4, Screen Resolution: 2560x1440

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++,gm2 --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-offload-targets=nvptx-none,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
Processor Notes: Scaling Governor: intel_pstate powersave - CPU Microcode: 0x5002f01
Java Notes: OpenJDK Runtime Environment (build 11.0.7+10-post-Ubuntu-2ubuntu219.10)
Python Notes: Python 2.7.17 + Python 3.7.5
Security Notes: itlb_multihit: KVM: Mitigation of Split huge pages + 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 Enhanced IBRS IBPB: conditional RSB filling + srbds: Not affected + tsx_async_abort: Mitigation of TSX disabled

2 x Xeon Platinum 8272CL

Processor: 2 x Intel Xeon Platinum 8272CL @ 3.70GHz (52 Cores / 104 Threads), Motherboard: ASRockRack EP2C621D16-4LP (P2.20 BIOS), Chipset: Intel Sky Lake-E DMI3 Registers, Memory: 12 x 16384 MB DDR4-3200MT/s Hynix HMA82GR7CJR8N-XN, Disk: 256GB TOSHIBA THNSNJ25, Graphics: llvmpipe 188GB, Audio: NVIDIA Device 10f8, Monitor: DELL UP2516D, Network: 4 x Intel X722 for 1GbE

OS: Ubuntu 19.10, Kernel: 5.3.0-64-generic (x86_64), Desktop: GNOME Shell 3.34.1, Display Server: X Server, OpenGL: 3.3 Mesa 19.2.8 (LLVM 9.0 256 bits), Compiler: GCC 9.2.1 20191008, File-System: ext4, Screen Resolution: 2560x1440

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++,gm2 --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-offload-targets=nvptx-none,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
Processor Notes: Scaling Governor: intel_pstate powersave - CPU Microcode: 0x5002f01
Java Notes: OpenJDK Runtime Environment (build 11.0.7+10-post-Ubuntu-2ubuntu219.10)
Python Notes: Python 2.7.17 + Python 3.7.5
Security Notes: itlb_multihit: KVM: Mitigation of Split huge pages + 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 Enhanced IBRS IBPB: conditional RSB filling + srbds: Not affected + tsx_async_abort: Mitigation of TSX disabled

Xeon Platinum 8280

Processor: Intel Xeon Platinum 8280 @ 4.00GHz (28 Cores / 56 Threads), Motherboard: GIGABYTE MD61-SC2-00 v01000100 (T15 BIOS), Chipset: Intel Sky Lake-E DMI3 Registers, Memory: 6 x 32 GB DDR4-2933MT/s HMA84GR7CJR4N-WM, Disk: 280GB INTEL SSDPED1D280GA, Graphics: ASPEED, Monitor: VE228, Network: 2 x Intel X722 for 1GbE + 2 x QLogic FastLinQ QL41000 10/25/40/50GbE

OS: Ubuntu 20.04, Kernel: 5.4.0-18-generic (x86_64), Desktop: GNOME Shell 3.36.0, Display Server: X Server 1.20.7, Display Driver: modesetting 1.20.7, Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 1024x768

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++,gm2 --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none,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
Processor Notes: Scaling Governor: intel_pstate powersave - CPU Microcode: 0x500002c
Java Notes: OpenJDK Runtime Environment (build 11.0.6+10-post-Ubuntu-2ubuntu2)

Python Notes: + Python 3.8.2
Security Notes: itlb_multihit: KVM: Mitigation of Split huge pages + 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 Enhanced IBRS IBPB: conditional RSB filling + tsx_async_abort: Mitigation of TSX disabled

2 x Xeon Platinum 8280

Processor: 2 x Intel Xeon Platinum 8280 @ 4.00GHz (56 Cores / 112 Threads), Motherboard: GIGABYTE MD61-SC2-00 v01000100 (T15 BIOS), Chipset: Intel Sky Lake-E DMI3 Registers, Memory: 12 x 32 GB DDR4-2933MT/s HMA84GR7CJR4N-WM, Disk: 280GB INTEL SSDPED1D280GA, Graphics: ASPEED, Monitor: VE228, Network: 2 x Intel X722 for 1GbE + 2 x QLogic FastLinQ QL41000 10/25/40/50GbE

OS: Ubuntu 20.04, Kernel: 5.4.0-18-generic (x86_64), Desktop: GNOME Shell 3.36.0, Display Server: X Server 1.20.7, Display Driver: modesetting 1.20.7, Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 1024x768

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++,gm2 --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none,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
Processor Notes: Scaling Governor: intel_pstate powersave - CPU Microcode: 0x500002c
Java Notes: OpenJDK Runtime Environment (build 11.0.6+10-post-Ubuntu-2ubuntu2)
Python Notes: + Python 3.8.2
Security Notes: itlb_multihit: KVM: Mitigation of Split huge pages + 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 Enhanced IBRS IBPB: conditional RSB filling + tsx_async_abort: Mitigation of TSX disabled

Xeon Platinum 8375C

Processor: Intel Xeon Platinum 8375C @ 3.50GHz (32 Cores / 64 Threads), Motherboard: Supermicro X12DPi-N6 v1.00 (1.0a BIOS), Chipset: Intel Device 0998, Memory: 8 x 16384 MB DDR4-3200MT/s Samsung M393A2K43CB2-CWE, Disk: 600GB INTEL SSDSC2BB60 + 10001GB Seagate ST10000NM0016-1T + 256GB TOSHIBA THNSNJ25, Graphics: llvmpipe 126GB, Monitor: Crystal View, Network: 2 x Intel I350

OS: Ubuntu 19.10, Kernel: 5.3.0-64-generic (x86_64), Desktop: GNOME Shell 3.34.1, Display Server: X Server, OpenGL: 3.3 Mesa 19.2.8 (LLVM 9.0 256 bits), Compiler: GCC 9.2.1 20191008, File-System: ext4, Screen Resolution: 800x600

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++,gm2 --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-offload-targets=nvptx-none,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
Processor Notes: Scaling Governor: acpi-cpufreq ondemand - CPU Microcode: 0xd0001b2
Java Notes: OpenJDK Runtime Environment (build 11.0.7+10-post-Ubuntu-2ubuntu219.10)
Python Notes: Python 2.7.17 + Python 3.7.5
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 Enhanced IBRS IBPB: conditional RSB filling + srbds: Not affected + tsx_async_abort: Not affected

2 x Xeon Platinum 8375C NUMA off

Processor: 2 x Intel Xeon Platinum 8375C @ 3.50GHz (64 Cores / 128 Threads), Motherboard: Supermicro X12DPi-N6 v1.00 (1.0a BIOS), Chipset: Intel Device 0998, Memory: 16 x 16384 MB DDR4-3200MT/s Samsung M393A2K43CB2-CWE, Disk: 600GB INTEL SSDSC2BB60 + 10001GB Seagate ST10000NM0016-1T + 256GB TOSHIBA THNSNJ25, Graphics: llvmpipe 251GB, Monitor: Crystal View, Network: 2 x Intel I350

OS: Ubuntu 19.10, Kernel: 5.3.0-64-generic (x86_64), Desktop: GNOME Shell 3.34.1, Display Server: X Server, OpenGL: 3.3 Mesa 19.2.8 (LLVM 9.0 256 bits), Compiler: GCC 9.2.1 20191008, File-System: ext4, Screen Resolution: 800x600

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++,gm2 --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-offload-targets=nvptx-none,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
Processor Notes: Scaling Governor: acpi-cpufreq ondemand - CPU Microcode: 0xd0001b2
Java Notes: OpenJDK Runtime Environment (build 11.0.7+10-post-Ubuntu-2ubuntu219.10)
Python Notes: Python 2.7.17 + Python 3.7.5
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 Enhanced IBRS IBPB: conditional RSB filling + srbds: Not affected + tsx_async_abort: Not affected

2 x Xeon Platinum 8375C

Processor: 2 x Intel Xeon Platinum 8375C @ 3.50GHz (64 Cores / 128 Threads), Motherboard: Supermicro X12DPi-N6 v1.00 (1.0a BIOS), Chipset: Intel Device 0998, Memory: 16 x 16384 MB DDR4-3200MT/s Samsung M393A2K43CB2-CWE, Disk: 600GB INTEL SSDSC2BB60 + 10001GB Seagate ST10000NM0016-1T + 256GB TOSHIBA THNSNJ25, Graphics: llvmpipe 252GB, Monitor: Crystal View, Network: 2 x Intel I350

OS: Ubuntu 19.10, Kernel: 5.3.0-64-generic (x86_64), Desktop: GNOME Shell 3.34.1, Display Server: X Server, OpenGL: 3.3 Mesa 19.2.8 (LLVM 9.0 256 bits), Compiler: GCC 9.2.1 20191008, File-System: ext4, Screen Resolution: 800x600

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++,gm2 --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-offload-targets=nvptx-none,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
Processor Notes: Scaling Governor: acpi-cpufreq ondemand - CPU Microcode: 0xd0001b2
Java Notes: OpenJDK Runtime Environment (build 11.0.7+10-post-Ubuntu-2ubuntu219.10)
Python Notes: Python 2.7.17 + Python 3.7.5
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 Enhanced IBRS IBPB: conditional RSB filling + srbds: Not affected + tsx_async_abort: Not affected

	EPYC 2 7R32	Xeon W-3275M	Xeon Platinum 8259CL	2 x Xeon Platinum 8259CL NUMA off	2 x Xeon Platinum 8259CL	Xeon Platinum 8272CL	2 x Xeon Platinum 8272CL NUMA off	2 x Xeon Platinum 8272CL	Xeon Platinum 8280	2 x Xeon Platinum 8280	Xeon Platinum 8375C	2 x Xeon Platinum 8375C NUMA off	2 x Xeon Platinum 8375C
Intel MPI Benchmarks - IMB-P2P PingPong (Msg/sec)	20348261	20246605	16759832	32444647	31988149	19096343	36872935	36807806	**16653865**	31821691	24658156	49151696	**50148418**
Normalized	40.58%	40.37%	33.42%	64.7%	63.79%	38.08%	73.53%	73.4%	33.21%	63.46%	49.17%	98.01%	100%
Standard Deviation	0.3%	0.5%	0.3%	0.6%	0.4%	0.5%	0.9%	0.4%	0.4%	0.4%	1.5%	2%	1%
dav1d - Summer Nature	**321.17**	256.60	205.63	212.99	215.64	208.50	211.05	216.00	**199.08**	221.31	247.86	246.96	251.63
Normalized	100%	79.9%	64.03%	66.32%	67.14%	64.92%	65.71%	67.25%	61.99%	68.91%	77.17%	76.89%	78.35%
Standard Deviation	0.5%	0.8%	1.1%	1.4%	1.4%	0.6%	2.2%	1.9%	1%	2.9%	1.3%	2.8%	0.9%

Xeon & EPYC Tests

dav1d - S.N.1 (FPS)	676.16	537.84	353.78	400.24	431.76	315.51	371.48	391.25	323.20	409.88	444.30	478.05	500.83
Normalized	100%	79.54%	52.32%	59.19%	63.85%	46.66%	54.94%	57.86%	47.8%	60.62%	65.71%	70.7%	74.07%
Standard Deviation	0.6%	0.7%	0.8%	3.6%	1.5%	1.2%	0.3%	2.8%	0.3%	3.5%	2.2%	0.4%	3.5%
dav1d - C.1.1.b (FPS)	140.14	81.60	67.33	88.66	89.55	63.01	82.65	82.87	65.40	85.14	96.93	118.88	118.37
Normalized	100%	58.23%	48.04%	63.27%	63.9%	44.96%	58.98%	59.13%	46.67%	60.75%	69.17%	84.83%	84.47%
Standard Deviation	0.7%	0.1%	0.3%	1.1%	0.1%	0.5%	0.6%	0.9%	0.3%	0.1%	1.1%	0.8%	0.3%
OSPray - San Miguel - SciVis (FPS)	58.82	34.48	32.97	61.58	62.5	37.04	66.67	66.67	38.46	69.52	54.39	99.24	100
Normalized	58.82%	34.48%	32.97%	61.58%	62.5%	37.04%	66.67%	66.67%	38.46%	69.52%	54.39%	99.24%	100%
Standard Deviation	0%	0%	1.9%	3%	0%	0%	0%	0%	0%	3.5%	2.9%	2.6%	
OSPray - XFrog Forest - SciVis (FPS)	11.03	5.72	5.38	10.32	10.42	6.02	11.63	11.63	6.25	12.05	9.38	17.86	17.86
Normalized	61.76%	32.03%	30.12%	57.78%	58.34%	33.71%	65.12%	65.12%	34.99%	67.47%	52.52%	100%	100%
Standard Deviation	0.6%	0.2%	0%	0.4%	0%	0%	0%	0%	0%	0%	0.5%	0%	0%
OSPray - San Miguel - Path Tracer (FPS)	4.73	3.25	3.00	5.54	5.58	3.36	6.21	6.25	3.52	6.53	5.16	9.52	9.52
Normalized	49.68%	34.14%	31.51%	58.19%	58.61%	35.29%	65.23%	65.65%	36.97%	68.59%	54.2%	100%	100%
Standard Deviation	0.3%	0.1%	0.2%	0.3%	0.3%	0.2%	0%	0%	0.2%	0.3%	0.2%	0%	0%
OSPray - NASA Streamlines - SciVis (FPS)	76.92	45.45	43.48	76.92	76.92	47.62	90.91	90.91	50	90.91	71.43	136.90	140.48
Normalized	54.76%	32.35%	30.95%	54.76%	54.76%	33.9%	64.71%	64.71%	35.59%	64.71%	50.85%	97.45%	100%
Standard Deviation	0%	0%	0%	0%	0%	0%	0%	0%		0%	0%	6.4%	4.5%
OSPray - XFrog Forest - Path Tracer (FPS)	5.85	3.17	2.96	5.71	5.71	3.33	6.41	6.44	3.46	6.67	5.18	9.88	9.88
Normalized	59.21%	32.09%	29.96%	57.79%	57.79%	33.7%	64.88%	65.18%	35.02%	67.51%	52.43%	100%	100%
Standard Deviation	0.6%	0.1%	0.1%	0.2%	0%	0.1%	0%	0.4%	0.2%	0%	0%	0.5%	0.4%
OSPray - M.R - SciVis (FPS)	40	40	37.04	62.5	62.5	40	71.43	71.43	42.87	71.43	62.5	111.11	108.33
Normalized	36%	36%	33.34%	56.25%	56.25%	36%	64.29%	64.29%	38.58%	64.29%	56.25%	100%	97.5%
Standard Deviation			0%	0%	0%		0%	0%	2.4%	0%	0%	0%	4.6%
OSPray - NASA Streamlines - Path Tracer (FPS)	16.60	8.69	8.09	15.54	15.625	9.09	17.44	17.54	9.49	18.18	14.22	27.03	27.03
Normalized	61.41%	32.15%	29.93%	57.49%	57.81%	33.63%	64.52%	64.89%	35.11%	67.26%	52.61%	100%	100%
Standard Deviation	0.8%	0.2%	0.5%	0.9%	0%	0%	1%	0%	0.5%	0%	0.8%	0%	0%
Embree - Pathtracer - Crown (FPS)	47.646	24.550	21.382	38.103	38.122	25.121	43.989	43.823	26.280	45.612	37.633	69.139	69.264
	4	3	9	3	2	8	4	8	0	1	9	2	8
Normalized	68.79%	35.44%	30.87%	55.01%	55.04%	36.27%	63.51%	63.27%	37.94%	65.85%	54.33%	99.82%	100%
Standard Deviation	0.3%	0.2%	0.2%	0.7%	0.8%	0.3%	0.7%	1.2%	0.3%	0.3%	1.4%	0.2%	0.4%

Xeon & EPYC Tests

Embree - Pathtracer ISPC - Crown (FPS)	45.1869	26.4010	**24.7267**	46.4184	46.1757	27.7844	50.9460	51.1982	28.7730	53.2304	42.5975	78.5535	**78.6342**
Normalized	57.46%	33.57%	31.45%	59.03%	58.72%	35.33%	64.79%	65.11%	36.59%	67.69%	54.17%	99.9%	100%
Standard Deviation	0.3%	0.2%	0.1%	0.2%	1.4%	0.1%	2.8%	1.6%	0.1%	0.2%	0.1%	0.1%	0.1%
Embree - Pathtracer - Asian Dragon (FPS)	52.953	30.105	**26.063**	46.908	46.792	30.565	54.196	54.204	32.247	57.487	44.305	78.537	**78.767**
	2	7	**8**	4	0	3	4	1	4	0	5	9	**2**
Normalized	67.23%	38.22%	33.09%	59.55%	59.41%	38.8%	68.81%	68.82%	40.94%	72.98%	56.25%	99.71%	100%
Standard Deviation	0.2%	0.3%	0.3%	0.3%	1.4%	0.3%	0.4%	0.9%	0.2%	0.5%	0.3%	0.9%	0.3%
Embree - Pathtracer - Asian Dragon Obj (FPS)	47.580	27.195	**23.719**	42.494	42.761	27.668	49.106	49.281	29.206	51.785	40.184	70.054	**70.388**
	6	2	**2**	6	3	5	1	5	1	3	6	3	**3**
Normalized	67.6%	38.64%	33.7%	60.37%	60.75%	39.31%	69.76%	70.01%	41.49%	73.57%	57.09%	99.53%	100%
Standard Deviation	0.1%	0.1%	0.1%	0.2%	0.2%	0.1%	0.2%	1%	0.3%	0.4%	0.1%	0.5%	0.1%
Embree - Pathtracer ISPC - Asian Dragon (FPS)	52.354	35.149	**32.908**	59.050	59.056	36.752	65.545	65.367	38.310	68.424	53.572	**95.985**	95.270
	1	5	**8**	2	3	4	2	9	0	1	0	**7**	6
Normalized	54.54%	36.62%	34.29%	61.52%	61.53%	38.29%	68.29%	68.1%	39.91%	71.29%	55.81%	100%	99.25%
Standard Deviation	0.1%	0.4%	0.1%	0.3%	0.2%	0.2%	0.1%	0.3%	0.3%	0.1%	0.1%	0.1%	0.9%
Embree - Pathtracer ISPC - Asian Dragon Obj (FPS)	45.433	30.345	**28.292**	50.864	50.976	31.567	56.459	56.506	33.049	58.694	46.143	**82.316**	81.900
	0	8	**8**	8	9	5	5	7	0	5	7	**4**	9
Normalized	55.19%	36.86%	34.37%	61.79%	61.93%	38.35%	68.59%	68.65%	40.15%	71.3%	56.06%	100%	99.5%
Standard Deviation	0.1%	0.1%	0.1%	0%	0%	0.1%	0.1%	0.1%	0.1%	0.2%	0.2%	0.1%	0.1%
SVT-AV1 - Enc Mode 4 - 1080p (FPS)	5.714	6.389	5.112	5.996	5.955	5.653	6.455	6.399	6.030	**7.033**	**4.098**	5.204	4.837
Normalized	81.25%	90.84%	72.69%	85.26%	84.67%	80.38%	91.78%	90.99%	85.74%	100%	58.27%	73.99%	68.78%
Standard Deviation	2.8%	0.6%	1.8%	2.5%	0.1%	1.6%	2.2%	1.7%	0.9%	1.6%	4%	8.2%	3%
SVT-AV1 - Enc Mode 8 - 1080p (FPS)	54.472	53.819	46.873	52.314	53.040	51.591	53.961	54.135	51.917	56.982	**41.842**	**67.084**	65.295
Normalized	81.2%	80.23%	69.87%	77.98%	79.07%	76.91%	80.44%	80.7%	77.39%	84.94%	62.37%	100%	97.33%
Standard Deviation	2.4%	1.5%	1.3%	0.9%	0.4%	1.2%	1.4%	1.1%	0.2%	2%	2.8%	2.8%	3.5%
SVT-VP9 - V.Q.O - Bosphorus 1080p (FPS)	**291.17**	282.18	256.24	229.53	229.91	256.02	227.90	**227.89**	265.40	233.17	266.29	243.24	249.76
Normalized	100%	96.91%	88%	78.83%	78.96%	87.93%	78.27%	78.27%	91.15%	80.08%	91.46%	83.54%	85.78%
Standard Deviation	1.5%	0.6%	0.9%	12.3%	12.1%	13.3%	12.6%	12.1%	2.7%	2.5%	1.1%	5.9%	2.9%

Xeon & EPYC Tests

High Performance Conjugate Gradient (GFLOP/s)	17.0608	14.1623	**13.6425**	16.5171	27.1060		16.5282	26.7025	14.9097	28.8542	20.1687	27.2072	**39.1562**
Normalized	43.57%	36.17%	34.84%	42.18%	69.23%		42.21%	68.19%	38.08%	73.69%	51.51%	69.48%	100%
Standard Deviation	0%	1.9%	0.4%	0%	0.8%		0%	0.6%	0.5%	1.5%	0.1%	0.1%	0.8%
ArrayFire - BLAS CPU	**990.798**	3128	2950	5651	5320	3282	**6331**	3972	3432	3430	4875	4631	4520
Normalized	15.65%	49.41%	46.6%	89.26%	84.03%	51.83%	100%	62.74%	54.21%	54.18%	77.01%	73.15%	71.4%
Standard Deviation	1.1%	1.7%	0.1%	0.4%	8%	0.4%	0.6%	21%	1.3%	1%	0.6%	1.1%	0.3%
Intel Open Image Denoise - Memorial (Images / Sec)	28.71	**27.35**	27.99	33.10	33.89	30.22	33.57	35.52	31.10	34.49	**36.56**	32.29	32.96
Normalized	78.53%	74.81%	76.56%	90.54%	92.7%	82.66%	91.82%	97.16%	85.07%	94.34%	100%	88.32%	90.15%
Standard Deviation	0.2%	1.9%	0.4%	1.1%	0.6%	0.6%	0.9%	0.7%	0.1%	0.8%	2.8%	2.9%	2.9%
Chaos Group V-RAY - CPU (Ksamples)	62897	33014	**29061**	53051	51803	33947	62175	61378	34710	64331	44760	**87937**	87388
Normalized	71.53%	37.54%	33.05%	60.33%	58.91%	38.6%	70.7%	69.8%	39.47%	73.16%	50.9%	100%	99.38%
Standard Deviation	0.5%	2.1%	0.5%	0.2%	1.1%	0.1%	0.6%	1.6%	1.5%	1.3%	2.8%	1.5%	1.5%
LuxCoreRender - DLSC (M samples/sec)	7.28	3.53	**3.04**	5.86	5.88	3.63	6.95	6.99	3.79	7.19	5.58	10.09	**10.15**
Normalized	71.72%	34.78%	29.95%	57.73%	57.93%	35.76%	68.47%	68.87%	37.34%	70.84%	54.98%	99.41%	100%
Standard Deviation	2.3%	0.2%	0.3%	0.8%	1%	0.8%	0.2%	1%	0.1%	2.3%	1.4%	1.6%	1.4%
LuxCoreRender - R.C.a.P (M samples/sec)	8.12	3.79	**3.30**	5.52	6.40	3.92	6.79	7.44	4.11	7.15	6.02	**10.91**	10.90
Normalized	74.43%	34.74%	30.25%	50.6%	58.66%	35.93%	62.24%	68.19%	37.67%	65.54%	55.18%	100%	99.91%
Standard Deviation	1.2%	3%	0.2%	25.6%	1%	0.6%	17.1%	0.8%	1.7%	21.6%	0.3%	1.1%	1.4%
lzbench - Zstd 1 - Compression (MB/s)	418	**508**	410	407	**399**	430	430	423	457	449	464	461	453
Normalized	82.28%	100%	80.71%	80.12%	78.54%	84.65%	84.65%	83.27%	89.96%	88.39%	91.34%	90.75%	89.17%
Standard Deviation		0.3%	0.1%	1%	1%	0.9%		0.4%	0.2%			0.1%	0.1%
lzbench - Zstd 1 - Decompression	1148	1299	1061	1032	**1027**	1122	1078	1088	1212	1168	**1321**	1271	1258
Normalized	86.9%	98.33%	80.32%	78.12%	77.74%	84.94%	81.6%	82.36%	91.75%	88.42%	100%	96.21%	95.23%
Standard Deviation		0.4%		0.1%	0.1%		1%	0.8%		0.3%	0.1%	0.1%	0.2%
lzbench - Zstd 8 - Compression (MB/s)	83	84	71	71	**69**	75	74	73	77	75	**89**	88	86
Normalized	93.26%	94.38%	79.78%	79.78%	77.53%	84.27%	83.15%	82.02%	86.52%	84.27%	100%	98.88%	96.63%
lzbench - Zstd 8 - Decompression	1266	1298	1089	**966**	1011	1145	1022	1058	1224	1124	**1412**	1291	1320
Normalized	89.66%	91.93%	77.12%	68.41%	71.6%	81.09%	72.38%	74.93%	86.69%	79.6%	100%	91.43%	93.48%
Standard Deviation		0.2%	0.1%	2.1%	0.3%	0.1%	0.2%		0.1%	0.2%	0.1%		

Xeon & EPYC Tests

lzbench - Crush 0 - Compression	81	109	91	86	88	97	93	93	101	96	111	109	106
Normalized	72.97%	98.2%	81.98%	77.48%	79.28%	87.39%	83.78%	83.78%	90.99%	86.49%	100%	98.2%	95.5%
Standard Deviation	1.2%	1.6%			0.7%			0.6%	0.6%			1.6%	0.5%
lzbench - Crush 0 - Decompression (MB/s)	380	509	404	396	394	427	412	415	440	428	422	416	413
Normalized	74.66%	100%	79.37%	77.8%	77.41%	83.89%	80.94%	81.53%	86.44%	84.09%	82.91%	81.73%	81.14%
Standard Deviation						0.2%	0.3%	0.1%		0.1%	0.1%		
lzbench - Brotli 2 - Compression	165	196	160	159	157	168	168	166	181	176	184	183	178
Normalized	84.18%	100%	81.63%	81.12%	80.1%	85.71%	85.71%	84.69%	92.35%	89.8%	93.88%	93.37%	90.82%
Standard Deviation	0.7%	0.3%	0.4%		1.5%	1.2%							
lzbench - Brotli 2 - Decompression	564	721	587	543	551	619	571	580	673	623	624	617	600
Normalized	78.22%	100%	81.41%	75.31%	76.42%	85.85%	79.2%	80.44%	93.34%	86.41%	86.55%	85.58%	83.22%
Standard Deviation	0.3%	0.3%		0.1%	0.1%	0.2%			0.2%	0.4%	0.9%	1.6%	0.3%
Nettle - aes256 (Mbyte/s)	4665	7071	5517	5523	5513	5830	5853	5852	6313	6320	8053	8007	8044
Normalized	57.93%	87.8%	68.51%	68.59%	68.46%	72.4%	72.68%	72.67%	78.4%	78.48%	100%	99.43%	99.89%
Standard Deviation	0%	1%	0.6%	0.2%	0.8%	0.3%	0.1%	0.2%	0.2%	0.1%	0.2%	0.7%	0.3%
Nettle - chacha (Mbyte/s)	750.357	1172	920.513	917.505	917.750	970.383	975.081	974.458	1051	1052	822.108	815.179	821.177
Normalized	64.02%	100%	78.53%	78.28%	78.3%	82.79%	83.19%	83.13%	89.67%	89.74%	70.14%	69.55%	70.06%
Standard Deviation	0%	0.9%	0.3%	0.8%	0.8%	0.4%	0%	0.1%	0.1%	0.1%	2.1%	1.5%	1.8%
Nettle - sha512 (Mbyte/s)	478.09	550.93	436.73	438.23	437.62	462.78	465.40	465.18	501.98	500.98	396.69	396.53	456.39
Normalized	86.78%	100%	79.27%	79.54%	79.43%	84%	84.48%	84.44%	91.12%	90.93%	72%	71.97%	82.84%
Standard Deviation	0.1%	0.9%	0.8%	0.7%	1%	0.6%	0.1%	0.1%	0.1%	0.3%	0%	0.1%	8.4%
Nettle - poly1305-aes (Mbyte/s)	2046	3208	2492	2517	2498	2662	2658	2654	2867	2869	1910	1909	1963
Normalized	63.79%	100%	77.7%	78.46%	77.86%	82.97%	82.85%	82.74%	89.39%	89.42%	59.53%	59.52%	61.19%
Standard Deviation	0.1%	1.3%	0.9%	0%	1.1%	0.8%	0.2%	0.2%	0.1%	0.1%	0.2%	0.2%	7.1%
Himeno Benchmark - P.P.S (MFLOPS)	3770	3866	3153	3131	3148	3319	3315	3331	3510	3515	4215	4199	4211
Normalized	89.44%	91.72%	74.79%	74.28%	74.68%	78.74%	78.66%	79.04%	83.28%	83.38%	100%	99.61%	99.91%
Standard Deviation	1%	0.2%	0.1%	0.2%	0.1%	0.3%	0.5%	0.1%	0.2%	0.3%	0.1%	0.3%	0%
SMHasher - wyhash (MiB/sec)		26299	20221	20232	20225	20557	20555	20553					
Normalized		100%	76.89%	76.93%	76.91%	78.17%	78.16%	78.15%					
Standard Deviation		0.7%	0.1%	0%	0.1%	0%	0%	0%					
Stockfish - Total Time	116765028	61170651	54437117	10410676	10351385	58172107	10975377	11236723	62891312	11971795	85313242	15311349	15290660
Normalized	76.26%	39.95%	35.55%	67.99%	67.61%	37.99%	71.68%	73.39%	41.07%	78.19%	55.72%	100%	99.87%

Xeon & EPYC Tests

Standard Deviation	1.8%	2%	0.4%	0.2%	0.6%	0.2%	2.5%	3%	2.3%	1.3%	1.7%	2.3%	1.4%
asmFish - 1.H.M.2.D (Nodes/s)	113278977	66225641	59350794	105070606	119912357	64230868	107388344	122933930	68762075	133839896	93896899	148521449	164553317
Normalized	68.84%	40.25%	36.07%	63.85%	72.87%	39.03%	65.26%	74.71%	41.79%	81.34%	57.06%	90.26%	100%
Standard Deviation	0.9%	2.6%	0.3%	2.5%	2.5%	2.6%	0.8%	0.7%	1.1%	0.6%	1.1%	0.5%	0.8%
LAMMPS Molecular Dynamics Simulator - Rhodopsin Protein (ns/day)	20.821	14.562	13.040	21.887	22.535	14.014	22.666	23.434	15.314	24.788	15.901	27.345	25.982
Normalized	76.14%	53.25%	47.69%	80.04%	82.41%	51.25%	82.89%	85.7%	56%	90.65%	58.15%	100%	95.02%
Standard Deviation	6.9%	3.4%	1.1%	2.6%	2.6%	0.3%	0.9%	2.7%	2.2%	3.8%	10.8%	13%	12.1%
John The Ripper - Blowfish (Real	66475	40326	35599	70955	70888	39604	78420	78301	42864	84084	56326	111847	109978
Normalized	59.43%	36.05%	31.83%	63.44%	63.38%	35.41%	70.11%	70.01%	38.32%	75.18%	50.36%	100%	98.33%
Standard Deviation	0.5%	0.6%	0%	0.1%	0.3%	1%	0.6%	0.8%	0.4%	1.4%	0.2%	0.1%	2.4%
John The Ripper - MD5 (Real C/S)	397200 0	365400 0	338400 0	660833 3	655466 7	372766 7	710266 7	715000 0	409000 0	788000 0	571433 3	107143 33	104973 33
Normalized	37.07%	34.1%	31.58%	61.68%	61.18%	34.79%	66.29%	66.73%	38.17%	73.55%	53.33%	100%	97.97%
Standard Deviation	1.3%	0.7%	0.5%	0.3%	1.1%	1.6%	0.7%	0.8%	0.6%	1.5%	0.1%	0.5%	1.7%
Numpy Benchmark (Score)	323.58	367.56	321.13	293.53	310.40	340.72	313.35	324.39	330.33	321.82	374.90	316.75	370.96
Normalized	86.31%	98.04%	85.66%	78.3%	82.8%	90.88%	83.58%	86.53%	88.11%	85.84%	100%	84.49%	98.95%
Standard Deviation	0.6%	1.3%	0.4%	2%	0.4%	0.2%	2.4%	0.6%	1.3%	1.6%	0.7%	2.3%	0.4%
PHPBench - P.B.S (Score)	500524	734339	569793	574348	573483	604857	606436	606548	649164	649693	712140	704453	708571
Normalized	68.16%	100%	77.59%	78.21%	78.1%	82.37%	82.58%	82.6%	88.4%	88.47%	96.98%	95.93%	96.49%
Standard Deviation	0.4%	0.2%	0.2%	0.1%	0.3%	0.4%	0.3%	0.1%	0.1%	0.2%	0.1%	0.4%	0.7%
NAS Parallel Benchmarks - BT.C (Mop/s)	106416	69348	51975	84766	104108	69011	102113	131794	71842	136047	96192	164569	188359
Normalized	56.5%	36.82%	27.59%	45%	55.27%	36.64%	54.21%	69.97%	38.14%	72.23%	51.07%	87.37%	100%
Standard Deviation	0.8%	0.3%	0.1%	0.1%	0.2%	0.4%	0.3%	0.2%	0.1%	0.1%	0.2%	0.1%	5.2%
NAS Parallel Benchmarks - EP.C (Mop/s)	3486	3025	2641	5059	5053	2974	5668	5763	3194	6105	4004	6745	6352
Normalized	51.69%	44.85%	39.16%	75.01%	74.91%	44.1%	84.03%	85.45%	47.36%	90.52%	59.36%	100%	94.19%
Standard Deviation	1.5%	2.3%	0.9%	1.2%	2.7%	1%	1.2%	0.8%	2.4%	2.5%	10.4%	7.9%	12.3%
NAS Parallel Benchmarks - EP.D (Mop/s)	3570	3211	2678	5284	5310	3033	5973	6088	3283	6285	4730	9334	9339
Normalized	38.23%	34.38%	28.67%	56.58%	56.86%	32.48%	63.96%	65.19%	35.16%	67.29%	50.65%	99.95%	100%
Standard Deviation	0.3%	0.2%	2.9%	2.8%	2.9%	2.9%	2.7%	2.5%	2.8%	8.2%	0.2%	2.7%	1.9%

Xeon & EPYC Tests

NAS Parallel Benchmarks - LU.C (Mop/s)	99822	69607	65522	94643	120962				74256	140090	97414	152799	177387
Normalized	56.27%	39.24%	36.94%	53.35%	68.19%				41.86%	78.97%	54.92%	86.14%	100%
Standard Deviation	0.2%	0.1%	0%	0.1%	0.1%				0.2%	0.2%	1.1%	1.2%	5.7%
NAS Parallel Benchmarks - MG.C (Mop/s)	49330	35376	33490	43490	63393	34709	45188	66471	37089	69175	50841	82390	111940
Normalized	44.07%	31.6%	29.92%	38.85%	56.63%	31.01%	40.37%	59.38%	33.13%	61.8%	45.42%	73.6%	100%
Standard Deviation	2.8%	0.2%	0.6%	1.7%	0.8%	0.1%	0.1%	0.6%	0.6%	2.8%	7.1%	0.3%	1.6%
NAS Parallel Benchmarks - SP.B (Mop/s)	51225	31427	24288	38494	53979	29919	46296	66865	32682	70893	46439	86029	112350
Normalized	45.59%	27.97%	21.62%	34.26%	48.05%	26.63%	41.21%	59.52%	29.09%	63.1%	41.33%	76.57%	100%
Standard Deviation	3.9%	0.8%	0.2%	0.2%	0.2%	0.7%	0.1%	0.2%	0.8%	0.3%	5.4%	4.7%	0.4%
PostgreSQL pgbench - Buffer Test - Normal Load - Read Only	891303	567697	512031	790828	795715	546028	873067	857061	560888	909916	751909	735556	1063448
Normalized	83.81%	53.38%	48.15%	74.36%	74.82%	51.35%	82.1%	80.59%	52.74%	85.56%	70.7%	69.17%	100%
Standard Deviation	0.2%	1.1%	0.1%	0.3%	0.5%	0.7%	3%	0.6%	0.5%	2%	0.9%	0.8%	23.6%
PostgreSQL pgbench - Buffer Test - Normal Load - Read Write	6106	11704	5941	3169	4009	4087	4921	2151	53139	24467	3870	4149	3302
Normalized	11.49%	22.03%	11.18%	5.96%	7.55%	7.69%	9.26%	4.05%	100%	46.04%	7.28%	7.81%	6.21%
Standard Deviation	18.1%	1.3%	14.3%	31.6%	2.4%	11.1%	14.4%	8.3%	1.2%	0.1%	12.1%	22.6%	5.6%
SMHasher - wyhash (cycles/hash)		18.508	24.187	24.154	24.151	23.676	23.671	23.645	22.678	22.677			
Normalized		100%	76.52%	76.62%	76.63%	78.17%	78.19%	78.27%	81.61%	81.62%			
Standard Deviation		0.3%	0.1%	0%	0%	0.1%	0%	0%	0%	0%			
NAMD - ATPase Simulation - 327,506 Atoms (days/ns)	0.48614	0.81434	0.86925	0.45422	0.44551	0.77724	0.40173	0.38840	0.70709	0.36226	0.46948	0.25632	0.24941
Normalized	51.3%	30.63%	28.69%	54.91%	55.98%	32.09%	62.08%	64.21%	35.27%	68.85%	53.12%	97.3%	100%
Standard Deviation	0.3%	3.7%	0.1%	0%	0.1%	2.9%	0.3%	0.1%	0.1%	0.6%	0%	0.7%	0.2%
PyBench - T.F.A.T.T (Milliseconds)	1226	951	1250	1253	1252	1184	1182	1182	1076	1073	978	979	980
Normalized	77.57%	100%	76.08%	75.9%	75.96%	80.32%	80.46%	80.46%	88.38%	88.63%	97.24%	97.14%	97.04%
Standard Deviation	0.4%	0.3%	0.1%	0.2%	0.1%	0.3%	0.1%	0.1%	0.2%	0.2%	0.6%	0.3%	0.3%
PyPerformance - float (Milliseconds)		94.5	122	123	123		117	117	109	109	134	134	133
Normalized		100%	77.46%	76.83%	76.83%		80.77%	80.77%	86.7%	86.7%	70.52%	70.52%	71.05%
Standard Deviation		0.2%	0.5%	0.5%									0.9%

Xeon & EPYC Tests

PyPerformance - regex_compile	213	157	200	200	200		190	189	164	164	186	191	183
Normalized	73.71%	100%	78.5%	78.5%	78.5%		82.63%	83.07%	95.73%	95.73%	84.41%	82.2%	85.79%
Standard Deviation	0.3%	1.3%	0.3%								1.4%	1.9%	2%
PyPerformance - python_startup	16.3	17.7	11.4	22.6	11.3	11.6	25.2	11.8	11.2	11.2	19.8	20.4	19.8
Normalized	68.71%	63.28%	98.25%	49.56%	99.12%	96.55%	44.44%	94.92%	100%	100%	56.57%	54.9%	56.57%
Standard Deviation	0%	0.9%	0.5%	0.3%	0.5%	0%	0.2%	1%	1%	0.5%	0%	0%	0%
PyPerformance - django_templat	66.4	49.9	64.1	64.1	64.2	60.6	60.8	60.6	46.2	45.9	65.4	65.3	63.2
Normalized	69.13%	91.98%	71.61%	71.61%	71.5%	75.74%	75.49%	75.74%	99.35%	100%	70.18%	70.29%	72.63%
Standard Deviation	0.2%	2.3%	0.2%	0.2%	0.2%	0.3%	0.2%	0%	0.2%	0.3%	0.9%	1.3%	4.6%
Renaissance - Scala Dotty	6577	6971	7201	7566	7257	6900	7347	6957	6664	6891	9000	9170	9329
Normalized	100%	94.35%	91.34%	86.93%	90.64%	95.32%	89.52%	94.54%	98.7%	95.45%	73.08%	71.73%	70.5%
Standard Deviation	1%	1%	1.1%	1.6%	0.6%	0.8%	2.9%	0.9%	0.6%	3%	2.2%	6.4%	6.2%
Renaissance - Apache Spark Bayes (ms)	3057	2744	3017	3814	3496	2739	3859	3402	2674	3229	3493	5550	4403
Normalized	87.48%	97.47%	88.63%	70.12%	76.5%	97.63%	69.29%	78.6%	100%	82.83%	76.56%	48.18%	60.74%
Standard Deviation	4.3%	2.9%	4.3%	7.3%	6.8%	3%	8.9%	6%	1.6%	5.6%	3%	15.5%	10.3%
Renaissance - Savina Reactors.IO (ms)	19304	25187	26711	28252	28107	23867	28366	27891	21975	26765	21743	29524	31369
Normalized	100%	76.64%	72.27%	68.33%	68.68%	80.88%	68.05%	69.21%	87.84%	72.12%	88.78%	65.38%	61.54%
Standard Deviation	8.5%	11.9%	8%	8.9%	8.6%	13.5%	10.9%	8.7%	13.5%	8.9%	9.5%	8%	9.9%
Renaissance - A.S.P (ms)	21642	21016	22227	25637	25275	21896	24910	23916	20621	23588	19555	22023	22457
Normalized	90.36%	93.05%	87.98%	76.28%	77.37%	89.31%	78.5%	81.76%	94.83%	82.9%	100%	88.79%	87.08%
Standard Deviation	2.1%	1.8%	1.6%	2%	2.5%	1.7%	1.8%	1.6%	1.8%	3%	2%	2.7%	3.8%
ArrayFire - C.G.C (ms)	35.13	4.423	4.677	7.604	8.430	4.196	8.947	7.467	4.115	7.481	2.814	4.036	7.355
Normalized	8.01%	63.62%	60.17%	37.01%	33.38%	67.06%	31.45%	37.69%	68.38%	37.62%	100%	69.72%	38.26%
Standard Deviation	1.1%	6.6%	0.8%	12.4%	4.2%	0.2%	8.1%	3%	2.8%	2.8%	0.5%	7%	0.8%
MKL-DNN DNNL - IP Batch 1D - f32	1.6756 0	2.8671 5	2.6997 7	1.5372 9	1.5768 7	2.3860 6	1.6310 6	1.6064 1	2.3945 1	1.6398 6	1.0855 3	0.7652 79	0.7317 53
Normalized	43.67%	25.52%	27.1%	47.6%	46.41%	30.67%	44.86%	45.55%	30.56%	44.62%	67.41%	95.62%	100%
Standard Deviation	0.7%	0.3%	0.6%	2.2%	3.6%	0.4%	1%	3.6%	0.8%	3.4%	0.7%	1.8%	0.9%
MKL-DNN DNNL - IP Batch All - f32	8.8839 0	7.5443 9	7.8907 1	6.6584 2	9.9766 9	7.4070 4	6.3865 2	9.7135 5	6.7950 9	9.5246 6	4.5955 0	3.7303 1	6.0026 4
Normalized	41.99%	49.44%	47.27%	56.02%	37.39%	50.36%	58.41%	38.4%	54.9%	39.16%	81.17%	100%	62.14%
Standard Deviation	0.2%	2.3%	0.7%	0.2%	0.6%	0.2%	0.2%	0.3%	0.2%	0.3%	0.1%	0.3%	0.2%

Xeon & EPYC Tests

MKL-DNN DNNL - IP Batch All -	149.339	3.59218	3.43236	2.78193	3.04866	3.34427	3.10530	3.29615	3.23121	3.11002	1.84515	1.49865	1.44613
Normalized	0.97%	40.26%	42.13%	51.98%	47.43%	43.24%	46.57%	43.87%	44.76%	46.5%	78.37%	96.5%	100%
Standard Deviation	0.3%	1.6%	0.1%	0.6%	0.8%	0.3%	0.6%	1.7%	0.2%	2.7%	0.7%	1%	0.6%
MKL-DNN DNNL - IP Batch 1D - bf16bf16bf16		5.56304	5.69900	4.46440	4.48918	5.59680	2.85310	2.89086	4.83170	3.65964	2.41906	1.74213	1.73950
Normalized		31.27%	30.52%	38.96%	38.75%	31.08%	60.97%	60.17%	36%	47.53%	71.91%	99.85%	100%
Standard Deviation		0.8%	0.1%	0.4%	0.2%	0.4%	0.4%	0.2%	0.1%	0.6%	0.2%	0.4%	1.3%
MKL-DNN DNNL - C.B.c - f32 (ms)	710.140	878.390	874.201	461.935	559.468	821.967	436.860	534.328	765.745	496.816	598.187	327.276	399.240
Normalized	46.09%	37.26%	37.44%	70.85%	58.5%	39.82%	74.92%	61.25%	42.74%	65.87%	54.71%	100%	81.97%
Standard Deviation	0.5%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.2%	0.1%	0.3%	0.1%	0.1%	2.2%
MKL-DNN DNNL - C.B.c - u8s8f32 (ms)	3077	6183	7096	3549	3551	6438	3243	3271	5920	3005	4454	2382	2541
Normalized	77.42%	38.53%	33.57%	67.13%	67.08%	37%	73.45%	72.82%	40.24%	79.26%	53.48%	100%	93.76%
Standard Deviation	1.5%	1.1%	0.1%	0.6%	0.4%	0.4%	0.9%	0.8%	0.3%	0.5%	0%	0.8%	0.5%
MKL-DNN DNNL - D.B.d - f32 (ms)	2.22540	1.74515	1.63928	1.22589	1.25795	1.47084	1.30395	1.34411	1.46232	1.24029	1.24001	1.03115	1.01890
Normalized	45.79%	58.38%	62.16%	83.12%	81%	69.27%	78.14%	75.8%	69.68%	82.15%	82.17%	98.81%	100%
Standard Deviation	1.5%	1.3%	0.1%	0.1%	1%	0.1%	0.4%	0.2%	0.2%	0.4%	0.1%	0.8%	0.9%
MKL-DNN DNNL - D.B.d - f32 (ms)	2.20471	2.27526	2.20053	1.26395	1.26649	2.16581	1.25294	1.25127	1.96279	1.13608	1.34096	0.851007	0.852518
Normalized	38.6%	37.4%	38.67%	67.33%	67.19%	39.29%	67.92%	68.01%	43.36%	74.91%	63.46%	100%	99.82%
Standard Deviation	0.5%	1.4%	0.4%	0.5%	0.2%	0.2%	0.3%	0.4%	0%	0.6%	0.7%	0.2%	0.1%
MKL-DNN DNNL - C.B.c - f32 (ms)	96.6881	108.568	107.804	55.3565	56.6465	98.6664	51.4429	52.9979	94.1937	49.8437	83.3609	42.9103	43.8561
Normalized	44.38%	39.52%	39.8%	77.52%	75.75%	43.49%	83.41%	80.97%	45.56%	86.09%	51.48%	100%	97.84%
Standard Deviation	2%	0.2%	0.2%	0.6%	0.7%	0.2%	0.4%	1.6%	0.1%	0.3%	0.1%	0.1%	0.1%
MKL-DNN DNNL - C.B.c - u8s8f32 (ms)	11729	2968	3402	1734	1794	3089	1579	1640	2846	1517	2126	1107	1166
Normalized	9.44%	37.31%	32.55%	63.85%	61.73%	35.84%	70.12%	67.5%	38.91%	72.97%	52.09%	100%	94.94%
Standard Deviation	0.3%	0.9%	0.2%	0.1%	0.1%	0.6%	0.2%	0%	0.1%	0.4%	0.1%	0%	1.8%
MKL-DNN DNNL - D.B.d - f32 (ms)	1485	1293	1029	743.695	739.163	1124	877.207	881.087	1114	881.783	724.602	458.494	469.428
Normalized	30.87%	35.47%	44.55%	61.65%	62.03%	40.8%	52.27%	52.04%	41.17%	52%	63.28%	100%	97.67%
Standard Deviation	0.2%	2.8%	0.2%	0.2%	0.2%	0.1%	0.2%	2%	0.1%	0.1%	0%	0.1%	0.4%
MKL-DNN DNNL - D.B.d - u8s8f32 (ms)	1131	0.458422	0.415614	0.361414	0.376222	0.378229	0.336426	0.351719	0.371036	0.394455	0.301007	0.306309	0.299473
Normalized	0.03%	65.33%	72.06%	82.86%	79.6%	79.18%	89.02%	85.15%	80.71%	75.92%	99.49%	97.77%	100%
Standard Deviation	0.6%	0.5%	0.4%	0.5%	0.4%	0.1%	1.2%	0.6%	0.2%	3%	0.1%	0.8%	1.7%

MKL-DNN DNNL - D.B.d - u8s8f32 (ms)	1899	3852	4426	2253	2238	3985	2063	2064	3717	1894	2531	1295	1321
Normalized	68.21%	33.63%	29.27%	57.51%	57.88%	32.51%	62.79%	62.76%	34.85%	68.41%	51.19%	100%	98.1%
Standard Deviation	0.3%	2.2%	0%	1.7%	0.2%	0.4%	0%	0.1%	0.1%	0.5%	0.1%	0.1%	1.3%
MKL-DNN DNNL - C.B.c - bf16bf16bf16 (ms)		16.5906	17.3217	9.18751	9.20665	14.0747	7.65561	7.67517	14.0780	7.92912	10.7508	5.71963	5.81243
Normalized		34.48%	33.02%	62.25%	62.12%	40.64%	74.71%	74.52%	40.63%	72.13%	53.2%	100%	98.4%
Standard Deviation		2.9%	0%	0.2%	0%	0.1%	0.1%	0.3%	0%	0.1%	0.1%	0.1%	1.7%
MKL-DNN DNNL - C.B.c - u8s8f32 (ms)	1301	31.9893	30.8800	19.3723	22.3830	27.9779	18.3929	20.0909	26.8391	19.8143	17.7241	10.9680	12.3317
Normalized	0.84%	34.29%	35.52%	56.62%	49%	39.2%	59.63%	54.59%	40.87%	55.35%	61.88%	100%	88.94%
Standard Deviation	0.4%	0.2%	0.2%	0.1%	1.8%	0.4%	0.5%	1.3%	0.1%	0.2%	0.1%	0.2%	1.6%
MKL-DNN DNNL - C.B.c - bf16bf16bf16 (ms)		3880	4364	2198	2198	3639	1843	1845	3497	1766	2712	1381	1422
Normalized		35.59%	31.65%	62.83%	62.84%	37.95%	74.94%	74.87%	39.49%	78.19%	50.93%	100%	97.14%
Standard Deviation		0%	0%	0%	0%	0%	0.1%	0.5%	0%	0.1%	0%	0.1%	0.5%
MKL-DNN DNNL - C.B.c - f32 (ms)	42.5413	49.8744	48.0640	25.0672	25.7722	45.1271	23.6729	24.1147	42.0758	23.1772	30.8279	17.3496	21.0065
Normalized	40.78%	34.79%	36.1%	69.21%	67.32%	38.45%	73.29%	71.95%	41.23%	74.86%	56.28%	100%	82.59%
Standard Deviation	0.8%	0.2%	0.1%	0.1%	0.7%	0.3%	0.6%	0.2%	0.1%	0.7%	0.1%	0.8%	3%
MKL-DNN DNNL - D.B.d - bf16bf16bf16 (ms)		7.61595	7.98292	4.46523	4.49039	6.59778	3.95067	3.98393	6.55374	4.06847	4.97888	2.91495	3.07797
Normalized		38.27%	36.51%	65.28%	64.92%	44.18%	73.78%	73.17%	44.48%	71.65%	58.55%	100%	94.7%
Standard Deviation		0.9%	0.5%	0.1%	0.2%	0%	0.1%	0.2%	0%	0.3%	0%	0.2%	0.2%
MKL-DNN DNNL - D.B.d - bf16bf16bf16 (ms)		8.46273	9.37107	4.85689	4.87194	8.31677	4.49464	4.49405	7.69605	4.35817	6.07117	3.77769	3.78319
Normalized		44.64%	40.31%	77.78%	77.54%	45.42%	84.05%	84.06%	49.09%	86.68%	62.22%	100%	99.85%
Standard Deviation		0.8%	0%	0.2%	0.3%	0%	0.1%	0.1%	0.1%	0.1%	3%	2.9%	2.8%
MKL-DNN DNNL - C.B.c - bf16bf16bf16 (ms)		702.065	796.753	399.308	399.298	662.755	332.319	337.883	637.374	320.060	500.120	251.826	252.406
Normalized		35.87%	31.61%	63.07%	63.07%	38%	75.78%	74.53%	39.51%	78.68%	50.35%	100%	99.77%
Standard Deviation		0.3%	0.1%	0%	0.1%	0%	0.1%	3%	0%	0%	1.9%	1.7%	1.8%
MKL-DNN DNNL - C.B.c - u8s8f32 (ms)	730.306	13.4504	12.7059	7.63651	8.74794	12.0288	6.82540	7.79708	11.2900	7.46050	7.35038	4.71574	5.35426
Normalized	0.65%	35.06%	37.11%	61.75%	53.91%	39.2%	69.09%	60.48%	41.77%	63.21%	64.16%	100%	88.07%
Standard Deviation	1.7%	0.2%	0.1%	0.4%	0.5%	0.4%	0.1%	0.9%	0.2%	0.8%	0.2%	0.8%	3.1%

Xeon & EPYC Tests

MKL-DNN DNNL - D.B.d - bf16bf16bf16 (ms)		3294	**3368**	1904	1904	2751	1833	1839	2936	1779	2063	**1167**	1211
Normalized		35.42%	34.64%	61.26%	61.27%	42.41%	63.64%	63.46%	39.74%	65.58%	56.54%	100%	96.32%
Standard Deviation		0.2%	0%	0%	0%	0.1%	0.3%	0.2%	0.3%	0.1%	0.6%	0.4%	0.2%
MKL-DNN DNNL - C.B.c - bf16bf16bf16 (ms)		188.611	**207.911**	106.714	106.893	173.381	90.2636	90.3982	166.984	86.5391	129.595	**67.9688**	71.0060
Normalized		36.04%	32.69%	63.69%	63.59%	39.2%	75.3%	75.19%	40.7%	78.54%	52.45%	100%	95.72%
Standard Deviation		0.2%	0%	0%	0%	0.1%	0.2%	0.2%	0%	0%	0.1%	0.7%	0.6%
DaCapo Benchmark - Jython (msec)	5246	**4321**	5012	5161	5172	4786	5037	5013	4547	4711	5112	**5400**	5338
Normalized	82.37%	100%	86.21%	83.72%	83.55%	90.28%	85.79%	86.2%	95.03%	91.72%	84.53%	80.02%	80.95%
Standard Deviation	0.4%	0.5%	0.9%	0.4%	2.2%	0.6%	1%	1.5%	0.7%	0.8%	0.3%	1.6%	0.9%
CloverLeaf - L.E.H (sec)	0.36	**1.14**	1.11	0.63	0.78	1.05	0.61	0.71	0.96	0.69	0.51	**0.33**	0.35
Normalized	91.67%	28.95%	29.73%	52.38%	42.31%	31.43%	54.1%	46.48%	34.38%	47.83%	64.71%	100%	94.29%
Standard Deviation	0.2%	6.1%	0.4%	0.3%	14.8%	0.2%	1%	13.3%	0.1%	9.2%	0.3%	2.8%	11.6%
Timed MrBayes Analysis - P.P.A (sec)	**92.361**	**143.348**	138.846	141.898	139.750	133.483	134.883	134.997	128.848	129.986	99.688	103.112	101.872
Normalized	100%	64.43%	66.52%	65.09%	66.09%	69.19%	68.47%	68.42%	71.68%	71.05%	92.65%	89.57%	90.66%
Standard Deviation	1.3%	0.2%	0.2%	2.3%	0.4%	0.1%	0.6%	1.3%	0%	0.5%	0.7%	3.2%	1.1%
Timed GCC Compilation - Time To Compile (sec)	**849.192**	994.583	1068	1074	1012	1107	**1110**	1068	1064	1006	1007	1024	970.916
Normalized	100%	85.38%	79.54%	79.09%	83.91%	76.69%	76.49%	79.48%	79.83%	84.45%	84.36%	82.92%	87.46%
Standard Deviation	0.1%	0.1%	0.1%	0.2%	0.1%	0.1%	0.1%	0.4%	0%	0%	0.2%	0%	0%
Timed GDB GNU Debugger Compilation - Time To Compile (sec)	**108.675**	134.824	132.228	146.435	129.689	142.501	**159.498**	143.645	144.643	142.695	139.362	149.863	140.610
Normalized	100%	80.61%	82.19%	74.21%	83.8%	76.26%	68.14%	75.66%	75.13%	76.16%	77.98%	72.52%	77.29%
Standard Deviation	0.1%	0.1%	0.1%	0.3%	0.6%	0.1%	0.2%	0.6%	0.2%	0.2%	0.3%	0.1%	0.3%
Timed Linux Kernel Compilation - Time To Compile (sec)	24.005	36.367	**41.137**	29.276	27.581	38.734	28.129	26.583	40.898	27.309	29.357	22.410	**21.399**
Normalized	89.14%	58.84%	52.02%	73.09%	77.59%	55.25%	76.07%	80.5%	52.32%	78.36%	72.89%	95.49%	100%
Standard Deviation	2.8%	2.9%	2.8%	4.7%	3.2%	3.7%	3.7%	3.9%	2.9%	3.4%	4.3%	5.1%	5%

Xeon & EPYC Tests

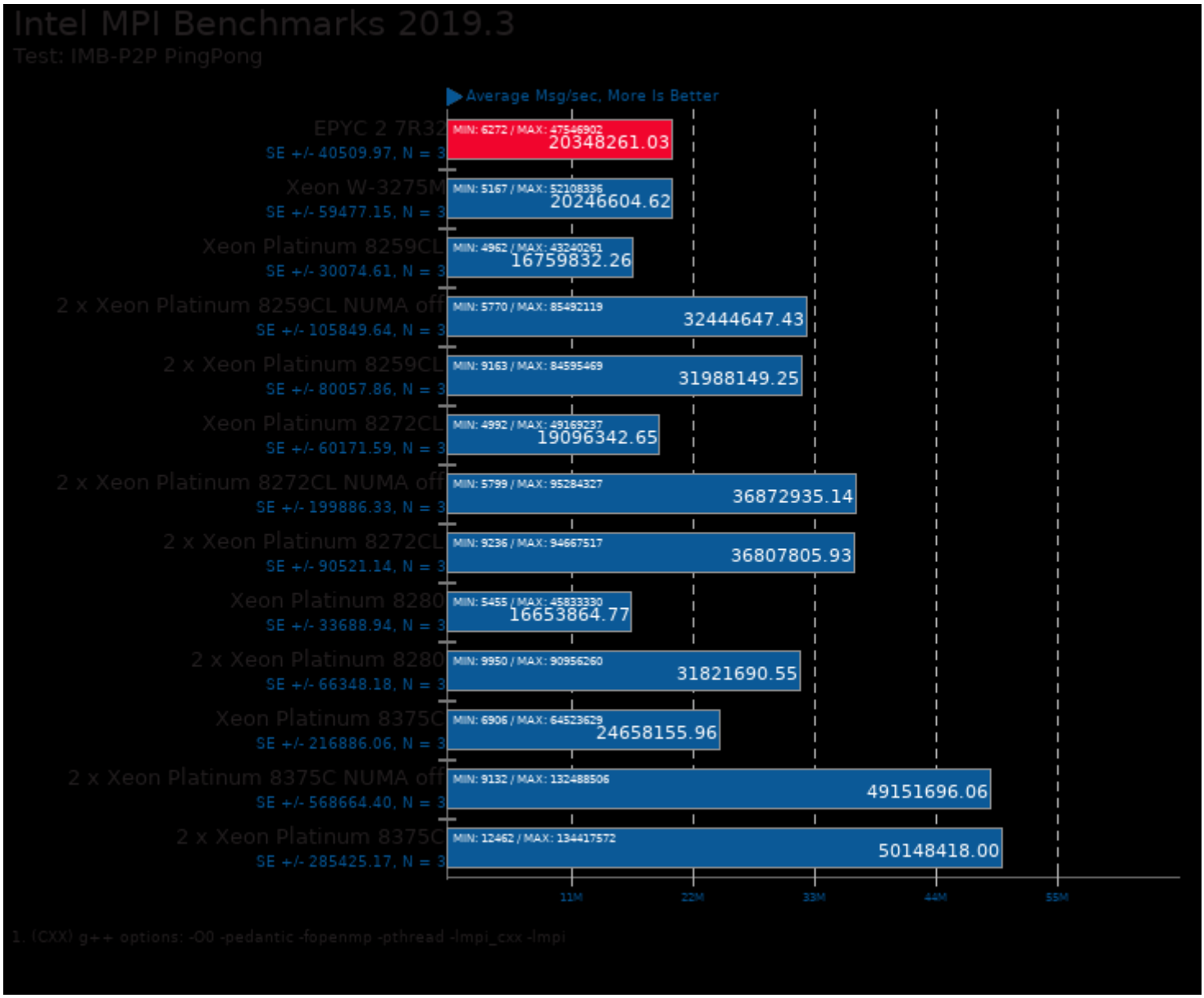
Timed LLVM Compilation - Time To Compile (sec)	200.039	281.678	317.610	244.940	232.053	301.531	230.854	216.886	308.741	221.515	215.837	178.751	167.672
Normalized	83.82%	59.53%	52.79%	68.45%	72.26%	55.61%	72.63%	77.31%	54.31%	75.69%	77.68%	93.8%	100%
Standard Deviation	0.6%	1.6%	2.8%	1%	0.8%	0.6%	0.7%	0.7%	2.7%	0.8%	2.2%	0.6%	1.2%
Build2 - Time To Compile	59.956	66.415	76.147	69.195	66.667	74.265	65.772	68.558	74.118	62.776	60.326	56.014	56.155
Normalized	93.43%	84.34%	73.56%	80.95%	84.02%	75.42%	85.16%	81.7%	75.57%	89.23%	92.85%	100%	99.75%
Standard Deviation	1.2%	0.4%	0.1%	0.5%	1.3%	1%	1.6%	1.2%	0.3%	0.2%	0.5%	0.4%	1.8%
Tungsten Renderer - Hair (sec)	7.67455	12.7104	14.8046	9.09073	9.26217	13.8818	8.34744	8.66791	12.6863	7.82706	9.21365	6.11790	6.05668
Normalized	78.92%	47.65%	40.91%	66.62%	65.39%	43.63%	72.56%	69.87%	47.74%	77.38%	65.74%	99%	100%
Standard Deviation	1.2%	0.7%	0.4%	1%	1.1%	0.6%	0.1%	2.1%	0.5%	2.5%	0.3%	1.9%	0.7%
Tungsten Renderer - Water Caustic (sec)	22.3247	21.5517	25.3555	24.7792	24.5437	24.2127	23.8207	23.9077	22.0167	21.5896	23.4206	23.6432	23.4941
Normalized	96.54%	100%	85%	86.97%	87.81%	89.01%	90.47%	90.15%	97.89%	99.82%	92.02%	91.15%	91.73%
Standard Deviation	0.2%	0.8%	0.4%	1.2%	0.6%	0.5%	0.3%	1.1%	0.6%	0.5%	1.8%	1%	2%
Zstd Compression - C.u.1.0.3.s.i.i.C. L.1 (sec)	9.230	8.380	9.672	10.294	9.949	8.307	10.088	9.653	8.203	9.137	7.283	8.422	8.179
Normalized	78.91%	86.91%	75.3%	70.75%	73.2%	87.67%	72.19%	75.45%	88.78%	79.71%	100%	86.48%	89.05%
Standard Deviation	2.6%	0.5%	2.3%	2.8%	3.7%	2.8%	2.9%	3.7%	0.3%	2.8%	3.5%	2.6%	4.7%
DeepSpeech - CPU (sec)	72.81599	123.85252	117.35692	135.05100	117.72613	117.86644	140.43949	123.81472	118.09377	122.22468	103.08017	113.28772	108.16158
Normalized	100%	58.79%	62.05%	53.92%	61.85%	61.78%	51.85%	58.81%	61.66%	59.58%	70.64%	64.28%	67.32%
Standard Deviation	0.2%	0.2%	2.8%	1.3%	1%	2.7%	2.3%	0.8%	2.3%	1.6%	0.5%	0.5%	1.5%
Radiance Benchmark - Serial (sec)	730.7	665.7	842.099	841.323	841.647	796.578	797.156	796.433	728.361	728.246	654.183	654.575	654.978
Normalized	89.53%	98.27%	77.68%	77.76%	77.73%	82.12%	82.06%	82.14%	89.82%	89.83%	100%	99.94%	99.88%
Radiance Benchmark - SMP Parallel (sec)	219.652	219.836	273.125	255.588	258.343	257.232	241.063	246.159	235	226.076	201.224	198.501	200.8
Normalized	90.37%	90.3%	72.68%	77.66%	76.84%	77.17%	82.34%	80.64%	84.47%	87.8%	98.65%	100%	98.86%
Basis Universal - ETC1S (sec)	54.310	47.653	57.399	58.280	57.826	54.194	55.456	55.278	51.446	52.694	48.227	48.921	49.403
Normalized	87.74%	100%	83.02%	81.77%	82.41%	87.93%	85.93%	86.21%	92.63%	90.43%	98.81%	97.41%	96.46%
Standard Deviation	0.1%	1.7%	0.1%	0.2%	0.3%	0.4%	0.2%	0.3%	0.4%	0.4%	0.3%	0.1%	0.4%
Basis Universal - UASTC Level 3 (sec)	19.193	30.634	35.983	23.147	23.088	32.199	21.120	21.404	30.689	19.885	26.597	17.341	16.915
Normalized	88.13%	55.22%	47.01%	73.08%	73.26%	52.53%	80.09%	79.03%	55.12%	85.06%	63.6%	97.54%	100%
Standard Deviation	0.5%	0.1%	0.1%	0.1%	0.6%	0.5%	0.2%	2.8%	0.1%	0.2%	0.4%	2.6%	0.5%

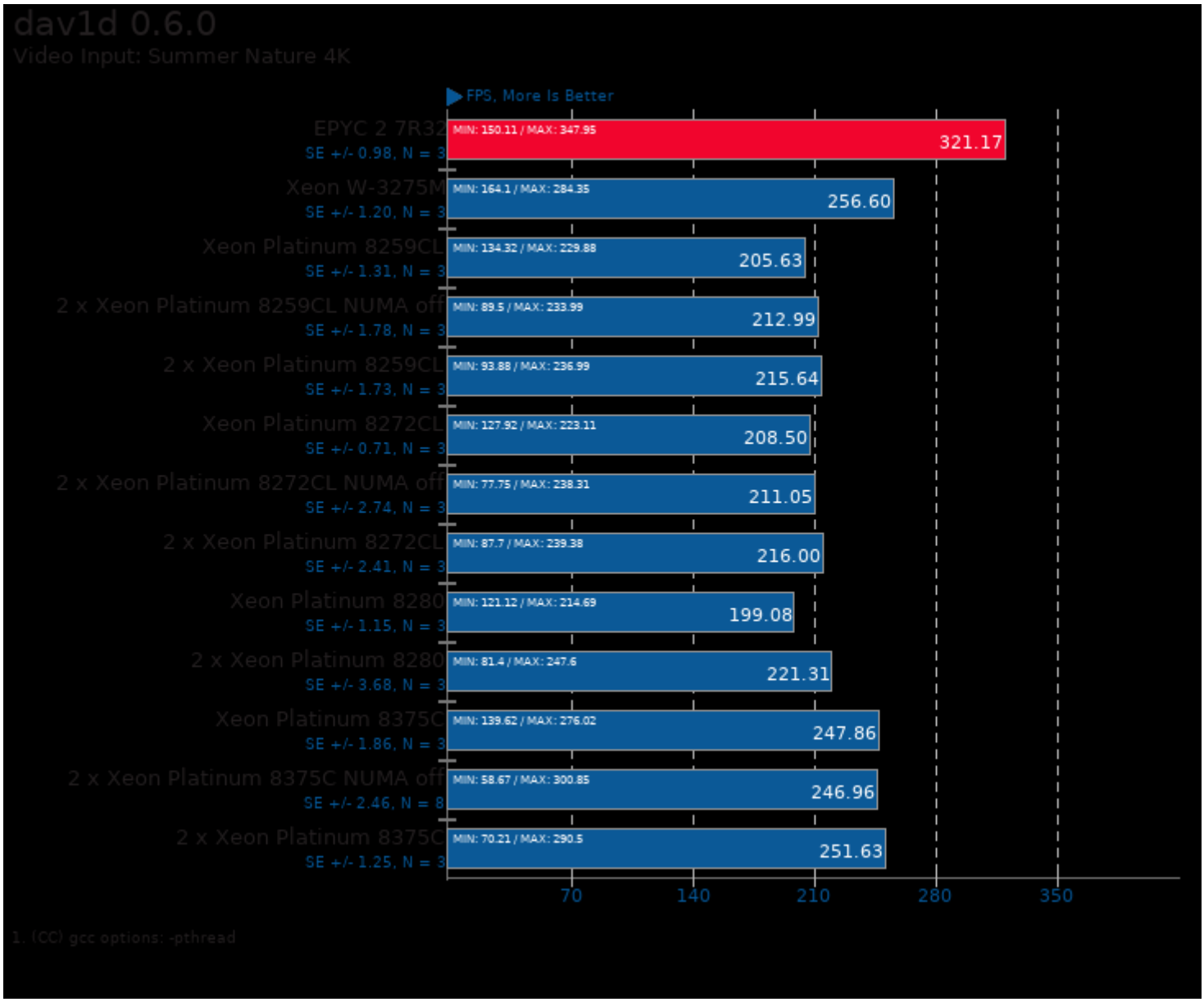
Xeon & EPYC Tests

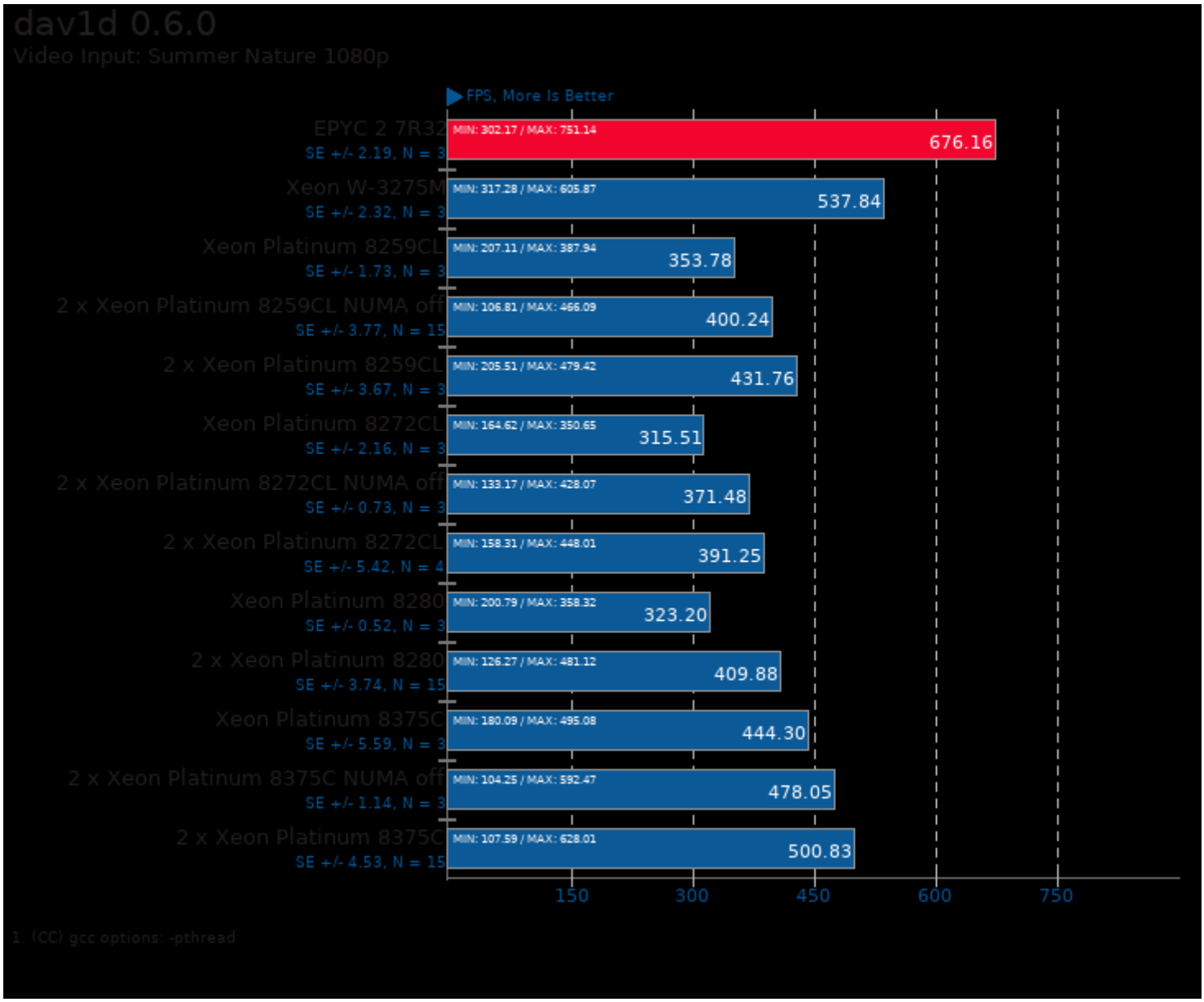
Blender - BMW27 - CPU-Only (sec)	41.76	74.96	86.89	48.00	47.63	75.86	41.22	41.33	69.80	38.79	52.28	31.09	31.10
Normalized	74.45%	41.48%	35.78%	64.77%	65.27%	40.98%	75.42%	75.22%	44.54%	80.15%	59.47%	100%	99.97%
Standard Deviation	0.4%	0.3%	0.3%	0.2%	0.4%	0.6%	0.3%	0.9%	0.2%	0.4%	0.3%	0.5%	0.8%
Blender - Classroom - CPU-Only (sec)	101.34	213.36	246.81	124.67	124.59	215.91	109.34	109.91	198.25	100.47	136.55	74.20	75.73
Normalized	73.22%	34.78%	30.06%	59.52%	59.56%	34.37%	67.86%	67.51%	37.43%	73.85%	54.34%	100%	97.98%
Standard Deviation	0.7%	0.3%	0.1%	0.2%	0.1%	0.3%	0.5%	0.1%	0.3%	0.4%	0.1%	2.1%	0.8%
Blender - Fishy Cat - CPU-Only (sec)	65.67	118.09	134.22	79.22	79.00	119.36	70.22	70.12	110.67	66.39	81.64	53.69	53.96
Normalized	81.76%	45.47%	40%	67.77%	67.96%	44.98%	76.46%	76.57%	48.51%	80.87%	65.76%	100%	99.5%
Standard Deviation	0.1%	0.1%	0.1%	0.3%	0.2%	0.2%	0.5%	0.6%	0.3%	0.1%	0.2%	0.3%	0.4%
Blender - Barbershop - CPU-Only (sec)	177.79	304.79	350.47	211.37	211.33	310.51	195.61	195.96	287.80	187.33	218.42	158.72	161.71
Normalized	89.27%	52.08%	45.29%	75.09%	75.11%	51.12%	81.14%	81%	55.15%	84.73%	72.67%	100%	98.15%
Standard Deviation	0.5%	0.1%	0%	0.1%	0.1%	0.1%	0.1%	0.5%	0.1%	0.4%	0.3%	0.4%	0.9%
Blender - Pabellon Barcelona - CPU-Only (sec)	132.04	265.41	305.20	157.99	158.13	271.68	142.81	143.31	246.31	129.01	177.57	99.21	100.51
Normalized	75.14%	37.38%	32.51%	62.8%	62.74%	36.52%	69.47%	69.23%	40.28%	76.9%	55.87%	100%	98.71%
Standard Deviation	0.7%	0.5%	0%	0.1%	0.1%	0.2%	0.3%	0.6%	0%	0.3%	0.1%	1.4%	1.2%
Appleseed - Emily (sec)	147.68 5856	196.92 9786	219.31 97	163.70 7232	161.84 6314	211.94 1251	161.37 6814	162.49 5615	197.64 9505	154.98 0752	156.21 5935	213.50 5962	214.95 4687
Normalized	100%	74.99%	67.34%	90.21%	91.25%	69.68%	91.52%	90.89%	74.72%	95.29%	94.54%	69.17%	68.71%
Appleseed - Disney Material (sec)	62.431 047	106.64 3392	120.16 9346	73.216 224	73.581 913	117.15 1798	72.848 426	73.503 828	103.83 3099	68.618 272	78.579 49	64.970 654	64.750 754
Normalized	100%	58.54%	51.95%	85.27%	84.85%	53.29%	85.7%	84.94%	60.13%	90.98%	79.45%	96.09%	96.42%
Appleseed - Material Tester (sec)	175.19 3708	124.14 7301	127.99 6296	197.29 3774	185.22 9734	129.03 06	195.11 1486	186.30 6033	123.97 9103	193.44 241	90.819 752	179.24 0906	185.45 4977
Normalized	51.84%	73.15%	70.95%	46.03%	49.03%	70.39%	46.55%	48.75%	73.25%	46.95%	100%	50.67%	48.97%
Mlpack Benchmark - scikit_ica (sec)	49.47	54.91	61.20	57.69	58.48	58.57	55.90	54.84	67.36	63.35	45.50	44.03	44.68
Normalized	89%	80.19%	71.94%	76.32%	75.29%	75.18%	78.77%	80.29%	65.37%	69.5%	96.77%	100%	98.55%
Standard Deviation	3.8%	0.3%	1%	1.1%	2.4%	0.2%	1.6%	1.3%	0.5%	1.6%	0.5%	1.3%	0.7%
Mlpack Benchmark - scikit_qda (sec)	39.54	32.65	31.98	41.29	42.88	31.51	40.35	40.64	30.45	38.35	26.51	29.53	29.92
Normalized	67.05%	81.19%	82.9%	64.2%	61.82%	84.13%	65.7%	65.23%	87.06%	69.13%	100%	89.77%	88.6%
Standard Deviation	1.2%	1%	0.6%	0.8%	4.4%	1.1%	2.6%	2.7%	1.6%	1.5%	0.5%	2.3%	3%

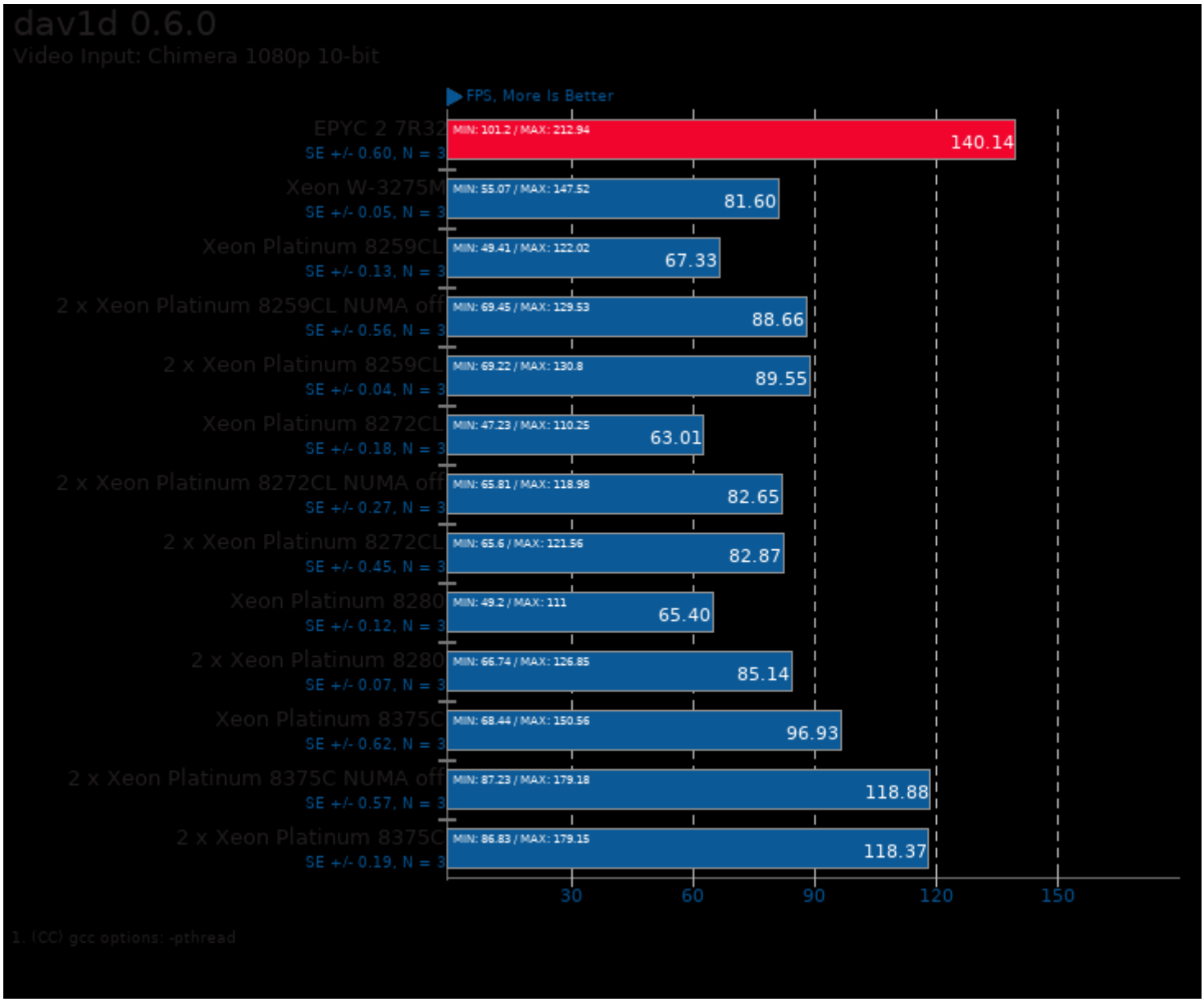
Xeon & EPYC Tests

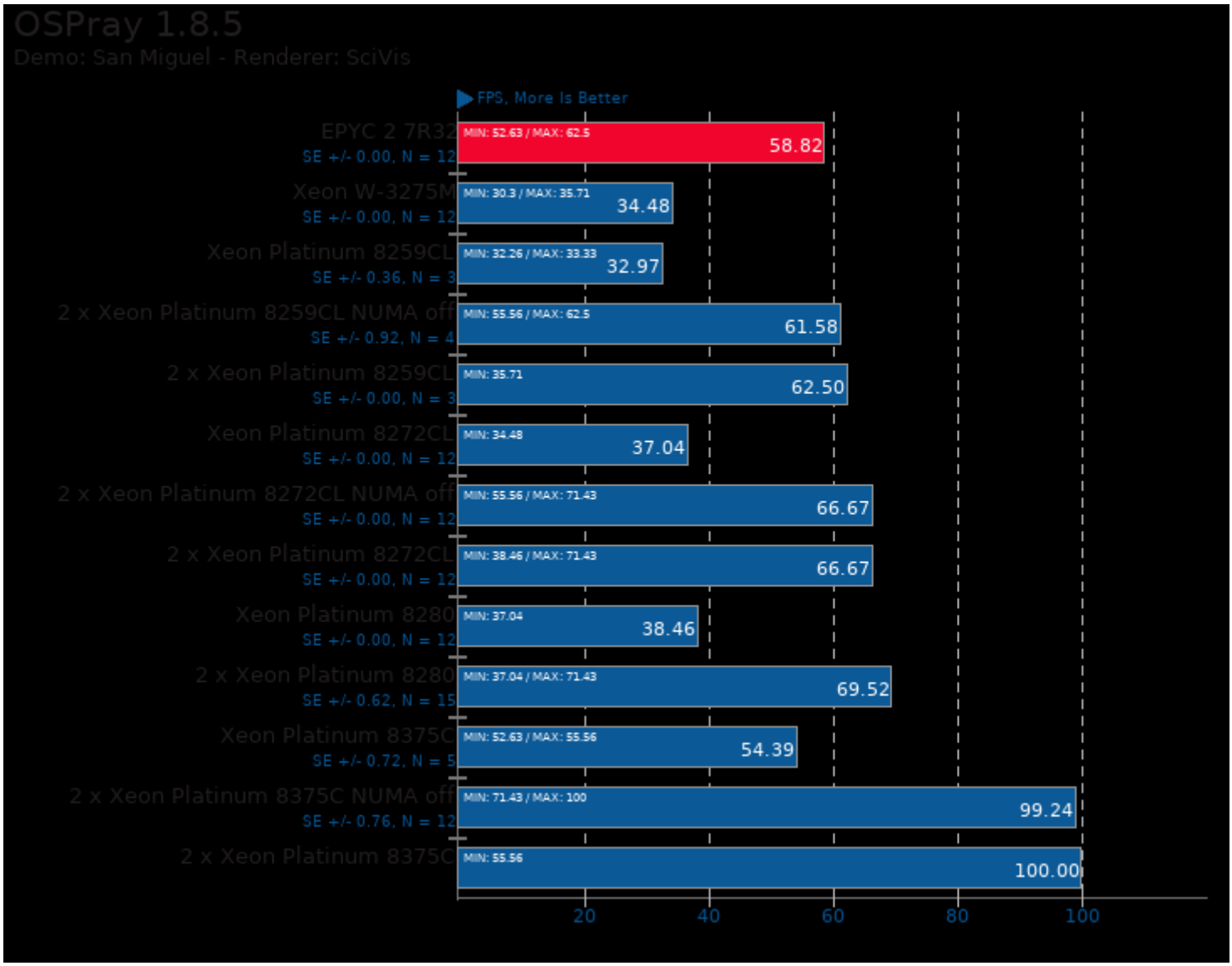
Mlpack Benchmark - scikit_svm	**15.16**	15.78	18.67	**19.62**	18.76	17.83	19.05	17.94	17.19	17.19	17.05	17.54	17.08
Normalized	100%	96.07%	81.2%	77.27%	80.81%	85.03%	79.58%	84.5%	88.19%	88.19%	88.91%	86.43%	88.76%
Standard Deviation	1%	2.1%	0.2%	0.2%	0.3%	0.4%	0.5%	1.1%	0.7%	0.9%	0.2%	0.7%	0.4%
Mlpack Benchmark - scikit_linearridgeregression	1.79	1.99	2.00	2.42	2.30	1.91	2.13	2.16	**1.67**	1.82	2.54	**2.75**	2.60
Normalized	93.3%	83.92%	83.5%	69.01%	72.61%	87.43%	78.4%	77.31%	100%	91.76%	65.75%	60.73%	64.23%
Standard Deviation	2.1%	1.6%	4.1%	2.9%	4%	2.3%	3%	2.5%	2%	2.6%	0.4%	0.8%	2.8%
Scikit-Learn (sec)	10.419	9.661	12.088	**12.954**	12.459	11.212	12.055	11.763	**9.127**	9.392	9.566	9.472	9.332
Normalized	87.6%	94.47%	75.5%	70.46%	73.26%	81.4%	75.71%	77.59%	100%	97.18%	95.41%	96.36%	97.8%
Standard Deviation	0.6%	0.6%	0.8%	0.6%	0.5%	0.4%	0.7%	0.4%	0.8%	2.2%	1%	1.1%	0.6%

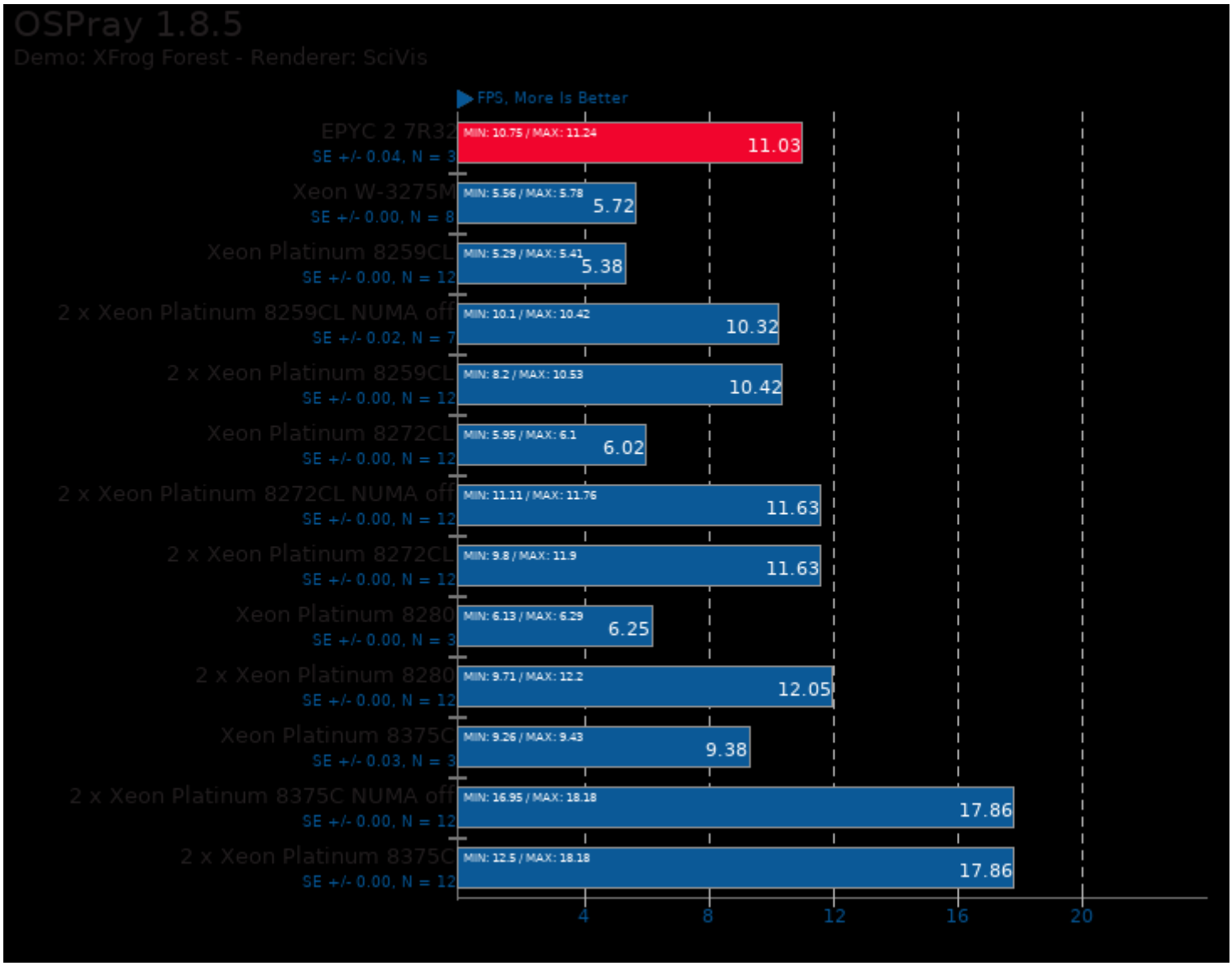

Intel MPI Benchmarks 2019.3
Test: IMB-P2P PingPong
Average Msg/sec, More Is Better
EPYC 2 7R32
SE +/- 40509.97, N = 3
MIN: 6272 / MAX: 47546902
20348261.03
Xeon W-3275M
SE +/- 59477.15, N = 3
MIN: 5167 / MAX: 52108336
20246604.62
Xeon Platinum 8259CL
SE +/- 30074.61, N = 3
MIN: 4962 / MAX: 43240261
16759832.26
2 x Xeon Platinum 8259CL NUMA off
SE +/- 105849.64, N = 3
MIN: 5770 / MAX: 85492119
32444647.43
2 x Xeon Platinum 8259CL
SE +/- 80057.86, N = 3
MIN: 9163 / MAX: 84595469
31988149.25
Xeon Platinum 8272CL
SE +/- 60171.59, N = 3
MIN: 4992 / MAX: 49169237
19096342.65
2 x Xeon Platinum 8272CL NUMA off
SE +/- 199886.33, N = 3
MIN: 5799 / MAX: 95284327
36872935.14
2 x Xeon Platinum 8272CL
SE +/- 90521.14, N = 3
MIN: 9236 / MAX: 94667517
36807805.93
Xeon Platinum 8280
SE +/- 33688.94, N = 3
MIN: 5455 / MAX: 45833330
16653864.77
2 x Xeon Platinum 8280
SE +/- 66348.18, N = 3
MIN: 9950 / MAX: 90956260
31821690.55
Xeon Platinum 8375C
SE +/- 216886.06, N = 3
MIN: 6906 / MAX: 64523629
24658155.96
2 x Xeon Platinum 8375C NUMA off
SE +/- 568664.40, N = 3
MIN: 9132 / MAX: 132488506
49151696.06
2 x Xeon Platinum 8375C
SE +/- 285425.17, N = 3
MIN: 12462 / MAX: 134417572
50148418.00
11M
22M
33M
44M
55M
1. (CXX) g++ options: -O0 -pedantic -fopenmp -pthread -lmpi_cxx -lmpi

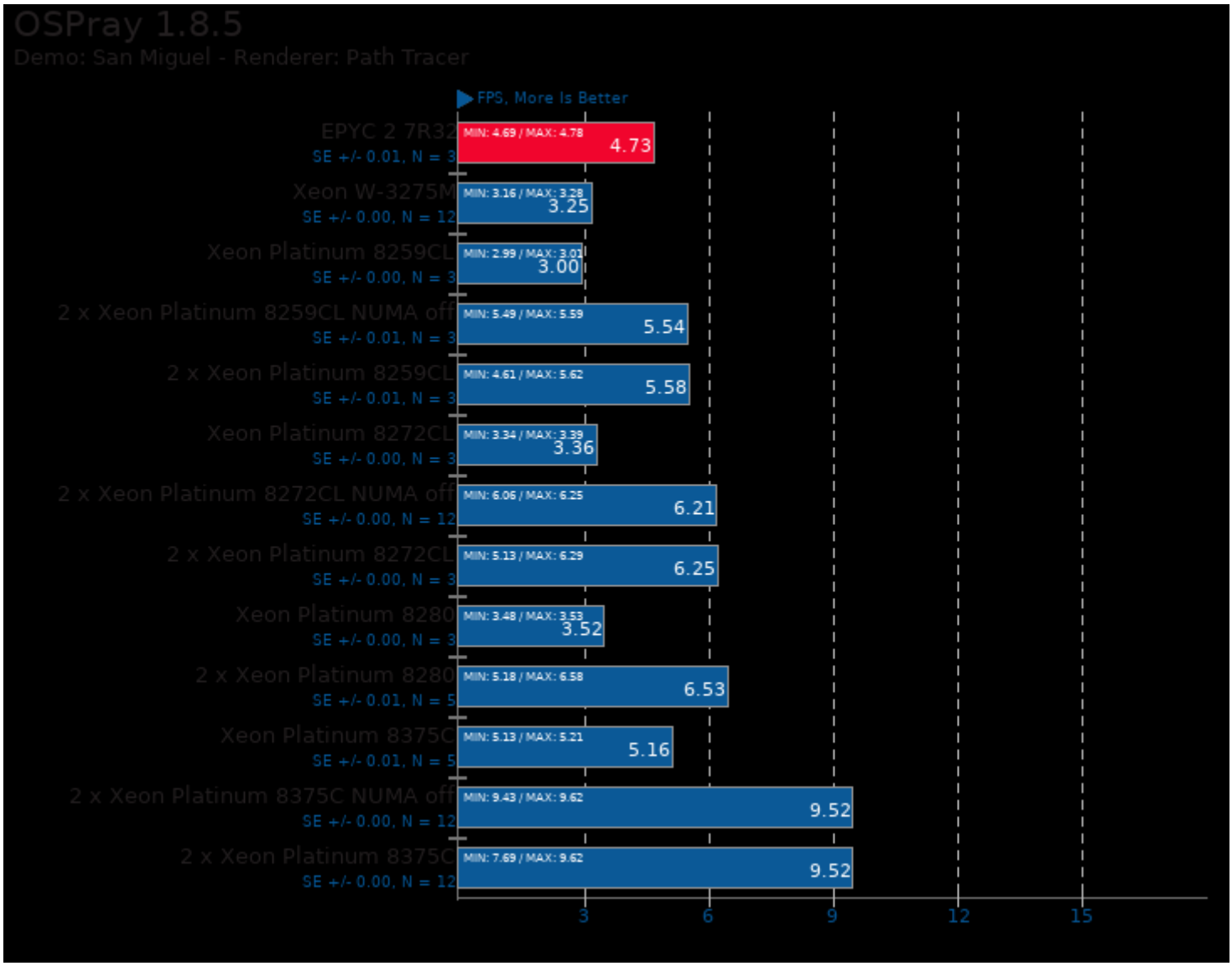

dav1d 0.6.0
Video Input: Summer Nature 4K
FPS, More Is Better
EPYC 2 7R32
SE +/- 0.98, N = 3
MIN: 150.11 / MAX: 347.95
321.17
Xeon W-3275M
SE +/- 1.20, N = 3
MIN: 164.1 / MAX: 284.35
256.60
Xeon Platinum 8259CL
SE +/- 1.31, N = 3
MIN: 134.32 / MAX: 229.88
205.63
2 x Xeon Platinum 8259CL NUMA off
SE +/- 1.78, N = 3
MIN: 89.5 / MAX: 233.99
212.99
2 x Xeon Platinum 8259CL
SE +/- 1.73, N = 3
MIN: 93.88 / MAX: 236.99
215.64
Xeon Platinum 8272CL
SE +/- 0.71, N = 3
MIN: 127.92 / MAX: 223.11
208.50
2 x Xeon Platinum 8272CL NUMA off
SE +/- 2.74, N = 3
MIN: 77.75 / MAX: 238.31
211.05
2 x Xeon Platinum 8272CL
SE +/- 2.41, N = 3
MIN: 87.7 / MAX: 239.38
216.00
Xeon Platinum 8280
SE +/- 1.15, N = 3
MIN: 121.12 / MAX: 214.69
199.08
2 x Xeon Platinum 8280
SE +/- 3.68, N = 3
MIN: 81.4 / MAX: 247.6
221.31
Xeon Platinum 8375C
SE +/- 1.86, N = 3
MIN: 139.62 / MAX: 276.02
247.86
2 x Xeon Platinum 8375C NUMA off
SE +/- 2.46, N = 8
MIN: 58.67 / MAX: 300.85
246.96
2 x Xeon Platinum 8375C
SE +/- 1.25, N = 3
MIN: 70.21 / MAX: 290.5
251.63
70
140
210
280
350
1. (CC) gcc options: -pthread

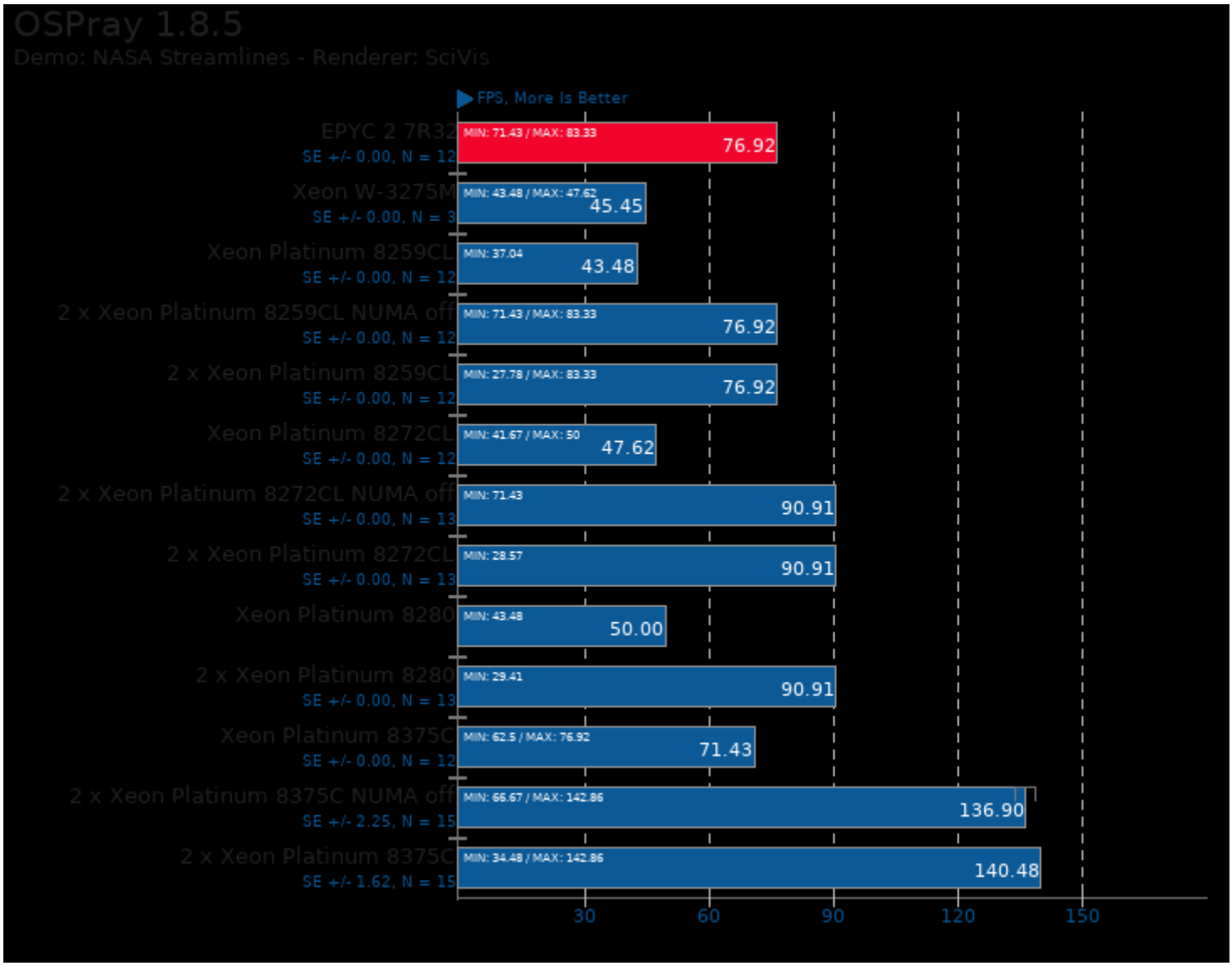

dav1d 0.6.0
Video Input: Summer Nature 1080p
FPS, More Is Better
EPYC 2 7R32
SE +/- 2.19, N = 3
MIN: 302.17 / MAX: 751.14
676.16
Xeon W-3275M
SE +/- 2.32, N = 3
MIN: 317.28 / MAX: 605.87
537.84
Xeon Platinum 8259CL
SE +/- 1.73, N = 3
MIN: 207.11 / MAX: 387.94
353.78
2 x Xeon Platinum 8259CL NUMA off
SE +/- 3.77, N = 15
MIN: 106.81 / MAX: 466.09
400.24
2 x Xeon Platinum 8259CL
SE +/- 3.67, N = 3
MIN: 205.51 / MAX: 479.42
431.76
Xeon Platinum 8272CL
SE +/- 2.16, N = 3
MIN: 164.62 / MAX: 350.65
315.51
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.73, N = 3
MIN: 133.17 / MAX: 428.07
371.48
2 x Xeon Platinum 8272CL
SE +/- 5.42, N = 4
MIN: 158.31 / MAX: 448.01
391.25
Xeon Platinum 8280
SE +/- 0.52, N = 3
MIN: 200.79 / MAX: 358.32
323.20
2 x Xeon Platinum 8280
SE +/- 3.74, N = 15
MIN: 126.27 / MAX: 481.12
409.88
Xeon Platinum 8375C
SE +/- 5.59, N = 3
MIN: 180.09 / MAX: 495.08
444.30
2 x Xeon Platinum 8375C NUMA off
SE +/- 1.14, N = 3
MIN: 104.25 / MAX: 592.47
478.05
2 x Xeon Platinum 8375C
SE +/- 4.53, N = 15
MIN: 107.59 / MAX: 628.01
500.83
150
300
450
600
750
1. (CC) gcc options: -pthread

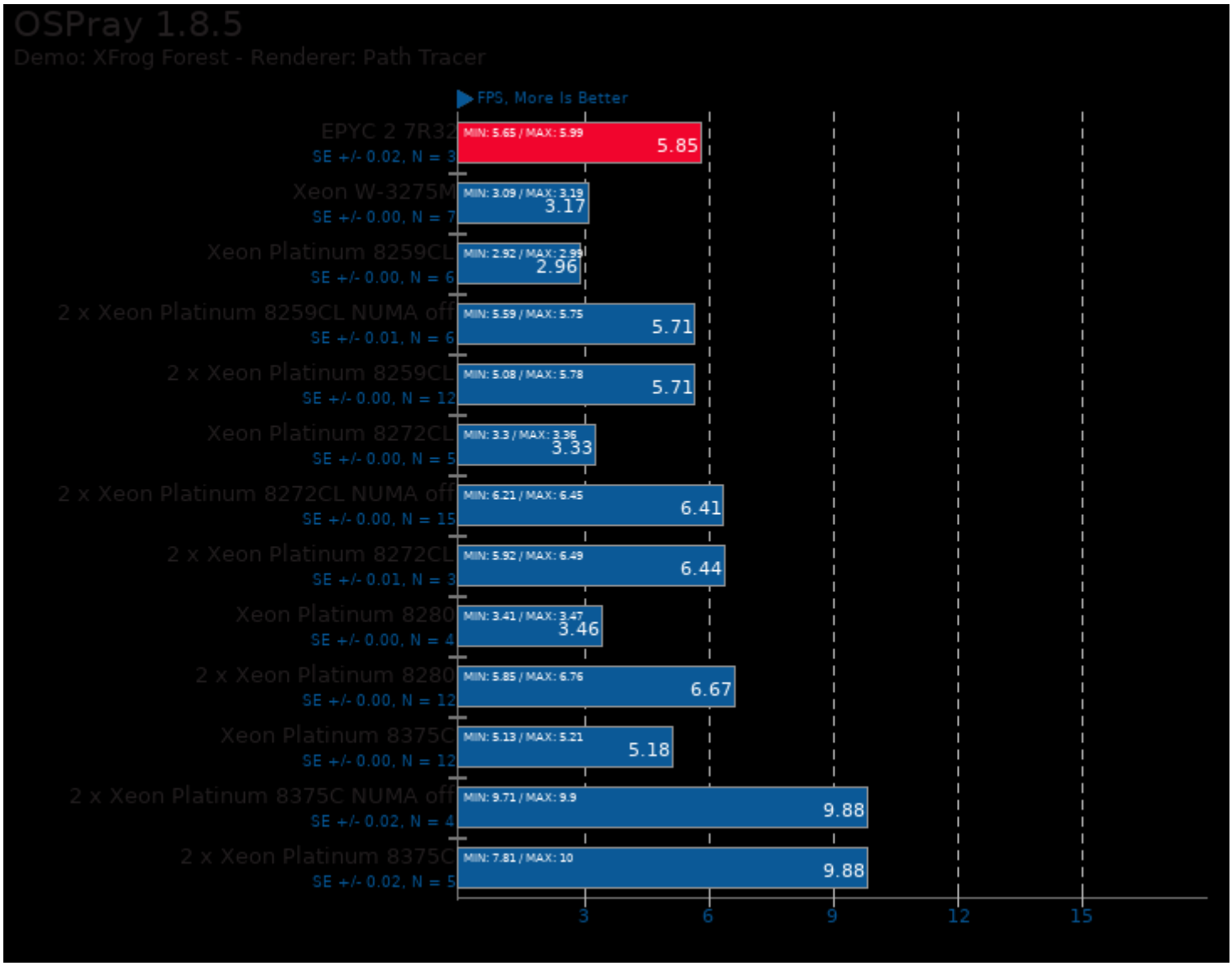

dav1d 0.6.0
Video Input: Chimera 1080p 10-bit
FPS, More Is Better
EPYC 2 7R32
SE +/- 0.60, N = 3
MIN: 101.2 / MAX: 212.94
140.14
Xeon W-3275M
SE +/- 0.05, N = 3
MIN: 55.07 / MAX: 147.52
81.60
Xeon Platinum 8259CL
SE +/- 0.13, N = 3
MIN: 49.41 / MAX: 122.02
67.33
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.56, N = 3
MIN: 69.45 / MAX: 129.53
88.66
2 x Xeon Platinum 8259CL
SE +/- 0.04, N = 3
MIN: 69.22 / MAX: 130.8
89.55
Xeon Platinum 8272CL
SE +/- 0.18, N = 3
MIN: 47.23 / MAX: 110.25
63.01
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.27, N = 3
MIN: 65.81 / MAX: 118.98
82.65
2 x Xeon Platinum 8272CL
SE +/- 0.45, N = 3
MIN: 65.6 / MAX: 121.56
82.87
Xeon Platinum 8280
SE +/- 0.12, N = 3
MIN: 49.2 / MAX: 111
65.40
2 x Xeon Platinum 8280
SE +/- 0.07, N = 3
MIN: 66.74 / MAX: 126.85
85.14
Xeon Platinum 8375C
SE +/- 0.62, N = 3
MIN: 68.44 / MAX: 150.56
96.93
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.57, N = 3
MIN: 87.23 / MAX: 179.18
118.88
2 x Xeon Platinum 8375C
SE +/- 0.19, N = 3
MIN: 86.83 / MAX: 179.15
118.37
30
60
90
120
150
1. (CC) gcc options: -pthread

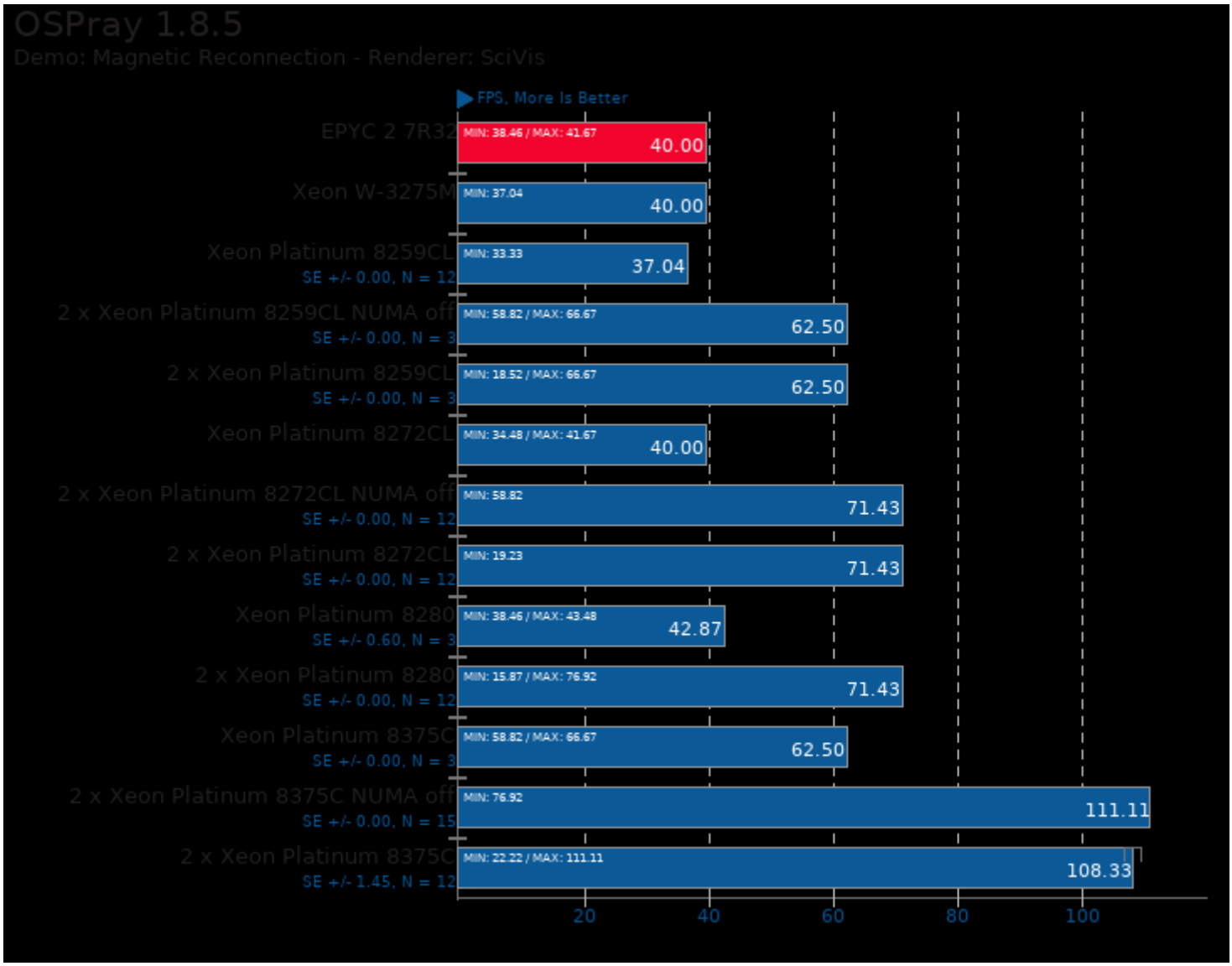

OSPray 1.8.5
Demo: San Miguel - Renderer: SciVis
FPS, More Is Better
EPYC 2 7R32
SE +/- 0.00, N = 12
MIN: 52.63 / MAX: 62.5
58.82
Xeon W-3275M
SE +/- 0.00, N = 12
MIN: 30.3 / MAX: 35.71
34.48
Xeon Platinum 8259CL
SE +/- 0.36, N = 3
MIN: 32.26 / MAX: 33.33
32.97
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.92, N = 4
MIN: 55.56 / MAX: 62.5
61.58
2 x Xeon Platinum 8259CL
SE +/- 0.00, N = 3
MIN: 35.71
62.50
Xeon Platinum 8272CL
SE +/- 0.00, N = 12
MIN: 34.48
37.04
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.00, N = 12
MIN: 55.56 / MAX: 71.43
66.67
2 x Xeon Platinum 8272CL
SE +/- 0.00, N = 12
MIN: 38.46 / MAX: 71.43
66.67
Xeon Platinum 8280
SE +/- 0.00, N = 12
MIN: 37.04
38.46
2 x Xeon Platinum 8280
SE +/- 0.62, N = 15
MIN: 37.04 / MAX: 71.43
69.52
Xeon Platinum 8375C
SE +/- 0.72, N = 5
MIN: 52.63 / MAX: 55.56
54.39
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.76, N = 12
MIN: 71.43 / MAX: 100
99.24
2 x Xeon Platinum 8375C
MIN: 55.56
100.00
20
40
60
80
100

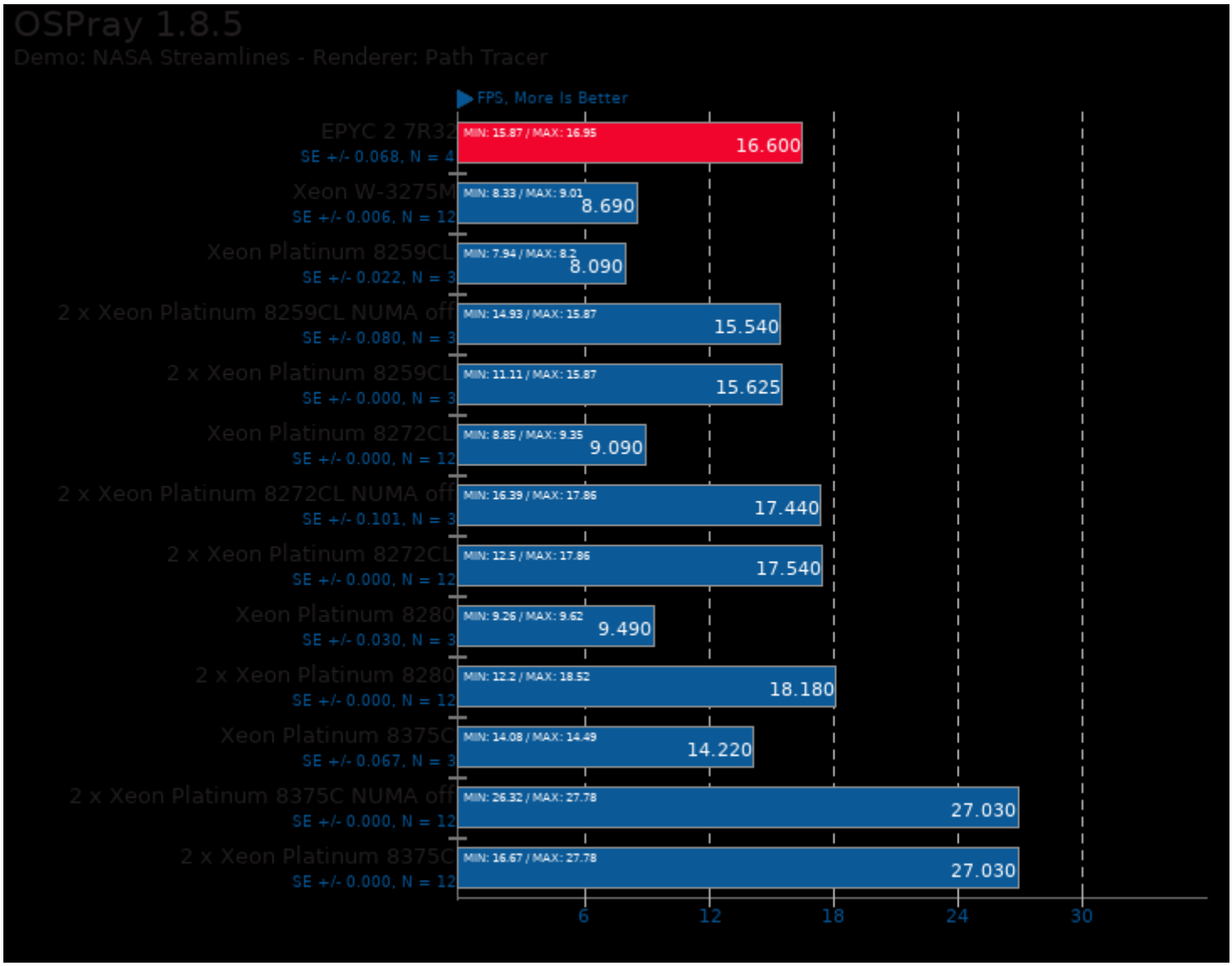

OSPray 1.8.5
Demo: XFrog Forest - Renderer: SciVis
FPS, More Is Better
EPYC 2 7R32
SE +/- 0.04, N = 3
MIN: 10.75 / MAX: 11.24
11.03
Xeon W-3275M
SE +/- 0.00, N = 8
MIN: 5.56 / MAX: 5.78
5.72
Xeon Platinum 8259CL
SE +/- 0.00, N = 12
MIN: 5.29 / MAX: 5.41
5.38
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.02, N = 7
MIN: 10.1 / MAX: 10.42
10.32
2 x Xeon Platinum 8259CL
SE +/- 0.00, N = 12
MIN: 8.2 / MAX: 10.53
10.42
Xeon Platinum 8272CL
SE +/- 0.00, N = 12
MIN: 5.95 / MAX: 6.1
6.02
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.00, N = 12
MIN: 11.11 / MAX: 11.76
11.63
2 x Xeon Platinum 8272CL
SE +/- 0.00, N = 12
MIN: 9.8 / MAX: 11.9
11.63
Xeon Platinum 8280
SE +/- 0.00, N = 3
MIN: 6.13 / MAX: 6.29
6.25
2 x Xeon Platinum 8280
SE +/- 0.00, N = 12
MIN: 9.71 / MAX: 12.2
12.05
Xeon Platinum 8375C
SE +/- 0.03, N = 3
MIN: 9.26 / MAX: 9.43
9.38
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.00, N = 12
MIN: 16.95 / MAX: 18.18
17.86
2 x Xeon Platinum 8375C
SE +/- 0.00, N = 12
MIN: 12.5 / MAX: 18.18
17.86
4
8
12
16
20

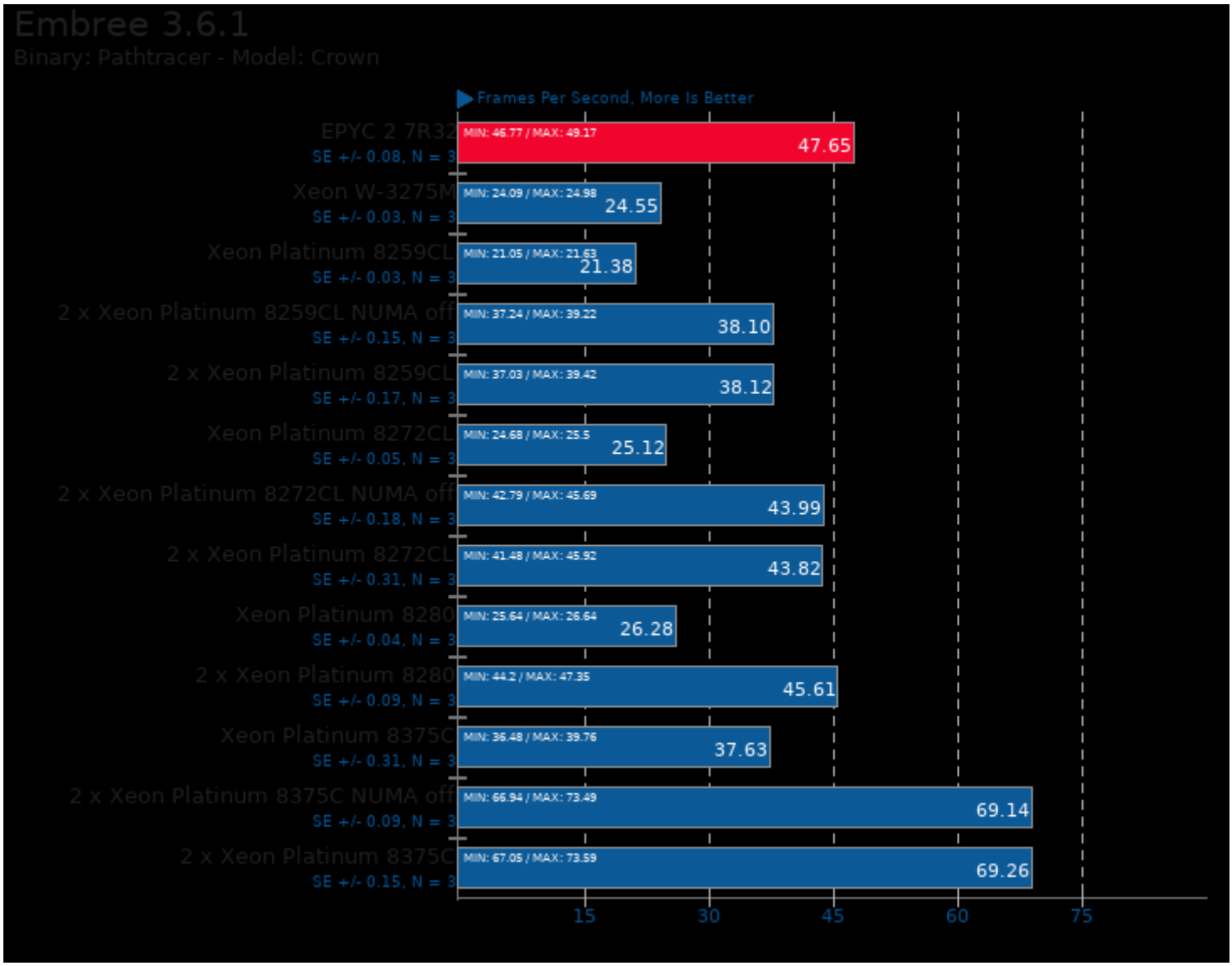

OSPray 1.8.5
Demo: San Miguel - Renderer: Path Tracer
FPS, More Is Better
EPYC 2 7R32
SE +/- 0.01, N = 3
MIN: 4.69 / MAX: 4.78
4.73
Xeon W-3275M
SE +/- 0.00, N = 12
MIN: 3.16 / MAX: 3.28
3.25
Xeon Platinum 8259CL
SE +/- 0.00, N = 3
MIN: 2.99 / MAX: 3.01
3.00
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.01, N = 3
MIN: 5.49 / MAX: 5.59
5.54
2 x Xeon Platinum 8259CL
SE +/- 0.01, N = 3
MIN: 4.61 / MAX: 5.62
5.58
Xeon Platinum 8272CL
SE +/- 0.00, N = 3
MIN: 3.34 / MAX: 3.39
3.36
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.00, N = 12
MIN: 6.06 / MAX: 6.25
6.21
2 x Xeon Platinum 8272CL
SE +/- 0.00, N = 3
MIN: 5.13 / MAX: 6.29
6.25
Xeon Platinum 8280
SE +/- 0.00, N = 3
MIN: 3.48 / MAX: 3.53
3.52
2 x Xeon Platinum 8280
SE +/- 0.01, N = 5
MIN: 5.18 / MAX: 6.58
6.53
Xeon Platinum 8375C
SE +/- 0.01, N = 5
MIN: 5.13 / MAX: 5.21
5.16
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.00, N = 12
MIN: 9.43 / MAX: 9.62
9.52
2 x Xeon Platinum 8375C
SE +/- 0.00, N = 12
MIN: 7.69 / MAX: 9.62
9.52
3
6
9
12
15

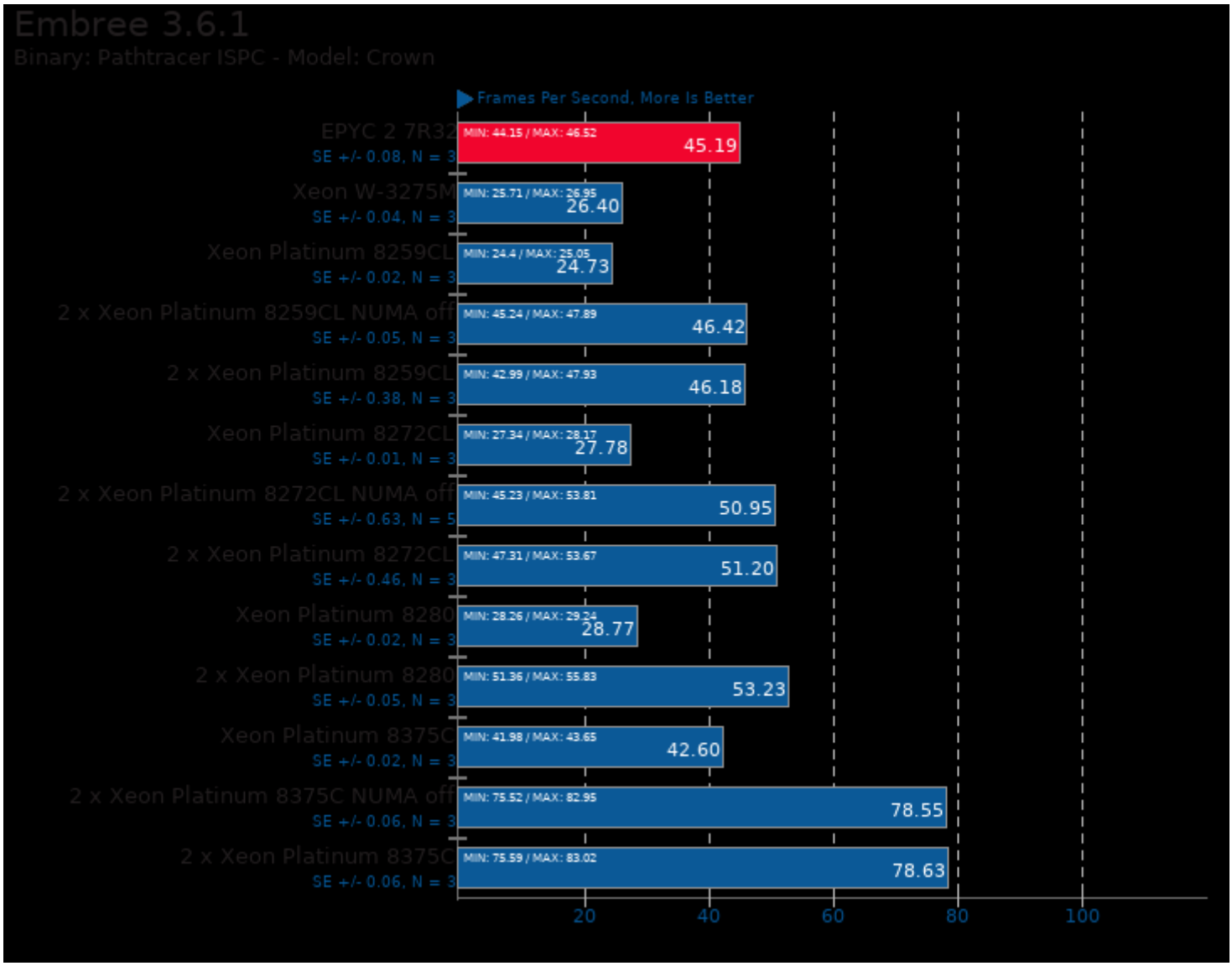

OSPray 1.8.5
Demo: NASA Streamlines - Renderer: SciVis
FPS, More Is Better
EPYC 2 7R32
SE +/- 0.00, N = 12
MIN: 71.43 / MAX: 83.33
76.92
Xeon W-3275M
SE +/- 0.00, N = 3
MIN: 43.48 / MAX: 47.62
45.45
Xeon Platinum 8259CL
SE +/- 0.00, N = 12
MIN: 37.04
43.48
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.00, N = 12
MIN: 71.43 / MAX: 83.33
76.92
2 x Xeon Platinum 8259CL
SE +/- 0.00, N = 12
MIN: 27.78 / MAX: 83.33
76.92
Xeon Platinum 8272CL
SE +/- 0.00, N = 12
MIN: 41.67 / MAX: 50
47.62
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.00, N = 13
MIN: 71.43
90.91
2 x Xeon Platinum 8272CL
SE +/- 0.00, N = 13
MIN: 28.57
90.91
Xeon Platinum 8280
MIN: 43.48
50.00
2 x Xeon Platinum 8280
SE +/- 0.00, N = 13
MIN: 29.41
90.91
Xeon Platinum 8375C
SE +/- 0.00, N = 12
MIN: 62.5 / MAX: 76.92
71.43
2 x Xeon Platinum 8375C NUMA off
SE +/- 2.25, N = 15
MIN: 66.67 / MAX: 142.86
136.90
2 x Xeon Platinum 8375C
SE +/- 1.62, N = 15
MIN: 34.48 / MAX: 142.86
140.48
30
60
90
120
150

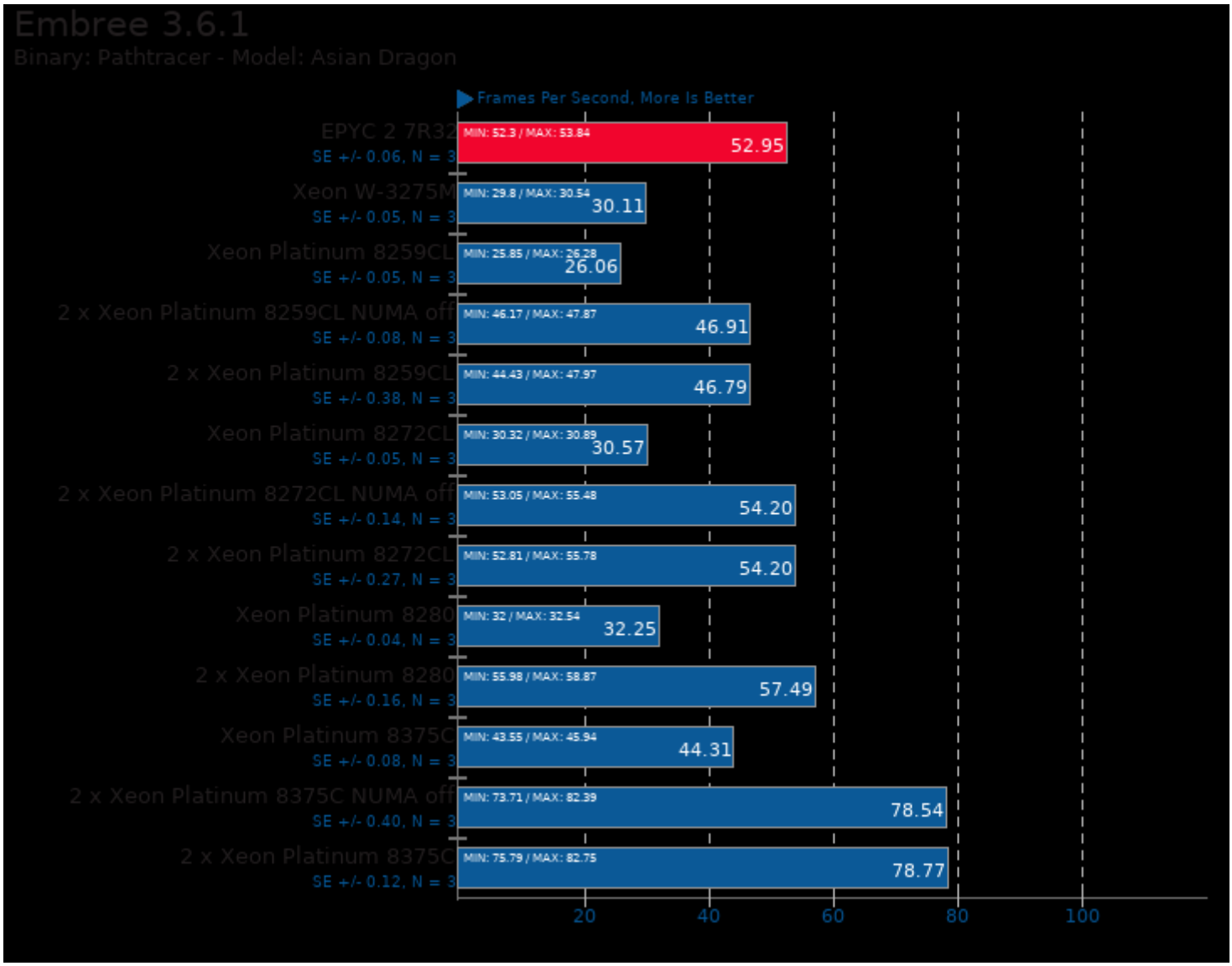

OSPray 1.8.5
Demo: XFrog Forest - Renderer: Path Tracer
FPS, More Is Better
EPYC 2 7R32
SE +/- 0.02, N = 3
MIN: 5.65 / MAX: 5.99
5.85
Xeon W-3275M
SE +/- 0.00, N = 7
MIN: 3.09 / MAX: 3.19
3.17
Xeon Platinum 8259CL
SE +/- 0.00, N = 6
MIN: 2.92 / MAX: 2.99
2.96
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.01, N = 6
MIN: 5.59 / MAX: 5.75
5.71
2 x Xeon Platinum 8259CL
SE +/- 0.00, N = 12
MIN: 5.08 / MAX: 5.78
5.71
Xeon Platinum 8272CL
SE +/- 0.00, N = 5
MIN: 3.3 / MAX: 3.36
3.33
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.00, N = 15
MIN: 6.21 / MAX: 6.45
6.41
2 x Xeon Platinum 8272CL
SE +/- 0.01, N = 3
MIN: 5.92 / MAX: 6.49
6.44
Xeon Platinum 8280
SE +/- 0.00, N = 4
MIN: 3.41 / MAX: 3.47
3.46
2 x Xeon Platinum 8280
SE +/- 0.00, N = 12
MIN: 5.85 / MAX: 6.76
6.67
Xeon Platinum 8375C
SE +/- 0.00, N = 12
MIN: 5.13 / MAX: 5.21
5.18
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.02, N = 4
MIN: 9.71 / MAX: 9.9
9.88
2 x Xeon Platinum 8375C
SE +/- 0.02, N = 5
MIN: 7.81 / MAX: 10
9.88
3
6
9
12
15

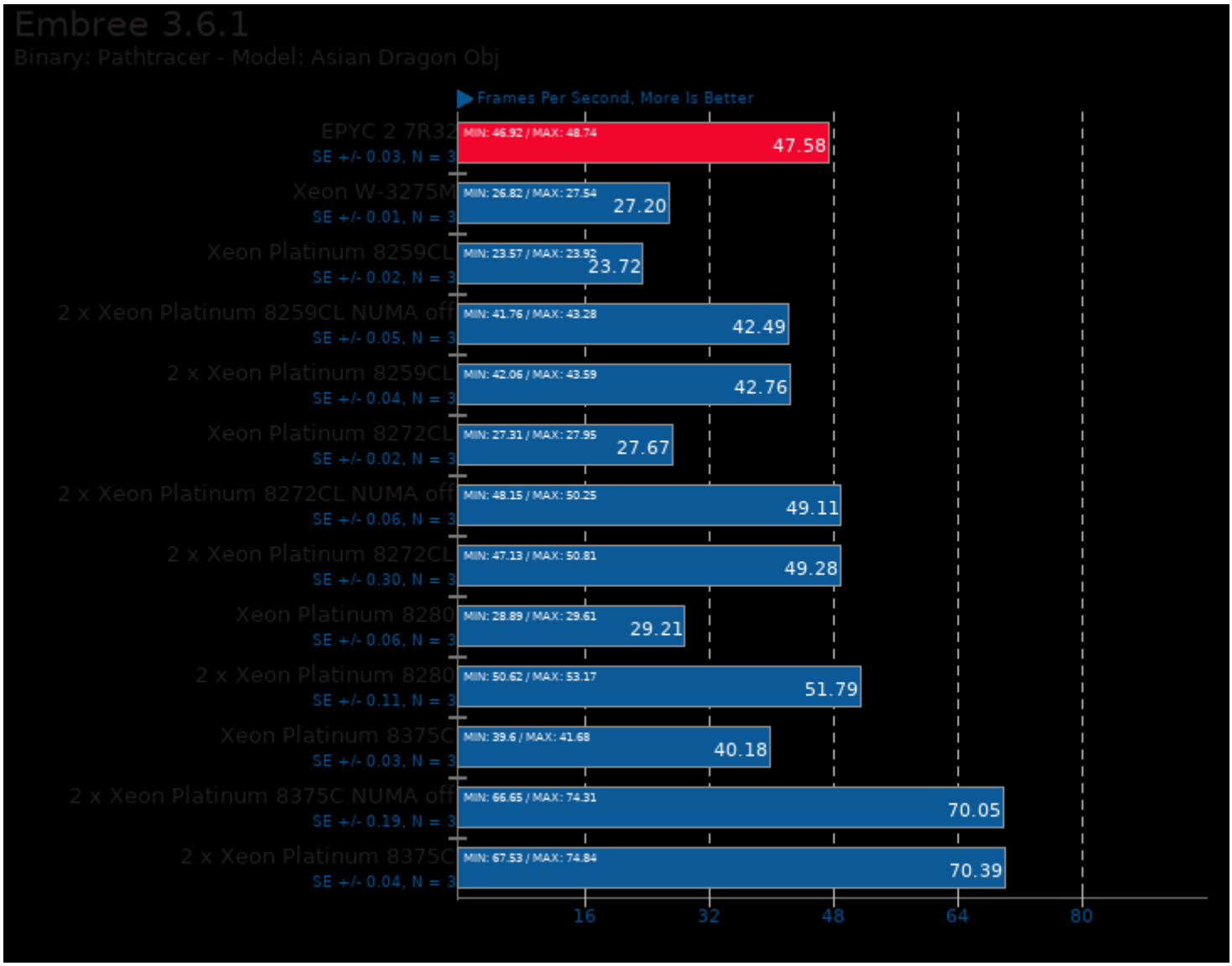

OSPray 1.8.5
Demo: Magnetic Reconnection - Renderer: SciVis
FPS, More Is Better
EPYC 2 7R32
MIN: 38.46 / MAX: 41.67
40.00
Xeon W-3275M
MIN: 37.04
40.00
Xeon Platinum 8259CL
SE +/- 0.00, N = 12
MIN: 33.33
37.04
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.00, N = 3
MIN: 58.82 / MAX: 66.67
62.50
2 x Xeon Platinum 8259CL
SE +/- 0.00, N = 3
MIN: 18.52 / MAX: 66.67
62.50
Xeon Platinum 8272CL
MIN: 34.48 / MAX: 41.67
40.00
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.00, N = 12
MIN: 58.82
71.43
2 x Xeon Platinum 8272CL
SE +/- 0.00, N = 12
MIN: 19.23
71.43
Xeon Platinum 8280
SE +/- 0.60, N = 3
MIN: 38.46 / MAX: 43.48
42.87
2 x Xeon Platinum 8280
SE +/- 0.00, N = 12
MIN: 15.87 / MAX: 76.92
71.43
Xeon Platinum 8375C
SE +/- 0.00, N = 3
MIN: 58.82 / MAX: 66.67
62.50
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.00, N = 15
MIN: 76.92
111.11
2 x Xeon Platinum 8375C
SE +/- 1.45, N = 12
MIN: 22.22 / MAX: 111.11
108.33
20
40
60
80
100

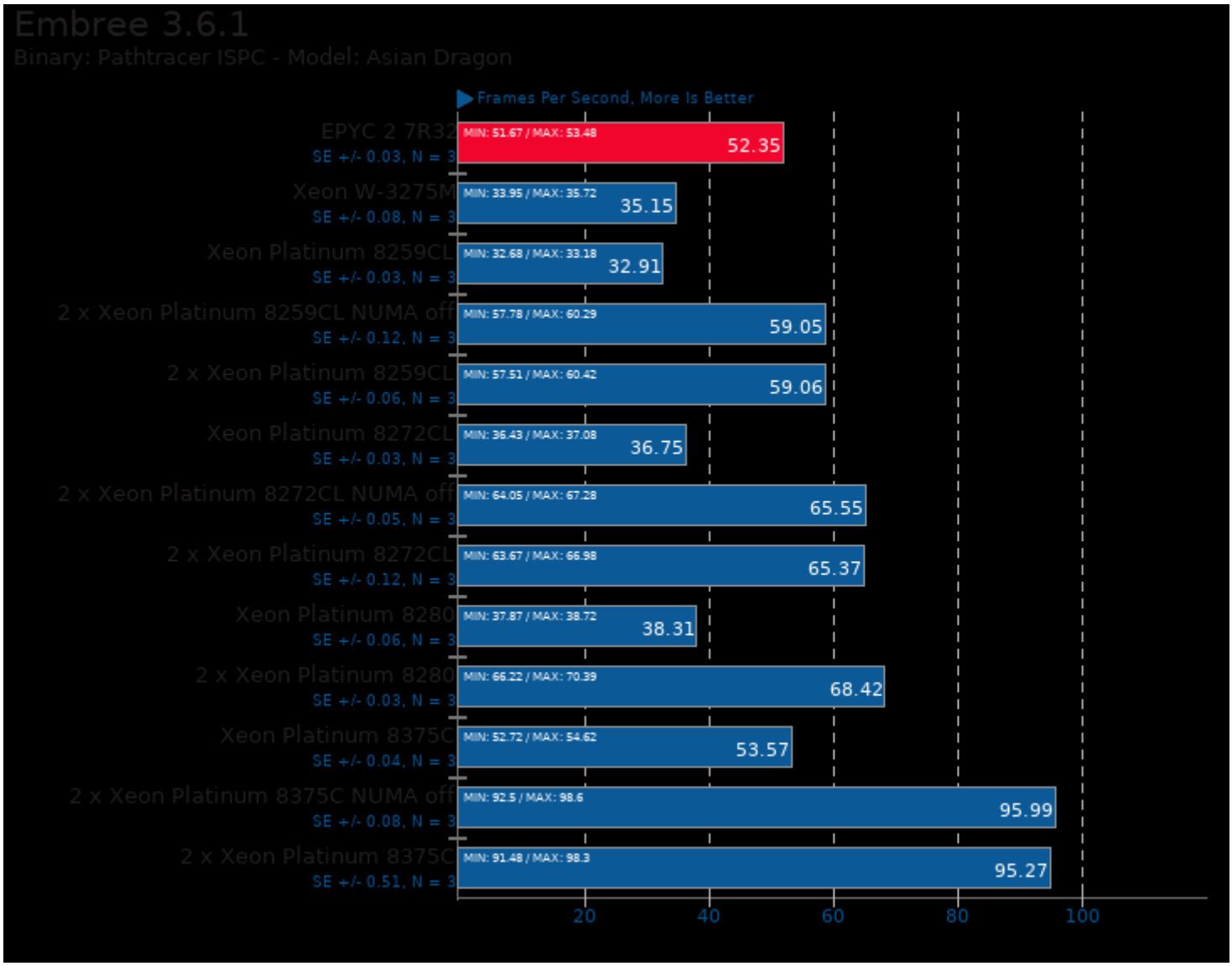

OSPray 1.8.5
Demo: NASA Streamlines - Renderer: Path Tracer
FPS, More Is Better
EPYC 2 7R32
SE +/- 0.068, N = 4
MIN: 15.87 / MAX: 16.95
16.600
Xeon W-3275M
SE +/- 0.006, N = 12
MIN: 8.33 / MAX: 9.01
8.690
Xeon Platinum 8259CL
SE +/- 0.022, N = 3
MIN: 7.94 / MAX: 8.2
8.090
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.080, N = 3
MIN: 14.93 / MAX: 15.87
15.540
2 x Xeon Platinum 8259CL
SE +/- 0.000, N = 3
MIN: 11.11 / MAX: 15.87
15.625
Xeon Platinum 8272CL
SE +/- 0.000, N = 12
MIN: 8.85 / MAX: 9.35
9.090
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.101, N = 3
MIN: 16.39 / MAX: 17.86
17.440
2 x Xeon Platinum 8272CL
SE +/- 0.000, N = 12
MIN: 12.5 / MAX: 17.86
17.540
Xeon Platinum 8280
SE +/- 0.030, N = 3
MIN: 9.26 / MAX: 9.62
9.490
2 x Xeon Platinum 8280
SE +/- 0.000, N = 12
MIN: 12.2 / MAX: 18.52
18.180
Xeon Platinum 8375C
SE +/- 0.067, N = 3
MIN: 14.08 / MAX: 14.49
14.220
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.000, N = 12
MIN: 26.32 / MAX: 27.78
27.030
2 x Xeon Platinum 8375C
SE +/- 0.000, N = 12
MIN: 16.67 / MAX: 27.78
27.030
6
12
18
24
30

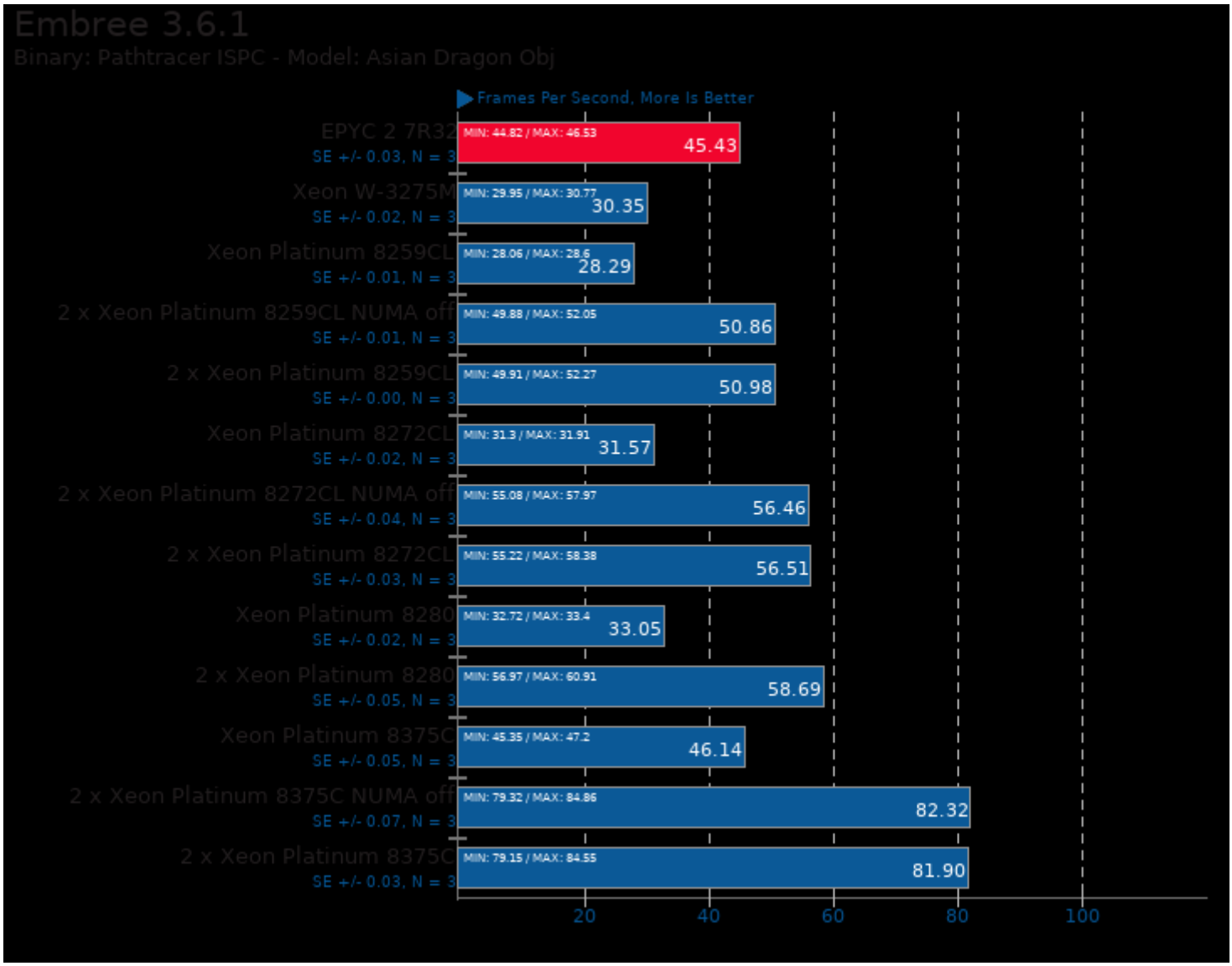

Embree 3.6.1
Binary: Pathtracer - Model: Crown
Frames Per Second, More Is Better
EPYC 2 7R32
SE +/- 0.08, N = 3
MIN: 46.77 / MAX: 49.17
47.65
Xeon W-3275M
SE +/- 0.03, N = 3
MIN: 24.09 / MAX: 24.98
24.55
Xeon Platinum 8259CL
SE +/- 0.03, N = 3
MIN: 21.05 / MAX: 21.63
21.38
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.15, N = 3
MIN: 37.24 / MAX: 39.22
38.10
2 x Xeon Platinum 8259CL
SE +/- 0.17, N = 3
MIN: 37.03 / MAX: 39.42
38.12
Xeon Platinum 8272CL
SE +/- 0.05, N = 3
MIN: 24.68 / MAX: 25.5
25.12
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.18, N = 3
MIN: 42.79 / MAX: 45.69
43.99
2 x Xeon Platinum 8272CL
SE +/- 0.31, N = 3
MIN: 41.48 / MAX: 45.92
43.82
Xeon Platinum 8280
SE +/- 0.04, N = 3
MIN: 25.64 / MAX: 26.64
26.28
2 x Xeon Platinum 8280
SE +/- 0.09, N = 3
MIN: 44.2 / MAX: 47.35
45.61
Xeon Platinum 8375C
SE +/- 0.31, N = 3
MIN: 36.48 / MAX: 39.76
37.63
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.09, N = 3
MIN: 66.94 / MAX: 73.49
69.14
2 x Xeon Platinum 8375C
SE +/- 0.15, N = 3
MIN: 67.05 / MAX: 73.59
69.26
15
30
45
60
75

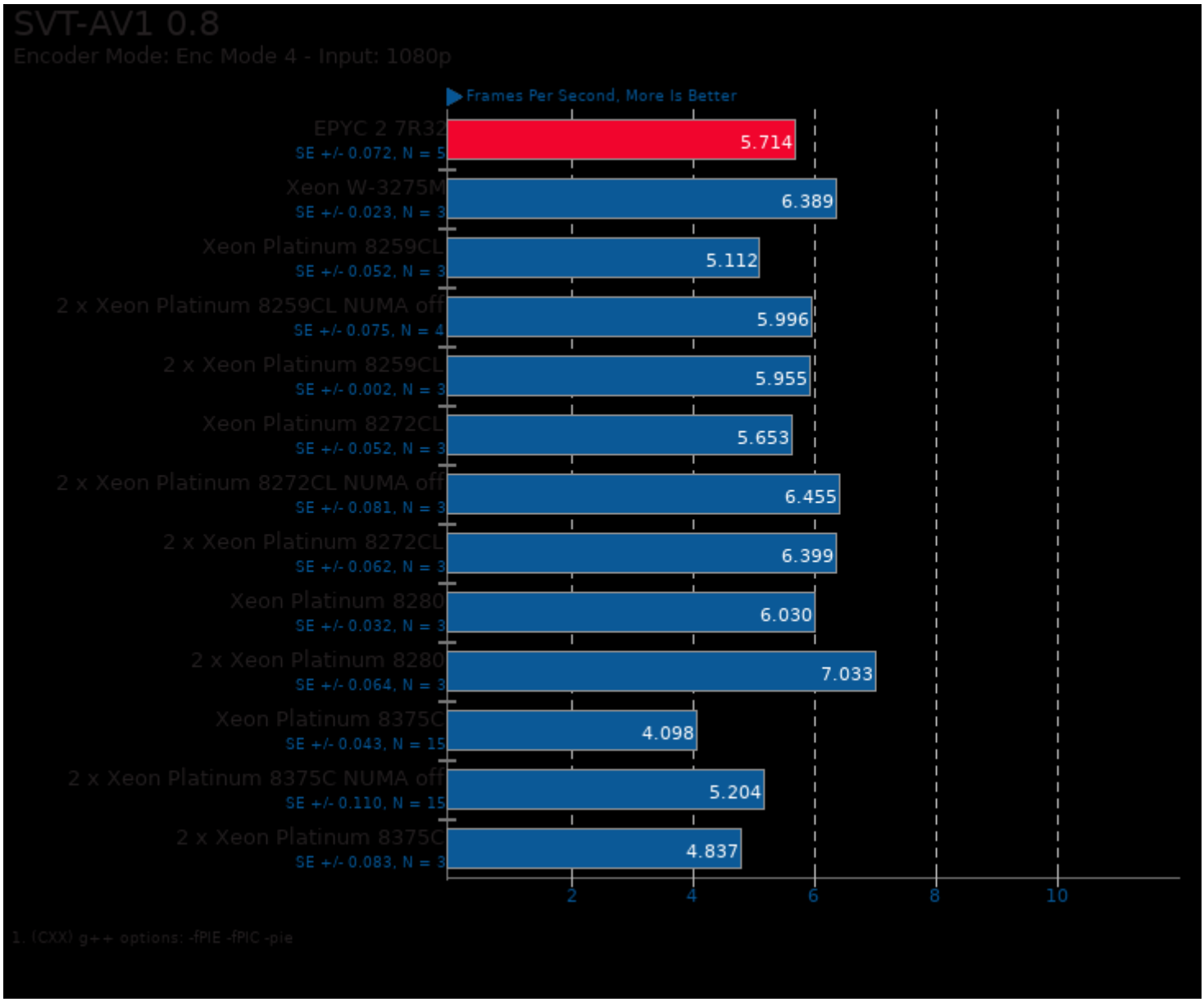

Embree 3.6.1
Binary: Pathtracer ISPC - Model: Crown
Frames Per Second, More Is Better
EPYC 2 7R32
SE +/- 0.08, N = 3
MIN: 44.15 / MAX: 46.52
45.19
Xeon W-3275M
SE +/- 0.04, N = 3
MIN: 25.71 / MAX: 26.95
26.40
Xeon Platinum 8259CL
SE +/- 0.02, N = 3
MIN: 24.4 / MAX: 25.05
24.73
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.05, N = 3
MIN: 45.24 / MAX: 47.89
46.42
2 x Xeon Platinum 8259CL
SE +/- 0.38, N = 3
MIN: 42.99 / MAX: 47.93
46.18
Xeon Platinum 8272CL
SE +/- 0.01, N = 3
MIN: 27.34 / MAX: 28.17
27.78
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.63, N = 5
MIN: 45.23 / MAX: 53.81
50.95
2 x Xeon Platinum 8272CL
SE +/- 0.46, N = 3
MIN: 47.31 / MAX: 53.67
51.20
Xeon Platinum 8280
SE +/- 0.02, N = 3
MIN: 28.26 / MAX: 29.24
28.77
2 x Xeon Platinum 8280
SE +/- 0.05, N = 3
MIN: 51.36 / MAX: 55.83
53.23
Xeon Platinum 8375C
SE +/- 0.02, N = 3
MIN: 41.98 / MAX: 43.65
42.60
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.06, N = 3
MIN: 75.52 / MAX: 82.95
78.55
2 x Xeon Platinum 8375C
SE +/- 0.06, N = 3
MIN: 75.59 / MAX: 83.02
78.63
20
40
60
80
100

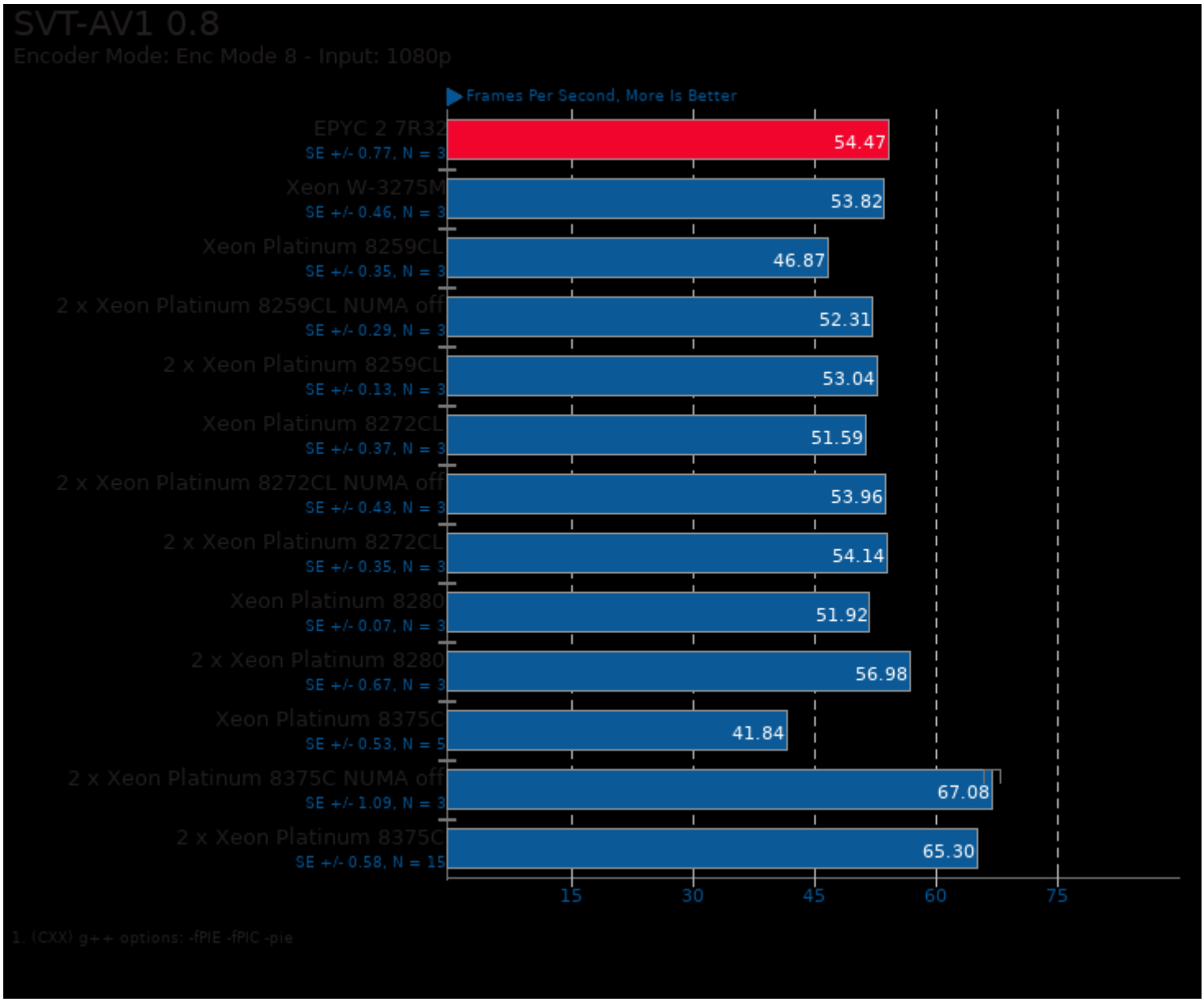

Embree 3.6.1
Binary: Pathtracer - Model: Asian Dragon
Frames Per Second, More Is Better
EPYC 2 7R32
SE +/- 0.06, N = 3
MIN: 52.3 / MAX: 53.84
52.95
Xeon W-3275M
SE +/- 0.05, N = 3
MIN: 29.8 / MAX: 30.54
30.11
Xeon Platinum 8259CL
SE +/- 0.05, N = 3
MIN: 25.85 / MAX: 26.28
26.06
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.08, N = 3
MIN: 46.17 / MAX: 47.87
46.91
2 x Xeon Platinum 8259CL
SE +/- 0.38, N = 3
MIN: 44.43 / MAX: 47.97
46.79
Xeon Platinum 8272CL
SE +/- 0.05, N = 3
MIN: 30.32 / MAX: 30.89
30.57
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.14, N = 3
MIN: 53.05 / MAX: 55.48
54.20
2 x Xeon Platinum 8272CL
SE +/- 0.27, N = 3
MIN: 52.81 / MAX: 55.78
54.20
Xeon Platinum 8280
SE +/- 0.04, N = 3
MIN: 32 / MAX: 32.54
32.25
2 x Xeon Platinum 8280
SE +/- 0.16, N = 3
MIN: 55.98 / MAX: 58.87
57.49
Xeon Platinum 8375C
SE +/- 0.08, N = 3
MIN: 43.55 / MAX: 45.94
44.31
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.40, N = 3
MIN: 73.71 / MAX: 82.39
78.54
2 x Xeon Platinum 8375C
SE +/- 0.12, N = 3
MIN: 75.79 / MAX: 82.75
78.77
20
40
60
80
100

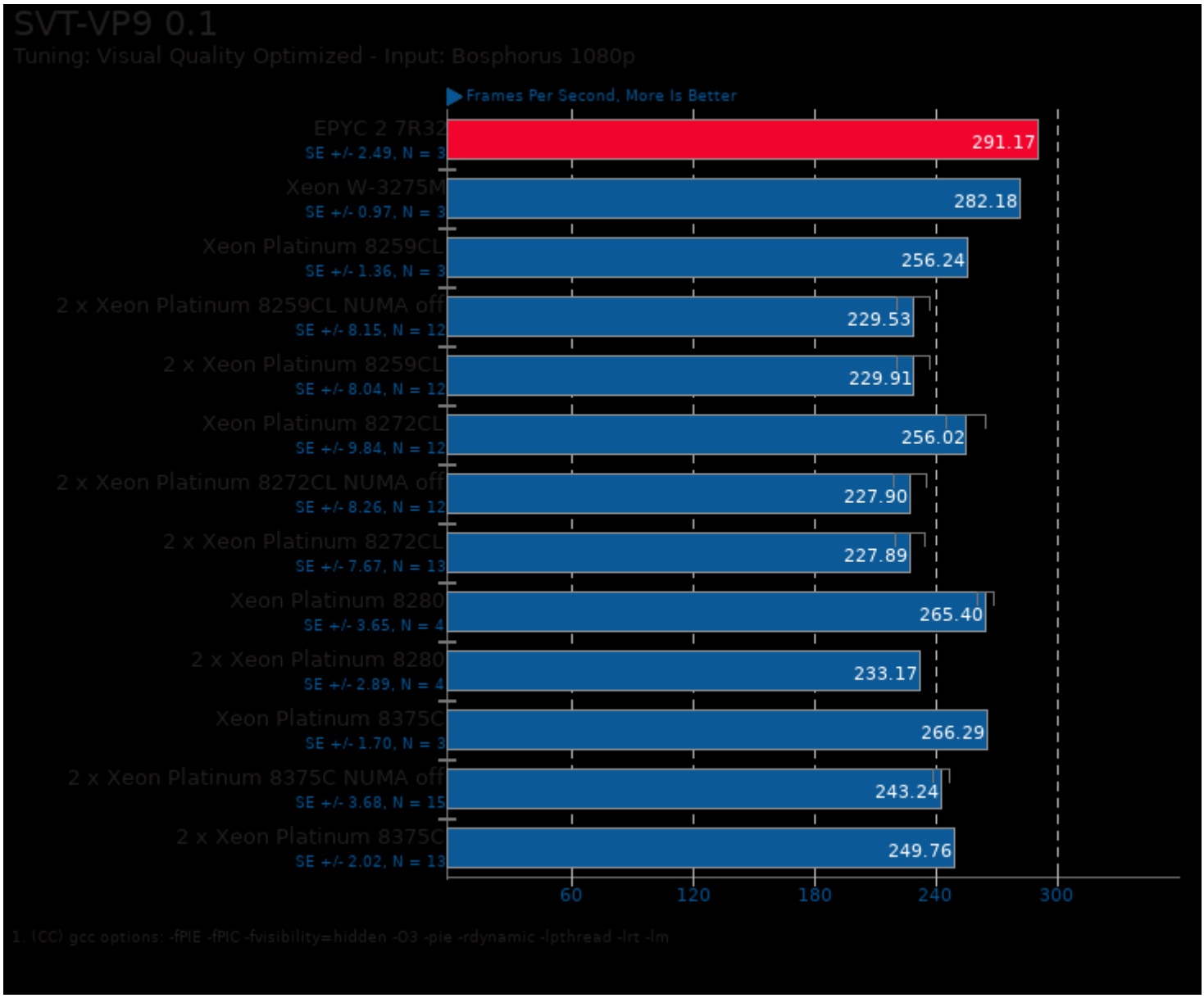

Embree 3.6.1
Binary: Pathtracer - Model: Asian Dragon Obj
Frames Per Second, More Is Better
EPYC 2 7R32
SE +/- 0.03, N = 3
MIN: 46.92 / MAX: 48.74
47.58
Xeon W-3275M
SE +/- 0.01, N = 3
MIN: 26.82 / MAX: 27.54
27.20
Xeon Platinum 8259CL
SE +/- 0.02, N = 3
MIN: 23.57 / MAX: 23.92
23.72
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.05, N = 3
MIN: 41.76 / MAX: 43.28
42.49
2 x Xeon Platinum 8259CL
SE +/- 0.04, N = 3
MIN: 42.06 / MAX: 43.59
42.76
Xeon Platinum 8272CL
SE +/- 0.02, N = 3
MIN: 27.31 / MAX: 27.95
27.67
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.06, N = 3
MIN: 48.15 / MAX: 50.25
49.11
2 x Xeon Platinum 8272CL
SE +/- 0.30, N = 3
MIN: 47.13 / MAX: 50.81
49.28
Xeon Platinum 8280
SE +/- 0.06, N = 3
MIN: 28.89 / MAX: 29.61
29.21
2 x Xeon Platinum 8280
SE +/- 0.11, N = 3
MIN: 50.62 / MAX: 53.17
51.79
Xeon Platinum 8375C
SE +/- 0.03, N = 3
MIN: 39.6 / MAX: 41.68
40.18
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.19, N = 3
MIN: 66.65 / MAX: 74.31
70.05
2 x Xeon Platinum 8375C
SE +/- 0.04, N = 3
MIN: 67.53 / MAX: 74.84
70.39
16
32
48
64
80

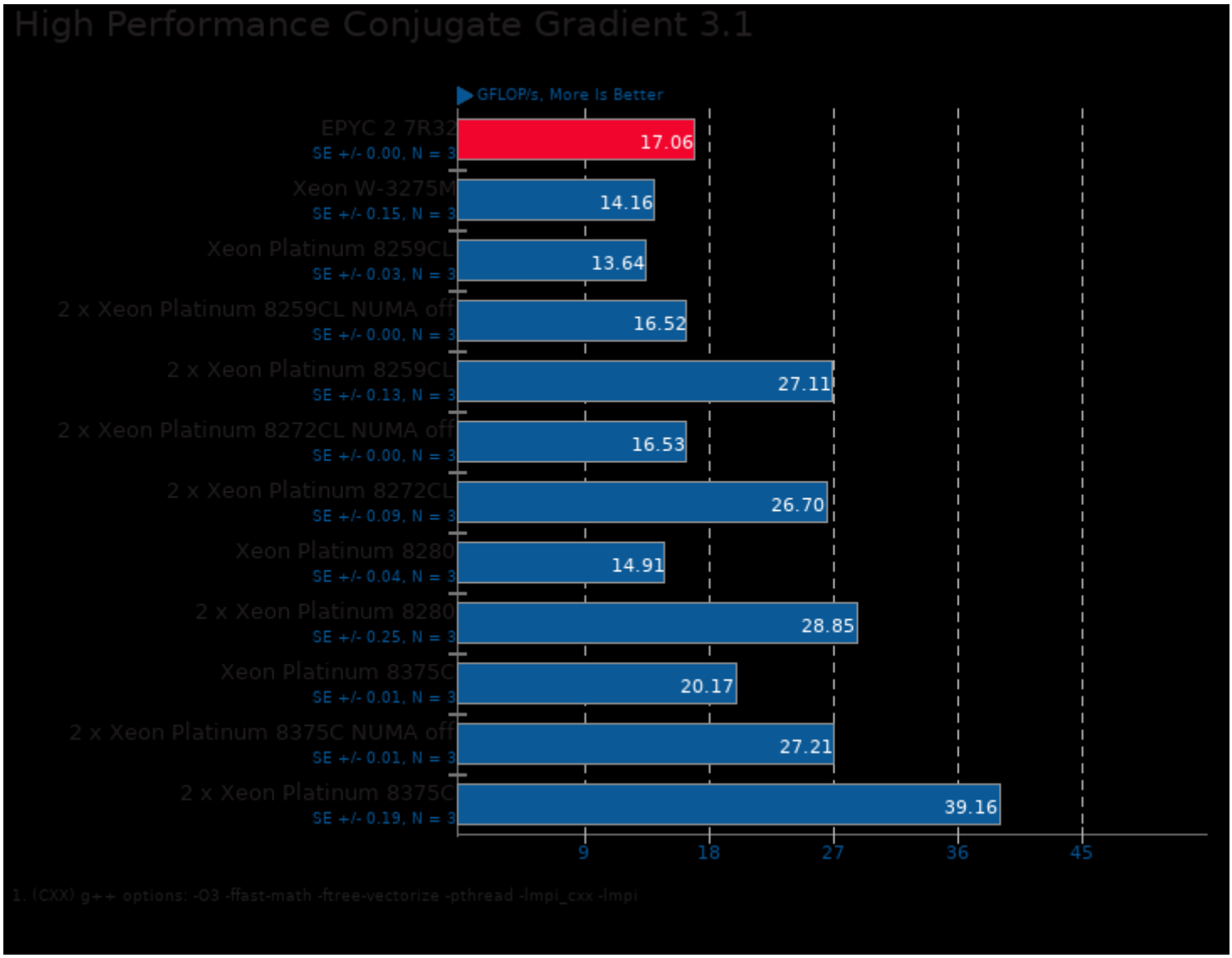

Embree 3.6.1
Binary: Pathtracer ISPC - Model: Asian Dragon
Frames Per Second, More Is Better
EPYC 2 7R32
SE +/- 0.03, N = 3
MIN: 51.67 / MAX: 53.48
52.35
Xeon W-3275M
SE +/- 0.08, N = 3
MIN: 33.95 / MAX: 35.72
35.15
Xeon Platinum 8259CL
SE +/- 0.03, N = 3
MIN: 32.68 / MAX: 33.18
32.91
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.12, N = 3
MIN: 57.78 / MAX: 60.29
59.05
2 x Xeon Platinum 8259CL
SE +/- 0.06, N = 3
MIN: 57.51 / MAX: 60.42
59.06
Xeon Platinum 8272CL
SE +/- 0.03, N = 3
MIN: 36.43 / MAX: 37.08
36.75
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.05, N = 3
MIN: 64.05 / MAX: 67.28
65.55
2 x Xeon Platinum 8272CL
SE +/- 0.12, N = 3
MIN: 63.67 / MAX: 66.98
65.37
Xeon Platinum 8280
SE +/- 0.06, N = 3
MIN: 37.87 / MAX: 38.72
38.31
2 x Xeon Platinum 8280
SE +/- 0.03, N = 3
MIN: 66.22 / MAX: 70.39
68.42
Xeon Platinum 8375C
SE +/- 0.04, N = 3
MIN: 52.72 / MAX: 54.62
53.57
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.08, N = 3
MIN: 92.5 / MAX: 98.6
95.99
2 x Xeon Platinum 8375C
SE +/- 0.51, N = 3
MIN: 91.48 / MAX: 98.3
95.27
20
40
60
80
100

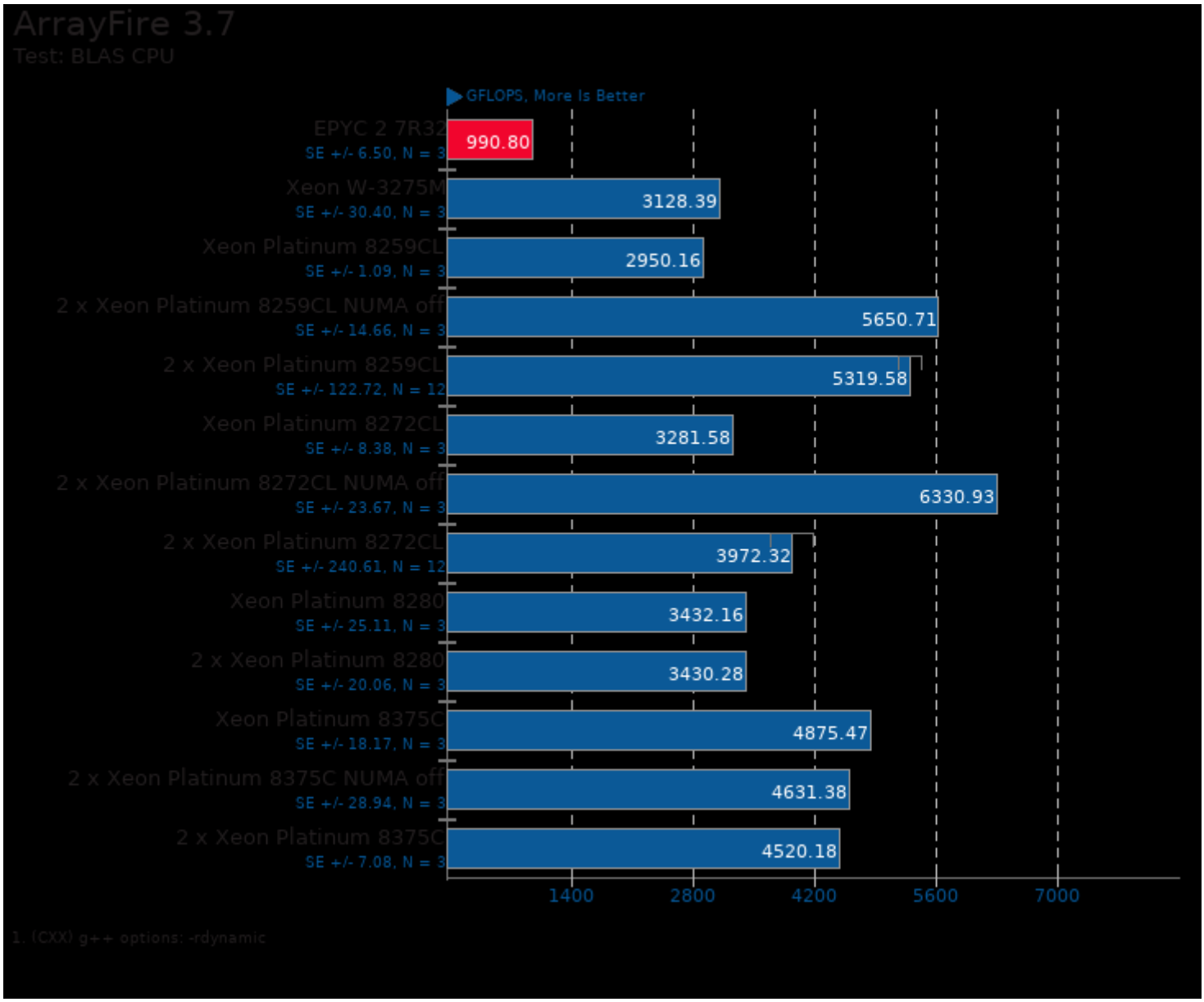

Embree 3.6.1
Binary: Pathtracer ISPC - Model: Asian Dragon Obj
Frames Per Second, More Is Better
EPYC 2 7R32
SE +/- 0.03, N = 3
MIN: 44.82 / MAX: 46.53
45.43
Xeon W-3275M
SE +/- 0.02, N = 3
MIN: 29.95 / MAX: 30.77
30.35
Xeon Platinum 8259CL
SE +/- 0.01, N = 3
MIN: 28.06 / MAX: 28.6
28.29
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.01, N = 3
MIN: 49.88 / MAX: 52.05
50.86
2 x Xeon Platinum 8259CL
SE +/- 0.00, N = 3
MIN: 49.91 / MAX: 52.27
50.98
Xeon Platinum 8272CL
SE +/- 0.02, N = 3
MIN: 31.3 / MAX: 31.91
31.57
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.04, N = 3
MIN: 55.08 / MAX: 57.97
56.46
2 x Xeon Platinum 8272CL
SE +/- 0.03, N = 3
MIN: 55.22 / MAX: 58.38
56.51
Xeon Platinum 8280
SE +/- 0.02, N = 3
MIN: 32.72 / MAX: 33.4
33.05
2 x Xeon Platinum 8280
SE +/- 0.05, N = 3
MIN: 56.97 / MAX: 60.91
58.69
Xeon Platinum 8375C
SE +/- 0.05, N = 3
MIN: 45.35 / MAX: 47.2
46.14
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.07, N = 3
MIN: 79.32 / MAX: 84.86
82.32
2 x Xeon Platinum 8375C
SE +/- 0.03, N = 3
MIN: 79.15 / MAX: 84.55
81.90
20
40
60
80
100

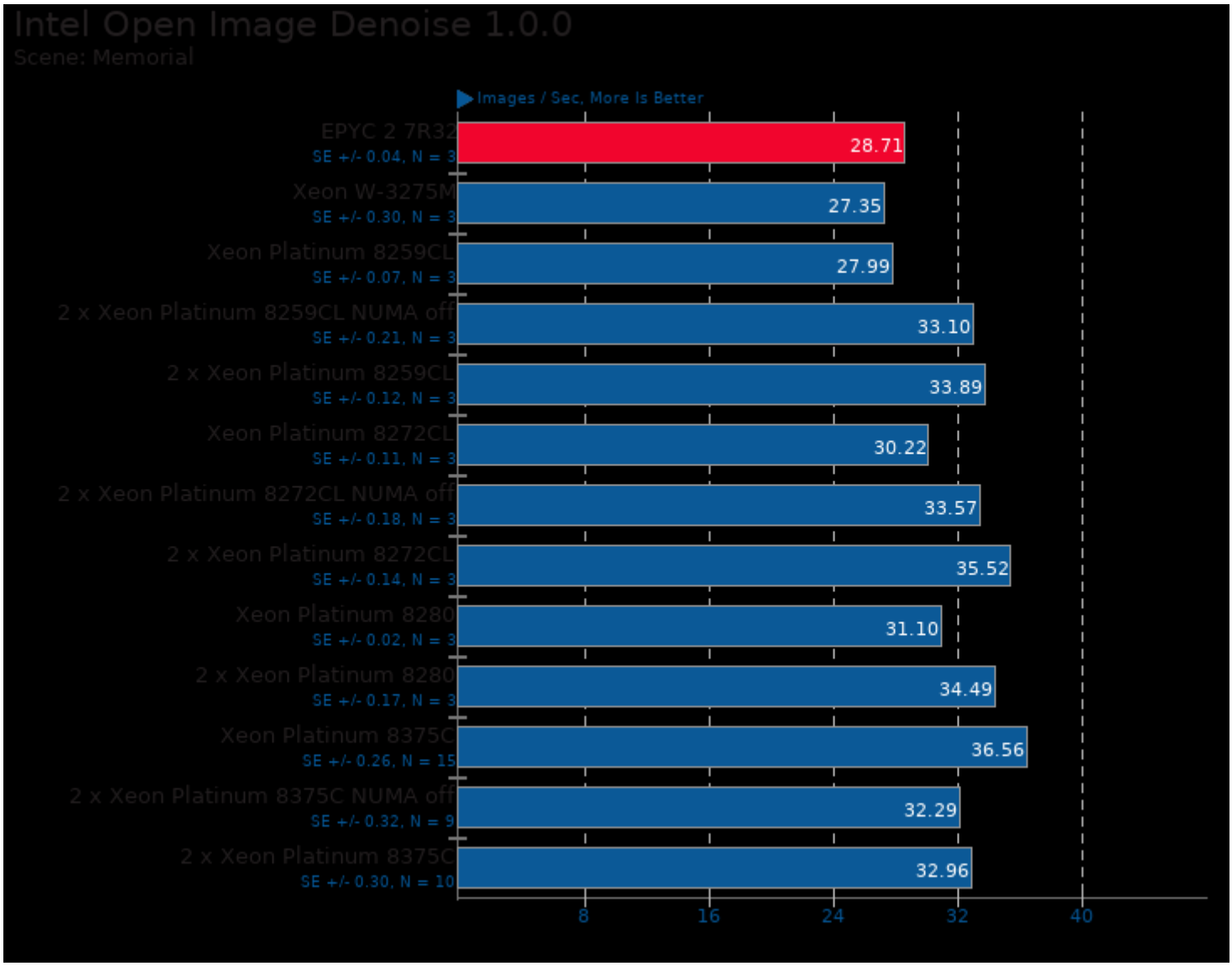

SVT-AV1 0.8
Encoder Mode: Enc Mode 4 - Input: 1080p
Frames Per Second, More Is Better
EPYC 2 7R32
SE +/- 0.072, N = 5
5.714
Xeon W-3275M
SE +/- 0.023, N = 3
6.389
Xeon Platinum 8259CL
SE +/- 0.052, N = 3
5.112
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.075, N = 4
5.996
2 x Xeon Platinum 8259CL
SE +/- 0.002, N = 3
5.955
Xeon Platinum 8272CL
SE +/- 0.052, N = 3
5.653
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.081, N = 3
6.455
2 x Xeon Platinum 8272CL
SE +/- 0.062, N = 3
6.399
Xeon Platinum 8280
SE +/- 0.032, N = 3
6.030
2 x Xeon Platinum 8280
SE +/- 0.064, N = 3
7.033
Xeon Platinum 8375C
SE +/- 0.043, N = 15
4.098
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.110, N = 15
5.204
2 x Xeon Platinum 8375C
SE +/- 0.083, N = 3
4.837
2
4
6
8
10
1. (CXX) g++ options: -fPIE -fPIC -pie

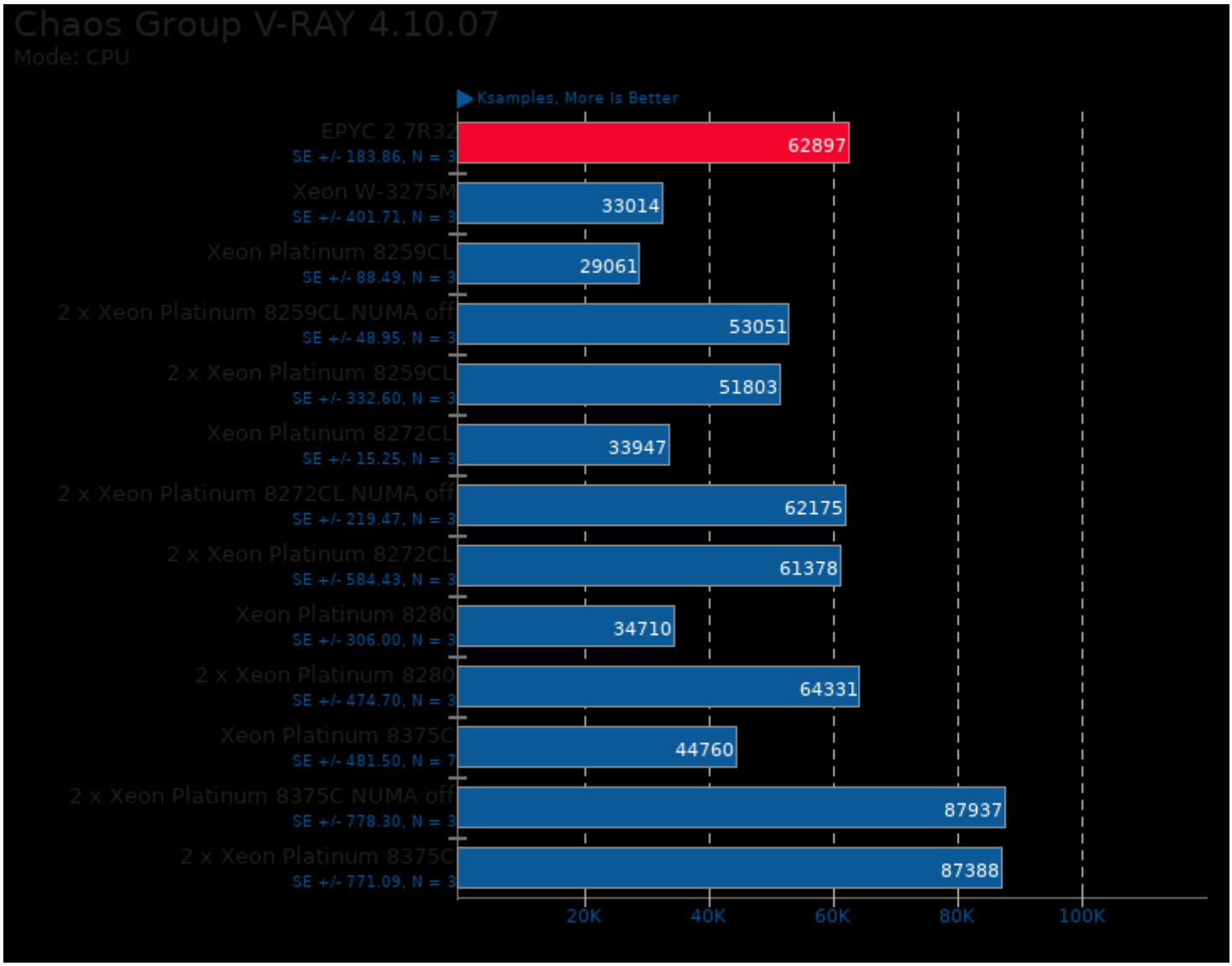

SVT-AV1 0.8
Encoder Mode: Enc Mode 8 - Input: 1080p
Frames Per Second, More Is Better
EPYC 2 7R32
SE +/- 0.77, N = 3
54.47
Xeon W-3275M
SE +/- 0.46, N = 3
53.82
Xeon Platinum 8259CL
SE +/- 0.35, N = 3
46.87
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.29, N = 3
52.31
2 x Xeon Platinum 8259CL
SE +/- 0.13, N = 3
53.04
Xeon Platinum 8272CL
SE +/- 0.37, N = 3
51.59
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.43, N = 3
53.96
2 x Xeon Platinum 8272CL
SE +/- 0.35, N = 3
54.14
Xeon Platinum 8280
SE +/- 0.07, N = 3
51.92
2 x Xeon Platinum 8280
SE +/- 0.67, N = 3
56.98
Xeon Platinum 8375C
SE +/- 0.53, N = 5
41.84
2 x Xeon Platinum 8375C NUMA off
SE +/- 1.09, N = 3
67.08
2 x Xeon Platinum 8375C
SE +/- 0.58, N = 15
65.30
15
30
45
60
75
1. (CXX) g++ options: -fPIE -fPIC -pie

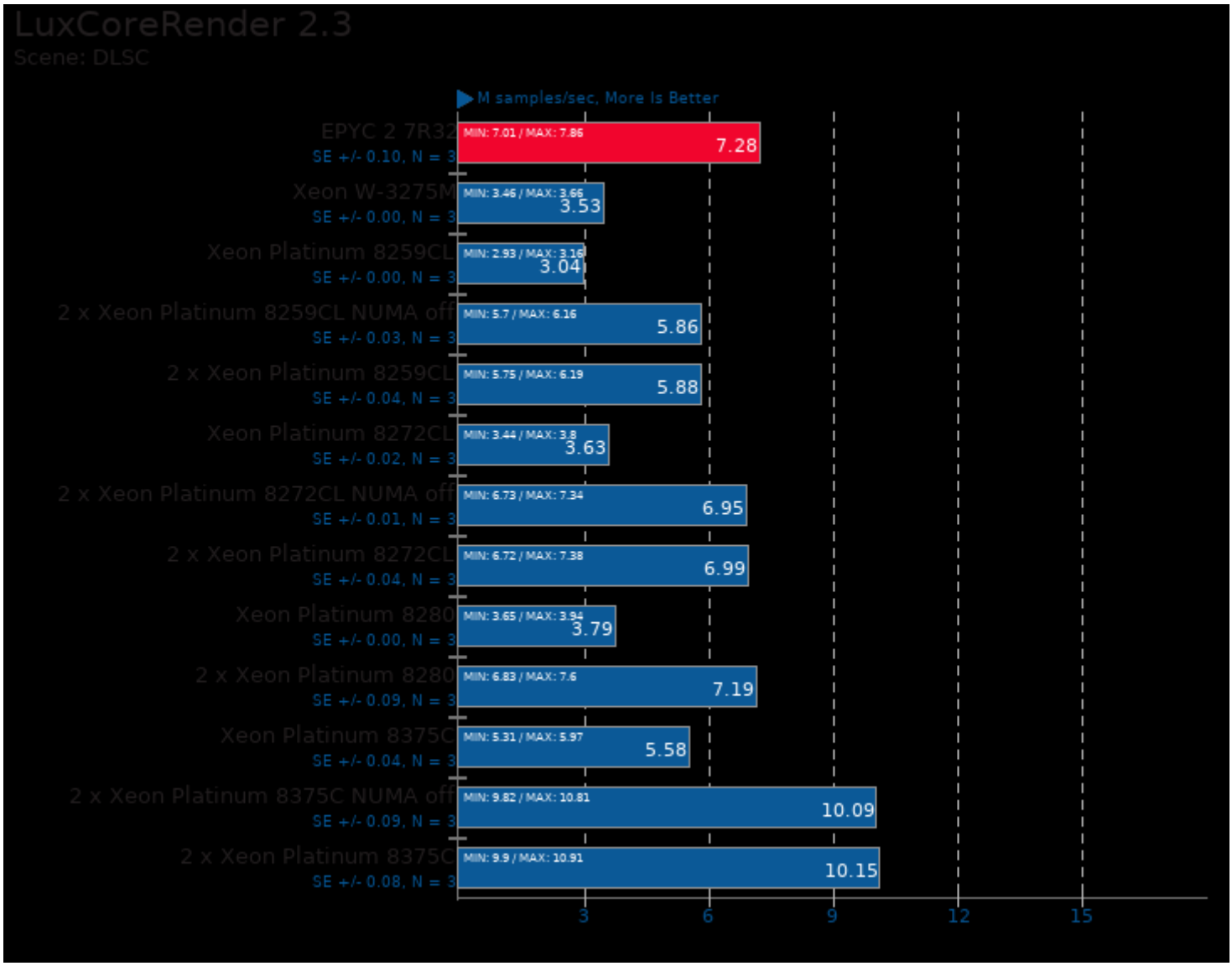

SVT-VP9 0.1
Tuning: Visual Quality Optimized - Input: Bosphorus 1080p
Frames Per Second, More Is Better
EPYC 2 7R32
SE +/- 2.49, N = 3
291.17
Xeon W-3275M
SE +/- 0.97, N = 3
282.18
Xeon Platinum 8259CL
SE +/- 1.36, N = 3
256.24
2 x Xeon Platinum 8259CL NUMA off
SE +/- 8.15, N = 12
229.53
2 x Xeon Platinum 8259CL
SE +/- 8.04, N = 12
229.91
Xeon Platinum 8272CL
SE +/- 9.84, N = 12
256.02
2 x Xeon Platinum 8272CL NUMA off
SE +/- 8.26, N = 12
227.90
2 x Xeon Platinum 8272CL
SE +/- 7.67, N = 13
227.89
Xeon Platinum 8280
SE +/- 3.65, N = 4
265.40
2 x Xeon Platinum 8280
SE +/- 2.89, N = 4
233.17
Xeon Platinum 8375C
SE +/- 1.70, N = 3
266.29
2 x Xeon Platinum 8375C NUMA off
SE +/- 3.68, N = 15
243.24
2 x Xeon Platinum 8375C
SE +/- 2.02, N = 13
249.76
60
120
180
240
300
1. (CC) gcc options: -fPIE -fPIC -fvisibility=hidden -O3 -pie -rdynamic -lpthread -lrt -lm

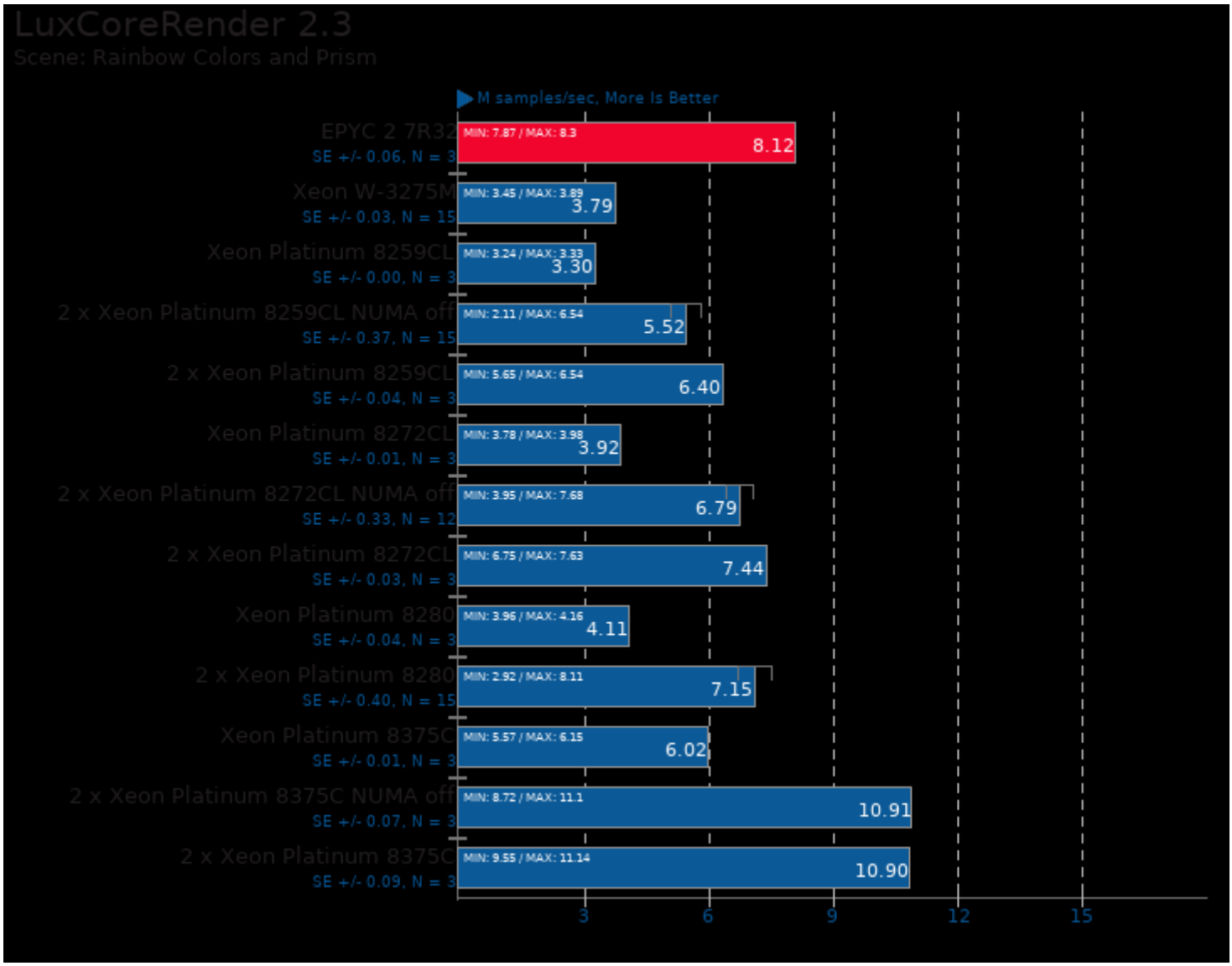

High Performance Conjugate Gradient 3.1
GFLOP/s, More Is Better
EPYC 2 7R32
SE +/- 0.00, N = 3
17.06
Xeon W-3275M
SE +/- 0.15, N = 3
14.16
Xeon Platinum 8259CL
SE +/- 0.03, N = 3
13.64
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.00, N = 3
16.52
2 x Xeon Platinum 8259CL
SE +/- 0.13, N = 3
27.11
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.00, N = 3
16.53
2 x Xeon Platinum 8272CL
SE +/- 0.09, N = 3
26.70
Xeon Platinum 8280
SE +/- 0.04, N = 3
14.91
2 x Xeon Platinum 8280
SE +/- 0.25, N = 3
28.85
Xeon Platinum 8375C
SE +/- 0.01, N = 3
20.17
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.01, N = 3
27.21
2 x Xeon Platinum 8375C
SE +/- 0.19, N = 3
39.16
9
18
27
36
45
1. (CXX) g++ options: -O3 -ffast-math -ftree-vectorize -pthread -lmpi_cxx -lmpi

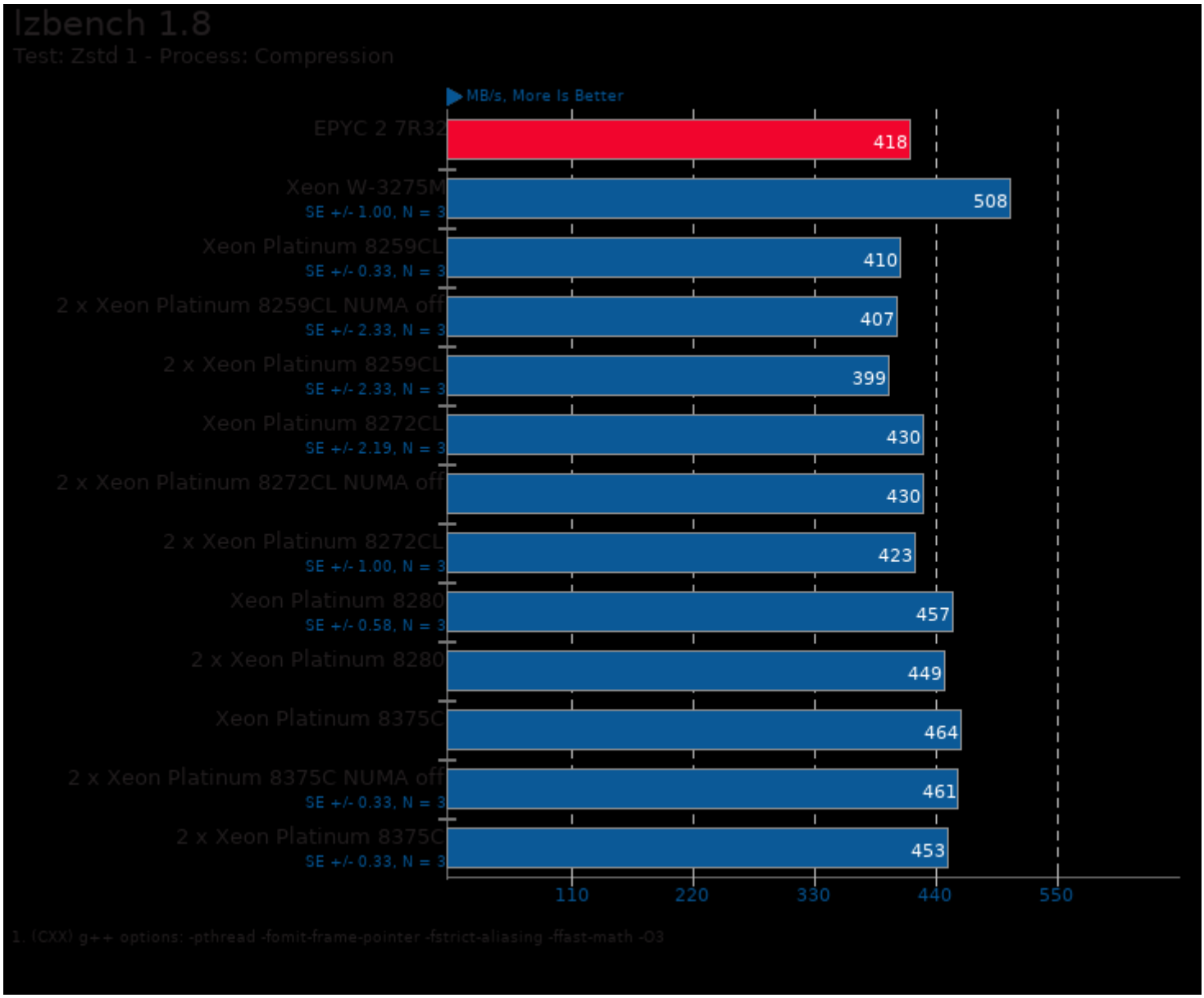

ArrayFire 3.7
Test: BLAS CPU
GFLOPS, More Is Better
EPYC 2 7R32
SE +/- 6.50, N = 3
990.80
Xeon W-3275M
SE +/- 30.40, N = 3
3128.39
Xeon Platinum 8259CL
SE +/- 1.09, N = 3
2950.16
2 x Xeon Platinum 8259CL NUMA off
SE +/- 14.66, N = 3
5650.71
2 x Xeon Platinum 8259CL
SE +/- 122.72, N = 12
5319.58
Xeon Platinum 8272CL
SE +/- 8.38, N = 3
3281.58
2 x Xeon Platinum 8272CL NUMA off
SE +/- 23.67, N = 3
6330.93
2 x Xeon Platinum 8272CL
SE +/- 240.61, N = 12
3972.32
Xeon Platinum 8280
SE +/- 25.11, N = 3
3432.16
2 x Xeon Platinum 8280
SE +/- 20.06, N = 3
3430.28
Xeon Platinum 8375C
SE +/- 18.17, N = 3
4875.47
2 x Xeon Platinum 8375C NUMA off
SE +/- 28.94, N = 3
4631.38
2 x Xeon Platinum 8375C
SE +/- 7.08, N = 3
4520.18
1400
2800
4200
5600
7000
1. (CXX) g++ options: -rdynamic

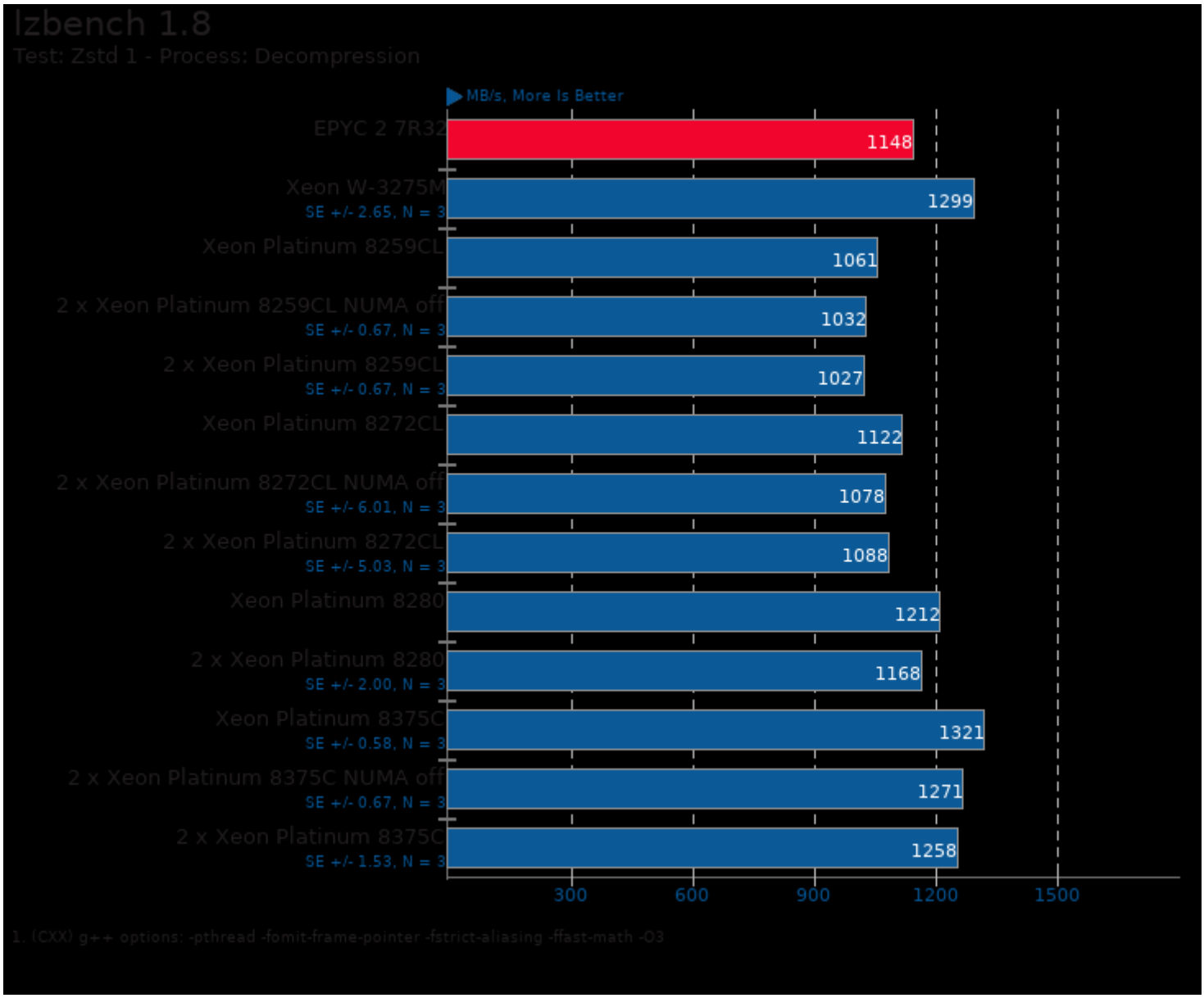

Intel Open Image Denoise 1.0.0
Scene: Memorial
Images / Sec, More Is Better
EPYC 2 7R32
SE +/- 0.04, N = 3
28.71
Xeon W-3275M
SE +/- 0.30, N = 3
27.35
Xeon Platinum 8259CL
SE +/- 0.07, N = 3
27.99
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.21, N = 3
33.10
2 x Xeon Platinum 8259CL
SE +/- 0.12, N = 3
33.89
Xeon Platinum 8272CL
SE +/- 0.11, N = 3
30.22
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.18, N = 3
33.57
2 x Xeon Platinum 8272CL
SE +/- 0.14, N = 3
35.52
Xeon Platinum 8280
SE +/- 0.02, N = 3
31.10
2 x Xeon Platinum 8280
SE +/- 0.17, N = 3
34.49
Xeon Platinum 8375C
SE +/- 0.26, N = 15
36.56
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.32, N = 9
32.29
2 x Xeon Platinum 8375C
SE +/- 0.30, N = 10
32.96
8
16
24
32
40

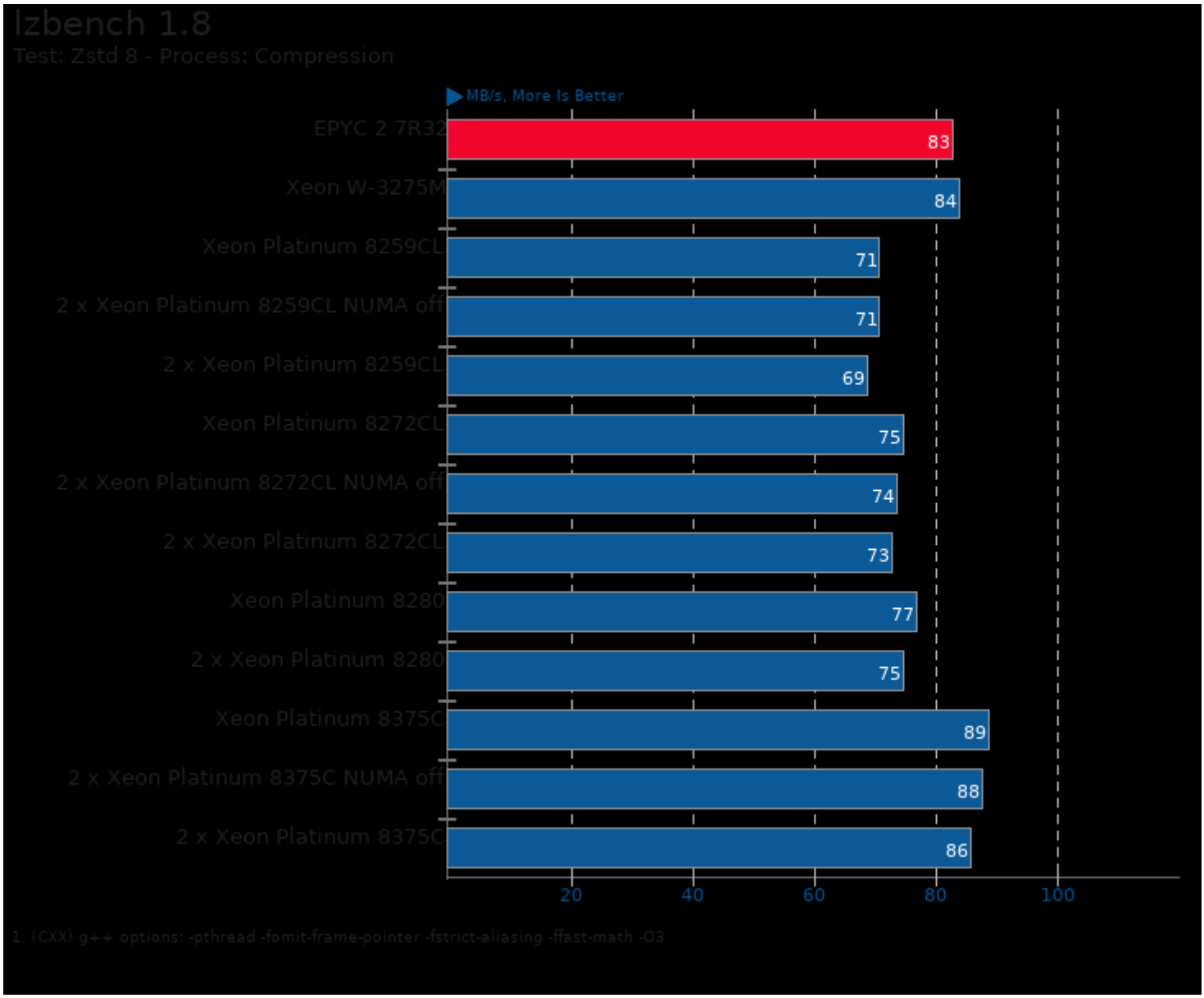

Chaos Group V-RAY 4.10.07
Mode: CPU
Ksamples, More Is Better
EPYC 2 7R32
SE +/- 183.86, N = 3
62897
Xeon W-3275M
SE +/- 401.71, N = 3
33014
Xeon Platinum 8259CL
SE +/- 88.49, N = 3
29061
2 x Xeon Platinum 8259CL NUMA off
SE +/- 48.95, N = 3
53051
2 x Xeon Platinum 8259CL
SE +/- 332.60, N = 3
51803
Xeon Platinum 8272CL
SE +/- 15.25, N = 3
33947
2 x Xeon Platinum 8272CL NUMA off
SE +/- 219.47, N = 3
62175
2 x Xeon Platinum 8272CL
SE +/- 584.43, N = 3
61378
Xeon Platinum 8280
SE +/- 306.00, N = 3
34710
2 x Xeon Platinum 8280
SE +/- 474.70, N = 3
64331
Xeon Platinum 8375C
SE +/- 481.50, N = 7
44760
2 x Xeon Platinum 8375C NUMA off
SE +/- 778.30, N = 3
87937
2 x Xeon Platinum 8375C
SE +/- 771.09, N = 3
87388
20K
40K
60K
80K
100K

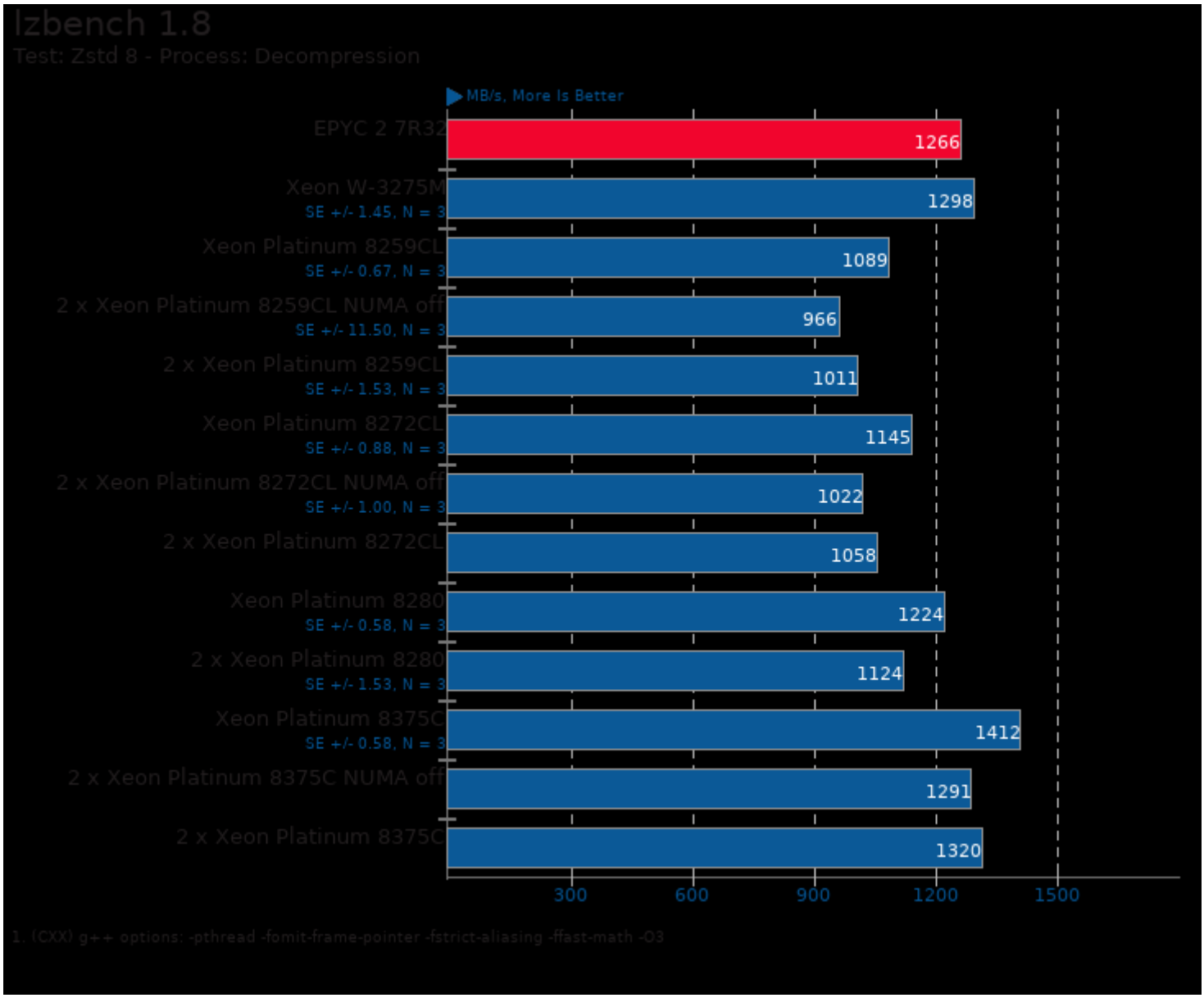

LuxCoreRender 2.3
Scene: DLSC
M samples/sec, More Is Better
EPYC 2 7R32
SE +/- 0.10, N = 3
MIN: 7.01 / MAX: 7.86
7.28
Xeon W-3275M
SE +/- 0.00, N = 3
MIN: 3.46 / MAX: 3.66
3.53
Xeon Platinum 8259CL
SE +/- 0.00, N = 3
MIN: 2.93 / MAX: 3.16
3.04
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.03, N = 3
MIN: 5.7 / MAX: 6.16
5.86
2 x Xeon Platinum 8259CL
SE +/- 0.04, N = 3
MIN: 5.75 / MAX: 6.19
5.88
Xeon Platinum 8272CL
SE +/- 0.02, N = 3
MIN: 3.44 / MAX: 3.8
3.63
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.01, N = 3
MIN: 6.73 / MAX: 7.34
6.95
2 x Xeon Platinum 8272CL
SE +/- 0.04, N = 3
MIN: 6.72 / MAX: 7.38
6.99
Xeon Platinum 8280
SE +/- 0.00, N = 3
MIN: 3.65 / MAX: 3.94
3.79
2 x Xeon Platinum 8280
SE +/- 0.09, N = 3
MIN: 6.83 / MAX: 7.6
7.19
Xeon Platinum 8375C
SE +/- 0.04, N = 3
MIN: 5.31 / MAX: 5.97
5.58
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.09, N = 3
MIN: 9.82 / MAX: 10.81
10.09
2 x Xeon Platinum 8375C
SE +/- 0.08, N = 3
MIN: 9.9 / MAX: 10.91
10.15
3
6
9
12
15

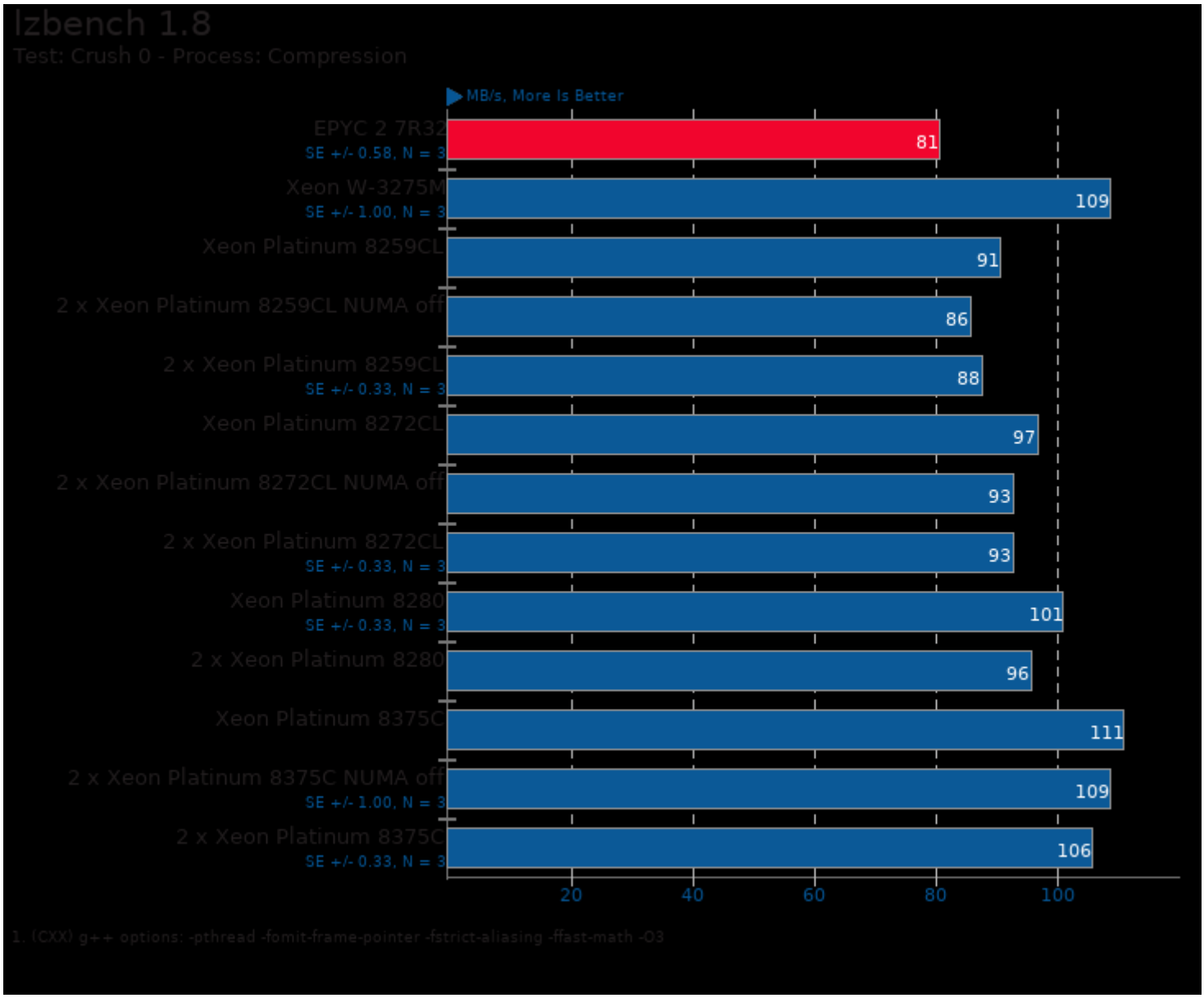

LuxCoreRender 2.3
Scene: Rainbow Colors and Prism
M samples/sec, More Is Better
EPYC 2 7R32
SE +/- 0.06, N = 3
MIN: 7.87 / MAX: 8.3
8.12
Xeon W-3275M
SE +/- 0.03, N = 15
MIN: 3.45 / MAX: 3.89
3.79
Xeon Platinum 8259CL
SE +/- 0.00, N = 3
MIN: 3.24 / MAX: 3.33
3.30
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.37, N = 15
MIN: 2.11 / MAX: 6.54
5.52
2 x Xeon Platinum 8259CL
SE +/- 0.04, N = 3
MIN: 5.65 / MAX: 6.54
6.40
Xeon Platinum 8272CL
SE +/- 0.01, N = 3
MIN: 3.78 / MAX: 3.98
3.92
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.33, N = 12
MIN: 3.95 / MAX: 7.68
6.79
2 x Xeon Platinum 8272CL
SE +/- 0.03, N = 3
MIN: 6.75 / MAX: 7.63
7.44
Xeon Platinum 8280
SE +/- 0.04, N = 3
MIN: 3.96 / MAX: 4.16
4.11
2 x Xeon Platinum 8280
SE +/- 0.40, N = 15
MIN: 2.92 / MAX: 8.11
7.15
Xeon Platinum 8375C
SE +/- 0.01, N = 3
MIN: 5.57 / MAX: 6.15
6.02
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.07, N = 3
MIN: 8.72 / MAX: 11.1
10.91
2 x Xeon Platinum 8375C
SE +/- 0.09, N = 3
MIN: 9.55 / MAX: 11.14
10.90
3
6
9
12
15

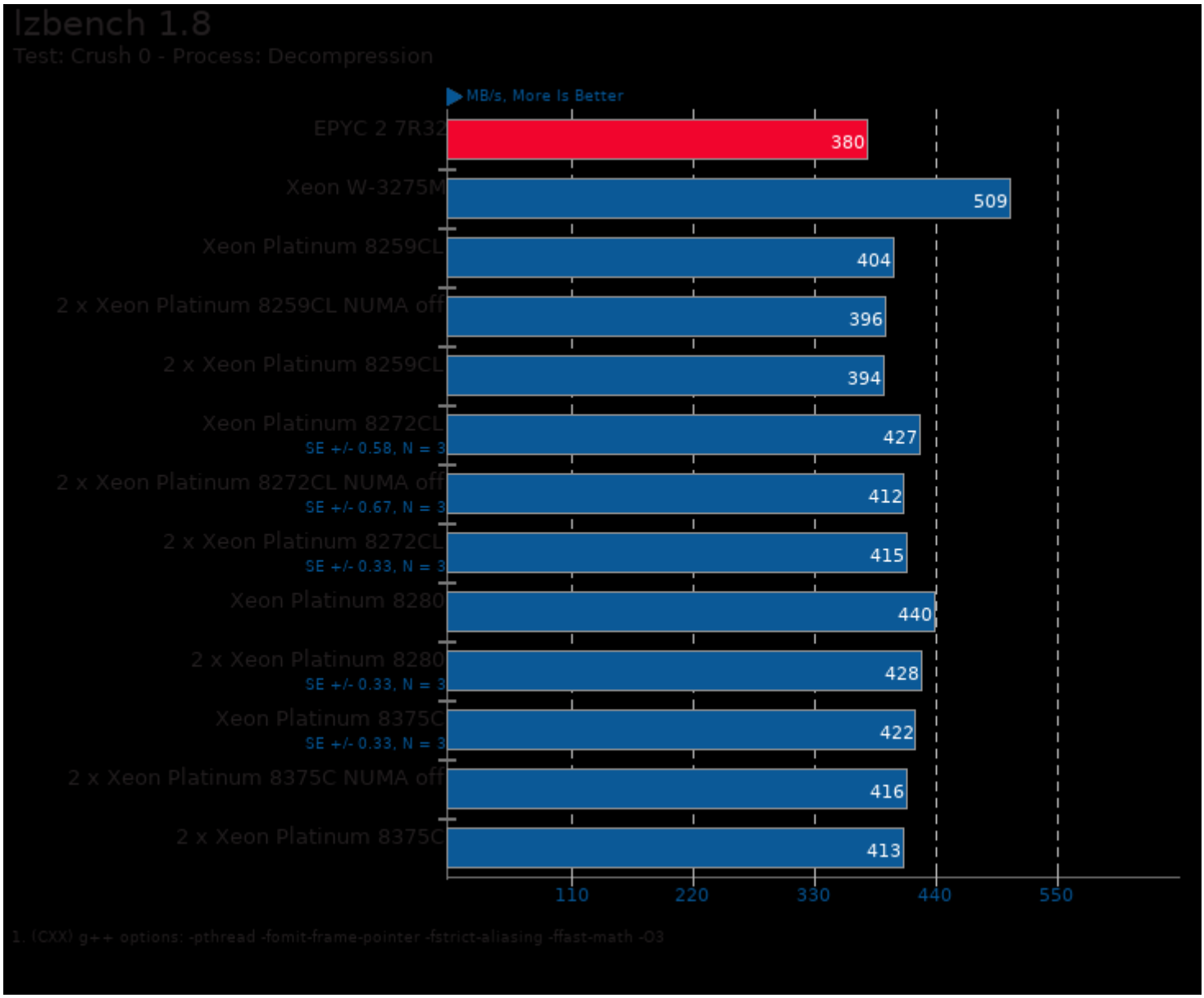

lzbench 1.8
Test: Zstd 1 - Process: Compression
MB/s, More Is Better
EPYC 2 7R32
418
Xeon W-3275M
SE +/- 1.00, N = 3
508
Xeon Platinum 8259CL
SE +/- 0.33, N = 3
410
2 x Xeon Platinum 8259CL NUMA off
SE +/- 2.33, N = 3
407
2 x Xeon Platinum 8259CL
SE +/- 2.33, N = 3
399
Xeon Platinum 8272CL
SE +/- 2.19, N = 3
430
2 x Xeon Platinum 8272CL NUMA off
430
2 x Xeon Platinum 8272CL
SE +/- 1.00, N = 3
423
Xeon Platinum 8280
SE +/- 0.58, N = 3
457
2 x Xeon Platinum 8280
449
Xeon Platinum 8375C
464
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.33, N = 3
461
2 x Xeon Platinum 8375C
SE +/- 0.33, N = 3
453
110
220
330
440
550
1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

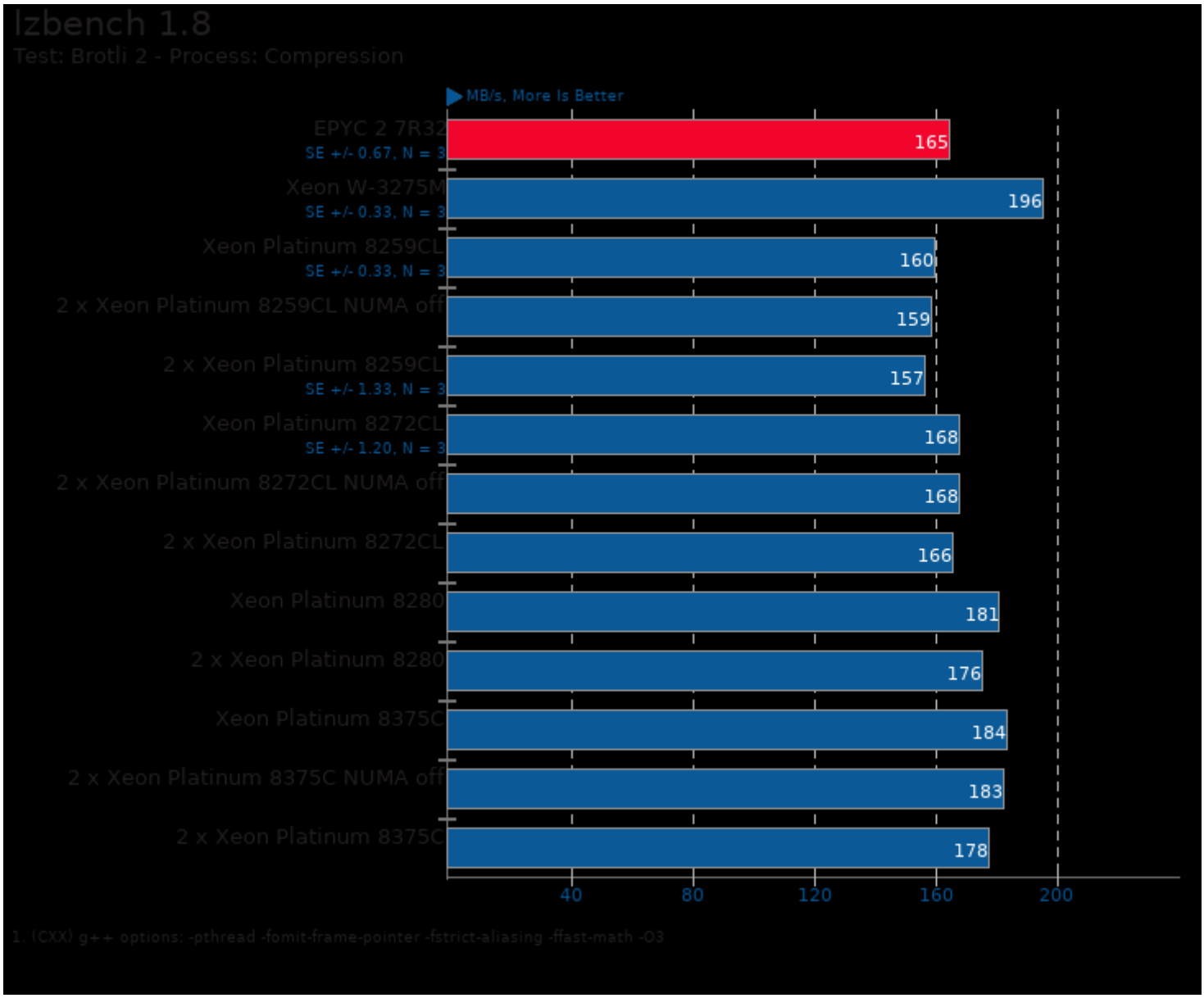

lzbench 1.8
Test: Zstd 1 - Process: Decompression
MB/s, More Is Better
EPYC 2 7R32
1148
Xeon W-3275M
SE +/- 2.65, N = 3
1299
Xeon Platinum 8259CL
1061
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.67, N = 3
1032
2 x Xeon Platinum 8259CL
SE +/- 0.67, N = 3
1027
Xeon Platinum 8272CL
1122
2 x Xeon Platinum 8272CL NUMA off
SE +/- 6.01, N = 3
1078
2 x Xeon Platinum 8272CL
SE +/- 5.03, N = 3
1088
Xeon Platinum 8280
1212
2 x Xeon Platinum 8280
SE +/- 2.00, N = 3
1168
Xeon Platinum 8375C
SE +/- 0.58, N = 3
1321
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.67, N = 3
1271
2 x Xeon Platinum 8375C
SE +/- 1.53, N = 3
1258
300
600
900
1200
1500
1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

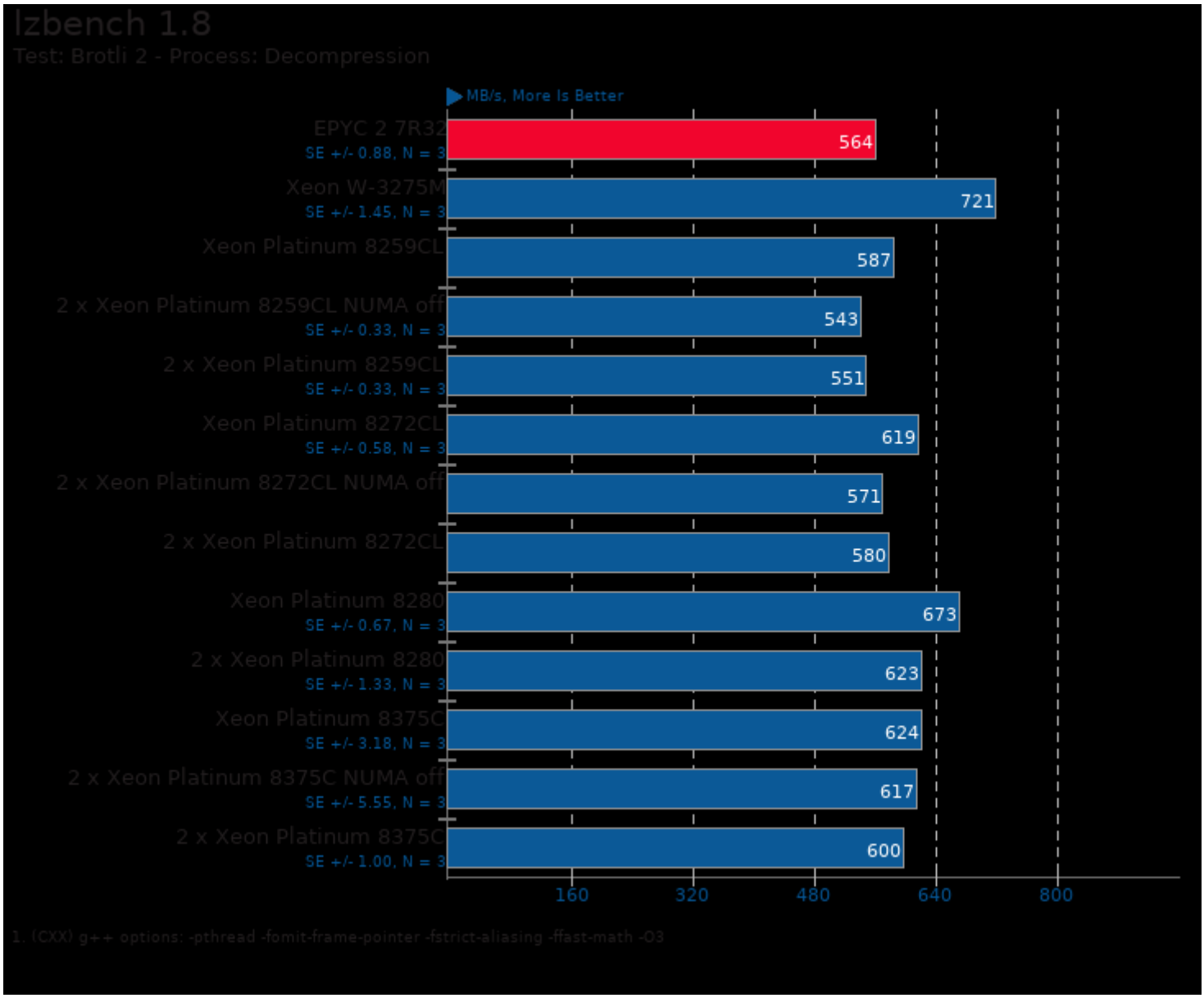

lzbench 1.8
Test: Zstd 8 - Process: Compression
MB/s, More Is Better
EPYC 2 7R32
Xeon W-3275M
Xeon Platinum 8259CL
2 x Xeon Platinum 8259CL NUMA off
2 x Xeon Platinum 8259CL
Xeon Platinum 8272CL
2 x Xeon Platinum 8272CL NUMA off
2 x Xeon Platinum 8272CL
Xeon Platinum 8280
2 x Xeon Platinum 8280
Xeon Platinum 8375C
2 x Xeon Platinum 8375C NUMA off
2 x Xeon Platinum 8375C
83
84
71
71
69
75
74
73
77
75
89
88
86
20
40
60
80
100
1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

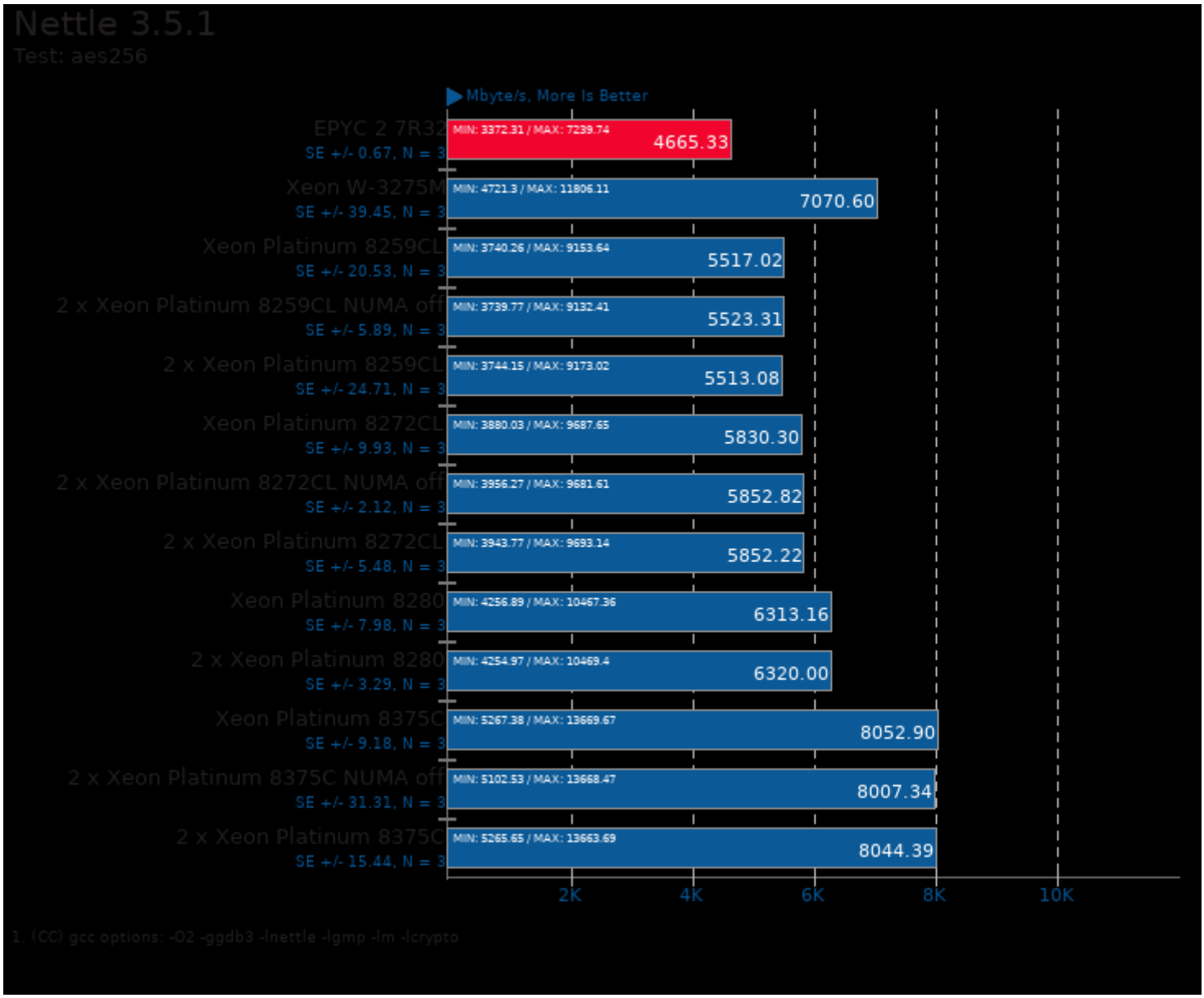

lzbench 1.8
Test: Zstd 8 - Process: Decompression
MB/s, More Is Better
EPYC 2 7R32
1266
Xeon W-3275M
SE +/- 1.45, N = 3
1298
Xeon Platinum 8259CL
SE +/- 0.67, N = 3
1089
2 x Xeon Platinum 8259CL NUMA off
SE +/- 11.50, N = 3
966
2 x Xeon Platinum 8259CL
SE +/- 1.53, N = 3
1011
Xeon Platinum 8272CL
SE +/- 0.88, N = 3
1145
2 x Xeon Platinum 8272CL NUMA off
SE +/- 1.00, N = 3
1022
2 x Xeon Platinum 8272CL
1058
Xeon Platinum 8280
SE +/- 0.58, N = 3
1224
2 x Xeon Platinum 8280
SE +/- 1.53, N = 3
1124
Xeon Platinum 8375C
SE +/- 0.58, N = 3
1412
2 x Xeon Platinum 8375C NUMA off
1291
2 x Xeon Platinum 8375C
1320
300
600
900
1200
1500
1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

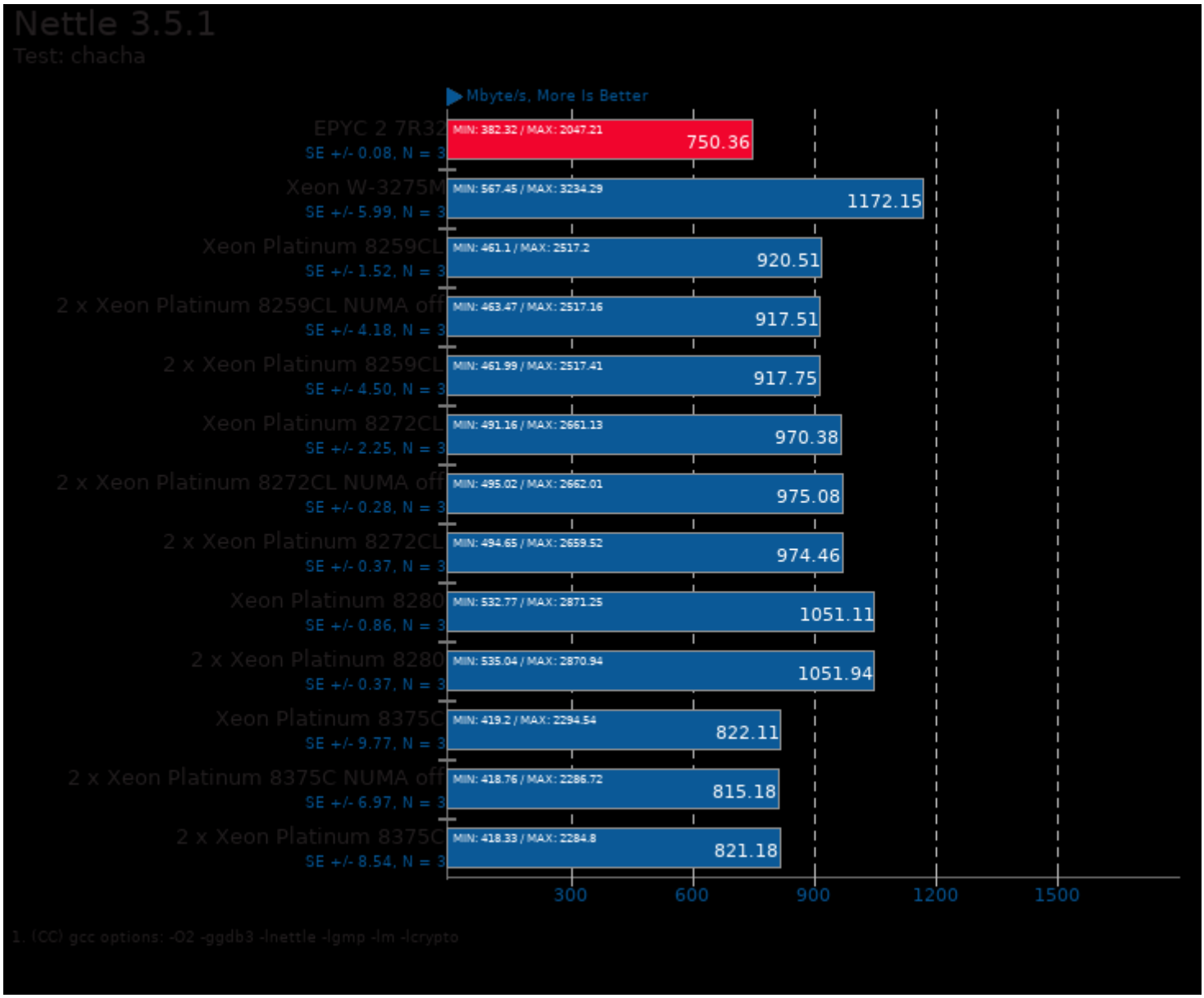

lzbench 1.8
Test: Crush 0 - Process: Compression
MB/s, More Is Better
EPYC 2 7R32
SE +/- 0.58, N = 3
81
Xeon W-3275M
SE +/- 1.00, N = 3
109
Xeon Platinum 8259CL
91
2 x Xeon Platinum 8259CL NUMA off
86
2 x Xeon Platinum 8259CL
SE +/- 0.33, N = 3
88
Xeon Platinum 8272CL
97
2 x Xeon Platinum 8272CL NUMA off
93
2 x Xeon Platinum 8272CL
SE +/- 0.33, N = 3
93
Xeon Platinum 8280
SE +/- 0.33, N = 3
101
2 x Xeon Platinum 8280
96
Xeon Platinum 8375C
111
2 x Xeon Platinum 8375C NUMA off
SE +/- 1.00, N = 3
109
2 x Xeon Platinum 8375C
SE +/- 0.33, N = 3
106
20
40
60
80
100
1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

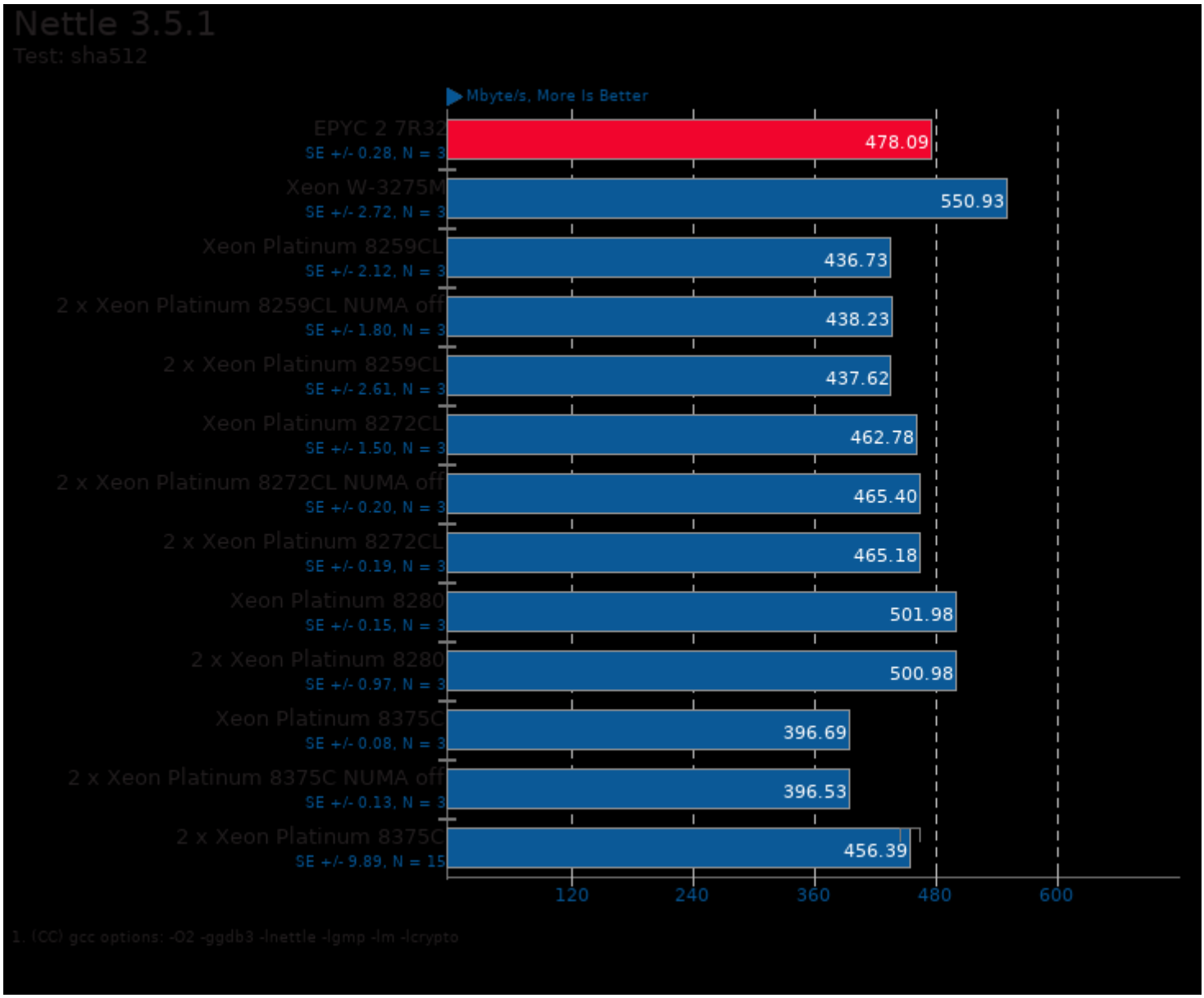

lzbench 1.8
Test: Crush 0 - Process: Decompression
MB/s, More Is Better
EPYC 2 7R32
380
Xeon W-3275M
509
Xeon Platinum 8259CL
404
2 x Xeon Platinum 8259CL NUMA off
396
2 x Xeon Platinum 8259CL
394
Xeon Platinum 8272CL
SE +/- 0.58, N = 3
427
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.67, N = 3
412
2 x Xeon Platinum 8272CL
SE +/- 0.33, N = 3
415
Xeon Platinum 8280
440
2 x Xeon Platinum 8280
SE +/- 0.33, N = 3
428
Xeon Platinum 8375C
SE +/- 0.33, N = 3
422
2 x Xeon Platinum 8375C NUMA off
416
2 x Xeon Platinum 8375C
413
110
220
330
440
550
1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

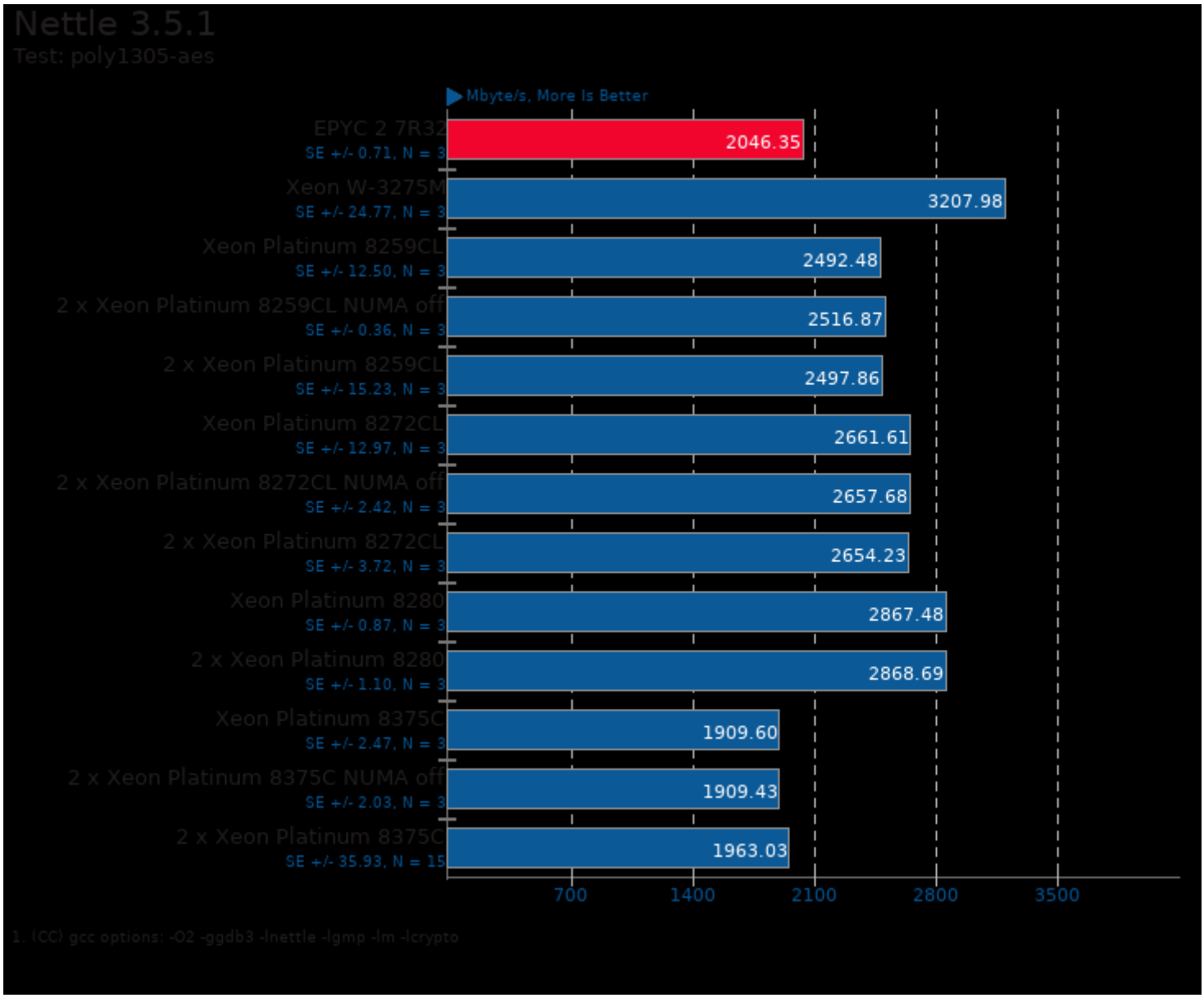

lzbench 1.8
Test: Brotli 2 - Process: Compression
MB/s, More Is Better
EPYC 2 7R32
SE +/- 0.67, N = 3
165
Xeon W-3275M
SE +/- 0.33, N = 3
196
Xeon Platinum 8259CL
SE +/- 0.33, N = 3
160
2 x Xeon Platinum 8259CL NUMA off
159
2 x Xeon Platinum 8259CL
SE +/- 1.33, N = 3
157
Xeon Platinum 8272CL
SE +/- 1.20, N = 3
168
2 x Xeon Platinum 8272CL NUMA off
168
2 x Xeon Platinum 8272CL
166
Xeon Platinum 8280
181
2 x Xeon Platinum 8280
176
Xeon Platinum 8375C
184
2 x Xeon Platinum 8375C NUMA off
183
2 x Xeon Platinum 8375C
178
40
80
120
160
200
1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

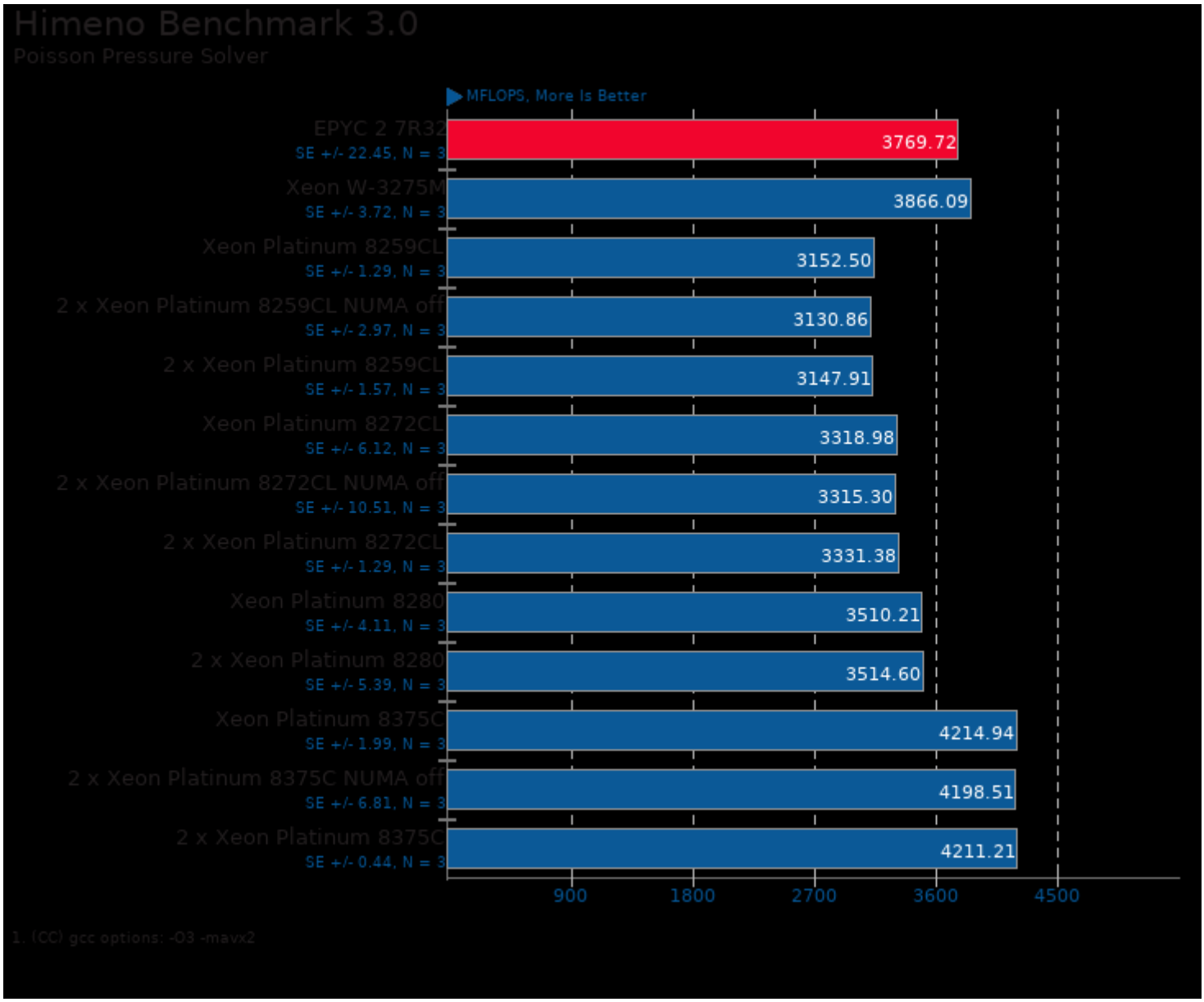

lzbench 1.8
Test: Brotli 2 - Process: Decompression
MB/s, More Is Better
EPYC 2 7R32
SE +/- 0.88, N = 3
564
Xeon W-3275M
SE +/- 1.45, N = 3
721
Xeon Platinum 8259CL
587
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.33, N = 3
543
2 x Xeon Platinum 8259CL
SE +/- 0.33, N = 3
551
Xeon Platinum 8272CL
SE +/- 0.58, N = 3
619
2 x Xeon Platinum 8272CL NUMA off
571
2 x Xeon Platinum 8272CL
580
Xeon Platinum 8280
SE +/- 0.67, N = 3
673
2 x Xeon Platinum 8280
SE +/- 1.33, N = 3
623
Xeon Platinum 8375C
SE +/- 3.18, N = 3
624
2 x Xeon Platinum 8375C NUMA off
SE +/- 5.55, N = 3
617
2 x Xeon Platinum 8375C
SE +/- 1.00, N = 3
600
160
320
480
640
800
1. (CXX) g++ options: -pthread -fomit-frame-pointer -fstrict-aliasing -ffast-math -O3

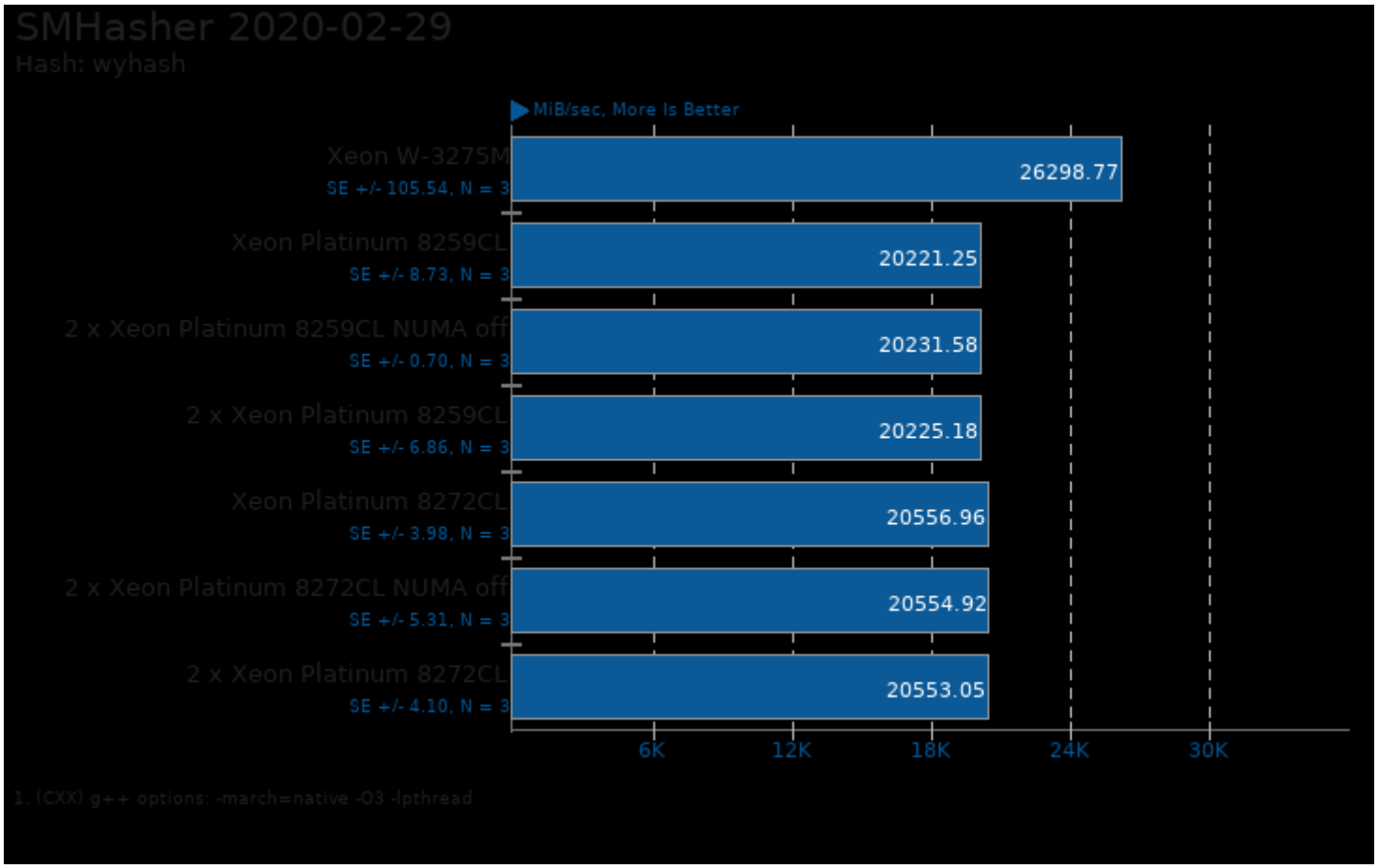

Nettle 3.5.1
Test: aes256
Mbyte/s, More Is Better
EPYC 2 7R32
SE +/- 0.67, N = 3
MIN: 3372.31 / MAX: 7239.74
4665.33
Xeon W-3275M
SE +/- 39.45, N = 3
MIN: 4721.3 / MAX: 11806.11
7070.60
Xeon Platinum 8259CL
SE +/- 20.53, N = 3
MIN: 3740.26 / MAX: 9153.64
5517.02
2 x Xeon Platinum 8259CL NUMA off
SE +/- 5.89, N = 3
MIN: 3739.77 / MAX: 9132.41
5523.31
2 x Xeon Platinum 8259CL
SE +/- 24.71, N = 3
MIN: 3744.15 / MAX: 9173.02
5513.08
Xeon Platinum 8272CL
SE +/- 9.93, N = 3
MIN: 3880.03 / MAX: 9687.65
5830.30
2 x Xeon Platinum 8272CL NUMA off
SE +/- 2.12, N = 3
MIN: 3956.27 / MAX: 9681.61
5852.82
2 x Xeon Platinum 8272CL
SE +/- 5.48, N = 3
MIN: 3943.77 / MAX: 9693.14
5852.22
Xeon Platinum 8280
SE +/- 7.98, N = 3
MIN: 4256.89 / MAX: 10467.36
6313.16
2 x Xeon Platinum 8280
SE +/- 3.29, N = 3
MIN: 4254.97 / MAX: 10469.4
6320.00
Xeon Platinum 8375C
SE +/- 9.18, N = 3
MIN: 5267.38 / MAX: 13669.67
8052.90
2 x Xeon Platinum 8375C NUMA off
SE +/- 31.31, N = 3
MIN: 5102.53 / MAX: 13668.47
8007.34
2 x Xeon Platinum 8375C
SE +/- 15.44, N = 3
MIN: 5265.65 / MAX: 13663.69
8044.39
2K
4K
6K
8K
10K
1. (CC) gcc options: -O2 -ggdb3 -lnettle -lgmp -lm -lcrypto

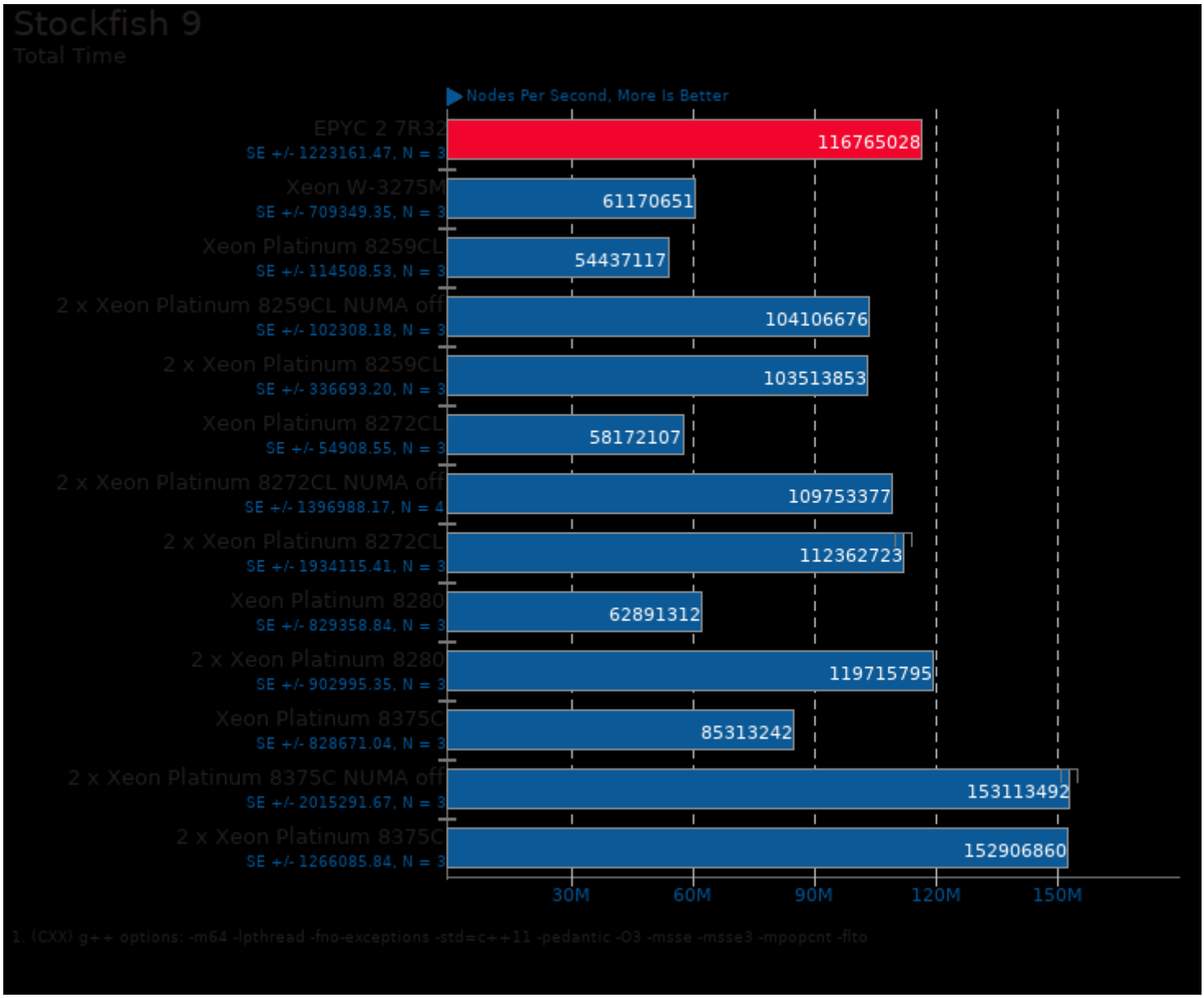

Nettle 3.5.1
Test: chacha
Mbyte/s, More Is Better
EPYC 2 7R32
SE +/- 0.08, N = 3
MIN: 382.32 / MAX: 2047.21
750.36
Xeon W-3275M
SE +/- 5.99, N = 3
MIN: 567.45 / MAX: 3234.29
1172.15
Xeon Platinum 8259CL
SE +/- 1.52, N = 3
MIN: 461.1 / MAX: 2517.2
920.51
2 x Xeon Platinum 8259CL NUMA off
SE +/- 4.18, N = 3
MIN: 463.47 / MAX: 2517.16
917.51
2 x Xeon Platinum 8259CL
SE +/- 4.50, N = 3
MIN: 461.99 / MAX: 2517.41
917.75
Xeon Platinum 8272CL
SE +/- 2.25, N = 3
MIN: 491.16 / MAX: 2661.13
970.38
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.28, N = 3
MIN: 495.02 / MAX: 2662.01
975.08
2 x Xeon Platinum 8272CL
SE +/- 0.37, N = 3
MIN: 494.65 / MAX: 2659.52
974.46
Xeon Platinum 8280
SE +/- 0.86, N = 3
MIN: 532.77 / MAX: 2871.25
1051.11
2 x Xeon Platinum 8280
SE +/- 0.37, N = 3
MIN: 535.04 / MAX: 2870.94
1051.94
Xeon Platinum 8375C
SE +/- 9.77, N = 3
MIN: 419.2 / MAX: 2294.54
822.11
2 x Xeon Platinum 8375C NUMA off
SE +/- 6.97, N = 3
MIN: 418.76 / MAX: 2286.72
815.18
2 x Xeon Platinum 8375C
SE +/- 8.54, N = 3
MIN: 418.33 / MAX: 2284.8
821.18
300
600
900
1200
1500
1. (CC) gcc options: -O2 -ggdb3 -lnettle -lgmp -lm -lcrypto

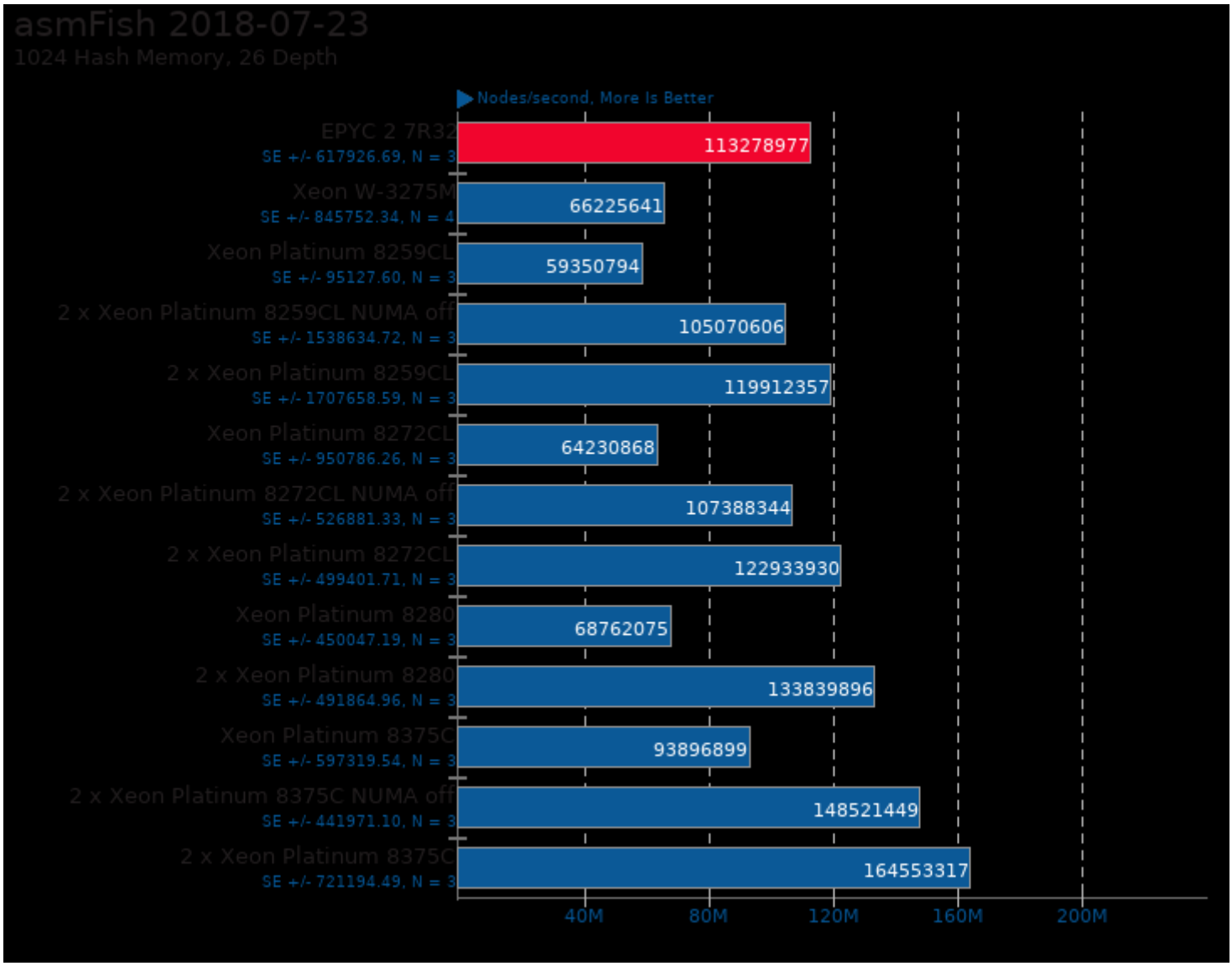

Nettle 3.5.1
Test: sha512
Mbyte/s, More Is Better
EPYC 2 7R32
SE +/- 0.28, N = 3
478.09
Xeon W-3275M
SE +/- 2.72, N = 3
550.93
Xeon Platinum 8259CL
SE +/- 2.12, N = 3
436.73
2 x Xeon Platinum 8259CL NUMA off
SE +/- 1.80, N = 3
438.23
2 x Xeon Platinum 8259CL
SE +/- 2.61, N = 3
437.62
Xeon Platinum 8272CL
SE +/- 1.50, N = 3
462.78
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.20, N = 3
465.40
2 x Xeon Platinum 8272CL
SE +/- 0.19, N = 3
465.18
Xeon Platinum 8280
SE +/- 0.15, N = 3
501.98
2 x Xeon Platinum 8280
SE +/- 0.97, N = 3
500.98
Xeon Platinum 8375C
SE +/- 0.08, N = 3
396.69
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.13, N = 3
396.53
2 x Xeon Platinum 8375C
SE +/- 9.89, N = 15
456.39
120
240
360
480
600
1. (CC) gcc options: -O2 -ggdb3 -lnettle -lgmp -lm -lcrypto

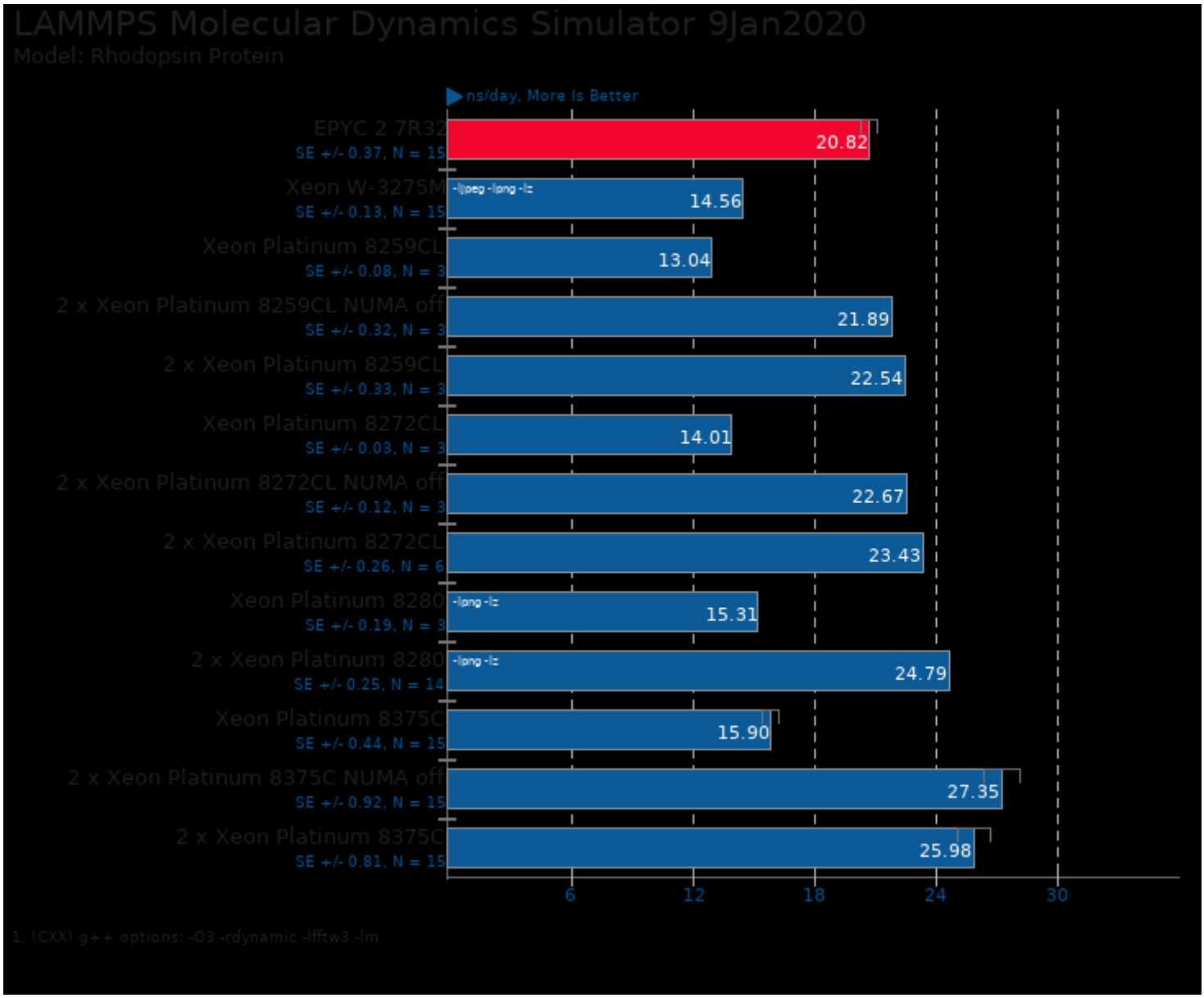

Nettle 3.5.1
Test: poly1305-aes
Mbyte/s, More Is Better
EPYC 2 7R32
SE +/- 0.71, N = 3
2046.35
Xeon W-3275M
SE +/- 24.77, N = 3
3207.98
Xeon Platinum 8259CL
SE +/- 12.50, N = 3
2492.48
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.36, N = 3
2516.87
2 x Xeon Platinum 8259CL
SE +/- 15.23, N = 3
2497.86
Xeon Platinum 8272CL
SE +/- 12.97, N = 3
2661.61
2 x Xeon Platinum 8272CL NUMA off
SE +/- 2.42, N = 3
2657.68
2 x Xeon Platinum 8272CL
SE +/- 3.72, N = 3
2654.23
Xeon Platinum 8280
SE +/- 0.87, N = 3
2867.48
2 x Xeon Platinum 8280
SE +/- 1.10, N = 3
2868.69
Xeon Platinum 8375C
SE +/- 2.47, N = 3
1909.60
2 x Xeon Platinum 8375C NUMA off
SE +/- 2.03, N = 3
1909.43
2 x Xeon Platinum 8375C
SE +/- 35.93, N = 15
1963.03
700
1400
2100
2800
3500
1. (CC) gcc options: -O2 -ggdb3 -lnettle -lgmp -lm -lcrypto

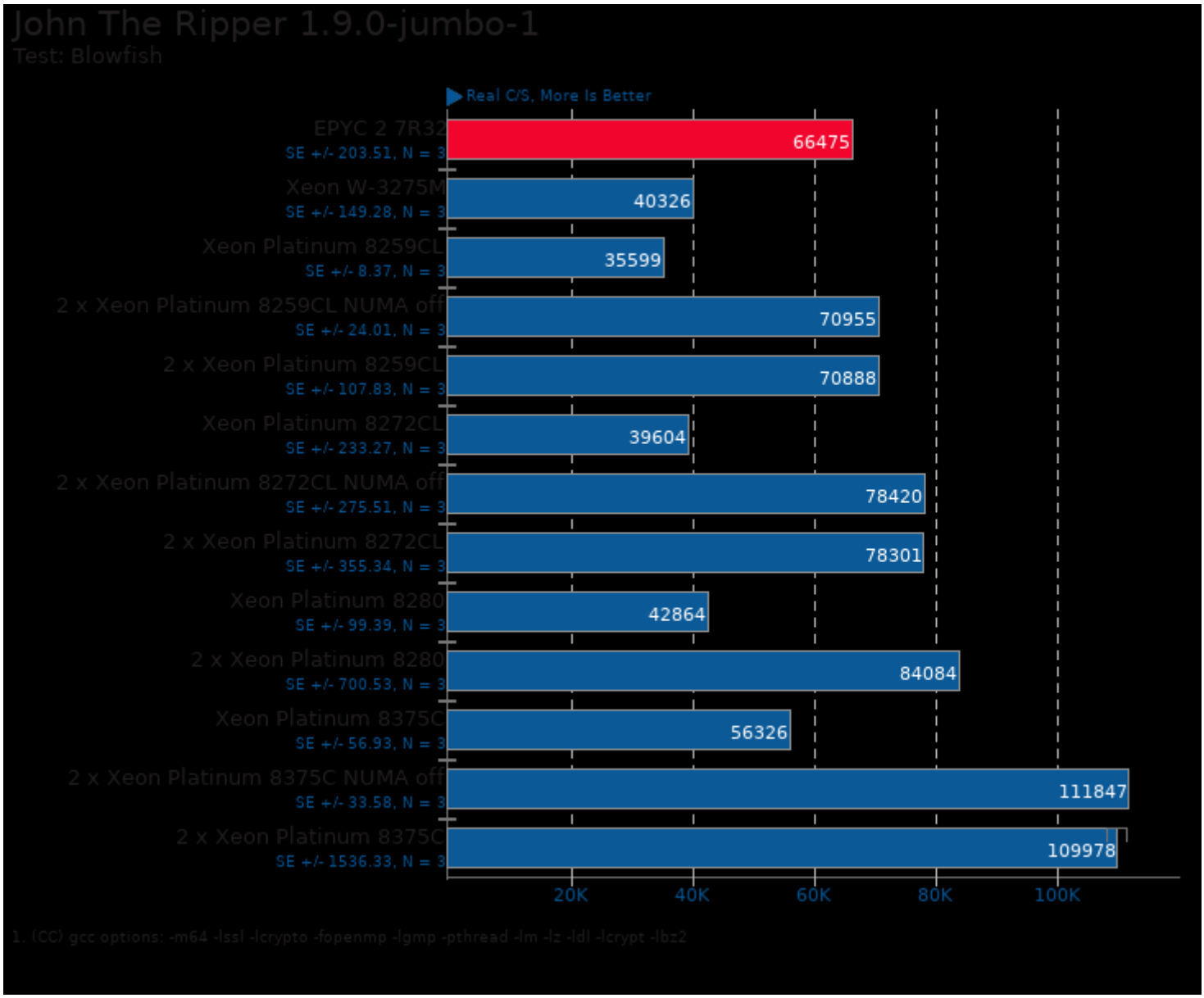

Himeno Benchmark 3.0
Poisson Pressure Solver
MFLOPS, More Is Better
EPYC 2 7R32
SE +/- 22.45, N = 3
3769.72
Xeon W-3275M
SE +/- 3.72, N = 3
3866.09
Xeon Platinum 8259CL
SE +/- 1.29, N = 3
3152.50
2 x Xeon Platinum 8259CL NUMA off
SE +/- 2.97, N = 3
3130.86
2 x Xeon Platinum 8259CL
SE +/- 1.57, N = 3
3147.91
Xeon Platinum 8272CL
SE +/- 6.12, N = 3
3318.98
2 x Xeon Platinum 8272CL NUMA off
SE +/- 10.51, N = 3
3315.30
2 x Xeon Platinum 8272CL
SE +/- 1.29, N = 3
3331.38
Xeon Platinum 8280
SE +/- 4.11, N = 3
3510.21
2 x Xeon Platinum 8280
SE +/- 5.39, N = 3
3514.60
Xeon Platinum 8375C
SE +/- 1.99, N = 3
4214.94
2 x Xeon Platinum 8375C NUMA off
SE +/- 6.81, N = 3
4198.51
2 x Xeon Platinum 8375C
SE +/- 0.44, N = 3
4211.21
900
1800
2700
3600
4500
1. (CC) gcc options: -O3 -mavx2

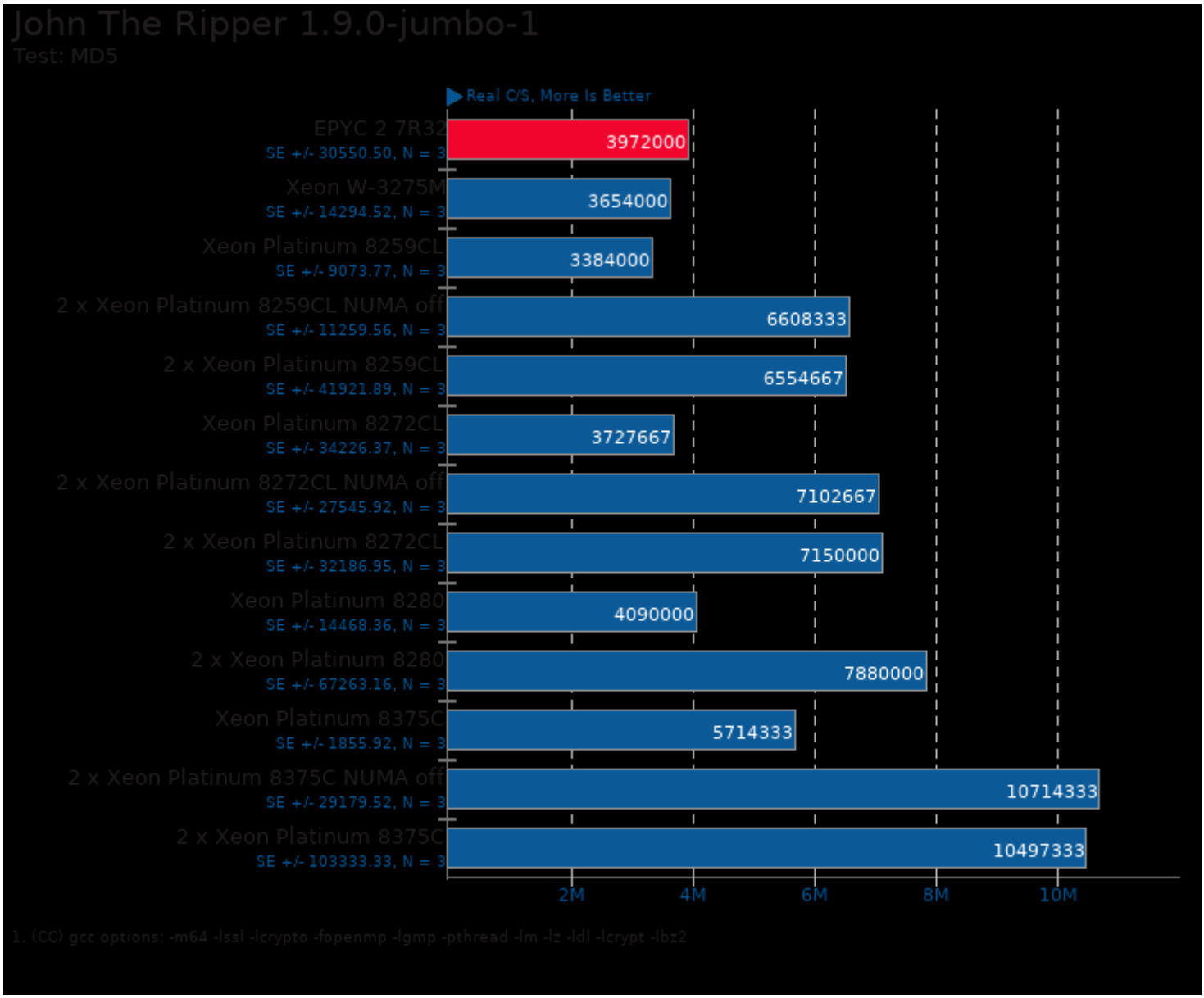

SMHasher 2020-02-29
Hash: wyhash
MiB/sec, More Is Better
Xeon W-3275M
SE +/- 105.54, N = 3
26298.77
Xeon Platinum 8259CL
SE +/- 8.73, N = 3
20221.25
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.70, N = 3
20231.58
2 x Xeon Platinum 8259CL
SE +/- 6.86, N = 3
20225.18
Xeon Platinum 8272CL
SE +/- 3.98, N = 3
20556.96
2 x Xeon Platinum 8272CL NUMA off
SE +/- 5.31, N = 3
20554.92
2 x Xeon Platinum 8272CL
SE +/- 4.10, N = 3
20553.05
6K
12K
18K
24K
30K
1. (CXX) g++ options: -march=native -O3 -lpthread

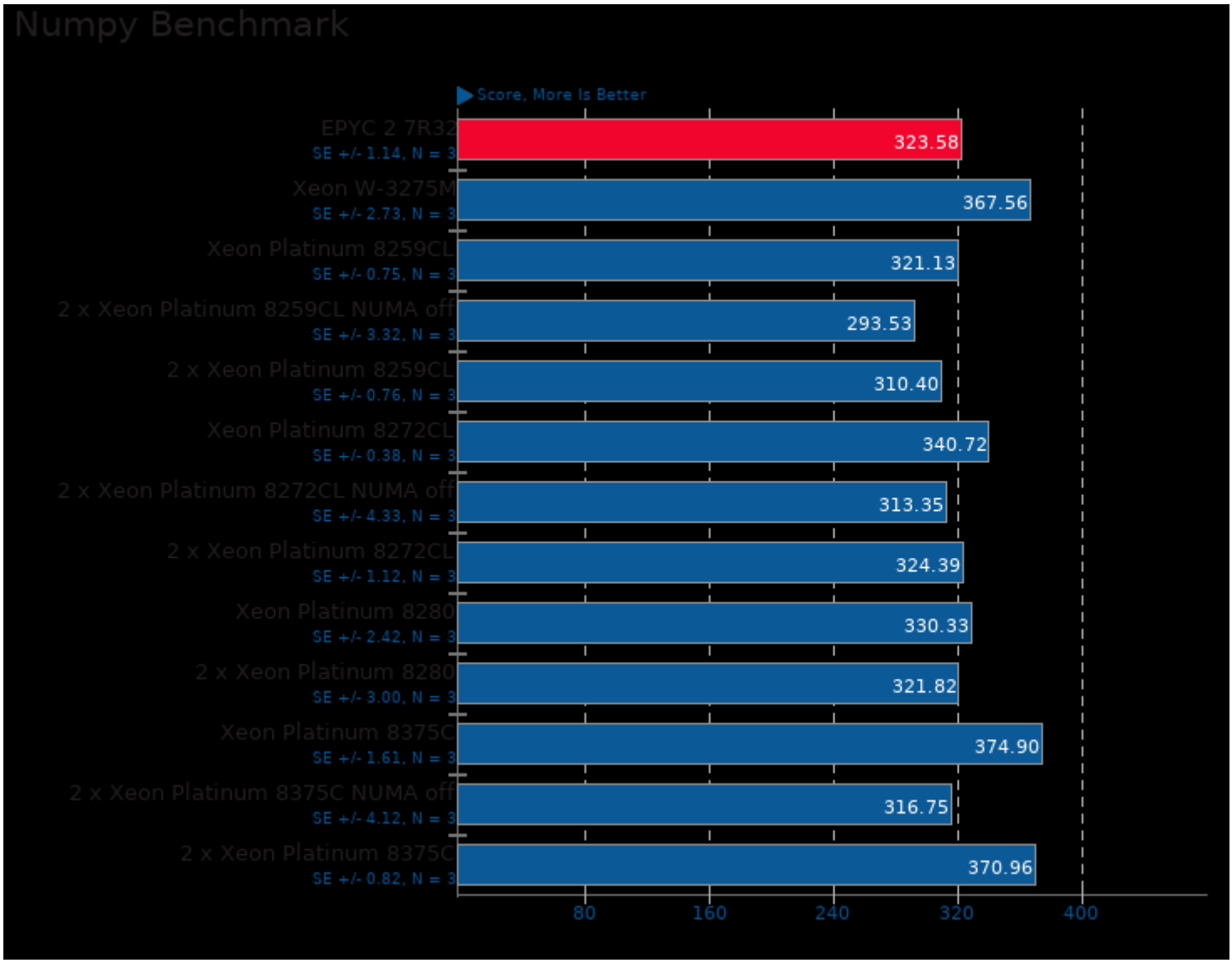

Stockfish 9
Total Time
Nodes Per Second, More Is Better
EPYC 2 7R32
SE +/- 1223161.47, N = 3
116765028
Xeon W-3275M
SE +/- 709349.35, N = 3
61170651
Xeon Platinum 8259CL
SE +/- 114508.53, N = 3
54437117
2 x Xeon Platinum 8259CL NUMA off
SE +/- 102308.18, N = 3
104106676
2 x Xeon Platinum 8259CL
SE +/- 336693.20, N = 3
103513853
Xeon Platinum 8272CL
SE +/- 54908.55, N = 3
58172107
2 x Xeon Platinum 8272CL NUMA off
SE +/- 1396988.17, N = 4
109753377
2 x Xeon Platinum 8272CL
SE +/- 1934115.41, N = 3
112362723
Xeon Platinum 8280
SE +/- 829358.84, N = 3
62891312
2 x Xeon Platinum 8280
SE +/- 902995.35, N = 3
119715795
Xeon Platinum 8375C
SE +/- 828671.04, N = 3
85313242
2 x Xeon Platinum 8375C NUMA off
SE +/- 2015291.67, N = 3
153113492
2 x Xeon Platinum 8375C
SE +/- 1266085.84, N = 3
152906860
30M
60M
90M
120M
150M
1. (CXX) g++ options: -m64 -lpthread -fno-exceptions -std=c++11 -pedantic -O3 -msse -msse3 -mpopcnt -flto

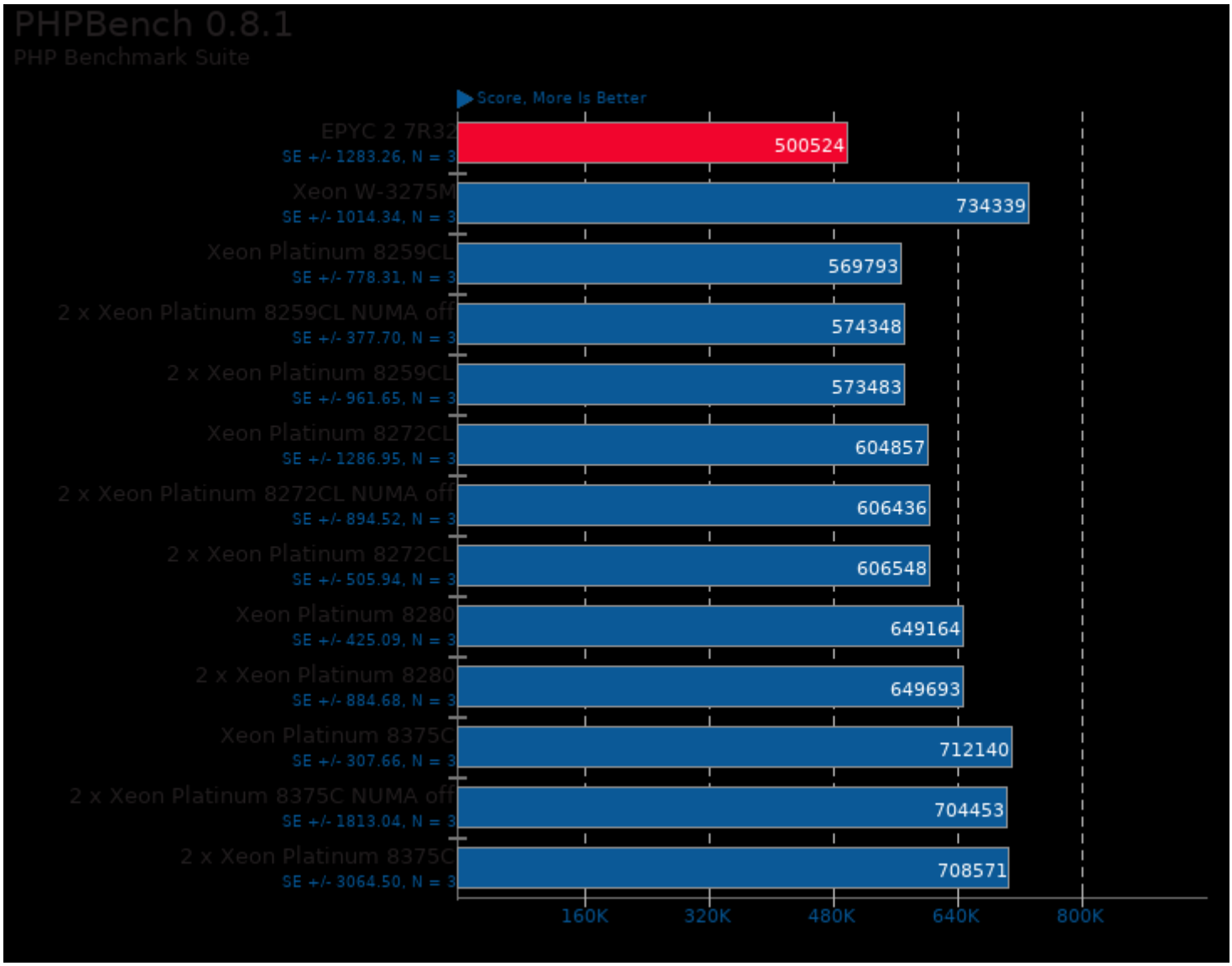

asmFish 2018-07-23
1024 Hash Memory, 26 Depth
Nodes/second, More Is Better
EPYC 2 7R32
SE +/- 617926.69, N = 3
113278977
Xeon W-3275M
SE +/- 845752.34, N = 4
66225641
Xeon Platinum 8259CL
SE +/- 95127.60, N = 3
59350794
2 x Xeon Platinum 8259CL NUMA off
SE +/- 1538634.72, N = 3
105070606
2 x Xeon Platinum 8259CL
SE +/- 1707658.59, N = 3
119912357
Xeon Platinum 8272CL
SE +/- 950786.26, N = 3
64230868
2 x Xeon Platinum 8272CL NUMA off
SE +/- 526881.33, N = 3
107388344
2 x Xeon Platinum 8272CL
SE +/- 499401.71, N = 3
122933930
Xeon Platinum 8280
SE +/- 450047.19, N = 3
68762075
2 x Xeon Platinum 8280
SE +/- 491864.96, N = 3
133839896
Xeon Platinum 8375C
SE +/- 597319.54, N = 3
93896899
2 x Xeon Platinum 8375C NUMA off
SE +/- 441971.10, N = 3
148521449
2 x Xeon Platinum 8375C
SE +/- 721194.49, N = 3
164553317
40M
80M
120M
160M
200M

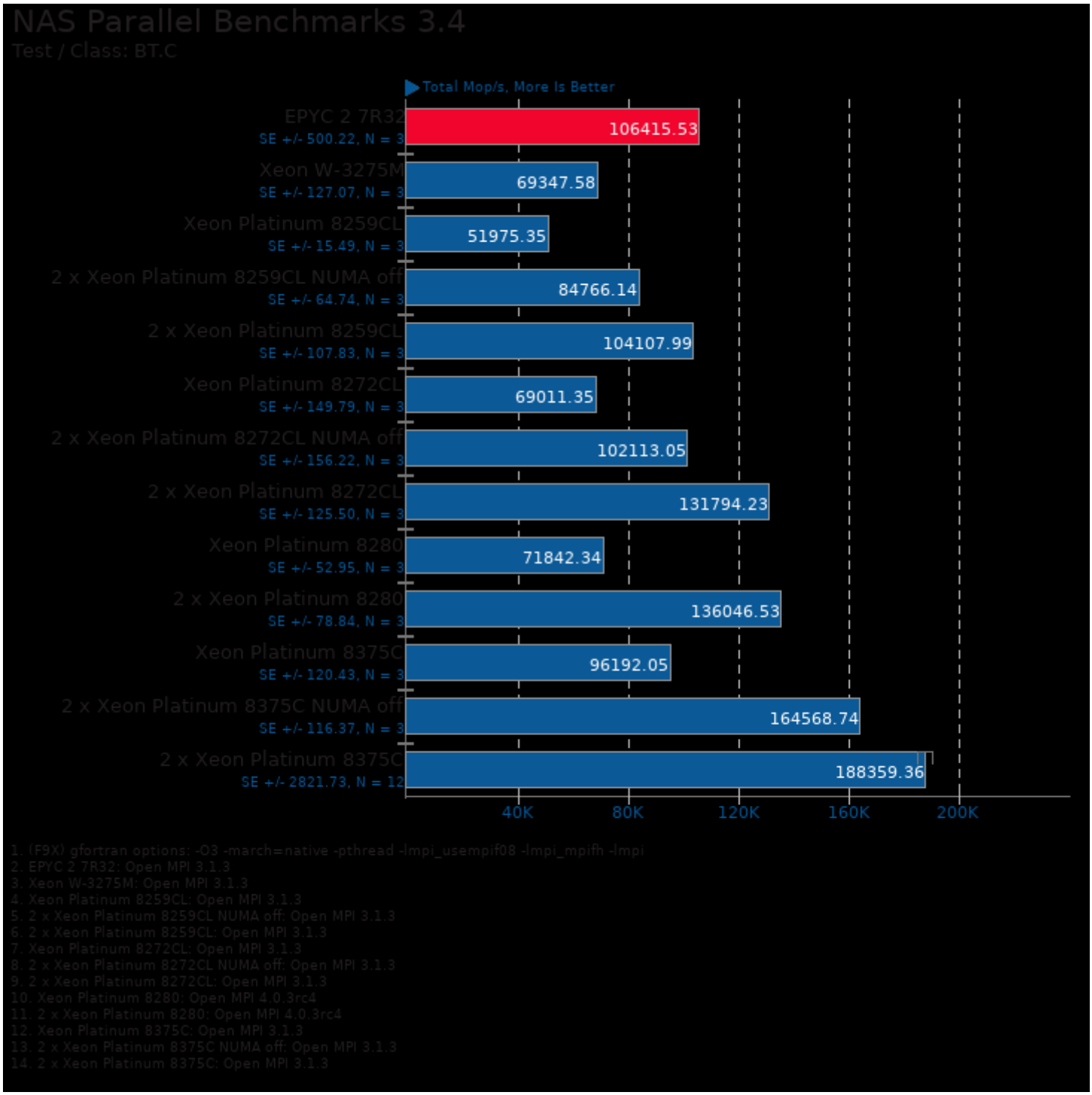

LAMMPS Molecular Dynamics Simulator 9Jan2020
Model: Rhodopsin Protein
ns/day, More Is Better
EPYC 2 7R32
SE +/- 0.37, N = 15
20.82
Xeon W-3275M
SE +/- 0.13, N = 15
-ljpeg -lpng -lz
14.56
Xeon Platinum 8259CL
SE +/- 0.08, N = 3
13.04
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.32, N = 3
21.89
2 x Xeon Platinum 8259CL
SE +/- 0.33, N = 3
22.54
Xeon Platinum 8272CL
SE +/- 0.03, N = 3
14.01
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.12, N = 3
22.67
2 x Xeon Platinum 8272CL
SE +/- 0.26, N = 6
23.43
Xeon Platinum 8280
SE +/- 0.19, N = 3
-lpng -lz
15.31
2 x Xeon Platinum 8280
SE +/- 0.25, N = 14
-lpng -lz
24.79
Xeon Platinum 8375C
SE +/- 0.44, N = 15
15.90
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.92, N = 15
27.35
2 x Xeon Platinum 8375C
SE +/- 0.81, N = 15
25.98
6
12
18
24
30
1. (CXX) g++ options: -O3 -rdynamic -lfftw3 -lm

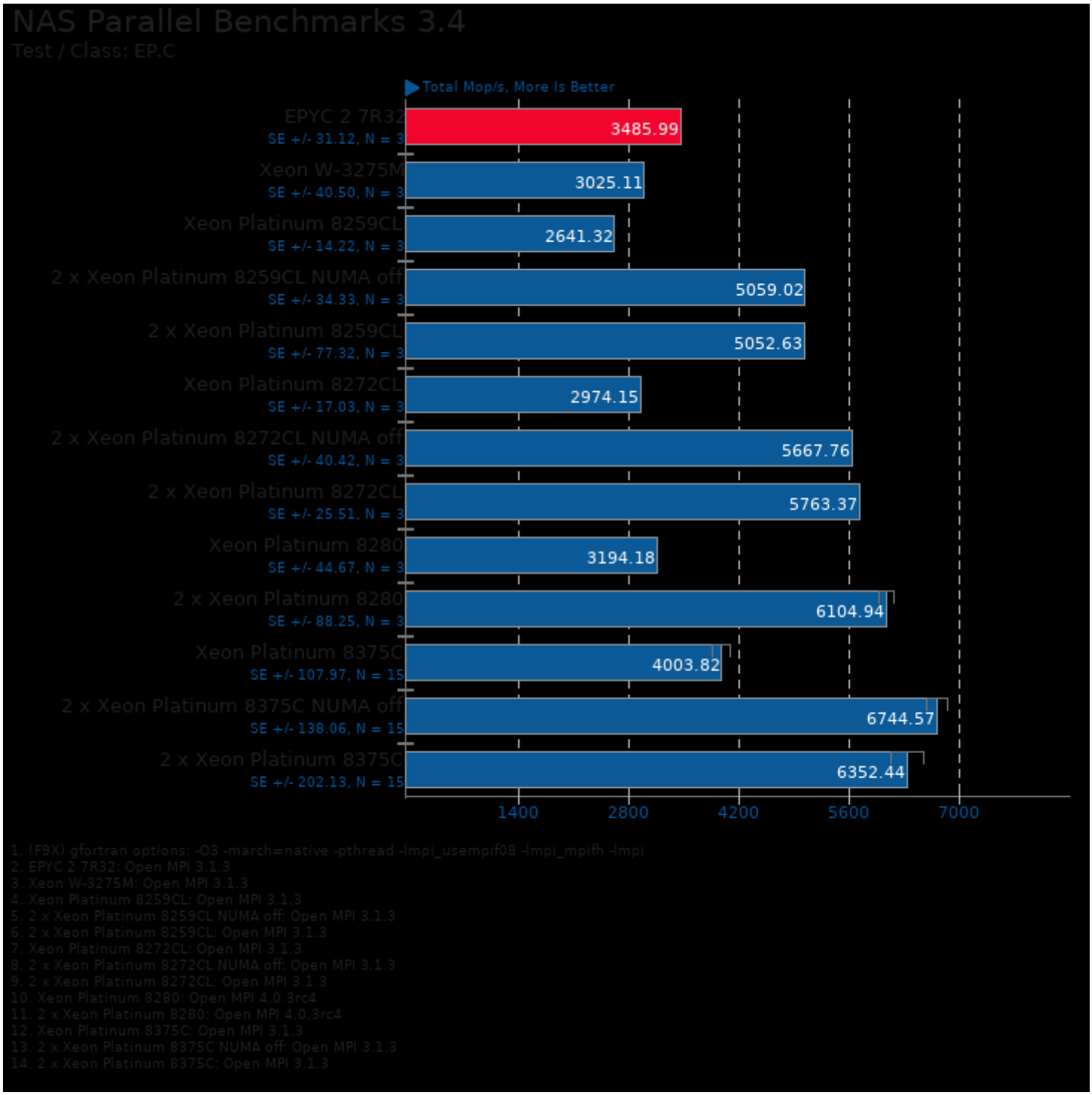

John The Ripper 1.9.0-jumbo-1
Test: Blowfish
Real C/S, More Is Better
EPYC 2 7R32
SE +/- 203.51, N = 3
66475
Xeon W-3275M
SE +/- 149.28, N = 3
40326
Xeon Platinum 8259CL
SE +/- 8.37, N = 3
35599
2 x Xeon Platinum 8259CL NUMA off
SE +/- 24.01, N = 3
70955
2 x Xeon Platinum 8259CL
SE +/- 107.83, N = 3
70888
Xeon Platinum 8272CL
SE +/- 233.27, N = 3
39604
2 x Xeon Platinum 8272CL NUMA off
SE +/- 275.51, N = 3
78420
2 x Xeon Platinum 8272CL
SE +/- 355.34, N = 3
78301
Xeon Platinum 8280
SE +/- 99.39, N = 3
42864
2 x Xeon Platinum 8280
SE +/- 700.53, N = 3
84084
Xeon Platinum 8375C
SE +/- 56.93, N = 3
56326
2 x Xeon Platinum 8375C NUMA off
SE +/- 33.58, N = 3
111847
2 x Xeon Platinum 8375C
SE +/- 1536.33, N = 3
109978
20K
40K
60K
80K
100K
1. (CC) gcc options: -m64 -lssl -lcrypto -fopenmp -lgmp -pthread -lm -lz -ldl -lcrypt -lbz2

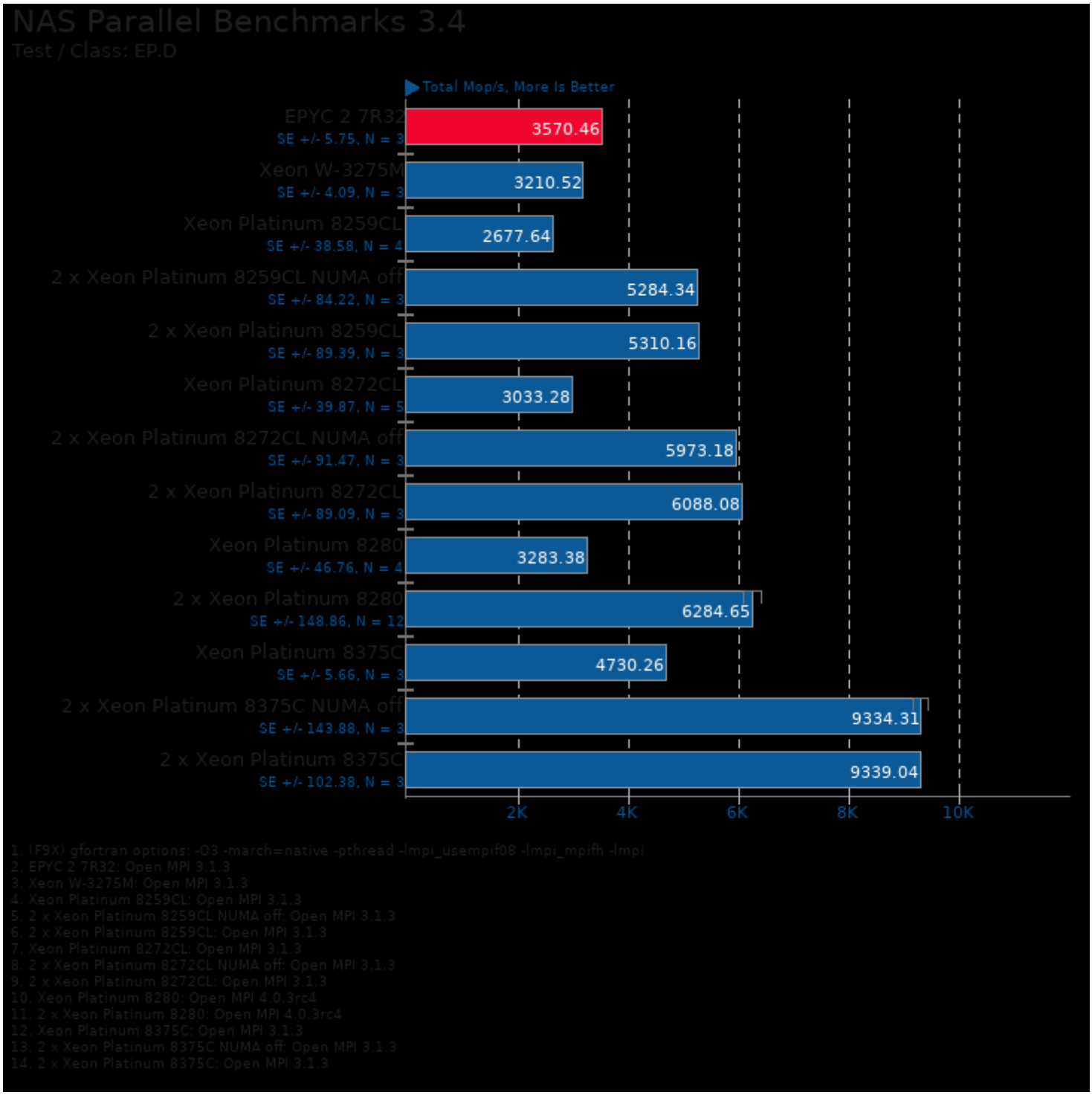

John The Ripper 1.9.0-jumbo-1
Test: MD5
Real C/S, More Is Better
EPYC 2 7R32
SE +/- 30550.50, N = 3
3972000
Xeon W-3275M
SE +/- 14294.52, N = 3
3654000
Xeon Platinum 8259CL
SE +/- 9073.77, N = 3
3384000
2 x Xeon Platinum 8259CL NUMA off
SE +/- 11259.56, N = 3
6608333
2 x Xeon Platinum 8259CL
SE +/- 41921.89, N = 3
6554667
Xeon Platinum 8272CL
SE +/- 34226.37, N = 3
3727667
2 x Xeon Platinum 8272CL NUMA off
SE +/- 27545.92, N = 3
7102667
2 x Xeon Platinum 8272CL
SE +/- 32186.95, N = 3
7150000
Xeon Platinum 8280
SE +/- 14468.36, N = 3
4090000
2 x Xeon Platinum 8280
SE +/- 67263.16, N = 3
7880000
Xeon Platinum 8375C
SE +/- 1855.92, N = 3
5714333
2 x Xeon Platinum 8375C NUMA off
SE +/- 29179.52, N = 3
10714333
2 x Xeon Platinum 8375C
SE +/- 103333.33, N = 3
10497333
2M
4M
6M
8M
10M
1. (CC) gcc options: -m64 -lssl -lcrypto -fopenmp -lgmp -pthread -lm -lz -ldl -lcrypt -lbz2

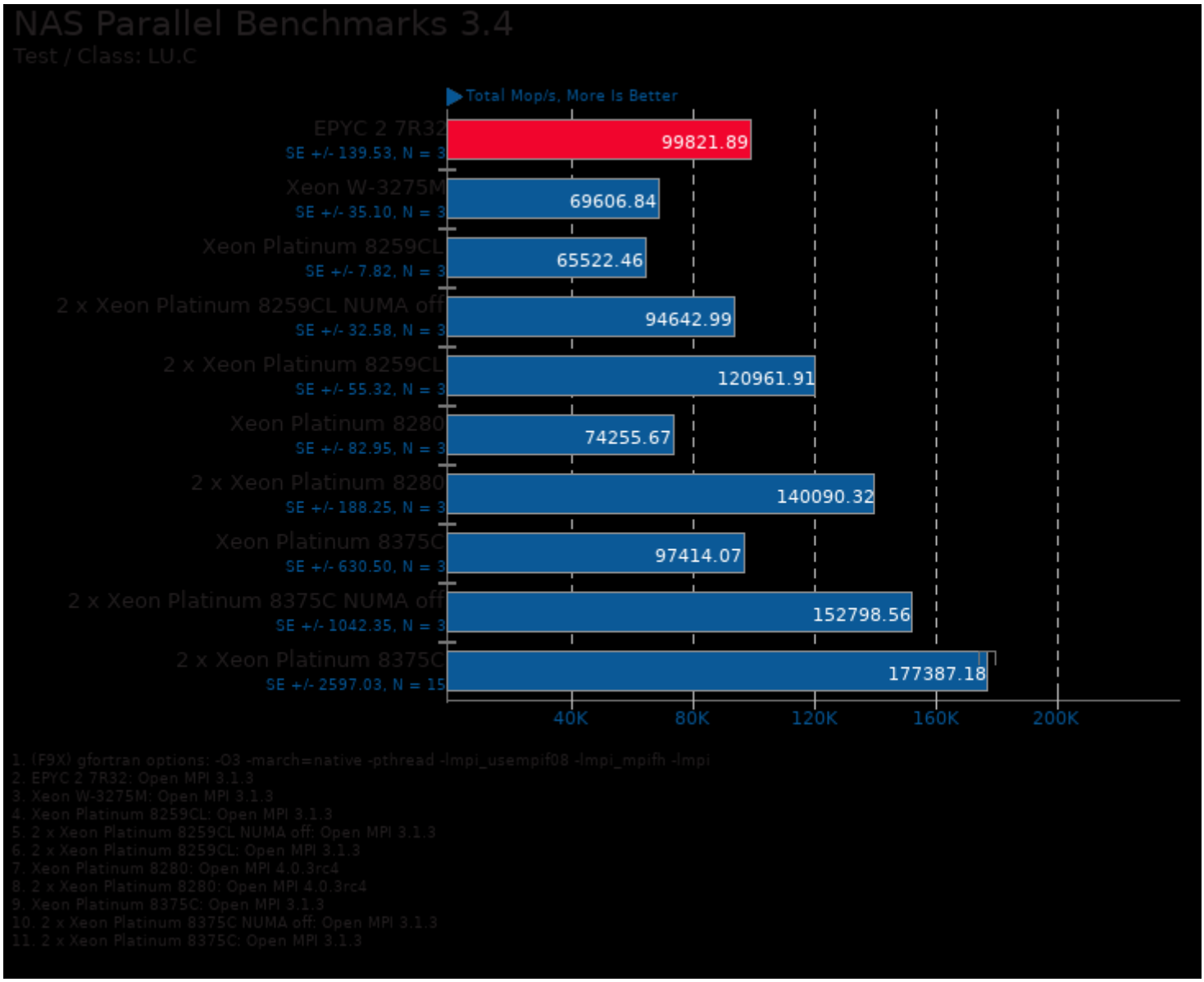

Numpy Benchmark
Score, More Is Better
EPYC 2 7R32
SE +/- 1.14, N = 3
323.58
Xeon W-3275M
SE +/- 2.73, N = 3
367.56
Xeon Platinum 8259CL
SE +/- 0.75, N = 3
321.13
2 x Xeon Platinum 8259CL NUMA off
SE +/- 3.32, N = 3
293.53
2 x Xeon Platinum 8259CL
SE +/- 0.76, N = 3
310.40
Xeon Platinum 8272CL
SE +/- 0.38, N = 3
340.72
2 x Xeon Platinum 8272CL NUMA off
SE +/- 4.33, N = 3
313.35
2 x Xeon Platinum 8272CL
SE +/- 1.12, N = 3
324.39
Xeon Platinum 8280
SE +/- 2.42, N = 3
330.33
2 x Xeon Platinum 8280
SE +/- 3.00, N = 3
321.82
Xeon Platinum 8375C
SE +/- 1.61, N = 3
374.90
2 x Xeon Platinum 8375C NUMA off
SE +/- 4.12, N = 3
316.75
2 x Xeon Platinum 8375C
SE +/- 0.82, N = 3
370.96
80
160
240
320
400

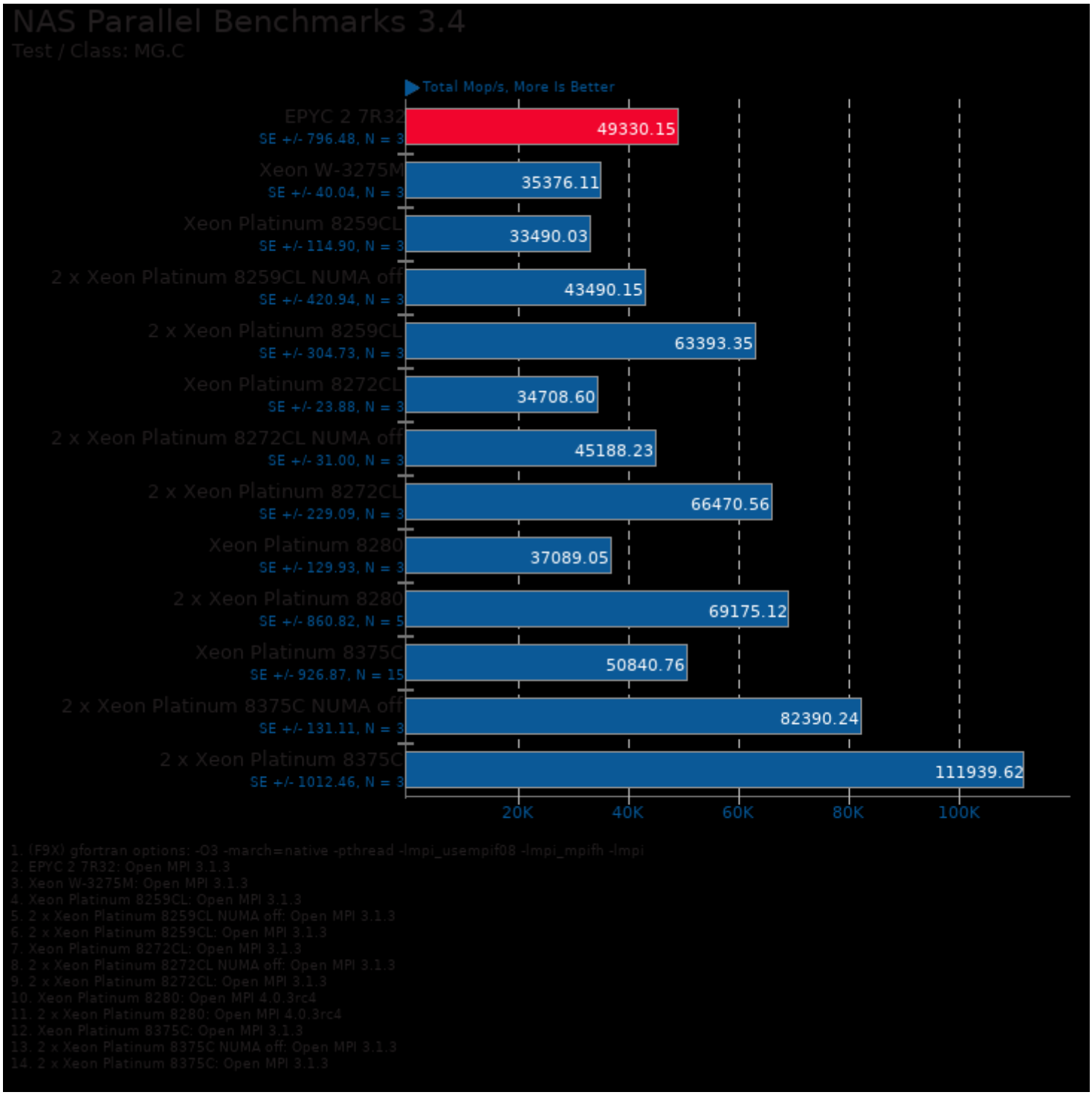

PHPBench 0.8.1
PHP Benchmark Suite
Score, More Is Better
EPYC 2 7R32
SE +/- 1283.26, N = 3
500524
Xeon W-3275M
SE +/- 1014.34, N = 3
734339
Xeon Platinum 8259CL
SE +/- 778.31, N = 3
569793
2 x Xeon Platinum 8259CL NUMA off
SE +/- 377.70, N = 3
574348
2 x Xeon Platinum 8259CL
SE +/- 961.65, N = 3
573483
Xeon Platinum 8272CL
SE +/- 1286.95, N = 3
604857
2 x Xeon Platinum 8272CL NUMA off
SE +/- 894.52, N = 3
606436
2 x Xeon Platinum 8272CL
SE +/- 505.94, N = 3
606548
Xeon Platinum 8280
SE +/- 425.09, N = 3
649164
2 x Xeon Platinum 8280
SE +/- 884.68, N = 3
649693
Xeon Platinum 8375C
SE +/- 307.66, N = 3
712140
2 x Xeon Platinum 8375C NUMA off
SE +/- 1813.04, N = 3
704453
2 x Xeon Platinum 8375C
SE +/- 3064.50, N = 3
708571
160K
320K
480K
640K
800K

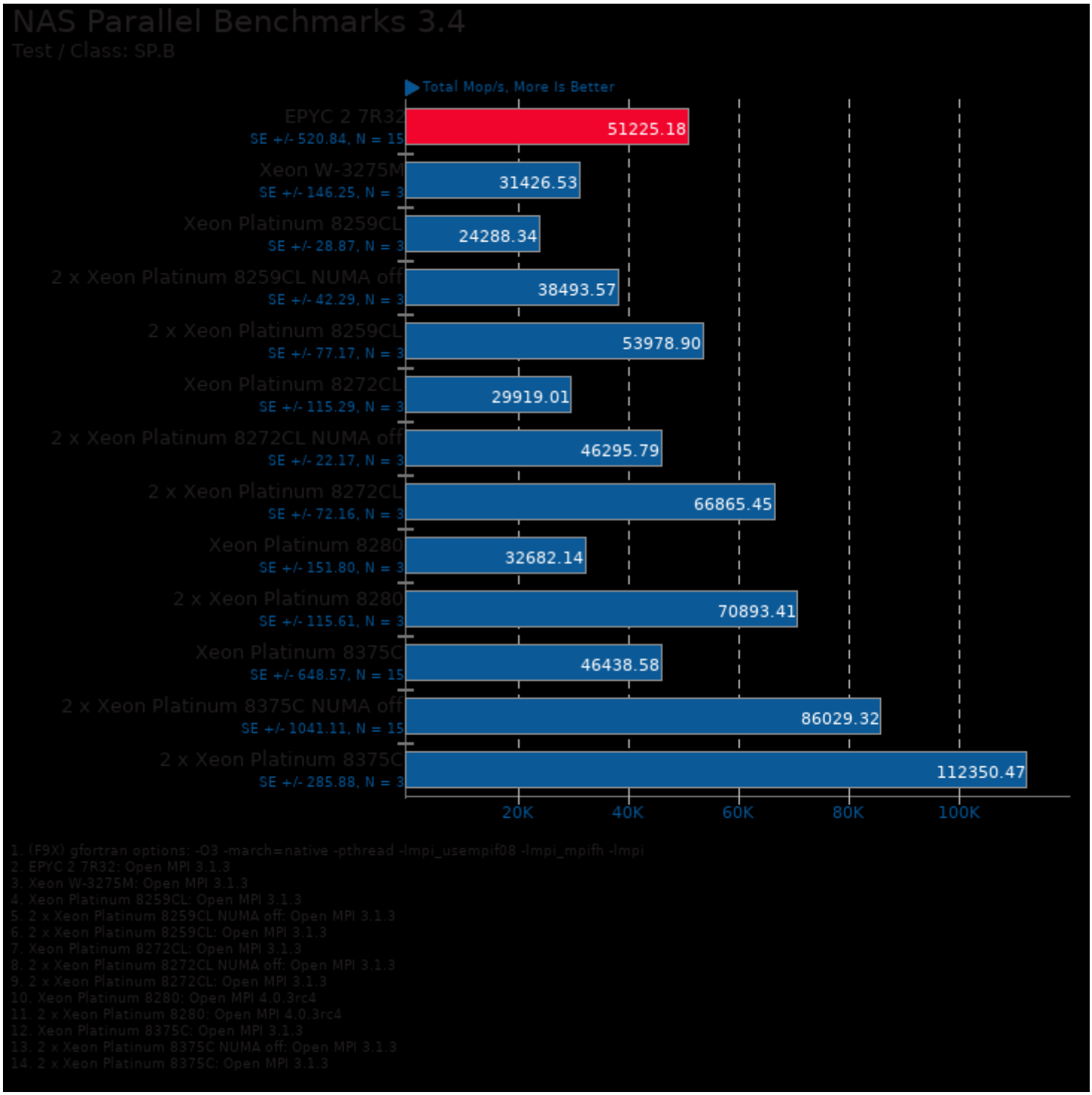

NAS Parallel Benchmarks 3.4
Test / Class: BT.C
Total Mop/s, More Is Better
EPYC 2 7R32
SE +/- 500.22, N = 3
106415.53
Xeon W-3275M
SE +/- 127.07, N = 3
69347.58
Xeon Platinum 8259CL
SE +/- 15.49, N = 3
51975.35
2 x Xeon Platinum 8259CL NUMA off
SE +/- 64.74, N = 3
84766.14
2 x Xeon Platinum 8259CL
SE +/- 107.83, N = 3
104107.99
Xeon Platinum 8272CL
SE +/- 149.79, N = 3
69011.35
2 x Xeon Platinum 8272CL NUMA off
SE +/- 156.22, N = 3
102113.05
2 x Xeon Platinum 8272CL
SE +/- 125.50, N = 3
131794.23
Xeon Platinum 8280
SE +/- 52.95, N = 3
71842.34
2 x Xeon Platinum 8280
SE +/- 78.84, N = 3
136046.53
Xeon Platinum 8375C
SE +/- 120.43, N = 3
96192.05
2 x Xeon Platinum 8375C NUMA off
SE +/- 116.37, N = 3
164568.74
2 x Xeon Platinum 8375C
SE +/- 2821.73, N = 12
188359.36
40K
80K
120K
160K
200K
1. (F9X) gfortran options: -O3 -march=native -pthread -lmpi_usempif08 -lmpi_mpifh -lmpi
2. EPYC 2 7R32: Open MPI 3.1.3
3. Xeon W-3275M: Open MPI 3.1.3
4. Xeon Platinum 8259CL: Open MPI 3.1.3
5. 2 x Xeon Platinum 8259CL NUMA off: Open MPI 3.1.3
6. 2 x Xeon Platinum 8259CL: Open MPI 3.1.3
7. Xeon Platinum 8272CL: Open MPI 3.1.3
8. 2 x Xeon Platinum 8272CL NUMA off: Open MPI 3.1.3
9. 2 x Xeon Platinum 8272CL: Open MPI 3.1.3
10. Xeon Platinum 8280: Open MPI 4.0.3rc4
11. 2 x Xeon Platinum 8280: Open MPI 4.0.3rc4
12. Xeon Platinum 8375C: Open MPI 3.1.3
13. 2 x Xeon Platinum 8375C NUMA off: Open MPI 3.1.3
14. 2 x Xeon Platinum 8375C: Open MPI 3.1.3

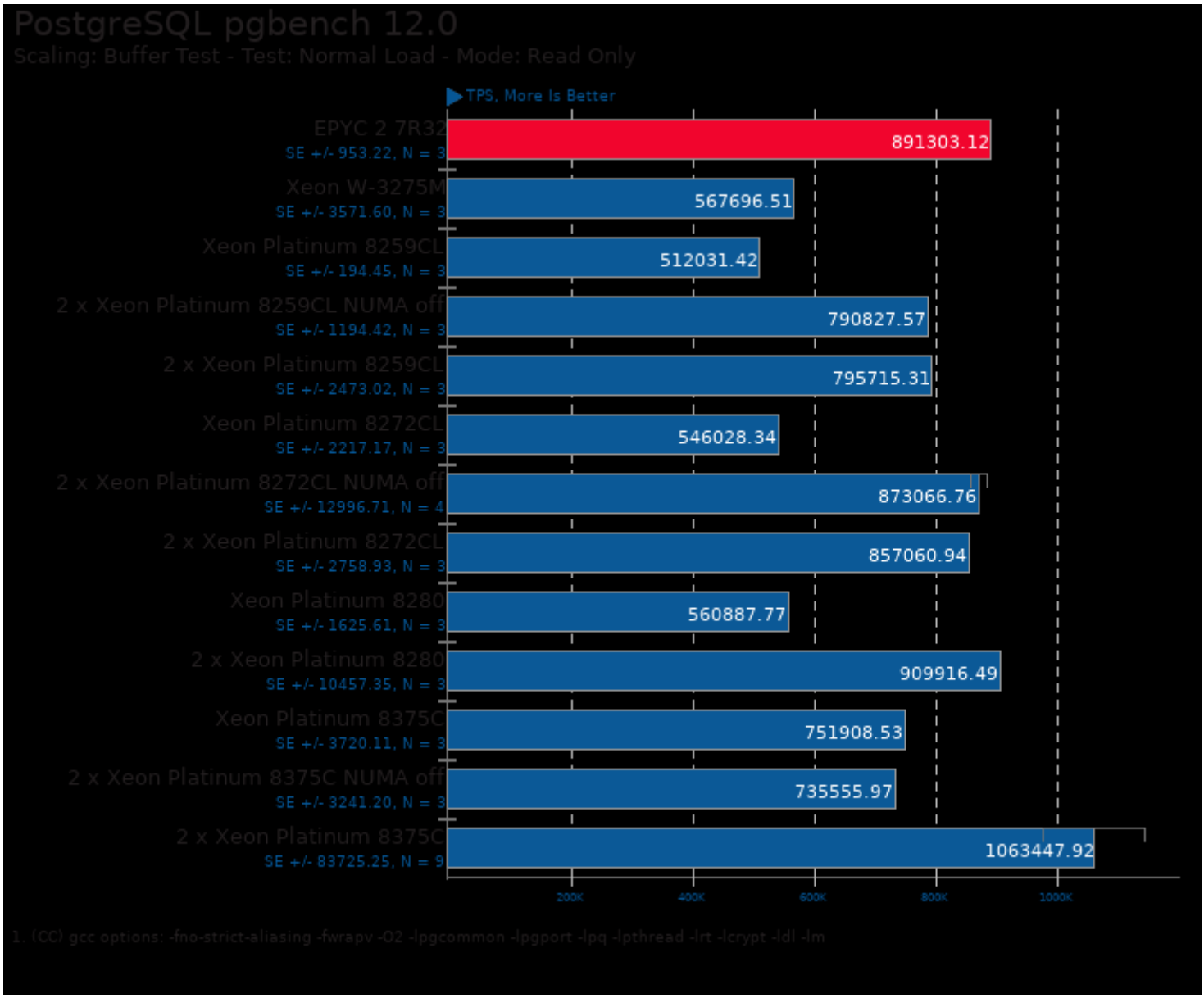

NAS Parallel Benchmarks 3.4
Test / Class: EP.C
Total Mop/s, More Is Better
EPYC 2 7R32
SE +/- 31.12, N = 3
3485.99
Xeon W-3275M
SE +/- 40.50, N = 3
3025.11
Xeon Platinum 8259CL
SE +/- 14.22, N = 3
2641.32
2 x Xeon Platinum 8259CL NUMA off
SE +/- 34.33, N = 3
5059.02
2 x Xeon Platinum 8259CL
SE +/- 77.32, N = 3
5052.63
Xeon Platinum 8272CL
SE +/- 17.03, N = 3
2974.15
2 x Xeon Platinum 8272CL NUMA off
SE +/- 40.42, N = 3
5667.76
2 x Xeon Platinum 8272CL
SE +/- 25.51, N = 3
5763.37
Xeon Platinum 8280
SE +/- 44.67, N = 3
3194.18
2 x Xeon Platinum 8280
SE +/- 88.25, N = 3
6104.94
Xeon Platinum 8375C
SE +/- 107.97, N = 15
4003.82
2 x Xeon Platinum 8375C NUMA off
SE +/- 138.06, N = 15
6744.57
2 x Xeon Platinum 8375C
SE +/- 202.13, N = 15
6352.44
1400
2800
4200
5600
7000
1. (F9X) gfortran options: -O3 -march=native -pthread -lmpi_usempif08 -lmpi_mpifh -lmpi
2. EPYC 2 7R32: Open MPI 3.1.3
3. Xeon W-3275M: Open MPI 3.1.3
4. Xeon Platinum 8259CL: Open MPI 3.1.3
5. 2 x Xeon Platinum 8259CL NUMA off: Open MPI 3.1.3
6. 2 x Xeon Platinum 8259CL: Open MPI 3.1.3
7. Xeon Platinum 8272CL: Open MPI 3.1.3
8. 2 x Xeon Platinum 8272CL NUMA off: Open MPI 3.1.3
9. 2 x Xeon Platinum 8272CL: Open MPI 3.1.3
10. Xeon Platinum 8280: Open MPI 4.0.3rc4
11. 2 x Xeon Platinum 8280: Open MPI 4.0.3rc4
12. Xeon Platinum 8375C: Open MPI 3.1.3
13. 2 x Xeon Platinum 8375C NUMA off: Open MPI 3.1.3
14. 2 x Xeon Platinum 8375C: Open MPI 3.1.3

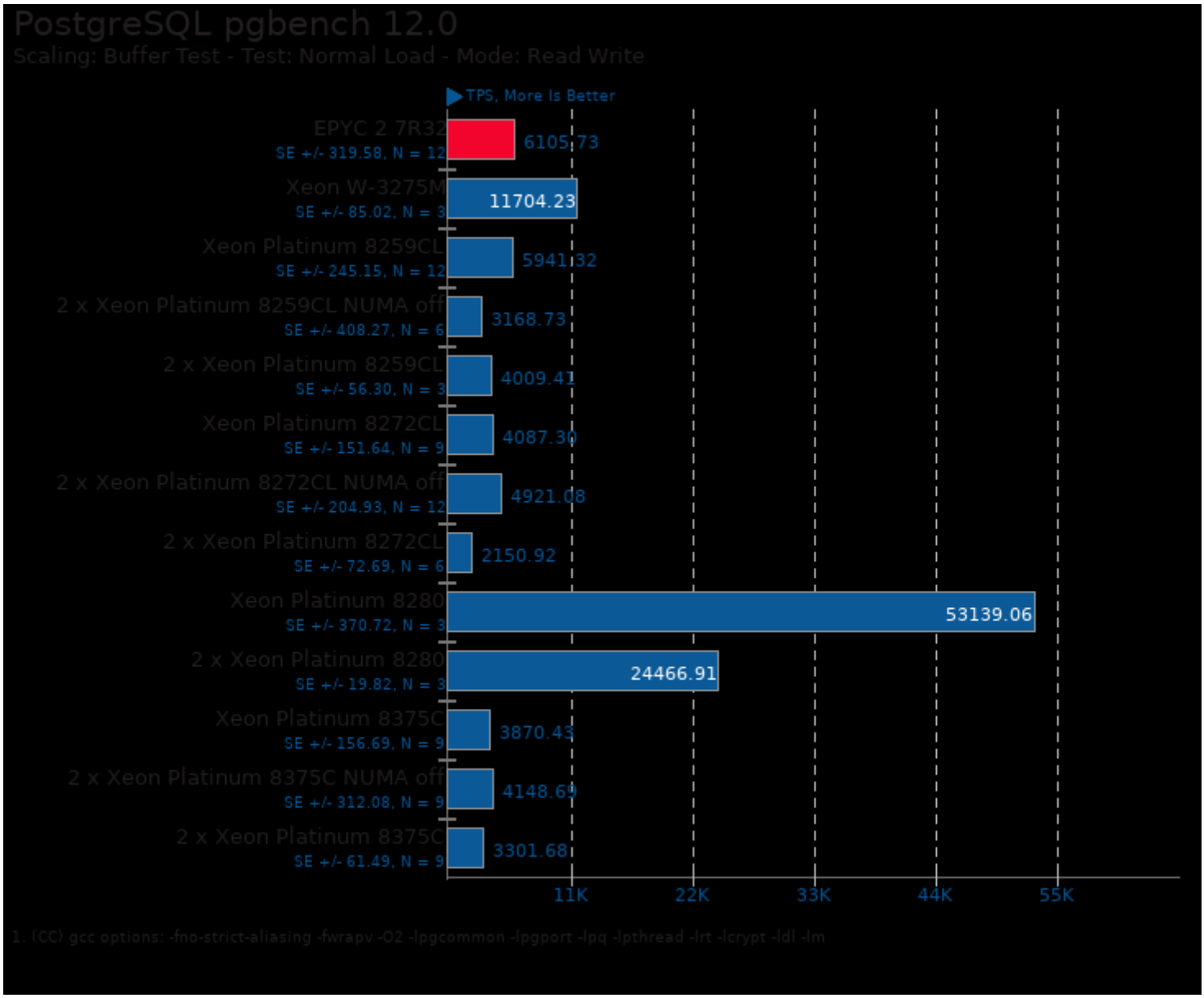

NAS Parallel Benchmarks 3.4
Test / Class: EP.D
Total Mop/s, More Is Better
EPYC 2 7R32
SE +/- 5.75, N = 3
3570.46
Xeon W-3275M
SE +/- 4.09, N = 3
3210.52
Xeon Platinum 8259CL
SE +/- 38.58, N = 4
2677.64
2 x Xeon Platinum 8259CL NUMA off
SE +/- 84.22, N = 3
5284.34
2 x Xeon Platinum 8259CL
SE +/- 89.39, N = 3
5310.16
Xeon Platinum 8272CL
SE +/- 39.87, N = 5
3033.28
2 x Xeon Platinum 8272CL NUMA off
SE +/- 91.47, N = 3
5973.18
2 x Xeon Platinum 8272CL
SE +/- 89.09, N = 3
6088.08
Xeon Platinum 8280
SE +/- 46.76, N = 4
3283.38
2 x Xeon Platinum 8280
SE +/- 148.86, N = 12
6284.65
Xeon Platinum 8375C
SE +/- 5.66, N = 3
4730.26
2 x Xeon Platinum 8375C NUMA off
SE +/- 143.88, N = 3
9334.31
2 x Xeon Platinum 8375C
SE +/- 102.38, N = 3
9339.04
2K
4K
6K
8K
10K
1. (F9X) gfortran options: -O3 -march=native -pthread -lmpi_usempif08 -lmpi_mpifh -lmpi
2. EPYC 2 7R32: Open MPI 3.1.3
3. Xeon W-3275M: Open MPI 3.1.3
4. Xeon Platinum 8259CL: Open MPI 3.1.3
5. 2 x Xeon Platinum 8259CL NUMA off: Open MPI 3.1.3
6. 2 x Xeon Platinum 8259CL: Open MPI 3.1.3
7. Xeon Platinum 8272CL: Open MPI 3.1.3
8. 2 x Xeon Platinum 8272CL NUMA off: Open MPI 3.1.3
9. 2 x Xeon Platinum 8272CL: Open MPI 3.1.3
10. Xeon Platinum 8280: Open MPI 4.0.3rc4
11. 2 x Xeon Platinum 8280: Open MPI 4.0.3rc4
12. Xeon Platinum 8375C: Open MPI 3.1.3
13. 2 x Xeon Platinum 8375C NUMA off: Open MPI 3.1.3
14. 2 x Xeon Platinum 8375C: Open MPI 3.1.3

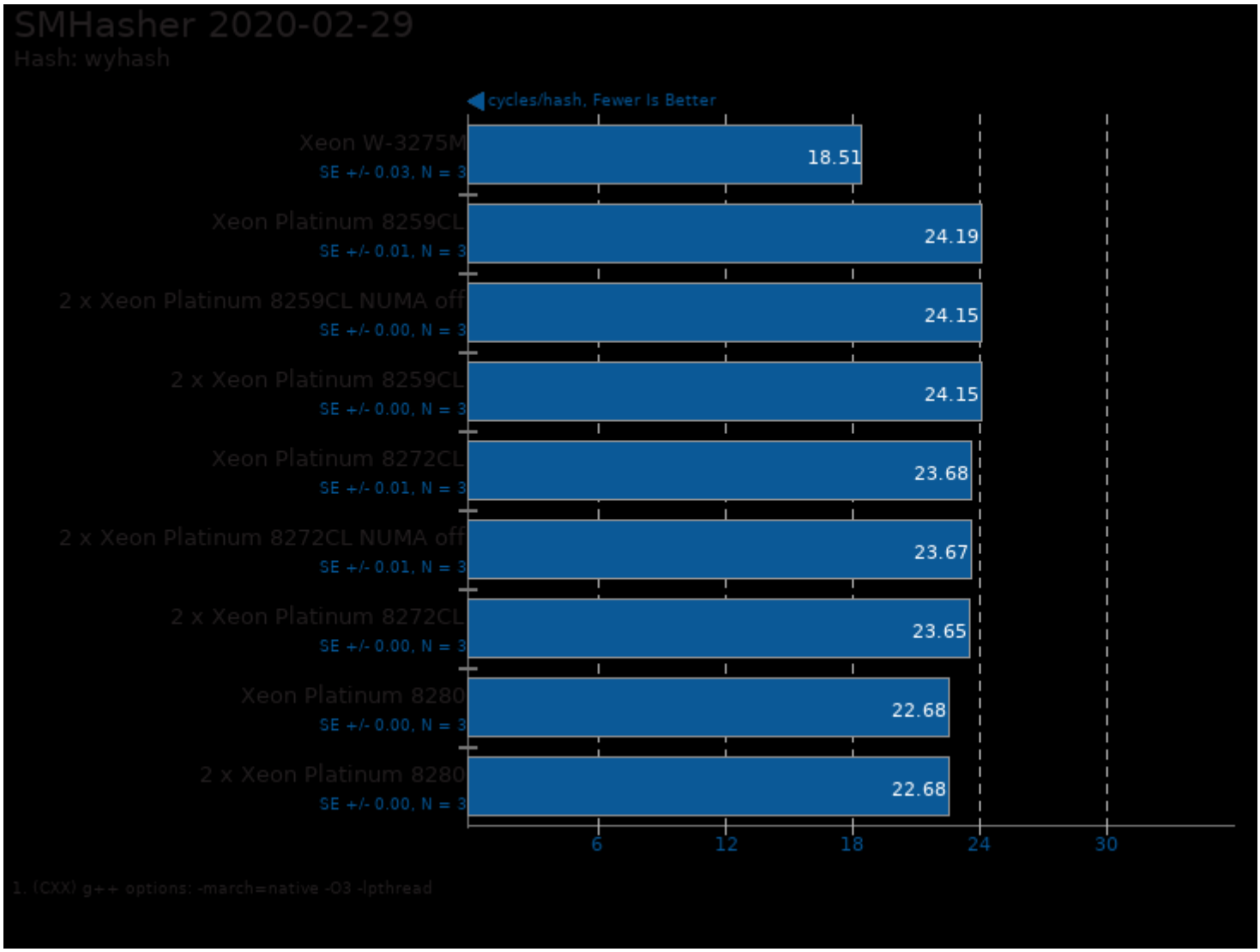

NAS Parallel Benchmarks 3.4
Test / Class: LU.C
Total Mop/s, More Is Better
EPYC 2 7R32
SE +/- 139.53, N = 3
99821.89
Xeon W-3275M
SE +/- 35.10, N = 3
69606.84
Xeon Platinum 8259CL
SE +/- 7.82, N = 3
65522.46
2 x Xeon Platinum 8259CL NUMA off
SE +/- 32.58, N = 3
94642.99
2 x Xeon Platinum 8259CL
SE +/- 55.32, N = 3
120961.91
Xeon Platinum 8280
SE +/- 82.95, N = 3
74255.67
2 x Xeon Platinum 8280
SE +/- 188.25, N = 3
140090.32
Xeon Platinum 8375C
SE +/- 630.50, N = 3
97414.07
2 x Xeon Platinum 8375C NUMA off
SE +/- 1042.35, N = 3
152798.56
2 x Xeon Platinum 8375C
SE +/- 2597.03, N = 15
177387.18
40K
80K
120K
160K
200K
1. (F9X) gfortran options: -O3 -march=native -pthread -lmpi_usempif08 -lmpi_mpifh -lmpi
2. EPYC 2 7R32: Open MPI 3.1.3
3. Xeon W-3275M: Open MPI 3.1.3
4. Xeon Platinum 8259CL: Open MPI 3.1.3
5. 2 x Xeon Platinum 8259CL NUMA off: Open MPI 3.1.3
6. 2 x Xeon Platinum 8259CL: Open MPI 3.1.3
7. Xeon Platinum 8280: Open MPI 4.0.3rc4
8. 2 x Xeon Platinum 8280: Open MPI 4.0.3rc4
9. Xeon Platinum 8375C: Open MPI 3.1.3
10. 2 x Xeon Platinum 8375C NUMA off: Open MPI 3.1.3
11. 2 x Xeon Platinum 8375C: Open MPI 3.1.3

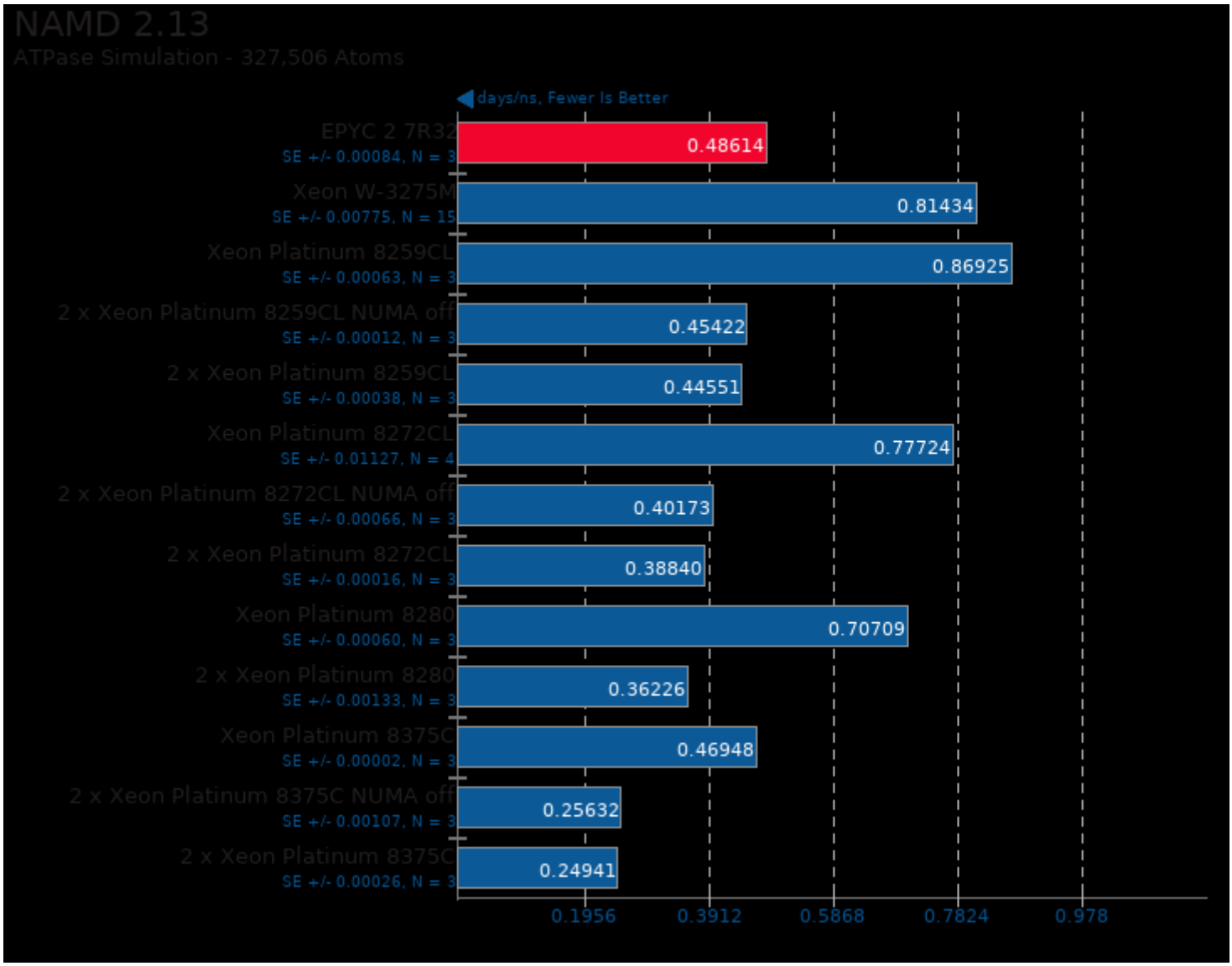

NAS Parallel Benchmarks 3.4
Test / Class: MG.C
Total Mop/s, More Is Better
EPYC 2 7R32
SE +/- 796.48, N = 3
49330.15
Xeon W-3275M
SE +/- 40.04, N = 3
35376.11
Xeon Platinum 8259CL
SE +/- 114.90, N = 3
33490.03
2 x Xeon Platinum 8259CL NUMA off
SE +/- 420.94, N = 3
43490.15
2 x Xeon Platinum 8259CL
SE +/- 304.73, N = 3
63393.35
Xeon Platinum 8272CL
SE +/- 23.88, N = 3
34708.60
2 x Xeon Platinum 8272CL NUMA off
SE +/- 31.00, N = 3
45188.23
2 x Xeon Platinum 8272CL
SE +/- 229.09, N = 3
66470.56
Xeon Platinum 8280
SE +/- 129.93, N = 3
37089.05
2 x Xeon Platinum 8280
SE +/- 860.82, N = 5
69175.12
Xeon Platinum 8375C
SE +/- 926.87, N = 15
50840.76
2 x Xeon Platinum 8375C NUMA off
SE +/- 131.11, N = 3
82390.24
2 x Xeon Platinum 8375C
SE +/- 1012.46, N = 3
111939.62
20K
40K
60K
80K
100K
1. (F9X) gfortran options: -O3 -march=native -pthread -lmpi_usempif08 -lmpi_mpifh -lmpi
2. EPYC 2 7R32: Open MPI 3.1.3
3. Xeon W-3275M: Open MPI 3.1.3
4. Xeon Platinum 8259CL: Open MPI 3.1.3
5. 2 x Xeon Platinum 8259CL NUMA off: Open MPI 3.1.3
6. 2 x Xeon Platinum 8259CL: Open MPI 3.1.3
7. Xeon Platinum 8272CL: Open MPI 3.1.3
8. 2 x Xeon Platinum 8272CL NUMA off: Open MPI 3.1.3
9. 2 x Xeon Platinum 8272CL: Open MPI 3.1.3
10. Xeon Platinum 8280: Open MPI 4.0.3rc4
11. 2 x Xeon Platinum 8280: Open MPI 4.0.3rc4
12. Xeon Platinum 8375C: Open MPI 3.1.3
13. 2 x Xeon Platinum 8375C NUMA off: Open MPI 3.1.3
14. 2 x Xeon Platinum 8375C: Open MPI 3.1.3

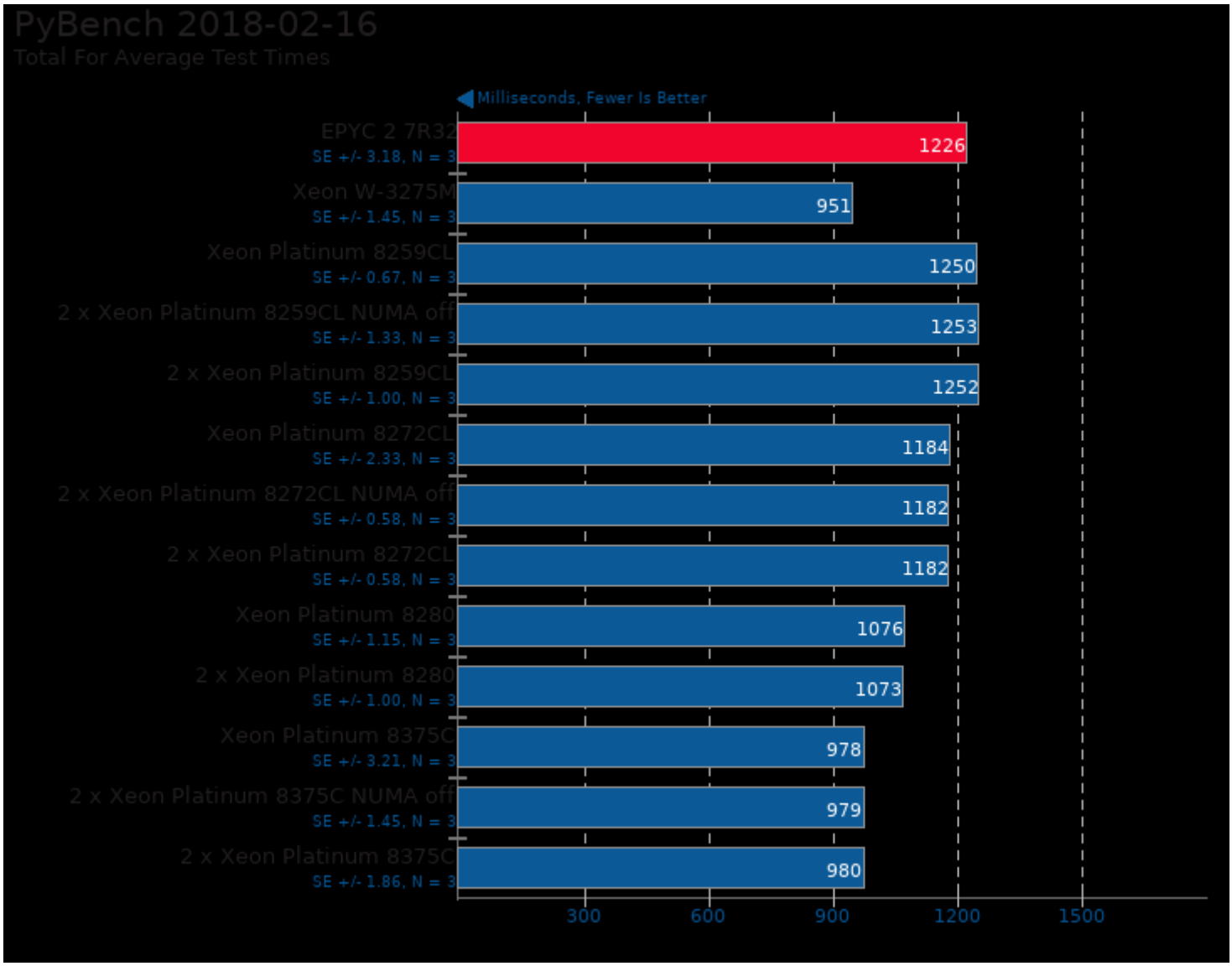

NAS Parallel Benchmarks 3.4
Test / Class: SP.B
Total Mop/s, More Is Better
EPYC 2 7R32
SE +/- 520.84, N = 15
51225.18
Xeon W-3275M
SE +/- 146.25, N = 3
31426.53
Xeon Platinum 8259CL
SE +/- 28.87, N = 3
24288.34
2 x Xeon Platinum 8259CL NUMA off
SE +/- 42.29, N = 3
38493.57
2 x Xeon Platinum 8259CL
SE +/- 77.17, N = 3
53978.90
Xeon Platinum 8272CL
SE +/- 115.29, N = 3
29919.01
2 x Xeon Platinum 8272CL NUMA off
SE +/- 22.17, N = 3
46295.79
2 x Xeon Platinum 8272CL
SE +/- 72.16, N = 3
66865.45
Xeon Platinum 8280
SE +/- 151.80, N = 3
32682.14
2 x Xeon Platinum 8280
SE +/- 115.61, N = 3
70893.41
Xeon Platinum 8375C
SE +/- 648.57, N = 15
46438.58
2 x Xeon Platinum 8375C NUMA off
SE +/- 1041.11, N = 15
86029.32
2 x Xeon Platinum 8375C
SE +/- 285.88, N = 3
112350.47
20K
40K
60K
80K
100K
1. (F9X) gfortran options: -O3 -march=native -pthread -lmpi_usempif08 -lmpi_mpifh -lmpi
2. EPYC 2 7R32: Open MPI 3.1.3
3. Xeon W-3275M: Open MPI 3.1.3
4. Xeon Platinum 8259CL: Open MPI 3.1.3
5. 2 x Xeon Platinum 8259CL NUMA off: Open MPI 3.1.3
6. 2 x Xeon Platinum 8259CL: Open MPI 3.1.3
7. Xeon Platinum 8272CL: Open MPI 3.1.3
8. 2 x Xeon Platinum 8272CL NUMA off: Open MPI 3.1.3
9. 2 x Xeon Platinum 8272CL: Open MPI 3.1.3
10. Xeon Platinum 8280: Open MPI 4.0.3rc4
11. 2 x Xeon Platinum 8280: Open MPI 4.0.3rc4
12. Xeon Platinum 8375C: Open MPI 3.1.3
13. 2 x Xeon Platinum 8375C NUMA off: Open MPI 3.1.3
14. 2 x Xeon Platinum 8375C: Open MPI 3.1.3

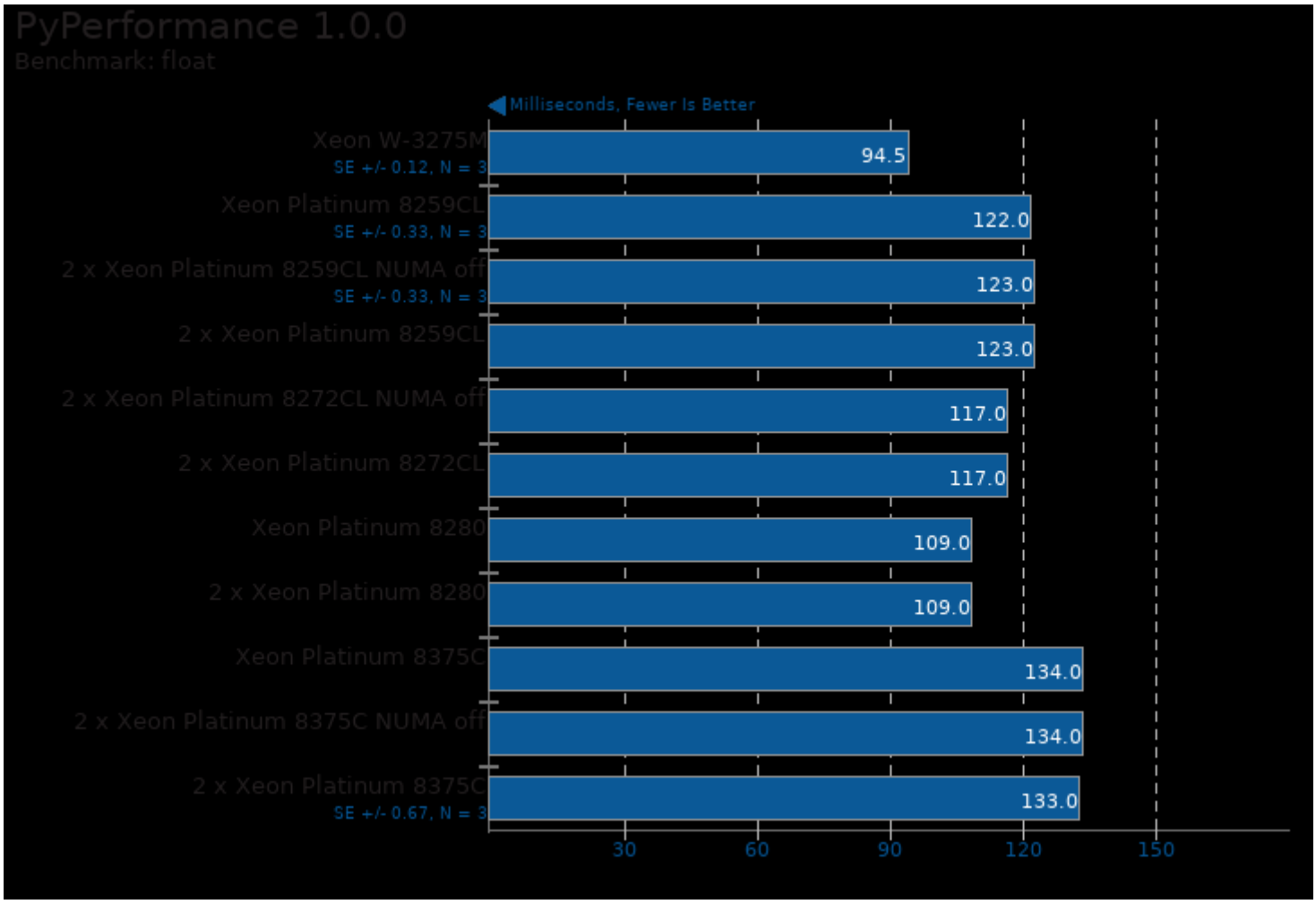

PostgreSQL pgbench 12.0
Scaling: Buffer Test - Test: Normal Load - Mode: Read Only
TPS, More Is Better
EPYC 2 7R32
SE +/- 953.22, N = 3
891303.12
Xeon W-3275M
SE +/- 3571.60, N = 3
567696.51
Xeon Platinum 8259CL
SE +/- 194.45, N = 3
512031.42
2 x Xeon Platinum 8259CL NUMA off
SE +/- 1194.42, N = 3
790827.57
2 x Xeon Platinum 8259CL
SE +/- 2473.02, N = 3
795715.31
Xeon Platinum 8272CL
SE +/- 2217.17, N = 3
546028.34
2 x Xeon Platinum 8272CL NUMA off
SE +/- 12996.71, N = 4
873066.76
2 x Xeon Platinum 8272CL
SE +/- 2758.93, N = 3
857060.94
Xeon Platinum 8280
SE +/- 1625.61, N = 3
560887.77
2 x Xeon Platinum 8280
SE +/- 10457.35, N = 3
909916.49
Xeon Platinum 8375C
SE +/- 3720.11, N = 3
751908.53
2 x Xeon Platinum 8375C NUMA off
SE +/- 3241.20, N = 3
735555.97
2 x Xeon Platinum 8375C
SE +/- 83725.25, N = 9
1063447.92
200K
400K
600K
800K
1000K
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lpthread -lrt -lcrypt -ldl -lm

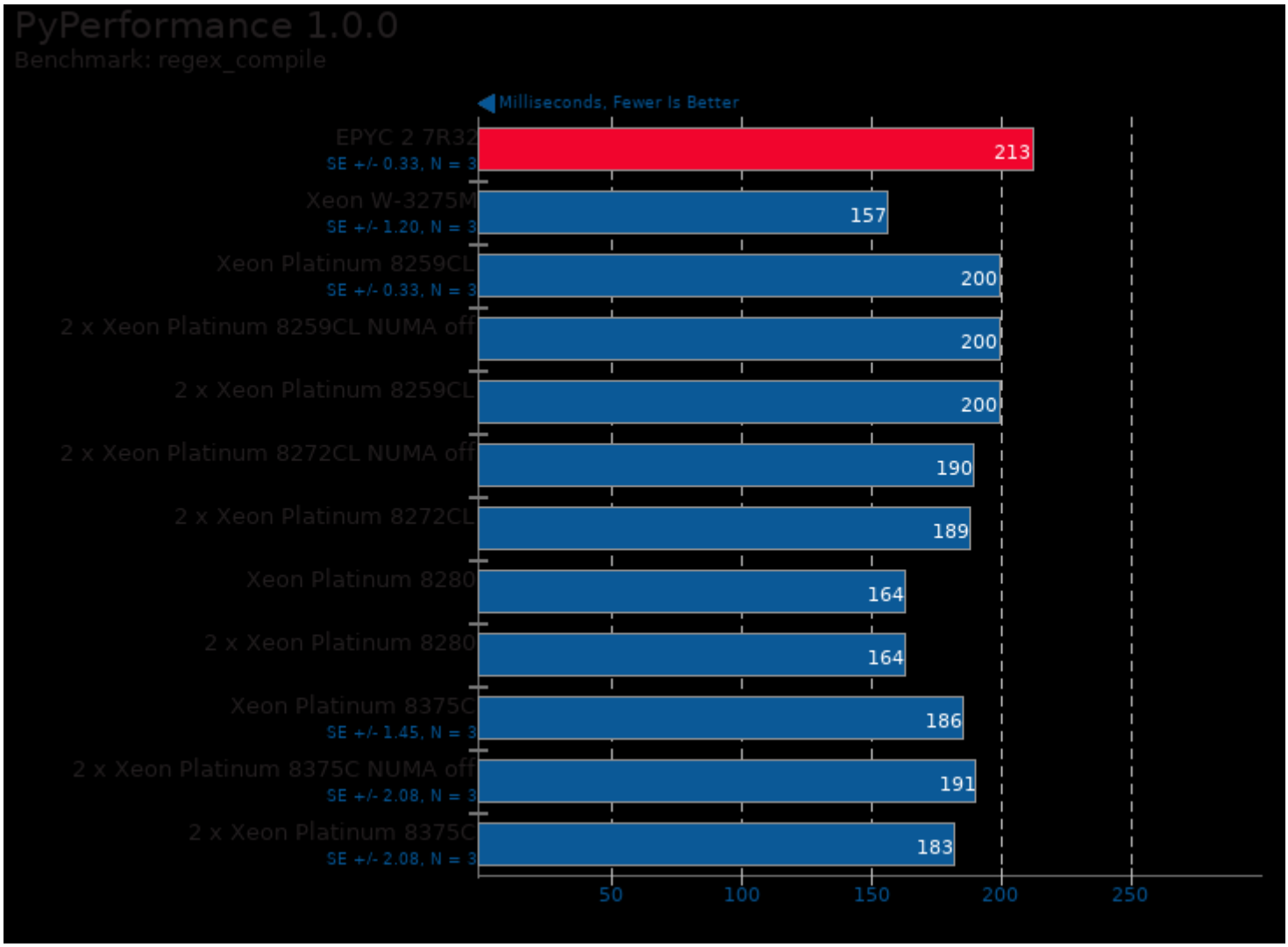

PostgreSQL pgbench 12.0
Scaling: Buffer Test - Test: Normal Load - Mode: Read Write
TPS, More Is Better
EPYC 2 7R32
SE +/- 319.58, N = 12
6105.73
Xeon W-3275M
SE +/- 85.02, N = 3
11704.23
Xeon Platinum 8259CL
SE +/- 245.15, N = 12
5941.32
2 x Xeon Platinum 8259CL NUMA off
SE +/- 408.27, N = 6
3168.73
2 x Xeon Platinum 8259CL
SE +/- 56.30, N = 3
4009.41
Xeon Platinum 8272CL
SE +/- 151.64, N = 9
4087.30
2 x Xeon Platinum 8272CL NUMA off
SE +/- 204.93, N = 12
4921.08
2 x Xeon Platinum 8272CL
SE +/- 72.69, N = 6
2150.92
Xeon Platinum 8280
SE +/- 370.72, N = 3
53139.06
2 x Xeon Platinum 8280
SE +/- 19.82, N = 3
24466.91
Xeon Platinum 8375C
SE +/- 156.69, N = 9
3870.43
2 x Xeon Platinum 8375C NUMA off
SE +/- 312.08, N = 9
4148.69
2 x Xeon Platinum 8375C
SE +/- 61.49, N = 9
3301.68
11K
22K
33K
44K
55K
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lpthread -lrt -lcrypt -ldl -lm

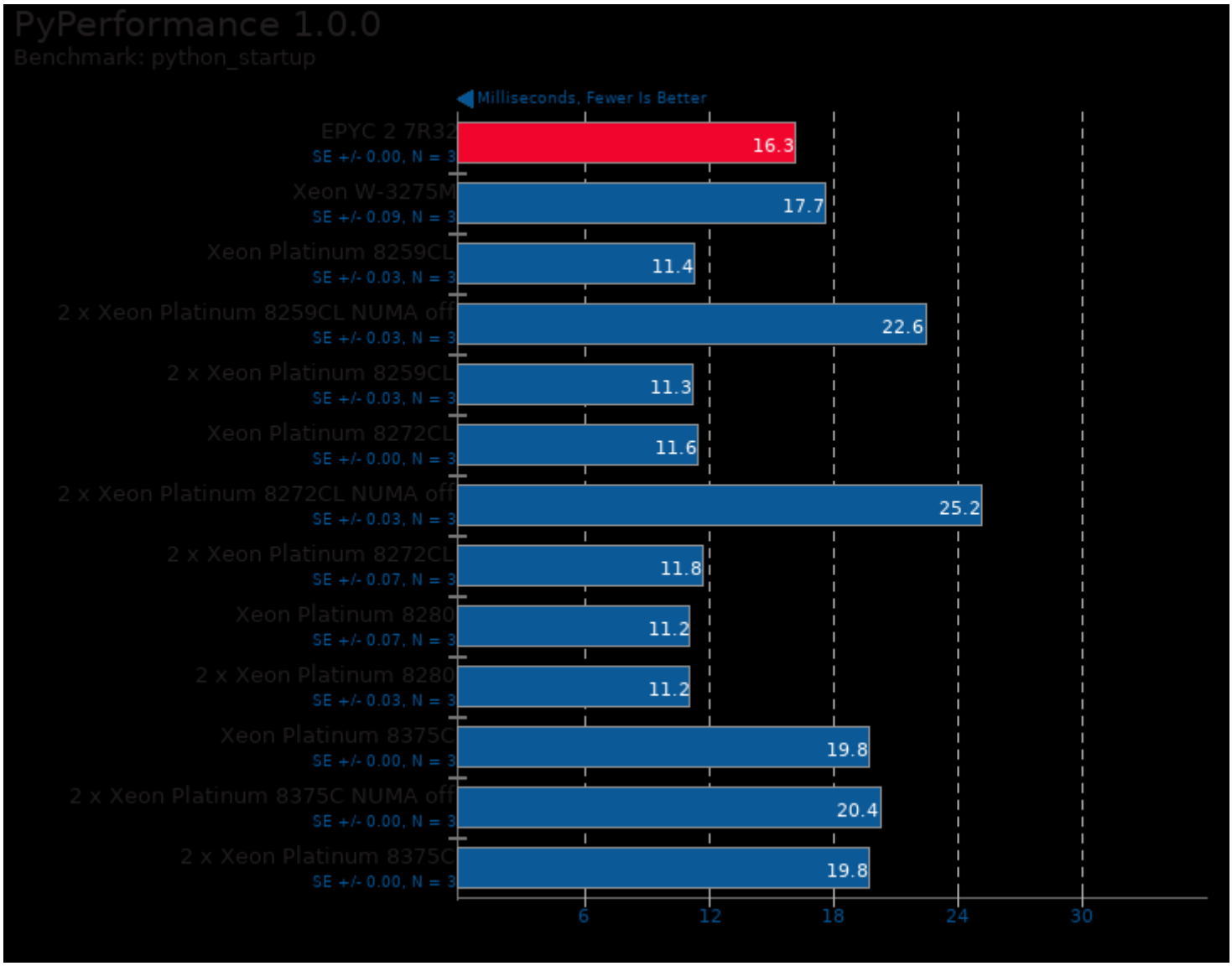

SMHasher 2020-02-29
Hash: wyhash
cycles/hash, Fewer Is Better
Xeon W-3275M
SE +/- 0.03, N = 3
18.51
Xeon Platinum 8259CL
SE +/- 0.01, N = 3
24.19
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.00, N = 3
24.15
2 x Xeon Platinum 8259CL
SE +/- 0.00, N = 3
24.15
Xeon Platinum 8272CL
SE +/- 0.01, N = 3
23.68
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.01, N = 3
23.67
2 x Xeon Platinum 8272CL
SE +/- 0.00, N = 3
23.65
Xeon Platinum 8280
SE +/- 0.00, N = 3
22.68
2 x Xeon Platinum 8280
SE +/- 0.00, N = 3
22.68
6
12
18
24
30
1. (CXX) g++ options: -march=native -O3 -lpthread

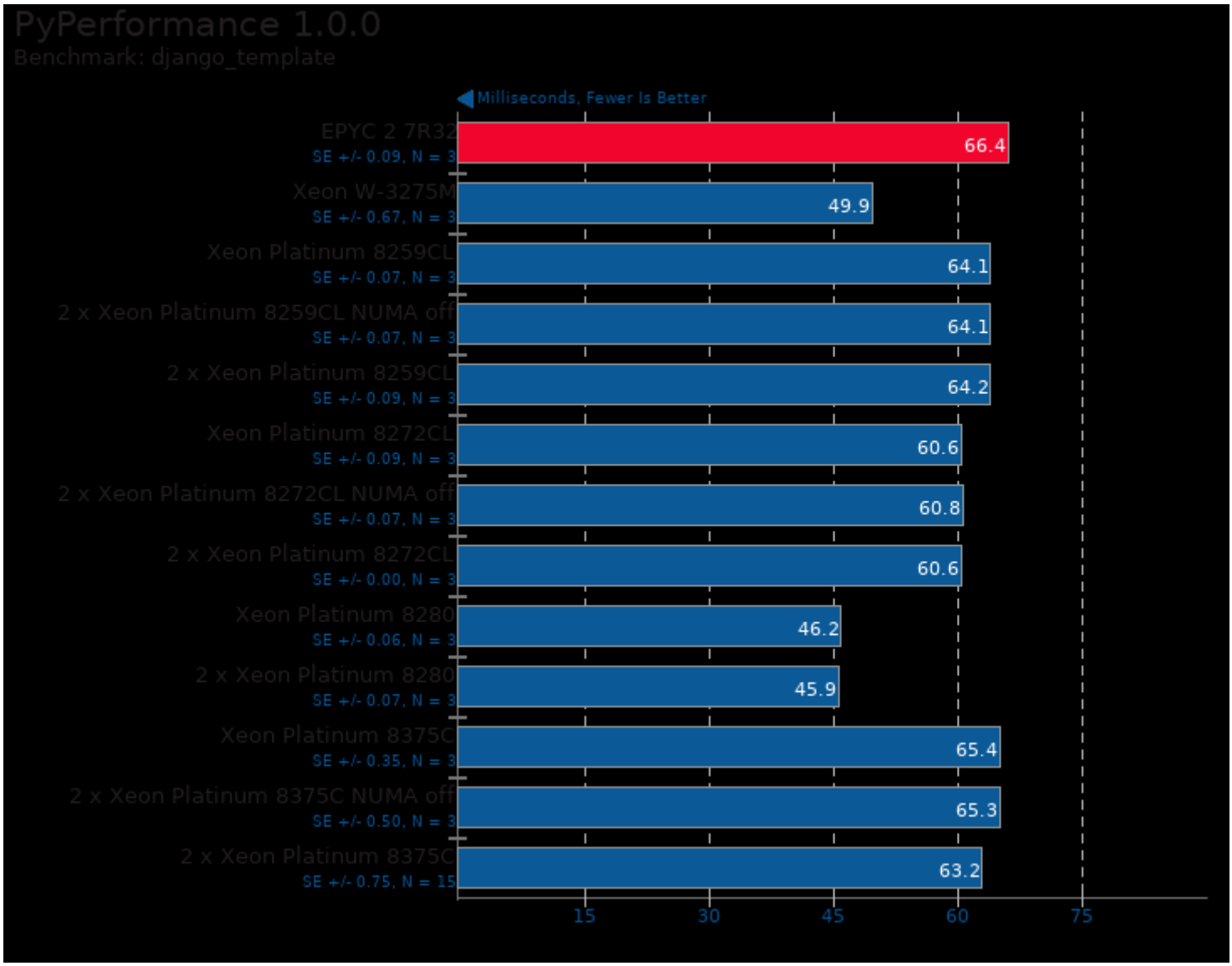

NAMD 2.13
ATPase Simulation - 327,506 Atoms
days/ns, Fewer Is Better
EPYC 2 7R32
SE +/- 0.00084, N = 3
0.48614
Xeon W-3275M
SE +/- 0.00775, N = 15
0.81434
Xeon Platinum 8259CL
SE +/- 0.00063, N = 3
0.86925
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.00012, N = 3
0.45422
2 x Xeon Platinum 8259CL
SE +/- 0.00038, N = 3
0.44551
Xeon Platinum 8272CL
SE +/- 0.01127, N = 4
0.77724
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.00066, N = 3
0.40173
2 x Xeon Platinum 8272CL
SE +/- 0.00016, N = 3
0.38840
Xeon Platinum 8280
SE +/- 0.00060, N = 3
0.70709
2 x Xeon Platinum 8280
SE +/- 0.00133, N = 3
0.36226
Xeon Platinum 8375C
SE +/- 0.00002, N = 3
0.46948
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.00107, N = 3
0.25632
2 x Xeon Platinum 8375C
SE +/- 0.00026, N = 3
0.24941
0.1956
0.3912
0.5868
0.7824
0.978

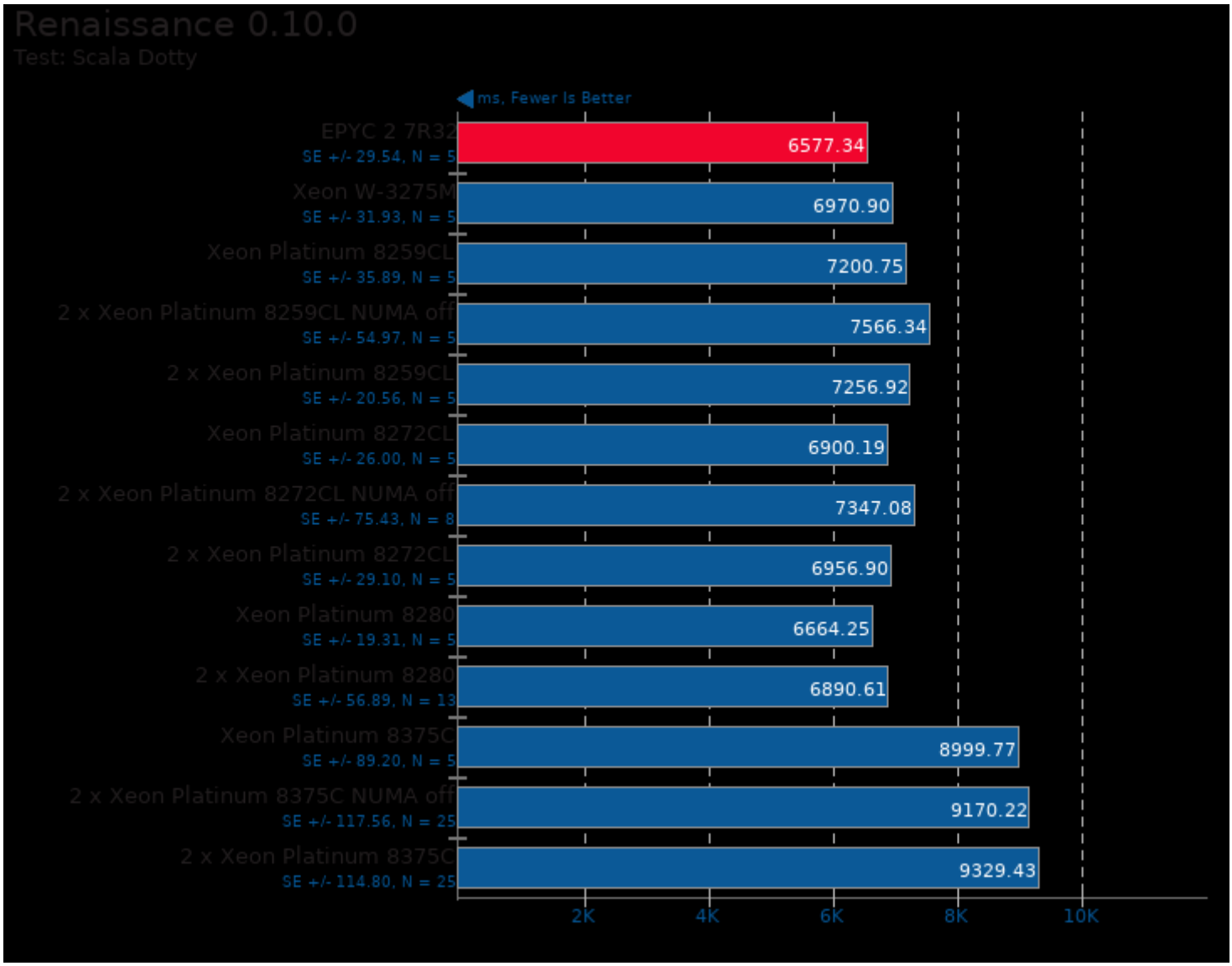

PyBench 2018-02-16
Total For Average Test Times
Milliseconds, Fewer Is Better
EPYC 2 7R32
SE +/- 3.18, N = 3
1226
Xeon W-3275M
SE +/- 1.45, N = 3
951
Xeon Platinum 8259CL
SE +/- 0.67, N = 3
1250
2 x Xeon Platinum 8259CL NUMA off
SE +/- 1.33, N = 3
1253
2 x Xeon Platinum 8259CL
SE +/- 1.00, N = 3
1252
Xeon Platinum 8272CL
SE +/- 2.33, N = 3
1184
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.58, N = 3
1182
2 x Xeon Platinum 8272CL
SE +/- 0.58, N = 3
1182
Xeon Platinum 8280
SE +/- 1.15, N = 3
1076
2 x Xeon Platinum 8280
SE +/- 1.00, N = 3
1073
Xeon Platinum 8375C
SE +/- 3.21, N = 3
978
2 x Xeon Platinum 8375C NUMA off
SE +/- 1.45, N = 3
979
2 x Xeon Platinum 8375C
SE +/- 1.86, N = 3
980
300
600
900
1200
1500

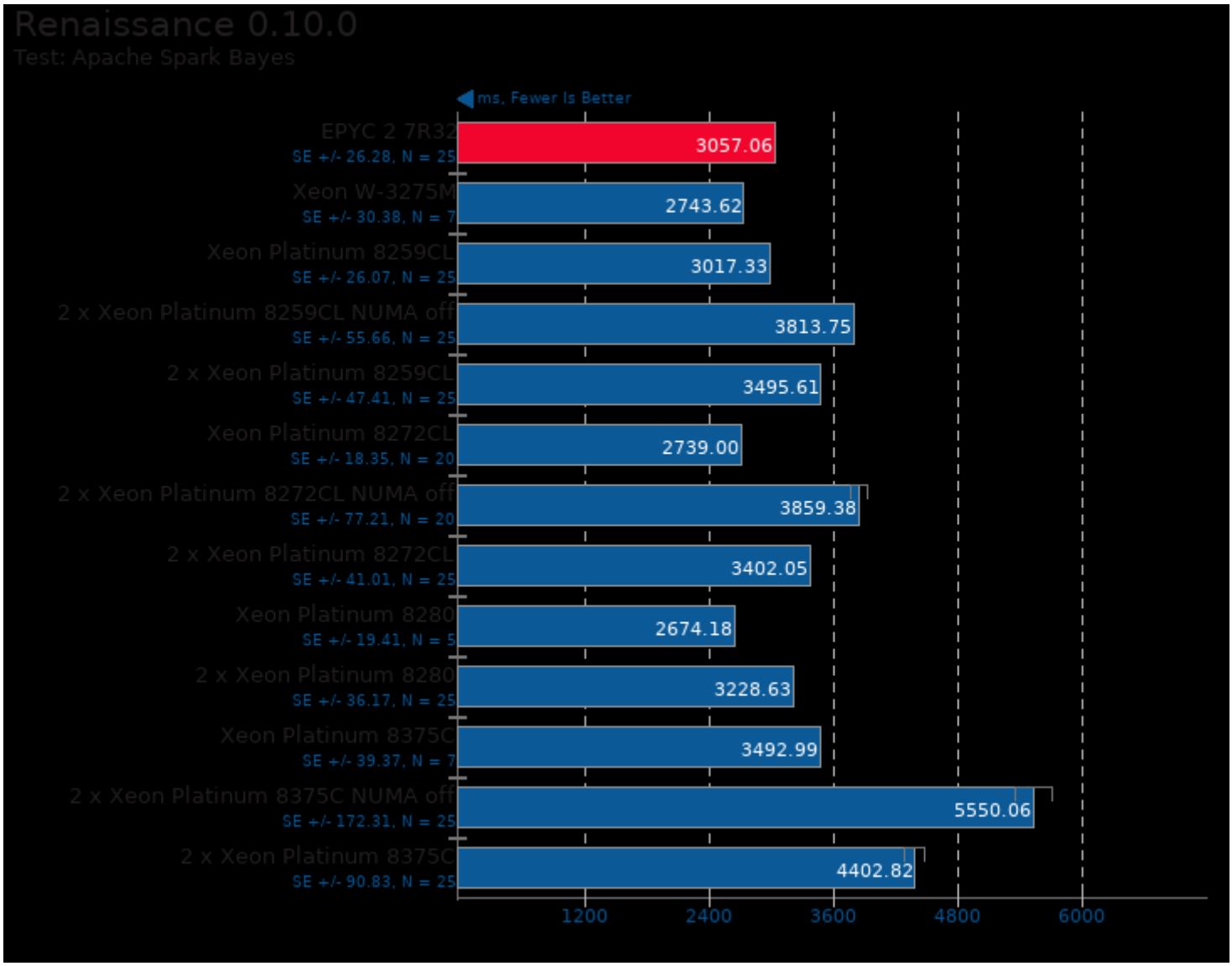

PyPerformance 1.0.0
Benchmark: float
Milliseconds, Fewer Is Better
Xeon W-3275M
SE +/- 0.12, N = 3
94.5
Xeon Platinum 8259CL
SE +/- 0.33, N = 3
122.0
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.33, N = 3
123.0
2 x Xeon Platinum 8259CL
123.0
2 x Xeon Platinum 8272CL NUMA off
117.0
2 x Xeon Platinum 8272CL
117.0
Xeon Platinum 8280
109.0
2 x Xeon Platinum 8280
109.0
Xeon Platinum 8375C
134.0
2 x Xeon Platinum 8375C NUMA off
134.0
2 x Xeon Platinum 8375C
SE +/- 0.67, N = 3
133.0
30
60
90
120
150

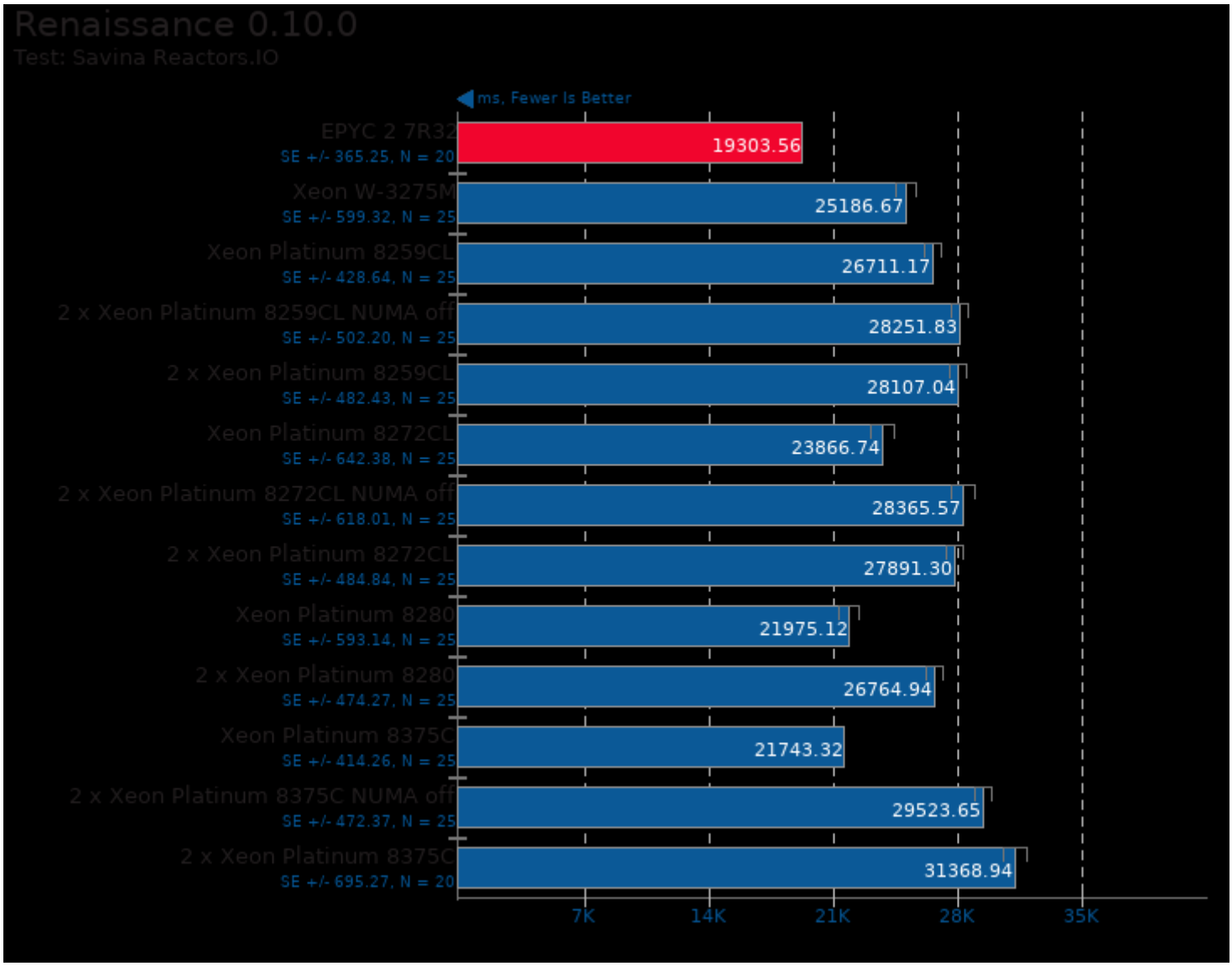

PyPerformance 1.0.0
Benchmark: regex_compile
Milliseconds, Fewer Is Better
EPYC 2 7R32
SE +/- 0.33, N = 3
213
Xeon W-3275M
SE +/- 1.20, N = 3
157
Xeon Platinum 8259CL
SE +/- 0.33, N = 3
200
2 x Xeon Platinum 8259CL NUMA off
200
2 x Xeon Platinum 8259CL
200
2 x Xeon Platinum 8272CL NUMA off
190
2 x Xeon Platinum 8272CL
189
Xeon Platinum 8280
164
2 x Xeon Platinum 8280
164
Xeon Platinum 8375C
SE +/- 1.45, N = 3
186
2 x Xeon Platinum 8375C NUMA off
SE +/- 2.08, N = 3
191
2 x Xeon Platinum 8375C
SE +/- 2.08, N = 3
183
50
100
150
200
250

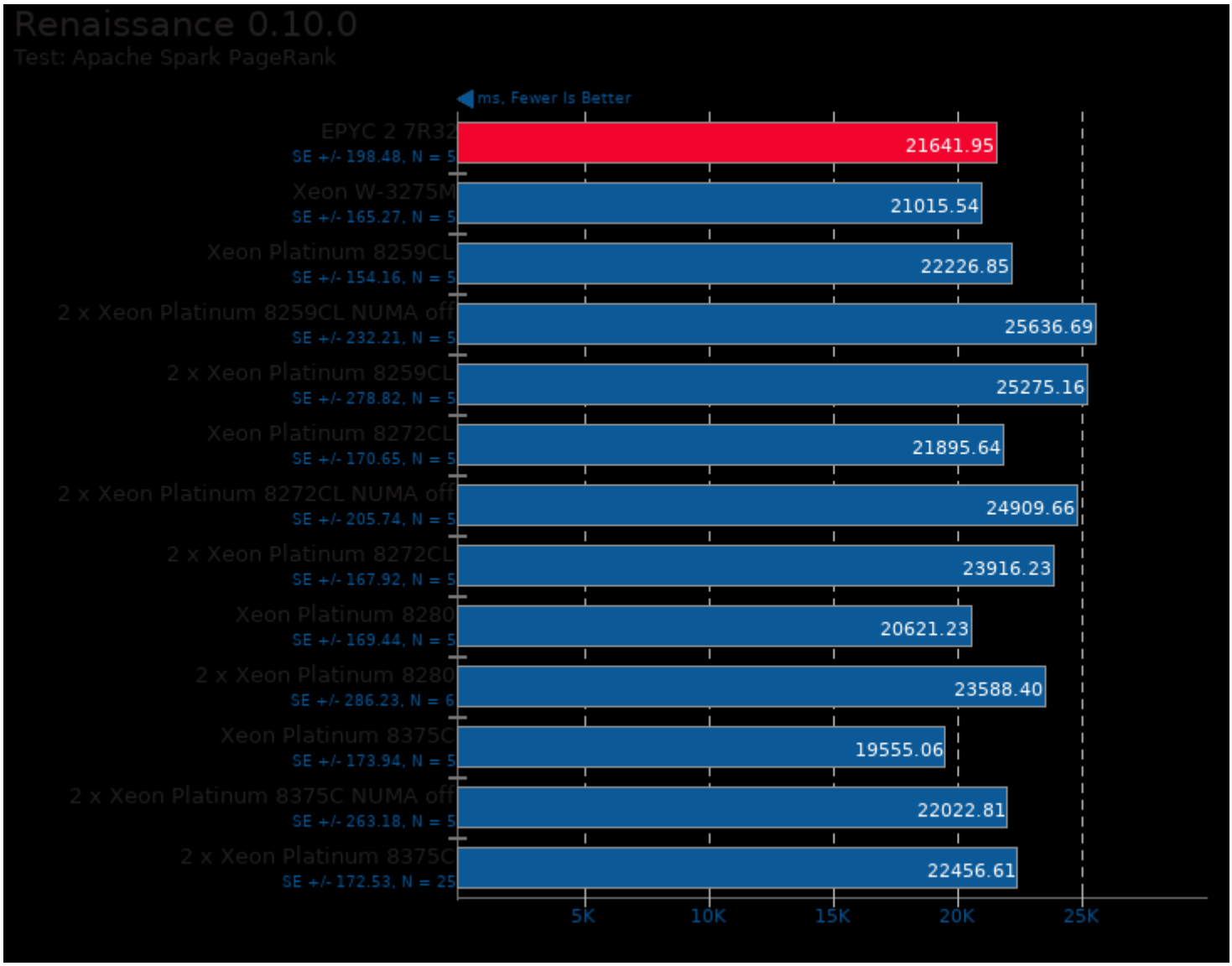

PyPerformance 1.0.0
Benchmark: python_startup
Milliseconds, Fewer Is Better
EPYC 2 7R32
SE +/- 0.00, N = 3
16.3
Xeon W-3275M
SE +/- 0.09, N = 3
17.7
Xeon Platinum 8259CL
SE +/- 0.03, N = 3
11.4
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.03, N = 3
22.6
2 x Xeon Platinum 8259CL
SE +/- 0.03, N = 3
11.3
Xeon Platinum 8272CL
SE +/- 0.00, N = 3
11.6
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.03, N = 3
25.2
2 x Xeon Platinum 8272CL
SE +/- 0.07, N = 3
11.8
Xeon Platinum 8280
SE +/- 0.07, N = 3
11.2
2 x Xeon Platinum 8280
SE +/- 0.03, N = 3
11.2
Xeon Platinum 8375C
SE +/- 0.00, N = 3
19.8
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.00, N = 3
20.4
2 x Xeon Platinum 8375C
SE +/- 0.00, N = 3
19.8
6
12
18
24
30

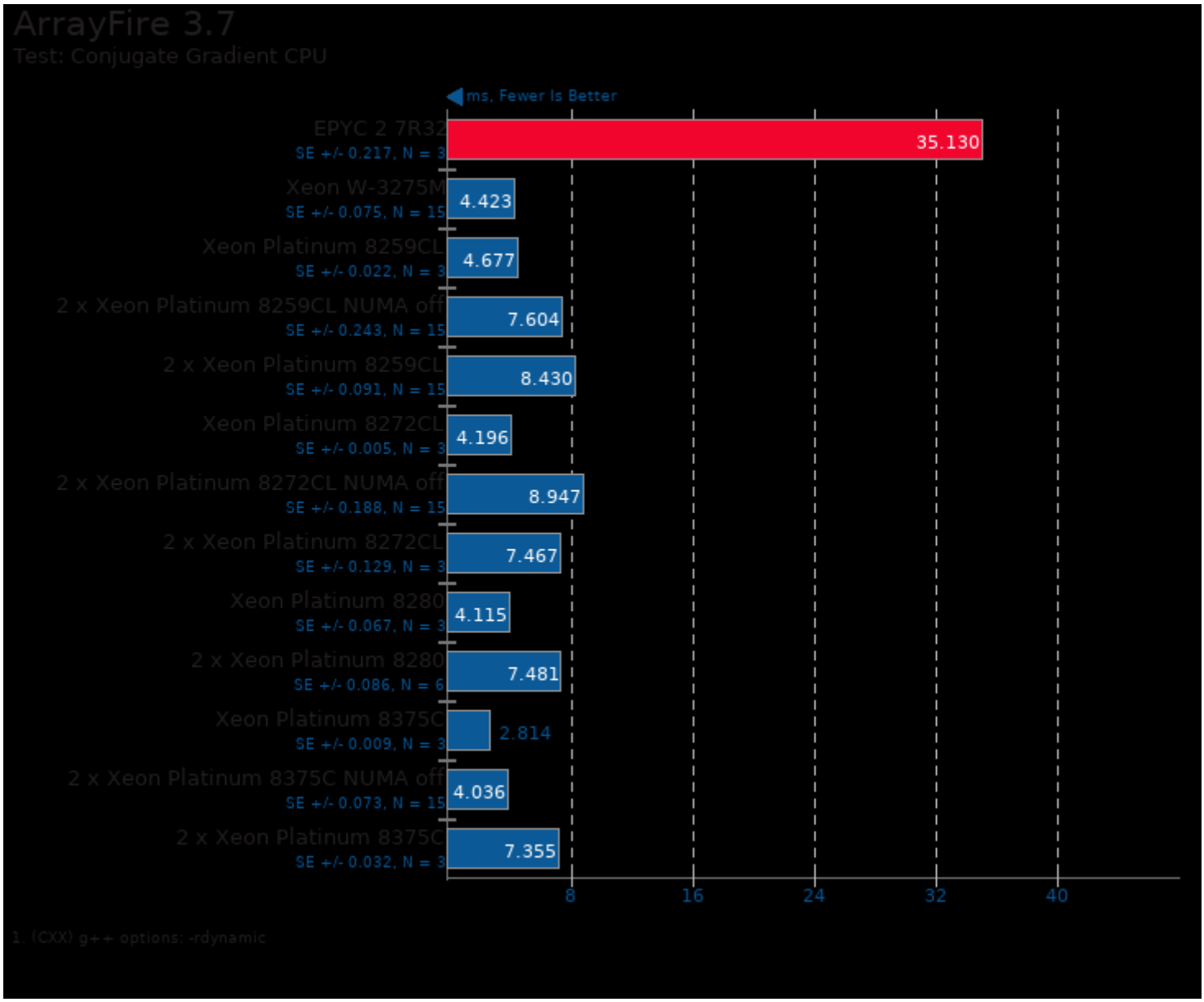

PyPerformance 1.0.0
Benchmark: django_template
Milliseconds, Fewer Is Better
EPYC 2 7R32
SE +/- 0.09, N = 3
66.4
Xeon W-3275M
SE +/- 0.67, N = 3
49.9
Xeon Platinum 8259CL
SE +/- 0.07, N = 3
64.1
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.07, N = 3
64.1
2 x Xeon Platinum 8259CL
SE +/- 0.09, N = 3
64.2
Xeon Platinum 8272CL
SE +/- 0.09, N = 3
60.6
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.07, N = 3
60.8
2 x Xeon Platinum 8272CL
SE +/- 0.00, N = 3
60.6
Xeon Platinum 8280
SE +/- 0.06, N = 3
46.2
2 x Xeon Platinum 8280
SE +/- 0.07, N = 3
45.9
Xeon Platinum 8375C
SE +/- 0.35, N = 3
65.4
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.50, N = 3
65.3
2 x Xeon Platinum 8375C
SE +/- 0.75, N = 15
63.2
15
30
45
60
75

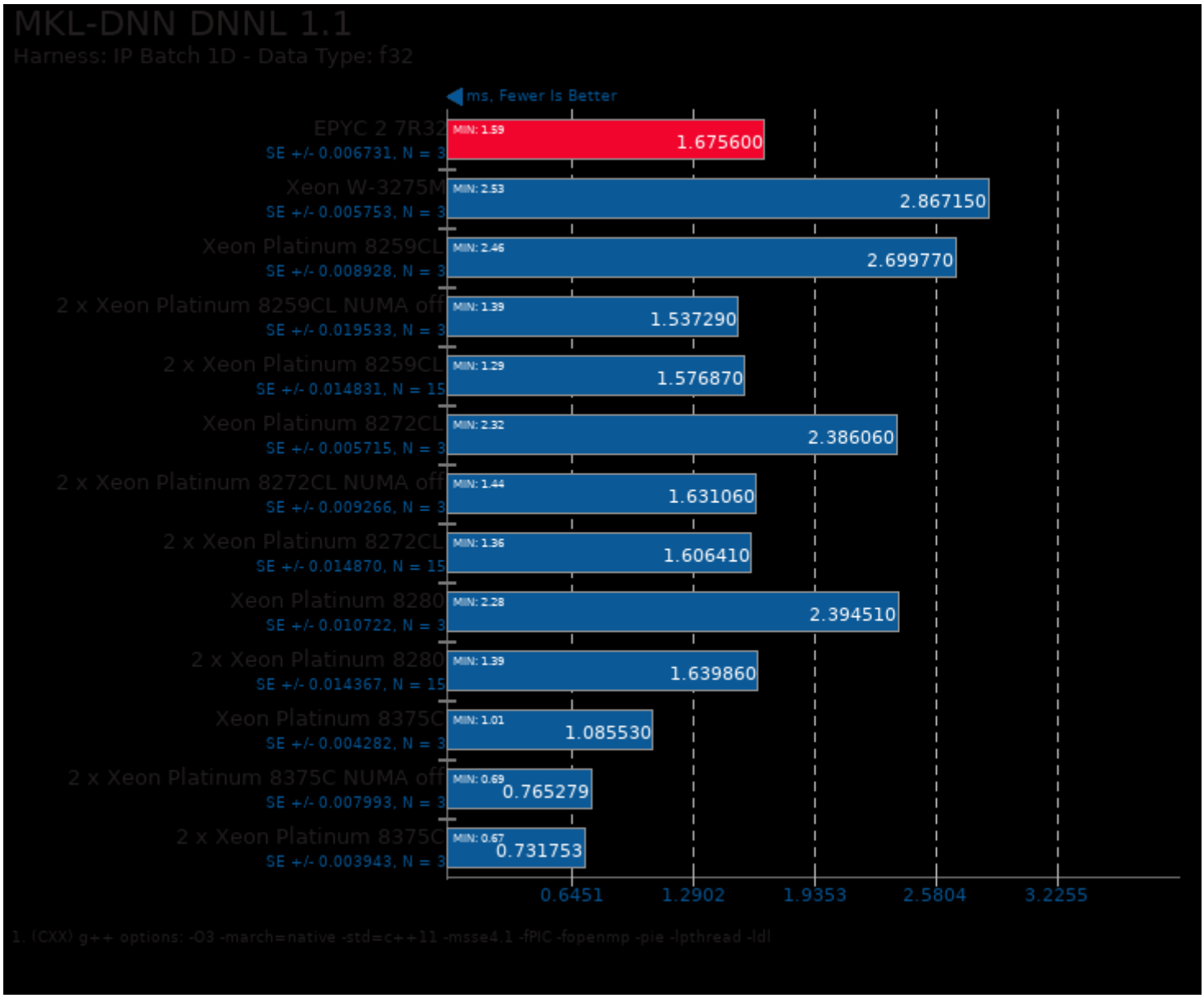

Renaissance 0.10.0
Test: Scala Dotty
ms, Fewer Is Better
EPYC 2 7R32
SE +/- 29.54, N = 5
6577.34
Xeon W-3275M
SE +/- 31.93, N = 5
6970.90
Xeon Platinum 8259CL
SE +/- 35.89, N = 5
7200.75
2 x Xeon Platinum 8259CL NUMA off
SE +/- 54.97, N = 5
7566.34
2 x Xeon Platinum 8259CL
SE +/- 20.56, N = 5
7256.92
Xeon Platinum 8272CL
SE +/- 26.00, N = 5
6900.19
2 x Xeon Platinum 8272CL NUMA off
SE +/- 75.43, N = 8
7347.08
2 x Xeon Platinum 8272CL
SE +/- 29.10, N = 5
6956.90
Xeon Platinum 8280
SE +/- 19.31, N = 5
6664.25
2 x Xeon Platinum 8280
SE +/- 56.89, N = 13
6890.61
Xeon Platinum 8375C
SE +/- 89.20, N = 5
8999.77
2 x Xeon Platinum 8375C NUMA off
SE +/- 117.56, N = 25
9170.22
2 x Xeon Platinum 8375C
SE +/- 114.80, N = 25
9329.43
2K
4K
6K
8K
10K

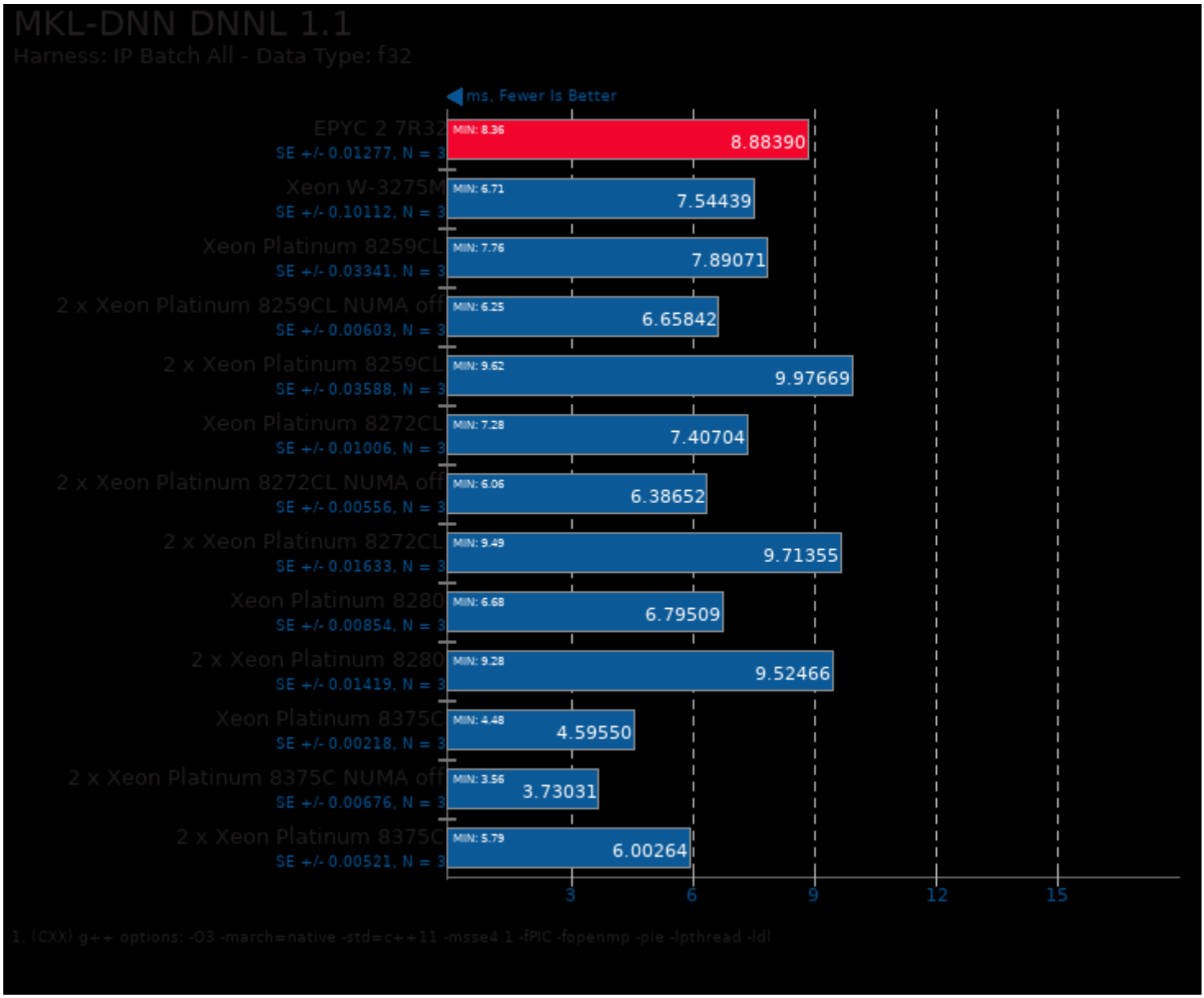

Renaissance 0.10.0
Test: Apache Spark Bayes
ms, Fewer Is Better
EPYC 2 7R32
SE +/- 26.28, N = 25
3057.06
Xeon W-3275M
SE +/- 30.38, N = 7
2743.62
Xeon Platinum 8259CL
SE +/- 26.07, N = 25
3017.33
2 x Xeon Platinum 8259CL NUMA off
SE +/- 55.66, N = 25
3813.75
2 x Xeon Platinum 8259CL
SE +/- 47.41, N = 25
3495.61
Xeon Platinum 8272CL
SE +/- 18.35, N = 20
2739.00
2 x Xeon Platinum 8272CL NUMA off
SE +/- 77.21, N = 20
3859.38
2 x Xeon Platinum 8272CL
SE +/- 41.01, N = 25
3402.05
Xeon Platinum 8280
SE +/- 19.41, N = 5
2674.18
2 x Xeon Platinum 8280
SE +/- 36.17, N = 25
3228.63
Xeon Platinum 8375C
SE +/- 39.37, N = 7
3492.99
2 x Xeon Platinum 8375C NUMA off
SE +/- 172.31, N = 25
5550.06
2 x Xeon Platinum 8375C
SE +/- 90.83, N = 25
4402.82
1200
2400
3600
4800
6000

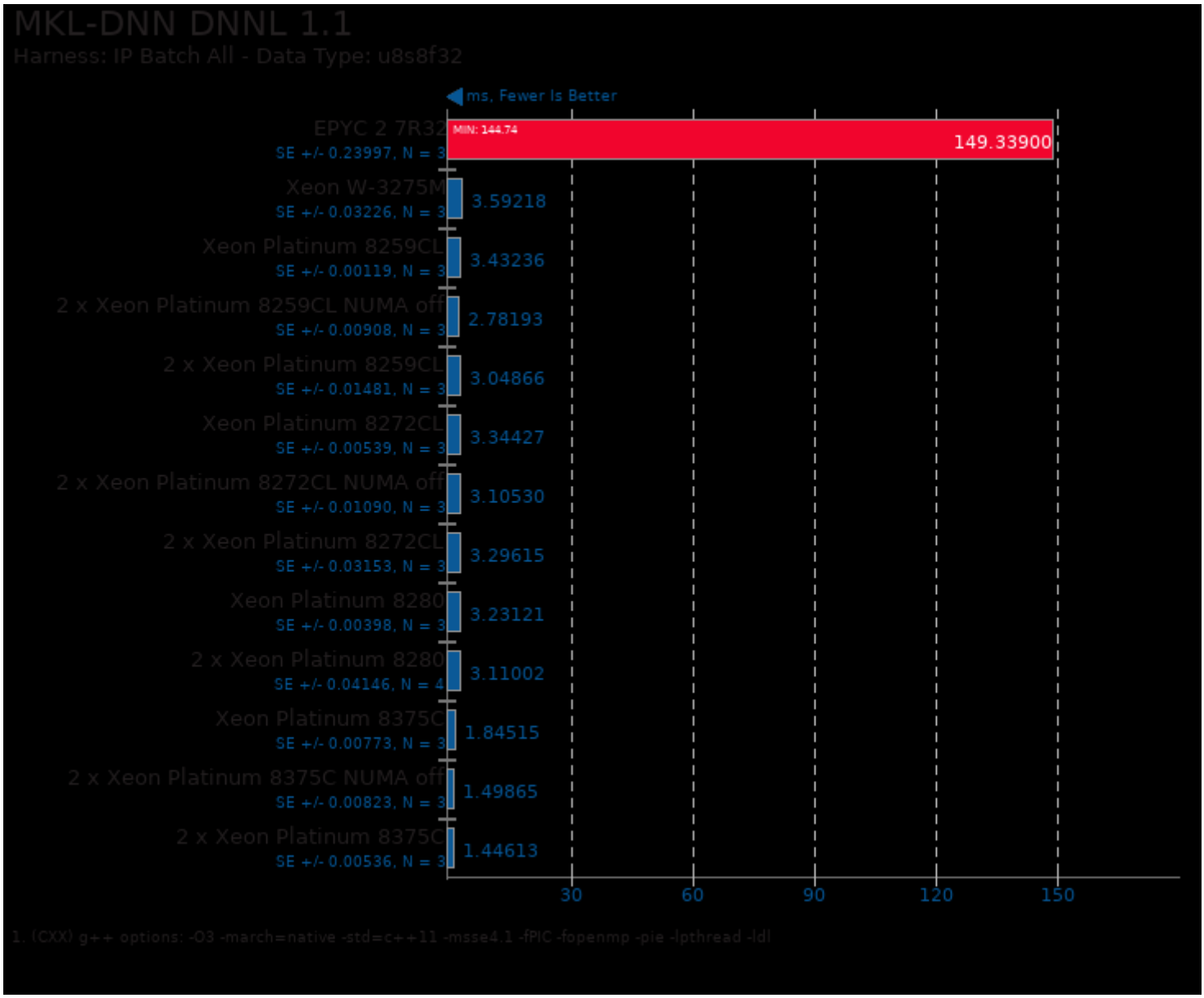

Renaissance 0.10.0
Test: Savina Reactors.IO
ms, Fewer Is Better
EPYC 2 7R32
SE +/- 365.25, N = 20
19303.56
Xeon W-3275M
SE +/- 599.32, N = 25
25186.67
Xeon Platinum 8259CL
SE +/- 428.64, N = 25
26711.17
2 x Xeon Platinum 8259CL NUMA off
SE +/- 502.20, N = 25
28251.83
2 x Xeon Platinum 8259CL
SE +/- 482.43, N = 25
28107.04
Xeon Platinum 8272CL
SE +/- 642.38, N = 25
23866.74
2 x Xeon Platinum 8272CL NUMA off
SE +/- 618.01, N = 25
28365.57
2 x Xeon Platinum 8272CL
SE +/- 484.84, N = 25
27891.30
Xeon Platinum 8280
SE +/- 593.14, N = 25
21975.12
2 x Xeon Platinum 8280
SE +/- 474.27, N = 25
26764.94
Xeon Platinum 8375C
SE +/- 414.26, N = 25
21743.32
2 x Xeon Platinum 8375C NUMA off
SE +/- 472.37, N = 25
29523.65
2 x Xeon Platinum 8375C
SE +/- 695.27, N = 20
31368.94
7K
14K
21K
28K
35K

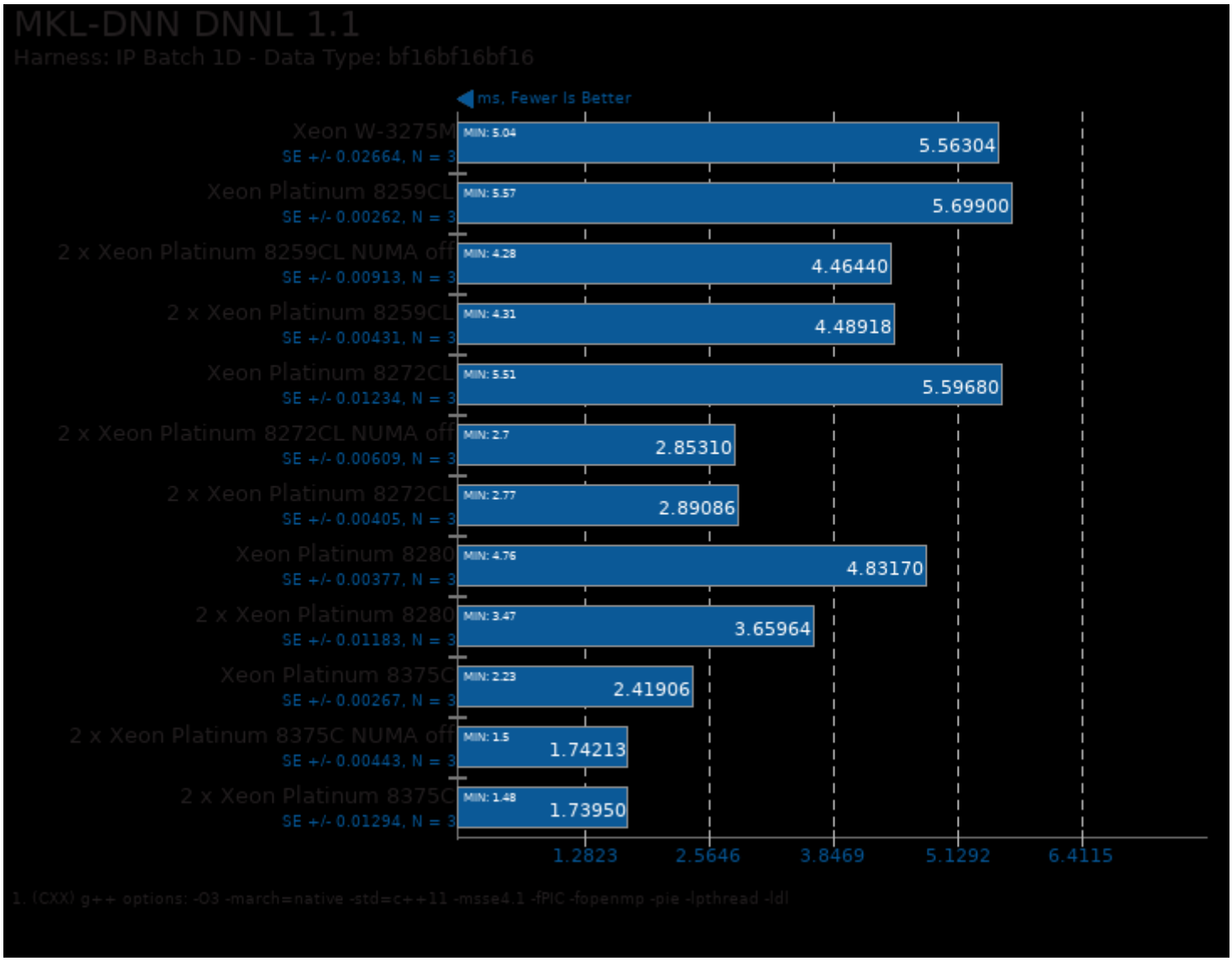

Renaissance 0.10.0
Test: Apache Spark PageRank
ms, Fewer Is Better
EPYC 2 7R32
SE +/- 198.48, N = 5
21641.95
Xeon W-3275M
SE +/- 165.27, N = 5
21015.54
Xeon Platinum 8259CL
SE +/- 154.16, N = 5
22226.85
2 x Xeon Platinum 8259CL NUMA off
SE +/- 232.21, N = 5
25636.69
2 x Xeon Platinum 8259CL
SE +/- 278.82, N = 5
25275.16
Xeon Platinum 8272CL
SE +/- 170.65, N = 5
21895.64
2 x Xeon Platinum 8272CL NUMA off
SE +/- 205.74, N = 5
24909.66
2 x Xeon Platinum 8272CL
SE +/- 167.92, N = 5
23916.23
Xeon Platinum 8280
SE +/- 169.44, N = 5
20621.23
2 x Xeon Platinum 8280
SE +/- 286.23, N = 6
23588.40
Xeon Platinum 8375C
SE +/- 173.94, N = 5
19555.06
2 x Xeon Platinum 8375C NUMA off
SE +/- 263.18, N = 5
22022.81
2 x Xeon Platinum 8375C
SE +/- 172.53, N = 25
22456.61
5K
10K
15K
20K
25K

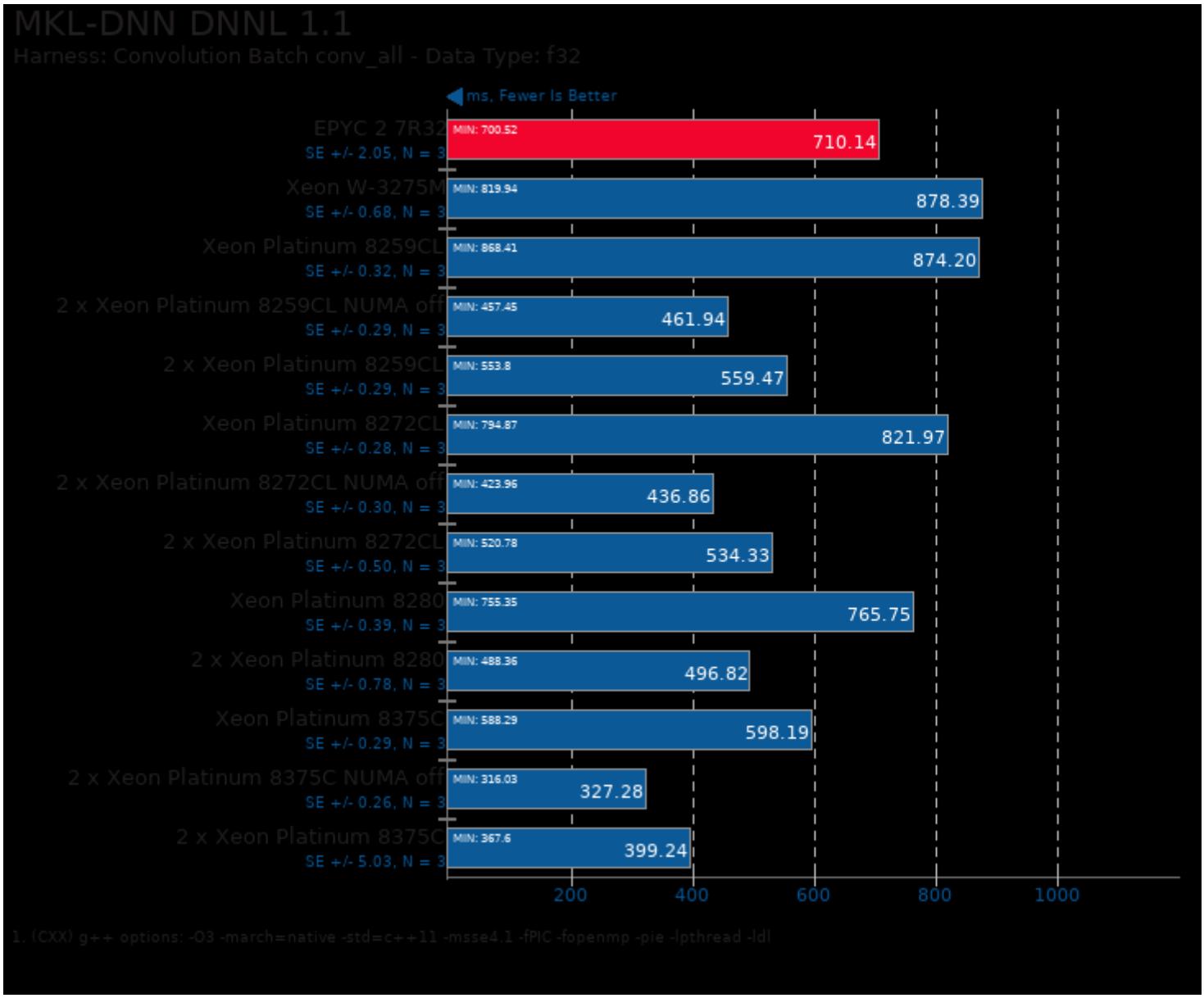

ArrayFire 3.7
Test: Conjugate Gradient CPU
ms, Fewer Is Better
EPYC 2 7R32
SE +/- 0.217, N = 3
35.130
Xeon W-3275M
SE +/- 0.075, N = 15
4.423
Xeon Platinum 8259CL
SE +/- 0.022, N = 3
4.677
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.243, N = 15
7.604
2 x Xeon Platinum 8259CL
SE +/- 0.091, N = 15
8.430
Xeon Platinum 8272CL
SE +/- 0.005, N = 3
4.196
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.188, N = 15
8.947
2 x Xeon Platinum 8272CL
SE +/- 0.129, N = 3
7.467
Xeon Platinum 8280
SE +/- 0.067, N = 3
4.115
2 x Xeon Platinum 8280
SE +/- 0.086, N = 6
7.481
Xeon Platinum 8375C
SE +/- 0.009, N = 3
2.814
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.073, N = 15
4.036
2 x Xeon Platinum 8375C
SE +/- 0.032, N = 3
7.355
8
16
24
32
40
1. (CXX) g++ options: -rdynamic

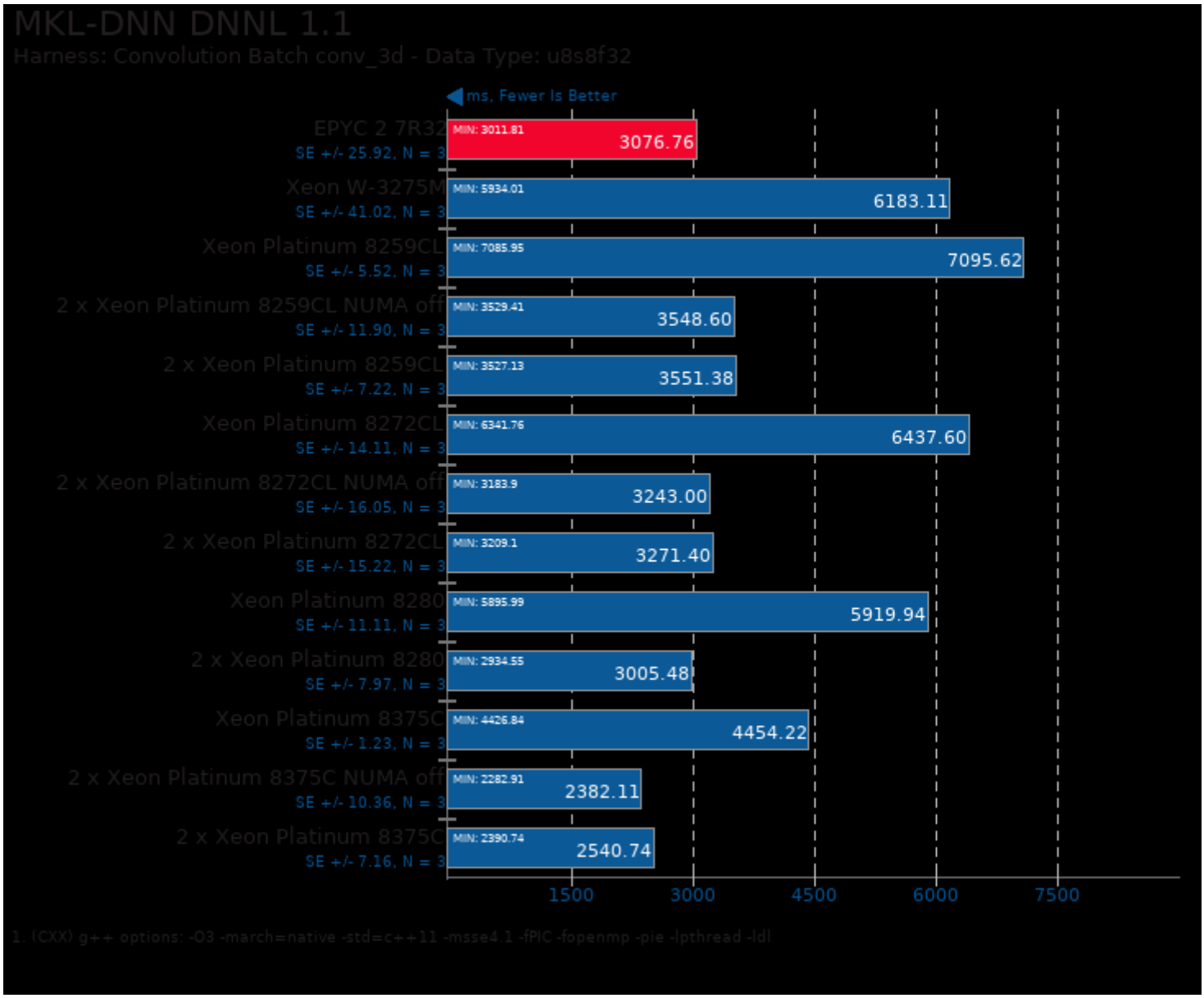

MKL-DNN DNNL 1.1
Harness: IP Batch 1D - Data Type: f32
ms, Fewer Is Better
EPYC 2 7R32
SE +/- 0.006731, N = 3
MIN: 1.59
1.675600
Xeon W-3275M
SE +/- 0.005753, N = 3
MIN: 2.53
2.867150
Xeon Platinum 8259CL
SE +/- 0.008928, N = 3
MIN: 2.46
2.699770
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.019533, N = 3
MIN: 1.39
1.537290
2 x Xeon Platinum 8259CL
SE +/- 0.014831, N = 15
MIN: 1.29
1.576870
Xeon Platinum 8272CL
SE +/- 0.005715, N = 3
MIN: 2.32
2.386060
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.009266, N = 3
MIN: 1.44
1.631060
2 x Xeon Platinum 8272CL
SE +/- 0.014870, N = 15
MIN: 1.36
1.606410
Xeon Platinum 8280
SE +/- 0.010722, N = 3
MIN: 2.28
2.394510
2 x Xeon Platinum 8280
SE +/- 0.014367, N = 15
MIN: 1.39
1.639860
Xeon Platinum 8375C
SE +/- 0.004282, N = 3
MIN: 1.01
1.085530
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.007993, N = 3
MIN: 0.69
0.765279
2 x Xeon Platinum 8375C
SE +/- 0.003943, N = 3
MIN: 0.67
0.731753
0.6451
1.2902
1.9353
2.5804
3.2255
1. (CXX) g++ options: -O3 -march=native -std=c++11 -msse4.1 -fPIC -fopenmp -pie -lpthread -ldl

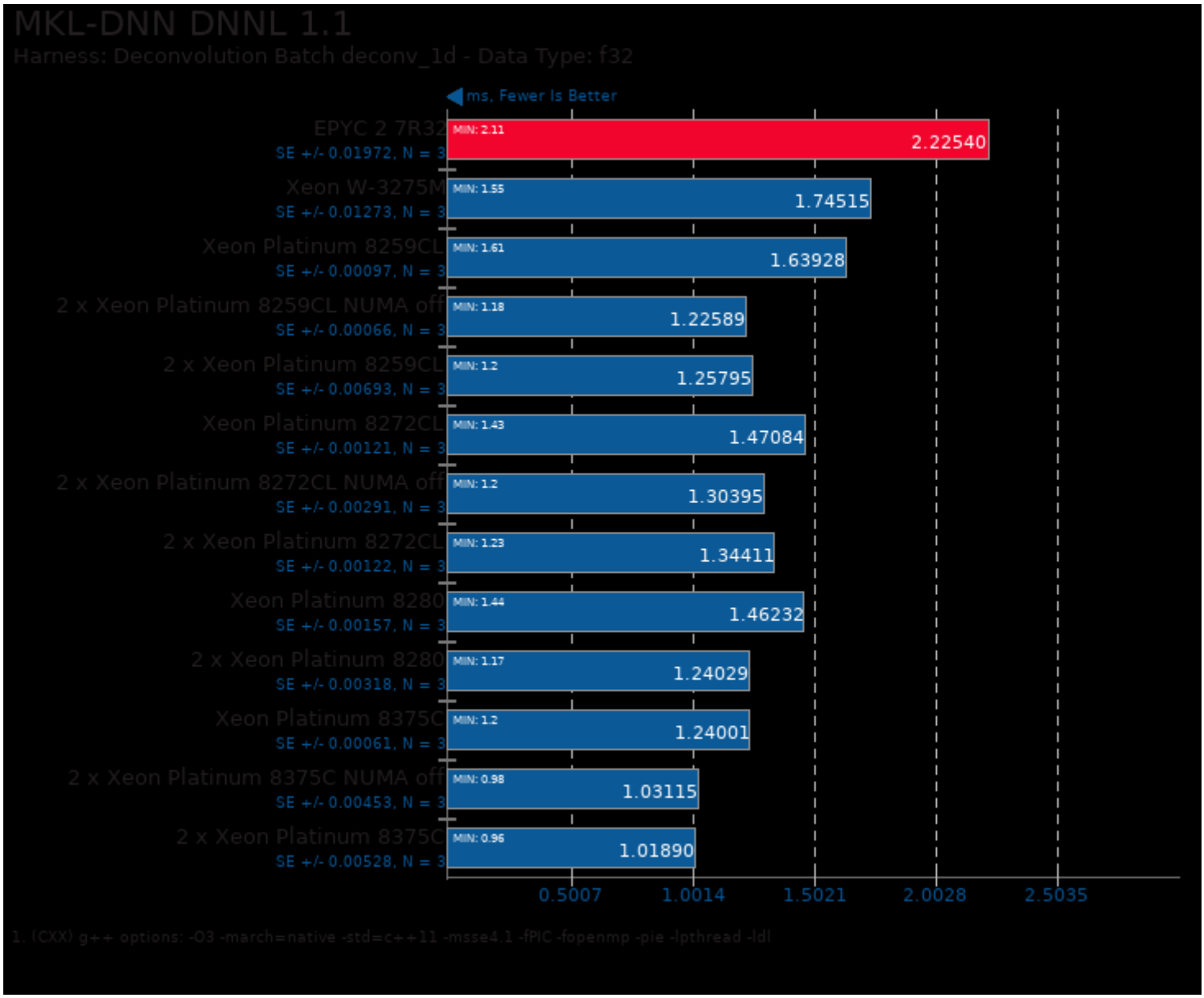

MKL-DNN DNNL 1.1
Harness: IP Batch All - Data Type: f32
ms, Fewer Is Better
EPYC 2 7R32
SE +/- 0.01277, N = 3
MIN: 8.36
8.88390
Xeon W-3275M
SE +/- 0.10112, N = 3
MIN: 6.71
7.54439
Xeon Platinum 8259CL
SE +/- 0.03341, N = 3
MIN: 7.76
7.89071
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.00603, N = 3
MIN: 6.25
6.65842
2 x Xeon Platinum 8259CL
SE +/- 0.03588, N = 3
MIN: 9.62
9.97669
Xeon Platinum 8272CL
SE +/- 0.01006, N = 3
MIN: 7.28
7.40704
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.00556, N = 3
MIN: 6.06
6.38652
2 x Xeon Platinum 8272CL
SE +/- 0.01633, N = 3
MIN: 9.49
9.71355
Xeon Platinum 8280
SE +/- 0.00854, N = 3
MIN: 6.68
6.79509
2 x Xeon Platinum 8280
SE +/- 0.01419, N = 3
MIN: 9.28
9.52466
Xeon Platinum 8375C
SE +/- 0.00218, N = 3
MIN: 4.48
4.59550
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.00676, N = 3
MIN: 3.56
3.73031
2 x Xeon Platinum 8375C
SE +/- 0.00521, N = 3
MIN: 5.79
6.00264
3
6
9
12
15
1. (CXX) g++ options: -O3 -march=native -std=c++11 -msse4.1 -fPIC -fopenmp -pie -lpthread -ldl

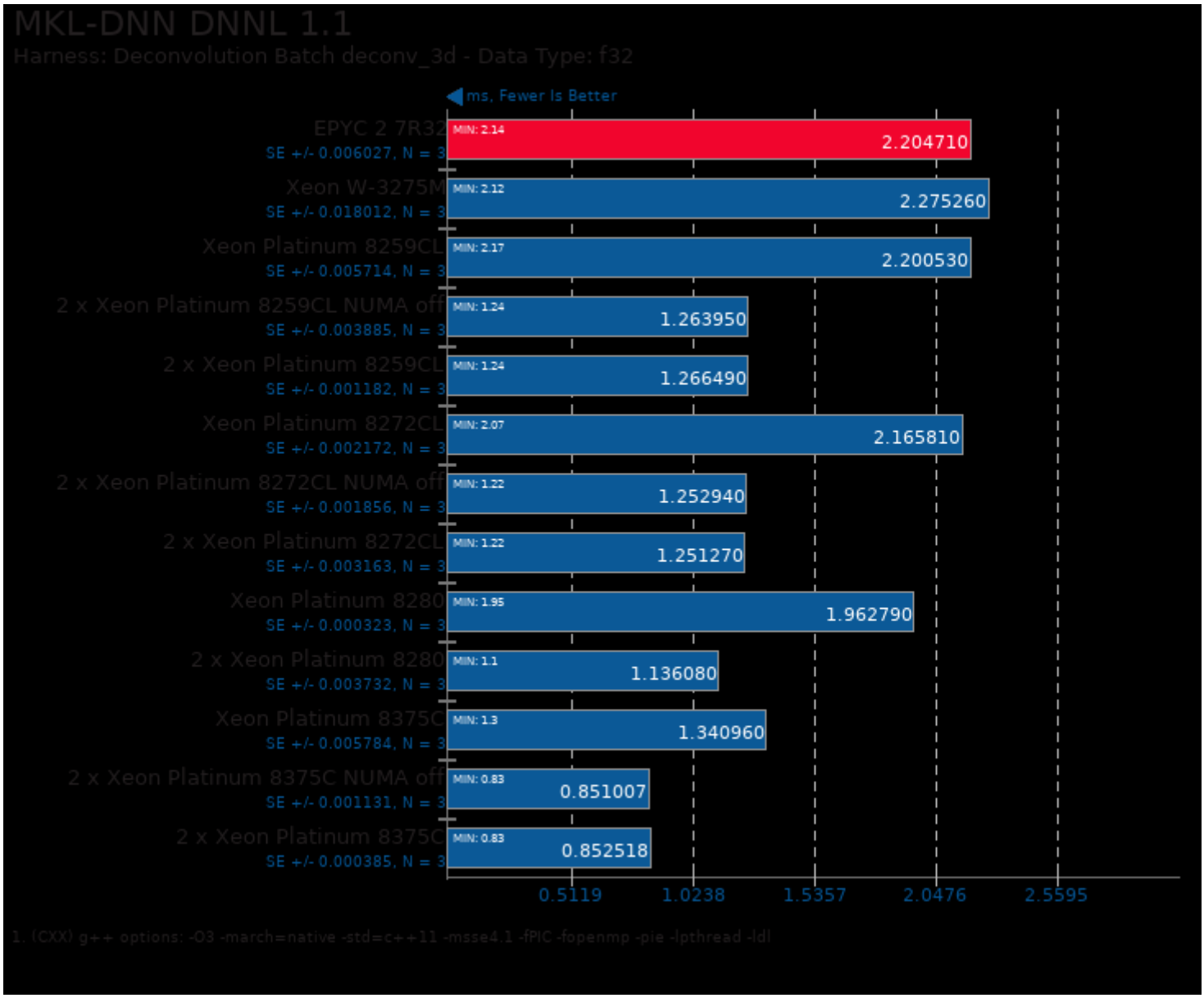

MKL-DNN DNNL 1.1
Harness: IP Batch All - Data Type: u8s8f32
ms, Fewer Is Better
EPYC 2 7R32
SE +/- 0.23997, N = 3
MIN: 144.74
149.33900
Xeon W-3275M
SE +/- 0.03226, N = 3
3.59218
Xeon Platinum 8259CL
SE +/- 0.00119, N = 3
3.43236
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.00908, N = 3
2.78193
2 x Xeon Platinum 8259CL
SE +/- 0.01481, N = 3
3.04866
Xeon Platinum 8272CL
SE +/- 0.00539, N = 3
3.34427
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.01090, N = 3
3.10530
2 x Xeon Platinum 8272CL
SE +/- 0.03153, N = 3
3.29615
Xeon Platinum 8280
SE +/- 0.00398, N = 3
3.23121
2 x Xeon Platinum 8280
SE +/- 0.04146, N = 4
3.11002
Xeon Platinum 8375C
SE +/- 0.00773, N = 3
1.84515
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.00823, N = 3
1.49865
2 x Xeon Platinum 8375C
SE +/- 0.00536, N = 3
1.44613
30
60
90
120
150
1. (CXX) g++ options: -O3 -march=native -std=c++11 -msse4.1 -fPIC -fopenmp -pie -lpthread -ldl

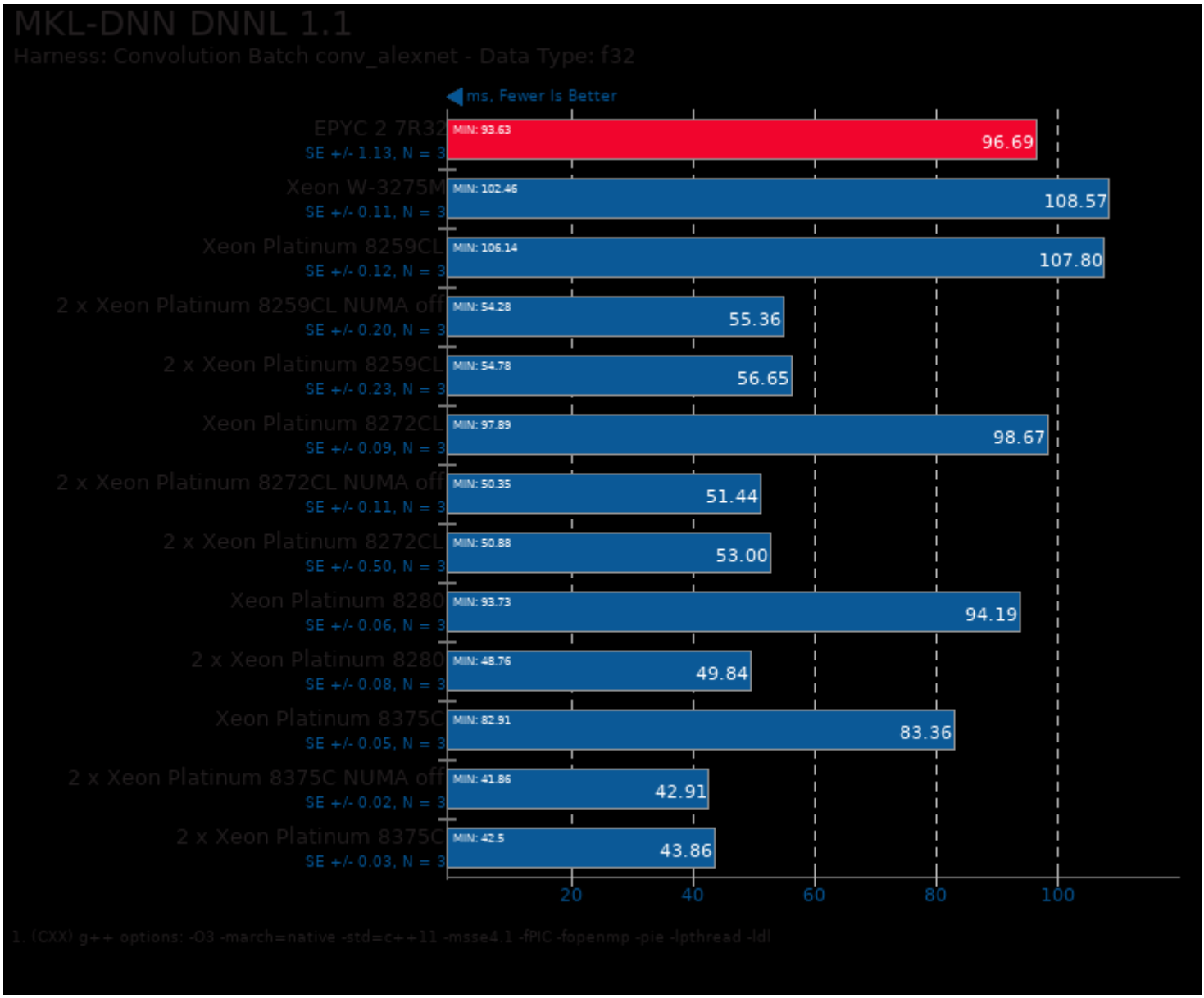

MKL-DNN DNNL 1.1
Harness: IP Batch 1D - Data Type: bf16bf16bf16
ms, Fewer Is Better
Xeon W-3275M
SE +/- 0.02664, N = 3
MIN: 5.04
5.56304
Xeon Platinum 8259CL
SE +/- 0.00262, N = 3
MIN: 5.57
5.69900
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.00913, N = 3
MIN: 4.28
4.46440
2 x Xeon Platinum 8259CL
SE +/- 0.00431, N = 3
MIN: 4.31
4.48918
Xeon Platinum 8272CL
SE +/- 0.01234, N = 3
MIN: 5.51
5.59680
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.00609, N = 3
MIN: 2.7
2.85310
2 x Xeon Platinum 8272CL
SE +/- 0.00405, N = 3
MIN: 2.77
2.89086
Xeon Platinum 8280
SE +/- 0.00377, N = 3
MIN: 4.76
4.83170
2 x Xeon Platinum 8280
SE +/- 0.01183, N = 3
MIN: 3.47
3.65964
Xeon Platinum 8375C
SE +/- 0.00267, N = 3
MIN: 2.23
2.41906
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.00443, N = 3
MIN: 1.5
1.74213
2 x Xeon Platinum 8375C
SE +/- 0.01294, N = 3
MIN: 1.48
1.73950
1.2823
2.5646
3.8469
5.1292
6.4115
1. (CXX) g++ options: -O3 -march=native -std=c++11 -msse4.1 -fPIC -fopenmp -pie -lpthread -ldl

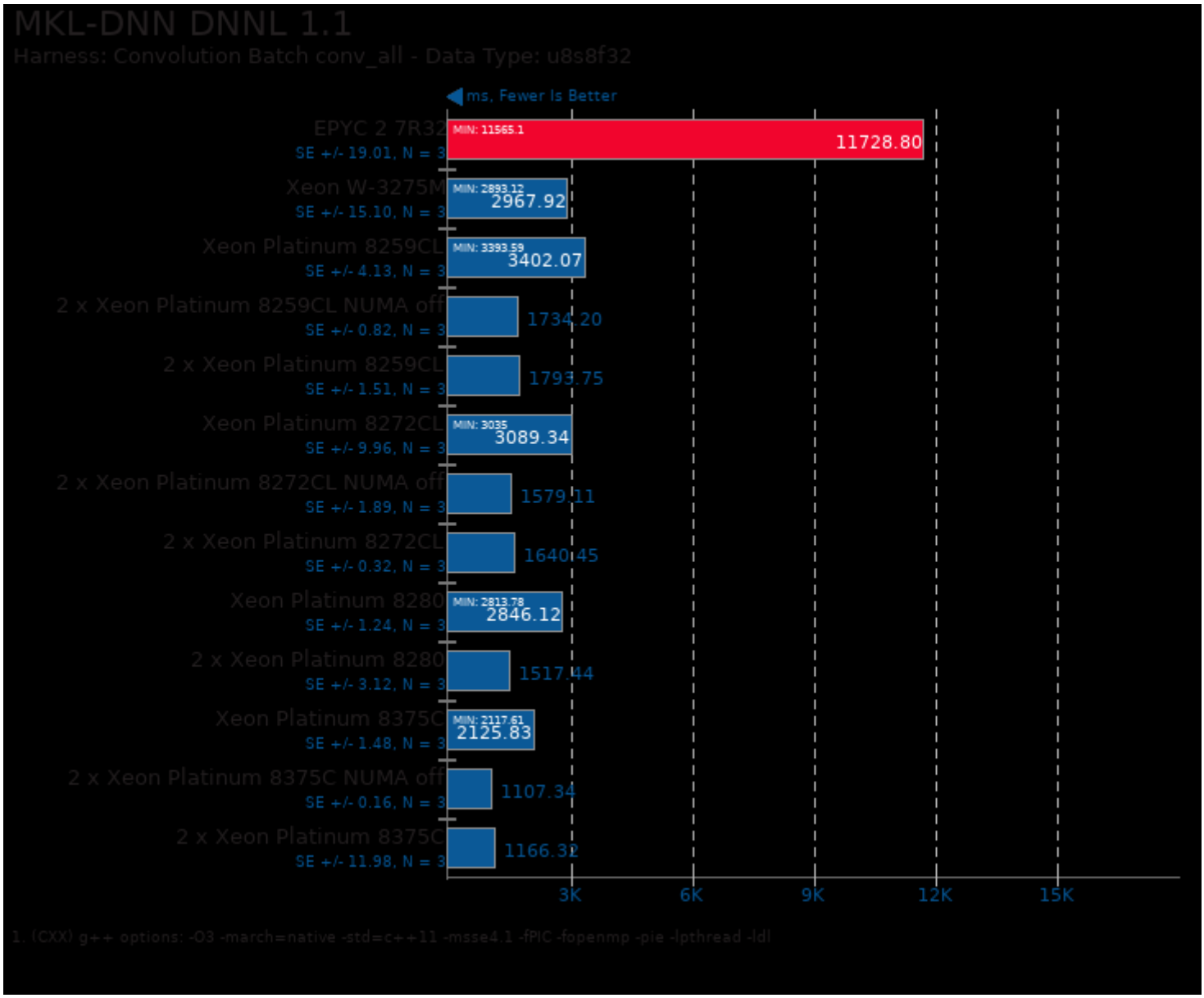

MKL-DNN DNNL 1.1
Harness: Convolution Batch conv_all - Data Type: f32
ms, Fewer Is Better
EPYC 2 7R32
SE +/- 2.05, N = 3
MIN: 700.52
710.14
Xeon W-3275M
SE +/- 0.68, N = 3
MIN: 819.94
878.39
Xeon Platinum 8259CL
SE +/- 0.32, N = 3
MIN: 868.41
874.20
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.29, N = 3
MIN: 457.45
461.94
2 x Xeon Platinum 8259CL
SE +/- 0.29, N = 3
MIN: 553.8
559.47
Xeon Platinum 8272CL
SE +/- 0.28, N = 3
MIN: 794.87
821.97
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.30, N = 3
MIN: 423.96
436.86
2 x Xeon Platinum 8272CL
SE +/- 0.50, N = 3
MIN: 520.78
534.33
Xeon Platinum 8280
SE +/- 0.39, N = 3
MIN: 755.35
765.75
2 x Xeon Platinum 8280
SE +/- 0.78, N = 3
MIN: 488.36
496.82
Xeon Platinum 8375C
SE +/- 0.29, N = 3
MIN: 588.29
598.19
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.26, N = 3
MIN: 316.03
327.28
2 x Xeon Platinum 8375C
SE +/- 5.03, N = 3
MIN: 367.6
399.24
200
400
600
800
1000
1. (CXX) g++ options: -O3 -march=native -std=c++11 -msse4.1 -fPIC -fopenmp -pie -lpthread -ldl

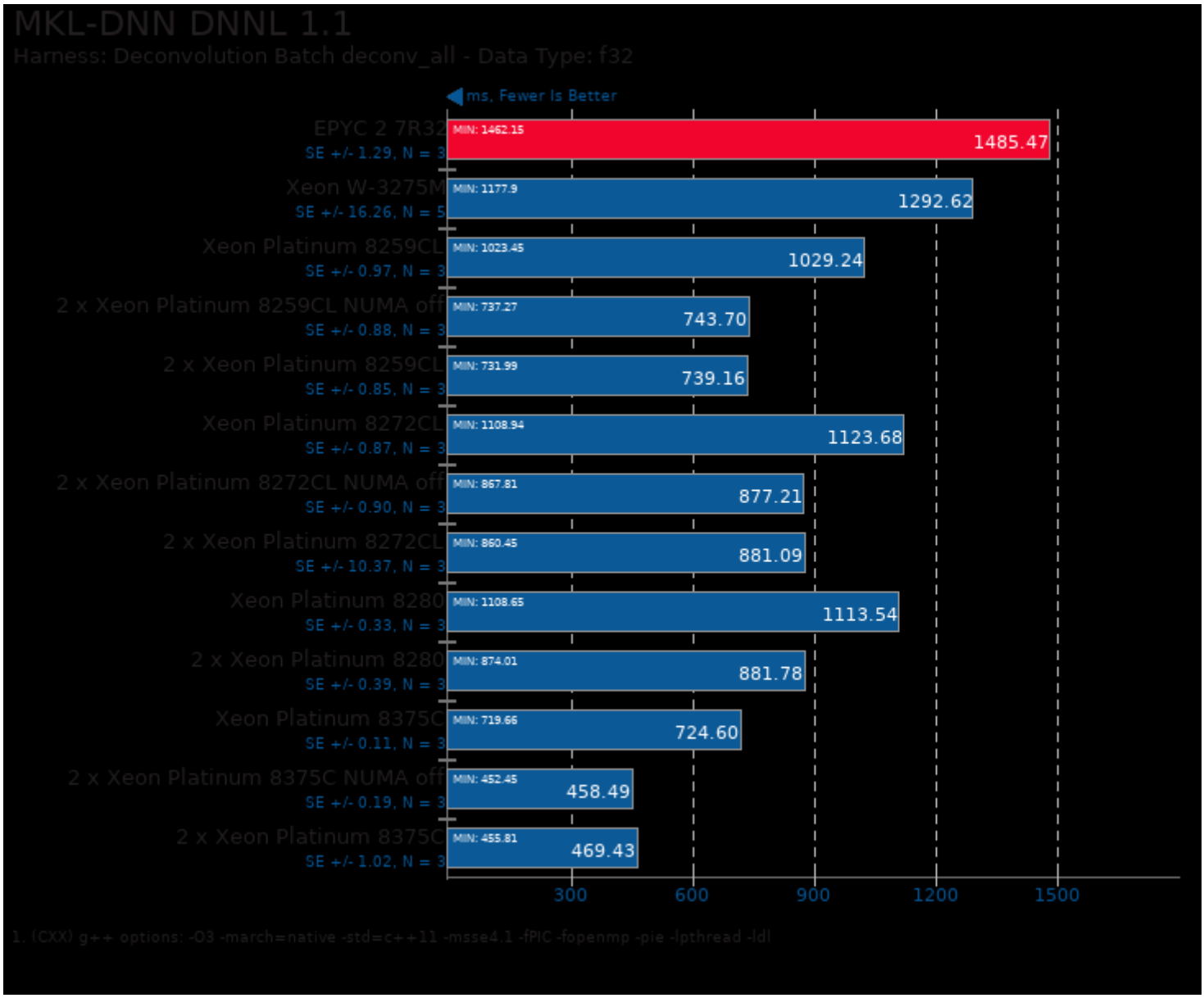

MKL-DNN DNNL 1.1
Harness: Convolution Batch conv_3d - Data Type: u8s8f32
ms, Fewer Is Better
EPYC 2 7R32
SE +/- 25.92, N = 3
MIN: 3011.81
3076.76
Xeon W-3275M
SE +/- 41.02, N = 3
MIN: 5934.01
6183.11
Xeon Platinum 8259CL
SE +/- 5.52, N = 3
MIN: 7085.95
7095.62
2 x Xeon Platinum 8259CL NUMA off
SE +/- 11.90, N = 3
MIN: 3529.41
3548.60
2 x Xeon Platinum 8259CL
SE +/- 7.22, N = 3
MIN: 3527.13
3551.38
Xeon Platinum 8272CL
SE +/- 14.11, N = 3
MIN: 6341.76
6437.60
2 x Xeon Platinum 8272CL NUMA off
SE +/- 16.05, N = 3
MIN: 3183.9
3243.00
2 x Xeon Platinum 8272CL
SE +/- 15.22, N = 3
MIN: 3209.1
3271.40
Xeon Platinum 8280
SE +/- 11.11, N = 3
MIN: 5895.99
5919.94
2 x Xeon Platinum 8280
SE +/- 7.97, N = 3
MIN: 2934.55
3005.48
Xeon Platinum 8375C
SE +/- 1.23, N = 3
MIN: 4426.84
4454.22
2 x Xeon Platinum 8375C NUMA off
SE +/- 10.36, N = 3
MIN: 2282.91
2382.11
2 x Xeon Platinum 8375C
SE +/- 7.16, N = 3
MIN: 2390.74
2540.74
1500
3000
4500
6000
7500
1. (CXX) g++ options: -O3 -march=native -std=c++11 -msse4.1 -fPIC -fopenmp -pie -lpthread -ldl

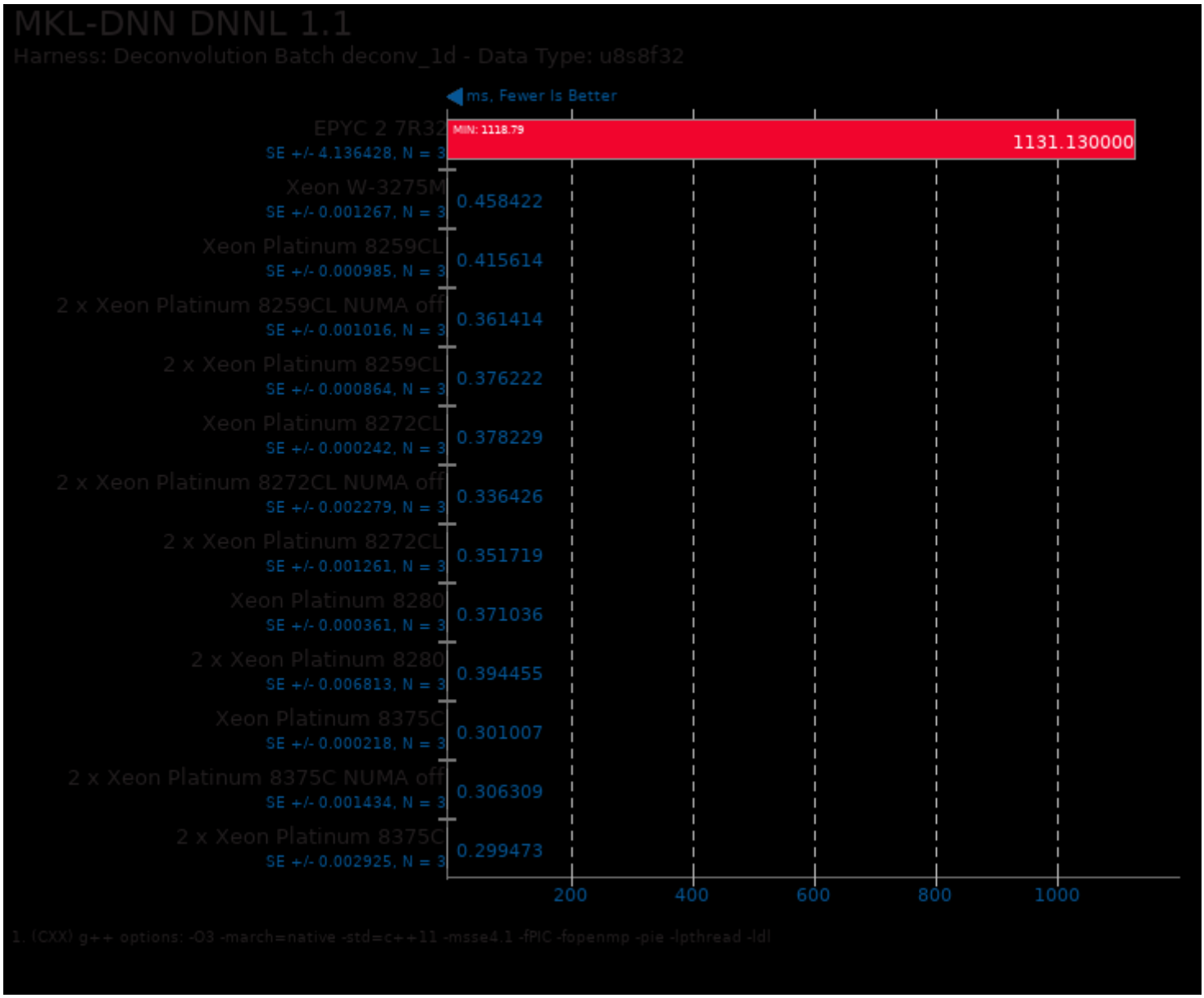

MKL-DNN DNNL 1.1
Harness: Deconvolution Batch deconv_1d - Data Type: f32
ms, Fewer Is Better
EPYC 2 7R32
SE +/- 0.01972, N = 3
MIN: 2.11
2.22540
Xeon W-3275M
SE +/- 0.01273, N = 3
MIN: 1.55
1.74515
Xeon Platinum 8259CL
SE +/- 0.00097, N = 3
MIN: 1.61
1.63928
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.00066, N = 3
MIN: 1.18
1.22589
2 x Xeon Platinum 8259CL
SE +/- 0.00693, N = 3
MIN: 1.2
1.25795
Xeon Platinum 8272CL
SE +/- 0.00121, N = 3
MIN: 1.43
1.47084
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.00291, N = 3
MIN: 1.2
1.30395
2 x Xeon Platinum 8272CL
SE +/- 0.00122, N = 3
MIN: 1.23
1.34411
Xeon Platinum 8280
SE +/- 0.00157, N = 3
MIN: 1.44
1.46232
2 x Xeon Platinum 8280
SE +/- 0.00318, N = 3
MIN: 1.17
1.24029
Xeon Platinum 8375C
SE +/- 0.00061, N = 3
MIN: 1.2
1.24001
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.00453, N = 3
MIN: 0.98
1.03115
2 x Xeon Platinum 8375C
SE +/- 0.00528, N = 3
MIN: 0.96
1.01890
0.5007
1.0014
1.5021
2.0028
2.5035
1. (CXX) g++ options: -O3 -march=native -std=c++11 -msse4.1 -fPIC -fopenmp -pie -lpthread -ldl

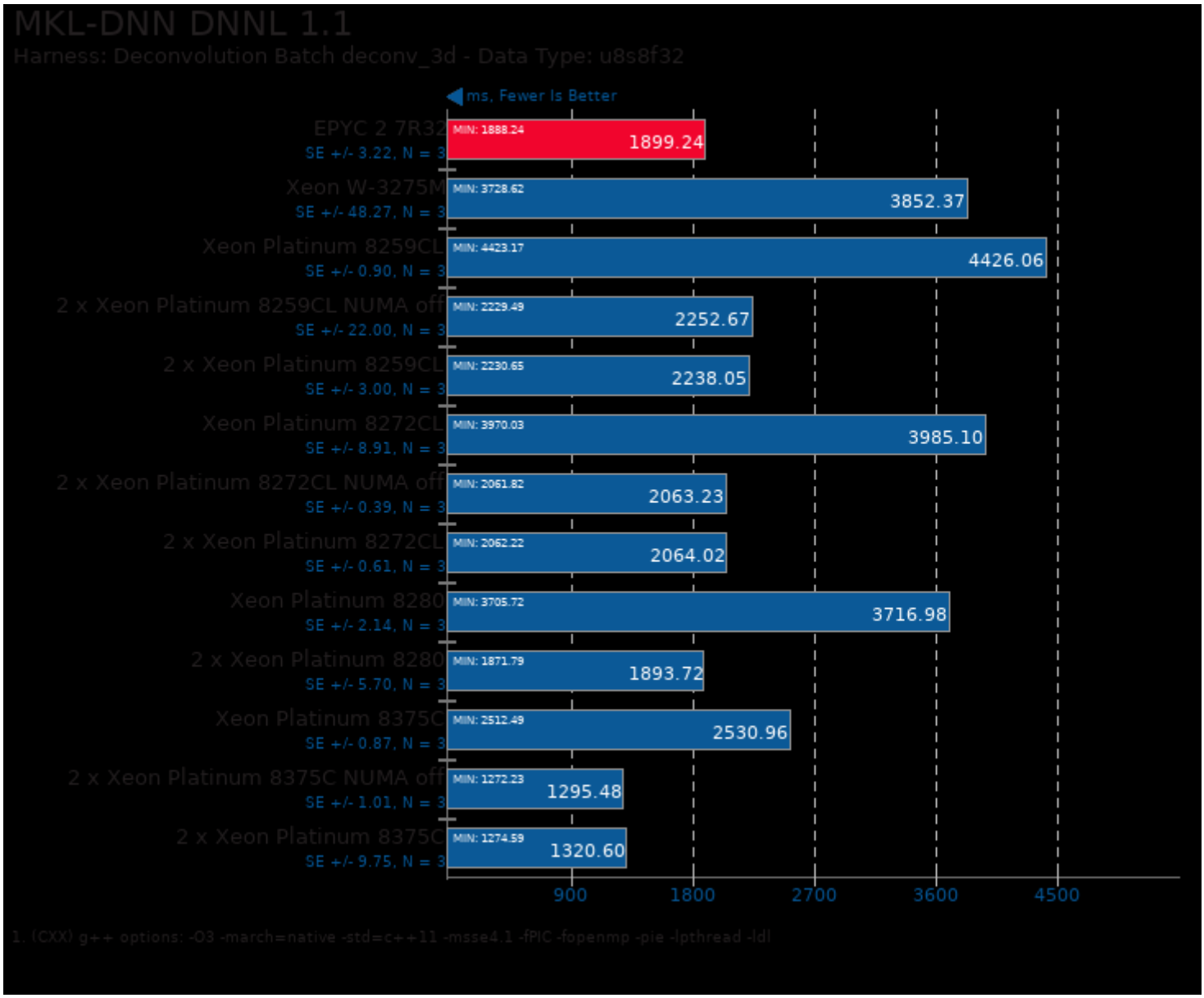

MKL-DNN DNNL 1.1
Harness: Deconvolution Batch deconv_3d - Data Type: f32
ms, Fewer Is Better
EPYC 2 7R32
SE +/- 0.006027, N = 3
MIN: 2.14
2.204710
Xeon W-3275M
SE +/- 0.018012, N = 3
MIN: 2.12
2.275260
Xeon Platinum 8259CL
SE +/- 0.005714, N = 3
MIN: 2.17
2.200530
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.003885, N = 3
MIN: 1.24
1.263950
2 x Xeon Platinum 8259CL
SE +/- 0.001182, N = 3
MIN: 1.24
1.266490
Xeon Platinum 8272CL
SE +/- 0.002172, N = 3
MIN: 2.07
2.165810
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.001856, N = 3
MIN: 1.22
1.252940
2 x Xeon Platinum 8272CL
SE +/- 0.003163, N = 3
MIN: 1.22
1.251270
Xeon Platinum 8280
SE +/- 0.000323, N = 3
MIN: 1.95
1.962790
2 x Xeon Platinum 8280
SE +/- 0.003732, N = 3
MIN: 1.1
1.136080
Xeon Platinum 8375C
SE +/- 0.005784, N = 3
MIN: 1.3
1.340960
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.001131, N = 3
MIN: 0.83
0.851007
2 x Xeon Platinum 8375C
SE +/- 0.000385, N = 3
MIN: 0.83
0.852518
0.5119
1.0238
1.5357
2.0476
2.5595
1. (CXX) g++ options: -O3 -march=native -std=c++11 -msse4.1 -fPIC -fopenmp -pie -lpthread -ldl

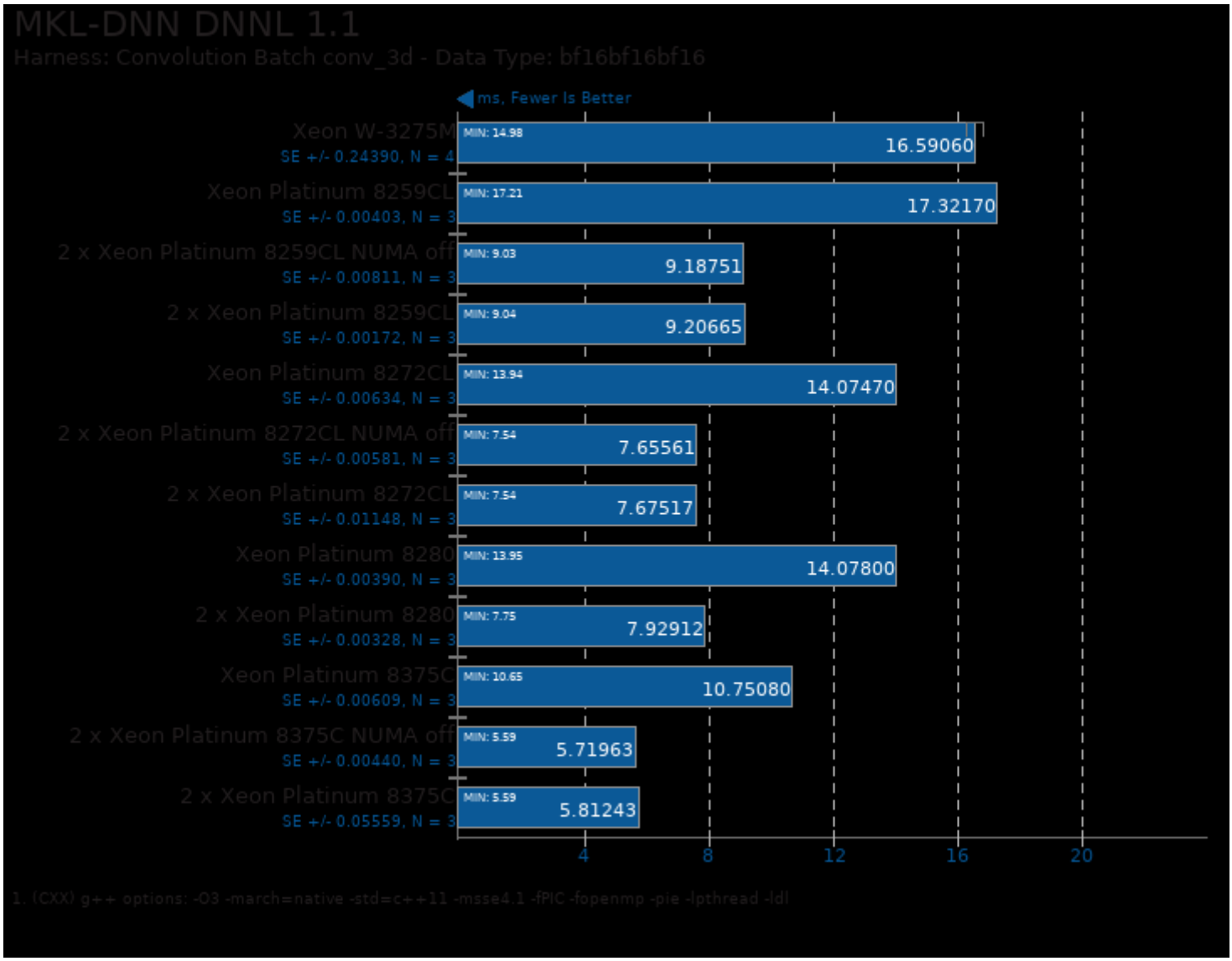

MKL-DNN DNNL 1.1
Harness: Convolution Batch conv_alexnet - Data Type: f32
ms, Fewer Is Better
EPYC 2 7R32
SE +/- 1.13, N = 3
MIN: 93.63
96.69
Xeon W-3275M
SE +/- 0.11, N = 3
MIN: 102.46
108.57
Xeon Platinum 8259CL
SE +/- 0.12, N = 3
MIN: 106.14
107.80
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.20, N = 3
MIN: 54.28
55.36
2 x Xeon Platinum 8259CL
SE +/- 0.23, N = 3
MIN: 54.78
56.65
Xeon Platinum 8272CL
SE +/- 0.09, N = 3
MIN: 97.89
98.67
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.11, N = 3
MIN: 50.35
51.44
2 x Xeon Platinum 8272CL
SE +/- 0.50, N = 3
MIN: 50.88
53.00
Xeon Platinum 8280
SE +/- 0.06, N = 3
MIN: 93.73
94.19
2 x Xeon Platinum 8280
SE +/- 0.08, N = 3
MIN: 48.76
49.84
Xeon Platinum 8375C
SE +/- 0.05, N = 3
MIN: 82.91
83.36
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.02, N = 3
MIN: 41.86
42.91
2 x Xeon Platinum 8375C
SE +/- 0.03, N = 3
MIN: 42.5
43.86
20
40
60
80
100
1. (CXX) g++ options: -O3 -march=native -std=c++11 -msse4.1 -fPIC -fopenmp -pie -lpthread -ldl

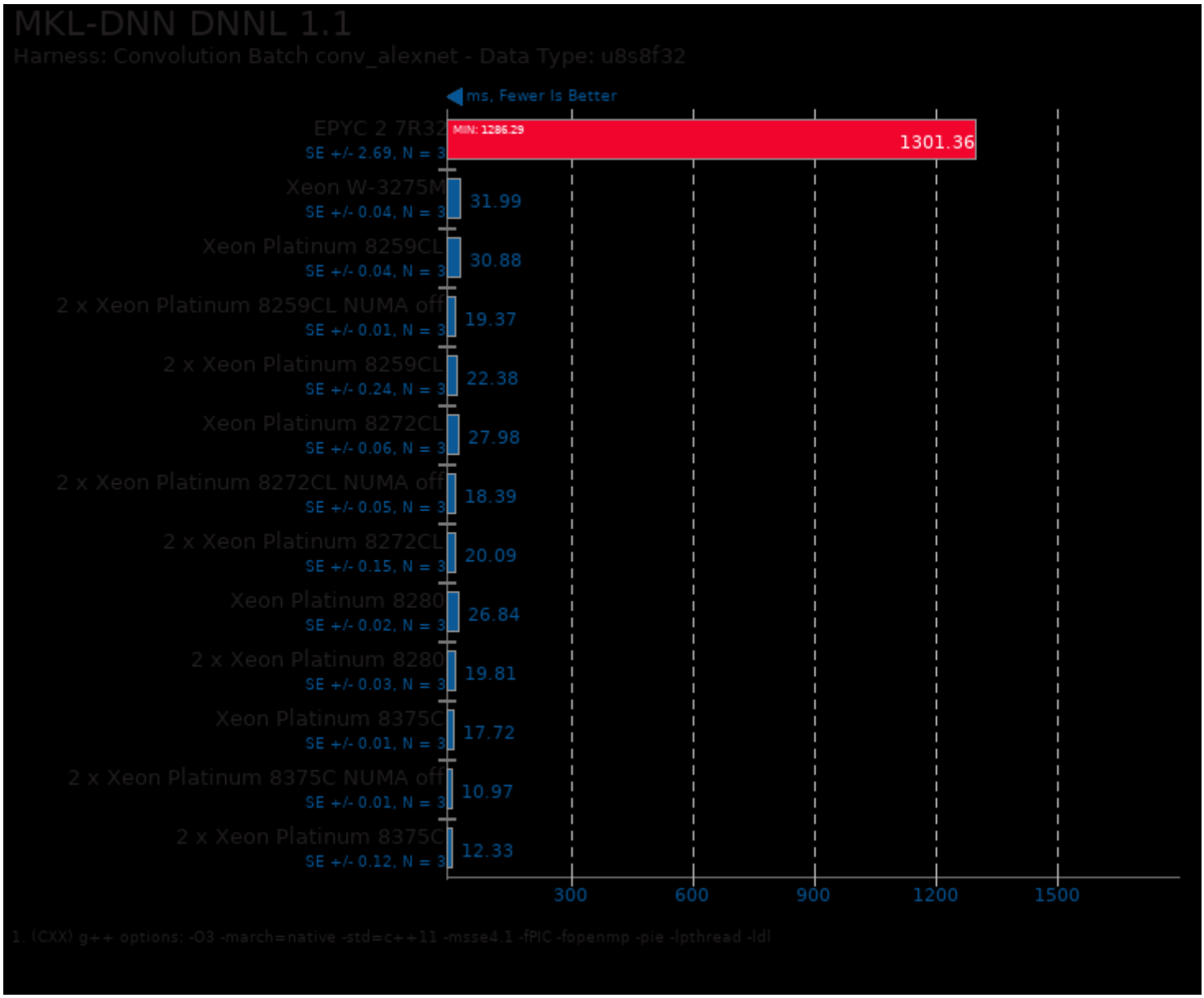

MKL-DNN DNNL 1.1
Harness: Convolution Batch conv_all - Data Type: u8s8f32
ms, Fewer Is Better
EPYC 2 7R32
SE +/- 19.01, N = 3
MIN: 11565.1
11728.80
Xeon W-3275M
SE +/- 15.10, N = 3
MIN: 2893.12
2967.92
Xeon Platinum 8259CL
SE +/- 4.13, N = 3
MIN: 3393.59
3402.07
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.82, N = 3
1734.20
2 x Xeon Platinum 8259CL
SE +/- 1.51, N = 3
1793.75
Xeon Platinum 8272CL
SE +/- 9.96, N = 3
MIN: 3035
3089.34
2 x Xeon Platinum 8272CL NUMA off
SE +/- 1.89, N = 3
1579.11
2 x Xeon Platinum 8272CL
SE +/- 0.32, N = 3
1640.45
Xeon Platinum 8280
SE +/- 1.24, N = 3
MIN: 2813.78
2846.12
2 x Xeon Platinum 8280
SE +/- 3.12, N = 3
1517.44
Xeon Platinum 8375C
SE +/- 1.48, N = 3
MIN: 2117.61
2125.83
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.16, N = 3
1107.34
2 x Xeon Platinum 8375C
SE +/- 11.98, N = 3
1166.32
3K
6K
9K
12K
15K
1. (CXX) g++ options: -O3 -march=native -std=c++11 -msse4.1 -fPIC -fopenmp -pie -lpthread -ldl

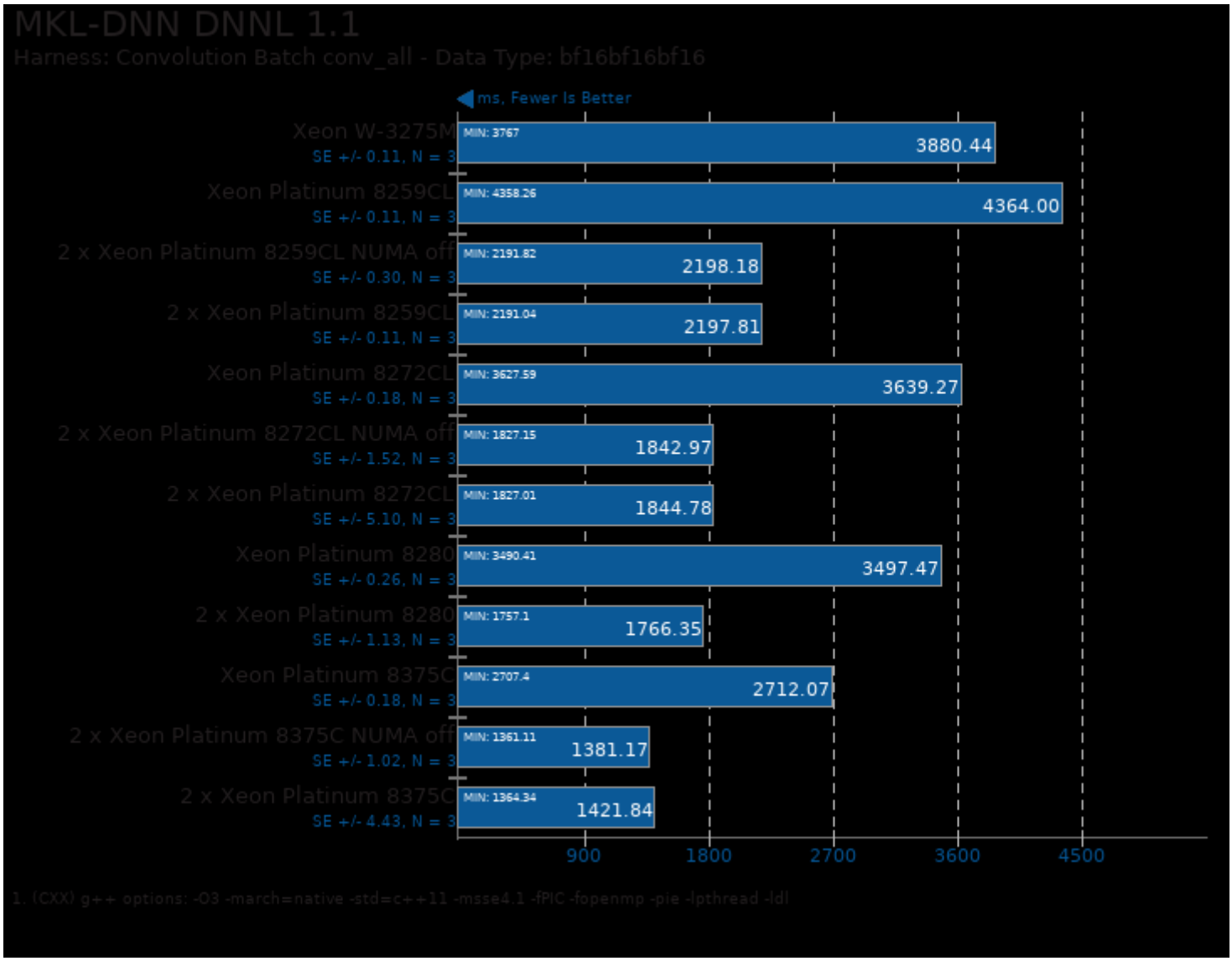

MKL-DNN DNNL 1.1
Harness: Deconvolution Batch deconv_all - Data Type: f32
ms, Fewer Is Better
EPYC 2 7R32
SE +/- 1.29, N = 3
MIN: 1462.15
1485.47
Xeon W-3275M
SE +/- 16.26, N = 5
MIN: 1177.9
1292.62
Xeon Platinum 8259CL
SE +/- 0.97, N = 3
MIN: 1023.45
1029.24
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.88, N = 3
MIN: 737.27
743.70
2 x Xeon Platinum 8259CL
SE +/- 0.85, N = 3
MIN: 731.99
739.16
Xeon Platinum 8272CL
SE +/- 0.87, N = 3
MIN: 1108.94
1123.68
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.90, N = 3
MIN: 867.81
877.21
2 x Xeon Platinum 8272CL
SE +/- 10.37, N = 3
MIN: 860.45
881.09
Xeon Platinum 8280
SE +/- 0.33, N = 3
MIN: 1108.65
1113.54
2 x Xeon Platinum 8280
SE +/- 0.39, N = 3
MIN: 874.01
881.78
Xeon Platinum 8375C
SE +/- 0.11, N = 3
MIN: 719.66
724.60
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.19, N = 3
MIN: 452.45
458.49
2 x Xeon Platinum 8375C
SE +/- 1.02, N = 3
MIN: 455.81
469.43
300
600
900
1200
1500
1. (CXX) g++ options: -O3 -march=native -std=c++11 -msse4.1 -fPIC -fopenmp -pie -lpthread -ldl

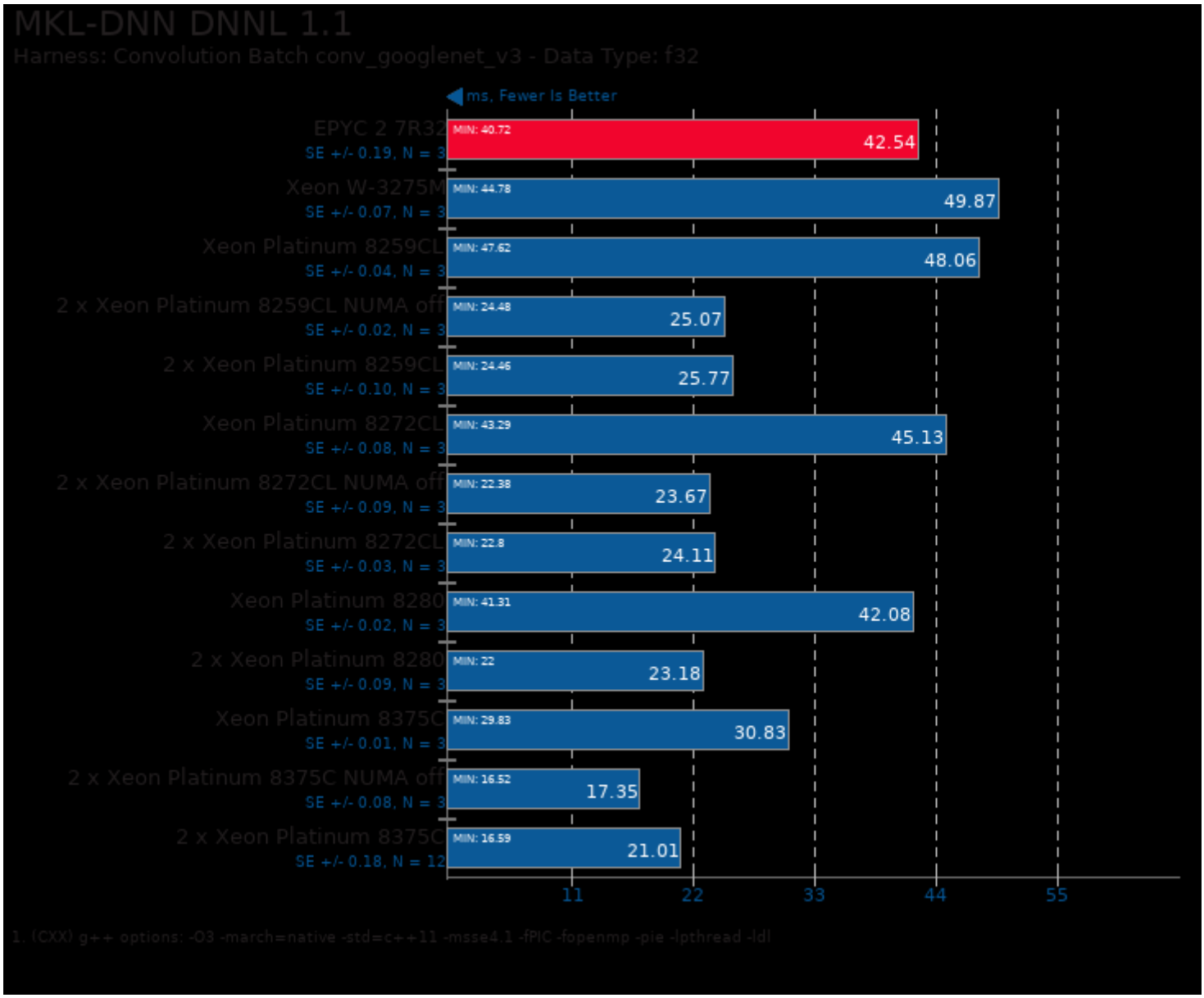

MKL-DNN DNNL 1.1
Harness: Deconvolution Batch deconv_1d - Data Type: u8s8f32
ms, Fewer Is Better
EPYC 2 7R32
SE +/- 4.136428, N = 3
MIN: 1118.79
1131.130000
Xeon W-3275M
SE +/- 0.001267, N = 3
0.458422
Xeon Platinum 8259CL
SE +/- 0.000985, N = 3
0.415614
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.001016, N = 3
0.361414
2 x Xeon Platinum 8259CL
SE +/- 0.000864, N = 3
0.376222
Xeon Platinum 8272CL
SE +/- 0.000242, N = 3
0.378229
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.002279, N = 3
0.336426
2 x Xeon Platinum 8272CL
SE +/- 0.001261, N = 3
0.351719
Xeon Platinum 8280
SE +/- 0.000361, N = 3
0.371036
2 x Xeon Platinum 8280
SE +/- 0.006813, N = 3
0.394455
Xeon Platinum 8375C
SE +/- 0.000218, N = 3
0.301007
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.001434, N = 3
0.306309
2 x Xeon Platinum 8375C
SE +/- 0.002925, N = 3
0.299473
200
400
600
800
1000
1. (CXX) g++ options: -O3 -march=native -std=c++11 -msse4.1 -fPIC -fopenmp -pie -lpthread -ldl

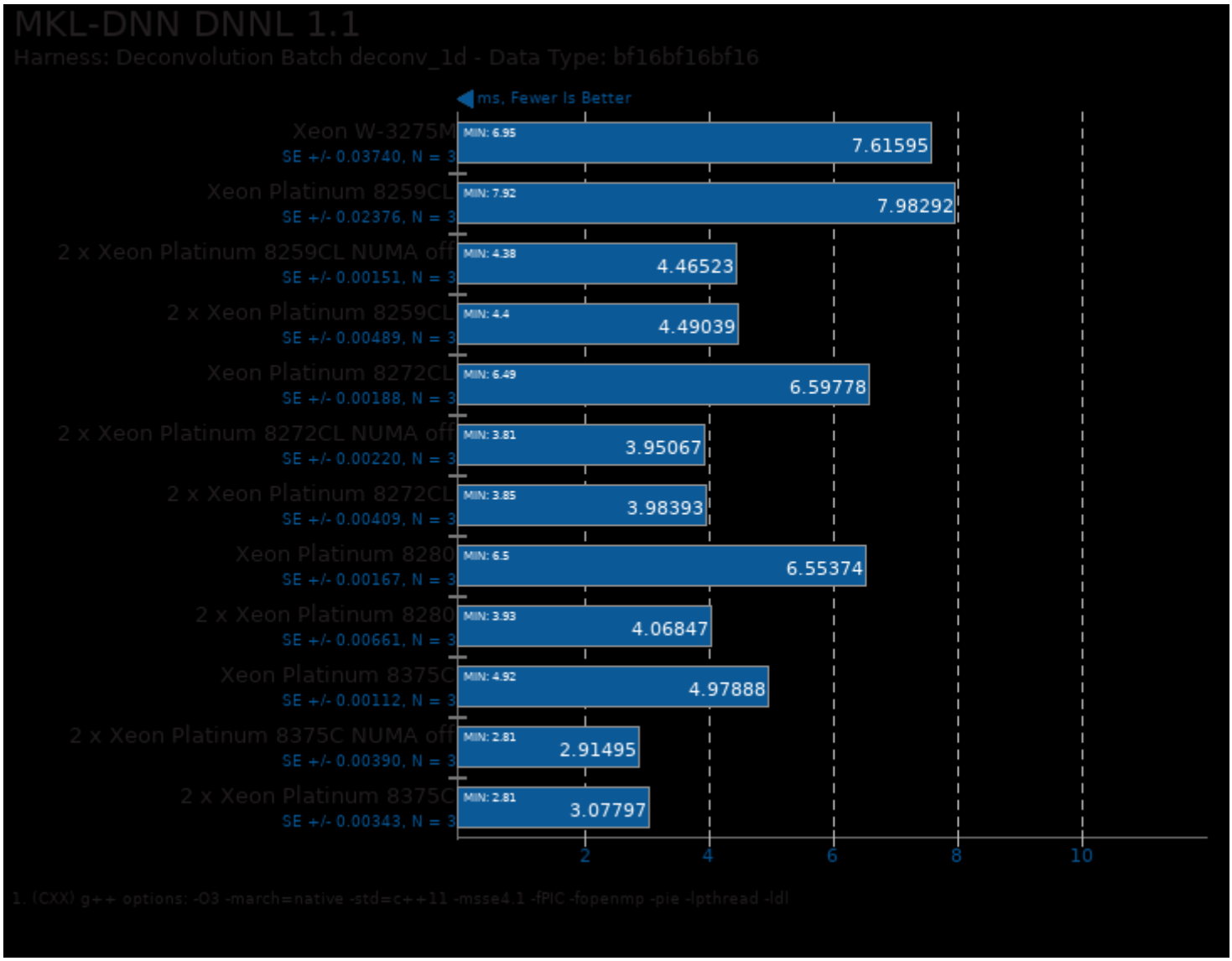

MKL-DNN DNNL 1.1
Harness: Deconvolution Batch deconv_3d - Data Type: u8s8f32
ms, Fewer Is Better
EPYC 2 7R32
SE +/- 3.22, N = 3
MIN: 1888.24
1899.24
Xeon W-3275M
SE +/- 48.27, N = 3
MIN: 3728.62
3852.37
Xeon Platinum 8259CL
SE +/- 0.90, N = 3
MIN: 4423.17
4426.06
2 x Xeon Platinum 8259CL NUMA off
SE +/- 22.00, N = 3
MIN: 2229.49
2252.67
2 x Xeon Platinum 8259CL
SE +/- 3.00, N = 3
MIN: 2230.65
2238.05
Xeon Platinum 8272CL
SE +/- 8.91, N = 3
MIN: 3970.03
3985.10
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.39, N = 3
MIN: 2061.82
2063.23
2 x Xeon Platinum 8272CL
SE +/- 0.61, N = 3
MIN: 2062.22
2064.02
Xeon Platinum 8280
SE +/- 2.14, N = 3
MIN: 3705.72
3716.98
2 x Xeon Platinum 8280
SE +/- 5.70, N = 3
MIN: 1871.79
1893.72
Xeon Platinum 8375C
SE +/- 0.87, N = 3
MIN: 2512.49
2530.96
2 x Xeon Platinum 8375C NUMA off
SE +/- 1.01, N = 3
MIN: 1272.23
1295.48
2 x Xeon Platinum 8375C
SE +/- 9.75, N = 3
MIN: 1274.59
1320.60
900
1800
2700
3600
4500
1. (CXX) g++ options: -O3 -march=native -std=c++11 -msse4.1 -fPIC -fopenmp -pie -lpthread -ldl

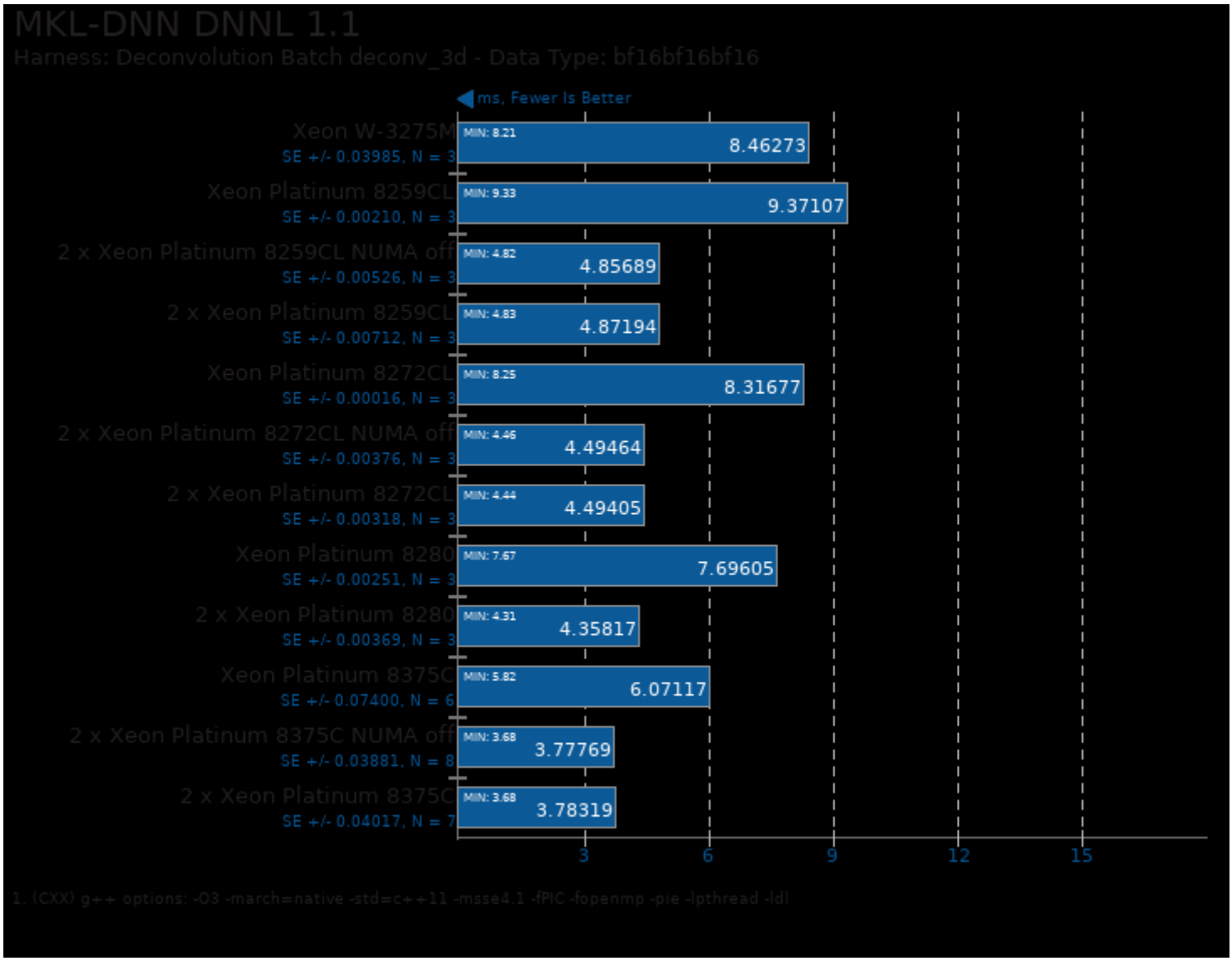

MKL-DNN DNNL 1.1
Harness: Convolution Batch conv_3d - Data Type: bf16bf16bf16
ms, Fewer Is Better
Xeon W-3275M
SE +/- 0.24390, N = 4
MIN: 14.98
16.59060
Xeon Platinum 8259CL
SE +/- 0.00403, N = 3
MIN: 17.21
17.32170
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.00811, N = 3
MIN: 9.03
9.18751
2 x Xeon Platinum 8259CL
SE +/- 0.00172, N = 3
MIN: 9.04
9.20665
Xeon Platinum 8272CL
SE +/- 0.00634, N = 3
MIN: 13.94
14.07470
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.00581, N = 3
MIN: 7.54
7.65561
2 x Xeon Platinum 8272CL
SE +/- 0.01148, N = 3
MIN: 7.54
7.67517
Xeon Platinum 8280
SE +/- 0.00390, N = 3
MIN: 13.95
14.07800
2 x Xeon Platinum 8280
SE +/- 0.00328, N = 3
MIN: 7.75
7.92912
Xeon Platinum 8375C
SE +/- 0.00609, N = 3
MIN: 10.65
10.75080
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.00440, N = 3
MIN: 5.59
5.71963
2 x Xeon Platinum 8375C
SE +/- 0.05559, N = 3
MIN: 5.59
5.81243
4
8
12
16
20
1. (CXX) g++ options: -O3 -march=native -std=c++11 -msse4.1 -fPIC -fopenmp -pie -lpthread -ldl

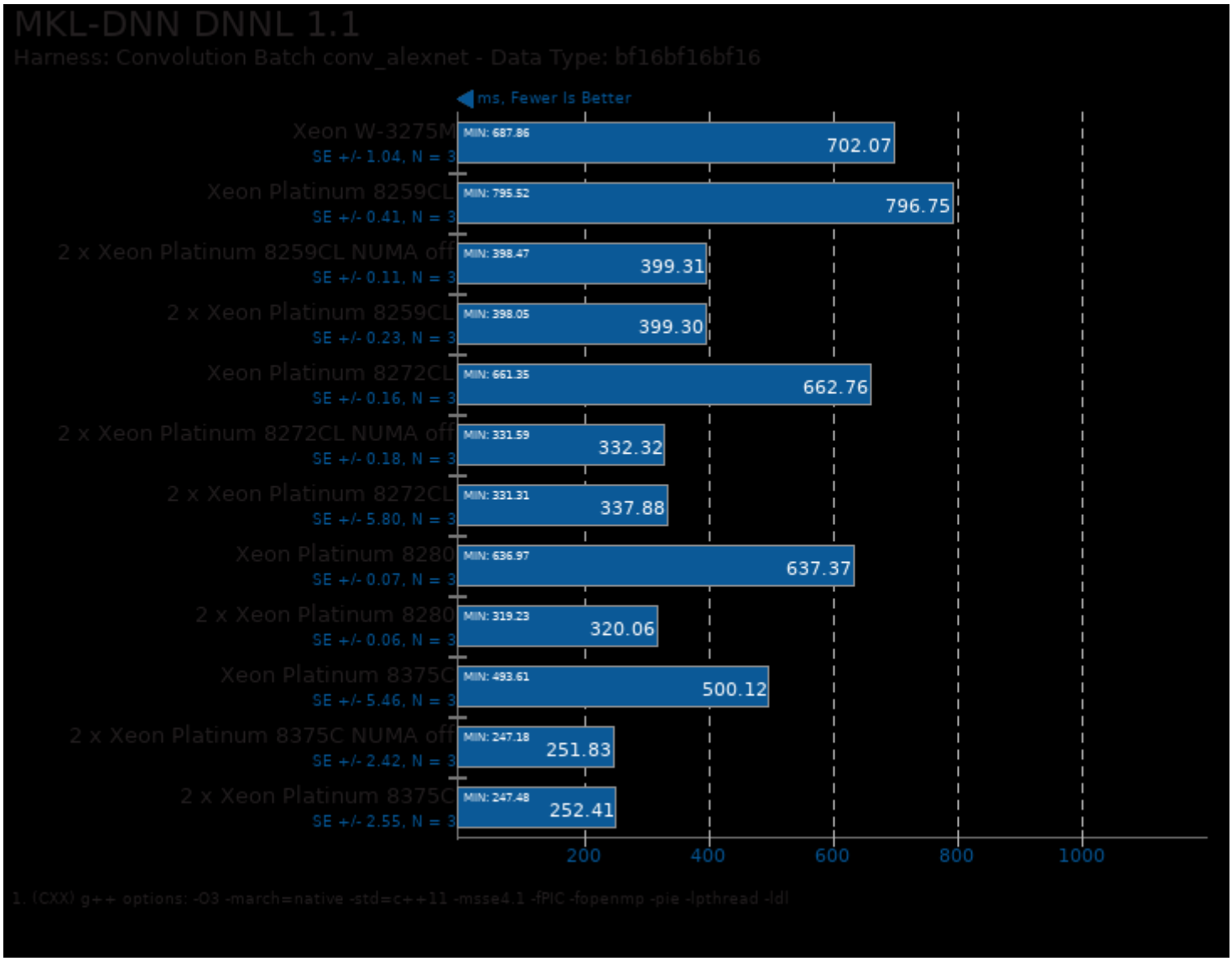

MKL-DNN DNNL 1.1
Harness: Convolution Batch conv_alexnet - Data Type: u8s8f32
ms, Fewer Is Better
EPYC 2 7R32
SE +/- 2.69, N = 3
MIN: 1286.29
1301.36
Xeon W-3275M
SE +/- 0.04, N = 3
31.99
Xeon Platinum 8259CL
SE +/- 0.04, N = 3
30.88
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.01, N = 3
19.37
2 x Xeon Platinum 8259CL
SE +/- 0.24, N = 3
22.38
Xeon Platinum 8272CL
SE +/- 0.06, N = 3
27.98
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.05, N = 3
18.39
2 x Xeon Platinum 8272CL
SE +/- 0.15, N = 3
20.09
Xeon Platinum 8280
SE +/- 0.02, N = 3
26.84
2 x Xeon Platinum 8280
SE +/- 0.03, N = 3
19.81
Xeon Platinum 8375C
SE +/- 0.01, N = 3
17.72
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.01, N = 3
10.97
2 x Xeon Platinum 8375C
SE +/- 0.12, N = 3
12.33
300
600
900
1200
1500
1. (CXX) g++ options: -O3 -march=native -std=c++11 -msse4.1 -fPIC -fopenmp -pie -lpthread -ldl

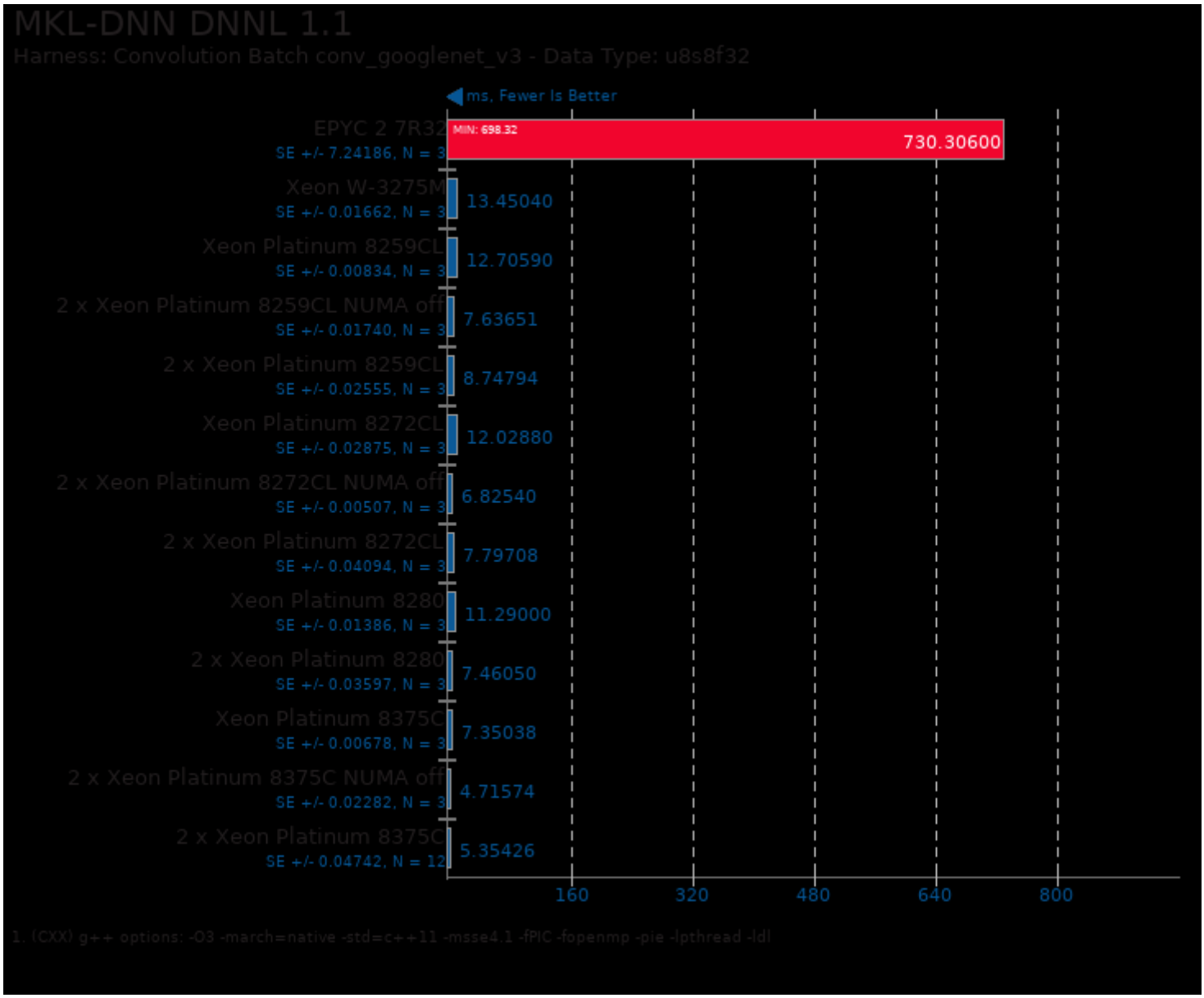

MKL-DNN DNNL 1.1
Harness: Convolution Batch conv_all - Data Type: bf16bf16bf16
ms, Fewer Is Better
Xeon W-3275M
SE +/- 0.11, N = 3
MIN: 3767
3880.44
Xeon Platinum 8259CL
SE +/- 0.11, N = 3
MIN: 4358.26
4364.00
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.30, N = 3
MIN: 2191.82
2198.18
2 x Xeon Platinum 8259CL
SE +/- 0.11, N = 3
MIN: 2191.04
2197.81
Xeon Platinum 8272CL
SE +/- 0.18, N = 3
MIN: 3627.59
3639.27
2 x Xeon Platinum 8272CL NUMA off
SE +/- 1.52, N = 3
MIN: 1827.15
1842.97
2 x Xeon Platinum 8272CL
SE +/- 5.10, N = 3
MIN: 1827.01
1844.78
Xeon Platinum 8280
SE +/- 0.26, N = 3
MIN: 3490.41
3497.47
2 x Xeon Platinum 8280
SE +/- 1.13, N = 3
MIN: 1757.1
1766.35
Xeon Platinum 8375C
SE +/- 0.18, N = 3
MIN: 2707.4
2712.07
2 x Xeon Platinum 8375C NUMA off
SE +/- 1.02, N = 3
MIN: 1361.11
1381.17
2 x Xeon Platinum 8375C
SE +/- 4.43, N = 3
MIN: 1364.34
1421.84
900
1800
2700
3600
4500
1. (CXX) g++ options: -O3 -march=native -std=c++11 -msse4.1 -fPIC -fopenmp -pie -lpthread -ldl

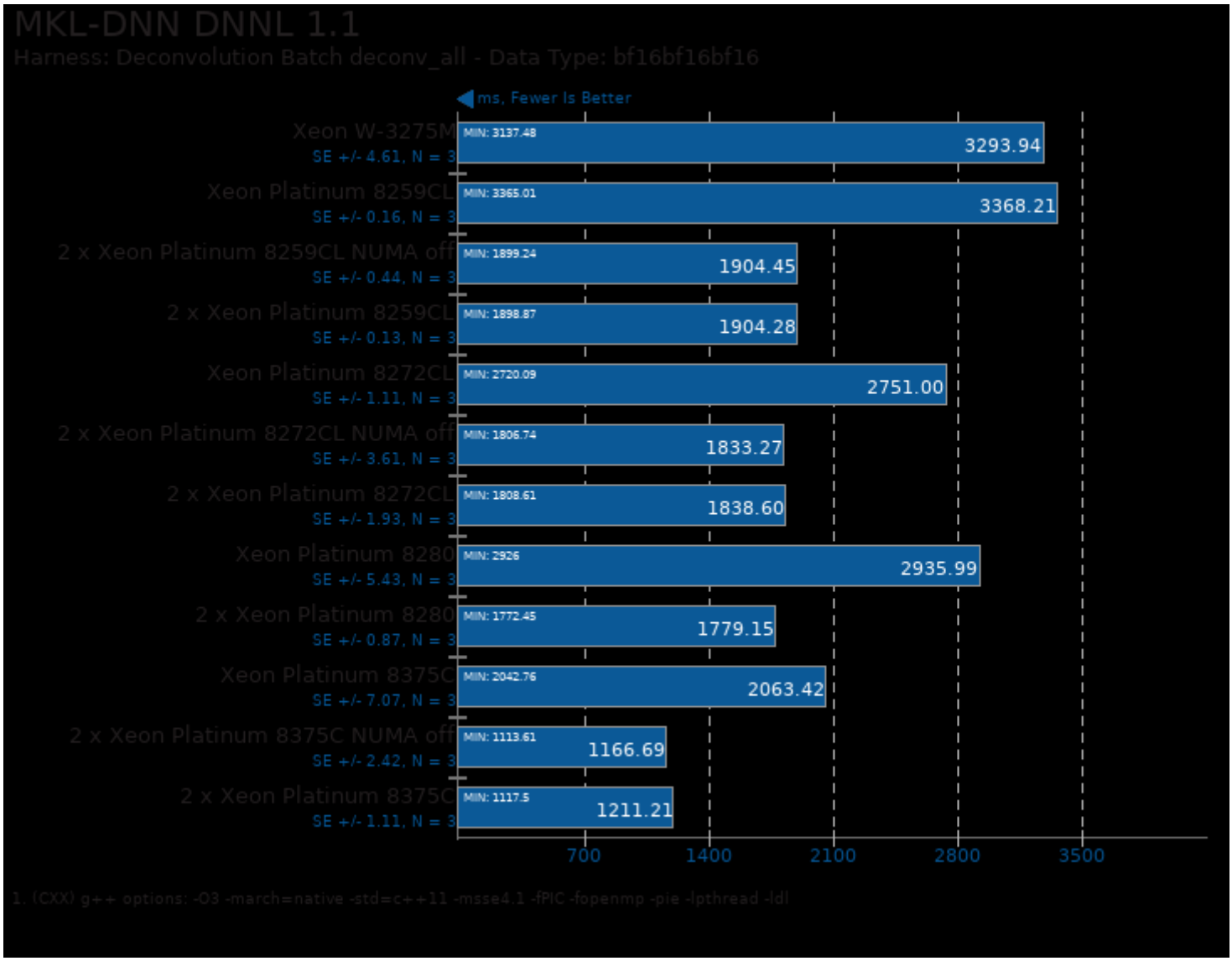

MKL-DNN DNNL 1.1
Harness: Convolution Batch conv_googlenet_v3 - Data Type: f32
ms, Fewer Is Better
EPYC 2 7R32
SE +/- 0.19, N = 3
MIN: 40.72
42.54
Xeon W-3275M
SE +/- 0.07, N = 3
MIN: 44.78
49.87
Xeon Platinum 8259CL
SE +/- 0.04, N = 3
MIN: 47.62
48.06
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.02, N = 3
MIN: 24.48
25.07
2 x Xeon Platinum 8259CL
SE +/- 0.10, N = 3
MIN: 24.46
25.77
Xeon Platinum 8272CL
SE +/- 0.08, N = 3
MIN: 43.29
45.13
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.09, N = 3
MIN: 22.38
23.67
2 x Xeon Platinum 8272CL
SE +/- 0.03, N = 3
MIN: 22.8
24.11
Xeon Platinum 8280
SE +/- 0.02, N = 3
MIN: 41.31
42.08
2 x Xeon Platinum 8280
SE +/- 0.09, N = 3
MIN: 22
23.18
Xeon Platinum 8375C
SE +/- 0.01, N = 3
MIN: 29.83
30.83
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.08, N = 3
MIN: 16.52
17.35
2 x Xeon Platinum 8375C
SE +/- 0.18, N = 12
MIN: 16.59
21.01
11
22
33
44
55
1. (CXX) g++ options: -O3 -march=native -std=c++11 -msse4.1 -fPIC -fopenmp -pie -lpthread -ldl

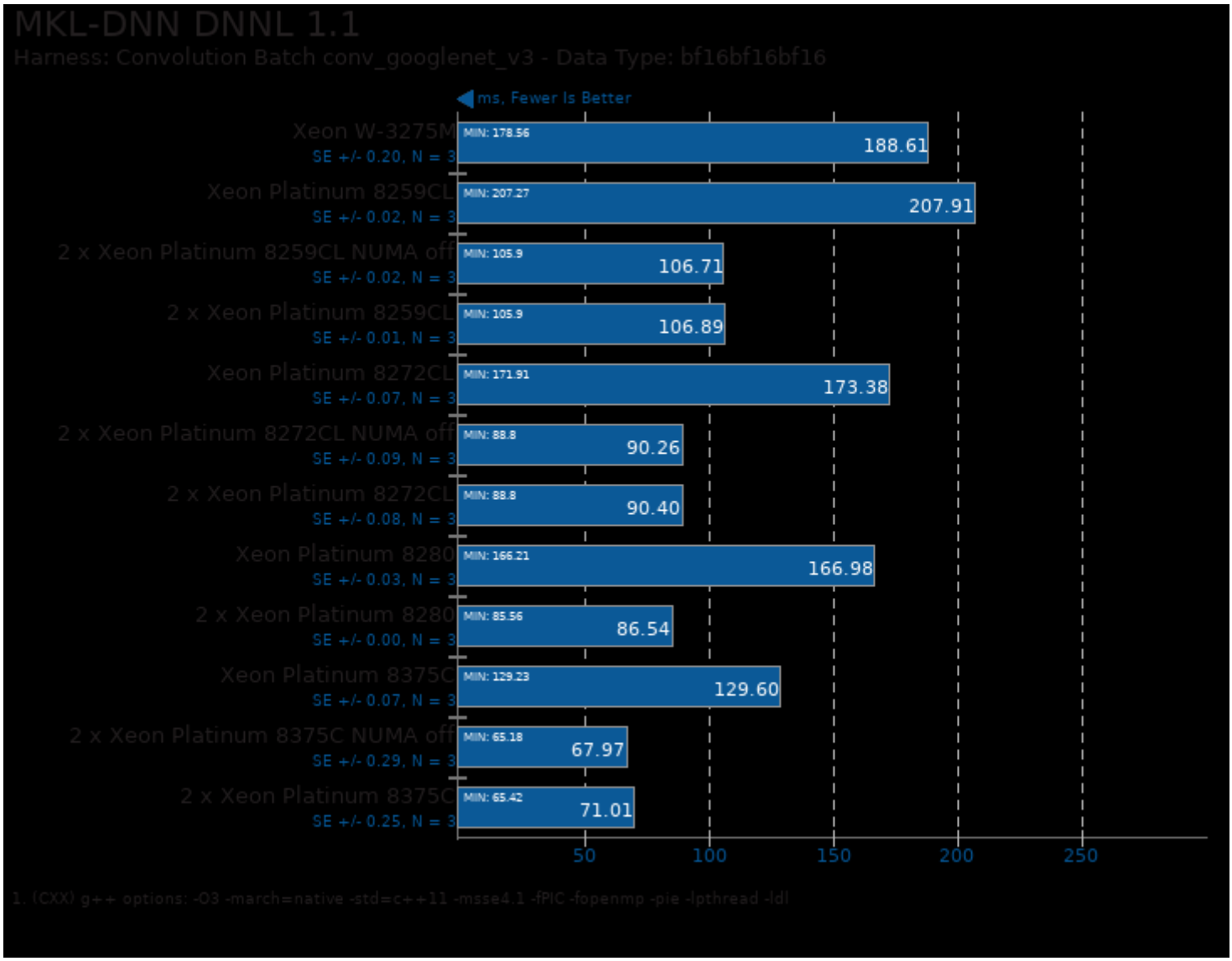

MKL-DNN DNNL 1.1
Harness: Deconvolution Batch deconv_1d - Data Type: bf16bf16bf16
ms, Fewer Is Better
Xeon W-3275M
SE +/- 0.03740, N = 3
MIN: 6.95
7.61595
Xeon Platinum 8259CL
SE +/- 0.02376, N = 3
MIN: 7.92
7.98292
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.00151, N = 3
MIN: 4.38
4.46523
2 x Xeon Platinum 8259CL
SE +/- 0.00489, N = 3
MIN: 4.4
4.49039
Xeon Platinum 8272CL
SE +/- 0.00188, N = 3
MIN: 6.49
6.59778
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.00220, N = 3
MIN: 3.81
3.95067
2 x Xeon Platinum 8272CL
SE +/- 0.00409, N = 3
MIN: 3.85
3.98393
Xeon Platinum 8280
SE +/- 0.00167, N = 3
MIN: 6.5
6.55374
2 x Xeon Platinum 8280
SE +/- 0.00661, N = 3
MIN: 3.93
4.06847
Xeon Platinum 8375C
SE +/- 0.00112, N = 3
MIN: 4.92
4.97888
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.00390, N = 3
MIN: 2.81
2.91495
2 x Xeon Platinum 8375C
SE +/- 0.00343, N = 3
MIN: 2.81
3.07797
2
4
6
8
10
1. (CXX) g++ options: -O3 -march=native -std=c++11 -msse4.1 -fPIC -fopenmp -pie -lpthread -ldl

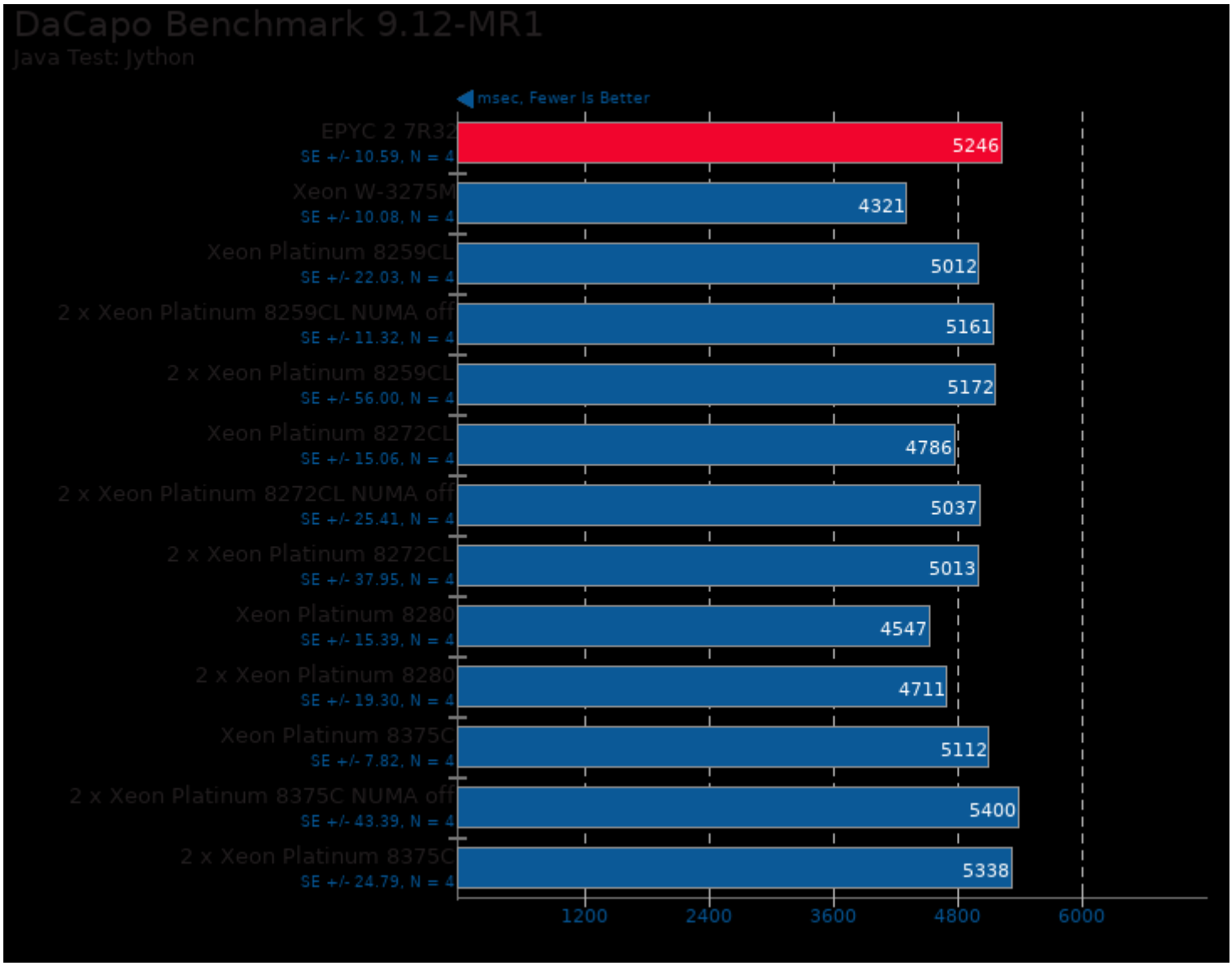

MKL-DNN DNNL 1.1
Harness: Deconvolution Batch deconv_3d - Data Type: bf16bf16bf16
ms, Fewer Is Better
Xeon W-3275M
SE +/- 0.03985, N = 3
MIN: 8.21
8.46273
Xeon Platinum 8259CL
SE +/- 0.00210, N = 3
MIN: 9.33
9.37107
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.00526, N = 3
MIN: 4.82
4.85689
2 x Xeon Platinum 8259CL
SE +/- 0.00712, N = 3
MIN: 4.83
4.87194
Xeon Platinum 8272CL
SE +/- 0.00016, N = 3
MIN: 8.25
8.31677
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.00376, N = 3
MIN: 4.46
4.49464
2 x Xeon Platinum 8272CL
SE +/- 0.00318, N = 3
MIN: 4.44
4.49405
Xeon Platinum 8280
SE +/- 0.00251, N = 3
MIN: 7.67
7.69605
2 x Xeon Platinum 8280
SE +/- 0.00369, N = 3
MIN: 4.31
4.35817
Xeon Platinum 8375C
SE +/- 0.07400, N = 6
MIN: 5.82
6.07117
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.03881, N = 8
MIN: 3.68
3.77769
2 x Xeon Platinum 8375C
SE +/- 0.04017, N = 7
MIN: 3.68
3.78319
3
6
9
12
15
1. (CXX) g++ options: -O3 -march=native -std=c++11 -msse4.1 -fPIC -fopenmp -pie -lpthread -ldl

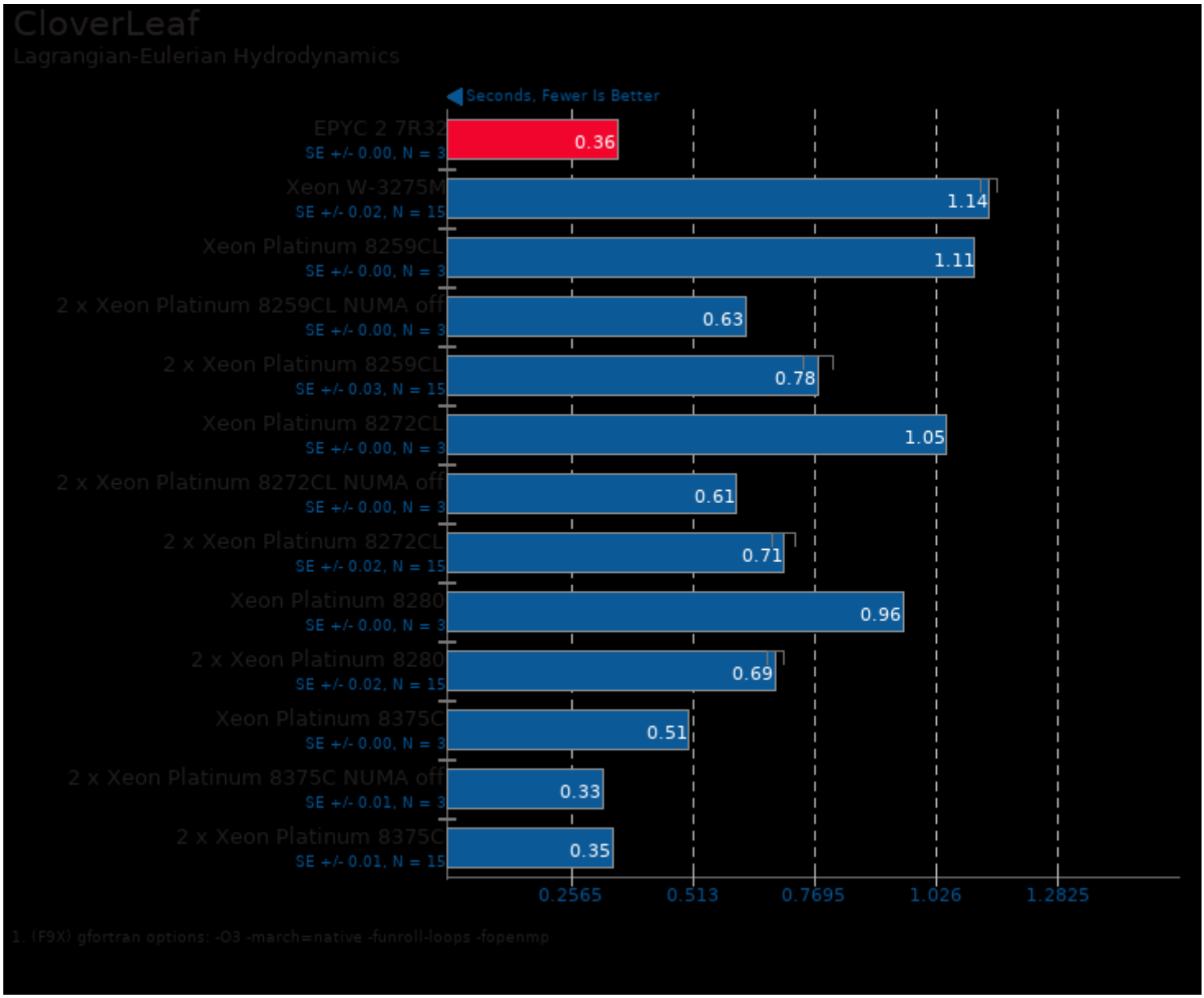

MKL-DNN DNNL 1.1
Harness: Convolution Batch conv_alexnet - Data Type: bf16bf16bf16
ms, Fewer Is Better
Xeon W-3275M
SE +/- 1.04, N = 3
MIN: 687.86
702.07
Xeon Platinum 8259CL
SE +/- 0.41, N = 3
MIN: 795.52
796.75
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.11, N = 3
MIN: 398.47
399.31
2 x Xeon Platinum 8259CL
SE +/- 0.23, N = 3
MIN: 398.05
399.30
Xeon Platinum 8272CL
SE +/- 0.16, N = 3
MIN: 661.35
662.76
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.18, N = 3
MIN: 331.59
332.32
2 x Xeon Platinum 8272CL
SE +/- 5.80, N = 3
MIN: 331.31
337.88
Xeon Platinum 8280
SE +/- 0.07, N = 3
MIN: 636.97
637.37
2 x Xeon Platinum 8280
SE +/- 0.06, N = 3
MIN: 319.23
320.06
Xeon Platinum 8375C
SE +/- 5.46, N = 3
MIN: 493.61
500.12
2 x Xeon Platinum 8375C NUMA off
SE +/- 2.42, N = 3
MIN: 247.18
251.83
2 x Xeon Platinum 8375C
SE +/- 2.55, N = 3
MIN: 247.48
252.41
200
400
600
800
1000
1. (CXX) g++ options: -O3 -march=native -std=c++11 -msse4.1 -fPIC -fopenmp -pie -lpthread -ldl

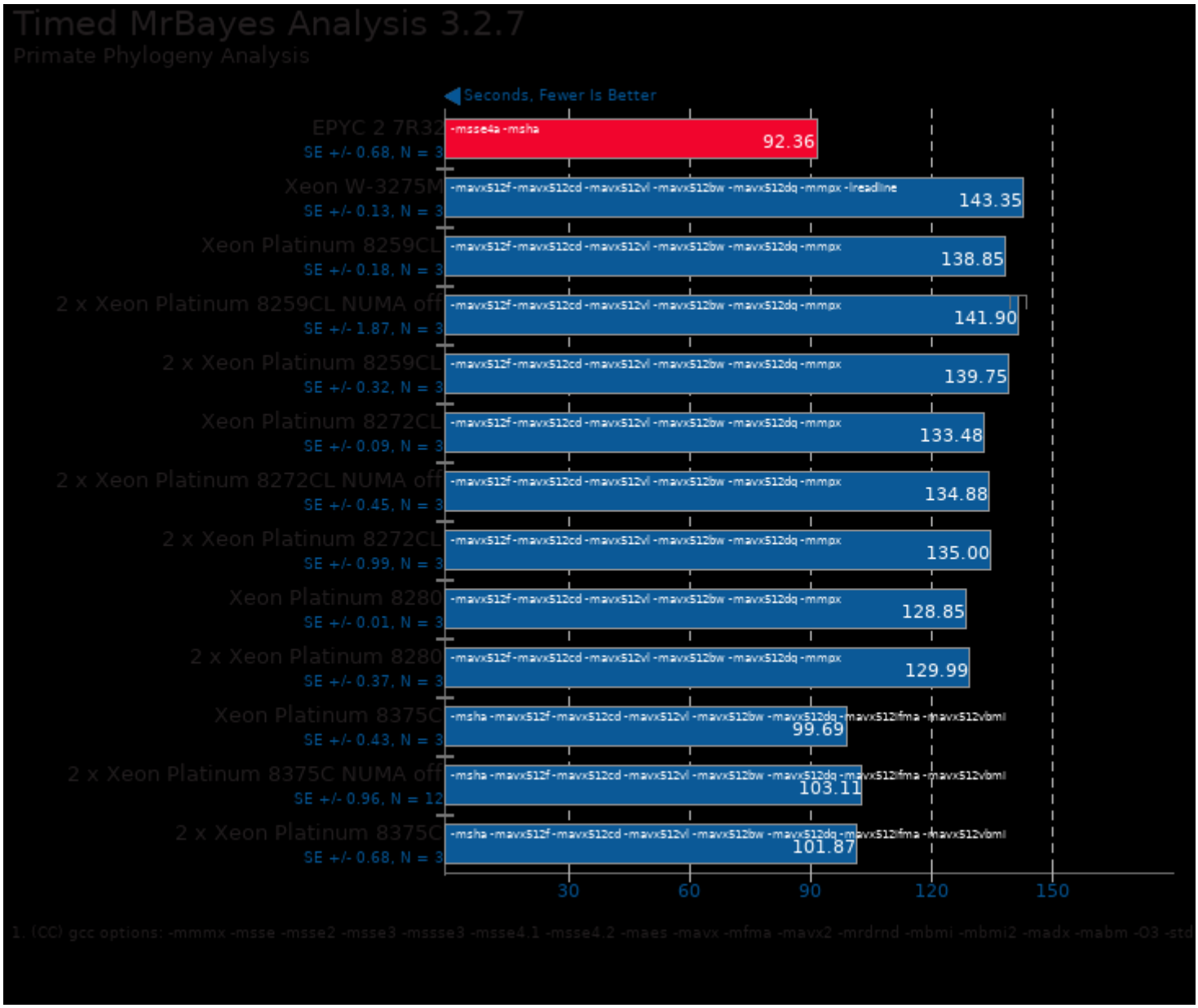

MKL-DNN DNNL 1.1
Harness: Convolution Batch conv_googlenet_v3 - Data Type: u8s8f32
ms, Fewer Is Better
EPYC 2 7R32
SE +/- 7.24186, N = 3
MIN: 698.32
730.30600
Xeon W-3275M
SE +/- 0.01662, N = 3
13.45040
Xeon Platinum 8259CL
SE +/- 0.00834, N = 3
12.70590
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.01740, N = 3
7.63651
2 x Xeon Platinum 8259CL
SE +/- 0.02555, N = 3
8.74794
Xeon Platinum 8272CL
SE +/- 0.02875, N = 3
12.02880
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.00507, N = 3
6.82540
2 x Xeon Platinum 8272CL
SE +/- 0.04094, N = 3
7.79708
Xeon Platinum 8280
SE +/- 0.01386, N = 3
11.29000
2 x Xeon Platinum 8280
SE +/- 0.03597, N = 3
7.46050
Xeon Platinum 8375C
SE +/- 0.00678, N = 3
7.35038
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.02282, N = 3
4.71574
2 x Xeon Platinum 8375C
SE +/- 0.04742, N = 12
5.35426
160
320
480
640
800
1. (CXX) g++ options: -O3 -march=native -std=c++11 -msse4.1 -fPIC -fopenmp -pie -lpthread -ldl

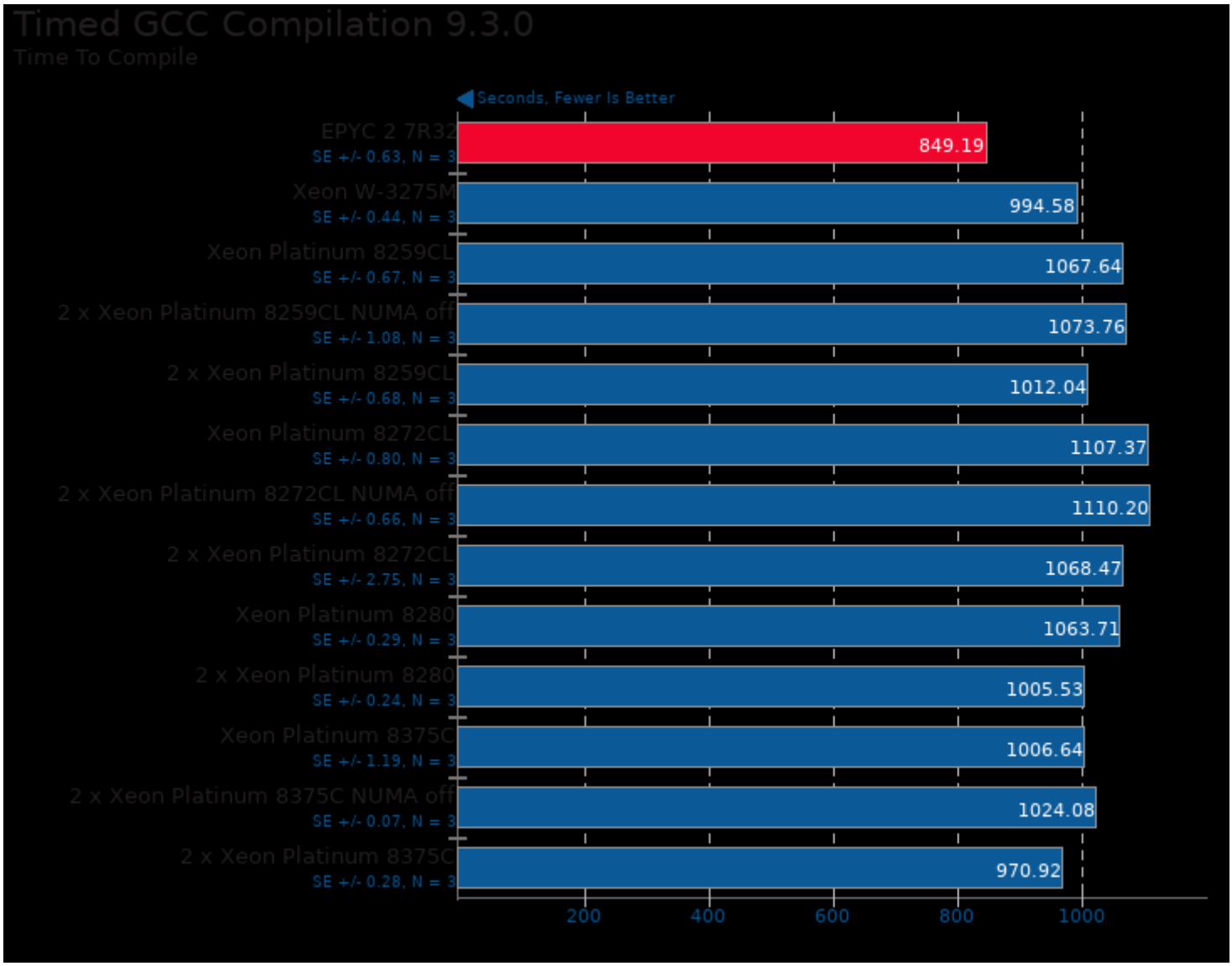

MKL-DNN DNNL 1.1
Harness: Deconvolution Batch deconv_all - Data Type: bf16bf16bf16
ms, Fewer Is Better
Xeon W-3275M
SE +/- 4.61, N = 3
MIN: 3137.48
3293.94
Xeon Platinum 8259CL
SE +/- 0.16, N = 3
MIN: 3365.01
3368.21
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.44, N = 3
MIN: 1899.24
1904.45
2 x Xeon Platinum 8259CL
SE +/- 0.13, N = 3
MIN: 1898.87
1904.28
Xeon Platinum 8272CL
SE +/- 1.11, N = 3
MIN: 2720.09
2751.00
2 x Xeon Platinum 8272CL NUMA off
SE +/- 3.61, N = 3
MIN: 1806.74
1833.27
2 x Xeon Platinum 8272CL
SE +/- 1.93, N = 3
MIN: 1808.61
1838.60
Xeon Platinum 8280
SE +/- 5.43, N = 3
MIN: 2926
2935.99
2 x Xeon Platinum 8280
SE +/- 0.87, N = 3
MIN: 1772.45
1779.15
Xeon Platinum 8375C
SE +/- 7.07, N = 3
MIN: 2042.76
2063.42
2 x Xeon Platinum 8375C NUMA off
SE +/- 2.42, N = 3
MIN: 1113.61
1166.69
2 x Xeon Platinum 8375C
SE +/- 1.11, N = 3
MIN: 1117.5
1211.21
700
1400
2100
2800
3500
1. (CXX) g++ options: -O3 -march=native -std=c++11 -msse4.1 -fPIC -fopenmp -pie -lpthread -ldl

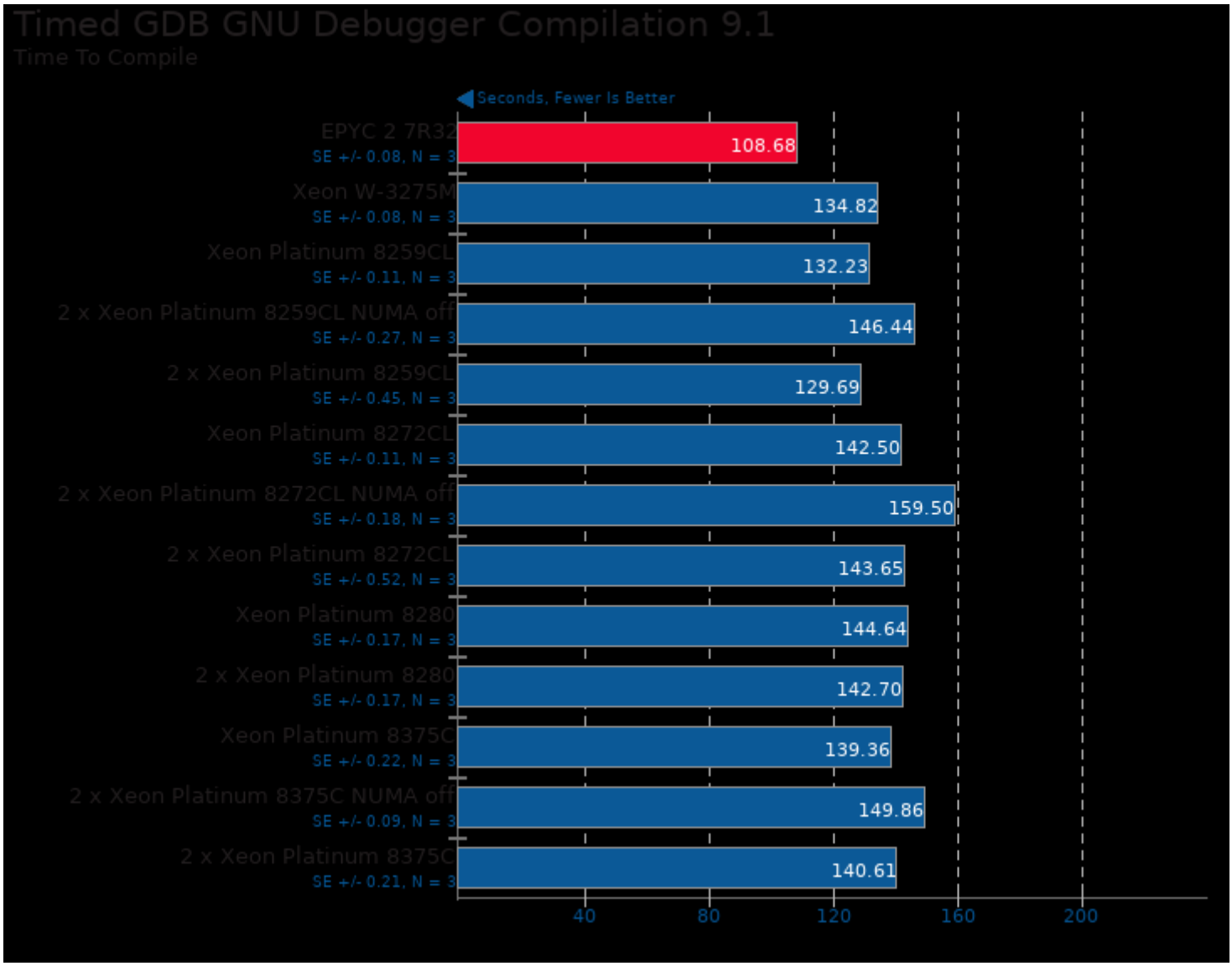

MKL-DNN DNNL 1.1
Harness: Convolution Batch conv_googlenet_v3 - Data Type: bf16bf16bf16
ms, Fewer Is Better
Xeon W-3275M
SE +/- 0.20, N = 3
MIN: 178.56
188.61
Xeon Platinum 8259CL
SE +/- 0.02, N = 3
MIN: 207.27
207.91
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.02, N = 3
MIN: 105.9
106.71
2 x Xeon Platinum 8259CL
SE +/- 0.01, N = 3
MIN: 105.9
106.89
Xeon Platinum 8272CL
SE +/- 0.07, N = 3
MIN: 171.91
173.38
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.09, N = 3
MIN: 88.8
90.26
2 x Xeon Platinum 8272CL
SE +/- 0.08, N = 3
MIN: 88.8
90.40
Xeon Platinum 8280
SE +/- 0.03, N = 3
MIN: 166.21
166.98
2 x Xeon Platinum 8280
SE +/- 0.00, N = 3
MIN: 85.56
86.54
Xeon Platinum 8375C
SE +/- 0.07, N = 3
MIN: 129.23
129.60
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.29, N = 3
MIN: 65.18
67.97
2 x Xeon Platinum 8375C
SE +/- 0.25, N = 3
MIN: 65.42
71.01
50
100
150
200
250
1. (CXX) g++ options: -O3 -march=native -std=c++11 -msse4.1 -fPIC -fopenmp -pie -lpthread -ldl

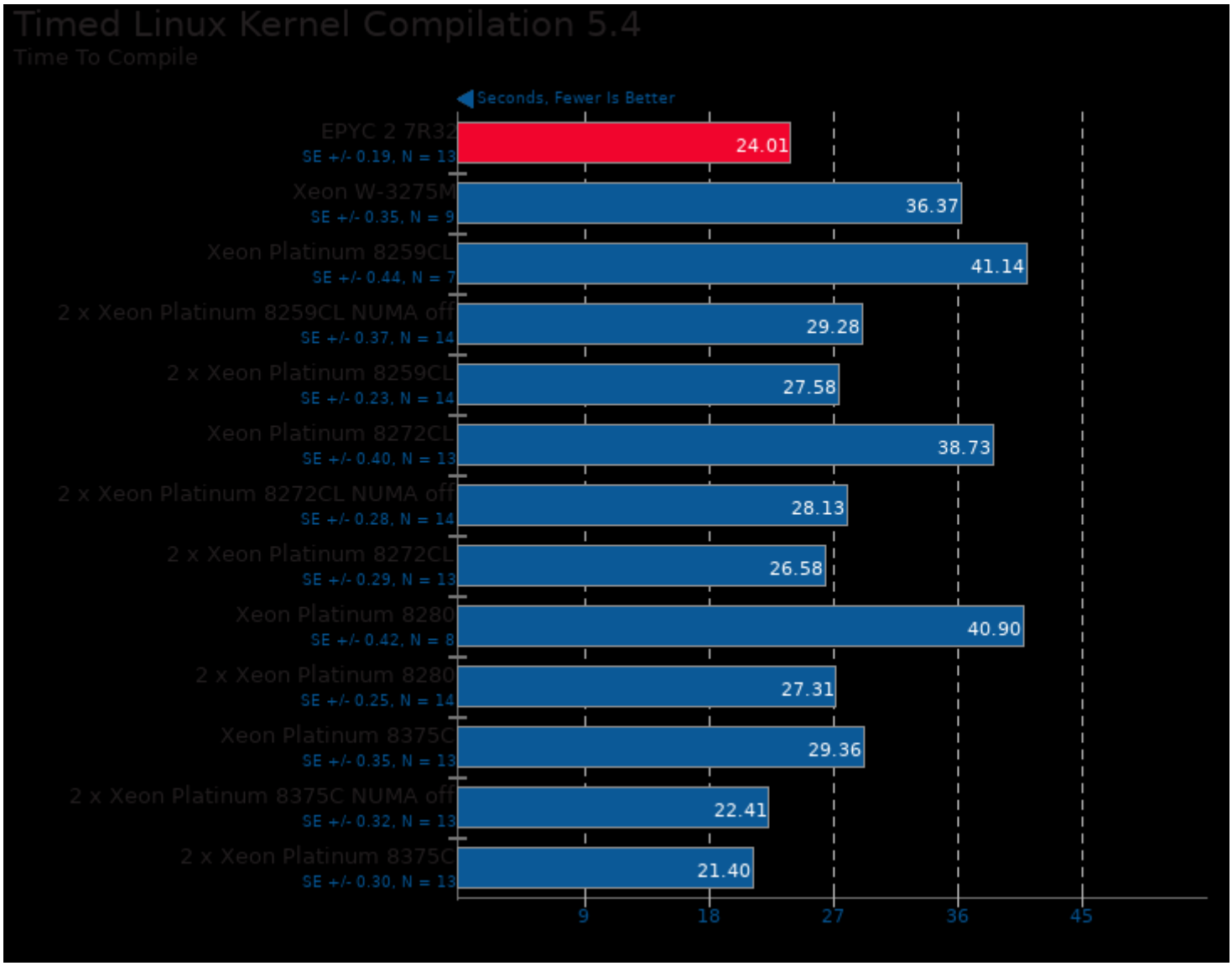

DaCapo Benchmark 9.12-MR1
Java Test: Jython
msec, Fewer Is Better
EPYC 2 7R32
SE +/- 10.59, N = 4
5246
Xeon W-3275M
SE +/- 10.08, N = 4
4321
Xeon Platinum 8259CL
SE +/- 22.03, N = 4
5012
2 x Xeon Platinum 8259CL NUMA off
SE +/- 11.32, N = 4
5161
2 x Xeon Platinum 8259CL
SE +/- 56.00, N = 4
5172
Xeon Platinum 8272CL
SE +/- 15.06, N = 4
4786
2 x Xeon Platinum 8272CL NUMA off
SE +/- 25.41, N = 4
5037
2 x Xeon Platinum 8272CL
SE +/- 37.95, N = 4
5013
Xeon Platinum 8280
SE +/- 15.39, N = 4
4547
2 x Xeon Platinum 8280
SE +/- 19.30, N = 4
4711
Xeon Platinum 8375C
SE +/- 7.82, N = 4
5112
2 x Xeon Platinum 8375C NUMA off
SE +/- 43.39, N = 4
5400
2 x Xeon Platinum 8375C
SE +/- 24.79, N = 4
5338
1200
2400
3600
4800
6000

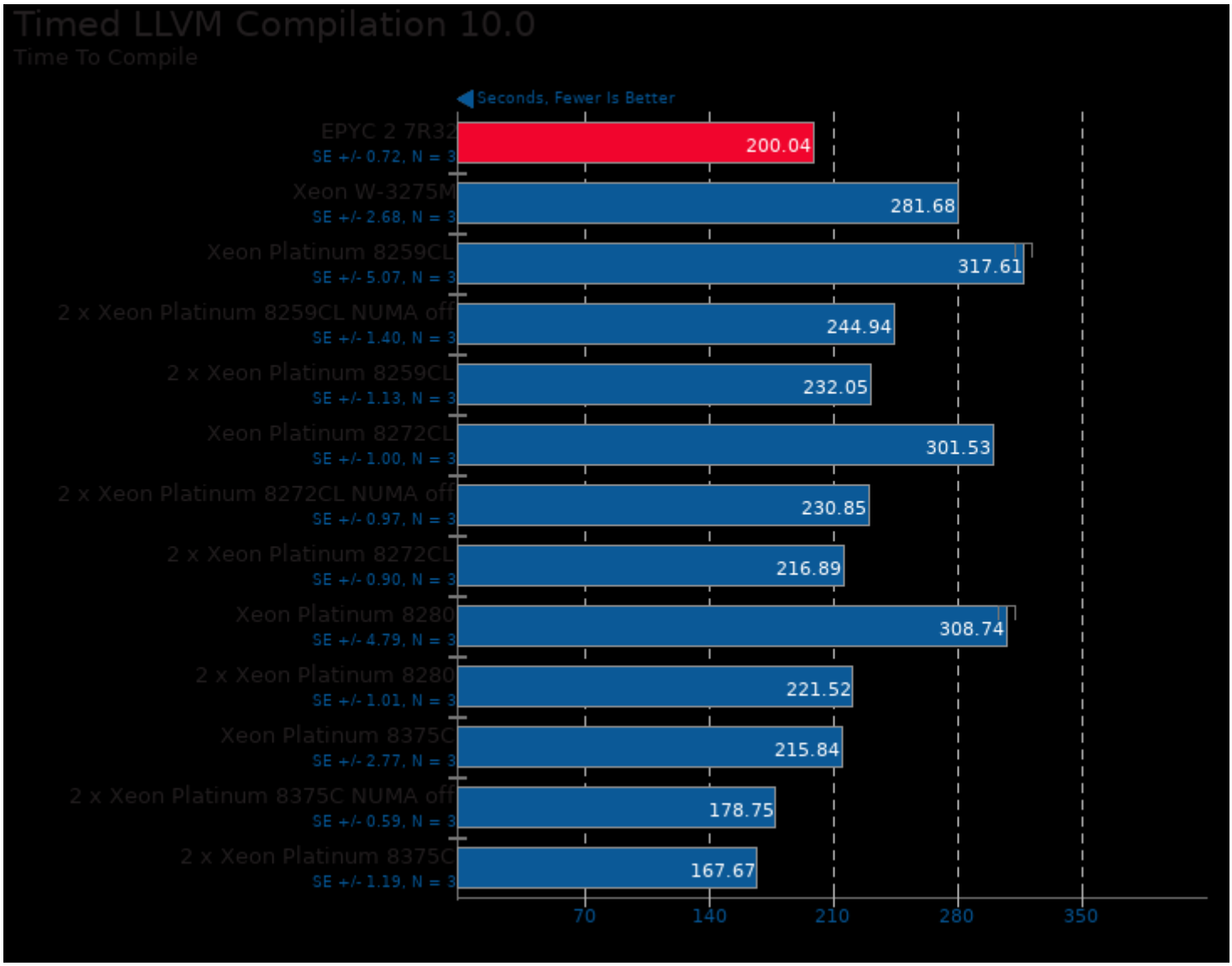

CloverLeaf
Lagrangian-Eulerian Hydrodynamics
Seconds, Fewer Is Better
EPYC 2 7R32
SE +/- 0.00, N = 3
0.36
Xeon W-3275M
SE +/- 0.02, N = 15
1.14
Xeon Platinum 8259CL
SE +/- 0.00, N = 3
1.11
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.00, N = 3
0.63
2 x Xeon Platinum 8259CL
SE +/- 0.03, N = 15
0.78
Xeon Platinum 8272CL
SE +/- 0.00, N = 3
1.05
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.00, N = 3
0.61
2 x Xeon Platinum 8272CL
SE +/- 0.02, N = 15
0.71
Xeon Platinum 8280
SE +/- 0.00, N = 3
0.96
2 x Xeon Platinum 8280
SE +/- 0.02, N = 15
0.69
Xeon Platinum 8375C
SE +/- 0.00, N = 3
0.51
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.01, N = 3
0.33
2 x Xeon Platinum 8375C
SE +/- 0.01, N = 15
0.35
0.2565
0.513
0.7695
1.026
1.2825
1. (F9X) gfortran options: -O3 -march=native -funroll-loops -fopenmp

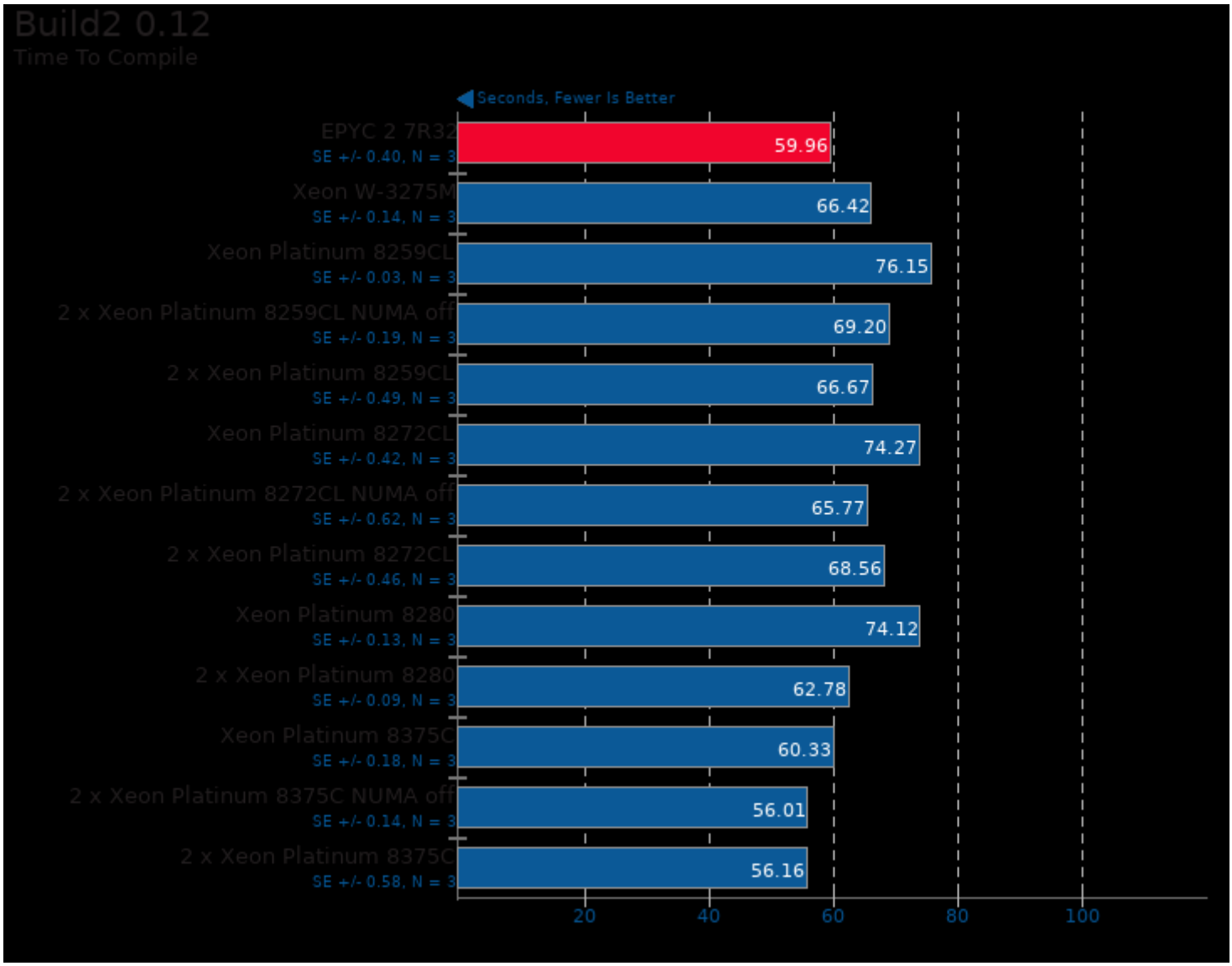

Timed MrBayes Analysis 3.2.7
Primate Phylogeny Analysis
Seconds, Fewer Is Better
EPYC 2 7R32
SE +/- 0.68, N = 3
-msse4a -msha
92.36
Xeon W-3275M
SE +/- 0.13, N = 3
-mavx512f -mavx512cd -mavx512vl -mavx512bw -mavx512dq -mmpx -lreadline
143.35
Xeon Platinum 8259CL
SE +/- 0.18, N = 3
-mavx512f -mavx512cd -mavx512vl -mavx512bw -mavx512dq -mmpx
138.85
2 x Xeon Platinum 8259CL NUMA off
SE +/- 1.87, N = 3
-mavx512f -mavx512cd -mavx512vl -mavx512bw -mavx512dq -mmpx
141.90
2 x Xeon Platinum 8259CL
SE +/- 0.32, N = 3
-mavx512f -mavx512cd -mavx512vl -mavx512bw -mavx512dq -mmpx
139.75
Xeon Platinum 8272CL
SE +/- 0.09, N = 3
-mavx512f -mavx512cd -mavx512vl -mavx512bw -mavx512dq -mmpx
133.48
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.45, N = 3
-mavx512f -mavx512cd -mavx512vl -mavx512bw -mavx512dq -mmpx
134.88
2 x Xeon Platinum 8272CL
SE +/- 0.99, N = 3
-mavx512f -mavx512cd -mavx512vl -mavx512bw -mavx512dq -mmpx
135.00
Xeon Platinum 8280
SE +/- 0.01, N = 3
-mavx512f -mavx512cd -mavx512vl -mavx512bw -mavx512dq -mmpx
128.85
2 x Xeon Platinum 8280
SE +/- 0.37, N = 3
-mavx512f -mavx512cd -mavx512vl -mavx512bw -mavx512dq -mmpx
129.99
Xeon Platinum 8375C
SE +/- 0.43, N = 3
-msha -mavx512f -mavx512cd -mavx512vl -mavx512bw -mavx512dq -mavx512ifma -mavx512vbmi
99.69
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.96, N = 12
-msha -mavx512f -mavx512cd -mavx512vl -mavx512bw -mavx512dq -mavx512ifma -mavx512vbmi
103.11
2 x Xeon Platinum 8375C
SE +/- 0.68, N = 3
-msha -mavx512f -mavx512cd -mavx512vl -mavx512bw -mavx512dq -mavx512ifma -mavx512vbmi
101.87
30
60
90
120
150
1. (CC) gcc options: -mmmx -msse -msse2 -msse3 -mssse3 -msse4.1 -msse4.2 -maes -mavx -mfma -mavx2 -mrdrnd -mbmi -mbmi2 -madx -mabm -O3 -std

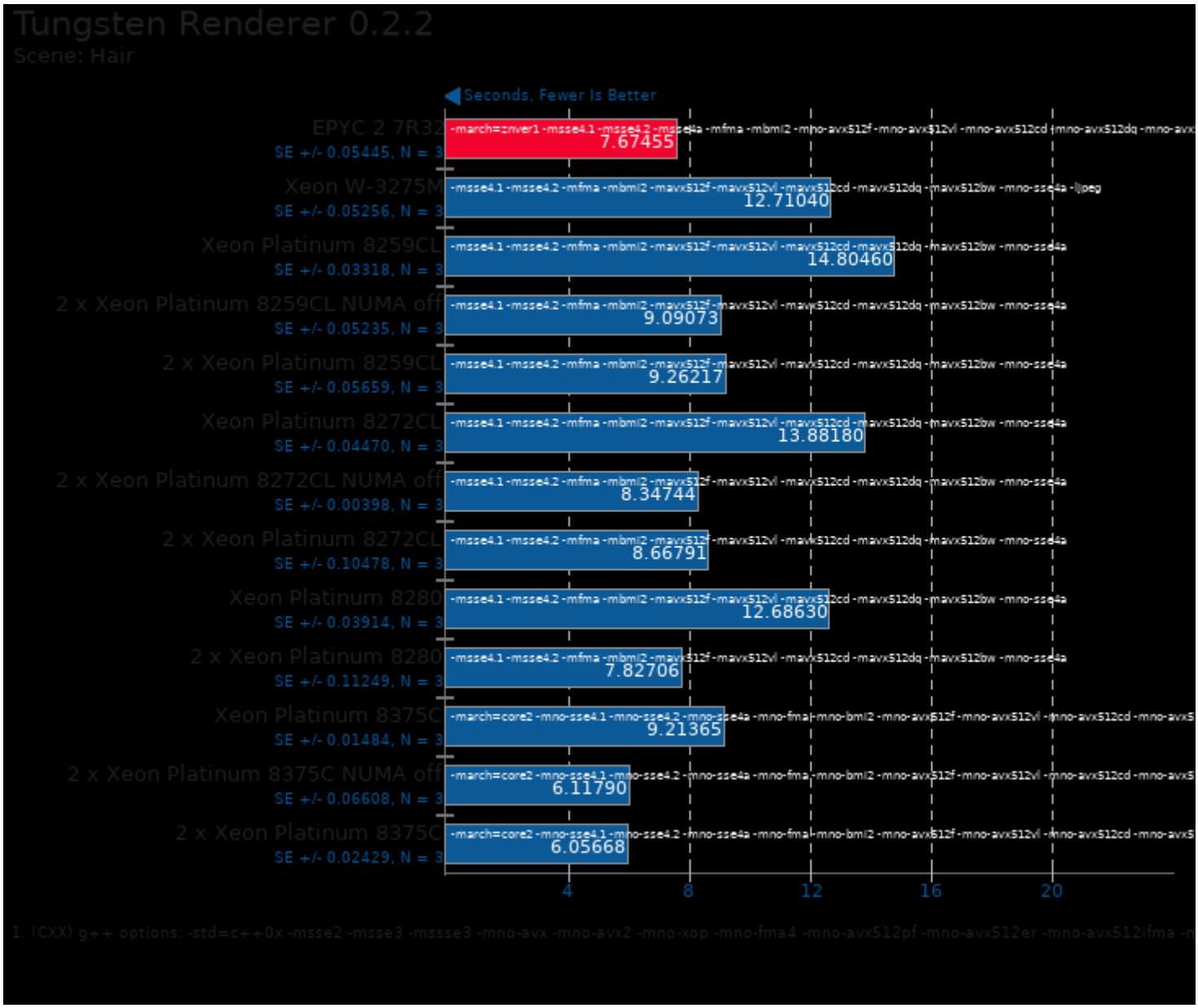

Timed GCC Compilation 9.3.0
Time To Compile
Seconds, Fewer Is Better
EPYC 2 7R32
SE +/- 0.63, N = 3
849.19
Xeon W-3275M
SE +/- 0.44, N = 3
994.58
Xeon Platinum 8259CL
SE +/- 0.67, N = 3
1067.64
2 x Xeon Platinum 8259CL NUMA off
SE +/- 1.08, N = 3
1073.76
2 x Xeon Platinum 8259CL
SE +/- 0.68, N = 3
1012.04
Xeon Platinum 8272CL
SE +/- 0.80, N = 3
1107.37
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.66, N = 3
1110.20
2 x Xeon Platinum 8272CL
SE +/- 2.75, N = 3
1068.47
Xeon Platinum 8280
SE +/- 0.29, N = 3
1063.71
2 x Xeon Platinum 8280
SE +/- 0.24, N = 3
1005.53
Xeon Platinum 8375C
SE +/- 1.19, N = 3
1006.64
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.07, N = 3
1024.08
2 x Xeon Platinum 8375C
SE +/- 0.28, N = 3
970.92
200
400
600
800
1000

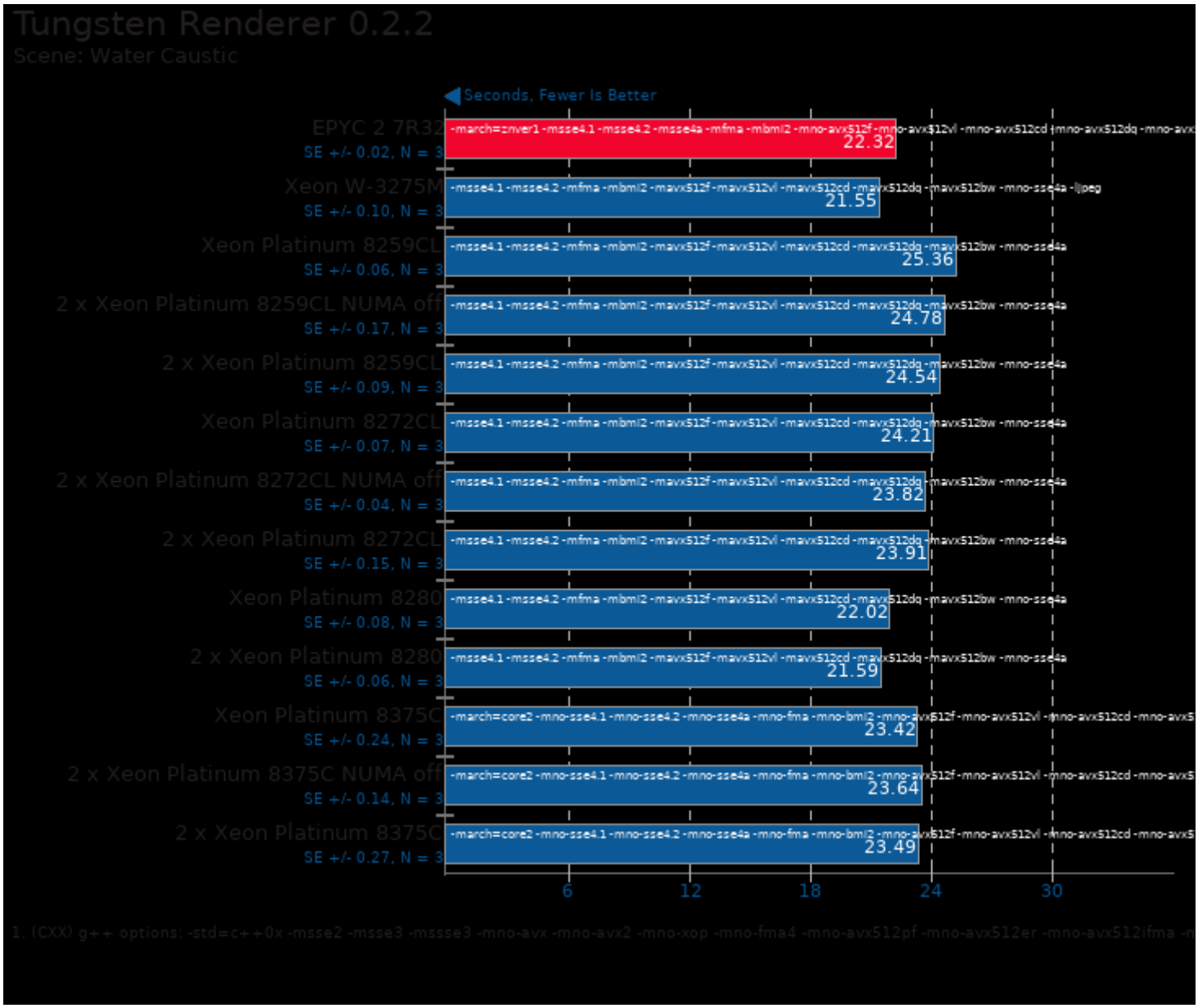

Timed GDB GNU Debugger Compilation 9.1
Time To Compile
Seconds, Fewer Is Better
EPYC 2 7R32
SE +/- 0.08, N = 3
108.68
Xeon W-3275M
SE +/- 0.08, N = 3
134.82
Xeon Platinum 8259CL
SE +/- 0.11, N = 3
132.23
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.27, N = 3
146.44
2 x Xeon Platinum 8259CL
SE +/- 0.45, N = 3
129.69
Xeon Platinum 8272CL
SE +/- 0.11, N = 3
142.50
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.18, N = 3
159.50
2 x Xeon Platinum 8272CL
SE +/- 0.52, N = 3
143.65
Xeon Platinum 8280
SE +/- 0.17, N = 3
144.64
2 x Xeon Platinum 8280
SE +/- 0.17, N = 3
142.70
Xeon Platinum 8375C
SE +/- 0.22, N = 3
139.36
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.09, N = 3
149.86
2 x Xeon Platinum 8375C
SE +/- 0.21, N = 3
140.61
40
80
120
160
200

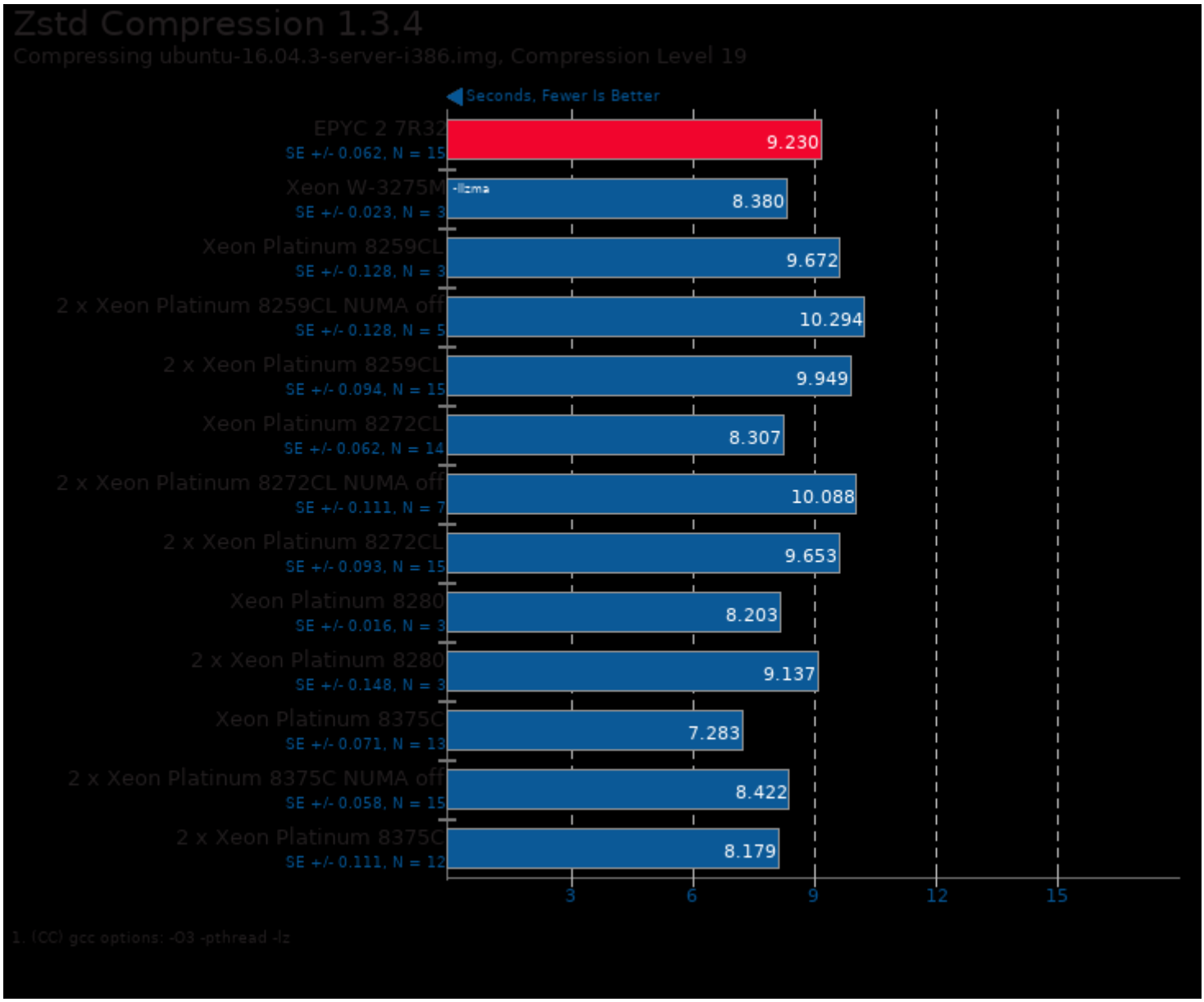

Timed Linux Kernel Compilation 5.4
Time To Compile
Seconds, Fewer Is Better
EPYC 2 7R32
SE +/- 0.19, N = 13
24.01
Xeon W-3275M
SE +/- 0.35, N = 9
36.37
Xeon Platinum 8259CL
SE +/- 0.44, N = 7
41.14
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.37, N = 14
29.28
2 x Xeon Platinum 8259CL
SE +/- 0.23, N = 14
27.58
Xeon Platinum 8272CL
SE +/- 0.40, N = 13
38.73
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.28, N = 14
28.13
2 x Xeon Platinum 8272CL
SE +/- 0.29, N = 13
26.58
Xeon Platinum 8280
SE +/- 0.42, N = 8
40.90
2 x Xeon Platinum 8280
SE +/- 0.25, N = 14
27.31
Xeon Platinum 8375C
SE +/- 0.35, N = 13
29.36
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.32, N = 13
22.41
2 x Xeon Platinum 8375C
SE +/- 0.30, N = 13
21.40
9
18
27
36
45

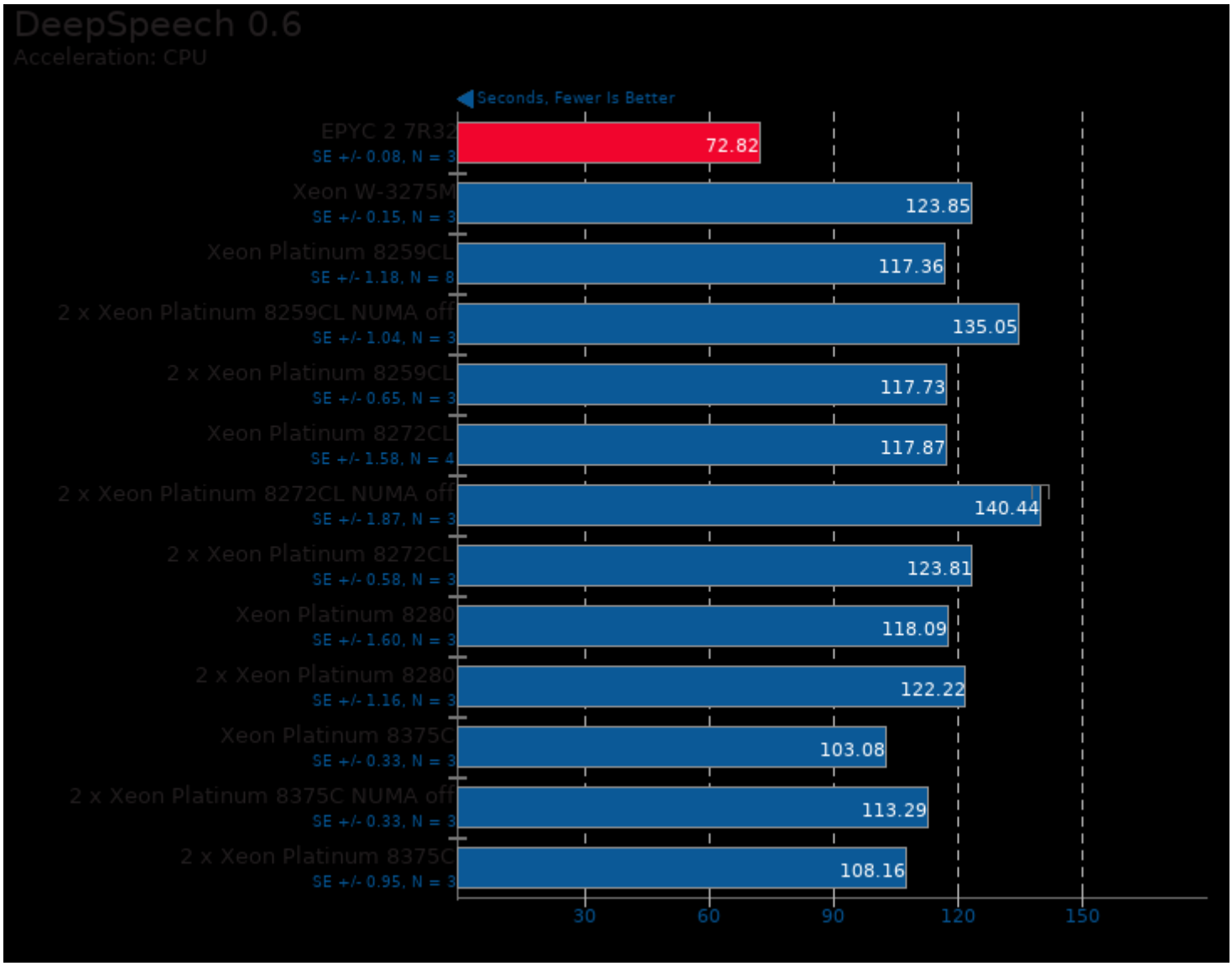

Timed LLVM Compilation 10.0
Time To Compile
Seconds, Fewer Is Better
EPYC 2 7R32
SE +/- 0.72, N = 3
200.04
Xeon W-3275M
SE +/- 2.68, N = 3
281.68
Xeon Platinum 8259CL
SE +/- 5.07, N = 3
317.61
2 x Xeon Platinum 8259CL NUMA off
SE +/- 1.40, N = 3
244.94
2 x Xeon Platinum 8259CL
SE +/- 1.13, N = 3
232.05
Xeon Platinum 8272CL
SE +/- 1.00, N = 3
301.53
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.97, N = 3
230.85
2 x Xeon Platinum 8272CL
SE +/- 0.90, N = 3
216.89
Xeon Platinum 8280
SE +/- 4.79, N = 3
308.74
2 x Xeon Platinum 8280
SE +/- 1.01, N = 3
221.52
Xeon Platinum 8375C
SE +/- 2.77, N = 3
215.84
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.59, N = 3
178.75
2 x Xeon Platinum 8375C
SE +/- 1.19, N = 3
167.67
70
140
210
280
350

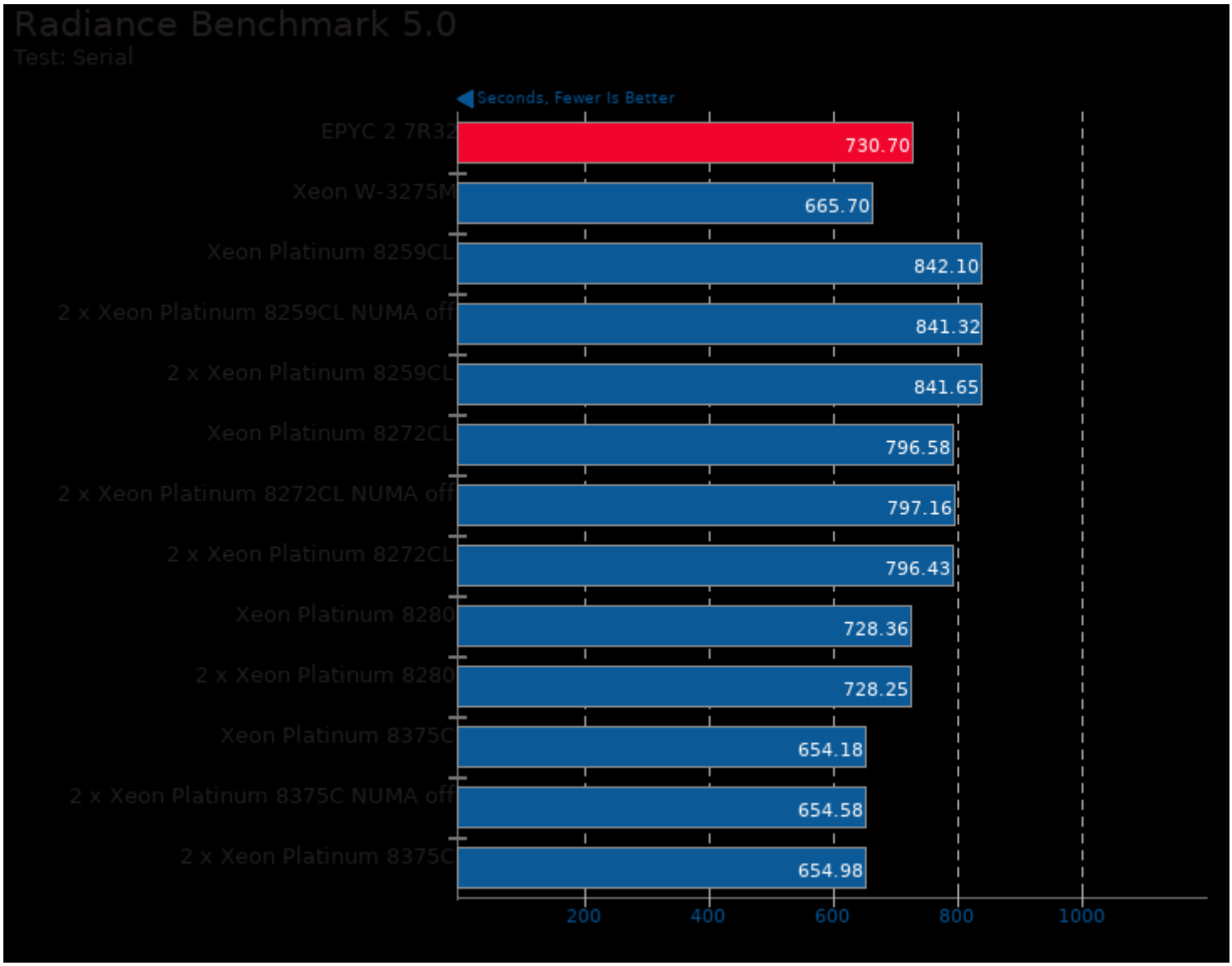

Build2 0.12
Time To Compile
Seconds, Fewer Is Better
EPYC 2 7R32
SE +/- 0.40, N = 3
59.96
Xeon W-3275M
SE +/- 0.14, N = 3
66.42
Xeon Platinum 8259CL
SE +/- 0.03, N = 3
76.15
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.19, N = 3
69.20
2 x Xeon Platinum 8259CL
SE +/- 0.49, N = 3
66.67
Xeon Platinum 8272CL
SE +/- 0.42, N = 3
74.27
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.62, N = 3
65.77
2 x Xeon Platinum 8272CL
SE +/- 0.46, N = 3
68.56
Xeon Platinum 8280
SE +/- 0.13, N = 3
74.12
2 x Xeon Platinum 8280
SE +/- 0.09, N = 3
62.78
Xeon Platinum 8375C
SE +/- 0.18, N = 3
60.33
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.14, N = 3
56.01
2 x Xeon Platinum 8375C
SE +/- 0.58, N = 3
56.16
20
40
60
80
100

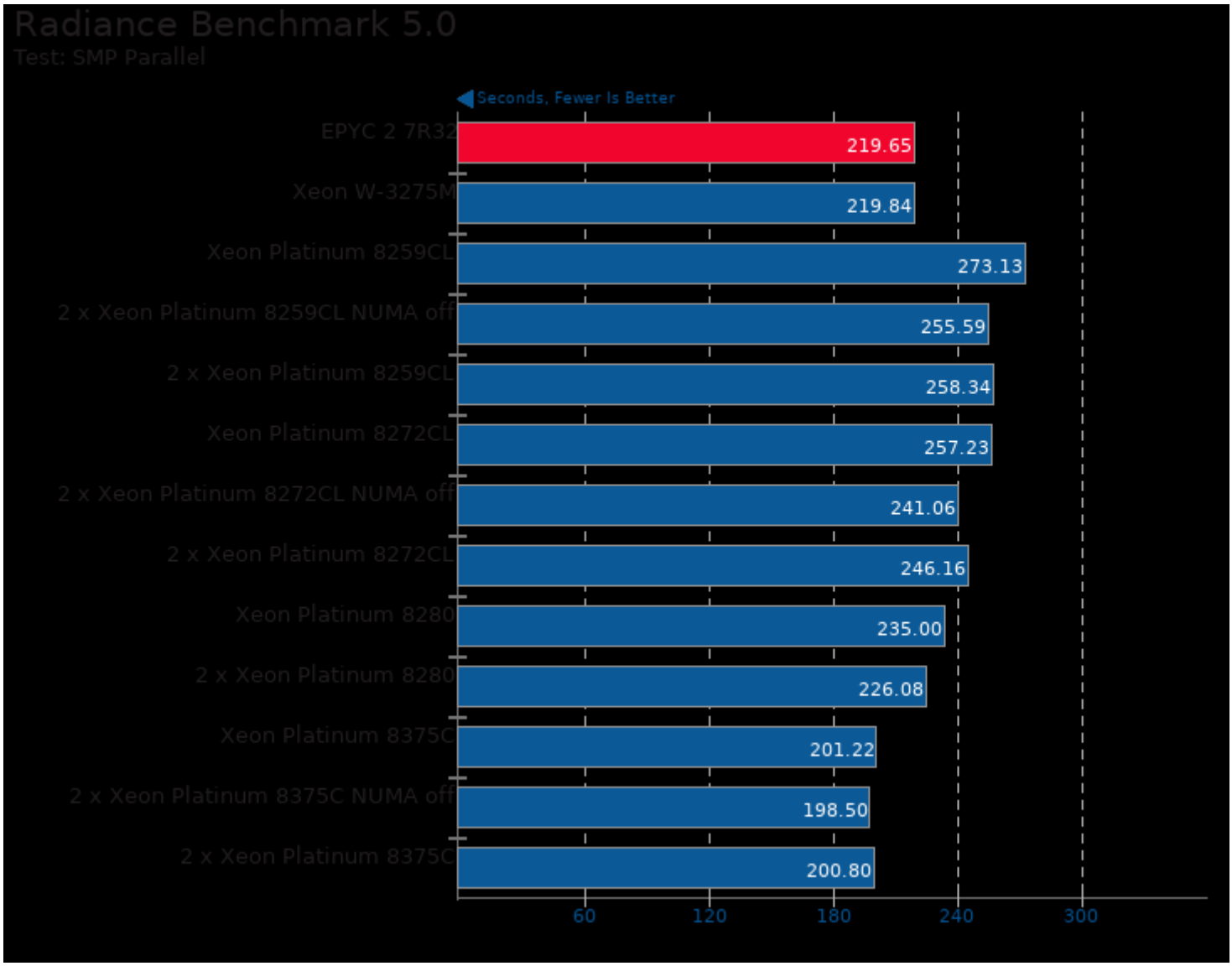

Tungsten Renderer 0.2.2
Scene: Hair
Seconds, Fewer Is Better
EPYC 2 7R32
SE +/- 0.05445, N = 3
-march=znver1 -msse4.1 -msse4.2 -msse4a -mfma -mbmi2 -mno-avx512f -mno-avx512vl -mno-avx512cd -mno-avx512dq -mno-avx
7.67455
Xeon W-3275M
SE +/- 0.05256, N = 3
-msse4.1 -msse4.2 -mfma -mbmi2 -mavx512f -mavx512vl -mavx512cd -mavx512dq -mavx512bw -mno-sse4a -ljpeg
12.71040
Xeon Platinum 8259CL
SE +/- 0.03318, N = 3
-msse4.1 -msse4.2 -mfma -mbmi2 -mavx512f -mavx512vl -mavx512cd -mavx512dq -mavx512bw -mno-sse4a
14.80460
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.05235, N = 3
-msse4.1 -msse4.2 -mfma -mbmi2 -mavx512f -mavx512vl -mavx512cd -mavx512dq -mavx512bw -mno-sse4a
9.09073
2 x Xeon Platinum 8259CL
SE +/- 0.05659, N = 3
-msse4.1 -msse4.2 -mfma -mbmi2 -mavx512f -mavx512vl -mavx512cd -mavx512dq -mavx512bw -mno-sse4a
9.26217
Xeon Platinum 8272CL
SE +/- 0.04470, N = 3
-msse4.1 -msse4.2 -mfma -mbmi2 -mavx512f -mavx512vl -mavx512cd -mavx512dq -mavx512bw -mno-sse4a
13.88180
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.00398, N = 3
-msse4.1 -msse4.2 -mfma -mbmi2 -mavx512f -mavx512vl -mavx512cd -mavx512dq -mavx512bw -mno-sse4a
8.34744
2 x Xeon Platinum 8272CL
SE +/- 0.10478, N = 3
-msse4.1 -msse4.2 -mfma -mbmi2 -mavx512f -mavx512vl -mavx512cd -mavx512dq -mavx512bw -mno-sse4a
8.66791
Xeon Platinum 8280
SE +/- 0.03914, N = 3
-msse4.1 -msse4.2 -mfma -mbmi2 -mavx512f -mavx512vl -mavx512cd -mavx512dq -mavx512bw -mno-sse4a
12.68630
2 x Xeon Platinum 8280
SE +/- 0.11249, N = 3
-msse4.1 -msse4.2 -mfma -mbmi2 -mavx512f -mavx512vl -mavx512cd -mavx512dq -mavx512bw -mno-sse4a
7.82706
Xeon Platinum 8375C
SE +/- 0.01484, N = 3
-march=core2 -mno-sse4.1 -mno-sse4.2 -mno-sse4a -mno-fma -mno-bmi2 -mno-avx512f -mno-avx512vl -mno-avx512cd -mno-avx
9.21365
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.06608, N = 3
-march=core2 -mno-sse4.1 -mno-sse4.2 -mno-sse4a -mno-fma -mno-bmi2 -mno-avx512f -mno-avx512vl -mno-avx512cd -mno-avx
6.11790
2 x Xeon Platinum 8375C
SE +/- 0.02429, N = 3
-march=core2 -mno-sse4.1 -mno-sse4.2 -mno-sse4a -mno-fma -mno-bmi2 -mno-avx512f -mno-avx512vl -mno-avx512cd -mno-avx
6.05668
4
8
12
16
20
1. (CXX) g++ options: -std=c++0x -msse2 -msse3 -mssse3 -mno-avx -mno-avx2 -mno-xop -mno-fma4 -mno-avx512pf -mno-avx512er -mno-avx512ifma

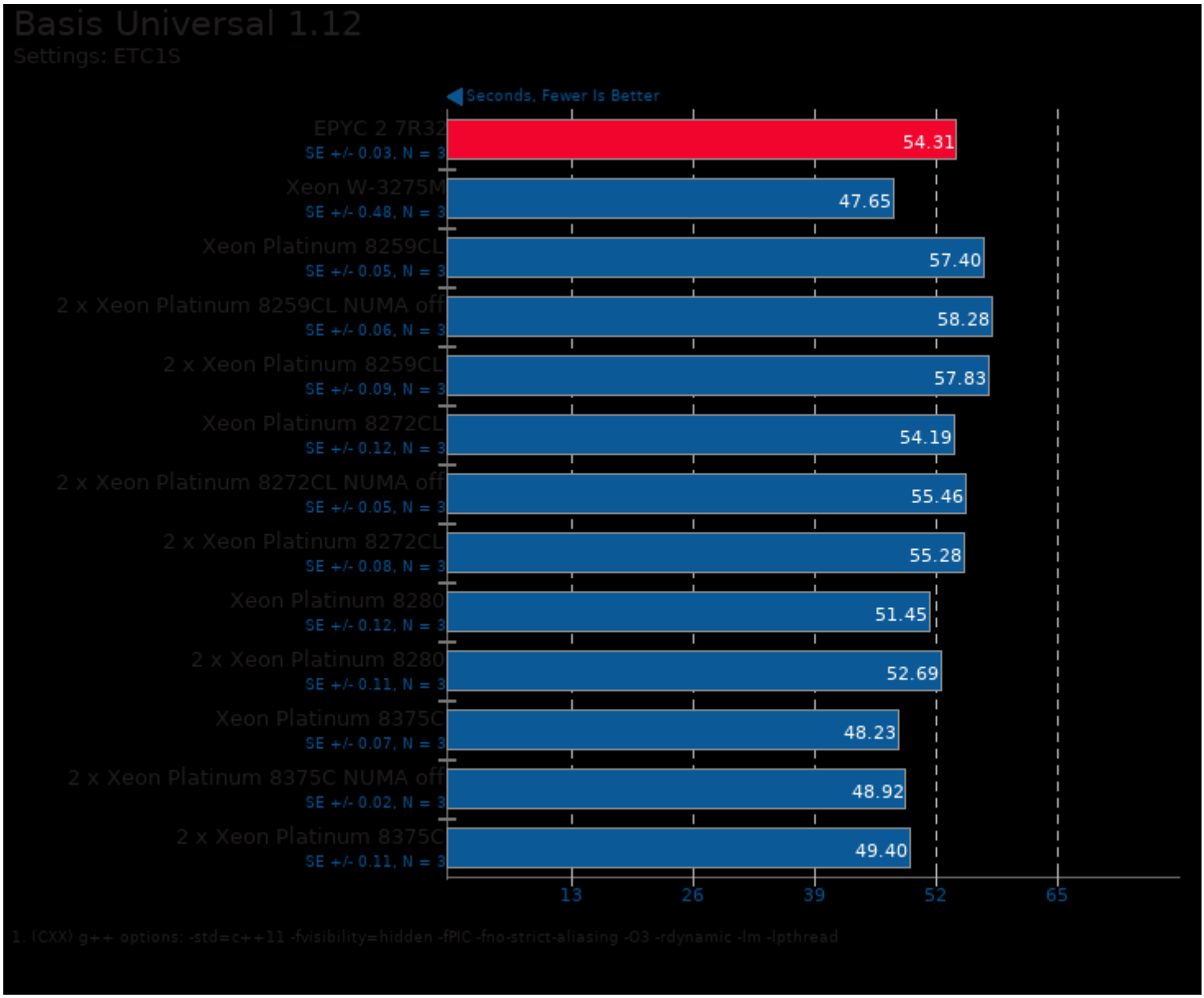

Tungsten Renderer 0.2.2
Scene: Water Caustic
Seconds, Fewer Is Better
EPYC 2 7R32
SE +/- 0.02, N = 3
-march=znver1 -msse4.1 -msse4.2 -msse4a -mfma -mbmi2 -mno-avx512f -mno-avx512vl -mno-avx512cd -mno-avx512dq -mno-avx
22.32
Xeon W-3275M
SE +/- 0.10, N = 3
-msse4.1 -msse4.2 -mfma -mbmi2 -mavx512f -mavx512vl -mavx512cd -mavx512dq -mavx512bw -mno-sse4a -ljpeg
21.55
Xeon Platinum 8259CL
SE +/- 0.06, N = 3
-msse4.1 -msse4.2 -mfma -mbmi2 -mavx512f -mavx512vl -mavx512cd -mavx512dq -mavx512bw -mno-sse4a
25.36
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.17, N = 3
-msse4.1 -msse4.2 -mfma -mbmi2 -mavx512f -mavx512vl -mavx512cd -mavx512dq -mavx512bw -mno-sse4a
24.78
2 x Xeon Platinum 8259CL
SE +/- 0.09, N = 3
-msse4.1 -msse4.2 -mfma -mbmi2 -mavx512f -mavx512vl -mavx512cd -mavx512dq -mavx512bw -mno-sse4a
24.54
Xeon Platinum 8272CL
SE +/- 0.07, N = 3
-msse4.1 -msse4.2 -mfma -mbmi2 -mavx512f -mavx512vl -mavx512cd -mavx512dq -mavx512bw -mno-sse4a
24.21
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.04, N = 3
-msse4.1 -msse4.2 -mfma -mbmi2 -mavx512f -mavx512vl -mavx512cd -mavx512dq -mavx512bw -mno-sse4a
23.82
2 x Xeon Platinum 8272CL
SE +/- 0.15, N = 3
-msse4.1 -msse4.2 -mfma -mbmi2 -mavx512f -mavx512vl -mavx512cd -mavx512dq -mavx512bw -mno-sse4a
23.91
Xeon Platinum 8280
SE +/- 0.08, N = 3
-msse4.1 -msse4.2 -mfma -mbmi2 -mavx512f -mavx512vl -mavx512cd -mavx512dq -mavx512bw -mno-sse4a
22.02
2 x Xeon Platinum 8280
SE +/- 0.06, N = 3
-msse4.1 -msse4.2 -mfma -mbmi2 -mavx512f -mavx512vl -mavx512cd -mavx512dq -mavx512bw -mno-sse4a
21.59
Xeon Platinum 8375C
SE +/- 0.24, N = 3
-march=core2 -mno-sse4.1 -mno-sse4.2 -mno-sse4a -mno-fma -mno-bmi2 -mno-avx512f -mno-avx512vl -mno-avx512cd -mno-avx5
23.42
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.14, N = 3
-march=core2 -mno-sse4.1 -mno-sse4.2 -mno-sse4a -mno-fma -mno-bmi2 -mno-avx512f -mno-avx512vl -mno-avx512cd -mno-avx5
23.64
2 x Xeon Platinum 8375C
SE +/- 0.27, N = 3
-march=core2 -mno-sse4.1 -mno-sse4.2 -mno-sse4a -mno-fma -mno-bmi2 -mno-avx512f -mno-avx512vl -mno-avx512cd -mno-avx5
23.49
6
12
18
24
30
1. (CXX) g++ options: -std=c++0x -msse2 -msse3 -mssse3 -mno-avx -mno-avx2 -mno-xop -mno-fma4 -mno-avx512pf -mno-avx512er -mno-avx512ifma

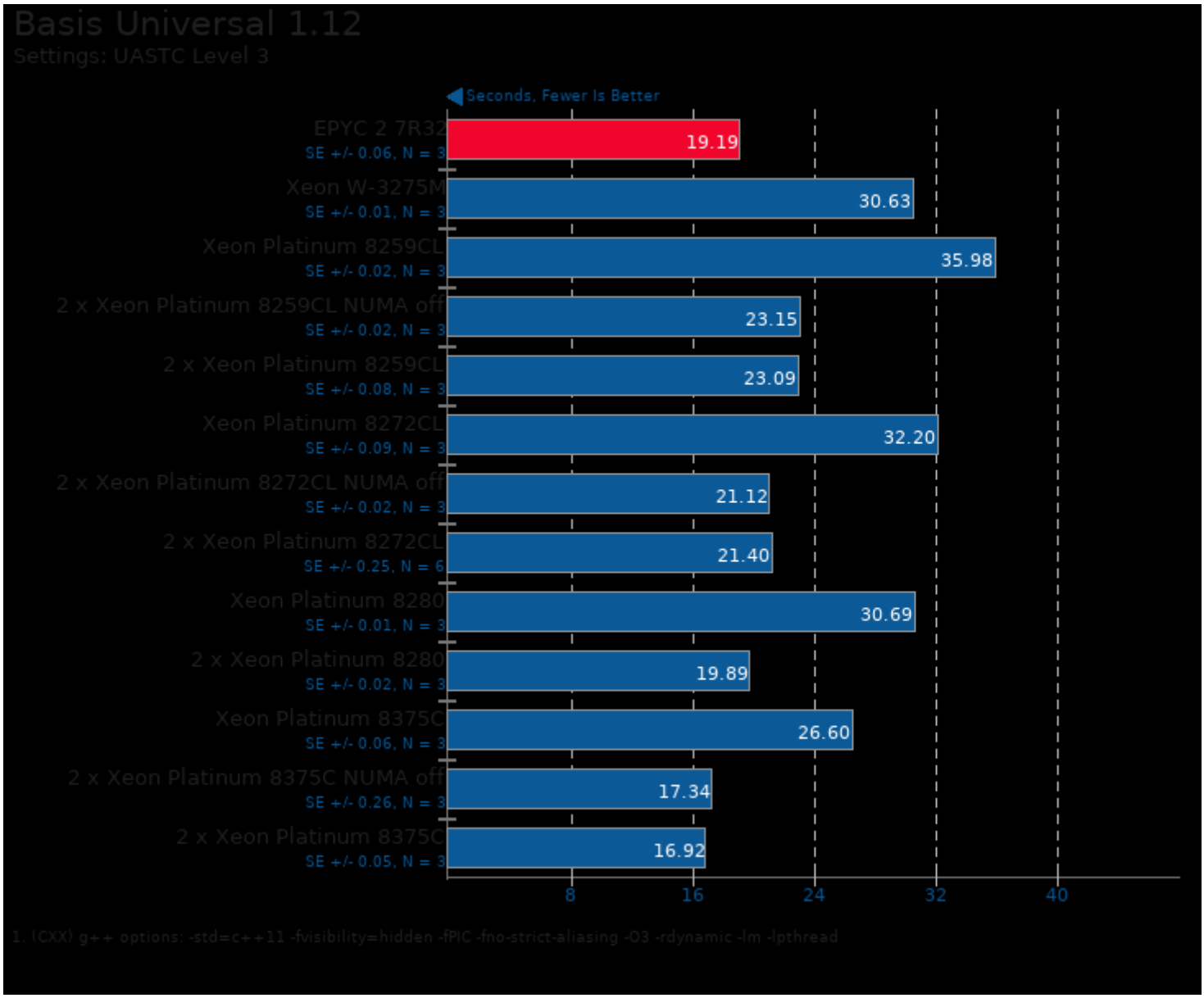

Zstd Compression 1.3.4
Compressing ubuntu-16.04.3-server-i386.img, Compression Level 19
Seconds, Fewer Is Better
EPYC 2 7R32
SE +/- 0.062, N = 15
9.230
Xeon W-3275M
SE +/- 0.023, N = 3
-llzma
8.380
Xeon Platinum 8259CL
SE +/- 0.128, N = 3
9.672
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.128, N = 5
10.294
2 x Xeon Platinum 8259CL
SE +/- 0.094, N = 15
9.949
Xeon Platinum 8272CL
SE +/- 0.062, N = 14
8.307
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.111, N = 7
10.088
2 x Xeon Platinum 8272CL
SE +/- 0.093, N = 15
9.653
Xeon Platinum 8280
SE +/- 0.016, N = 3
8.203
2 x Xeon Platinum 8280
SE +/- 0.148, N = 3
9.137
Xeon Platinum 8375C
SE +/- 0.071, N = 13
7.283
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.058, N = 15
8.422
2 x Xeon Platinum 8375C
SE +/- 0.111, N = 12
8.179
3
6
9
12
15
1. (CC) gcc options: -O3 -pthread -lz

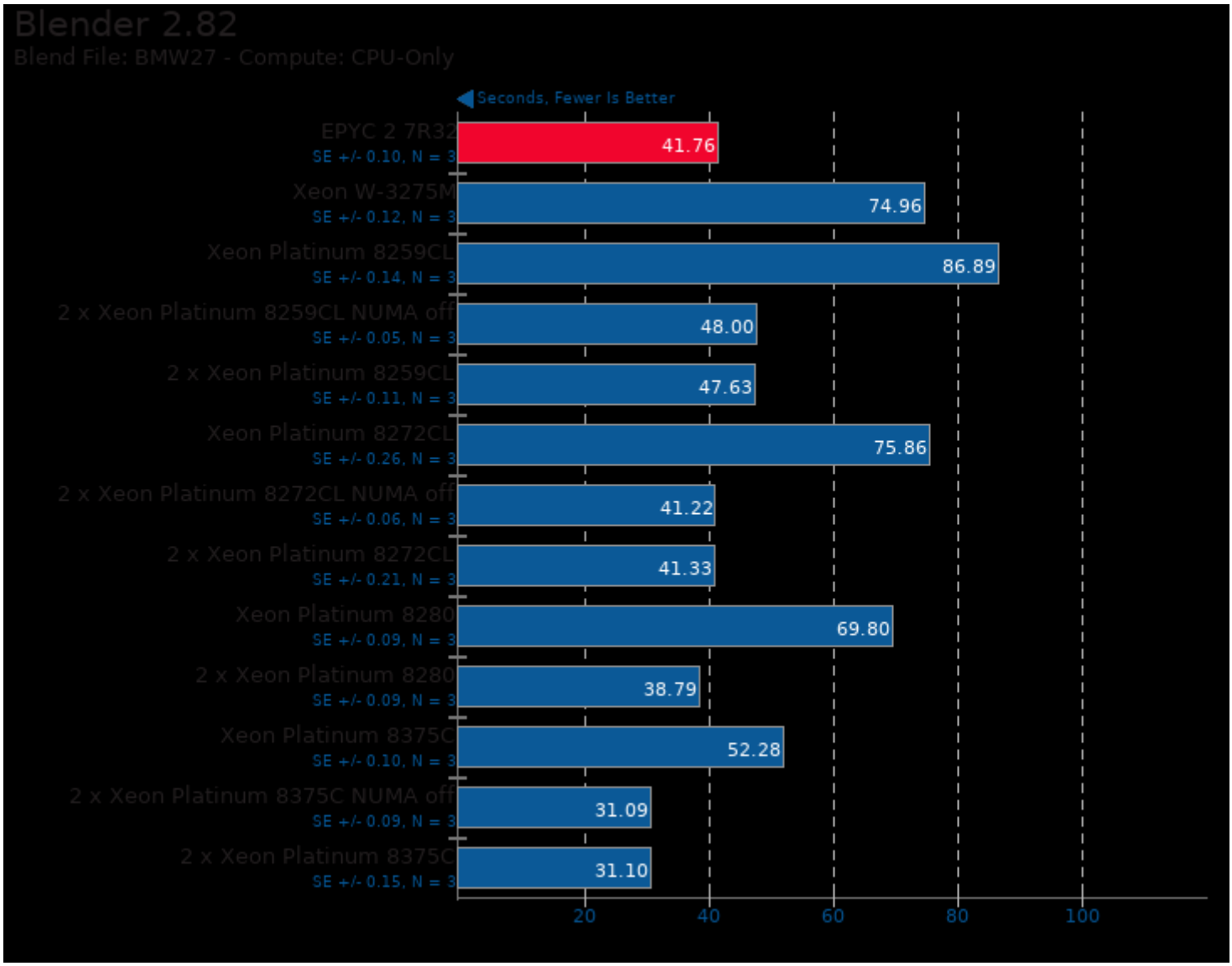

DeepSpeech 0.6
Acceleration: CPU
Seconds, Fewer Is Better
EPYC 2 7R32
SE +/- 0.08, N = 3
72.82
Xeon W-3275M
SE +/- 0.15, N = 3
123.85
Xeon Platinum 8259CL
SE +/- 1.18, N = 8
117.36
2 x Xeon Platinum 8259CL NUMA off
SE +/- 1.04, N = 3
135.05
2 x Xeon Platinum 8259CL
SE +/- 0.65, N = 3
117.73
Xeon Platinum 8272CL
SE +/- 1.58, N = 4
117.87
2 x Xeon Platinum 8272CL NUMA off
SE +/- 1.87, N = 3
140.44
2 x Xeon Platinum 8272CL
SE +/- 0.58, N = 3
123.81
Xeon Platinum 8280
SE +/- 1.60, N = 3
118.09
2 x Xeon Platinum 8280
SE +/- 1.16, N = 3
122.22
Xeon Platinum 8375C
SE +/- 0.33, N = 3
103.08
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.33, N = 3
113.29
2 x Xeon Platinum 8375C
SE +/- 0.95, N = 3
108.16
30
60
90
120
150

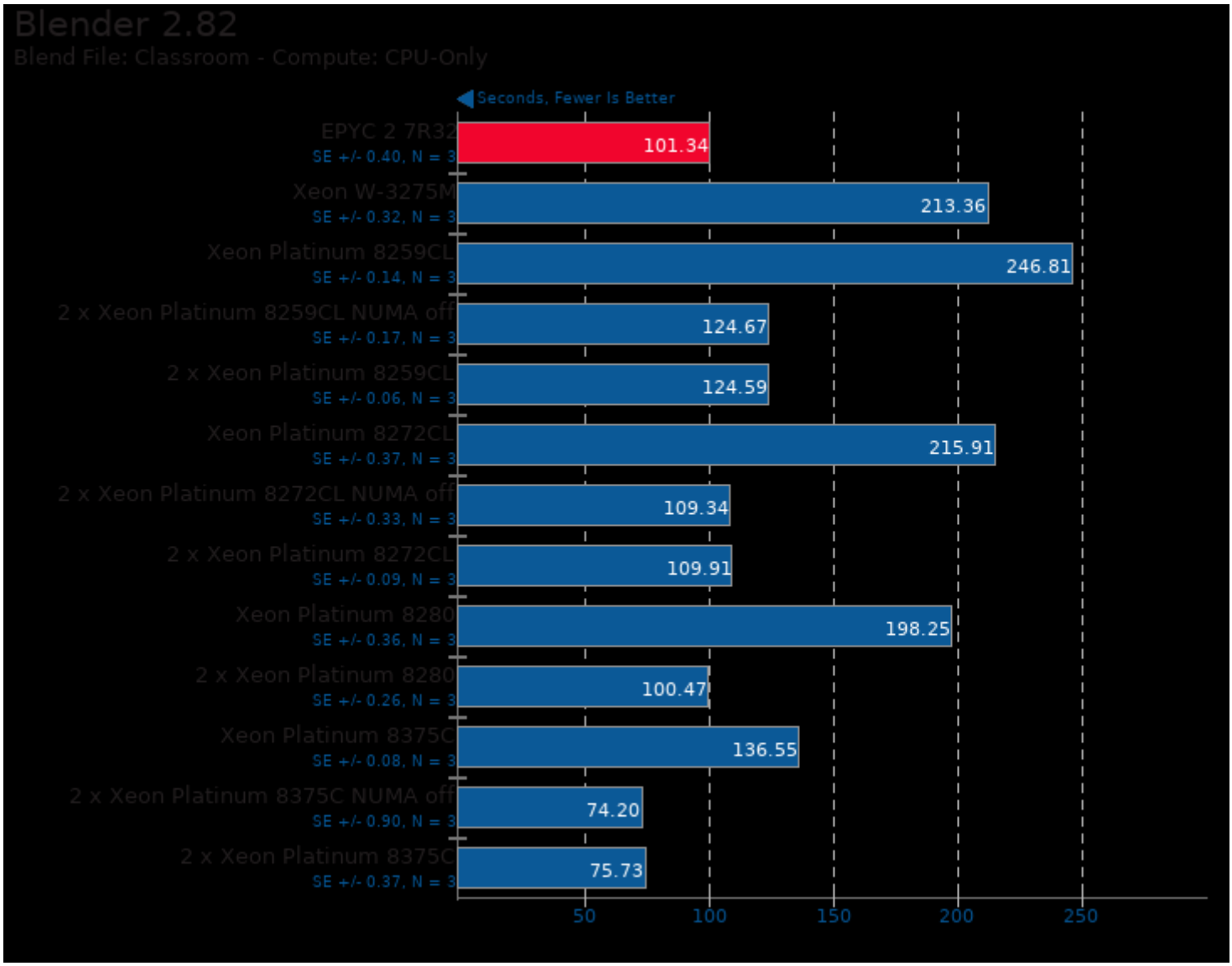

Radiance Benchmark 5.0
Test: Serial
Seconds, Fewer Is Better
EPYC 2 7R32
730.70
Xeon W-3275M
665.70
Xeon Platinum 8259CL
842.10
2 x Xeon Platinum 8259CL NUMA off
841.32
2 x Xeon Platinum 8259CL
841.65
Xeon Platinum 8272CL
796.58
2 x Xeon Platinum 8272CL NUMA off
797.16
2 x Xeon Platinum 8272CL
796.43
Xeon Platinum 8280
728.36
2 x Xeon Platinum 8280
728.25
Xeon Platinum 8375C
654.18
2 x Xeon Platinum 8375C NUMA off
654.58
2 x Xeon Platinum 8375C
654.98
200
400
600
800
1000

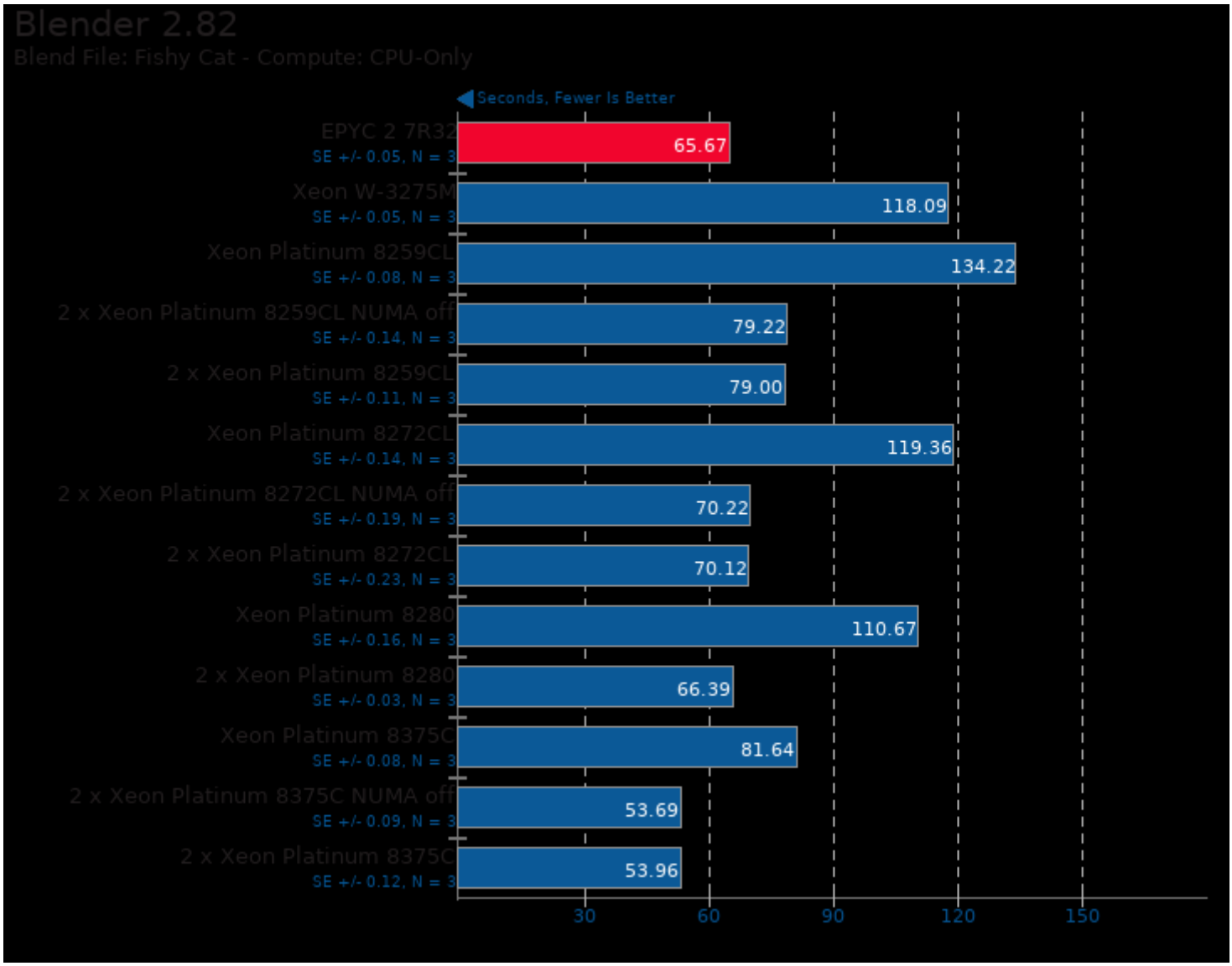

Radiance Benchmark 5.0
Test: SMP Parallel
Seconds, Fewer Is Better
EPYC 2 7R32
219.65
Xeon W-3275M
219.84
Xeon Platinum 8259CL
273.13
2 x Xeon Platinum 8259CL NUMA off
255.59
2 x Xeon Platinum 8259CL
258.34
Xeon Platinum 8272CL
257.23
2 x Xeon Platinum 8272CL NUMA off
241.06
2 x Xeon Platinum 8272CL
246.16
Xeon Platinum 8280
235.00
2 x Xeon Platinum 8280
226.08
Xeon Platinum 8375C
201.22
2 x Xeon Platinum 8375C NUMA off
198.50
2 x Xeon Platinum 8375C
200.80
60
120
180
240
300

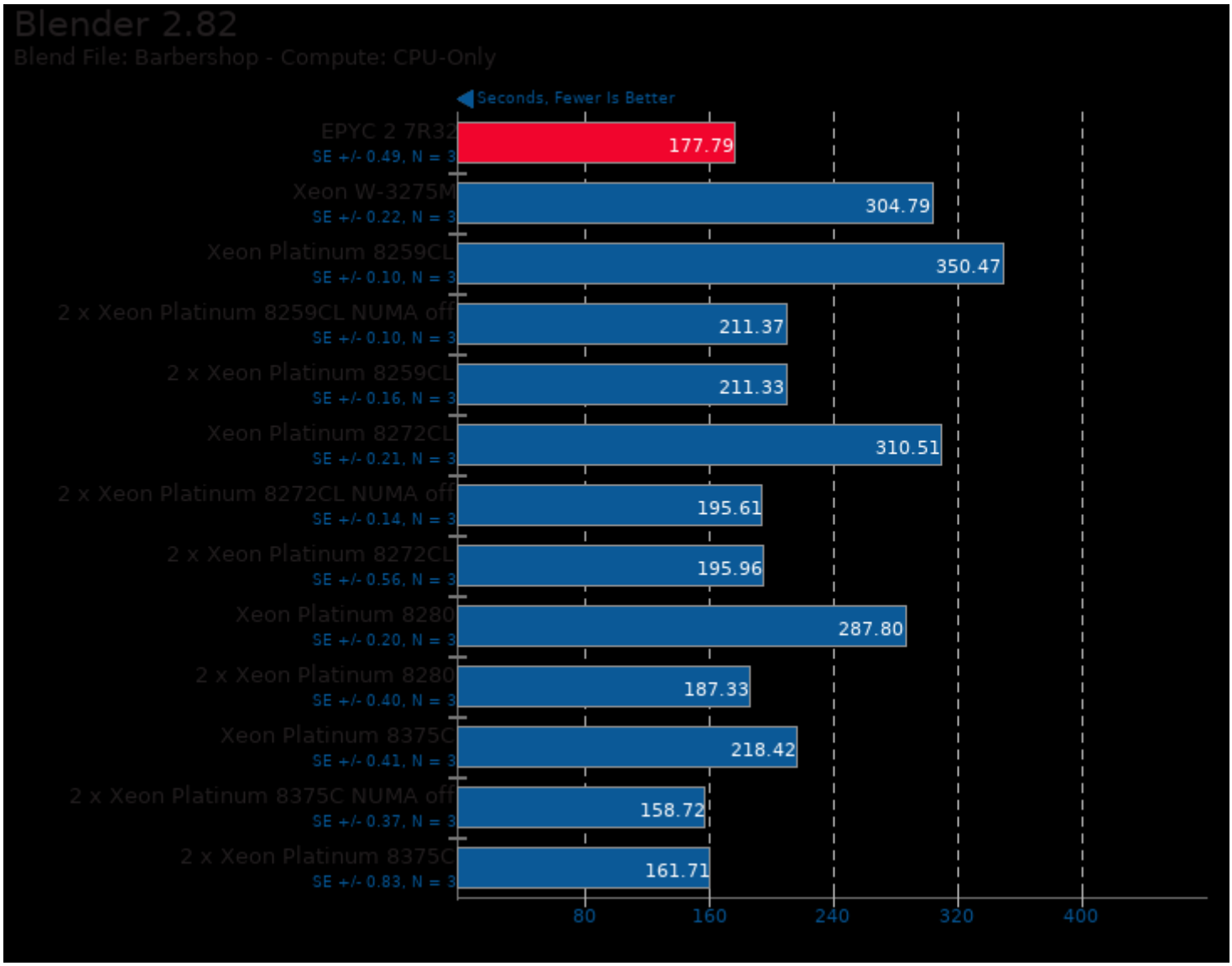

Basis Universal 1.12
Settings: ETC1S
Seconds, Fewer Is Better
EPYC 2 7R32
SE +/- 0.03, N = 3
54.31
Xeon W-3275M
SE +/- 0.48, N = 3
47.65
Xeon Platinum 8259CL
SE +/- 0.05, N = 3
57.40
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.06, N = 3
58.28
2 x Xeon Platinum 8259CL
SE +/- 0.09, N = 3
57.83
Xeon Platinum 8272CL
SE +/- 0.12, N = 3
54.19
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.05, N = 3
55.46
2 x Xeon Platinum 8272CL
SE +/- 0.08, N = 3
55.28
Xeon Platinum 8280
SE +/- 0.12, N = 3
51.45
2 x Xeon Platinum 8280
SE +/- 0.11, N = 3
52.69
Xeon Platinum 8375C
SE +/- 0.07, N = 3
48.23
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.02, N = 3
48.92
2 x Xeon Platinum 8375C
SE +/- 0.11, N = 3
49.40
13
26
39
52
65
1. (CXX) g++ options: -std=c++11 -fvisibility=hidden -fPIC -fno-strict-aliasing -O3 -rdynamic -lm -lpthread

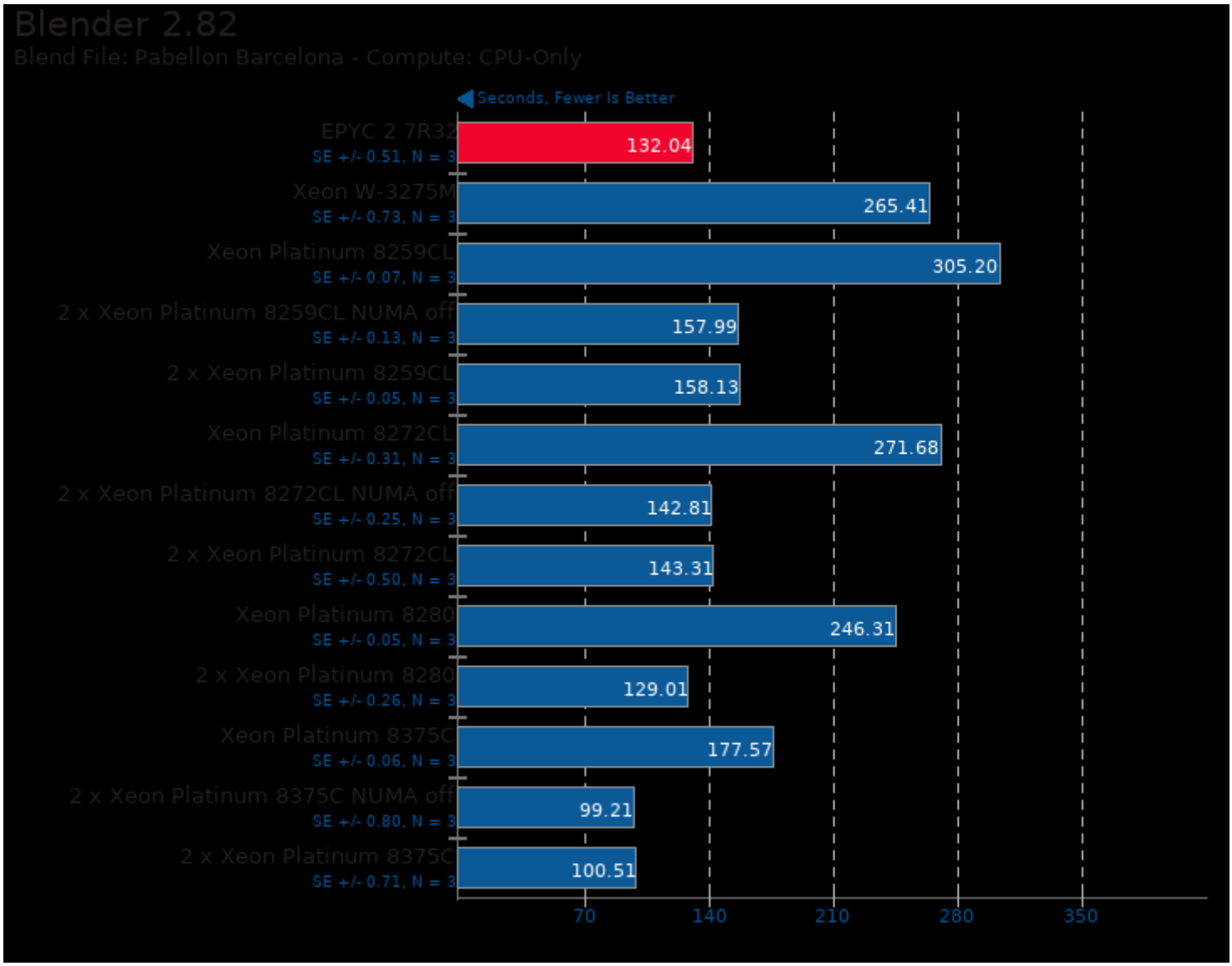

Basis Universal 1.12
Settings: UASTC Level 3
Seconds, Fewer Is Better
EPYC 2 7R32
SE +/- 0.06, N = 3
19.19
Xeon W-3275M
SE +/- 0.01, N = 3
30.63
Xeon Platinum 8259CL
SE +/- 0.02, N = 3
35.98
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.02, N = 3
23.15
2 x Xeon Platinum 8259CL
SE +/- 0.08, N = 3
23.09
Xeon Platinum 8272CL
SE +/- 0.09, N = 3
32.20
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.02, N = 3
21.12
2 x Xeon Platinum 8272CL
SE +/- 0.25, N = 6
21.40
Xeon Platinum 8280
SE +/- 0.01, N = 3
30.69
2 x Xeon Platinum 8280
SE +/- 0.02, N = 3
19.89
Xeon Platinum 8375C
SE +/- 0.06, N = 3
26.60
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.26, N = 3
17.34
2 x Xeon Platinum 8375C
SE +/- 0.05, N = 3
16.92
8
16
24
32
40
1. (CXX) g++ options: -std=c++11 -fvisibility=hidden -fPIC -fno-strict-aliasing -O3 -rdynamic -lm -lpthread

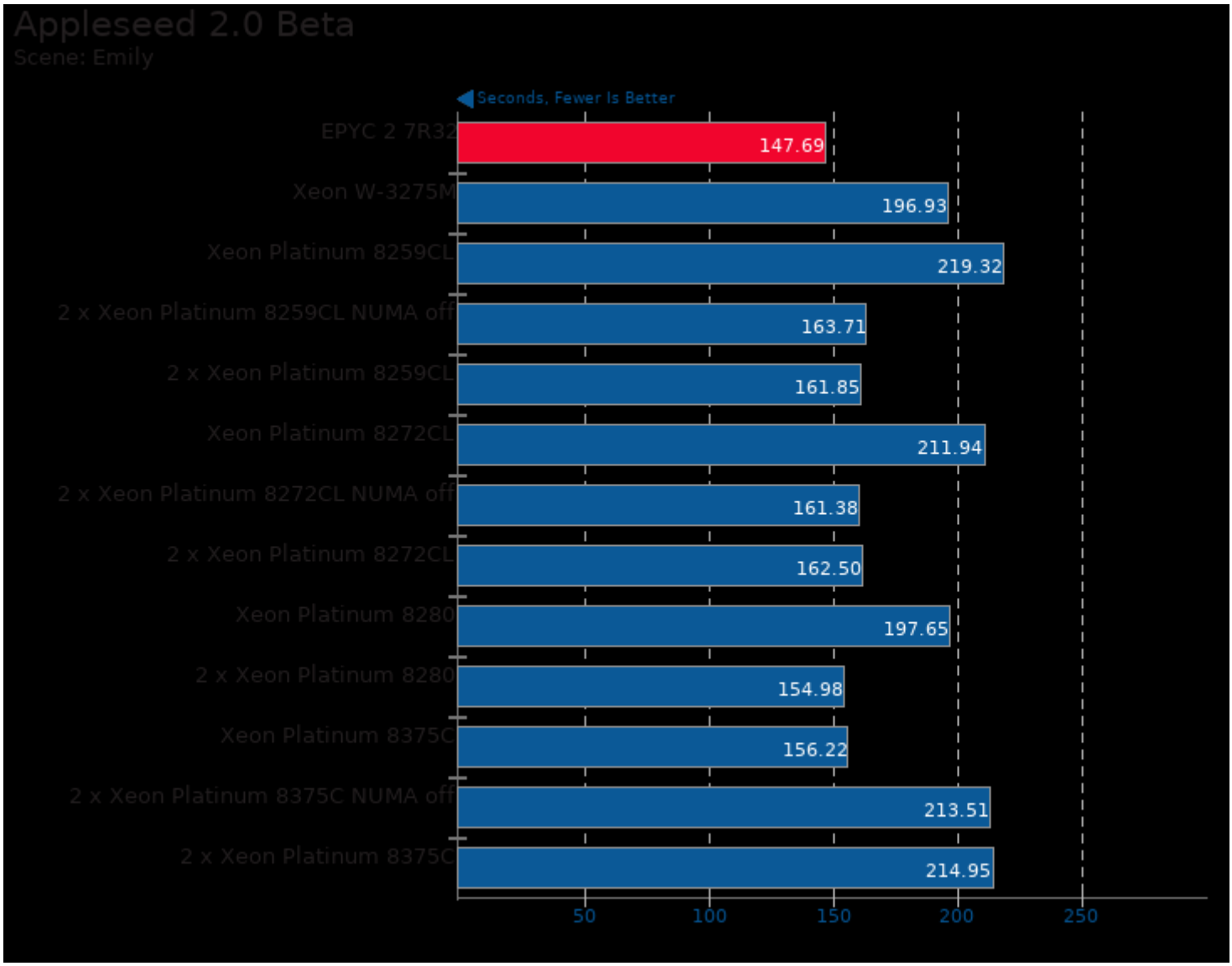

Blender 2.82
Blend File: BMW27 - Compute: CPU-Only
Seconds, Fewer Is Better
EPYC 2 7R32
SE +/- 0.10, N = 3
41.76
Xeon W-3275M
SE +/- 0.12, N = 3
74.96
Xeon Platinum 8259CL
SE +/- 0.14, N = 3
86.89
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.05, N = 3
48.00
2 x Xeon Platinum 8259CL
SE +/- 0.11, N = 3
47.63
Xeon Platinum 8272CL
SE +/- 0.26, N = 3
75.86
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.06, N = 3
41.22
2 x Xeon Platinum 8272CL
SE +/- 0.21, N = 3
41.33
Xeon Platinum 8280
SE +/- 0.09, N = 3
69.80
2 x Xeon Platinum 8280
SE +/- 0.09, N = 3
38.79
Xeon Platinum 8375C
SE +/- 0.10, N = 3
52.28
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.09, N = 3
31.09
2 x Xeon Platinum 8375C
SE +/- 0.15, N = 3
31.10
20
40
60
80
100

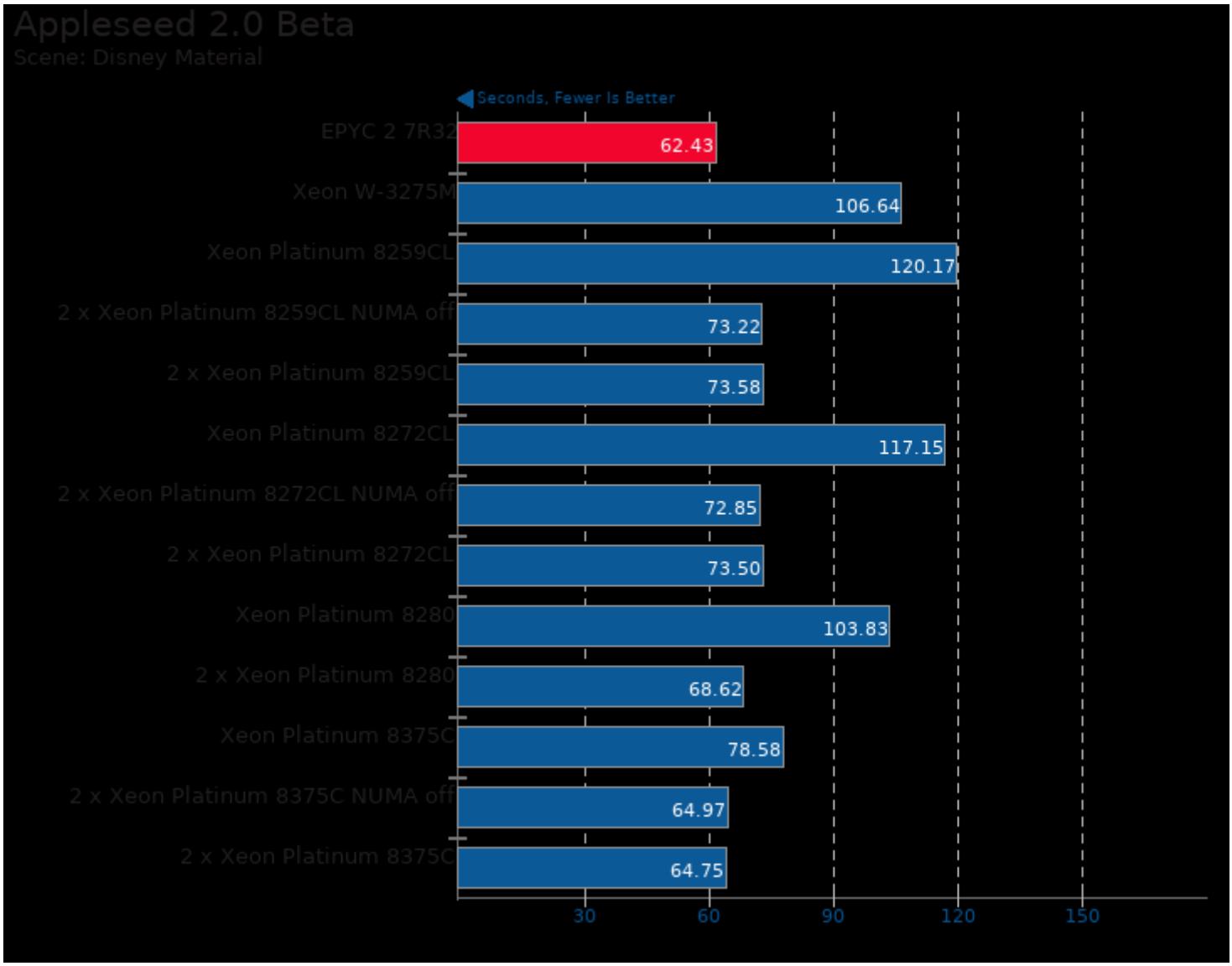

Blender 2.82
Blend File: Classroom - Compute: CPU-Only
Seconds, Fewer Is Better
EPYC 2 7R32
SE +/- 0.40, N = 3
101.34
Xeon W-3275M
SE +/- 0.32, N = 3
213.36
Xeon Platinum 8259CL
SE +/- 0.14, N = 3
246.81
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.17, N = 3
124.67
2 x Xeon Platinum 8259CL
SE +/- 0.06, N = 3
124.59
Xeon Platinum 8272CL
SE +/- 0.37, N = 3
215.91
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.33, N = 3
109.34
2 x Xeon Platinum 8272CL
SE +/- 0.09, N = 3
109.91
Xeon Platinum 8280
SE +/- 0.36, N = 3
198.25
2 x Xeon Platinum 8280
SE +/- 0.26, N = 3
100.47
Xeon Platinum 8375C
SE +/- 0.08, N = 3
136.55
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.90, N = 3
74.20
2 x Xeon Platinum 8375C
SE +/- 0.37, N = 3
75.73
50
100
150
200
250

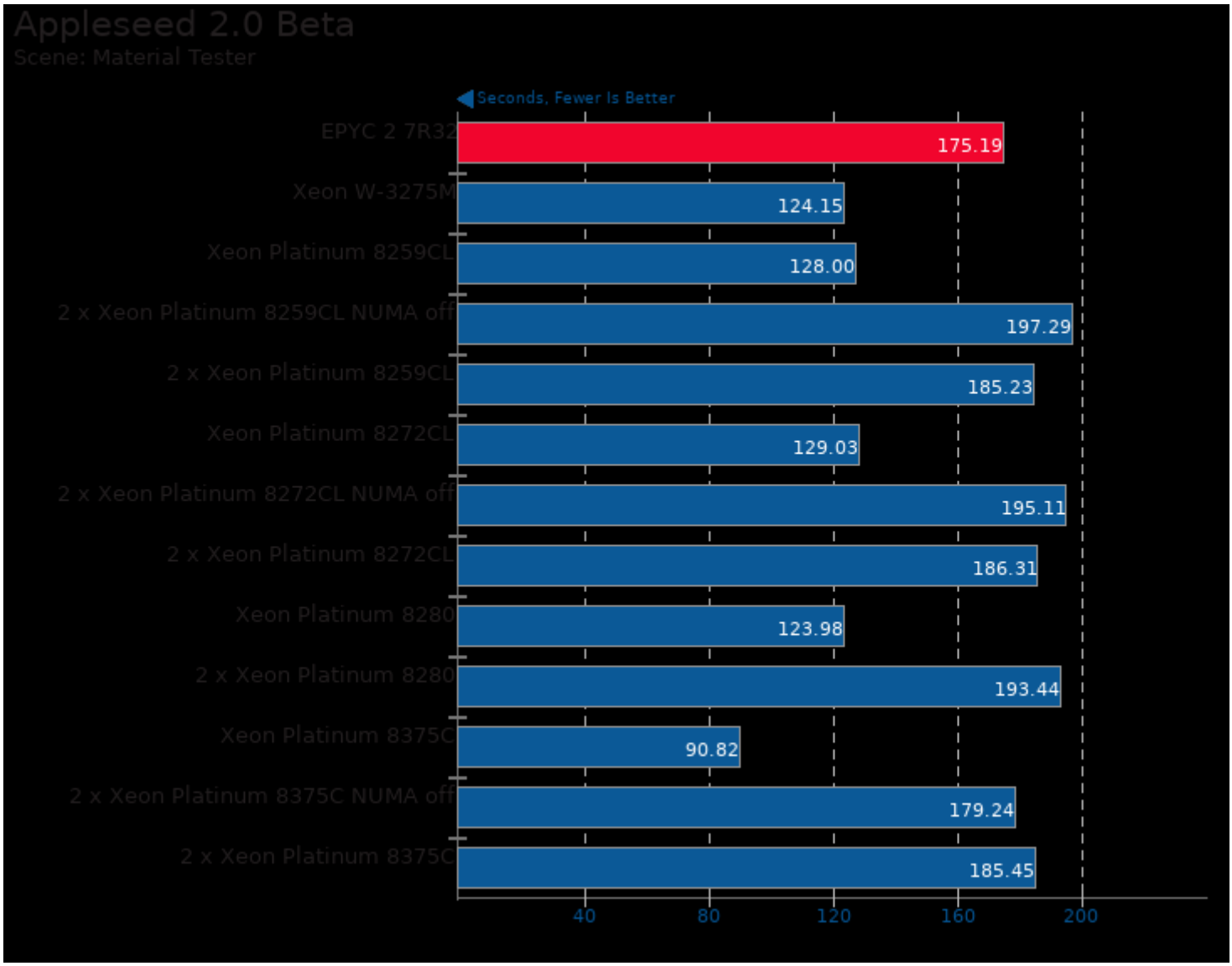

Blender 2.82
Blend File: Fishy Cat - Compute: CPU-Only
Seconds, Fewer Is Better
EPYC 2 7R32
SE +/- 0.05, N = 3
65.67
Xeon W-3275M
SE +/- 0.05, N = 3
118.09
Xeon Platinum 8259CL
SE +/- 0.08, N = 3
134.22
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.14, N = 3
79.22
2 x Xeon Platinum 8259CL
SE +/- 0.11, N = 3
79.00
Xeon Platinum 8272CL
SE +/- 0.14, N = 3
119.36
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.19, N = 3
70.22
2 x Xeon Platinum 8272CL
SE +/- 0.23, N = 3
70.12
Xeon Platinum 8280
SE +/- 0.16, N = 3
110.67
2 x Xeon Platinum 8280
SE +/- 0.03, N = 3
66.39
Xeon Platinum 8375C
SE +/- 0.08, N = 3
81.64
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.09, N = 3
53.69
2 x Xeon Platinum 8375C
SE +/- 0.12, N = 3
53.96
30
60
90
120
150

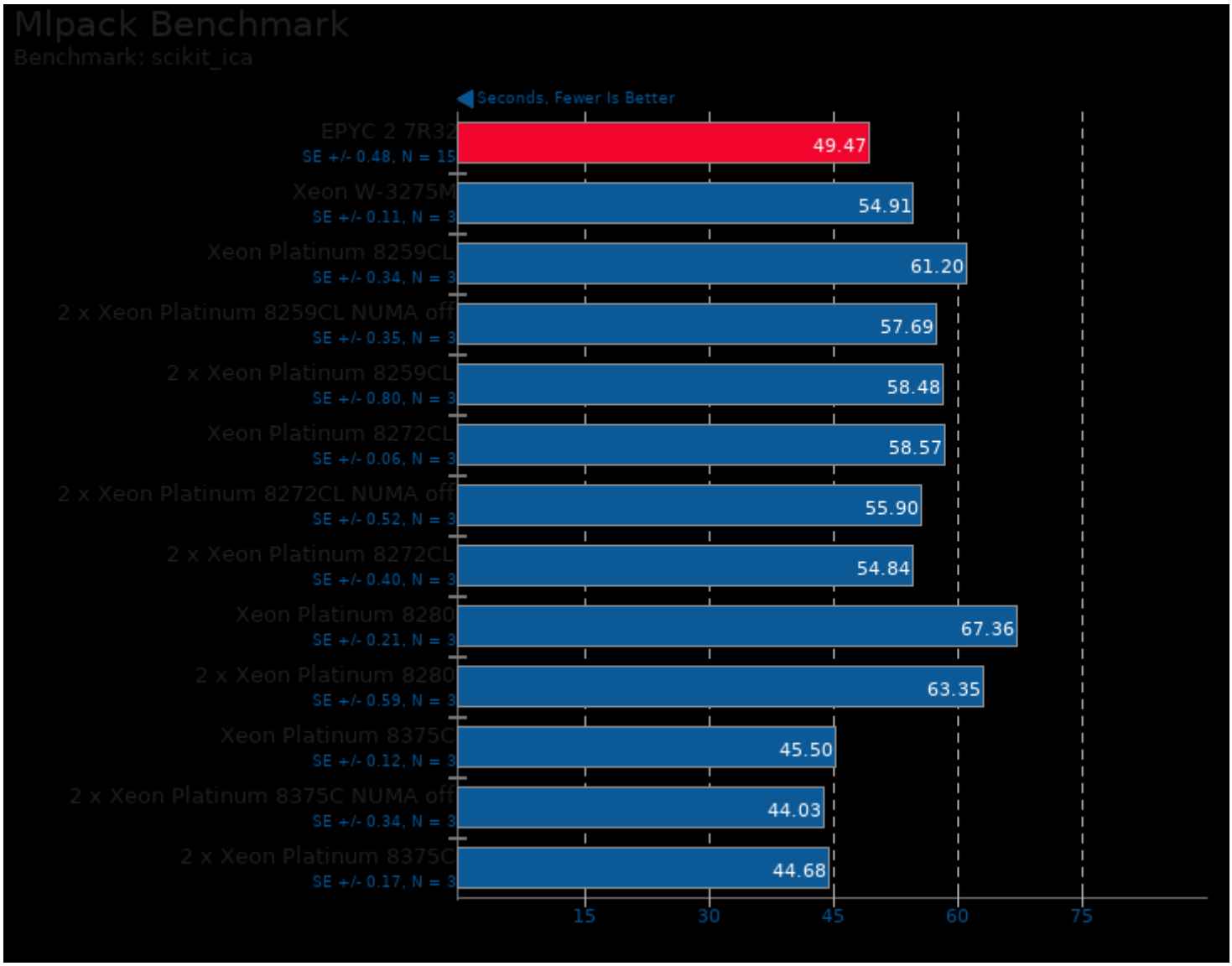

Blender 2.82
Blend File: Barbershop - Compute: CPU-Only
Seconds, Fewer Is Better
EPYC 2 7R32
SE +/- 0.49, N = 3
177.79
Xeon W-3275M
SE +/- 0.22, N = 3
304.79
Xeon Platinum 8259CL
SE +/- 0.10, N = 3
350.47
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.10, N = 3
211.37
2 x Xeon Platinum 8259CL
SE +/- 0.16, N = 3
211.33
Xeon Platinum 8272CL
SE +/- 0.21, N = 3
310.51
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.14, N = 3
195.61
2 x Xeon Platinum 8272CL
SE +/- 0.56, N = 3
195.96
Xeon Platinum 8280
SE +/- 0.20, N = 3
287.80
2 x Xeon Platinum 8280
SE +/- 0.40, N = 3
187.33
Xeon Platinum 8375C
SE +/- 0.41, N = 3
218.42
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.37, N = 3
158.72
2 x Xeon Platinum 8375C
SE +/- 0.83, N = 3
161.71
80
160
240
320
400

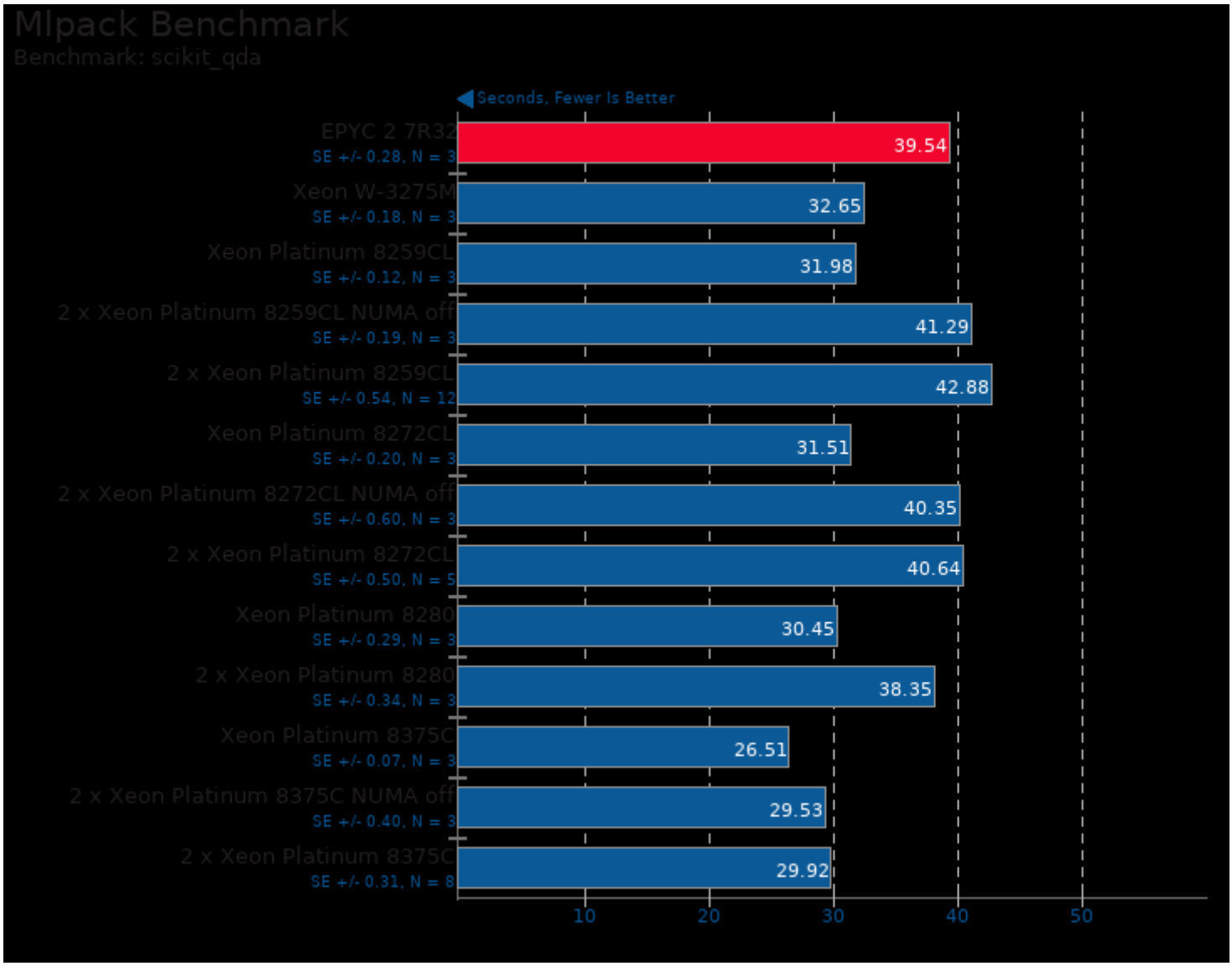

Blender 2.82
Blend File: Pabellon Barcelona - Compute: CPU-Only
Seconds, Fewer Is Better
EPYC 2 7R32
SE +/- 0.51, N = 3
132.04
Xeon W-3275M
SE +/- 0.73, N = 3
265.41
Xeon Platinum 8259CL
SE +/- 0.07, N = 3
305.20
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.13, N = 3
157.99
2 x Xeon Platinum 8259CL
SE +/- 0.05, N = 3
158.13
Xeon Platinum 8272CL
SE +/- 0.31, N = 3
271.68
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.25, N = 3
142.81
2 x Xeon Platinum 8272CL
SE +/- 0.50, N = 3
143.31
Xeon Platinum 8280
SE +/- 0.05, N = 3
246.31
2 x Xeon Platinum 8280
SE +/- 0.26, N = 3
129.01
Xeon Platinum 8375C
SE +/- 0.06, N = 3
177.57
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.80, N = 3
99.21
2 x Xeon Platinum 8375C
SE +/- 0.71, N = 3
100.51
70
140
210
280
350

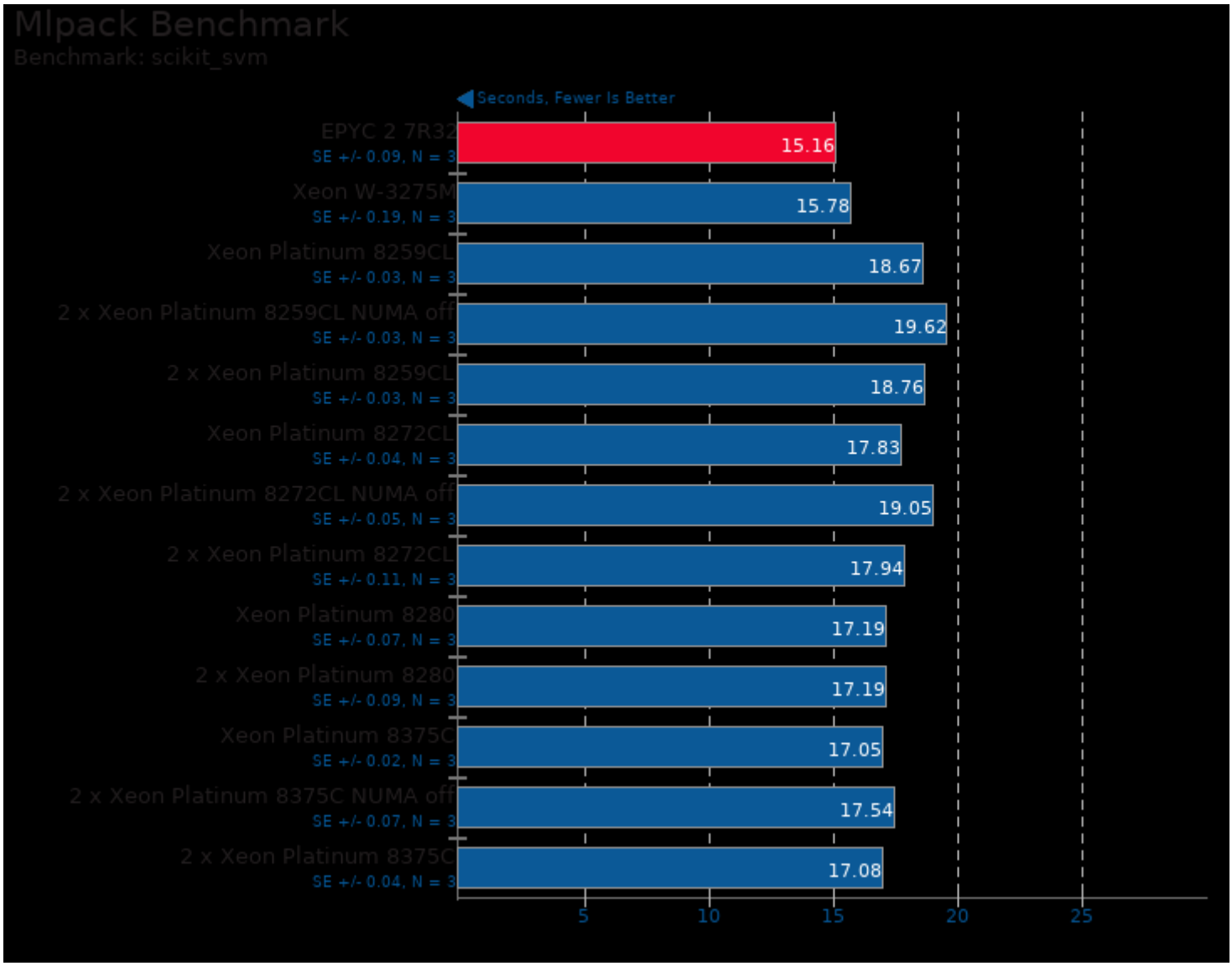

Appleseed 2.0 Beta
Scene: Emily
Seconds, Fewer Is Better
EPYC 2 7R32
147.69
Xeon W-3275M
196.93
Xeon Platinum 8259CL
219.32
2 x Xeon Platinum 8259CL NUMA off
163.71
2 x Xeon Platinum 8259CL
161.85
Xeon Platinum 8272CL
211.94
2 x Xeon Platinum 8272CL NUMA off
161.38
2 x Xeon Platinum 8272CL
162.50
Xeon Platinum 8280
197.65
2 x Xeon Platinum 8280
154.98
Xeon Platinum 8375C
156.22
2 x Xeon Platinum 8375C NUMA off
213.51
2 x Xeon Platinum 8375C
214.95
50
100
150
200
250

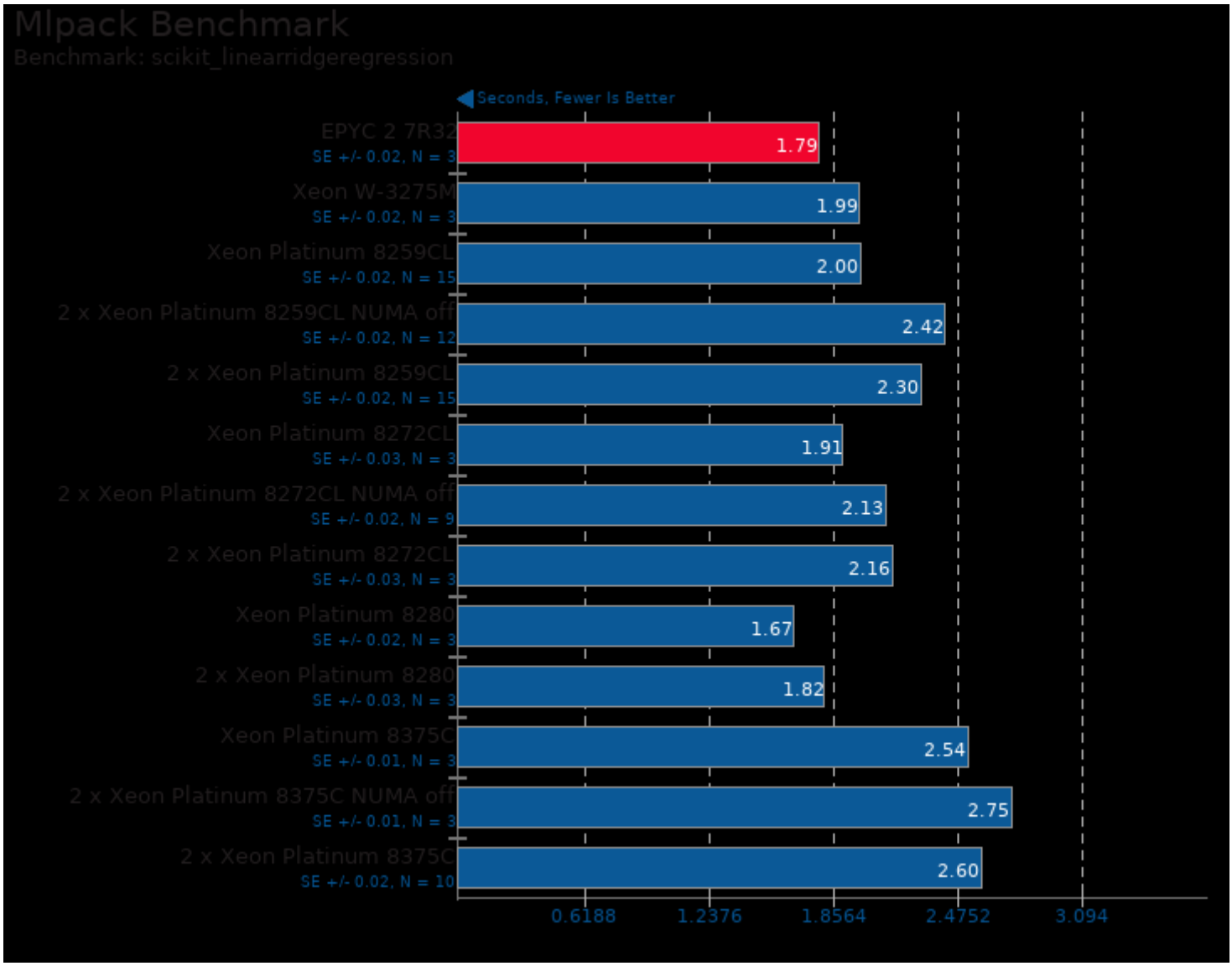

Appleseed 2.0 Beta
Scene: Disney Material
Seconds, Fewer Is Better
EPYC 2 7R32
62.43
Xeon W-3275M
106.64
Xeon Platinum 8259CL
120.17
2 x Xeon Platinum 8259CL NUMA off
73.22
2 x Xeon Platinum 8259CL
73.58
Xeon Platinum 8272CL
117.15
2 x Xeon Platinum 8272CL NUMA off
72.85
2 x Xeon Platinum 8272CL
73.50
Xeon Platinum 8280
103.83
2 x Xeon Platinum 8280
68.62
Xeon Platinum 8375C
78.58
2 x Xeon Platinum 8375C NUMA off
64.97
2 x Xeon Platinum 8375C
64.75
30
60
90
120
150

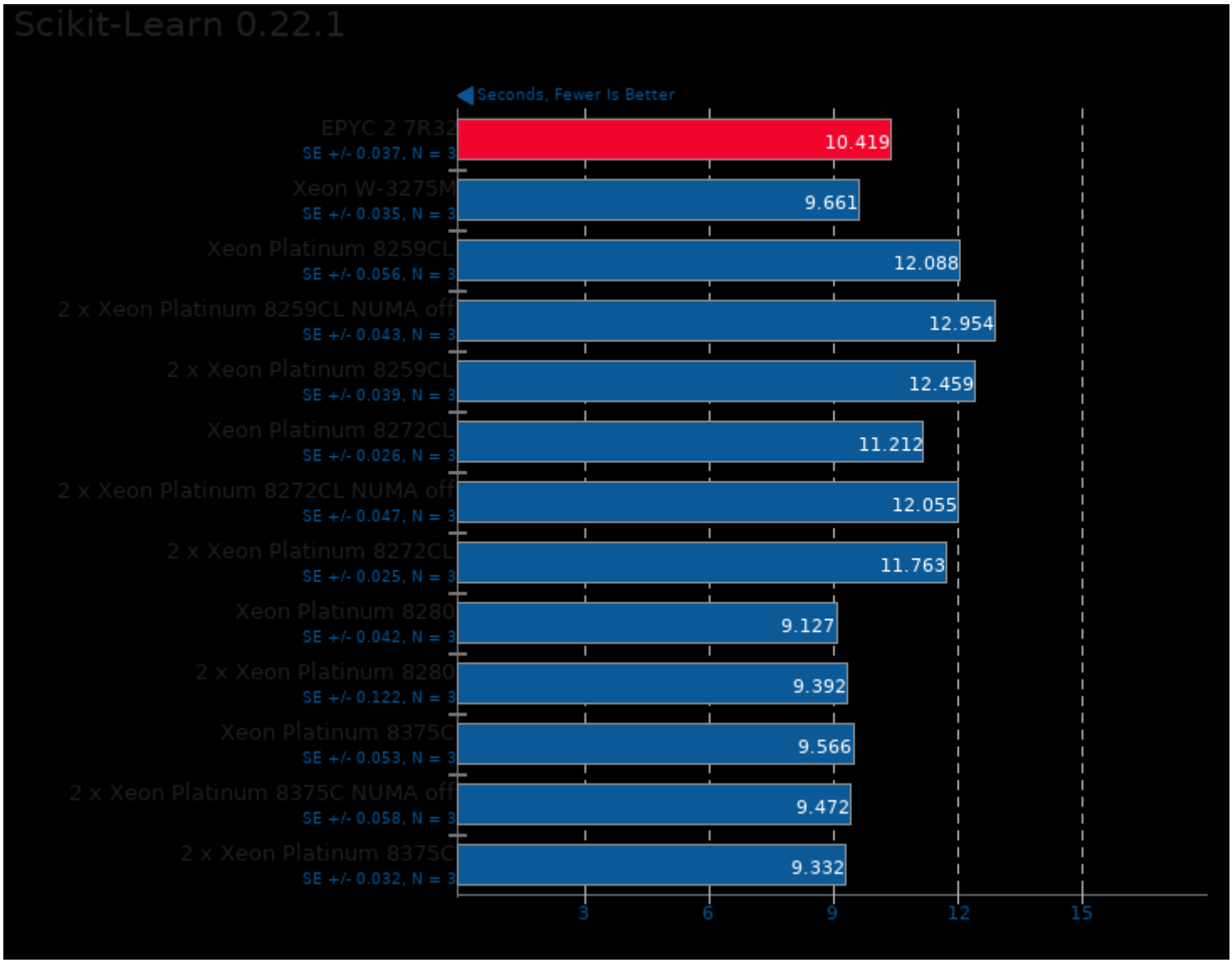

Appleseed 2.0 Beta
Scene: Material Tester
Seconds, Fewer Is Better
EPYC 2 7R32
175.19
Xeon W-3275M
124.15
Xeon Platinum 8259CL
128.00
2 x Xeon Platinum 8259CL NUMA off
197.29
2 x Xeon Platinum 8259CL
185.23
Xeon Platinum 8272CL
129.03
2 x Xeon Platinum 8272CL NUMA off
195.11
2 x Xeon Platinum 8272CL
186.31
Xeon Platinum 8280
123.98
2 x Xeon Platinum 8280
193.44
Xeon Platinum 8375C
90.82
2 x Xeon Platinum 8375C NUMA off
179.24
2 x Xeon Platinum 8375C
185.45
40
80
120
160
200


Mlpack Benchmark
Benchmark: scikit_ica
Seconds, Fewer Is Better
EPYC 2 7R32
SE +/- 0.48, N = 15
49.47
Xeon W-3275M
SE +/- 0.11, N = 3
54.91
Xeon Platinum 8259CL
SE +/- 0.34, N = 3
61.20
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.35, N = 3
57.69
2 x Xeon Platinum 8259CL
SE +/- 0.80, N = 3
58.48
Xeon Platinum 8272CL
SE +/- 0.06, N = 3
58.57
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.52, N = 3
55.90
2 x Xeon Platinum 8272CL
SE +/- 0.40, N = 3
54.84
Xeon Platinum 8280
SE +/- 0.21, N = 3
67.36
2 x Xeon Platinum 8280
SE +/- 0.59, N = 3
63.35
Xeon Platinum 8375C
SE +/- 0.12, N = 3
45.50
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.34, N = 3
44.03
2 x Xeon Platinum 8375C
SE +/- 0.17, N = 3
44.68
15
30
45
60
75

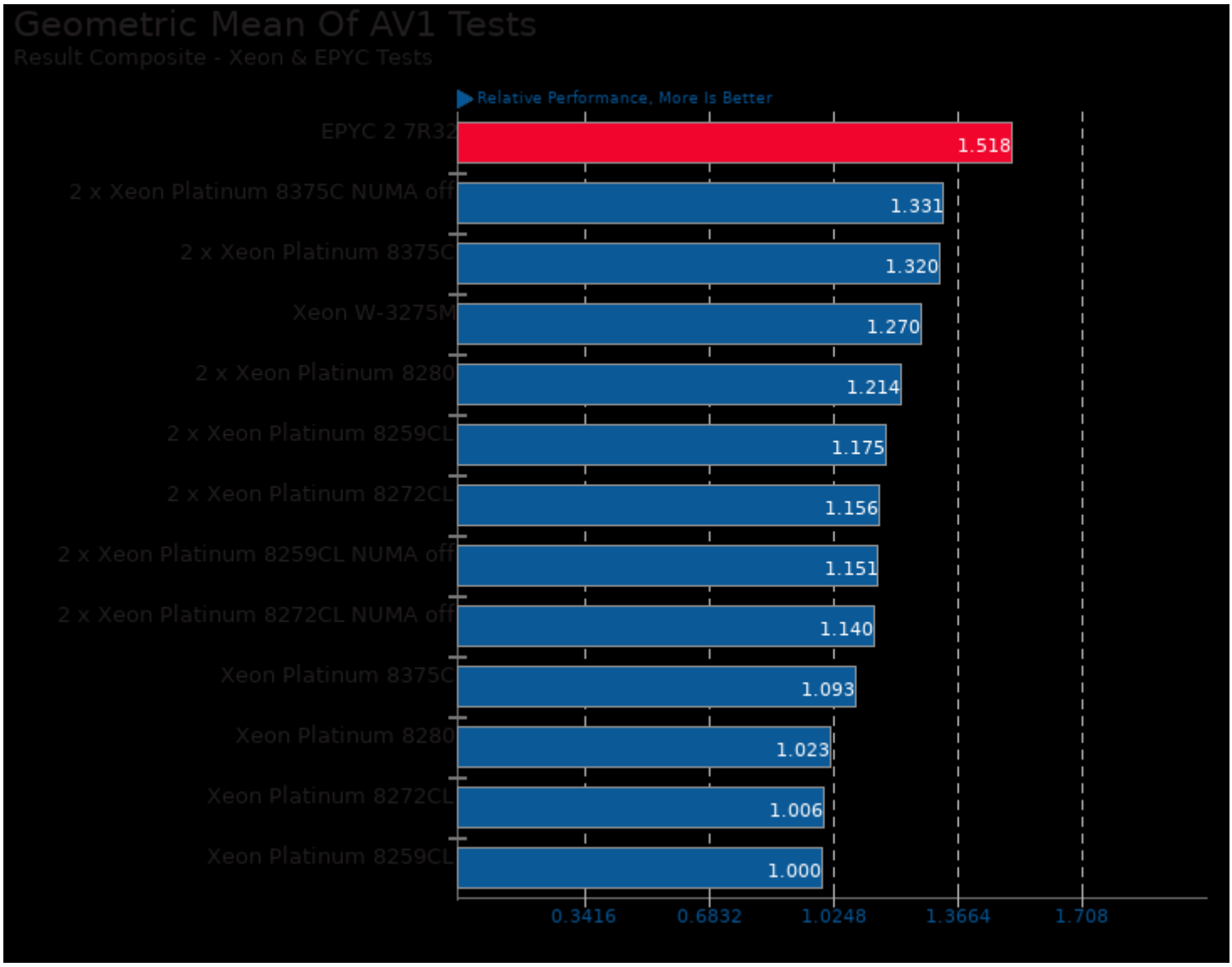

Mlpack Benchmark
Benchmark: scikit_qda
Seconds, Fewer Is Better
EPYC 2 7R32
SE +/- 0.28, N = 3
39.54
Xeon W-3275M
SE +/- 0.18, N = 3
32.65
Xeon Platinum 8259CL
SE +/- 0.12, N = 3
31.98
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.19, N = 3
41.29
2 x Xeon Platinum 8259CL
SE +/- 0.54, N = 12
42.88
Xeon Platinum 8272CL
SE +/- 0.20, N = 3
31.51
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.60, N = 3
40.35
2 x Xeon Platinum 8272CL
SE +/- 0.50, N = 5
40.64
Xeon Platinum 8280
SE +/- 0.29, N = 3
30.45
2 x Xeon Platinum 8280
SE +/- 0.34, N = 3
38.35
Xeon Platinum 8375C
SE +/- 0.07, N = 3
26.51
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.40, N = 3
29.53
2 x Xeon Platinum 8375C
SE +/- 0.31, N = 8
29.92
10
20
30
40
50


Mlpack Benchmark
Benchmark: scikit_svm
Seconds, Fewer Is Better
EPYC 2 7R32
SE +/- 0.09, N = 3
15.16
Xeon W-3275M
SE +/- 0.19, N = 3
15.78
Xeon Platinum 8259CL
SE +/- 0.03, N = 3
18.67
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.03, N = 3
19.62
2 x Xeon Platinum 8259CL
SE +/- 0.03, N = 3
18.76
Xeon Platinum 8272CL
SE +/- 0.04, N = 3
17.83
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.05, N = 3
19.05
2 x Xeon Platinum 8272CL
SE +/- 0.11, N = 3
17.94
Xeon Platinum 8280
SE +/- 0.07, N = 3
17.19
2 x Xeon Platinum 8280
SE +/- 0.09, N = 3
17.19
Xeon Platinum 8375C
SE +/- 0.02, N = 3
17.05
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.07, N = 3
17.54
2 x Xeon Platinum 8375C
SE +/- 0.04, N = 3
17.08
5
10
15
20
25


Mlpack Benchmark
Benchmark: scikit_linearridgeregression
Seconds, Fewer Is Better
EPYC 2 7R32
SE +/- 0.02, N = 3
1.79
Xeon W-3275M
SE +/- 0.02, N = 3
1.99
Xeon Platinum 8259CL
SE +/- 0.02, N = 15
2.00
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.02, N = 12
2.42
2 x Xeon Platinum 8259CL
SE +/- 0.02, N = 15
2.30
Xeon Platinum 8272CL
SE +/- 0.03, N = 3
1.91
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.02, N = 9
2.13
2 x Xeon Platinum 8272CL
SE +/- 0.03, N = 3
2.16
Xeon Platinum 8280
SE +/- 0.02, N = 3
1.67
2 x Xeon Platinum 8280
SE +/- 0.03, N = 3
1.82
Xeon Platinum 8375C
SE +/- 0.01, N = 3
2.54
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.01, N = 3
2.75
2 x Xeon Platinum 8375C
SE +/- 0.02, N = 10
2.60
0.6188
1.2376
1.8564
2.4752
3.094


Scikit-Learn 0.22.1
Seconds, Fewer Is Better
EPYC 2 7R32
SE +/- 0.037, N = 3
10.419
Xeon W-3275M
SE +/- 0.035, N = 3
9.661
Xeon Platinum 8259CL
SE +/- 0.056, N = 3
12.088
2 x Xeon Platinum 8259CL NUMA off
SE +/- 0.043, N = 3
12.954
2 x Xeon Platinum 8259CL
SE +/- 0.039, N = 3
12.459
Xeon Platinum 8272CL
SE +/- 0.026, N = 3
11.212
2 x Xeon Platinum 8272CL NUMA off
SE +/- 0.047, N = 3
12.055
2 x Xeon Platinum 8272CL
SE +/- 0.025, N = 3
11.763
Xeon Platinum 8280
SE +/- 0.042, N = 3
9.127
2 x Xeon Platinum 8280
SE +/- 0.122, N = 3
9.392
Xeon Platinum 8375C
SE +/- 0.053, N = 3
9.566
2 x Xeon Platinum 8375C NUMA off
SE +/- 0.058, N = 3
9.472
2 x Xeon Platinum 8375C
SE +/- 0.032, N = 3
9.332
3
6
9
12
15

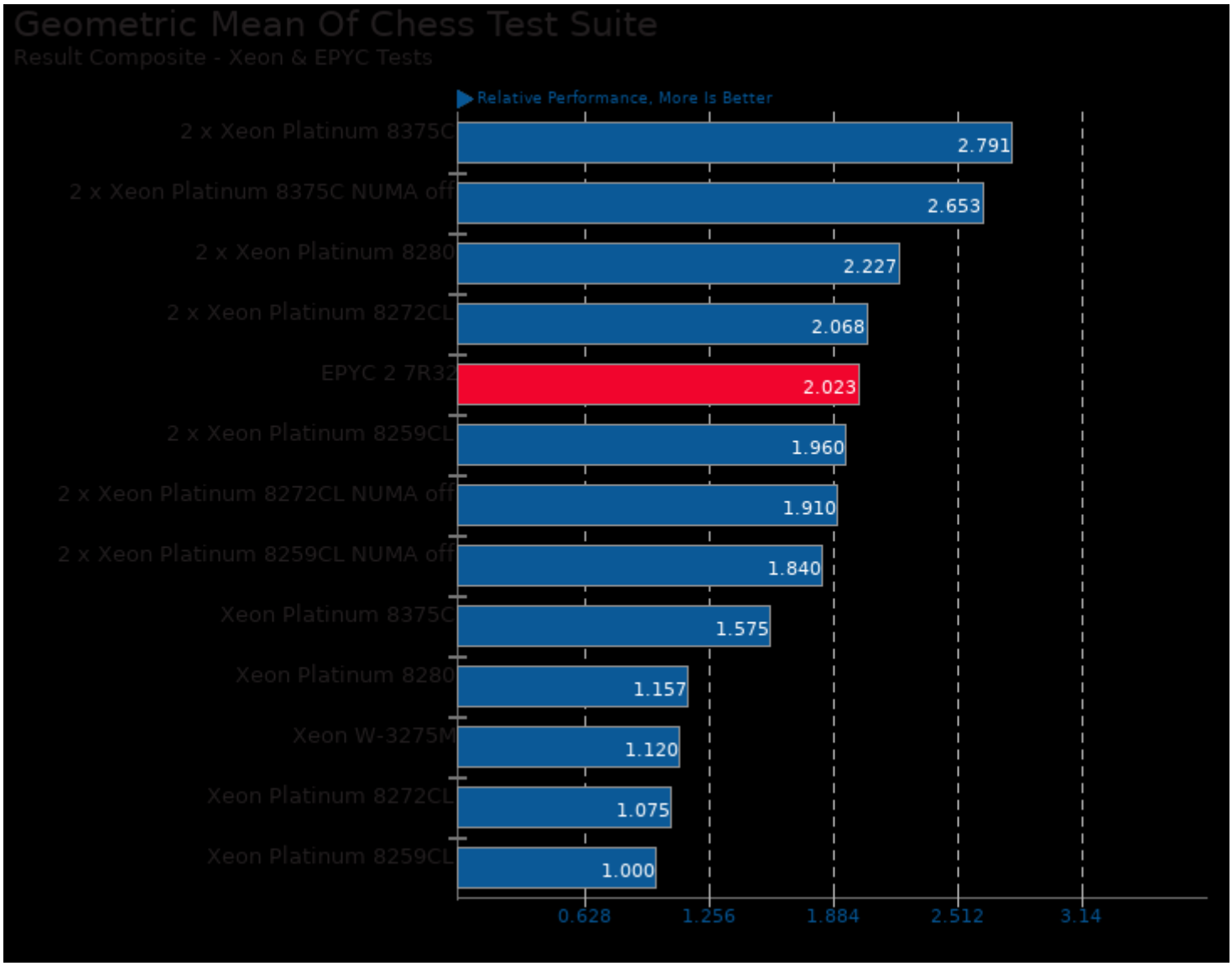
These geometric means are based upon test groupings / test suites for this result file.



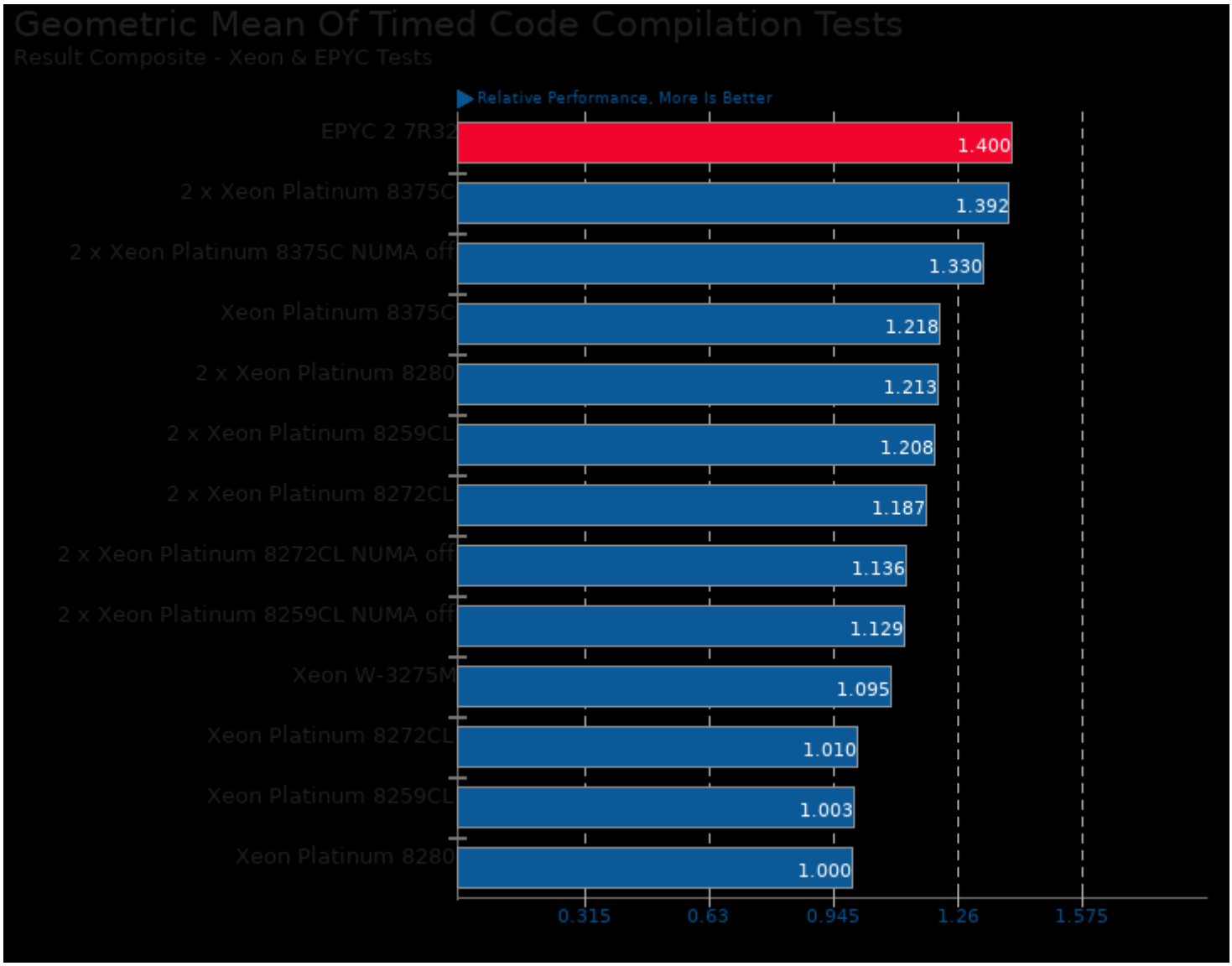
Geometric mean based upon tests: pts/dav1d and pts/svt-av1



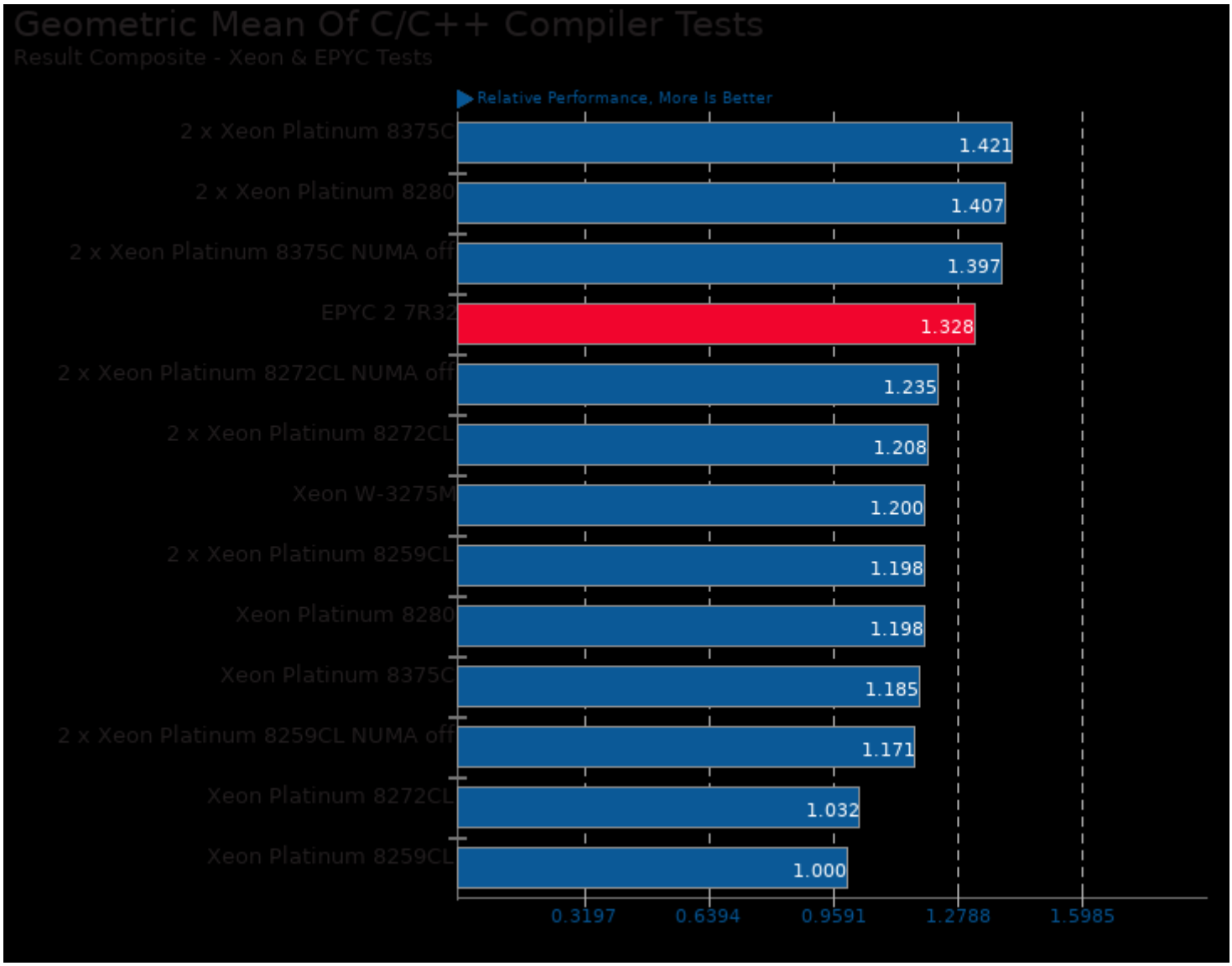
Geometric mean based upon tests: pts/himeno and pts/mrbayes



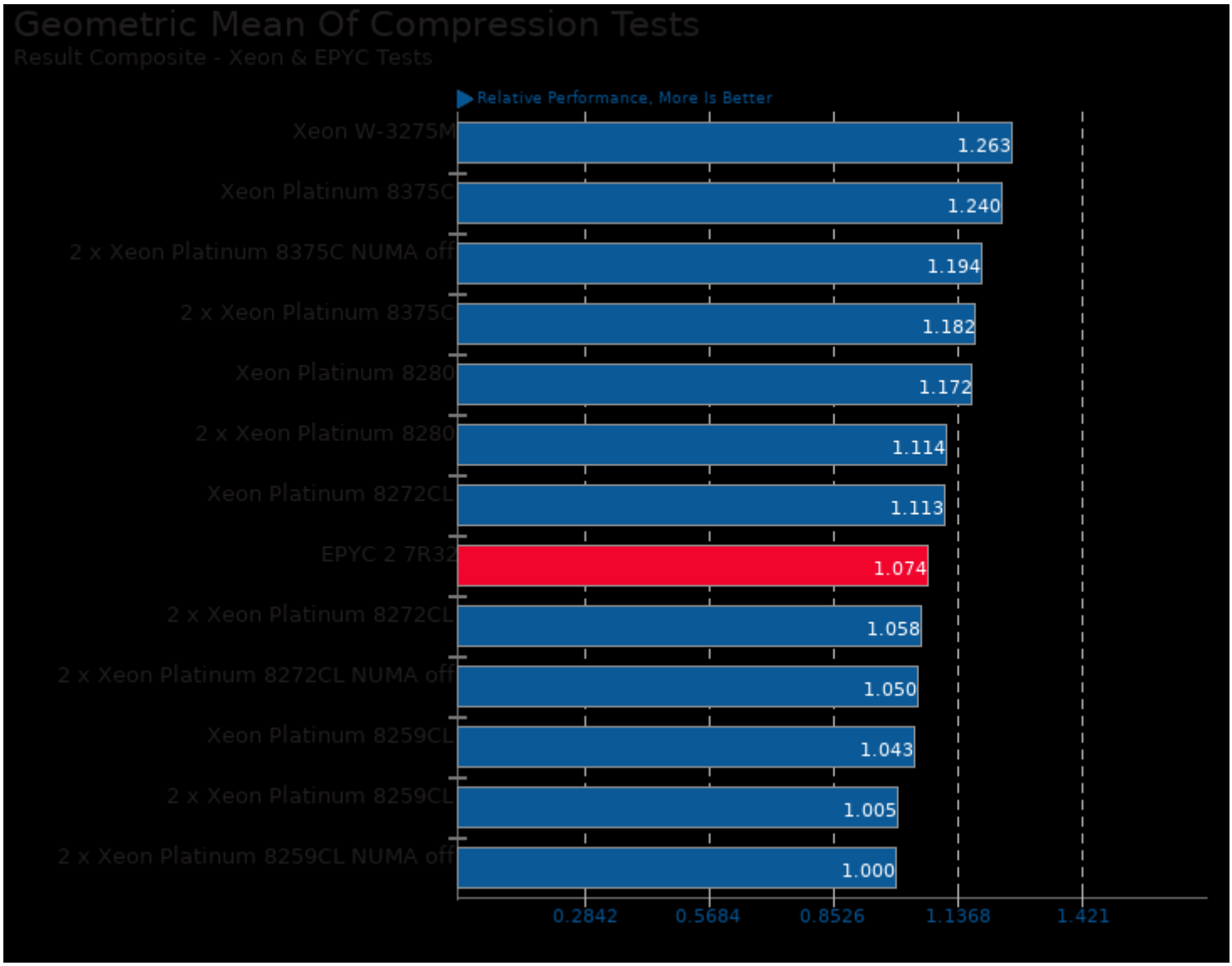
Geometric mean based upon tests: pts/stockfish and pts/asmfish



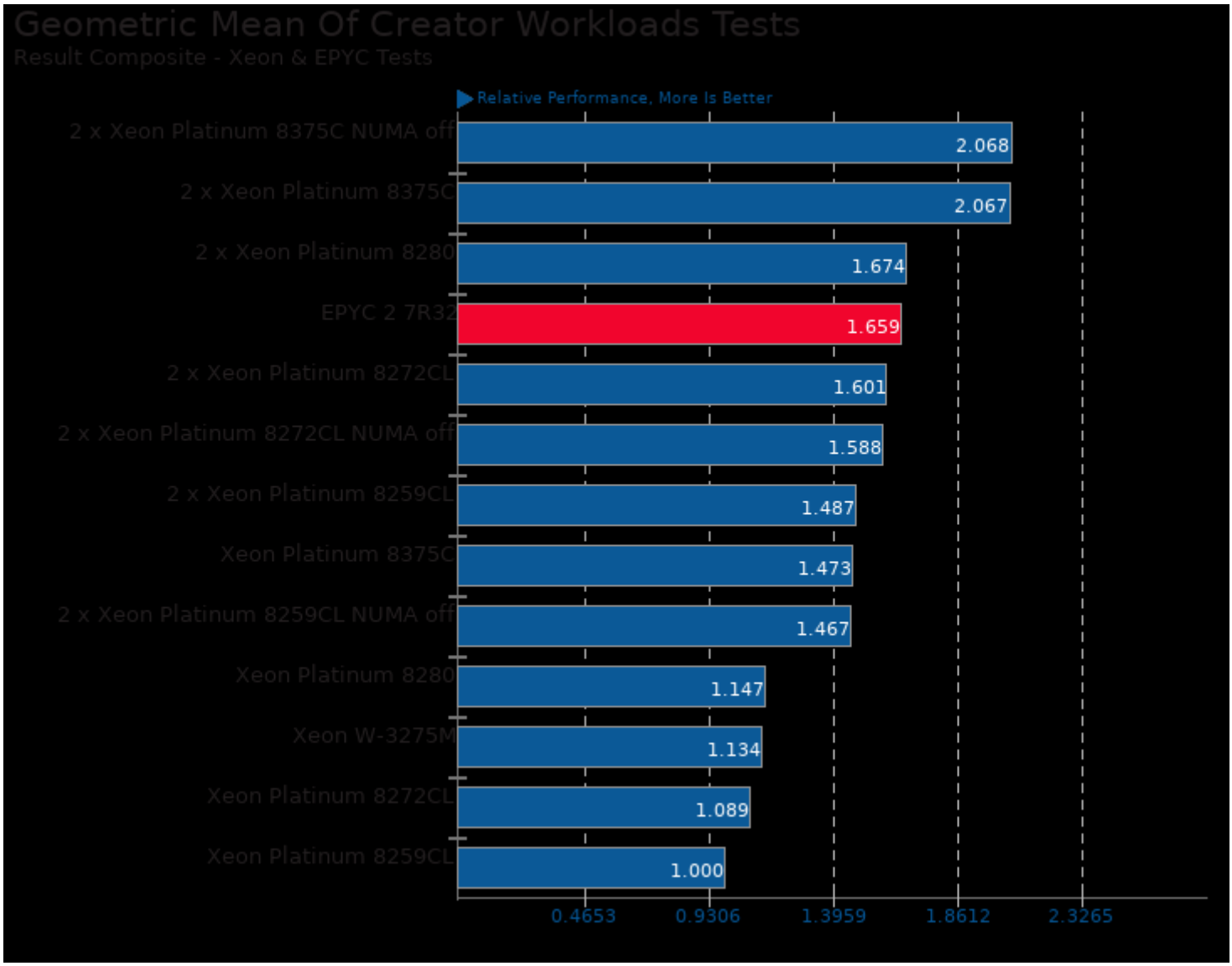
Geometric mean based upon tests: pts/build-linux-kernel, pts/build-gcc, pts/build-gdb, pts/build-llvm and pts/build2



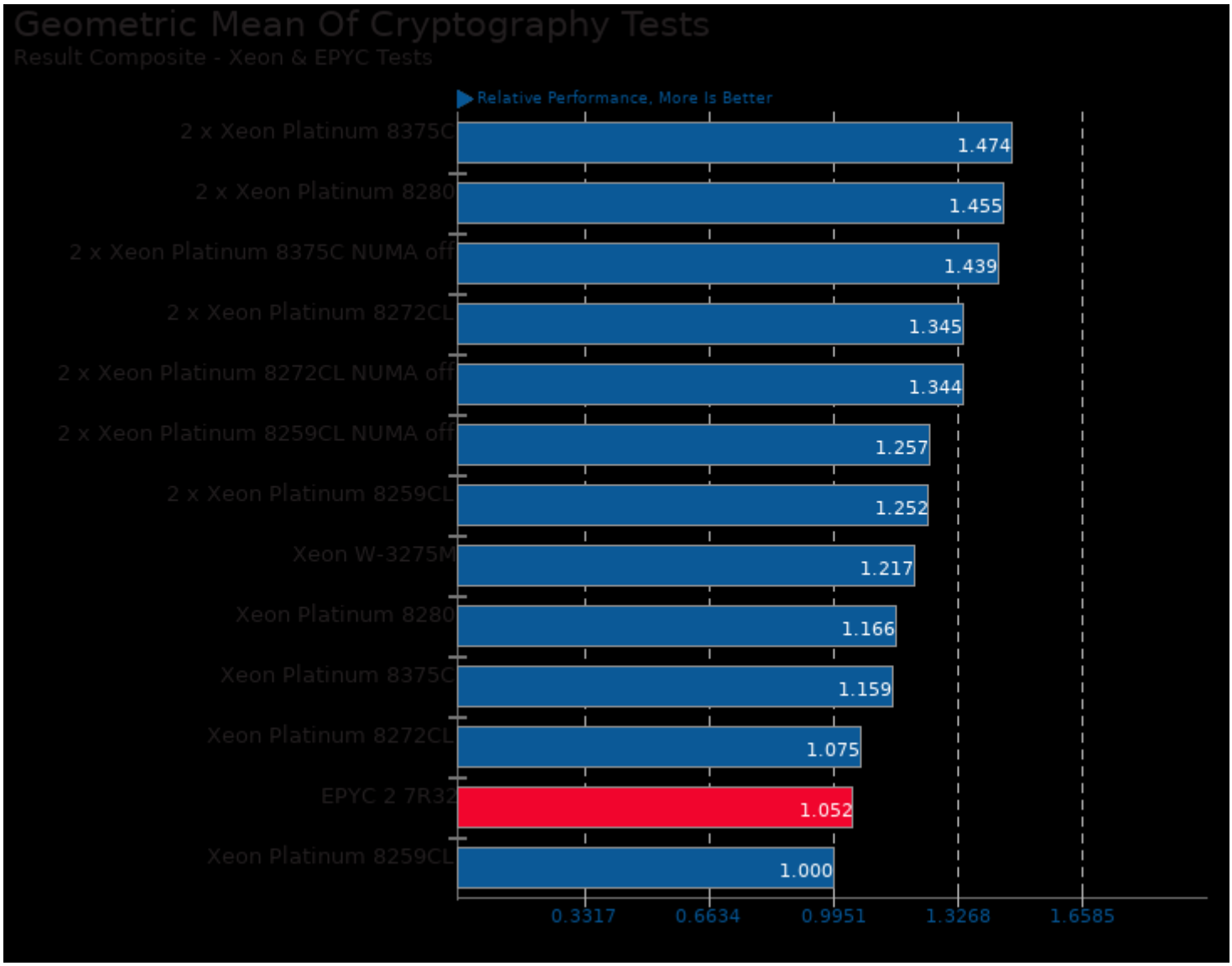
Geometric mean based upon tests: pts/himeno, pts/stockfish, pts/build-llvm, pts/pgbench, pts/mrbayes, pts/john-the-ripper, pts/dav1d, pts/tungsten, pts/compress-zstd, pts/lammps, pts/svt-av1, pts/svt-vp9, pts/build-gdb, pts/smhasher, pts/basis and pts/nettle



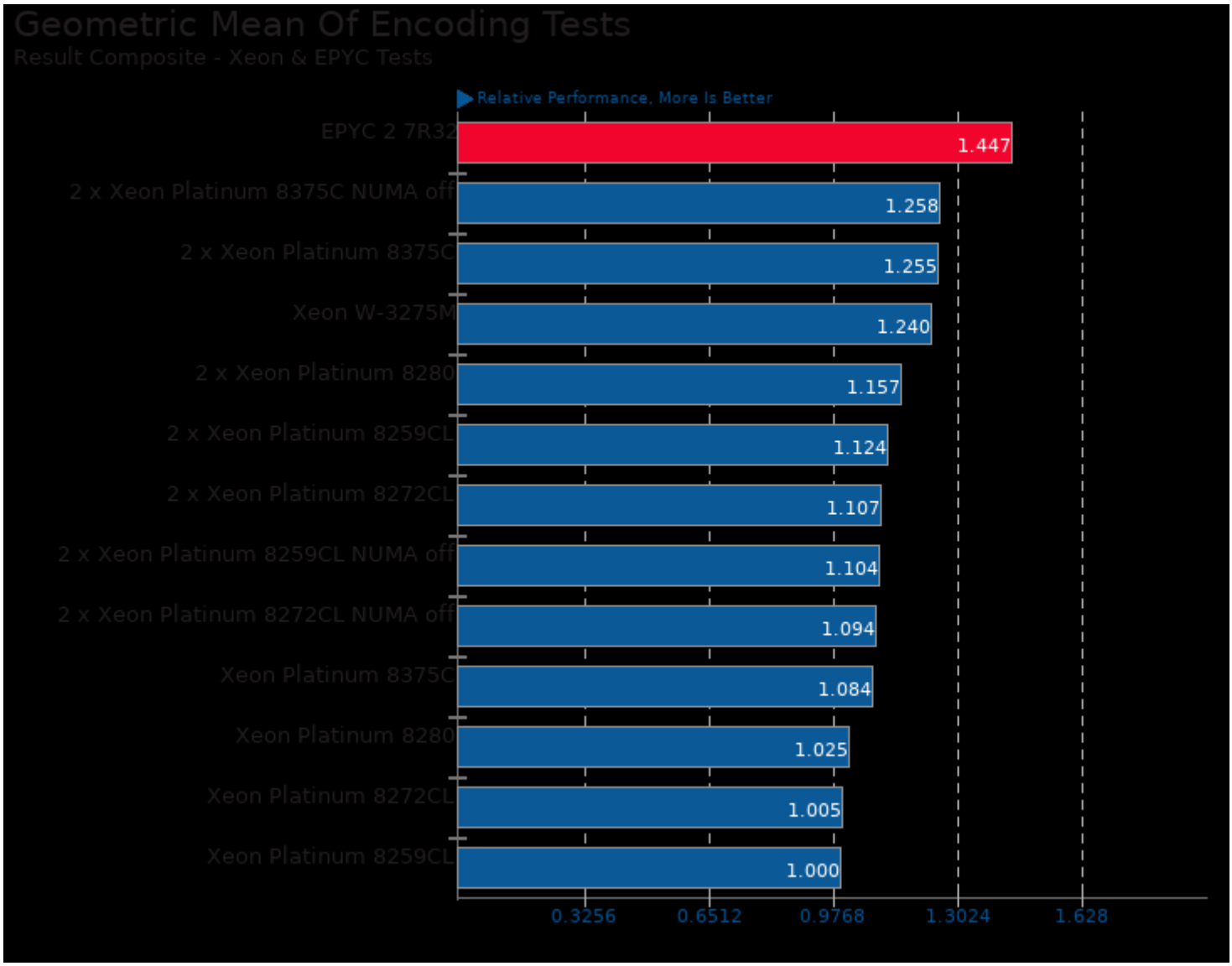
Geometric mean based upon tests: pts/compress-zstd and pts/lzbench



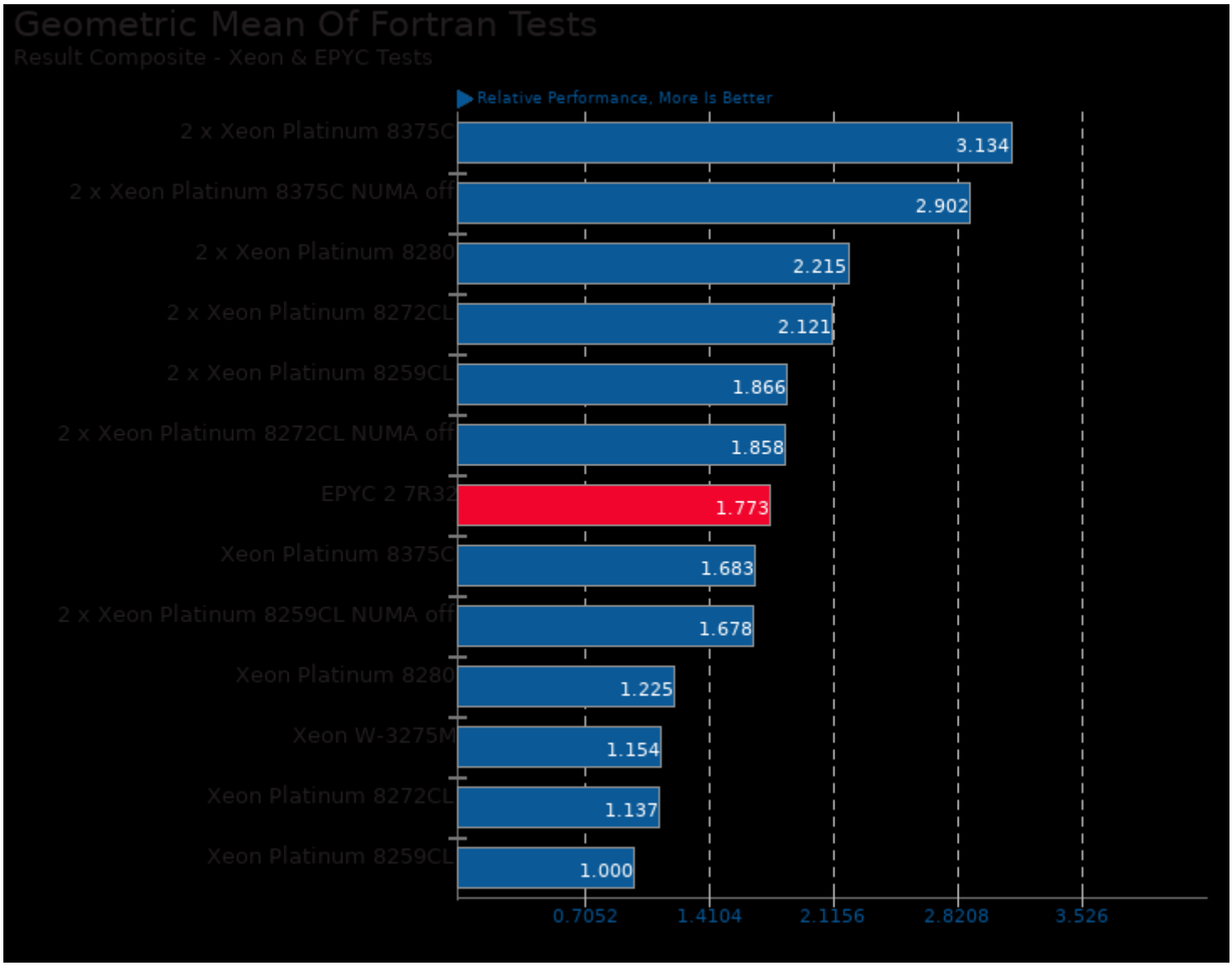
Geometric mean based upon tests: pts/ospray, pts/blender, pts/tungsten, pts/appleseed, pts/radiance, pts/luxcorerender, pts/v-ray, pts/svt-vp9, pts/dav1d, pts/svt-av1, pts/embree, pts/oidn, pts/basis and pts/deepspeech



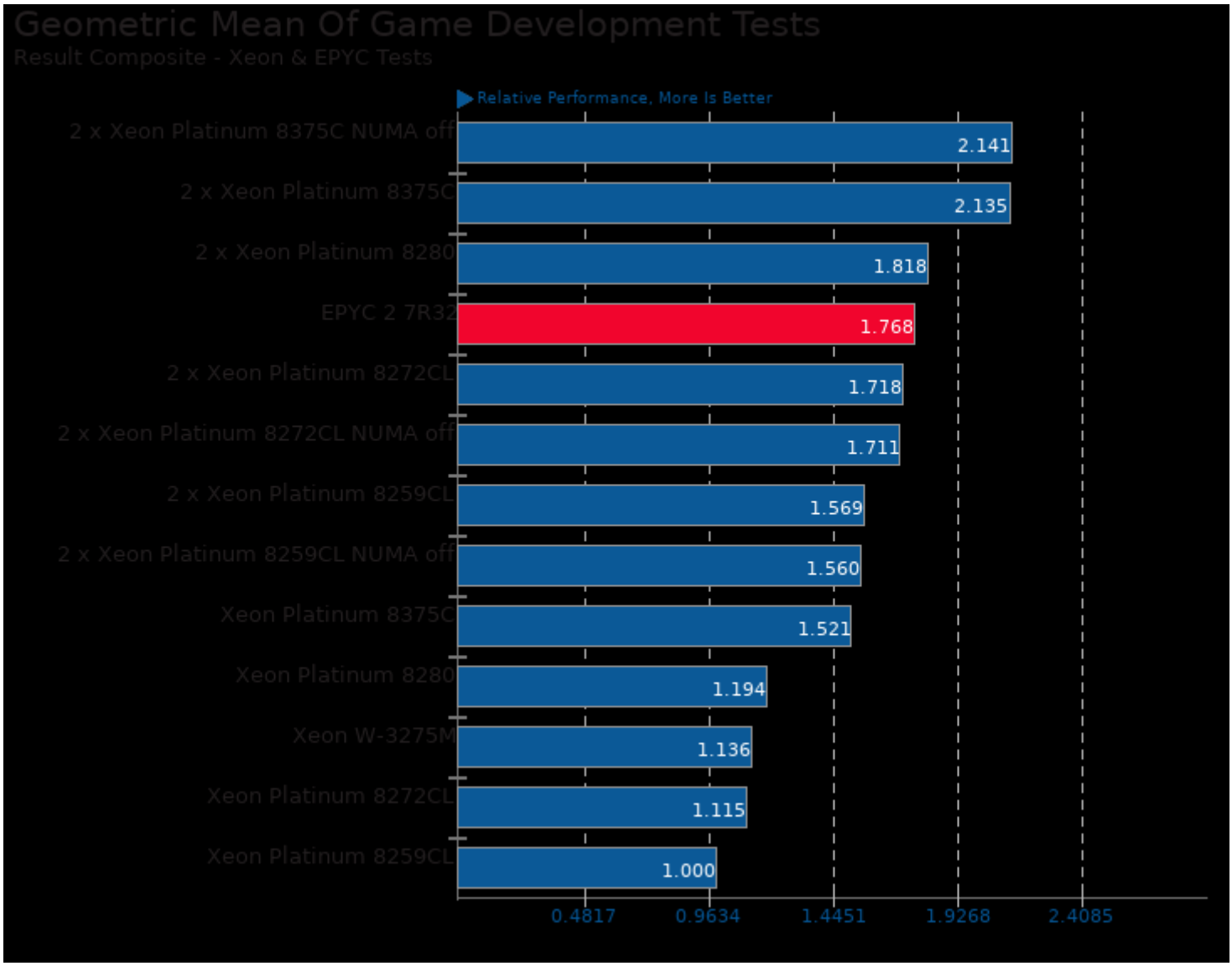
Geometric mean based upon tests: pts/john-the-ripper, pts/smhasher and pts/nettle



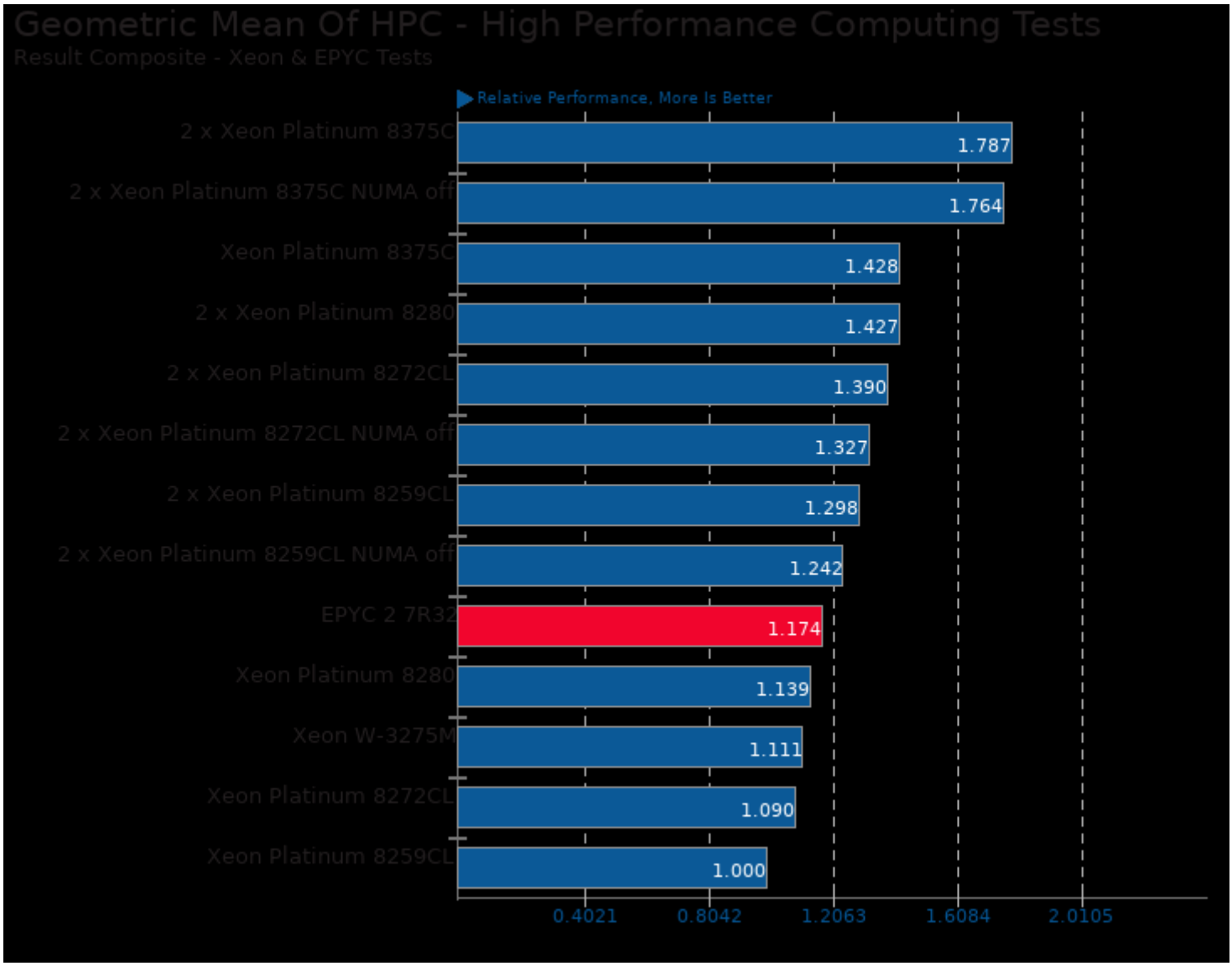
Geometric mean based upon tests: pts/svt-vp9, pts/dav1d and pts/svt-av1



Geometric mean based upon tests: pts/hpcg, pts/lammps, pts/npb and pts/cloverleaf



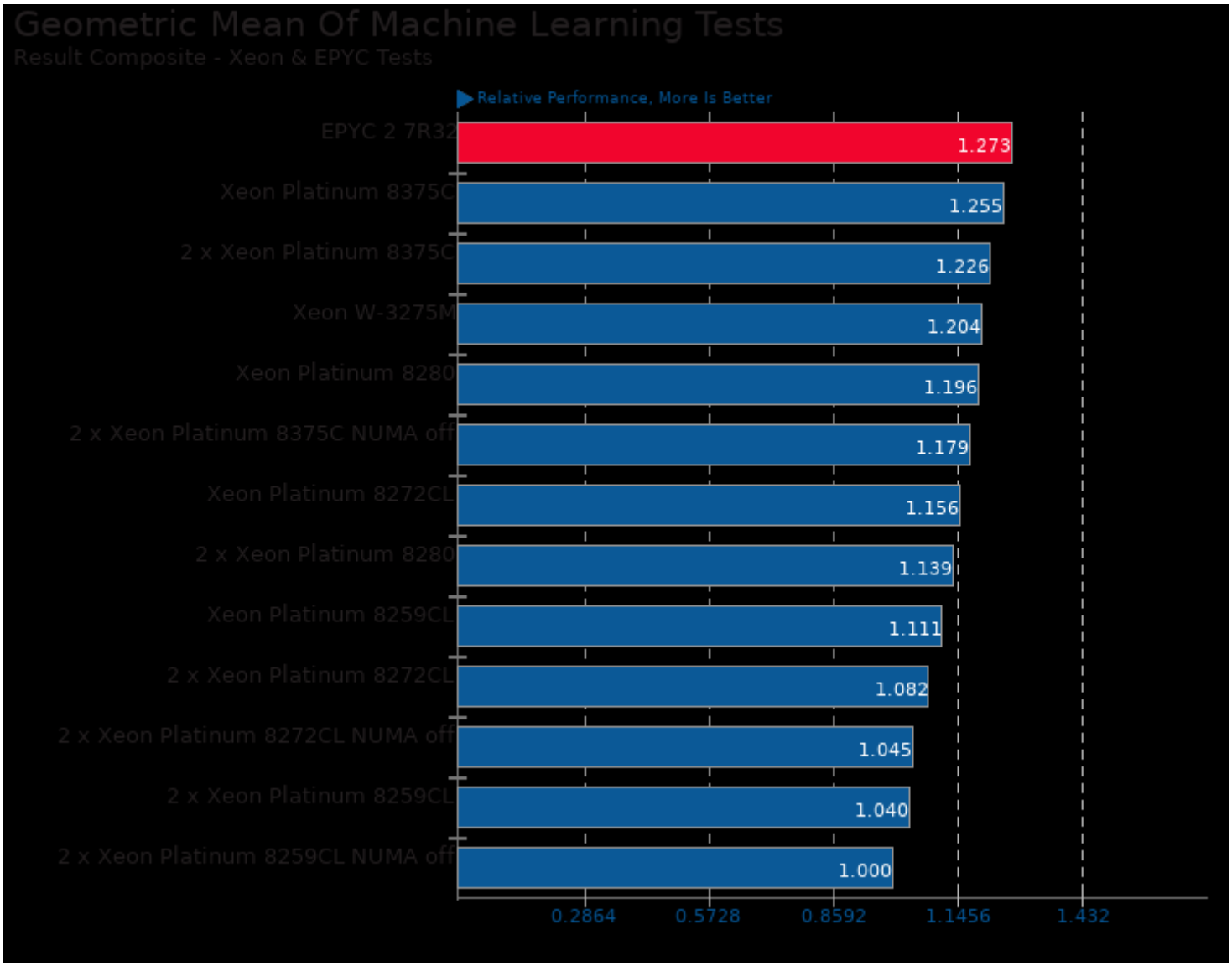
Geometric mean based upon tests: pts/basis, pts/blender and pts/oidn



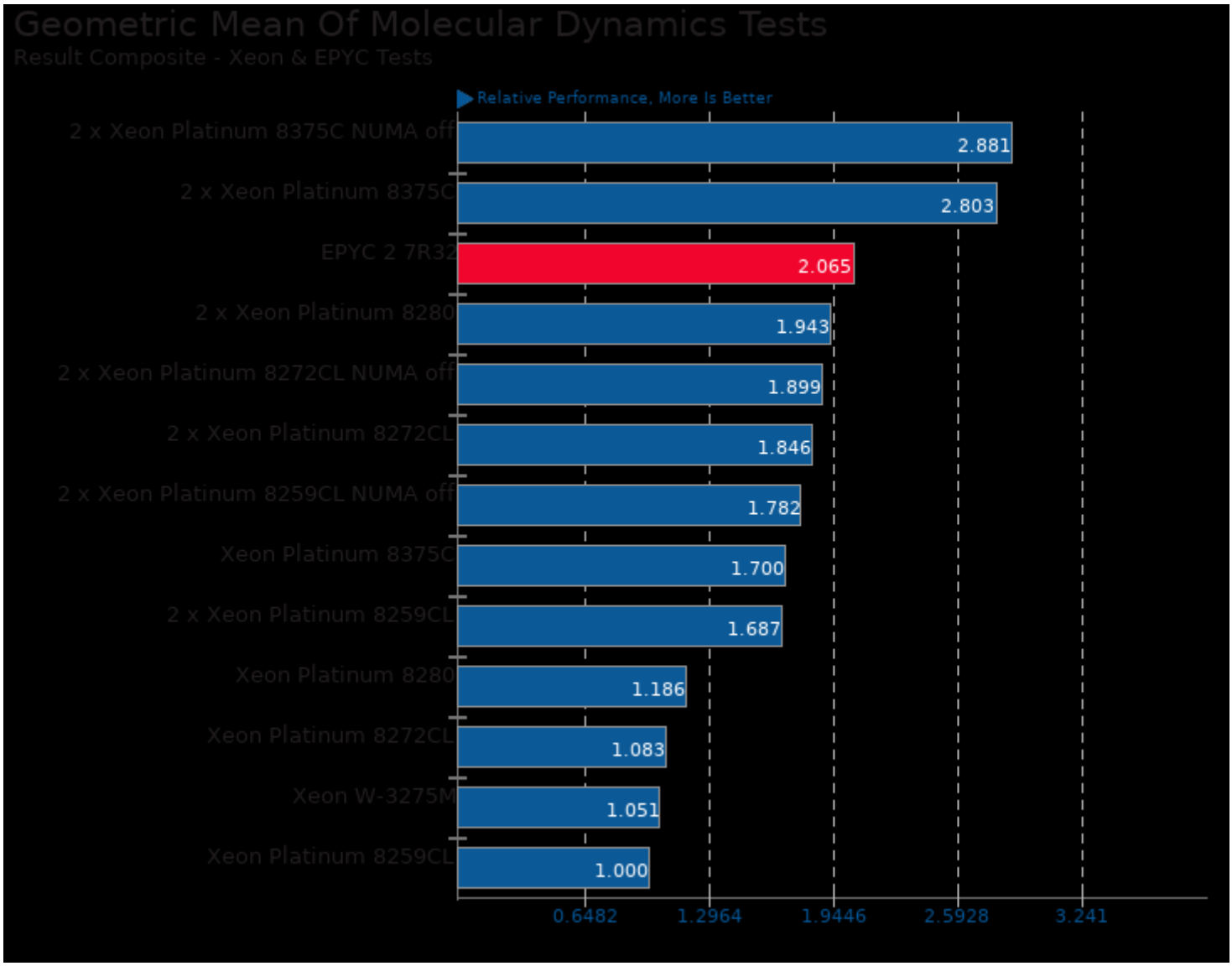
Geometric mean based upon tests: pts/npb, pts/hpcg, pts/intel-mpi, pts/arrayfire, pts/namd, pts/cloverleaf, pts/lammps, pts/himeno, pts/mrbayes, pts/numpy, pts/deepspeech, pts/scikit-learn and pts/mlpack



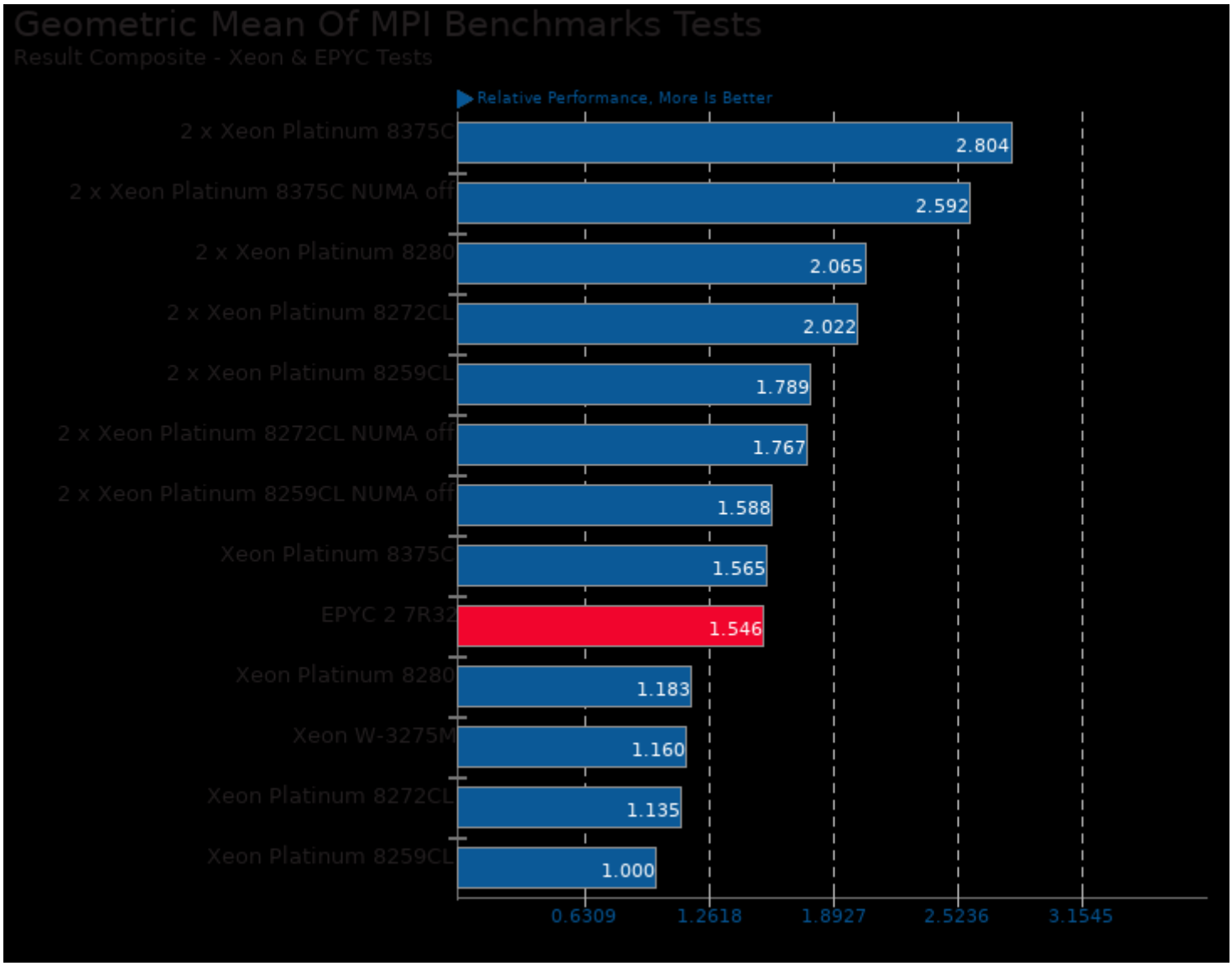
Geometric mean based upon tests: pts/dacapobench and pts/renaissance



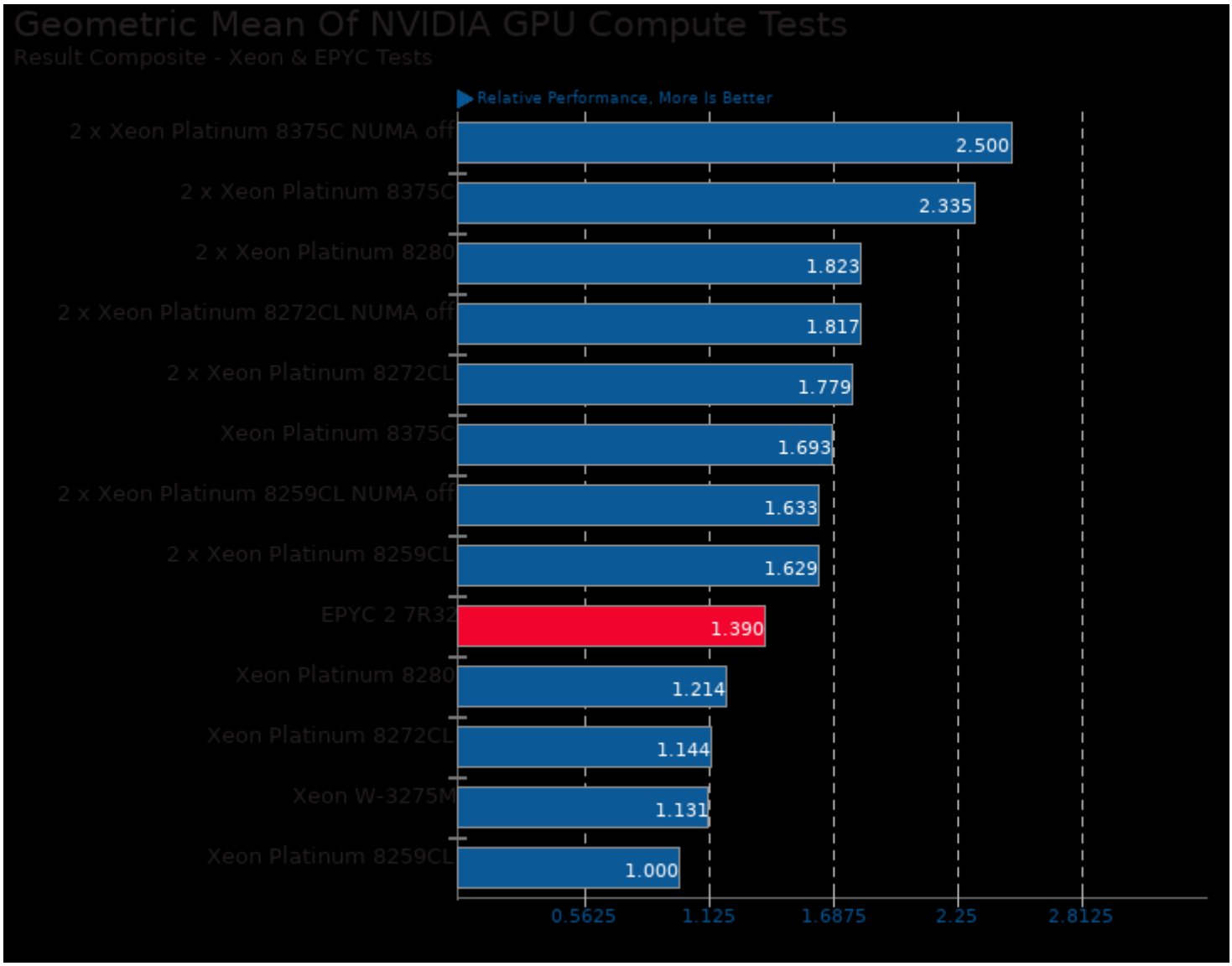
Geometric mean based upon tests: pts/numpy, pts/deepspeech, pts/scikit-learn and pts/mlpack



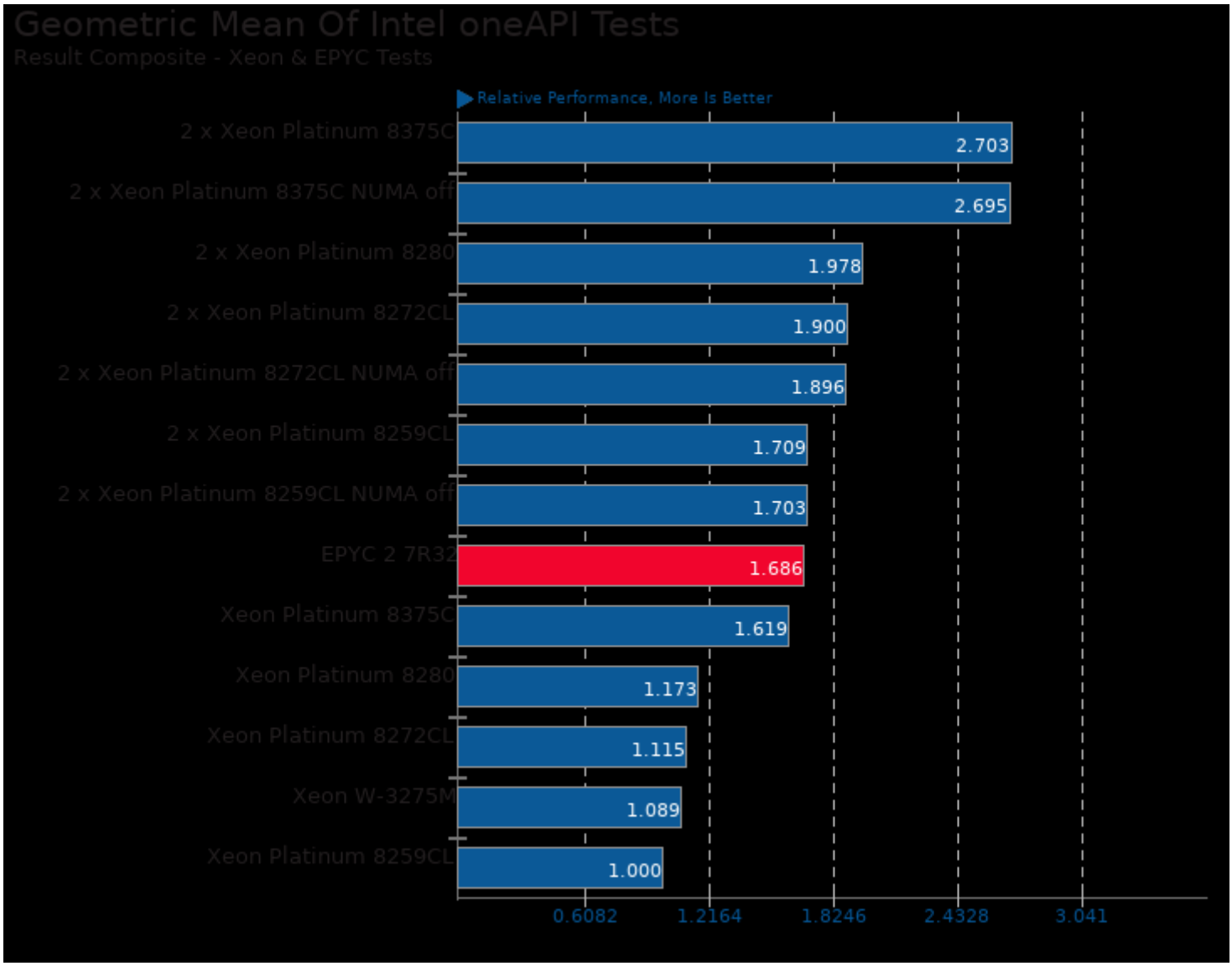
Geometric mean based upon tests: pts/namd, pts/cloverleaf and pts/lammps



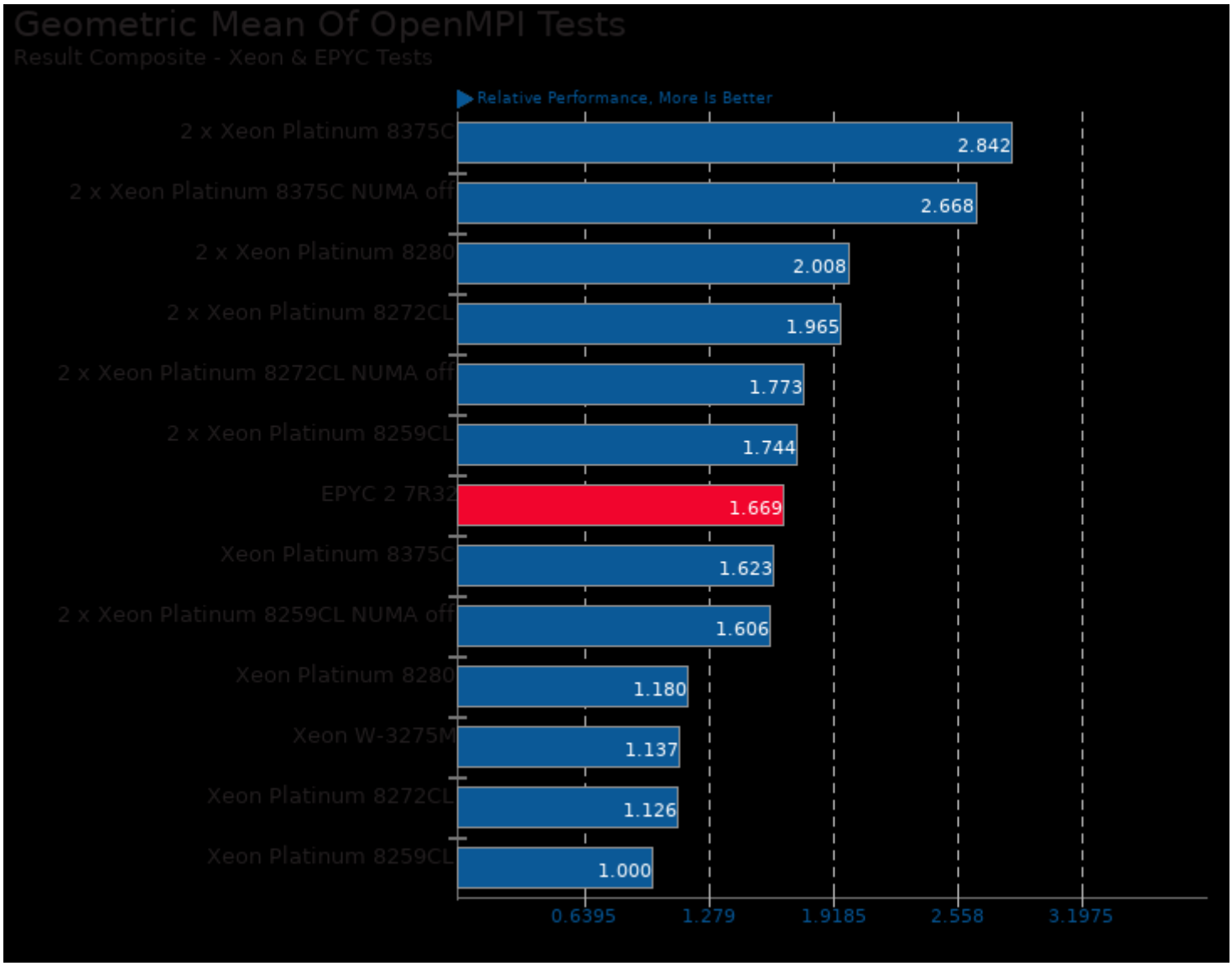
Geometric mean based upon tests: pts/lammps, pts/intel-mpi, pts/hpcg, pts/mrbayes and pts/npb



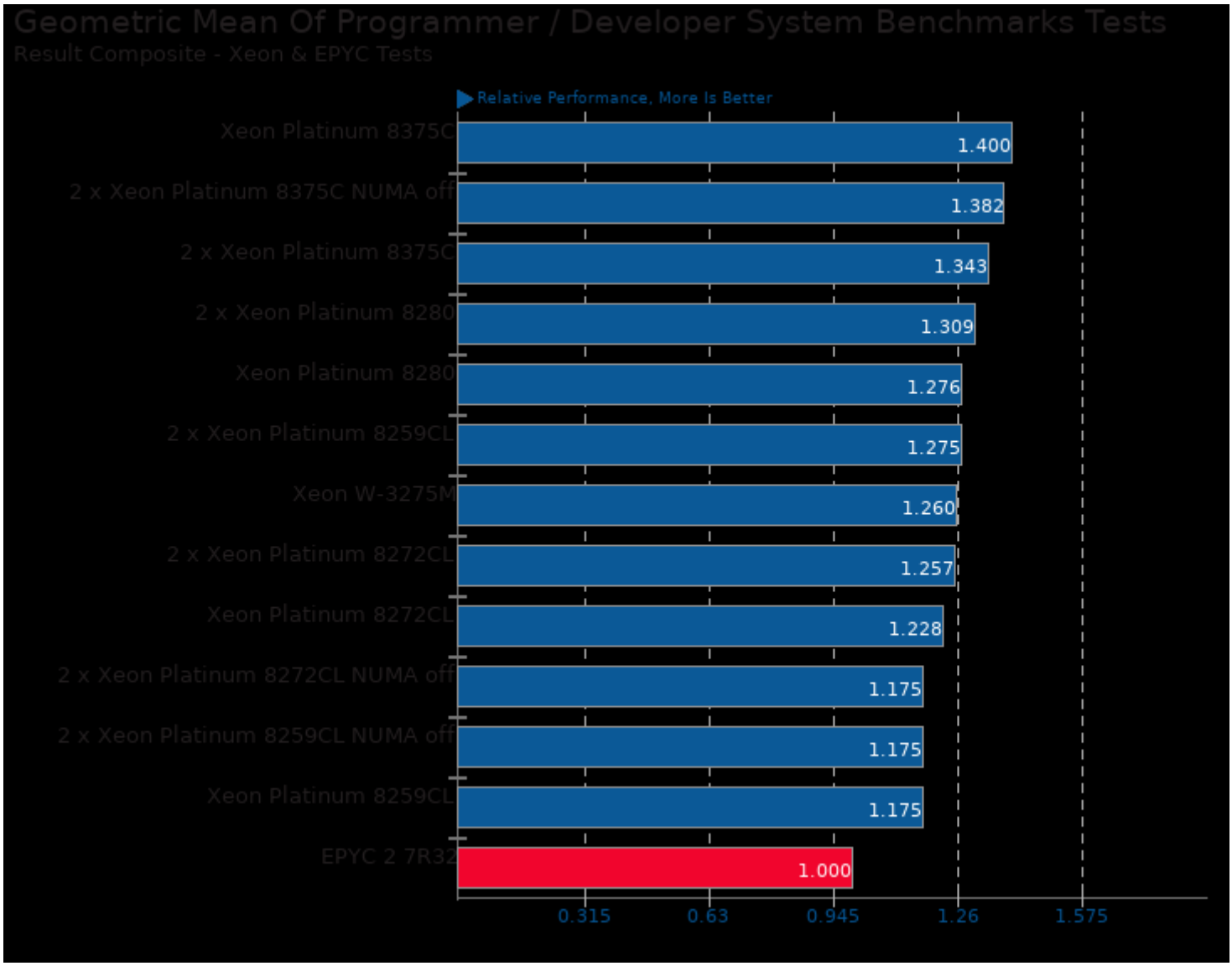
Geometric mean based upon tests: pts/luxcorerender, pts/arrayfire, pts/v-ray and pts/blender



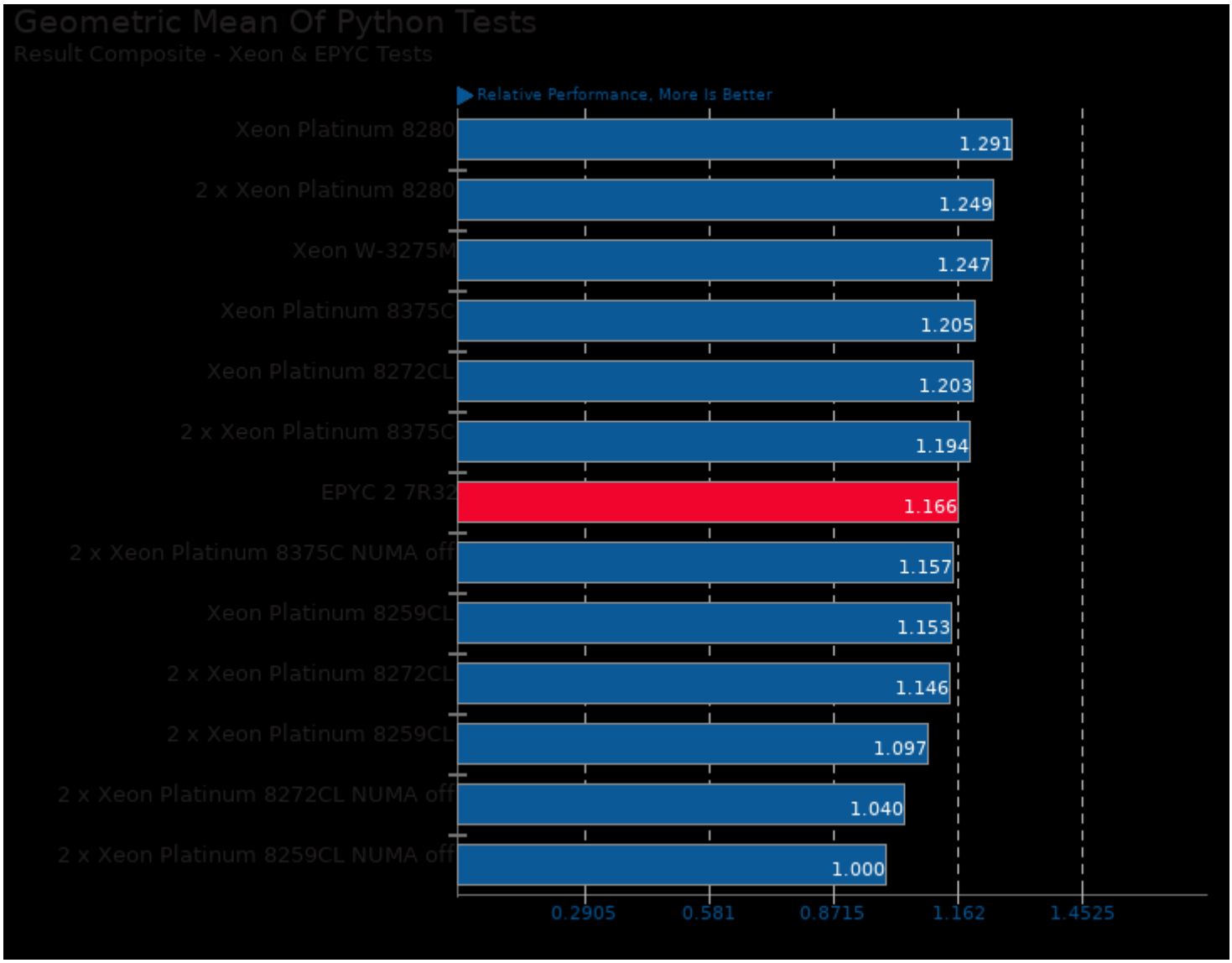
Geometric mean based upon tests: pts/embree, pts/oidn, pts/ospray and pts/tungsten



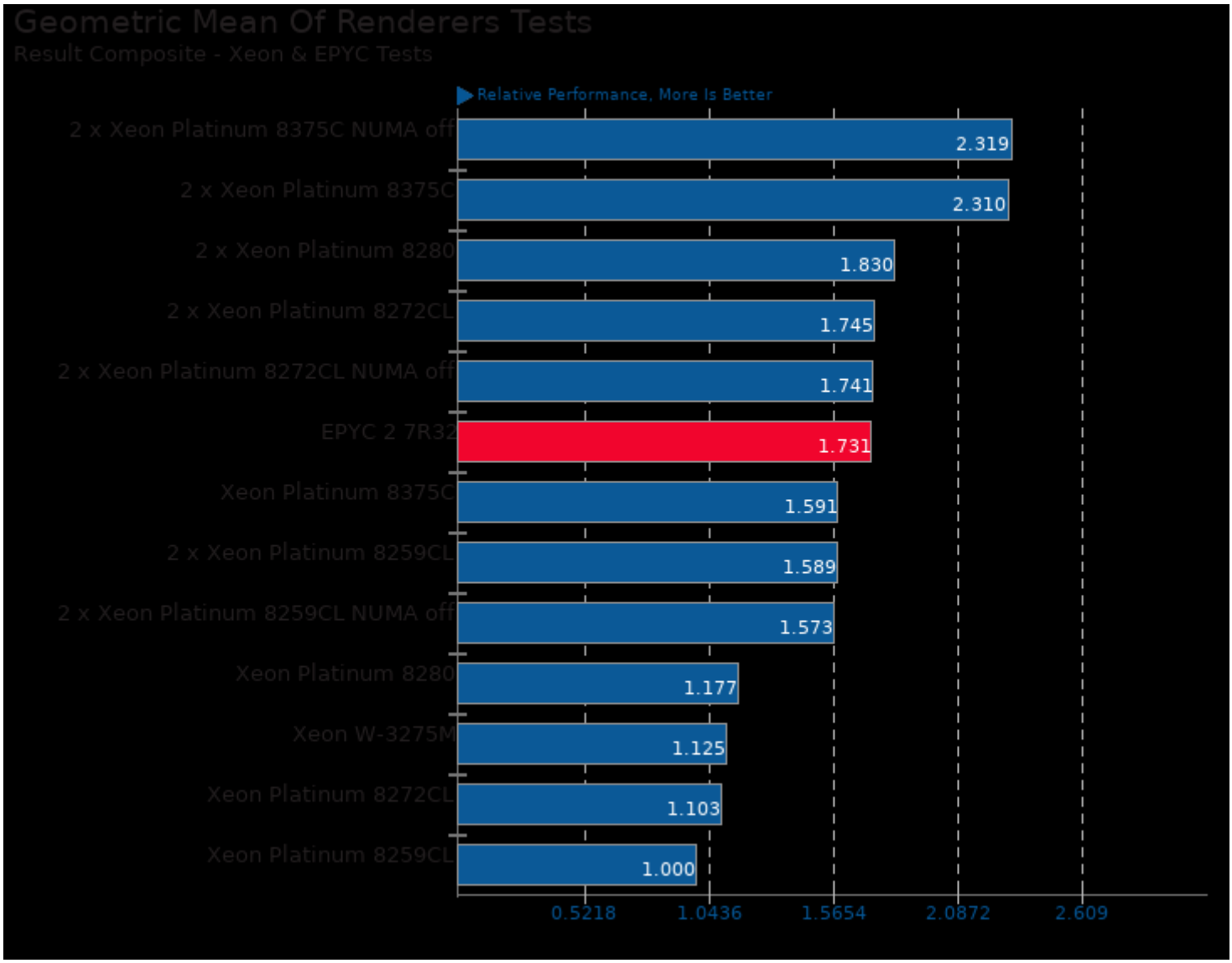
Geometric mean based upon tests: pts/intel-mpi, pts/hpcg, pts/lammps, pts/npb, pts/cloverleaf and pts/mrbayes



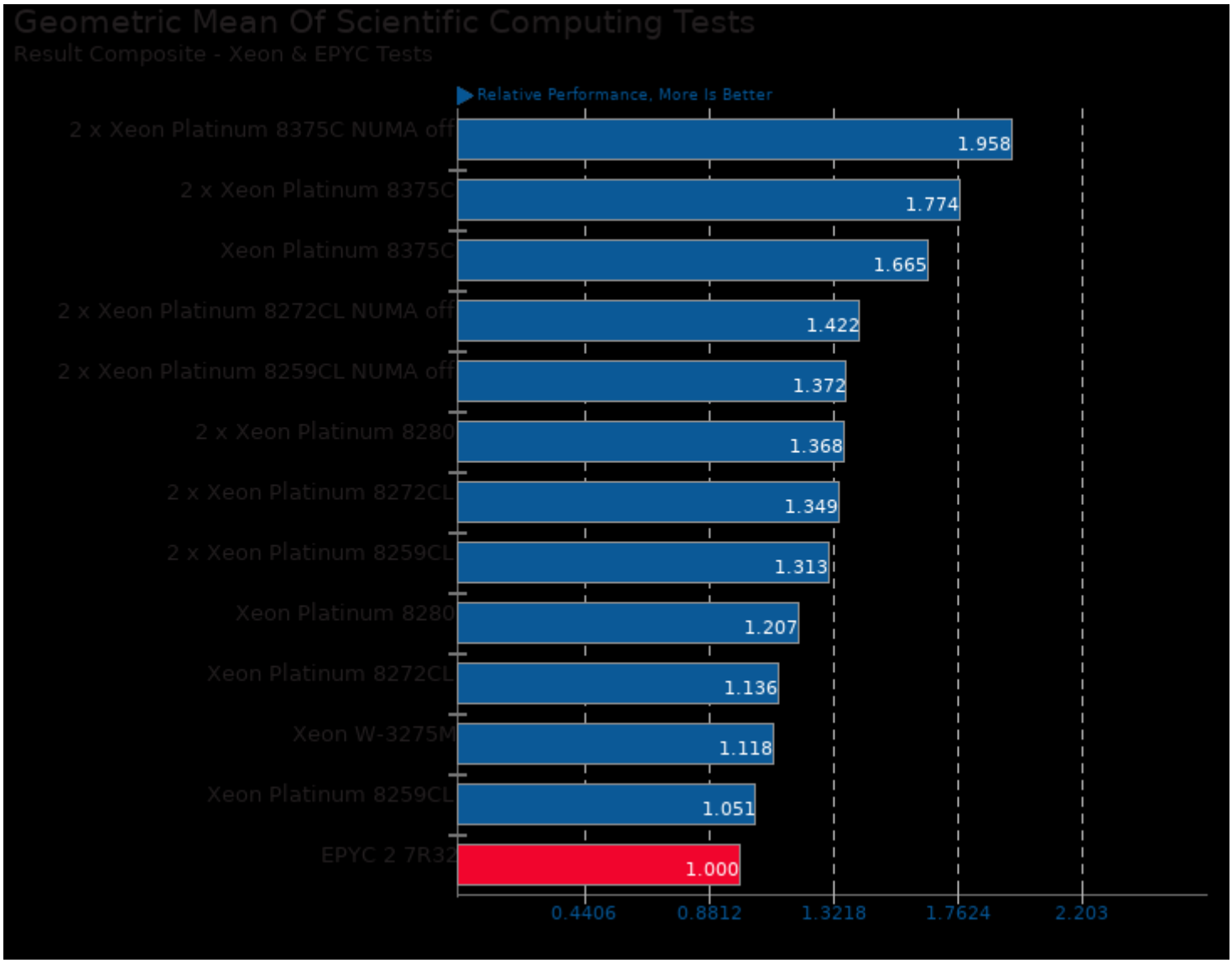
Geometric mean based upon tests: pts/compress-zstd, pts/pyperformance, pts/pybench, pts/build-linux-kernel, pts/build-gcc, pts/build-gdb, pts/build-llvm, pts/build2 and pts/arrayfire



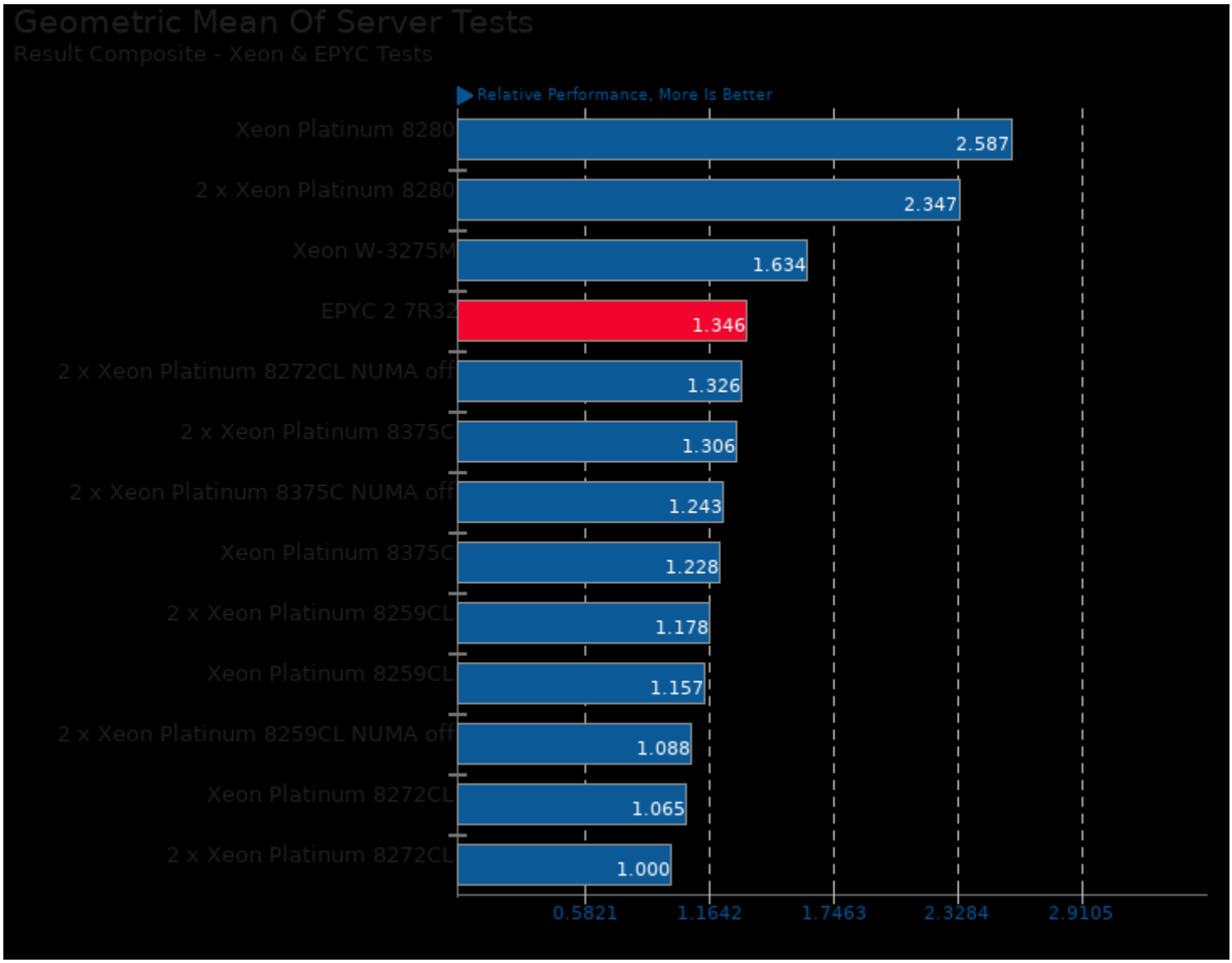
Geometric mean based upon tests: pts/pybench, pts/numpy, pts/mlpack, pts/scikit-learn and pts/pyperformance



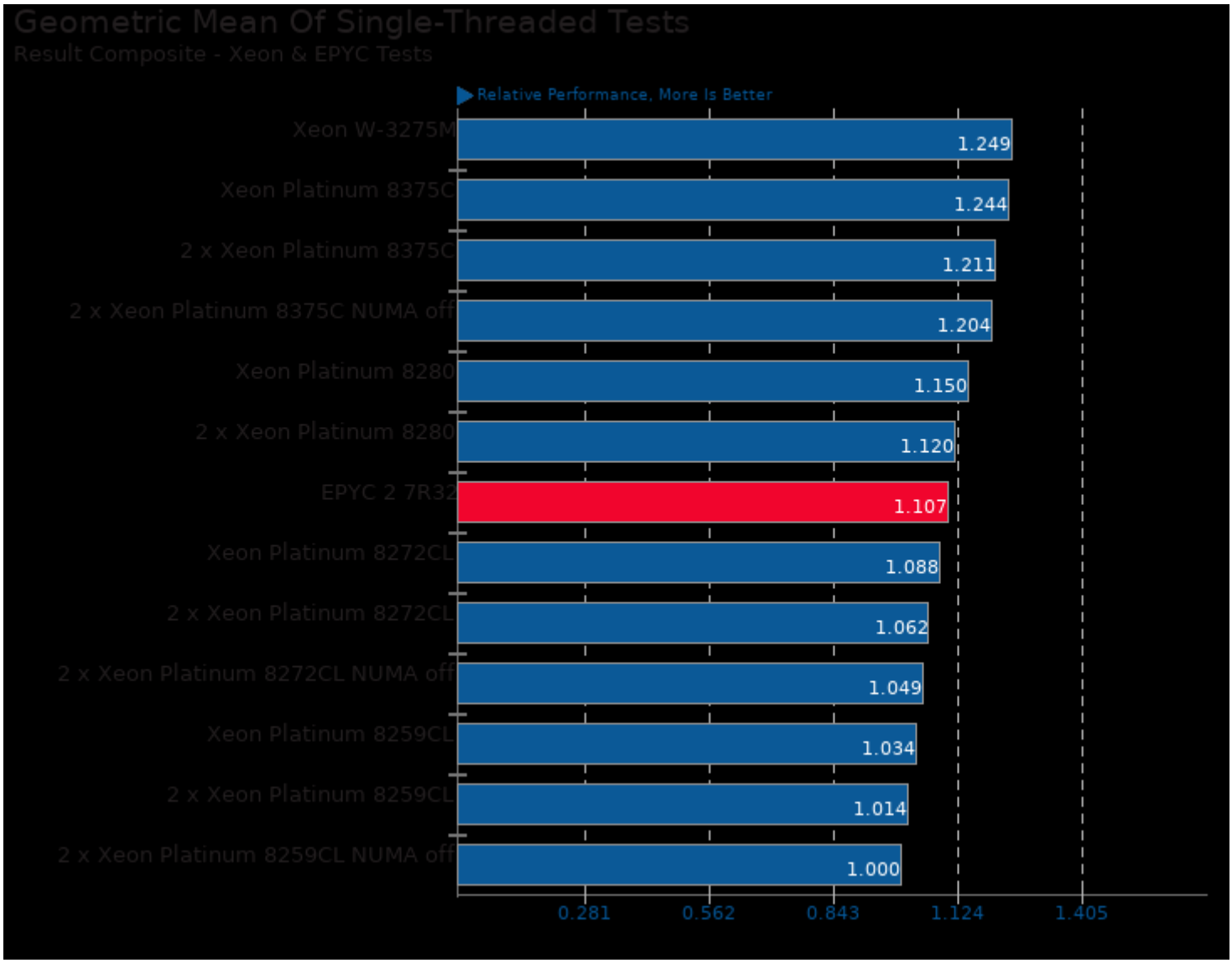
Geometric mean based upon tests: pts/ospray, pts/blender, pts/tungsten, pts/appleseed, pts/radiance, pts/luxcorerender and pts/v-ray



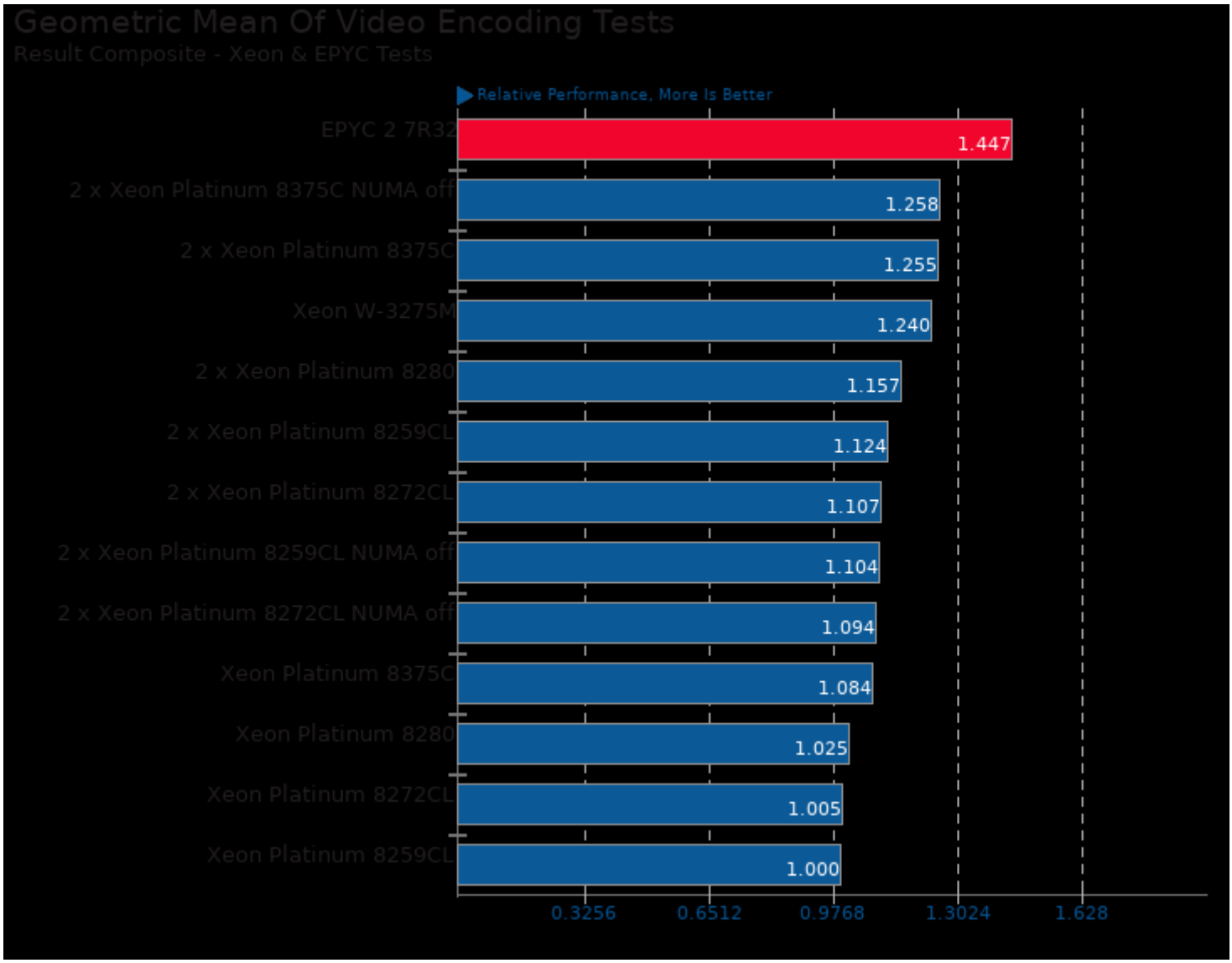
Geometric mean based upon tests: pts/arrayfire, pts/namd, pts/cloverleaf, pts/lammps, pts/himeno and pts/mrbayes



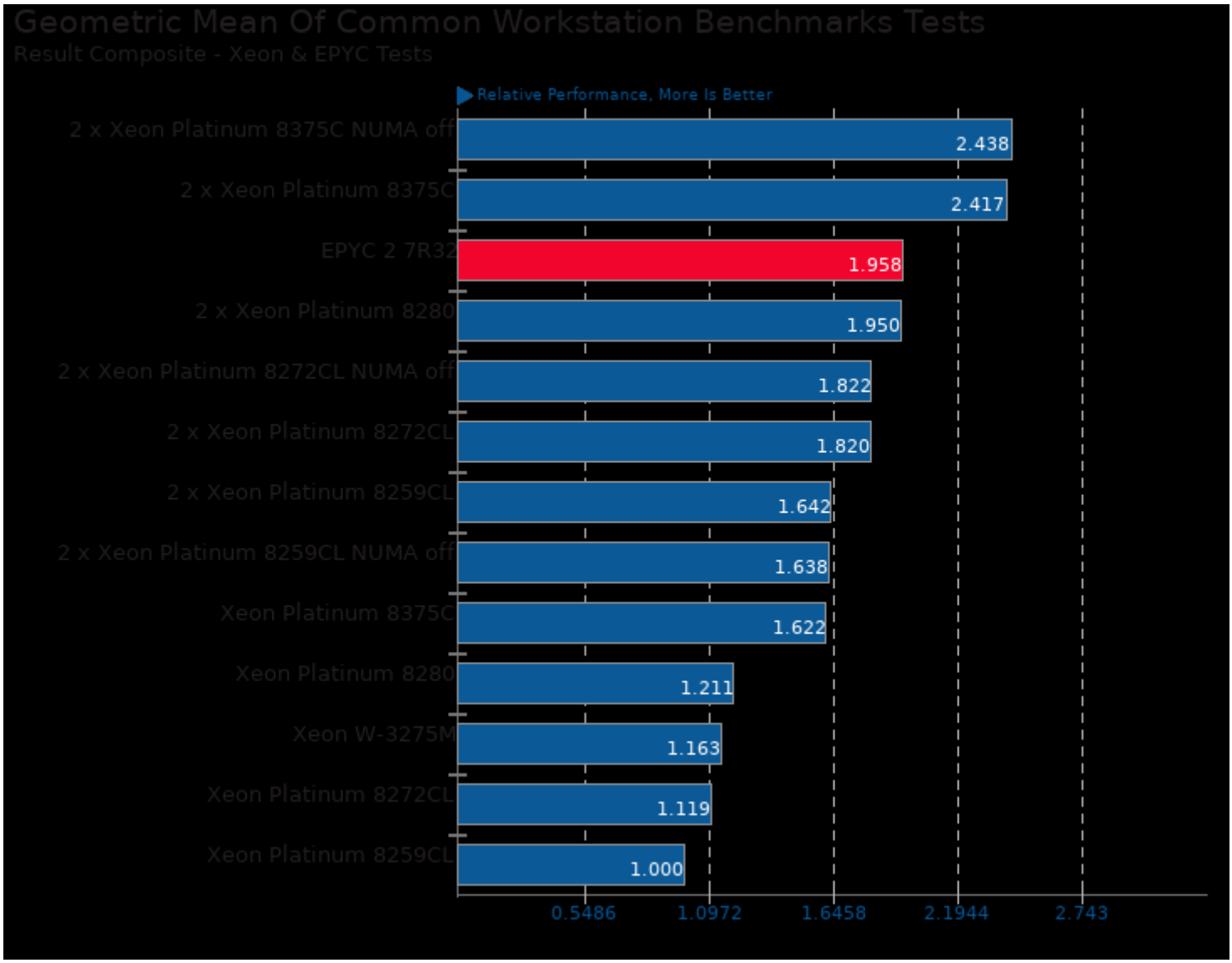
Geometric mean based upon tests: pts/pgbench and pts/phpbench



Geometric mean based upon tests: pts/lzbench, pts/numpy, pts/deepspeech, pts/radiance, pts/pybench and pts/phpbench



Geometric mean based upon tests: pts/svt-vp9, pts/dav1d and pts/svt-av1



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

This file was automatically generated via the Phoronix Test Suite benchmarking software on Thursday, 28 March 2024 13:57.