Phoronix Test Suite

www.phoronix-test-suite.com

Xeon Cascade Lake Refresh vs. AMD EPYC Rome Linux Benchmarks

Benchmarks for a future article by Michael Larabel.

Automated Executive Summary

2 x EPYC 7742 had the most wins, coming in first place for 49% of the tests.

Based on the geometric mean of all complete results, the fastest (2 x EPYC 7742) was 2.879x the speed of the slowest (EPYC 7F32).

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

MKL-DNN DNNL (Harness: Deconvolution Batch deconv_3d - Data Type: u8s8f32) at 12.004x
John The Ripper (Test: Blowfish) at 11.012x
Blender (Blend File: Classroom - Compute: CPU-Only) at 10.627x
LuxCoreRender (Scene: Rainbow Colors and Prism) at 10.079x
asmFish (1024 Hash Memory, 26 Depth) at 9.955x
Stockfish (Total Time) at 9.782x
LuxCoreRender (Scene: DLSC) at 9.665x
OSPray (Demo: San Miguel - Renderer: Path Tracer) at 9.126x
John The Ripper (Test: MD5) at 9.088x
LAMMPS Molecular Dynamics Simulator (Model: Rhodopsin Protein) at 8.475x.

Test Systems:

Xeon Gold 5220R

Processor: Intel Xeon Gold 5220R @ 3.90GHz (18 Cores / 36 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, 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: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,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
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 Gold 5220R

Processor: 2 x Intel Xeon Gold 5220R @ 3.90GHz (36 Cores / 72 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, 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: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,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
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 Gold 6226R

Processor: Intel Xeon Gold 6226R @ 3.90GHz (16 Cores / 32 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, 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: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,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

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 Gold 6226R

Processor: 2 x Intel Xeon Gold 6226R @ 3.90GHz (32 Cores / 64 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, 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: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,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
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 Gold 6250

Processor: Intel Xeon Gold 6250 @ 4.50GHz (8 Cores / 16 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 SSDPE21D280GA, Graphics: ASPEED, Network: 2 x Intel X722 for 1GbE + 2 x QLogic FastLinQ QL41000 10/25/40/50GbE

OS: Ubuntu 20.04, Kernel: 5.4.0-21-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: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,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
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 Gold 6250

Processor: 2 x Intel Xeon Gold 6250 @ 4.50GHz (16 Cores / 32 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 SSDPE21D280GA, Graphics: ASPEED, Network: 2 x Intel X722 for 1GbE + 2 x QLogic FastLinQ QL41000 10/25/40/50GbE

OS: Ubuntu 20.04, Kernel: 5.4.0-21-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: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,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
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 Gold 6258R

Processor: Intel Xeon Gold 6258R @ 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 SSDPE21D280GA, Graphics: ASPEED, Network: 2 x Intel X722 for 1GbE + 2 x QLogic FastLinQ QL41000 10/25/40/50GbE

OS: Ubuntu 20.04, Kernel: 5.4.0-21-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: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,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
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 Gold 6258R

Processor: 2 x Intel Xeon Gold 6258R @ 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 SSDPE21D280GA, Graphics: ASPEED, Network: 2 x Intel X722 for 1GbE + 2 x QLogic FastLinQ QL41000 10/25/40/50GbE

OS: Ubuntu 20.04, Kernel: 5.4.0-21-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: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,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
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 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, 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: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,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
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, 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: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,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
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

EPYC 7282

Processor: AMD EPYC 7282 16-Core @ 2.80GHz (16 Cores / 32 Threads), Motherboard: AMD DAYTONA_X (RDY1006G BIOS), Chipset: AMD Starship/Matisse, Memory: 8 x 32 GB DDR4-3200MT/s 36ASF4G72PZ-3G2E2, Disk: 280GB INTEL SSDPE21D280GA, Graphics: ASPEED, Network: 2 x Mellanox MT27710

OS: Ubuntu 20.04, Kernel: 5.4.0-21-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: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,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: acpi-cpufreq ondemand - CPU Microcode: 0x8301034
Python Notes: + Python 3.8.2
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 + tsx_async_abort: Not affected

2 x EPYC 7282

Processor: 2 x AMD EPYC 7282 16-Core @ 2.80GHz (32 Cores / 64 Threads), Motherboard: AMD DAYTONA_X (RDY1006G BIOS), Chipset: AMD Starship/Matisse, Memory: 16 x 32 GB DDR4-3200MT/s 36ASF4G72PZ-3G2E2, Disk: 280GB INTEL SSDPE21D280GA, Graphics: llvmpipe 504GB, Network: 2 x Mellanox MT27710

OS: Ubuntu 20.04, Kernel: 5.4.0-21-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: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,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: acpi-cpufreq ondemand - CPU Microcode: 0x8301034
Python Notes: + Python 3.8.2
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 + tsx_async_abort: Not affected

2 x EPYC 7302

Processor: 2 x AMD EPYC 7302 16-Core @ 3.00GHz (32 Cores / 64 Threads), Motherboard: AMD DAYTONA_X (RDY1006G BIOS), Chipset: AMD Starship/Matisse, Memory: 16 x 32 GB DDR4-3200MT/s 36ASF4G72PZ-3G2E2, Disk: 280GB INTEL SSDPE21D280GA, Graphics: ASPEED, Network: 2 x Mellanox MT27710

OS: Ubuntu 20.04, Kernel: 5.4.0-21-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: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,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: acpi-cpufreq ondemand - CPU Microcode: 0x8301034
Python Notes: + Python 3.8.2
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 + tsx_async_abort: Not affected

2 x EPYC 7352

Processor: 2 x AMD EPYC 7352 24-Core @ 2.30GHz (48 Cores / 96 Threads), Motherboard: AMD DAYTONA_X (RDY1006G BIOS), Chipset: AMD Starship/Matisse, Memory: 16 x 32 GB DDR4-3200MT/s 36ASF4G72PZ-3G2E2, Disk: 280GB INTEL SSDPE21D280GA, Graphics: ASPEED, Network: 2 x Mellanox MT27710

OS: Ubuntu 20.04, Kernel: 5.4.0-21-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: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,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: acpi-cpufreq ondemand - CPU Microcode: 0x8301034
Python Notes: + Python 3.8.2
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 + tsx_async_abort: Not affected

2 x EPYC 7532

Processor: 2 x AMD EPYC 7532 32-Core @ 2.40GHz (64 Cores / 128 Threads), Motherboard: AMD DAYTONA_X (RDY1006G BIOS), Chipset: AMD Starship/Matisse, Memory: 16 x 32 GB DDR4-3200MT/s 36ASF4G72PZ-3G2E2, Disk: 280GB INTEL SSDPE21D280GA, Graphics: llvmpipe 504GB, Network: 2 x Mellanox MT27710

OS: Ubuntu 20.04, Kernel: 5.4.0-21-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: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,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: acpi-cpufreq ondemand - CPU Microcode: 0x8301034
Python Notes: + Python 3.8.2

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 + tsx_async_abort: Not affected

2 x EPYC 7452

Processor: AMD EPYC 7452 32-Core @ 2.35GHz (64 Cores / 128 Threads), Motherboard: AMD DAYTONA_X (RDY1006G BIOS), Chipset: AMD Starship/Matisse, Memory: 8 x 32 GB DDR4-3200MT/s 36ASF4G72PZ-3G2E2, Disk: 280GB INTEL SSDPE21D280GA, Graphics: llvmpipe 252GB, Network: 2 x Mellanox MT27710

OS: Ubuntu 20.04, Kernel: 5.4.0-21-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: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,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: acpi-cpufreq ondemand - CPU Microcode: 0x8301034
Python Notes: + Python 3.8.2
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 + tsx_async_abort: Not affected

EPYC 7742

Processor: AMD EPYC 7742 64-Core @ 2.25GHz (64 Cores / 128 Threads), Motherboard: AMD DAYTONA_X (RDY1006G BIOS), Chipset: AMD Starship/Matisse, Memory: 8 x 32 GB DDR4-3200MT/s 36ASF4G72PZ-3G2E2, Disk: 280GB INTEL SSDPE21D280GA, Graphics: ASPEED, Network: 2 x Mellanox MT27710

OS: Ubuntu 20.04, Kernel: 5.4.0-21-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: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,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: acpi-cpufreq ondemand - CPU Microcode: 0x8301034
Python Notes: + Python 3.8.2
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 + tsx_async_abort: Not affected

2 x EPYC 7742

Processor: 2 x AMD EPYC 7742 64-Core @ 2.25GHz (128 Cores / 256 Threads), Motherboard: AMD DAYTONA_X (RDY1006G BIOS), Chipset: AMD Starship/Matisse, Memory: 16 x 32 GB DDR4-3200MT/s 36ASF4G72PZ-3G2E2, Disk: 280GB INTEL SSDPE21D280GA, Graphics: ASPEED, Network: 2 x Mellanox MT27710

OS: Ubuntu 20.04, Kernel: 5.4.0-21-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: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,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: acpi-cpufreq ondemand - CPU Microcode: 0x8301034
Python Notes: + Python 3.8.2
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 + tsx_async_abort: Not affected

EPYC 7F32

Processor: AMD EPYC 7F32 8-Core @ 3.70GHz (8 Cores / 16 Threads), Motherboard: AMD DAYTONA_X (RDY1006G BIOS), Chipset: AMD Starship/Matisse, Memory: 8 x 32 GB DDR4-3200MT/s 36ASF4G72PZ-3G2E2, Disk: 280GB INTEL SSDPE21D280GA, Graphics: ASPEED, Network: 2 x Mellanox MT27710

OS: Ubuntu 20.04, Kernel: 5.4.0-21-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: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,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: acpi-cpufreq ondemand - CPU Microcode: 0x8301034
Python Notes: + Python 3.8.2
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 + tsx_async_abort: Not affected

2 x EPYC 7F32

Processor: 2 x AMD EPYC 7F32 8-Core @ 3.70GHz (16 Cores / 32 Threads), Motherboard: AMD DAYTONA_X (RDY1006G BIOS), Chipset: AMD Starship/Matisse, Memory: 16 x 32 GB DDR4-3200MT/s 36ASF4G72PZ-3G2E2, Disk: 280GB INTEL SSDPE21D280GA, Graphics: llvmpipe 504GB, Network: 2 x Mellanox MT27710

OS: Ubuntu 20.04, Kernel: 5.4.0-21-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: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,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: acpi-cpufreq ondemand - CPU Microcode: 0x8301034
Python Notes: + Python 3.8.2
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 + tsx_async_abort: Not affected

EPYC 7F52

Processor: AMD EPYC 7F52 16-Core @ 3.50GHz (16 Cores / 32 Threads), Motherboard: AMD DAYTONA_X (RDY1006G BIOS), Chipset: AMD Starship/Matisse, Memory: 8 x 32 GB DDR4-3200MT/s 36ASF4G72PZ-3G2E2, Disk: 280GB INTEL SSDPE21D280GA, Graphics: ASPEED, Network: 2 x Mellanox MT27710

OS: Ubuntu 20.04, Kernel: 5.4.0-21-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: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,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: acpi-cpufreq ondemand - CPU Microcode: 0x8301034
Python Notes: + Python 3.8.2
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 + tsx_async_abort: Not affected

2 x EPYC 7F52

Processor: 2 x AMD EPYC 7F52 16-Core @ 3.50GHz (32 Cores / 64 Threads), Motherboard: AMD DAYTONA_X

(RDY1006G BIOS), Chipset: AMD Starship/Matisse, Memory: 16 x 32 GB DDR4-3200MT/s 36ASF4G72PZ-3G2E2, Disk: 280GB INTEL SSDPE21D280GA, Graphics: ASPEED, Network: 2 x Mellanox MT27710

OS: Ubuntu 20.04, Kernel: 5.4.0-21-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: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,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: acpi-cpufreq ondemand - CPU Microcode: 0x8301034
Python Notes: + Python 3.8.2
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 + tsx_async_abort: Not affected

EPYC 7F72

Processor: AMD EPYC 7F72 24-Core @ 3.20GHz (24 Cores / 48 Threads), Motherboard: AMD DAYTONA_X (RDY1006G BIOS), Chipset: AMD Starship/Matisse, Memory: 8 x 32 GB DDR4-3200MT/s 36ASF4G72PZ-3G2E2, Disk: 280GB INTEL SSDPE21D280GA, Graphics: ASPEED, Network: 2 x Mellanox MT27710

OS: Ubuntu 20.04, Kernel: 5.4.0-21-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: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,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: acpi-cpufreq ondemand - CPU Microcode: 0x8301034
Python Notes: + Python 3.8.2
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 + tsx_async_abort: Not affected

2 x EPYC 7F72

Processor: 2 x AMD EPYC 7F72 24-Core @ 3.20GHz (48 Cores / 96 Threads), Motherboard: AMD DAYTONA_X (RDY1006G BIOS), Chipset: AMD Starship/Matisse, Memory: 16 x 32 GB DDR4-3200MT/s 36ASF4G72PZ-3G2E2, Disk: 280GB INTEL SSDPE21D280GA, Graphics: ASPEED, Network: 2 x Mellanox MT27710

OS: Ubuntu 20.04, Kernel: 5.4.0-21-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: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,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: acpi-cpufreq ondemand - CPU Microcode: 0x8301034
Python Notes: + Python 3.8.2
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 + tsx_async_abort: Not affected

	Xeon Gold 5220R	2 x Xeon Gold 5220R	Xeon Gold 6226R	2 x Xeon Gold 6226R	Xeon Gold 6250	2 x Xeon Gold 6250	Xeon Gold 6258R	2 x Xeon Gold 6258R	Xeon Platinum 8280	2 x Xeon Platinum 8280	EPYC 7282	2 x EPYC 7282	2 x EPYC 7302	2 x EPYC 7352	2 x EPYC 7532	2 x EPYC 7452	EPYC 7742	2 x EPYC 7742	EPYC 7F32	2 x EPYC 7F32	EPYC 7F52	2 x EPYC 7F52	EPYC 7F72	2 x EPYC 7F72
High Performance Conjugate Gradient (GFLOP/s)	13.3529	25.6303	13.9581	26.5910	10.3321	19.9764	14.7849	28.8783	14.9097	28.8542	8.9717	17.1748	27.4536	28.4007	33.9207	28.7970	17.1621	34.0485	13.2247	24.8643	17.7444	33.5182	16.9363	32.3602
Normalized	39.22%	75.28%	40.99%	78.1%	30.35%	58.67%	43.42%	84.82%	43.79%	84.74%	25.84%	50.44%	80.63%	83.41%	99.62%	84.58%	50.4%	100%	38.84%	73.03%	52.12%	98.44%	49.74%	95.04%
Standard Deviation	1.1%	1%	0.3%	0.8%	1%	0.6%	1.1%	0.4%	0.5%	1.5%	0.5%	0.5%	0.5%	0.4%	0.9%	0.5%	0.3%	0.4%	0.1%	1.6%	0.8%	0.1%	1%	1.1%
NAMD - ATPase Simulation - 327,506 Atoms (days/ns)	1.15745	0.60333	1.13586	0.58237	1.75881	0.88958	0.70381	0.36038	0.70709	0.36226	1.36750	0.72339	0.66024	0.54038	0.39893	0.42781	0.42785	0.27009	2.09528	1.05982	1.06177	0.54379	0.80253	0.41625
Normalized	23.33%	44.77%	23.78%	46.38%	15.36%	30.36%	38.38%	74.95%	38.2%	74.56%	19.75%	37.34%	40.91%	49.98%	67.7%	63.13%	63.13%	100%	12.89%	25.48%	25.44%	49.67%	33.65%	64.89%
Standard Deviation	0.2%	1.8%	0.2%	0.3%	0.2%	0.4%	0.1%	0.2%	0.1%	0.6%	0.1%	0.1%	0%	0.2%	0.2%	0.1%	0.4%	0.9%	0.1%	0.1%	0.1%	0.1%	0.1%	0.2%
Timed MrBayes Analysis - P.P.A	134.483	134.928	123.702	124.258	79.605	79.445	109.111	111.157	128.848	129.986	89.008	90.186	86.569	102.291	97.780	103.914	106.587	108.872	72.185	72.018	72.146	72.093	79.650	79.373
Normalized	53.55%	53.38%	58.22%	57.96%	90.47%	90.65%	66%	64.79%	55.89%	55.4%	80.91%	79.85%	83.19%	70.41%	73.65%	69.31%	67.57%	66.15%	99.77%	100%	99.82%	99.9%	90.42%	90.73%
Standard Deviation	0%	0.3%	0.1%	0.4%	0.9%	0.5%	0.4%	2.7%	0%	0.5%	0.2%	0.1%	3%	2.5%	0.1%	0.2%	0.5%	0.3%	0.3%	0.3%	0.2%	0.3%	1.8%	0.1%

LAMMPS Molecular Dynamics Simulator - Rhodopsin Protein (ns/day	9.535	17.378	10.325	18.150	6.787	12.652	15.382	24.697	15.314	**24.788**	6.491	6.210	8.282	6.782	6.336	4.615	6.360	**2.925**	5.557	8.307	8.574	8.590	9.518	7.176
Normalized	38.47%	70.11%	41.65%	73.22%	27.38%	51.04%	62.05%	99.63%	61.78%	100%	26.19%	25.05%	33.41%	27.36%	25.56%	18.62%	25.66%	11.8%	22.42%	33.51%	34.59%	34.65%	38.4%	28.95%
Standard Deviation	0.3%	0.5%	0.4%	0.5%	0%	0.8%	3%	3.9%	2.2%	3.8%	2.5%	1.4%	1.1%	5.8%	9.7%	2.7%	2.6%	9%	2.4%	1.8%	4.9%	2.2%	2.9%	3%
Nettle - aes256 (Mbyte/s)	6134	6159	6161	6157	7100	**7111**	6306	6322	6313	6320	4516	4517	4657	**4446**	4653	4724	4799	4796	5498	5500	5499	5506	5215	5221
Normalized	86.26%	86.61%	86.64%	86.59%	99.85%	100%	88.67%	88.91%	88.78%	88.87%	63.5%	63.52%	65.5%	62.52%	65.43%	66.44%	67.48%	67.44%	77.32%	77.34%	77.34%	77.42%	73.33%	73.42%
Standard Deviation	0.1%	0.1%	0.2%	0.2%	0.1%	0%	0.1%	0.1%	0.2%	0.1%	0.1%	0.1%	0%	0%	0.1%	0.1%	0.1%	0.1%	0%	0.1%	0.1%	0%	0%	0.1%
Nettle - sha512 (Mbyte/s)	485.86	489.15	488.81	489.42	563.82	**564.54**	498.99	500.75	501.98	500.98	462.55	462.53	476.80	**455.36**	476.65	483.85	491.54	491.47	563.45	563.59	563.39	563.07	534.18	534.86
Normalized	86.06%	86.65%	86.59%	86.69%	99.87%	100%	88.39%	88.7%	88.92%	88.74%	81.93%	81.93%	84.46%	80.66%	84.43%	85.71%	87.07%	87.06%	99.81%	99.83%	99.8%	99.74%	94.62%	94.74%
Standard Deviation	0.4%	0.1%	0.3%	0%	0.2%	0.2%	0.4%	0.1%	0.1%	0.3%	0%	0%	0%	0.1%	0%	0.1%	0%	0.1%	0.1%	0%	0%	0.2%	0.2%	0%
John The Ripper - Blowfish (Real C/S)	25547	51324	27126	53485	16751	33269	42952	84240	42864	84084	21636	43113	41886	60146	83737	79273	74944	**145129**	**13179**	26314	26349	52525	36831	73095
Normalized	17.6%	35.36%	18.69%	36.85%	11.54%	22.92%	29.6%	58.04%	29.54%	57.94%	14.91%	29.71%	28.86%	41.44%	57.7%	54.62%	51.64%	100%	9.08%	18.13%	18.16%	36.19%	25.38%	50.37%
Standard Deviation	0.5%	0%	0.4%	0.4%	0.4%	0.3%	0.2%	0.8%	0.4%	1.4%	0%	0.1%	14.1%	0.7%	0.2%	0.1%	0%	0.8%	0%		0%	0.1%	0.2%	0.2%

John The Ripper - MD5 (Real C/S)	2506000	4821000	2583000	4977667	946414	1855000	2282000	4459000	4090000	7880000	1428000	2724000	2946667	3668000	5011000	4677667	4663000	**8348333**	**918630**	1813333	1818000	3088333	2388000	4605333
Normalized	30.02%	57.75%	30.94%	59.62%	11.34%	22.22%	27.33%	53.41%	48.99%	94.39%	17.11%	32.63%	35.3%	43.94%	60.02%	56.03%	55.86%	100%	11%	21.72%	21.78%	36.99%	28.6%	55.16%
Standard Deviation	0.5%	0.3%	0.7%	0.6%	0.2%	0.3%	0.3%	0.3%	0.6%	1.5%		1.5%	0.1%	0.3%	0.3%	0.3%	0.1%	2.2%	0%	0.6%	0.1%	0.2%	0.1%	0.9%
MKL-DNN DNNL - IP Batch 1D - f32 (ms)	4.49985	2.23009	4.41366	2.18975	**5.50309**	2.93892	2.48806	1.64610	2.39451	**1.63986**	4.54745	2.87226	2.47718	2.52651	2.27357	2.64594	1.89100	2.04349	5.19142	3.35207	3.08143	2.08868	2.39954	2.19999
Normalized	36.44%	73.53%	37.15%	74.89%	29.8%	55.8%	65.91%	99.62%	68.48%	100%	36.06%	57.09%	66.2%	64.91%	72.13%	61.98%	86.72%	80.25%	31.59%	48.92%	53.22%	78.51%	68.34%	74.54%
Standard Deviation	0.4%	3.8%	0.3%	1%	1.7%	14.5%	0.9%	2.9%	0.8%	3.4%	0.4%	2.1%	0.3%	1.2%	3.5%	2.2%	0.5%	1%	1.5%	10.3%	0.4%	0.5%	0.4%	9.1%
MKL-DNN DNNL - D.B.d - u8s8f32 (ms)	6073	3112	5864	2987	**10090**	5074	4090	2078	3717	1894	5647	2870	2743	2128	1533	1621	1652	**840.505**	9281	4641	4636	2330	3347	1691
Normalized	13.84%	27.01%	14.33%	28.14%	8.33%	16.56%	20.55%	40.46%	22.61%	44.38%	14.88%	29.29%	30.65%	39.5%	54.84%	51.84%	50.88%	100%	9.06%	18.11%	18.13%	36.08%	25.11%	49.7%
Standard Deviation	0.2%	0.2%	0.1%	0.1%	0.1%	0%	0.1%	0%	0.1%	0.5%	0%	0.7%	0.1%	0%	0.2%	0.1%	0.1%	0.2%	0.1%	0%	0.1%	0.5%	0.1%	0%
dav1d - Summer Nature 4K	160.59	177.89	170.07	203.10	**149.90**	184.99	199.38	223.17	199.08	221.31	194.28	238.78	240.37	261.12	296.06	302.35	**336.08**	322.35	152.02	193.94	222.23	263.77	287.41	314.80
Normalized	47.78%	52.93%	50.6%	60.43%	44.6%	55.04%	59.33%	66.4%	59.24%	65.85%	57.81%	71.05%	71.52%	77.7%	88.09%	89.96%	100%	95.91%	45.23%	57.71%	66.12%	78.48%	85.52%	93.67%
Standard Deviation	0.8%	0.8%	1.2%	1.4%	0.3%	1%	2.2%	0.6%	1%	2.9%	0.1%	0.9%	0.3%	0.4%	0.8%	0.4%	0.9%	0.5%	0.3%	0.4%	0.3%	0.8%	0.6%	0.3%
dav1d - S.N.1 (FPS)	**274.98**	321.84	307.75	358.62	369.48	310.84	325.10	402.97	323.20	409.88	431.00	524.78	533.12	566.85	649.45	658.09	691.02	**767.92**	373.28	467.44	501.21	618.87	660.54	752.02
Normalized	35.81%	41.91%	40.08%	46.7%	48.11%	40.48%	42.34%	52.48%	42.09%	53.38%	56.13%	68.34%	69.42%	73.82%	84.57%	85.7%	89.99%	100%	48.61%	60.87%	65.27%	80.59%	86.02%	97.93%
Standard Deviation	1.5%	2.9%	0.5%	0.9%	3%	0.3%	0.5%	3.7%	0.3%	3.5%	0.1%	1.2%	1%	0.4%	0.5%	1.7%	1.2%	1%	0.2%	0.6%	0.2%	0.4%	0.6%	0.7%

OSPray - San Miguel - SciVis (FPS)	23.26	43.48	22.69	42.27	16.67	31.25	40	71.43	38.46	69.52	19.61	33.33	35.30	42.87	58.82	55.56	62.5	**90.91**	**12.5**	21.69	24.39	41.67	33.33	54.82
Normalized	25.59%	47.83%	24.96%	46.5%	18.34%	34.37%	44%	78.57%	42.31%	76.47%	21.57%	36.66%	38.83%	47.16%	64.7%	61.12%	68.75%	100%	13.75%	23.86%	26.83%	45.84%	36.66%	60.3%
Standard Deviation	0%	0%	0.6%	2.5%	0%	0%		0%	0%	3.5%	0%	0%	2%	2.4%	0%	0%	0%	0%	0%	0.7%	0%	0%	0%	2.7%
OSPray - San Miguel - Path Tracer (FPS)	2.14	3.95	2.02	3.71	1.43	2.65	3.63	6.71	3.52	6.53	1.59	2.68	2.83	3.69	5.02	4.73	5.25	**8.67**	**0.95**	1.65	1.87	3.26	2.64	4.52
Normalized	24.68%	45.56%	23.3%	42.79%	16.49%	30.57%	41.87%	77.39%	40.6%	75.32%	18.34%	30.91%	32.64%	42.56%	57.9%	54.56%	60.55%	100%	10.96%	19.03%	21.57%	37.6%	30.45%	52.13%
Standard Deviation	0.1%	0.1%	0.1%	0.1%	0.1%	0.2%	0.2%	0%	0.2%	0.3%	0.1%	0.1%	0.1%	0.1%	0.3%	0.2%	0.3%	0.5%	0.1%	0.1%	0.1%	0.2%	0.2%	0.3%
OSPray - NASA Streamlines - SciVis (FPS)	28.57	55.56	29.41	55.56	21.28	41.43	52.63	90.91	50	90.91	27.78	45.45	47.44	56.37	76.92	76.92	83.33	**125**	**17.24**	28.57	33.33	55.56	45.45	71.43
Normalized	22.86%	44.45%	23.53%	44.45%	17.02%	33.14%	42.1%	72.73%	40%	72.73%	22.22%	36.36%	37.95%	45.1%	61.54%	61.54%	66.66%	100%	13.79%	22.86%	26.66%	44.45%	36.36%	57.14%
Standard Deviation	0%	0%	0%	0%	0%	1.5%	0%	0%		0%	0%	0%	1.3%	2.9%	0%	0%	0%		0%	0%	0%	0%	0%	0%
Embree - Pathtracer - Crown (FPS)	16.0514	29.5153	15.9943	28.9602	10.1718	19.1259	26.2954	44.7434	26.2800	45.6121	16.2617	27.7221	29.2185	37.4607	50.3213	47.6765	51.4095	**82.8086**	**9.8376**	17.2652	19.3025	33.6903	26.7824	45.8603
Normalized	19.38%	35.64%	19.31%	34.97%	12.28%	23.1%	31.75%	54.03%	31.74%	55.08%	19.64%	33.48%	35.28%	45.24%	60.77%	57.57%	62.08%	100%	11.88%	20.85%	23.31%	40.68%	32.34%	55.38%
Standard Deviation	0.2%	0.3%	0%	0.5%	0.1%	0.2%	0.2%	2.6%	0.3%	0.3%	0.1%	0.2%	0.2%	0.1%	0%	0%	2%	1.6%	0.1%	0.1%	0.2%	0%	0.3%	0.4%
Embree - Pathtracer ISPC - Crown	17.6604	33.4469	16.8099	31.7318	12.1834	23.2054	29.7952	54.8077	28.7730	53.2304	15.5411	26.1842	27.7450	35.6204	47.8862	45.3703	49.7196	**77.4635**	**9.3656**	16.2848	18.3774	31.8760	25.6614	43.3293
Normalized	22.8%	43.18%	21.7%	40.96%	15.73%	29.96%	38.46%	70.75%	37.14%	68.72%	20.06%	33.8%	35.82%	45.98%	61.82%	58.57%	64.18%	100%	12.09%	21.02%	23.72%	41.15%	33.13%	55.94%
Standard Deviation	0.1%	0.1%	0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.2%	0.2%	1%	0%	0.4%	0.1%	0.1%	0.2%	0.3%	0.1%	0.7%	0.1%	0.1%	0.1%	1.6%

SVT-AV1 - Enc Mode 4 - 1080p (FPS)	4.285	5.302	4.340	5.431	3.276	5.049	5.989	6.807	6.030	7.033	3.483	4.417	4.719	5.653	6.688	6.227	6.177	6.787	**2.999**	4.847	4.923	6.544	5.910	**7.428**
Normalized	57.69%	71.38%	58.43%	73.12%	44.1%	67.97%	80.63%	91.64%	81.18%	94.68%	46.89%	59.46%	63.53%	76.1%	90.04%	83.83%	83.16%	91.37%	40.37%	65.25%	66.28%	88.1%	79.56%	100%
Standard Deviation	0.6%	0.6%	0.7%	0.3%	0.9%	1.4%	0.8%	3%	0.9%	1.6%	2.7%	5.4%	4.6%	2.8%	1.7%	6.1%	2.4%	3%	1.8%	1.7%	0.6%	1.8%	0.1%	2.8%
Intel Open Image Denoise - Memorial (Images / Sec)	18.41	27.97	22.01	33.06	15.71	22.70	31.63	**34.95**	31.10	34.49	10.26	16.84	15.98	19.80	24.84	23.97	26.88	33.05	**7.33**	13.07	13.51	22.51	15.91	26.33
Normalized	52.68%	80.03%	62.98%	94.59%	44.95%	64.95%	90.5%	100%	88.98%	98.68%	29.36%	48.18%	45.72%	56.65%	71.07%	68.58%	76.91%	94.56%	20.97%	37.4%	38.66%	64.41%	45.52%	75.34%
Standard Deviation	0.1%	0.3%	0.2%	1.9%	0.3%	0.4%	0.2%	0.9%	0.1%	0.8%	2.3%	5.5%	1.2%	0.5%	4.4%	2.3%	0.9%	0.8%	0.2%	0.7%	0.1%	0.6%	1.2%	0.8%
LuxCoreRender - DLSC (M samples/sec)	2.32	4.44	2.35	4.5183	**1.55**	2.96	3.78	7.30	3.79	7.19	2.50	4.7095	5.03	6.04	8.35	7.83	7.77	**14.98**	1.68	3.19	3.21	5.97	4.19	7.96
Normalized	15.49%	29.64%	15.69%	30.16%	10.35%	19.76%	25.23%	48.73%	25.3%	48%	16.69%	31.44%	33.58%	40.32%	55.74%	52.27%	51.87%	100%	11.21%	21.3%	21.43%	39.85%	27.97%	53.14%
Standard Deviation	1.8%	0.5%	1.1%	0.1%	0.7%	1.3%	0.3%	0.4%	0.1%	2.3%	1.3%	1.2%	0.6%	1.5%	0.6%	1.1%	0.8%	0.6%	1.7%	2.3%	1.7%	2.4%	0.2%	2.1%
LuxCoreRender - R.C.a.P (M samples/sec)	2.48	4.46	2.51	4.32	**1.65**	2.97	4.09	7.78	4.11	7.15	2.67	5.03	5.38	6.78	9.32	8.69	8.59	**16.63**	1.81	3.48	3.50	6.67	4.62	8.77
Normalized	14.91%	26.82%	15.09%	25.98%	9.92%	17.86%	24.59%	46.78%	24.71%	42.99%	16.06%	30.25%	32.35%	40.77%	56.04%	52.25%	51.65%	100%	10.88%	20.93%	21.05%	40.11%	27.78%	52.74%
Standard Deviation	1.1%	23.1%	0.9%	11.9%	0.4%	6.4%	3.8%	2.8%	1.7%	21.6%	1.1%	2.7%	2.9%	0.5%	1.3%	1.2%	1.3%	1%	0.4%	0.8%	0.1%	0.8%	0.5%	2.1%

Himeno Benchmark - P.P.S (MFLOPS)	**3398**	3405	3401	3410	3891	3935	3516	3527	3510	3515	3697	3590	3775	3647	3783	3778	3821	3861	4245	4226	**4370**	4304	4213	4118
Normalized	77.76%	77.91%	77.83%	78.04%	89.03%	90.03%	80.45%	80.7%	80.32%	80.42%	84.6%	82.16%	86.38%	83.46%	86.57%	86.44%	87.43%	88.36%	97.13%	96.7%	100%	98.48%	96.4%	94.23%
Standard Deviation	0.1%	0.3%	0.1%	0%	0.3%	0.1%	0.1%	0%	0.2%	0.3%	2.2%	1.5%	0.5%	1.9%	0.8%	1.8%	1.7%	2%	2.6%	3.9%	2.8%	2.1%	2.2%	2.3%
Stockfish - Total Time (Nodes/	38167326	74235829	39776292	75203729	25629262	48835001	63718259	121781028	62891312	119715795	40555142	71291133	76186363	97354985	130975714	125753475	131112957	**237733339**	**24303039**	43333871	47342101	85755273	67160590	121845246
Normalized	16.05%	31.23%	16.73%	31.63%	10.78%	20.54%	26.8%	51.23%	26.45%	50.36%	17.06%	29.99%	32.05%	40.95%	55.09%	52.9%	55.15%	100%	10.22%	18.23%	19.91%	36.07%	28.25%	51.25%
Standard Deviation	0.8%	0.7%	1.4%	2.2%	1.5%	1.9%	1.4%	2.2%	2.3%	1.3%	1.5%	0.6%	1.4%	0.8%	1.5%	1%	0.4%	1.9%	1%	0.6%	2.1%	1.1%	1.9%	2.5%
asmFish - 1.H.M.2.D (Nodes/s)	43217939	85501851	44614925	83894514	27866287	53217106	69952080	134932158	68762075	133839896	41752324	74776567	75601364	101338444	133449810	127589237	132346088	**242607477**	**24370627**	42331920	46284215	85203831	65300872	121210055
Normalized	17.81%	35.24%	18.39%	34.58%	11.49%	21.94%	28.83%	55.62%	28.34%	55.17%	17.21%	30.82%	31.16%	41.77%	55.01%	52.59%	54.55%	100%	10.05%	17.45%	19.08%	35.12%	26.92%	49.96%
Standard Deviation	1.5%	0.2%	2.4%	2%	0.5%	1.6%	1.8%	0.4%	1.1%	0.6%	0.8%	2.9%	1.2%	2%	0.1%	1.5%	2.6%	0.6%	1.1%	1.5%	0.6%	1.2%	1.6%	2.6%
Timed Linux Kernel Compilation - Time To Compil	59.012	36.699	57.772	36.595	**80.489**	46.936	40.622	27.178	40.898	27.309	57.425	36.929	34.327	30.876	25.983	26.617	26.500	**20.203**	76.783	43.740	43.909	28.063	37.003	24.603
Normalized	34.24%	55.05%	34.97%	55.21%	25.1%	43.04%	49.73%	74.34%	49.4%	73.98%	35.18%	54.71%	58.85%	65.43%	77.75%	75.9%	76.24%	100%	26.31%	46.19%	46.01%	71.99%	54.6%	82.12%
Standard Deviation	3%	3%	2.7%	2.9%	2.8%	2.8%	3%	3.5%	2.9%	3.4%	2.9%	3%	2.9%	2.9%	2.8%	2.8%	3%	3.6%	1.2%	2.8%	2.9%	2%	2.8%	2.8%

Timed LLVM Compilation - Time To Compile	430.426	286.782	433.191	279.682	**609.862**	353.756	306.990	219.982	308.741	221.515	429.534	283.150	264.631	248.568	217.743	224.563	223.876	**195.880**	570.972	332.009	328.764	217.826	282.564	202.133
Normalized	45.51%	68.3%	45.22%	70.04%	32.12%	55.37%	63.81%	89.04%	63.44%	88.43%	45.6%	69.18%	74.02%	78.8%	89.96%	87.23%	87.49%	100%	34.31%	59%	59.58%	89.92%	69.32%	96.91%
Standard Deviation	0.7%	1.2%	0.9%	2.2%	0.8%	0.5%	2.2%	0.8%	2.7%	0.8%	2.2%	1.6%	1%	1.4%	1.2%	0.6%	0.1%	0.4%	0.3%	1%	2.7%	0.8%	1.8%	1.1%
Build2 - Time To Compile	91.641	72.151	88.977	70.608	**105.598**	73.353	73.559	63.048	74.118	62.776	88.695	73.171	68.976	70.287	64.693	64.682	63.786	60.909	98.780	70.676	69.542	**58.185**	66.248	58.284
Normalized	63.49%	80.64%	65.39%	82.41%	55.1%	79.32%	79.1%	92.29%	78.5%	92.69%	65.6%	79.52%	84.36%	82.78%	89.94%	89.96%	91.22%	95.53%	58.9%	82.33%	83.67%	100%	87.83%	99.83%
Standard Deviation	0.3%	0.3%	0.1%	0.2%	1.9%	0.7%	0.3%	1%	0.3%	0.2%	0.5%	1%	0.3%	0.4%	0.8%	0.2%	0.7%	1.5%	1%	0.5%	0.2%	0.4%	0.2%	0.6%
Tungsten Renderer - Hair (sec)	18.9840	11.0726	18.6129	10.6653	**27.3812**	14.5607	12.3990	7.41034	12.6863	7.82706	17.5522	10.4395	9.88558	8.74498	6.84549	7.12495	7.06398	**5.44897**	26.4433	14.1870	14.0638	8.25357	11.1090	7.03358
Normalized	28.7%	49.21%	29.28%	51.09%	19.9%	37.42%	43.95%	73.53%	42.95%	69.62%	31.04%	52.2%	55.12%	62.31%	79.6%	76.48%	77.14%	100%	20.61%	38.41%	38.74%	66.02%	49.05%	77.47%
Standard Deviation	0.3%	0.6%	0.6%	0.9%	0.3%	0.8%	0.6%	1.1%	0.5%	2.5%	0.2%	0.3%	0.5%	0.6%	1.3%	0.9%	1%	1%	0.2%	0.4%	0.4%	0.5%	0.2%	0.9%
Tungsten Renderer - Water Caustic (sec)	25.0080	23.3367	24.0874	23.1916	26.1775	23.4652	22.2189	21.5987	22.0167	21.5896	26.7902	25.2194	24.6163	25.3589	24.4033	23.9728	21.7091	22.7188	**28.3601**	24.3255	22.5617	21.5359	22.0899	**21.5306**
Normalized	86.09%	92.26%	89.39%	92.84%	82.25%	91.76%	96.9%	99.68%	97.79%	99.73%	80.37%	85.37%	87.46%	84.9%	88.23%	89.81%	99.18%	94.77%	75.92%	88.51%	95.43%	99.98%	97.47%	100%
Standard Deviation	0.5%	0.3%	0.5%	0.4%	0.4%	1.3%	0.9%	0.7%	0.6%	0.5%	0.2%	0.4%	0.2%	2.8%	2.8%	3.5%	0.1%	2.1%	2.1%	0.7%	0.5%	0.7%	0.2%	0.6%
Numpy Benchmark (Score)	313.76	300.73	318.87	304.16	367.44	360.01	337.46	325.69	330.33	321.82	312.05	309.56	317.99	**296.14**	307.69	310.54	317.39	323.70	368.08	**370.14**	366.16	364.86	348.71	347.12
Normalized	84.77%	81.25%	86.15%	82.17%	99.27%	97.26%	91.17%	87.99%	89.24%	86.95%	84.31%	83.63%	85.91%	80.01%	83.13%	83.9%	85.75%	87.45%	99.44%	100%	98.92%	98.57%	94.21%	93.78%
Standard Deviation	1.8%	0.4%	0.3%	0.8%	0.1%	1%	0.5%	0.2%	1.3%	1.6%	0.2%	0.4%	0.6%	0.7%	0.8%	0.6%	0.6%	1.9%	0.4%	0.6%	0.4%	0.2%	1.1%	0.6%

Radiance Benchmark - SMP Parallel (sec)	**242.515**	230.561	242.002	233.042	198.529	195.85	236.5	225.8	235	226.076	224.322	226.572	220.818	232.1	221.282	215.018	211.238	210.654	182.179	184.725	**181.763**	187.859	193.951	198.243
Normalized	74.95%	78.84%	75.11%	78%	91.55%	92.81%	76.86%	80.5%	77.35%	80.4%	81.03%	80.22%	82.31%	78.31%	82.14%	84.53%	86.05%	86.29%	99.77%	98.4%	100%	96.76%	93.72%	91.69%
PostgreSQL pgbench - Buffer Test - Normal Load - Read Only (TPS)	383121	598799	376860	587882	240485	375415	580953	906771	560888	909916	343544	529714	493578	585293	855210	892352	**989333**	973259	**197276**	309997	348616	474356	515161	704451
Normalized	38.73%	60.53%	38.09%	59.42%	24.31%	37.95%	58.72%	91.65%	56.69%	91.97%	34.72%	53.54%	49.89%	59.16%	86.44%	90.2%	100%	98.38%	19.94%	31.33%	35.24%	47.95%	52.07%	71.2%
Standard Deviation	0.2%	0.6%	0.2%	0.1%	0.4%	2%	0.1%	0.6%	0.5%	2%	0.4%	0.3%	1.1%	0.3%	2.2%	0.2%	0.7%	1.2%	0.3%	0.1%	0.2%	0.2%	0.2%	0.1%
Basis Universal - UASTC Level 3 (sec)	46.708	27.981	44.943	27.226	**66.381**	37.234	30.446	19.714	30.689	19.885	40.945	25.153	24.021	21.058	17.340	17.696	17.760	**13.164**	60.115	33.737	33.531	20.483	26.506	17.169
Normalized	28.18%	47.05%	29.29%	48.35%	19.83%	35.35%	43.24%	66.77%	42.89%	66.2%	32.15%	52.34%	54.8%	62.51%	75.92%	74.39%	74.12%	100%	21.9%	39.02%	39.26%	64.27%	49.66%	76.67%
Standard Deviation	0%	0.2%	0.1%	0.3%	0%	0.2%	0.1%	0.2%	0.1%	0.2%	0%	0.3%	0.2%	0.2%	0.2%	0.4%	0.2%	0.2%	0%	0%	0%	0.1%	0.1%	0.1%
Chaos Group V-RAY - CPU (Ksamples)	21886	40270	22074	34749	14360	26516	34316	64714	34710	64331	21700	32580	35690	47866	59529	57983	**65976**		**14284**	24144	27598	40790	36396	57404
Normalized	33.17%	61.04%	33.46%	52.67%	21.77%	40.19%	52.01%	98.09%	52.61%	97.51%	32.89%	49.38%	54.1%	72.55%	90.23%	87.88%	100%		21.65%	36.6%	41.83%	61.83%	55.17%	87.01%
Standard Deviation	0.4%	0.8%	0.5%	1.8%	0.2%	0.2%	0.4%	1.6%	1.5%	1.3%	1.2%	2.8%	2.8%	1.6%	0.4%	2.6%	0.8%		0.4%	1.8%	0.7%	2.1%	1.4%	0.6%

Blender - BMW27 - CPU-Only	113.30	60.67	111.82	59.45	**169.47**	87.10	69.77	38.78	69.80	38.79	109.08	60.67	55.25	47.23	35.86	38.72	38.33	**26.93**	162.65	84.04	85.14	45.31	64.92	36.65
Normalized	23.77%	44.39%	24.08%	45.3%	15.89%	30.92%	38.6%	69.44%	38.58%	69.43%	24.69%	44.39%	48.74%	57.02%	75.1%	69.55%	70.26%	100%	16.56%	32.04%	31.63%	59.44%	41.48%	73.48%
Standard Deviation	0.3%	0.4%	0.3%	0.1%	0.1%	0.4%	0.2%	0.2%	0.2%	0.4%	0.5%	0.1%	0.2%	0.7%	0.4%	0.5%	1.2%	0.9%	0.1%	0.1%	0.5%	0.2%	0.3%	0.4%
Blender - Classroom - CPU-Only	328.81	165.96	321.53	163.32	**498.60**	250.87	197.75	100.26	198.25	100.47	290.37	150.40	139.10	112.16	82.13	88.00	89.39	**46.92**	438.12	221.74	225.29	114.58	171.33	86.36
Normalized	14.27%	28.27%	14.59%	28.73%	9.41%	18.7%	23.73%	46.8%	23.67%	46.7%	16.16%	31.2%	33.73%	41.83%	57.13%	53.32%	52.49%	100%	10.71%	21.16%	20.83%	40.95%	27.39%	54.33%
Standard Deviation	0.2%	0.2%	0.1%	0.5%	0.2%	0.1%	0.1%	0.1%	0.3%	0.4%	0.2%	0.1%	0.5%	0.1%	0%	0.2%	0.2%	0.2%	0.1%	0.3%	0.1%	0.3%	0.3%	0.5%
Blender - Fishy Cat - CPU-Only	175.95	98.24	173.95	96.41	**264.60**	136.87	110.69	66.35	110.67	66.39	159.97	93.82	86.03	75.45	60.11	63.66	61.43	**44.19**	239.74	125.86	123.24	70.15	94.81	59.10
Normalized	25.12%	44.98%	25.4%	45.84%	16.7%	32.29%	39.92%	66.6%	39.93%	66.56%	27.62%	47.1%	51.37%	58.57%	73.52%	69.42%	71.94%	100%	18.43%	35.11%	35.86%	62.99%	46.61%	74.77%
Standard Deviation	0.1%	0.1%	0%	0.4%	0.1%	0.1%	0%	0.4%	0.3%	0.1%	0.5%	0.7%	0.4%	0.2%	0.2%	0.1%	0.5%	1.5%	0.1%	0.2%	0.1%	0.3%	0.4%	1.2%
Blender - Barbershop - CPU-Only	456.47	260.56	453.22	257.01	**690.89**	367.08	288.32	186.49	287.80	187.33	436.81	260.03	243.32	206.09	171.38	179.43	172.43	**144.65**	681.40	383.43	352.28	202.28	267.18	162.77
Normalized	31.69%	55.52%	31.92%	56.28%	20.94%	39.41%	50.17%	77.56%	50.26%	77.22%	33.12%	55.63%	59.45%	70.19%	84.4%	80.62%	83.89%	100%	21.23%	37.73%	41.06%	71.51%	54.14%	88.87%
Standard Deviation	0.1%	0.2%	0.2%	0.2%	0.1%	0.2%	0.1%	0.4%	0.1%	0.4%	0.2%	0.2%	0.2%	0.5%	0.7%	0.8%	0.2%	0.4%	0.1%	0.1%	0%	0.1%	0%	0.4%

Blender - Pabellon Barcelona - CPU-Only	404.78	208.30	400.96	207.41	622.44	314.88	245.42	128.53	246.31	129.01	367.16	197.37	182.08	150.88	111.91	120.28	118.46	74.87	554.14	285.22	286.93	151.36	215.96	115.93
Normalized	18.5%	35.94%	18.67%	36.1%	12.03%	23.78%	30.51%	58.25%	30.4%	58.03%	20.39%	37.93%	41.12%	49.62%	66.9%	62.25%	63.2%	100%	13.51%	26.25%	26.09%	49.46%	34.67%	64.58%
Standard Deviation	0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0%	0.3%	0.2%	0.7%	0.1%	1%	0.1%	0.4%	0.4%	1.1%	0.2%	0.2%	0.4%	0.2%	0.5%	1%
PyBench - T.F.A.T.T (Milliseconds)	1114	1100	1103	1104	955	956	1076	1073	1076	1073	1203	1227	1167	1230	1170	1155	1135	1153	994	994	987	997	1065	1045
Normalized	85.73%	86.82%	86.58%	86.5%	100%	99.9%	88.75%	89%	88.75%	89%	79.38%	77.83%	81.83%	77.64%	81.62%	82.68%	84.14%	82.83%	96.08%	96.08%	96.76%	95.79%	89.67%	91.39%
Standard Deviation	1.9%	0.2%	0.5%	0.1%	0.2%		0.2%	0.3%	0.2%	0.2%	0.2%	0.5%	0.3%	0.4%			0.2%	1.2%	0.4%	0.9%	0.3%	0.6%	0.2%	1.1%
PyPerformance - float (Milliseconds)	114	113	115	113	96.6	96.5	109	109	109	109	143	145	139	146	139	137	135	135	119	119	118	119	125	125
Normalized	84.65%	85.4%	83.91%	85.4%	99.9%	100%	88.53%	88.53%	88.53%	88.53%	67.48%	66.55%	69.42%	66.1%	69.42%	70.44%	71.48%	71.48%	81.09%	81.09%	81.78%	81.09%	77.2%	77.2%
Standard Deviation		0.5%			0%	0.2%					0.4%													
PyPerformance - regex_compile (Milliseconds)	168	167	168	167	145	145	164	163	164	164	213	216	208	216	210	204	199	204	176	177	173	175	185	184
Normalized	86.31%	86.83%	86.31%	86.83%	100%	100%	88.41%	88.96%	88.41%	88.41%	68.08%	67.13%	69.71%	67.13%	69.05%	71.08%	72.86%	71.08%	82.39%	81.92%	83.82%	82.86%	78.38%	78.8%
Standard Deviation											0.3%	0.3%					0.3%	0.3%		0.7%	0.3%			
Appleseed - Emily (sec)	284.27974	180.645797	276.768654	177.661148	386.804863	229.319136	194.140103	153.95073	197.649505	154.980752	281.561555	196.709892	190.229747	188.306413	176.225709	182.553195	152.526945	176.313087	397.157424	252.673891	227.568691	162.268095	182.410943	157.088123
Normalized	53.65%	84.43%	55.11%	85.85%	39.43%	66.51%	78.57%	99.08%	77.17%	98.42%	54.17%	77.54%	80.18%	81%	86.55%	83.55%	100%	86.51%	38.4%	60.37%	67.02%	94%	83.62%	97.1%

PHPBench - P.B.S (Score)	629690	631283	632431	632601	729819	731952	643737	647832	649164	649693	492988	495914	510599	485243	515758	516902	527173	527208	602328	609673	604627	606970	572134	560990
Normalized	86.03%	86.25%	86.4%	86.43%	99.71%	100%	87.95%	88.51%	88.69%	88.76%	67.35%	67.75%	69.76%	66.29%	70.46%	70.62%	72.02%	72.03%	82.29%	83.29%	82.6%	82.92%	78.17%	76.64%
Standard Deviation	0.2%	0.3%	0.2%	0%	0.3%	0.2%	1.2%	0.5%	0.1%	0.2%	0.2%	1%	0.6%	0.5%	0.2%	0.6%	0.8%	0.2%	0.2%	0.9%	0.2%	0.6%	0.4%	0.2%
Mlpack Benchmark - scikit_ica (sec)	68.19	77.41	61.82	74.63	50.09	55.54	67.36	63.38	67.36	63.35	63.62	77.86	76.04	70.28	65.60	64.27	57.69	55.18	53.13	60.75	53.26	67.48	61.93	61.54
Normalized	73.46%	64.71%	81.03%	67.12%	100%	90.19%	74.36%	79.03%	74.36%	79.07%	78.73%	64.33%	65.87%	71.27%	76.36%	77.94%	86.83%	90.78%	94.28%	82.45%	94.05%	74.23%	80.88%	81.39%
Standard Deviation	0.6%	2.8%	1.3%	0.7%	1%	2.5%	0.3%	0.4%	0.5%	1.6%	2.6%	2.4%	0.2%	0.3%	0.8%	1.2%	0.7%	1.2%	2%	2.3%	1.6%	1.4%	2%	1.8%
Mlpack Benchmark - scikit_svm	17.82	17.92	17.92	17.77	15.72	15.47	17.11	17.33	17.19	17.19	15.42	15.52	15.83	16.50	17.23	16.39	14.58	15.95	12.94	13.10	12.86	12.99	13.54	13.70
Normalized	72.17%	71.76%	71.76%	72.37%	81.81%	83.13%	75.16%	74.21%	74.81%	74.81%	83.4%	82.86%	81.24%	77.94%	74.64%	78.46%	88.2%	80.63%	99.38%	98.17%	100%	99%	94.98%	93.87%
Standard Deviation	0.9%	0.4%	0%	1.3%	0.5%	0.7%	0.4%	1.1%	0.7%	0.9%	0.1%	0.3%	5.9%	7.5%	2%	7.4%	0.6%	8.1%	0.1%	1%	0.5%	0.7%	0.9%	0.5%
Mlpack Benchmark - scikit_linearridgeregression	2.25	2.39	1.93	2.08	2.07	1.74	1.66	1.78	1.67	1.82	2.15	2.07	2.15	2.29	1.95	1.97	1.66	1.76	2.25	1.99	1.78	1.95	1.69	1.84
Normalized	73.78%	69.46%	86.01%	79.81%	80.19%	95.4%	100%	93.26%	99.4%	91.21%	77.21%	80.19%	77.21%	72.49%	85.13%	84.26%	100%	94.32%	73.78%	83.42%	93.26%	85.13%	98.22%	90.22%
Standard Deviation	2.3%	8.1%	2.4%	7.9%	3.6%	2.4%	1.6%	3%	2%	2.6%	1.1%	6.1%	3%	9.9%	5%	2.7%	1.9%	8.4%	1.3%	3.9%	0.7%	2.8%	1%	2.6%
Scikit-Learn (sec)	10.112	10.458	9.924	10.449	8.525	8.819	9.283	9.452	9.127	9.392	11.074	11.233	11.053	11.531	10.913	10.788	10.463	10.533	9.742	9.735	9.571	9.888	9.928	10.125
Normalized	84.31%	81.52%	85.9%	81.59%	100%	96.67%	91.83%	90.19%	93.4%	90.77%	76.98%	75.89%	77.13%	73.93%	78.12%	79.02%	81.48%	80.94%	87.51%	87.57%	89.07%	86.22%	85.87%	84.2%
Standard Deviation	0.6%	0.4%	0.5%	0.9%	0.7%	1.4%	1.7%	2.2%	0.8%	2.2%	0.1%	0.5%	0.4%	2.9%	0.8%	0.8%	0.1%	0.2%	0.1%	0.2%	0.3%	0.5%	0.2%	1.1%

OpenVKL - vklBenchmark (Items / Sec)	145.93	265.81	312.80	467.04	181.81	298.59	307.53	361.31	416.52	**523.15**	513.10	**114.67**	206.48	219.22	350.49	291.96	433.28
Normalized	27.89%	50.81%	59.79%	89.27%	34.75%	57.08%	58.78%	69.06%	79.62%	100%	98.08%	21.92%	39.47%	41.9%	67%	55.81%	82.82%
Standard Deviation	0.6%	1.1%	0.9%	2.8%	0.2%	0.3%	3%	2.9%	2.8%	2.8%	2.8%	0.3%	1.4%	0.2%	2.8%	0.7%	2.2%
OpenVKL - vklBenchmarkVdbVolume (Items / Sec)	19665846	25446738	24856794	**26517246**	13294376	14838884	15452698	15225642	16894367	19772908	19618179	**12058576**	15557356	16596719	18885095	18028869	19403359
Normalized	74.16%	95.96%	93.74%	100%	50.13%	55.96%	58.27%	57.42%	63.71%	74.57%	73.98%	45.47%	58.67%	62.59%	71.22%	67.99%	73.17%
Standard Deviation	0.3%	2.6%	0.1%	0.7%	0.1%	0.2%	0.3%	0.1%	0.3%	0.3%	0.4%	0.2%	0.9%	0.1%	0.3%	0.1%	1.2%
OpenVKL - vklBenchmarkStructuredVolume (Items /	51919733	67922527	70258026	78700243	58566303	69131511	72351925	70983017	76861898	93665886	**95564073**	**49999251**	68046951	74031223	87474537	79983507	87236205
Normalized	54.33%	71.08%	73.52%	82.35%	61.28%	72.34%	75.71%	74.28%	80.43%	98.01%	100%	52.32%	71.21%	77.47%	91.53%	83.7%	91.29%
Standard Deviation	0.4%	2.9%	0.1%	4.2%	0.9%	1.5%	0.8%	0.8%	0.6%	1.7%	2.4%	0.7%	1.3%	0.2%	1.2%	0.3%	2.7%

High Performance Conjugate Gradient - Performance / Cost (GFLOP/s/Dollar)	0.007	0.007	0.010	0.010	0.003	0.003	0.004	0.004	**0.001**	**0.001**	0.012	0.012	**0.013**	0.010	0.005	0.007	0.002	0.002	0.006	0.006	0.006	0.005	0.007	0.007
Normalized	53.85%	53.85%	76.92%	76.92%	23.08%	23.08%	30.77%	30.77%	7.69%	7.69%	92.31%	92.31%	100%	76.92%	38.46%	53.85%	15.38%	15.38%	46.15%	46.15%	46.15%	38.46%	53.85%	53.85%
NAMD - Performance / Cost - ATPase Simulation - 327,506 Atoms (days/ns x	2141	2232	1521	1560	6107	6177	2845	2913	7077	**7252**	**1019**	1078	1392	1573	2867	1879	3218	4063	4400	4451	3291	3371	1966	2040
Normalized	47.58%	45.64%	66.99%	65.32%	16.68%	16.49%	35.81%	34.97%	14.4%	14.05%	100%	94.52%	73.2%	64.79%	35.54%	54.22%	31.66%	25.07%	23.15%	22.89%	30.95%	30.22%	51.82%	49.95%

Timed MrBayes Analysis - Performance / Cost - P.P.A (sec x Dollar)	248794	499234	165637	332763	276389	551666	441027	898593	1289640	**2602060**	**66311**	134377	182487	297667	702647	456390	801747	1637870	151589	302476	223653	446977	195143	388928
Normalized	26.65%	13.28%	40.03%	19.93%	23.99%	12.02%	15.04%	7.38%	5.14%	2.55%	100%	49.35%	36.34%	22.28%	9.44%	14.53%	8.27%	4.05%	43.74%	21.92%	29.65%	14.84%	33.98%	17.05%
LAMMPS Molecular Dynamics Simulator - Performance / Cost - Rhodopsin Protein (ns/day/Dollar)	0.005	0.005	0.008	0.007	0.002	0.002	0.004	0.003	0.002	**0.001**	**0.009**	0.004	0.004	0.002	**0.001**	**0.001**	**0.001**		0.003	0.002	0.003	**0.001**	0.004	**0.001**
Normalized	55.56%	55.56%	88.89%	77.78%	22.22%	22.22%	44.44%	33.33%	22.22%	11.11%	100%	44.44%	44.44%	22.22%	11.11%	11.11%	11.11%		33.33%	22.22%	33.33%	11.11%	44.44%	11.11%
Nettle - Performance / Cost - aes256 (Mbyte/s/Dollar	3.316	1.665	4.602	2.299	2.045	1.024	1.560	0.782	0.631	**0.316**	**6.061**	3.032	2.209	1.528	0.647	1.076	0.638	0.319	2.618	1.309	1.774	0.888	2.128	1.065
Normalized	54.71%	27.47%	75.93%	37.93%	33.74%	16.89%	25.74%	12.9%	10.41%	5.21%	100%	50.02%	36.45%	25.21%	10.67%	17.75%	10.53%	5.26%	43.19%	21.6%	29.27%	14.65%	35.11%	17.57%

Nettle - Performance / Cost - sha512 (Mbyte/s/Dollar)	0.263	0.132	0.365	0.183	0.162	0.081	0.123	0.062	0.050	**0.025**	**0.621**	0.310	0.226	0.156	0.066	0.110	0.065	0.033	0.268	0.134	0.182	0.091	0.218	0.109
Normalized	42.35%	21.26%	58.78%	29.47%	26.09%	13.04%	19.81%	9.98%	8.05%	4.03%	100%	49.92%	36.39%	25.12%	10.63%	17.71%	10.47%	5.31%	43.16%	21.58%	29.31%	14.65%	35.1%	17.55%
John The Ripper - Performance / Cost - Blowfish (Real C/S/Dollar)	13.809	13.871	20.258	19.972	4.825	4.791	10.626	10.421	4.283	**4.200**	**29.042**	28.935	19.870	20.669	11.653	18.049	9.963	9.647	6.276	6.265	8.500	8.472	15.033	14.917
Normalized	47.55%	47.76%	69.75%	68.77%	16.61%	16.5%	36.59%	35.88%	14.75%	14.46%	100%	99.63%	68.42%	71.17%	40.12%	62.15%	34.31%	33.22%	21.61%	21.57%	29.27%	29.17%	51.76%	51.36%
John The Ripper - Performance / Cost - MD5 (Real C/S/Dollar)	1355	1303	**1929**	1859	272.585	**267.137**	564.572	551.583	408.632	393.646	1917	1828	1398	1260	697.328	1065	619.915	554.928	437.443	431.746	586.452	498.118	974.694	939.864
Normalized	70.22%	67.54%	100%	96.35%	14.13%	13.85%	29.27%	28.59%	21.18%	20.41%	99.36%	94.77%	72.46%	65.34%	36.15%	55.21%	32.14%	28.77%	22.68%	22.38%	30.4%	25.82%	50.53%	48.72%

MKL-DNN DNNL - Performance / Cost - IP Batch 1D - f32 (ms x Dollar)	8325	8251	5910	5864	19107	20408	10057	13307	23967	**32827**	**3388**	4280	5222	7352	16338	11621	14224	30742	10902	14079	9552	12950	5879	10780
Normalized	40.7%	41.06%	57.33%	57.77%	17.73%	16.6%	33.69%	25.46%	14.14%	10.32%	100%	79.16%	64.88%	46.08%	20.74%	29.15%	23.82%	11.02%	31.08%	24.06%	35.47%	26.16%	57.63%	31.43%
MKL-DNN DNNL - Performance / Cost - D.B.d - u8s8f32 (ms x Dollar)	11234255	11515732	7852244	7999400	35031091	35236009	16532588	16795076	37203253	**37908487**	**4206963**	4275615	5781274	6192655	11014557	7121452	12425140	12644557	19489050	19493922	14370050	14444264	8201081	8287174
Normalized	37.45%	36.53%	53.58%	52.59%	12.01%	11.94%	25.45%	25.05%	11.31%	11.1%	100%	98.39%	72.77%	67.93%	38.19%	59.07%	33.86%	33.27%	21.59%	21.58%	29.28%	29.13%	51.3%	50.76%
dav1d - Performance / Cost - Summer Nature 4K (FPS/D	0.087	0.048	0.127	0.076	0.043	0.027	0.049	0.028	0.020	**0.011**	**0.261**	0.160	0.114	0.090	0.041	0.069	0.045	0.021	0.072	0.046	0.072	0.043	0.117	0.064
Normalized	33.33%	18.39%	48.66%	29.12%	16.48%	10.34%	18.77%	10.73%	7.66%	4.21%	100%	61.3%	43.68%	34.48%	15.71%	26.44%	17.24%	8.05%	27.59%	17.62%	27.59%	16.48%	44.83%	24.52%
dav1d - Performance / Cost - S.N.1 (FPS/Dollar)	0.149	0.087	0.230	0.134	0.106	0.045	0.080	0.050	0.032	**0.020**	**0.579**	0.352	0.253	0.195	0.090	0.150	0.092	0.051	0.178	0.111	0.162	0.100	0.270	0.153
Normalized	25.73%	15.03%	39.72%	23.14%	18.31%	7.77%	13.82%	8.64%	5.53%	3.45%	100%	60.79%	43.7%	33.68%	15.54%	25.91%	15.89%	8.81%	30.74%	19.17%	27.98%	17.27%	46.63%	26.42%

OSPray - Performance / Cost - San Miguel - SciVis (FPS/Dollar)	0.013	0.012	0.017	0.016	0.005	0.005	0.010	0.009	0.004	**0.003**	**0.026**	0.022	0.017	0.015	0.008	0.013	0.008	0.006	0.006	0.005	0.008	0.007	0.014	0.011
Normalized	50%	46.15%	65.38%	61.54%	19.23%	19.23%	38.46%	34.62%	15.38%	11.54%	100%	84.62%	65.38%	57.69%	30.77%	50%	30.77%	23.08%	23.08%	19.23%	30.77%	26.92%	53.85%	42.31%
OSPray - Performance / Cost - San Miguel - Path Tracer (FPS/Dollar)	**0.001**	**0.001**	**0.002**	**0.001**			**0.001**	**0.001**			**0.002**	**0.002**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**			**0.001**	**0.001**	**0.001**	**0.001**
Normalized	50%	50%	100%	50%			50%	50%			100%	100%	50%	50%	50%	50%	50%	50%			50%	50%	50%	50%
OSPray - Performance / Cost - NASA Streamlines - SciVis (FPS/Dollar)	0.015	0.015	0.022	0.021	0.006	0.006	0.013	0.011	**0.005**	**0.005**	**0.037**	0.031	0.023	0.019	0.011	0.018	0.011	0.008	0.008	0.007	0.011	0.009	0.019	0.015
Normalized	40.54%	40.54%	59.46%	56.76%	16.22%	16.22%	35.14%	29.73%	13.51%	13.51%	100%	83.78%	62.16%	51.35%	29.73%	48.65%	29.73%	21.62%	21.62%	18.92%	29.73%	24.32%	51.35%	40.54%

Embree - Performance / Cost - Pathtracer - Crown (FPS/Dollar)	0.009	0.008	0.012	0.011	0.003	0.003	0.007	0.006	0.003	0.002	0.022	0.019	0.014	0.013	0.007	0.011	0.007	0.006	0.005	0.004	0.006	0.005	0.011	0.009
Normalized	40.91%	36.36%	54.55%	50%	13.64%	13.64%	31.82%	27.27%	13.64%	9.09%	100%	86.36%	63.64%	59.09%	31.82%	50%	31.82%	27.27%	22.73%	18.18%	27.27%	22.73%	50%	40.91%
Embree - Performance / Cost - Pathtracer ISPC - Crown (FPS/D	0.010	0.009	0.013	0.012	0.004	0.003	0.007	0.007	0.003	0.003	0.021	0.018	0.013	0.012	0.007	0.010	0.007	0.005	0.004	0.004	0.006	0.005	0.010	0.009
Normalized	47.62%	42.86%	61.9%	57.14%	19.05%	14.29%	33.33%	33.33%	14.29%	14.29%	100%	85.71%	61.9%	57.14%	33.33%	47.62%	33.33%	23.81%	19.05%	19.05%	28.57%	23.81%	47.62%	42.86%
SVT-AV1 - Performance / Cost - Enc Mode 4 - 1080p (FPS/Dollar)	0.002	0.001	0.003	0.002	0.001	0.001	0.001	0.001	0.001		0.005	0.003	0.002	0.002	0.001	0.001	0.001		0.001	0.001	0.002	0.001	0.002	0.002
Normalized	40%	20%	60%	40%	20%	20%	20%	20%	20%		100%	60%	40%	40%	20%	20%	20%		20%	20%	40%	20%	40%	40%

Intel Open Image Denoise - Performance / Cost - Memorial (Images / Sec/Dollar)	0.010	0.008	**0.016**	0.012	0.005	0.003	0.008	0.004	0.003	**0.002**	0.014	0.011	0.008	0.007	0.003	0.005	0.004	**0.002**	0.003	0.003	0.004	0.004	0.006	0.005
Normalized	62.5%	50%	100%	75%	31.25%	18.75%	50%	25%	18.75%	12.5%	87.5%	68.75%	50%	43.75%	18.75%	31.25%	25%	12.5%	18.75%	18.75%	25%	25%	37.5%	31.25%
LuxCoreRender - Performance / Cost - DLSC (M samples/sec/Dollar)	**0.001**	**0.001**	0.002	0.002			**0.001**	**0.001**			**0.003**	**0.003**	0.002	0.002	**0.001**	0.002	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	0.002	0.002
Normalized	33.33%	33.33%	66.67%	66.67%			33.33%	33.33%			100%	100%	66.67%	66.67%	33.33%	66.67%	33.33%	33.33%	33.33%	33.33%	33.33%	33.33%	66.67%	66.67%

LuxCoreRender - Performance / Cost - R.C.a.P (M samples/sec/Dollar)	**0.001**	**0.001**	0.002	0.002			**0.001**	**0.001**			**0.004**	0.003	0.003	0.002	**0.001**	0.002	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	0.002	0.002
Normalized	25%	25%	50%	50%			25%	25%			100%	75%	75%	50%	25%	50%	25%	25%	25%	25%	25%	25%	50%	50%
Himeno Benchmark - Performance / Cost - P.P.S (MFLOPS/Dollar)	1.837	0.920	2.540	1.273	1.121	0.567	0.870	0.436	0.351	**0.176**	**4.963**	2.410	1.791	1.253	0.526	0.860	0.508	0.257	2.021	1.006	1.410	0.694	1.720	0.840
Normalized	37.01%	18.54%	51.18%	25.65%	22.59%	11.42%	17.53%	8.79%	7.07%	3.55%	100%	48.56%	36.09%	25.25%	10.6%	17.33%	10.24%	5.18%	40.72%	20.27%	28.41%	13.98%	34.66%	16.93%
Stockfish - Performance / Cost - Total Time (Nodes/s/Dollar	20631	20064	29706	28082	7382	7033	15764	15064	6283	**5980**	**54436**	47846	36142	33455	18227	28632	17431	15803	11573	10318	15272	13831	27412	24866
Normalized	37.9%	36.86%	54.57%	51.59%	13.56%	12.92%	28.96%	27.67%	11.54%	10.99%	100%	87.89%	66.39%	61.46%	33.48%	52.6%	32.02%	29.03%	21.26%	18.95%	28.05%	25.41%	50.36%	45.68%

asmFish - Performance / Cost - 1.H.M.2.D (Nodes/s/Dollar	23361	23109	33320	31327	8026	7664	17306	16691	6870	6686	56043	50186	35864	34824	18571	29050	17595	16127	11605	10079	14930	13743	26653	24737
Normalized	41.68%	41.23%	59.45%	55.9%	14.32%	13.67%	30.88%	29.78%	12.26%	11.93%	100%	89.55%	63.99%	62.14%	33.14%	51.84%	31.39%	28.78%	20.71%	17.98%	26.64%	24.52%	47.56%	44.14%
Timed Linux Kernel Compilation - Performance / Cost - Time To Compile (sec x	109172	135786	77357	98001	279458	325924	164194	219707	409348	546672	42782	55024	72361	89849	186714	116902	199333	303934	161244	183708	136118	173991	90657	120555
Normalized	39.19%	31.51%	55.3%	43.65%	15.31%	13.13%	26.06%	19.47%	10.45%	7.83%	100%	77.75%	59.12%	47.61%	22.91%	36.6%	21.46%	14.08%	26.53%	23.29%	31.43%	24.59%	47.19%	35.49%
Timed LLVM Compilation - Performance / Cost - Time To Compile (sec x	796288	1061093	580043	748988	2117441	2456482	1240854	1778334	3090189	4434287	320003	421894	557842	723333	1564701	986281	1683995	2946819	1199041	1394438	1019168	1350521	692282	990452
Normalized	40.19%	30.16%	55.17%	42.72%	15.11%	13.03%	25.79%	17.99%	10.36%	7.22%	100%	75.85%	57.36%	44.24%	20.45%	32.45%	19%	10.86%	26.69%	22.95%	31.4%	23.69%	46.22%	32.31%

Build2 - Performance / Cost - Time To Compile (sec x	169536	266959	119140	189088	366636	509363	297325	509680	741847	**1256650**	**66078**	109025	145401	204535	464884	284083	479798	916315	207438	296839	215580	360747	162308	285592
Normalized	38.98%	24.75%	55.46%	34.95%	18.02%	12.97%	22.22%	12.96%	8.91%	5.26%	100%	60.61%	45.45%	32.31%	14.21%	23.26%	13.77%	7.21%	31.85%	22.26%	30.65%	18.32%	40.71%	23.14%
Tungsten Renderer - Performance / Cost - Hair (sec x Dollar)	35120	40969	24923	28562	95068	101110	50117	59905	126977	**156682**	**13076**	15555	20839	25448	49192	31293	53135	81974	55531	59585	43598	51172	27217	34465
Normalized	37.23%	31.92%	52.47%	45.78%	13.75%	12.93%	26.09%	21.83%	10.3%	8.35%	100%	84.07%	62.75%	51.38%	26.58%	41.79%	24.61%	15.95%	23.55%	21.95%	29.99%	25.55%	48.04%	37.94%
Tungsten Renderer - Performance / Cost - Water Caustic (sec x Dollar)	46265	86346	32253	62107	90888	162942	89809	174604	220365	**432181**	**19959**	37577	51891	73794	175362	105289	163296	341782	59556	102167	69941	133523	54120	105500
Normalized	43.14%	23.11%	61.88%	32.14%	21.96%	12.25%	22.22%	11.43%	9.06%	4.62%	100%	53.11%	38.46%	27.05%	11.38%	18.96%	12.22%	5.84%	33.51%	19.54%	28.54%	14.95%	36.88%	18.92%

Numpy Benchmark - Performance / Cost (Score/Dollar)	0.170	0.081	0.238	0.114	0.106	0.052	0.083	0.040	0.033	**0.016**	**0.419**	0.208	0.151	0.102	0.043	0.071	0.042	0.022	0.175	0.088	0.118	0.059	0.142	0.071
Normalized	40.57%	19.33%	56.8%	27.21%	25.3%	12.41%	19.81%	9.55%	7.88%	3.82%	100%	49.64%	36.04%	24.34%	10.26%	16.95%	10.02%	5.25%	41.77%	21%	28.16%	14.08%	33.89%	16.95%
Radiance Benchmark - Performance / Cost - SMP Parallel (sec x Dollar)	448653	853076	324041	624086	689293	1359982	955933	1825367	2352115	**4525589**	**167120**	337592	465484	675411	1590132	944359	1588932	3169079	382576	775845	563465	1164726	475180	971391
Normalized	37.25%	19.59%	51.57%	26.78%	24.25%	12.29%	17.48%	9.16%	7.11%	3.69%	100%	49.5%	35.9%	24.74%	10.51%	17.7%	10.52%	5.27%	43.68%	21.54%	29.66%	14.35%	35.17%	17.2%

PostgreSQL pgbench - Performance / Cost - Buffer Test - Normal Load - Read Only (TPS/Dollar)	207.092	161.837	281.449	219.523	69.264	54.063	143.729	112.169	56.038	45.455	461.134	355.513	234.145	201.132	119.011	203.177	131.525	64.694	93.941	73.809	112.457	76.509	210.270	143.765
Normalized	44.91%	35.1%	61.03%	47.61%	15.02%	11.72%	31.17%	24.32%	12.15%	9.86%	100%	77.1%	50.78%	43.62%	25.81%	44.06%	28.52%	14.03%	20.37%	16.01%	24.39%	16.59%	45.6%	31.18%
Basis Universal - Performance / Cost - UASTC Level 3 (sec x Dollar)	86410	103530	60179	72911	230475	258553	123063	159368	307166	398058	30504	37478	50636	61279	124605	77721	133591	198039	126242	141695	103946	126995	64940	84128
Normalized	35.3%	29.46%	50.69%	41.84%	13.24%	11.8%	24.79%	19.14%	9.93%	7.66%	100%	81.39%	60.24%	49.78%	24.48%	39.25%	22.83%	15.4%	24.16%	21.53%	29.35%	24.02%	46.97%	36.26%
Chaos Group V-RAY - Performance / Cost - CPU (Ksamples/Dollar)	11.830	10.884	16.485	12.976	4.136	3.819	8.490	8.005	3.468	3.214	29.128	21.866	16.931	16.449	8.284	13.202	8.771		6.802	5.749	8.903	6.579	14.856	11.715
Normalized	40.61%	37.37%	56.6%	44.55%	14.2%	13.11%	29.15%	27.48%	11.91%	11.03%	100%	75.07%	58.13%	56.47%	28.44%	45.32%	30.11%		23.35%	19.74%	30.57%	22.59%	51%	40.22%

Blender - Performance / Cost - BMW27 - CPU-Only (secx	209605	224479	149727	159207	588400	604822	282010	313498	698628	**776498**	**81265**	90398	116467	137439	257690	170058	288318	405135	341565	352968	263934	280922	159054	179585
Normalized	38.77%	36.2%	54.28%	51.04%	13.81%	13.44%	28.82%	25.92%	11.63%	10.47%	100%	89.9%	69.77%	59.13%	31.54%	47.79%	28.19%	20.06%	23.79%	23.02%	30.79%	28.93%	51.09%	45.25%
Blender - Performance / Cost - Classroom - CPU-Only (secx	608299	614052	430529	437371	1731139	1742041	799306	810502	1984284	**2011208**	**216326**	224096	293223	326386	590186	386496	672392	705864	920052	931308	698399	710396	419759	423164
Normalized	35.56%	35.23%	50.25%	49.46%	12.5%	12.42%	27.06%	26.69%	10.9%	10.76%	100%	96.53%	73.78%	66.28%	36.65%	55.97%	32.17%	30.65%	23.51%	23.23%	30.97%	30.45%	51.54%	51.12%
Blender - Performance / Cost - Fishy Cat - CPU-Only (secx	325508	363488	232919	258186	918691	950425	447409	536373	1107696	**1328995**	**119178**	139792	181351	219560	431950	279595	462076	664794	503454	528612	382044	434930	232285	289590
Normalized	36.61%	32.79%	51.17%	46.16%	12.97%	12.54%	26.64%	22.22%	10.76%	8.97%	100%	85.25%	65.72%	54.28%	27.59%	42.63%	25.79%	17.93%	23.67%	22.55%	31.19%	27.4%	51.31%	41.15%

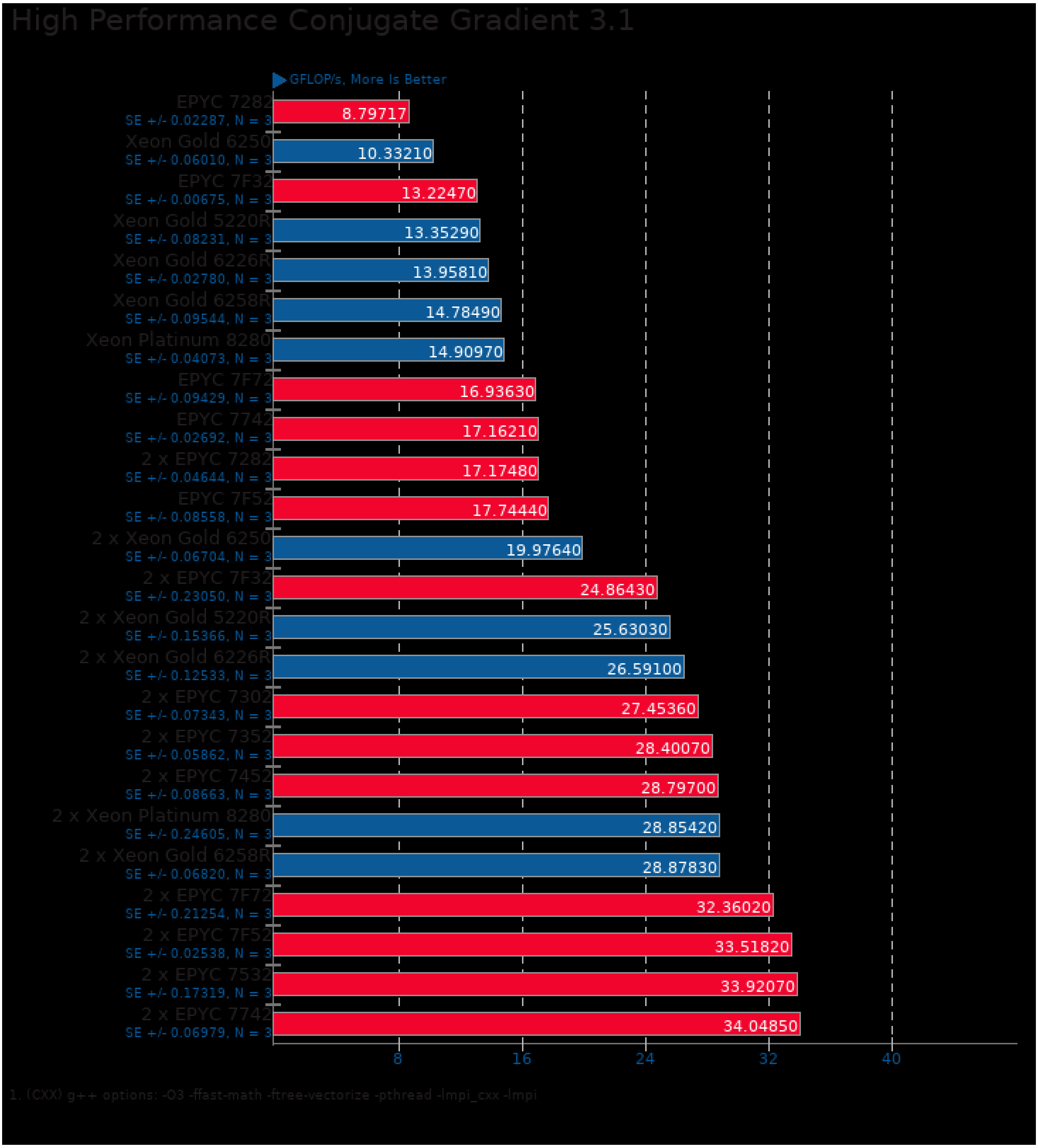
Blender - Performance / Cost - Barbershop - CPU-Only (sec x	844470	964072	606862	688273	2398770	2549004	1165389	1507585	2880590	**3749972**	**325423**	387445	512919	599722	1231537	788057	1297018	2176115	1430940	1610406	1092068	1254136	654591	797573
Normalized	38.54%	33.76%	53.62%	47.28%	13.57%	12.77%	27.92%	21.59%	11.3%	8.68%	100%	83.99%	63.45%	54.26%	26.42%	41.29%	25.09%	14.95%	22.74%	20.21%	29.8%	25.95%	49.71%	40.8%
Blender - Performance / Cost - Pabellon Barcelona - CPU-Only (sec x	748843	770710	536885	555444	2161112	2186527	991988	1039037	2465317	**2582522**	**273534**	294081	383825	439061	804185	528270	891056	1126344	1163694	1197924	889483	938432	529102	568057
Normalized	36.53%	35.49%	50.95%	49.25%	12.66%	12.51%	27.57%	26.33%	11.1%	10.59%	100%	93.01%	71.27%	62.3%	34.01%	51.78%	30.7%	24.29%	23.51%	22.83%	30.75%	29.15%	51.7%	48.15%
PyBench - Performance / Cost - T.F.A.T.T (Milliseconds x Dollar)	2060900	4070000	1476917	2956512	3315760	6638464	4349192	8674132	10769684	**21479314**	**896235**	1828230	2460036	3579300	8407620	5072760	8537470	17345732	2087400	4174800	3059700	6181400	2609250	5120500
Normalized	43.49%	22.02%	60.68%	30.31%	27.03%	13.5%	20.61%	10.33%	8.32%	4.17%	100%	49.02%	36.43%	25.04%	10.66%	17.67%	10.5%	5.17%	42.94%	21.47%	29.29%	14.5%	34.35%	17.5%

PyPerformance - Performance / Cost - float (Milliseconds x Dollar)	210900	418100	153985	302614	335395	670096	440578	881156	1090981	**2181962**	**106535**	216050	293012	424860	998854	601704	1015470	2030940	249900	499800	365800	737800	306250	612500
Normalized	50.51%	25.48%	69.19%	35.2%	31.76%	15.9%	24.18%	12.09%	9.77%	4.88%	100%	49.31%	36.36%	25.08%	10.67%	17.71%	10.49%	5.25%	42.63%	21.32%	29.12%	14.44%	34.79%	17.39%
PyPerformance - Performance / Cost - regex_compile (Milliseconds x Dollar)	310800	617900	224952	447226	503440	1006880	662888	1317692	1641476	**3282952**	**158685**	321840	438464	628560	1509060	895968	1496878	3068976	369600	743400	536300	1085000	453250	901600
Normalized	51.06%	25.68%	70.54%	35.48%	31.52%	15.76%	23.94%	12.04%	9.67%	4.83%	100%	49.31%	36.19%	25.25%	10.52%	17.71%	10.6%	5.17%	42.93%	21.35%	29.59%	14.63%	35.01%	17.6%
Appleseed - Performance / Cost - Emily (sec x Dollar)	525918	668389	370593	475777	1342986	1592392	784714	1244538	1978274	**3102405**	**209763**	293098	401004	547972	1266358	801774	1147308	2652454	834031	1061230	705463	1006062	446907	769732
Normalized	39.89%	31.38%	56.6%	44.09%	15.62%	13.17%	26.73%	16.85%	10.6%	6.76%	100%	71.57%	52.31%	38.28%	16.56%	26.16%	18.28%	7.91%	25.15%	19.77%	29.73%	20.85%	46.94%	27.25%

PHPBench - Performance / Cost - P.B.S (Score/Dollar)	340.373	170.617	472.316	236.221	210.201	105.408	159.262	80.138	64.858	**32.455**	**661.729**	332.828	242.220	166.750	71.773	117.692	70.084	35.044	286.823	145.160	195.041	97.898	233.524	114.488
Normalized	51.44%	25.78%	71.38%	35.7%	31.77%	15.93%	24.07%	12.11%	9.8%	4.9%	100%	50.3%	36.6%	25.2%	10.85%	17.79%	10.59%	5.3%	43.34%	21.94%	29.47%	14.79%	35.29%	17.3%
Mlpack Benchmark - Performance / Cost - scikit_ica (sec x	126152	286417	82777	199859	173912	385670	272269	512364	674206	**1268140**	**47397**	116011	160292	204515	471402	282274	433944	830128	111573	255150	165106	418376	151729	301546
Normalized	37.57%	16.55%	57.26%	23.72%	27.25%	12.29%	17.41%	9.25%	7.03%	3.74%	100%	40.86%	29.57%	23.18%	10.05%	16.79%	10.92%	5.71%	42.48%	18.58%	28.71%	11.33%	31.24%	15.72%
Mlpack Benchmark - Performance / Cost - scikit_svm (sec x	32967	66304	23995	47588	54580	107424	69159	140096	172055	**344109**	**11488**	23125	33370	48015	123815	71985	109671	239952	27174	55020	39866	80538	33173	67130
Normalized	34.85%	17.33%	47.88%	24.14%	21.05%	10.69%	16.61%	8.2%	6.68%	3.34%	100%	49.68%	34.43%	23.93%	9.28%	15.96%	10.47%	4.79%	42.28%	20.88%	28.82%	14.26%	34.63%	17.11%

Mlpack Benchmark - Performance / Cost - scikit_linearridgeregression (sec x	4163	8843	2584	5570	7187	12083	6710	14390	16715	**36433**	**1602**	3084	4532	6664	14013	8652	12487	26477	4725	8358	5518	12090	4141	9016
Normalized	38.48%	18.11%	61.98%	28.76%	22.29%	13.26%	23.87%	11.13%	9.58%	4.4%	100%	51.93%	35.34%	24.04%	11.43%	18.51%	12.83%	6.05%	33.9%	19.16%	29.03%	13.25%	38.68%	17.77%
Scikit-Learn - Performance / Cost (sec x Dollar)	18707	38695	13288	27982	29599	61239	37522	76410	91352	**188009**	**8250**	16737	23300	33555	78421	47381	78703	158458	20458	40887	29670	61306	24324	49613
Normalized	44.1%	21.32%	62.09%	29.48%	27.87%	13.47%	21.99%	10.8%	9.03%	4.39%	100%	49.29%	35.41%	24.59%	10.52%	17.41%	10.48%	5.21%	40.33%	20.18%	27.81%	13.46%	33.92%	16.63%
OpenVKL - Performance / Cost - vklBenchmark (Items / Sec/Dollar)					0.042	0.038	0.077	0.058			**0.244**	0.200	0.146	0.124		0.095	0.070	**0.034**	0.055	0.049	0.071	0.057	0.119	0.088
Normalized					17.21%	15.57%	31.56%	23.77%			100%	81.97%	59.84%	50.82%		38.93%	28.69%	13.93%	22.54%	20.08%	29.1%	23.36%	48.77%	36.07%

OpenVKL - Performance / Cost - vklBenchmark VdbVolume (Items / Sec/Dollar)	5664	3665	6150	3280			**17845**	9959	7331	5232		3847	2629	**1304**	5742	3704	5354	3046	7359	3960
Normalized	31.74%	20.54%	34.46%	18.38%			100%	55.81%	41.08%	29.32%		21.56%	14.73%	7.31%	32.18%	20.76%	30%	17.07%	41.24%	22.19%
OpenVKL - Performance / Cost - vklBenchmark StructuredVolume (Items / Sec/Dol	14954	9781	17382	9735			**78612**	46397	34323	24393		17500	12452	**6352**	23809	16202	23881	14109	32646	17803
Normalized	19.02%	12.44%	22.11%	12.38%			100%	59.02%	43.66%	31.03%		22.26%	15.84%	8.08%	30.29%	20.61%	30.38%	17.95%	41.53%	22.65%


High Performance Conjugate Gradient 3.1
GFLOP/s, More Is Better
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Xeon Gold 6250
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10.33210
EPYC 7F32
SE +/- 0.00675, N = 3
13.22470
Xeon Gold 5220R
SE +/- 0.08231, N = 3
13.35290
Xeon Gold 6226R
SE +/- 0.02780, N = 3
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Xeon Gold 6258R
SE +/- 0.09544, N = 3
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Xeon Platinum 8280
SE +/- 0.04073, N = 3
14.90970
EPYC 7F72
SE +/- 0.09429, N = 3
16.93630
EPYC 7742
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SE +/- 0.04644, N = 3
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EPYC 7F52
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SE +/- 0.06704, N = 3
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SE +/- 0.23050, N = 3
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SE +/- 0.15366, N = 3
25.63030
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SE +/- 0.12533, N = 3
26.59100
2 x EPYC 7302
SE +/- 0.07343, N = 3
27.45360
2 x EPYC 7352
SE +/- 0.05862, N = 3
28.40070
2 x EPYC 7452
SE +/- 0.08663, N = 3
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2 x Xeon Platinum 8280
SE +/- 0.24605, N = 3
28.85420
2 x Xeon Gold 6258R
SE +/- 0.06820, N = 3
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2 x EPYC 7F72
SE +/- 0.21254, N = 3
32.36020
2 x EPYC 7F52
SE +/- 0.02538, N = 3
33.51820
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SE +/- 0.17319, N = 3
33.92070
2 x EPYC 7742
SE +/- 0.06979, N = 3
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8
16
24
32
40
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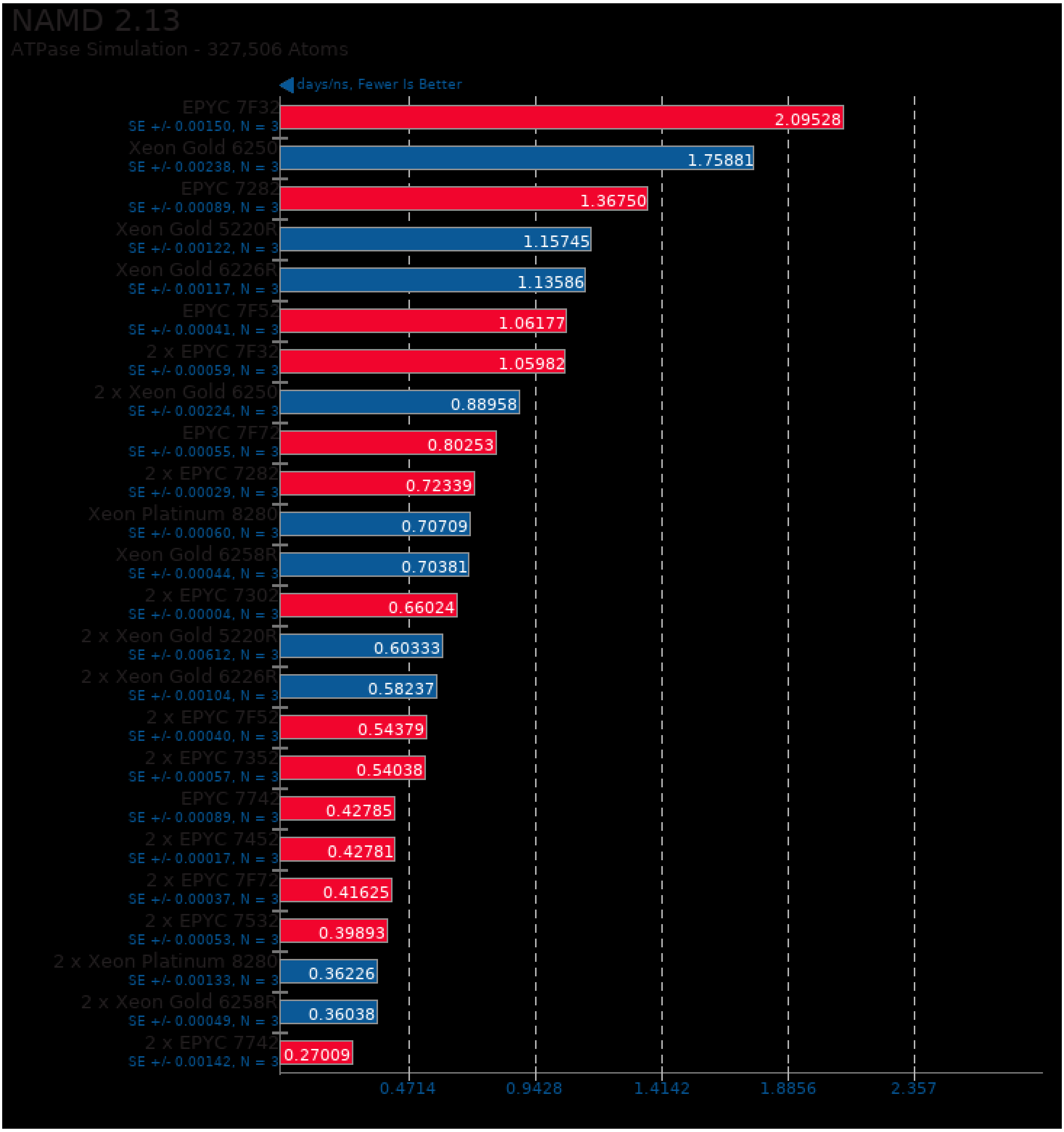
NAMD 2.13
ATPase Simulation - 327,506 Atoms
days/ns, Fewer Is Better
EPYC 7F32
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Xeon Gold 6250
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EPYC 7282
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Xeon Gold 5220R
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Xeon Gold 6226R
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1.06177
2 x EPYC 7F32
SE +/- 0.00059, N = 3
1.05982
2 x Xeon Gold 6250
SE +/- 0.00224, N = 3
0.88958
EPYC 7F72
SE +/- 0.00055, N = 3
0.80253
2 x EPYC 7282
SE +/- 0.00029, N = 3
0.72339
Xeon Platinum 8280
SE +/- 0.00060, N = 3
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Xeon Gold 6258R
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2 x Xeon Gold 5220R
SE +/- 0.00612, N = 3
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2 x Xeon Gold 6226R
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SE +/- 0.00037, N = 3
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SE +/- 0.00053, N = 3
0.39893
2 x Xeon Platinum 8280
SE +/- 0.00133, N = 3
0.36226
2 x Xeon Gold 6258R
SE +/- 0.00049, N = 3
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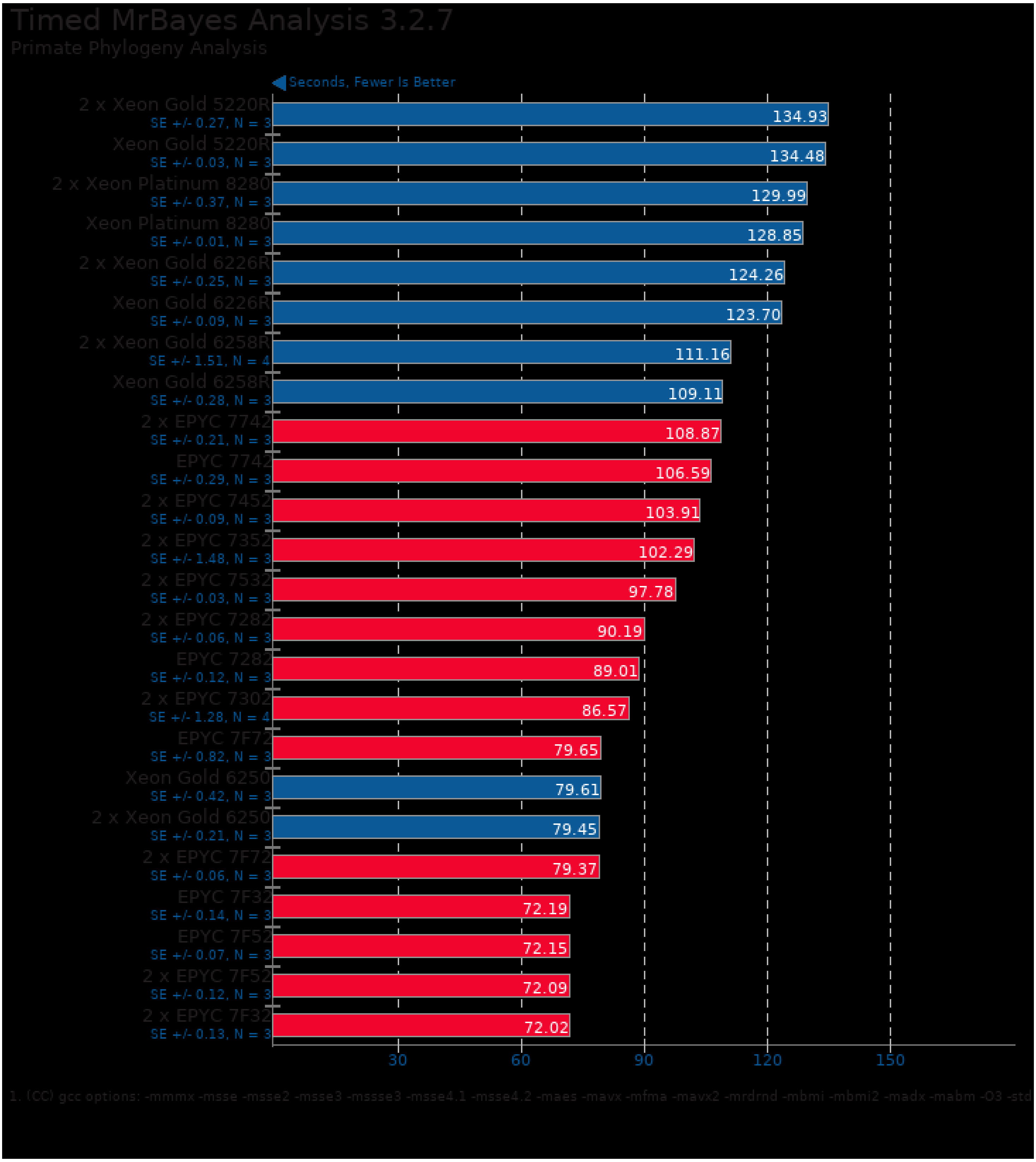
2.357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Primate Phylogeny Analysis
Seconds, Fewer Is Better
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134.93
Xeon Gold 5220R
SE +/- 0.03, N = 3
134.48
2 x Xeon Platinum 8280
SE +/- 0.37, N = 3
129.99
Xeon Platinum 8280
SE +/- 0.01, N = 3
128.85
2 x Xeon Gold 6226R
SE +/- 0.25, N = 3
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Xeon Gold 6226R
SE +/- 0.09, N = 3
123.70
2 x Xeon Gold 6258R
SE +/- 1.51, N = 4
111.16
Xeon Gold 6258R
SE +/- 0.28, N = 3
109.11
2 x EPYC 7742
SE +/- 0.21, N = 3
108.87
EPYC 7742
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106.59
2 x EPYC 7452
SE +/- 0.09, N = 3
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SE +/- 1.48, N = 3
102.29
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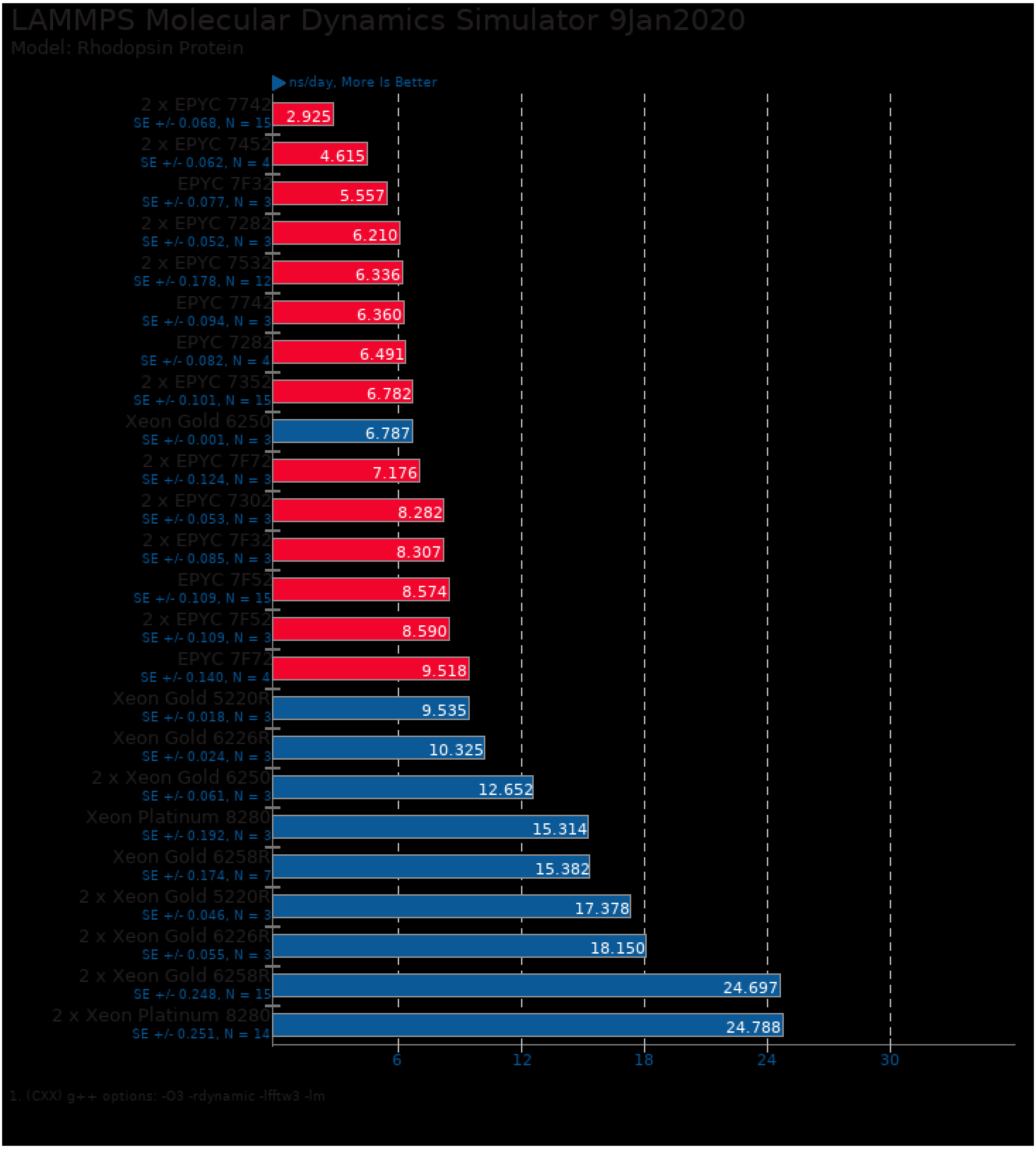
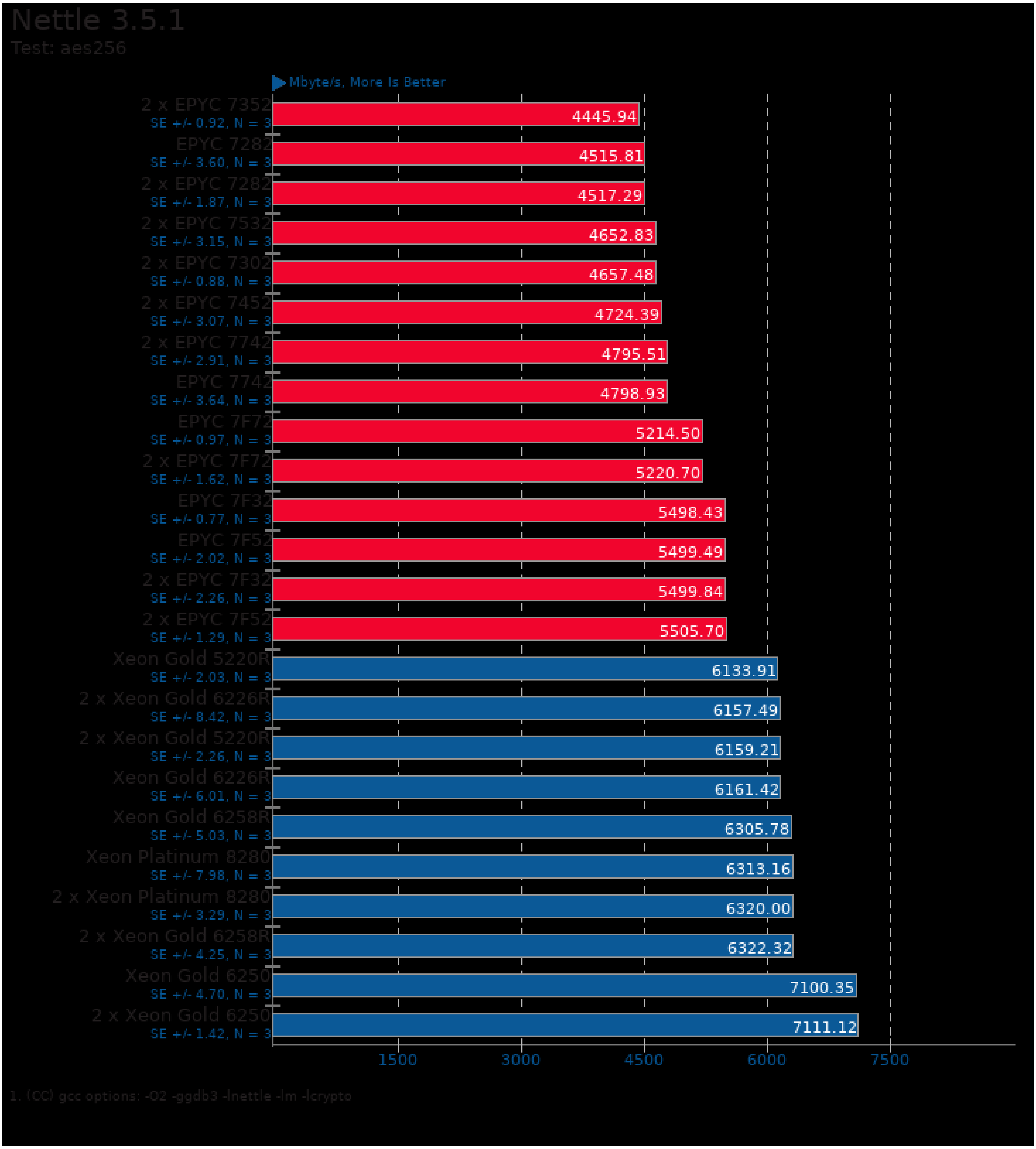
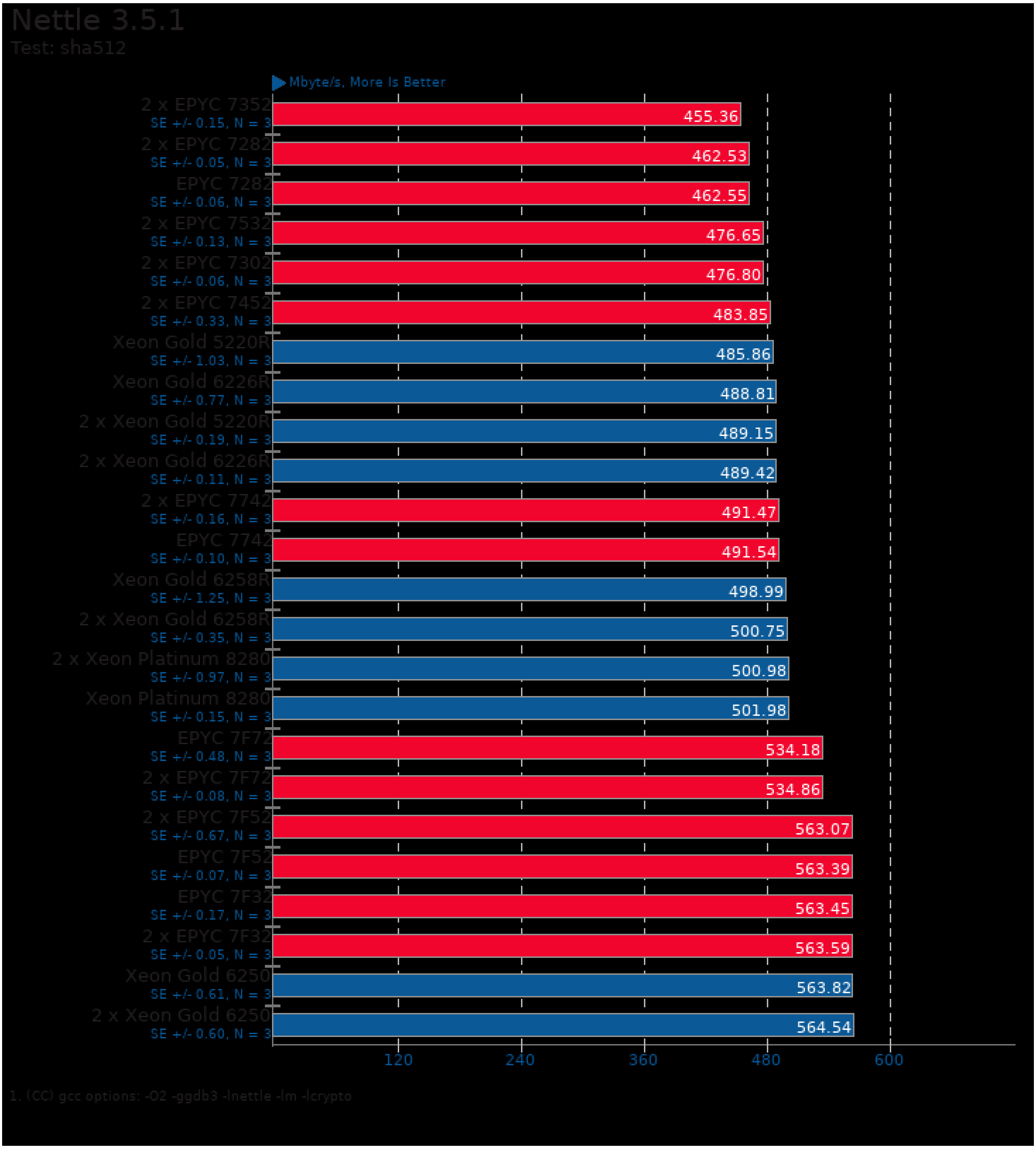
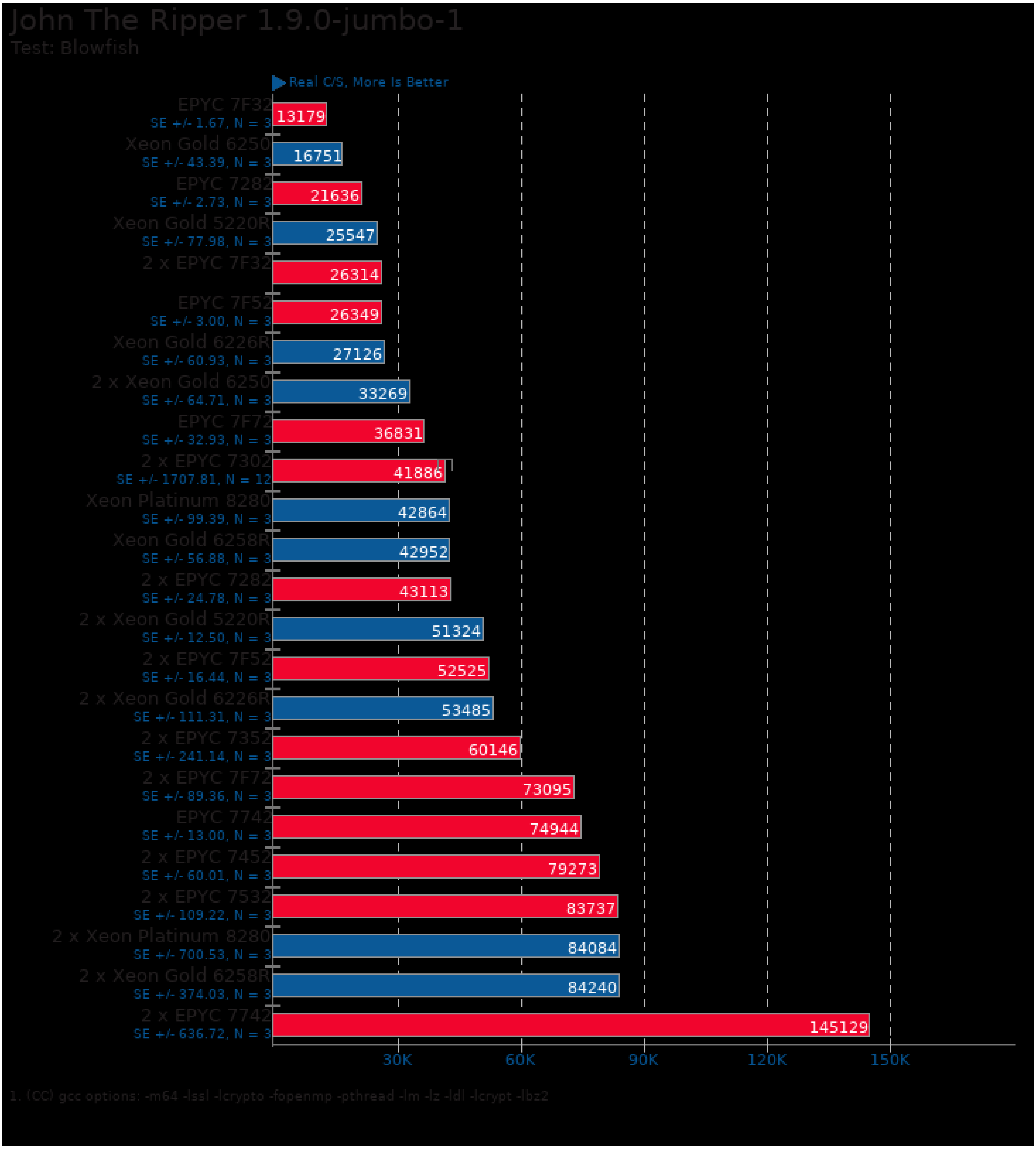
SE +/- 0.03, N = 3
97.78
2 x EPYC 7282
SE +/- 0.06, N = 3
90.19
EPYC 7282
SE +/- 0.12, N = 3
89.01
2 x EPYC 7302
SE +/- 1.28, N = 4
86.57
EPYC 7F72
SE +/- 0.82, N = 3
79.65
Xeon Gold 6250
SE +/- 0.42, N = 3
79.61
2 x Xeon Gold 6250
SE +/- 0.21, N = 3
79.45
2 x EPYC 7F72
SE +/- 0.06, N = 3
79.37
EPYC 7F32
SE +/- 0.14, N = 3
72.19
EPYC 7F52
SE +/- 0.07, N = 3
72.15
2 x EPYC 7F52
SE +/- 0.12, N = 3
72.09
2 x EPYC 7F32
SE +/- 0.13, N = 3
72.02
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

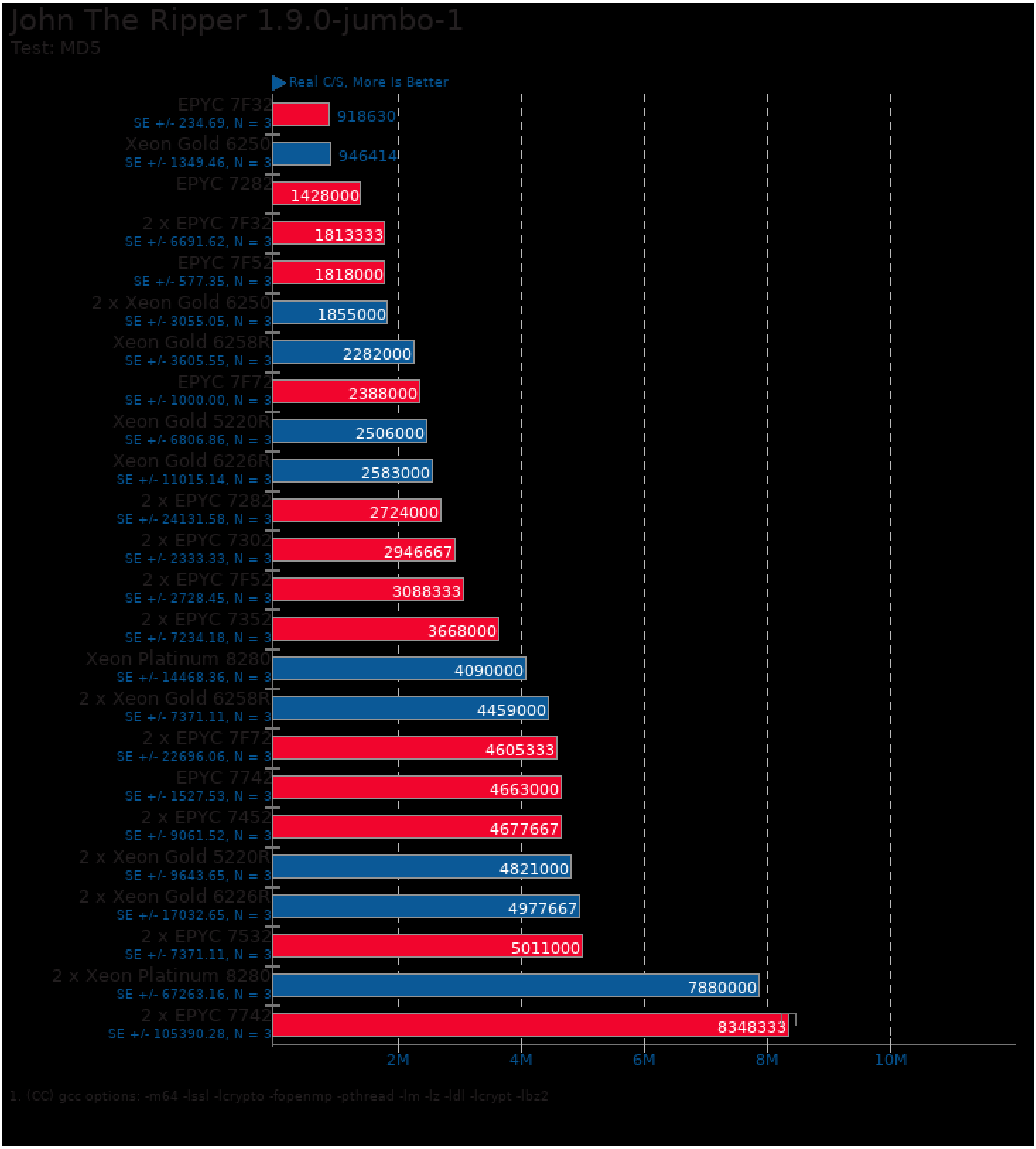

LAMMPS Molecular Dynamics Simulator 9Jan2020
Model: Rhodopsin Protein
ns/day, More Is Better
2 x EPYC 7742
SE +/- 0.068, N = 15
2.925
2 x EPYC 7452
SE +/- 0.062, N = 4
4.615
EPYC 7F32
SE +/- 0.077, N = 3
5.557
2 x EPYC 7282
SE +/- 0.052, N = 3
6.210
2 x EPYC 7532
SE +/- 0.178, N = 12
6.336
EPYC 7742
SE +/- 0.094, N = 3
6.360
EPYC 7282
SE +/- 0.082, N = 4
6.491
2 x EPYC 7352
SE +/- 0.101, N = 15
6.782
Xeon Gold 6250
SE +/- 0.001, N = 3
6.787
2 x EPYC 7F72
SE +/- 0.124, N = 3
7.176
2 x EPYC 7302
SE +/- 0.053, N = 3
8.282
2 x EPYC 7F32
SE +/- 0.085, N = 3
8.307
EPYC 7F52
SE +/- 0.109, N = 15
8.574
2 x EPYC 7F52
SE +/- 0.109, N = 3
8.590
EPYC 7F72
SE +/- 0.140, N = 4
9.518
Xeon Gold 5220R
SE +/- 0.018, N = 3
9.535
Xeon Gold 6226R
SE +/- 0.024, N = 3
10.325
2 x Xeon Gold 6250
SE +/- 0.061, N = 3
12.652
Xeon Platinum 8280
SE +/- 0.192, N = 3
15.314
Xeon Gold 6258R
SE +/- 0.174, N = 7
15.382
2 x Xeon Gold 5220R
SE +/- 0.046, N = 3
17.378
2 x Xeon Gold 6226R
SE +/- 0.055, N = 3
18.150
2 x Xeon Gold 6258R
SE +/- 0.248, N = 15
24.697
2 x Xeon Platinum 8280
SE +/- 0.251, N = 14
24.788
6
12
18
24
30
1. (CXX) g++ options: -O3 -rdynamic -lfftw3 -lm

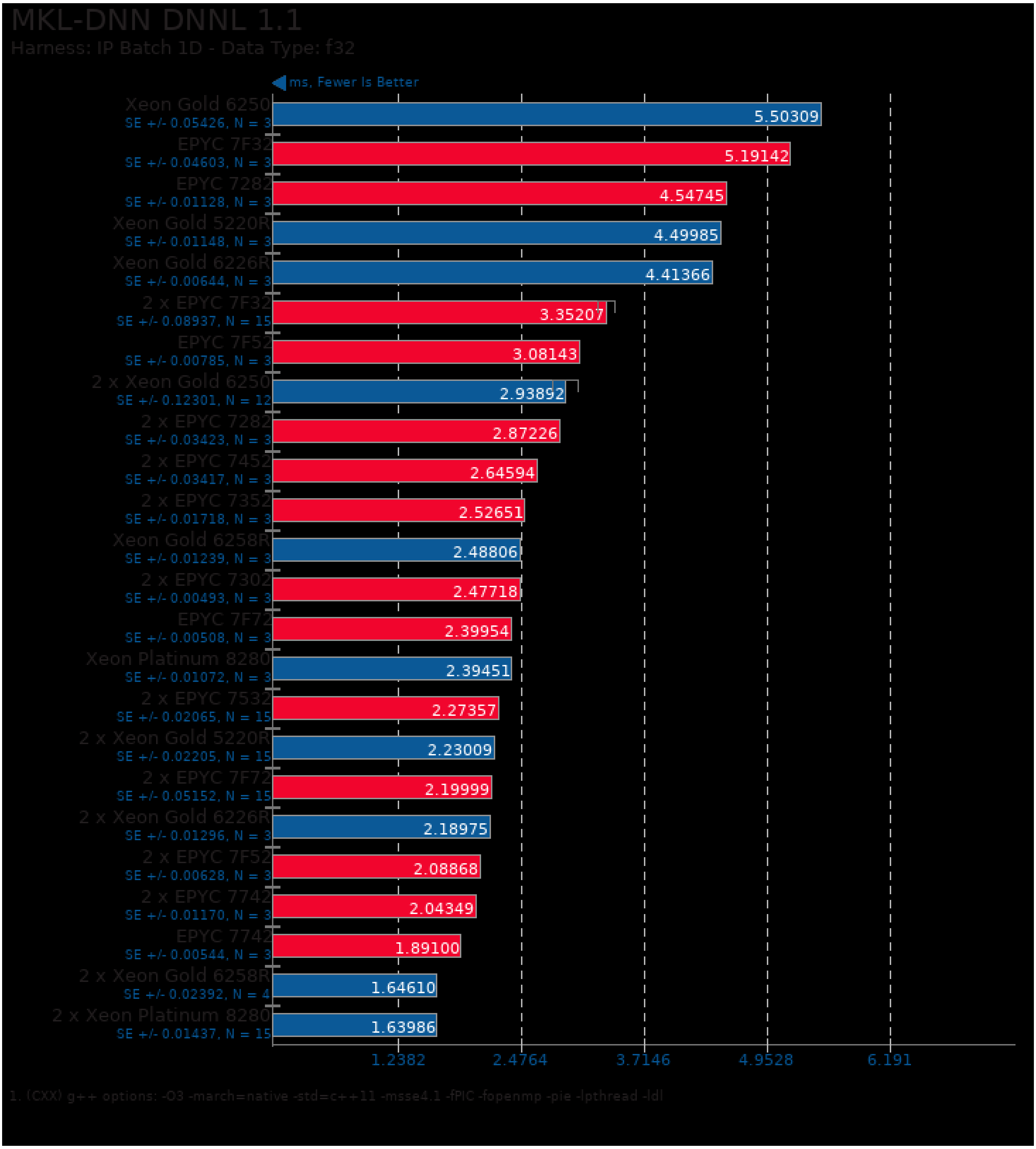

Nettle 3.5.1
Test: aes256
Mbyte/s, More Is Better
2 x EPYC 7352
SE +/- 0.92, N = 3
4445.94
EPYC 7282
SE +/- 3.60, N = 3
4515.81
2 x EPYC 7282
SE +/- 1.87, N = 3
4517.29
2 x EPYC 7532
SE +/- 3.15, N = 3
4652.83
2 x EPYC 7302
SE +/- 0.88, N = 3
4657.48
2 x EPYC 7452
SE +/- 3.07, N = 3
4724.39
2 x EPYC 7742
SE +/- 2.91, N = 3
4795.51
EPYC 7742
SE +/- 3.64, N = 3
4798.93
EPYC 7F72
SE +/- 0.97, N = 3
5214.50
2 x EPYC 7F72
SE +/- 1.62, N = 3
5220.70
EPYC 7F32
SE +/- 0.77, N = 3
5498.43
EPYC 7F52
SE +/- 2.02, N = 3
5499.49
2 x EPYC 7F32
SE +/- 2.26, N = 3
5499.84
2 x EPYC 7F52
SE +/- 1.29, N = 3
5505.70
Xeon Gold 5220R
SE +/- 2.03, N = 3
6133.91
2 x Xeon Gold 6226R
SE +/- 8.42, N = 3
6157.49
2 x Xeon Gold 5220R
SE +/- 2.26, N = 3
6159.21
Xeon Gold 6226R
SE +/- 6.01, N = 3
6161.42
Xeon Gold 6258R
SE +/- 5.03, N = 3
6305.78
Xeon Platinum 8280
SE +/- 7.98, N = 3
6313.16
2 x Xeon Platinum 8280
SE +/- 3.29, N = 3
6320.00
2 x Xeon Gold 6258R
SE +/- 4.25, N = 3
6322.32
Xeon Gold 6250
SE +/- 4.70, N = 3
7100.35
2 x Xeon Gold 6250
SE +/- 1.42, N = 3
7111.12
1500
3000
4500
6000
7500
1. (CC) gcc options: -O2 -ggdb3 -lnettle -lm -lcrypto

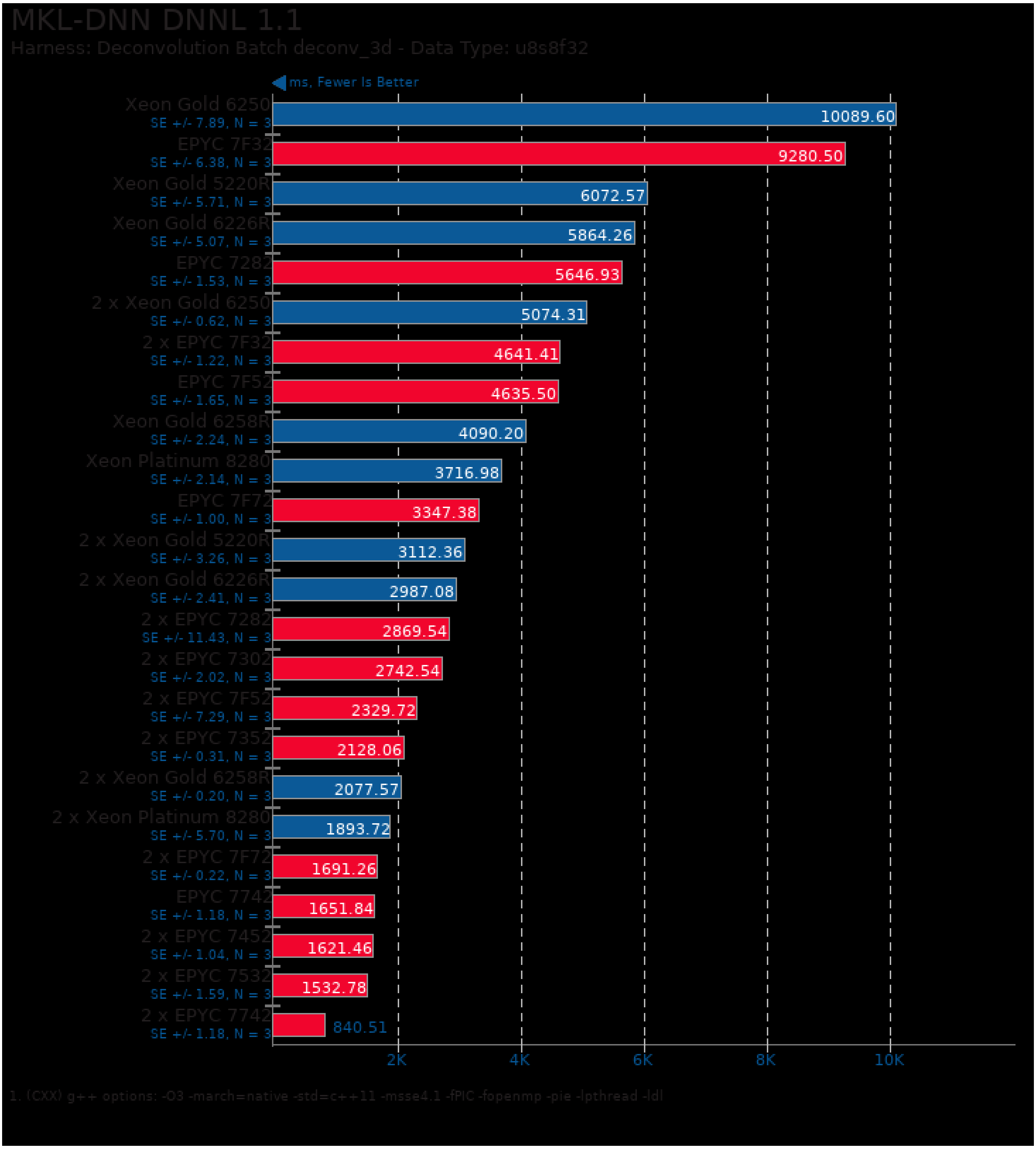
Xeon Cascade Lake Refresh vs. AMD EPYC Rome Linux Benchmarks

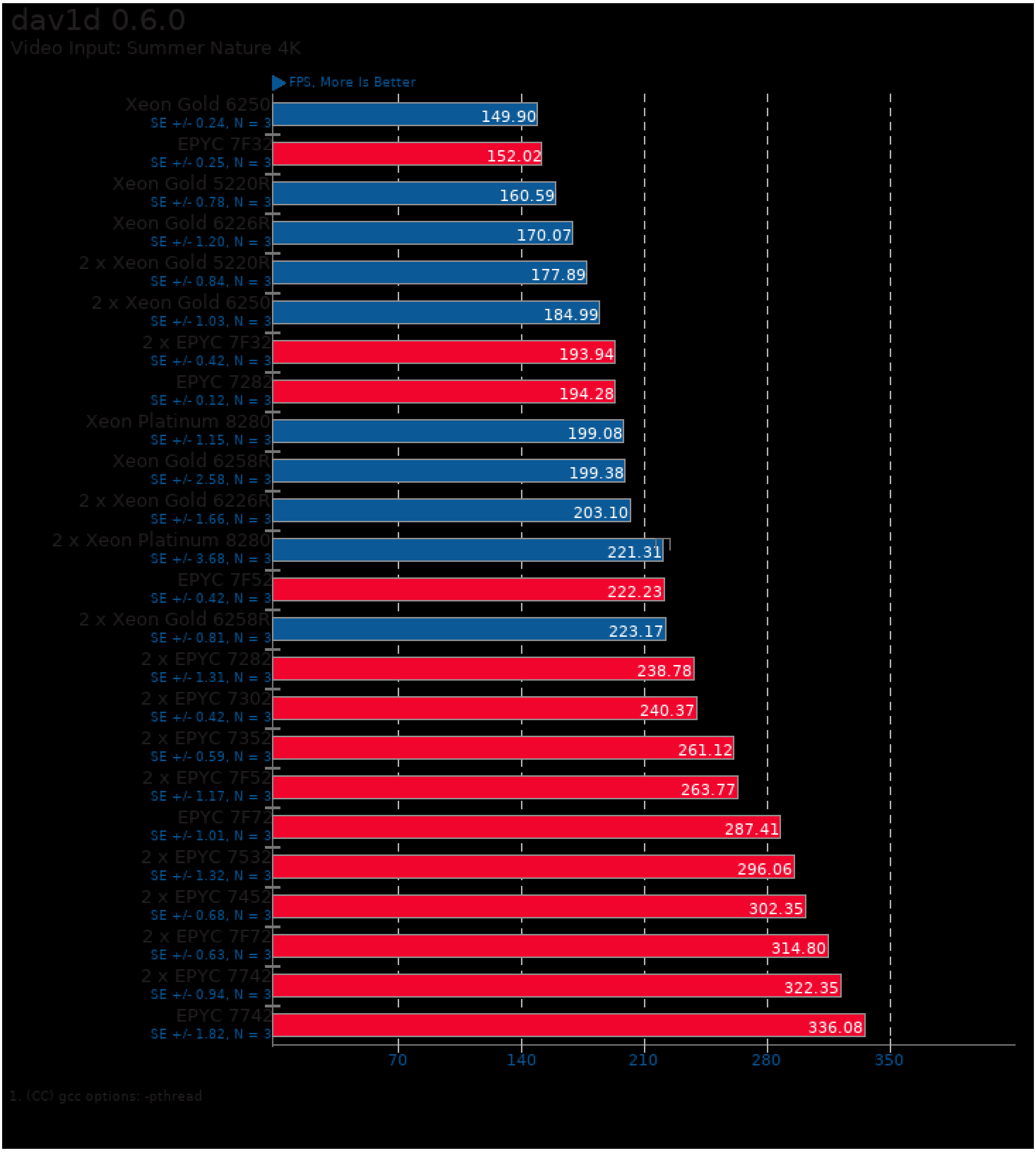



John The Ripper 1.9.0-jumbo-1
Test: Blowfish
Real C/S, More Is Better
EPYC 7F32
SE +/- 1.67, N = 3
13179
Xeon Gold 6250
SE +/- 43.39, N = 3
16751
EPYC 7282
SE +/- 2.73, N = 3
21636
Xeon Gold 5220R
SE +/- 77.98, N = 3
25547
2 x EPYC 7F32
26314
EPYC 7F52
SE +/- 3.00, N = 3
26349
Xeon Gold 6226R
SE +/- 60.93, N = 3
27126
2 x Xeon Gold 6250
SE +/- 64.71, N = 3
33269
EPYC 7F72
SE +/- 32.93, N = 3
36831
2 x EPYC 7302
SE +/- 1707.81, N = 12
41886
Xeon Platinum 8280
SE +/- 99.39, N = 3
42864
Xeon Gold 6258R
SE +/- 56.88, N = 3
42952
2 x EPYC 7282
SE +/- 24.78, N = 3
43113
2 x Xeon Gold 5220R
SE +/- 12.50, N = 3
51324
2 x EPYC 7F52
SE +/- 16.44, N = 3
52525
2 x Xeon Gold 6226R
SE +/- 111.31, N = 3
53485
2 x EPYC 7352
SE +/- 241.14, N = 3
60146
2 x EPYC 7F72
SE +/- 89.36, N = 3
73095
EPYC 7742
SE +/- 13.00, N = 3
74944
2 x EPYC 7452
SE +/- 60.01, N = 3
79273
2 x EPYC 7532
SE +/- 109.22, N = 3
83737
2 x Xeon Platinum 8280
SE +/- 700.53, N = 3
84084
2 x Xeon Gold 6258R
SE +/- 374.03, N = 3
84240
2 x EPYC 7742
SE +/- 636.72, N = 3
145129
30K
60K
90K
120K
150K
1. (CC) gcc options: -m64 -lssl -lcrypto -fopenmp -pthread -lm -lz -ldl -lcrypt -lbz2

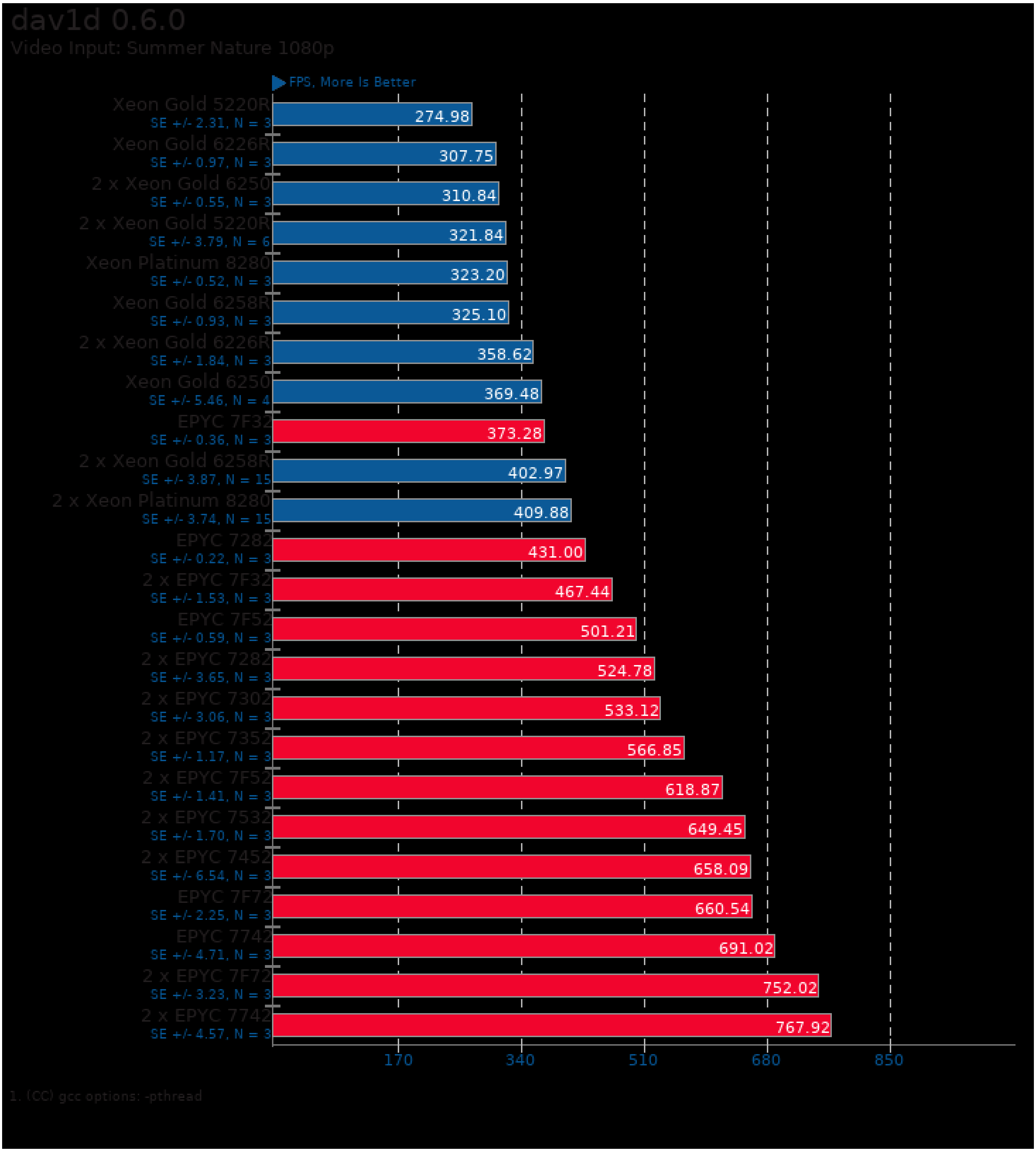

John The Ripper 1.9.0-jumbo-1
Test: MD5
Real C/S, More Is Better
EPYC 7F32
SE +/- 234.69, N = 3
918630
Xeon Gold 6250
SE +/- 1349.46, N = 3
946414
EPYC 7282
1428000
2 x EPYC 7F32
SE +/- 6691.62, N = 3
1813333
EPYC 7F52
SE +/- 577.35, N = 3
1818000
2 x Xeon Gold 6250
SE +/- 3055.05, N = 3
1855000
Xeon Gold 6258R
SE +/- 3605.55, N = 3
2282000
EPYC 7F72
SE +/- 1000.00, N = 3
2388000
Xeon Gold 5220R
SE +/- 6806.86, N = 3
2506000
Xeon Gold 6226R
SE +/- 11015.14, N = 3
2583000
2 x EPYC 7282
SE +/- 24131.58, N = 3
2724000
2 x EPYC 7302
SE +/- 2333.33, N = 3
2946667
2 x EPYC 7F52
SE +/- 2728.45, N = 3
3088333
2 x EPYC 7352
SE +/- 7234.18, N = 3
3668000
Xeon Platinum 8280
SE +/- 14468.36, N = 3
4090000
2 x Xeon Gold 6258R
SE +/- 7371.11, N = 3
4459000
2 x EPYC 7F72
SE +/- 22696.06, N = 3
4605333
EPYC 7742
SE +/- 1527.53, N = 3
4663000
2 x EPYC 7452
SE +/- 9061.52, N = 3
4677667
2 x Xeon Gold 5220R
SE +/- 9643.65, N = 3
4821000
2 x Xeon Gold 6226R
SE +/- 17032.65, N = 3
4977667
2 x EPYC 7532
SE +/- 7371.11, N = 3
5011000
2 x Xeon Platinum 8280
SE +/- 67263.16, N = 3
7880000
2 x EPYC 7742
SE +/- 105390.28, N = 3
8348333
2M
4M
6M
8M
10M
1. (CC) gcc options: -m64 -lssl -lcrypto -fopenmp -pthread -lm -lz -ldl -lcrypt -lbz2

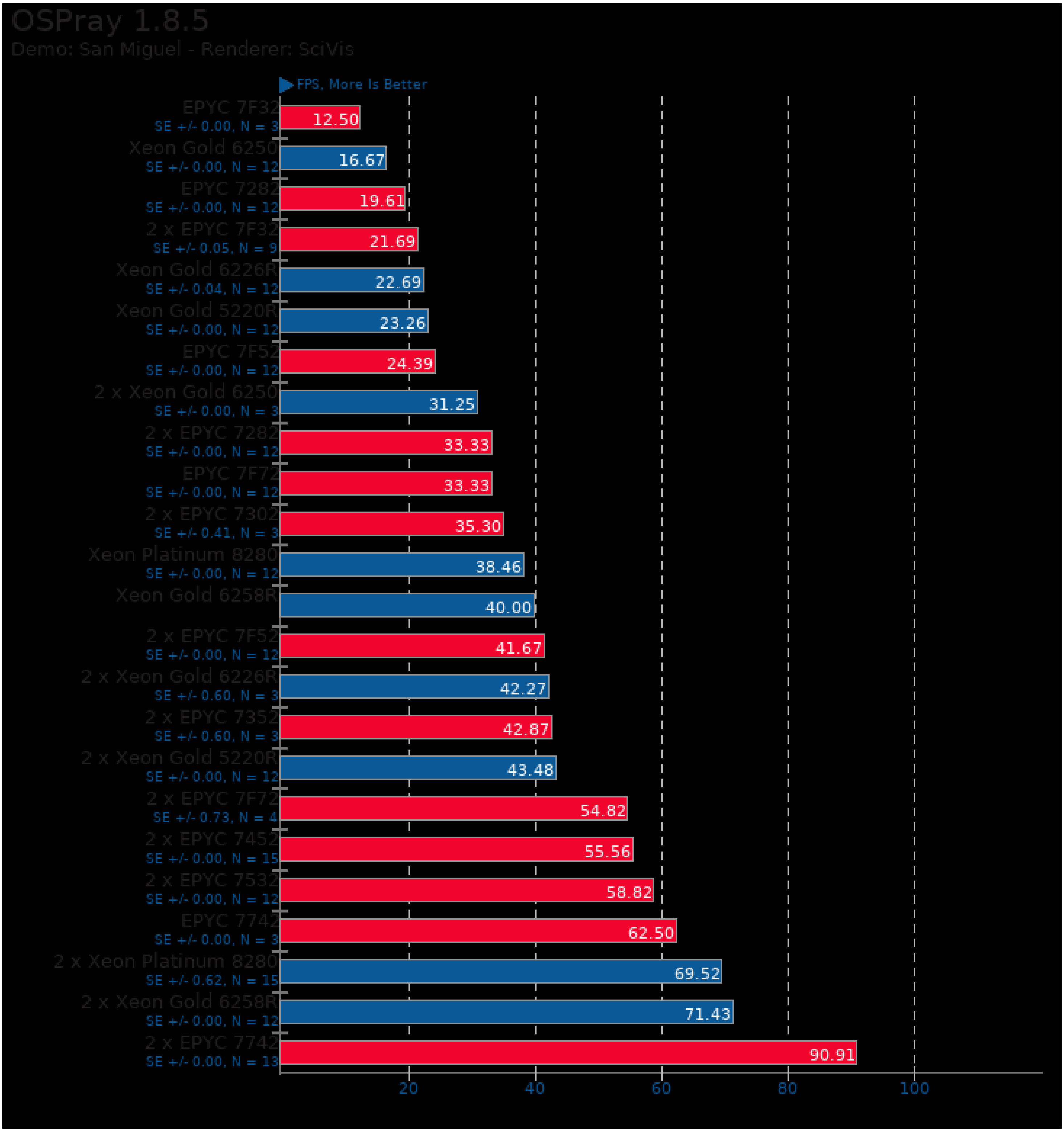

MKL-DNN DNNL 1.1
Harness: IP Batch 1D - Data Type: f32
ms, Fewer Is Better
Xeon Gold 6250
SE +/- 0.05426, N = 3
5.50309
EPYC 7F32
SE +/- 0.04603, N = 3
5.19142
EPYC 7282
SE +/- 0.01128, N = 3
4.54745
Xeon Gold 5220R
SE +/- 0.01148, N = 3
4.49985
Xeon Gold 6226R
SE +/- 0.00644, N = 3
4.41366
2 x EPYC 7F32
SE +/- 0.08937, N = 15
3.35207
EPYC 7F52
SE +/- 0.00785, N = 3
3.08143
2 x Xeon Gold 6250
SE +/- 0.12301, N = 12
2.93892
2 x EPYC 7282
SE +/- 0.03423, N = 3
2.87226
2 x EPYC 7452
SE +/- 0.03417, N = 3
2.64594
2 x EPYC 7352
SE +/- 0.01718, N = 3
2.52651
Xeon Gold 6258R
SE +/- 0.01239, N = 3
2.48806
2 x EPYC 7302
SE +/- 0.00493, N = 3
2.47718
EPYC 7F72
SE +/- 0.00508, N = 3
2.39954
Xeon Platinum 8280
SE +/- 0.01072, N = 3
2.39451
2 x EPYC 7532
SE +/- 0.02065, N = 15
2.27357
2 x Xeon Gold 5220R
SE +/- 0.02205, N = 15
2.23009
2 x EPYC 7F72
SE +/- 0.05152, N = 15
2.19999
2 x Xeon Gold 6226R
SE +/- 0.01296, N = 3
2.18975
2 x EPYC 7F52
SE +/- 0.00628, N = 3
2.08868
2 x EPYC 7742
SE +/- 0.01170, N = 3
2.04349
EPYC 7742
SE +/- 0.00544, N = 3
1.89100
2 x Xeon Gold 6258R
SE +/- 0.02392, N = 4
1.64610
2 x Xeon Platinum 8280
SE +/- 0.01437, N = 15
1.63986
1.2382
2.4764
3.7146
4.9528
6.191
1. (CXX) g++ options: -O3 -march=native -std=c++11 -msse4.1 -fPIC -fopenmp -pie -lpthread -ldl

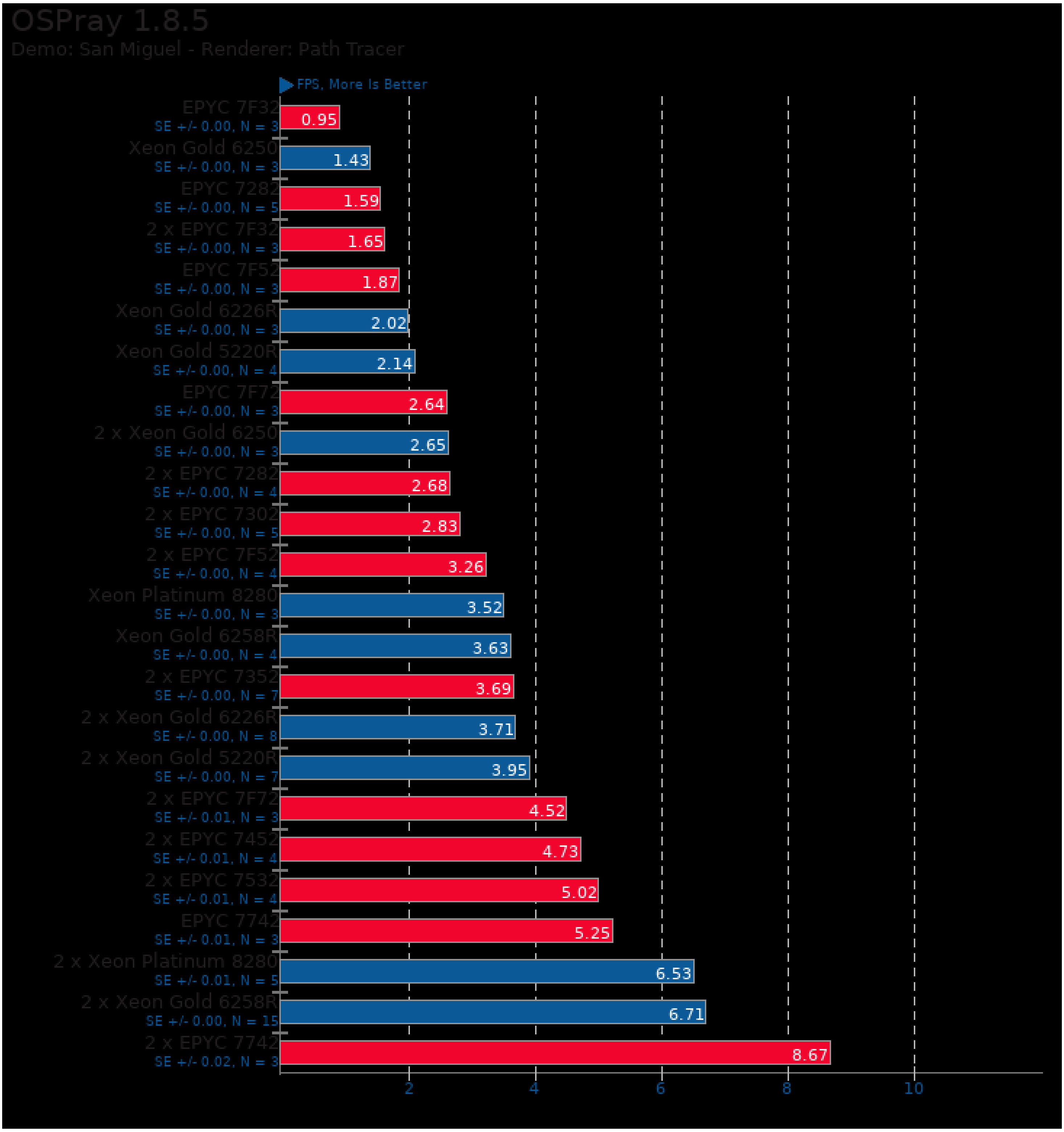

MKL-DNN DNNL 1.1
Harness: Deconvolution Batch deconv_3d - Data Type: u8s8f32
ms, Fewer Is Better
Xeon Gold 6250
SE +/- 7.89, N = 3
10089.60
EPYC 7F32
SE +/- 6.38, N = 3
9280.50
Xeon Gold 5220R
SE +/- 5.71, N = 3
6072.57
Xeon Gold 6226R
SE +/- 5.07, N = 3
5864.26
EPYC 7282
SE +/- 1.53, N = 3
5646.93
2 x Xeon Gold 6250
SE +/- 0.62, N = 3
5074.31
2 x EPYC 7F32
SE +/- 1.22, N = 3
4641.41
EPYC 7F52
SE +/- 1.65, N = 3
4635.50
Xeon Gold 6258R
SE +/- 2.24, N = 3
4090.20
Xeon Platinum 8280
SE +/- 2.14, N = 3
3716.98
EPYC 7F72
SE +/- 1.00, N = 3
3347.38
2 x Xeon Gold 5220R
SE +/- 3.26, N = 3
3112.36
2 x Xeon Gold 6226R
SE +/- 2.41, N = 3
2987.08
2 x EPYC 7282
SE +/- 11.43, N = 3
2869.54
2 x EPYC 7302
SE +/- 2.02, N = 3
2742.54
2 x EPYC 7F52
SE +/- 7.29, N = 3
2329.72
2 x EPYC 7352
SE +/- 0.31, N = 3
2128.06
2 x Xeon Gold 6258R
SE +/- 0.20, N = 3
2077.57
2 x Xeon Platinum 8280
SE +/- 5.70, N = 3
1893.72
2 x EPYC 7F72
SE +/- 0.22, N = 3
1691.26
EPYC 7742
SE +/- 1.18, N = 3
1651.84
2 x EPYC 7452
SE +/- 1.04, N = 3
1621.46
2 x EPYC 7532
SE +/- 1.59, N = 3
1532.78
2 x EPYC 7742
SE +/- 1.18, N = 3
840.51
2K
4K
6K
8K
10K
1. (CXX) g++ options: -O3 -march=native -std=c++11 -msse4.1 -fPIC -fopenmp -pie -lpthread -ldl


dav1d 0.6.0
Video Input: Summer Nature 4K
FPS, More Is Better
Xeon Gold 6250
SE +/- 0.24, N = 3
149.90
EPYC 7F32
SE +/- 0.25, N = 3
152.02
Xeon Gold 5220R
SE +/- 0.78, N = 3
160.59
Xeon Gold 6226R
SE +/- 1.20, N = 3
170.07
2 x Xeon Gold 5220R
SE +/- 0.84, N = 3
177.89
2 x Xeon Gold 6250
SE +/- 1.03, N = 3
184.99
2 x EPYC 7F32
SE +/- 0.42, N = 3
193.94
EPYC 7282
SE +/- 0.12, N = 3
194.28
Xeon Platinum 8280
SE +/- 1.15, N = 3
199.08
Xeon Gold 6258R
SE +/- 2.58, N = 3
199.38
2 x Xeon Gold 6226R
SE +/- 1.66, N = 3
203.10
2 x Xeon Platinum 8280
SE +/- 3.68, N = 3
221.31
EPYC 7F52
SE +/- 0.42, N = 3
222.23
2 x Xeon Gold 6258R
SE +/- 0.81, N = 3
223.17
2 x EPYC 7282
SE +/- 1.31, N = 3
238.78
2 x EPYC 7302
SE +/- 0.42, N = 3
240.37
2 x EPYC 7352
SE +/- 0.59, N = 3
261.12
2 x EPYC 7F52
SE +/- 1.17, N = 3
263.77
EPYC 7F72
SE +/- 1.01, N = 3
287.41
2 x EPYC 7532
SE +/- 1.32, N = 3
296.06
2 x EPYC 7452
SE +/- 0.68, N = 3
302.35
2 x EPYC 7F72
SE +/- 0.63, N = 3
314.80
2 x EPYC 7742
SE +/- 0.94, N = 3
322.35
EPYC 7742
SE +/- 1.82, N = 3
336.08
70
140
210
280
350
1. (CC) gcc options: -pthread

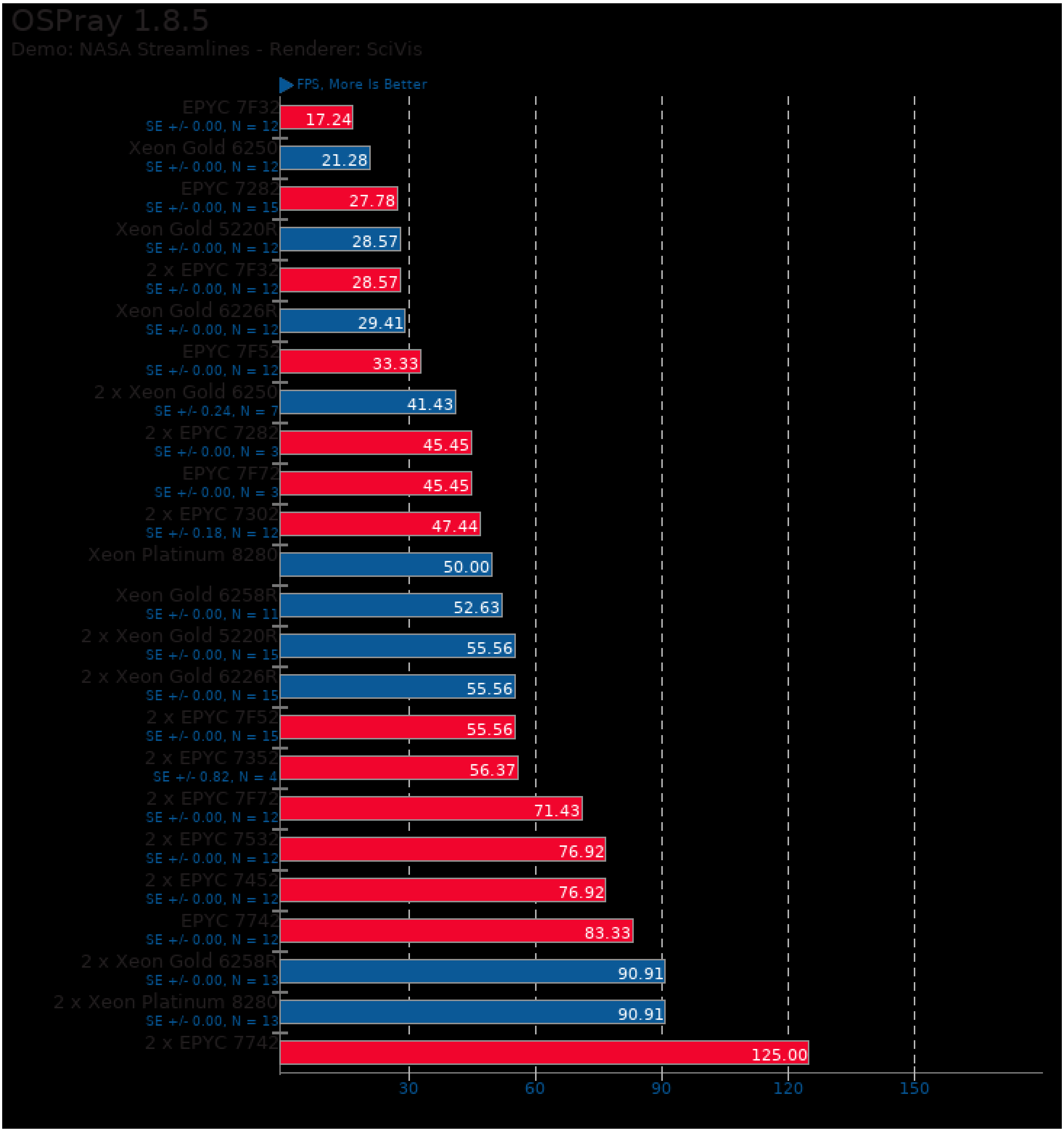
Xeon Cascade Lake Refresh vs. AMD EPYC Rome Linux Benchmarks

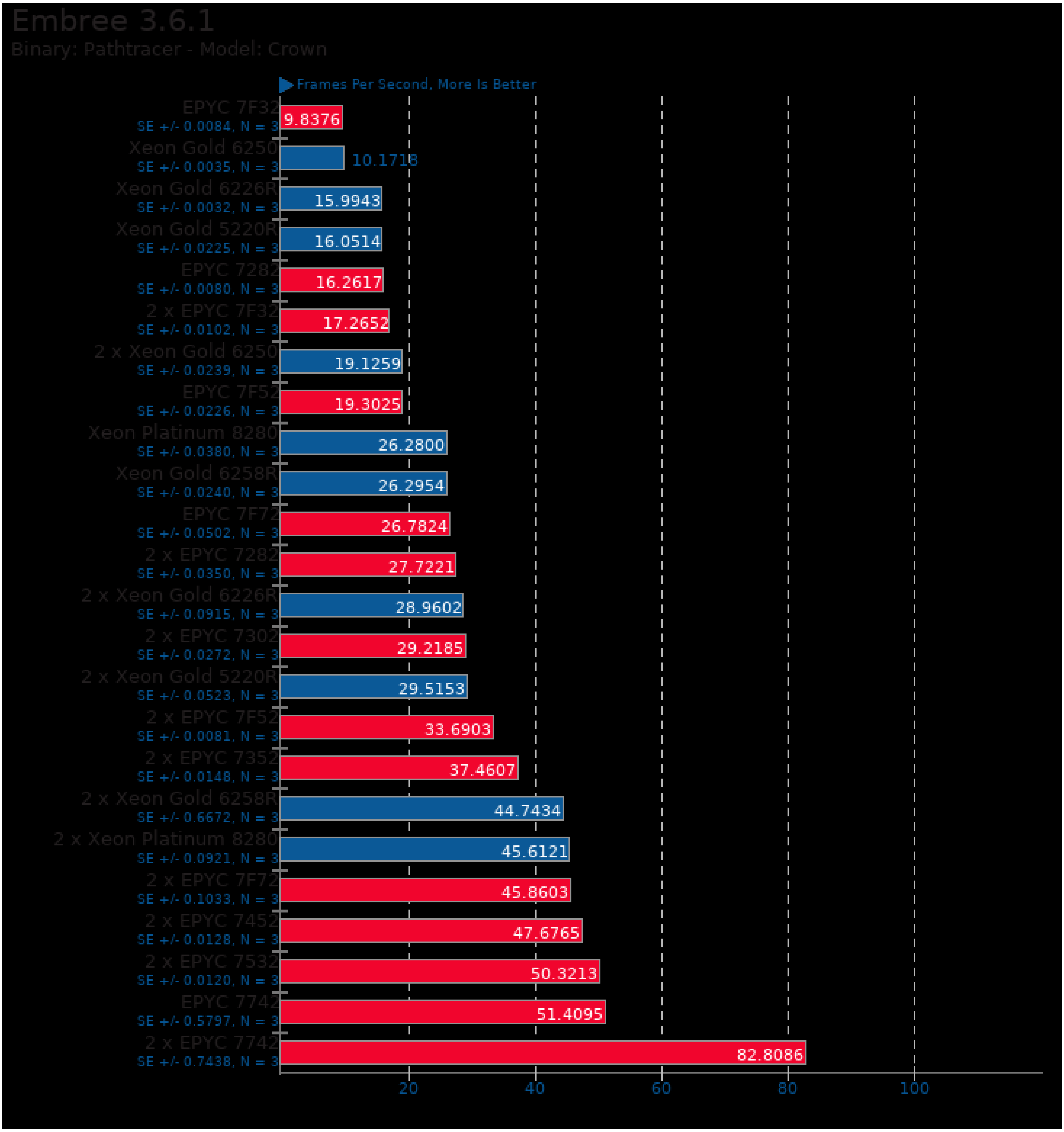


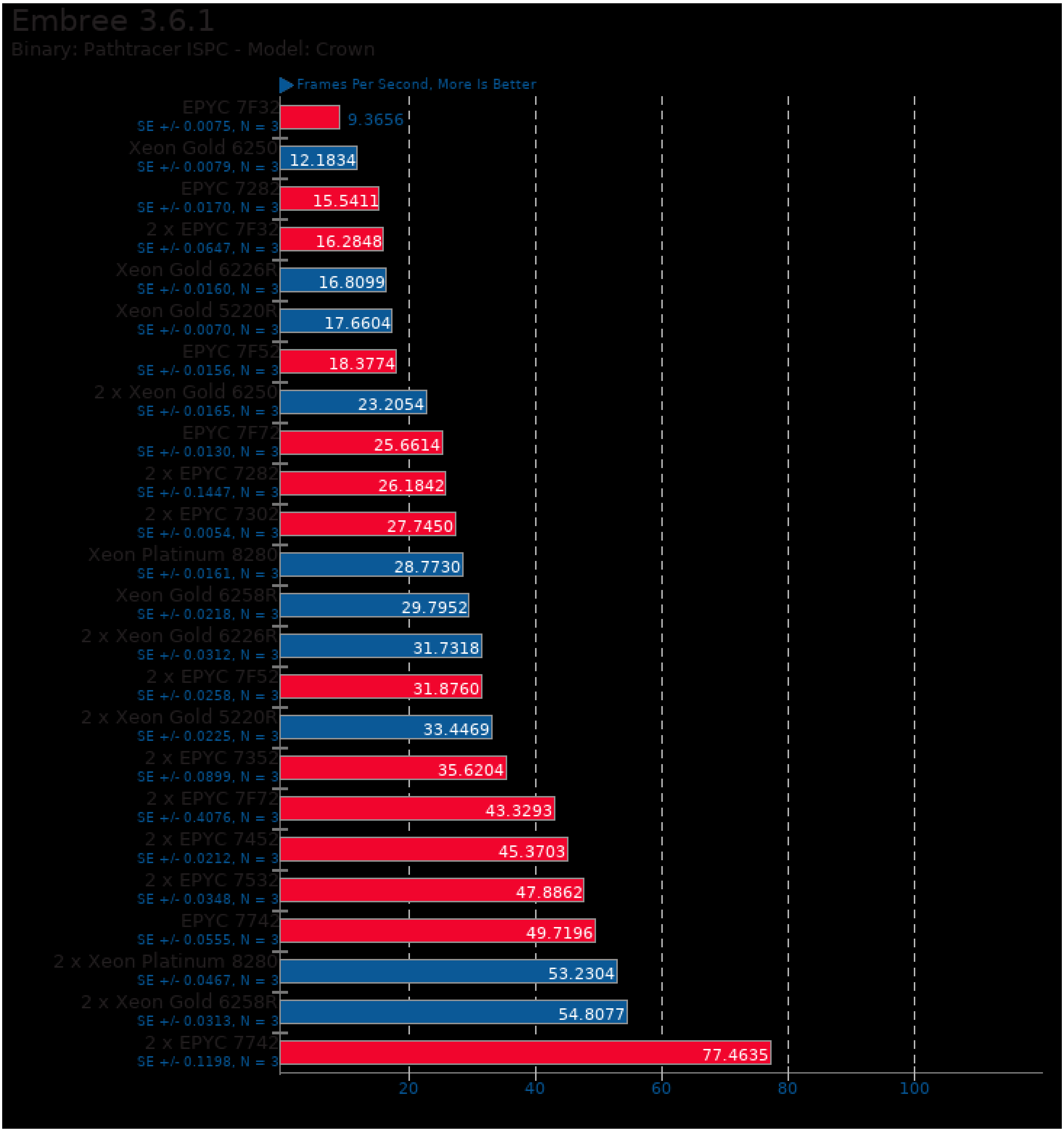

OSPray 1.8.5
Demo: San Miguel - Renderer: SciVis
FPS, More Is Better
EPYC 7F32
SE +/- 0.00, N = 3
12.50
Xeon Gold 6250
SE +/- 0.00, N = 12
16.67
EPYC 7282
SE +/- 0.00, N = 12
19.61
2 x EPYC 7F32
SE +/- 0.05, N = 9
21.69
Xeon Gold 6226R
SE +/- 0.04, N = 12
22.69
Xeon Gold 5220R
SE +/- 0.00, N = 12
23.26
EPYC 7F52
SE +/- 0.00, N = 12
24.39
2 x Xeon Gold 6250
SE +/- 0.00, N = 3
31.25
2 x EPYC 7282
SE +/- 0.00, N = 12
33.33
EPYC 7F72
SE +/- 0.00, N = 12
33.33
2 x EPYC 7302
SE +/- 0.41, N = 3
35.30
Xeon Platinum 8280
SE +/- 0.00, N = 12
38.46
Xeon Gold 6258R
40.00
2 x EPYC 7F52
SE +/- 0.00, N = 12
41.67
2 x Xeon Gold 6226R
SE +/- 0.60, N = 3
42.27
2 x EPYC 7352
SE +/- 0.60, N = 3
42.87
2 x Xeon Gold 5220R
SE +/- 0.00, N = 12
43.48
2 x EPYC 7F72
SE +/- 0.73, N = 4
54.82
2 x EPYC 7452
SE +/- 0.00, N = 15
55.56
2 x EPYC 7532
SE +/- 0.00, N = 12
58.82
EPYC 7742
SE +/- 0.00, N = 3
62.50
2 x Xeon Platinum 8280
SE +/- 0.62, N = 15
69.52
2 x Xeon Gold 6258R
SE +/- 0.00, N = 12
71.43
2 x EPYC 7742
SE +/- 0.00, N = 13
90.91
20
40
60
80
100

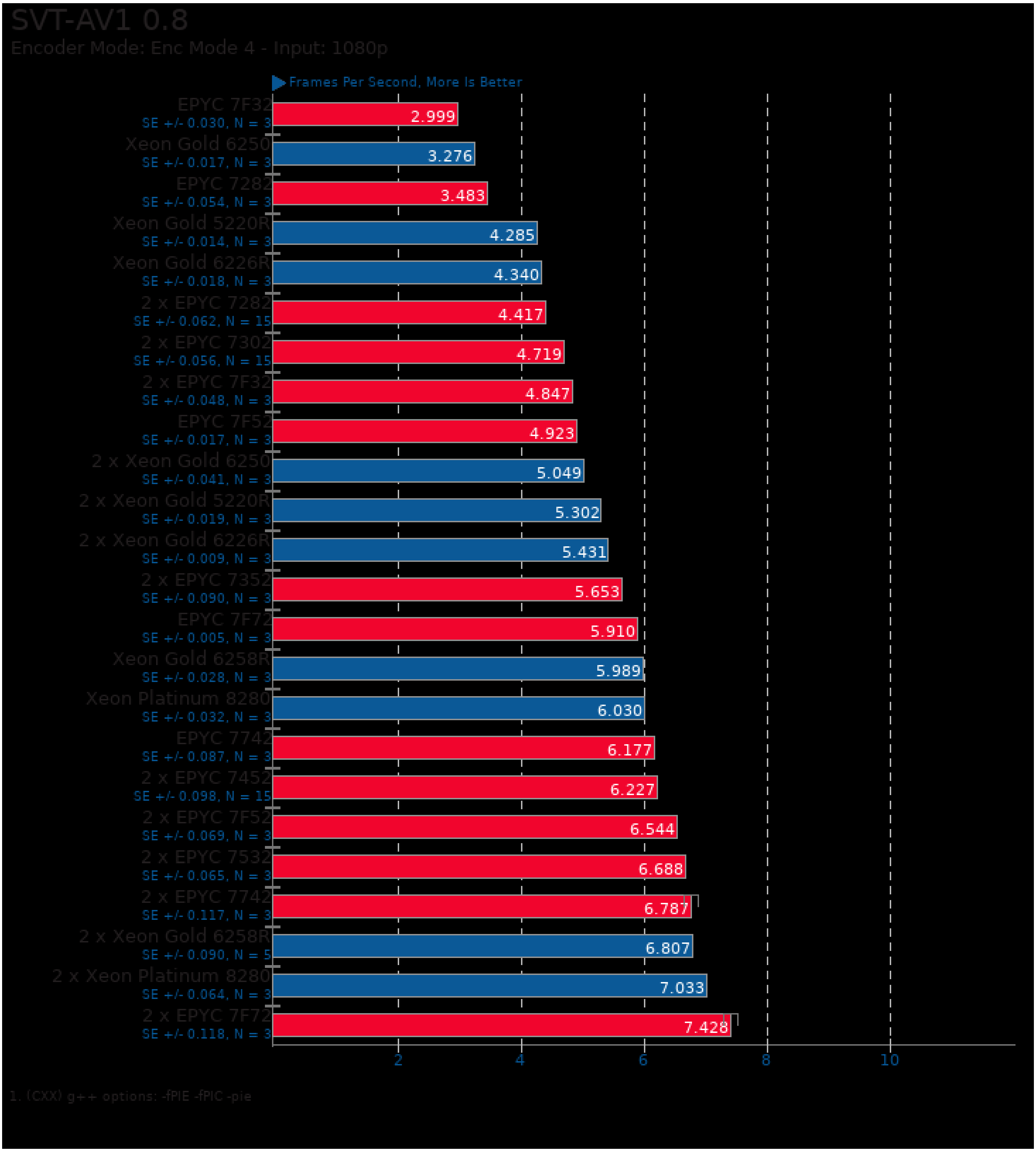

OSPray 1.8.5
Demo: San Miguel - Renderer: Path Tracer
FPS, More Is Better
EPYC 7F32
SE +/- 0.00, N = 3
0.95
Xeon Gold 6250
SE +/- 0.00, N = 3
1.43
EPYC 7282
SE +/- 0.00, N = 5
1.59
2 x EPYC 7F32
SE +/- 0.00, N = 3
1.65
EPYC 7F52
SE +/- 0.00, N = 3
1.87
Xeon Gold 6226R
SE +/- 0.00, N = 3
2.02
Xeon Gold 5220R
SE +/- 0.00, N = 4
2.14
EPYC 7F72
SE +/- 0.00, N = 3
2.64
2 x Xeon Gold 6250
SE +/- 0.00, N = 3
2.65
2 x EPYC 7282
SE +/- 0.00, N = 4
2.68
2 x EPYC 7302
SE +/- 0.00, N = 5
2.83
2 x EPYC 7F52
SE +/- 0.00, N = 4
3.26
Xeon Platinum 8280
SE +/- 0.00, N = 3
3.52
Xeon Gold 6258R
SE +/- 0.00, N = 4
3.63
2 x EPYC 7352
SE +/- 0.00, N = 7
3.69
2 x Xeon Gold 6226R
SE +/- 0.00, N = 8
3.71
2 x Xeon Gold 5220R
SE +/- 0.00, N = 7
3.95
2 x EPYC 7F72
SE +/- 0.01, N = 3
4.52
2 x EPYC 7452
SE +/- 0.01, N = 4
4.73
2 x EPYC 7532
SE +/- 0.01, N = 4
5.02
EPYC 7742
SE +/- 0.01, N = 3
5.25
2 x Xeon Platinum 8280
SE +/- 0.01, N = 5
6.53
2 x Xeon Gold 6258R
SE +/- 0.00, N = 15
6.71
2 x EPYC 7742
SE +/- 0.02, N = 3
8.67
2
4
6
8
10

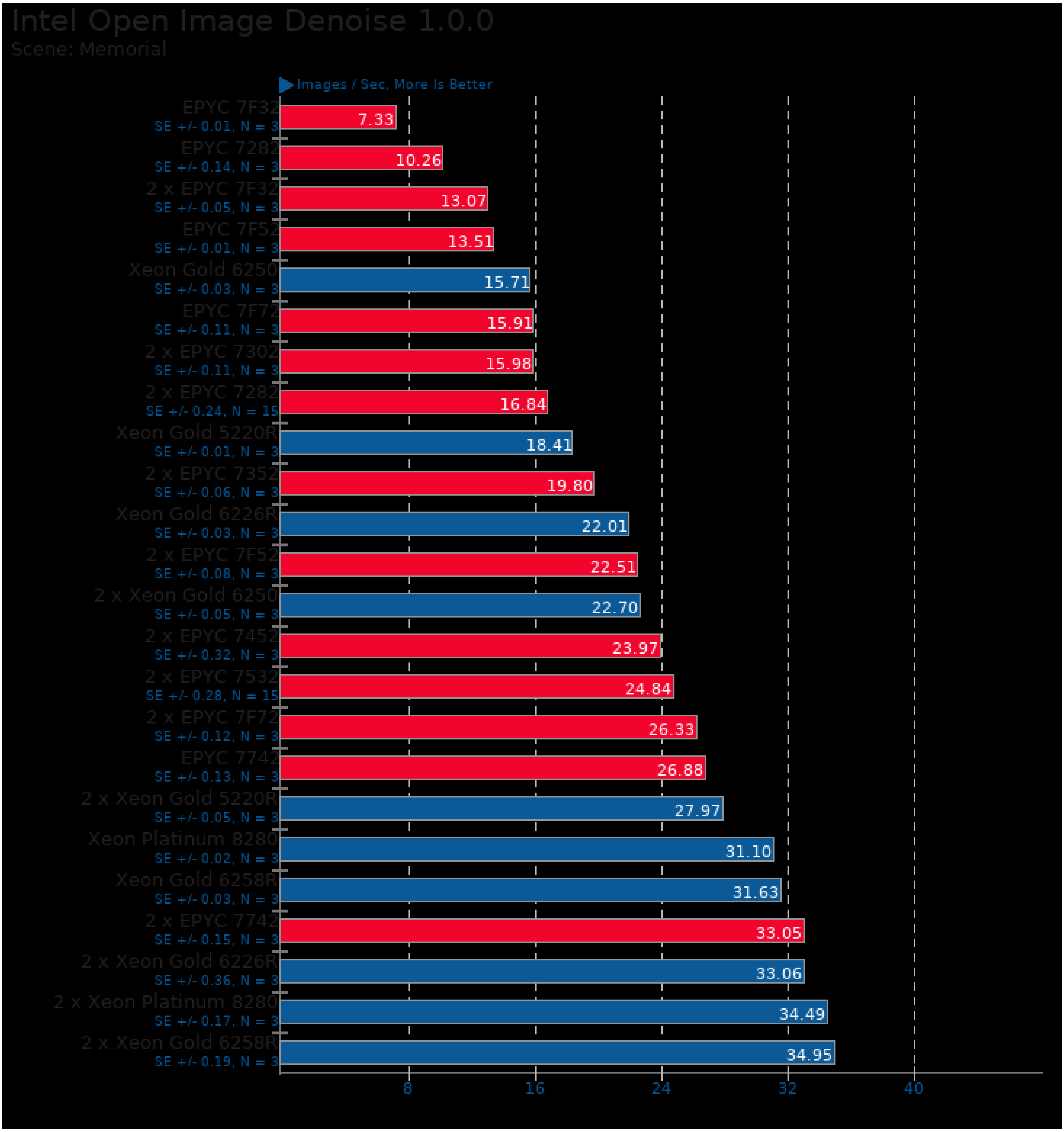
Xeon Cascade Lake Refresh vs. AMD EPYC Rome Linux Benchmarks

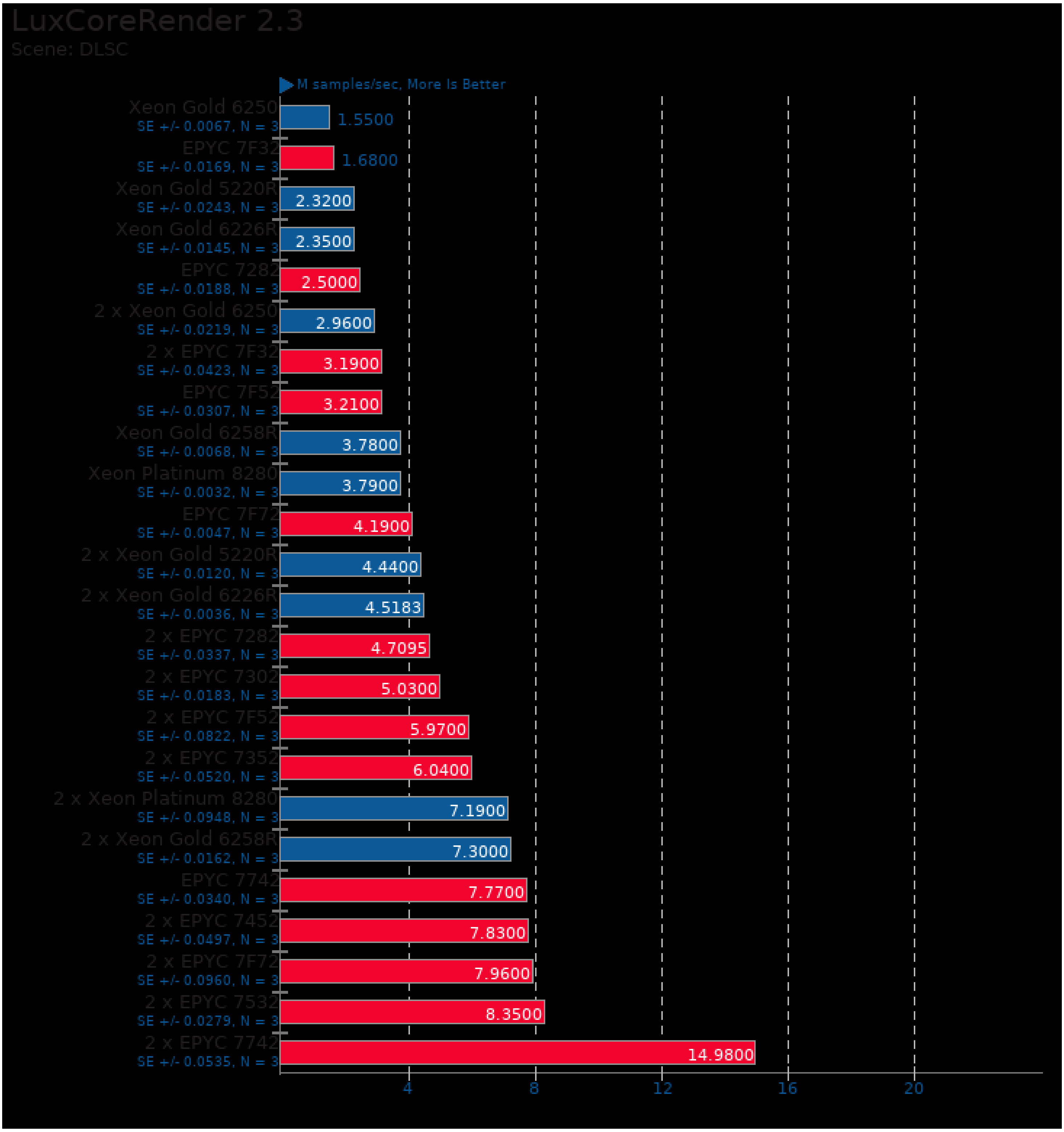


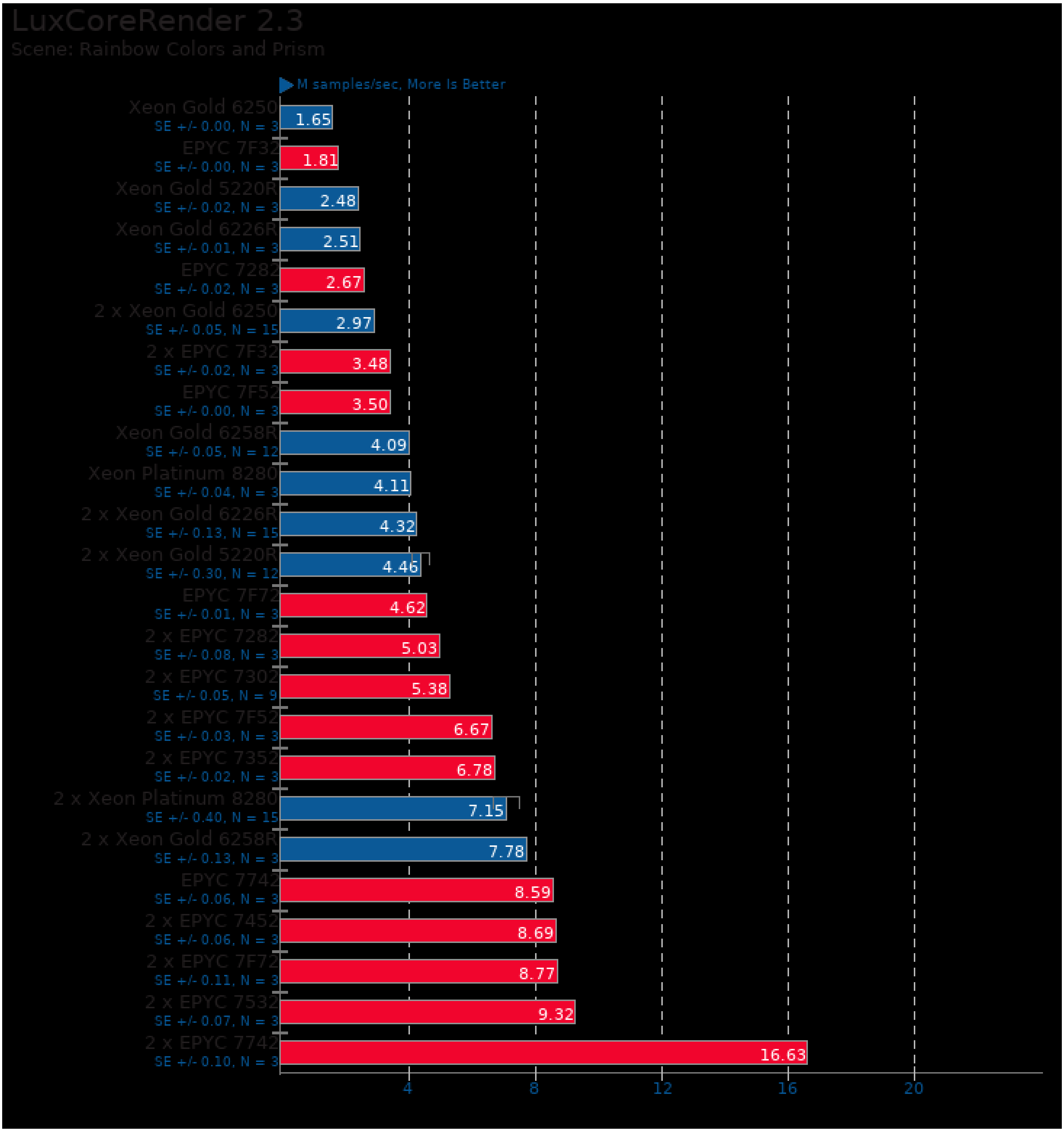

Embree 3.6.1
Binary: Pathtracer - Model: Crown
Frames Per Second, More Is Better
EPYC 7F32
SE +/- 0.0084, N = 3
9.8376
Xeon Gold 6250
SE +/- 0.0035, N = 3
10.1718
Xeon Gold 6226R
SE +/- 0.0032, N = 3
15.9943
Xeon Gold 5220R
SE +/- 0.0225, N = 3
16.0514
EPYC 7282
SE +/- 0.0080, N = 3
16.2617
2 x EPYC 7F32
SE +/- 0.0102, N = 3
17.2652
2 x Xeon Gold 6250
SE +/- 0.0239, N = 3
19.1259
EPYC 7F52
SE +/- 0.0226, N = 3
19.3025
Xeon Platinum 8280
SE +/- 0.0380, N = 3
26.2800
Xeon Gold 6258R
SE +/- 0.0240, N = 3
26.2954
EPYC 7F72
SE +/- 0.0502, N = 3
26.7824
2 x EPYC 7282
SE +/- 0.0350, N = 3
27.7221
2 x Xeon Gold 6226R
SE +/- 0.0915, N = 3
28.9602
2 x EPYC 7302
SE +/- 0.0272, N = 3
29.2185
2 x Xeon Gold 5220R
SE +/- 0.0523, N = 3
29.5153
2 x EPYC 7F52
SE +/- 0.0081, N = 3
33.6903
2 x EPYC 7352
SE +/- 0.0148, N = 3
37.4607
2 x Xeon Gold 6258R
SE +/- 0.6672, N = 3
44.7434
2 x Xeon Platinum 8280
SE +/- 0.0921, N = 3
45.6121
2 x EPYC 7F72
SE +/- 0.1033, N = 3
45.8603
2 x EPYC 7452
SE +/- 0.0128, N = 3
47.6765
2 x EPYC 7532
SE +/- 0.0120, N = 3
50.3213
EPYC 7742
SE +/- 0.5797, N = 3
51.4095
2 x EPYC 7742
SE +/- 0.7438, N = 3
82.8086
20
40
60
80
100

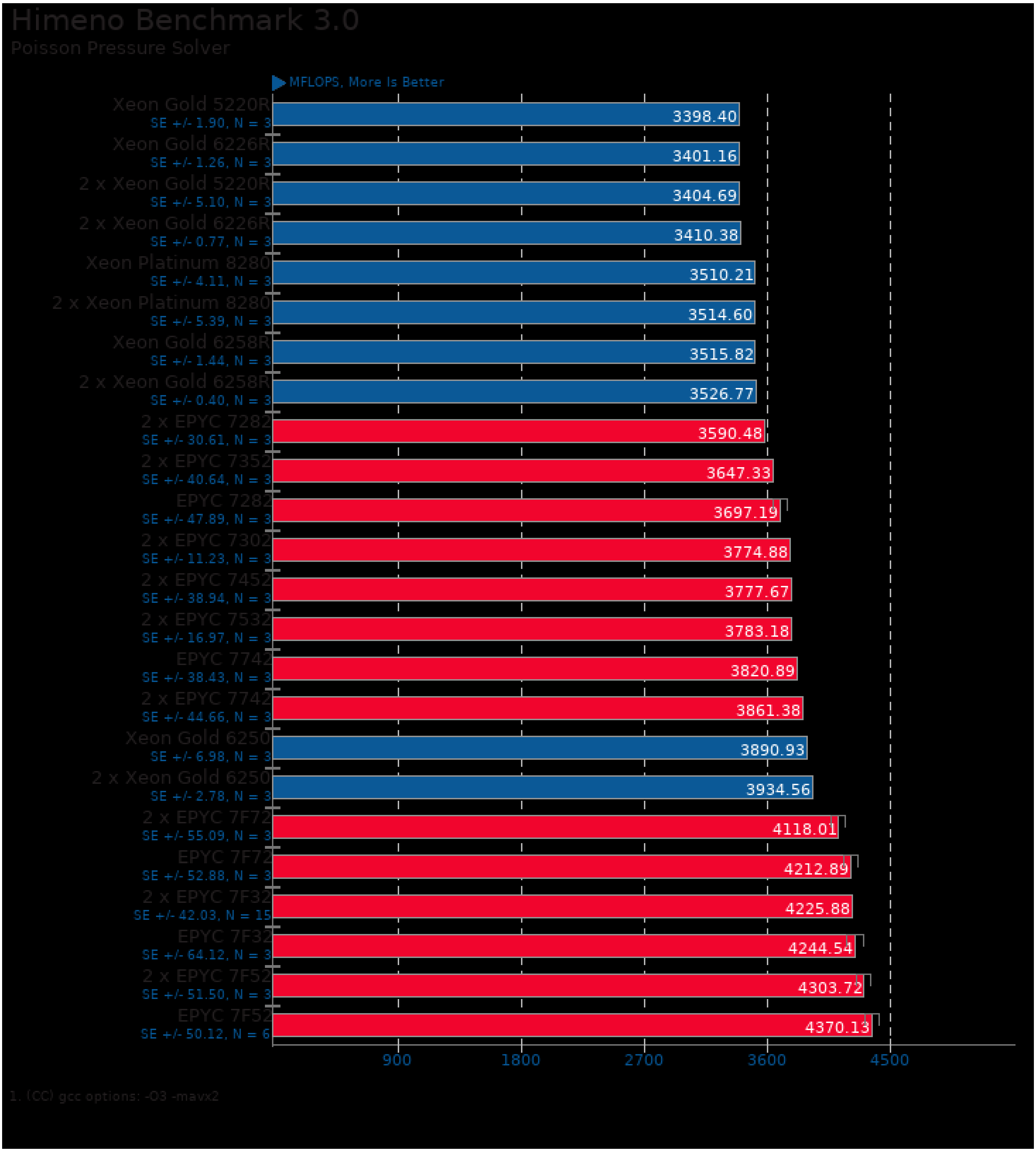

Embree 3.6.1
Binary: Pathtracer ISPC - Model: Crown
Frames Per Second, More Is Better
EPYC 7F32
SE +/- 0.0075, N = 3
9.3656
Xeon Gold 6250
SE +/- 0.0079, N = 3
12.1834
EPYC 7282
SE +/- 0.0170, N = 3
15.5411
2 x EPYC 7F32
SE +/- 0.0647, N = 3
16.2848
Xeon Gold 6226R
SE +/- 0.0160, N = 3
16.8099
Xeon Gold 5220R
SE +/- 0.0070, N = 3
17.6604
EPYC 7F52
SE +/- 0.0156, N = 3
18.3774
2 x Xeon Gold 6250
SE +/- 0.0165, N = 3
23.2054
EPYC 7F72
SE +/- 0.0130, N = 3
25.6614
2 x EPYC 7282
SE +/- 0.1447, N = 3
26.1842
2 x EPYC 7302
SE +/- 0.0054, N = 3
27.7450
Xeon Platinum 8280
SE +/- 0.0161, N = 3
28.7730
Xeon Gold 6258R
SE +/- 0.0218, N = 3
29.7952
2 x Xeon Gold 6226R
SE +/- 0.0312, N = 3
31.7318
2 x EPYC 7F52
SE +/- 0.0258, N = 3
31.8760
2 x Xeon Gold 5220R
SE +/- 0.0225, N = 3
33.4469
2 x EPYC 7352
SE +/- 0.0899, N = 3
35.6204
2 x EPYC 7F72
SE +/- 0.4076, N = 3
43.3293
2 x EPYC 7452
SE +/- 0.0212, N = 3
45.3703
2 x EPYC 7532
SE +/- 0.0348, N = 3
47.8862
EPYC 7742
SE +/- 0.0555, N = 3
49.7196
2 x Xeon Platinum 8280
SE +/- 0.0467, N = 3
53.2304
2 x Xeon Gold 6258R
SE +/- 0.0313, N = 3
54.8077
2 x EPYC 7742
SE +/- 0.1198, N = 3
77.4635
20
40
60
80
100

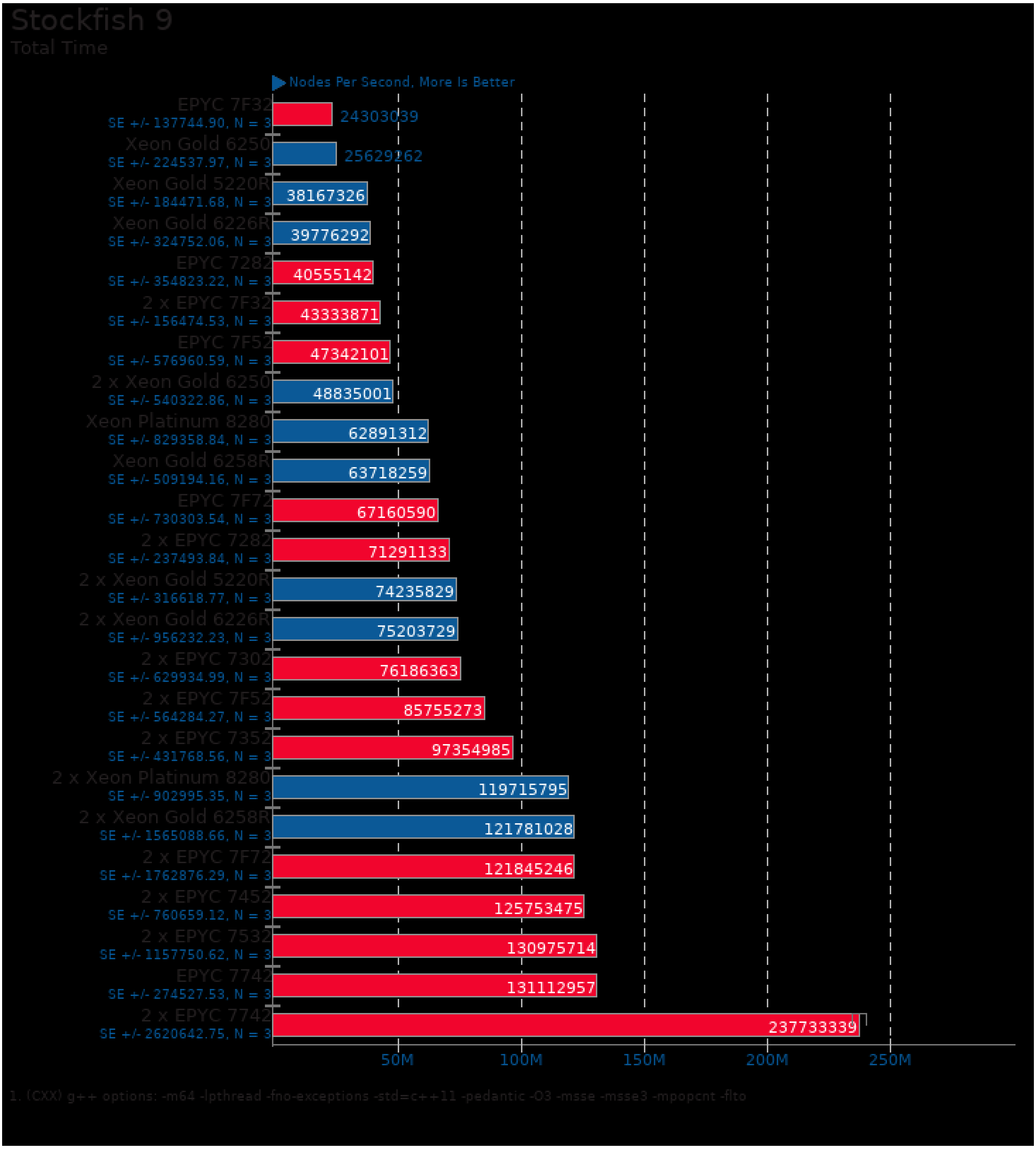

SVT-AV1 0.8
Encoder Mode: Enc Mode 4 - Input: 1080p
Frames Per Second, More Is Better
EPYC 7F32 2.999 SE +/- 0.030, N = 3
Xeon Gold 6250 3.276 SE +/- 0.017, N = 3
EPYC 7282 3.483 SE +/- 0.054, N = 3
Xeon Gold 5220R 4.285 SE +/- 0.014, N = 3
Xeon Gold 6226R 4.340 SE +/- 0.018, N = 3
2 x EPYC 7282 4.417 SE +/- 0.062, N = 15
2 x EPYC 7302 4.719 SE +/- 0.056, N = 15
2 x EPYC 7F32 4.847 SE +/- 0.048, N = 3
EPYC 7F52 4.923 SE +/- 0.017, N = 3
2 x Xeon Gold 6250 5.049 SE +/- 0.041, N = 3
2 x Xeon Gold 5220R 5.302 SE +/- 0.019, N = 3
2 x Xeon Gold 6226R 5.431 SE +/- 0.009, N = 3
2 x EPYC 7352 5.653 SE +/- 0.090, N = 3
EPYC 7F72 5.910 SE +/- 0.005, N = 3
Xeon Gold 6258R 5.989 SE +/- 0.028, N = 3
Xeon Platinum 8280 6.030 SE +/- 0.032, N = 3
EPYC 7742 6.177 SE +/- 0.087, N = 3
2 x EPYC 7452 6.227 SE +/- 0.098, N = 15
2 x EPYC 7F52 6.544 SE +/- 0.069, N = 3
2 x EPYC 7532 6.688 SE +/- 0.065, N = 3
2 x EPYC 7742 6.787 SE +/- 0.117, N = 3
2 x Xeon Gold 6258R 6.807 SE +/- 0.090, N = 5
2 x Xeon Platinum 8280 7.033 SE +/- 0.064, N = 3
2 x EPYC 7F72 7.428 SE +/- 0.118, N = 3
2
4
6
8
10
1. (CXX) g++ options: -fPIE -fPIC -pie

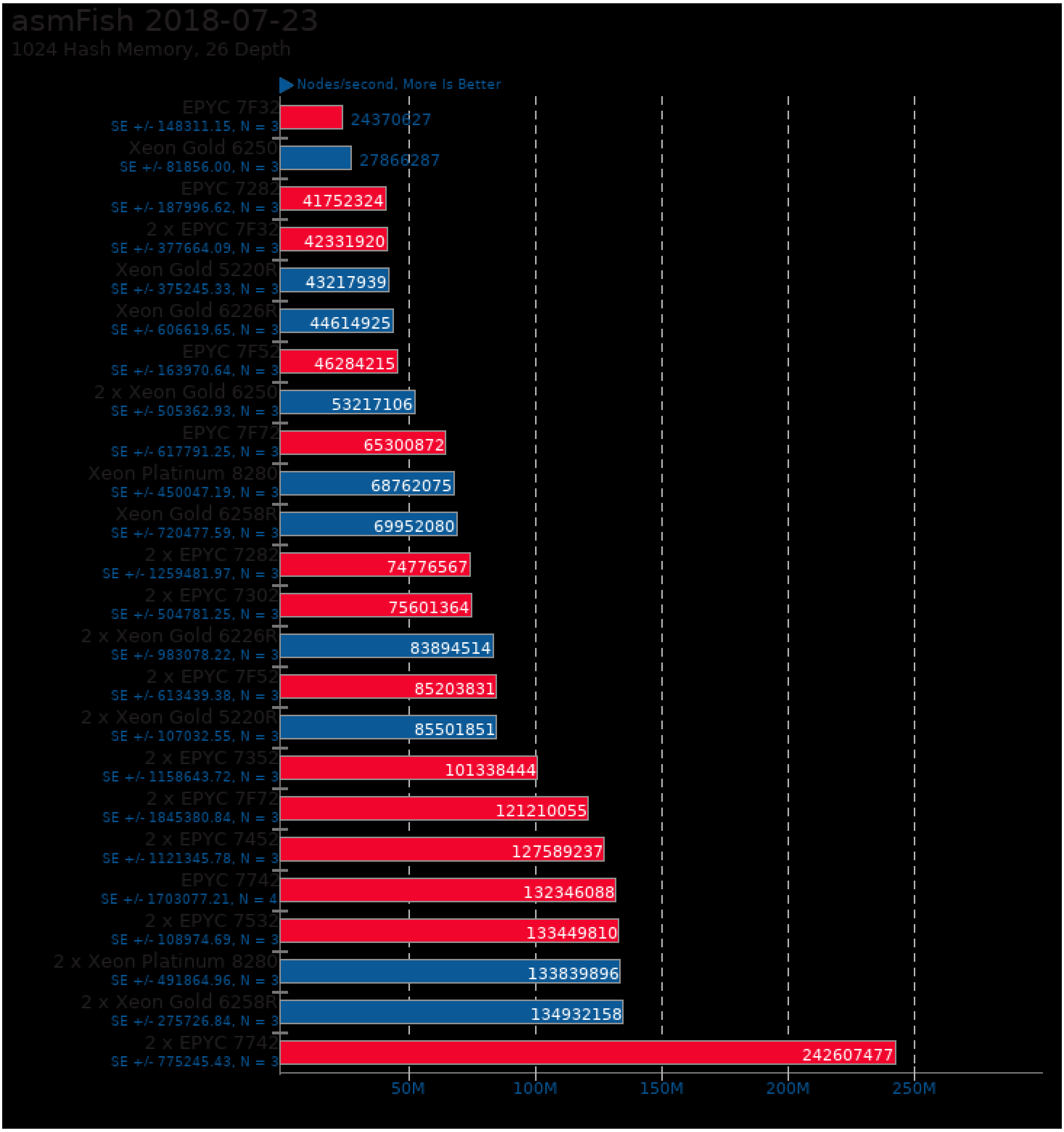

Intel Open Image Denoise 1.0.0
Scene: Memorial
Images / Sec, More Is Better
EPYC 7F32 SE +/- 0.01, N = 3 7.33
EPYC 7282 SE +/- 0.14, N = 3 10.26
2 x EPYC 7F32 SE +/- 0.05, N = 3 13.07
EPYC 7F52 SE +/- 0.01, N = 3 13.51
Xeon Gold 6250 SE +/- 0.03, N = 3 15.71
EPYC 7F72 SE +/- 0.11, N = 3 15.91
2 x EPYC 7302 SE +/- 0.11, N = 3 15.98
2 x EPYC 7282 SE +/- 0.24, N = 15 16.84
Xeon Gold 5220R SE +/- 0.01, N = 3 18.41
2 x EPYC 7352 SE +/- 0.06, N = 3 19.80
Xeon Gold 6226R SE +/- 0.03, N = 3 22.01
2 x EPYC 7F52 SE +/- 0.08, N = 3 22.51
2 x Xeon Gold 6250 SE +/- 0.05, N = 3 22.70
2 x EPYC 7452 SE +/- 0.32, N = 3 23.97
2 x EPYC 7532 SE +/- 0.28, N = 15 24.84
2 x EPYC 7F72 SE +/- 0.12, N = 3 26.33
EPYC 7742 SE +/- 0.13, N = 3 26.88
2 x Xeon Gold 5220R SE +/- 0.05, N = 3 27.97
Xeon Platinum 8280 SE +/- 0.02, N = 3 31.10
Xeon Gold 6258R SE +/- 0.03, N = 3 31.63
2 x EPYC 7742 SE +/- 0.15, N = 3 33.05
2 x Xeon Gold 6226R SE +/- 0.36, N = 3 33.06
2 x Xeon Platinum 8280 SE +/- 0.17, N = 3 34.49
2 x Xeon Gold 6258R SE +/- 0.19, N = 3 34.95
8
16
24
32
40

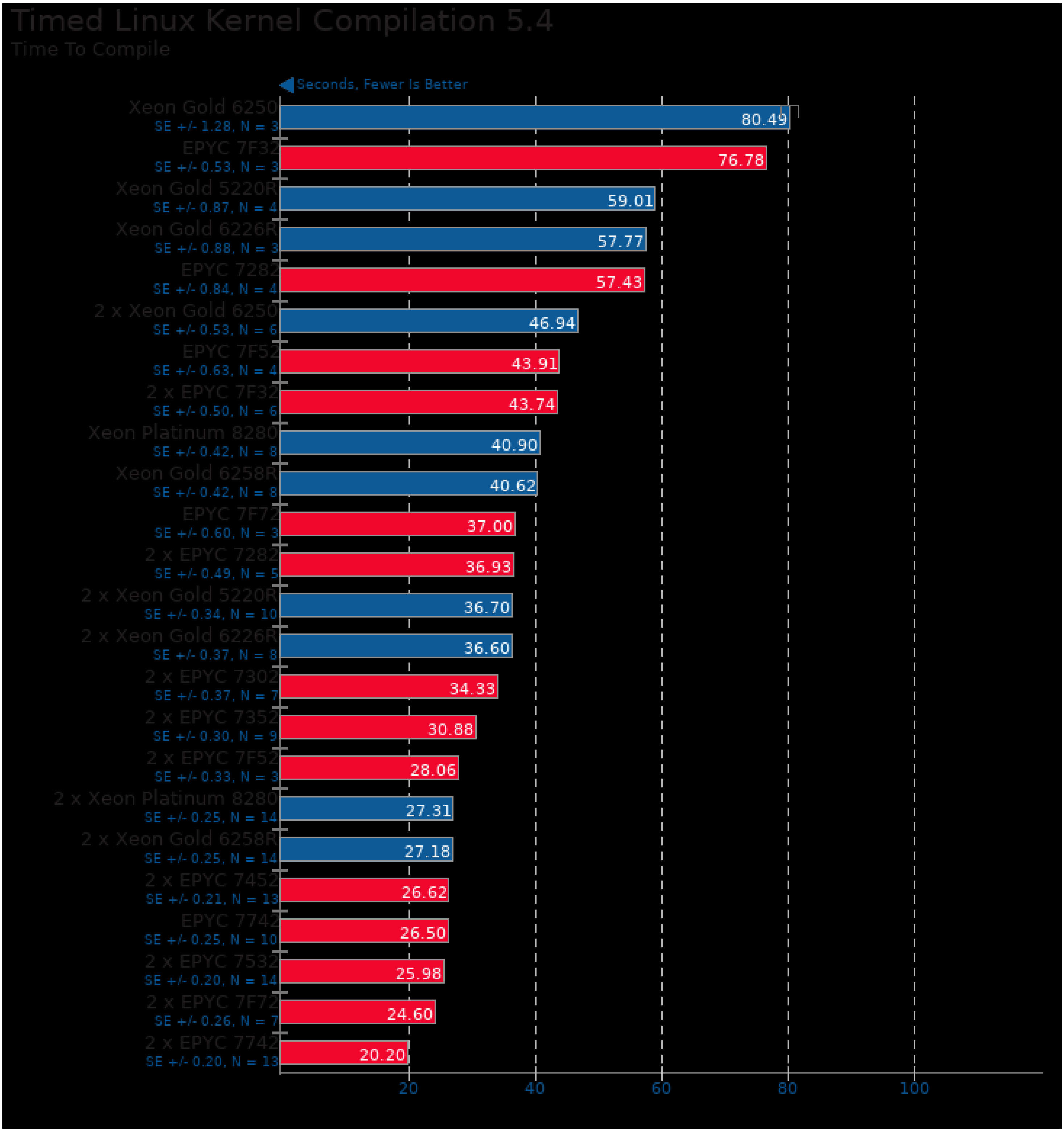

LuxCoreRender 2.3
Scene: DLSC
M samples/sec, More Is Better
Xeon Gold 6250
SE +/- 0.0067, N = 3
1.5500
EPYC 7F32
SE +/- 0.0169, N = 3
1.6800
Xeon Gold 5220R
SE +/- 0.0243, N = 3
2.3200
Xeon Gold 6226R
SE +/- 0.0145, N = 3
2.3500
EPYC 7282
SE +/- 0.0188, N = 3
2.5000
2 x Xeon Gold 6250
SE +/- 0.0219, N = 3
2.9600
2 x EPYC 7F32
SE +/- 0.0423, N = 3
3.1900
EPYC 7F52
SE +/- 0.0307, N = 3
3.2100
Xeon Gold 6258R
SE +/- 0.0068, N = 3
3.7800
Xeon Platinum 8280
SE +/- 0.0032, N = 3
3.7900
EPYC 7F72
SE +/- 0.0047, N = 3
4.1900
2 x Xeon Gold 5220R
SE +/- 0.0120, N = 3
4.4400
2 x Xeon Gold 6226R
SE +/- 0.0036, N = 3
4.5183
2 x EPYC 7282
SE +/- 0.0337, N = 3
4.7095
2 x EPYC 7302
SE +/- 0.0183, N = 3
5.0300
2 x EPYC 7F52
SE +/- 0.0822, N = 3
5.9700
2 x EPYC 7352
SE +/- 0.0520, N = 3
6.0400
2 x Xeon Platinum 8280
SE +/- 0.0948, N = 3
7.1900
2 x Xeon Gold 6258R
SE +/- 0.0162, N = 3
7.3000
EPYC 7742
SE +/- 0.0340, N = 3
7.7700
2 x EPYC 7452
SE +/- 0.0497, N = 3
7.8300
2 x EPYC 7F72
SE +/- 0.0960, N = 3
7.9600
2 x EPYC 7532
SE +/- 0.0279, N = 3
8.3500
2 x EPYC 7742
SE +/- 0.0535, N = 3
14.9800
4
8
12
16
20

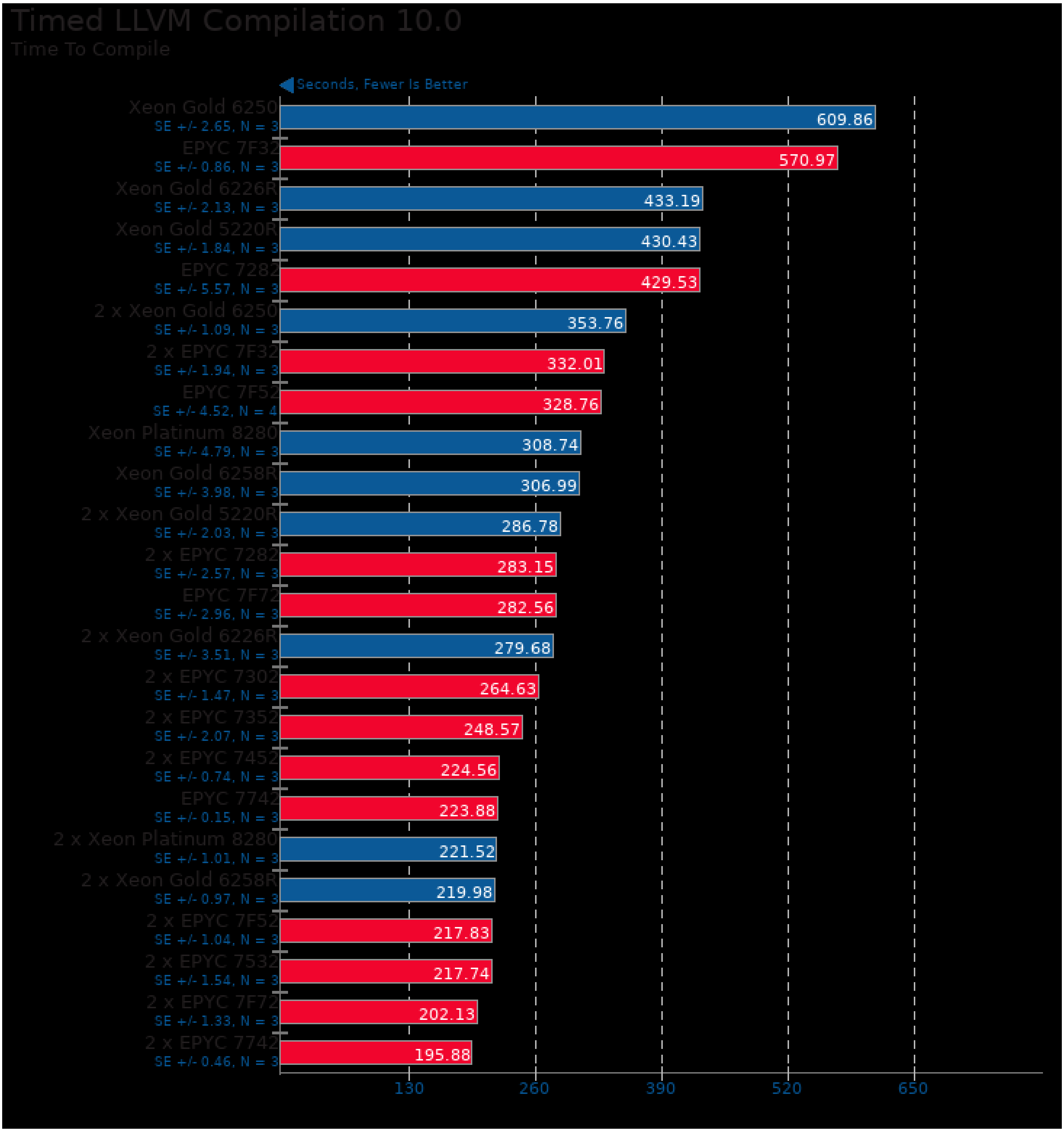

LuxCoreRender 2.3
Scene: Rainbow Colors and Prism
M samples/sec, More Is Better
Xeon Gold 6250
SE +/- 0.00, N = 3
1.65
EPYC 7F32
SE +/- 0.00, N = 3
1.81
Xeon Gold 5220R
SE +/- 0.02, N = 3
2.48
Xeon Gold 6226R
SE +/- 0.01, N = 3
2.51
EPYC 7282
SE +/- 0.02, N = 3
2.67
2 x Xeon Gold 6250
SE +/- 0.05, N = 15
2.97
2 x EPYC 7F32
SE +/- 0.02, N = 3
3.48
EPYC 7F52
SE +/- 0.00, N = 3
3.50
Xeon Gold 6258R
SE +/- 0.05, N = 12
4.09
Xeon Platinum 8280
SE +/- 0.04, N = 3
4.11
2 x Xeon Gold 6226R
SE +/- 0.13, N = 15
4.32
2 x Xeon Gold 5220R
SE +/- 0.30, N = 12
4.46
EPYC 7F72
SE +/- 0.01, N = 3
4.62
2 x EPYC 7282
SE +/- 0.08, N = 3
5.03
2 x EPYC 7302
SE +/- 0.05, N = 9
5.38
2 x EPYC 7F52
SE +/- 0.03, N = 3
6.67
2 x EPYC 7352
SE +/- 0.02, N = 3
6.78
2 x Xeon Platinum 8280
SE +/- 0.40, N = 15
7.15
2 x Xeon Gold 6258R
SE +/- 0.13, N = 3
7.78
EPYC 7742
SE +/- 0.06, N = 3
8.59
2 x EPYC 7452
SE +/- 0.06, N = 3
8.69
2 x EPYC 7F72
SE +/- 0.11, N = 3
8.77
2 x EPYC 7532
SE +/- 0.07, N = 3
9.32
2 x EPYC 7742
SE +/- 0.10, N = 3
16.63
4
8
12
16
20


Himeno Benchmark 3.0
Poisson Pressure Solver
MFLOPS, More Is Better
Xeon Gold 5220R
SE +/- 1.90, N = 3
3398.40
Xeon Gold 6226R
SE +/- 1.26, N = 3
3401.16
2 x Xeon Gold 5220R
SE +/- 5.10, N = 3
3404.69
2 x Xeon Gold 6226R
SE +/- 0.77, N = 3
3410.38
Xeon Platinum 8280
SE +/- 4.11, N = 3
3510.21
2 x Xeon Platinum 8280
SE +/- 5.39, N = 3
3514.60
Xeon Gold 6258R
SE +/- 1.44, N = 3
3515.82
2 x Xeon Gold 6258R
SE +/- 0.40, N = 3
3526.77
2 x EPYC 7282
SE +/- 30.61, N = 3
3590.48
2 x EPYC 7352
SE +/- 40.64, N = 3
3647.33
EPYC 7282
SE +/- 47.89, N = 3
3697.19
2 x EPYC 7302
SE +/- 11.23, N = 3
3774.88
2 x EPYC 7452
SE +/- 38.94, N = 3
3777.67
2 x EPYC 7532
SE +/- 16.97, N = 3
3783.18
EPYC 7742
SE +/- 38.43, N = 3
3820.89
2 x EPYC 7742
SE +/- 44.66, N = 3
3861.38
Xeon Gold 6250
SE +/- 6.98, N = 3
3890.93
2 x Xeon Gold 6250
SE +/- 2.78, N = 3
3934.56
2 x EPYC 7F72
SE +/- 55.09, N = 3
4118.01
EPYC 7F72
SE +/- 52.88, N = 3
4212.89
2 x EPYC 7F32
SE +/- 42.03, N = 15
4225.88
EPYC 7F32
SE +/- 64.12, N = 3
4244.54
2 x EPYC 7F52
SE +/- 51.50, N = 3
4303.72
EPYC 7F52
SE +/- 50.12, N = 6
4370.13
900
1800
2700
3600
4500
1. (CC) gcc options: -O3 -mavx2

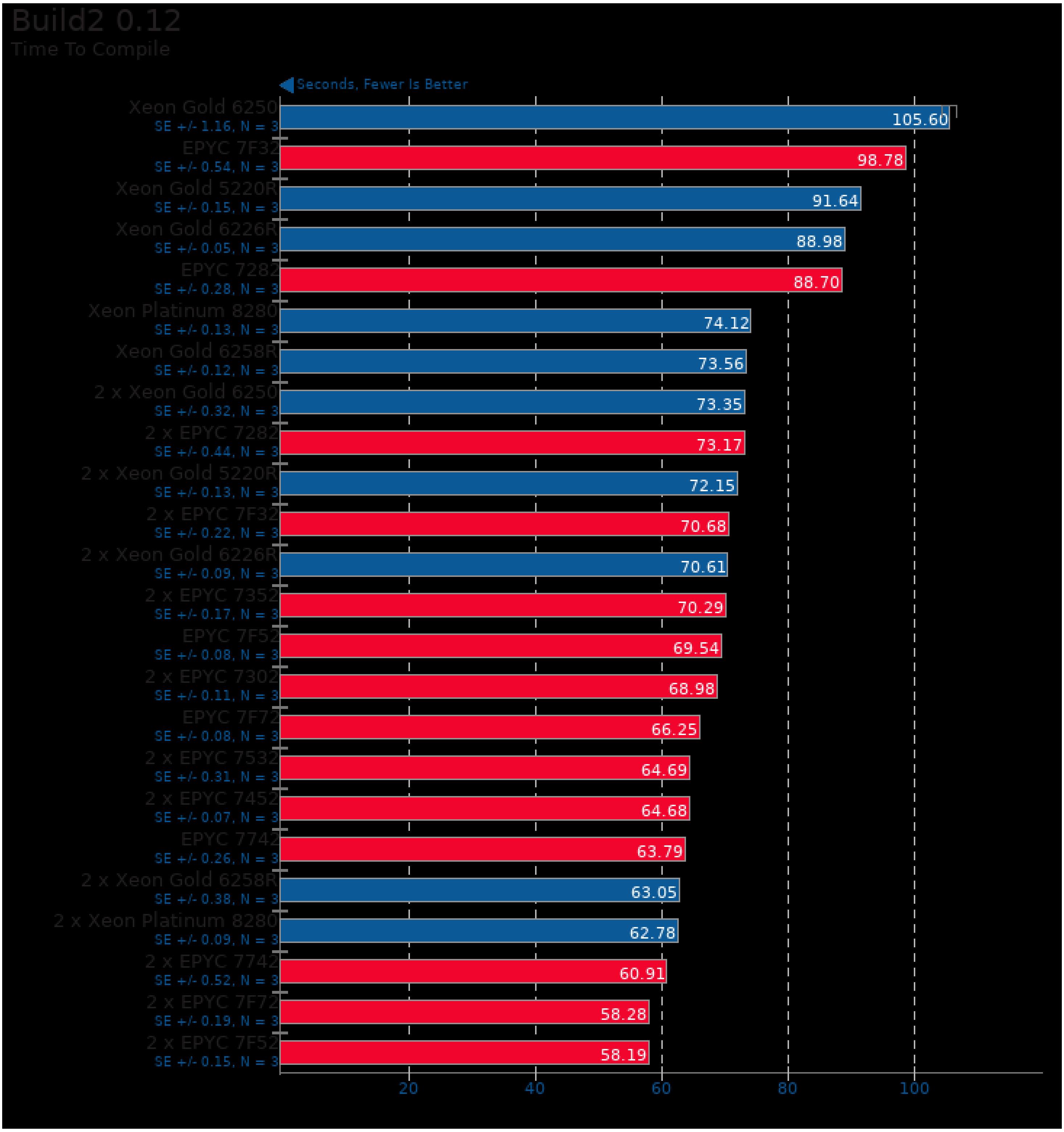

Stockfish 9
Total Time
Nodes Per Second, More Is Better
EPYC 7F32
SE +/- 137744.90, N = 3
24303039
Xeon Gold 6250
SE +/- 224537.97, N = 3
25629262
Xeon Gold 5220R
SE +/- 184471.68, N = 3
38167326
Xeon Gold 6226R
SE +/- 324752.06, N = 3
39776292
EPYC 7282
SE +/- 354823.22, N = 3
40555142
2 x EPYC 7F32
SE +/- 156474.53, N = 3
43333871
EPYC 7F52
SE +/- 576960.59, N = 3
47342101
2 x Xeon Gold 6250
SE +/- 540322.86, N = 3
48835001
Xeon Platinum 8280
SE +/- 829358.84, N = 3
62891312
Xeon Gold 6258R
SE +/- 509194.16, N = 3
63718259
EPYC 7F72
SE +/- 730303.54, N = 3
67160590
2 x EPYC 7282
SE +/- 237493.84, N = 3
71291133
2 x Xeon Gold 5220R
SE +/- 316618.77, N = 3
74235829
2 x Xeon Gold 6226R
SE +/- 956232.23, N = 3
75203729
2 x EPYC 7302
SE +/- 629934.99, N = 3
76186363
2 x EPYC 7F52
SE +/- 564284.27, N = 3
85755273
2 x EPYC 7352
SE +/- 431768.56, N = 3
97354985
2 x Xeon Platinum 8280
SE +/- 902995.35, N = 3
119715795
2 x Xeon Gold 6258R
SE +/- 1565088.66, N = 3
121781028
2 x EPYC 7F72
SE +/- 1762876.29, N = 3
121845246
2 x EPYC 7452
SE +/- 760659.12, N = 3
125753475
2 x EPYC 7532
SE +/- 1157750.62, N = 3
130975714
EPYC 7742
SE +/- 274527.53, N = 3
131112957
2 x EPYC 7742
SE +/- 2620642.75, N = 3
237733339
50M
100M
150M
200M
250M
1. (CXX) g++ options: -m64 -lpthread -fno-exceptions -std=c++11 -pedantic -O3 -msse -msse3 -mpopcnt -flto

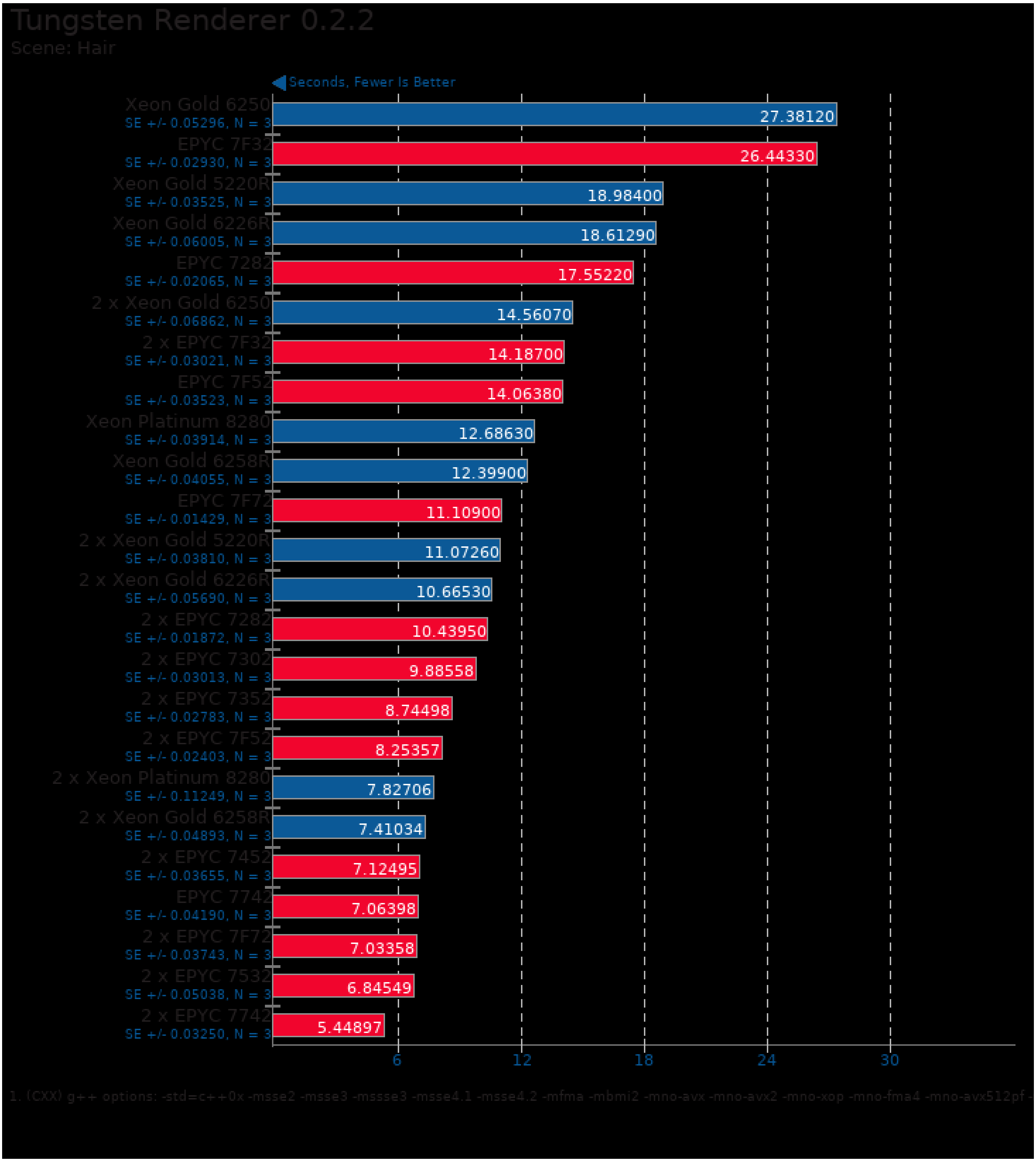

asmFish 2018-07-23
1024 Hash Memory, 26 Depth
Nodes/second, More Is Better
EPYC 7F32
SE +/- 148311.15, N = 3
24370627
Xeon Gold 6250
SE +/- 81856.00, N = 3
27866287
EPYC 7282
SE +/- 187996.62, N = 3
41752324
2 x EPYC 7F32
SE +/- 377664.09, N = 3
42331920
Xeon Gold 5220R
SE +/- 375245.33, N = 3
43217939
Xeon Gold 6226R
SE +/- 606619.65, N = 3
44614925
EPYC 7F52
SE +/- 163970.64, N = 3
46284215
2 x Xeon Gold 6250
SE +/- 505362.93, N = 3
53217106
EPYC 7F72
SE +/- 617791.25, N = 3
65300872
Xeon Platinum 8280
SE +/- 450047.19, N = 3
68762075
Xeon Gold 6258R
SE +/- 720477.59, N = 3
69952080
2 x EPYC 7282
SE +/- 1259481.97, N = 3
74776567
2 x EPYC 7302
SE +/- 504781.25, N = 3
75601364
2 x Xeon Gold 6226R
SE +/- 983078.22, N = 3
83894514
2 x EPYC 7F52
SE +/- 613439.38, N = 3
85203831
2 x Xeon Gold 5220R
SE +/- 107032.55, N = 3
85501851
2 x EPYC 7352
SE +/- 1158643.72, N = 3
101338444
2 x EPYC 7F72
SE +/- 1845380.84, N = 3
121210055
2 x EPYC 7452
SE +/- 1121345.78, N = 3
127589237
EPYC 7742
SE +/- 1703077.21, N = 4
132346088
2 x EPYC 7532
SE +/- 108974.69, N = 3
133449810
2 x Xeon Platinum 8280
SE +/- 491864.96, N = 3
133839896
2 x Xeon Gold 6258R
SE +/- 275726.84, N = 3
134932158
2 x EPYC 7742
SE +/- 775245.43, N = 3
242607477
50M
100M
150M
200M
250M

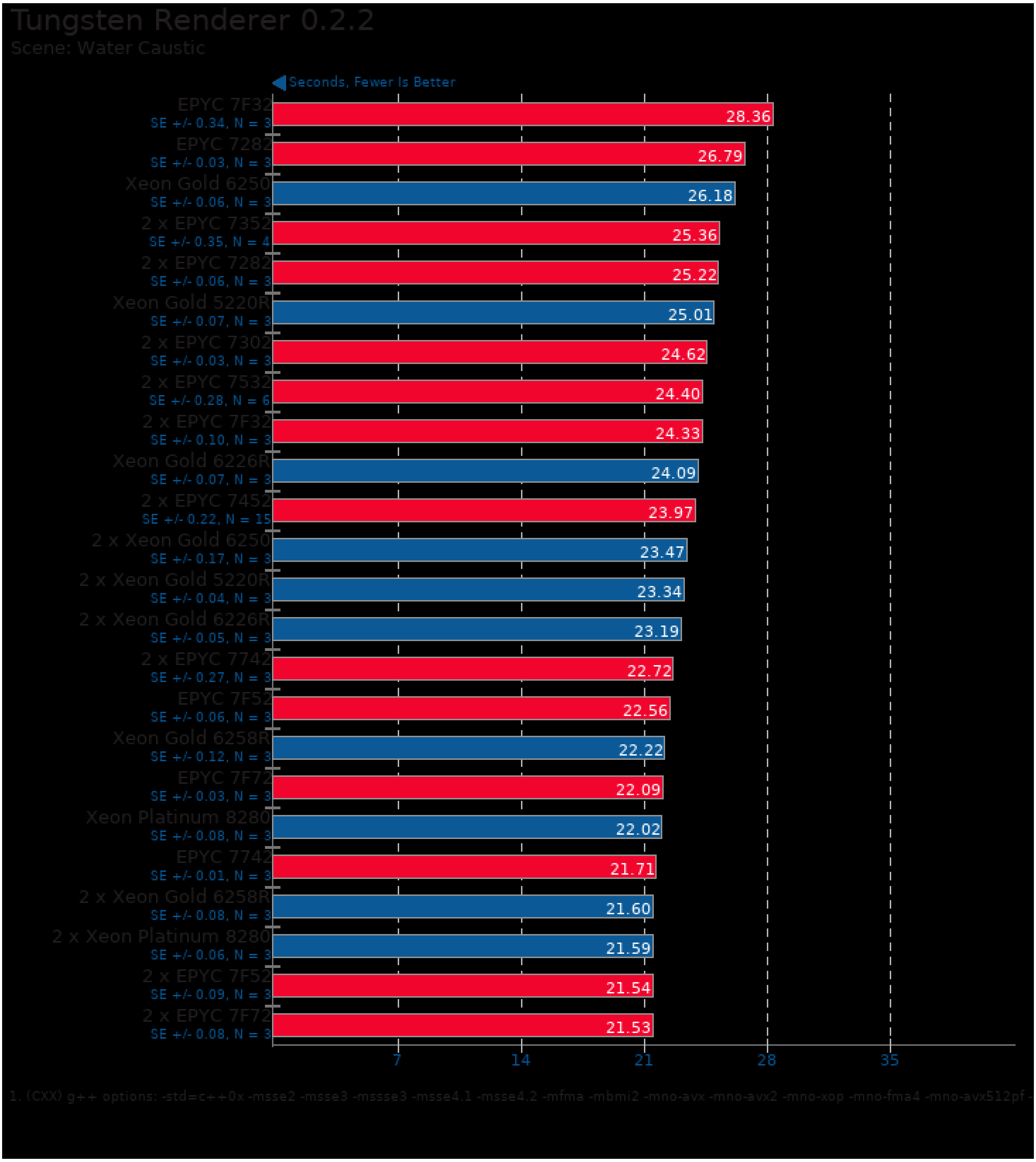

Timed Linux Kernel Compilation 5.4
Time To Compile
Seconds, Fewer Is Better
Xeon Gold 6250
SE +/- 1.28, N = 3
80.49
EPYC 7F32
SE +/- 0.53, N = 3
76.78
Xeon Gold 5220R
SE +/- 0.87, N = 4
59.01
Xeon Gold 6226R
SE +/- 0.88, N = 3
57.77
EPYC 7282
SE +/- 0.84, N = 4
57.43
2 x Xeon Gold 6250
SE +/- 0.53, N = 6
46.94
EPYC 7F52
SE +/- 0.63, N = 4
43.91
2 x EPYC 7F32
SE +/- 0.50, N = 6
43.74
Xeon Platinum 8280
SE +/- 0.42, N = 8
40.90
Xeon Gold 6258R
SE +/- 0.42, N = 8
40.62
EPYC 7F72
SE +/- 0.60, N = 3
37.00
2 x EPYC 7282
SE +/- 0.49, N = 5
36.93
2 x Xeon Gold 5220R
SE +/- 0.34, N = 10
36.70
2 x Xeon Gold 6226R
SE +/- 0.37, N = 8
36.60
2 x EPYC 7302
SE +/- 0.37, N = 7
34.33
2 x EPYC 7352
SE +/- 0.30, N = 9
30.88
2 x EPYC 7F52
SE +/- 0.33, N = 3
28.06
2 x Xeon Platinum 8280
SE +/- 0.25, N = 14
27.31
2 x Xeon Gold 6258R
SE +/- 0.25, N = 14
27.18
2 x EPYC 7452
SE +/- 0.21, N = 13
26.62
EPYC 7742
SE +/- 0.25, N = 10
26.50
2 x EPYC 7532
SE +/- 0.20, N = 14
25.98
2 x EPYC 7F72
SE +/- 0.26, N = 7
24.60
2 x EPYC 7742
SE +/- 0.20, N = 13
20.20
20
40
60
80
100

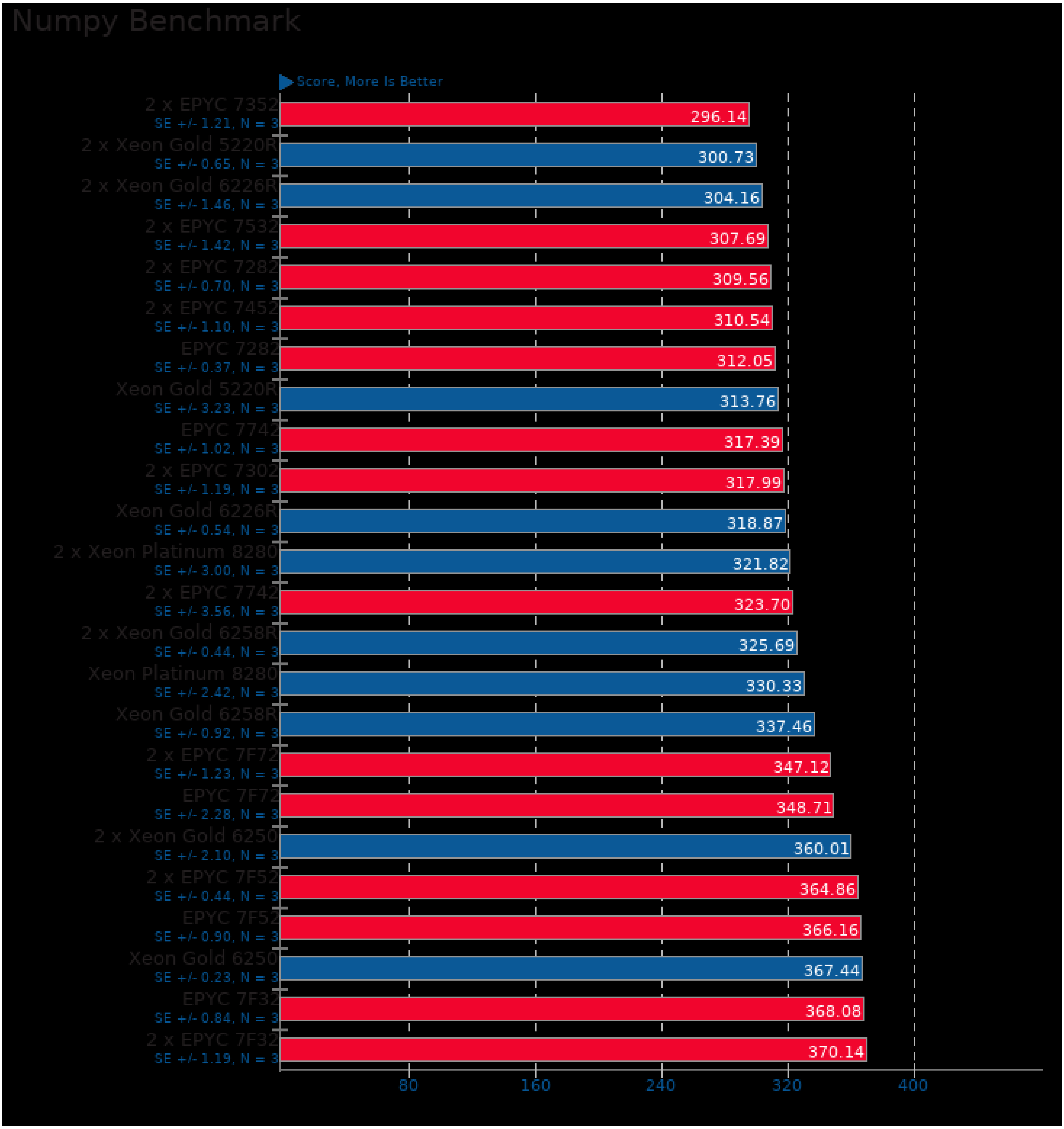

Timed LLVM Compilation 10.0
Time To Compile
Seconds, Fewer Is Better
Xeon Gold 6250
SE +/- 2.65, N = 3
609.86
EPYC 7F32
SE +/- 0.86, N = 3
570.97
Xeon Gold 6226R
SE +/- 2.13, N = 3
433.19
Xeon Gold 5220R
SE +/- 1.84, N = 3
430.43
EPYC 7282
SE +/- 5.57, N = 3
429.53
2 x Xeon Gold 6250
SE +/- 1.09, N = 3
353.76
2 x EPYC 7F32
SE +/- 1.94, N = 3
332.01
EPYC 7F52
SE +/- 4.52, N = 4
328.76
Xeon Platinum 8280
SE +/- 4.79, N = 3
308.74
Xeon Gold 6258R
SE +/- 3.98, N = 3
306.99
2 x Xeon Gold 5220R
SE +/- 2.03, N = 3
286.78
2 x EPYC 7282
SE +/- 2.57, N = 3
283.15
EPYC 7F72
SE +/- 2.96, N = 3
282.56
2 x Xeon Gold 6226R
SE +/- 3.51, N = 3
279.68
2 x EPYC 7302
SE +/- 1.47, N = 3
264.63
2 x EPYC 7352
SE +/- 2.07, N = 3
248.57
2 x EPYC 7452
SE +/- 0.74, N = 3
224.56
EPYC 7742
SE +/- 0.15, N = 3
223.88
2 x Xeon Platinum 8280
SE +/- 1.01, N = 3
221.52
2 x Xeon Gold 6258R
SE +/- 0.97, N = 3
219.98
2 x EPYC 7F52
SE +/- 1.04, N = 3
217.83
2 x EPYC 7532
SE +/- 1.54, N = 3
217.74
2 x EPYC 7F72
SE +/- 1.33, N = 3
202.13
2 x EPYC 7742
SE +/- 0.46, N = 3
195.88
130
260
390
520
650

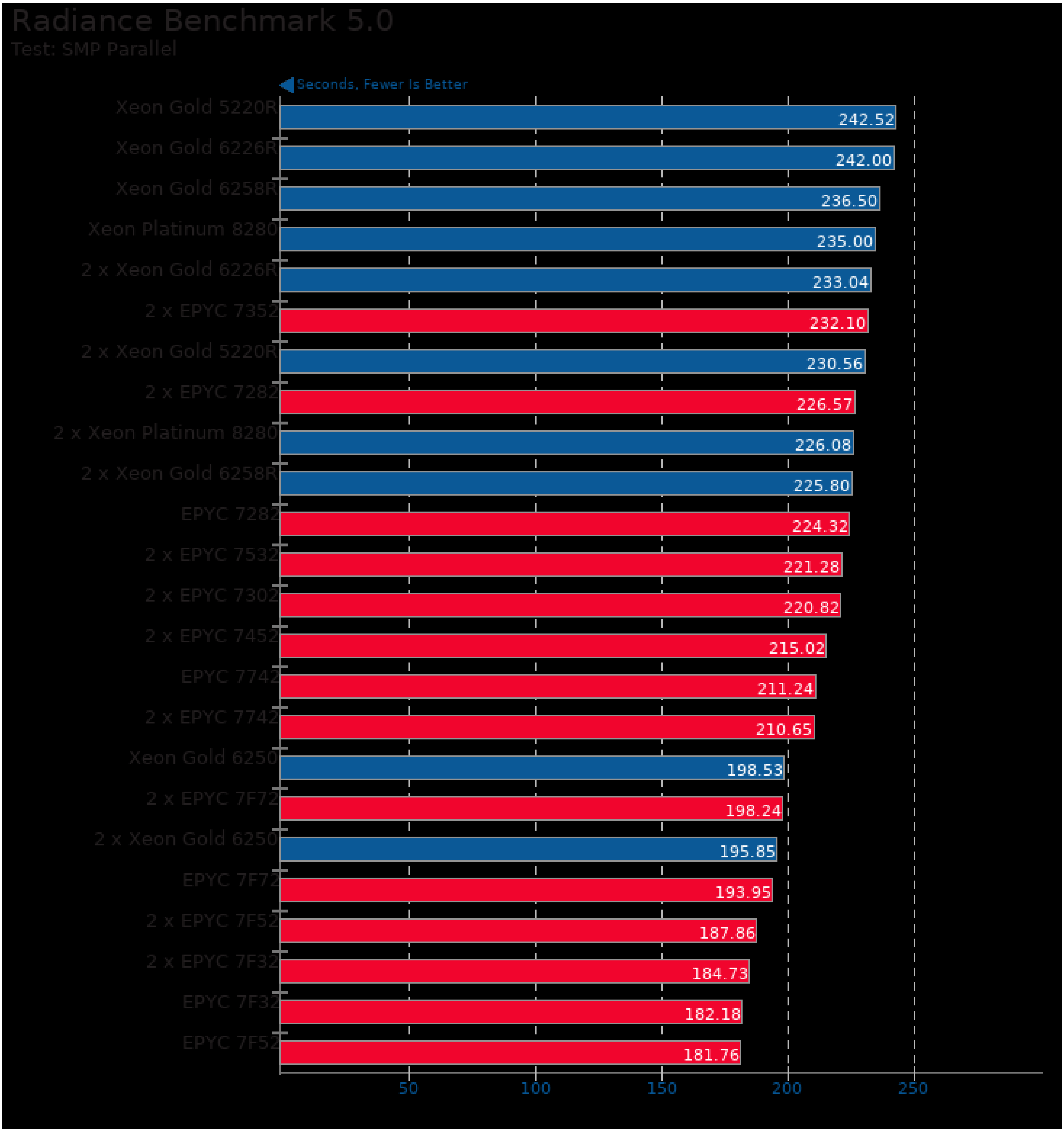
Xeon Cascade Lake Refresh vs. AMD EPYC Rome Linux Benchmarks

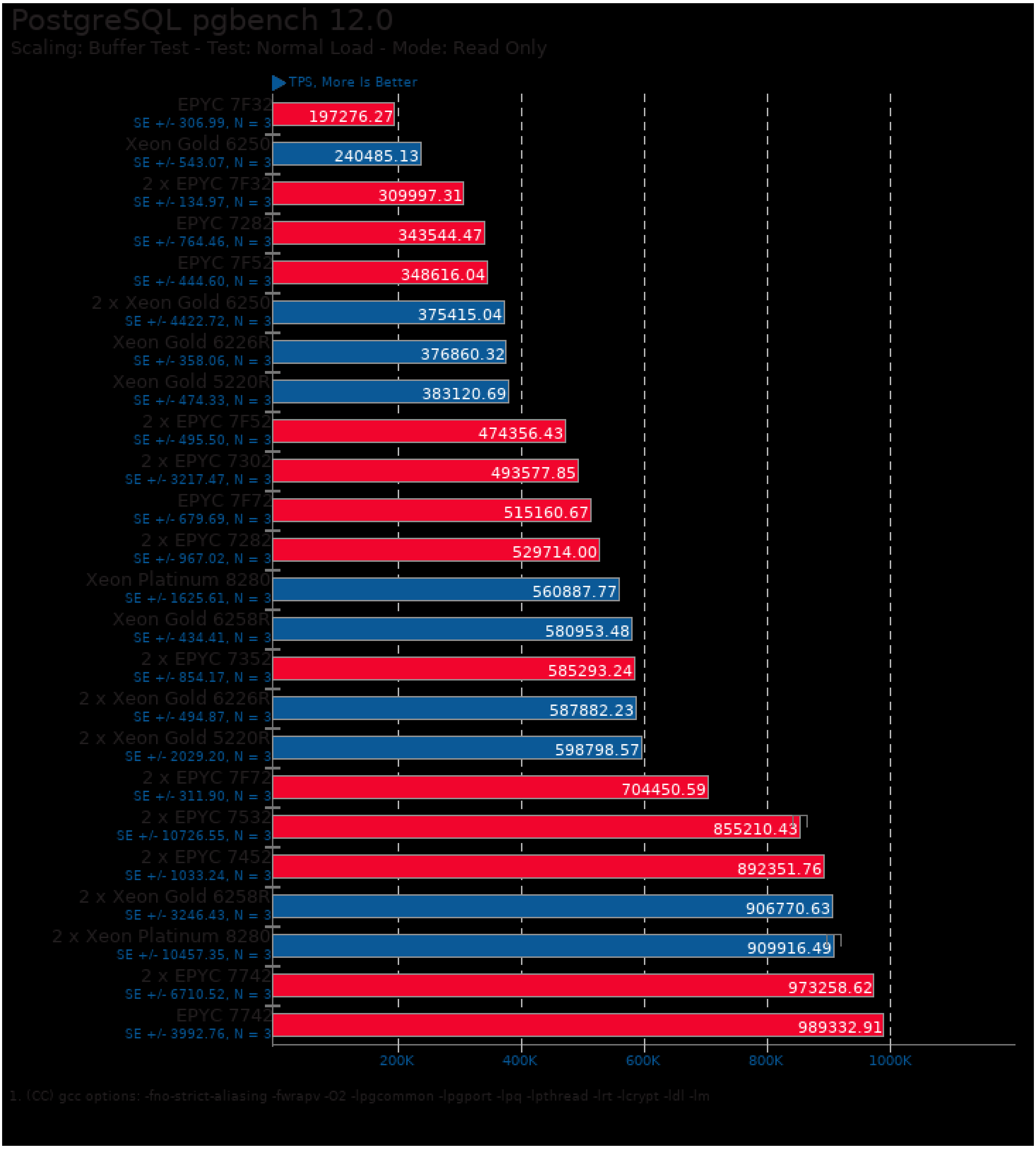


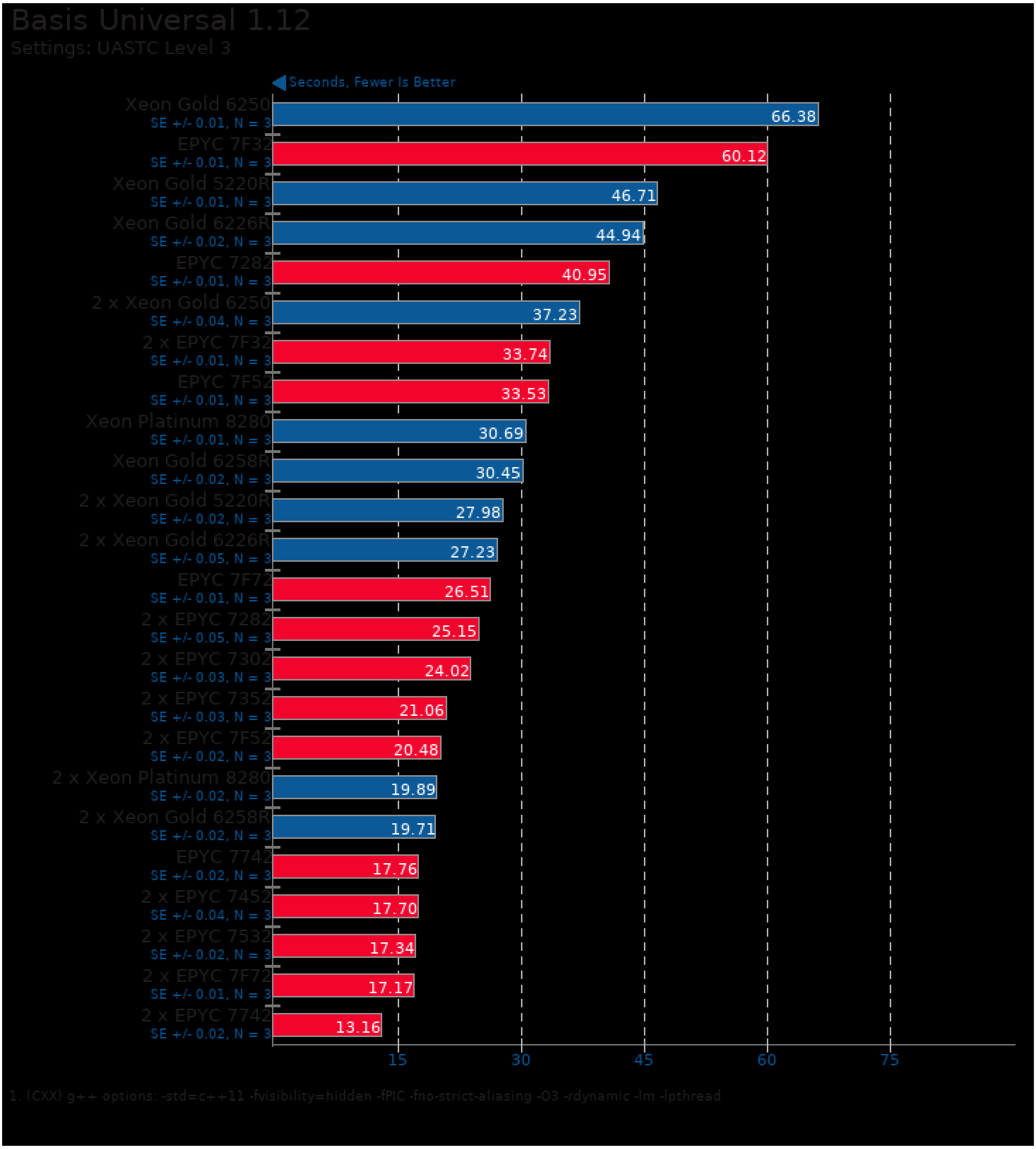

Tungsten Renderer 0.2.2
Scene: Hair
Seconds, Fewer Is Better
Xeon Gold 6250
SE +/- 0.05296, N = 3
27.38120
EPYC 7F32
SE +/- 0.02930, N = 3
26.44330
Xeon Gold 5220R
SE +/- 0.03525, N = 3
18.98400
Xeon Gold 6226R
SE +/- 0.06005, N = 3
18.61290
EPYC 7282
SE +/- 0.02065, N = 3
17.55220
2 x Xeon Gold 6250
SE +/- 0.06862, N = 3
14.56070
2 x EPYC 7F32
SE +/- 0.03021, N = 3
14.18700
EPYC 7F52
SE +/- 0.03523, N = 3
14.06380
Xeon Platinum 8280
SE +/- 0.03914, N = 3
12.68630
Xeon Gold 6258R
SE +/- 0.04055, N = 3
12.39900
EPYC 7F72
SE +/- 0.01429, N = 3
11.10900
2 x Xeon Gold 5220R
SE +/- 0.03810, N = 3
11.07260
2 x Xeon Gold 6226R
SE +/- 0.05690, N = 3
10.66530
2 x EPYC 7282
SE +/- 0.01872, N = 3
10.43950
2 x EPYC 7302
SE +/- 0.03013, N = 3
9.88558
2 x EPYC 7352
SE +/- 0.02783, N = 3
8.74498
2 x EPYC 7F52
SE +/- 0.02403, N = 3
8.25357
2 x Xeon Platinum 8280
SE +/- 0.11249, N = 3
7.82706
2 x Xeon Gold 6258R
SE +/- 0.04893, N = 3
7.41034
2 x EPYC 7452
SE +/- 0.03655, N = 3
7.12495
EPYC 7742
SE +/- 0.04190, N = 3
7.06398
2 x EPYC 7F72
SE +/- 0.03743, N = 3
7.03358
2 x EPYC 7532
SE +/- 0.05038, N = 3
6.84549
2 x EPYC 7742
SE +/- 0.03250, N = 3
5.44897
6
12
18
24
30
1. (CXX) g++ options: -std=c++0x -msse2 -msse3 -mssse3 -msse4.1 -msse4.2 -mfma -mbmi2 -mno-avx -mno-avx2 -mno-xop -mno-fma4 -mno-avx512pf -

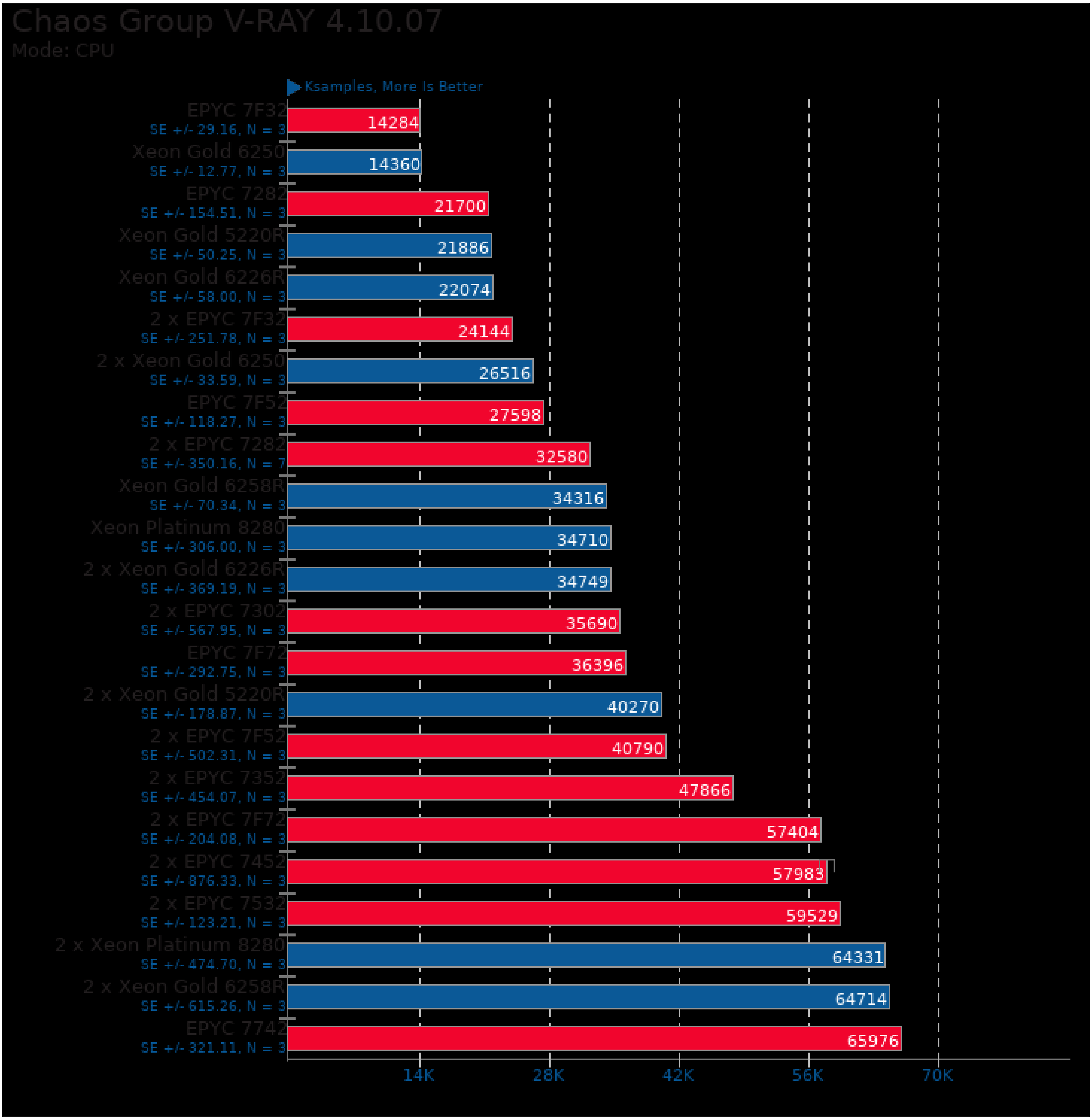

Tungsten Renderer 0.2.2
Scene: Water Caustic
Seconds, Fewer Is Better
EPYC 7F32 — SE +/- 0.34, N = 3 — 28.36
EPYC 7282 — SE +/- 0.03, N = 3 — 26.79
Xeon Gold 6250 — SE +/- 0.06, N = 3 — 26.18
2 x EPYC 7352 — SE +/- 0.35, N = 4 — 25.36
2 x EPYC 7282 — SE +/- 0.06, N = 3 — 25.22
Xeon Gold 5220R — SE +/- 0.07, N = 3 — 25.01
2 x EPYC 7302 — SE +/- 0.03, N = 3 — 24.62
2 x EPYC 7532 — SE +/- 0.28, N = 6 — 24.40
2 x EPYC 7F32 — SE +/- 0.10, N = 3 — 24.33
Xeon Gold 6226R — SE +/- 0.07, N = 3 — 24.09
2 x EPYC 7452 — SE +/- 0.22, N = 15 — 23.97
2 x Xeon Gold 6250 — SE +/- 0.17, N = 3 — 23.47
2 x Xeon Gold 5220R — SE +/- 0.04, N = 3 — 23.34
2 x Xeon Gold 6226R — SE +/- 0.05, N = 3 — 23.19
2 x EPYC 7742 — SE +/- 0.27, N = 3 — 22.72
EPYC 7F52 — SE +/- 0.06, N = 3 — 22.56
Xeon Gold 6258R — SE +/- 0.12, N = 3 — 22.22
EPYC 7F72 — SE +/- 0.03, N = 3 — 22.09
Xeon Platinum 8280 — SE +/- 0.08, N = 3 — 22.02
EPYC 7742 — SE +/- 0.01, N = 3 — 21.71
2 x Xeon Gold 6258R — SE +/- 0.08, N = 3 — 21.60
2 x Xeon Platinum 8280 — SE +/- 0.06, N = 3 — 21.59
2 x EPYC 7F52 — SE +/- 0.09, N = 3 — 21.54
2 x EPYC 7F72 — SE +/- 0.08, N = 3 — 21.53
7
14
21
28
35
1. (CXX) g++ options: -std=c++0x -msse2 -msse3 -mssse3 -msse4.1 -msse4.2 -mfma -mbmi2 -mno-avx -mno-avx2 -mno-xop -mno-fma4 -mno-avx512pf -

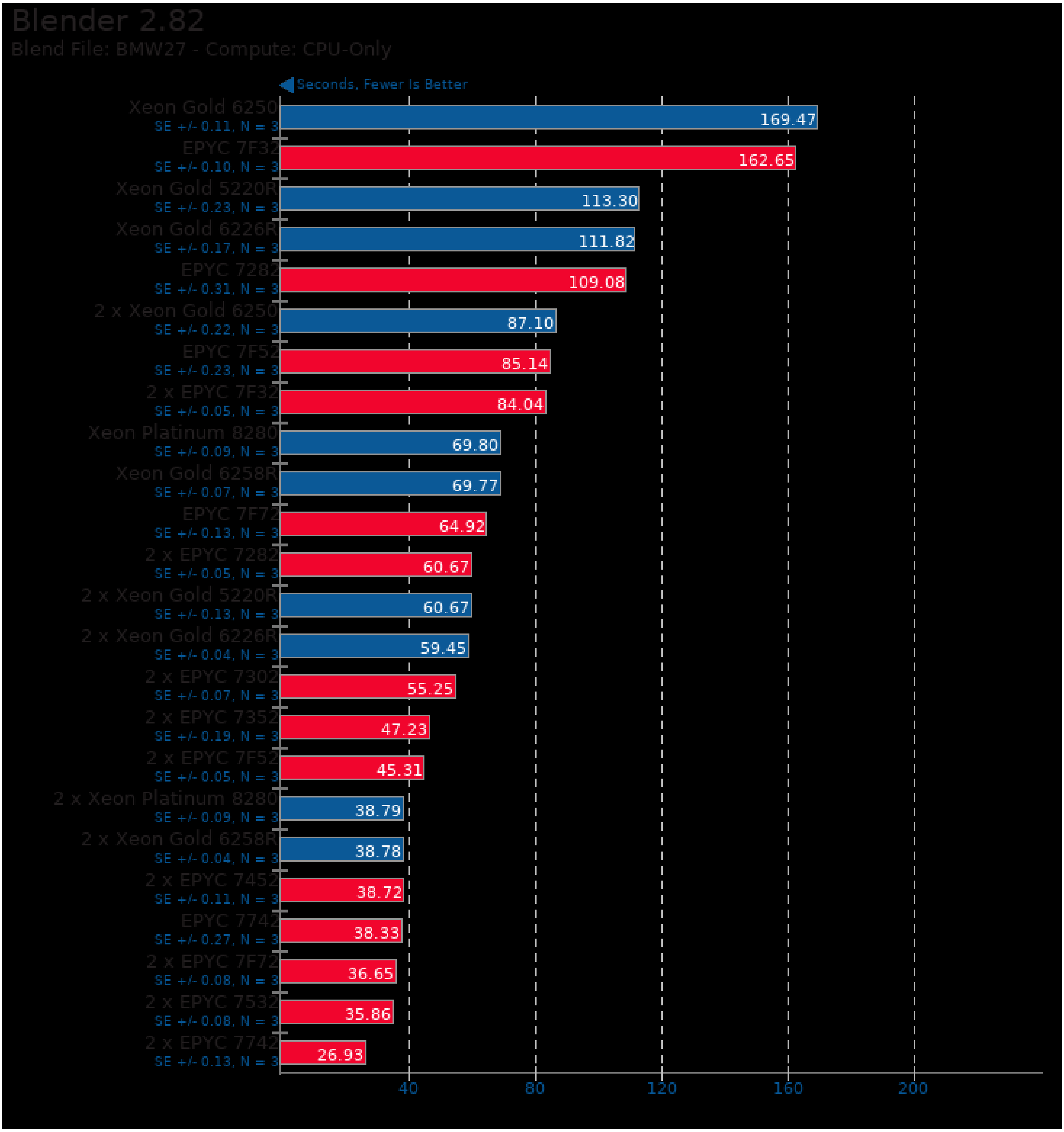

Numpy Benchmark
Score, More Is Better
2 x EPYC 7352
SE +/- 1.21, N = 3
296.14
2 x Xeon Gold 5220R
SE +/- 0.65, N = 3
300.73
2 x Xeon Gold 6226R
SE +/- 1.46, N = 3
304.16
2 x EPYC 7532
SE +/- 1.42, N = 3
307.69
2 x EPYC 7282
SE +/- 0.70, N = 3
309.56
2 x EPYC 7452
SE +/- 1.10, N = 3
310.54
EPYC 7282
SE +/- 0.37, N = 3
312.05
Xeon Gold 5220R
SE +/- 3.23, N = 3
313.76
EPYC 7742
SE +/- 1.02, N = 3
317.39
2 x EPYC 7302
SE +/- 1.19, N = 3
317.99
Xeon Gold 6226R
SE +/- 0.54, N = 3
318.87
2 x Xeon Platinum 8280
SE +/- 3.00, N = 3
321.82
2 x EPYC 7742
SE +/- 3.56, N = 3
323.70
2 x Xeon Gold 6258R
SE +/- 0.44, N = 3
325.69
Xeon Platinum 8280
SE +/- 2.42, N = 3
330.33
Xeon Gold 6258R
SE +/- 0.92, N = 3
337.46
2 x EPYC 7F72
SE +/- 1.23, N = 3
347.12
EPYC 7F72
SE +/- 2.28, N = 3
348.71
2 x Xeon Gold 6250
SE +/- 2.10, N = 3
360.01
2 x EPYC 7F52
SE +/- 0.44, N = 3
364.86
EPYC 7F52
SE +/- 0.90, N = 3
366.16
Xeon Gold 6250
SE +/- 0.23, N = 3
367.44
EPYC 7F32
SE +/- 0.84, N = 3
368.08
2 x EPYC 7F32
SE +/- 1.19, N = 3
370.14
80
160
240
320
400

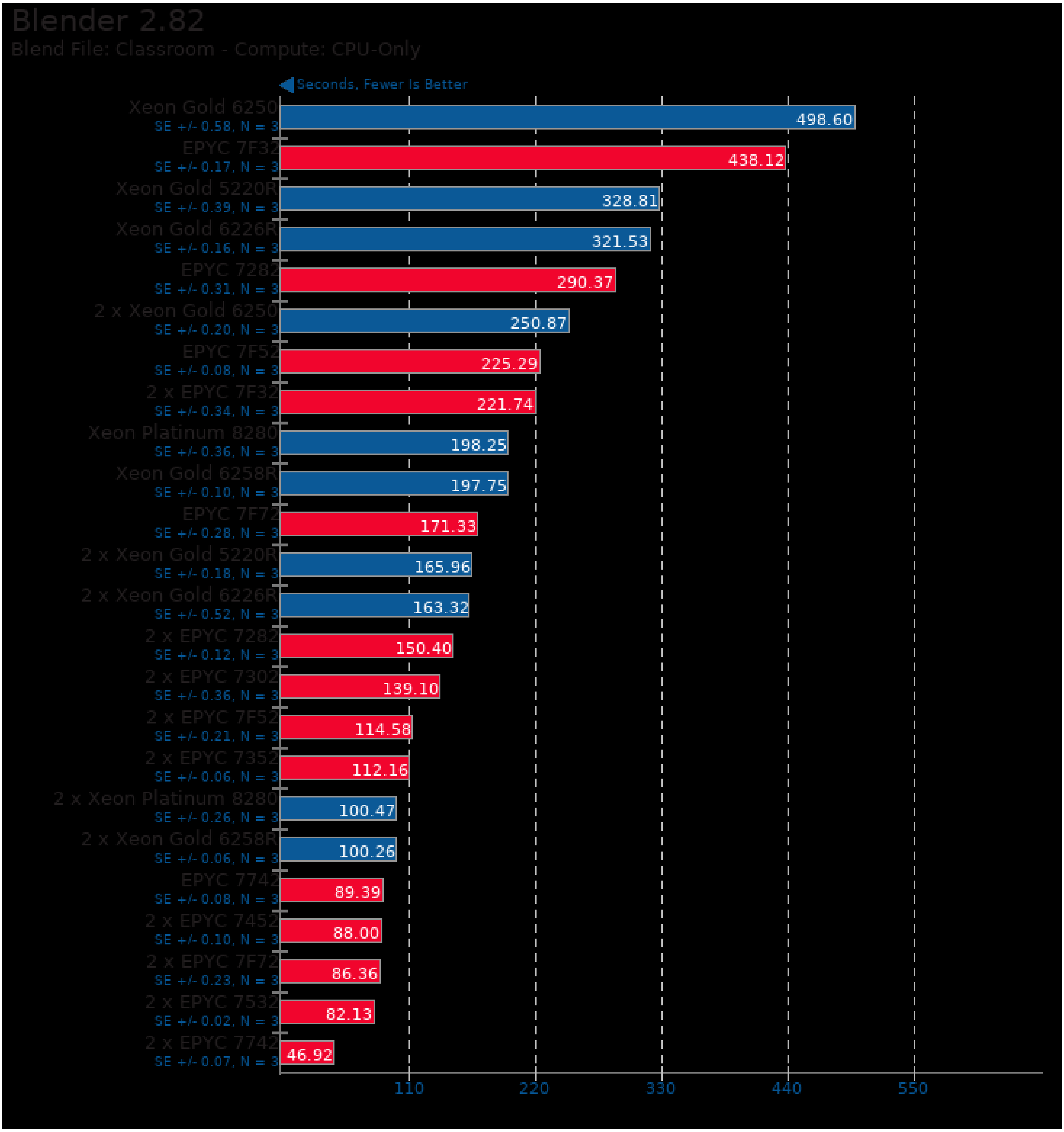

Radiance Benchmark 5.0
Test: SMP Parallel
Seconds, Fewer Is Better
Xeon Gold 5220R
242.52
Xeon Gold 6226R
242.00
Xeon Gold 6258R
236.50
Xeon Platinum 8280
235.00
2 x Xeon Gold 6226R
233.04
2 x EPYC 7352
232.10
2 x Xeon Gold 5220R
230.56
2 x EPYC 7282
226.57
2 x Xeon Platinum 8280
226.08
2 x Xeon Gold 6258R
225.80
EPYC 7282
224.32
2 x EPYC 7532
221.28
2 x EPYC 7302
220.82
2 x EPYC 7452
215.02
EPYC 7742
211.24
2 x EPYC 7742
210.65
Xeon Gold 6250
198.53
2 x EPYC 7F72
198.24
2 x Xeon Gold 6250
195.85
EPYC 7F72
193.95
2 x EPYC 7F52
187.86
2 x EPYC 7F32
184.73
EPYC 7F32
182.18
EPYC 7F52
181.76
50
100
150
200
250

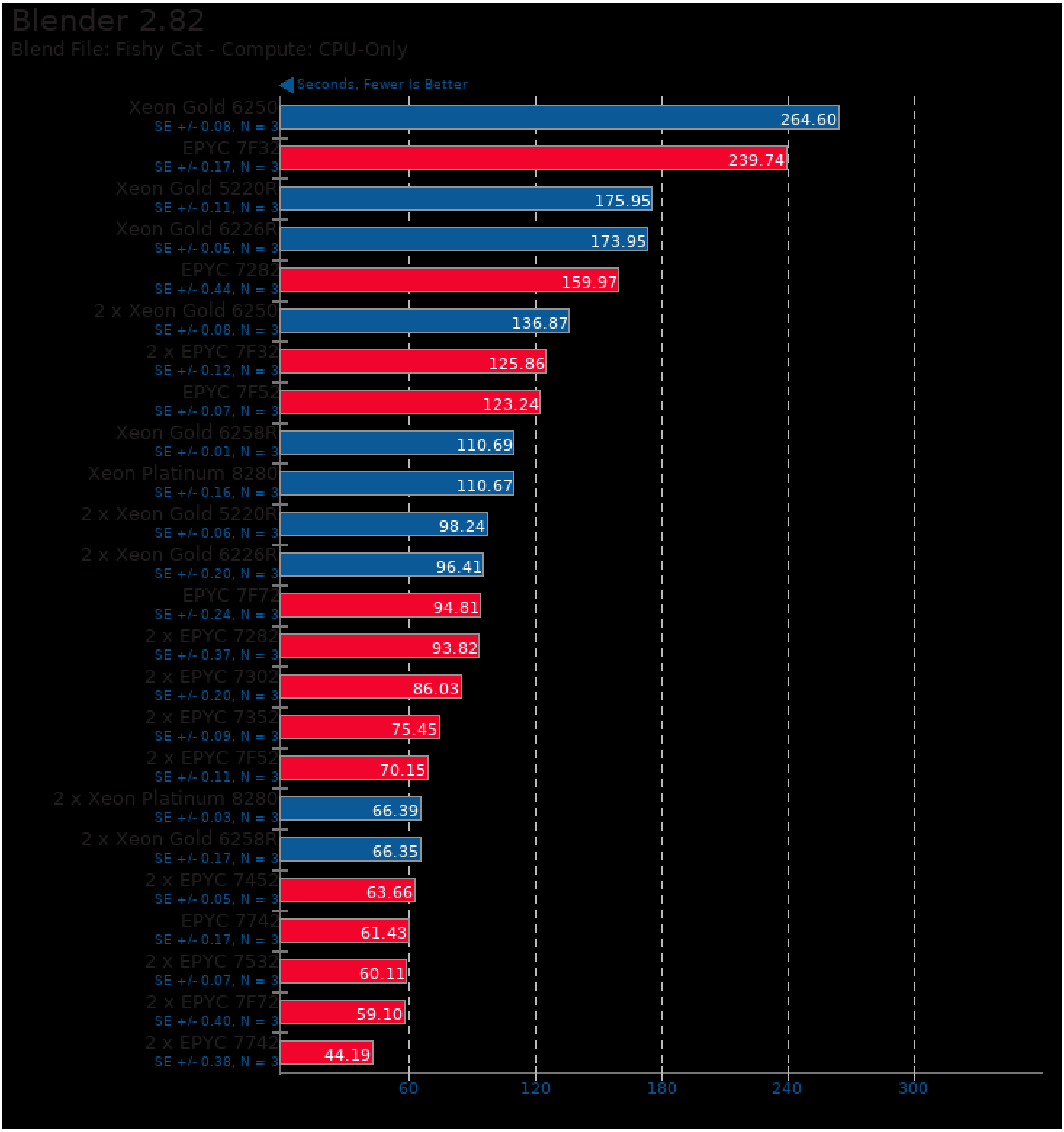

PostgreSQL pgbench 12.0
Scaling: Buffer Test - Test: Normal Load - Mode: Read Only
TPS, More Is Better
EPYC 7F32
SE +/- 306.99, N = 3
197276.27
Xeon Gold 6250
SE +/- 543.07, N = 3
240485.13
2 x EPYC 7F32
SE +/- 134.97, N = 3
309997.31
EPYC 7282
SE +/- 764.46, N = 3
343544.47
EPYC 7F52
SE +/- 444.60, N = 3
348616.04
2 x Xeon Gold 6250
SE +/- 4422.72, N = 3
375415.04
Xeon Gold 6226R
SE +/- 358.06, N = 3
376860.32
Xeon Gold 5220R
SE +/- 474.33, N = 3
383120.69
2 x EPYC 7F52
SE +/- 495.50, N = 3
474356.43
2 x EPYC 7302
SE +/- 3217.47, N = 3
493577.85
EPYC 7F72
SE +/- 679.69, N = 3
515160.67
2 x EPYC 7282
SE +/- 967.02, N = 3
529714.00
Xeon Platinum 8280
SE +/- 1625.61, N = 3
560887.77
Xeon Gold 6258R
SE +/- 434.41, N = 3
580953.48
2 x EPYC 7352
SE +/- 854.17, N = 3
585293.24
2 x Xeon Gold 6226R
SE +/- 494.87, N = 3
587882.23
2 x Xeon Gold 5220R
SE +/- 2029.20, N = 3
598798.57
2 x EPYC 7F72
SE +/- 311.90, N = 3
704450.59
2 x EPYC 7532
SE +/- 10726.55, N = 3
855210.43
2 x EPYC 7452
SE +/- 1033.24, N = 3
892351.76
2 x Xeon Gold 6258R
SE +/- 3246.43, N = 3
906770.63
2 x Xeon Platinum 8280
SE +/- 10457.35, N = 3
909916.49
2 x EPYC 7742
SE +/- 6710.52, N = 3
973258.62
EPYC 7742
SE +/- 3992.76, N = 3
989332.91
200K
400K
600K
800K
1000K
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lpthread -lrt -lcrypt -ldl -lm

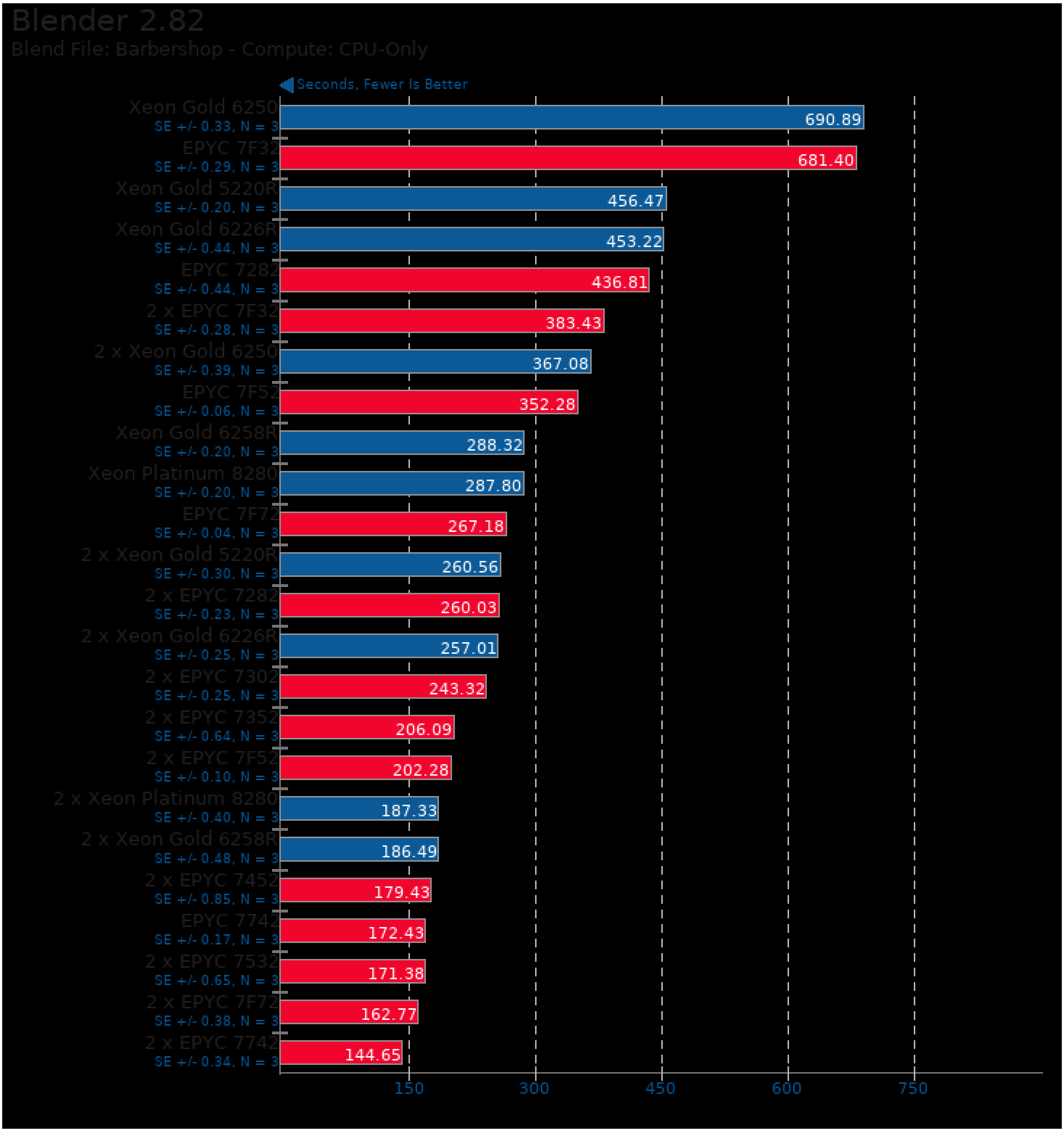

Basis Universal 1.12
Settings: UASTC Level 3
Seconds, Fewer Is Better
Xeon Gold 6250
SE +/- 0.01, N = 3
66.38
EPYC 7F32
SE +/- 0.01, N = 3
60.12
Xeon Gold 5220R
SE +/- 0.01, N = 3
46.71
Xeon Gold 6226R
SE +/- 0.02, N = 3
44.94
EPYC 7282
SE +/- 0.01, N = 3
40.95
2 x Xeon Gold 6250
SE +/- 0.04, N = 3
37.23
2 x EPYC 7F32
SE +/- 0.01, N = 3
33.74
EPYC 7F52
SE +/- 0.01, N = 3
33.53
Xeon Platinum 8280
SE +/- 0.01, N = 3
30.69
Xeon Gold 6258R
SE +/- 0.02, N = 3
30.45
2 x Xeon Gold 5220R
SE +/- 0.02, N = 3
27.98
2 x Xeon Gold 6226R
SE +/- 0.05, N = 3
27.23
EPYC 7F72
SE +/- 0.01, N = 3
26.51
2 x EPYC 7282
SE +/- 0.05, N = 3
25.15
2 x EPYC 7302
SE +/- 0.03, N = 3
24.02
2 x EPYC 7352
SE +/- 0.03, N = 3
21.06
2 x EPYC 7F52
SE +/- 0.02, N = 3
20.48
2 x Xeon Platinum 8280
SE +/- 0.02, N = 3
19.89
2 x Xeon Gold 6258R
SE +/- 0.02, N = 3
19.71
EPYC 7742
SE +/- 0.02, N = 3
17.76
2 x EPYC 7452
SE +/- 0.04, N = 3
17.70
2 x EPYC 7532
SE +/- 0.02, N = 3
17.34
2 x EPYC 7F72
SE +/- 0.01, N = 3
17.17
2 x EPYC 7742
SE +/- 0.02, N = 3
13.16
15
30
45
60
75
1. (CXX) g++ options: -std=c++11 -fvisibility=hidden -fPIC -fno-strict-aliasing -O3 -rdynamic -lm -lpthread

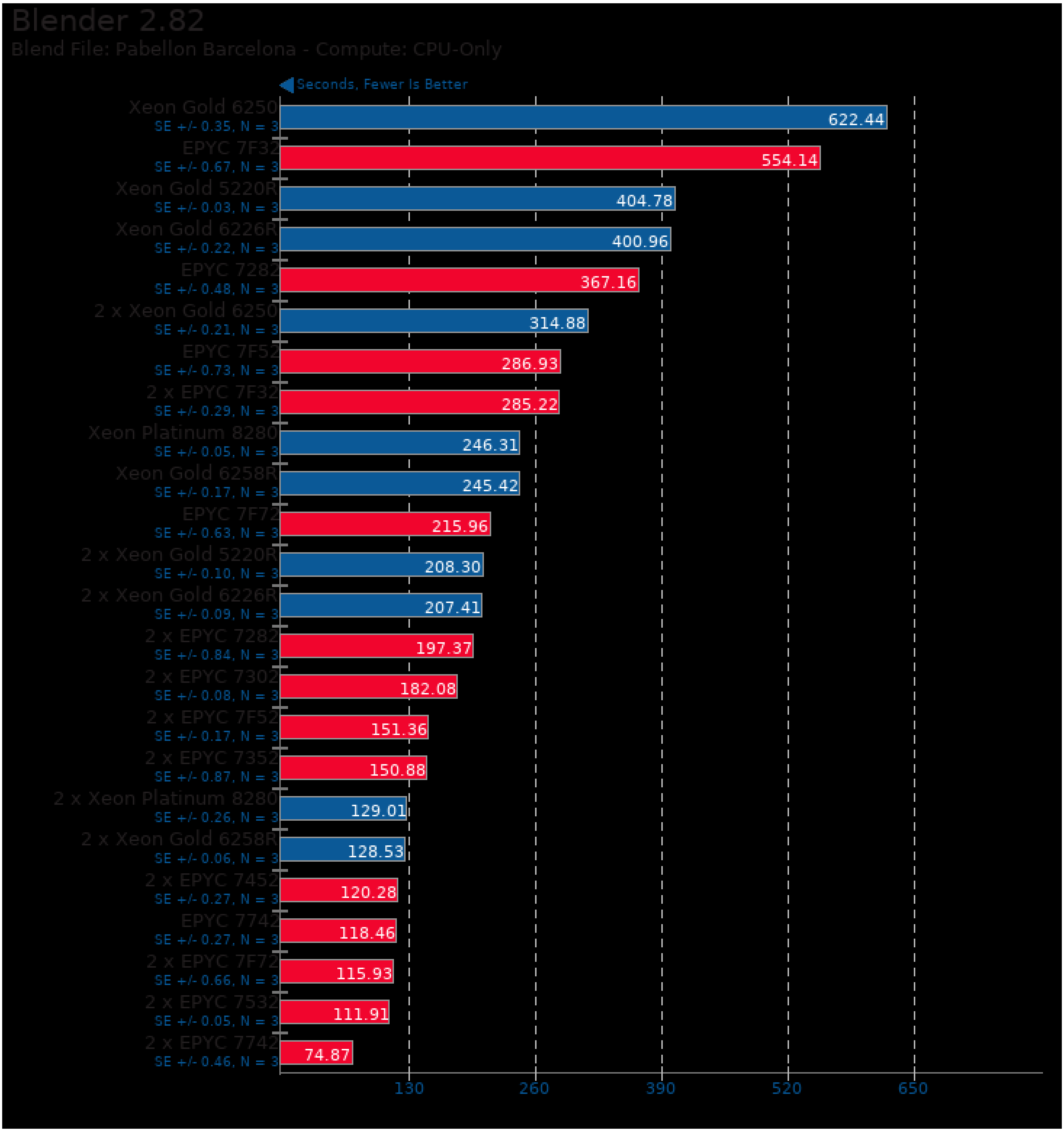

Chaos Group V-RAY 4.10.07
Mode: CPU
Ksamples, More Is Better
EPYC 7F32
SE +/- 29.16, N = 3
14284
Xeon Gold 6250
SE +/- 12.77, N = 3
14360
EPYC 7282
SE +/- 154.51, N = 3
21700
Xeon Gold 5220R
SE +/- 50.25, N = 3
21886
Xeon Gold 6226R
SE +/- 58.00, N = 3
22074
2 x EPYC 7F32
SE +/- 251.78, N = 3
24144
2 x Xeon Gold 6250
SE +/- 33.59, N = 3
26516
EPYC 7F52
SE +/- 118.27, N = 3
27598
2 x EPYC 7282
SE +/- 350.16, N = 7
32580
Xeon Gold 6258R
SE +/- 70.34, N = 3
34316
Xeon Platinum 8280
SE +/- 306.00, N = 3
34710
2 x Xeon Gold 6226R
SE +/- 369.19, N = 3
34749
2 x EPYC 7302
SE +/- 567.95, N = 3
35690
EPYC 7F72
SE +/- 292.75, N = 3
36396
2 x Xeon Gold 5220R
SE +/- 178.87, N = 3
40270
2 x EPYC 7F52
SE +/- 502.31, N = 3
40790
2 x EPYC 7352
SE +/- 454.07, N = 3
47866
2 x EPYC 7F72
SE +/- 204.08, N = 3
57404
2 x EPYC 7452
SE +/- 876.33, N = 3
57983
2 x EPYC 7532
SE +/- 123.21, N = 3
59529
2 x Xeon Platinum 8280
SE +/- 474.70, N = 3
64331
2 x Xeon Gold 6258R
SE +/- 615.26, N = 3
64714
EPYC 7742
SE +/- 321.11, N = 3
65976
14K
28K
42K
56K
70K

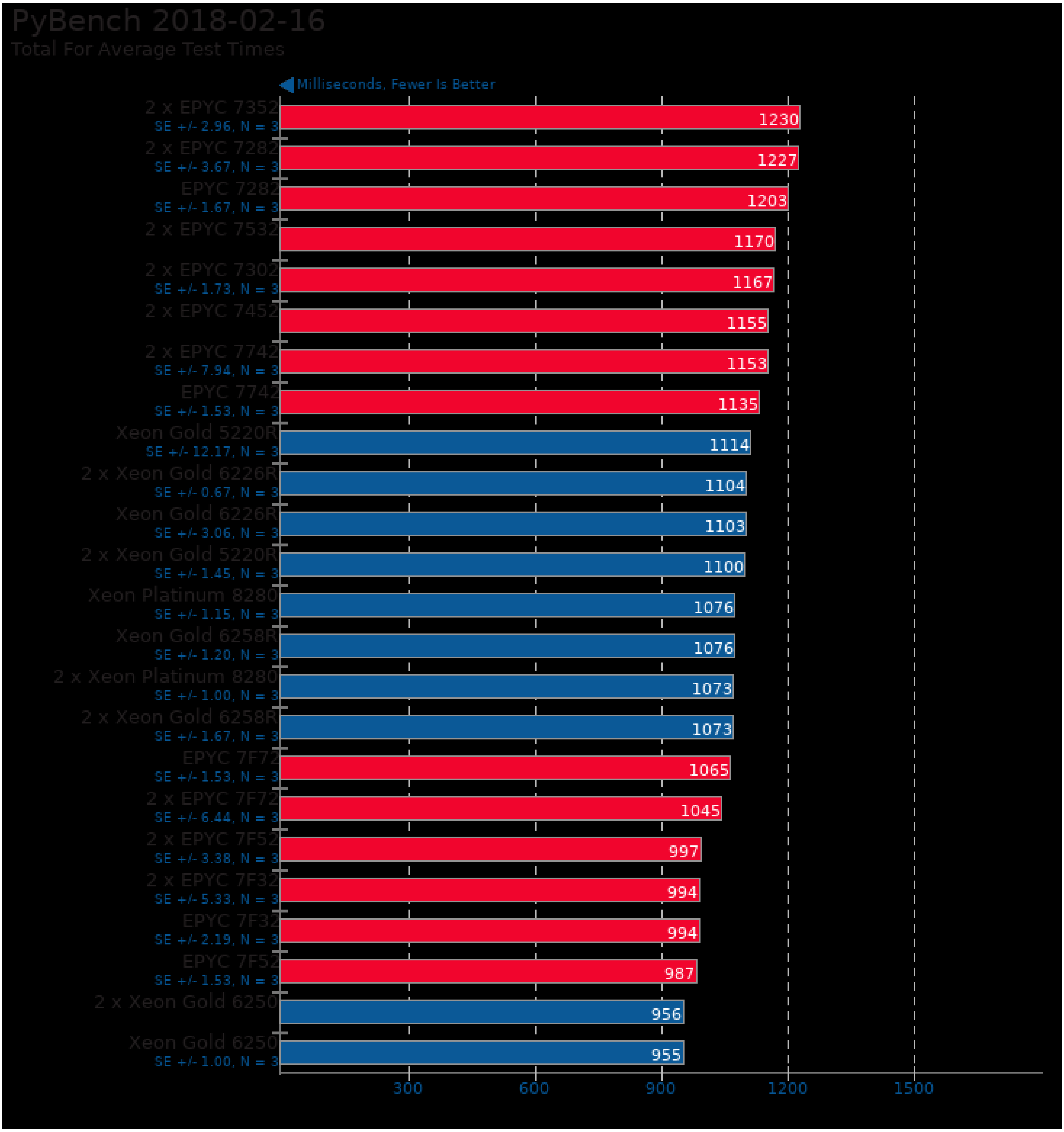

Blender 2.82
Blend File: BMW27 - Compute: CPU-Only
Seconds, Fewer Is Better
Xeon Gold 6250
SE +/- 0.11, N = 3
169.47
EPYC 7F32
SE +/- 0.10, N = 3
162.65
Xeon Gold 5220R
SE +/- 0.23, N = 3
113.30
Xeon Gold 6226R
SE +/- 0.17, N = 3
111.82
EPYC 7282
SE +/- 0.31, N = 3
109.08
2 x Xeon Gold 6250
SE +/- 0.22, N = 3
87.10
EPYC 7F52
SE +/- 0.23, N = 3
85.14
2 x EPYC 7F32
SE +/- 0.05, N = 3
84.04
Xeon Platinum 8280
SE +/- 0.09, N = 3
69.80
Xeon Gold 6258R
SE +/- 0.07, N = 3
69.77
EPYC 7F72
SE +/- 0.13, N = 3
64.92
2 x EPYC 7282
SE +/- 0.05, N = 3
60.67
2 x Xeon Gold 5220R
SE +/- 0.13, N = 3
60.67
2 x Xeon Gold 6226R
SE +/- 0.04, N = 3
59.45
2 x EPYC 7302
SE +/- 0.07, N = 3
55.25
2 x EPYC 7352
SE +/- 0.19, N = 3
47.23
2 x EPYC 7F52
SE +/- 0.05, N = 3
45.31
2 x Xeon Platinum 8280
SE +/- 0.09, N = 3
38.79
2 x Xeon Gold 6258R
SE +/- 0.04, N = 3
38.78
2 x EPYC 7452
SE +/- 0.11, N = 3
38.72
EPYC 7742
SE +/- 0.27, N = 3
38.33
2 x EPYC 7F72
SE +/- 0.08, N = 3
36.65
2 x EPYC 7532
SE +/- 0.08, N = 3
35.86
2 x EPYC 7742
SE +/- 0.13, N = 3
26.93
40
80
120
160
200

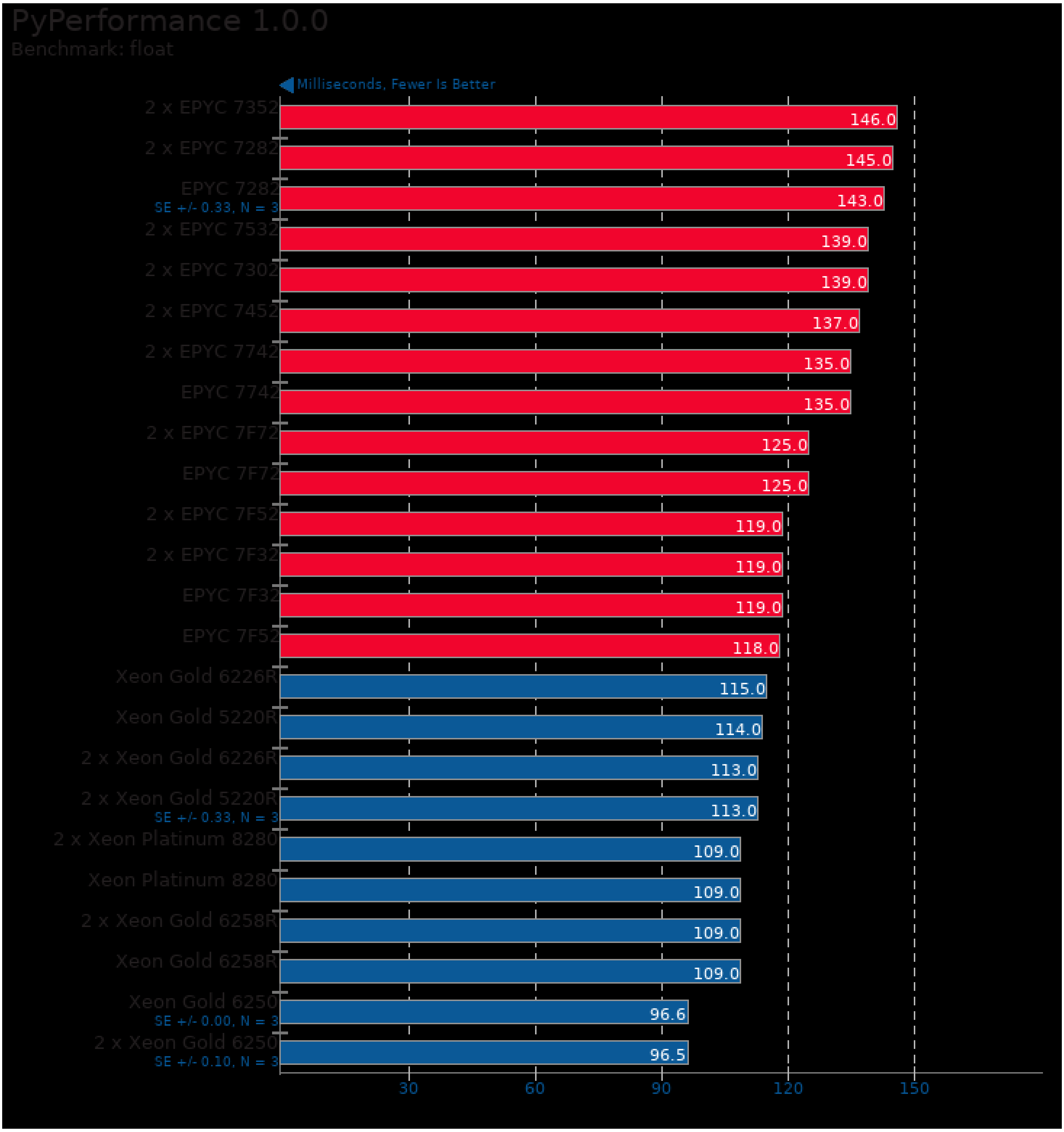

Blender 2.82
Blend File: Classroom - Compute: CPU-Only
Seconds, Fewer Is Better
Xeon Gold 6250
SE +/- 0.58, N = 3
498.60
EPYC 7F32
SE +/- 0.17, N = 3
438.12
Xeon Gold 5220R
SE +/- 0.39, N = 3
328.81
Xeon Gold 6226R
SE +/- 0.16, N = 3
321.53
EPYC 7282
SE +/- 0.31, N = 3
290.37
2 x Xeon Gold 6250
SE +/- 0.20, N = 3
250.87
EPYC 7F52
SE +/- 0.08, N = 3
225.29
2 x EPYC 7F32
SE +/- 0.34, N = 3
221.74
Xeon Platinum 8280
SE +/- 0.36, N = 3
198.25
Xeon Gold 6258R
SE +/- 0.10, N = 3
197.75
EPYC 7F72
SE +/- 0.28, N = 3
171.33
2 x Xeon Gold 5220R
SE +/- 0.18, N = 3
165.96
2 x Xeon Gold 6226R
SE +/- 0.52, N = 3
163.32
2 x EPYC 7282
SE +/- 0.12, N = 3
150.40
2 x EPYC 7302
SE +/- 0.36, N = 3
139.10
2 x EPYC 7F52
SE +/- 0.21, N = 3
114.58
2 x EPYC 7352
SE +/- 0.06, N = 3
112.16
2 x Xeon Platinum 8280
SE +/- 0.26, N = 3
100.47
2 x Xeon Gold 6258R
SE +/- 0.06, N = 3
100.26
EPYC 7742
SE +/- 0.08, N = 3
89.39
2 x EPYC 7452
SE +/- 0.10, N = 3
88.00
2 x EPYC 7F72
SE +/- 0.23, N = 3
86.36
2 x EPYC 7532
SE +/- 0.02, N = 3
82.13
2 x EPYC 7742
SE +/- 0.07, N = 3
46.92
110
220
330
440
550

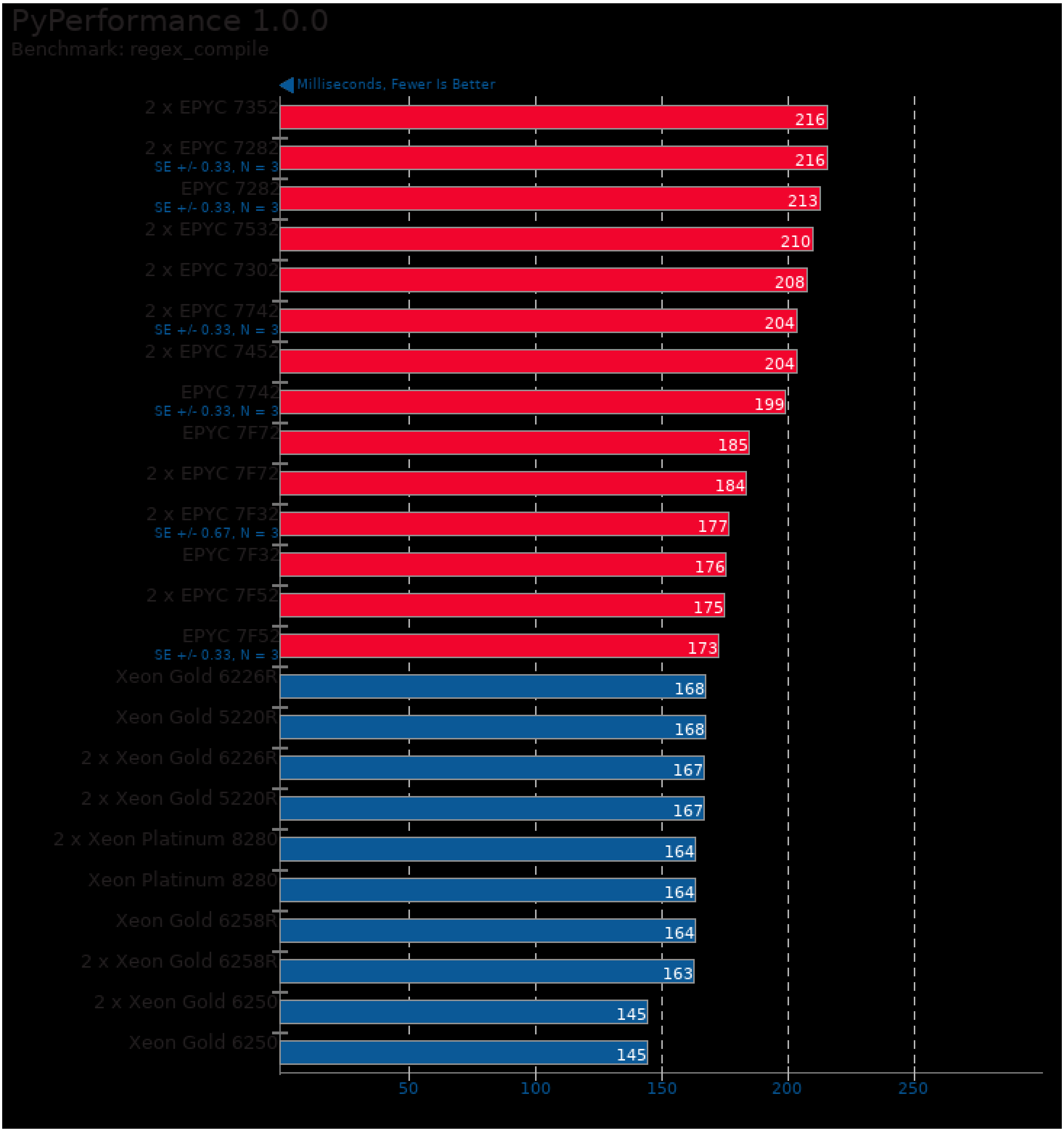

Blender 2.82
Blend File: Fishy Cat - Compute: CPU-Only
Seconds, Fewer Is Better
Xeon Gold 6250
SE +/- 0.08, N = 3
264.60
EPYC 7F32
SE +/- 0.17, N = 3
239.74
Xeon Gold 5220R
SE +/- 0.11, N = 3
175.95
Xeon Gold 6226R
SE +/- 0.05, N = 3
173.95
EPYC 7282
SE +/- 0.44, N = 3
159.97
2 x Xeon Gold 6250
SE +/- 0.08, N = 3
136.87
2 x EPYC 7F32
SE +/- 0.12, N = 3
125.86
EPYC 7F52
SE +/- 0.07, N = 3
123.24
Xeon Gold 6258R
SE +/- 0.01, N = 3
110.69
Xeon Platinum 8280
SE +/- 0.16, N = 3
110.67
2 x Xeon Gold 5220R
SE +/- 0.06, N = 3
98.24
2 x Xeon Gold 6226R
SE +/- 0.20, N = 3
96.41
EPYC 7F72
SE +/- 0.24, N = 3
94.81
2 x EPYC 7282
SE +/- 0.37, N = 3
93.82
2 x EPYC 7302
SE +/- 0.20, N = 3
86.03
2 x EPYC 7352
SE +/- 0.09, N = 3
75.45
2 x EPYC 7F52
SE +/- 0.11, N = 3
70.15
2 x Xeon Platinum 8280
SE +/- 0.03, N = 3
66.39
2 x Xeon Gold 6258R
SE +/- 0.17, N = 3
66.35
2 x EPYC 7452
SE +/- 0.05, N = 3
63.66
EPYC 7742
SE +/- 0.17, N = 3
61.43
2 x EPYC 7532
SE +/- 0.07, N = 3
60.11
2 x EPYC 7F72
SE +/- 0.40, N = 3
59.10
2 x EPYC 7742
SE +/- 0.38, N = 3
44.19
60
120
180
240
300

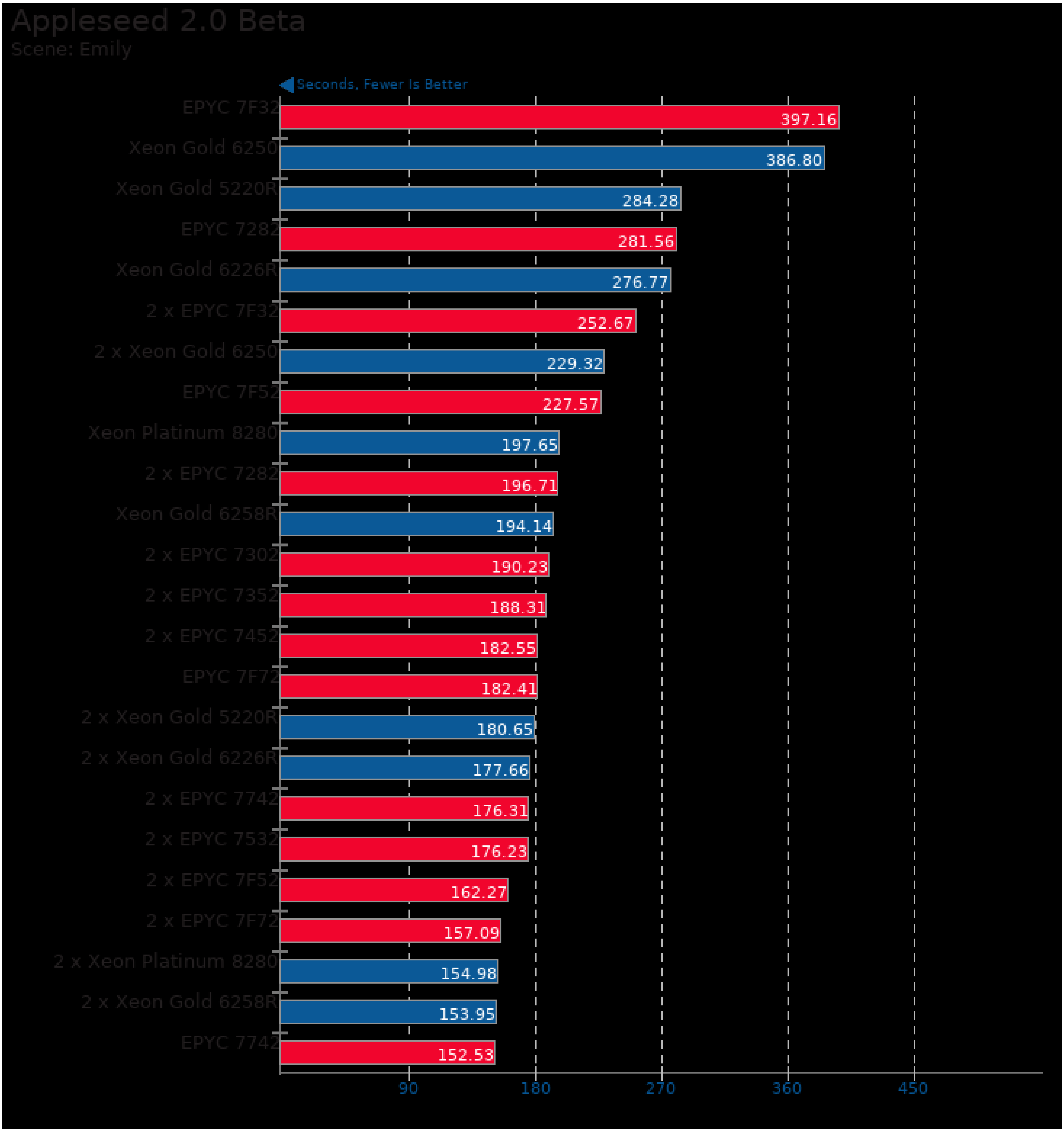

Blender 2.82
Blend File: Barbershop - Compute: CPU-Only
Seconds, Fewer Is Better
Xeon Gold 6250
SE +/- 0.33, N = 3
690.89
EPYC 7F32
SE +/- 0.29, N = 3
681.40
Xeon Gold 5220R
SE +/- 0.20, N = 3
456.47
Xeon Gold 6226R
SE +/- 0.44, N = 3
453.22
EPYC 7282
SE +/- 0.44, N = 3
436.81
2 x EPYC 7F32
SE +/- 0.28, N = 3
383.43
2 x Xeon Gold 6250
SE +/- 0.39, N = 3
367.08
EPYC 7F52
SE +/- 0.06, N = 3
352.28
Xeon Gold 6258R
SE +/- 0.20, N = 3
288.32
Xeon Platinum 8280
SE +/- 0.20, N = 3
287.80
EPYC 7F72
SE +/- 0.04, N = 3
267.18
2 x Xeon Gold 5220R
SE +/- 0.30, N = 3
260.56
2 x EPYC 7282
SE +/- 0.23, N = 3
260.03
2 x Xeon Gold 6226R
SE +/- 0.25, N = 3
257.01
2 x EPYC 7302
SE +/- 0.25, N = 3
243.32
2 x EPYC 7352
SE +/- 0.64, N = 3
206.09
2 x EPYC 7F52
SE +/- 0.10, N = 3
202.28
2 x Xeon Platinum 8280
SE +/- 0.40, N = 3
187.33
2 x Xeon Gold 6258R
SE +/- 0.48, N = 3
186.49
2 x EPYC 7452
SE +/- 0.85, N = 3
179.43
EPYC 7742
SE +/- 0.17, N = 3
172.43
2 x EPYC 7532
SE +/- 0.65, N = 3
171.38
2 x EPYC 7F72
SE +/- 0.38, N = 3
162.77
2 x EPYC 7742
SE +/- 0.34, N = 3
144.65
150
300
450
600
750

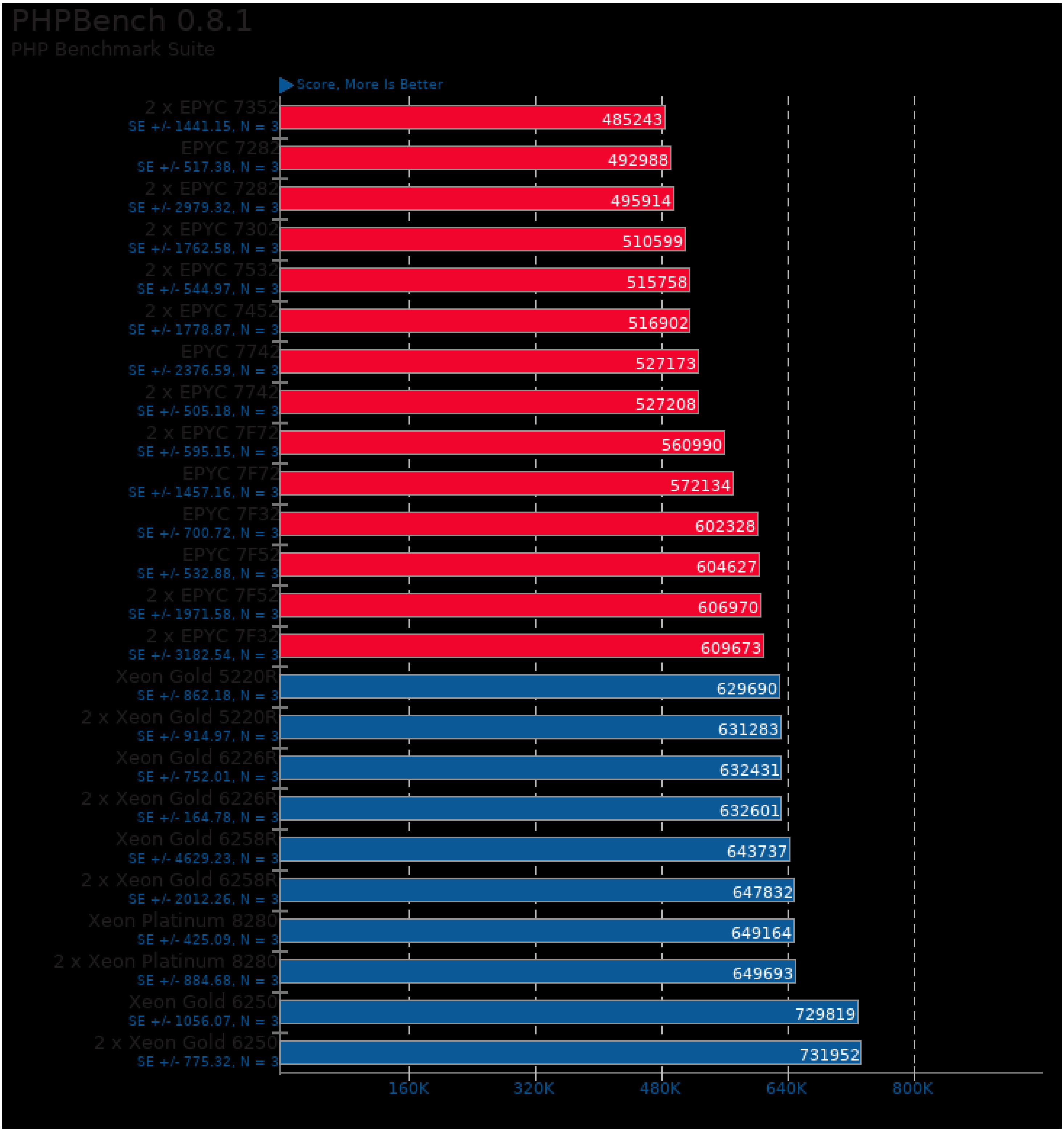

Blender 2.82
Blend File: Pabellon Barcelona - Compute: CPU-Only
Seconds, Fewer Is Better
Xeon Gold 6250
SE +/- 0.35, N = 3
622.44
EPYC 7F32
SE +/- 0.67, N = 3
554.14
Xeon Gold 5220R
SE +/- 0.03, N = 3
404.78
Xeon Gold 6226R
SE +/- 0.22, N = 3
400.96
EPYC 7282
SE +/- 0.48, N = 3
367.16
2 x Xeon Gold 6250
SE +/- 0.21, N = 3
314.88
EPYC 7F52
SE +/- 0.73, N = 3
286.93
2 x EPYC 7F32
SE +/- 0.29, N = 3
285.22
Xeon Platinum 8280
SE +/- 0.05, N = 3
246.31
Xeon Gold 6258R
SE +/- 0.17, N = 3
245.42
EPYC 7F72
SE +/- 0.63, N = 3
215.96
2 x Xeon Gold 5220R
SE +/- 0.10, N = 3
208.30
2 x Xeon Gold 6226R
SE +/- 0.09, N = 3
207.41
2 x EPYC 7282
SE +/- 0.84, N = 3
197.37
2 x EPYC 7302
SE +/- 0.08, N = 3
182.08
2 x EPYC 7F52
SE +/- 0.17, N = 3
151.36
2 x EPYC 7352
SE +/- 0.87, N = 3
150.88
2 x Xeon Platinum 8280
SE +/- 0.26, N = 3
129.01
2 x Xeon Gold 6258R
SE +/- 0.06, N = 3
128.53
2 x EPYC 7452
SE +/- 0.27, N = 3
120.28
EPYC 7742
SE +/- 0.27, N = 3
118.46
2 x EPYC 7F72
SE +/- 0.66, N = 3
115.93
2 x EPYC 7532
SE +/- 0.05, N = 3
111.91
2 x EPYC 7742
SE +/- 0.46, N = 3
74.87
130
260
390
520
650

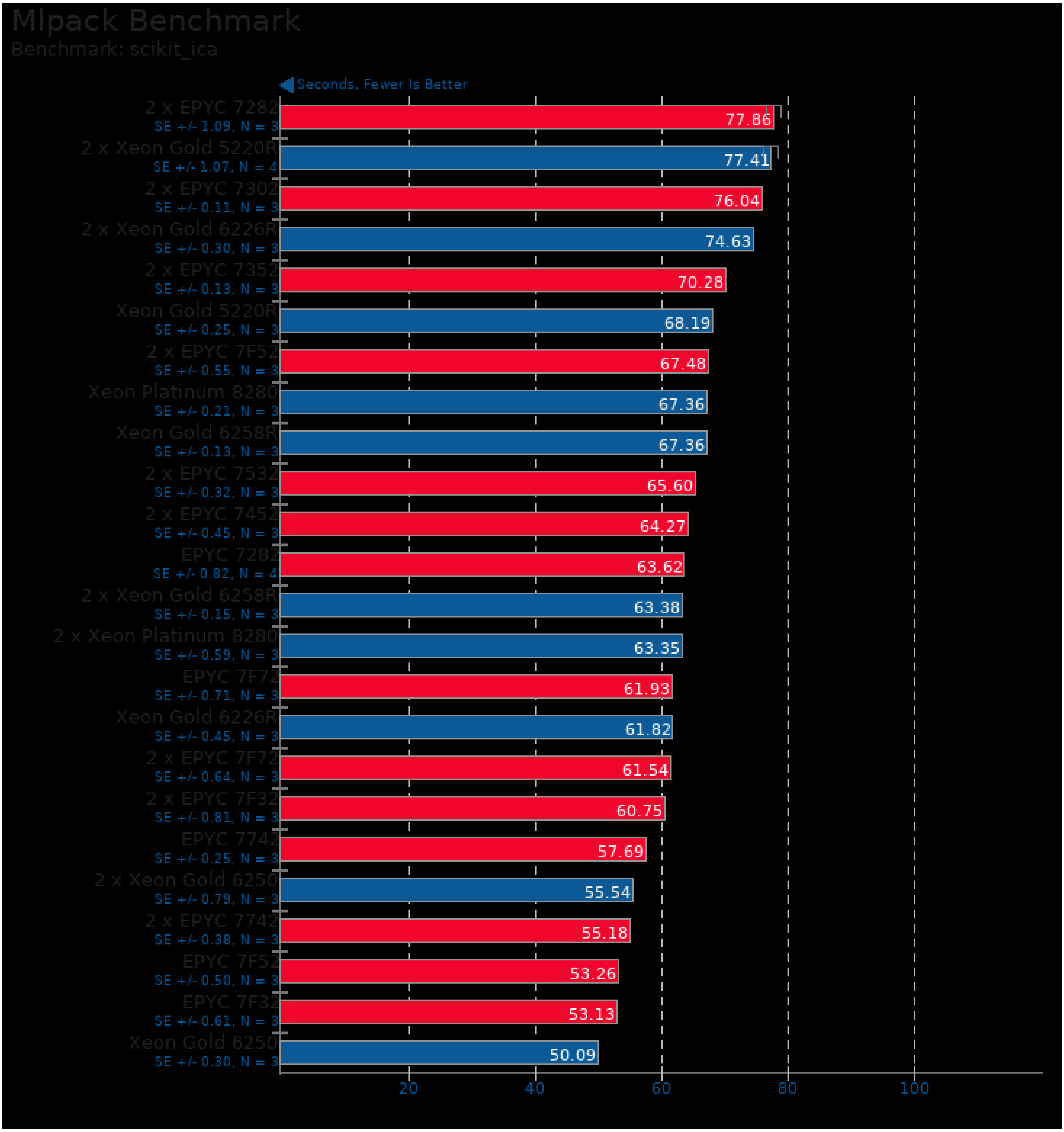

PyBench 2018-02-16
Total For Average Test Times
Milliseconds, Fewer Is Better
2 x EPYC 7352
SE +/- 2.96, N = 3
1230
2 x EPYC 7282
SE +/- 3.67, N = 3
1227
EPYC 7282
SE +/- 1.67, N = 3
1203
2 x EPYC 7532
1170
2 x EPYC 7302
SE +/- 1.73, N = 3
1167
2 x EPYC 7452
1155
2 x EPYC 7742
SE +/- 7.94, N = 3
1153
EPYC 7742
SE +/- 1.53, N = 3
1135
Xeon Gold 5220R
SE +/- 12.17, N = 3
1114
2 x Xeon Gold 6226R
SE +/- 0.67, N = 3
1104
Xeon Gold 6226R
SE +/- 3.06, N = 3
1103
2 x Xeon Gold 5220R
SE +/- 1.45, N = 3
1100
Xeon Platinum 8280
SE +/- 1.15, N = 3
1076
Xeon Gold 6258R
SE +/- 1.20, N = 3
1076
2 x Xeon Platinum 8280
SE +/- 1.00, N = 3
1073
2 x Xeon Gold 6258R
SE +/- 1.67, N = 3
1073
EPYC 7F72
SE +/- 1.53, N = 3
1065
2 x EPYC 7F72
SE +/- 6.44, N = 3
1045
2 x EPYC 7F52
SE +/- 3.38, N = 3
997
2 x EPYC 7F32
SE +/- 5.33, N = 3
994
EPYC 7F32
SE +/- 2.19, N = 3
994
EPYC 7F52
SE +/- 1.53, N = 3
987
2 x Xeon Gold 6250
956
Xeon Gold 6250
SE +/- 1.00, N = 3
955
300
600
900
1200
1500

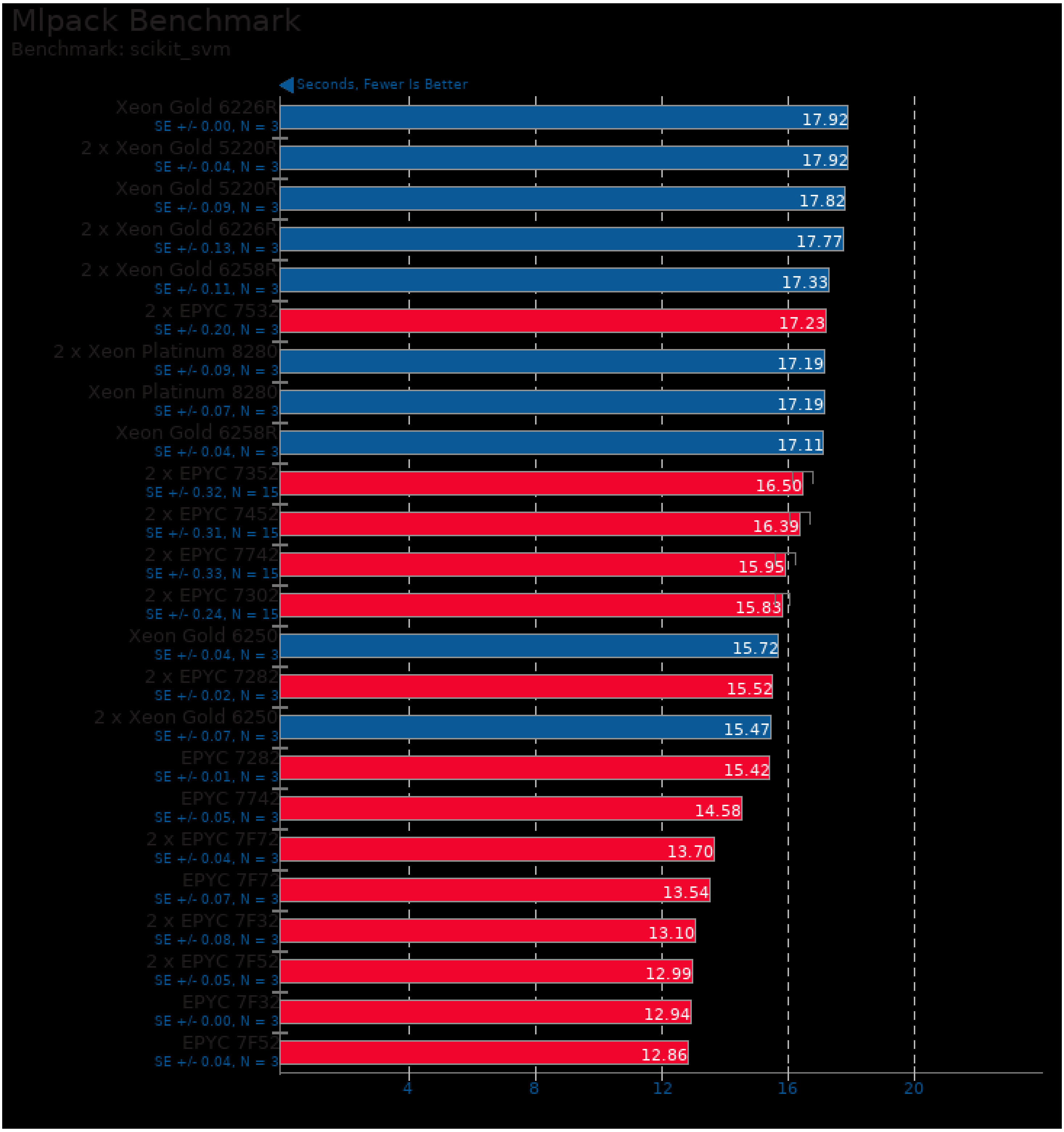

PyPerformance 1.0.0
Benchmark: float
Milliseconds, Fewer Is Better
2 x EPYC 7352
146.0
2 x EPYC 7282
145.0
EPYC 7282
SE +/- 0.33, N = 3
143.0
2 x EPYC 7532
139.0
2 x EPYC 7302
139.0
2 x EPYC 7452
137.0
2 x EPYC 7742
135.0
EPYC 7742
135.0
2 x EPYC 7F72
125.0
EPYC 7F72
125.0
2 x EPYC 7F52
119.0
2 x EPYC 7F32
119.0
EPYC 7F32
119.0
EPYC 7F52
118.0
Xeon Gold 6226R
115.0
Xeon Gold 5220R
114.0
2 x Xeon Gold 6226R
113.0
2 x Xeon Gold 5220R
SE +/- 0.33, N = 3
113.0
2 x Xeon Platinum 8280
109.0
Xeon Platinum 8280
109.0
2 x Xeon Gold 6258R
109.0
Xeon Gold 6258R
109.0
Xeon Gold 6250
SE +/- 0.00, N = 3
96.6
2 x Xeon Gold 6250
SE +/- 0.10, N = 3
96.5
30
60
90
120
150

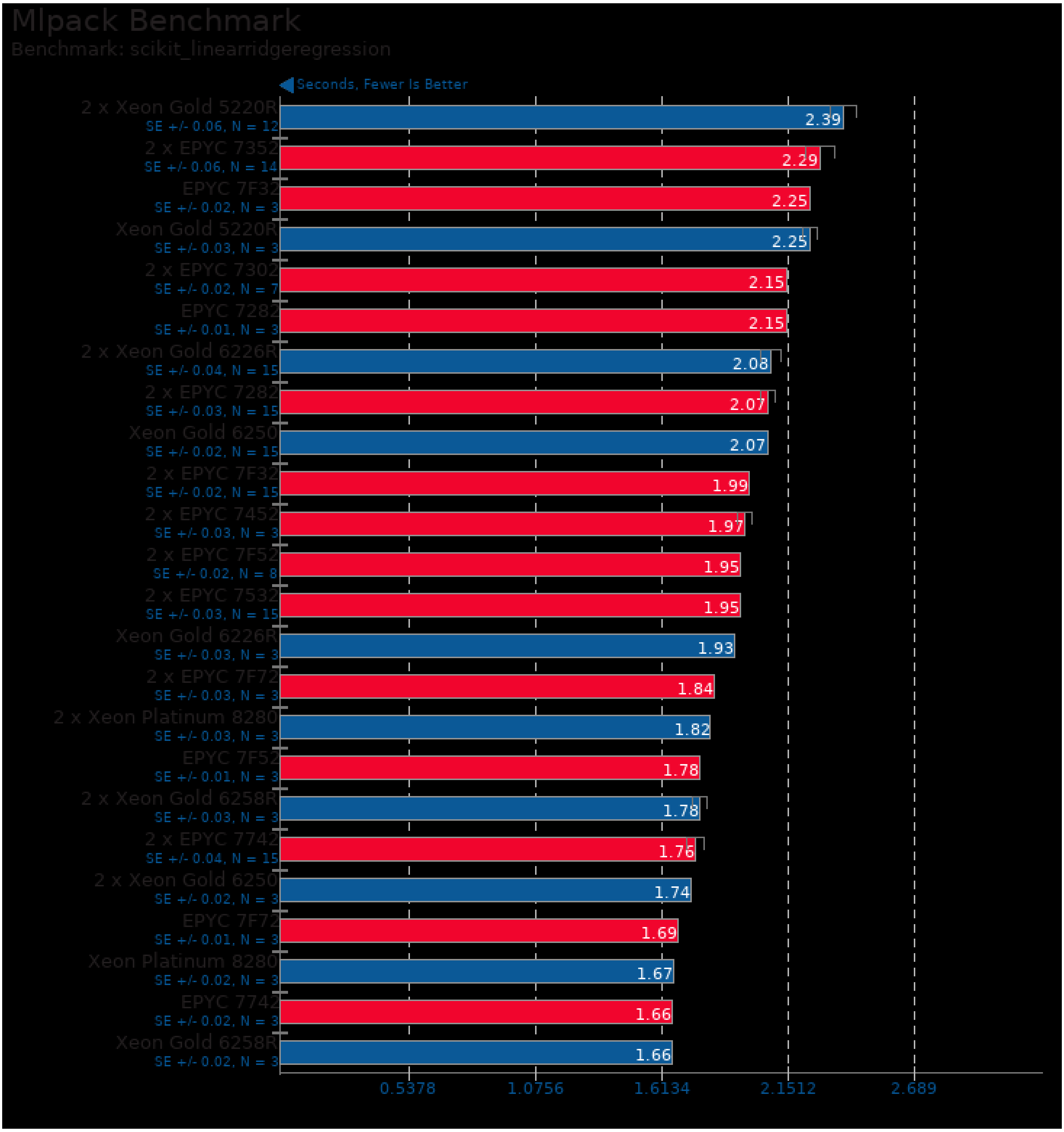

PyPerformance 1.0.0
Benchmark: regex_compile
Milliseconds, Fewer Is Better
2 x EPYC 7352
216
2 x EPYC 7282
SE +/- 0.33, N = 3
216
EPYC 7282
SE +/- 0.33, N = 3
213
2 x EPYC 7532
210
2 x EPYC 7302
208
2 x EPYC 7742
SE +/- 0.33, N = 3
204
2 x EPYC 7452
204
EPYC 7742
SE +/- 0.33, N = 3
199
EPYC 7F72
185
2 x EPYC 7F72
184
2 x EPYC 7F32
SE +/- 0.67, N = 3
177
EPYC 7F32
176
2 x EPYC 7F52
175
EPYC 7F52
SE +/- 0.33, N = 3
173
Xeon Gold 6226R
168
Xeon Gold 5220R
168
2 x Xeon Gold 6226R
167
2 x Xeon Gold 5220R
167
2 x Xeon Platinum 8280
164
Xeon Platinum 8280
164
Xeon Gold 6258R
164
2 x Xeon Gold 6258R
163
2 x Xeon Gold 6250
145
Xeon Gold 6250
145
50
100
150
200
250

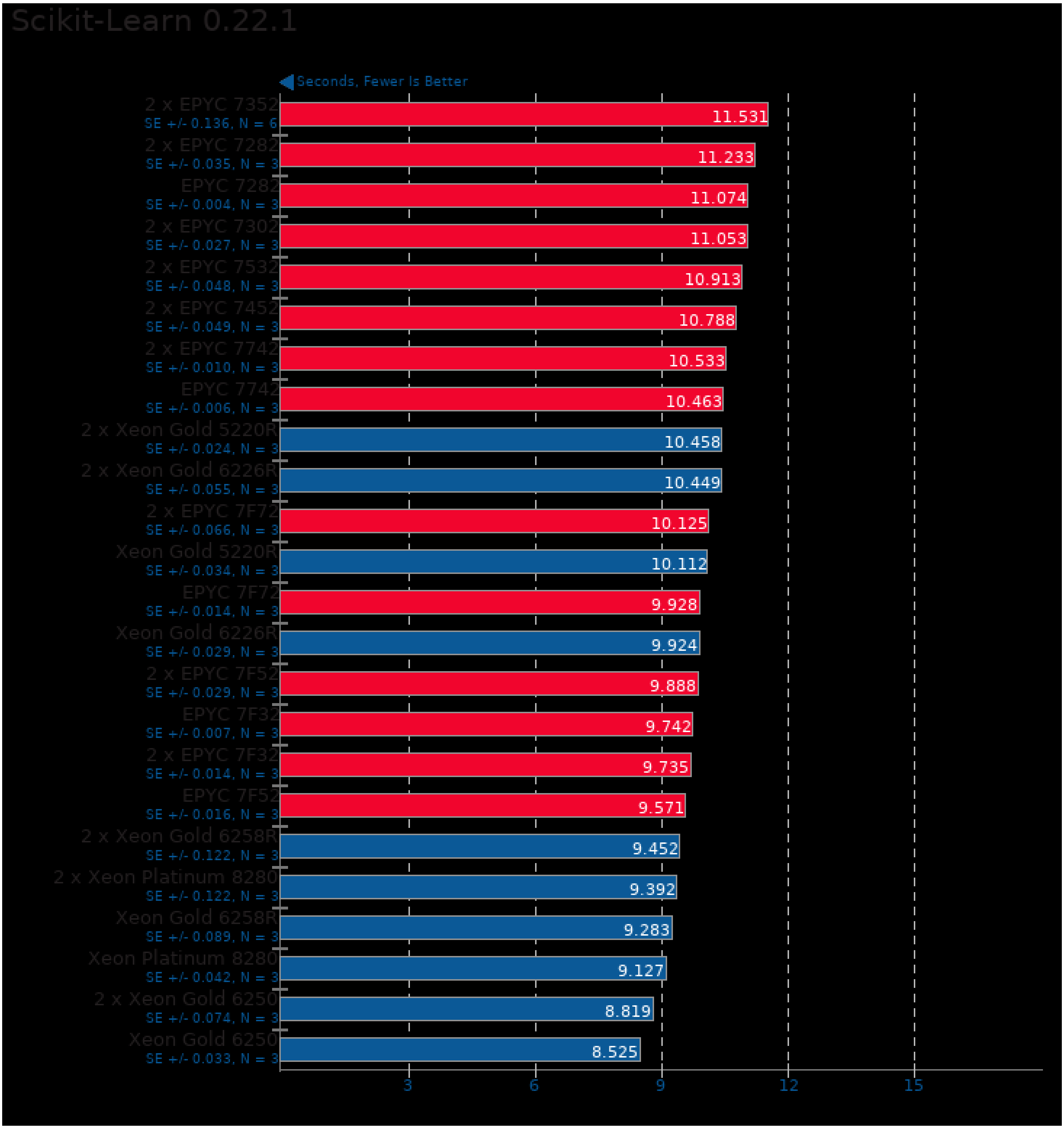

Appleseed 2.0 Beta
Scene: Emily
Seconds, Fewer Is Better
EPYC 7F32 397.16
Xeon Gold 6250 386.80
Xeon Gold 5220R 284.28
EPYC 7282 281.56
Xeon Gold 6226R 276.77
2 x EPYC 7F32 252.67
2 x Xeon Gold 6250 229.32
EPYC 7F52 227.57
Xeon Platinum 8280 197.65
2 x EPYC 7282 196.71
Xeon Gold 6258R 194.14
2 x EPYC 7302 190.23
2 x EPYC 7352 188.31
2 x EPYC 7452 182.55
EPYC 7F72 182.41
2 x Xeon Gold 5220R 180.65
2 x Xeon Gold 6226R 177.66
2 x EPYC 7742 176.31
2 x EPYC 7532 176.23
2 x EPYC 7F52 162.27
2 x EPYC 7F72 157.09
2 x Xeon Platinum 8280 154.98
2 x Xeon Gold 6258R 153.95
EPYC 7742 152.53
90
180
270
360
450

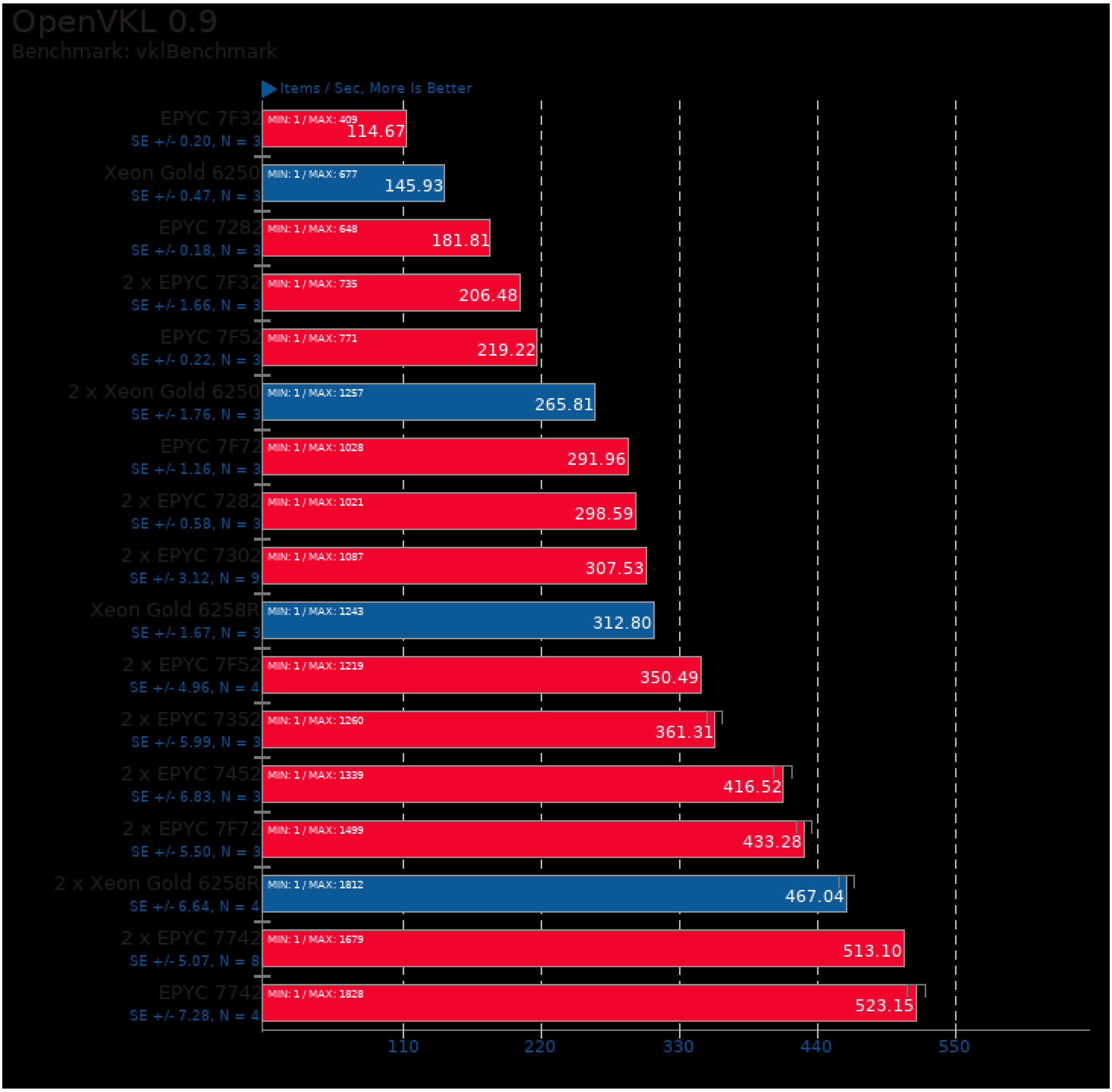

PHPBench 0.8.1
PHP Benchmark Suite
Score, More Is Better
2 x EPYC 7352
SE +/- 1441.15, N = 3
485243
EPYC 7282
SE +/- 517.38, N = 3
492988
2 x EPYC 7282
SE +/- 2979.32, N = 3
495914
2 x EPYC 7302
SE +/- 1762.58, N = 3
510599
2 x EPYC 7532
SE +/- 544.97, N = 3
515758
2 x EPYC 7452
SE +/- 1778.87, N = 3
516902
EPYC 7742
SE +/- 2376.59, N = 3
527173
2 x EPYC 7742
SE +/- 505.18, N = 3
527208
2 x EPYC 7F72
SE +/- 595.15, N = 3
560990
EPYC 7F72
SE +/- 1457.16, N = 3
572134
EPYC 7F32
SE +/- 700.72, N = 3
602328
EPYC 7F52
SE +/- 532.88, N = 3
604627
2 x EPYC 7F52
SE +/- 1971.58, N = 3
606970
2 x EPYC 7F32
SE +/- 3182.54, N = 3
609673
Xeon Gold 5220R
SE +/- 862.18, N = 3
629690
2 x Xeon Gold 5220R
SE +/- 914.97, N = 3
631283
Xeon Gold 6226R
SE +/- 752.01, N = 3
632431
2 x Xeon Gold 6226R
SE +/- 164.78, N = 3
632601
Xeon Gold 6258R
SE +/- 4629.23, N = 3
643737
2 x Xeon Gold 6258R
SE +/- 2012.26, N = 3
647832
Xeon Platinum 8280
SE +/- 425.09, N = 3
649164
2 x Xeon Platinum 8280
SE +/- 884.68, N = 3
649693
Xeon Gold 6250
SE +/- 1056.07, N = 3
729819
2 x Xeon Gold 6250
SE +/- 775.32, N = 3
731952
160K
320K
480K
640K
800K

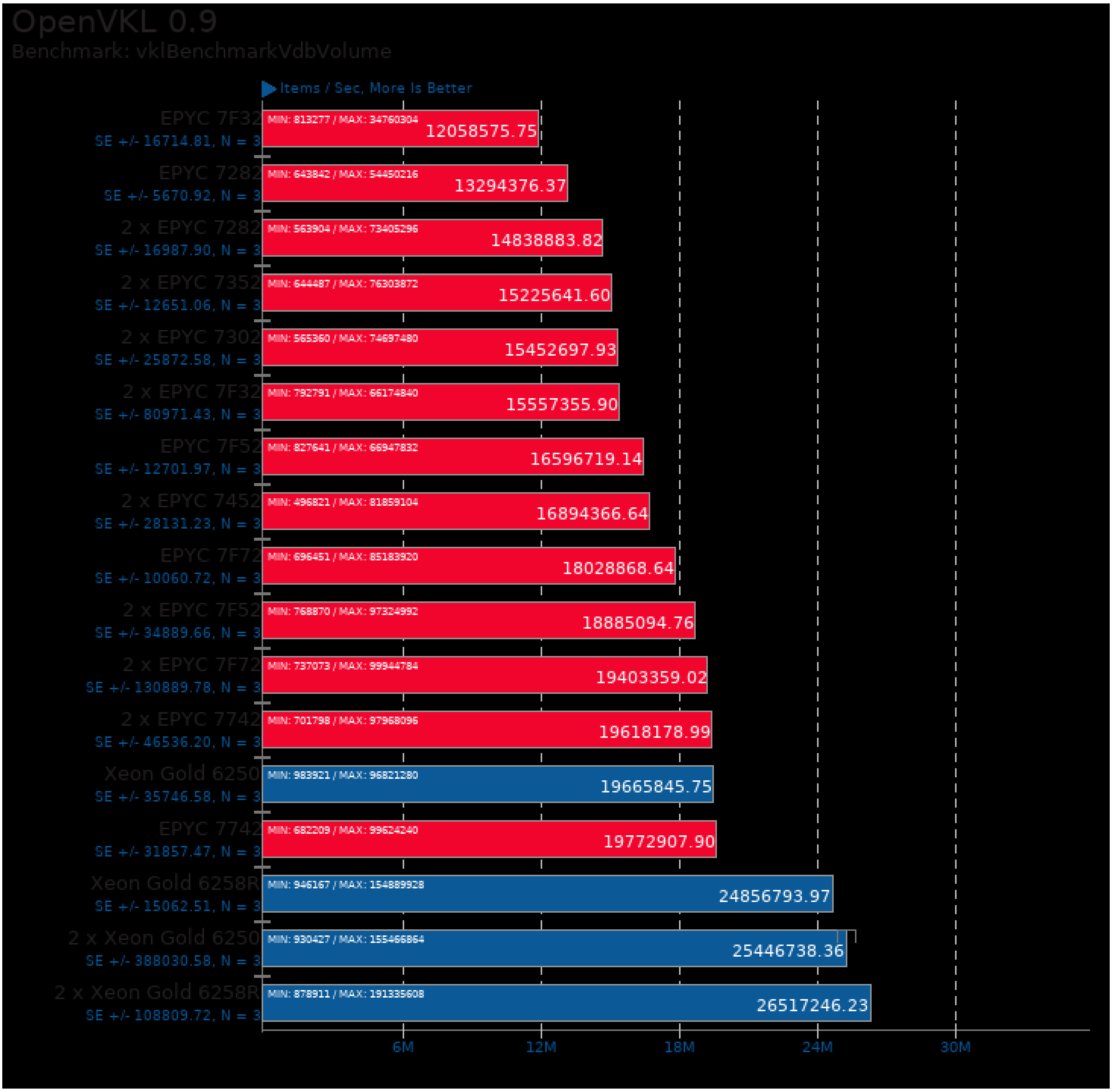

Mlpack Benchmark
Benchmark: scikit_ica
Seconds, Fewer Is Better
2 x EPYC 7282
SE +/- 1.09, N = 3
77.86
2 x Xeon Gold 5220R
SE +/- 1.07, N = 4
77.41
2 x EPYC 7302
SE +/- 0.11, N = 3
76.04
2 x Xeon Gold 6226R
SE +/- 0.30, N = 3
74.63
2 x EPYC 7352
SE +/- 0.13, N = 3
70.28
Xeon Gold 5220R
SE +/- 0.25, N = 3
68.19
2 x EPYC 7F52
SE +/- 0.55, N = 3
67.48
Xeon Platinum 8280
SE +/- 0.21, N = 3
67.36
Xeon Gold 6258R
SE +/- 0.13, N = 3
67.36
2 x EPYC 7532
SE +/- 0.32, N = 3
65.60
2 x EPYC 7452
SE +/- 0.45, N = 3
64.27
EPYC 7282
SE +/- 0.82, N = 4
63.62
2 x Xeon Gold 6258R
SE +/- 0.15, N = 3
63.38
2 x Xeon Platinum 8280
SE +/- 0.59, N = 3
63.35
EPYC 7F72
SE +/- 0.71, N = 3
61.93
Xeon Gold 6226R
SE +/- 0.45, N = 3
61.82
2 x EPYC 7F72
SE +/- 0.64, N = 3
61.54
2 x EPYC 7F32
SE +/- 0.81, N = 3
60.75
EPYC 7742
SE +/- 0.25, N = 3
57.69
2 x Xeon Gold 6250
SE +/- 0.79, N = 3
55.54
2 x EPYC 7742
SE +/- 0.38, N = 3
55.18
EPYC 7F52
SE +/- 0.50, N = 3
53.26
EPYC 7F32
SE +/- 0.61, N = 3
53.13
Xeon Gold 6250
SE +/- 0.30, N = 3
50.09
20
40
60
80
100

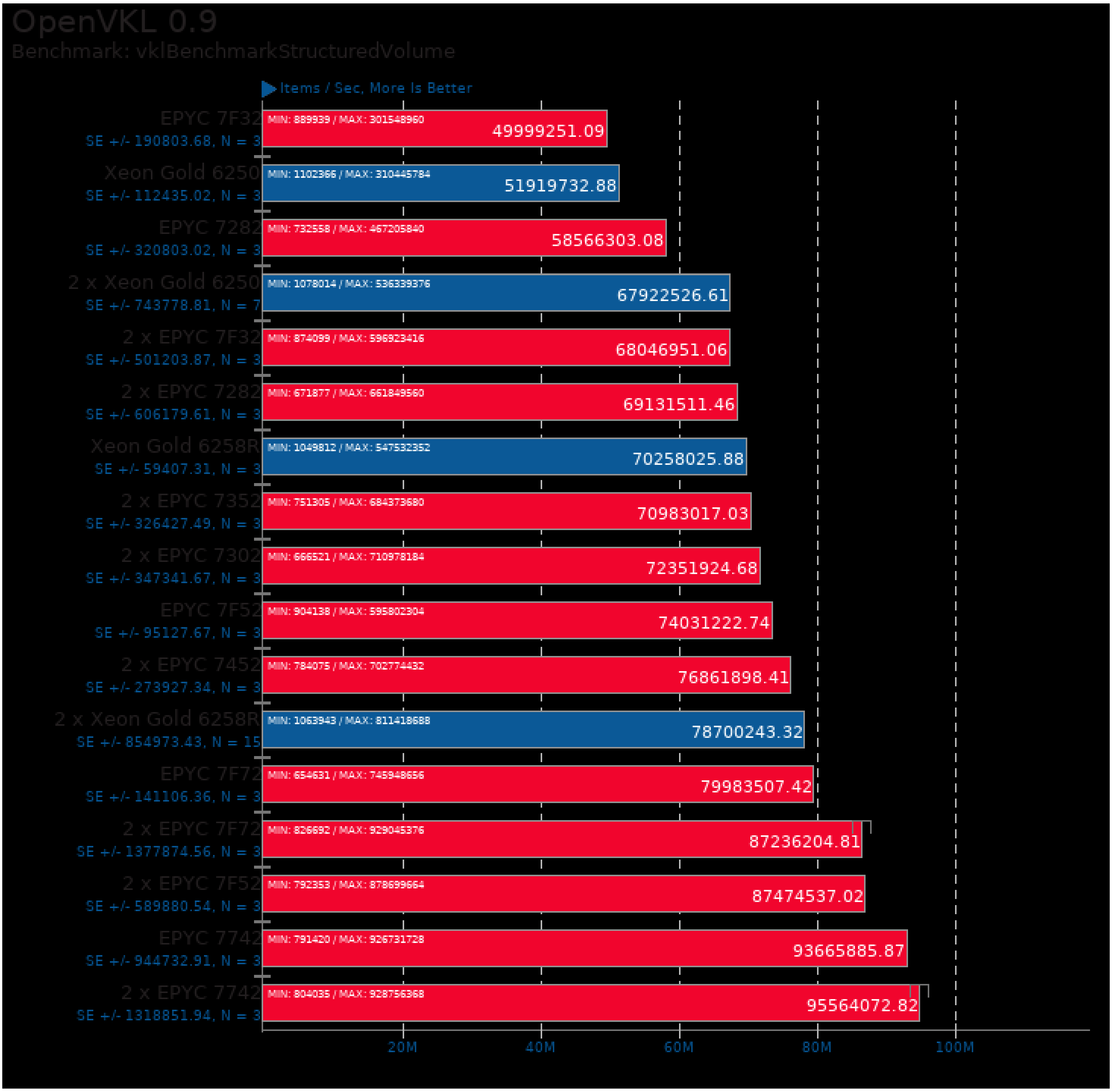

Mlpack Benchmark
Benchmark: scikit_svm
Seconds, Fewer Is Better
Xeon Gold 6226R
SE +/- 0.00, N = 3
17.92
2 x Xeon Gold 5220R
SE +/- 0.04, N = 3
17.92
Xeon Gold 5220R
SE +/- 0.09, N = 3
17.82
2 x Xeon Gold 6226R
SE +/- 0.13, N = 3
17.77
2 x Xeon Gold 6258R
SE +/- 0.11, N = 3
17.33
2 x EPYC 7532
SE +/- 0.20, N = 3
17.23
2 x Xeon Platinum 8280
SE +/- 0.09, N = 3
17.19
Xeon Platinum 8280
SE +/- 0.07, N = 3
17.19
Xeon Gold 6258R
SE +/- 0.04, N = 3
17.11
2 x EPYC 7352
SE +/- 0.32, N = 15
16.50
2 x EPYC 7452
SE +/- 0.31, N = 15
16.39
2 x EPYC 7742
SE +/- 0.33, N = 15
15.95
2 x EPYC 7302
SE +/- 0.24, N = 15
15.83
Xeon Gold 6250
SE +/- 0.04, N = 3
15.72
2 x EPYC 7282
SE +/- 0.02, N = 3
15.52
2 x Xeon Gold 6250
SE +/- 0.07, N = 3
15.47
EPYC 7282
SE +/- 0.01, N = 3
15.42
EPYC 7742
SE +/- 0.05, N = 3
14.58
2 x EPYC 7F72
SE +/- 0.04, N = 3
13.70
EPYC 7F72
SE +/- 0.07, N = 3
13.54
2 x EPYC 7F32
SE +/- 0.08, N = 3
13.10
2 x EPYC 7F52
SE +/- 0.05, N = 3
12.99
EPYC 7F32
SE +/- 0.00, N = 3
12.94
EPYC 7F52
SE +/- 0.04, N = 3
12.86
4
8
12
16
20


Mlpack Benchmark
Benchmark: scikit_linearridgeregression
Seconds, Fewer Is Better
2 x Xeon Gold 5220R
SE +/- 0.06, N = 12
2.39
2 x EPYC 7352
SE +/- 0.06, N = 14
2.29
EPYC 7F32
SE +/- 0.02, N = 3
2.25
Xeon Gold 5220R
SE +/- 0.03, N = 3
2.25
2 x EPYC 7302
SE +/- 0.02, N = 7
2.15
EPYC 7282
SE +/- 0.01, N = 3
2.15
2 x Xeon Gold 6226R
SE +/- 0.04, N = 15
2.08
2 x EPYC 7282
SE +/- 0.03, N = 15
2.07
Xeon Gold 6250
SE +/- 0.02, N = 15
2.07
2 x EPYC 7F32
SE +/- 0.02, N = 15
1.99
2 x EPYC 7452
SE +/- 0.03, N = 3
1.97
2 x EPYC 7F52
SE +/- 0.02, N = 8
1.95
2 x EPYC 7532
SE +/- 0.03, N = 15
1.95
Xeon Gold 6226R
SE +/- 0.03, N = 3
1.93
2 x EPYC 7F72
SE +/- 0.03, N = 3
1.84
2 x Xeon Platinum 8280
SE +/- 0.03, N = 3
1.82
EPYC 7F52
SE +/- 0.01, N = 3
1.78
2 x Xeon Gold 6258R
SE +/- 0.03, N = 3
1.78
2 x EPYC 7742
SE +/- 0.04, N = 15
1.76
2 x Xeon Gold 6250
SE +/- 0.02, N = 3
1.74
EPYC 7F72
SE +/- 0.01, N = 3
1.69
Xeon Platinum 8280
SE +/- 0.02, N = 3
1.67
EPYC 7742
SE +/- 0.02, N = 3
1.66
Xeon Gold 6258R
SE +/- 0.02, N = 3
1.66
0.5378
1.0756
1.6134
2.1512
2.689

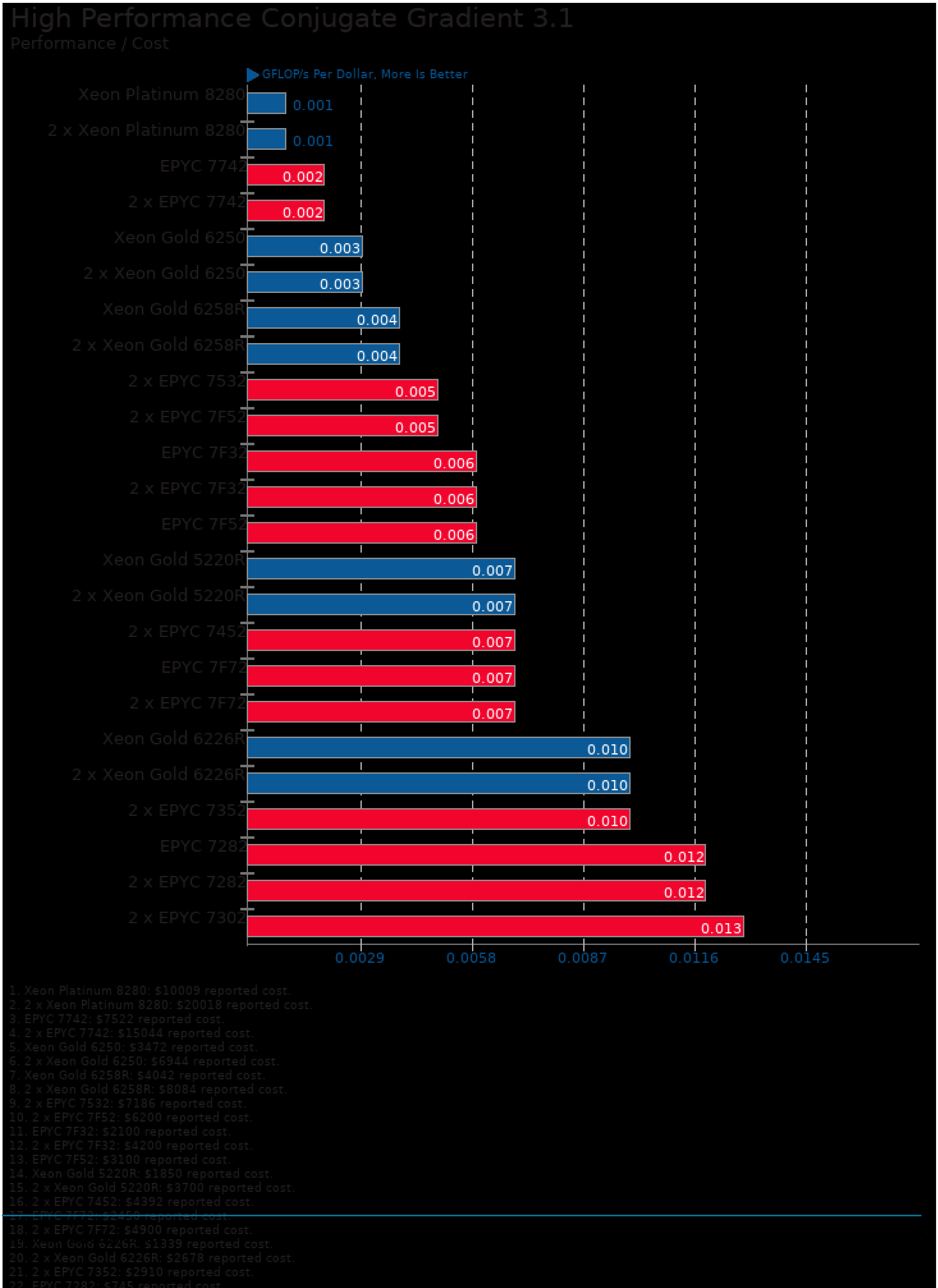

Scikit-Learn 0.22.1
Seconds, Fewer Is Better
2 x EPYC 7352
SE +/- 0.136, N = 6
11.531
2 x EPYC 7282
SE +/- 0.035, N = 3
11.233
EPYC 7282
SE +/- 0.004, N = 3
11.074
2 x EPYC 7302
SE +/- 0.027, N = 3
11.053
2 x EPYC 7532
SE +/- 0.048, N = 3
10.913
2 x EPYC 7452
SE +/- 0.049, N = 3
10.788
2 x EPYC 7742
SE +/- 0.010, N = 3
10.533
EPYC 7742
SE +/- 0.006, N = 3
10.463
2 x Xeon Gold 5220R
SE +/- 0.024, N = 3
10.458
2 x Xeon Gold 6226R
SE +/- 0.055, N = 3
10.449
2 x EPYC 7F72
SE +/- 0.066, N = 3
10.125
Xeon Gold 5220R
SE +/- 0.034, N = 3
10.112
EPYC 7F72
SE +/- 0.014, N = 3
9.928
Xeon Gold 6226R
SE +/- 0.029, N = 3
9.924
2 x EPYC 7F52
SE +/- 0.029, N = 3
9.888
EPYC 7F32
SE +/- 0.007, N = 3
9.742
2 x EPYC 7F32
SE +/- 0.014, N = 3
9.735
EPYC 7F52
SE +/- 0.016, N = 3
9.571
2 x Xeon Gold 6258R
SE +/- 0.122, N = 3
9.452
2 x Xeon Platinum 8280
SE +/- 0.122, N = 3
9.392
Xeon Gold 6258R
SE +/- 0.089, N = 3
9.283
Xeon Platinum 8280
SE +/- 0.042, N = 3
9.127
2 x Xeon Gold 6250
SE +/- 0.074, N = 3
8.819
Xeon Gold 6250
SE +/- 0.033, N = 3
8.525
3
6
9
12
15


OpenVKL 0.9
Benchmark: vklBenchmark
Items / Sec, More Is Better
EPYC 7F32
SE +/- 0.20, N = 3
MIN: 1 / MAX: 409
114.67
Xeon Gold 6250
SE +/- 0.47, N = 3
MIN: 1 / MAX: 677
145.93
EPYC 7282
SE +/- 0.18, N = 3
MIN: 1 / MAX: 648
181.81
2 x EPYC 7F32
SE +/- 1.66, N = 3
MIN: 1 / MAX: 735
206.48
EPYC 7F52
SE +/- 0.22, N = 3
MIN: 1 / MAX: 771
219.22
2 x Xeon Gold 6250
SE +/- 1.76, N = 3
MIN: 1 / MAX: 1257
265.81
EPYC 7F72
SE +/- 1.16, N = 3
MIN: 1 / MAX: 1028
291.96
2 x EPYC 7282
SE +/- 0.58, N = 3
MIN: 1 / MAX: 1021
298.59
2 x EPYC 7302
SE +/- 3.12, N = 9
MIN: 1 / MAX: 1087
307.53
Xeon Gold 6258R
SE +/- 1.67, N = 3
MIN: 1 / MAX: 1243
312.80
2 x EPYC 7F52
SE +/- 4.96, N = 4
MIN: 1 / MAX: 1219
350.49
2 x EPYC 7352
SE +/- 5.99, N = 3
MIN: 1 / MAX: 1260
361.31
2 x EPYC 7452
SE +/- 6.83, N = 3
MIN: 1 / MAX: 1339
416.52
2 x EPYC 7F72
SE +/- 5.50, N = 3
MIN: 1 / MAX: 1499
433.28
2 x Xeon Gold 6258R
SE +/- 6.64, N = 4
MIN: 1 / MAX: 1812
467.04
2 x EPYC 7742
SE +/- 5.07, N = 8
MIN: 1 / MAX: 1679
513.10
EPYC 7742
SE +/- 7.28, N = 4
MIN: 1 / MAX: 1828
523.15
110
220
330
440
550

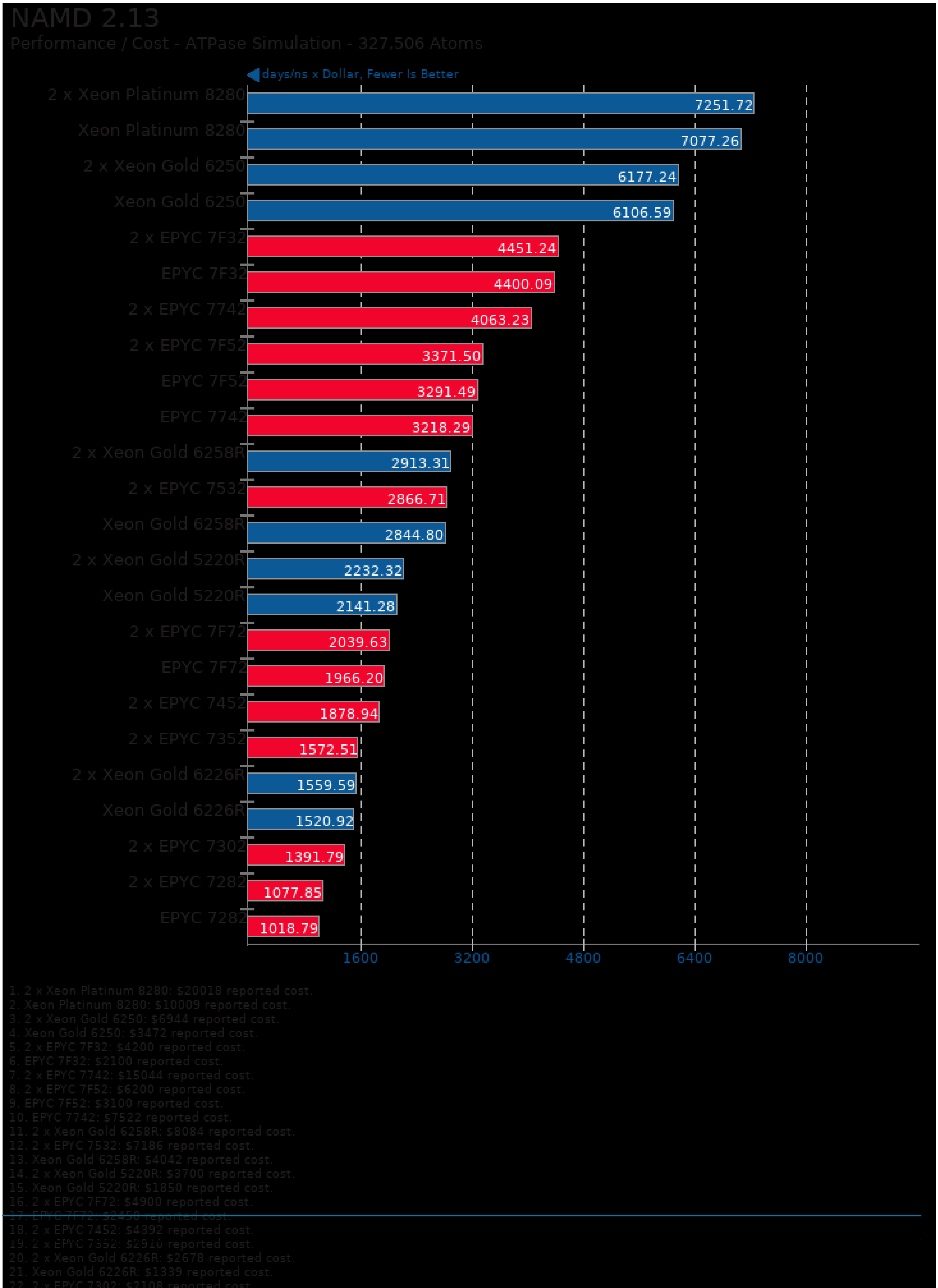

OpenVKL 0.9
Benchmark: vklBenchmarkVdbVolume
Items / Sec, More Is Better
EPYC 7F32
SE +/- 16714.81, N = 3
MIN: 813277 / MAX: 34760304
12058575.75
EPYC 7282
SE +/- 5670.92, N = 3
MIN: 643842 / MAX: 54450216
13294376.37
2 x EPYC 7282
SE +/- 16987.90, N = 3
MIN: 563904 / MAX: 73405296
14838883.82
2 x EPYC 7352
SE +/- 12651.06, N = 3
MIN: 644487 / MAX: 76303872
15225641.60
2 x EPYC 7302
SE +/- 25872.58, N = 3
MIN: 565360 / MAX: 74697480
15452697.93
2 x EPYC 7F32
SE +/- 80971.43, N = 3
MIN: 792791 / MAX: 66174840
15557355.90
EPYC 7F52
SE +/- 12701.97, N = 3
MIN: 827641 / MAX: 66947832
16596719.14
2 x EPYC 7452
SE +/- 28131.23, N = 3
MIN: 496821 / MAX: 81859104
16894366.64
EPYC 7F72
SE +/- 10060.72, N = 3
MIN: 696451 / MAX: 85183920
18028868.64
2 x EPYC 7F52
SE +/- 34889.66, N = 3
MIN: 768870 / MAX: 97324992
18885094.76
2 x EPYC 7F72
SE +/- 130889.78, N = 3
MIN: 737073 / MAX: 99944784
19403359.02
2 x EPYC 7742
SE +/- 46536.20, N = 3
MIN: 701798 / MAX: 97968096
19618178.99
Xeon Gold 6250
SE +/- 35746.58, N = 3
MIN: 983921 / MAX: 96821280
19665845.75
EPYC 7742
SE +/- 31857.47, N = 3
MIN: 682209 / MAX: 99624240
19772907.90
Xeon Gold 6258R
SE +/- 15062.51, N = 3
MIN: 946167 / MAX: 154889928
24856793.97
2 x Xeon Gold 6250
SE +/- 388030.58, N = 3
MIN: 930427 / MAX: 155466864
25446738.36
2 x Xeon Gold 6258R
SE +/- 108809.72, N = 3
MIN: 878911 / MAX: 191335608
26517246.23
6M
12M
18M
24M
30M

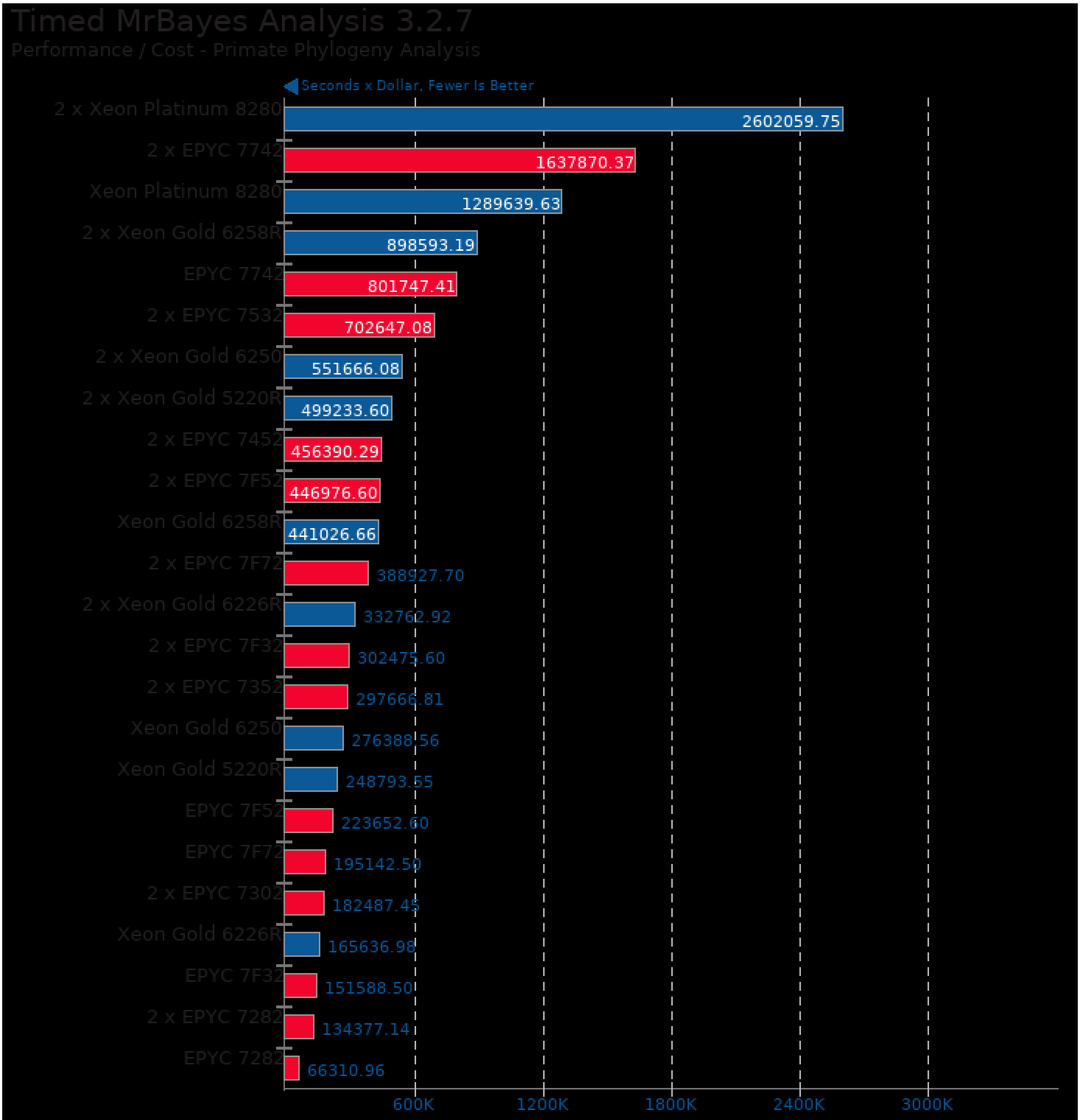

OpenVKL 0.9
Benchmark: vklBenchmarkStructuredVolume
Items / Sec, More Is Better
EPYC 7F32
SE +/- 190803.68, N = 3
MIN: 889939 / MAX: 301548960
49999251.09
Xeon Gold 6250
SE +/- 112435.02, N = 3
MIN: 1102366 / MAX: 310445784
51919732.88
EPYC 7282
SE +/- 320803.02, N = 3
MIN: 732558 / MAX: 467205840
58566303.08
2 x Xeon Gold 6250
SE +/- 743778.81, N = 7
MIN: 1078014 / MAX: 536339376
67922526.61
2 x EPYC 7F32
SE +/- 501203.87, N = 3
MIN: 874099 / MAX: 596923416
68046951.06
2 x EPYC 7282
SE +/- 606179.61, N = 3
MIN: 671877 / MAX: 661849560
69131511.46
Xeon Gold 6258R
SE +/- 59407.31, N = 3
MIN: 1049812 / MAX: 547532352
70258025.88
2 x EPYC 7352
SE +/- 326427.49, N = 3
MIN: 751305 / MAX: 684373680
70983017.03
2 x EPYC 7302
SE +/- 347341.67, N = 3
MIN: 666521 / MAX: 710978184
72351924.68
EPYC 7F52
SE +/- 95127.67, N = 3
MIN: 904138 / MAX: 595802304
74031222.74
2 x EPYC 7452
SE +/- 273927.34, N = 3
MIN: 784075 / MAX: 702774432
76861898.41
2 x Xeon Gold 6258R
SE +/- 854973.43, N = 15
MIN: 1063943 / MAX: 811418688
78700243.32
EPYC 7F72
SE +/- 141106.36, N = 3
MIN: 654631 / MAX: 745948656
79983507.42
2 x EPYC 7F72
SE +/- 1377874.56, N = 3
MIN: 826692 / MAX: 929045376
87236204.81
2 x EPYC 7F52
SE +/- 589880.54, N = 3
MIN: 792353 / MAX: 878699664
87474537.02
EPYC 7742
SE +/- 944732.91, N = 3
MIN: 791420 / MAX: 926731728
93665885.87
2 x EPYC 7742
SE +/- 1318851.94, N = 3
MIN: 804035 / MAX: 928756368
95564072.82
20M
40M
60M
80M
100M

Xeon Cascade Lake Refresh vs. AMD EPYC Rome Linux Benchmarks

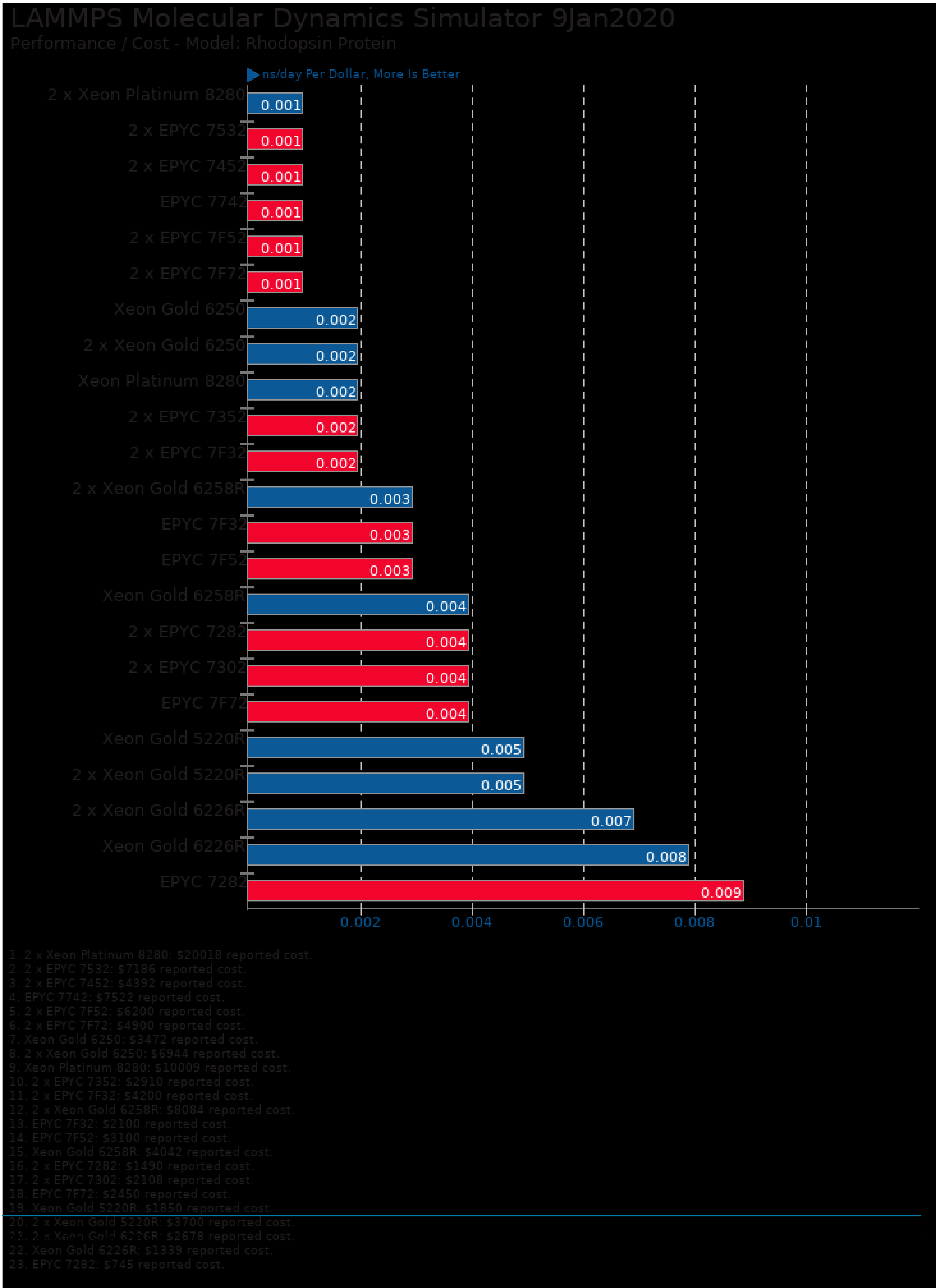


Xeon Cascade Lake Refresh vs. AMD EPYC Rome Linux Benchmarks



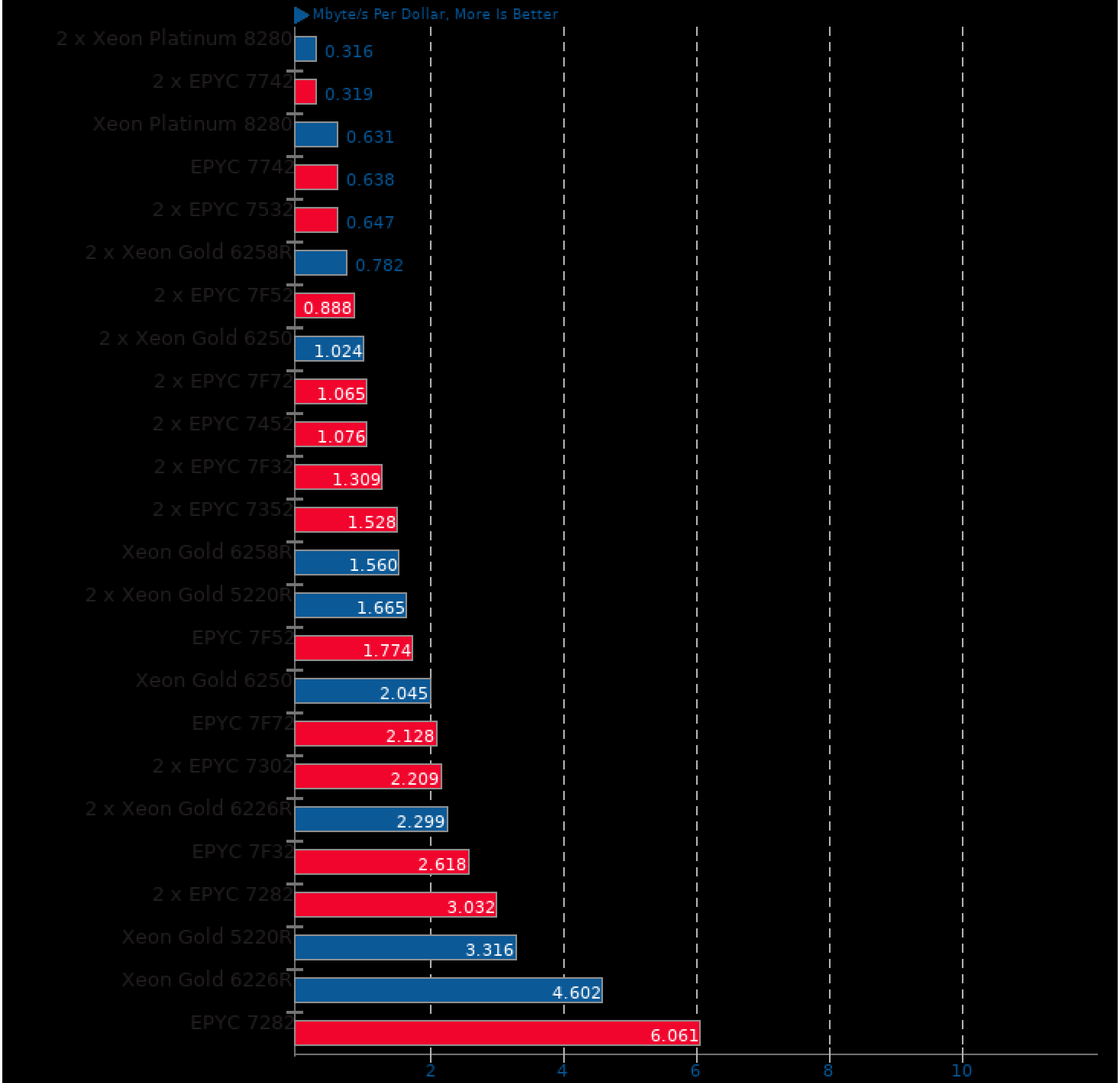


1. 2 x Xeon Platinum 8280: $20018 reported cost.
2. 2 x EPYC 7742: $15044 reported cost.
3. Xeon Platinum 8280: $10009 reported cost.
4. 2 x Xeon Gold 6258R: $8084 reported cost.
5. EPYC 7742: $7522 reported cost.
6. 2 x EPYC 7532: $7186 reported cost.
7. 2 x Xeon Gold 6250: $6944 reported cost.
8. 2 x Xeon Gold 5220R: $3700 reported cost.
9. 2 x EPYC 7452: $4392 reported cost.
10. 2 x EPYC 7F52: $6200 reported cost.
11. Xeon Gold 6258R: $4042 reported cost.
12. 2 x EPYC 7F72: $4900 reported cost.
13. 2 x Xeon Gold 6226R: $2678 reported cost.
14. 2 x EPYC 7F32: $4200 reported cost.
15. 2 x EPYC 7352: $2910 reported cost.
16. Xeon Gold 6250: $3472 reported cost.
17. Xeon Gold 5220R: $1850 reported cost.
18. EPYC 7F52: $3100 reported cost.
19. EPYC 7F72: $2450 reported cost.
20. 2 x EPYC 7302: $2108 reported cost.
21. Xeon Gold 6226R: $1339 reported cost.
22. EPYC 7F32: $2100 reported cost.


LAMMPS Molecular Dynamics Simulator 9Jan2020
Performance / Cost - Model: Rhodopsin Protein
ns/day Per Dollar, More Is Better
2 x Xeon Platinum 8280
0.001
2 x EPYC 7532
0.001
2 x EPYC 7452
0.001
EPYC 7742
0.001
2 x EPYC 7F52
0.001
2 x EPYC 7F72
0.001
Xeon Gold 6250
0.002
2 x Xeon Gold 6250
0.002
Xeon Platinum 8280
0.002
2 x EPYC 7352
0.002
2 x EPYC 7F32
0.002
2 x Xeon Gold 6258R
0.003
EPYC 7F32
0.003
EPYC 7F52
0.003
Xeon Gold 6258R
0.004
2 x EPYC 7282
0.004
2 x EPYC 7302
0.004
EPYC 7F72
0.004
Xeon Gold 5220R
0.005
2 x Xeon Gold 5220R
0.005
2 x Xeon Gold 6226R
0.007
Xeon Gold 6226R
0.008
EPYC 7282
0.009
0.002
0.004
0.006
0.008
0.01
1. 2 x Xeon Platinum 8280: $20018 reported cost.
2. 2 x EPYC 7532: $7186 reported cost.
3. 2 x EPYC 7452: $4392 reported cost.
4. EPYC 7742: $7522 reported cost.
5. 2 x EPYC 7F52: $6200 reported cost.
6. 2 x EPYC 7F72: $4900 reported cost.
7. Xeon Gold 6250: $3472 reported cost.
8. 2 x Xeon Gold 6250: $6944 reported cost.
9. Xeon Platinum 8280: $10009 reported cost.
10. 2 x EPYC 7352: $2910 reported cost.
11. 2 x EPYC 7F32: $4200 reported cost.
12. 2 x Xeon Gold 6258R: $8084 reported cost.
13. EPYC 7F32: $2100 reported cost.
14. EPYC 7F52: $3100 reported cost.
15. Xeon Gold 6258R: $4042 reported cost.
16. 2 x EPYC 7282: $1490 reported cost.
17. 2 x EPYC 7302: $2108 reported cost.
18. EPYC 7F72: $2450 reported cost.
19. Xeon Gold 5220R: $1850 reported cost.
20. 2 x Xeon Gold 5220R: $3700 reported cost.
21. 2 x Xeon Gold 6226R: $2678 reported cost.
22. Xeon Gold 6226R: $1339 reported cost.
23. EPYC 7282: $745 reported cost.

Nettle 3.5.1

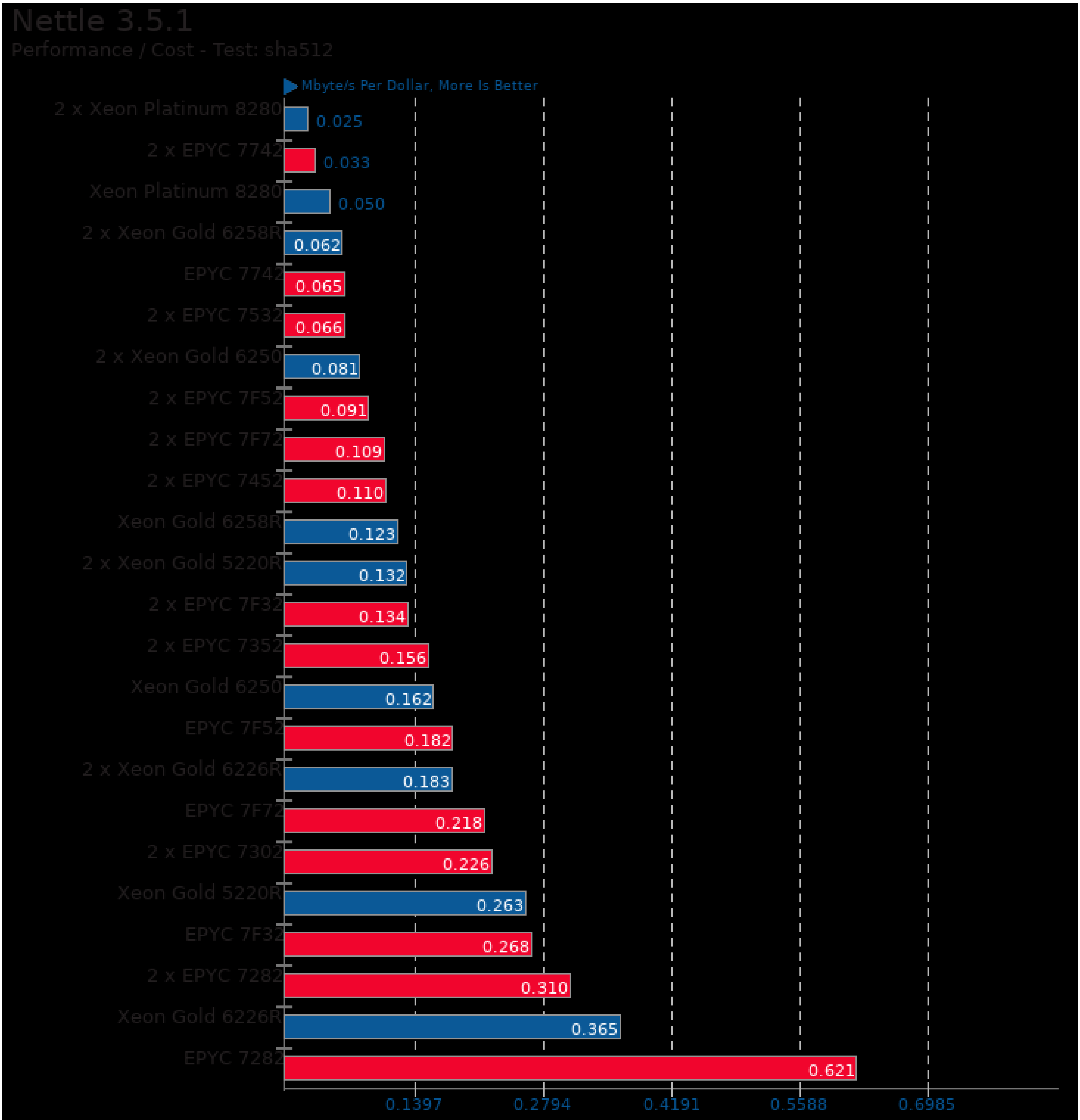
Performance / Cost - Test: aes256



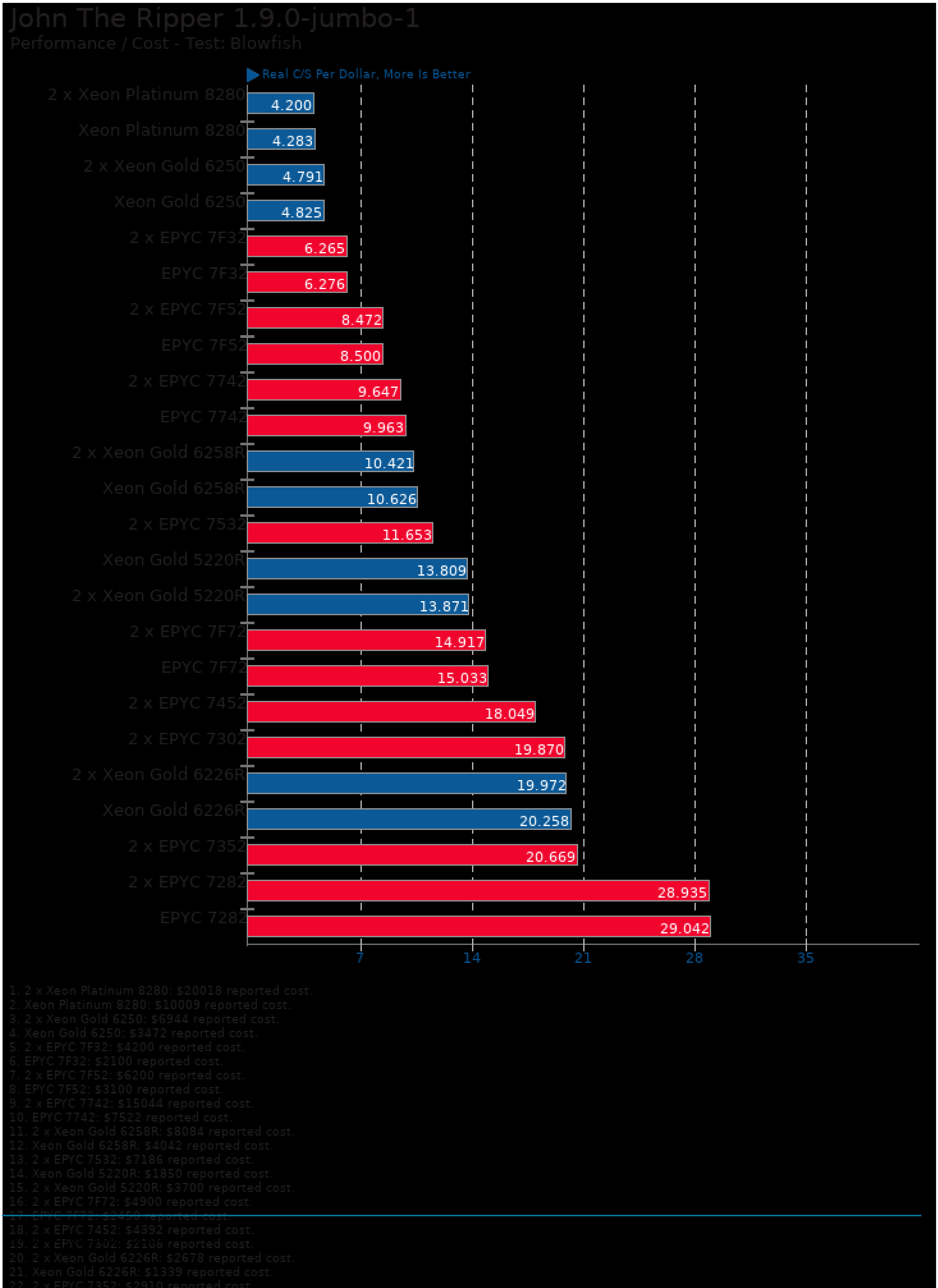
1. 2 x Xeon Platinum 8280: $20018 reported cost.
2. 2 x EPYC 7742: $15044 reported cost.
3. Xeon Platinum 8280: $10009 reported cost.
4. EPYC 7742: $7522 reported cost.
5. 2 x EPYC 7532: $7186 reported cost.
6. 2 x Xeon Gold 6258R: $8084 reported cost.
7. 2 x EPYC 7F52: $6200 reported cost.
8. 2 x Xeon Gold 6250: $6944 reported cost.
9. 2 x EPYC 7F72: $4900 reported cost.
10. 2 x EPYC 7452: $4392 reported cost.
11. 2 x EPYC 7F32: $4200 reported cost.
12. 2 x EPYC 7352: $2910 reported cost.
13. Xeon Gold 6258R: $4042 reported cost.
14. 2 x Xeon Gold 5220R: $3700 reported cost.
15. EPYC 7F52: $3100 reported cost.
16. Xeon Gold 6250: $3472 reported cost.
17. EPYC 7F72: $2450 reported cost.
18. 2 x EPYC 7302: $2108 reported cost.
19. 2 x Xeon Gold 6226R: $2678 reported cost.
20. EPYC 7F32: $2100 reported cost.
21. 2 x EPYC 7282: $1490 reported cost.
22. Xeon Gold 5220R: $1850 reported cost.

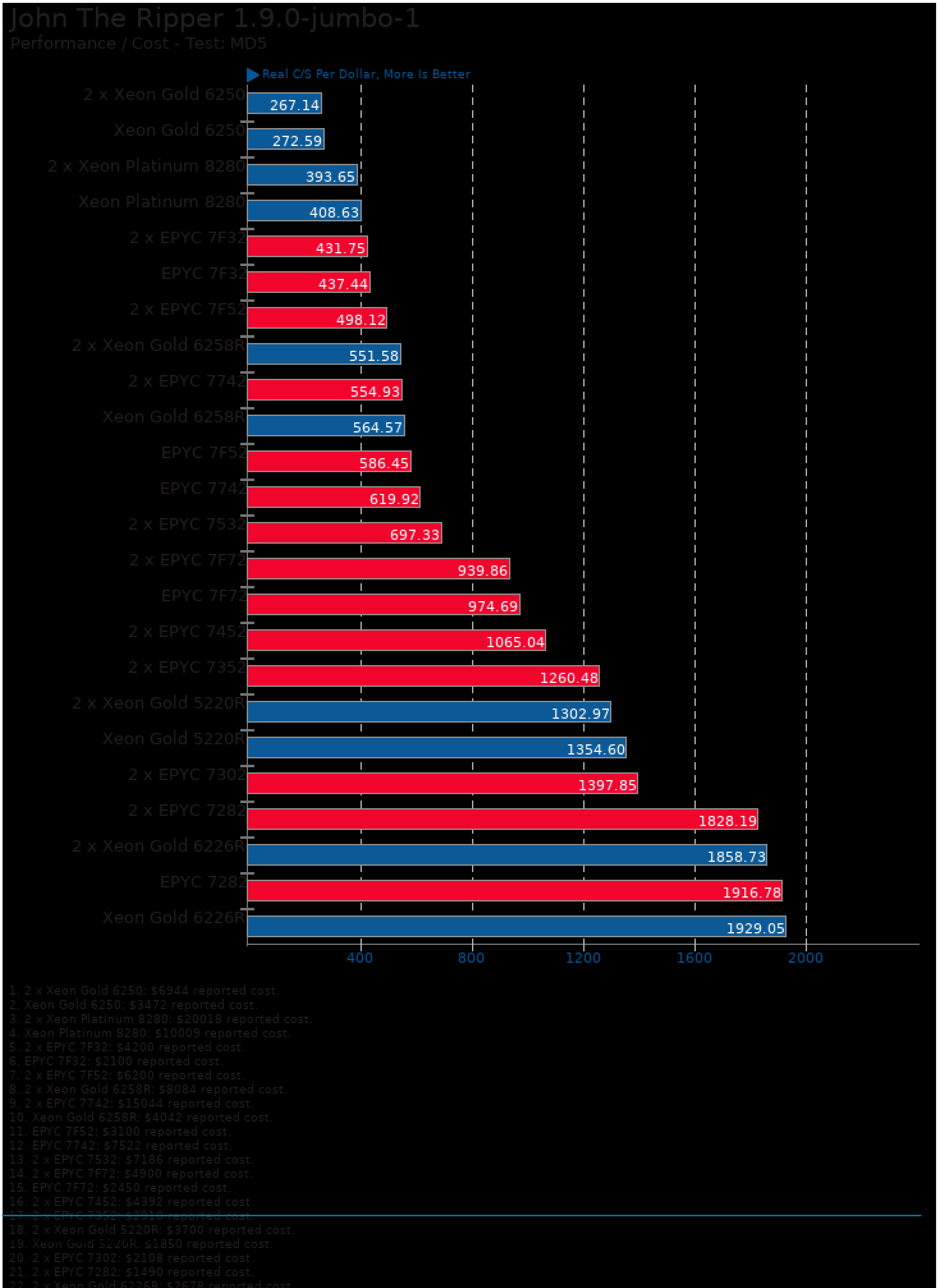
Phoronix Test Suite

Xeon Cascade Lake Refresh vs. AMD EPYC Rome Linux Benchmarks

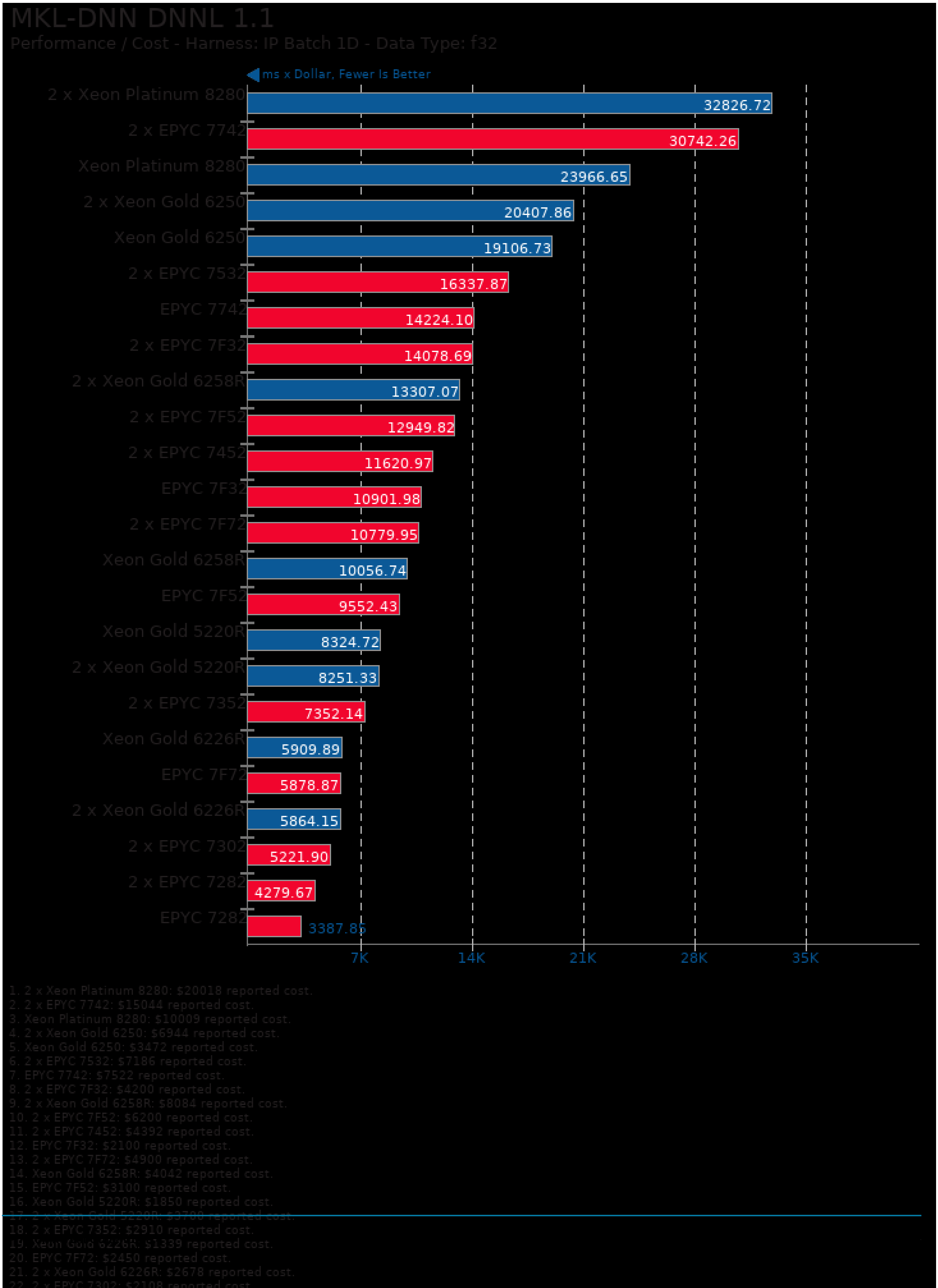


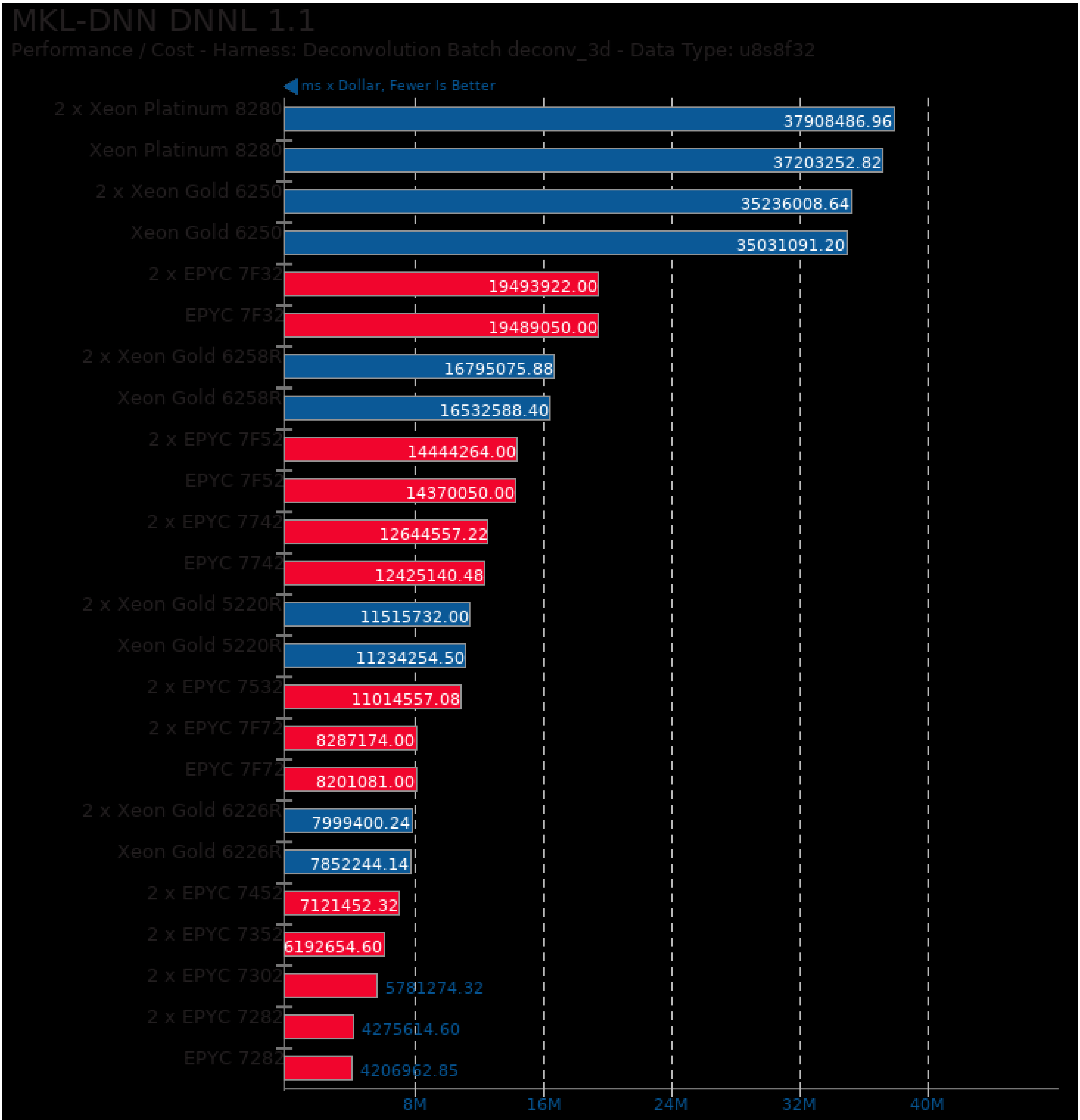
1. 2 x Xeon Platinum 8280: $20018 reported cost.
2. 2 x EPYC 7742: $15044 reported cost.
3. Xeon Platinum 8280: $10009 reported cost.
4. 2 x Xeon Gold 6258R: $8084 reported cost.
5. EPYC 7742: $7522 reported cost.
6. 2 x EPYC 7532: $7186 reported cost.
7. 2 x Xeon Gold 6250: $6944 reported cost.
8. 2 x EPYC 7F52: $6200 reported cost.
9. 2 x EPYC 7F72: $4900 reported cost.
10. 2 x EPYC 7452: $4392 reported cost.
11. Xeon Gold 6258R: $4042 reported cost.
12. 2 x Xeon Gold 5220R: $3700 reported cost.
13. 2 x EPYC 7F32: $4200 reported cost.
14. 2 x EPYC 7352: $2910 reported cost.
15. Xeon Gold 6250: $3472 reported cost.
16. EPYC 7F52: $3100 reported cost.
17. 2 x Xeon Gold 6226R: $2670 reported cost.
18. EPYC 7F72: $2450 reported cost.
19. 2 x EPYC 7302: $2108 reported cost.
20. Xeon Gold 5220R: $1850 reported cost.
21. EPYC 7F32: $2100 reported cost.
22. 2 x EPYC 7282: $1490 reported cost.


John The Ripper 1.9.0-jumbo-1
Performance / Cost - Test: Blowfish
Real C/S Per Dollar, More Is Better
2 x Xeon Platinum 8280
4.200
Xeon Platinum 8280
4.283
2 x Xeon Gold 6250
4.791
Xeon Gold 6250
4.825
2 x EPYC 7F32
6.265
EPYC 7F32
6.276
2 x EPYC 7F52
8.472
EPYC 7F52
8.500
2 x EPYC 7742
9.647
EPYC 7742
9.963
2 x Xeon Gold 6258R
10.421
Xeon Gold 6258R
10.626
2 x EPYC 7532
11.653
Xeon Gold 5220R
13.809
2 x Xeon Gold 5220R
13.871
2 x EPYC 7F72
14.917
EPYC 7F72
15.033
2 x EPYC 7452
18.049
2 x EPYC 7302
19.870
2 x Xeon Gold 6226R
19.972
Xeon Gold 6226R
20.258
2 x EPYC 7352
20.669
2 x EPYC 7282
28.935
EPYC 7282
29.042
7
14
21
28
35
1. 2 x Xeon Platinum 8280: $20018 reported cost.
2. Xeon Platinum 8280: $10009 reported cost.
3. 2 x Xeon Gold 6250: $6944 reported cost.
4. Xeon Gold 6250: $3472 reported cost.
5. 2 x EPYC 7F32: $4200 reported cost.
6. EPYC 7F32: $2100 reported cost.
7. 2 x EPYC 7F52: $6200 reported cost.
8. EPYC 7F52: $3100 reported cost.
9. 2 x EPYC 7742: $15044 reported cost.
10. EPYC 7742: $7522 reported cost.
11. 2 x Xeon Gold 6258R: $8084 reported cost.
12. Xeon Gold 6258R: $4042 reported cost.
13. 2 x EPYC 7532: $7186 reported cost.
14. Xeon Gold 5220R: $1850 reported cost.
15. 2 x Xeon Gold 5220R: $3700 reported cost.
16. 2 x EPYC 7F72: $4900 reported cost.
17. EPYC 7F72: $2450 reported cost.
18. 2 x EPYC 7452: $4392 reported cost.
19. 2 x EPYC 7302: $2108 reported cost.
20. 2 x Xeon Gold 6226R: $2678 reported cost.
21. Xeon Gold 6226R: $1339 reported cost.
22. 2 x EPYC 7352: $2910 reported cost.


John The Ripper 1.9.0-jumbo-1
Performance / Cost - Test: MD5
Real C/S Per Dollar, More Is Better
2 x Xeon Gold 6250
267.14
Xeon Gold 6250
272.59
2 x Xeon Platinum 8280
393.65
Xeon Platinum 8280
408.63
2 x EPYC 7F32
431.75
EPYC 7F32
437.44
2 x EPYC 7F52
498.12
2 x Xeon Gold 6258R
551.58
2 x EPYC 7742
554.93
Xeon Gold 6258R
564.57
EPYC 7F52
586.45
EPYC 7742
619.92
2 x EPYC 7532
697.33
2 x EPYC 7F72
939.86
EPYC 7F72
974.69
2 x EPYC 7452
1065.04
2 x EPYC 7352
1260.48
2 x Xeon Gold 5220R
1302.97
Xeon Gold 5220R
1354.60
2 x EPYC 7302
1397.85
2 x EPYC 7282
1828.19
2 x Xeon Gold 6226R
1858.73
EPYC 7282
1916.78
Xeon Gold 6226R
1929.05
400
800
1200
1600
2000
1. 2 x Xeon Gold 6250: $6944 reported cost.
2. Xeon Gold 6250: $3472 reported cost.
3. 2 x Xeon Platinum 8280: $20018 reported cost.
4. Xeon Platinum 8280: $10009 reported cost.
5. 2 x EPYC 7F32: $4200 reported cost.
6. EPYC 7F32: $2100 reported cost.
7. 2 x EPYC 7F52: $6200 reported cost.
8. 2 x Xeon Gold 6258R: $8084 reported cost.
9. 2 x EPYC 7742: $15044 reported cost.
10. Xeon Gold 6258R: $4042 reported cost.
11. EPYC 7F52: $3100 reported cost.
12. EPYC 7742: $7522 reported cost.
13. 2 x EPYC 7532: $7186 reported cost.
14. 2 x EPYC 7F72: $4900 reported cost.
15. EPYC 7F72: $2450 reported cost.
16. 2 x EPYC 7452: $4392 reported cost.
17. 2 x EPYC 7352: $2910 reported cost.
18. 2 x Xeon Gold 5220R: $3700 reported cost.
19. Xeon Gold 5220R: $1850 reported cost.
20. 2 x EPYC 7302: $2108 reported cost.
21. 2 x EPYC 7282: $1490 reported cost.
22. 2 x Xeon Gold 6226R: $2678 reported cost.

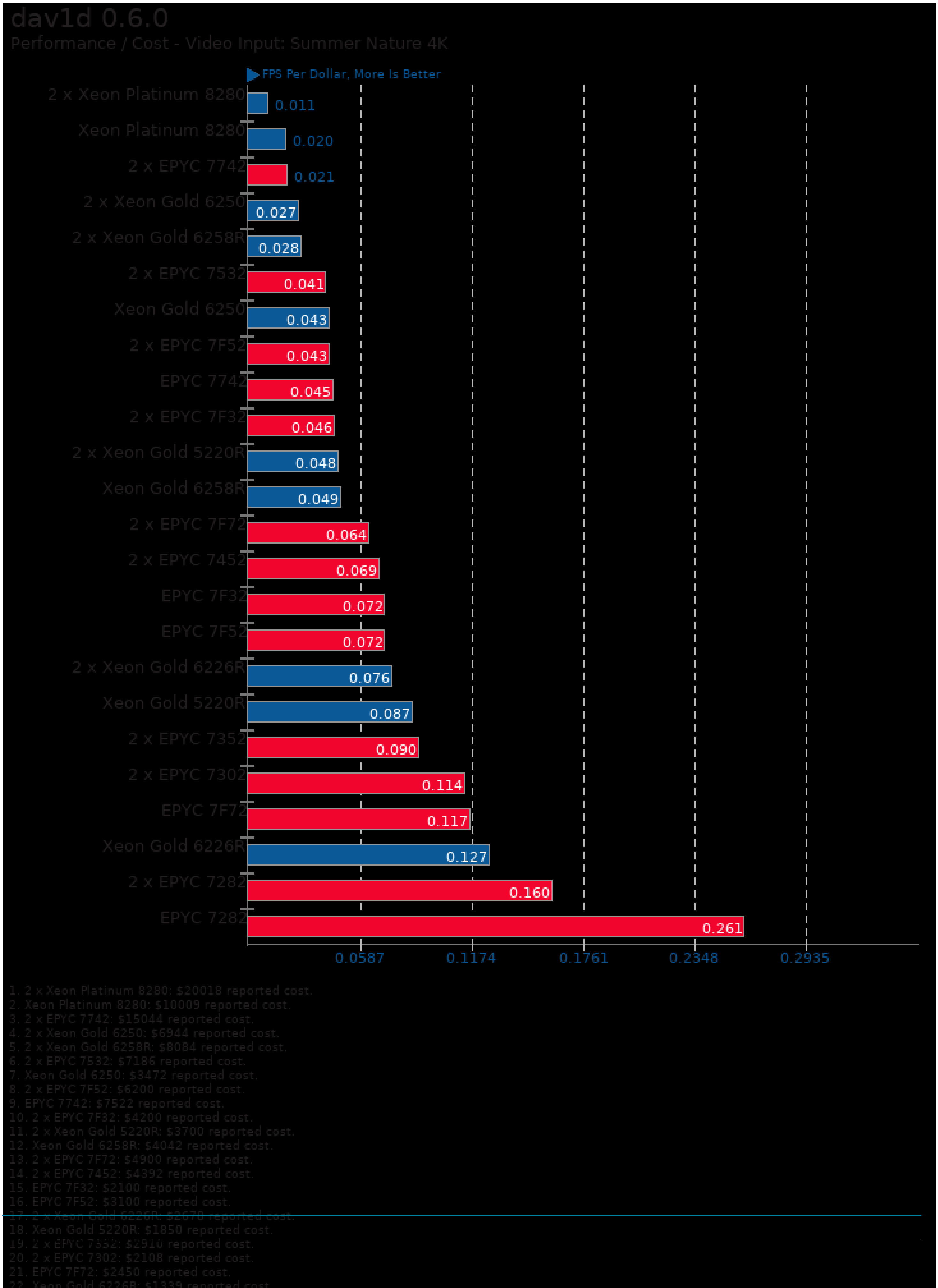
Xeon Cascade Lake Refresh vs. AMD EPYC Rome Linux Benchmarks

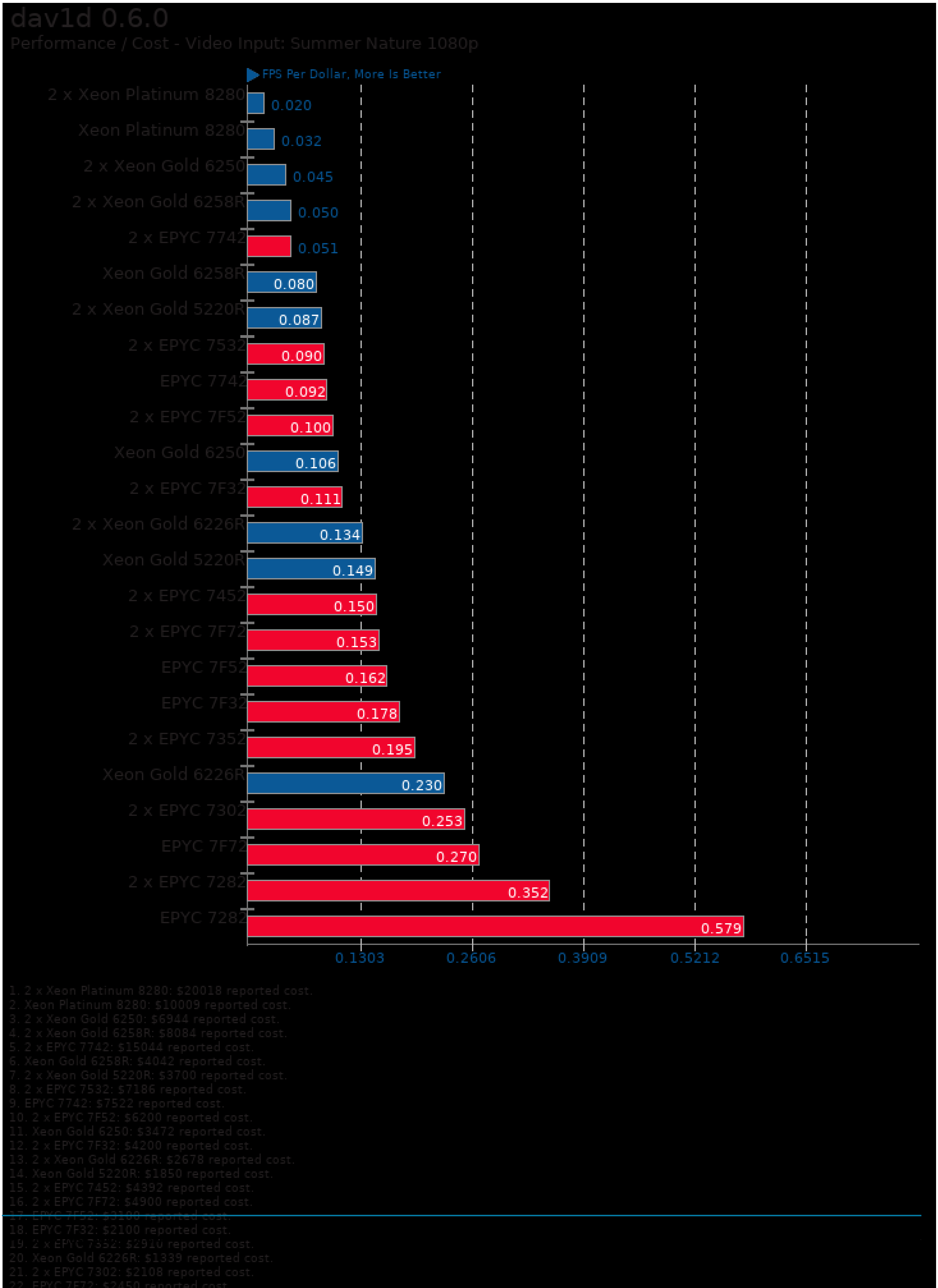




1. 2 x Xeon Platinum 8280: $20018 reported cost.
2. Xeon Platinum 8280: $10009 reported cost.
3. 2 x Xeon Gold 6250: $6944 reported cost.
4. Xeon Gold 6250: $3472 reported cost.
5. 2 x EPYC 7F32: $4200 reported cost.
6. EPYC 7F32: $2100 reported cost.
7. 2 x Xeon Gold 6258R: $8084 reported cost.
8. Xeon Gold 6258R: $4042 reported cost.
9. 2 x EPYC 7F52: $6200 reported cost.
10. EPYC 7F52: $3100 reported cost.
11. 2 x EPYC 7742: $15044 reported cost.
12. EPYC 7742: $7522 reported cost.
13. 2 x Xeon Gold 5220R: $3700 reported cost.
14. Xeon Gold 5220R: $1850 reported cost.
15. 2 x EPYC 7532: $7186 reported cost.
16. 2 x EPYC 7F72: $4900 reported cost.
17. EPYC 7F72: $2450 reported cost.
18. 2 x Xeon Gold 6226R: $2678 reported cost.
19. Xeon Gold 6226R: $1339 reported cost.
20. 2 x EPYC 7452: $4392 reported cost.
21. 2 x EPYC 7352: $2910 reported cost.
22. 2 x EPYC 7302: $2108 reported cost.

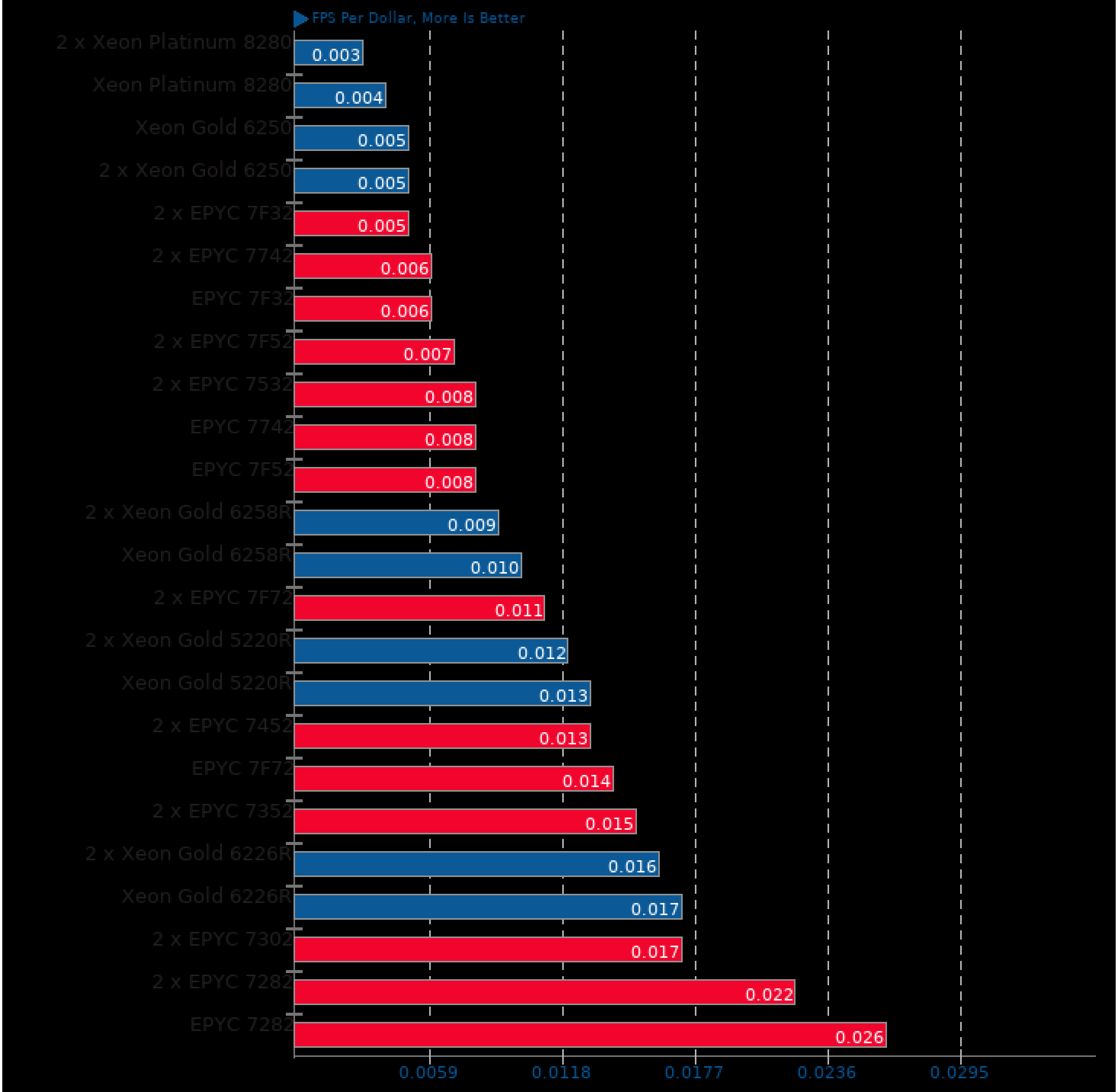
Xeon Cascade Lake Refresh vs. AMD EPYC Rome Linux Benchmarks



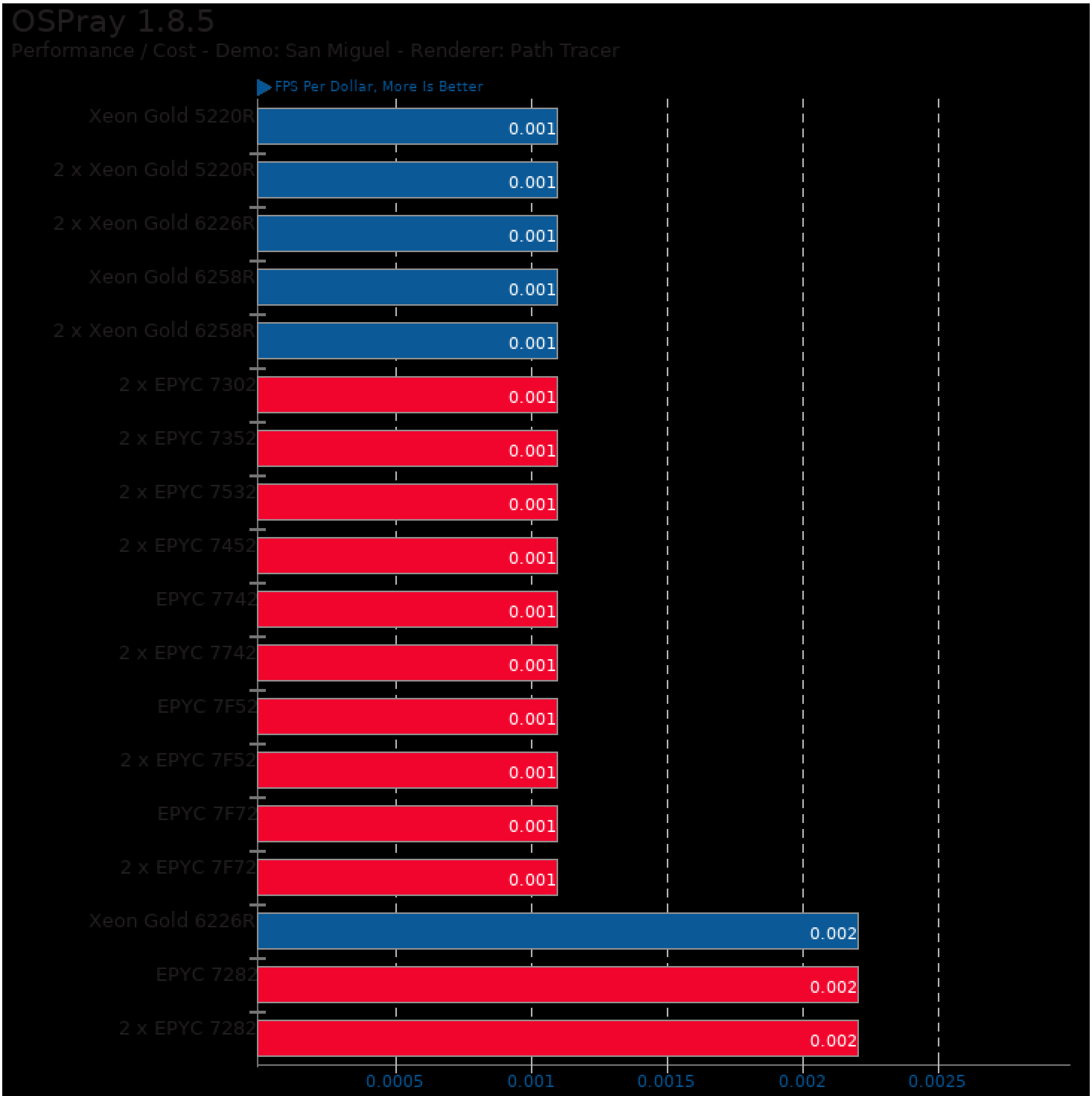

dav1d 0.6.0
Performance / Cost - Video Input: Summer Nature 1080p
FPS Per Dollar, More Is Better
2 x Xeon Platinum 8280 0.020
Xeon Platinum 8280 0.032
2 x Xeon Gold 6250 0.045
2 x Xeon Gold 6258R 0.050
2 x EPYC 7742 0.051
Xeon Gold 6258R 0.080
2 x Xeon Gold 5220R 0.087
2 x EPYC 7532 0.090
EPYC 7742 0.092
2 x EPYC 7F52 0.100
Xeon Gold 6250 0.106
2 x EPYC 7F32 0.111
2 x Xeon Gold 6226R 0.134
Xeon Gold 5220R 0.149
2 x EPYC 7452 0.150
2 x EPYC 7F72 0.153
EPYC 7F52 0.162
EPYC 7F32 0.178
2 x EPYC 7352 0.195
Xeon Gold 6226R 0.230
2 x EPYC 7302 0.253
EPYC 7F72 0.270
2 x EPYC 7282 0.352
EPYC 7282 0.579
0.1303
0.2606
0.3909
0.5212
0.6515
1. 2 x Xeon Platinum 8280: $20018 reported cost.
2. Xeon Platinum 8280: $10009 reported cost.
3. 2 x Xeon Gold 6250: $6944 reported cost.
4. 2 x Xeon Gold 6258R: $8084 reported cost.
5. 2 x EPYC 7742: $15044 reported cost.
6. Xeon Gold 6258R: $4042 reported cost.
7. 2 x Xeon Gold 5220R: $3700 reported cost.
8. 2 x EPYC 7532: $7186 reported cost.
9. EPYC 7742: $7522 reported cost.
10. 2 x EPYC 7F52: $6200 reported cost.
11. Xeon Gold 6250: $3472 reported cost.
12. 2 x EPYC 7F32: $4200 reported cost.
13. 2 x Xeon Gold 6226R: $2678 reported cost.
14. Xeon Gold 5220R: $1850 reported cost.
15. 2 x EPYC 7452: $4392 reported cost.
16. 2 x EPYC 7F72: $4900 reported cost.
18. EPYC 7F32: $2100 reported cost.
19. 2 x EPYC 7352: $2910 reported cost.
20. Xeon Gold 6226R: $1339 reported cost.
21. 2 x EPYC 7302: $2108 reported cost.

OSPray 1.8.5

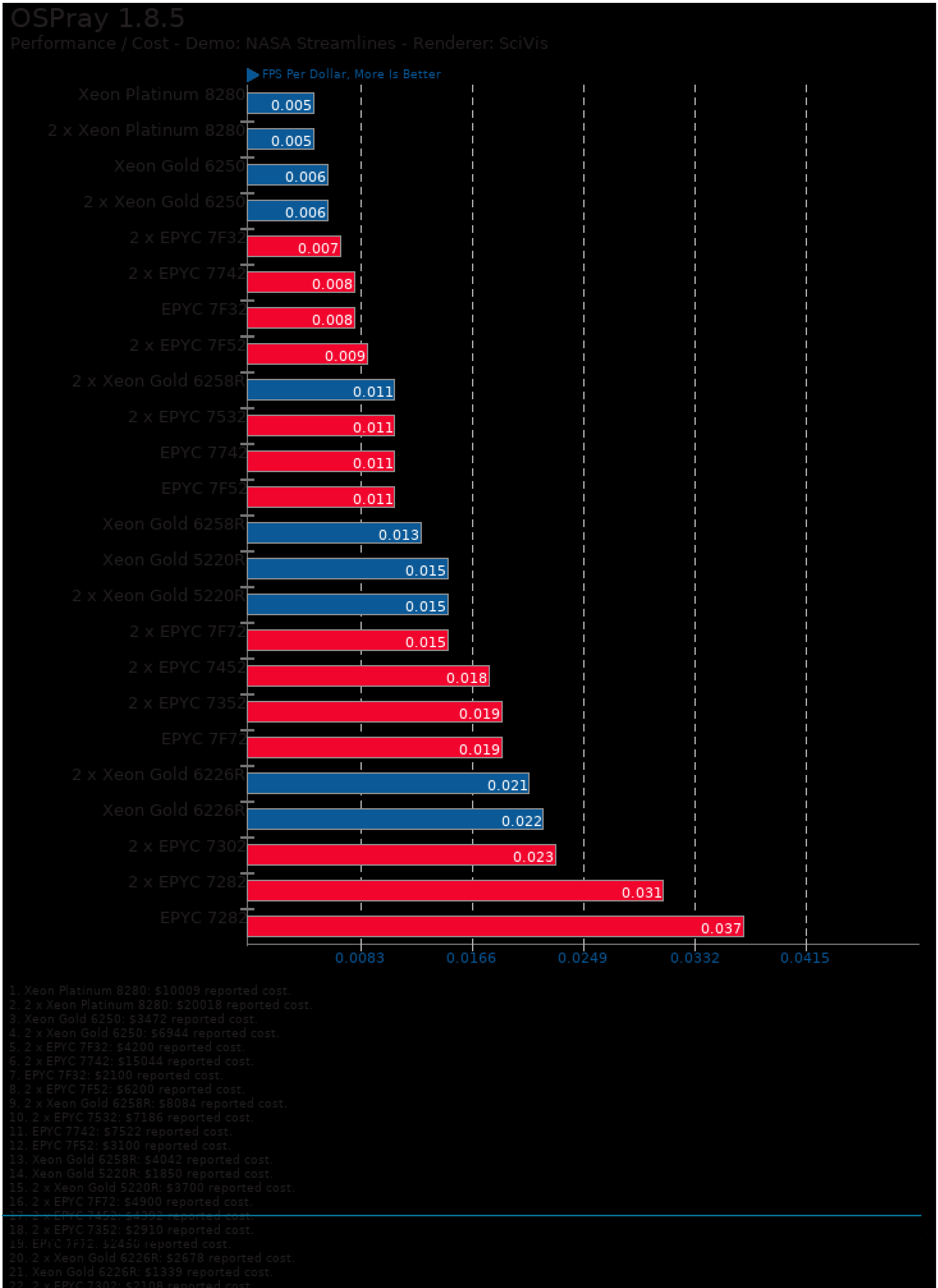
Performance / Cost - Demo: San Miguel - Renderer: SciVis

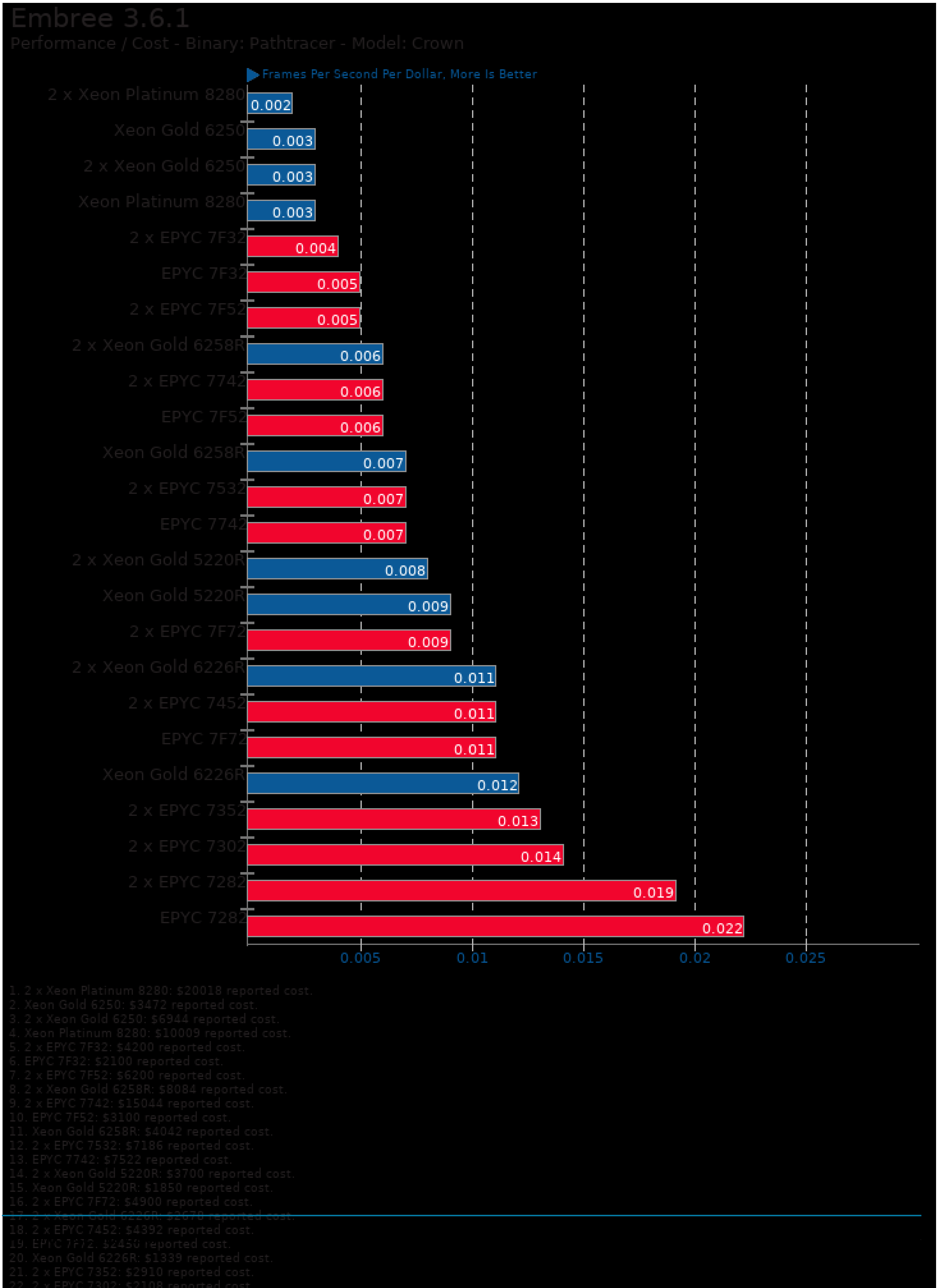


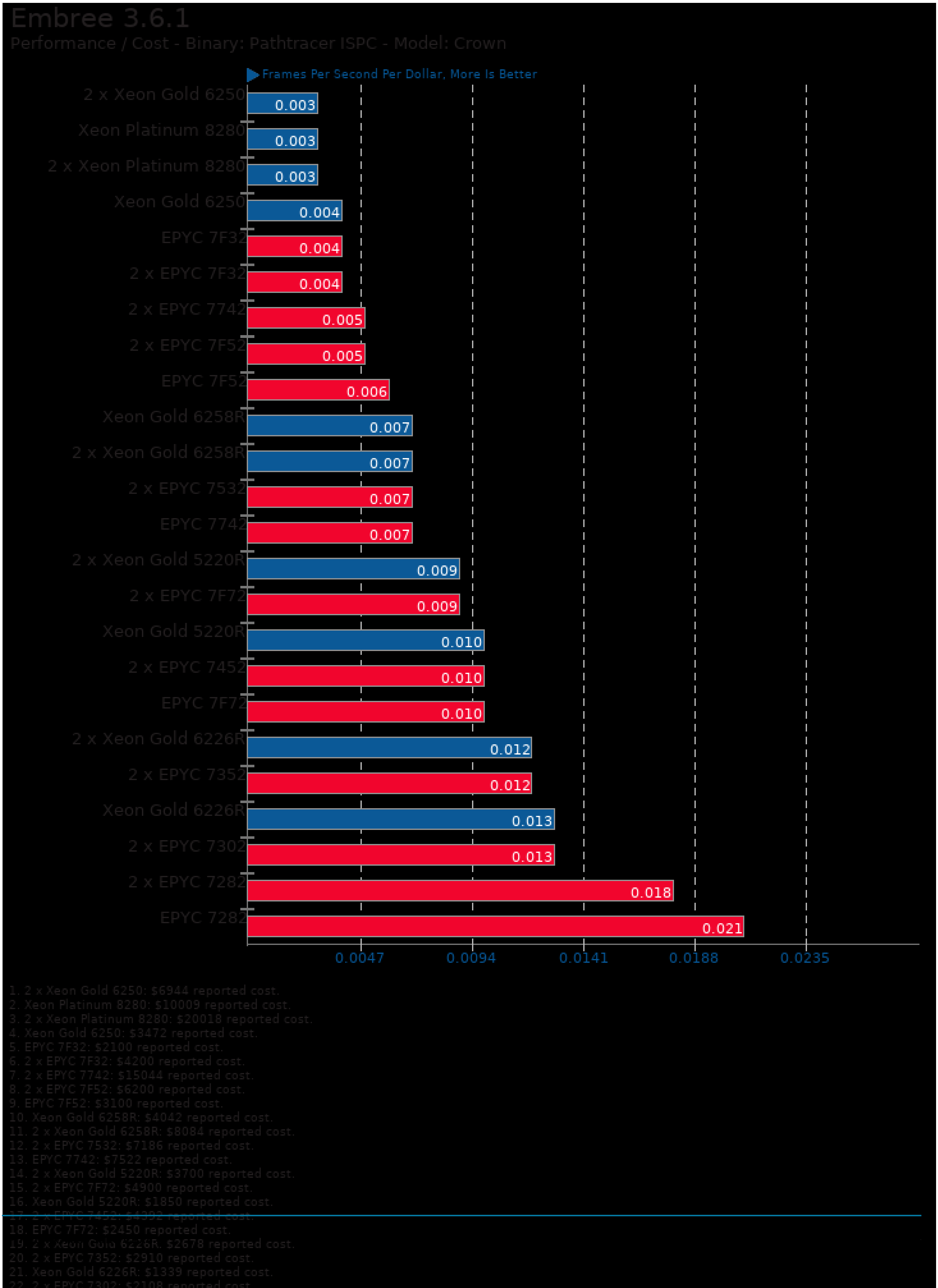
1. 2 x Xeon Platinum 8280: $20018 reported cost.
2. Xeon Platinum 8280: $10009 reported cost.
3. Xeon Gold 6250: $3472 reported cost.
4. 2 x Xeon Gold 6250: $6944 reported cost.
5. 2 x EPYC 7F32: $4200 reported cost.
6. 2 x EPYC 7742: $15044 reported cost.
7. EPYC 7F32: $2100 reported cost.
8. 2 x EPYC 7F52: $6200 reported cost.
9. 2 x EPYC 7532: $7186 reported cost.
10. EPYC 7742: $7522 reported cost.
11. EPYC 7F52: $3100 reported cost.
12. 2 x Xeon Gold 6258R: $8084 reported cost.
13. Xeon Gold 6258R: $4042 reported cost.
14. 2 x EPYC 7F72: $4900 reported cost.
15. 2 x Xeon Gold 5220R: $3700 reported cost.
16. Xeon Gold 5220R: $1850 reported cost.
17. 2 x EPYC 7452: $4392 reported cost.
18. EPYC 7F72: $2450 reported cost.
19. 2 x EPYC 7352: $2910 reported cost.
20. 2 x Xeon Gold 6226R: $2678 reported cost.
21. Xeon Gold 6226R: $1339 reported cost.
22. 2 x EPYC 7302: $2108 reported cost.

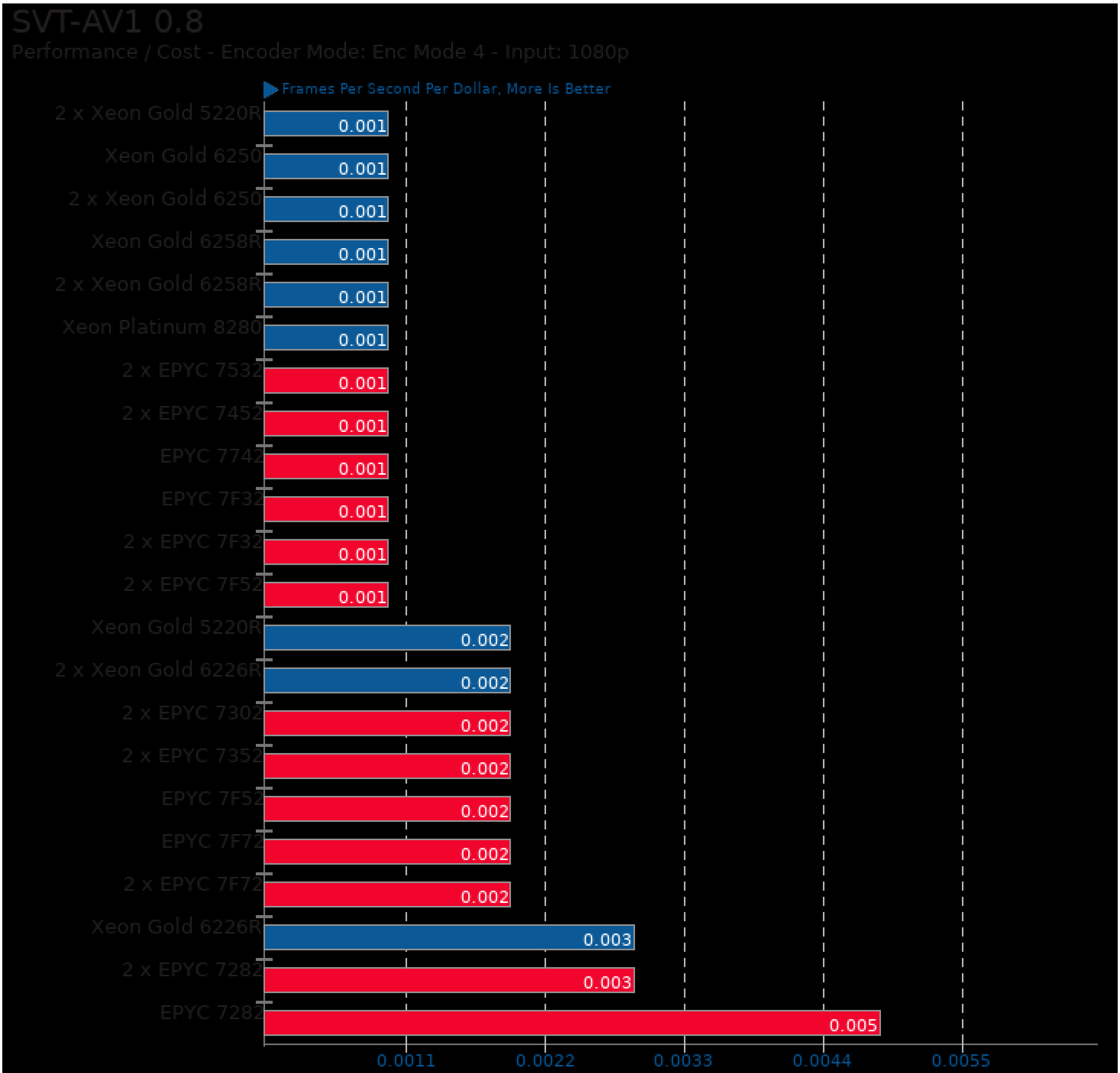


1. Xeon Gold 5220R: $1850 reported cost.
2. 2 x Xeon Gold 5220R: $3700 reported cost.
3. 2 x Xeon Gold 6226R: $2678 reported cost.
4. Xeon Gold 6258R: $4042 reported cost.
5. 2 x Xeon Gold 6258R: $8084 reported cost.
6. 2 x EPYC 7302: $2108 reported cost.
7. 2 x EPYC 7352: $2910 reported cost.
8. 2 x EPYC 7532: $7186 reported cost.
9. 2 x EPYC 7452: $4392 reported cost.
10. EPYC 7742: $7522 reported cost.
11. 2 x EPYC 7742: $15044 reported cost.
12. EPYC 7F52: $3100 reported cost.
13. 2 x EPYC 7F52: $6200 reported cost.
14. EPYC 7F72: $2450 reported cost.
15. 2 x EPYC 7F72: $4900 reported cost.
16. Xeon Gold 6226R: $1339 reported cost.
17. EPYC 7282: $745 reported cost.
18. 2 x EPYC 7282: $1490 reported cost.

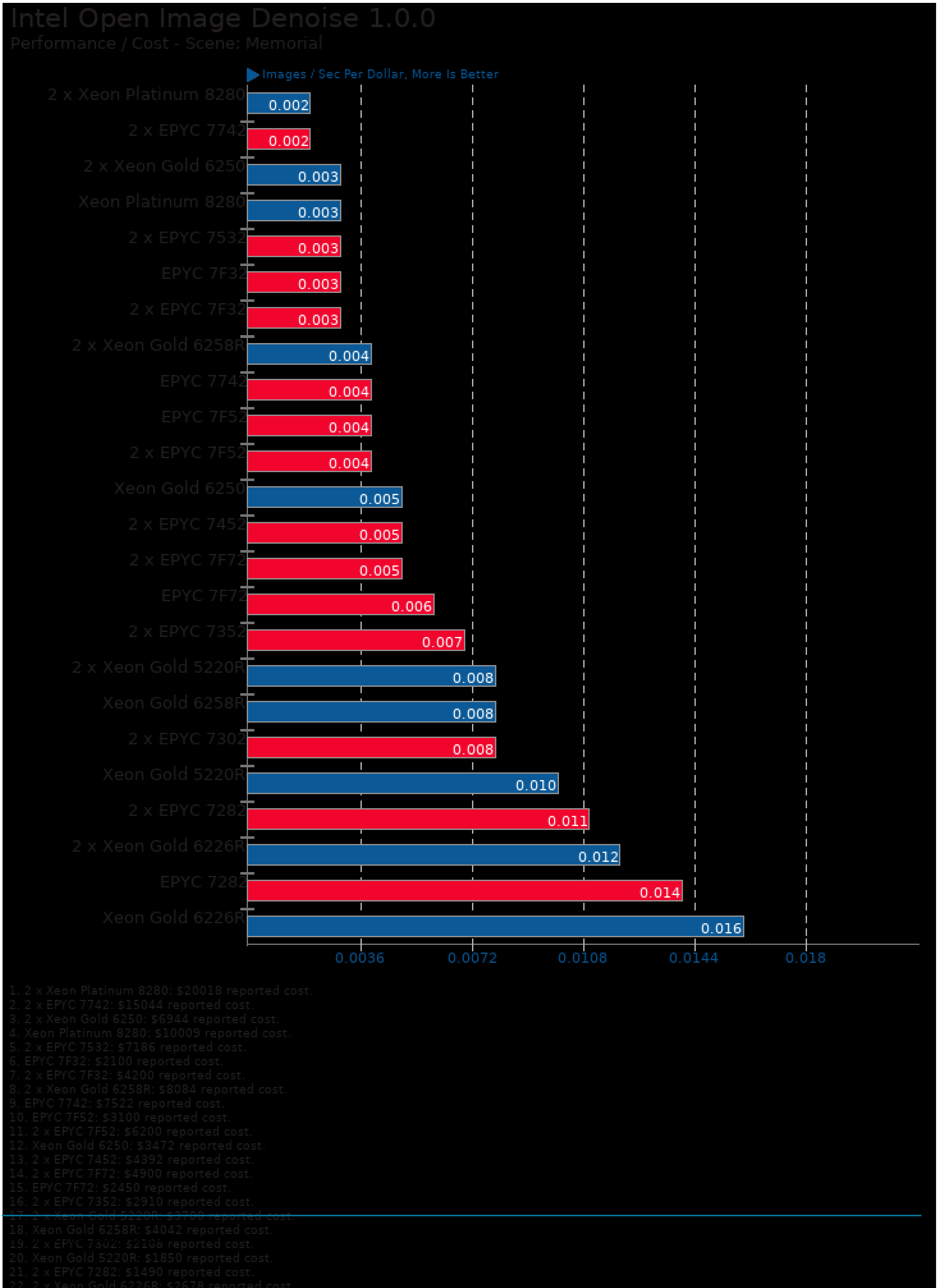

OSPray 1.8.5
Performance / Cost - Demo: NASA Streamlines - Renderer: SciVis
FPS Per Dollar, More Is Better
Xeon Platinum 8280
0.005
2 x Xeon Platinum 8280
0.005
Xeon Gold 6250
0.006
2 x Xeon Gold 6250
0.006
2 x EPYC 7F32
0.007
2 x EPYC 7742
0.008
EPYC 7F32
0.008
2 x EPYC 7F52
0.009
2 x Xeon Gold 6258R
0.011
2 x EPYC 7532
0.011
EPYC 7742
0.011
EPYC 7F52
0.011
Xeon Gold 6258R
0.013
Xeon Gold 5220R
0.015
2 x Xeon Gold 5220R
0.015
2 x EPYC 7F72
0.015
2 x EPYC 7452
0.018
2 x EPYC 7352
0.019
EPYC 7F72
0.019
2 x Xeon Gold 6226R
0.021
Xeon Gold 6226R
0.022
2 x EPYC 7302
0.023
2 x EPYC 7282
0.031
EPYC 7282
0.037
0.0083
0.0166
0.0249
0.0332
0.0415
1. Xeon Platinum 8280: $10009 reported cost.
2. 2 x Xeon Platinum 8280: $20018 reported cost.
3. Xeon Gold 6250: $3472 reported cost.
4. 2 x Xeon Gold 6250: $6944 reported cost.
5. 2 x EPYC 7F32: $4200 reported cost.
6. 2 x EPYC 7742: $15044 reported cost.
7. EPYC 7F32: $2100 reported cost.
8. 2 x EPYC 7F52: $6200 reported cost.
9. 2 x Xeon Gold 6258R: $8084 reported cost.
10. 2 x EPYC 7532: $7186 reported cost.
11. EPYC 7742: $7522 reported cost.
12. EPYC 7F52: $3100 reported cost.
13. Xeon Gold 6258R: $4042 reported cost.
14. Xeon Gold 5220R: $1850 reported cost.
15. 2 x Xeon Gold 5220R: $3700 reported cost.
16. 2 x EPYC 7F72: $4900 reported cost.
17. 2 x EPYC 7452: $4392 reported cost.
18. 2 x EPYC 7352: $2910 reported cost.
19. EPYC 7F72: $2450 reported cost.
20. 2 x Xeon Gold 6226R: $2678 reported cost.
21. Xeon Gold 6226R: $1339 reported cost.
22. 2 x EPYC 7302: $2108 reported cost.

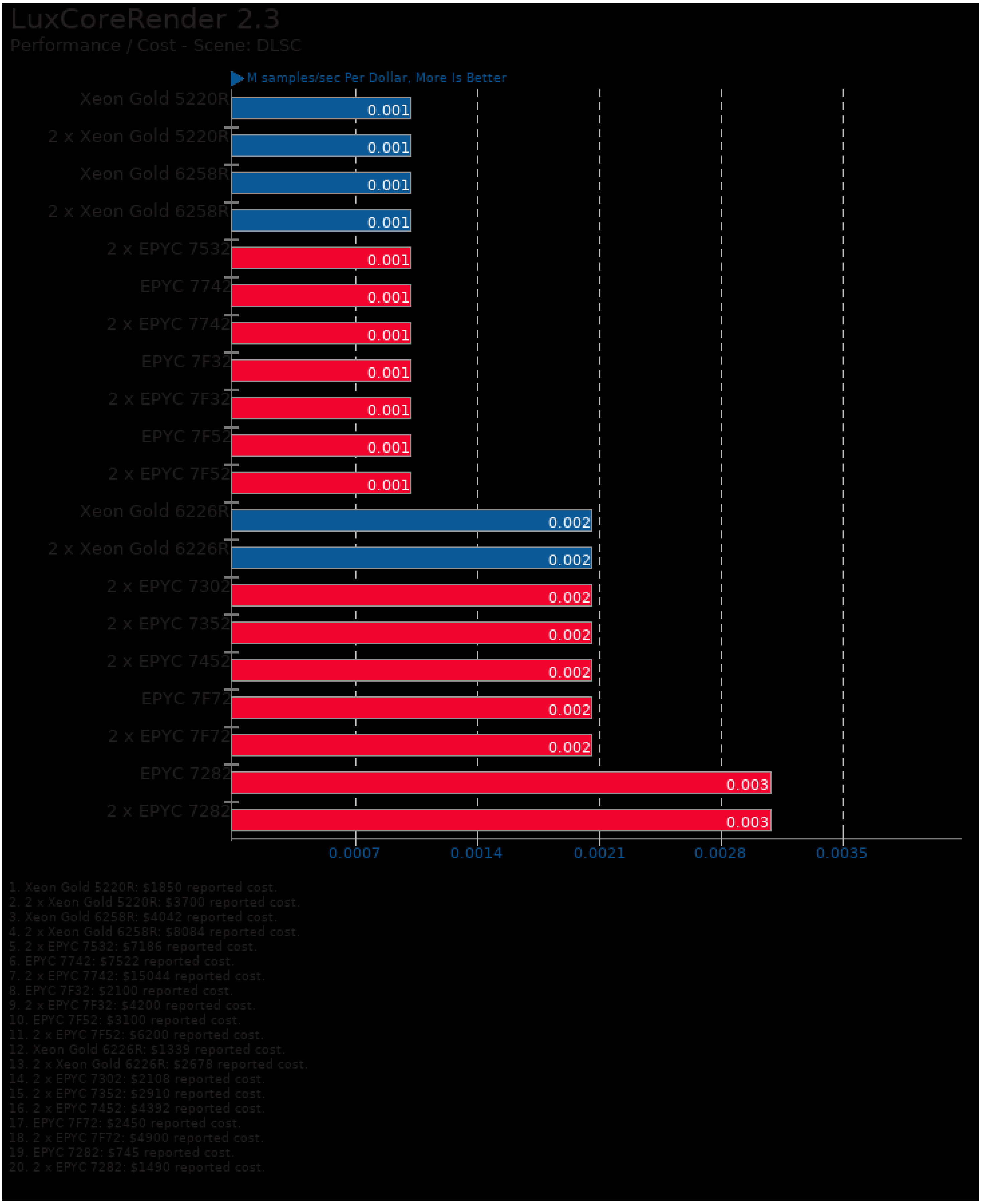

Embree 3.6.1
Performance / Cost - Binary: Pathtracer - Model: Crown
Frames Per Second Per Dollar, More Is Better
2 x Xeon Platinum 8280
0.002
Xeon Gold 6250
0.003
2 x Xeon Gold 6250
0.003
Xeon Platinum 8280
0.003
2 x EPYC 7F32
0.004
EPYC 7F32
0.005
2 x EPYC 7F52
0.005
2 x Xeon Gold 6258R
0.006
2 x EPYC 7742
0.006
EPYC 7F52
0.006
Xeon Gold 6258R
0.007
2 x EPYC 7532
0.007
EPYC 7742
0.007
2 x Xeon Gold 5220R
0.008
Xeon Gold 5220R
0.009
2 x EPYC 7F72
0.009
2 x Xeon Gold 6226R
0.011
2 x EPYC 7452
0.011
EPYC 7F72
0.011
Xeon Gold 6226R
0.012
2 x EPYC 7352
0.013
2 x EPYC 7302
0.014
2 x EPYC 7282
0.019
EPYC 7282
0.022
0.005
0.01
0.015
0.02
0.025
1. 2 x Xeon Platinum 8280: $20018 reported cost.
2. Xeon Gold 6250: $3472 reported cost.
3. 2 x Xeon Gold 6250: $6944 reported cost.
4. Xeon Platinum 8280: $10009 reported cost.
5. 2 x EPYC 7F32: $4200 reported cost.
6. EPYC 7F32: $2100 reported cost.
7. 2 x EPYC 7F52: $6200 reported cost.
8. 2 x Xeon Gold 6258R: $8084 reported cost.
9. 2 x EPYC 7742: $15044 reported cost.
10. EPYC 7F52: $3100 reported cost.
11. Xeon Gold 6258R: $4042 reported cost.
12. 2 x EPYC 7532: $7186 reported cost.
13. EPYC 7742: $7522 reported cost.
14. 2 x Xeon Gold 5220R: $3700 reported cost.
15. Xeon Gold 5220R: $1850 reported cost.
16. 2 x EPYC 7F72: $4900 reported cost.
17. 2 x Xeon Gold 6226R: $2670 reported cost.
18. 2 x EPYC 7452: $4392 reported cost.
19. EPYC 7F72: $2450 reported cost.
20. Xeon Gold 6226R: $1339 reported cost.
21. 2 x EPYC 7352: $2910 reported cost.

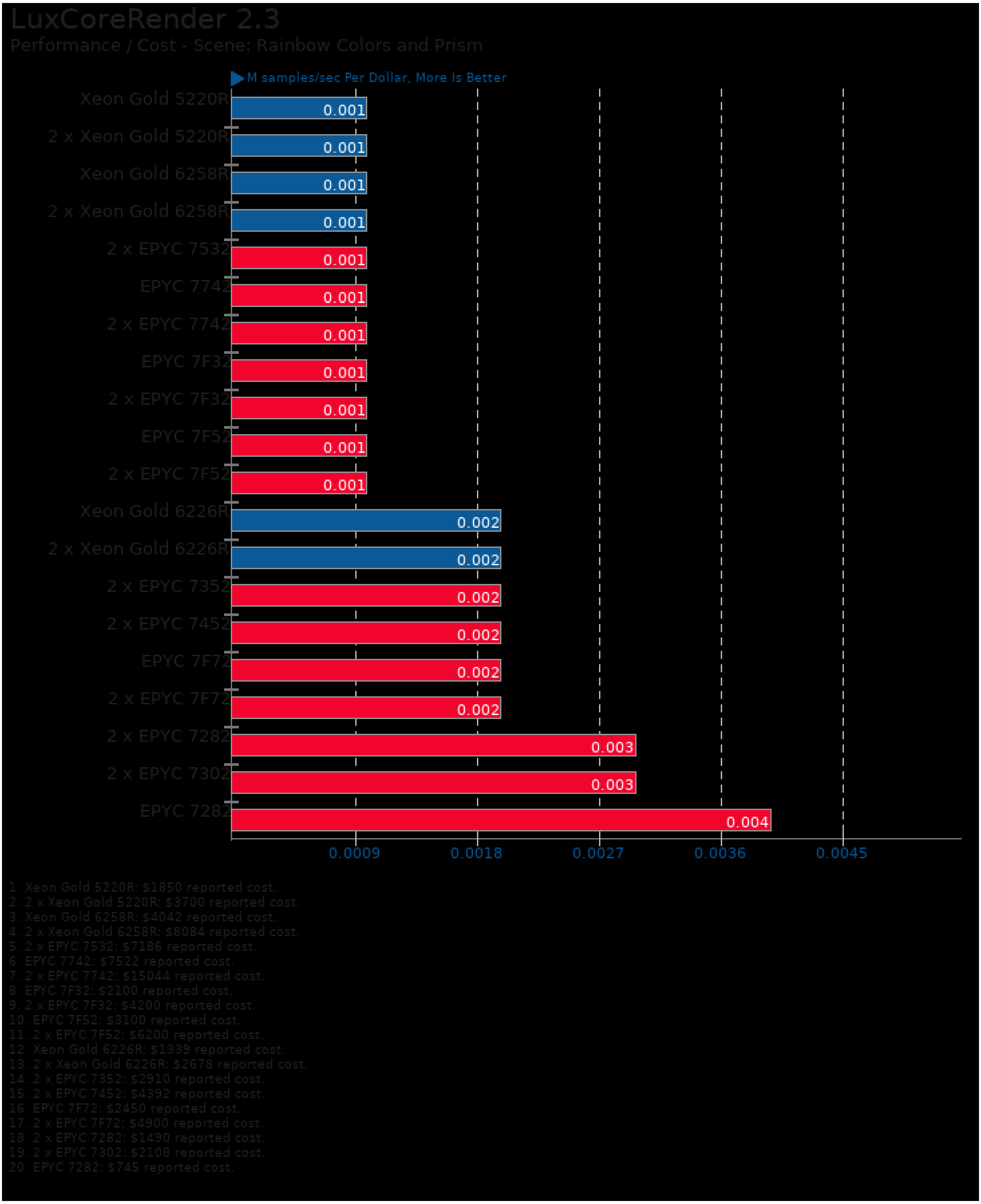

Embree 3.6.1
Performance / Cost - Binary: Pathtracer ISPC - Model: Crown
Frames Per Second Per Dollar, More Is Better
2 x Xeon Gold 6250
0.003
Xeon Platinum 8280
0.003
2 x Xeon Platinum 8280
0.003
Xeon Gold 6250
0.004
EPYC 7F32
0.004
2 x EPYC 7F32
0.004
2 x EPYC 7742
0.005
2 x EPYC 7F52
0.005
EPYC 7F52
0.006
Xeon Gold 6258R
0.007
2 x Xeon Gold 6258R
0.007
2 x EPYC 7532
0.007
EPYC 7742
0.007
2 x Xeon Gold 5220R
0.009
2 x EPYC 7F72
0.009
Xeon Gold 5220R
0.010
2 x EPYC 7452
0.010
EPYC 7F72
0.010
2 x Xeon Gold 6226R
0.012
2 x EPYC 7352
0.012
Xeon Gold 6226R
0.013
2 x EPYC 7302
0.013
2 x EPYC 7282
0.018
EPYC 7282
0.021
0.0047
0.0094
0.0141
0.0188
0.0235
1. 2 x Xeon Gold 6250: $6944 reported cost.
2. Xeon Platinum 8280: $10009 reported cost.
3. 2 x Xeon Platinum 8280: $20018 reported cost.
4. Xeon Gold 6250: $3472 reported cost.
5. EPYC 7F32: $2100 reported cost.
6. 2 x EPYC 7F32: $4200 reported cost.
7. 2 x EPYC 7742: $15044 reported cost.
8. 2 x EPYC 7F52: $6200 reported cost.
9. EPYC 7F52: $3100 reported cost.
10. Xeon Gold 6258R: $4042 reported cost.
11. 2 x Xeon Gold 6258R: $8084 reported cost.
12. 2 x EPYC 7532: $7186 reported cost.
13. EPYC 7742: $7522 reported cost.
14. 2 x Xeon Gold 5220R: $3700 reported cost.
15. 2 x EPYC 7F72: $4900 reported cost.
16. Xeon Gold 5220R: $1850 reported cost.
17. 2 x EPYC 7452: $4392 reported cost.
18. EPYC 7F72: $2450 reported cost.
19. 2 x Xeon Gold 6226R: $2678 reported cost.
20. 2 x EPYC 7352: $2910 reported cost.
21. Xeon Gold 6226R: $1339 reported cost.

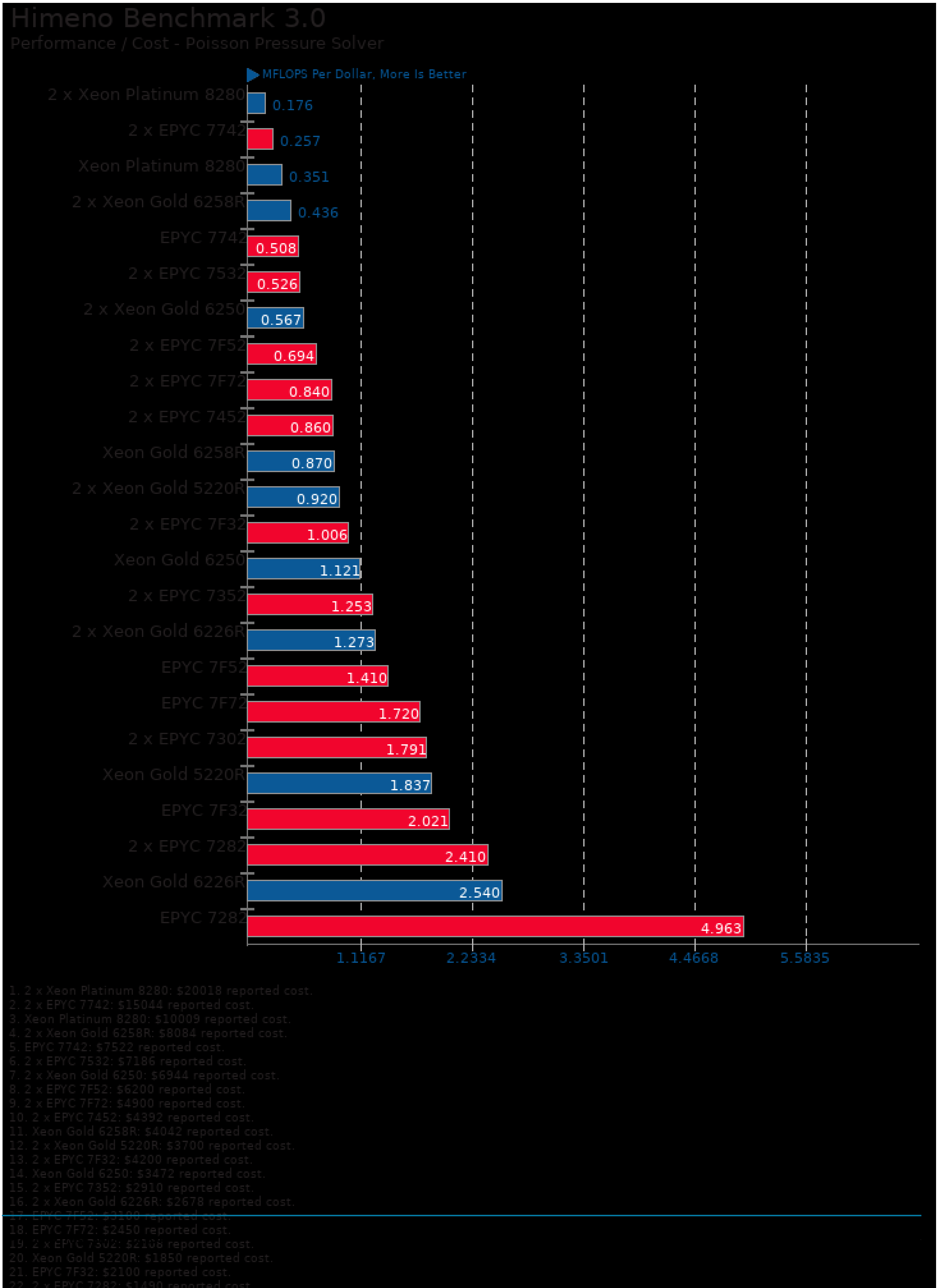


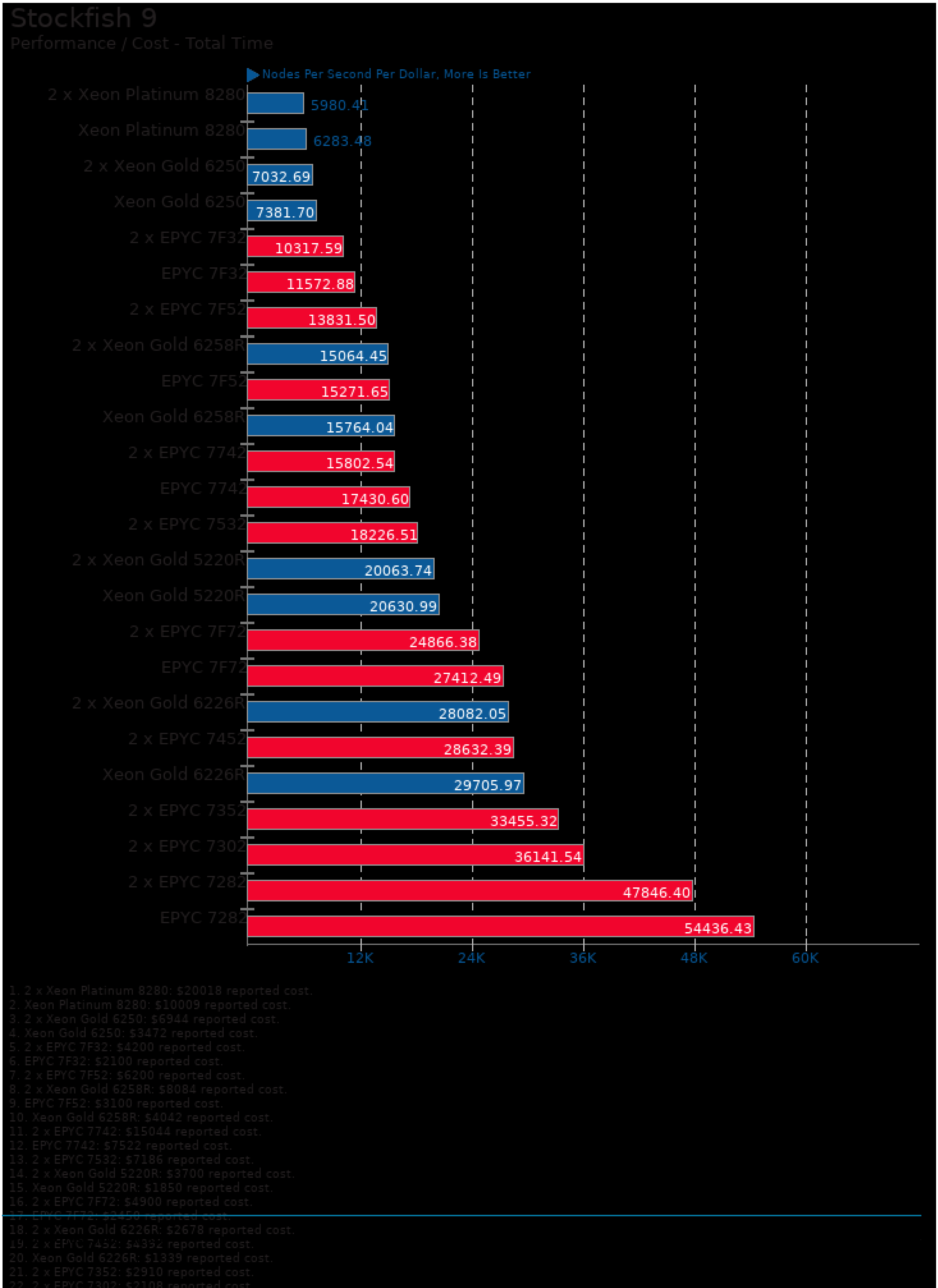
1. 2 x Xeon Gold 5220R: $3700 reported cost.
2. Xeon Gold 6250: $3472 reported cost.
3. 2 x Xeon Gold 6250: $6944 reported cost.
4. Xeon Gold 6258R: $4042 reported cost.
5. 2 x Xeon Gold 6258R: $8084 reported cost.
6. Xeon Platinum 8280: $10009 reported cost.
7. 2 x EPYC 7532: $7186 reported cost.
8. 2 x EPYC 7452: $4392 reported cost.
9. EPYC 7742: $7522 reported cost.
10. EPYC 7F32: $2100 reported cost.
11. 2 x EPYC 7F32: $4200 reported cost.
12. 2 x EPYC 7F52: $6200 reported cost.
13. Xeon Gold 5220R: $1850 reported cost.
14. 2 x Xeon Gold 6226R: $2678 reported cost.
15. 2 x EPYC 7302: $2108 reported cost.
16. 2 x EPYC 7352: $2910 reported cost.
17. EPYC 7F52: $3100 reported cost.
18. EPYC 7F72: $2450 reported cost.
19. 2 x EPYC 7F72: $4900 reported cost.
20. Xeon Gold 6226R: $1339 reported cost.
21. 2 x EPYC 7282: $1490 reported cost.
22. EPYC 7282: $745 reported cost.

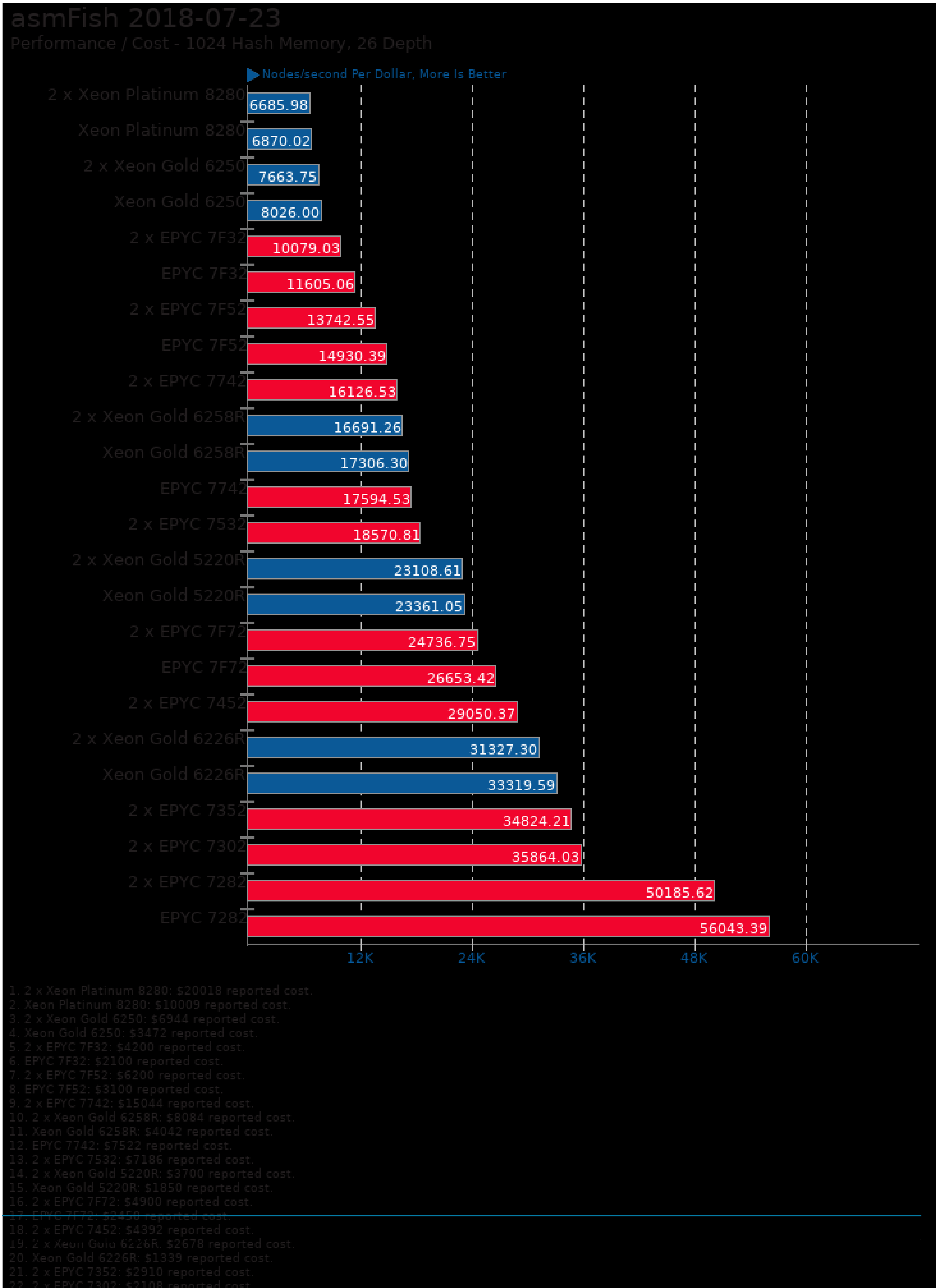

Intel Open Image Denoise 1.0.0
Performance / Cost - Scene: Memorial
Images / Sec Per Dollar, More Is Better
2 x Xeon Platinum 8280
0.002
2 x EPYC 7742
0.002
2 x Xeon Gold 6250
0.003
Xeon Platinum 8280
0.003
2 x EPYC 7532
0.003
EPYC 7F32
0.003
2 x EPYC 7F32
0.003
2 x Xeon Gold 6258R
0.004
EPYC 7742
0.004
EPYC 7F52
0.004
2 x EPYC 7F52
0.004
Xeon Gold 6250
0.005
2 x EPYC 7452
0.005
2 x EPYC 7F72
0.005
EPYC 7F72
0.006
2 x EPYC 7352
0.007
2 x Xeon Gold 5220R
0.008
Xeon Gold 6258R
0.008
2 x EPYC 7302
0.008
Xeon Gold 5220R
0.010
2 x EPYC 7282
0.011
2 x Xeon Gold 6226R
0.012
EPYC 7282
0.014
Xeon Gold 6226R
0.016
0.0036
0.0072
0.0108
0.0144
0.018
1. 2 x Xeon Platinum 8280: $20018 reported cost.
2. 2 x EPYC 7742: $15044 reported cost.
3. 2 x Xeon Gold 6250: $6944 reported cost.
4. Xeon Platinum 8280: $10009 reported cost.
5. 2 x EPYC 7532: $7186 reported cost.
6. EPYC 7F32: $2100 reported cost.
7. 2 x EPYC 7F32: $4200 reported cost.
8. 2 x Xeon Gold 6258R: $8084 reported cost.
9. EPYC 7742: $7522 reported cost.
10. EPYC 7F52: $3100 reported cost.
11. 2 x EPYC 7F52: $6200 reported cost.
12. Xeon Gold 6250: $3472 reported cost.
13. 2 x EPYC 7452: $4392 reported cost.
14. 2 x EPYC 7F72: $4900 reported cost.
15. EPYC 7F72: $2450 reported cost.
16. 2 x EPYC 7352: $2910 reported cost.
17. 2 x Xeon Gold 5220R: $3700 reported cost.
18. Xeon Gold 6258R: $4042 reported cost.
19. 2 x EPYC 7302: $2108 reported cost.
20. Xeon Gold 5220R: $1850 reported cost.
21. 2 x EPYC 7282: $1490 reported cost.
22. 2 x Xeon Gold 6226R: $2678 reported cost.

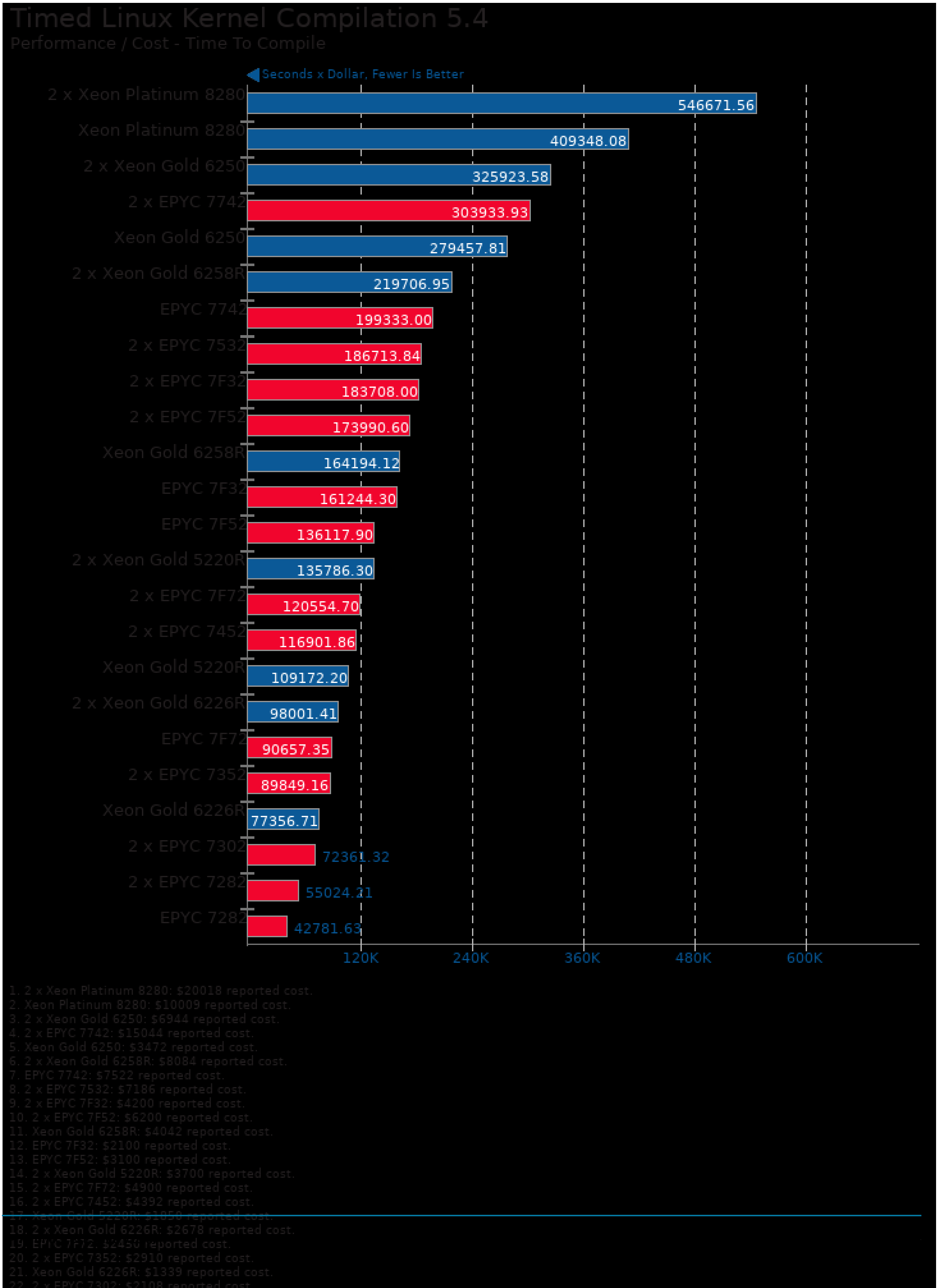

LuxCoreRender 2.3
Performance / Cost - Scene: DLSC
M samples/sec Per Dollar, More Is Better
Xeon Gold 5220R
0.001
2 x Xeon Gold 5220R
0.001
Xeon Gold 6258R
0.001
2 x Xeon Gold 6258R
0.001
2 x EPYC 7532
0.001
EPYC 7742
0.001
2 x EPYC 7742
0.001
EPYC 7F32
0.001
2 x EPYC 7F32
0.001
EPYC 7F52
0.001
2 x EPYC 7F52
0.001
Xeon Gold 6226R
0.002
2 x Xeon Gold 6226R
0.002
2 x EPYC 7302
0.002
2 x EPYC 7352
0.002
2 x EPYC 7452
0.002
EPYC 7F72
0.002
2 x EPYC 7F72
0.002
EPYC 7282
0.003
2 x EPYC 7282
0.003
0.0007
0.0014
0.0021
0.0028
0.0035
1. Xeon Gold 5220R: $1850 reported cost.
2. 2 x Xeon Gold 5220R: $3700 reported cost.
3. Xeon Gold 6258R: $4042 reported cost.
4. 2 x Xeon Gold 6258R: $8084 reported cost.
5. 2 x EPYC 7532: $7186 reported cost.
6. EPYC 7742: $7522 reported cost.
7. 2 x EPYC 7742: $15044 reported cost.
8. EPYC 7F32: $2100 reported cost.
9. 2 x EPYC 7F32: $4200 reported cost.
10. EPYC 7F52: $3100 reported cost.
11. 2 x EPYC 7F52: $6200 reported cost.
12. Xeon Gold 6226R: $1339 reported cost.
13. 2 x Xeon Gold 6226R: $2678 reported cost.
14. 2 x EPYC 7302: $2108 reported cost.
15. 2 x EPYC 7352: $2910 reported cost.
16. 2 x EPYC 7452: $4392 reported cost.
17. EPYC 7F72: $2450 reported cost.
18. 2 x EPYC 7F72: $4900 reported cost.
19. EPYC 7282: $745 reported cost.
20. 2 x EPYC 7282: $1490 reported cost.

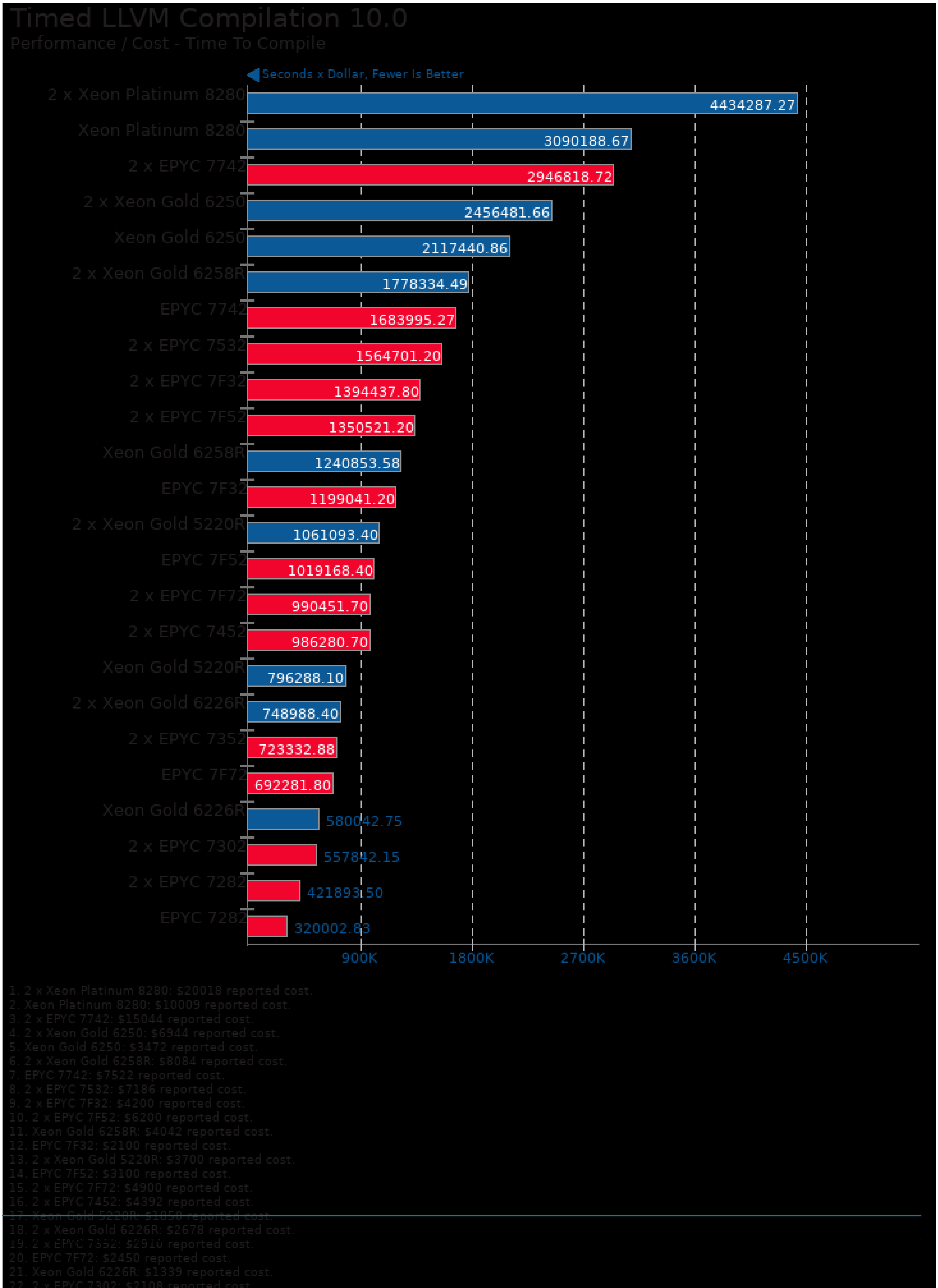

LuxCoreRender 2.3
Performance / Cost - Scene: Rainbow Colors and Prism
M samples/sec Per Dollar, More Is Better
Xeon Gold 5220R
0.001
2 x Xeon Gold 5220R
0.001
Xeon Gold 6258R
0.001
2 x Xeon Gold 6258R
0.001
2 x EPYC 7532
0.001
EPYC 7742
0.001
2 x EPYC 7742
0.001
EPYC 7F32
0.001
2 x EPYC 7F32
0.001
EPYC 7F52
0.001
2 x EPYC 7F52
0.001
Xeon Gold 6226R
0.002
2 x Xeon Gold 6226R
0.002
2 x EPYC 7352
0.002
2 x EPYC 7452
0.002
EPYC 7F72
0.002
2 x EPYC 7F72
0.002
2 x EPYC 7282
0.003
2 x EPYC 7302
0.003
EPYC 7282
0.004
0.0009
0.0018
0.0027
0.0036
0.0045
1. Xeon Gold 5220R: $1850 reported cost.
2. 2 x Xeon Gold 5220R: $3700 reported cost.
3. Xeon Gold 6258R: $4042 reported cost.
4. 2 x Xeon Gold 6258R: $8084 reported cost.
5. 2 x EPYC 7532: $7186 reported cost.
6. EPYC 7742: $7522 reported cost.
7. 2 x EPYC 7742: $15044 reported cost.
8. EPYC 7F32: $2100 reported cost.
9. 2 x EPYC 7F32: $4200 reported cost.
10. EPYC 7F52: $3100 reported cost.
11. 2 x EPYC 7F52: $6200 reported cost.
12. Xeon Gold 6226R: $1339 reported cost.
13. 2 x Xeon Gold 6226R: $2678 reported cost.
14. 2 x EPYC 7352: $2910 reported cost.
15. 2 x EPYC 7452: $4392 reported cost.
16. EPYC 7F72: $2450 reported cost.
17. 2 x EPYC 7F72: $4900 reported cost.
18. 2 x EPYC 7282: $1490 reported cost.
19. 2 x EPYC 7302: $2108 reported cost.
20. EPYC 7282: $745 reported cost.

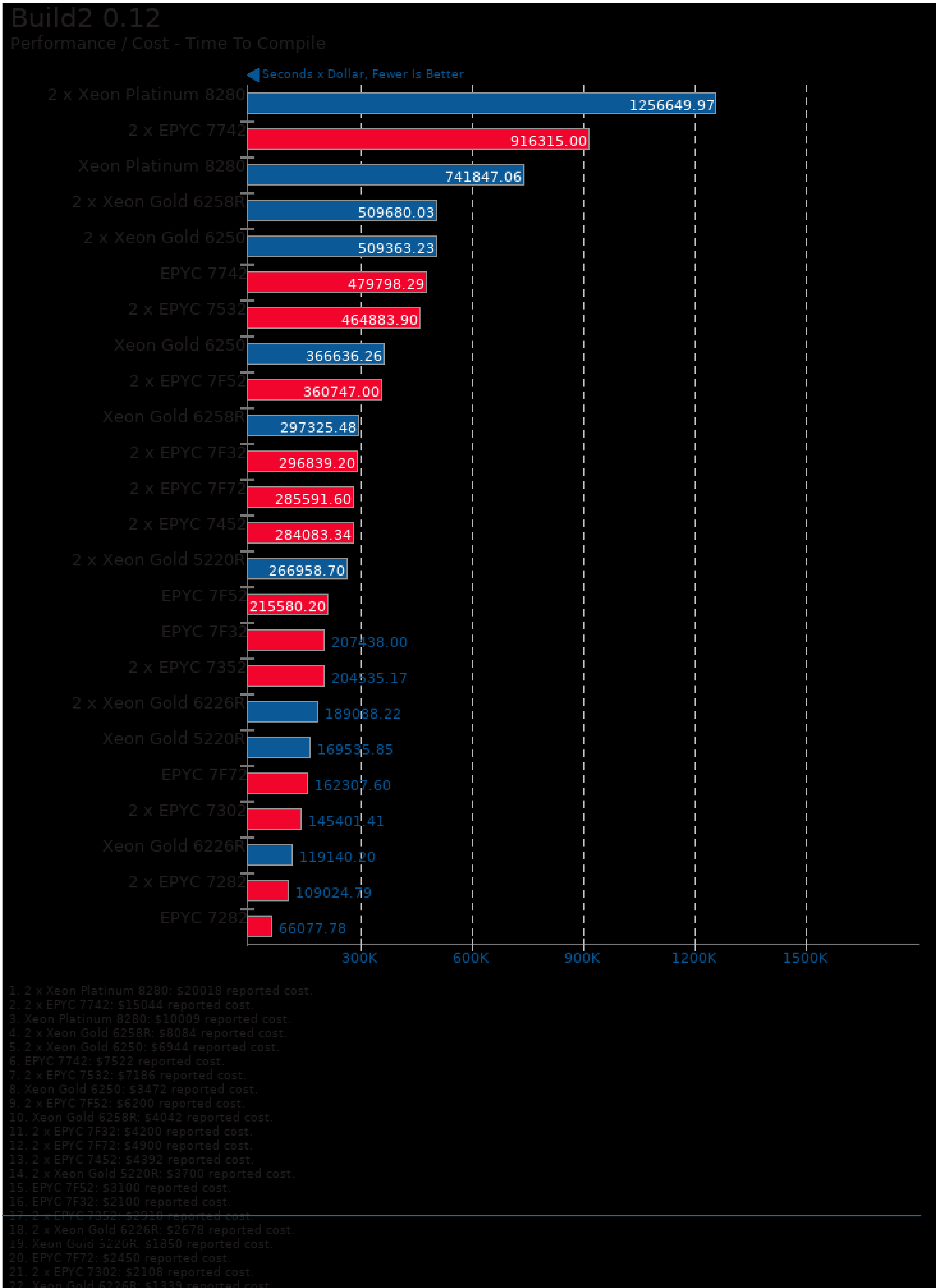

Himeno Benchmark 3.0
Performance / Cost - Poisson Pressure Solver
MFLOPS Per Dollar, More Is Better
2 x Xeon Platinum 8280
0.176
2 x EPYC 7742
0.257
Xeon Platinum 8280
0.351
2 x Xeon Gold 6258R
0.436
EPYC 7742
0.508
2 x EPYC 7532
0.526
2 x Xeon Gold 6250
0.567
2 x EPYC 7F52
0.694
2 x EPYC 7F72
0.840
2 x EPYC 7452
0.860
Xeon Gold 6258R
0.870
2 x Xeon Gold 5220R
0.920
2 x EPYC 7F32
1.006
Xeon Gold 6250
1.121
2 x EPYC 7352
1.253
2 x Xeon Gold 6226R
1.273
EPYC 7F52
1.410
EPYC 7F72
1.720
2 x EPYC 7302
1.791
Xeon Gold 5220R
1.837
EPYC 7F32
2.021
2 x EPYC 7282
2.410
Xeon Gold 6226R
2.540
EPYC 7282
4.963
1.1167
2.2334
3.3501
4.4668
5.5835
1. 2 x Xeon Platinum 8280: $20018 reported cost.
2. 2 x EPYC 7742: $15044 reported cost.
3. Xeon Platinum 8280: $10009 reported cost.
4. 2 x Xeon Gold 6258R: $8084 reported cost.
5. EPYC 7742: $7522 reported cost.
6. 2 x EPYC 7532: $7186 reported cost.
7. 2 x Xeon Gold 6250: $6944 reported cost.
8. 2 x EPYC 7F52: $6200 reported cost.
9. 2 x EPYC 7F72: $4900 reported cost.
10. 2 x EPYC 7452: $4392 reported cost.
11. Xeon Gold 6258R: $4042 reported cost.
12. 2 x Xeon Gold 5220R: $3700 reported cost.
13. 2 x EPYC 7F32: $4200 reported cost.
14. Xeon Gold 6250: $3472 reported cost.
15. 2 x EPYC 7352: $2910 reported cost.
16. 2 x Xeon Gold 6226R: $2678 reported cost.
17. EPYC 7F52: $3100 reported cost.
18. EPYC 7F72: $2450 reported cost.
19. 2 x EPYC 7302: $2108 reported cost.
20. Xeon Gold 5220R: $1850 reported cost.
21. EPYC 7F32: $2100 reported cost.
22. 2 x EPYC 7282: $1490 reported cost.

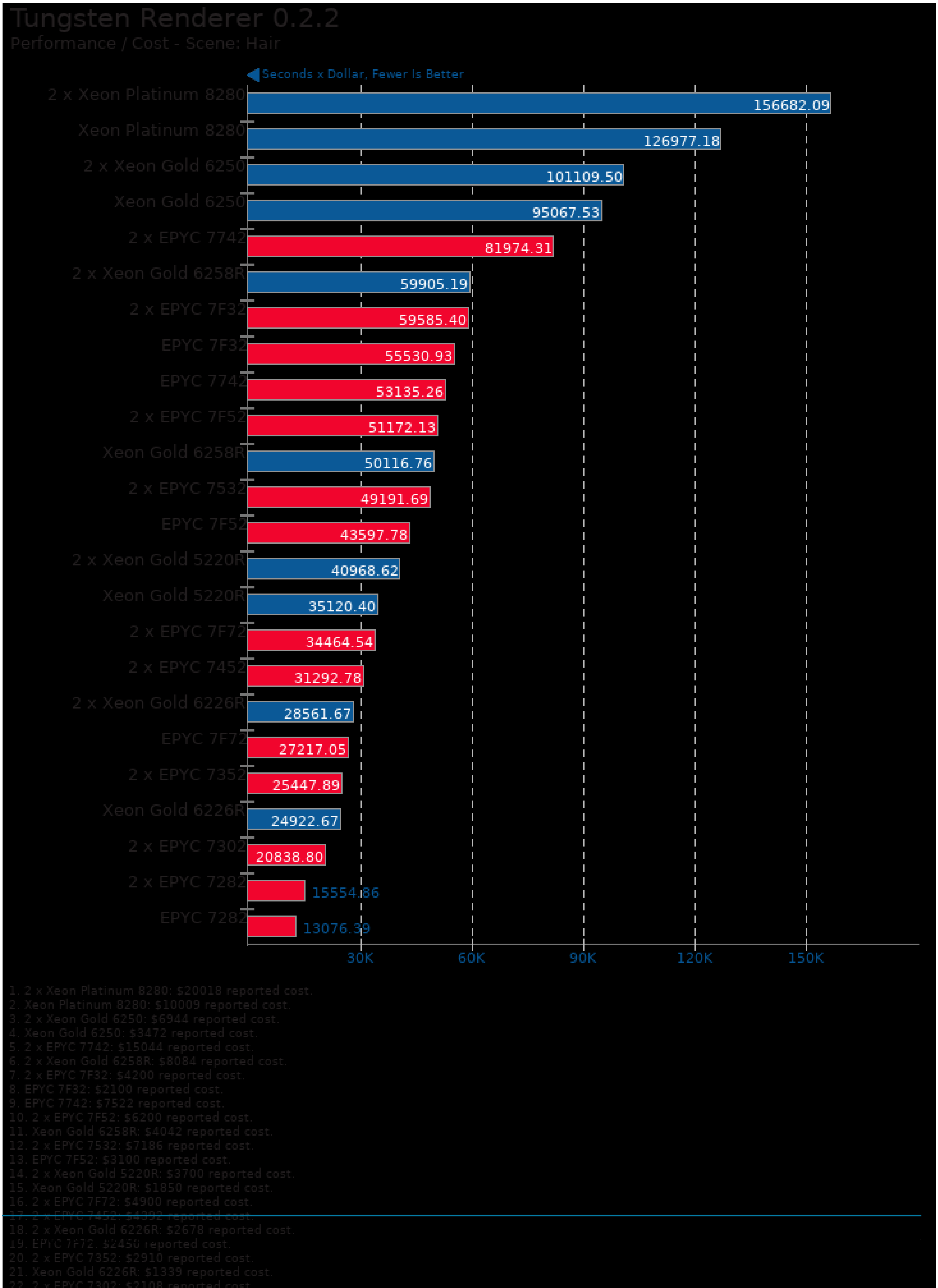

Stockfish 9
Performance / Cost - Total Time
Nodes Per Second Per Dollar, More Is Better
2 x Xeon Platinum 8280
5980.41
Xeon Platinum 8280
6283.48
2 x Xeon Gold 6250
7032.69
Xeon Gold 6250
7381.70
2 x EPYC 7F32
10317.59
EPYC 7F32
11572.88
2 x EPYC 7F52
13831.50
2 x Xeon Gold 6258R
15064.45
EPYC 7F52
15271.65
Xeon Gold 6258R
15764.04
2 x EPYC 7742
15802.54
EPYC 7742
17430.60
2 x EPYC 7532
18226.51
2 x Xeon Gold 5220R
20063.74
Xeon Gold 5220R
20630.99
2 x EPYC 7F72
24866.38
EPYC 7F72
27412.49
2 x Xeon Gold 6226R
28082.05
2 x EPYC 7452
28632.39
Xeon Gold 6226R
29705.97
2 x EPYC 7352
33455.32
2 x EPYC 7302
36141.54
2 x EPYC 7282
47846.40
EPYC 7282
54436.43
12K
24K
36K
48K
60K
1. 2 x Xeon Platinum 8280: $20018 reported cost.
2. Xeon Platinum 8280: $10009 reported cost.
3. 2 x Xeon Gold 6250: $6944 reported cost.
4. Xeon Gold 6250: $3472 reported cost.
5. 2 x EPYC 7F32: $4200 reported cost.
6. EPYC 7F32: $2100 reported cost.
7. 2 x EPYC 7F52: $6200 reported cost.
8. 2 x Xeon Gold 6258R: $8084 reported cost.
9. EPYC 7F52: $3100 reported cost.
10. Xeon Gold 6258R: $4042 reported cost.
11. 2 x EPYC 7742: $15044 reported cost.
12. EPYC 7742: $7522 reported cost.
13. 2 x EPYC 7532: $7186 reported cost.
14. 2 x Xeon Gold 5220R: $3700 reported cost.
15. Xeon Gold 5220R: $1850 reported cost.
16. 2 x EPYC 7F72: $4900 reported cost.
17. EPYC 7F72: $2450 reported cost.
18. 2 x Xeon Gold 6226R: $2678 reported cost.
19. 2 x EPYC 7452: $4392 reported cost.
20. Xeon Gold 6226R: $1339 reported cost.
21. 2 x EPYC 7352: $2910 reported cost.

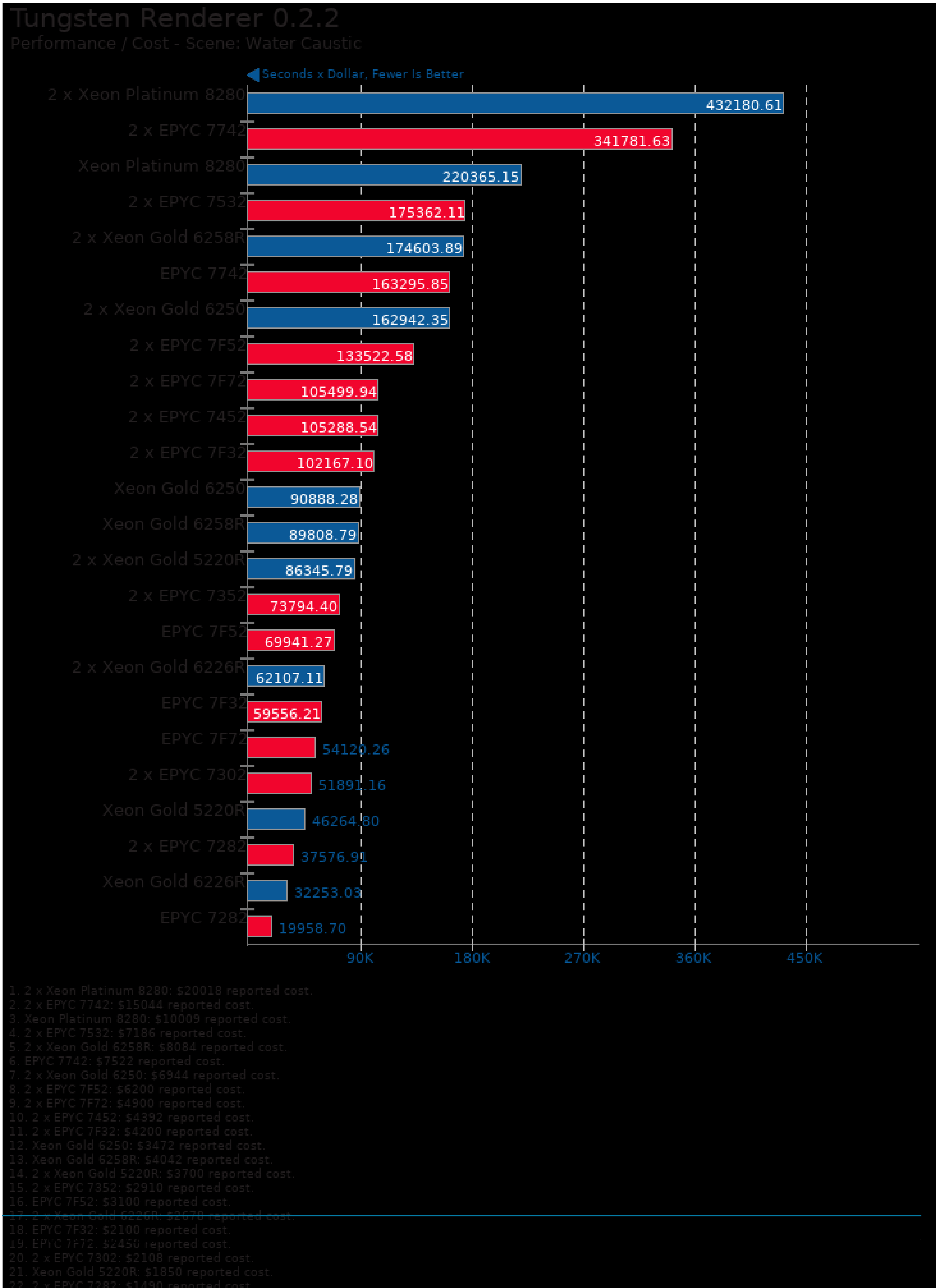

asmFish 2018-07-23
Performance / Cost - 1024 Hash Memory, 26 Depth
Nodes/second Per Dollar, More Is Better
2 x Xeon Platinum 8280
6685.98
Xeon Platinum 8280
6870.02
2 x Xeon Gold 6250
7663.75
Xeon Gold 6250
8026.00
2 x EPYC 7F32
10079.03
EPYC 7F32
11605.06
2 x EPYC 7F52
13742.55
EPYC 7F52
14930.39
2 x EPYC 7742
16126.53
2 x Xeon Gold 6258R
16691.26
Xeon Gold 6258R
17306.30
EPYC 7742
17594.53
2 x EPYC 7532
18570.81
2 x Xeon Gold 5220R
23108.61
Xeon Gold 5220R
23361.05
2 x EPYC 7F72
24736.75
EPYC 7F72
26653.42
2 x EPYC 7452
29050.37
2 x Xeon Gold 6226R
31327.30
Xeon Gold 6226R
33319.59
2 x EPYC 7352
34824.21
2 x EPYC 7302
35864.03
2 x EPYC 7282
50185.62
EPYC 7282
56043.39
12K
24K
36K
48K
60K
1. 2 x Xeon Platinum 8280: $20018 reported cost.
2. Xeon Platinum 8280: $10009 reported cost.
3. 2 x Xeon Gold 6250: $6944 reported cost.
4. Xeon Gold 6250: $3472 reported cost.
5. 2 x EPYC 7F32: $4200 reported cost.
6. EPYC 7F32: $2100 reported cost.
7. 2 x EPYC 7F52: $6200 reported cost.
8. EPYC 7F52: $3100 reported cost.
9. 2 x EPYC 7742: $15044 reported cost.
10. 2 x Xeon Gold 6258R: $8084 reported cost.
11. Xeon Gold 6258R: $4042 reported cost.
12. EPYC 7742: $7522 reported cost.
13. 2 x EPYC 7532: $7186 reported cost.
14. 2 x Xeon Gold 5220R: $3700 reported cost.
15. Xeon Gold 5220R: $1850 reported cost.
16. 2 x EPYC 7F72: $4900 reported cost.
17. EPYC 7F72: $2450 reported cost.
18. 2 x EPYC 7452: $4392 reported cost.
19. 2 x Xeon Gold 6226R: $2678 reported cost.
20. Xeon Gold 6226R: $1339 reported cost.
21. 2 x EPYC 7352: $2910 reported cost.
22. 2 x EPYC 7302: $2108 reported cost.

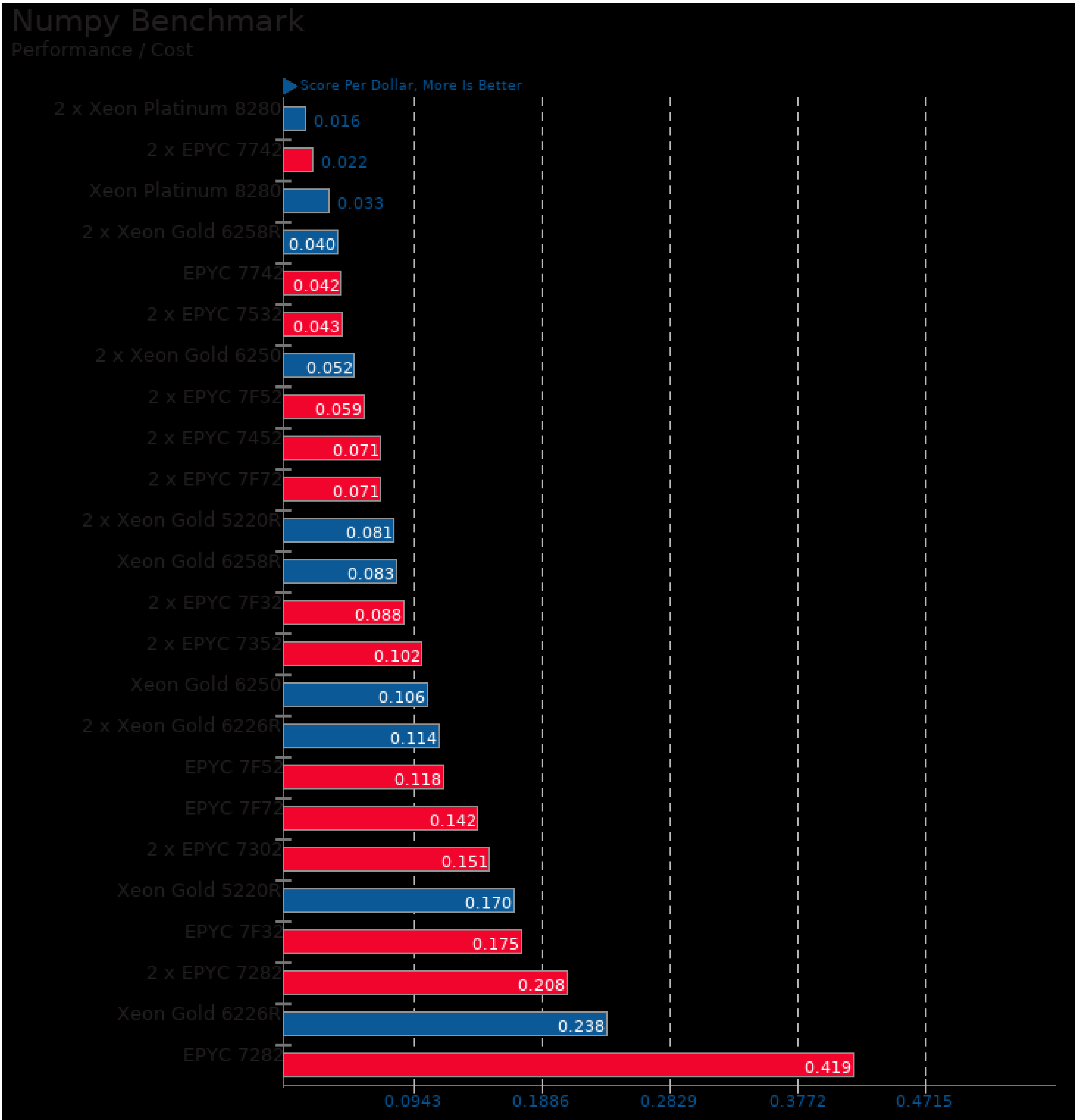

Timed Linux Kernel Compilation 5.4
Performance / Cost - Time To Compile
Seconds x Dollar, Fewer Is Better
2 x Xeon Platinum 8280
546671.56
Xeon Platinum 8280
409348.08
2 x Xeon Gold 6250
325923.58
2 x EPYC 7742
303933.93
Xeon Gold 6250
279457.81
2 x Xeon Gold 6258R
219706.95
EPYC 7742
199333.00
2 x EPYC 7532
186713.84
2 x EPYC 7F32
183708.00
2 x EPYC 7F52
173990.60
Xeon Gold 6258R
164194.12
EPYC 7F32
161244.30
EPYC 7F52
136117.90
2 x Xeon Gold 5220R
135786.30
2 x EPYC 7F72
120554.70
2 x EPYC 7452
116901.86
Xeon Gold 5220R
109172.20
2 x Xeon Gold 6226R
98001.41
EPYC 7F72
90657.35
2 x EPYC 7352
89849.16
Xeon Gold 6226R
77356.71
2 x EPYC 7302
72361.32
2 x EPYC 7282
55024.21
EPYC 7282
42781.63
120K
240K
360K
480K
600K
1. 2 x Xeon Platinum 8280: $20018 reported cost.
2. Xeon Platinum 8280: $10009 reported cost.
3. 2 x Xeon Gold 6250: $6944 reported cost.
4. 2 x EPYC 7742: $15044 reported cost.
5. Xeon Gold 6250: $3472 reported cost.
6. 2 x Xeon Gold 6258R: $8084 reported cost.
7. EPYC 7742: $7522 reported cost.
8. 2 x EPYC 7532: $7186 reported cost.
9. 2 x EPYC 7F32: $4200 reported cost.
10. 2 x EPYC 7F52: $6200 reported cost.
11. Xeon Gold 6258R: $4042 reported cost.
12. EPYC 7F32: $2100 reported cost.
13. EPYC 7F52: $3100 reported cost.
14. 2 x Xeon Gold 5220R: $3700 reported cost.
15. 2 x EPYC 7F72: $4900 reported cost.
16. 2 x EPYC 7452: $4392 reported cost.
17. Xeon Gold 5220R: $1850 reported cost.
18. 2 x Xeon Gold 6226R: $2678 reported cost.
19. EPYC 7F72: $2450 reported cost.
20. 2 x EPYC 7352: $2910 reported cost.
21. Xeon Gold 6226R: $1339 reported cost.
22. 2 x EPYC 7302: $2108 reported cost.


Timed LLVM Compilation 10.0
Performance / Cost - Time To Compile
Seconds x Dollar, Fewer Is Better
2 x Xeon Platinum 8280
4434287.27
Xeon Platinum 8280
3090188.67
2 x EPYC 7742
2946818.72
2 x Xeon Gold 6250
2456481.66
Xeon Gold 6250
2117440.86
2 x Xeon Gold 6258R
1778334.49
EPYC 7742
1683995.27
2 x EPYC 7532
1564701.20
2 x EPYC 7F32
1394437.80
2 x EPYC 7F52
1350521.20
Xeon Gold 6258R
1240853.58
EPYC 7F32
1199041.20
2 x Xeon Gold 5220R
1061093.40
EPYC 7F52
1019168.40
2 x EPYC 7F72
990451.70
2 x EPYC 7452
986280.70
Xeon Gold 5220R
796288.10
2 x Xeon Gold 6226R
748988.40
2 x EPYC 7352
723332.88
EPYC 7F72
692281.80
Xeon Gold 6226R
580042.75
2 x EPYC 7302
557842.15
2 x EPYC 7282
421893.50
EPYC 7282
320002.83
900K
1800K
2700K
3600K
4500K
1. 2 x Xeon Platinum 8280: $20018 reported cost.
2. Xeon Platinum 8280: $10009 reported cost.
3. 2 x EPYC 7742: $15044 reported cost.
4. 2 x Xeon Gold 6250: $6944 reported cost.
5. Xeon Gold 6250: $3472 reported cost.
6. 2 x Xeon Gold 6258R: $8084 reported cost.
7. EPYC 7742: $7522 reported cost.
8. 2 x EPYC 7532: $7186 reported cost.
9. 2 x EPYC 7F32: $4200 reported cost.
10. 2 x EPYC 7F52: $6200 reported cost.
11. Xeon Gold 6258R: $4042 reported cost.
12. EPYC 7F32: $2100 reported cost.
13. 2 x Xeon Gold 5220R: $3700 reported cost.
14. EPYC 7F52: $3100 reported cost.
15. 2 x EPYC 7F72: $4900 reported cost.
16. 2 x EPYC 7452: $4392 reported cost.
17. Xeon Gold 5220R: $1850 reported cost.
18. 2 x Xeon Gold 6226R: $2678 reported cost.
19. 2 x EPYC 7352: $2910 reported cost.
20. EPYC 7F72: $2450 reported cost.
21. Xeon Gold 6226R: $1339 reported cost.
22. 2 x EPYC 7302: $2108 reported cost.


Build2 0.12
Performance / Cost - Time To Compile
Seconds x Dollar, Fewer Is Better
2 x Xeon Platinum 8280
1256649.97
2 x EPYC 7742
916315.00
Xeon Platinum 8280
741847.06
2 x Xeon Gold 6258R
509680.03
2 x Xeon Gold 6250
509363.23
EPYC 7742
479798.29
2 x EPYC 7532
464883.90
Xeon Gold 6250
366636.26
2 x EPYC 7F52
360747.00
Xeon Gold 6258R
297325.48
2 x EPYC 7F32
296839.20
2 x EPYC 7F72
285591.60
2 x EPYC 7452
284083.34
2 x Xeon Gold 5220R
266958.70
EPYC 7F52
215580.20
EPYC 7F32
207438.00
2 x EPYC 7352
204535.17
2 x Xeon Gold 6226R
189088.22
Xeon Gold 5220R
169535.85
EPYC 7F72
162307.60
2 x EPYC 7302
145401.41
Xeon Gold 6226R
119140.20
2 x EPYC 7282
109024.79
EPYC 7282
66077.78
300K
600K
900K
1200K
1500K
1. 2 x Xeon Platinum 8280: $20018 reported cost.
2. 2 x EPYC 7742: $15044 reported cost.
3. Xeon Platinum 8280: $10009 reported cost.
4. 2 x Xeon Gold 6258R: $8084 reported cost.
5. 2 x Xeon Gold 6250: $6944 reported cost.
6. EPYC 7742: $7522 reported cost.
7. 2 x EPYC 7532: $7186 reported cost.
8. Xeon Gold 6250: $3472 reported cost.
9. 2 x EPYC 7F52: $6200 reported cost.
10. Xeon Gold 6258R: $4042 reported cost.
11. 2 x EPYC 7F32: $4200 reported cost.
12. 2 x EPYC 7F72: $4900 reported cost.
13. 2 x EPYC 7452: $4392 reported cost.
14. 2 x Xeon Gold 5220R: $3700 reported cost.
15. EPYC 7F52: $3100 reported cost.
16. EPYC 7F32: $2100 reported cost.
17. 2 x EPYC 7352: $2910 reported cost.
18. 2 x Xeon Gold 6226R: $2678 reported cost.
19. Xeon Gold 5220R: $1850 reported cost.
20. EPYC 7F72: $2450 reported cost.
21. 2 x EPYC 7302: $2108 reported cost.

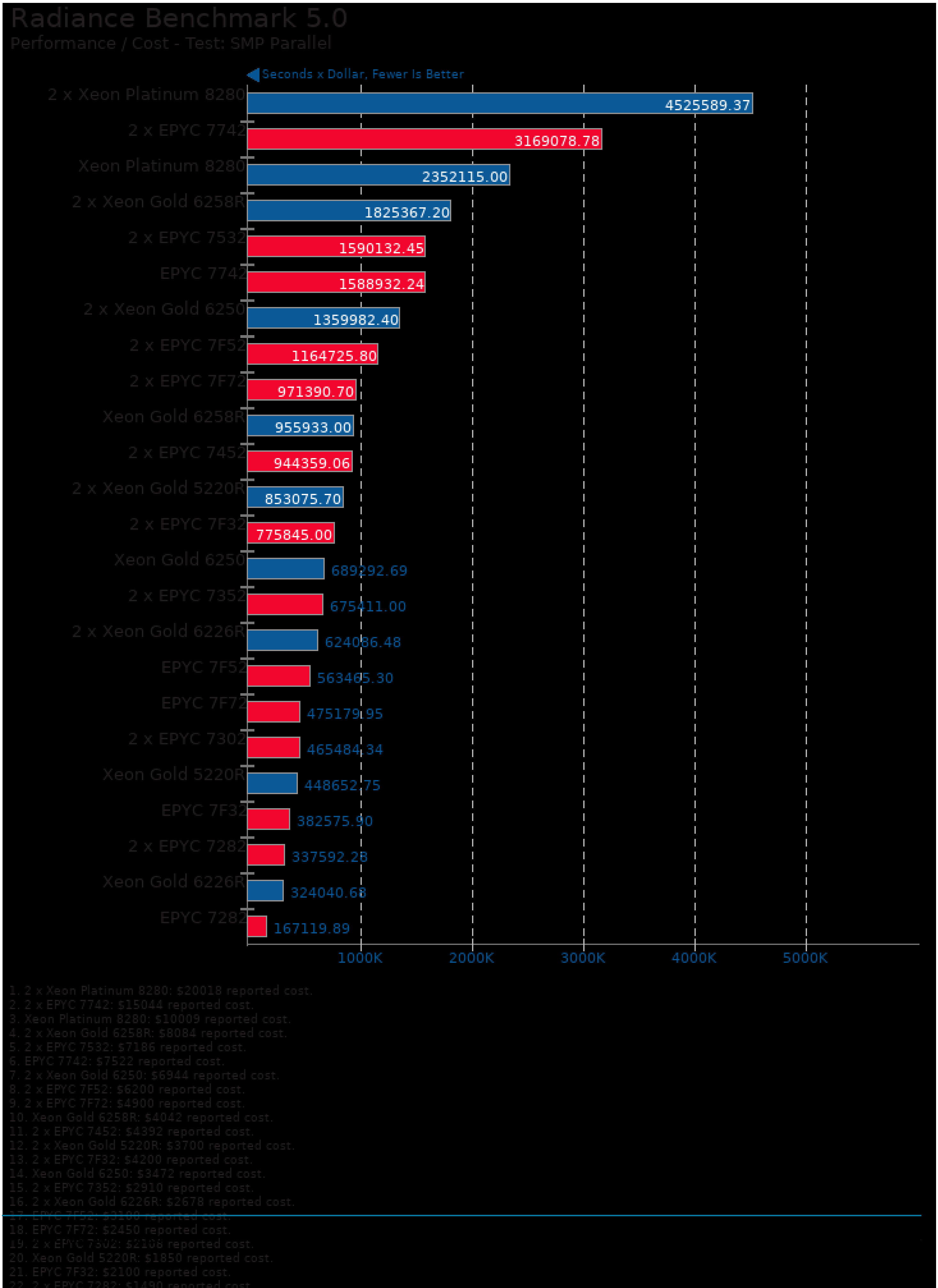

Tungsten Renderer 0.2.2
Performance / Cost - Scene: Hair
Seconds x Dollar, Fewer Is Better
2 x Xeon Platinum 8280
156682.09
Xeon Platinum 8280
126977.18
2 x Xeon Gold 6250
101109.50
Xeon Gold 6250
95067.53
2 x EPYC 7742
81974.31
2 x Xeon Gold 6258R
59905.19
2 x EPYC 7F32
59585.40
EPYC 7F32
55530.93
EPYC 7742
53135.26
2 x EPYC 7F52
51172.13
Xeon Gold 6258R
50116.76
2 x EPYC 7532
49191.69
EPYC 7F52
43597.78
2 x Xeon Gold 5220R
40968.62
Xeon Gold 5220R
35120.40
2 x EPYC 7F72
34464.54
2 x EPYC 7452
31292.78
2 x Xeon Gold 6226R
28561.67
EPYC 7F72
27217.05
2 x EPYC 7352
25447.89
Xeon Gold 6226R
24922.67
2 x EPYC 7302
20838.80
2 x EPYC 7282
15554.86
EPYC 7282
13076.39
30K
60K
90K
120K
150K
1. 2 x Xeon Platinum 8280: $20018 reported cost.
2. Xeon Platinum 8280: $10009 reported cost.
3. 2 x Xeon Gold 6250: $6944 reported cost.
4. Xeon Gold 6250: $3472 reported cost.
5. 2 x EPYC 7742: $15044 reported cost.
6. 2 x Xeon Gold 6258R: $8084 reported cost.
7. 2 x EPYC 7F32: $4200 reported cost.
8. EPYC 7F32: $2100 reported cost.
9. EPYC 7742: $7522 reported cost.
10. 2 x EPYC 7F52: $6200 reported cost.
11. Xeon Gold 6258R: $4042 reported cost.
12. 2 x EPYC 7532: $7186 reported cost.
13. EPYC 7F52: $3100 reported cost.
14. 2 x Xeon Gold 5220R: $3700 reported cost.
15. Xeon Gold 5220R: $1850 reported cost.
16. 2 x EPYC 7F72: $4900 reported cost.
17. 2 x EPYC 7452: $4392 reported cost.
18. 2 x Xeon Gold 6226R: $2678 reported cost.
19. EPYC 7F72: $2450 reported cost.
20. 2 x EPYC 7352: $2910 reported cost.
21. Xeon Gold 6226R: $1339 reported cost.
22. 2 x EPYC 7302: $2108 reported cost.

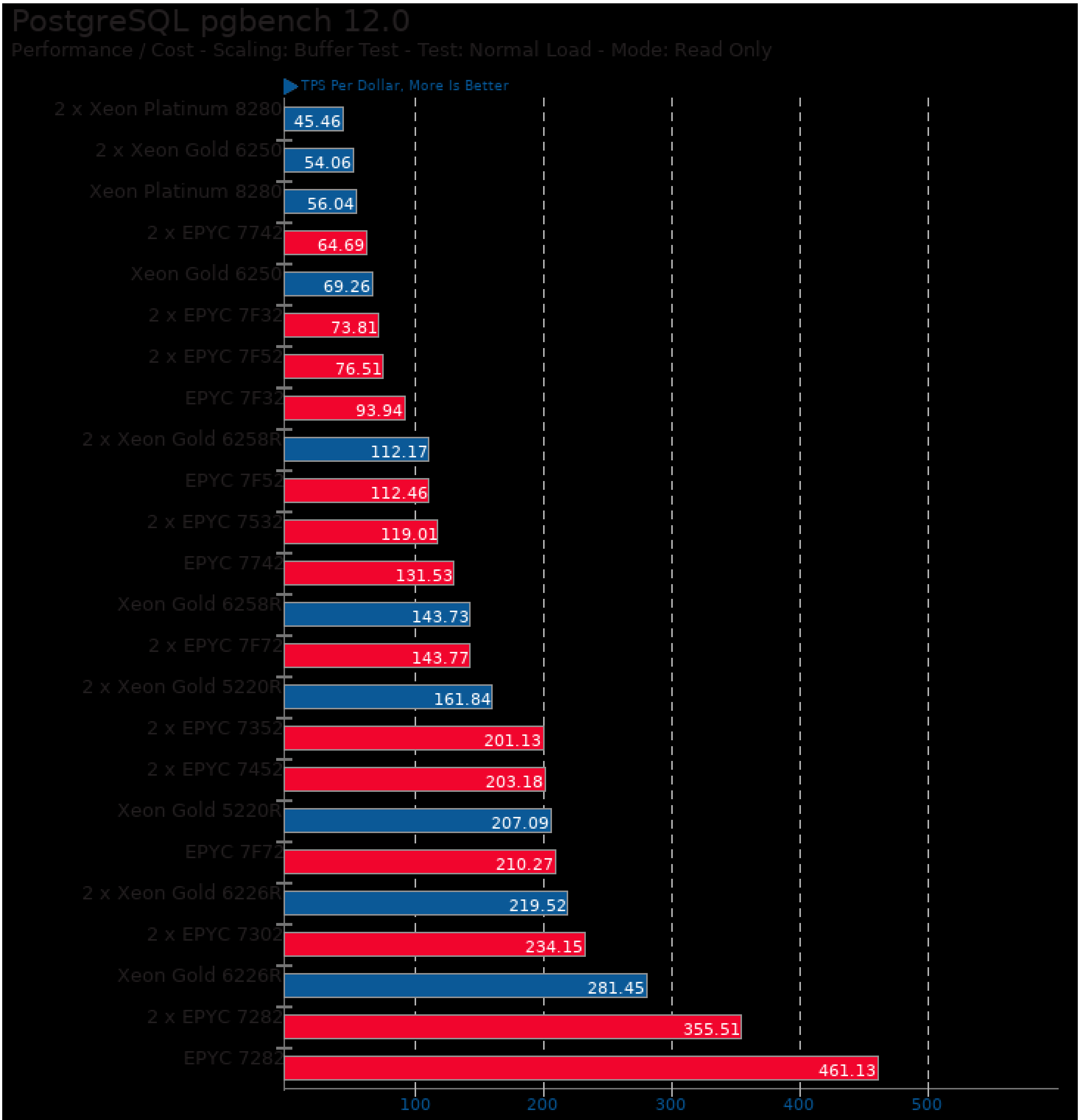

Tungsten Renderer 0.2.2
Performance / Cost - Scene: Water Caustic
Seconds x Dollar, Fewer Is Better
2 x Xeon Platinum 8280
432180.61
2 x EPYC 7742
341781.63
Xeon Platinum 8280
220365.15
2 x EPYC 7532
175362.11
2 x Xeon Gold 6258R
174603.89
EPYC 7742
163295.85
2 x Xeon Gold 6250
162942.35
2 x EPYC 7F52
133522.58
2 x EPYC 7F72
105499.94
2 x EPYC 7452
105288.54
2 x EPYC 7F32
102167.10
Xeon Gold 6250
90888.28
Xeon Gold 6258R
89808.79
2 x Xeon Gold 5220R
86345.79
2 x EPYC 7352
73794.40
EPYC 7F52
69941.27
2 x Xeon Gold 6226R
62107.11
EPYC 7F32
59556.21
EPYC 7F72
54120.26
2 x EPYC 7302
51891.16
Xeon Gold 5220R
46264.80
2 x EPYC 7282
37576.91
Xeon Gold 6226R
32253.03
EPYC 7282
19958.70
90K
180K
270K
360K
450K
1. 2 x Xeon Platinum 8280: $20018 reported cost.
2. 2 x EPYC 7742: $15044 reported cost.
3. Xeon Platinum 8280: $10009 reported cost.
4. 2 x EPYC 7532: $7186 reported cost.
5. 2 x Xeon Gold 6258R: $8084 reported cost.
6. EPYC 7742: $7522 reported cost.
7. 2 x Xeon Gold 6250: $6944 reported cost.
8. 2 x EPYC 7F52: $6200 reported cost.
9. 2 x EPYC 7F72: $4900 reported cost.
10. 2 x EPYC 7452: $4392 reported cost.
11. 2 x EPYC 7F32: $4200 reported cost.
12. Xeon Gold 6250: $3472 reported cost.
13. Xeon Gold 6258R: $4042 reported cost.
14. 2 x Xeon Gold 5220R: $3700 reported cost.
15. 2 x EPYC 7352: $2910 reported cost.
16. EPYC 7F52: $3100 reported cost.
17. 2 x Xeon Gold 6226R: $2670 reported cost.
18. EPYC 7F32: $2100 reported cost.
19. EPYC 7F72: $2450 reported cost.
20. 2 x EPYC 7302: $2108 reported cost.
21. Xeon Gold 5220R: $1850 reported cost.
22. 2 x EPYC 7282: $1490 reported cost.



1. 2 x Xeon Platinum 8280: $20018 reported cost.
2. 2 x EPYC 7742: $15044 reported cost.
3. Xeon Platinum 8280: $10009 reported cost.
4. 2 x Xeon Gold 6258R: $8084 reported cost.
5. EPYC 7742: $7522 reported cost.
6. 2 x EPYC 7532: $7186 reported cost.
7. 2 x Xeon Gold 6250: $6944 reported cost.
8. 2 x EPYC 7F52: $6200 reported cost.
9. 2 x EPYC 7452: $4392 reported cost.
10. 2 x EPYC 7F72: $4900 reported cost.
11. 2 x Xeon Gold 5220R: $3700 reported cost.
12. Xeon Gold 6258R: $4042 reported cost.
13. 2 x EPYC 7F32: $4200 reported cost.
14. 2 x EPYC 7352: $2910 reported cost.
15. Xeon Gold 6250: $3472 reported cost.
16. 2 x Xeon Gold 6226R: $2678 reported cost.
17. EPYC 7F52: $3100 reported cost.
18. EPYC 7F72: $2450 reported cost.
19. 2 x EPYC 7302: $2108 reported cost.
20. Xeon Gold 5220R: $1850 reported cost.
21. EPYC 7F32: $2100 reported cost.
22. 2 x EPYC 7282: $1490 reported cost.

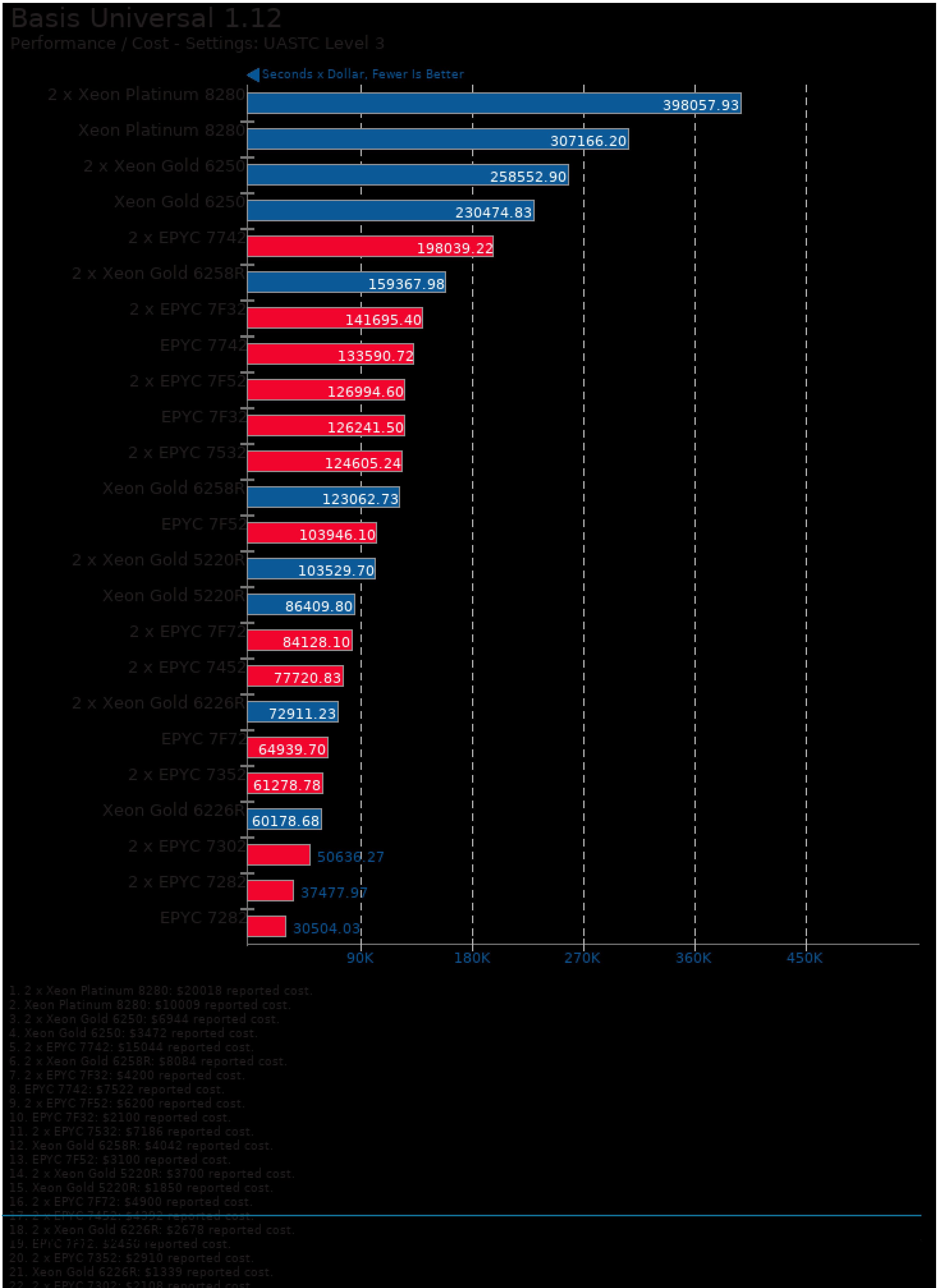
Xeon Cascade Lake Refresh vs. AMD EPYC Rome Linux Benchmarks

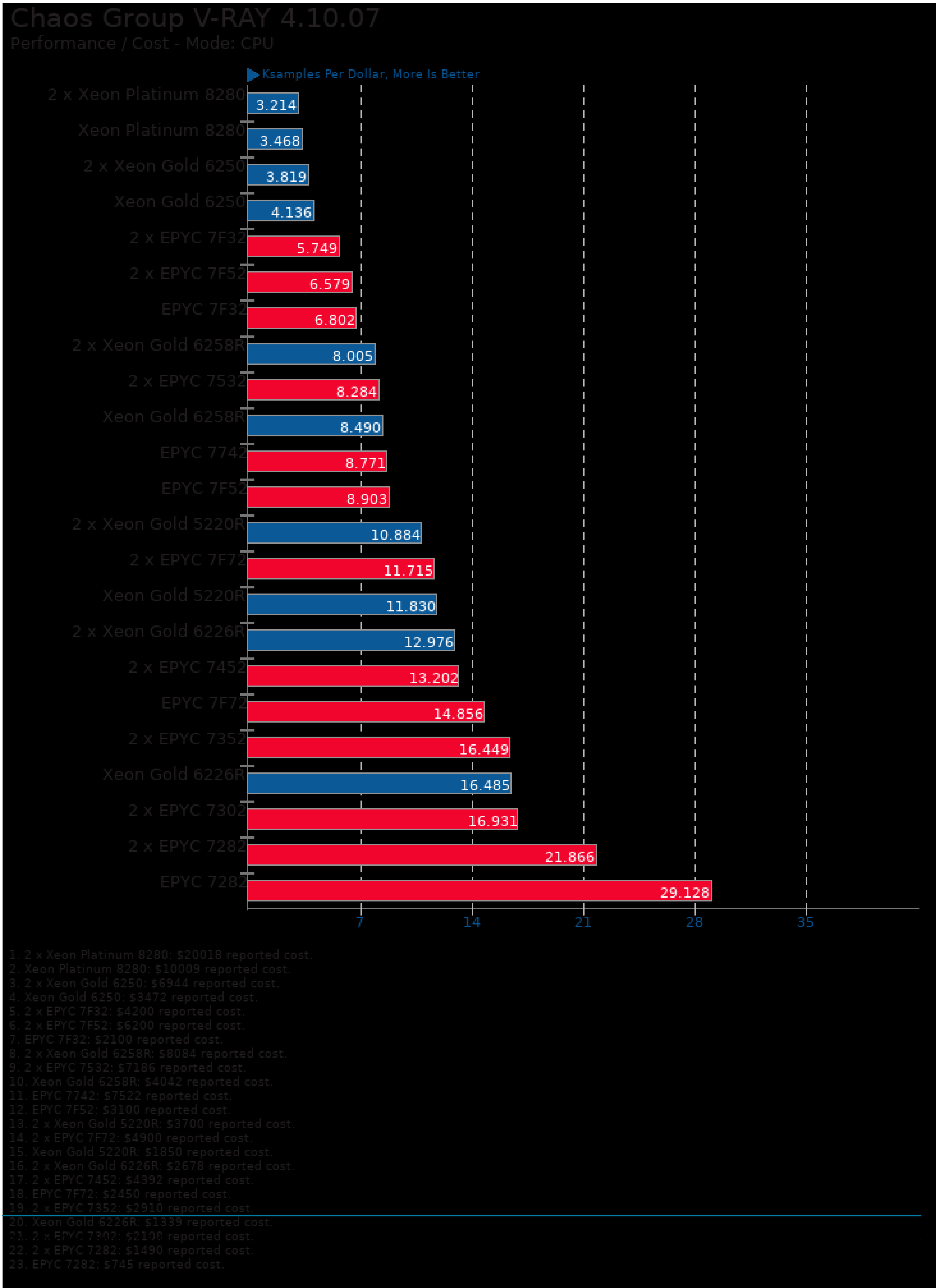


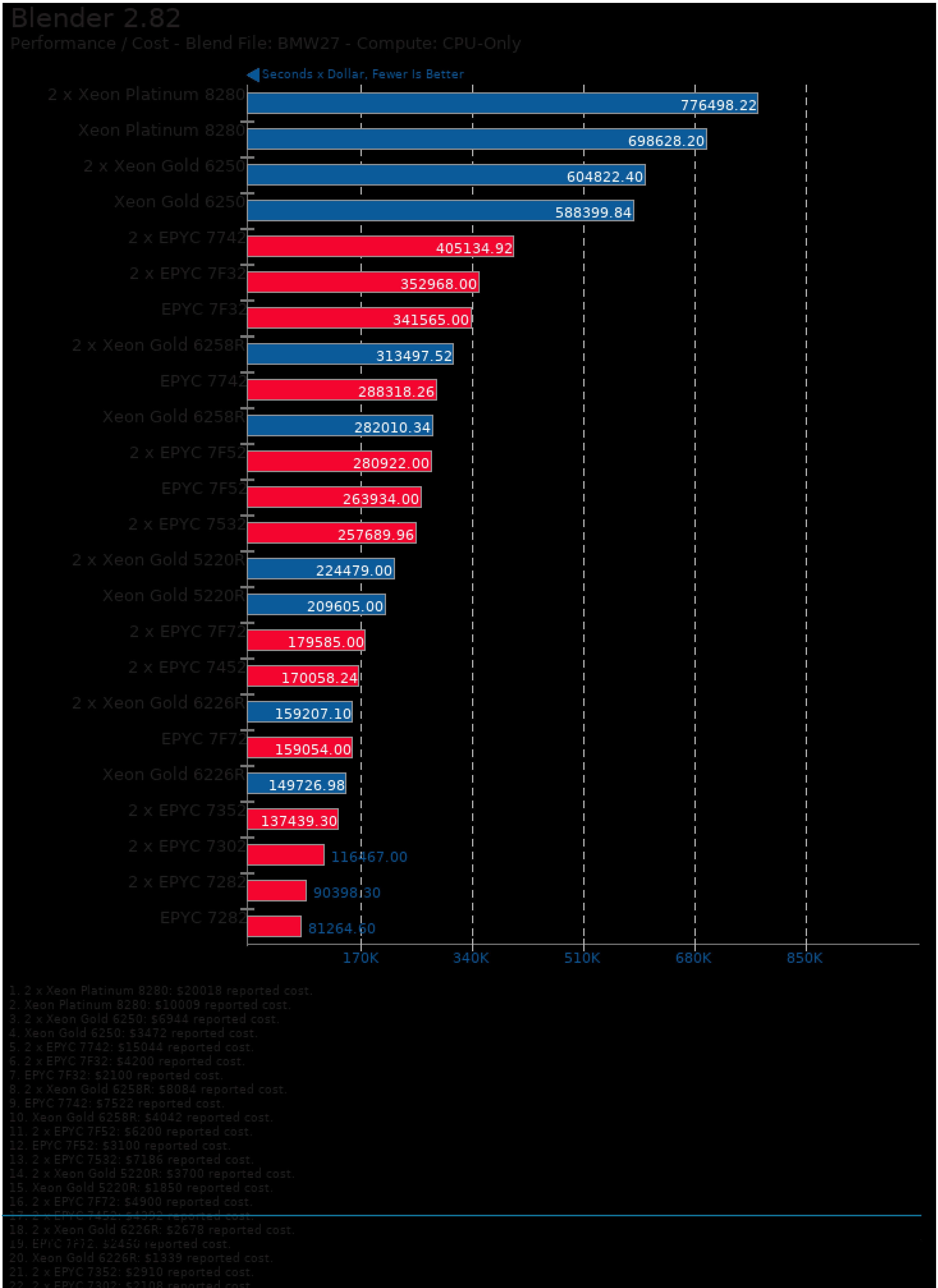


1. 2 x Xeon Platinum 8280: $20018 reported cost.
2. 2 x Xeon Gold 6250: $6944 reported cost.
3. Xeon Platinum 8280: $10009 reported cost.
4. 2 x EPYC 7742: $15044 reported cost.
5. Xeon Gold 6250: $3472 reported cost.
6. 2 x EPYC 7F32: $4200 reported cost.
7. 2 x EPYC 7F52: $6200 reported cost.
8. EPYC 7F32: $2100 reported cost.
9. 2 x Xeon Gold 6258R: $8084 reported cost.
10. EPYC 7F52: $3100 reported cost.
11. 2 x EPYC 7532: $7186 reported cost.
12. EPYC 7742: $7522 reported cost.
13. Xeon Gold 6258R: $4042 reported cost.
14. 2 x EPYC 7F72: $4900 reported cost.
15. 2 x Xeon Gold 5220R: $3700 reported cost.
16. 2 x EPYC 7352: $2910 reported cost.
17. 2 x EPYC 7452: $4392 reported cost.
18. Xeon Gold 5220R: $1850 reported cost.
19. EPYC 7F72: $2450 reported cost.
20. 2 x Xeon Gold 6226R: $2678 reported cost.
21. 2 x EPYC 7302: $2108 reported cost.
22. Xeon Gold 6226R: $1339 reported cost.

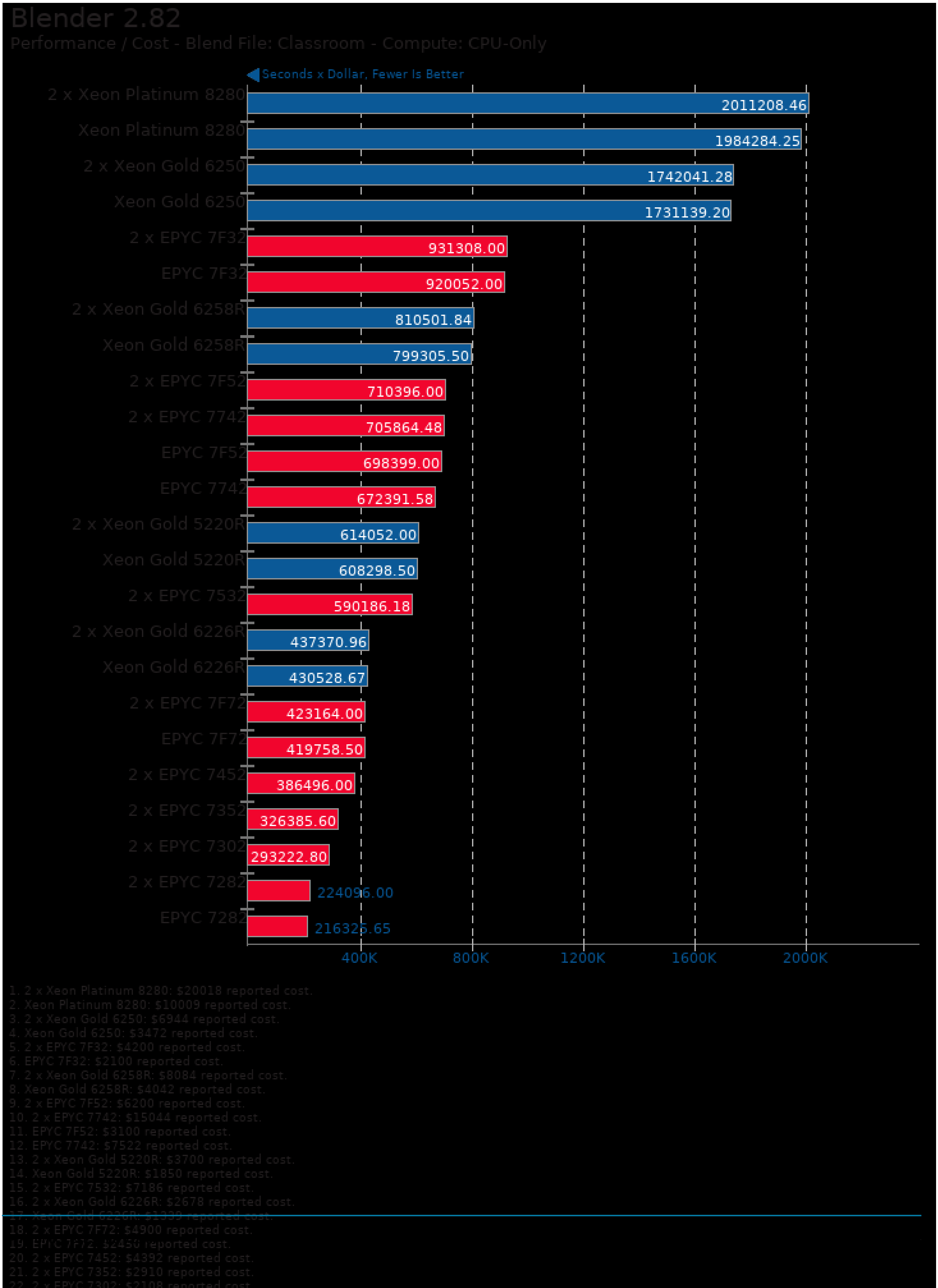
Xeon Cascade Lake Refresh vs. AMD EPYC Rome Linux Benchmarks

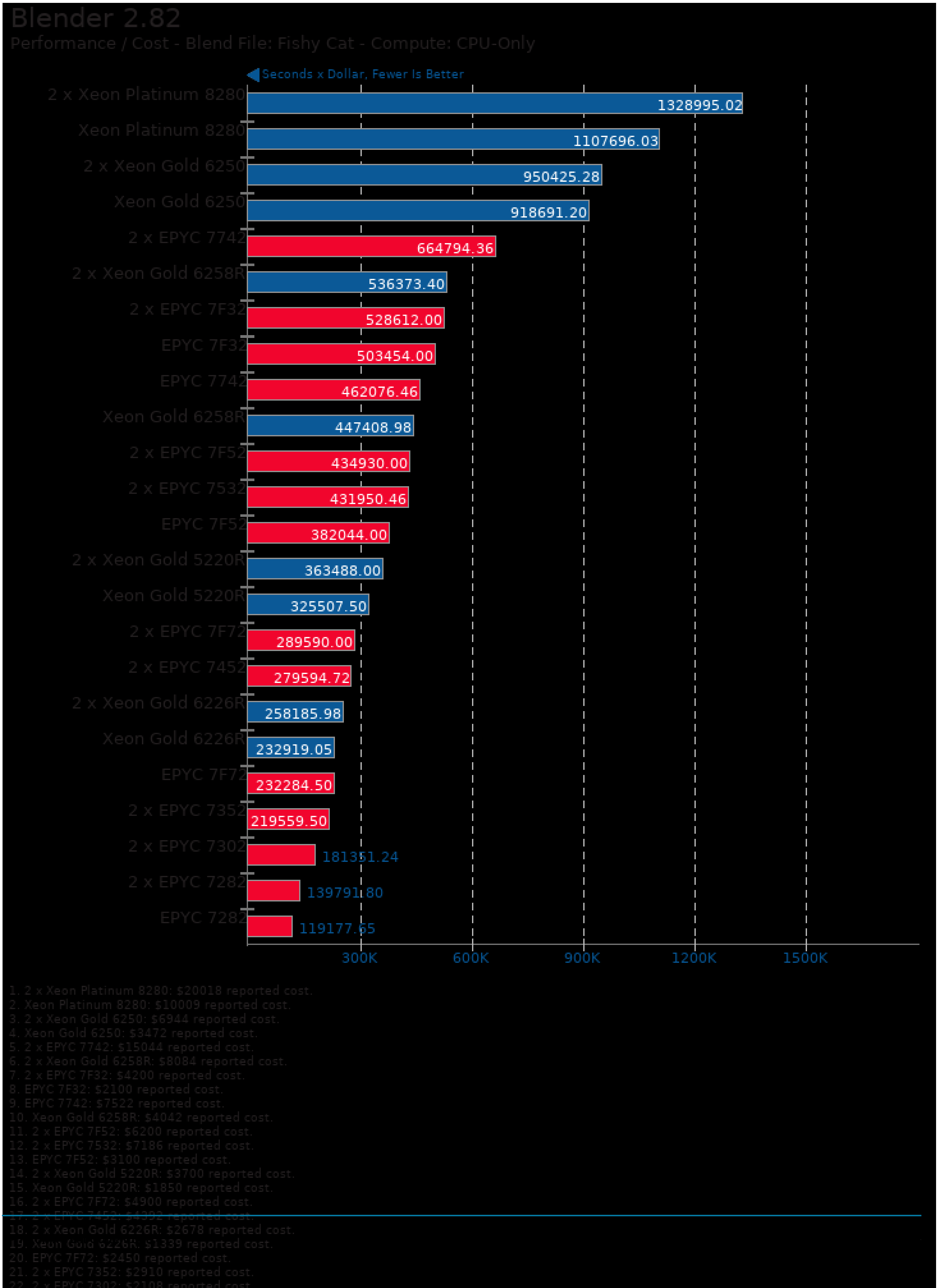



Chaos Group V-RAY 4.10.07
Performance / Cost - Mode: CPU
Ksamples Per Dollar, More Is Better
2 x Xeon Platinum 8280
3.214
Xeon Platinum 8280
3.468
2 x Xeon Gold 6250
3.819
Xeon Gold 6250
4.136
2 x EPYC 7F32
5.749
2 x EPYC 7F52
6.579
EPYC 7F32
6.802
2 x Xeon Gold 6258R
8.005
2 x EPYC 7532
8.284
Xeon Gold 6258R
8.490
EPYC 7742
8.771
EPYC 7F52
8.903
2 x Xeon Gold 5220R
10.884
2 x EPYC 7F72
11.715
Xeon Gold 5220R
11.830
2 x Xeon Gold 6226R
12.976
2 x EPYC 7452
13.202
EPYC 7F72
14.856
2 x EPYC 7352
16.449
Xeon Gold 6226R
16.485
2 x EPYC 7302
16.931
2 x EPYC 7282
21.866
EPYC 7282
29.128
7
14
21
28
35
1. 2 x Xeon Platinum 8280: $20018 reported cost.
2. Xeon Platinum 8280: $10009 reported cost.
3. 2 x Xeon Gold 6250: $6944 reported cost.
4. Xeon Gold 6250: $3472 reported cost.
5. 2 x EPYC 7F32: $4200 reported cost.
6. 2 x EPYC 7F52: $6200 reported cost.
7. EPYC 7F32: $2100 reported cost.
8. 2 x Xeon Gold 6258R: $8084 reported cost.
9. 2 x EPYC 7532: $7186 reported cost.
10. Xeon Gold 6258R: $4042 reported cost.
11. EPYC 7742: $7522 reported cost.
12. EPYC 7F52: $3100 reported cost.
13. 2 x Xeon Gold 5220R: $3700 reported cost.
14. 2 x EPYC 7F72: $4900 reported cost.
15. Xeon Gold 5220R: $1850 reported cost.
16. 2 x Xeon Gold 6226R: $2678 reported cost.
17. 2 x EPYC 7452: $4392 reported cost.
18. EPYC 7F72: $2450 reported cost.
19. 2 x EPYC 7352: $2910 reported cost.
20. Xeon Gold 6226R: $1339 reported cost.
21. 2 x EPYC 7302: $2100 reported cost.
22. 2 x EPYC 7282: $1490 reported cost.
23. EPYC 7282: $745 reported cost.


Blender 2.82
Performance / Cost - Blend File: BMW27 - Compute: CPU-Only
Seconds x Dollar, Fewer Is Better
2 x Xeon Platinum 8280
776498.22
Xeon Platinum 8280
698628.20
2 x Xeon Gold 6250
604822.40
Xeon Gold 6250
588399.84
2 x EPYC 7742
405134.92
2 x EPYC 7F32
352968.00
EPYC 7F32
341565.00
2 x Xeon Gold 6258R
313497.52
EPYC 7742
288318.26
Xeon Gold 6258R
282010.34
2 x EPYC 7F52
280922.00
EPYC 7F52
263934.00
2 x EPYC 7532
257689.96
2 x Xeon Gold 5220R
224479.00
Xeon Gold 5220R
209605.00
2 x EPYC 7F72
179585.00
2 x EPYC 7452
170058.24
2 x Xeon Gold 6226R
159207.10
EPYC 7F72
159054.00
Xeon Gold 6226R
149726.98
2 x EPYC 7352
137439.30
2 x EPYC 7302
116467.00
2 x EPYC 7282
90398.30
EPYC 7282
81264.60
170K
340K
510K
680K
850K
1. 2 x Xeon Platinum 8280: $20018 reported cost.
2. Xeon Platinum 8280: $10009 reported cost.
3. 2 x Xeon Gold 6250: $6944 reported cost.
4. Xeon Gold 6250: $3472 reported cost.
5. 2 x EPYC 7742: $15044 reported cost.
6. 2 x EPYC 7F32: $4200 reported cost.
7. EPYC 7F32: $2100 reported cost.
8. 2 x Xeon Gold 6258R: $8084 reported cost.
9. EPYC 7742: $7522 reported cost.
10. Xeon Gold 6258R: $4042 reported cost.
11. 2 x EPYC 7F52: $6200 reported cost.
12. EPYC 7F52: $3100 reported cost.
13. 2 x EPYC 7532: $7186 reported cost.
14. 2 x Xeon Gold 5220R: $3700 reported cost.
15. Xeon Gold 5220R: $1850 reported cost.
16. 2 x EPYC 7F72: $4900 reported cost.
17. 2 x EPYC 7452: $4392 reported cost.
18. 2 x Xeon Gold 6226R: $2678 reported cost.
19. EPYC 7F72: $2450 reported cost.
20. Xeon Gold 6226R: $1339 reported cost.
21. 2 x EPYC 7352: $2910 reported cost.
22. 2 x EPYC 7302: $2108 reported cost.

Xeon Cascade Lake Refresh vs. AMD EPYC Rome Linux Benchmarks

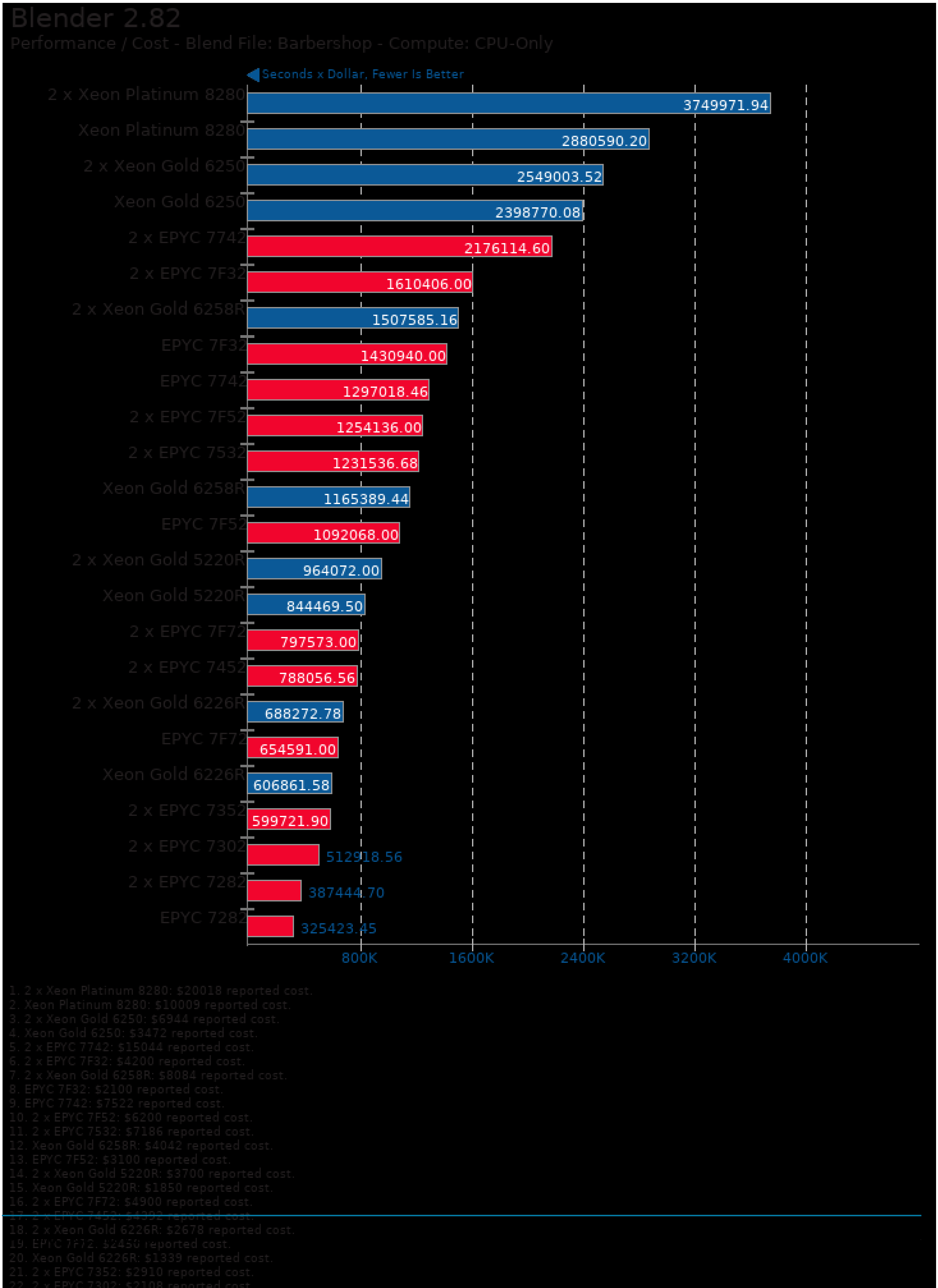




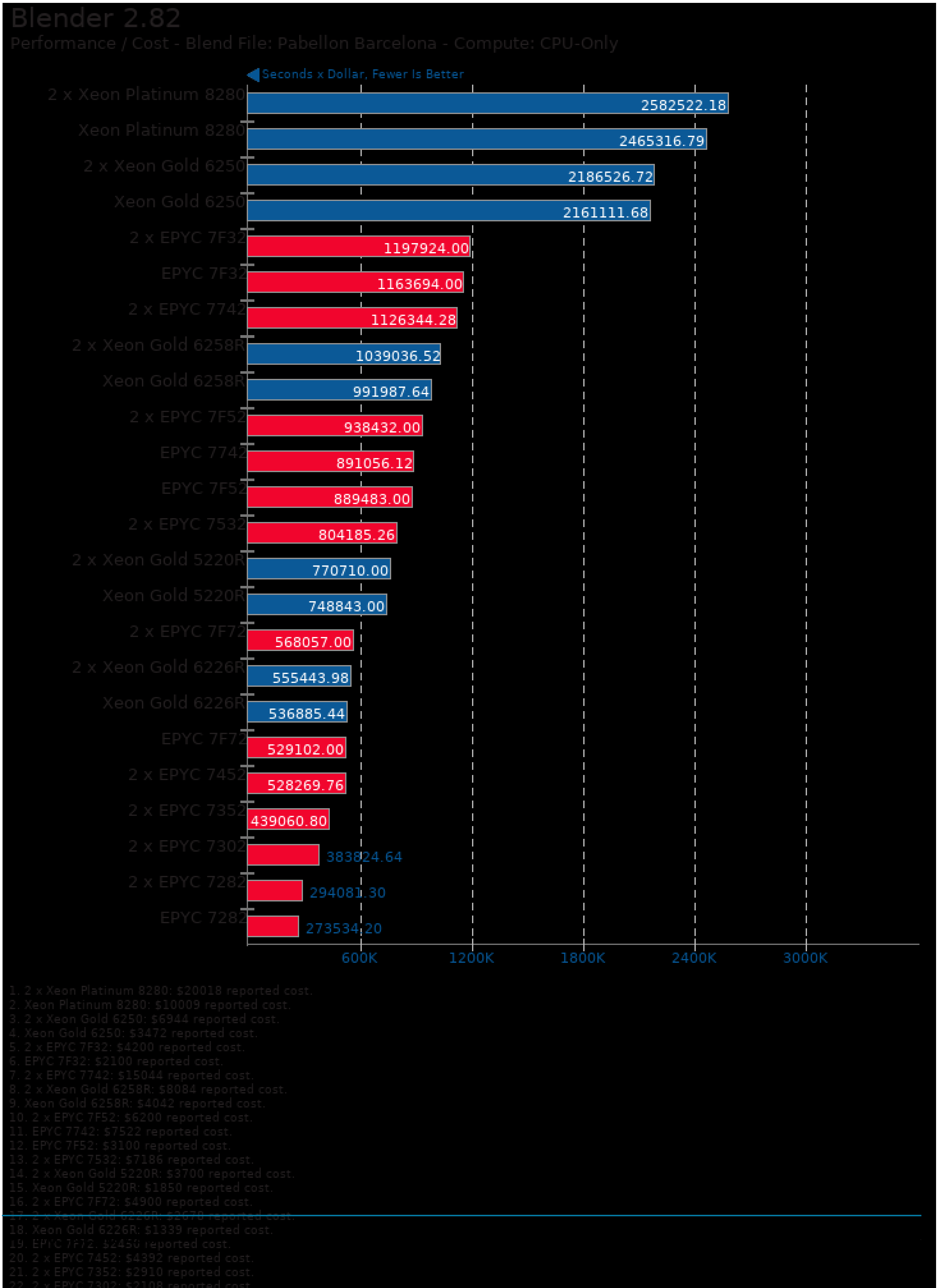
Blender 2.82
Performance / Cost - Blend File: Fishy Cat - Compute: CPU-Only
Seconds x Dollar, Fewer Is Better
2 x Xeon Platinum 8280
1328995.02
Xeon Platinum 8280
1107696.03
2 x Xeon Gold 6250
950425.28
Xeon Gold 6250
918691.20
2 x EPYC 7742
664794.36
2 x Xeon Gold 6258R
536373.40
2 x EPYC 7F32
528612.00
EPYC 7F32
503454.00
EPYC 7742
462076.46
Xeon Gold 6258R
447408.98
2 x EPYC 7F52
434930.00
2 x EPYC 7532
431950.46
EPYC 7F52
382044.00
2 x Xeon Gold 5220R
363488.00
Xeon Gold 5220R
325507.50
2 x EPYC 7F72
289590.00
2 x EPYC 7452
279594.72
2 x Xeon Gold 6226R
258185.98
Xeon Gold 6226R
232919.05
EPYC 7F72
232284.50
2 x EPYC 7352
219559.50
2 x EPYC 7302
181351.24
2 x EPYC 7282
139791.80
EPYC 7282
119177.65
300K
600K
900K
1200K
1500K
1. 2 x Xeon Platinum 8280: $20018 reported cost.
2. Xeon Platinum 8280: $10009 reported cost.
3. 2 x Xeon Gold 6250: $6944 reported cost.
4. Xeon Gold 6250: $3472 reported cost.
5. 2 x EPYC 7742: $15044 reported cost.
6. 2 x Xeon Gold 6258R: $8084 reported cost.
7. 2 x EPYC 7F32: $4200 reported cost.
8. EPYC 7F32: $2100 reported cost.
9. EPYC 7742: $7522 reported cost.
10. Xeon Gold 6258R: $4042 reported cost.
11. 2 x EPYC 7F52: $6200 reported cost.
12. 2 x EPYC 7532: $7186 reported cost.
13. EPYC 7F52: $3100 reported cost.
14. 2 x Xeon Gold 5220R: $3700 reported cost.
15. Xeon Gold 5220R: $1850 reported cost.
16. 2 x EPYC 7F72: $4900 reported cost.
17. 2 x EPYC 7452: $4392 reported cost.
18. 2 x Xeon Gold 6226R: $2678 reported cost.
19. Xeon Gold 6226R: $1339 reported cost.
20. EPYC 7F72: $2450 reported cost.
21. 2 x EPYC 7352: $2910 reported cost.
22. 2 x EPYC 7302: $2108 reported cost.

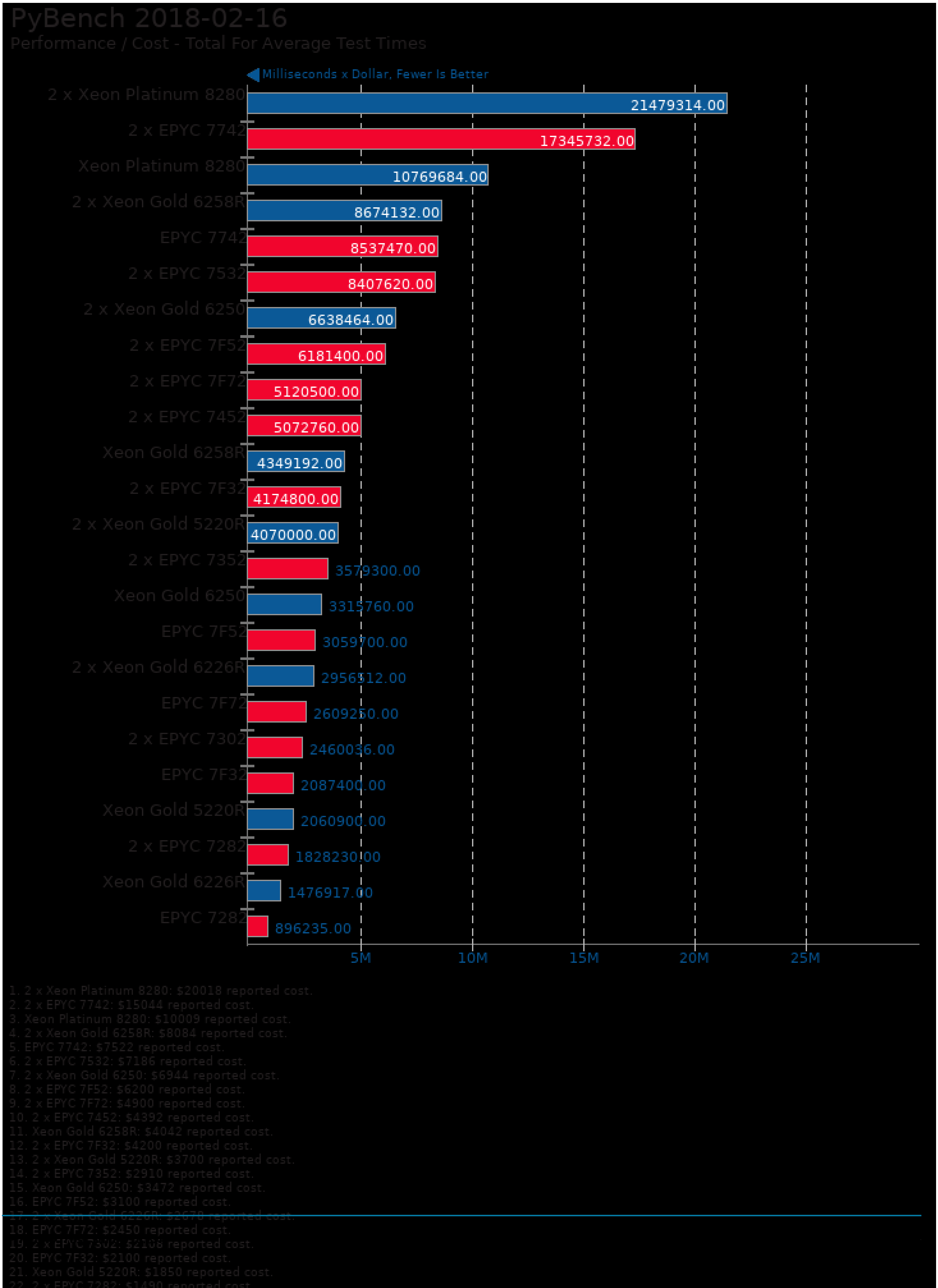
Phoronix Test Suite

Xeon Cascade Lake Refresh vs. AMD EPYC Rome Linux Benchmarks

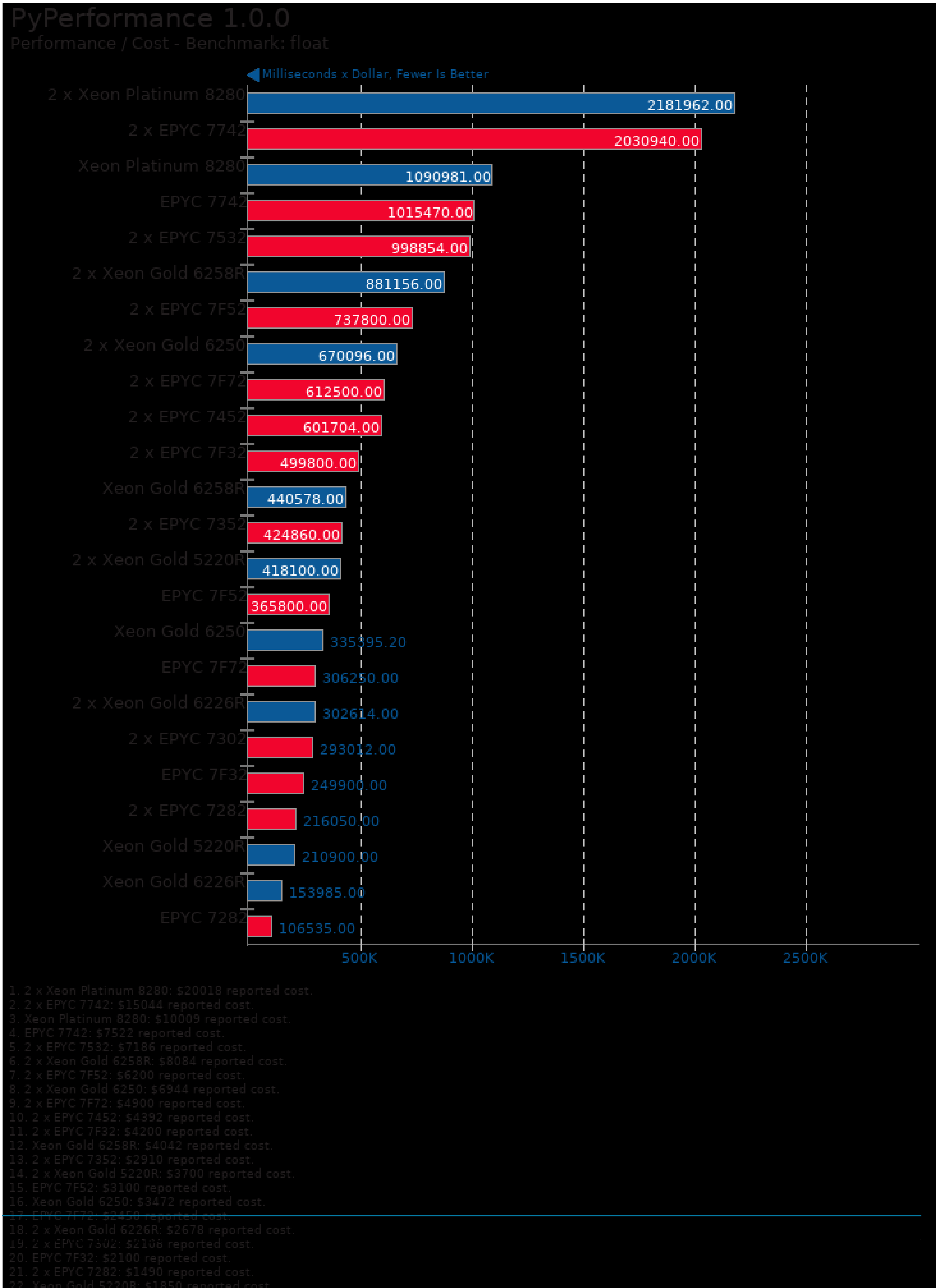


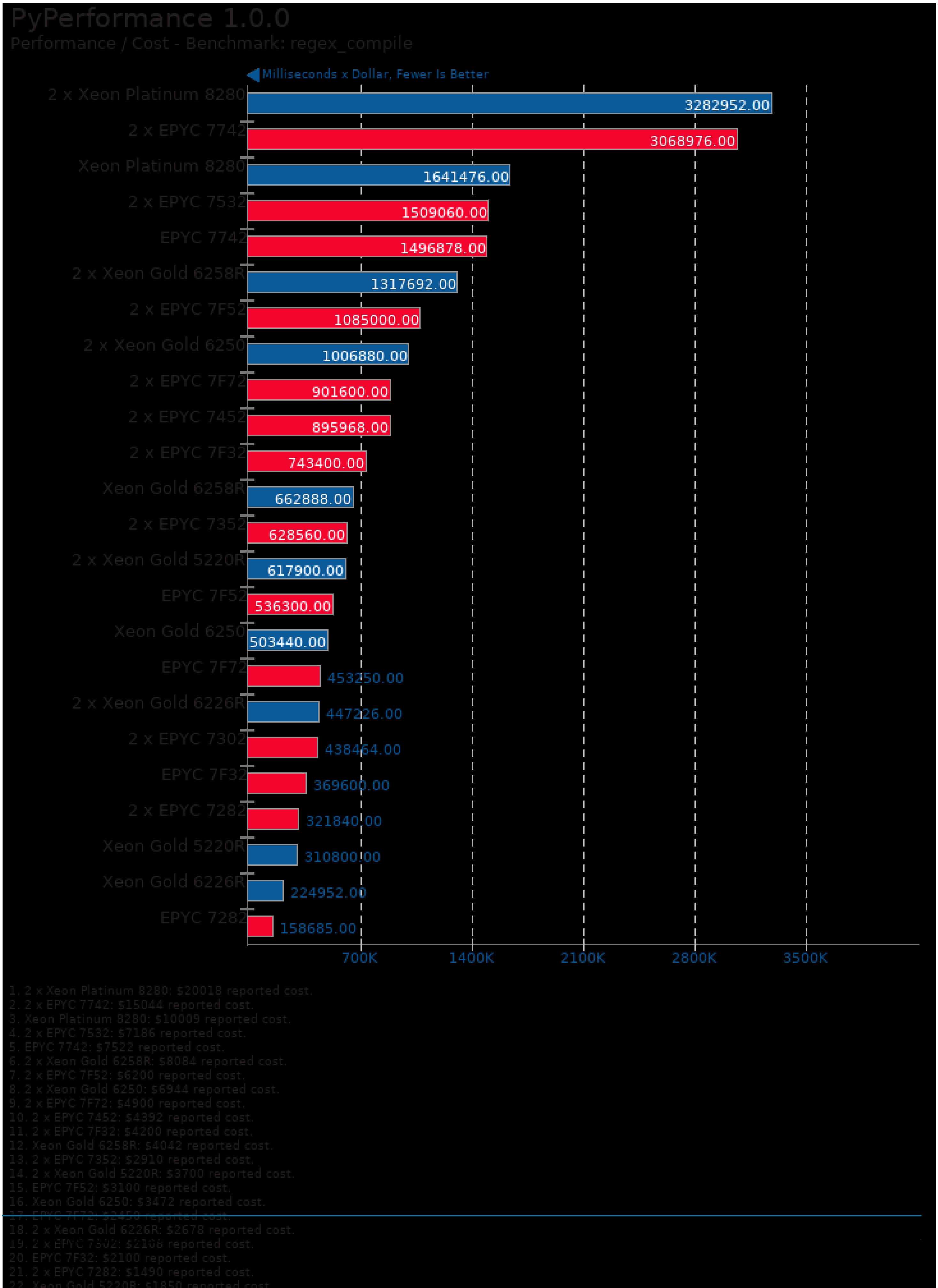
Xeon Cascade Lake Refresh vs. AMD EPYC Rome Linux Benchmarks



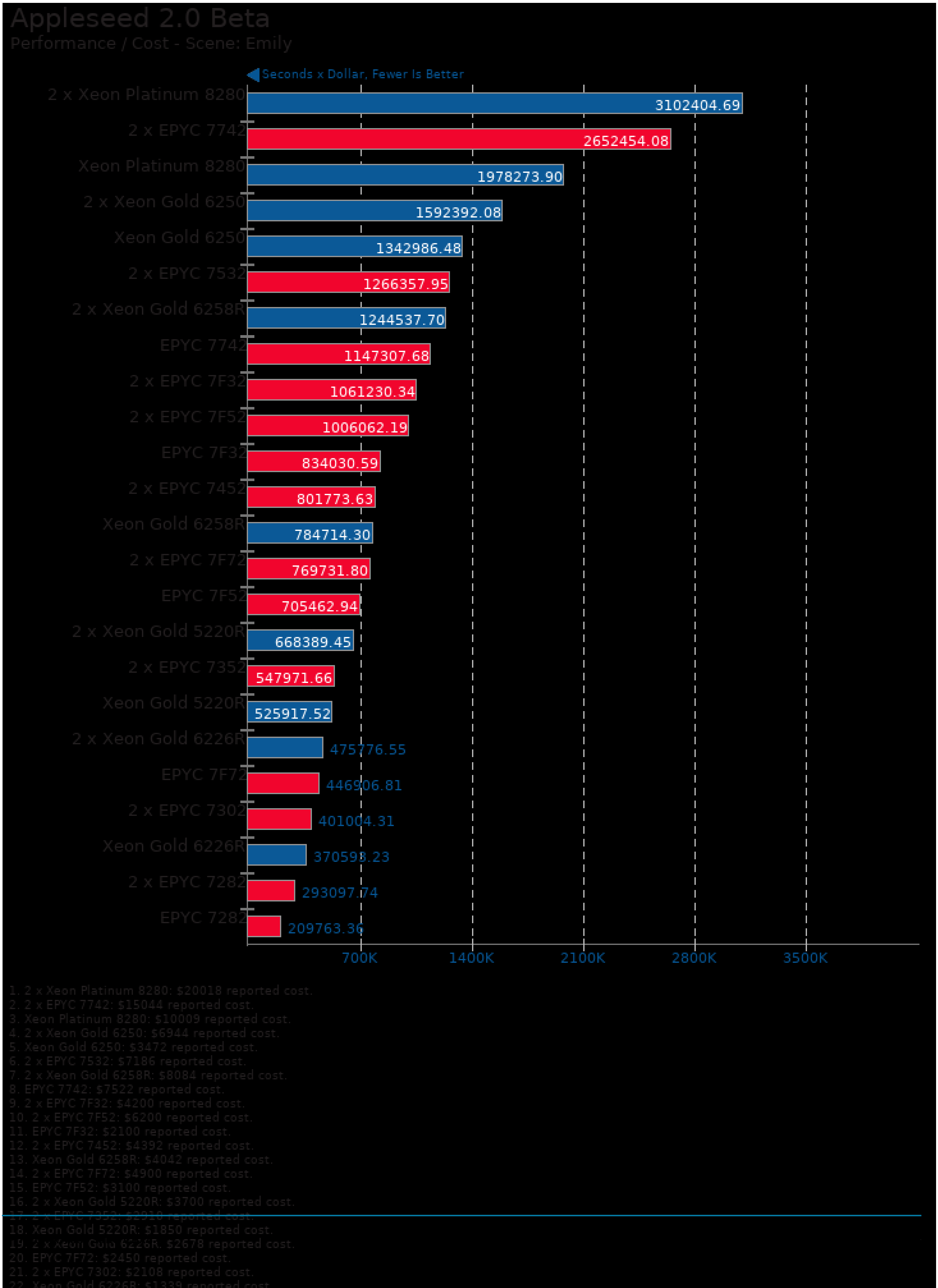

PyBench 2018-02-16
Performance / Cost - Total For Average Test Times
Milliseconds x Dollar, Fewer Is Better
2 x Xeon Platinum 8280
21479314.00
2 x EPYC 7742
17345732.00
Xeon Platinum 8280
10769684.00
2 x Xeon Gold 6258R
8674132.00
EPYC 7742
8537470.00
2 x EPYC 7532
8407620.00
2 x Xeon Gold 6250
6638464.00
2 x EPYC 7F52
6181400.00
2 x EPYC 7F72
5120500.00
2 x EPYC 7452
5072760.00
Xeon Gold 6258R
4349192.00
2 x EPYC 7F32
4174800.00
2 x Xeon Gold 5220R
4070000.00
2 x EPYC 7352
3579300.00
Xeon Gold 6250
3315760.00
EPYC 7F52
3059700.00
2 x Xeon Gold 6226R
2956512.00
EPYC 7F72
2609250.00
2 x EPYC 7302
2460036.00
EPYC 7F32
2087400.00
Xeon Gold 5220R
2060900.00
2 x EPYC 7282
1828230.00
Xeon Gold 6226R
1476917.00
EPYC 7282
896235.00
5M
10M
15M
20M
25M
1. 2 x Xeon Platinum 8280: $20018 reported cost.
2. 2 x EPYC 7742: $15044 reported cost.
3. Xeon Platinum 8280: $10009 reported cost.
4. 2 x Xeon Gold 6258R: $8084 reported cost.
5. EPYC 7742: $7522 reported cost.
6. 2 x EPYC 7532: $7186 reported cost.
7. 2 x Xeon Gold 6250: $6944 reported cost.
8. 2 x EPYC 7F52: $6200 reported cost.
9. 2 x EPYC 7F72: $4900 reported cost.
10. 2 x EPYC 7452: $4392 reported cost.
11. Xeon Gold 6258R: $4042 reported cost.
12. 2 x EPYC 7F32: $4200 reported cost.
13. 2 x Xeon Gold 5220R: $3700 reported cost.
14. 2 x EPYC 7352: $2910 reported cost.
15. Xeon Gold 6250: $3472 reported cost.
16. EPYC 7F52: $3100 reported cost.
17. 2 x Xeon Gold 6226R: $2670 reported cost.
18. EPYC 7F72: $2450 reported cost.
19. 2 x EPYC 7302: $2108 reported cost.
20. EPYC 7F32: $2100 reported cost.
21. Xeon Gold 5220R: $1850 reported cost.

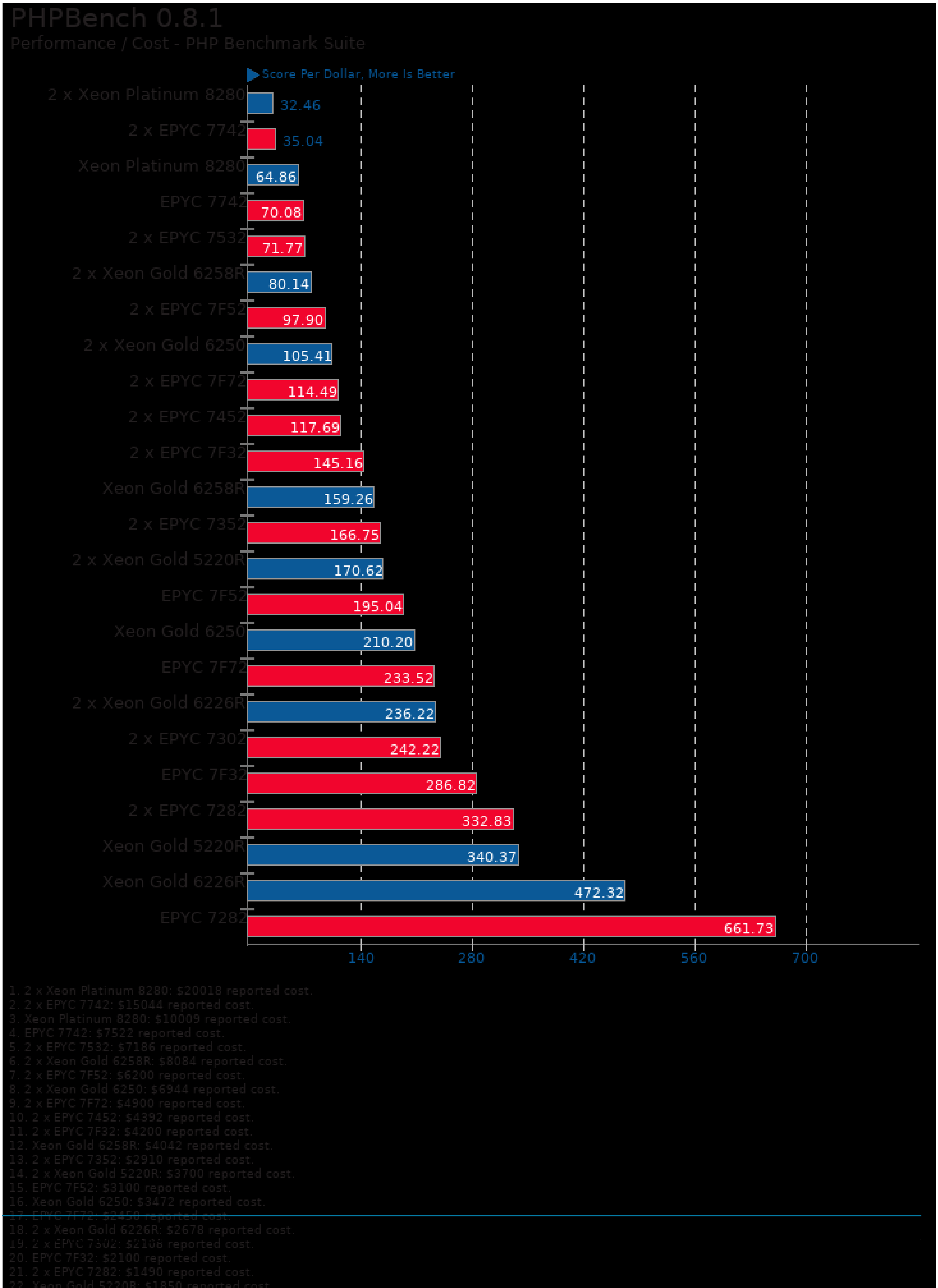
Xeon Cascade Lake Refresh vs. AMD EPYC Rome Linux Benchmarks

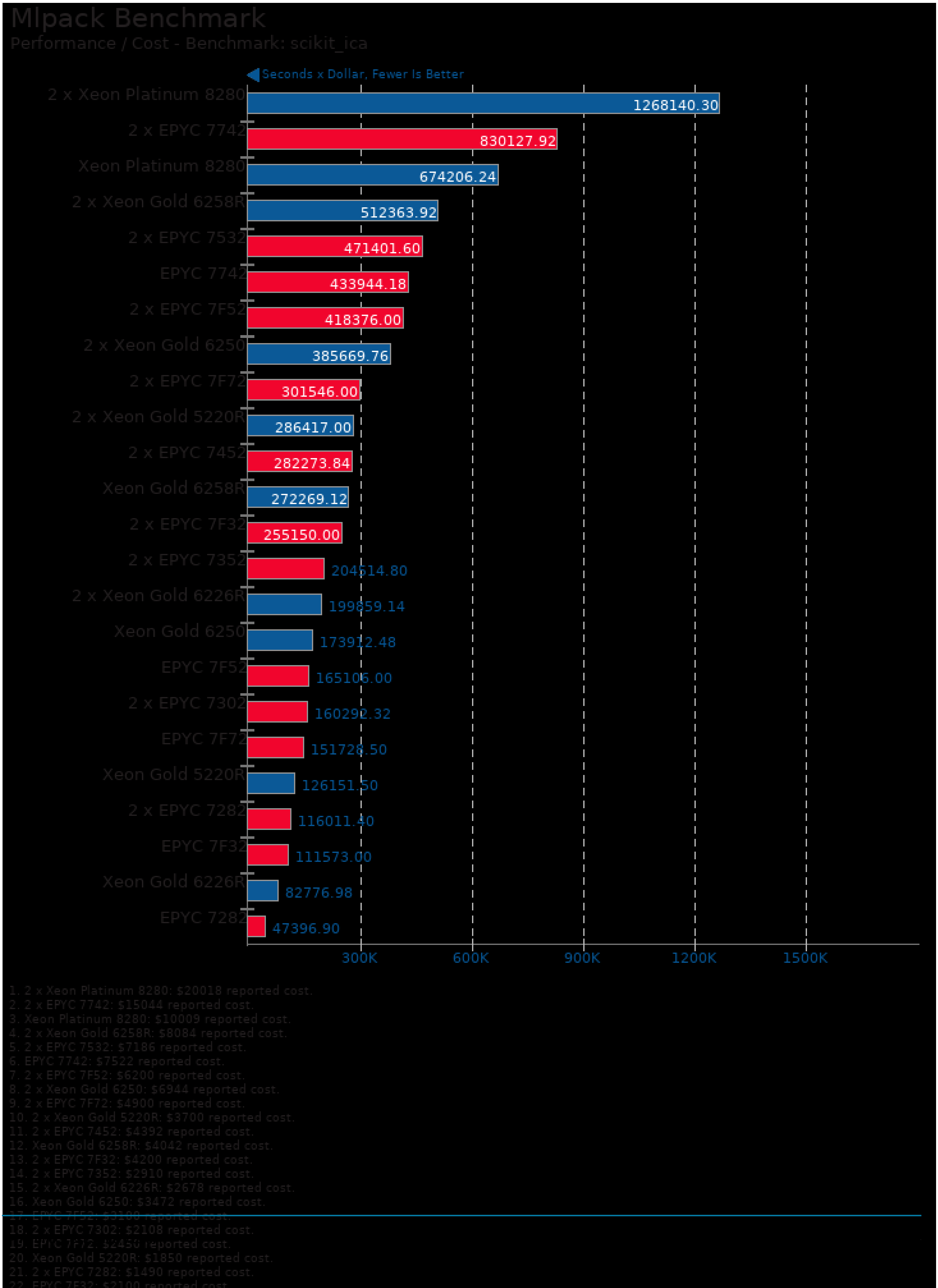



PyPerformance 1.0.0
Performance / Cost - Benchmark: regex_compile
Milliseconds x Dollar, Fewer Is Better
2 x Xeon Platinum 8280
3282952.00
2 x EPYC 7742
3068976.00
Xeon Platinum 8280
1641476.00
2 x EPYC 7532
1509060.00
EPYC 7742
1496878.00
2 x Xeon Gold 6258R
1317692.00
2 x EPYC 7F52
1085000.00
2 x Xeon Gold 6250
1006880.00
2 x EPYC 7F72
901600.00
2 x EPYC 7452
895968.00
2 x EPYC 7F32
743400.00
Xeon Gold 6258R
662888.00
2 x EPYC 7352
628560.00
2 x Xeon Gold 5220R
617900.00
EPYC 7F52
536300.00
Xeon Gold 6250
503440.00
EPYC 7F72
453250.00
2 x Xeon Gold 6226R
447226.00
2 x EPYC 7302
438464.00
EPYC 7F32
369600.00
2 x EPYC 7282
321840.00
Xeon Gold 5220R
310800.00
Xeon Gold 6226R
224952.00
EPYC 7282
158685.00
700K
1400K
2100K
2800K
3500K
1. 2 x Xeon Platinum 8280: $20018 reported cost.
2. 2 x EPYC 7742: $15044 reported cost.
3. Xeon Platinum 8280: $10009 reported cost.
4. 2 x EPYC 7532: $7186 reported cost.
5. EPYC 7742: $7522 reported cost.
6. 2 x Xeon Gold 6258R: $8084 reported cost.
7. 2 x EPYC 7F52: $6200 reported cost.
8. 2 x Xeon Gold 6250: $6944 reported cost.
9. 2 x EPYC 7F72: $4900 reported cost.
10. 2 x EPYC 7452: $4392 reported cost.
11. 2 x EPYC 7F32: $4200 reported cost.
12. Xeon Gold 6258R: $4042 reported cost.
13. 2 x EPYC 7352: $2910 reported cost.
14. 2 x Xeon Gold 5220R: $3700 reported cost.
15. EPYC 7F52: $3100 reported cost.
16. Xeon Gold 6250: $3472 reported cost.
17. EPYC 7F72: $2450 reported cost.
18. 2 x Xeon Gold 6226R: $2678 reported cost.
19. 2 x EPYC 7302: $2108 reported cost.
20. EPYC 7F32: $2100 reported cost.
21. 2 x EPYC 7282: $1490 reported cost.
22. Xeon Gold 5220R: $1850 reported cost.

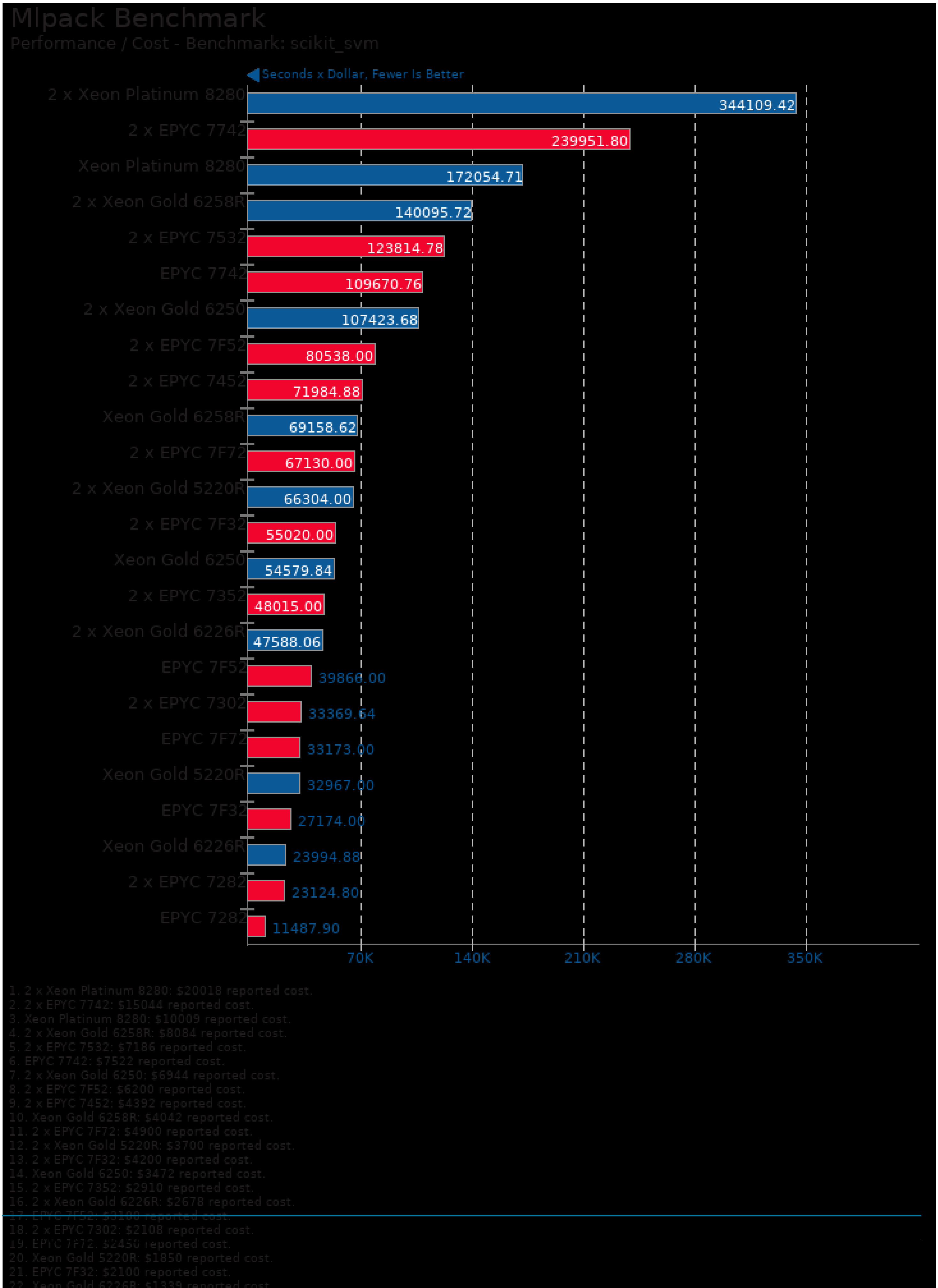
Xeon Cascade Lake Refresh vs. AMD EPYC Rome Linux Benchmarks

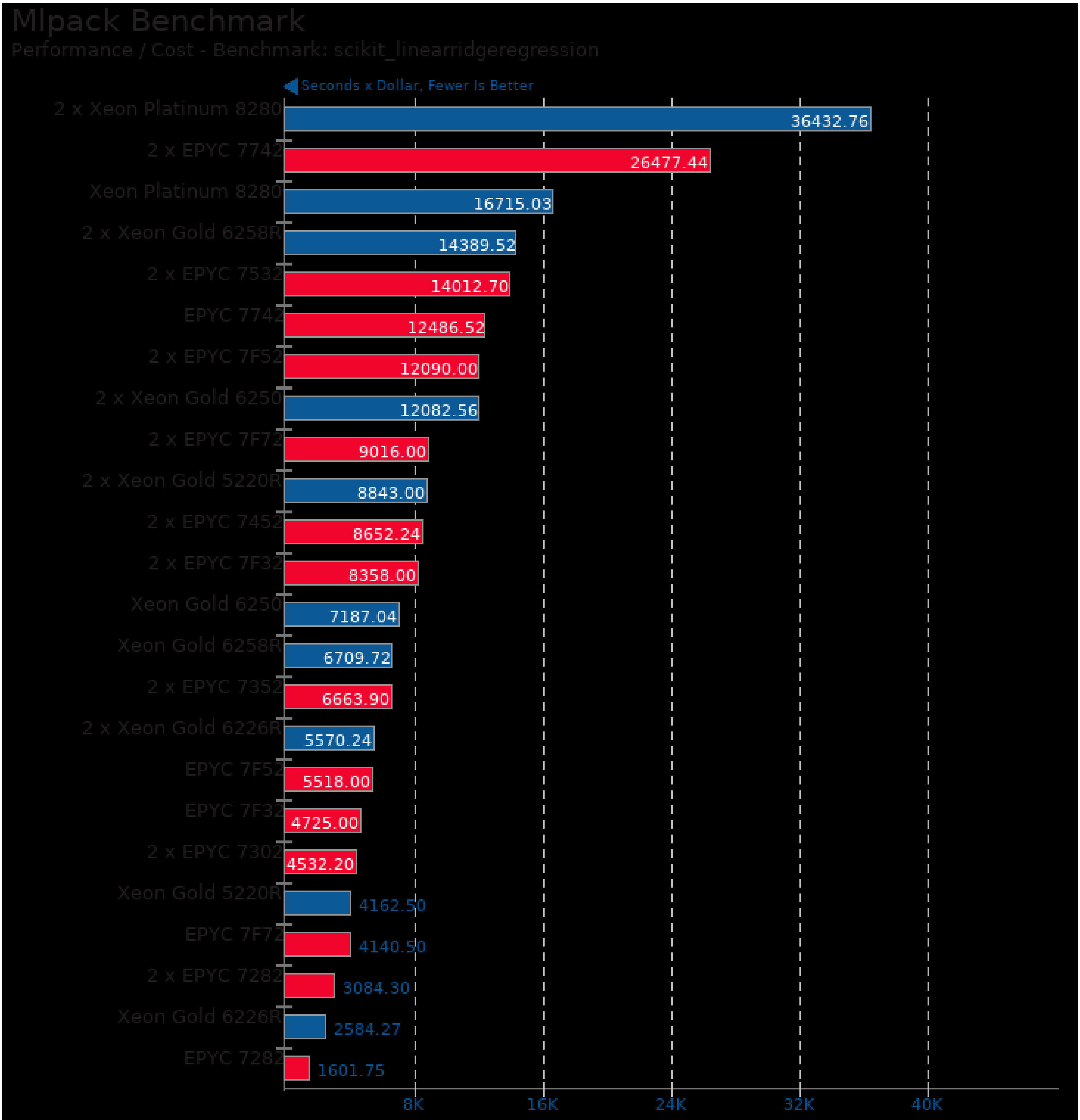



PHPBench 0.8.1
Performance / Cost - PHP Benchmark Suite
Score Per Dollar, More Is Better
2 x Xeon Platinum 8280 32.46
2 x EPYC 7742 35.04
Xeon Platinum 8280 64.86
EPYC 7742 70.08
2 x EPYC 7532 71.77
2 x Xeon Gold 6258R 80.14
2 x EPYC 7F52 97.90
2 x Xeon Gold 6250 105.41
2 x EPYC 7F72 114.49
2 x EPYC 7452 117.69
2 x EPYC 7F32 145.16
Xeon Gold 6258R 159.26
2 x EPYC 7352 166.75
2 x Xeon Gold 5220R 170.62
EPYC 7F52 195.04
Xeon Gold 6250 210.20
EPYC 7F72 233.52
2 x Xeon Gold 6226R 236.22
2 x EPYC 7302 242.22
EPYC 7F32 286.82
2 x EPYC 7282 332.83
Xeon Gold 5220R 340.37
Xeon Gold 6226R 472.32
EPYC 7282 661.73
140
280
420
560
700
1. 2 x Xeon Platinum 8280: $20018 reported cost.
2. 2 x EPYC 7742: $15044 reported cost.
3. Xeon Platinum 8280: $10009 reported cost.
4. EPYC 7742: $7522 reported cost.
5. 2 x EPYC 7532: $7186 reported cost.
6. 2 x Xeon Gold 6258R: $8084 reported cost.
7. 2 x EPYC 7F52: $6200 reported cost.
8. 2 x Xeon Gold 6250: $6944 reported cost.
9. 2 x EPYC 7F72: $4900 reported cost.
10. 2 x EPYC 7452: $4392 reported cost.
11. 2 x EPYC 7F32: $4200 reported cost.
12. Xeon Gold 6258R: $4042 reported cost.
13. 2 x EPYC 7352: $2910 reported cost.
14. 2 x Xeon Gold 5220R: $3700 reported cost.
15. EPYC 7F52: $3100 reported cost.
16. Xeon Gold 6250: $3472 reported cost.
17. EPYC 7F72: $2450 reported cost.
18. 2 x Xeon Gold 6226R: $2678 reported cost.
19. 2 x EPYC 7302: $2108 reported cost.
20. EPYC 7F32: $2100 reported cost.
21. 2 x EPYC 7282: $1490 reported cost.
22. Xeon Gold 5220R: $1850 reported cost.

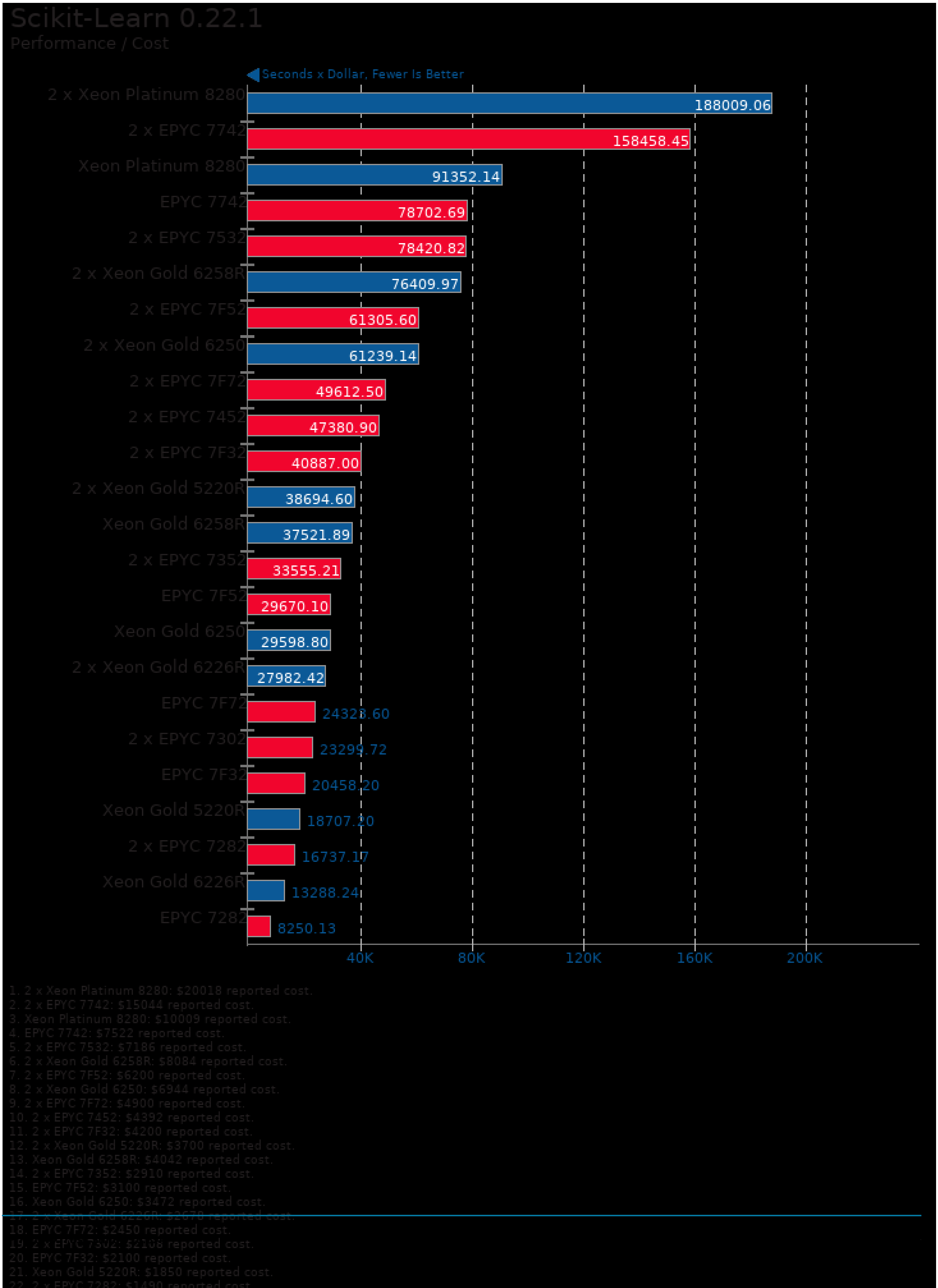

Mlpack Benchmark
Performance / Cost - Benchmark: scikit_ica
Seconds x Dollar, Fewer Is Better
2 x Xeon Platinum 8280
1268140.30
2 x EPYC 7742
830127.92
Xeon Platinum 8280
674206.24
2 x Xeon Gold 6258R
512363.92
2 x EPYC 7532
471401.60
EPYC 7742
433944.18
2 x EPYC 7F52
418376.00
2 x Xeon Gold 6250
385669.76
2 x EPYC 7F72
301546.00
2 x Xeon Gold 5220R
286417.00
2 x EPYC 7452
282273.84
Xeon Gold 6258R
272269.12
2 x EPYC 7F32
255150.00
2 x EPYC 7352
204514.80
2 x Xeon Gold 6226R
199859.14
Xeon Gold 6250
173912.48
EPYC 7F52
165106.00
2 x EPYC 7302
160292.32
EPYC 7F72
151728.50
Xeon Gold 5220R
126151.50
2 x EPYC 7282
116011.40
EPYC 7F32
111573.00
Xeon Gold 6226R
82776.98
EPYC 7282
47396.90
300K
600K
900K
1200K
1500K
1. 2 x Xeon Platinum 8280: $20018 reported cost.
2. 2 x EPYC 7742: $15044 reported cost.
3. Xeon Platinum 8280: $10009 reported cost.
4. 2 x Xeon Gold 6258R: $8084 reported cost.
5. 2 x EPYC 7532: $7186 reported cost.
6. EPYC 7742: $7522 reported cost.
7. 2 x EPYC 7F52: $6200 reported cost.
8. 2 x Xeon Gold 6250: $6944 reported cost.
9. 2 x EPYC 7F72: $4900 reported cost.
10. 2 x Xeon Gold 5220R: $3700 reported cost.
11. 2 x EPYC 7452: $4392 reported cost.
12. Xeon Gold 6258R: $4042 reported cost.
13. 2 x EPYC 7F32: $4200 reported cost.
14. 2 x EPYC 7352: $2910 reported cost.
15. 2 x Xeon Gold 6226R: $2678 reported cost.
16. Xeon Gold 6250: $3472 reported cost.
17. EPYC 7F52: $3100 reported cost.
18. 2 x EPYC 7302: $2108 reported cost.
19. EPYC 7F72: $2450 reported cost.
20. Xeon Gold 5220R: $1850 reported cost.
21. 2 x EPYC 7282: $1490 reported cost.
22. EPYC 7F32: $2100 reported cost.

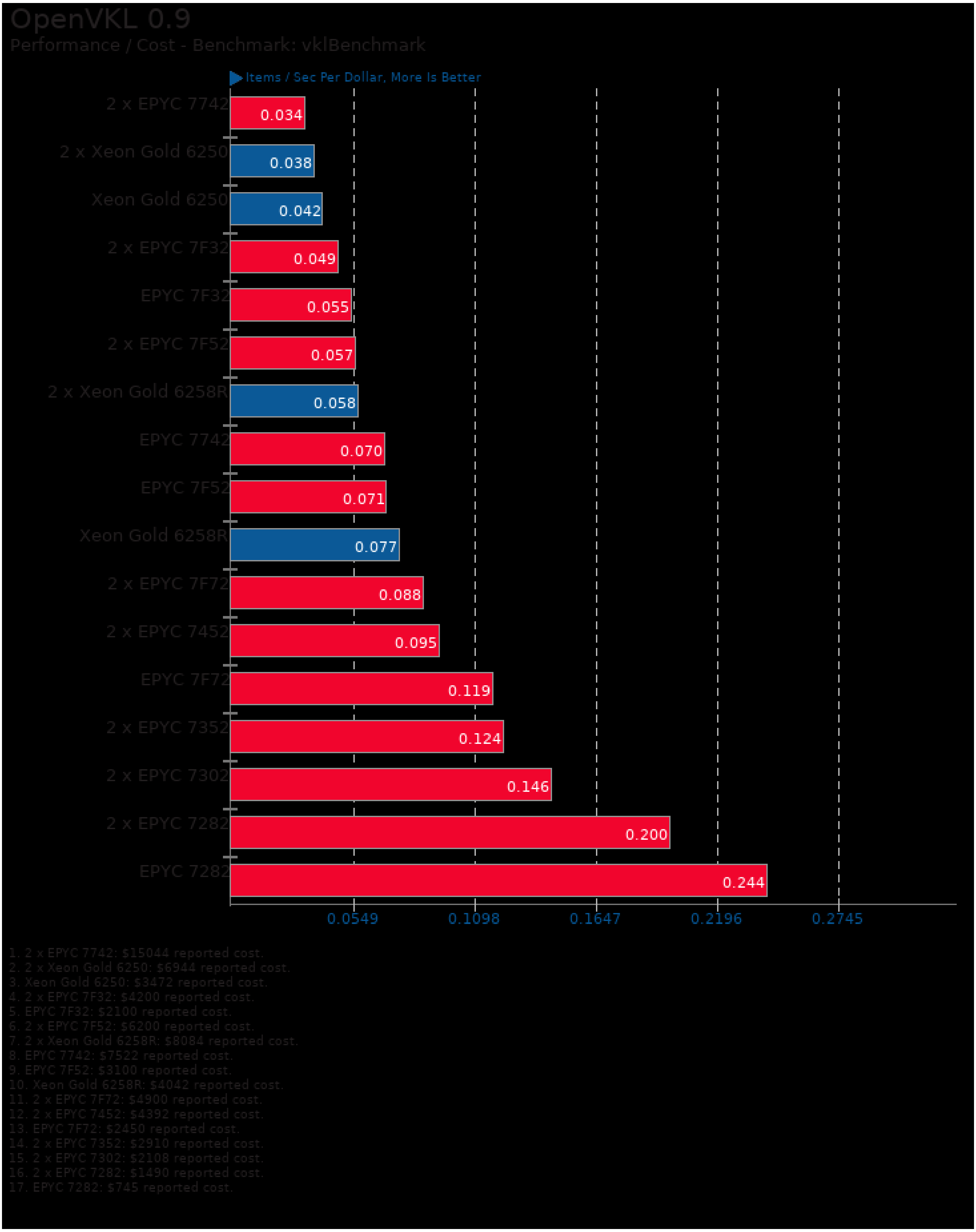
Xeon Cascade Lake Refresh vs. AMD EPYC Rome Linux Benchmarks

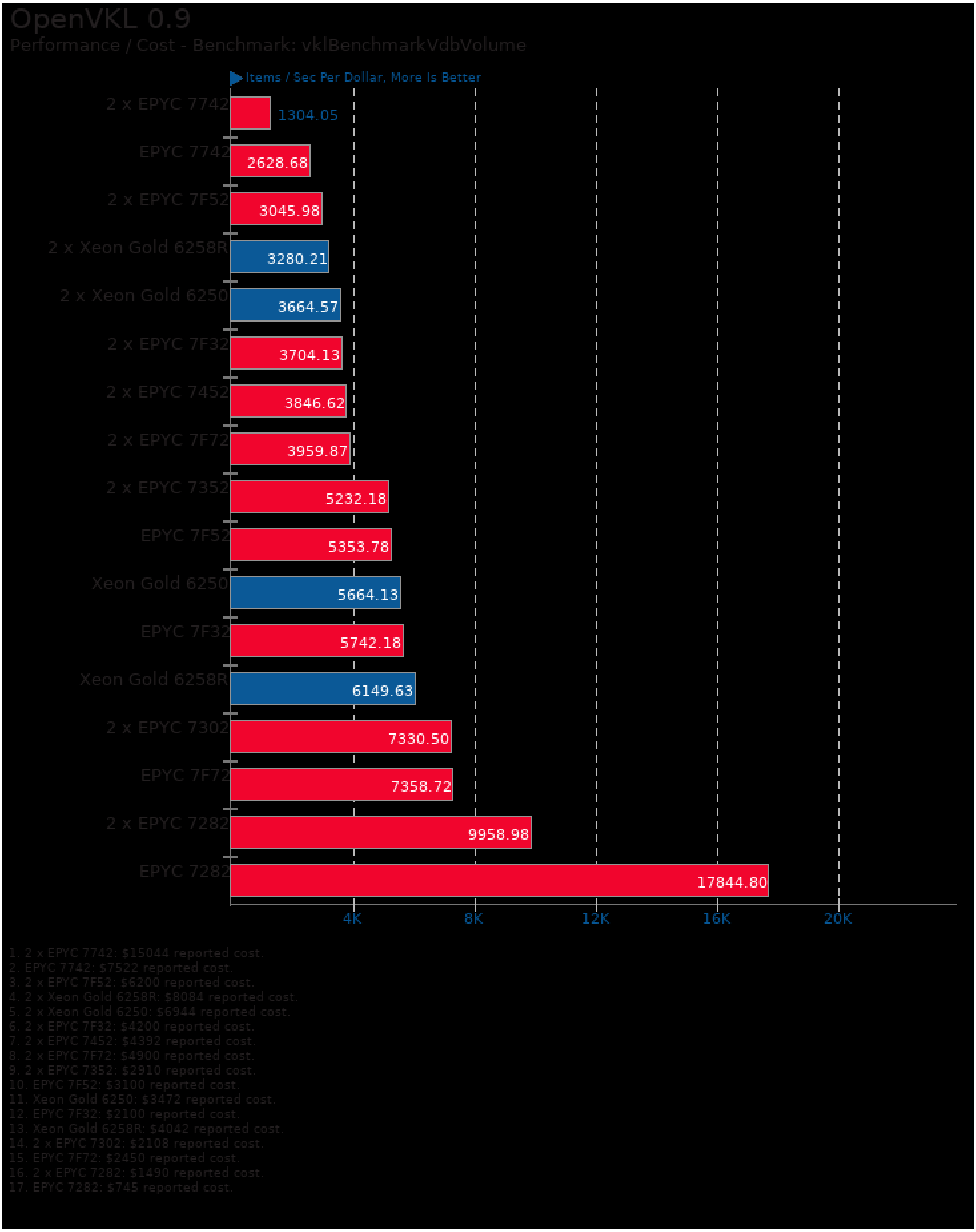




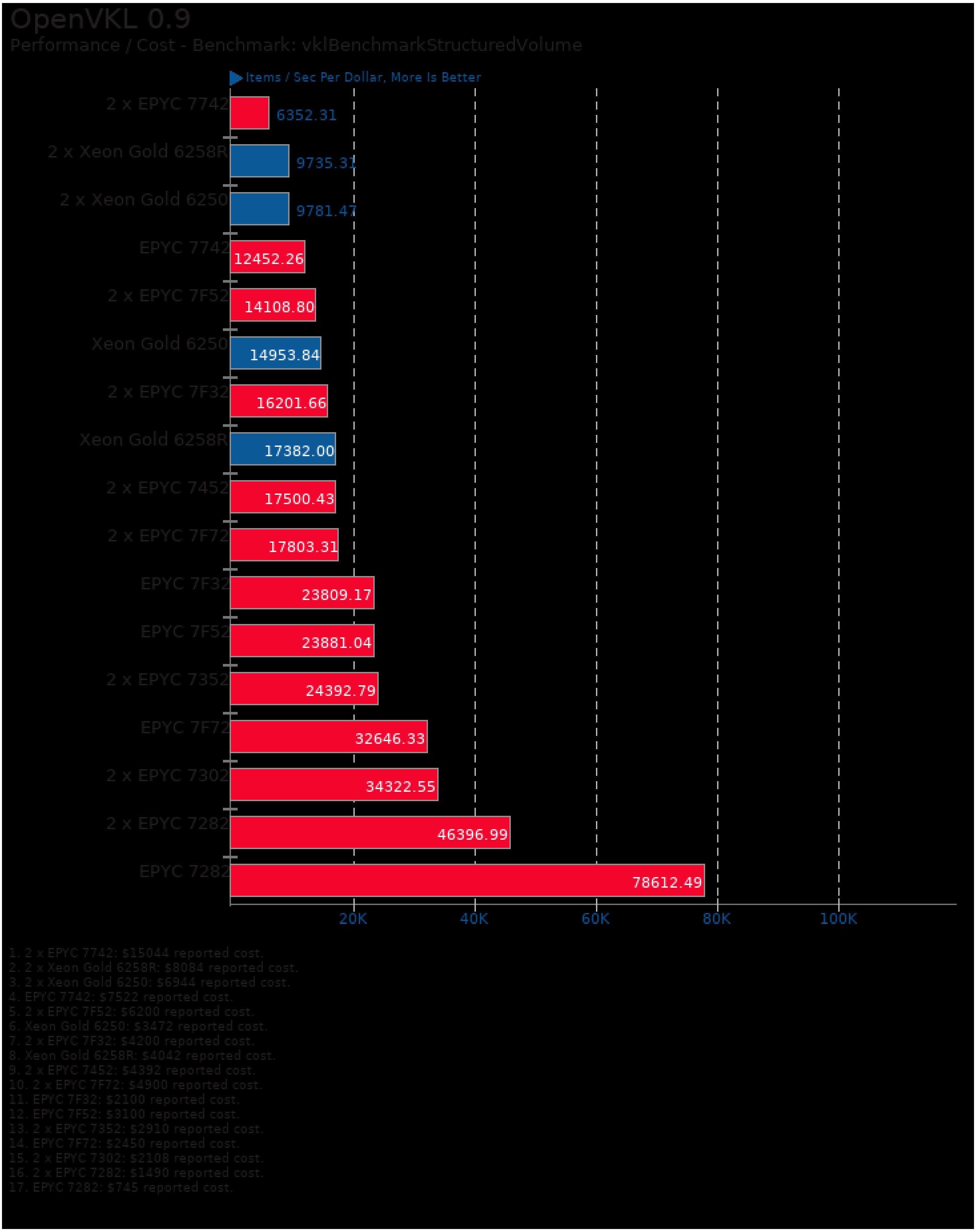
1. 2 x Xeon Platinum 8280: $20018 reported cost.
2. 2 x EPYC 7742: $15044 reported cost.
3. Xeon Platinum 8280: $10009 reported cost.
4. 2 x Xeon Gold 6258R: $8084 reported cost.
5. 2 x EPYC 7532: $7186 reported cost.
6. EPYC 7742: $7522 reported cost.
7. 2 x EPYC 7F52: $6200 reported cost.
8. 2 x Xeon Gold 6250: $6944 reported cost.
9. 2 x EPYC 7F72: $4900 reported cost.
10. 2 x Xeon Gold 5220R: $3700 reported cost.
11. 2 x EPYC 7452: $4392 reported cost.
12. 2 x EPYC 7F32: $4200 reported cost.
13. Xeon Gold 6250: $3472 reported cost.
14. Xeon Gold 6258R: $4042 reported cost.
15. 2 x EPYC 7352: $2910 reported cost.
16. 2 x Xeon Gold 6226R: $2678 reported cost.
17. EPYC 7F52: $3100 reported cost.
18. EPYC 7F32: $2100 reported cost.
19. 2 x EPYC 7302: $2108 reported cost.
20. Xeon Gold 5220R: $1850 reported cost.
21. EPYC 7F72: $2450 reported cost.
22. 2 x EPYC 7282: $1490 reported cost.


Scikit-Learn 0.22.1
Performance / Cost
Seconds x Dollar, Fewer Is Better
2 x Xeon Platinum 8280
188009.06
2 x EPYC 7742
158458.45
Xeon Platinum 8280
91352.14
EPYC 7742
78702.69
2 x EPYC 7532
78420.82
2 x Xeon Gold 6258R
76409.97
2 x EPYC 7F52
61305.60
2 x Xeon Gold 6250
61239.14
2 x EPYC 7F72
49612.50
2 x EPYC 7452
47380.90
2 x EPYC 7F32
40887.00
2 x Xeon Gold 5220R
38694.60
Xeon Gold 6258R
37521.89
2 x EPYC 7352
33555.21
EPYC 7F52
29670.10
Xeon Gold 6250
29598.80
2 x Xeon Gold 6226R
27982.42
EPYC 7F72
24328.60
2 x EPYC 7302
23299.72
EPYC 7F32
20458.20
Xeon Gold 5220R
18707.20
2 x EPYC 7282
16737.17
Xeon Gold 6226R
13288.24
EPYC 7282
8250.13
40K
80K
120K
160K
200K
1. 2 x Xeon Platinum 8280: $20018 reported cost.
2. 2 x EPYC 7742: $15044 reported cost.
3. Xeon Platinum 8280: $10009 reported cost.
4. EPYC 7742: $7522 reported cost.
5. 2 x EPYC 7532: $7186 reported cost.
6. 2 x Xeon Gold 6258R: $8084 reported cost.
7. 2 x EPYC 7F52: $6200 reported cost.
8. 2 x Xeon Gold 6250: $6944 reported cost.
9. 2 x EPYC 7F72: $4900 reported cost.
10. 2 x EPYC 7452: $4392 reported cost.
11. 2 x EPYC 7F32: $4200 reported cost.
12. 2 x Xeon Gold 5220R: $3700 reported cost.
13. Xeon Gold 6258R: $4042 reported cost.
14. 2 x EPYC 7352: $2910 reported cost.
15. EPYC 7F52: $3100 reported cost.
16. Xeon Gold 6250: $3472 reported cost.
17. 2 x Xeon Gold 6226R: $2670 reported cost.
18. EPYC 7F72: $2450 reported cost.
19. 2 x EPYC 7302: $2108 reported cost.
20. EPYC 7F32: $2100 reported cost.
21. Xeon Gold 5220R: $1850 reported cost.
22. 2 x EPYC 7282: $1490 reported cost.

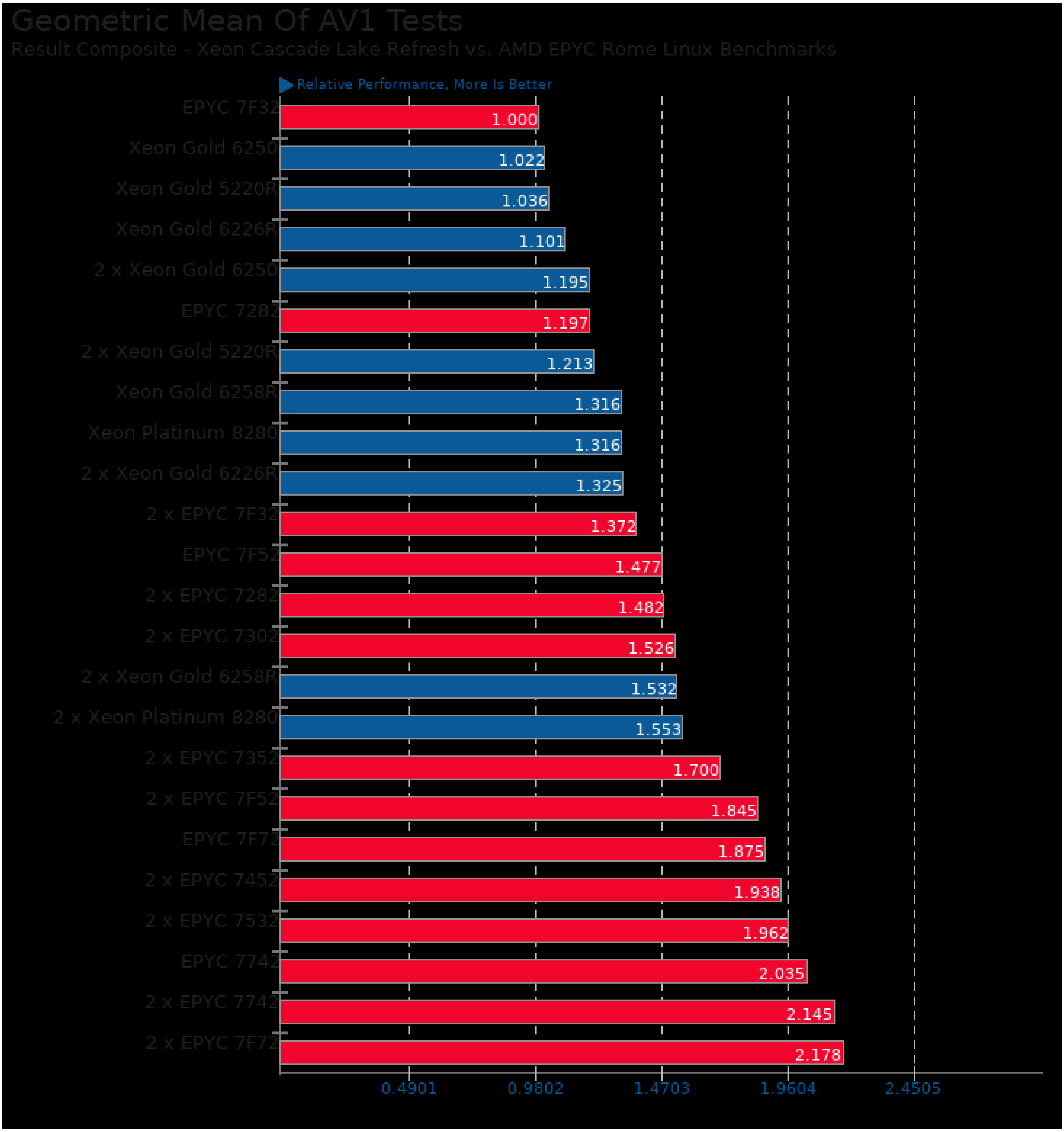

OpenVKL 0.9
Performance / Cost - Benchmark: vklBenchmark
Items / Sec Per Dollar, More Is Better
2 x EPYC 7742
0.034
2 x Xeon Gold 6250
0.038
Xeon Gold 6250
0.042
2 x EPYC 7F32
0.049
EPYC 7F32
0.055
2 x EPYC 7F52
0.057
2 x Xeon Gold 6258R
0.058
EPYC 7742
0.070
EPYC 7F52
0.071
Xeon Gold 6258R
0.077
2 x EPYC 7F72
0.088
2 x EPYC 7452
0.095
EPYC 7F72
0.119
2 x EPYC 7352
0.124
2 x EPYC 7302
0.146
2 x EPYC 7282
0.200
EPYC 7282
0.244
0.0549
0.1098
0.1647
0.2196
0.2745
1. 2 x EPYC 7742: $15044 reported cost.
2. 2 x Xeon Gold 6250: $6944 reported cost.
3. Xeon Gold 6250: $3472 reported cost.
4. 2 x EPYC 7F32: $4200 reported cost.
5. EPYC 7F32: $2100 reported cost.
6. 2 x EPYC 7F52: $6200 reported cost.
7. 2 x Xeon Gold 6258R: $8084 reported cost.
8. EPYC 7742: $7522 reported cost.
9. EPYC 7F52: $3100 reported cost.
10. Xeon Gold 6258R: $4042 reported cost.
11. 2 x EPYC 7F72: $4900 reported cost.
12. 2 x EPYC 7452: $4392 reported cost.
13. EPYC 7F72: $2450 reported cost.
14. 2 x EPYC 7352: $2910 reported cost.
15. 2 x EPYC 7302: $2108 reported cost.
16. 2 x EPYC 7282: $1490 reported cost.
17. EPYC 7282: $745 reported cost.


OpenVKL 0.9
Performance / Cost - Benchmark: vklBenchmarkVdbVolume
Items / Sec Per Dollar, More Is Better
2 x EPYC 7742 1304.05
EPYC 7742 2628.68
2 x EPYC 7F52 3045.98
2 x Xeon Gold 6258R 3280.21
2 x Xeon Gold 6250 3664.57
2 x EPYC 7F32 3704.13
2 x EPYC 7452 3846.62
2 x EPYC 7F72 3959.87
2 x EPYC 7352 5232.18
EPYC 7F52 5353.78
Xeon Gold 6250 5664.13
EPYC 7F32 5742.18
Xeon Gold 6258R 6149.63
2 x EPYC 7302 7330.50
EPYC 7F72 7358.72
2 x EPYC 7282 9958.98
EPYC 7282 17844.80
4K
8K
12K
16K
20K
1. 2 x EPYC 7742: $15044 reported cost.
2. EPYC 7742: $7522 reported cost.
3. 2 x EPYC 7F52: $6200 reported cost.
4. 2 x Xeon Gold 6258R: $8084 reported cost.
5. 2 x Xeon Gold 6250: $6944 reported cost.
6. 2 x EPYC 7F32: $4200 reported cost.
7. 2 x EPYC 7452: $4392 reported cost.
8. 2 x EPYC 7F72: $4900 reported cost.
9. 2 x EPYC 7352: $2910 reported cost.
10. EPYC 7F52: $3100 reported cost.
11. Xeon Gold 6250: $3472 reported cost.
12. EPYC 7F32: $2100 reported cost.
13. Xeon Gold 6258R: $4042 reported cost.
14. 2 x EPYC 7302: $2108 reported cost.
15. EPYC 7F72: $2450 reported cost.
16. 2 x EPYC 7282: $1490 reported cost.
17. EPYC 7282: $745 reported cost.

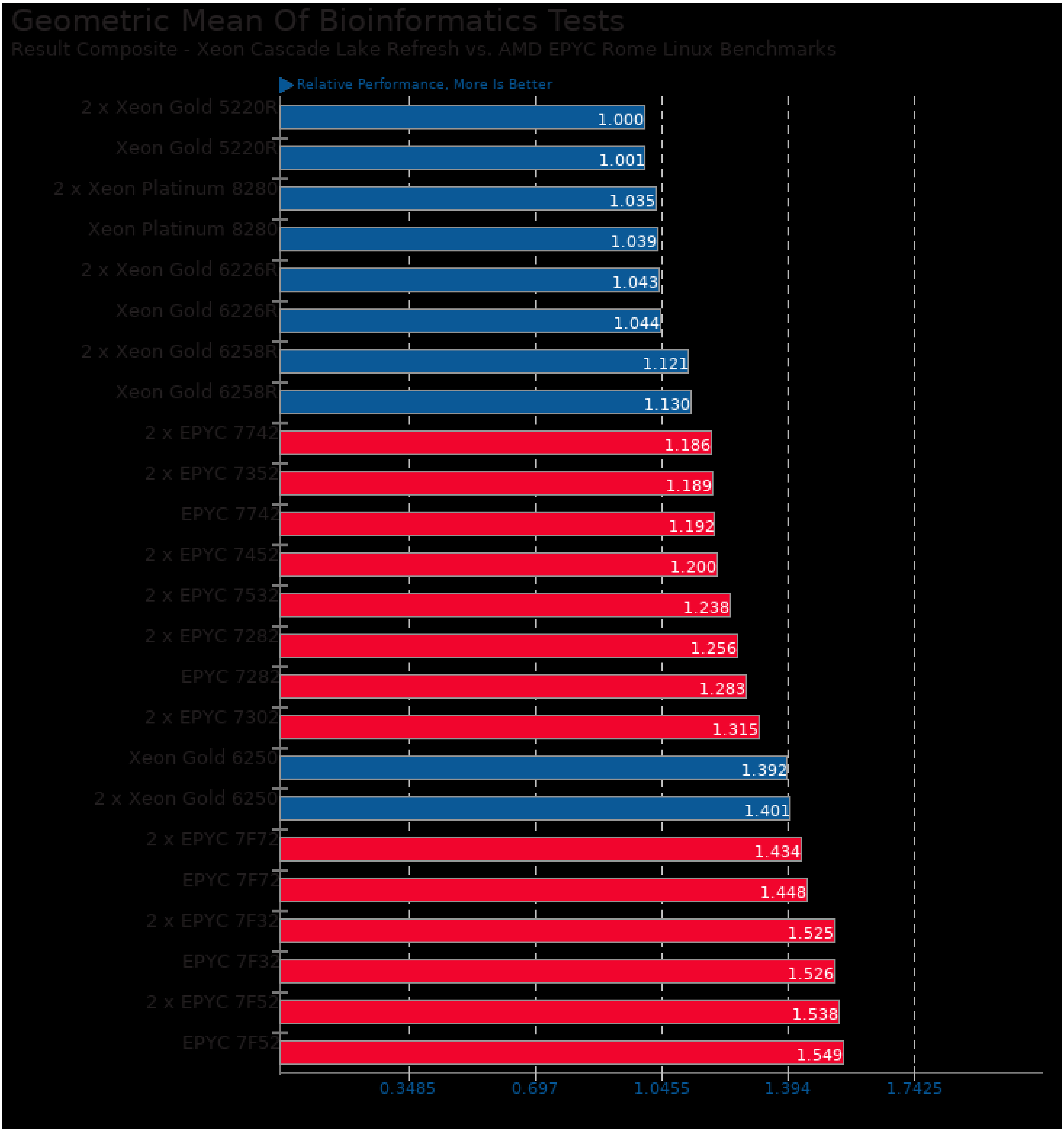
Xeon Cascade Lake Refresh vs. AMD EPYC Rome Linux Benchmarks



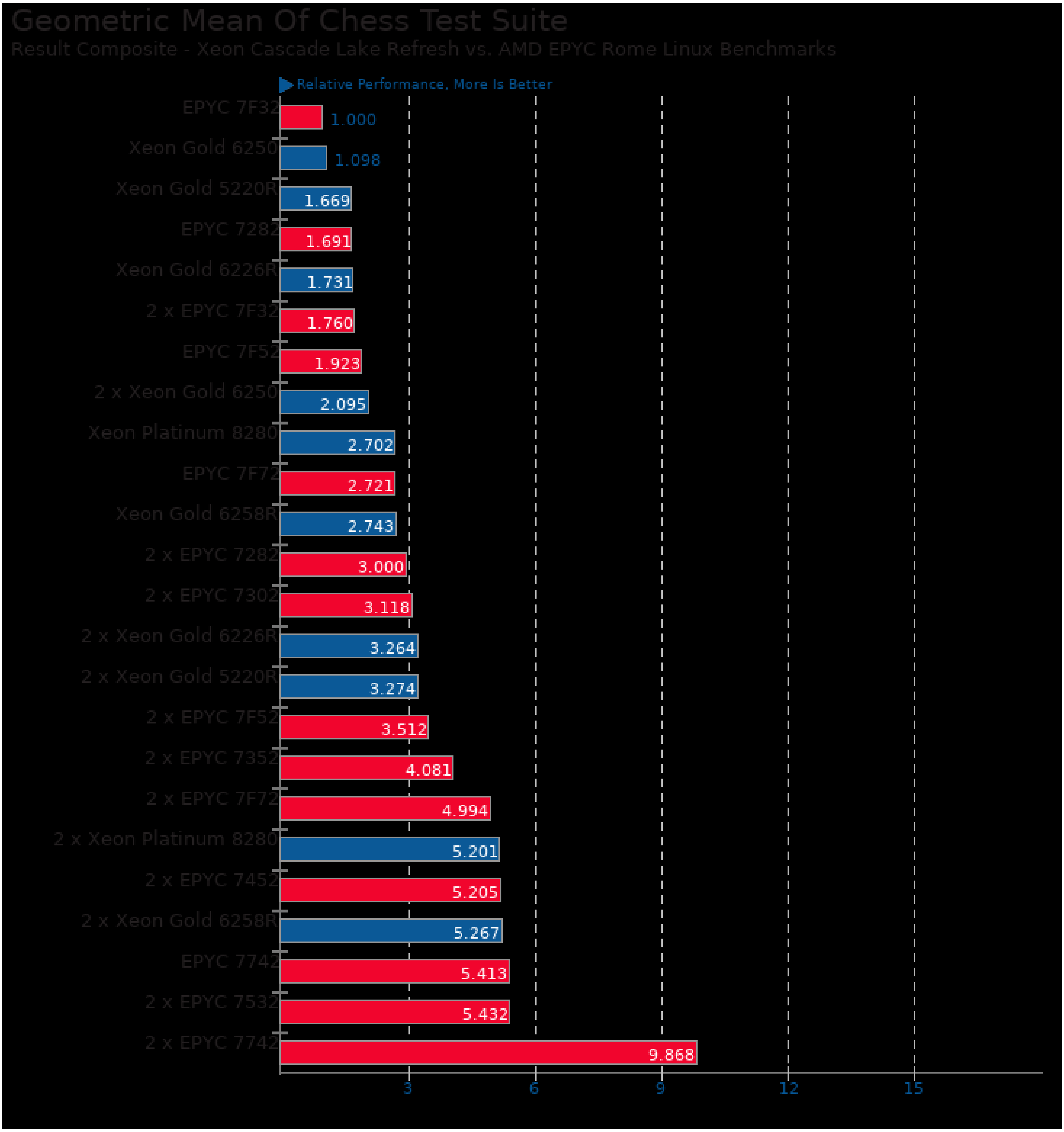
These geometric means are based upon test groupings / test suites for this result file.



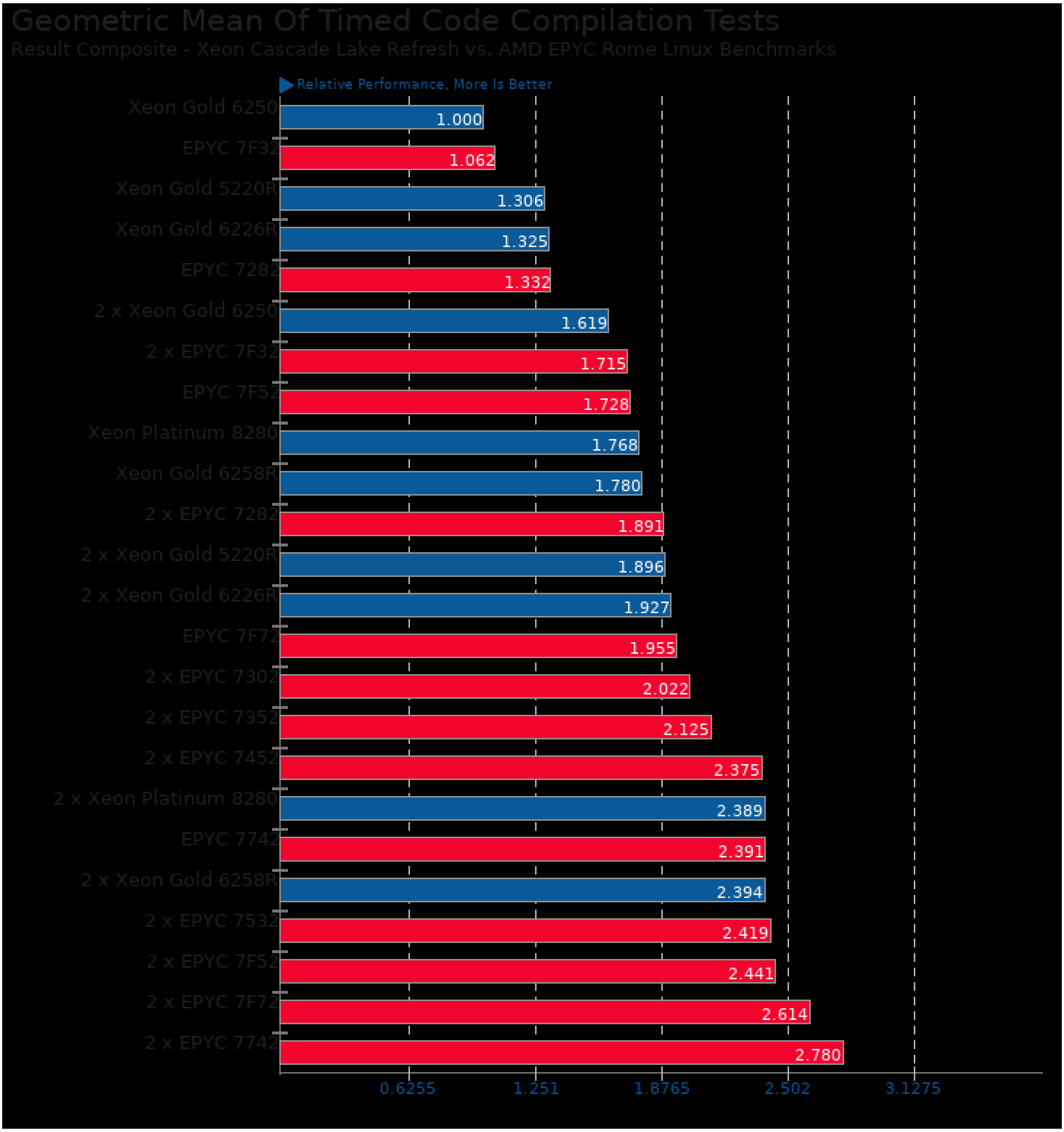
Geometric mean based upon tests: pts/dav1d and pts/svt-av1



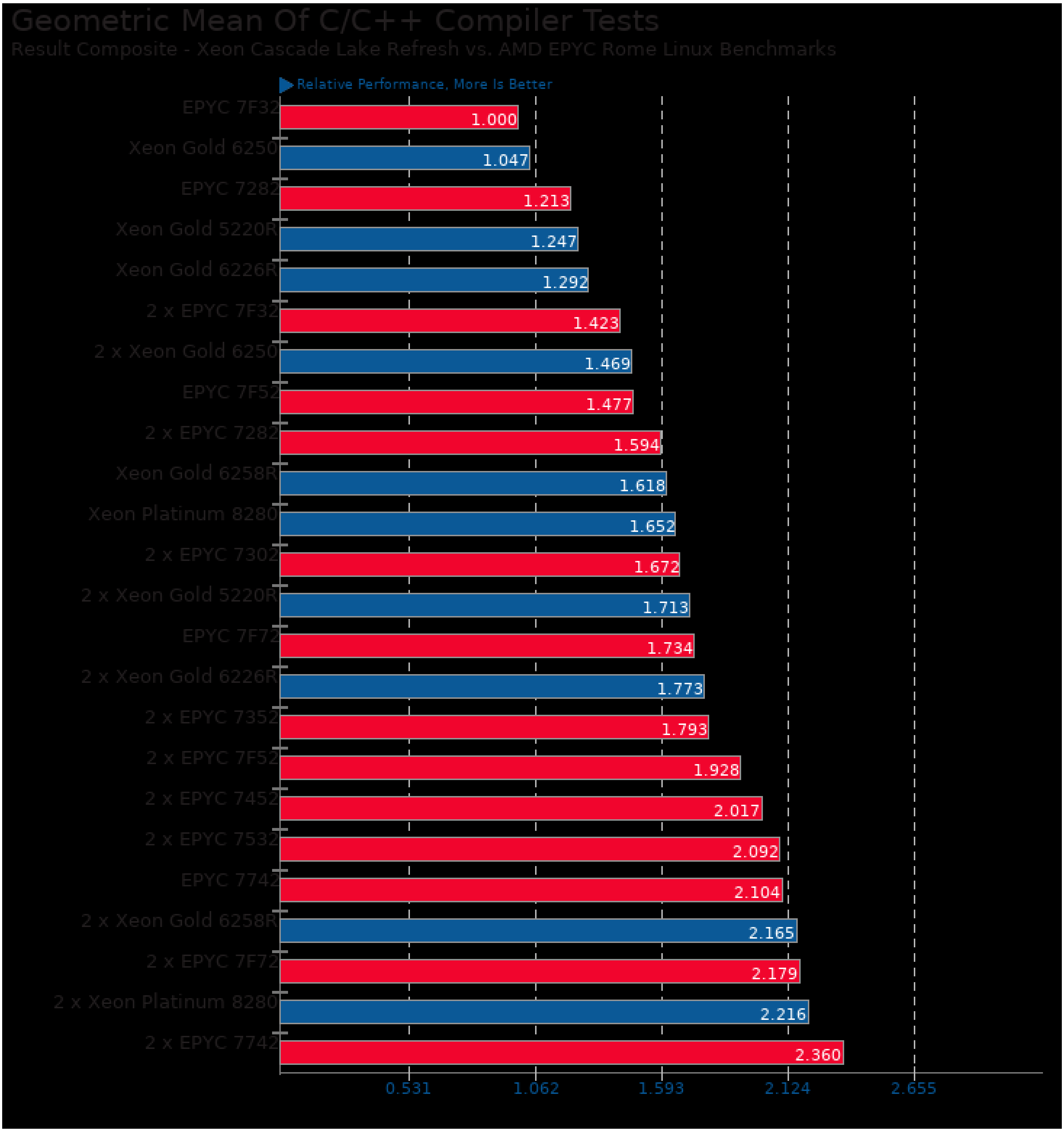
Geometric mean based upon tests: pts/himeno and pts/mrbayes



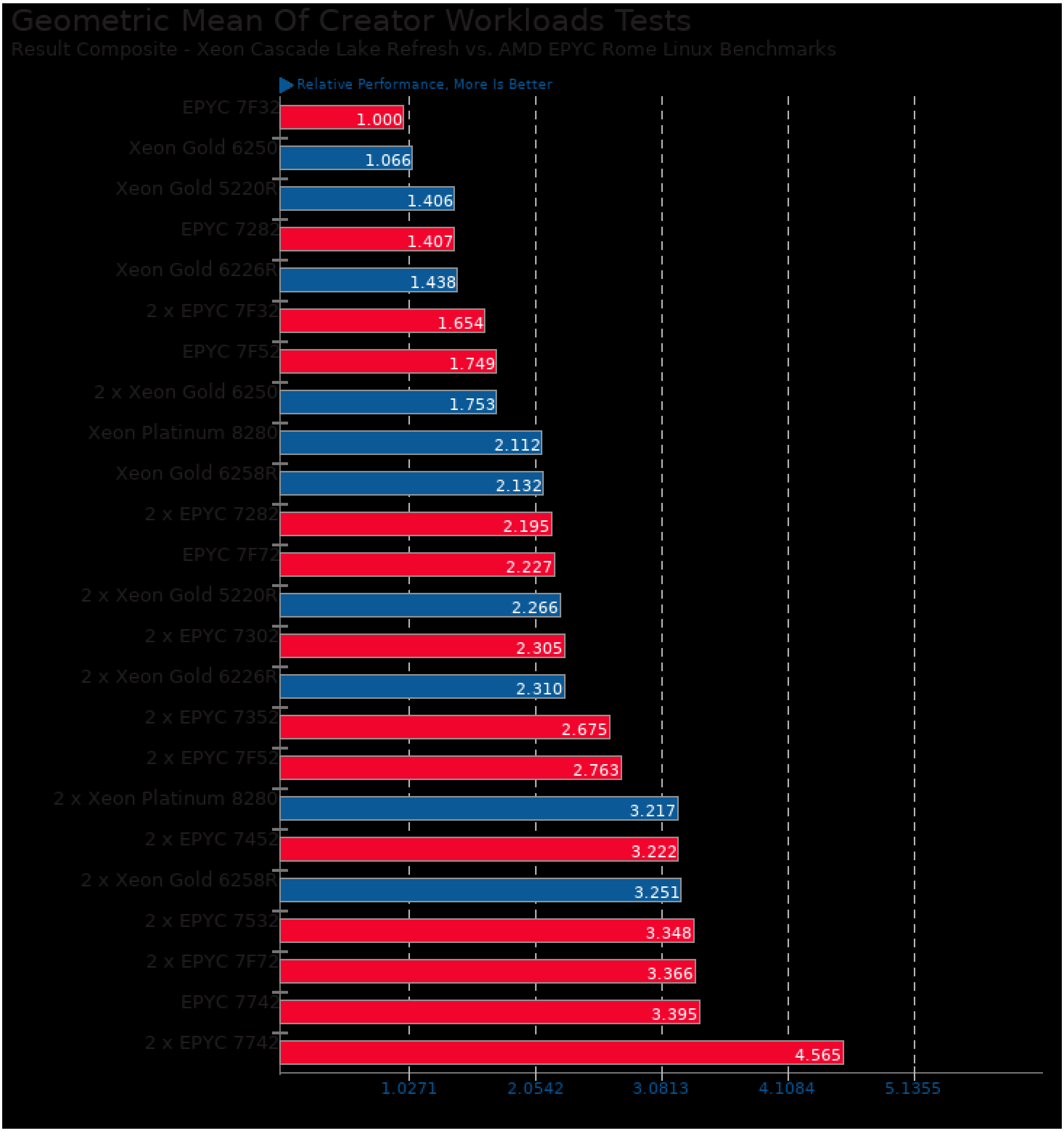
Geometric mean based upon tests: pts/stockfish and pts/asmfish



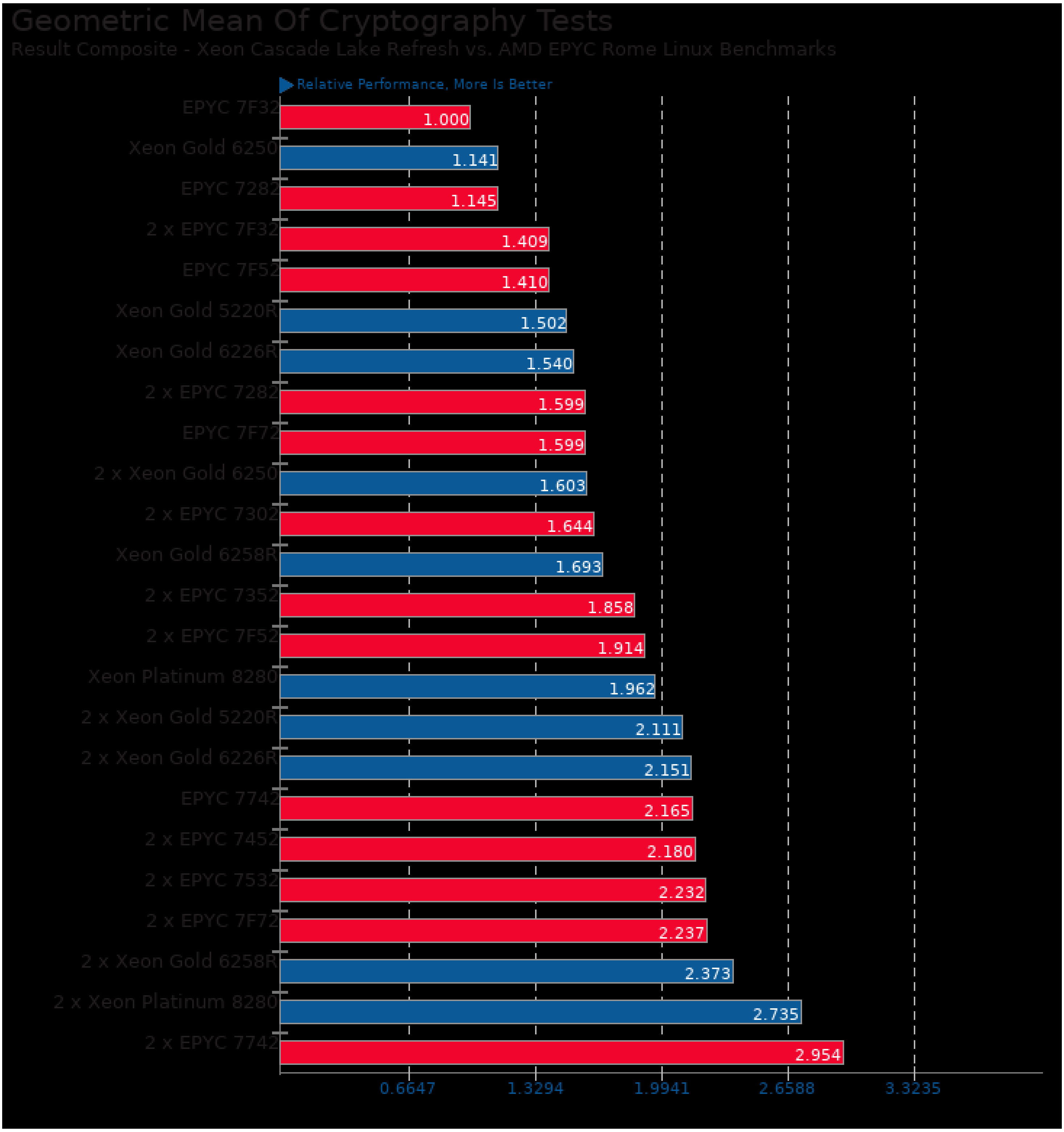
Geometric mean based upon tests: pts/build-linux-kernel, pts/build-llvm and pts/build2



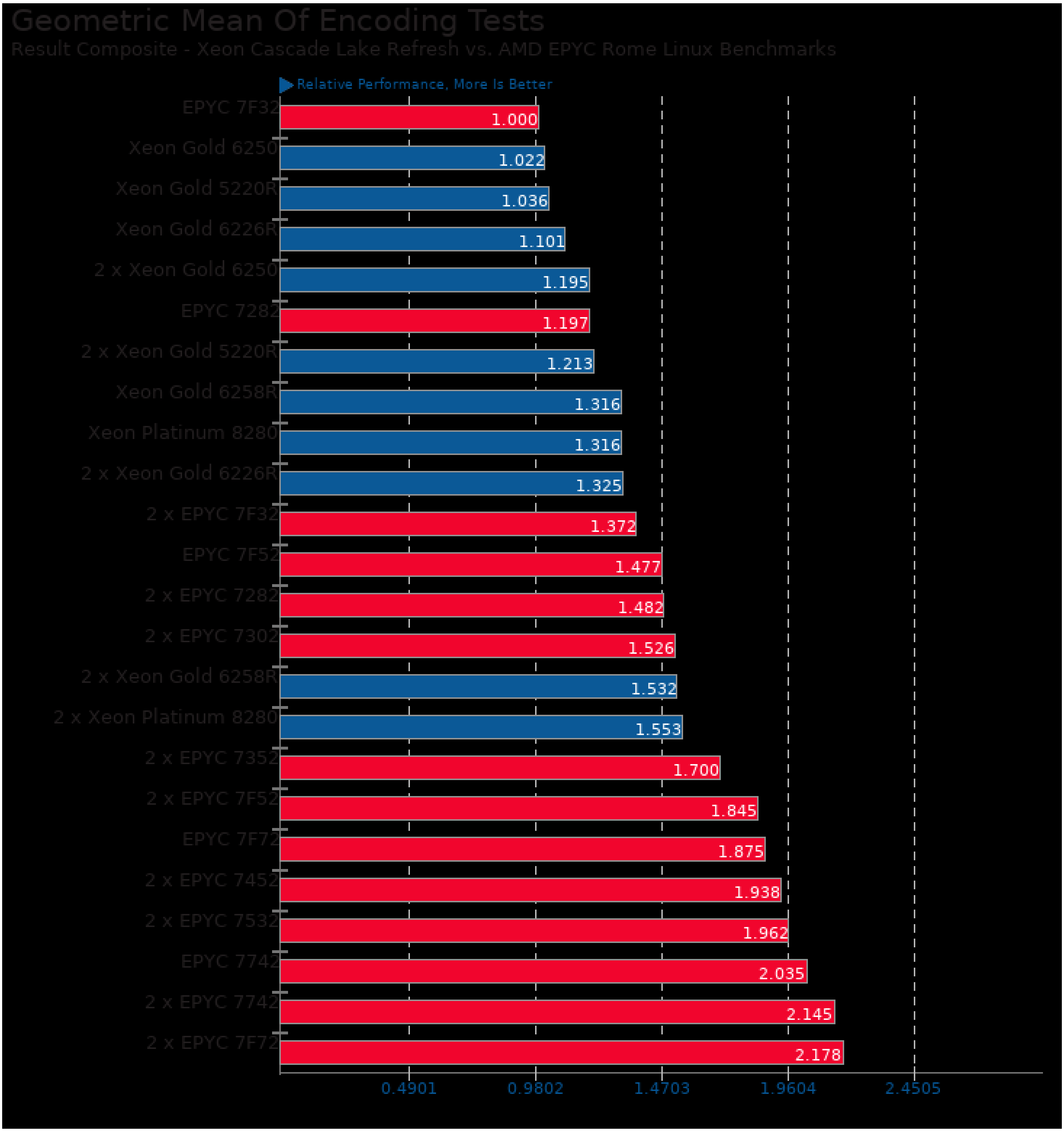
Geometric mean based upon tests: pts/himeno, pts/stockfish, pts/build-llvm, pts/pgbench, pts/mrbayes, pts/john-the-ripper, pts/dav1d, pts/tungsten, pts/lammps, pts/svt-av1, pts/basis and pts/nettle



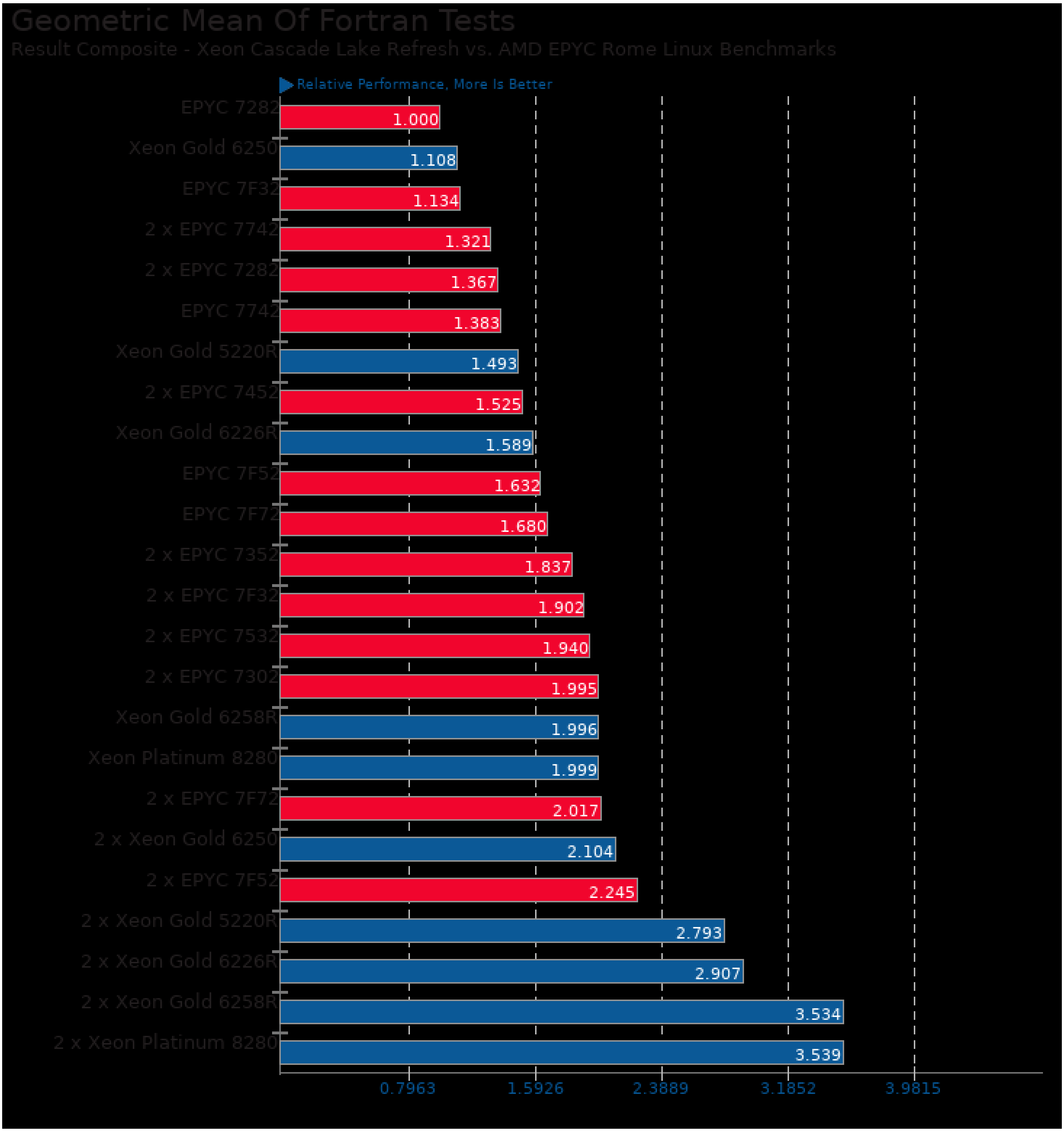
Geometric mean based upon tests: pts/ospray, pts/blender, pts/tungsten, pts/appleseed, pts/radiance, pts/luxcorerender, pts/v-ray, pts/dav1d, pts/svt-av1, pts/embree, pts/oidn, pts/openvkl and pts/basis



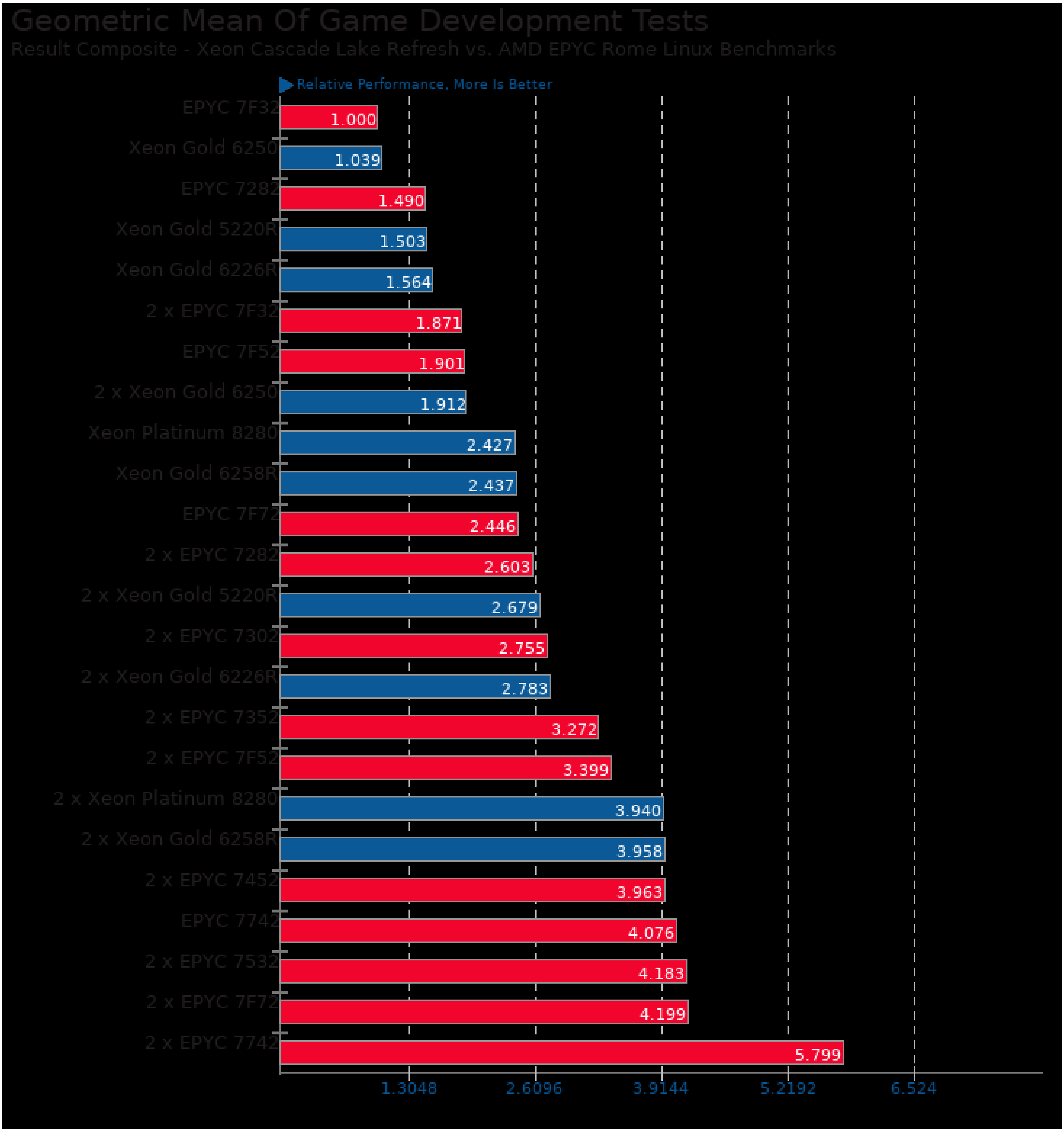
Geometric mean based upon tests: pts/john-the-ripper and pts/nettle



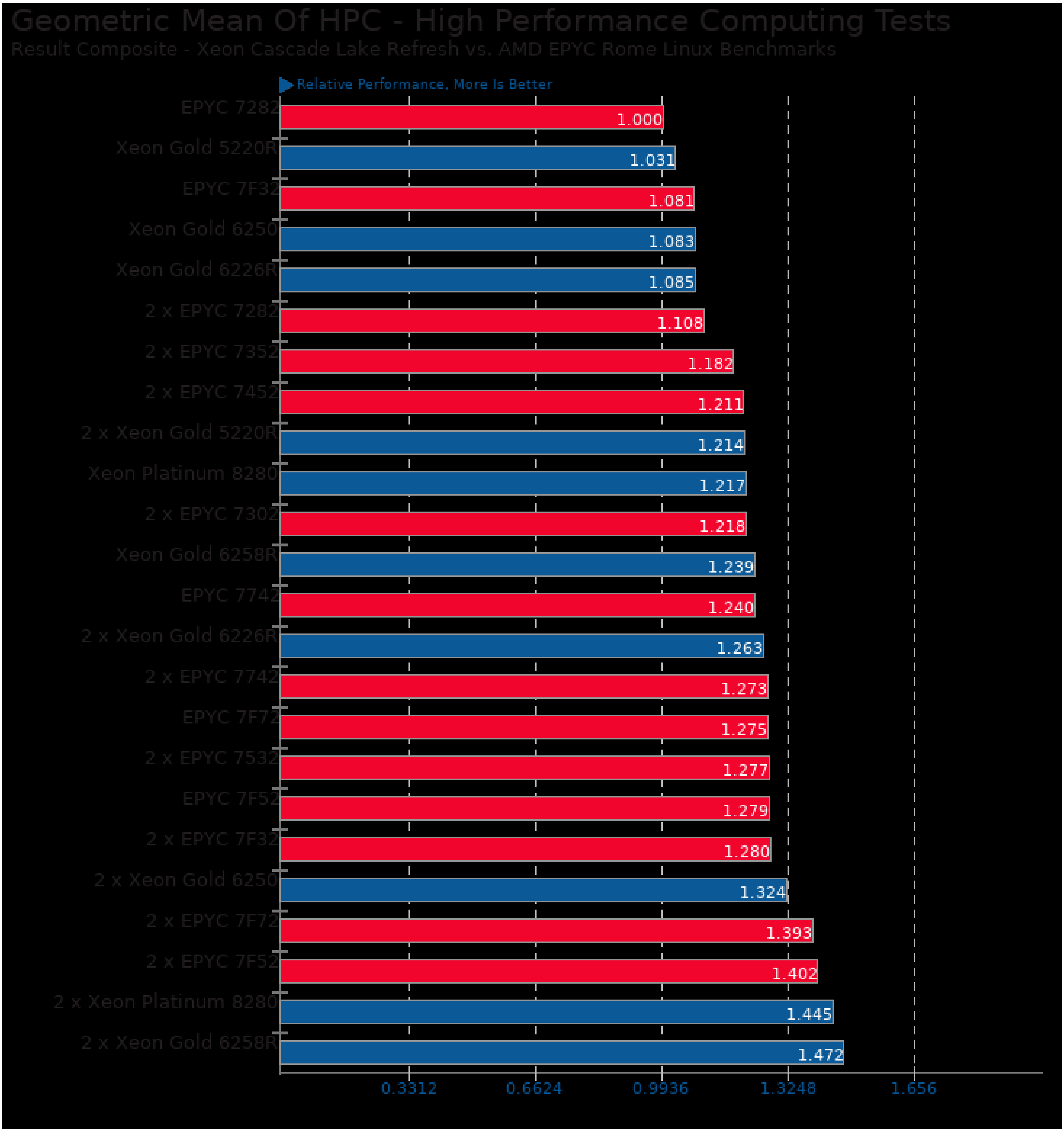
Geometric mean based upon tests: pts/dav1d and pts/svt-av1



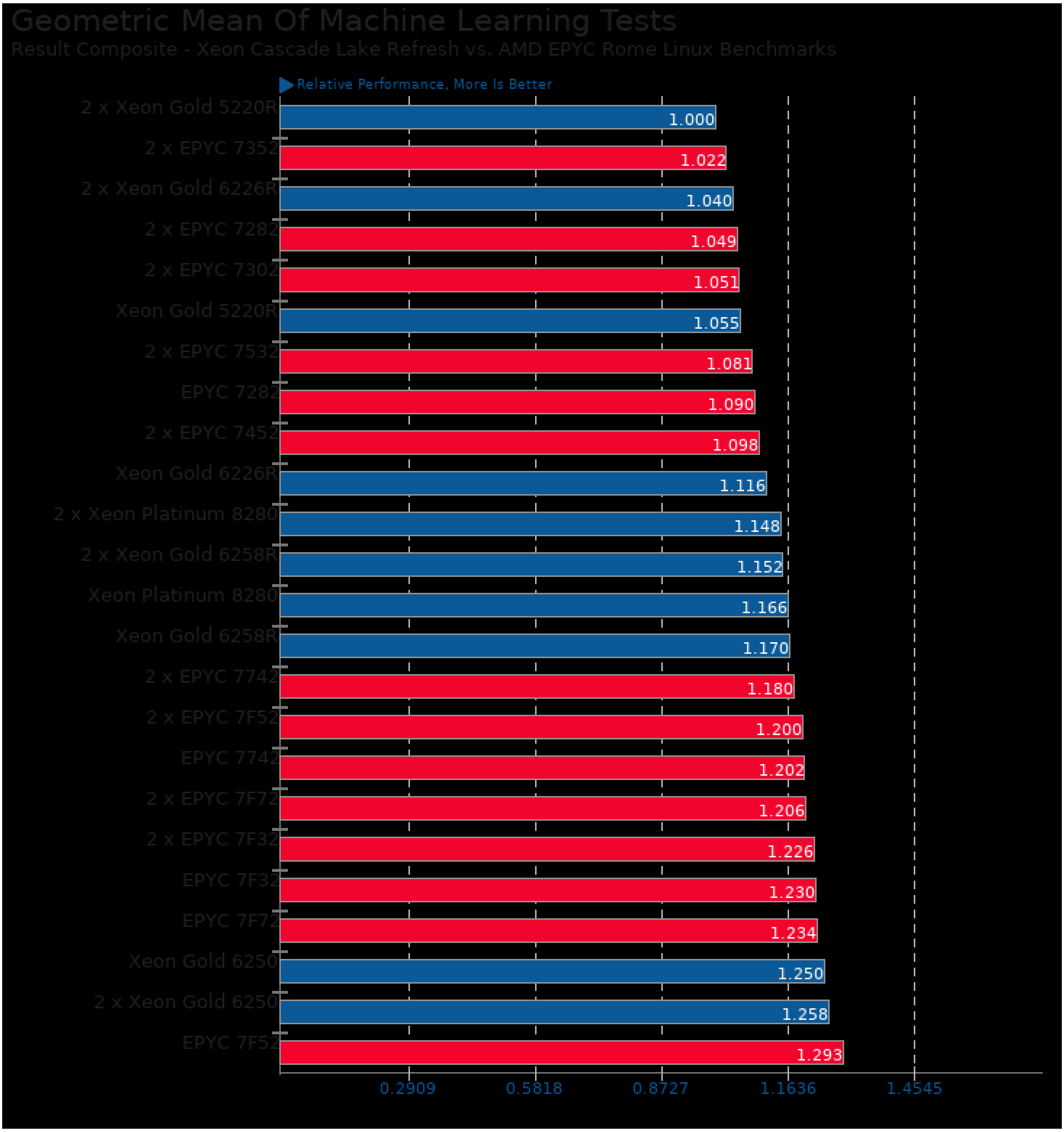
Geometric mean based upon tests: pts/hpcg and pts/lammps



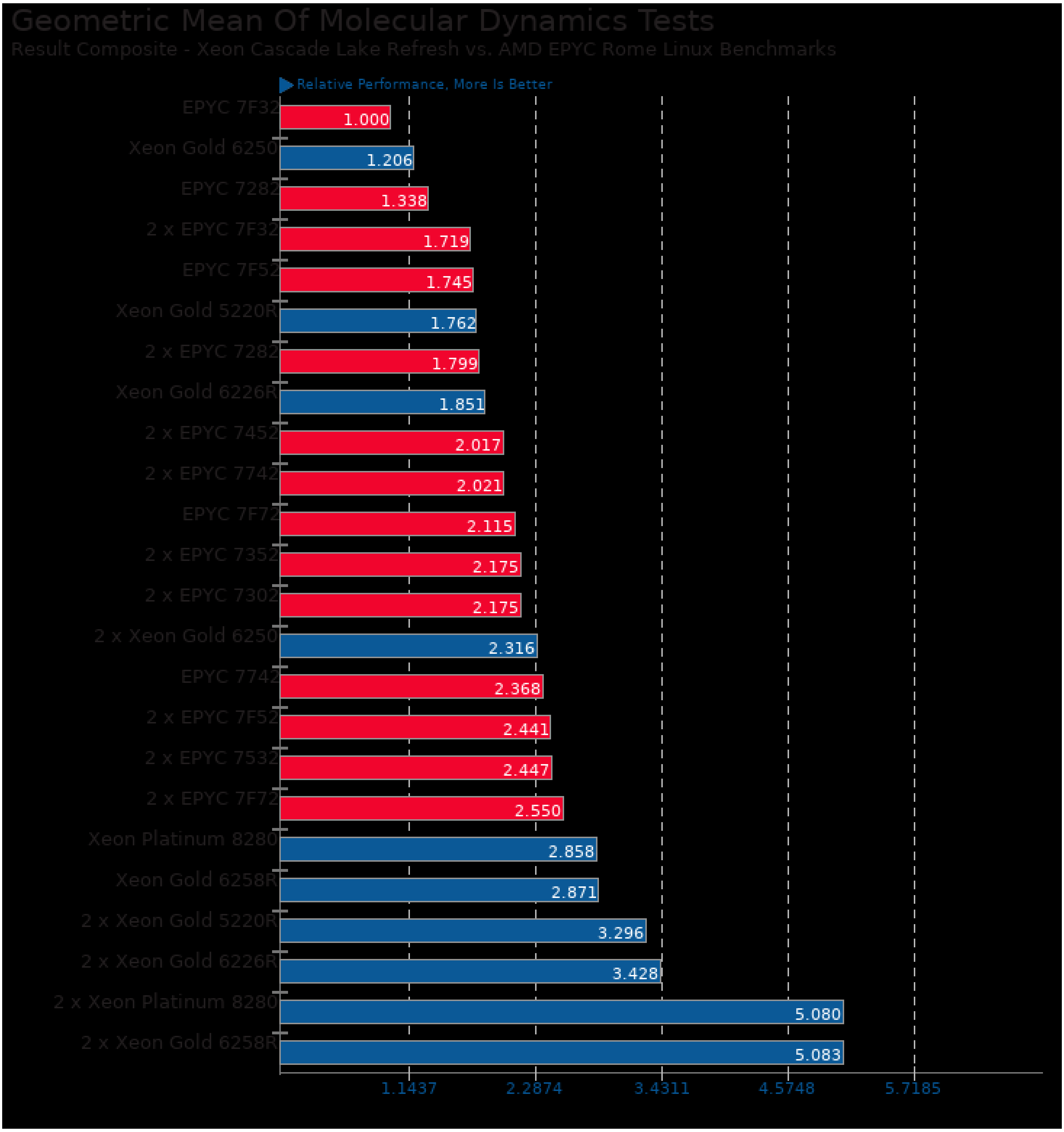
Geometric mean based upon tests: pts/basis, pts/blender, pts/oidn and pts/openvkl



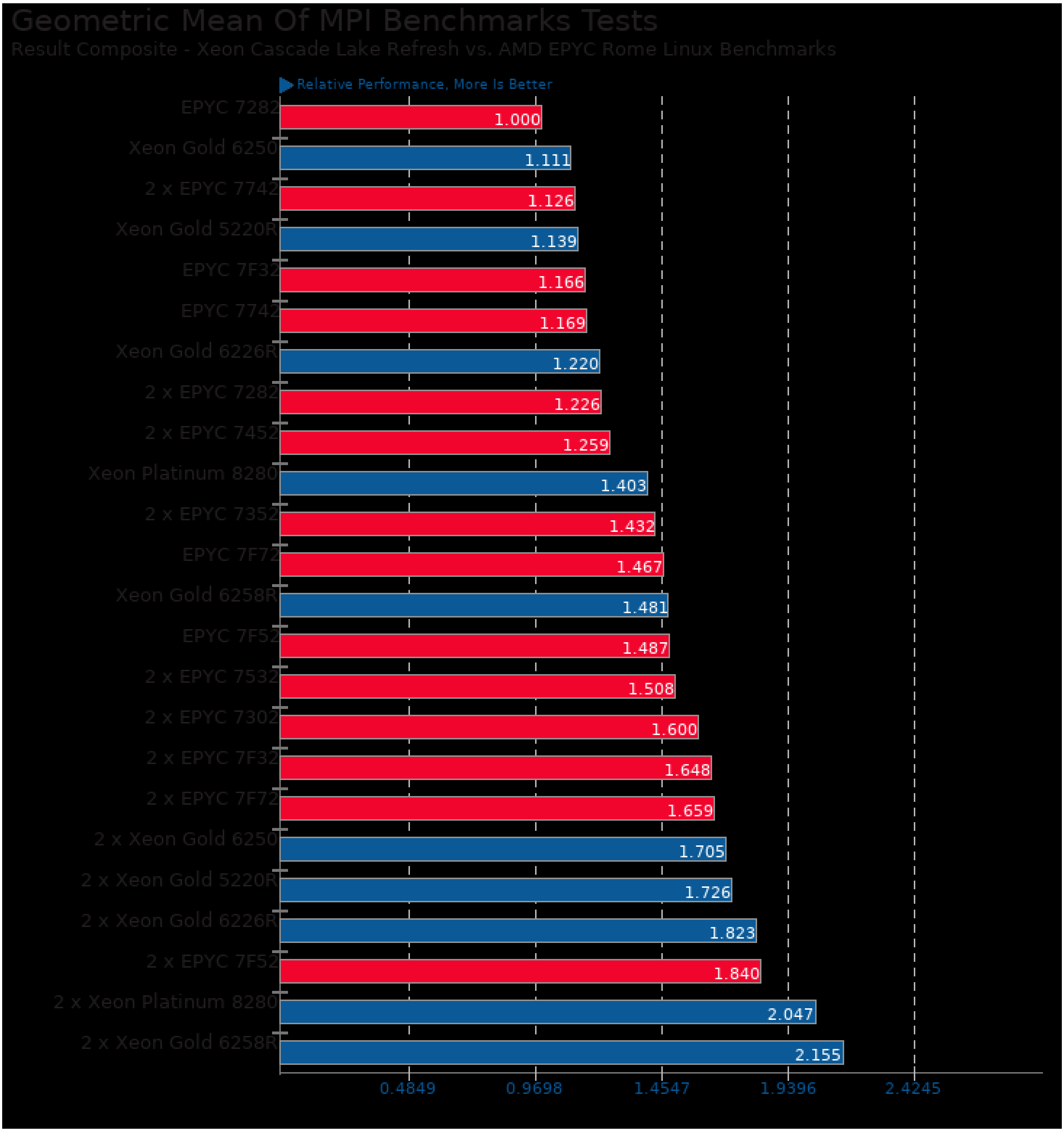
Geometric mean based upon tests: pts/hpcg, pts/namd, pts/lammps, pts/himeno, pts/mrbayes, pts/numpy, pts/scikit-learn and pts/mlpack



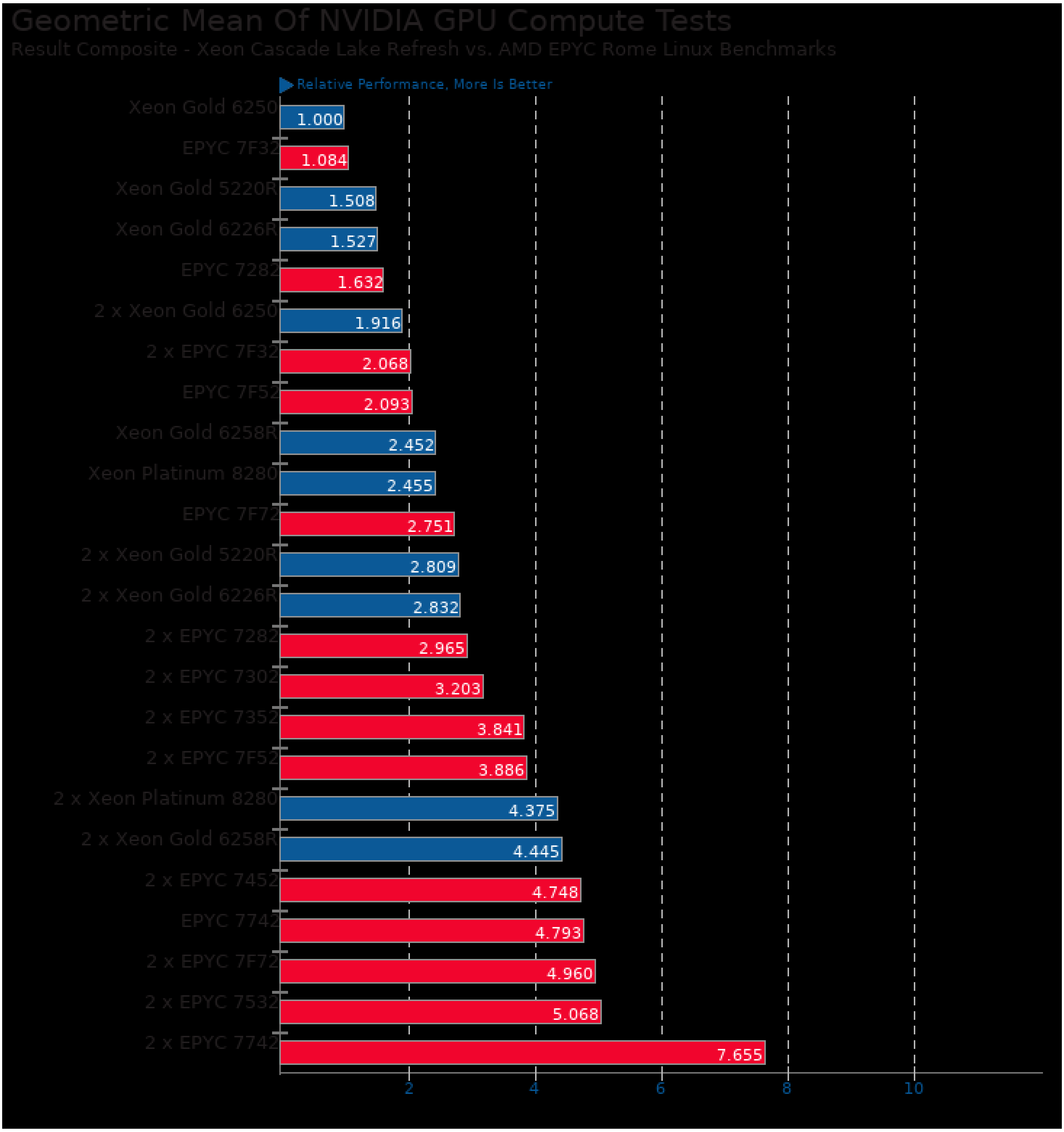
Geometric mean based upon tests: pts/numpy, pts/scikit-learn and pts/mlpack



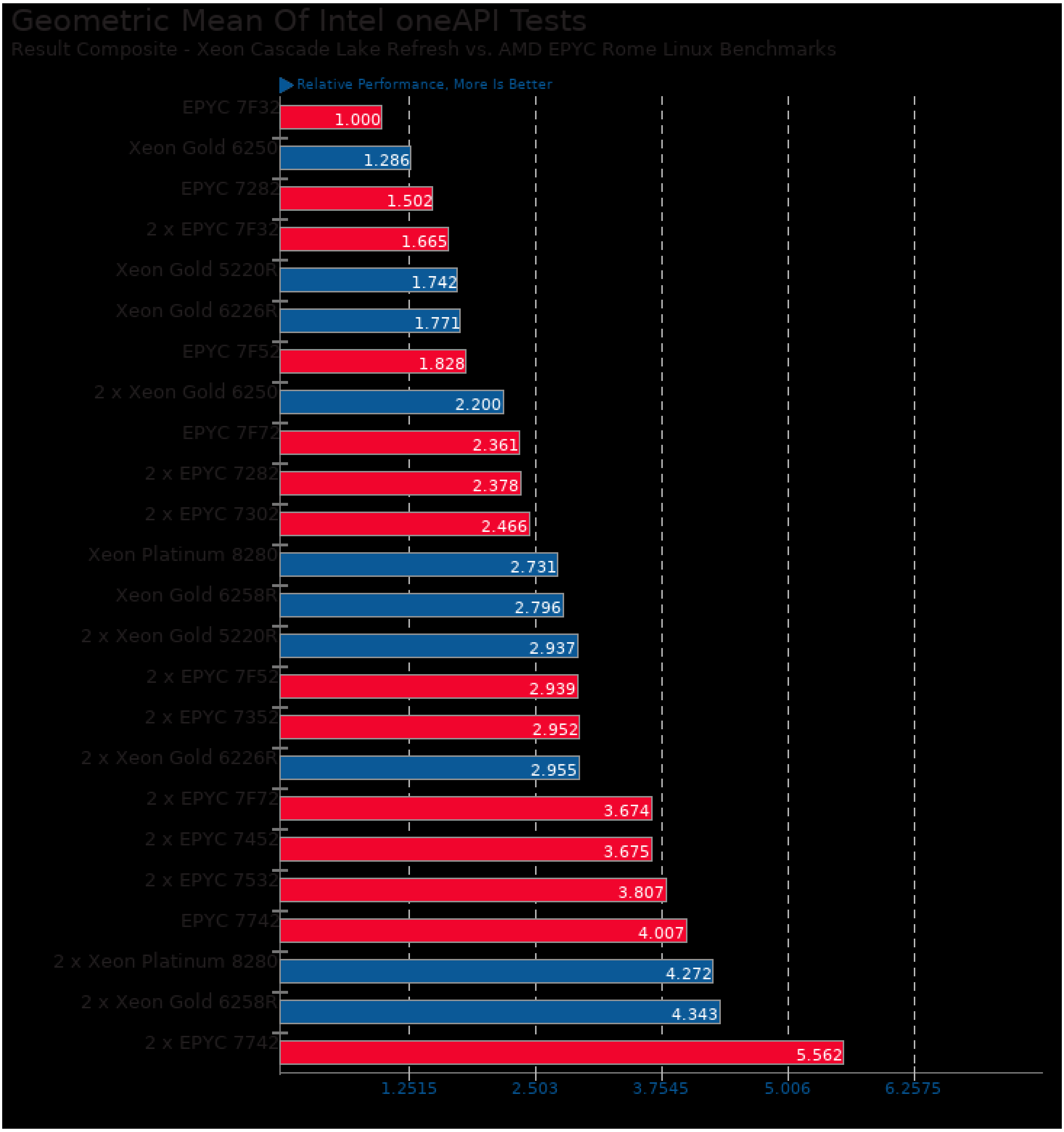
Geometric mean based upon tests: pts/namd and pts/lammps



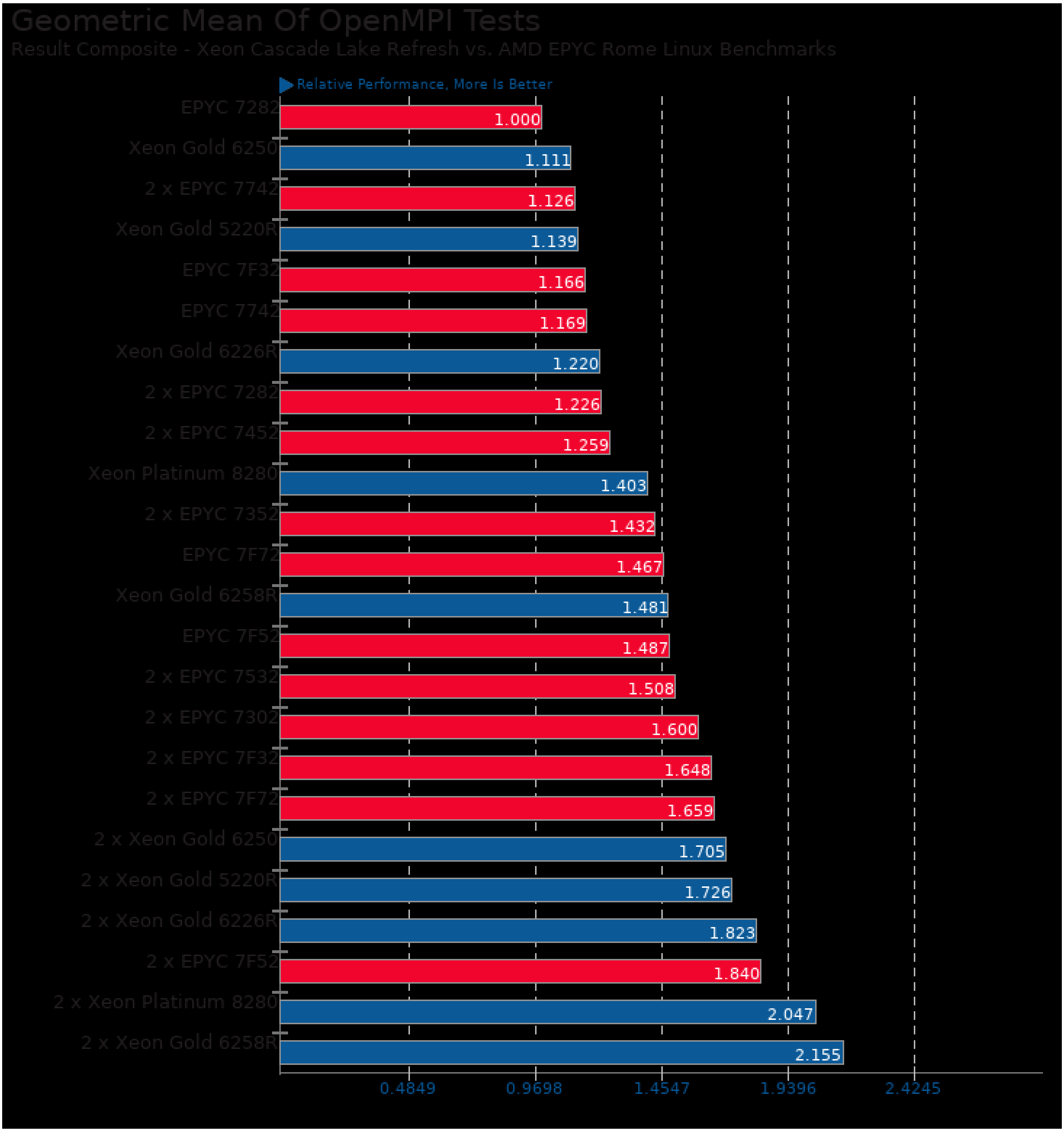
Geometric mean based upon tests: pts/lammps, pts/hpcg and pts/mrbayes



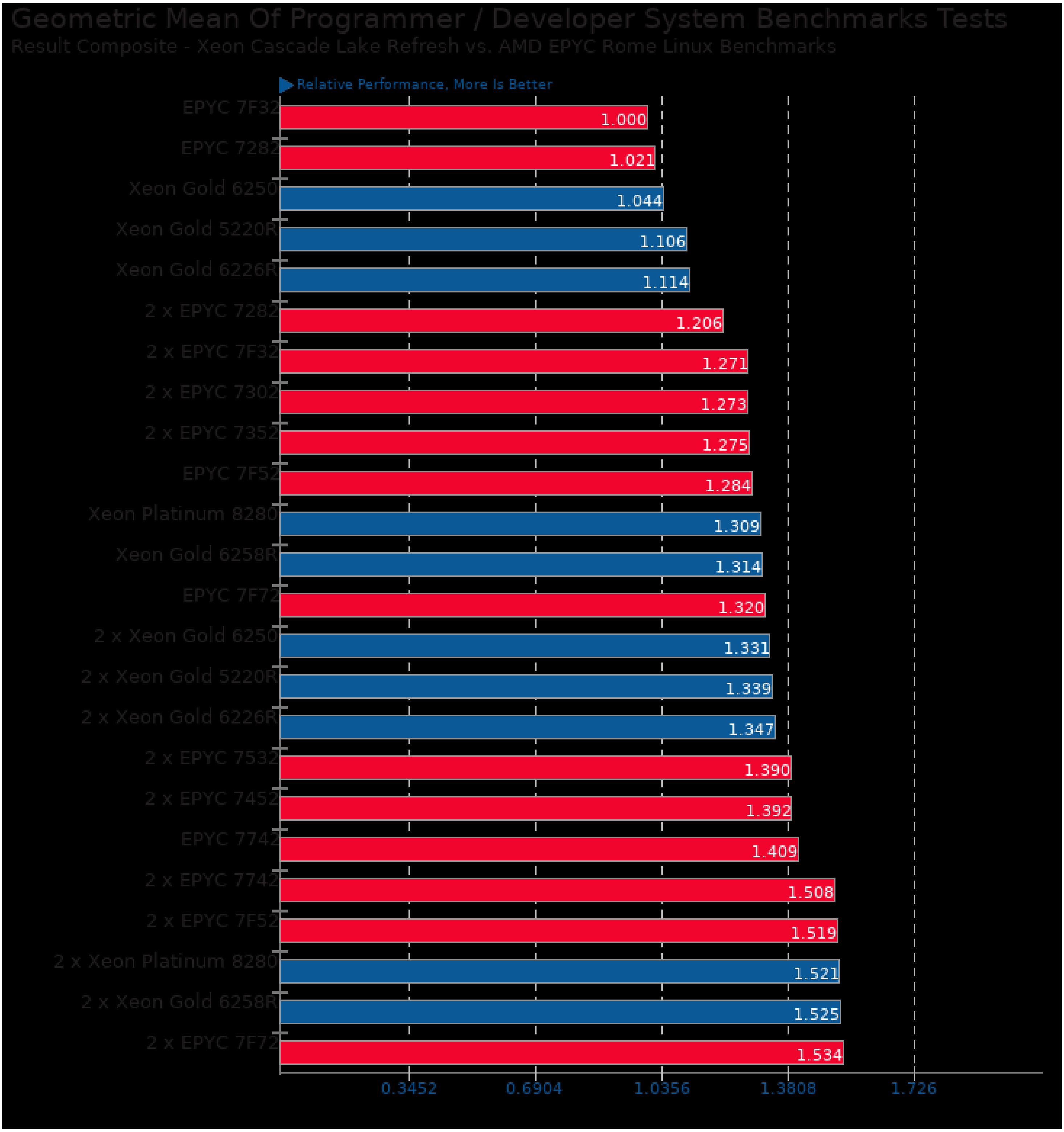
Geometric mean based upon tests: pts/luxcorerender, pts/v-ray and pts/blender



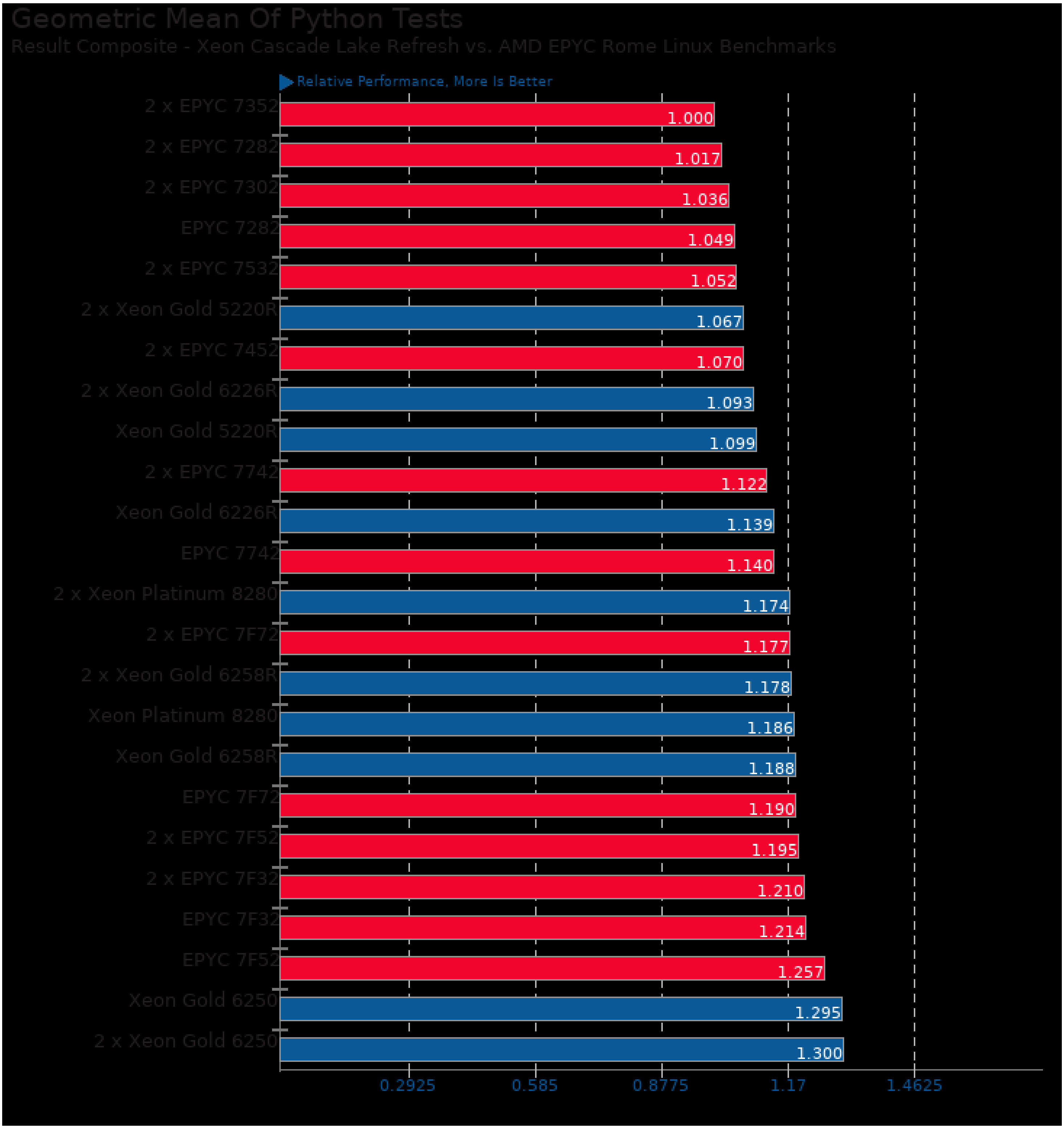
Geometric mean based upon tests: pts/embree, pts/oidn, pts/ospray, pts/tungsten and pts/openvkl



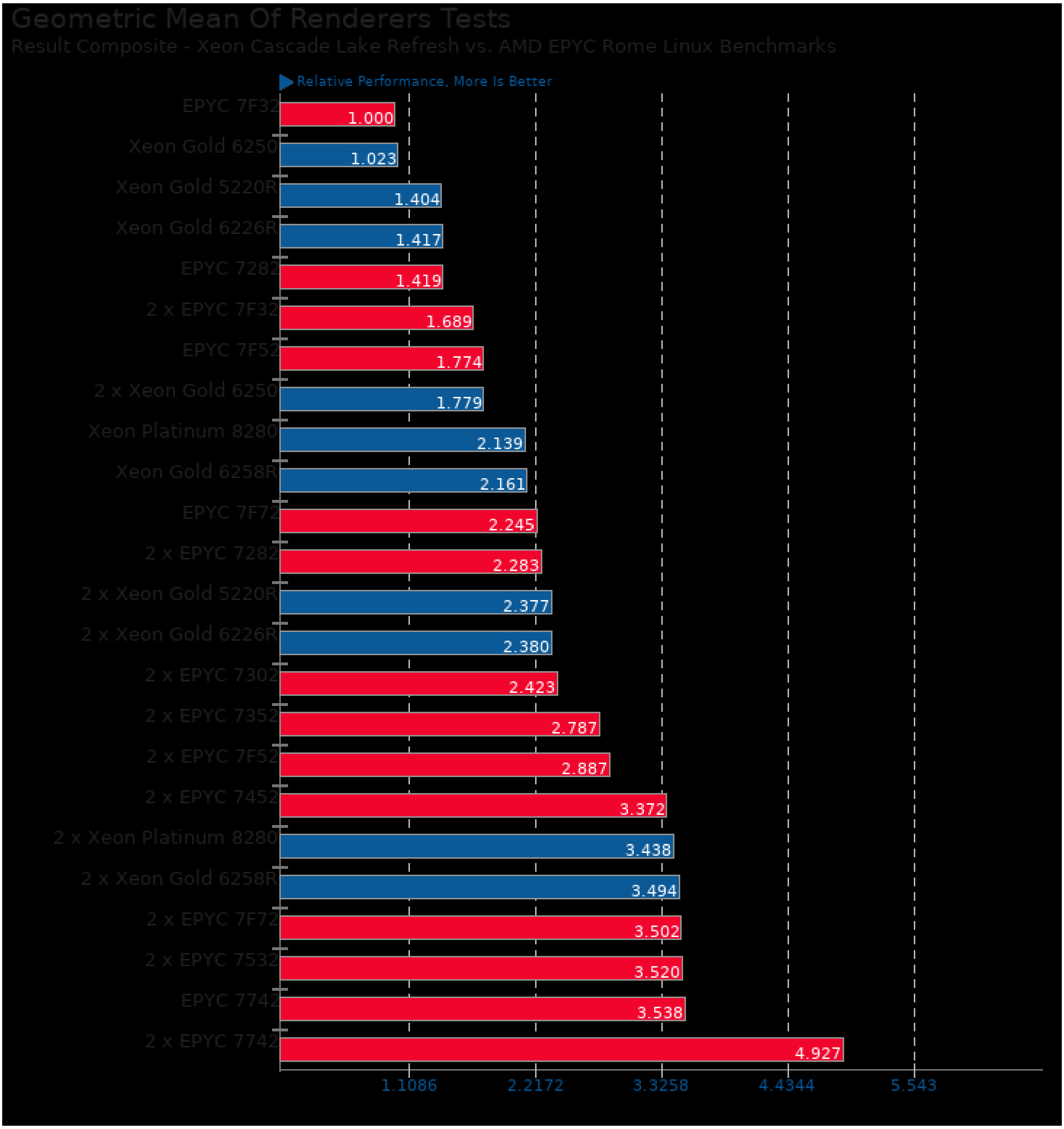
Geometric mean based upon tests: pts/hpcg, pts/mrbayes and pts/lammps



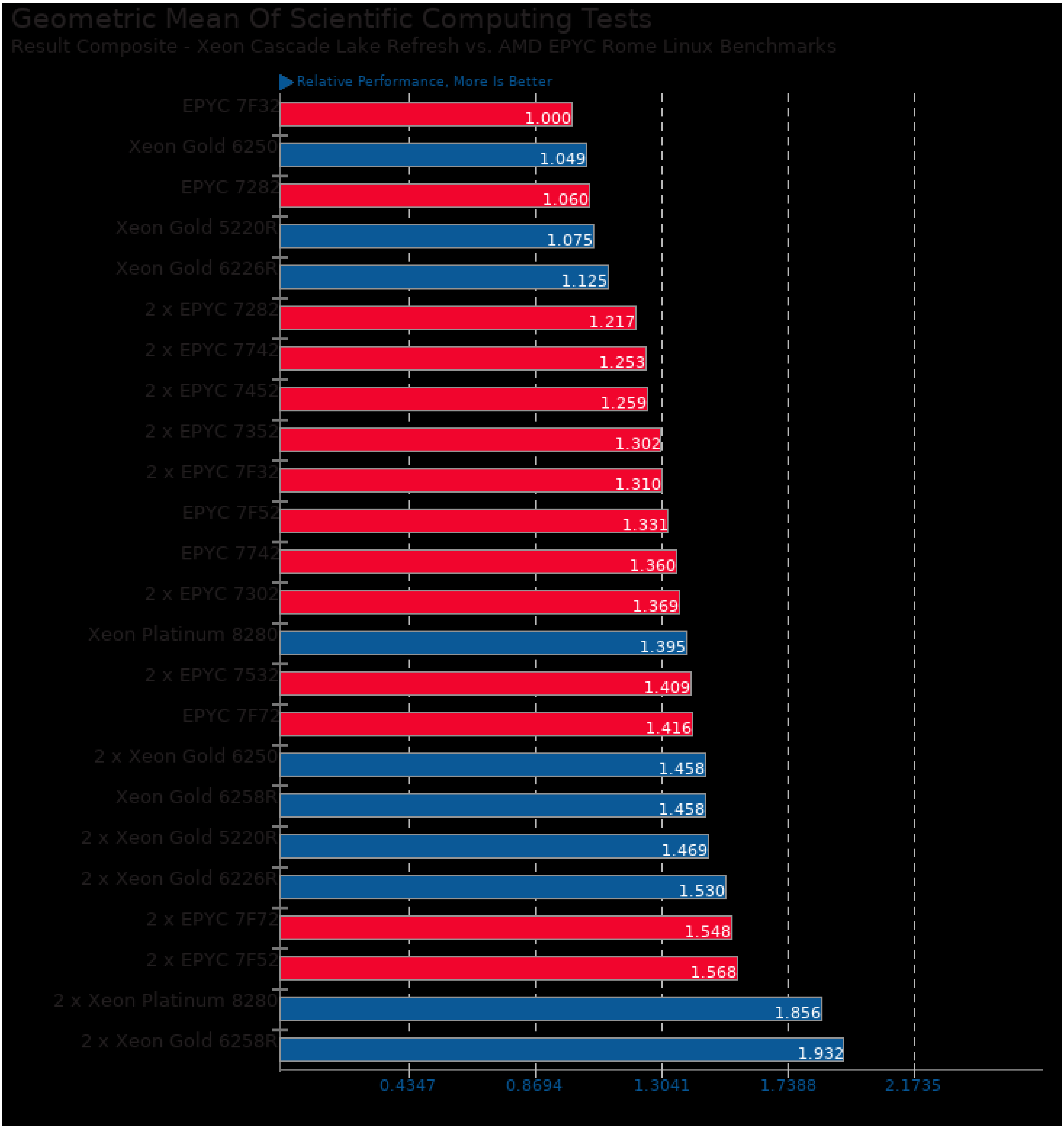
Geometric mean based upon tests: pts/pyperformance, pts/pybench, pts/build-linux-kernel, pts/build-llvm and pts/build2



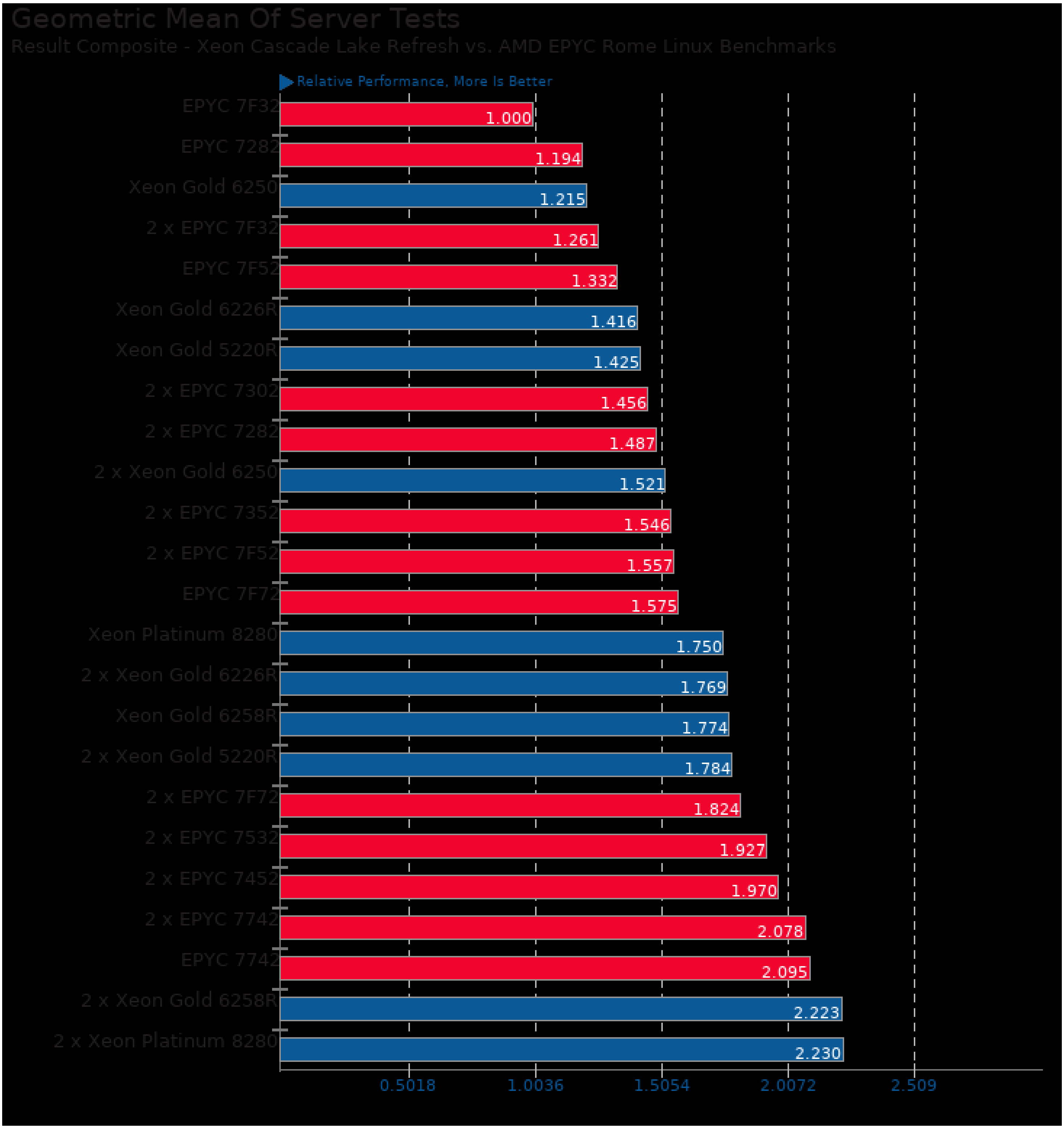
Geometric mean based upon tests: pts/pybench, pts/numpy, pts/mlpack, pts/scikit-learn and pts/pyperformance



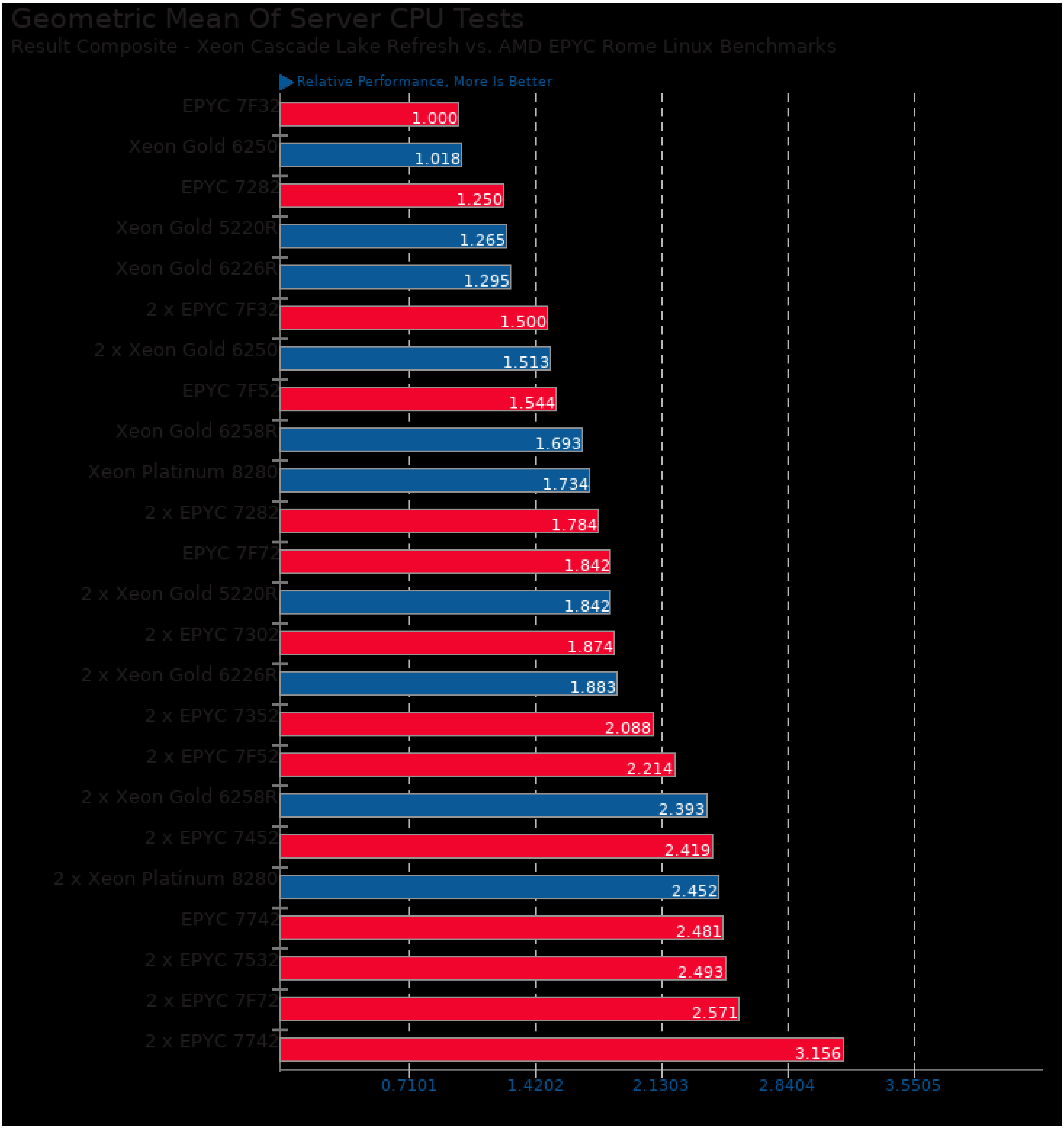
Geometric mean based upon tests: pts/ospray, pts/blender, pts/tungsten, pts/appleseed, pts/radiance, pts/luxcorerender and pts/v-ray



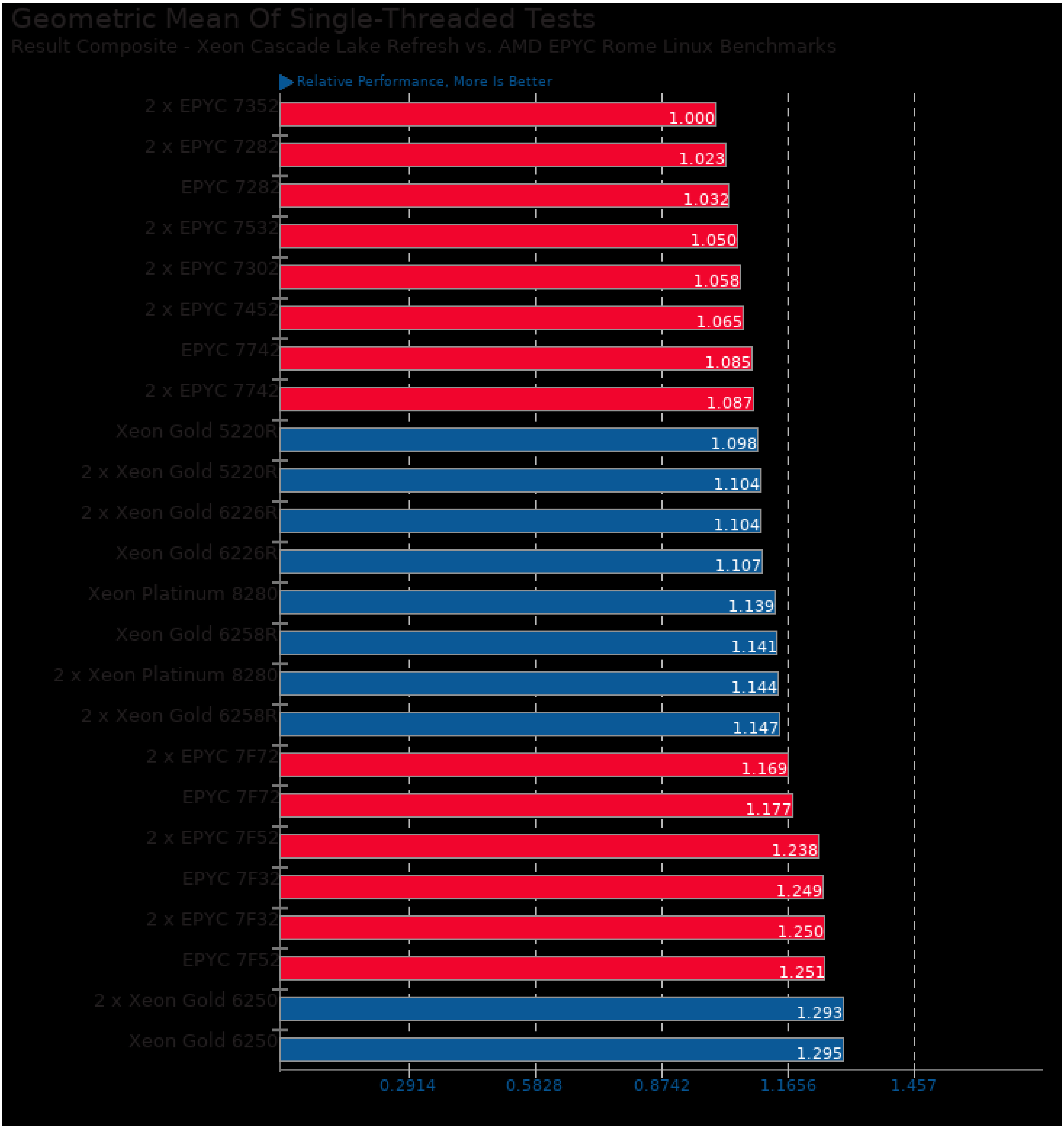
Geometric mean based upon tests: pts/namd, pts/lammps, pts/himeno and pts/mrbayes



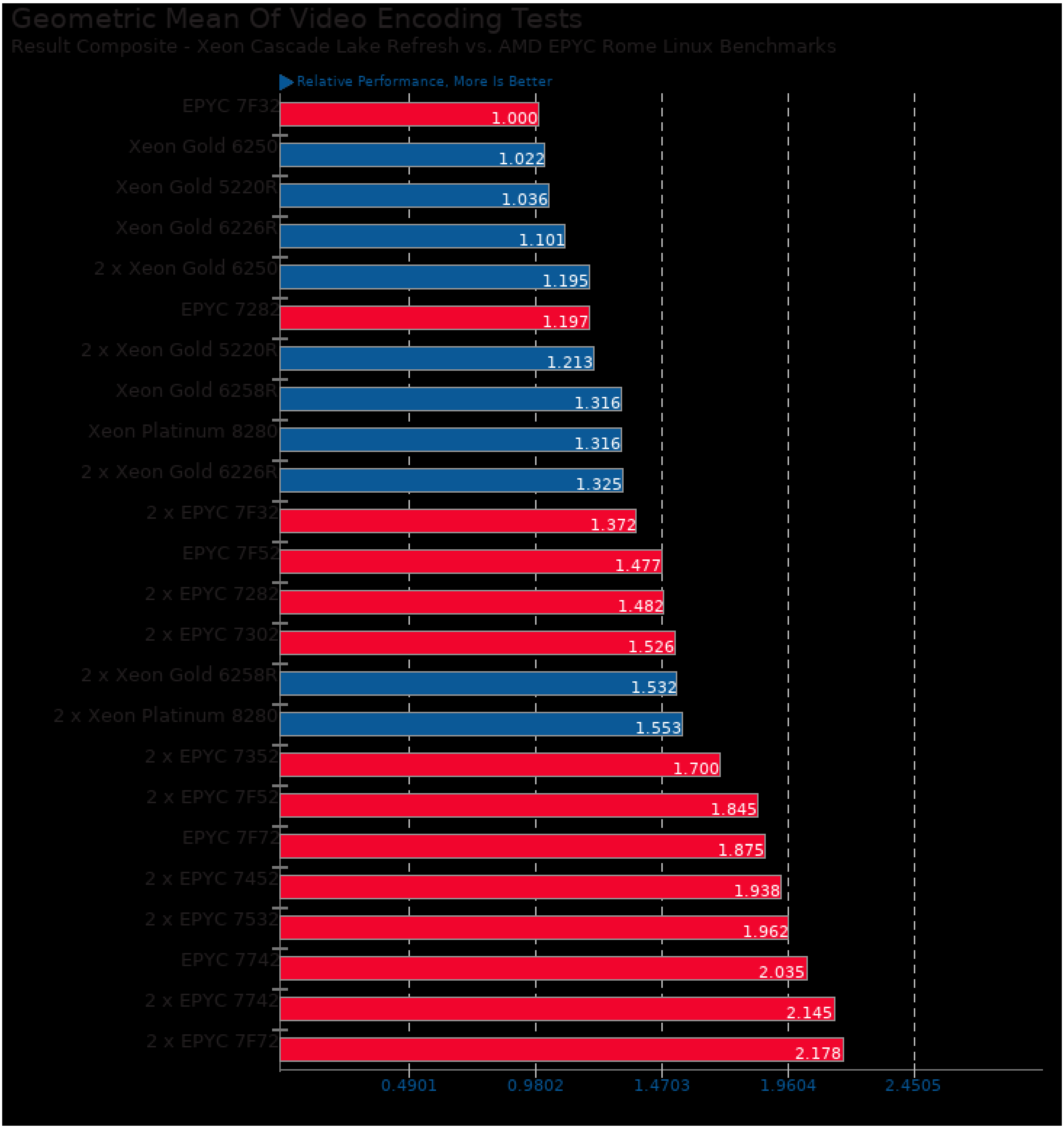
Geometric mean based upon tests: pts/pgbench and pts/phpbench



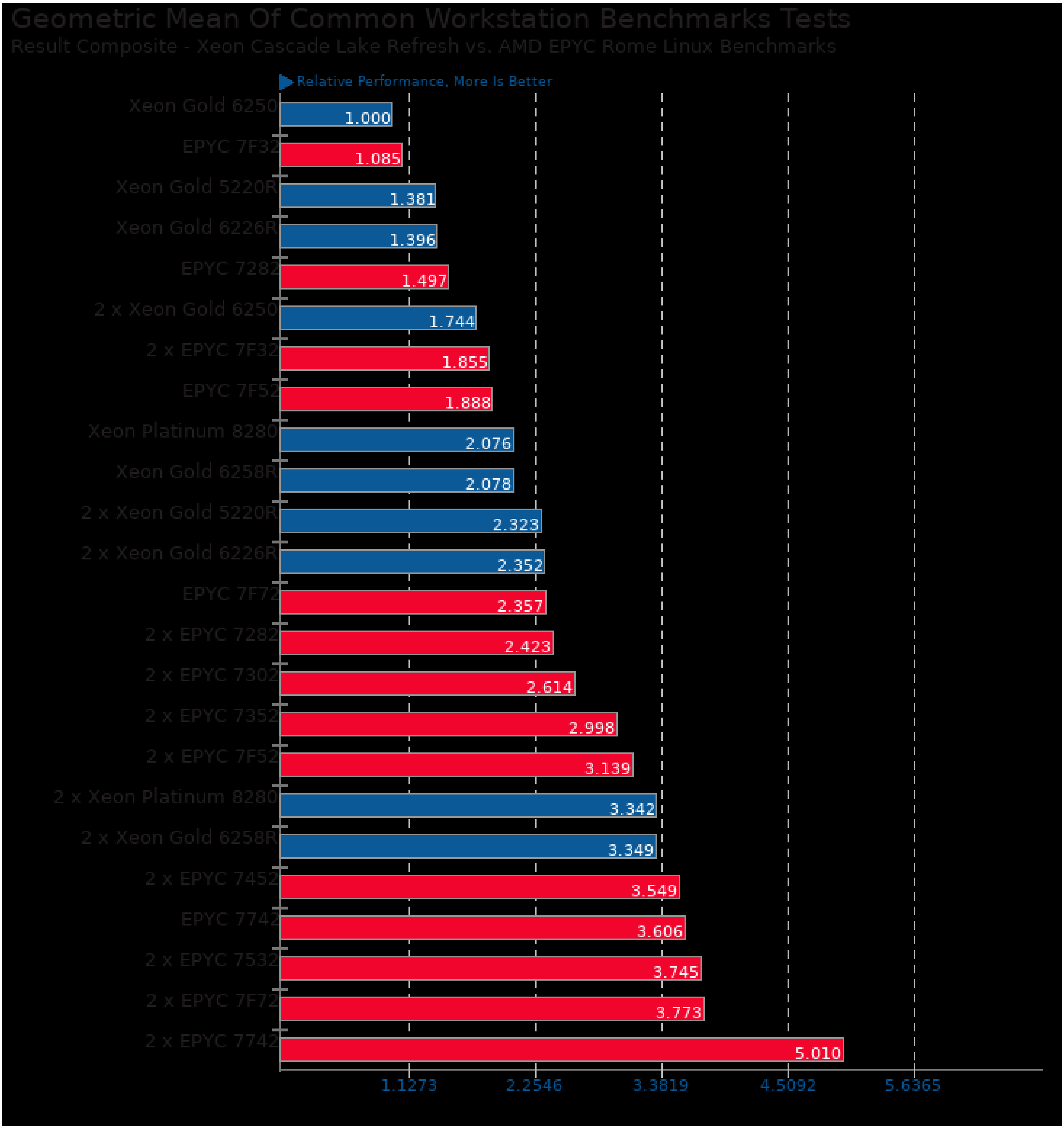
Geometric mean based upon tests: pts/namd, pts/john-the-ripper, pts/svt-av1, pts/dav1d, pts/himeno, pts/stockfish, pts/asmfish, pts/build-linux-kernel, pts/build-llvm, pts/radiance, pts/blender, pts/appleseed, pts/pybench, pts/numpy, pts/phpbench and pts/scikit-learn



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



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



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

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