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AMD EPYC 7302 / 7402 / 7502 / 7742 2P vs. Xeon Benchmarks

EL7 running kernel-lt 5.4

Automated Executive Summary

EPYC 7742 2P had the most wins, coming in first place for 74% of the tests.

Based on the geometric mean of all complete results, the fastest (EPYC 7742 2P) was 20.226x the speed of the slowest (6272 ES 2P - 20200209).

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

MKL-DNN (Harness: Convolution Batch conv_googlenet_v3 - Data Type: f32) at 326.769x
MKL-DNN (Harness: Convolution Batch conv_all - Data Type: f32) at 311.708x
MKL-DNN (Harness: Convolution Batch conv_alexnet - Data Type: f32) at 299.053x
MKL-DNN (Harness: Convolution Batch conv_3d - Data Type: f32) at 289.809x
MKL-DNN (Performance / Cost - Harness: IP Batch All - Data Type: f32) at 53.725x
SVT-HEVC (1080p 8-bit YUV To HEVC Video Encode) at 42.976x
MKL-DNN (Harness: IP Batch All - Data Type: f32) at 35.622x
SVT-VP9 (Performance / Cost - 1080p 8-bit YUV To VP9 Video Encode) at 26x
SVT-HEVC (Performance / Cost - 1080p 8-bit YUV To HEVC Video Encode) at 24x
PyBench (Performance / Cost - Total For Average Test Times) at 22.453x.

Test Systems:

EPYC 7251

Processor: AMD EPYC 7251 8-Core @ 2.10GHz (8 Cores / 16 Threads), Motherboard: TYAN B8026T70AE24HR (V1.02.B10 BIOS), Chipset: AMD 17h, Memory: 129024MB, Disk: 280GB INTEL SSDPE21D280GA, Graphics: llvmpipe 126GB, Monitor: VE228, Network: 2 x Broadcom NetXtreme BCM5720 PCIe

OS: Ubuntu 19.04, Kernel: 5.3.0-999-generic (x86_64) 20190907, Desktop: GNOME Shell 3.32.2, Display Server: X Server 1.20.4, Display Driver: modesetting 1.20.4, OpenGL: 3.3 Mesa 19.0.8 (LLVM 8.0 128 bits), Compiler: GCC 8.3.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: acpi-cpufreq ondemand
Java Notes: OpenJDK Runtime Environment (build 11.0.4+11-post-Ubuntu-1ubuntu219.04)
Python Notes: Python 2.7.16 + Python 3.7.3
Security Notes: 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 STIBP: disabled RSB filling

EPYC 7401P

Processor: AMD EPYC 7401P 24-Core @ 2.00GHz (24 Cores / 48 Threads), Motherboard: TYAN B8026T70AE24HR (V1.02.B10 BIOS), Chipset: AMD 17h, Memory: 129024MB, Disk: 280GB INTEL SSDPE21D280GA, Graphics: llvmpipe 126GB, Monitor: VE228, Network: 2 x Broadcom NetXtreme BCM5720 PCIe

OS: Ubuntu 19.04, Kernel: 5.3.0-999-generic (x86_64) 20190907, Desktop: GNOME Shell 3.32.2, Display Server: X Server 1.20.4, Display Driver: modesetting 1.20.4, OpenGL: 3.3 Mesa 19.0.8 (LLVM 8.0 128 bits), Compiler: GCC 8.3.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: acpi-cpufreq ondemand
Java Notes: OpenJDK Runtime Environment (build 11.0.4+11-post-Ubuntu-1ubuntu219.04)
Python Notes: Python 2.7.16 + Python 3.7.3
Security Notes: 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 STIBP: disabled RSB filling

EPYC 7601

Processor: AMD EPYC 7601 32-Core @ 2.20GHz (32 Cores / 64 Threads), Motherboard: TYAN B8026T70AE24HR (V1.02.B10 BIOS), Chipset: AMD 17h, Memory: 129024MB, Disk: 280GB INTEL SSDPE21D280GA, Graphics: llvmpipe 126GB, Monitor: VE228, Network: 2 x Broadcom NetXtreme BCM5720 PCIe

OS: Ubuntu 19.04, Kernel: 5.3.0-999-generic (x86_64) 20190907, Desktop: GNOME Shell 3.32.2, Display Server: X Server 1.20.4, Display Driver: modesetting 1.20.4, OpenGL: 3.3 Mesa 19.0.8 (LLVM 8.0 128 bits), Compiler: GCC 8.3.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: acpi-cpufreq ondemand

Java Notes: OpenJDK Runtime Environment (build 11.0.4+11-post-Ubuntu-1ubuntu219.04)
Python Notes: Python 2.7.16 + Python 3.7.3
Security Notes: 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 STIBP: disabled RSB filling

EPYC 7601 2P

Processor: 2 x AMD EPYC 7601 32-Core (64 Cores / 128 Threads), Motherboard: Dell 02MJ3T (1.2.5 BIOS), Chipset: AMD 17h, Memory: 516096MB, Disk: 280GB INTEL SSDPED1D280GA + 17 x 500GB Samsung SSD 860 + 120GB SSDSCKJB120G7R, Graphics: llvmpipe 504GB, Monitor: VE228, Network: 2 x Broadcom BCM57416 NetXtreme-E Dual-Media 10G RDMA + 2 x Broadcom NetXtreme BCM5720 PCIe

OS: Ubuntu 19.04, Kernel: 5.3.0-999-generic (x86_64) 20190907, Desktop: GNOME Shell 3.32.1, Display Server: X Server 1.20.4, Display Driver: modesetting 1.20.4, OpenGL: 3.3 Mesa 19.0.2 (LLVM 8.0 128 bits), Compiler: GCC 8.3.0, File-System: ext4, Screen Resolution: 1600x1200

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib --with-tune=generic --without-cuda-driver -v
Java Notes: OpenJDK Runtime Environment (build 11.0.4+11-post-Ubuntu-1ubuntu219.04)
Python Notes: Python 2.7.16 + Python 3.7.3
Security Notes: 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 STIBP: disabled RSB filling

EPYC 7302

Processor: AMD EPYC 7302 16-Core @ 3.00GHz (16 Cores / 32 Threads), Motherboard: AMD DAYTONA_X (RDY1001C BIOS), Chipset: AMD Device 1480, Memory: 258048MB, Disk: 280GB INTEL SSDPE21D280GA + 256GB Micron_1100_MTFD, Graphics: llvmpipe 252GB, Monitor: VE228, Network: 2 x Mellanox MT27710

OS: Ubuntu 19.04, Kernel: 5.3.0-999-generic (x86_64) 20190907, Desktop: GNOME Shell 3.32.2, Display Server: X Server 1.20.4, Display Driver: modesetting 1.20.4, OpenGL: 3.3 Mesa 19.0.8 (LLVM 8.0 128 bits), Compiler: GCC 8.3.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: acpi-cpufreq ondemand
Java Notes: OpenJDK Runtime Environment (build 11.0.4+11-post-Ubuntu-1ubuntu219.04)
Python Notes: Python 2.7.16 + Python 3.7.3
Security Notes: 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

EPYC 7302 2P

Processor: 2 x AMD EPYC 7302 16-Core @ 3.00GHz (32 Cores / 64 Threads), Motherboard: AMD DAYTONA_X (RDY1001C BIOS), Chipset: AMD Device 1480, Memory: 516096MB, Disk: 280GB INTEL SSDPED1D280GA + 280GB INTEL SSDPE21D280GA + 256GB Micron_1100_MTFD, Graphics: llvmpipe 504GB, Monitor: VE228, Network: 2 x Mellanox MT27710

OS: Ubuntu 19.04, Kernel: 5.3.0-999-generic (x86_64) 20190907, Desktop: GNOME Shell 3.32.2, Display Server: X Server 1.20.4, Display Driver: modesetting 1.20.4, OpenGL: 3.3 Mesa 19.0.8 (LLVM 8.0 128 bits), Compiler: GCC 8.3.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-default-pie

--enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: acpi-cpufreq ondemand
Java Notes: OpenJDK Runtime Environment (build 11.0.4+11-post-Ubuntu-1ubuntu219.04)
Python Notes: Python 2.7.16 + Python 3.7.3
Security Notes: 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

EPYC 7402

Processor: AMD EPYC 7402 24-Core @ 2.80GHz (24 Cores / 48 Threads), Motherboard: AMD DAYTONA_X (RDY1001C BIOS), Chipset: AMD Device 1480, Memory: 258048MB, Disk: 280GB INTEL SSDPE21D280GA + 256GB Micron_1100_MTFD, Graphics: llvmpipe 252GB, Monitor: VE228, Network: 2 x Mellanox MT27710

OS: Ubuntu 19.04, Kernel: 5.3.0-999-generic (x86_64) 20190907, Desktop: GNOME Shell 3.32.2, Display Server: X Server 1.20.4, Display Driver: modesetting 1.20.4, OpenGL: 3.3 Mesa 19.0.8 (LLVM 8.0 128 bits), Compiler: GCC 8.3.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: acpi-cpufreq ondemand
Java Notes: OpenJDK Runtime Environment (build 11.0.4+11-post-Ubuntu-1ubuntu219.04)
Python Notes: Python 2.7.16 + Python 3.7.3
Security Notes: 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

EPYC 7402 2P

Processor: 2 x AMD EPYC 7402 24-Core @ 2.80GHz (48 Cores / 96 Threads), Motherboard: AMD DAYTONA_X (RDY1001C BIOS), Chipset: AMD Device 1480, Memory: 516096MB, Disk: 280GB INTEL SSDPED1D280GA + 280GB INTEL SSDPE21D280GA + 256GB Micron_1100_MTFD, Graphics: llvmpipe 504GB, Monitor: VE228, Network: 2 x Mellanox MT27710

OS: Ubuntu 19.04, Kernel: 5.3.0-999-generic (x86_64) 20190907, Desktop: GNOME Shell 3.32.2, Display Server: X Server 1.20.4, Display Driver: modesetting 1.20.4, OpenGL: 3.3 Mesa 19.0.8 (LLVM 8.0 128 bits), Compiler: GCC 8.3.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: acpi-cpufreq ondemand
Java Notes: OpenJDK Runtime Environment (build 11.0.4+11-post-Ubuntu-1ubuntu219.04)
Python Notes: Python 2.7.16 + Python 3.7.3
Security Notes: 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

EPYC 7502

Processor: AMD EPYC 7502 32-Core @ 2.50GHz (32 Cores / 64 Threads), Motherboard: AMD DAYTONA_X (RDY1001C BIOS), Chipset: AMD Device 1480, Memory: 258048MB, Disk: 280GB INTEL SSDPE21D280GA + 256GB Micron_1100_MTFD, Graphics: llvmpipe 252GB, Monitor: VE228, Network: 2 x Mellanox MT27710

OS: Ubuntu 19.04, Kernel: 5.3.0-999-generic (x86_64) 20190907, Desktop: GNOME Shell 3.32.2, Display Server: X

Server 1.20.4, Display Driver: modesetting 1.20.4, OpenGL: 3.3 Mesa 19.0.8 (LLVM 8.0 128 bits), Compiler: GCC 8.3.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: acpi-cpufreq ondemand
Java Notes: OpenJDK Runtime Environment (build 11.0.4+11-post-Ubuntu-1ubuntu219.04)
Python Notes: Python 2.7.16 + Python 3.7.3
Security Notes: 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

EPYC 7502 2P

Processor: 2 x AMD EPYC 7502 32-Core @ 2.50GHz (64 Cores / 128 Threads), Motherboard: AMD DAYTONA_X (RDY1001C BIOS), Chipset: AMD Device 1480, Memory: 516096MB, Disk: 280GB INTEL SSDPE21D280GA + 280GB INTEL SSDPED1D280GA + 256GB Micron_1100_MTFD, Graphics: llvmpipe 504GB, Monitor: VE228, Network: 2 x Mellanox MT27710

OS: Ubuntu 19.04, Kernel: 5.3.0-999-generic (x86_64) 20190907, Desktop: GNOME Shell 3.32.2, Display Server: X Server 1.20.4, Display Driver: modesetting 1.20.4, OpenGL: 3.3 Mesa 19.0.8 (LLVM 8.0 128 bits), Compiler: GCC 8.3.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: acpi-cpufreq ondemand
Java Notes: OpenJDK Runtime Environment (build 11.0.4+11-post-Ubuntu-1ubuntu219.04)
Python Notes: Python 2.7.16 + Python 3.7.3
Security Notes: 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

EPYC 7742

Processor: AMD EPYC 7742 64-Core @ 2.25GHz (64 Cores / 128 Threads), Motherboard: AMD DAYTONA_X (RDY1001C BIOS), Chipset: AMD Device 1480, Memory: 258048MB, Disk: 280GB INTEL SSDPE21D280GA + 256GB Micron_1100_MTFD, Graphics: llvmpipe 252GB, Monitor: VE228, Network: 2 x Mellanox MT27710

OS: Ubuntu 19.04, Kernel: 5.3.0-999-generic (x86_64) 20190907, Desktop: GNOME Shell 3.32.2, Display Server: X Server 1.20.4, Display Driver: modesetting 1.20.4, OpenGL: 3.3 Mesa 19.0.8 (LLVM 8.0 128 bits), Compiler: GCC 8.3.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: acpi-cpufreq ondemand
Java Notes: OpenJDK Runtime Environment (build 11.0.4+11-post-Ubuntu-1ubuntu219.04)
Python Notes: Python 2.7.16 + Python 3.7.3
Security Notes: 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

EPYC 7742 2P

Processor: 2 x AMD EPYC 7742 64-Core @ 2.25GHz (128 Cores / 256 Threads), Motherboard: AMD DAYTONA_X

(RDY1001C BIOS), Chipset: AMD Device 1480, Memory: 516096MB, Disk: 280GB INTEL SSDPE21D280GA, Graphics: llvmpipe 504GB, Monitor: VE228, Network: 2 x Mellanox MT27710

OS: Ubuntu 19.04, Kernel: 5.3.0-999-generic (x86_64) 20190907, Desktop: GNOME Shell 3.32.2, Display Server: X Server 1.20.4, Display Driver: modesetting 1.20.4, OpenGL: 3.3 Mesa 19.0.8 (LLVM 8.0 128 bits), Compiler: GCC 8.3.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: acpi-cpufreq ondemand
Java Notes: OpenJDK Runtime Environment (build 11.0.4+11-post-Ubuntu-1ubuntu219.04)
Python Notes: Python 2.7.16 + Python 3.7.3
Security Notes: 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

Xeon Gold 6138

Processor: Intel Xeon Gold 6138 @ 3.70GHz (20 Cores / 40 Threads), Motherboard: TYAN S7106 (V2.00.B20 BIOS), Chipset: Intel Sky Lake-E DMI3 Registers, Memory: 47104MB, Disk: 280GB INTEL SSDPE21D280GA, Graphics: llvmpipe 46GB, Monitor: VE228, Network: 2 x Intel I210 + 2 x QLogic cLOM8214 1/10GbE

OS: Ubuntu 19.04, Kernel: 5.3.0-999-generic (x86_64) 20190907, Desktop: GNOME Shell 3.32.2, Display Server: X Server 1.20.4, Display Driver: modesetting 1.20.4, OpenGL: 3.3 Mesa 19.0.8 (LLVM 8.0 256 bits), Compiler: GCC 8.3.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: intel_pstate powersave
Python Notes: Python 2.7.16 + Python 3.7.3
Security Notes: l1tf: Mitigation of PTE Inversion; VMX: conditional cache flushes SMT vulnerable + mds: Mitigation of Clear buffers; SMT vulnerable + meltdown: Mitigation of PTI + 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 generic retpoline IBPB: conditional IBRS_FW STIBP: conditional RSB filling

2 x Xeon Gold 6138

Processor: 2 x Intel Xeon Gold 6138 @ 3.70GHz (40 Cores / 80 Threads), Motherboard: TYAN S7106 (V2.00.B20 BIOS), Chipset: Intel Sky Lake-E DMI3 Registers, Memory: 96256MB, Disk: 280GB INTEL SSDPE21D280GA, Graphics: llvmpipe 93GB, Monitor: VE228, Network: 2 x Intel I210 + 2 x QLogic cLOM8214 1/10GbE

OS: Ubuntu 19.04, Kernel: 5.3.0-999-generic (x86_64) 20190907, Desktop: GNOME Shell 3.32.2, Display Server: X Server 1.20.4, Display Driver: modesetting 1.20.4, OpenGL: 3.3 Mesa 19.0.8 (LLVM 8.0 256 bits), Compiler: GCC 8.3.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: intel_pstate powersave
Python Notes: Python 2.7.16 + Python 3.7.3
Security Notes: l1tf: Mitigation of PTE Inversion; VMX: conditional cache flushes SMT vulnerable + mds: Mitigation of Clear buffers; SMT vulnerable + meltdown: Mitigation of PTI + 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 generic retpoline IBPB: conditional IBRS_FW STIBP: conditional RSB filling

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: 192512MB, Disk: 280GB INTEL SSDPED1D280GA, Graphics: llvmpipe 188GB, Monitor: VE228, Network: 2 x Intel X722 for 1GbE + 2 x QLogic FastLinQ QL41000 10/25/40/50GbE

OS: Ubuntu 19.04, Kernel: 5.3.0-999-generic (x86_64) 20190907, Desktop: GNOME Shell 3.32.2, Display Server: X Server 1.20.4, Display Driver: modesetting 1.20.4, OpenGL: 3.3 Mesa 19.0.8 (LLVM 8.0 256 bits), Compiler: GCC 8.3.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: intel_pstate powersave
Java Notes: OpenJDK Runtime Environment (build 11.0.4+11-post-Ubuntu-1ubuntu219.04)
Python Notes: Python 2.7.16 + Python 3.7.3
Security Notes: 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

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: 386048MB, Disk: 280GB INTEL SSDPED1D280GA, Graphics: llvmpipe 377GB, Monitor: VE228, Network: 2 x Intel X722 for 1GbE + 2 x QLogic FastLinQ QL41000 10/25/40/50GbE

OS: Ubuntu 19.04, Kernel: 5.3.0-999-generic (x86_64) 20190907, Desktop: GNOME Shell 3.32.0, Display Server: X Server 1.20.4, Display Driver: modesetting 1.20.4, OpenGL: 3.3 Mesa 19.0.8 (LLVM 8.0 256 bits), Compiler: GCC 8.3.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: intel_pstate powersave
Java Notes: OpenJDK Runtime Environment (build 11.0.4+11-post-Ubuntu-1ubuntu219.04)
Python Notes: Python 2.7.16 + Python 3.7.3
Security Notes: 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

W3175X 3.4ghz lock

Processor: Intel Xeon W-3175X @ 3.40GHz (28 Cores / 56 Threads), Motherboard: ASUS ROG DOMINUS EXTREME (0509 BIOS), Chipset: Intel Sky Lake-E DMI3 Registers, Memory: 97280MB, Disk: 4 x 400GB KXG50ZNV512G TOSHIBA, Graphics: AMD Radeon RX 470/480/570/570X/580/580X/590 8GB (1380/2000MHz), Audio: Realtek ALC1220, Monitor: 289K, Network: Intel I219-LM

OS: Fedora 30, Kernel: 5.2.6-200.fc30.x86_64 (x86_64), Desktop: GNOME Shell 3.32.2, Display Server: X Server + Wayland, OpenGL: 4.5 Mesa 19.1.3 (LLVM 8.0.0), Compiler: GCC 9.2.1 20190827, File-System: ext4, Screen Resolution: 3840x2160

Compiler Notes: --build=x86_64-redhat-linux --disable-libunwind-exceptions --enable-__cxa_atexit --enable-bootstrap --enable-cet --enable-checking=release --enable-gnu-indirect-function --enable-gnu-unique-object --enable-initfini-array --enable-languages=c,c++,fortran,objc,obj-c++,ada,go,d,lto --enable-multilib --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --mandir=/usr/share/man --with-arch_32=i686 --with-gcc-major-version-only --with-isl --with-linker-hash-style=gnu --with-tune=generic --without-cuda-driver
Processor Notes: Scaling Governor: intel_pstate performance
Python Notes: Python 2.7.16 + Python 3.7.4
Security Notes: SELinux + KPTI + __user pointer sanitization + Full generic retpoline IBPB: conditional IBRS_FW STIBP: conditional RSB filling + SSB disabled via prctl and seccomp + PTE Inversion

6272 ES 2P - 20200209

Processor: 2 x AMD Eng Sample ZS222445TGG44_32/22/2_2/16 (16 Cores / 32 Threads), Motherboard: Supermicro H8DG6/H8DGi v1.0 (3.5c BIOS), Chipset: AMD RD890 + SB7x0/SB8x0/SB9x0, Memory: 120GB, Disk: 40008GB Seagate ST8000NM-VOL#001 + 256GB SSD RAID 1, Graphics: NVIDIA GeForce GTX 1080 8GB (1708/5005MHz), Audio: NVIDIA GP104 HD Audio, Network: 2 x Intel 82576

OS: Gentoo/Linux, Kernel: 4.19.66-gentoo (x86_64), Desktop: KDE Plasma 5.17.4, Display Server: X Server 1.20.6, Display Driver: NVIDIA 440.44, OpenGL: 4.6.0, Compiler: GCC 9.2.0, File-System: ext4, Screen Resolution: 1920x1200

Compiler Notes: --bindir=/usr/x86_64-pc-linux-gnu/gcc-bin/9.2.0 --build=x86_64-pc-linux-gnu --datadir=/usr/share/gcc-data/x86_64-pc-linux-gnu/9.2.0 --disable-altivec --disable-esp --disable-fixed-point --disable-libmudflap --disable-libssp --disable-systemtap --disable-werror --enable-__cxa_atexit --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-default-ssp --enable-languages=c,c++,fortran --enable-libgomp --enable-libstdcxx-time --enable-lto --enable-multilib --enable-nls --enable-obsolete --enable-secureplt --enable-shared --enable-targets=all --enable-threads=posix --enable-vtable-verify --host=x86_64-pc-linux-gnu --includedir=/usr/lib/gcc/x86_64-pc-linux-gnu/9.2.0/include --mandir=/usr/share/gcc-data/x86_64-pc-linux-gnu/9.2.0/man --with-multilib-list=m32,m64 --with-python-dir=/share/gcc-data/x86_64-pc-linux-gnu/9.2.0/python --without-isl
Processor Notes: CPU Microcode: 0x6000425
OpenCL Notes: GPU Compute Cores: 2560
Python Notes: Python 3.6.9
Security Notes: 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 STIBP: disabled RSB filling

Threadripper 3960x

Processor: AMD Ryzen Threadripper 3960X 24-Core @ 3.80GHz (24 Cores / 48 Threads), Motherboard: Gigabyte TRX40 AORUS XTREME (F2 BIOS), Chipset: AMD Device 1480, Memory: 129024MB, Disk: 1000GB Sabrent Rocket 4.0 1TB + 380GB INTEL SSDPEL1D380GA, Graphics: AMD Radeon Frontier Edition 16GB (1600/945MHz), Audio: AMD Device aaf8, Monitor: U32J59x, Network: 2 x Intel 10G X550T + Intel Device 2723

OS: Ubuntu 18.04, Kernel: 5.3.0-28-generic (x86_64), Desktop: GNOME Shell 3.28.4, Display Server: X Server 1.20.5, Display Driver: amdgpu 19.0.1, OpenGL: 4.5 Mesa 19.2.8 (LLVM 9.0.0), Compiler: GCC 7.4.0, File-System: ext4, Screen Resolution: 3840x2160

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: acpi-cpufreq ondemand - CPU Microcode: 0x8301025
Python Notes: Python 2.7.17 + Python 3.6.9
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 STIBP: conditional RSB filling + tsx_async_abort: Not affected

g36 5.6 EPYC 7302 2P

Processor: 2 x AMD EPYC 7302 16-Core @ 3.00GHz (32 Cores / 64 Threads), Motherboard: Supermicro H11DSi-NT v2.00 (2.1 BIOS), Chipset: AMD Starship/Matisse, Memory: 8 x 32 GB DDR4-3200MT/s Samsung M393A4K40DB3-CWE, Disk: 1920GB SAMSUNG MZ1LB1T9HALS-00007, Graphics: ASPEED, Network: 2 x Intel 10G X550T

OS: CentOS 7.9.2009, Kernel: 5.6.14-1.el7.elrepo.x86_64 (x86_64), Compiler: GCC 4.8.5 20150623, File-System: ext4

Compiler Notes: --build=x86_64-redhat-linux --disable-libgcj --disable-libunwind-exceptions --enable-__cxa_atexit --enable-bootstrap --enable-checking=release --enable-gnu-indirect-function --enable-gnu-unique-object --enable-initfini-array --enable-languages=c,c++,objc,obj-c++,java,fortran,ada,go,lto --enable-plugin --enable-shared --enable-threads=posix --mandir=/usr/share/man --with-arch_32=x86-64 --with-linker-hash-style=gnu --with-tune=generic
Processor Notes: Scaling Governor: acpi-cpufreq conservative - CPU Microcode: 0x8301034
Python Notes: Python 2.7.5 + Python 3.6.8
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

g39 5.4 EPYC 7713P

Processor: AMD EPYC 7713P 64-Core @ 2.00GHz (64 Cores / 128 Threads), Motherboard: Supermicro H12SSW-AN6 v1.01 (2.4 BIOS), Chipset: AMD Starship/Matisse, Memory: 512GB, Disk: 3841GB SAMSUNG MZ1LB3T8HMLA-00007, Graphics: ASPEED, Network: 2 x Intel 10G X550T

OS: CentOS 7.9.2009, Kernel: 5.14.15-1.el7.elrepo.x86_64 (x86_64), Display Server: X Server 1.19.2, Compiler: GCC 4.8.5 20150623, File-System: ext4, Screen Resolution: 1024x768

Kernel Notes: Transparent Huge Pages: always
Compiler Notes: --build=x86_64-redhat-linux --disable-libgcj --disable-libunwind-exceptions --enable-__cxa_atexit --enable-bootstrap --enable-checking=release --enable-gnu-indirect-function --enable-gnu-unique-object --enable-initfini-array --enable-languages=c,c++,objc,obj-c++,java,fortran,ada,go,lto --enable-plugin --enable-shared --enable-threads=posix --mandir=/usr/share/man --with-arch_32=x86-64 --with-linker-hash-style=gnu --with-tune=generic
Processor Notes: Scaling Governor: acpi-cpufreq conservative (Boost: Enabled) - CPU Microcode: 0xa00115d
Python Notes: Python 2.7.5 + Python 3.6.8
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline IBPB: conditional IBRS_FW STIBP: always-on RSB filling + srbds: Not affected + tsx_async_abort: Not affected

	EPYC 7251	EPYC 7401P	EPYC 7601	EPYC 7601 2P	EPYC 7302	EPYC 7302 2P	EPYC 7402	EPYC 7402 2P	EPYC 7502	EPYC 7502 2P	EPYC 7742	EPYC 7742 2P	Xeon Gold 6138	2 x Xeon Gold 6138	Xeon Platinum 8280	2 x Xeon Platinum 8280	W3175X 3.4ghz lock	6272 ES 2P - 20200209	Threadripper 3960x	g36 5.6 EPYC 7302 2P	g39 5.4 EPYC 7713P
SVT-AV1 - Enc Mode 0 - 1080p (FPS)													0.05	0.05							
Standard Deviation													0%	0%							
MKL-DNN - C.B.c - f32	7772	3096	2278	1205	1805	974	1285	687	1087	583	688	412	1324	674	766	383	14051	119384	1039	27276	25195
Normalized	4.93%	12.37%	16.81%	31.78%	21.22%	39.32%	29.81%	55.75%	35.23%	65.69%	55.67%	92.96%	28.93%	56.82%	50%	100%	2.73%	0.32%	36.88%	1.4%	1.52%
Standard Deviation	1.4%	0.5%	0.8%	2.6%	0.2%	1.9%	0.8%	1.8%	0.8%	2.2%	1.8%	3.2%	0%	0.3%	2.1%	1.6%	0%	0.3%	1.2%	0.2%	0.7%
Blender - Barbershop - CPU-Only (sec)	1190	453	347	220	400	238	284	180	243	164	169	142	455	266	279	181	236	866.38	230.28	245.41	
Normalized	11.93%	31.35%	40.92%	64.55%	35.5%	59.66%	50%	78.89%	58.44%	86.59%	84.02%	100%	31.21%	53.38%	50.9%	78.45%	60.17%	16.39%	61.66%	57.86%	
Standard Deviation	0.1%	0.3%	0.3%	0.6%	0.1%	0.2%	0.1%	0.3%	0.3%	0.4%	0.2%	0.3%	0.1%	0.1%	0.1%	0.3%	0.2%	0.5%	0.1%	2.4%	

Blender - Pabellon Barcelona - CPU-Only (sec)	**1067**	390.84	294.28	159.74	341.22	180.38	234.19	128.52	199.29	109.24	116.92	**74.19**	414.35	214.82	237.50	124.87	203.60	828.53	183.36	176.73	
Normalized	6.95%	18.98%	25.21%	46.44%	21.74%	41.13%	31.68%	57.73%	37.23%	67.91%	63.45%	100%	17.91%	34.54%	31.24%	59.41%	36.44%	8.95%	40.46%	41.98%	
Standard Deviation	0.1%	0.1%	0.3%	0.1%	0.2%	0.9%	0.6%	0.9%	0.7%	0.6%	0.8%	0.5%	0.1%	0.1%	0.1%	0.2%	0.1%	0.3%	0.1%	0.2%	
Blender - Classroom - CPU-Only (sec)	**704.46**	275.15	204.36	98.92	264.66	136.31	181.58	94.41	152.52	78.17	86.25	**46.33**	321.10	163.61	188.04	95.00	156.48	653.78	140.34	138.28	
Normalized	6.58%	16.84%	22.67%	46.84%	17.51%	33.99%	25.51%	49.07%	30.38%	59.27%	53.72%	100%	14.43%	28.32%	24.64%	48.77%	29.61%	7.09%	33.01%	33.5%	
Standard Deviation	0.3%	0.3%	0.2%	0.4%	0.1%	0.9%	0%	0.5%	0.4%	0.4%	0.4%	0.7%	0.1%	0.5%	0.3%	0.1%	0.1%	0.2%	0.1%	1.1%	
AOM AV1 - AV1 Video Encoding (FPS)													0.10								
Standard Deviation													0%								
asmFish - 1.H.M.2.D	**16219903**	46018875	62241924	114981990	42909829	75783369	62962855	112672179	78467488	135474285	131710538	**239606281**	40796460	74681445	70136822	134205427	74771159	29203259	74819561	73651018	142246356
Normalized	6.77%	19.21%	25.98%	47.99%	17.91%	31.63%	26.28%	47.02%	32.75%	56.54%	54.97%	100%	17.03%	31.17%	29.27%	56.01%	31.21%	12.19%	31.23%	30.74%	59.37%
Standard Deviation	2.7%	0.9%	0.6%	1.5%	1%	1.7%	0.3%	3%	1%	0.3%	0.8%	0.7%	2.9%	1%	0.9%	2.1%	1.8%	0.7%	0.6%	0.9%	0.7%
MKL-DNN - C.B.c - f32	428.94	175.29	130.93	70.10	101.56	60.16	70.94	41.01	59.54	34.31	37.98	23.75	73.17	36.89	41.74	**21.18**	780.42	**6921**	63.1845	1673	1571
Normalized	4.94%	12.08%	16.18%	30.21%	20.85%	35.21%	29.86%	51.65%	35.57%	61.73%	55.77%	89.18%	28.95%	57.41%	50.74%	100%	2.71%	0.31%	33.52%	1.27%	1.35%
Standard Deviation	0.6%	1.4%	1.4%	1.5%	0.8%	2.9%	2%	5.4%	0.2%	5.3%	1.4%	2.9%	0.1%	0.6%	0.1%	0.4%	0.1%	0.6%	2.7%	0.5%	0.7%

VP9 libvpx Encoding - v.V.1.V.E (FPS)													82.57	79.27							
Normalized													100%	96%							
Standard Deviation													1.7%	0.8%							
Geekbench - CPU Multi Core - Face Detection (images/	56.47	155.13	195.67	363.70	148.30	290.47	219.67	415.53	266.73	501.20	465.80	792.37	130.90	194.57	225.17	396.27					
Normalized	7.13%	19.58%	24.69%	45.9%	18.72%	36.66%	27.72%	52.44%	33.66%	63.25%	58.79%	100%	16.52%	24.56%	28.42%	50.01%					
Standard Deviation	1.5%	1.3%	6.2%	3.9%	0.8%	1.8%	0.8%	1.6%	1.2%	6.4%	3%	4.5%	1.1%	3.7%	2.6%	8.5%					
Geekbench - CPU Multi Core (Score)	6571	14576	17829	28438	17312	28823	23514	37477	27437	43436	42067	59066	14386	19626	23734	36165					
Normalized	11.12%	24.68%	30.18%	48.15%	29.31%	48.8%	39.81%	63.45%	46.45%	73.54%	71.22%	100%	24.36%	33.23%	40.18%	61.23%					
Standard Deviation	2%	1.7%	2.8%	2.6%	0.5%	0.7%	0.2%	1.4%	0%	1.4%	0.9%	1.7%	0.6%	0.8%	0.6%	1.3%					
Timed Linux Kernel Compilation - Time To Compile (sec)	102.34	47.49	39.30	23.45	41.67	27.40	32.73	22.62	29.01	20.83	22.36	16.07	48.69	31.89	31.22	21.31	30.41	99.080	27.028	28.992	21.562
Normalized	15.7%	33.84%	40.89%	68.53%	38.56%	58.65%	49.1%	71.04%	55.39%	77.15%	71.87%	100%	33%	50.39%	51.47%	75.41%	52.84%	16.22%	59.46%	55.43%	74.53%
Standard Deviation	2.2%	2.9%	2.7%	3.7%	3%	3.5%	2.7%	3.8%	3.3%	4.4%	4.1%	6.2%	2.7%	3.3%	3.9%	5.7%	3.4%	4%	2.7%	3.2%	3.5%

Blender - Fishy Cat - CPU-Only (sec)	**410.78**	160.03	125.29	76.73	143.59	82.88	101.69	64.75	88.34	57.60	59.38	**43.71**	177.35	100.07	104.70	62.53	92.38	350.85	80.30	81.14	
Normalized	10.64%	27.31%	34.89%	56.97%	30.44%	52.74%	42.98%	67.51%	49.48%	75.89%	73.61%	100%	24.65%	43.68%	41.75%	69.9%	47.32%	12.46%	54.43%	53.87%	
Standard Deviation	0.3%	0.2%	0.4%	0.7%	0.1%	0.4%	0.3%	0.6%	0.1%	0.2%	0.3%	0.2%	0%	0.4%	0.1%	0.1%	0.1%	0.2%	0.2%	0.6%	
NAMD - ATPase Simulation - 327,506 Atoms (days/ns)	**3.07536**	1.20635	0.91048	0.44693	1.26580	0.66156	0.89148	0.47061	0.73872	0.39054	0.42879	**0.26393**	1.23836	0.66562	0.70069	0.35906	0.61065	2.08374	0.75019	0.75955	0.44209
Normalized	8.58%	21.88%	28.99%	59.05%	20.85%	39.9%	29.61%	56.08%	35.73%	67.58%	61.55%	100%	21.31%	39.65%	37.67%	73.51%	43.22%	12.67%	35.18%	34.75%	59.7%
Standard Deviation	0.2%	0.6%	0.3%	0.3%	0.3%	0.2%	0.1%	0.2%	0.2%	0.2%	0.4%	0.7%	0.9%	1.5%	0.2%	0.2%	1.8%	0.6%	6.9%	1.1%	0.3%
Blender - BMW27 - CPU-Only (sec)	**277.45**	109.37	83.46	47.93	101.34	54.63	70.54	40.52	60.95	35.41	37.39	**26.84**	117.74	63.61	68.31	37.84	59.14	239.25	56.13	54.15	
Normalized	9.67%	24.54%	32.16%	56%	26.49%	49.13%	38.05%	66.24%	44.04%	75.8%	71.78%	100%	22.8%	42.19%	39.29%	70.93%	45.38%	11.22%	47.82%	49.57%	
Standard Deviation	0.4%	0.9%	0.7%	0.4%	0.5%	0.2%	0.2%	0.5%	0%	1.1%	0.6%	0.9%	0%	0.4%	0.2%	0.7%	0.5%	3%	0.6%	0.7%	
7-Zip Compression - C.S.T (MIPS)	**30676**	78308	90342	134090	96539	150914	140234	218425	171119	255034	280575	**350308**	83345	139242	139773	241149	142956	42586	157195	80777	307056
Normalized	8.76%	22.35%	25.79%	38.28%	27.56%	43.08%	40.03%	62.35%	48.85%	72.8%	80.09%	100%	23.79%	39.75%	39.9%	68.84%	40.81%	12.16%	44.87%	23.06%	87.65%
Standard Deviation	1.7%	0.5%	2.4%	4.4%	0.1%	2.4%	0.4%	0.3%	0.3%	1.2%	0.2%	1.7%	0.3%	1.8%	0.9%	2.7%	0.2%	1.9%	1.4%	1.9%	0.1%
Appleseed - Disney Material (sec)	**336.89**	144.50	108.53	69.44	148.04	81.28	109.30	63.45	86.34	59.83	63.50	**57.99**	162.72	96.10	97.09	65.95	86.33	325.13217	83.615651		
Normalized	17.21%	40.13%	53.43%	83.51%	39.17%	71.35%	53.06%	91.39%	67.16%	96.92%	91.32%	100%	35.64%	60.34%	59.73%	87.93%	67.17%	17.84%	69.35%		
MKL-DNN - C.B.c - f32	39.47	16.54	12.88	6.48	9.62	5.48	6.91	3.86	5.80	3.42	3.62	**2.72**	12.62	4.82	8.14	3.30	89.26	**788.281**	7.7273	181.138	170.336
Normalized	6.89%	16.44%	21.12%	41.98%	28.27%	49.64%	39.36%	70.47%	46.96%	79.53%	75.14%	100%	21.55%	56.43%	33.42%	82.42%	3.05%	0.35%	34.99%	1.5%	1.6%
Standard Deviation	2%	0.6%	1.2%	2.7%	1.8%	5.8%	2.9%	8.9%	0.5%	10.6%	2.7%	6.6%	0.1%	0.3%	0.1%	0.4%	0.3%	1.4%	2.9%	1.5%	0.5%

Stockfish - Total Time (Nodes/s	**16318808**	42945065	58216860	103330585	42554164	76602512	62020868	113901411	75903528	139070880	133120860	**241185105**	37423561	67928161	65150665	124044462	71628459	28644659	77585376	77660643	145114663
Normalized	6.77%	17.81%	24.14%	42.84%	17.64%	31.76%	25.72%	47.23%	31.47%	57.66%	55.19%	100%	15.52%	28.16%	27.01%	51.43%	29.7%	11.88%	32.17%	32.2%	60.17%
Standard Deviation	2%	1.4%	1.6%	1.8%	0.3%	1.3%	0.2%	0.5%	2.3%	1.3%	1%	0.5%	1.1%	0.8%	0.7%	2.7%	1.1%	2.1%	0.8%	1.1%	0.6%
MKL-DNN - IP Batch All - f32	523.85	152.73	112.65	783.83	200.24	123.29	148.29	99.98	124.81	**81.21**	89.75	89.65	115.62	122.60	94.88	97.37	261.42	**2893**	121.392	2658	2574
Normalized	15.5%	53.17%	72.09%	10.36%	40.56%	65.87%	54.76%	81.23%	65.07%	100%	90.48%	90.59%	70.24%	66.24%	85.59%	83.4%	31.06%	2.81%	66.9%	3.05%	3.15%
Standard Deviation	0.6%	0.2%	0.9%	2.4%	0.4%	1.8%	0.3%	2.4%	0.2%	1.4%	1.6%	1.5%	0.7%	2.4%	1%	1.1%	0.1%	3.5%	0.3%	8.7%	5.1%
Geekbench - CPU Single Core - Horizon Detection (Gpixels/	**17.70**	18.03	18.77	18.40	23.50	22.83	23.80	23.10	23.83	23.30	24.10	24	23.53	23.10	**25.40**	25.10					
Normalized	69.69%	70.98%	73.9%	72.44%	92.52%	89.88%	93.7%	90.94%	93.82%	91.73%	94.88%	94.49%	92.64%	90.94%	100%	98.82%					
Standard Deviation	10.9%	7.6%	4%	2.2%	0%	0.3%	1.1%	1.1%	0.5%	0.7%	0%		0.2%	0%	0%	0.4%					
Geekbench - CPU Single Core - Face Detection (images/	**6.04**	6.25	6.68	6.68	8.18	8.19	8.31	8.28	8.31	8.31	**8.45**	8.28	7.70	7.70	8.33	8.31					
Normalized	71.48%	73.96%	79.05%	79.05%	96.8%	96.92%	98.34%	97.99%	98.34%	98.34%	100%	97.99%	91.12%	91.12%	98.58%	98.34%					
Standard Deviation	0.3%	0.2%	0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.3%	0.1%	0.1%	0.5%	0.4%					

Geekbench - CPU Single Core - Gaussian Blur (Mpixels/sec)	55.27	56.63	60.53	60.97	63.17	62.60	64.33	63.47	64.40	63.73	65.67	64.43	40.80	40.03	42.53	42.13					
Normalized	84.16%	86.23%	92.17%	92.84%	96.19%	95.33%	97.96%	96.65%	98.07%	97.05%	100%	98.11%	62.13%	60.96%	64.76%	64.15%					
Standard Deviation	0.3%	0.2%	0.2%	0.4%	0.2%	0.5%	0.5%	0.6%	0.7%	0.2%	0.6%	0.2%	0%	0.1%	1%	0.1%					
Geekbench - CPU Single Core (Score)	770	820	869	873	1005	991	1026	1006	1026	999	1041	1033	1073	1046	1143	1135					
Normalized	67.37%	71.74%	76.03%	76.38%	87.93%	86.7%	89.76%	88.01%	89.76%	87.4%	91.08%	90.38%	93.88%	91.51%	100%	99.3%					
Standard Deviation	0.4%	0.4%	0.3%	0.1%	0.7%	0.6%	0.4%	0.7%	0.1%	0.5%	0.5%		0.1%			0.1%					
Timed LLVM Compilation - Time To Compile (sec)	538.02	233.69	203.14	133.00	203.24	134.26	158.54	105.84	143.43	99.96	102.14	78.81	242.85	156.28	158.80	104.91	167.01	484.421	154.138		
Normalized	14.65%	33.72%	38.8%	59.26%	38.78%	58.7%	49.71%	74.46%	54.95%	78.84%	77.16%	100%	32.45%	50.43%	49.63%	75.12%	47.19%	16.27%	51.13%		
Coremark - CoreMark Size 666 - I.P.S (Iteration	234690	618299	820414	1655574	588635	1134097	880327	1655894	1109475	2118764	1966211	3719997	589752	1143121	967330	1883689	972452	250422	1061775	831234	1415860
Normalized	6.31%	16.62%	22.05%	44.5%	15.82%	30.49%	23.66%	44.51%	29.82%	56.96%	52.86%	100%	15.85%	30.73%	26%	50.64%	26.14%	6.73%	28.54%	22.35%	38.06%
Standard Deviation	0.1%	1%	1.1%	1.6%	0.2%	0.6%	0.8%	1.2%	0.1%	0.9%	0.2%	0.2%	2.8%	1.5%	0.6%	2%	0.5%	3.5%	1.8%	0.7%	0%
John The Ripper - Blowfish (Real	12939	27746	33399	81920	31305	62398	46756	92216	57523	110992	97345	183465	24968	48933	42924	84968	44330	10100	45824	56301	90831
Normalized	7.05%	15.12%	18.2%	44.65%	17.06%	34.01%	25.48%	50.26%	31.35%	60.5%	53.06%	100%	13.61%	26.67%	23.4%	46.31%	24.16%	5.51%	24.98%	30.69%	49.51%
Standard Deviation	0.6%	7%	0.7%	7.4%	0%	0%	0.1%	0.2%	0.1%	3.9%	0.1%	2.2%	0.3%	0.8%	0.4%	0.7%	0.1%	0.4%	2.8%	5.8%	0.3%

NeatBench - CPU (FPS)	**10.37**	13.05	11.57	10.38	28.97	27.40	32.93	31.63	33.70	31.57	**34.43**	32.53	24.80	22.97	34.30	31.71					
Normalized	30.1	37.9	33.6	30.1	84.1	79.5	95.6	91.8	97.8	91.6	100	94.4	72.0	66.7	99.6	92.1					
Standard Deviation	2% 0.6%	% 2.7%	% 5.7%	5% 2.9%	4% 0.9%	8% 1.3%	4% 2.2%	7% 1.9%	8% 2.2%	9% 1%	% 3%	8% 0.2%	3% 2%	2% 1.8%	2% 2.9%	% 3.5%					
PyBench - T.F.A.T.T (Milliseconds)	1607	1551	1457	1462	1221	1225	1207	1211	1212	1211	1202	1206	1084	1075	1017	1013	1516	**3402**	**975**	1796	1239
Normalized	60.6	62.8	66.9	66.6	79.8	79.5	80.7	80.5	80.4	80.5	81.1	80.8	89.9	90.7	95.8	96.2	64.3	28.6	100	54.2	78.6
Standard Deviation	7%	6% 0.6%	2% 0.3%	9% 1.2%	5% 0.6%	9% 0.2%	8% 0.4%	1% 0.3%	5% 0.9%	1% 0.3%	1% 0.2%	5% 0.3%	4% 0.3%	% 0.2%	7% 0.2%	5% 0.1%	1%	6% 0.5%	% 1.3%	9% 0.8%	9% 0.2%
dav1d - Summer Nature 4K (sec)	51.83	26.44	24.97	18.67	21.89	17.47	16.78	14.47	15.98	13.04	12.01	**11.41**	26.92	28.15	21.65	18.09	13.99	**70.666**			
Normalized	22.0	43.1	45.6	61.1	52.1	65.3	68%	78.8	71.4	87.5	95%	100	42.3	40.5	52.7	63.0	81.5	16.1			
Standard Deviation	1% 0.4%	5% 0.4%	9% 0.5%	1% 0.6%	2% 0.3%	1% 0.4%	0.2%	5% 0.5%	% 0.1%	% 1%	0.2%	% 2.8%	8% 0.4%	3% 41.4 %	% 0.6%	7% 1.9%	6% 0.2%	5% 0.8%			
C-Ray - Total Time - 4.1.R.P.P (sec)	**88.08**	32.36	24.45	12.28	38.23	19.35	25.62	13.02	20.80	10.86	11.85	**6.29**	49.00	27.42	27.88	14.31	27.16	75.941	25.692	20.106	12.894
Normalized	7.14	19.4	25.7	51.2	16.4	32.5	24.5	48.3	30.2	57.9	53.0	100	12.8	22.9	22.5	43.9	23.1	8.28	24.4	31.2	48.7
Standard Deviation	% 0.1%	4% 0.8%	3% 1%	2% 0.3%	5% 0.1%	1% 0.3%	5% 0.2%	1% 0%	4% 0.1%	2% 0.8%	8% 0.2%	% 2.6%	4% 0.1%	4% 2.9%	6% 0.1%	6% 0.2%	6% 0.1%	% 0.6%	8% 0.2%	8% 0.1%	8% 0.5%
POV-Ray - Trace Time (sec)	**71.32**	29.15	22.35	12.57	28.88	16.36	20.65	12.15	17.34	10.32	10.86	**8.41**	35.53	19.74	20.70	11.82	23.71	51.327	15.710	16.405	10.411
Normalized	11.7	28.8	37.6	66.9	29.1	51.4	40.7	69.2	48.5	81.4	77.4	100	23.6	42.6	40.6	71.1	35.4	16.3	53.5	51.2	80.7
Standard Deviation	9% 0.2%	5% 0.3%	3% 0.4%	1% 0.1%	2% 0.3%	1% 1%	3% 0.3%	2% 0.9%	% 0.4%	9% 1.1%	4% 0.5%	% 3.4%	7% 0.5%	% 0.1%	3% 0.2%	5% 2.7%	7% 3.1%	9% 1.4%	3% 0.6%	6% 0.7%	8% 0.3%
PHPBench - P.B.S	359687	373155	397124	395581	489637	489367	495293	496430	495466	495916	502052	501770	595163	598887	637497	**645629**	574890	224645	619602	**160532**	224766
Normalized	55.7	57.8	61.5	61.2	75.8	75.8	76.7	76.8	76.7	76.8	77.7	77.7	92.1	92.7	98.7	100	89.0	34.7	95.9	24.8	34.8
Standard Deviation	1% 0.3%	% 0.3%	1% 0.2%	7% 0.5%	4% 0.5%	% 0.7%	1% 0.8%	9% 0.3%	4% 0.5%	1% 0.3%	6% 0.6%	2% 0.3%	8% 0.9%	6% 0.3%	4% 1.4%	% 0.3%	4% 0.1%	9% 1.1%	7% 0.6%	6% 0.4%	1% 1.2%

MKL-DNN - C.B.c - f32	1002	404.57	300.45	157.10	243.03	131.15	173.43	97.71	141.76	76.91	88.95	50.66	165.95	85.32	94.33	**48.56**	1886	**14522**	157.245	3413	3186
Normalized	4.85%	12%	16.16%	30.91%	19.98%	37.03%	28%	49.7%	34.26%	63.14%	54.59%	95.85%	29.26%	56.92%	51.48%	100%	2.57%	0.33%	30.88%	1.42%	1.52%
Standard Deviation	1%	0.9%	0.9%	2.7%	1.6%	1.8%	2.2%	2.9%	1.1%	1.8%	1.8%	2.7%	0%	0.3%	0%	0.1%	0.1%	0.2%	3.6%	0.9%	1.2%
SVT-AV1 - Enc Mode 4 - 1080p (FPS)													**4.75**	**6.59**							
Normalized													72.08%	100%							
Standard Deviation													0.5%	0.2%							
Tungsten Renderer - Hair	**39.49**	16.26	13.07	8.10	16.26	9.67	12.00	7.55	10.34	6.57	6.97	**5.32**	19.19	11.17	11.86	7.07	13.81	30.4598	9.9820		
Normalized	13.47%	32.72%	40.7%	65.68%	32.72%	55.02%	44.33%	70.46%	51.45%	80.97%	76.33%	100%	27.72%	47.63%	44.86%	75.25%	38.52%	17.47%	53.58%		
Standard Deviation	0.4%	0%	0.4%	0.8%	0.9%	0.4%	0.3%	1.3%	0.4%	0.6%	0.2%	1.2%	0.3%	1.3%	0.4%	1.4%	0.3%	3.8%	0.8%		
x265 - H.2.1.V.E (FPS)	**25.01**	32.90	33.44	39.34	50.55	49.20	**50.81**	49.41	48.93	47.86	48.95	48.45	36.02	34.68	35.44	34.88					
Normalized	49.22%	64.75%	65.81%	77.43%	99.49%	96.83%	100%	97.24%	96.3%	94.19%	96.34%	95.36%	70.89%	68.25%	69.75%	68.65%					
Standard Deviation	0.9%	0.4%	0.5%	0.7%	0.4%	0.2%	0.4%	1.7%	0.4%	0.1%	0.8%	2.4%	0.2%	1%	0.3%	0.7%					
SVT-AV1 - Enc Mode 8 - 1080p (FPS)													**34.91**	**50.14**							
Normalized													69.63%	100%							
Standard Deviation													0.1%	1.7%							
SVT-AV1 - 1.8.b.Y.T.A.V.E (FPS)	16.65	35.05	37.11	38.65	44.76	60.68	62.78	71.72	67.00	96.82	98.77	**101.52**	36.13	49.35	55.38	63.05		**5.790**	76.559		
Normalized	16.4%	34.53%	36.55%	38.07%	44.09%	59.77%	61.84%	70.65%	66%	95.37%	97.29%	100%	35.59%	48.61%	54.55%	62.11%		5.7%	75.41%		
Standard Deviation	0.8%	1.3%	1.2%	3.7%	0.7%	2.9%	0.4%	1.7%	0.8%	2.8%	1%	0.5%	0.8%	2.8%	1.4%	2.2%		2.1%	1.9%		

SVT-HEVC - 1.8.b.Y.T.H.V.E (FPS)	89.22	179.31	186.05	164.10	258.45	328.76	343.93	338.31	360.14	335.96	367.52	329.82	243.27	235.59	319.41	269.00		**9.74**	**418.59**
Normalized	21.31%	42.84%	44.45%	39.2%	61.74%	78.54%	82.16%	80.82%	86.04%	80.26%	87.8%	78.79%	58.12%	56.28%	76.31%	64.26%		2.33%	100%
Standard Deviation	0.6%	4.3%	7.7%	6.8%	1%	2.3%	1.1%	1.2%	2.4%	2.5%	0.9%	2.9%	11.7%	11.8%	3.7%	0.9%		0.3%	1.7%
SVT-HEVC - 1.8.b.Y.T.H.V.E (FPS)													**71.29**	**109.36**					
Normalized													65.19%	100%					
Standard Deviation													0%	2.8%					
SVT-VP9 - 1.8.b.Y.T.V.V.E (FPS)	**66.76**	160.83	158.54	133.45	272.54	319.09	358.66	347.87	374.60	345.47	**393.10**	344.13	262.13	249.49	370.05	279.16			
Normalized	16.98%	40.91%	40.33%	33.95%	69.33%	81.17%	91.24%	88.49%	95.29%	87.88%	100%	87.54%	66.68%	63.47%	94.14%	71.02%			
Standard Deviation	1.7%	0.8%	4.2%	2.7%	0.9%	2.7%	2.6%	3%	1.7%	1.5%	2.9%	4.9%	13.3%	13.8%	2.3%	2.9%			
Geekbench - Performance / Cost - CPU Multi Core (Score/Dollar)	11.69	14.22	3.32	2.65	**16.29**	13.56	12.16	9.69	9.74	7.71	5.48	3.85	5.37	3.66	2.37	**1.81**			
Normalized	71.76%	87.29%	20.38%	16.27%	100%	83.24%	74.65%	59.48%	59.79%	47.33%	33.64%	23.63%	32.97%	22.47%	14.55%	11.11%			

PHPBench - Performance / Cost - P.B.S (Score/Dollar)	**640.01**	364.05	74.02	36.87	460.62	230.18	256.23	128.41	175.88	88.02	65.46	32.69	222.16	111.77	63.69	**32.25**
Normalized	100%	56.88%	11.57%	5.76%	71.97%	35.97%	40.04%	20.06%	27.48%	13.75%	10.23%	5.11%	34.71%	17.46%	9.95%	5.04%
PyBench - Performance / Cost - T.F.A.T.T (Milliseconds x Dollar)	**903134**	1589775	7816805	15687260	1297923	2604350	2333131	4681726	3414204	6822774	9219340	18510894	2904036	5759850	10179153	**20278234**
Normalized	100%	56.81%	11.55%	5.76%	69.58%	34.68%	38.71%	19.29%	26.45%	13.24%	9.8%	4.88%	31.1%	15.68%	8.87%	4.45%
Tungsten Renderer - Performance / Cost - Hair (sec	22193	**16667**	70121	86913	17284	20558	23196	29188	29128	37015	53460	81657	51410	59849	118707	**141527**
Normalized	75.1%	100%	23.77%	19.18%	96.43%	81.07%	71.85%	57.1%	57.22%	45.03%	31.18%	20.41%	32.42%	27.85%	14.04%	11.78%
Appleseed - Performance / Cost - Disney Material (sec x Dollar)	189332	**148113**	582263	745091	157367	172801	211277	245298	243220	337082	487045	890089	435927	514904	971774	**1320187**
Normalized	78.23%	100%	25.44%	19.88%	94.12%	85.71%	70.1%	60.38%	60.9%	43.94%	30.41%	16.64%	33.98%	28.77%	15.24%	11.22%

Blender - Performance / Cost - Pabellon Barcelona - CPU-Only (sec x Dollar)	599783	400611	1578812	1714010	**362717**	383488	452689	496858	561400	615458	896776	1138742	1110044	1151006	2377138	**2499648**
Normalized	60.47%	90.54%	22.97%	21.16%	100%	94.58%	80.12%	73%	64.61%	58.93%	40.45%	31.85%	32.68%	31.51%	15.26%	14.51%
Blender - Performance / Cost - Barbershop - CPU-Only (sec x Dollar)	668842	464756	1861601	2360064	**425508**	506201	549359	694991	683996	926511	1295847	2175414	1218248	1424692	2796415	**3631866**
Normalized	63.62%	91.56%	22.86%	18.03%	100%	84.06%	77.46%	61.23%	62.21%	45.93%	32.84%	19.56%	34.93%	29.87%	15.22%	11.72%
Blender - Performance / Cost - Fishy Cat - CPU-Only (sec x Dollar)	230858	164031	672181	823313	**152636**	176203	196567	250324	248854	324518	455445	670905	475121	536175	1047942	**1251726**
Normalized	66.12%	93.05%	22.71%	18.54%	100%	86.63%	77.65%	60.98%	61.34%	47.03%	33.51%	22.75%	32.13%	28.47%	14.57%	12.19%

Blender - Performance / Cost - Classroom - CPU-Only (sec x Dollar)	395907	282029	1096391	1061412	**281334**	289795	350994	364989	429649	440410	661538	711119	860227	876622	1882092	**1901710**
Normalized	71.06%	99.75%	25.66%	26.51%	100%	97.08%	80.15%	77.08%	65.48%	63.88%	42.53%	39.56%	32.7%	32.09%	14.95%	14.79%
Blender - Performance / Cost - BMW27 - CPU-Only (sec x Dollar)	155927	112104	447763	514289	**107724**	116143	136354	156650	171696	199500	286781	411967	315425	340822	683715	**757481**
Normalized	69.09%	96.09%	24.06%	20.95%	100%	92.75%	79%	68.77%	62.74%	54%	37.56%	26.15%	34.15%	31.61%	15.76%	14.22%
7-Zip Compression - Performance / Cost - C.S.T (MIPS/Dollar)	54.58	76.40	16.84	12.50	**90.82**	70.98	72.55	56.50	60.75	45.27	36.58	22.82	31.11	25.99	13.96	**12.05**
Normalized	60.1%	84.12%	18.54%	13.76%	100%	78.15%	79.88%	62.21%	66.89%	49.85%	40.28%	25.13%	34.25%	28.62%	15.37%	13.27%
POV-Ray - Performance / Cost - Trace Time (sec x	40082	**29879**	119908	134876	30699	34781	39916	46972	48847	58143	83296	129085	95185	105767	207186	**236613**
Normalized	74.54%	100%	24.92%	22.15%	97.33%	85.9%	74.85%	63.61%	61.17%	51.39%	35.87%	23.15%	31.39%	28.25%	14.42%	12.63%

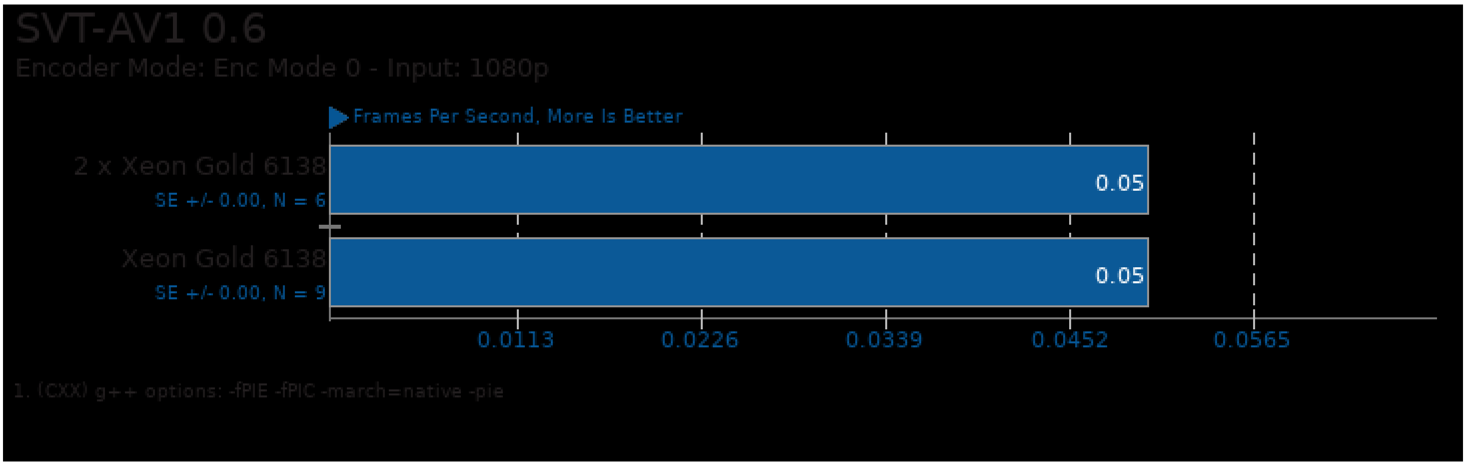
C-Ray - Performance / Cost - Total Time - 4.1.R.P.P (sec x Dollar)	49501	**33169**	131174	131764	40638	41138	49523	50335	58594	61185	90890	96545	131271	146916	279051	**286458**
Normalized	67.01%	100%	25.29%	25.17%	81.62%	80.63%	66.98%	65.9%	56.61%	54.21%	36.49%	34.36%	25.27%	22.58%	11.89%	11.58%
Timed LLVM Compilation - Performance / Cost - Time To Compile (sec x Dollar)	302367	239532	1089846	1427090	**216044**	285437	306458	409177	404042	563175	783414	1209655	650595	837348	1589429	**2100088**
Normalized	71.45%	90.19%	19.82%	15.14%	100%	75.69%	70.5%	52.8%	53.47%	38.36%	27.58%	17.86%	33.21%	25.8%	13.59%	10.29%
Timed Linux Kernel Compilation - Performance / Cost - Time To Compile (sec x Dollar)	57515	48677	210845	251619	**44295**	58252	63267	87449	81721	117356	171501	246658	130441	170867	312481	**426584**
Normalized	77.01%	91%	21.01%	17.6%	100%	76.04%	70.01%	50.65%	54.2%	37.74%	25.83%	17.96%	33.96%	25.92%	14.18%	10.38%

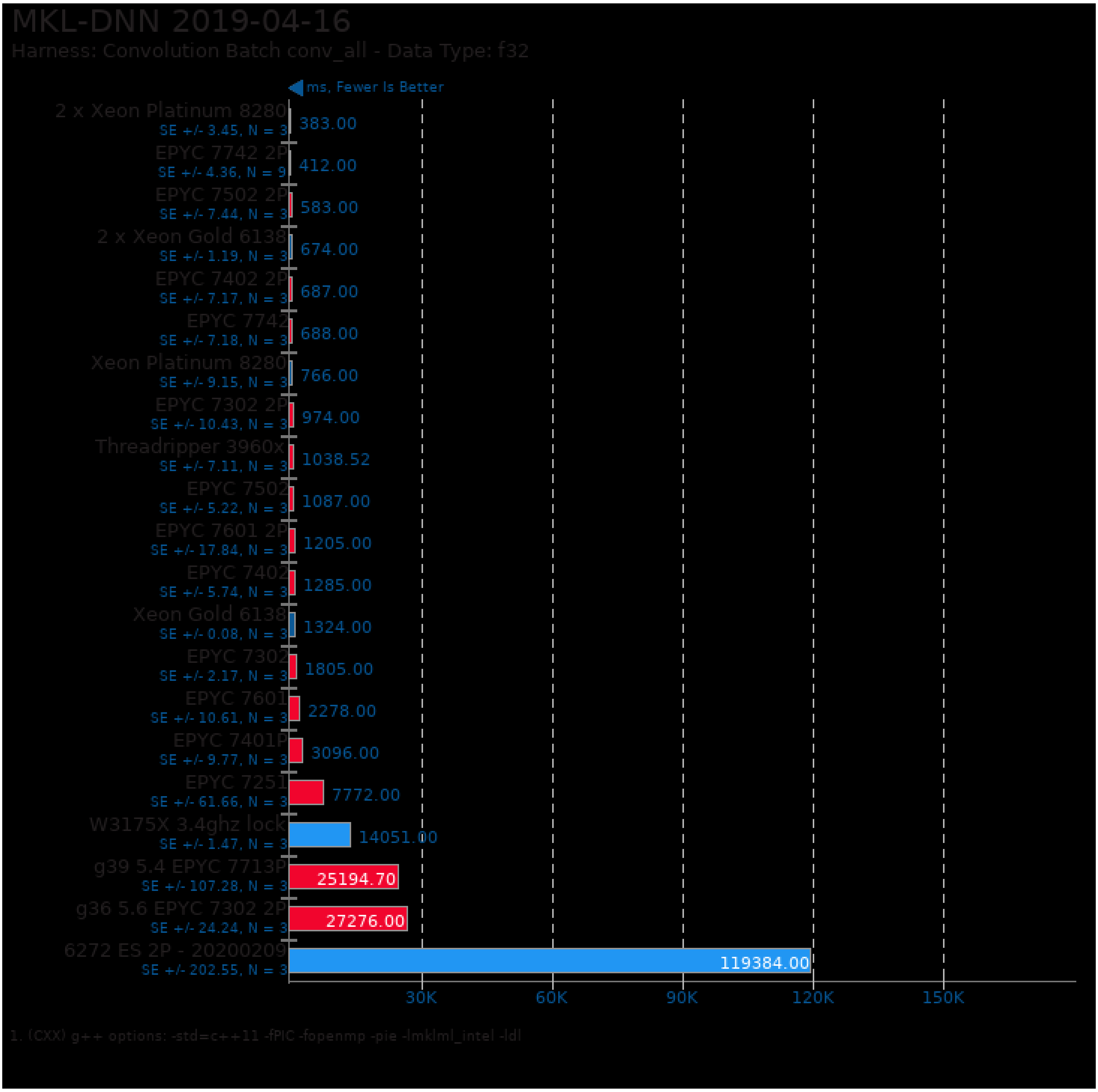
asmFish - Performance / Cost - 1.H.M.2.D (Nodes/s	28861	**44896**	11601	10716	40367	35646	32573	29144	27855	24046	17172	15611	15228	13938	7007	**6704**
Normalized	64.28%	100%	25.84%	23.87%	89.91%	79.4%	72.55%	64.91%	62.04%	53.56%	38.25%	34.77%	33.92%	31.05%	15.61%	14.93%
Stockfish - Performance / Cost - Total Time (Nodes/s /Dollar)	29037	**41898**	10851	9630	40032	36031	32085	29462	26945	24684	17356	15713	13969	12678	6509	**6197**
Normalized	69.3%	100%	25.9%	22.98%	95.55%	86%	76.58%	70.32%	64.31%	58.92%	41.42%	37.5%	33.34%	30.26%	15.54%	14.79%
Coremark - Performance / Cost - CoreMark Size 666 - I.P.S (Iterations/Sec/Do	417.60	**603.22**	152.92	154.29	553.75	533.44	455.42	428.32	393.85	376.07	256.35	242.36	220.14	213.35	96.65	**94.10**
Normalized	69.23%	100%	25.35%	25.58%	91.8%	88.43%	75.5%	71.01%	65.29%	62.34%	42.5%	40.18%	36.49%	35.37%	16.02%	15.6%
dav1d - Performance / Cost - Summer Nature 4K (sec x Dollar)	29128	27101	133964	200329	**23269**	37141	32436	55941	45016	73467	92117	175132	72119	150828	216695	**362126**
Normalized	79.88%	85.86%	17.37%	11.62%	100%	62.65%	71.74%	41.6%	51.69%	31.67%	25.26%	13.29%	32.26%	15.43%	10.74%	6.43%

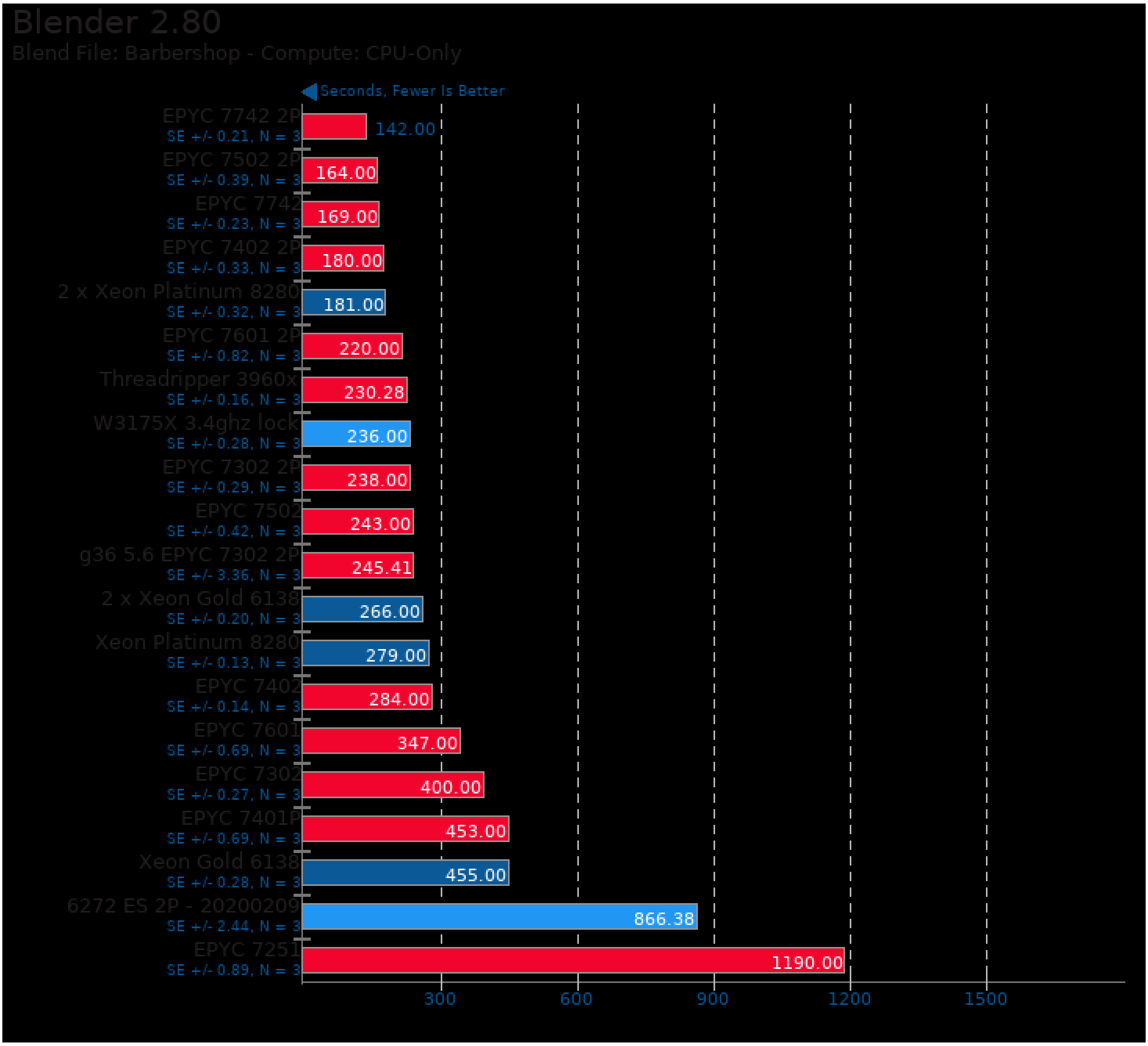
SVT-VP9 - Performance / Cost - 1.8.b.Y.T.V.V.E (FPS/Dollar)	0.12	0.16	0.03	0.01	0.26	0.15	0.19	0.09	0.13	0.06	0.05	0.02	0.10	0.05	0.04	0.01
Normalized	46.15%	61.54%	11.54%	3.85%	100%	57.69%	73.08%	34.62%	50%	23.08%	19.23%	7.69%	38.46%	19.23%	15.38%	3.85%
SVT-HEVC - Performance / Cost - 1.8.b.Y.T.H.V.E (FPS/Dollar)	0.16	0.17	0.03	0.02	0.24	0.15	0.18	0.09	0.13	0.06	0.05	0.02	0.09	0.04	0.03	0.01
Normalized	66.67%	70.83%	12.5%	8.33%	100%	62.5%	75%	37.5%	54.17%	25%	20.83%	8.33%	37.5%	16.67%	12.5%	4.17%
MKL-DNN - Performance / Cost - C.B.c - f32 (ms x Dollar)	241064	179672	702439	752173	107958	127900	137127	158545	167724	193303	291307	364539	196022	197657	417776	423981
Normalized	44.78%	60.09%	15.37%	14.35%	100%	84.41%	78.73%	68.09%	64.37%	55.85%	37.06%	29.62%	55.07%	54.62%	25.84%	25.46%
MKL-DNN - Performance / Cost - C.B.c - f32 (ms x Dollar)	563231	414684	1611914	1685683	258341	278825	335240	377747	399338	433311	682247	777580	444580	457145	944149	972074
Normalized	45.87%	62.3%	16.03%	15.33%	100%	92.65%	77.06%	68.39%	64.69%	59.62%	37.87%	33.22%	58.11%	56.51%	27.36%	26.58%

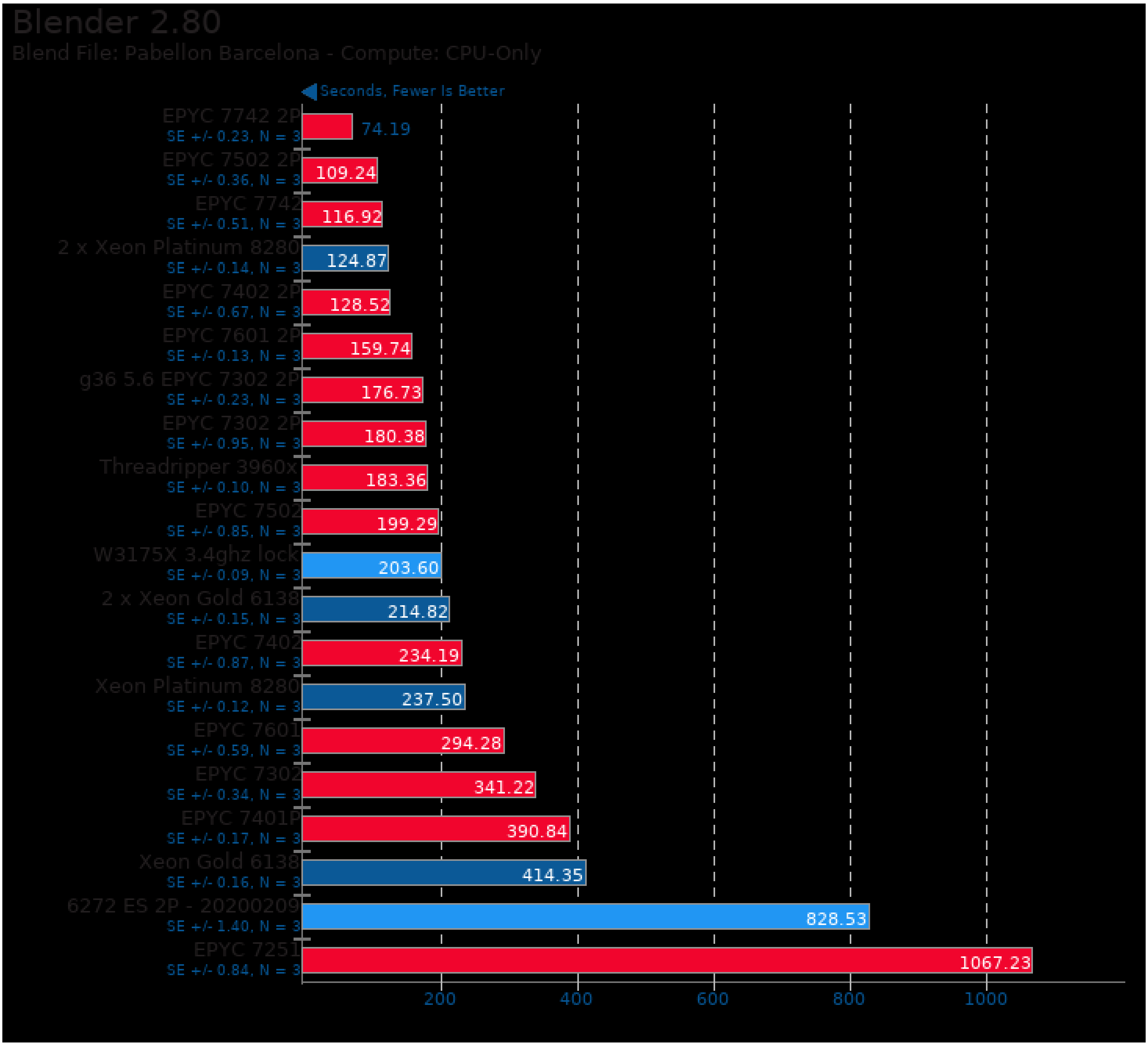
MKL-DNN - Performance / Cost - C.B.c - f32 (ms x Dollar)	4367594	3173031	12219861	**12932547**	**1918672**	2070575	2483344	2657488	3061797	3282706	5276346	6324402	3547773	3613650	7671098	7674301
Normalized	43.93%	60.47%	15.7%	14.84%	100%	92.66%	77.26%	72.2%	62.66%	58.45%	36.36%	30.34%	54.08%	53.1%	25.01%	25%
MKL-DNN - Performance / Cost - C.B.c - f32 (ms x Dollar)	22182	16954	69101	69530	**10226**	11650	13357	14923	16339	19268	27765	41749	33809	25826	**81473**	66059
Normalized	46.1%	60.32%	14.8%	14.71%	100%	87.77%	76.56%	68.53%	62.59%	53.07%	36.83%	24.49%	30.25%	39.6%	12.55%	15.48%
MKL-DNN - Performance / Cost - IP Batch All - f32 (ms x Dollar)	294404	**156548**	604367	**8410496**	212855	262115	286645	386523	351590	457537	688383	1376038	309746	656891	949654	1949153
Normalized	53.17%	100%	25.9%	1.86%	73.55%	59.73%	54.61%	40.5%	44.53%	34.22%	22.74%	11.38%	50.54%	23.83%	16.48%	8.03%
John The Ripper - Performance / Cost - Blowfish (Real C/S/Dolla	23.02	27.07	6.23	7.63	**29.45**	29.35	24.19	23.85	20.42	19.70	12.69	11.95	9.32	9.13	4.29	**4.24**
Normalized	78.17%	91.92%	21.15%	25.91%	100%	99.66%	82.14%	80.98%	69.34%	66.89%	43.09%	40.58%	31.65%	31%	14.57%	14.4%

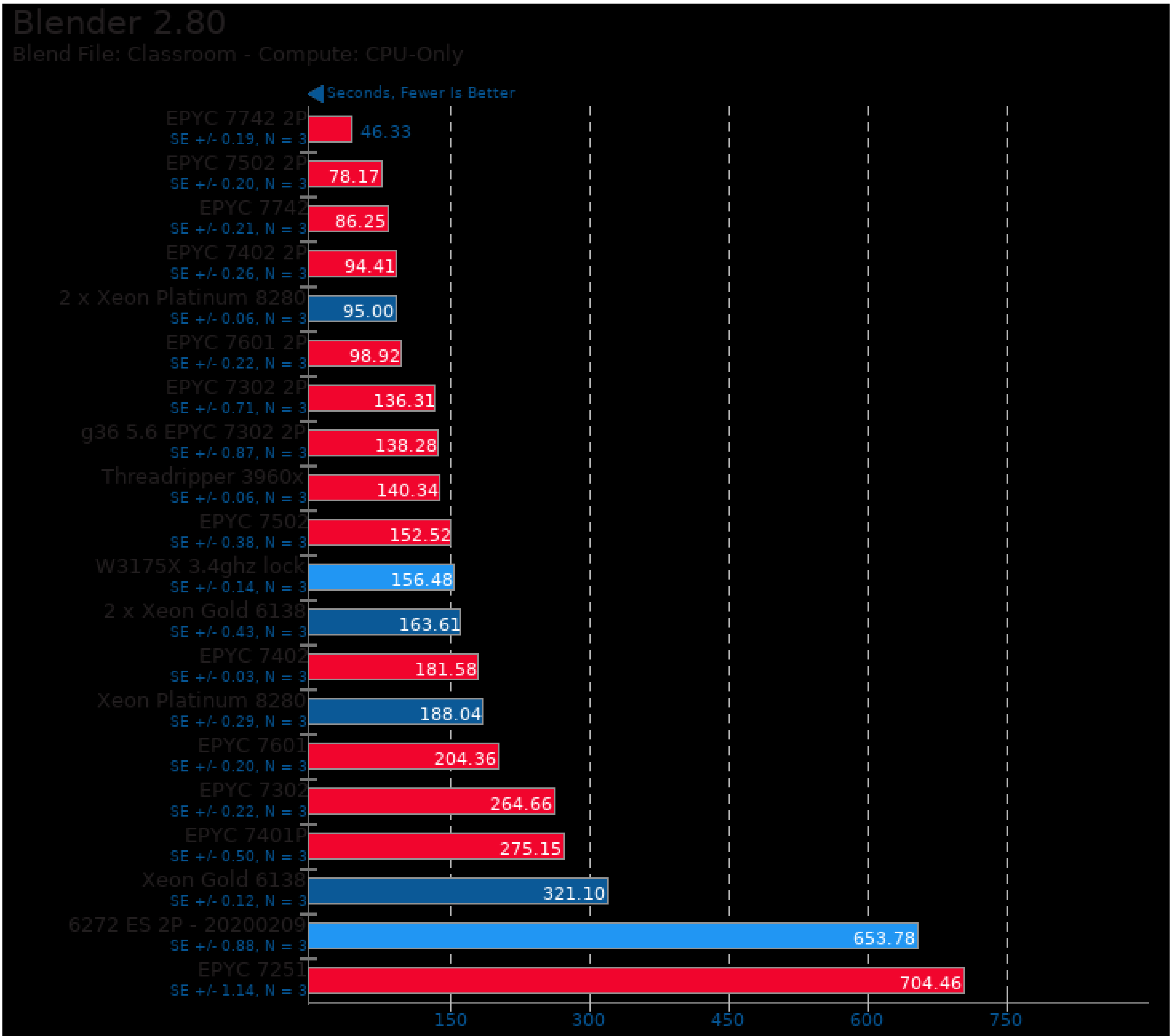
NAMD - Performance / Cost - ATPase Simulation - 327,506 Atoms (days/ns x Dollar)	1728	**1237**	4885	4796	1346	1406	1723	1819	2081	2200	3289	4051	3318	3566	7013	**7188**
Normalized	71.54%	100%	25.31%	25.78%	91.9%	87.92%	71.76%	67.96%	59.42%	56.2%	37.6%	30.52%	37.27%	34.67%	17.63%	17.2%

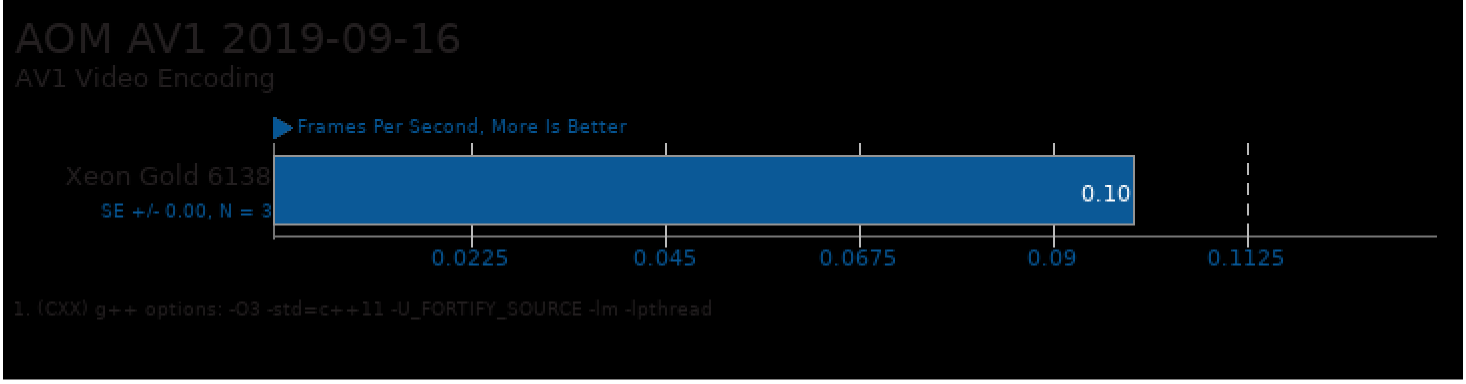

SVT-AV1 0.6
Encoder Mode: Enc Mode 0 - Input: 1080p
Frames Per Second, More Is Better
2 x Xeon Gold 6138
SE +/- 0.00, N = 6
0.05
Xeon Gold 6138
SE +/- 0.00, N = 9
0.05
0.0113
0.0226
0.0339
0.0452
0.0565
1. (CXX) g++ options: -fPIE -fPIC -march=native -pie

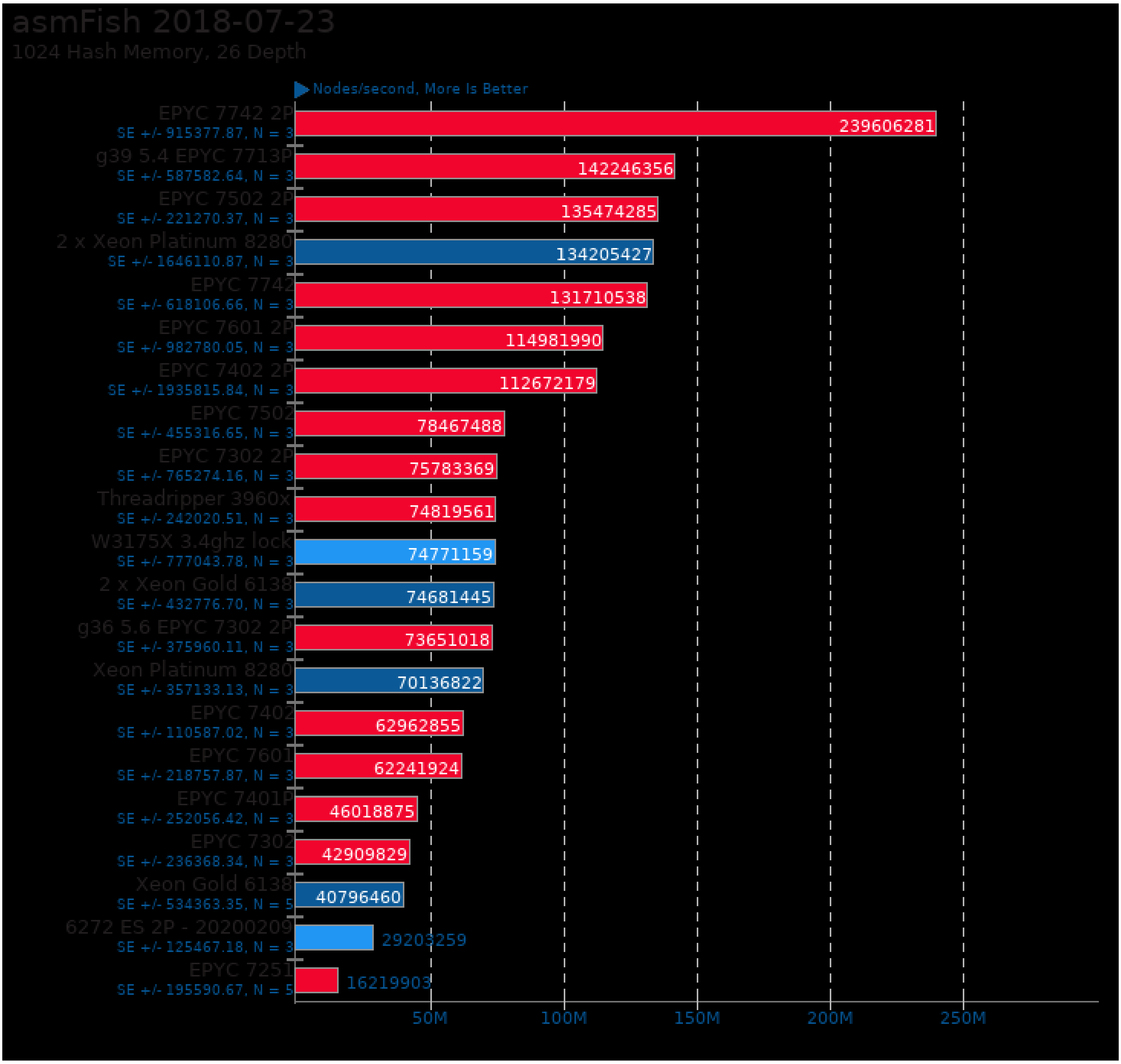

MKL-DNN 2019-04-16
Harness: Convolution Batch conv_all - Data Type: f32
ms, Fewer Is Better
2 x Xeon Platinum 8280
SE +/- 3.45, N = 3
383.00
EPYC 7742 2P
SE +/- 4.36, N = 9
412.00
EPYC 7502 2P
SE +/- 7.44, N = 3
583.00
2 x Xeon Gold 6138
SE +/- 1.19, N = 3
674.00
EPYC 7402 2P
SE +/- 7.17, N = 3
687.00
EPYC 7742
SE +/- 7.18, N = 3
688.00
Xeon Platinum 8280
SE +/- 9.15, N = 3
766.00
EPYC 7302 2P
SE +/- 10.43, N = 3
974.00
Threadripper 3960x
SE +/- 7.11, N = 3
1038.52
EPYC 7502
SE +/- 5.22, N = 3
1087.00
EPYC 7601 2P
SE +/- 17.84, N = 3
1205.00
EPYC 7402
SE +/- 5.74, N = 3
1285.00
Xeon Gold 6138
SE +/- 0.08, N = 3
1324.00
EPYC 7302
SE +/- 2.17, N = 3
1805.00
EPYC 7601
SE +/- 10.61, N = 3
2278.00
EPYC 7401P
SE +/- 9.77, N = 3
3096.00
EPYC 7251
SE +/- 61.66, N = 3
7772.00
W3175X 3.4ghz lock
SE +/- 1.47, N = 3
14051.00
g39 5.4 EPYC 7713P
SE +/- 107.28, N = 3
25194.70
g36 5.6 EPYC 7302 2P
SE +/- 24.24, N = 3
27276.00
6272 ES 2P - 20200209
SE +/- 202.55, N = 3
119384.00
30K
60K
90K
120K
150K
1. (CXX) g++ options: -std=c++11 -fPIC -fopenmp -pie -lmklml_intel -ldl

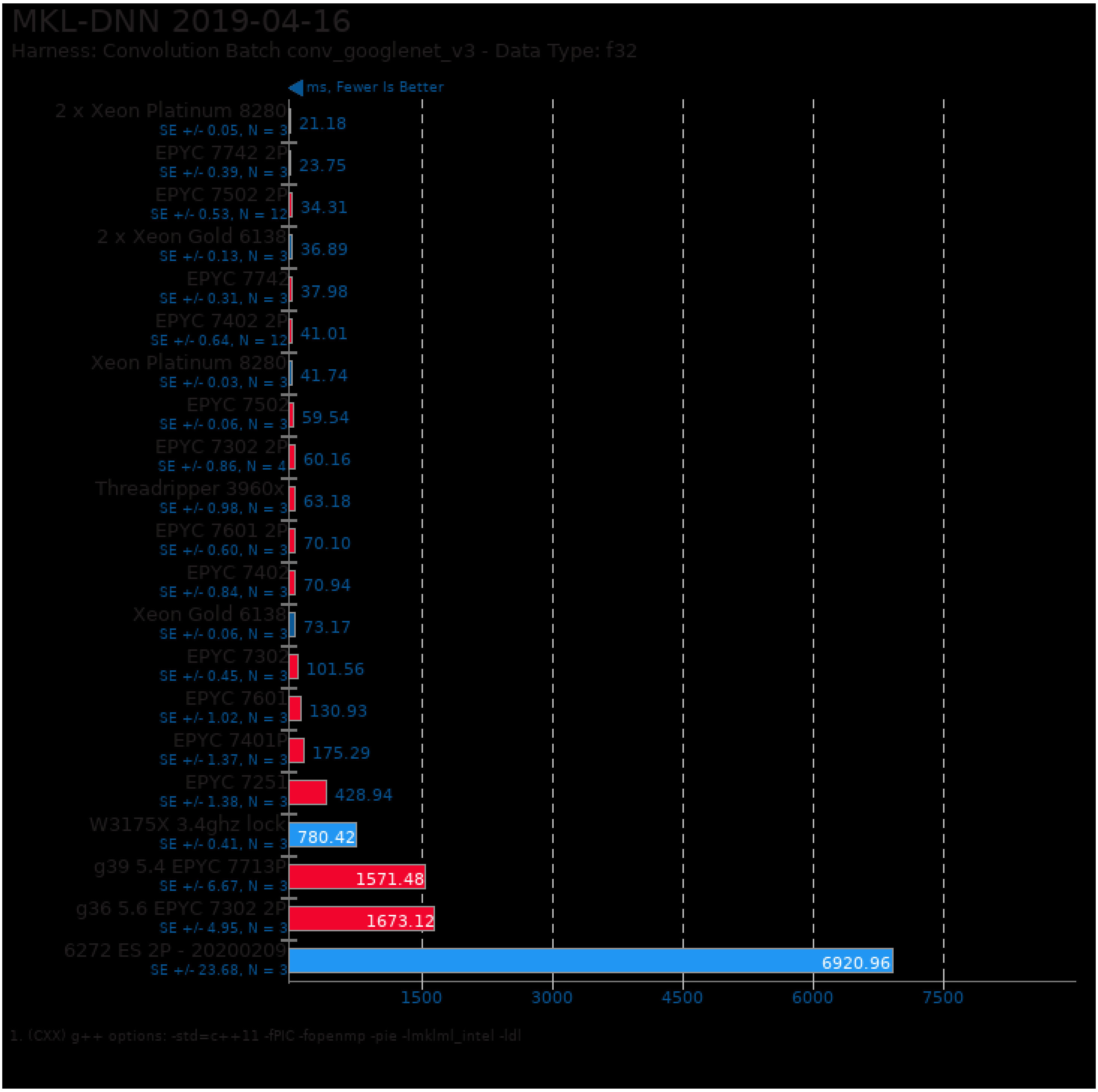

Blender 2.80
Blend File: Barbershop - Compute: CPU-Only
Seconds, Fewer Is Better
EPYC 7742 2P
SE +/- 0.21, N = 3
142.00
EPYC 7502 2P
SE +/- 0.39, N = 3
164.00
EPYC 7742
SE +/- 0.23, N = 3
169.00
EPYC 7402 2P
SE +/- 0.33, N = 3
180.00
2 x Xeon Platinum 8280
SE +/- 0.32, N = 3
181.00
EPYC 7601 2P
SE +/- 0.82, N = 3
220.00
Threadripper 3960x
SE +/- 0.16, N = 3
230.28
W3175X 3.4ghz lock
SE +/- 0.28, N = 3
236.00
EPYC 7302 2P
SE +/- 0.29, N = 3
238.00
EPYC 7502
SE +/- 0.42, N = 3
243.00
g36 5.6 EPYC 7302 2P
SE +/- 3.36, N = 3
245.41
2 x Xeon Gold 6138
SE +/- 0.20, N = 3
266.00
Xeon Platinum 8280
SE +/- 0.13, N = 3
279.00
EPYC 7402
SE +/- 0.14, N = 3
284.00
EPYC 7601
SE +/- 0.69, N = 3
347.00
EPYC 7302
SE +/- 0.27, N = 3
400.00
EPYC 7401P
SE +/- 0.69, N = 3
453.00
Xeon Gold 6138
SE +/- 0.28, N = 3
455.00
6272 ES 2P - 20200209
SE +/- 2.44, N = 3
866.38
EPYC 7251
SE +/- 0.89, N = 3
1190.00
300
600
900
1200
1500

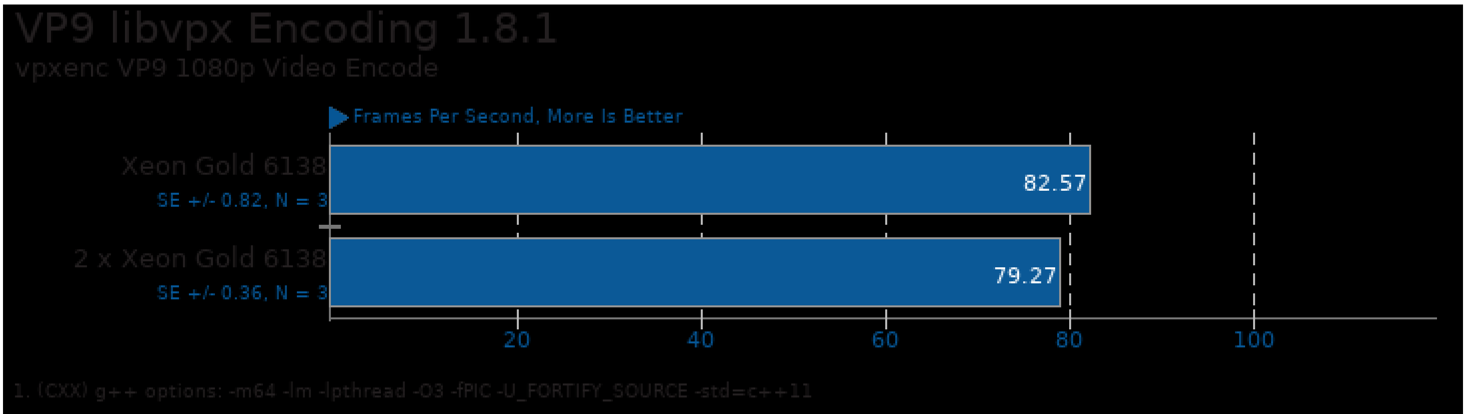

Blender 2.80
Blend File: Pabellon Barcelona - Compute: CPU-Only
Seconds, Fewer Is Better
EPYC 7742 2P
SE +/- 0.23, N = 3
74.19
EPYC 7502 2P
SE +/- 0.36, N = 3
109.24
EPYC 7742
SE +/- 0.51, N = 3
116.92
2 x Xeon Platinum 8280
SE +/- 0.14, N = 3
124.87
EPYC 7402 2P
SE +/- 0.67, N = 3
128.52
EPYC 7601 2P
SE +/- 0.13, N = 3
159.74
g36 5.6 EPYC 7302 2P
SE +/- 0.23, N = 3
176.73
EPYC 7302 2P
SE +/- 0.95, N = 3
180.38
Threadripper 3960X
SE +/- 0.10, N = 3
183.36
EPYC 7502
SE +/- 0.85, N = 3
199.29
W3175X 3.4ghz lock
SE +/- 0.09, N = 3
203.60
2 x Xeon Gold 6138
SE +/- 0.15, N = 3
214.82
EPYC 7402
SE +/- 0.87, N = 3
234.19
Xeon Platinum 8280
SE +/- 0.12, N = 3
237.50
EPYC 7601
SE +/- 0.59, N = 3
294.28
EPYC 7302
SE +/- 0.34, N = 3
341.22
EPYC 7401P
SE +/- 0.17, N = 3
390.84
Xeon Gold 6138
SE +/- 0.16, N = 3
414.35
6272 ES 2P - 20200209
SE +/- 1.40, N = 3
828.53
EPYC 7251
SE +/- 0.84, N = 3
1067.23
200
400
600
800
1000

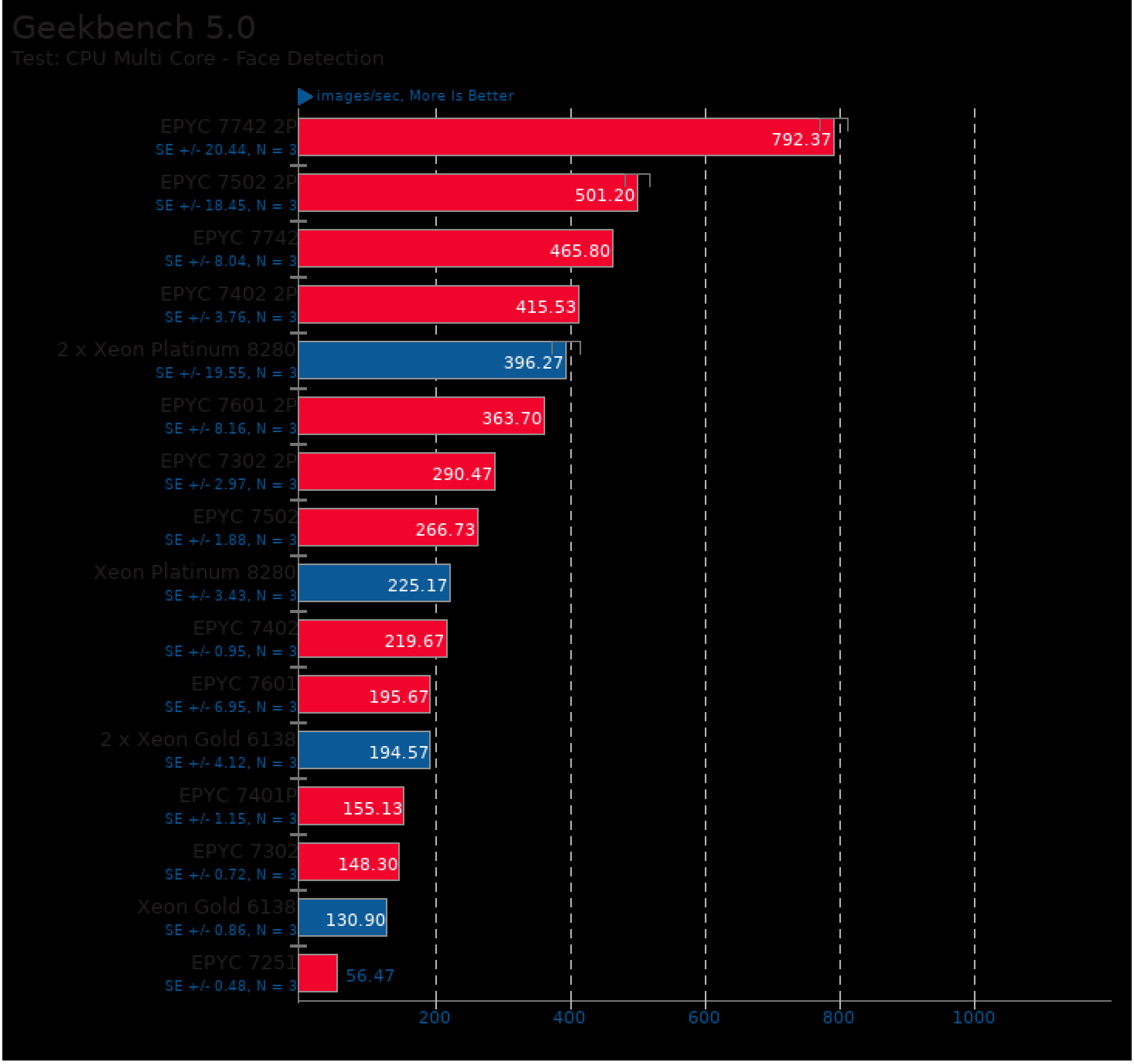

Blender 2.80
Blend File: Classroom - Compute: CPU-Only
Seconds, Fewer Is Better
EPYC 7742 2P
SE +/- 0.19, N = 3
46.33
EPYC 7502 2P
SE +/- 0.20, N = 3
78.17
EPYC 7742
SE +/- 0.21, N = 3
86.25
EPYC 7402 2P
SE +/- 0.26, N = 3
94.41
2 x Xeon Platinum 8280
SE +/- 0.06, N = 3
95.00
EPYC 7601 2P
SE +/- 0.22, N = 3
98.92
EPYC 7302 2P
SE +/- 0.71, N = 3
136.31
g36 5.6 EPYC 7302 2P
SE +/- 0.87, N = 3
138.28
Threadripper 3960x
SE +/- 0.06, N = 3
140.34
EPYC 7502
SE +/- 0.38, N = 3
152.52
W3175X 3.4ghz lock
SE +/- 0.14, N = 3
156.48
2 x Xeon Gold 6138
SE +/- 0.43, N = 3
163.61
EPYC 7402
SE +/- 0.03, N = 3
181.58
Xeon Platinum 8280
SE +/- 0.29, N = 3
188.04
EPYC 7601
SE +/- 0.20, N = 3
204.36
EPYC 7302
SE +/- 0.22, N = 3
264.66
EPYC 7401P
SE +/- 0.50, N = 3
275.15
Xeon Gold 6138
SE +/- 0.12, N = 3
321.10
6272 ES 2P - 20200209
SE +/- 0.88, N = 3
653.78
EPYC 7251
SE +/- 1.14, N = 3
704.46
150
300
450
600
750

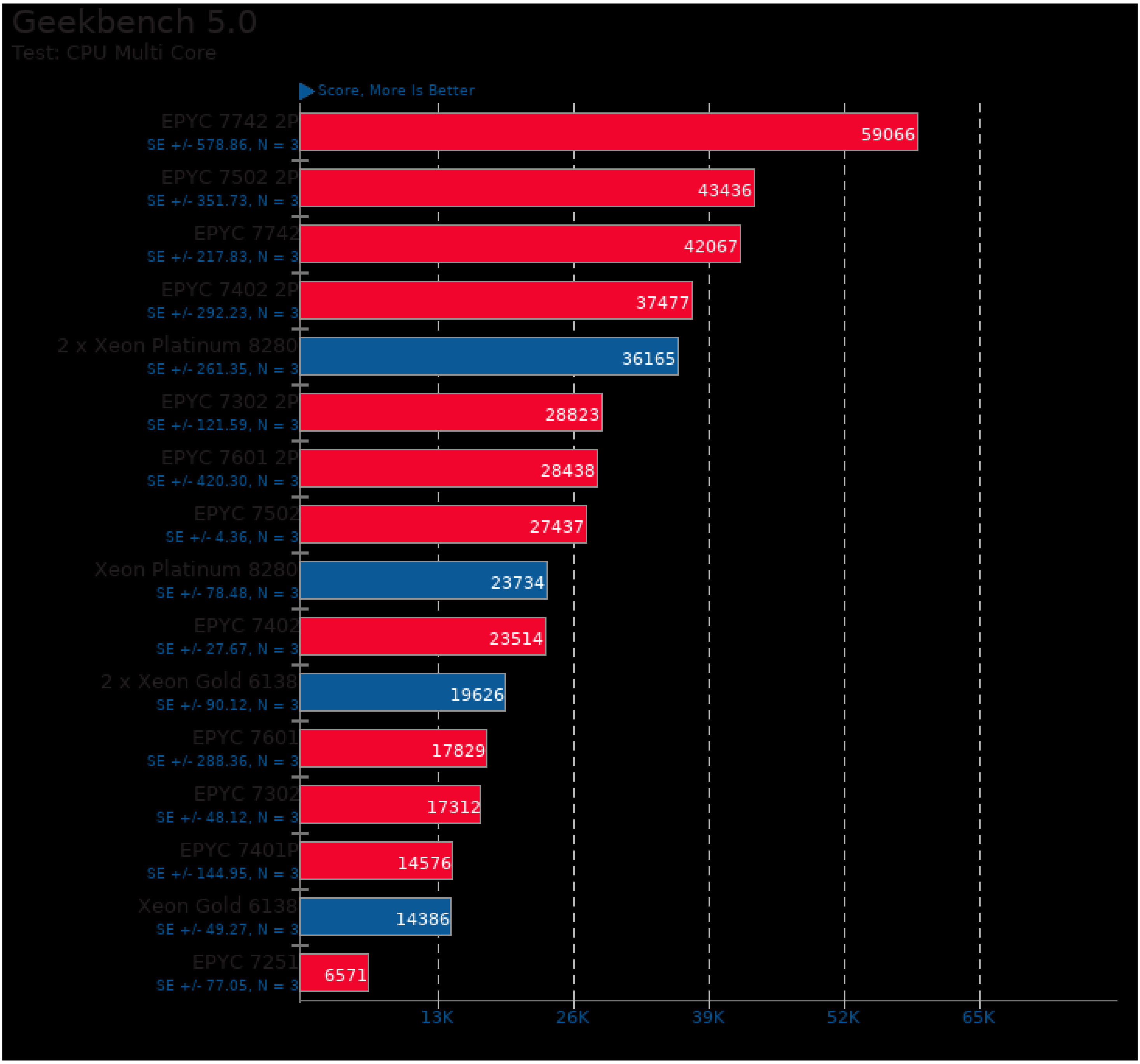

AOM AV1 2019-09-16
AV1 Video Encoding
Frames Per Second, More Is Better
Xeon Gold 6138
SE +/- 0.00, N = 3
0.10
0.0225
0.045
0.0675
0.09
0.1125
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm -lpthread

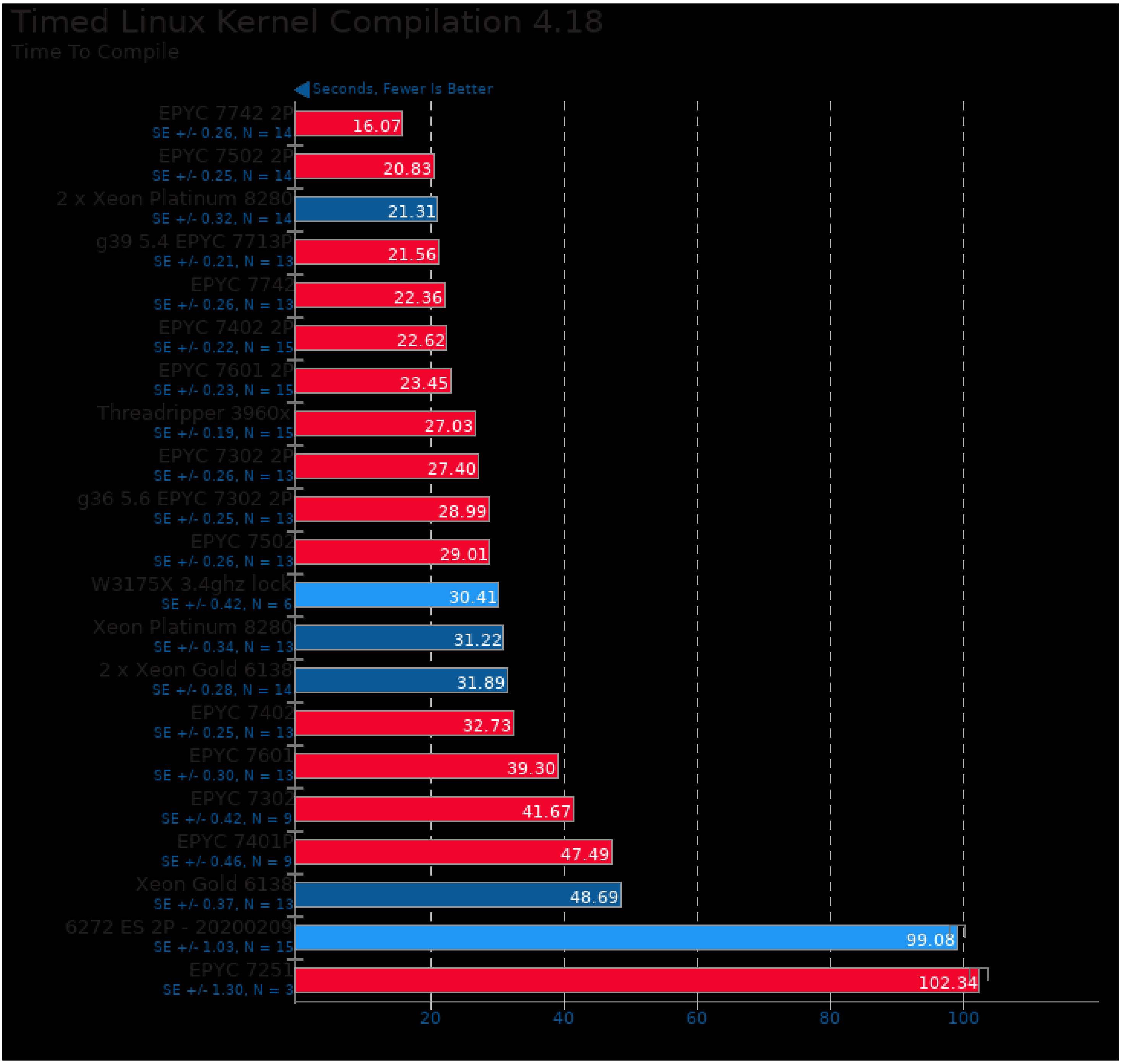

asmFish 2018-07-23
1024 Hash Memory, 26 Depth
Nodes/second, More Is Better
EPYC 7742 2P
SE +/- 915377.87, N = 3
239606281
g39 5.4 EPYC 7713P
SE +/- 587582.64, N = 3
142246356
EPYC 7502 2P
SE +/- 221270.37, N = 3
135474285
2 x Xeon Platinum 8280
SE +/- 1646110.87, N = 3
134205427
EPYC 7742
SE +/- 618106.66, N = 3
131710538
EPYC 7601 2P
SE +/- 982780.05, N = 3
114981990
EPYC 7402 2P
SE +/- 1935815.84, N = 3
112672179
EPYC 7502
SE +/- 455316.65, N = 3
78467488
EPYC 7302 2P
SE +/- 765274.16, N = 3
75783369
Threadripper 3960x
SE +/- 242020.51, N = 3
74819561
W3175X 3.4ghz lock
SE +/- 777043.78, N = 3
74771159
2 x Xeon Gold 6138
SE +/- 432776.70, N = 3
74681445
g36 5.6 EPYC 7302 2P
SE +/- 375960.11, N = 3
73651018
Xeon Platinum 8280
SE +/- 357133.13, N = 3
70136822
EPYC 7402
SE +/- 110587.02, N = 3
62962855
EPYC 7601
SE +/- 218757.87, N = 3
62241924
EPYC 7401P
SE +/- 252056.42, N = 3
46018875
EPYC 7302
SE +/- 236368.34, N = 3
42909829
Xeon Gold 6138
SE +/- 534363.35, N = 5
40796460
6272 ES 2P - 20200209
SE +/- 125467.18, N = 3
29203259
EPYC 7251
SE +/- 195590.67, N = 5
16219903
50M
100M
150M
200M
250M

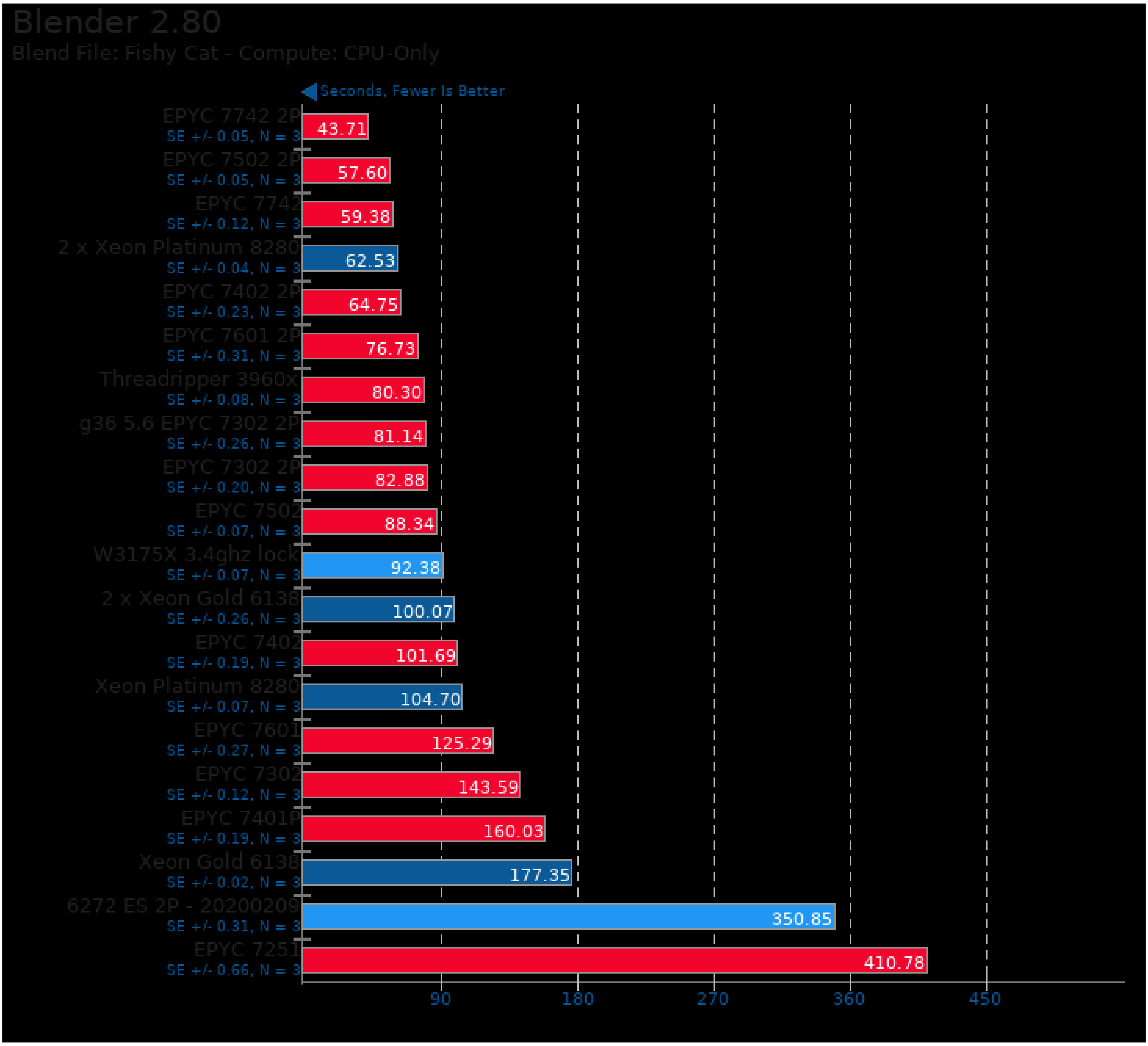

MKL-DNN 2019-04-16
Harness: Convolution Batch conv_googlenet_v3 - Data Type: f32
ms, Fewer Is Better
2 x Xeon Platinum 8280
SE +/- 0.05, N = 3
21.18
EPYC 7742 2P
SE +/- 0.39, N = 3
23.75
EPYC 7502 2P
SE +/- 0.53, N = 12
34.31
2 x Xeon Gold 6138
SE +/- 0.13, N = 3
36.89
EPYC 7742
SE +/- 0.31, N = 3
37.98
EPYC 7402 2P
SE +/- 0.64, N = 12
41.01
Xeon Platinum 8280
SE +/- 0.03, N = 3
41.74
EPYC 7502
SE +/- 0.06, N = 3
59.54
EPYC 7302 2P
SE +/- 0.86, N = 4
60.16
Threadripper 3960X
SE +/- 0.98, N = 3
63.18
EPYC 7601 2P
SE +/- 0.60, N = 3
70.10
EPYC 7402
SE +/- 0.84, N = 3
70.94
Xeon Gold 6138
SE +/- 0.06, N = 3
73.17
EPYC 7302
SE +/- 0.45, N = 3
101.56
EPYC 7601
SE +/- 1.02, N = 3
130.93
EPYC 7401P
SE +/- 1.37, N = 3
175.29
EPYC 7251
SE +/- 1.38, N = 3
428.94
W3175X 3.4ghz lock
SE +/- 0.41, N = 3
780.42
g39 5.4 EPYC 7713P
SE +/- 6.67, N = 3
1571.48
g36 5.6 EPYC 7302 2P
SE +/- 4.95, N = 3
1673.12
6272 ES 2P - 20200209
SE +/- 23.68, N = 3
6920.96
1500
3000
4500
6000
7500
1. (CXX) g++ options: -std=c++11 -fPIC -fopenmp -pie -lmklml_intel -ldl

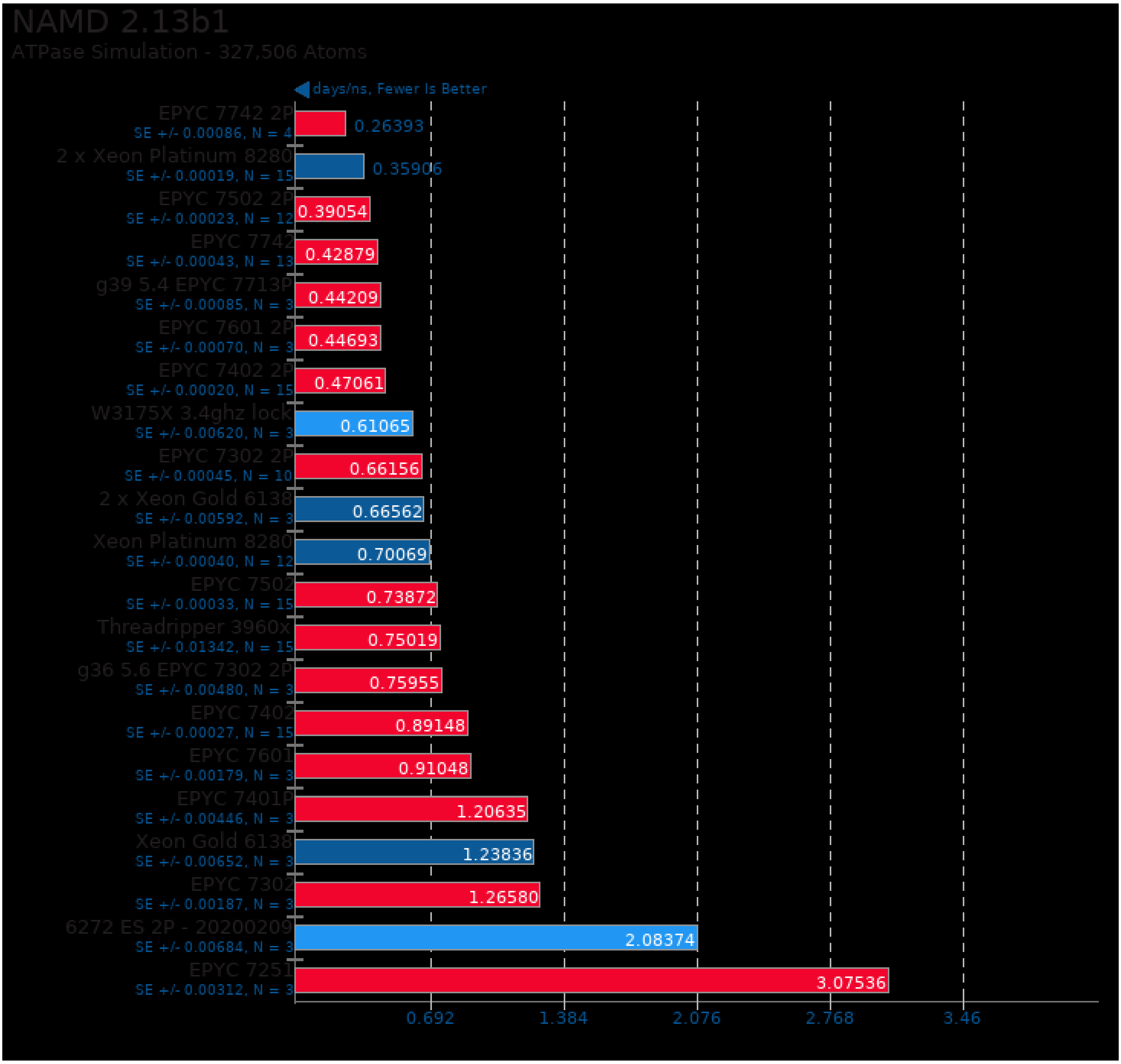

VP9 libvpx Encoding 1.8.1
vpxenc VP9 1080p Video Encode
Frames Per Second, More Is Better
Xeon Gold 6138
SE +/- 0.82, N = 3
82.57
2 x Xeon Gold 6138
SE +/- 0.36, N = 3
79.27
20
40
60
80
100
1. (CXX) g++ options: -m64 -lm -lpthread -O3 -fPIC -U_FORTIFY_SOURCE -std=c++11

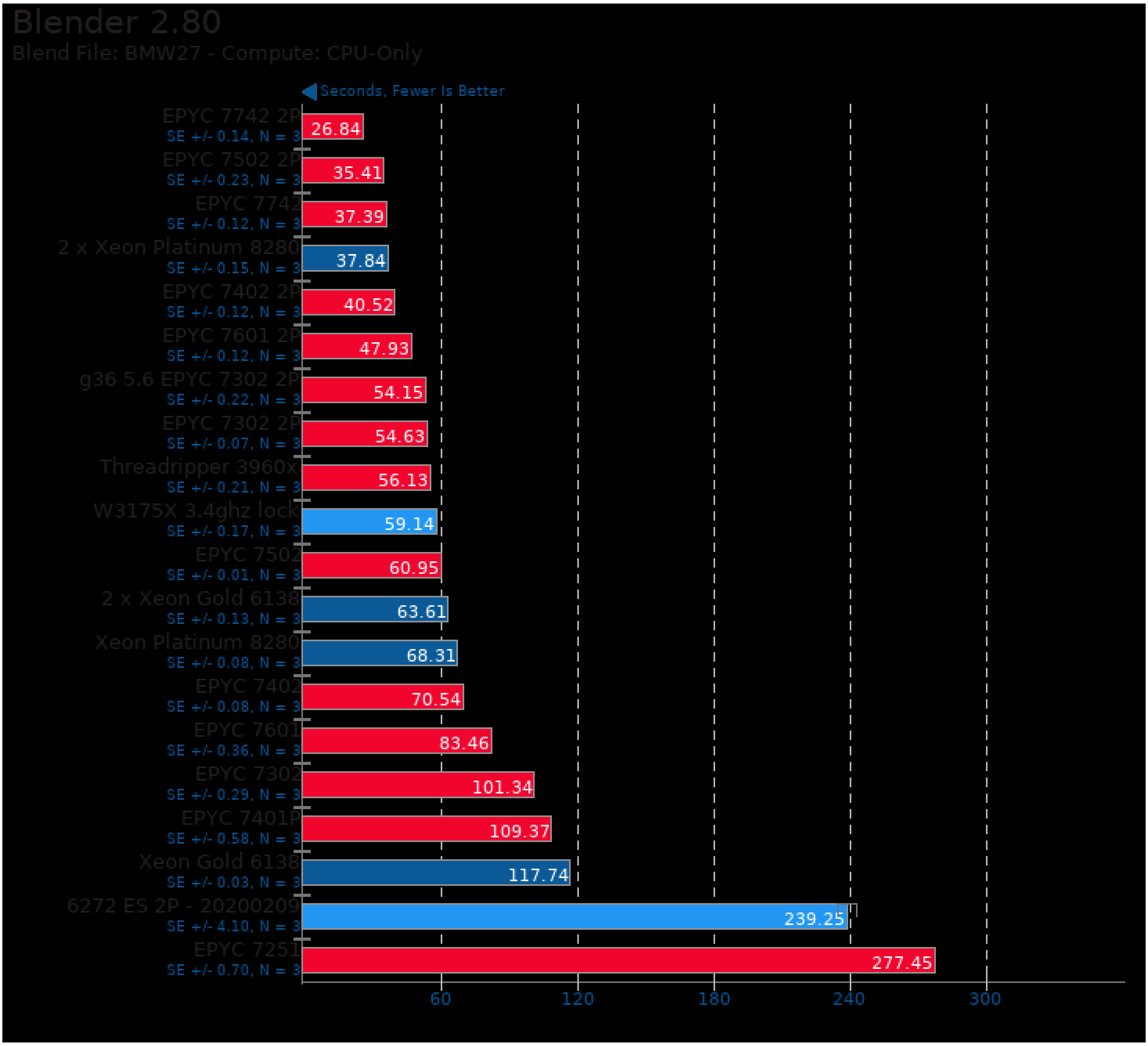

Geekbench 5.0
Test: CPU Multi Core - Face Detection
images/sec, More Is Better
EPYC 7742 2P
SE +/- 20.44, N = 3
792.37
EPYC 7502 2P
SE +/- 18.45, N = 3
501.20
EPYC 7742
SE +/- 8.04, N = 3
465.80
EPYC 7402 2P
SE +/- 3.76, N = 3
415.53
2 x Xeon Platinum 8280
SE +/- 19.55, N = 3
396.27
EPYC 7601 2P
SE +/- 8.16, N = 3
363.70
EPYC 7302 2P
SE +/- 2.97, N = 3
290.47
EPYC 7502
SE +/- 1.88, N = 3
266.73
Xeon Platinum 8280
SE +/- 3.43, N = 3
225.17
EPYC 7402
SE +/- 0.95, N = 3
219.67
EPYC 7601
SE +/- 6.95, N = 3
195.67
2 x Xeon Gold 6138
SE +/- 4.12, N = 3
194.57
EPYC 7401P
SE +/- 1.15, N = 3
155.13
EPYC 7302
SE +/- 0.72, N = 3
148.30
Xeon Gold 6138
SE +/- 0.86, N = 3
130.90
EPYC 7251
SE +/- 0.48, N = 3
56.47
200
400
600
800
1000

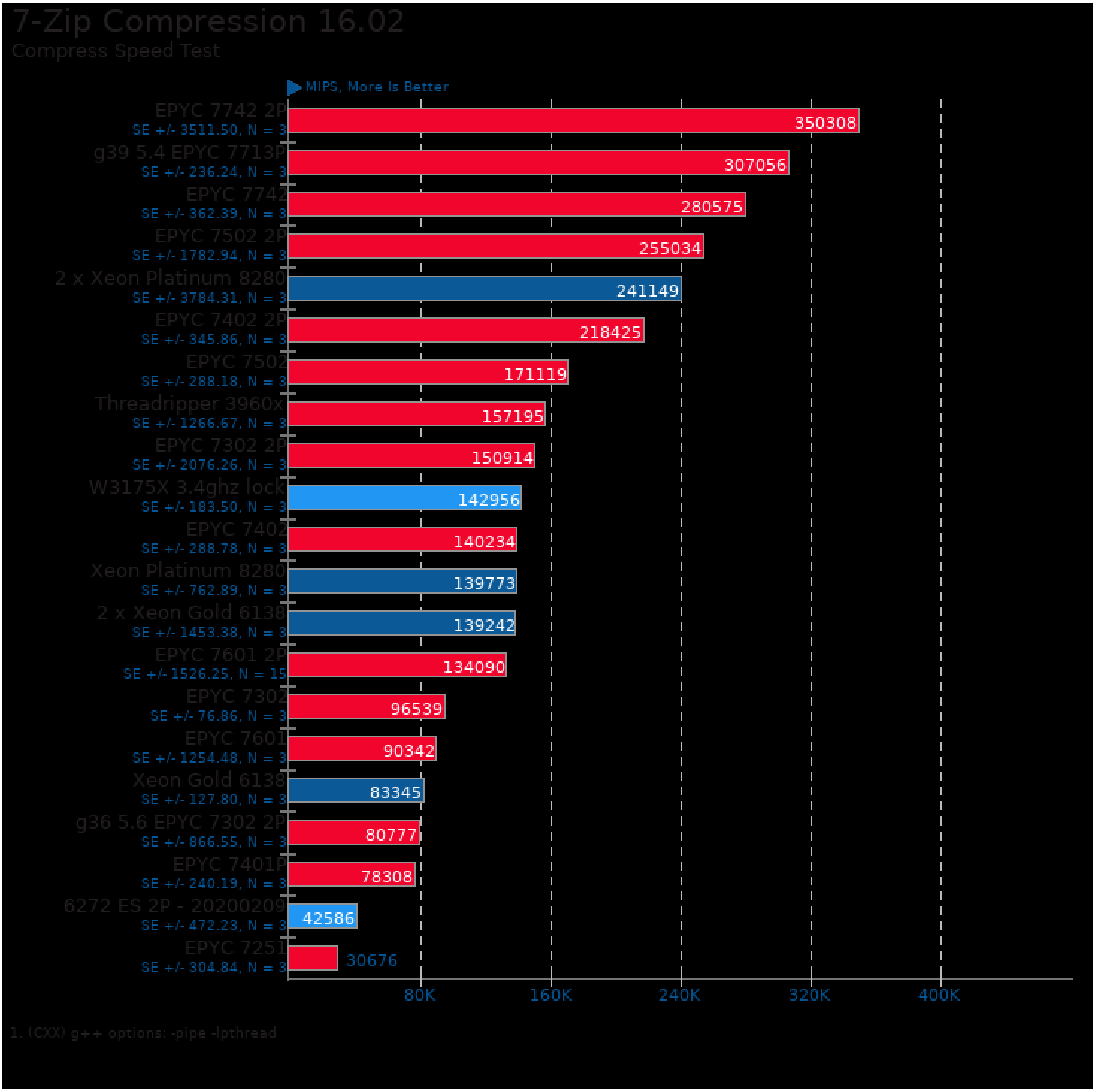

Geekbench 5.0
Test: CPU Multi Core
Score, More Is Better
EPYC 7742 2P
SE +/- 578.86, N = 3
59066
EPYC 7502 2P
SE +/- 351.73, N = 3
43436
EPYC 7742
SE +/- 217.83, N = 3
42067
EPYC 7402 2P
SE +/- 292.23, N = 3
37477
2 x Xeon Platinum 8280
SE +/- 261.35, N = 3
36165
EPYC 7302 2P
SE +/- 121.59, N = 3
28823
EPYC 7601 2P
SE +/- 420.30, N = 3
28438
EPYC 7502
SE +/- 4.36, N = 3
27437
Xeon Platinum 8280
SE +/- 78.48, N = 3
23734
EPYC 7402
SE +/- 27.67, N = 3
23514
2 x Xeon Gold 6138
SE +/- 90.12, N = 3
19626
EPYC 7601
SE +/- 288.36, N = 3
17829
EPYC 7302
SE +/- 48.12, N = 3
17312
EPYC 7401P
SE +/- 144.95, N = 3
14576
Xeon Gold 6138
SE +/- 49.27, N = 3
14386
EPYC 7251
SE +/- 77.05, N = 3
6571
13K
26K
39K
52K
65K

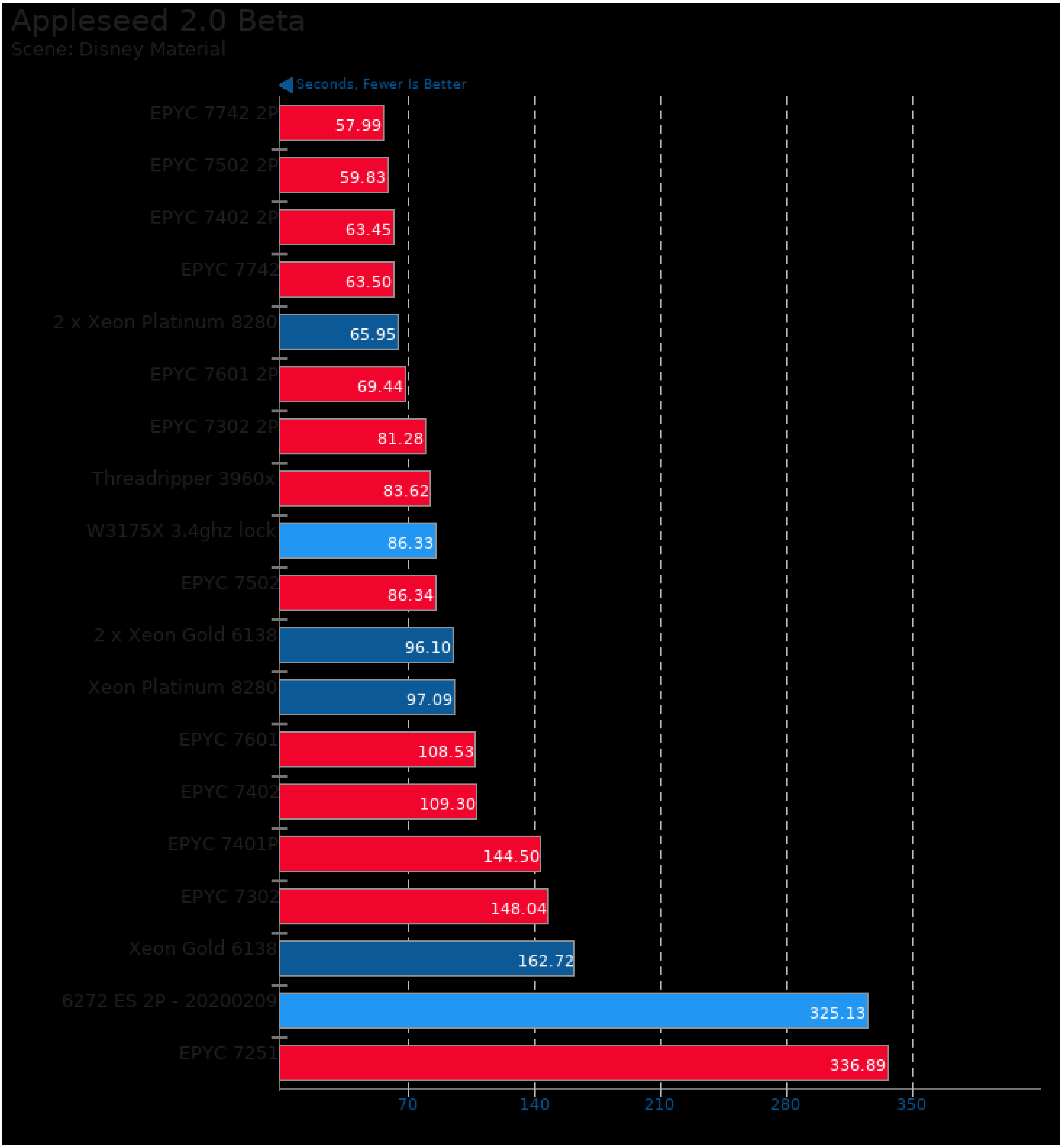

Timed Linux Kernel Compilation 4.18
Time To Compile
Seconds, Fewer Is Better
EPYC 7742 2P
SE +/- 0.26, N = 14
16.07
EPYC 7502 2P
SE +/- 0.25, N = 14
20.83
2 x Xeon Platinum 8280
SE +/- 0.32, N = 14
21.31
g39 5.4 EPYC 7713P
SE +/- 0.21, N = 13
21.56
EPYC 7742
SE +/- 0.26, N = 13
22.36
EPYC 7402 2P
SE +/- 0.22, N = 15
22.62
EPYC 7601 2P
SE +/- 0.23, N = 15
23.45
Threadripper 3960x
SE +/- 0.19, N = 15
27.03
EPYC 7302 2P
SE +/- 0.26, N = 13
27.40
g36 5.6 EPYC 7302 2P
SE +/- 0.25, N = 13
28.99
EPYC 7502
SE +/- 0.26, N = 13
29.01
W3175X 3.4ghz lock
SE +/- 0.42, N = 6
30.41
Xeon Platinum 8280
SE +/- 0.34, N = 13
31.22
2 x Xeon Gold 6138
SE +/- 0.28, N = 14
31.89
EPYC 7402
SE +/- 0.25, N = 13
32.73
EPYC 7601
SE +/- 0.30, N = 13
39.30
EPYC 7302
SE +/- 0.42, N = 9
41.67
EPYC 7401P
SE +/- 0.46, N = 9
47.49
Xeon Gold 6138
SE +/- 0.37, N = 13
48.69
6272 ES 2P - 20200209
SE +/- 1.03, N = 15
99.08
EPYC 7251
SE +/- 1.30, N = 3
102.34
20
40
60
80
100

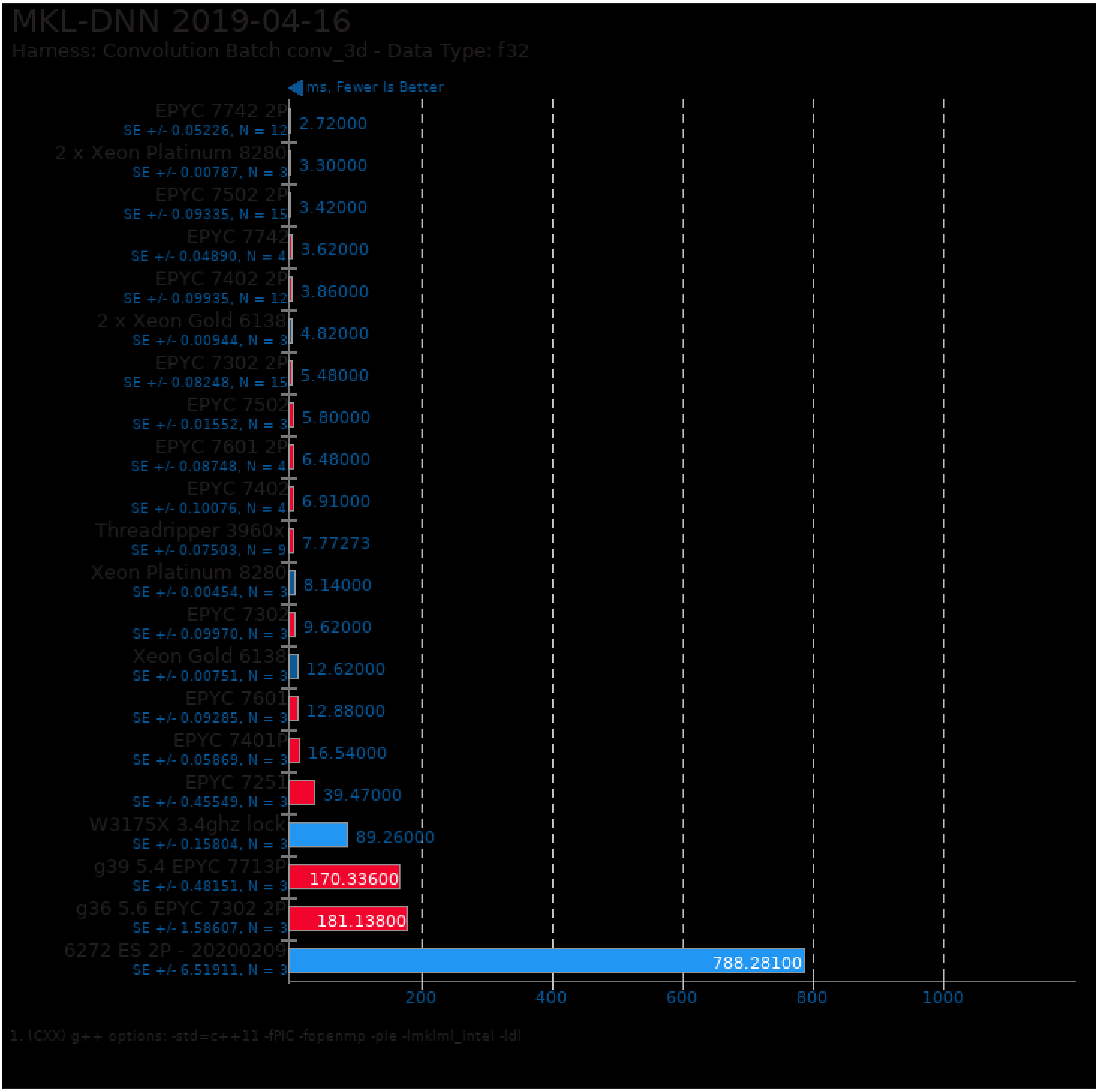

Blender 2.80
Blend File: Fishy Cat - Compute: CPU-Only
Seconds, Fewer Is Better
EPYC 7742 2P
SE +/- 0.05, N = 3
43.71
EPYC 7502 2P
SE +/- 0.05, N = 3
57.60
EPYC 7742
SE +/- 0.12, N = 3
59.38
2 x Xeon Platinum 8280
SE +/- 0.04, N = 3
62.53
EPYC 7402 2P
SE +/- 0.23, N = 3
64.75
EPYC 7601 2P
SE +/- 0.31, N = 3
76.73
Threadripper 3960x
SE +/- 0.08, N = 3
80.30
g36 5.6 EPYC 7302 2P
SE +/- 0.26, N = 3
81.14
EPYC 7302 2P
SE +/- 0.20, N = 3
82.88
EPYC 7502
SE +/- 0.07, N = 3
88.34
W3175X 3.4ghz lock
SE +/- 0.07, N = 3
92.38
2 x Xeon Gold 6138
SE +/- 0.26, N = 3
100.07
EPYC 7402
SE +/- 0.19, N = 3
101.69
Xeon Platinum 8280
SE +/- 0.07, N = 3
104.70
EPYC 7601
SE +/- 0.27, N = 3
125.29
EPYC 7302
SE +/- 0.12, N = 3
143.59
EPYC 7401P
SE +/- 0.19, N = 3
160.03
Xeon Gold 6138
SE +/- 0.02, N = 3
177.35
6272 ES 2P - 20200209
SE +/- 0.31, N = 3
350.85
EPYC 7251
SE +/- 0.66, N = 3
410.78
90
180
270
360
450

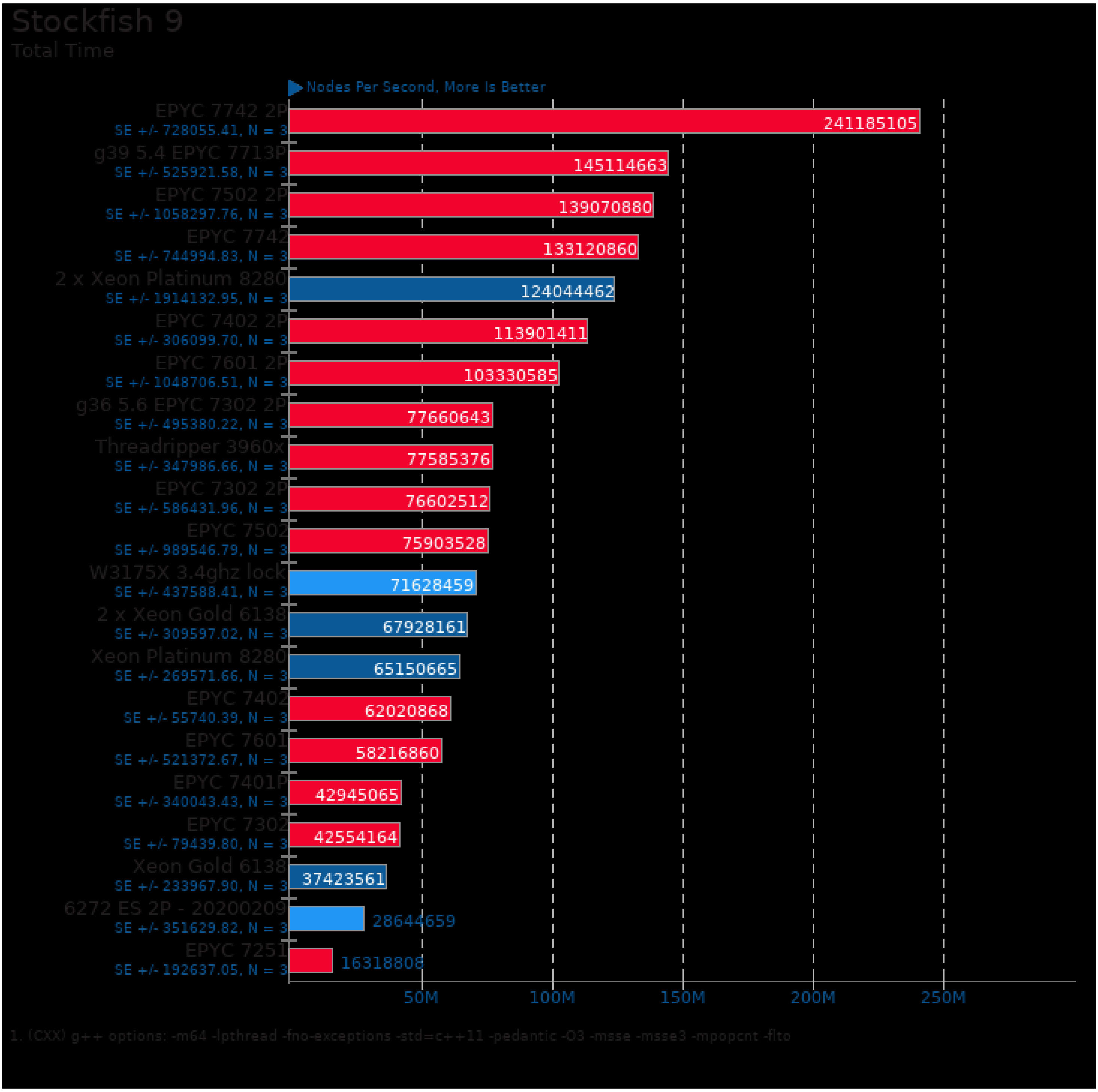

NAMD 2.13b1
ATPase Simulation - 327,506 Atoms
days/ns, Fewer Is Better
EPYC 7742 2P
SE +/- 0.00086, N = 4
0.26393
2 x Xeon Platinum 8280
SE +/- 0.00019, N = 15
0.35906
EPYC 7502 2P
SE +/- 0.00023, N = 12
0.39054
EPYC 7742
SE +/- 0.00043, N = 13
0.42879
g39 5.4 EPYC 7713P
SE +/- 0.00085, N = 3
0.44209
EPYC 7601 2P
SE +/- 0.00070, N = 3
0.44693
EPYC 7402 2P
SE +/- 0.00020, N = 15
0.47061
W3175X 3.4ghz lock
SE +/- 0.00620, N = 3
0.61065
EPYC 7302 2P
SE +/- 0.00045, N = 10
0.66156
2 x Xeon Gold 6138
SE +/- 0.00592, N = 3
0.66562
Xeon Platinum 8280
SE +/- 0.00040, N = 12
0.70069
EPYC 7502
SE +/- 0.00033, N = 15
0.73872
Threadripper 3960X
SE +/- 0.01342, N = 15
0.75019
g36 5.6 EPYC 7302 2P
SE +/- 0.00480, N = 3
0.75955
EPYC 7402
SE +/- 0.00027, N = 15
0.89148
EPYC 7601
SE +/- 0.00179, N = 3
0.91048
EPYC 7401P
SE +/- 0.00446, N = 3
1.20635
Xeon Gold 6138
SE +/- 0.00652, N = 3
1.23836
EPYC 7302
SE +/- 0.00187, N = 3
1.26580
6272 ES 2P - 20200209
SE +/- 0.00684, N = 3
2.08374
EPYC 7251
SE +/- 0.00312, N = 3
3.07536
0.692
1.384
2.076
2.768
3.46

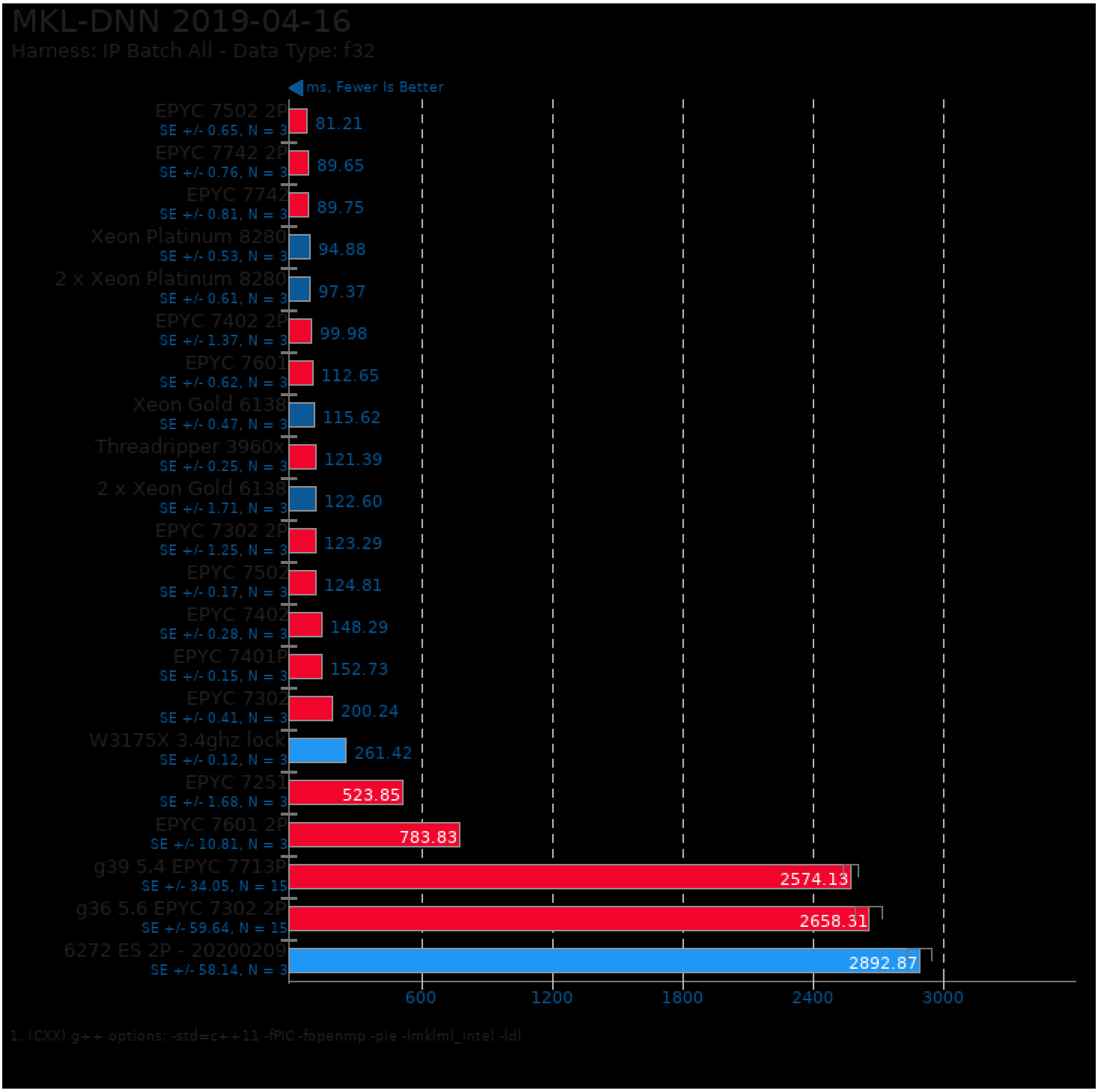

Blender 2.80
Blend File: BMW27 - Compute: CPU-Only
Seconds, Fewer Is Better
EPYC 7742 2P
SE +/- 0.14, N = 3
26.84
EPYC 7502 2P
SE +/- 0.23, N = 3
35.41
EPYC 7742
SE +/- 0.12, N = 3
37.39
2 x Xeon Platinum 8280
SE +/- 0.15, N = 3
37.84
EPYC 7402 2P
SE +/- 0.12, N = 3
40.52
EPYC 7601 2P
SE +/- 0.12, N = 3
47.93
g36 5.6 EPYC 7302 2P
SE +/- 0.22, N = 3
54.15
EPYC 7302 2P
SE +/- 0.07, N = 3
54.63
Threadripper 3960x
SE +/- 0.21, N = 3
56.13
W3175X 3.4ghz lock
SE +/- 0.17, N = 3
59.14
EPYC 7502
SE +/- 0.01, N = 3
60.95
2 x Xeon Gold 6138
SE +/- 0.13, N = 3
63.61
Xeon Platinum 8280
SE +/- 0.08, N = 3
68.31
EPYC 7402
SE +/- 0.08, N = 3
70.54
EPYC 7601
SE +/- 0.36, N = 3
83.46
EPYC 7302
SE +/- 0.29, N = 3
101.34
EPYC 7401P
SE +/- 0.58, N = 3
109.37
Xeon Gold 6138
SE +/- 0.03, N = 3
117.74
6272 ES 2P - 20200209
SE +/- 4.10, N = 3
239.25
EPYC 7251
SE +/- 0.70, N = 3
277.45
60
120
180
240
300

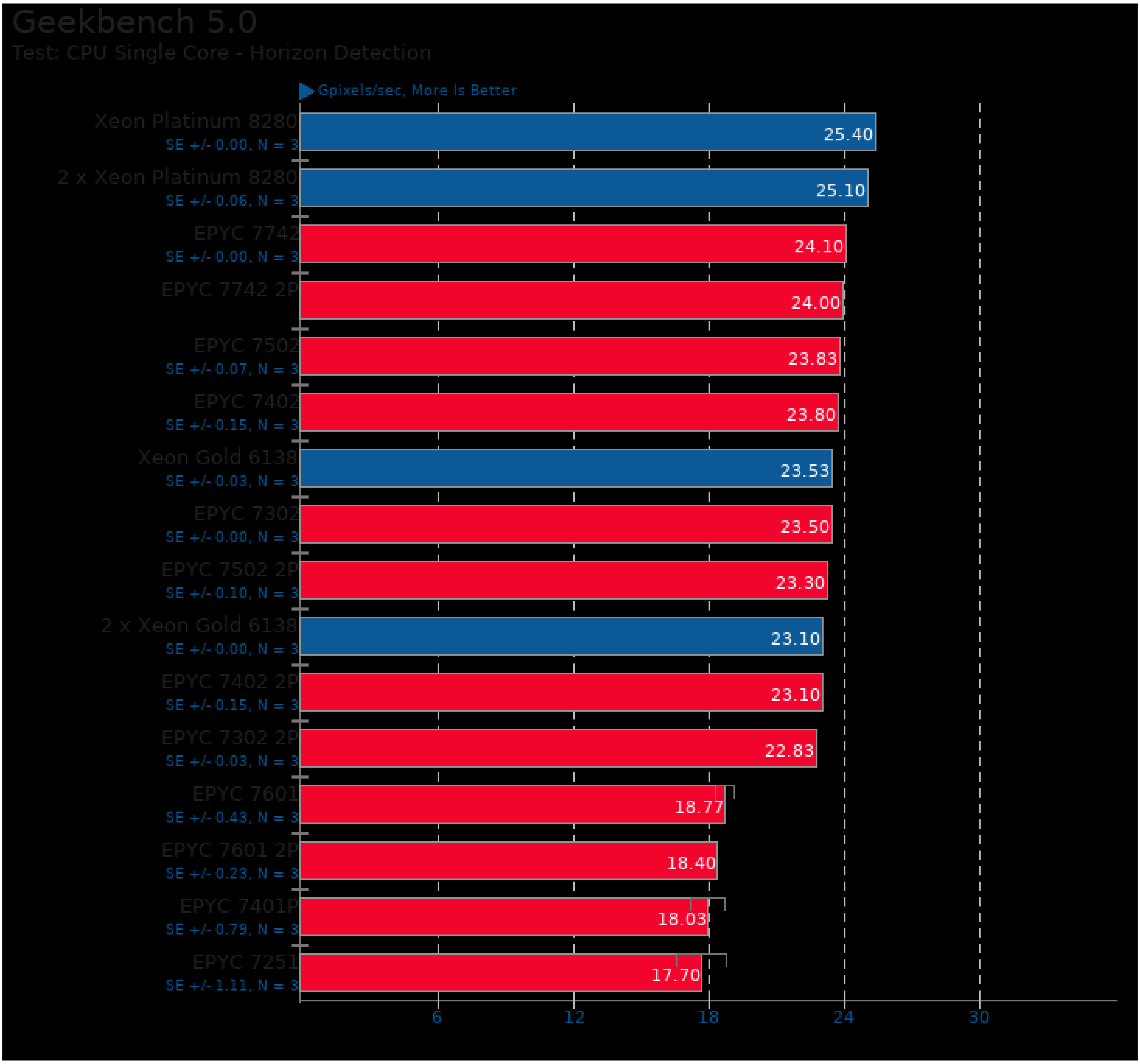

7-Zip Compression 16.02
Compress Speed Test
MIPS, More Is Better
EPYC 7742 2P
SE +/- 3511.50, N = 3
350308
g39 5.4 EPYC 7713P
SE +/- 236.24, N = 3
307056
EPYC 7742
SE +/- 362.39, N = 3
280575
EPYC 7502 2P
SE +/- 1782.94, N = 3
255034
2 x Xeon Platinum 8280
SE +/- 3784.31, N = 3
241149
EPYC 7402 2P
SE +/- 345.86, N = 3
218425
EPYC 7502
SE +/- 288.18, N = 3
171119
Threadripper 3960X
SE +/- 1266.67, N = 3
157195
EPYC 7302 2P
SE +/- 2076.26, N = 3
150914
W3175X 3.4ghz lock
SE +/- 183.50, N = 3
142956
EPYC 7402
SE +/- 288.78, N = 3
140234
Xeon Platinum 8280
SE +/- 762.89, N = 3
139773
2 x Xeon Gold 6138
SE +/- 1453.38, N = 3
139242
EPYC 7601 2P
SE +/- 1526.25, N = 15
134090
EPYC 7302
SE +/- 76.86, N = 3
96539
EPYC 7601
SE +/- 1254.48, N = 3
90342
Xeon Gold 6138
SE +/- 127.80, N = 3
83345
g36 5.6 EPYC 7302 2P
SE +/- 866.55, N = 3
80777
EPYC 7401P
SE +/- 240.19, N = 3
78308
6272 ES 2P - 20200209
SE +/- 472.23, N = 3
42586
EPYC 7251
SE +/- 304.84, N = 3
30676
80K
160K
240K
320K
400K
1. (CXX) g++ options: -pipe -lpthread

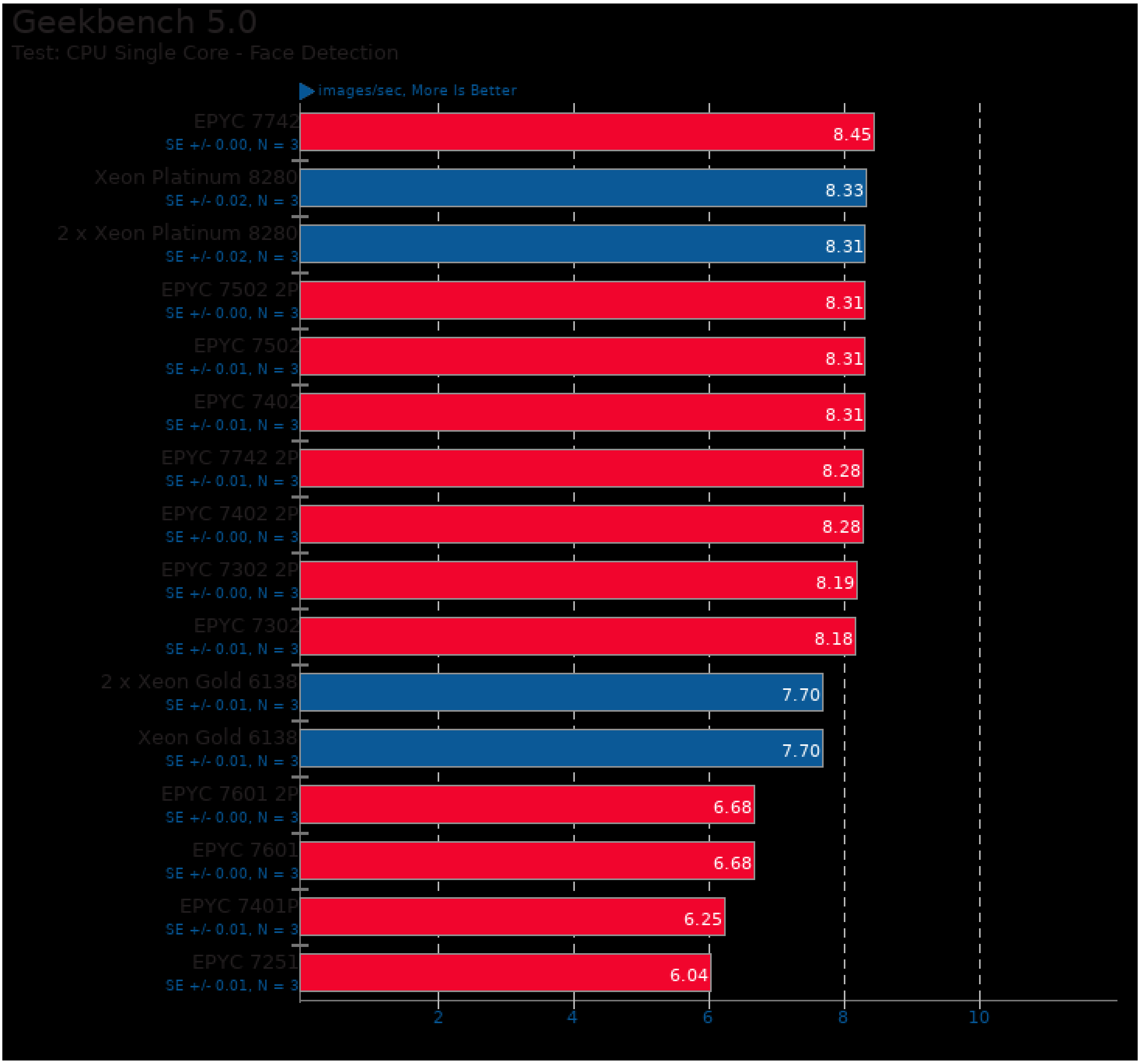

Appleseed 2.0 Beta
Scene: Disney Material
Seconds, Fewer Is Better
EPYC 7742 2P
57.99
EPYC 7502 2P
59.83
EPYC 7402 2P
63.45
EPYC 7742
63.50
2 x Xeon Platinum 8280
65.95
EPYC 7601 2P
69.44
EPYC 7302 2P
81.28
Threadripper 3960x
83.62
W3175X 3.4ghz lock
86.33
EPYC 7502
86.34
2 x Xeon Gold 6138
96.10
Xeon Platinum 8280
97.09
EPYC 7601
108.53
EPYC 7402
109.30
EPYC 7401P
144.50
EPYC 7302
148.04
Xeon Gold 6138
162.72
6272 ES 2P - 20200209
325.13
EPYC 7251
336.89
70
140
210
280
350

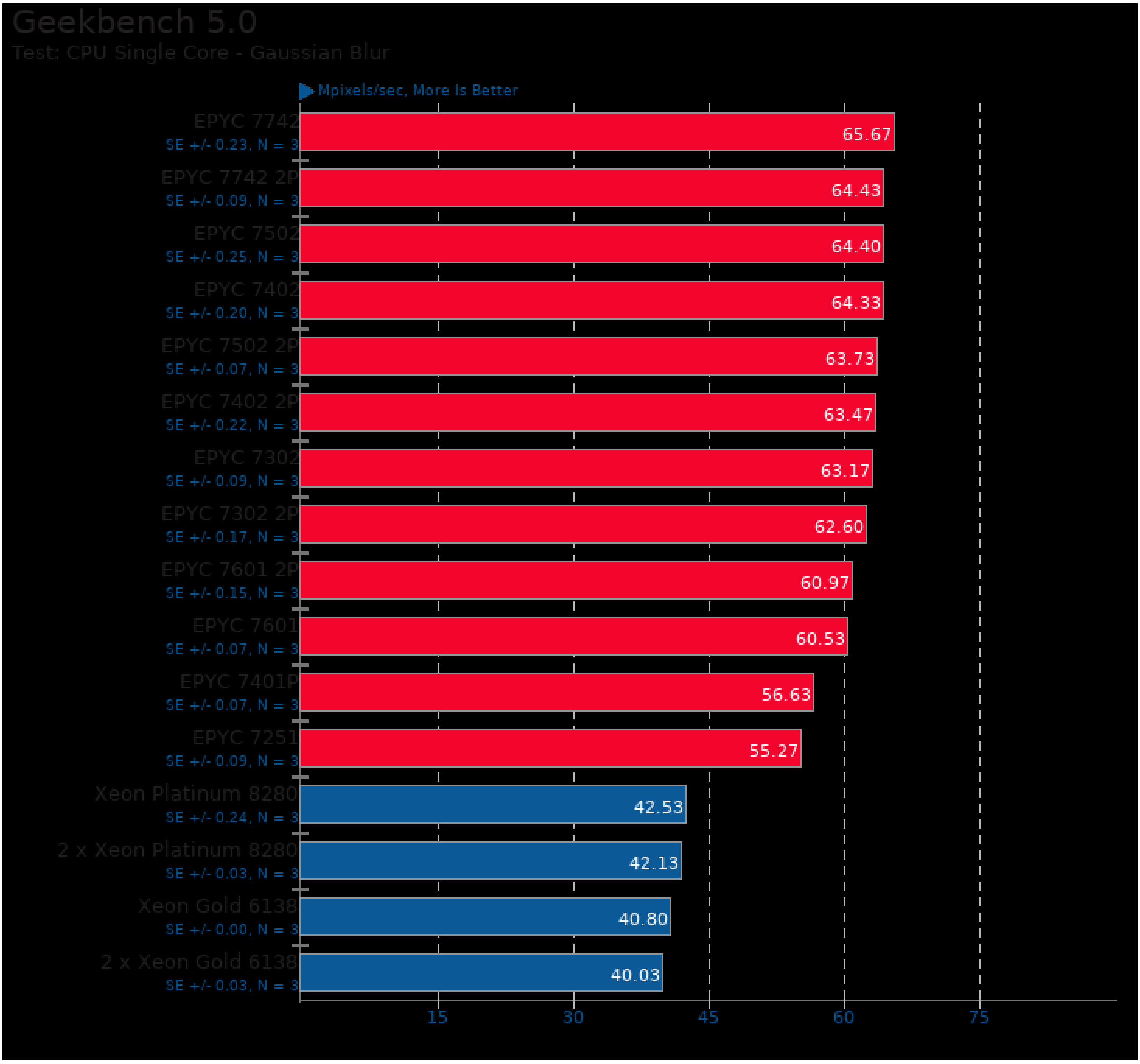

MKL-DNN 2019-04-16
Harness: Convolution Batch conv_3d - Data Type: f32
ms, Fewer Is Better
EPYC 7742 2P
SE +/- 0.05226, N = 12
2.72000
2 x Xeon Platinum 8280
SE +/- 0.00787, N = 3
3.30000
EPYC 7502 2P
SE +/- 0.09335, N = 15
3.42000
EPYC 7742
SE +/- 0.04890, N = 4
3.62000
EPYC 7402 2P
SE +/- 0.09935, N = 12
3.86000
2 x Xeon Gold 6138
SE +/- 0.00944, N = 3
4.82000
EPYC 7302 2P
SE +/- 0.08248, N = 15
5.48000
EPYC 7502
SE +/- 0.01552, N = 3
5.80000
EPYC 7601 2P
SE +/- 0.08748, N = 4
6.48000
EPYC 7402
SE +/- 0.10076, N = 4
6.91000
Threadripper 3960x
SE +/- 0.07503, N = 9
7.77273
Xeon Platinum 8280
SE +/- 0.00454, N = 3
8.14000
EPYC 7302
SE +/- 0.09970, N = 3
9.62000
Xeon Gold 6138
SE +/- 0.00751, N = 3
12.62000
EPYC 7601
SE +/- 0.09285, N = 3
12.88000
EPYC 7401P
SE +/- 0.05869, N = 3
16.54000
EPYC 7251
SE +/- 0.45549, N = 3
39.47000
W3175X 3.4ghz lock
SE +/- 0.15804, N = 3
89.26000
g39 5.4 EPYC 7713P
SE +/- 0.48151, N = 3
170.33600
g36 5.6 EPYC 7302 2P
SE +/- 1.58607, N = 3
181.13800
6272 ES 2P - 20200209
SE +/- 6.51911, N = 3
788.28100
200
400
600
800
1000
1. (CXX) g++ options: -std=c++11 -fPIC -fopenmp -pie -lmklml_intel -ldl

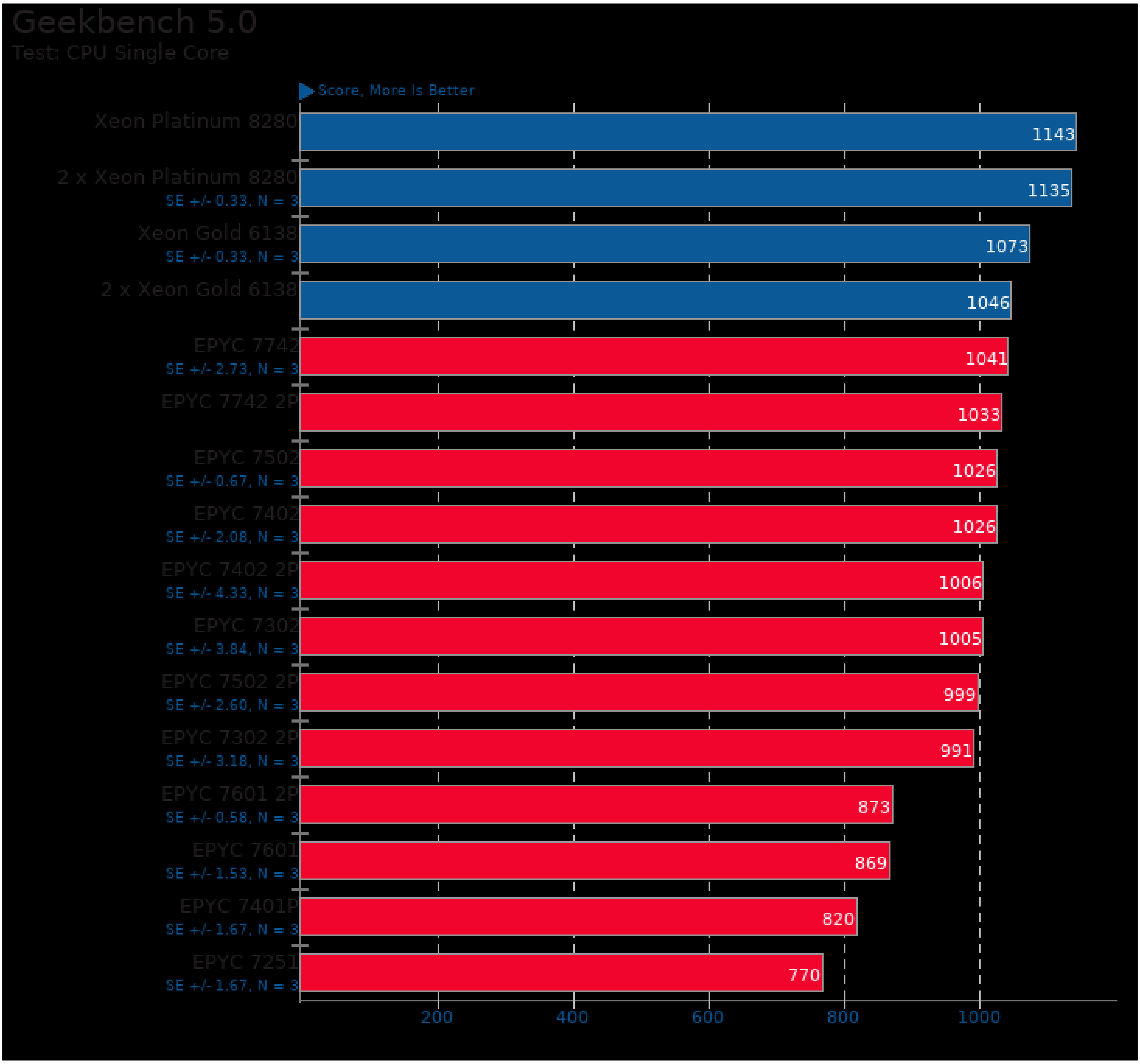

Stockfish 9
Total Time
Nodes Per Second, More Is Better
EPYC 7742 2P
SE +/- 728055.41, N = 3
241185105
g39 5.4 EPYC 7713P
SE +/- 525921.58, N = 3
145114663
EPYC 7502 2P
SE +/- 1058297.76, N = 3
139070880
EPYC 7742
SE +/- 744994.83, N = 3
133120860
2 x Xeon Platinum 8280
SE +/- 1914132.95, N = 3
124044462
EPYC 7402 2P
SE +/- 306099.70, N = 3
113901411
EPYC 7601 2P
SE +/- 1048706.51, N = 3
103330585
g36 5.6 EPYC 7302 2P
SE +/- 495380.22, N = 3
77660643
Threadripper 3960x
SE +/- 347986.66, N = 3
77585376
EPYC 7302 2P
SE +/- 586431.96, N = 3
76602512
EPYC 7502
SE +/- 989546.79, N = 3
75903528
W3175X 3.4ghz lock
SE +/- 437588.41, N = 3
71628459
2 x Xeon Gold 6138
SE +/- 309597.02, N = 3
67928161
Xeon Platinum 8280
SE +/- 269571.66, N = 3
65150665
EPYC 7402
SE +/- 55740.39, N = 3
62020868
EPYC 7601
SE +/- 521372.67, N = 3
58216860
EPYC 7401P
SE +/- 340043.43, N = 3
42945065
EPYC 7302
SE +/- 79439.80, N = 3
42554164
Xeon Gold 6138
SE +/- 233967.90, N = 3
37423561
6272 ES 2P - 20200209
SE +/- 351629.82, N = 3
28644659
EPYC 7251
SE +/- 192637.05, N = 3
16318808
50M
100M
150M
200M
250M
1. (CXX) g++ options: -m64 -lpthread -fno-exceptions -std=c++11 -pedantic -O3 -msse -msse3 -mpopcnt -flto

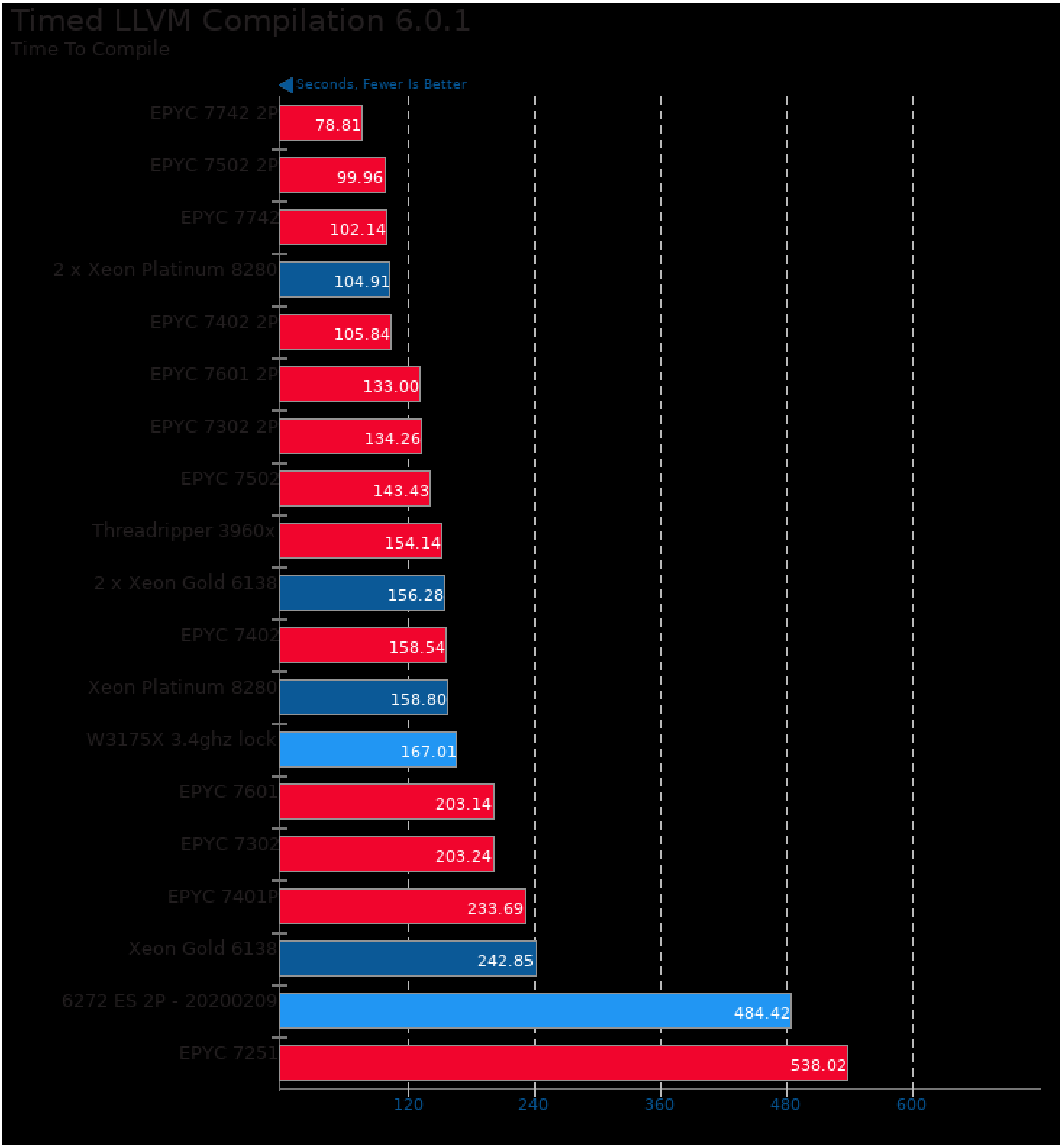

MKL-DNN 2019-04-16
Harness: IP Batch All - Data Type: f32
ms, Fewer Is Better
EPYC 7502 2P
SE +/- 0.65, N = 3
81.21
EPYC 7742 2P
SE +/- 0.76, N = 3
89.65
EPYC 7742
SE +/- 0.81, N = 3
89.75
Xeon Platinum 8280
SE +/- 0.53, N = 3
94.88
2 x Xeon Platinum 8280
SE +/- 0.61, N = 3
97.37
EPYC 7402 2P
SE +/- 1.37, N = 3
99.98
EPYC 7601
SE +/- 0.62, N = 3
112.65
Xeon Gold 6138
SE +/- 0.47, N = 3
115.62
Threadripper 3960x
SE +/- 0.25, N = 3
121.39
2 x Xeon Gold 6138
SE +/- 1.71, N = 3
122.60
EPYC 7302 2P
SE +/- 1.25, N = 3
123.29
EPYC 7502
SE +/- 0.17, N = 3
124.81
EPYC 7402
SE +/- 0.28, N = 3
148.29
EPYC 7401P
SE +/- 0.15, N = 3
152.73
EPYC 7302
SE +/- 0.41, N = 3
200.24
W3175X 3.4ghz lock
SE +/- 0.12, N = 3
261.42
EPYC 7251
SE +/- 1.68, N = 3
523.85
EPYC 7601 2P
SE +/- 10.81, N = 3
783.83
g39 5.4 EPYC 7713P
SE +/- 34.05, N = 15
2574.13
g36 5.6 EPYC 7302 2P
SE +/- 59.64, N = 15
2658.31
6272 ES 2P - 20200209
SE +/- 58.14, N = 3
2892.87
600
1200
1800
2400
3000
1. (CXX) g++ options: -std=c++11 -fPIC -fopenmp -pie -lmklml_intel -ldl

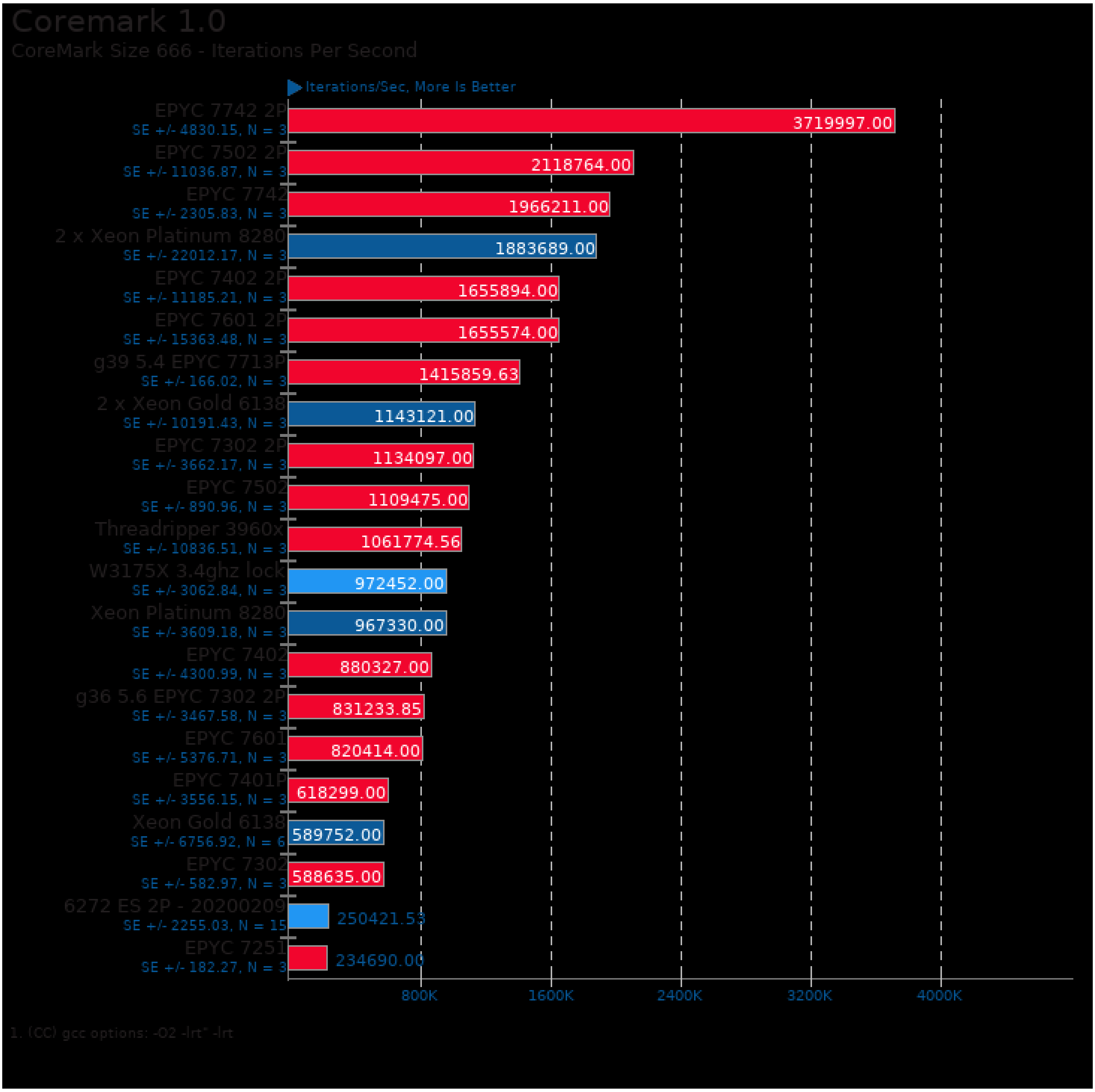

Geekbench 5.0
Test: CPU Single Core - Horizon Detection
Gpixels/sec, More Is Better
Xeon Platinum 8280
SE +/- 0.00, N = 3
25.40
2 x Xeon Platinum 8280
SE +/- 0.06, N = 3
25.10
EPYC 7742
SE +/- 0.00, N = 3
24.10
EPYC 7742 2P
24.00
EPYC 7502
SE +/- 0.07, N = 3
23.83
EPYC 7402
SE +/- 0.15, N = 3
23.80
Xeon Gold 6138
SE +/- 0.03, N = 3
23.53
EPYC 7302
SE +/- 0.00, N = 3
23.50
EPYC 7502 2P
SE +/- 0.10, N = 3
23.30
2 x Xeon Gold 6138
SE +/- 0.00, N = 3
23.10
EPYC 7402 2P
SE +/- 0.15, N = 3
23.10
EPYC 7302 2P
SE +/- 0.03, N = 3
22.83
EPYC 7601
SE +/- 0.43, N = 3
18.77
EPYC 7601 2P
SE +/- 0.23, N = 3
18.40
EPYC 7401P
SE +/- 0.79, N = 3
18.03
EPYC 7251
SE +/- 1.11, N = 3
17.70
6
12
18
24
30

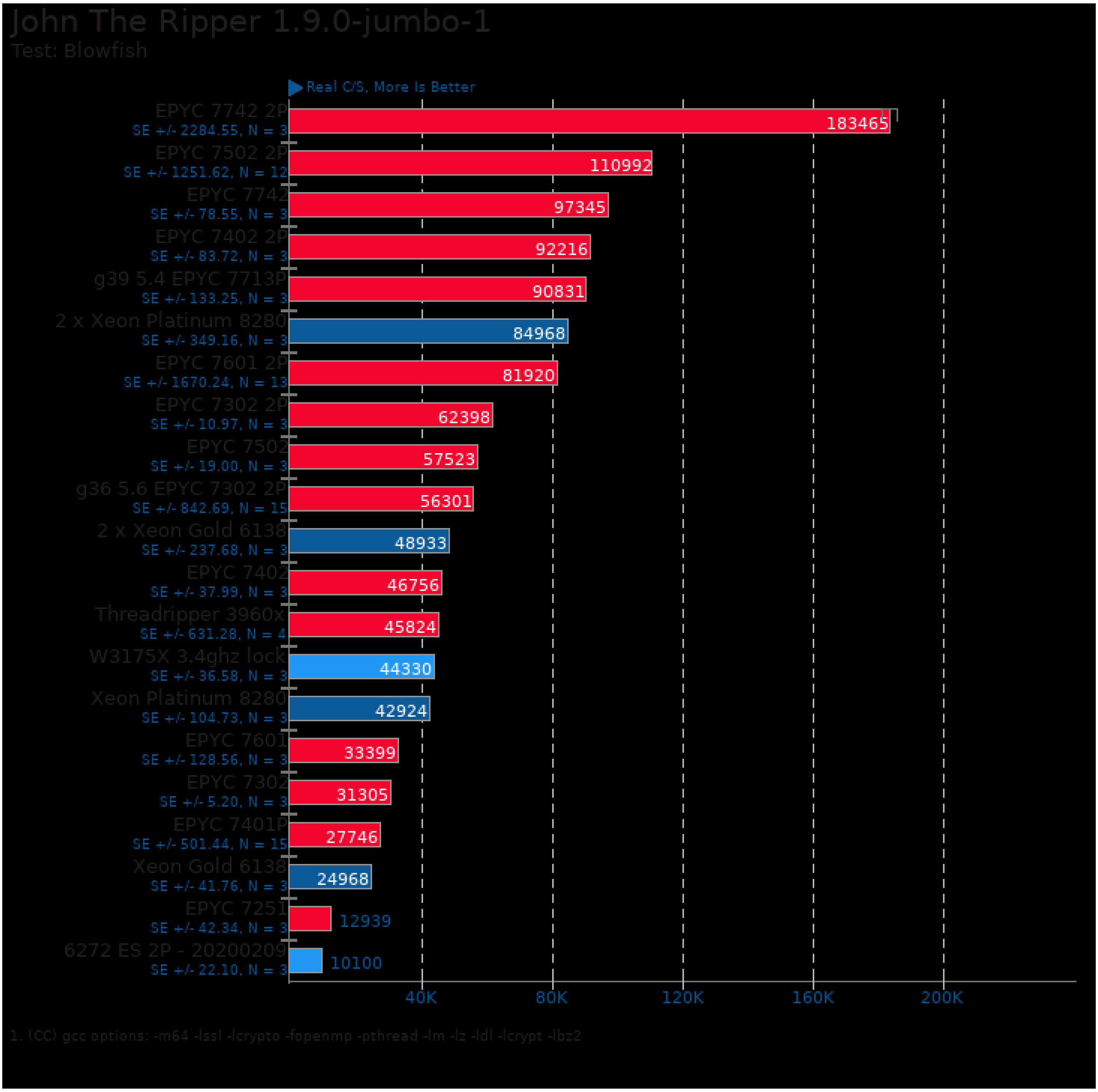

Geekbench 5.0
Test: CPU Single Core - Face Detection
images/sec, More Is Better
EPYC 7742
SE +/- 0.00, N = 3
8.45
Xeon Platinum 8280
SE +/- 0.02, N = 3
8.33
2 x Xeon Platinum 8280
SE +/- 0.02, N = 3
8.31
EPYC 7502 2P
SE +/- 0.00, N = 3
8.31
EPYC 7502
SE +/- 0.01, N = 3
8.31
EPYC 7402
SE +/- 0.01, N = 3
8.31
EPYC 7742 2P
SE +/- 0.01, N = 3
8.28
EPYC 7402 2P
SE +/- 0.00, N = 3
8.28
EPYC 7302 2P
SE +/- 0.00, N = 3
8.19
EPYC 7302
SE +/- 0.01, N = 3
8.18
2 x Xeon Gold 6138
SE +/- 0.01, N = 3
7.70
Xeon Gold 6138
SE +/- 0.01, N = 3
7.70
EPYC 7601 2P
SE +/- 0.00, N = 3
6.68
EPYC 7601
SE +/- 0.00, N = 3
6.68
EPYC 7401P
SE +/- 0.01, N = 3
6.25
EPYC 7251
SE +/- 0.01, N = 3
6.04
2
4
6
8
10

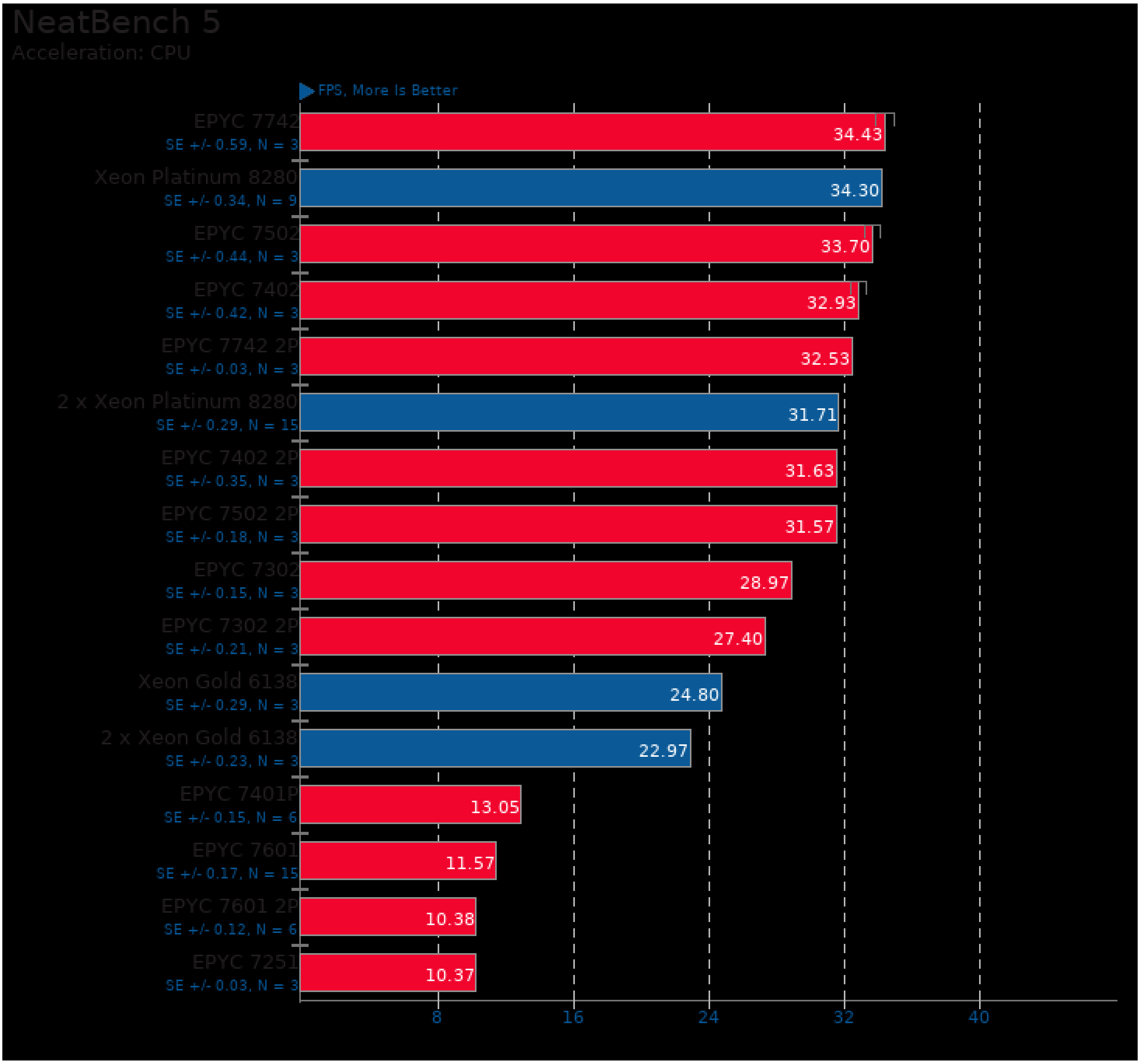

Geekbench 5.0
Test: CPU Single Core - Gaussian Blur
Mpixels/sec, More Is Better
EPYC 7742
SE +/- 0.23, N = 3
65.67
EPYC 7742 2P
SE +/- 0.09, N = 3
64.43
EPYC 7502
SE +/- 0.25, N = 3
64.40
EPYC 7402
SE +/- 0.20, N = 3
64.33
EPYC 7502 2P
SE +/- 0.07, N = 3
63.73
EPYC 7402 2P
SE +/- 0.22, N = 3
63.47
EPYC 7302
SE +/- 0.09, N = 3
63.17
EPYC 7302 2P
SE +/- 0.17, N = 3
62.60
EPYC 7601 2P
SE +/- 0.15, N = 3
60.97
EPYC 7601
SE +/- 0.07, N = 3
60.53
EPYC 7401P
SE +/- 0.07, N = 3
56.63
EPYC 7251
SE +/- 0.09, N = 3
55.27
Xeon Platinum 8280
SE +/- 0.24, N = 3
42.53
2 x Xeon Platinum 8280
SE +/- 0.03, N = 3
42.13
Xeon Gold 6138
SE +/- 0.00, N = 3
40.80
2 x Xeon Gold 6138
SE +/- 0.03, N = 3
40.03
15
30
45
60
75

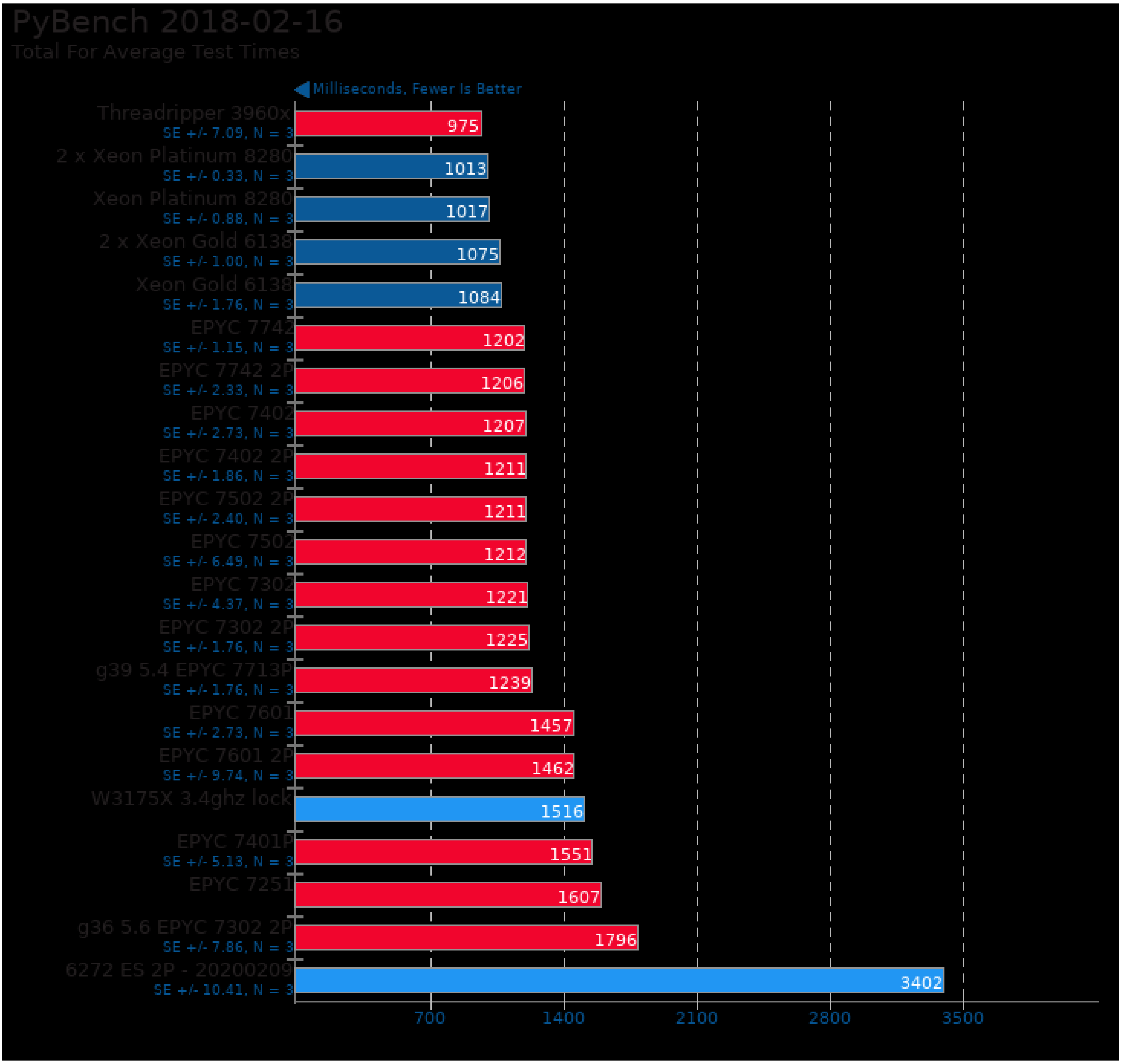

Geekbench 5.0
Test: CPU Single Core
Score, More Is Better
Xeon Platinum 8280
1143
2 x Xeon Platinum 8280
SE +/- 0.33, N = 3
1135
Xeon Gold 6138
SE +/- 0.33, N = 3
1073
2 x Xeon Gold 6138
1046
EPYC 7742
SE +/- 2.73, N = 3
1041
EPYC 7742 2P
1033
EPYC 7502
SE +/- 0.67, N = 3
1026
EPYC 7402
SE +/- 2.08, N = 3
1026
EPYC 7402 2P
SE +/- 4.33, N = 3
1006
EPYC 7302
SE +/- 3.84, N = 3
1005
EPYC 7502 2P
SE +/- 2.60, N = 3
999
EPYC 7302 2P
SE +/- 3.18, N = 3
991
EPYC 7601 2P
SE +/- 0.58, N = 3
873
EPYC 7601
SE +/- 1.53, N = 3
869
EPYC 7401P
SE +/- 1.67, N = 3
820
EPYC 7251
SE +/- 1.67, N = 3
770
200
400
600
800
1000

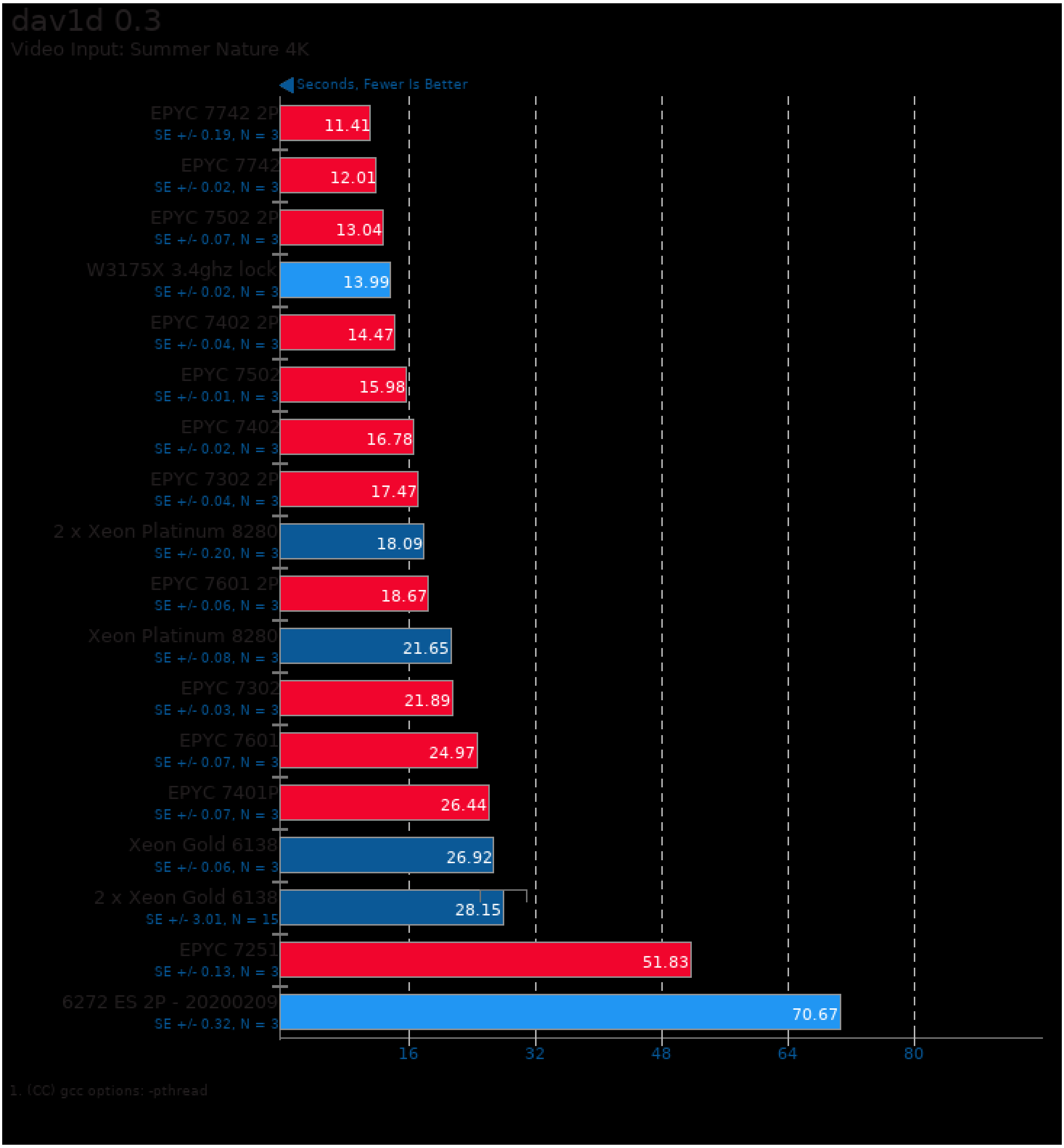

Timed LLVM Compilation 6.0.1
Time To Compile
Seconds, Fewer Is Better
EPYC 7742 2P
78.81
EPYC 7502 2P
99.96
EPYC 7742
102.14
2 x Xeon Platinum 8280
104.91
EPYC 7402 2P
105.84
EPYC 7601 2P
133.00
EPYC 7302 2P
134.26
EPYC 7502
143.43
Threadripper 3960x
154.14
2 x Xeon Gold 6138
156.28
EPYC 7402
158.54
Xeon Platinum 8280
158.80
W3175X 3.4ghz lock
167.01
EPYC 7601
203.14
EPYC 7302
203.24
EPYC 7401P
233.69
Xeon Gold 6138
242.85
6272 ES 2P - 20200209
484.42
EPYC 7251
538.02
120
240
360
480
600

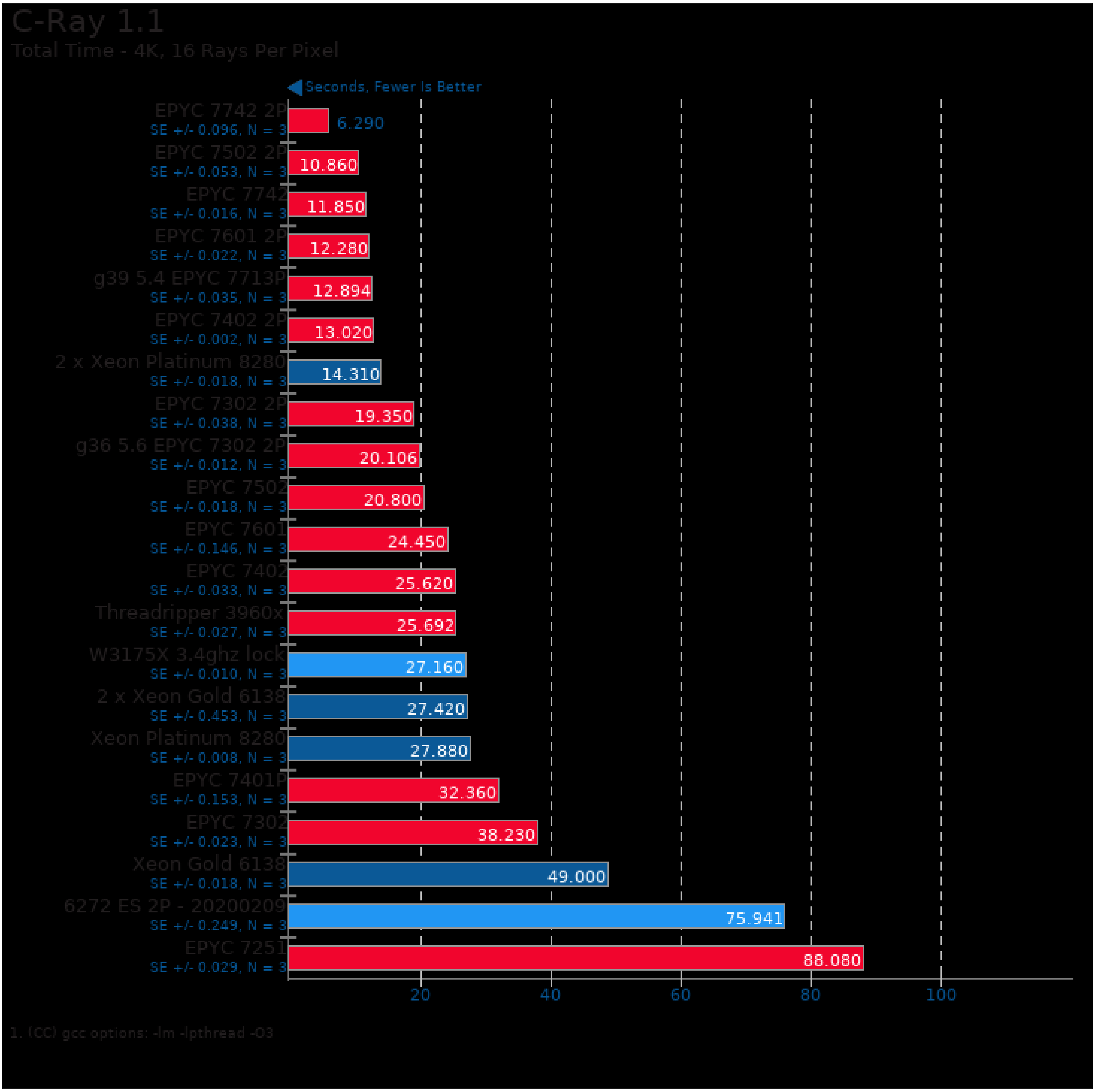

Coremark 1.0
CoreMark Size 666 - Iterations Per Second
Iterations/Sec, More Is Better
EPYC 7742 2P
SE +/- 4830.15, N = 3
3719997.00
EPYC 7502 2P
SE +/- 11036.87, N = 3
2118764.00
EPYC 7742
SE +/- 2305.83, N = 3
1966211.00
2 x Xeon Platinum 8280
SE +/- 22012.17, N = 3
1883689.00
EPYC 7402 2P
SE +/- 11185.21, N = 3
1655894.00
EPYC 7601 2P
SE +/- 15363.48, N = 3
1655574.00
g39 5.4 EPYC 7713P
SE +/- 166.02, N = 3
1415859.63
2 x Xeon Gold 6138
SE +/- 10191.43, N = 3
1143121.00
EPYC 7302 2P
SE +/- 3662.17, N = 3
1134097.00
EPYC 7502
SE +/- 890.96, N = 3
1109475.00
Threadripper 3960x
SE +/- 10836.51, N = 3
1061774.56
W3175X 3.4ghz lock
SE +/- 3062.84, N = 3
972452.00
Xeon Platinum 8280
SE +/- 3609.18, N = 3
967330.00
EPYC 7402
SE +/- 4300.99, N = 3
880327.00
g36 5.6 EPYC 7302 2P
SE +/- 3467.58, N = 3
831233.85
EPYC 7601
SE +/- 5376.71, N = 3
820414.00
EPYC 7401P
SE +/- 3556.15, N = 3
618299.00
Xeon Gold 6138
SE +/- 6756.92, N = 6
589752.00
EPYC 7302
SE +/- 582.97, N = 3
588635.00
6272 ES 2P - 20200209
SE +/- 2255.03, N = 15
250421.53
EPYC 7251
SE +/- 182.27, N = 3
234690.00
800K
1600K
2400K
3200K
4000K
1. (CC) gcc options: -O2 -lrt" -lrt

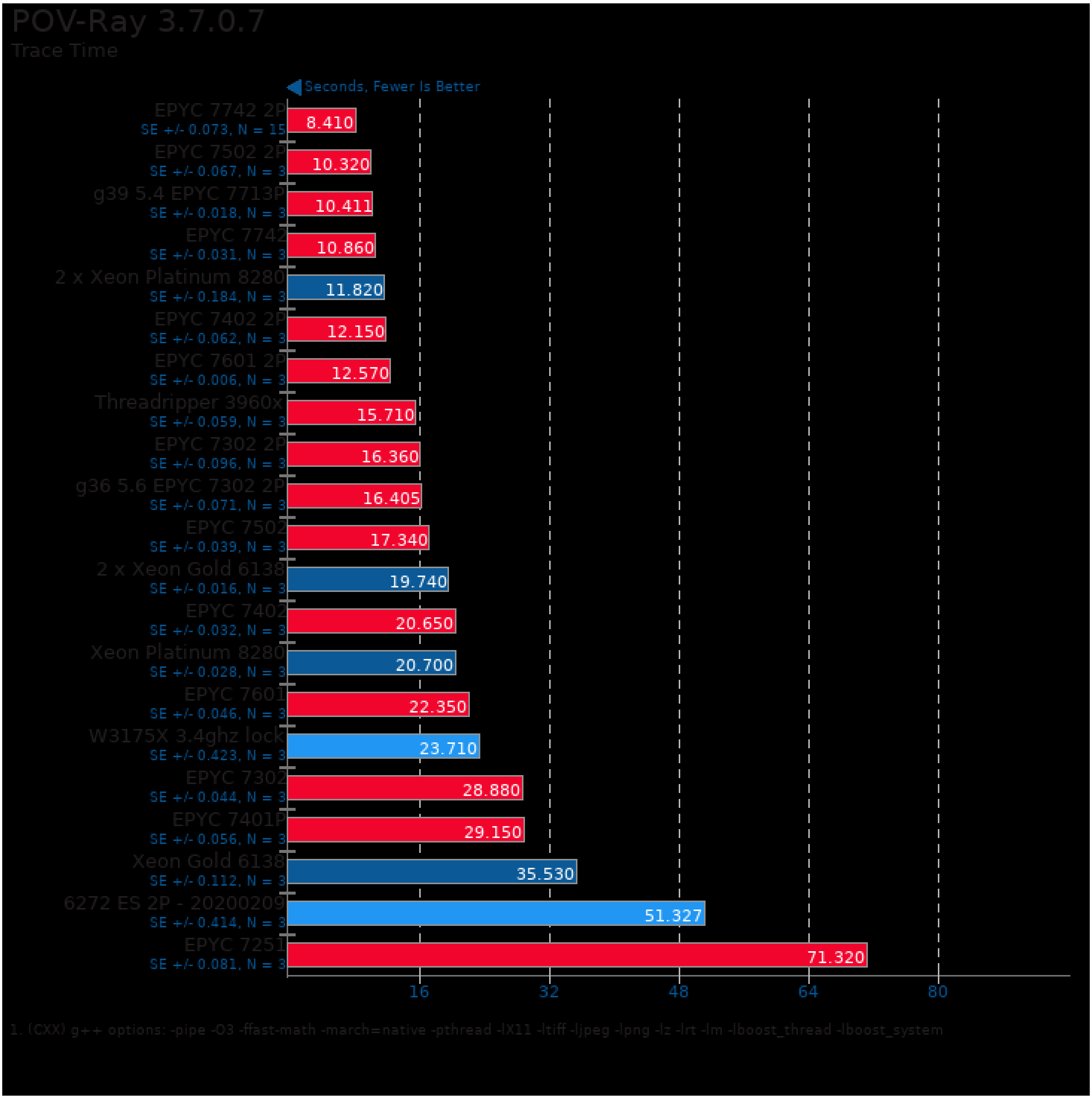

John The Ripper 1.9.0-jumbo-1
Test: Blowfish
Real C/S, More Is Better
EPYC 7742 2P
SE +/- 2284.55, N = 3
183465
EPYC 7502 2P
SE +/- 1251.62, N = 12
110992
EPYC 7742
SE +/- 78.55, N = 3
97345
EPYC 7402 2P
SE +/- 83.72, N = 3
92216
g39 5.4 EPYC 7713P
SE +/- 133.25, N = 3
90831
2 x Xeon Platinum 8280
SE +/- 349.16, N = 3
84968
EPYC 7601 2P
SE +/- 1670.24, N = 13
81920
EPYC 7302 2P
SE +/- 10.97, N = 3
62398
EPYC 7502
SE +/- 19.00, N = 3
57523
g36 5.6 EPYC 7302 2P
SE +/- 842.69, N = 15
56301
2 x Xeon Gold 6138
SE +/- 237.68, N = 3
48933
EPYC 7402
SE +/- 37.99, N = 3
46756
Threadripper 3960x
SE +/- 631.28, N = 4
45824
W3175X 3.4ghz lock
SE +/- 36.58, N = 3
44330
Xeon Platinum 8280
SE +/- 104.73, N = 3
42924
EPYC 7601
SE +/- 128.56, N = 3
33399
EPYC 7302
SE +/- 5.20, N = 3
31305
EPYC 7401P
SE +/- 501.44, N = 15
27746
Xeon Gold 6138
SE +/- 41.76, N = 3
24968
EPYC 7251
SE +/- 42.34, N = 3
12939
6272 ES 2P - 20200209
SE +/- 22.10, N = 3
10100
40K
80K
120K
160K
200K
1. (CC) gcc options: -m64 -lssl -lcrypto -fopenmp -pthread -lm -lz -ldl -lcrypt -lbz2

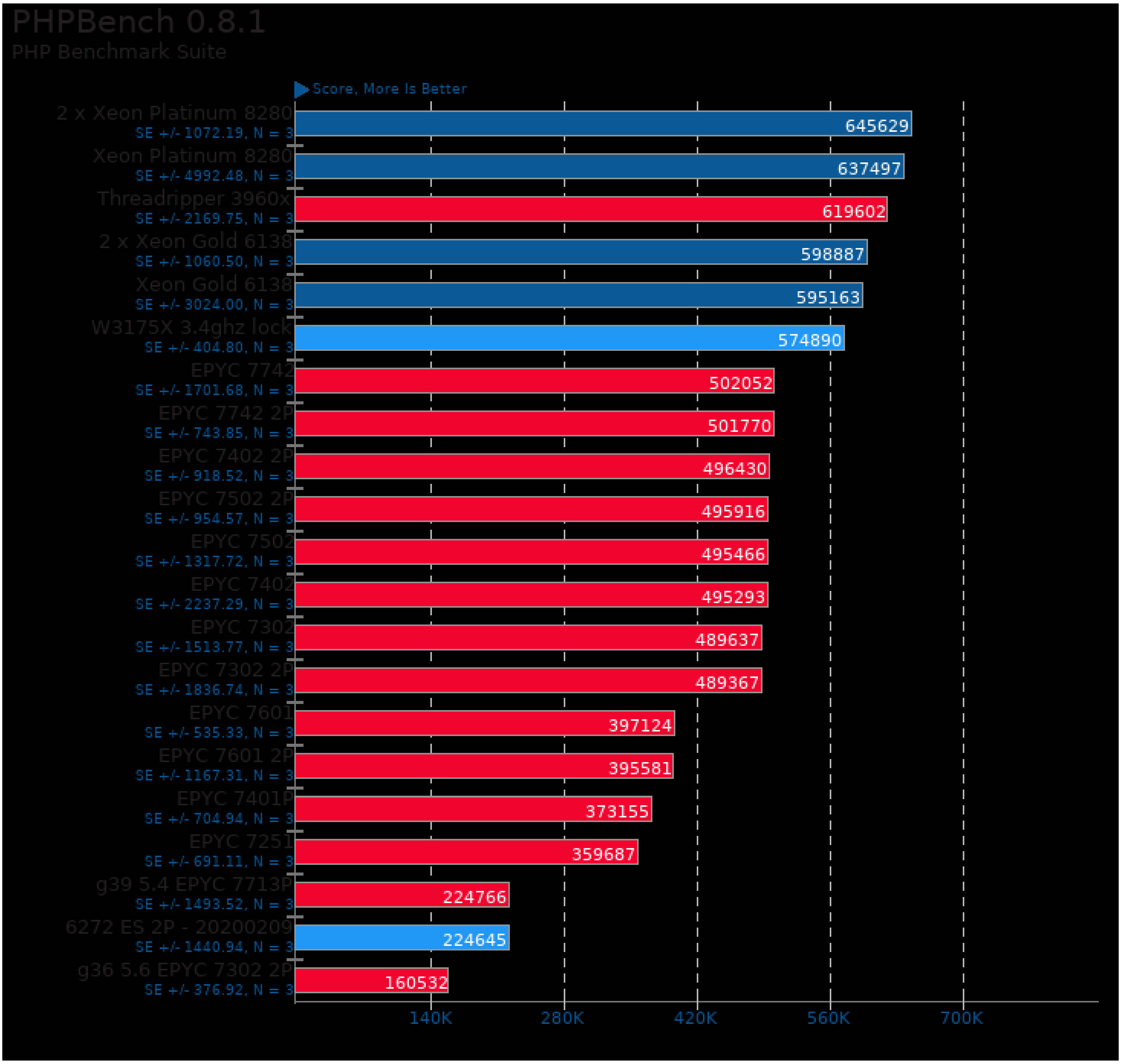

NeatBench 5
Acceleration: CPU
FPS, More Is Better
EPYC 7742
SE +/- 0.59, N = 3
34.43
Xeon Platinum 8280
SE +/- 0.34, N = 9
34.30
EPYC 7502
SE +/- 0.44, N = 3
33.70
EPYC 7402
SE +/- 0.42, N = 3
32.93
EPYC 7742 2P
SE +/- 0.03, N = 3
32.53
2 x Xeon Platinum 8280
SE +/- 0.29, N = 15
31.71
EPYC 7402 2P
SE +/- 0.35, N = 3
31.63
EPYC 7502 2P
SE +/- 0.18, N = 3
31.57
EPYC 7302
SE +/- 0.15, N = 3
28.97
EPYC 7302 2P
SE +/- 0.21, N = 3
27.40
Xeon Gold 6138
SE +/- 0.29, N = 3
24.80
2 x Xeon Gold 6138
SE +/- 0.23, N = 3
22.97
EPYC 7401P
SE +/- 0.15, N = 6
13.05
EPYC 7601
SE +/- 0.17, N = 15
11.57
EPYC 7601 2P
SE +/- 0.12, N = 6
10.38
EPYC 7251
SE +/- 0.03, N = 3
10.37
8
16
24
32
40

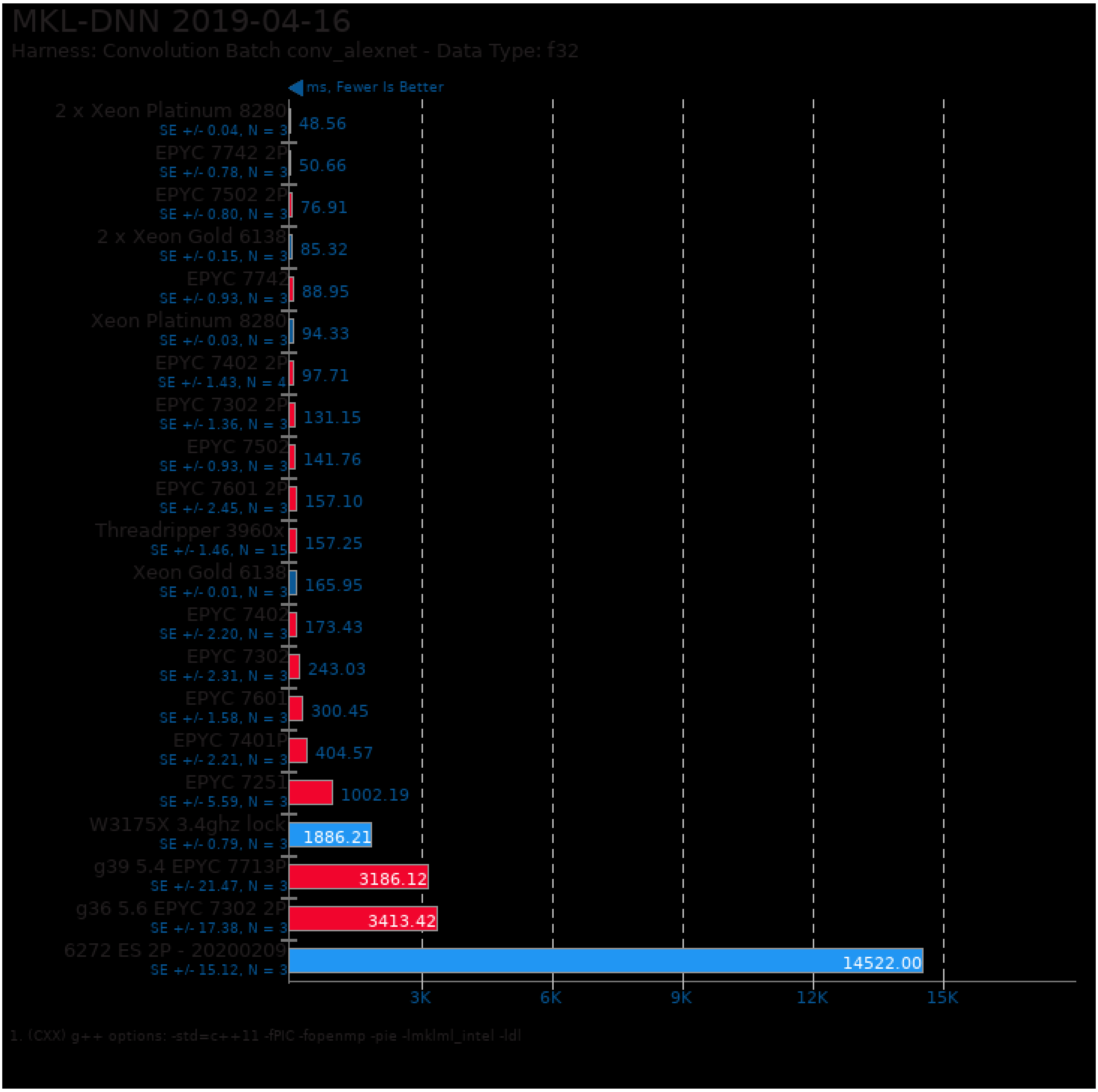

PyBench 2018-02-16
Total For Average Test Times
Milliseconds, Fewer Is Better
Threadripper 3960X
SE +/- 7.09, N = 3
975
2 x Xeon Platinum 8280
SE +/- 0.33, N = 3
1013
Xeon Platinum 8280
SE +/- 0.88, N = 3
1017
2 x Xeon Gold 6138
SE +/- 1.00, N = 3
1075
Xeon Gold 6138
SE +/- 1.76, N = 3
1084
EPYC 7742
SE +/- 1.15, N = 3
1202
EPYC 7742 2P
SE +/- 2.33, N = 3
1206
EPYC 7402
SE +/- 2.73, N = 3
1207
EPYC 7402 2P
SE +/- 1.86, N = 3
1211
EPYC 7502 2P
SE +/- 2.40, N = 3
1211
EPYC 7502
SE +/- 6.49, N = 3
1212
EPYC 7302
SE +/- 4.37, N = 3
1221
EPYC 7302 2P
SE +/- 1.76, N = 3
1225
g39 5.4 EPYC 7713P
SE +/- 1.76, N = 3
1239
EPYC 7601
SE +/- 2.73, N = 3
1457
EPYC 7601 2P
SE +/- 9.74, N = 3
1462
W3175X 3.4ghz lock
1516
EPYC 7401P
SE +/- 5.13, N = 3
1551
EPYC 7251
1607
g36 5.6 EPYC 7302 2P
SE +/- 7.86, N = 3
1796
6272 ES 2P - 20200209
SE +/- 10.41, N = 3
3402
700
1400
2100
2800
3500

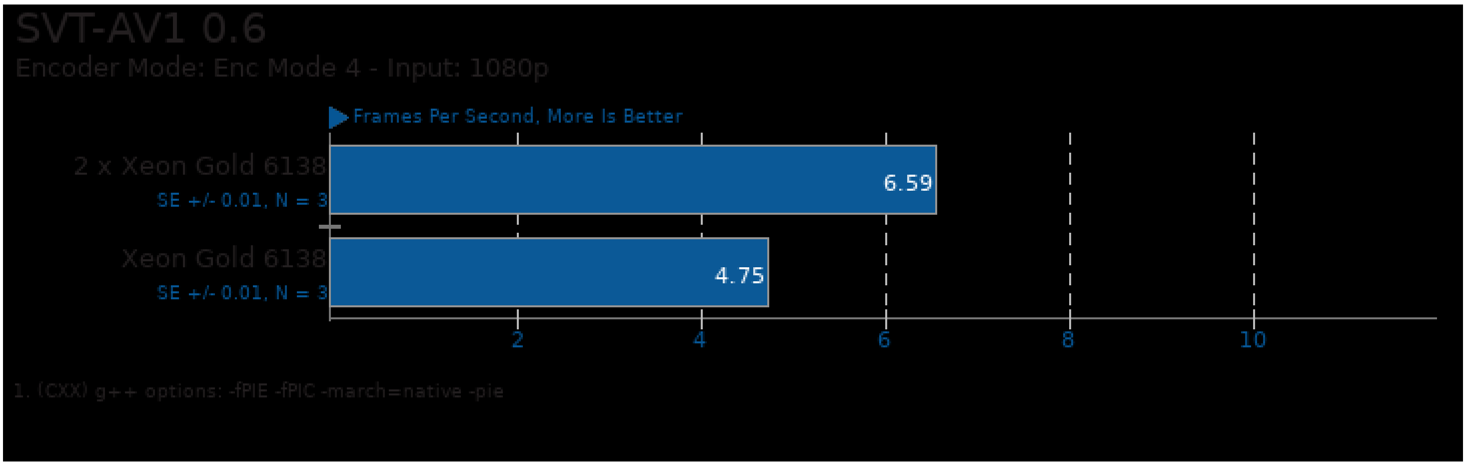

dav1d 0.3
Video Input: Summer Nature 4K
Seconds, Fewer Is Better
EPYC 7742 2P
SE +/- 0.19, N = 3
11.41
EPYC 7742
SE +/- 0.02, N = 3
12.01
EPYC 7502 2P
SE +/- 0.07, N = 3
13.04
W3175X 3.4ghz lock
SE +/- 0.02, N = 3
13.99
EPYC 7402 2P
SE +/- 0.04, N = 3
14.47
EPYC 7502
SE +/- 0.01, N = 3
15.98
EPYC 7402
SE +/- 0.02, N = 3
16.78
EPYC 7302 2P
SE +/- 0.04, N = 3
17.47
2 x Xeon Platinum 8280
SE +/- 0.20, N = 3
18.09
EPYC 7601 2P
SE +/- 0.06, N = 3
18.67
Xeon Platinum 8280
SE +/- 0.08, N = 3
21.65
EPYC 7302
SE +/- 0.03, N = 3
21.89
EPYC 7601
SE +/- 0.07, N = 3
24.97
EPYC 7401P
SE +/- 0.07, N = 3
26.44
Xeon Gold 6138
SE +/- 0.06, N = 3
26.92
2 x Xeon Gold 6138
SE +/- 3.01, N = 15
28.15
EPYC 7251
SE +/- 0.13, N = 3
51.83
6272 ES 2P - 20200209
SE +/- 0.32, N = 3
70.67
16
32
48
64
80
1. (CC) gcc options: -pthread

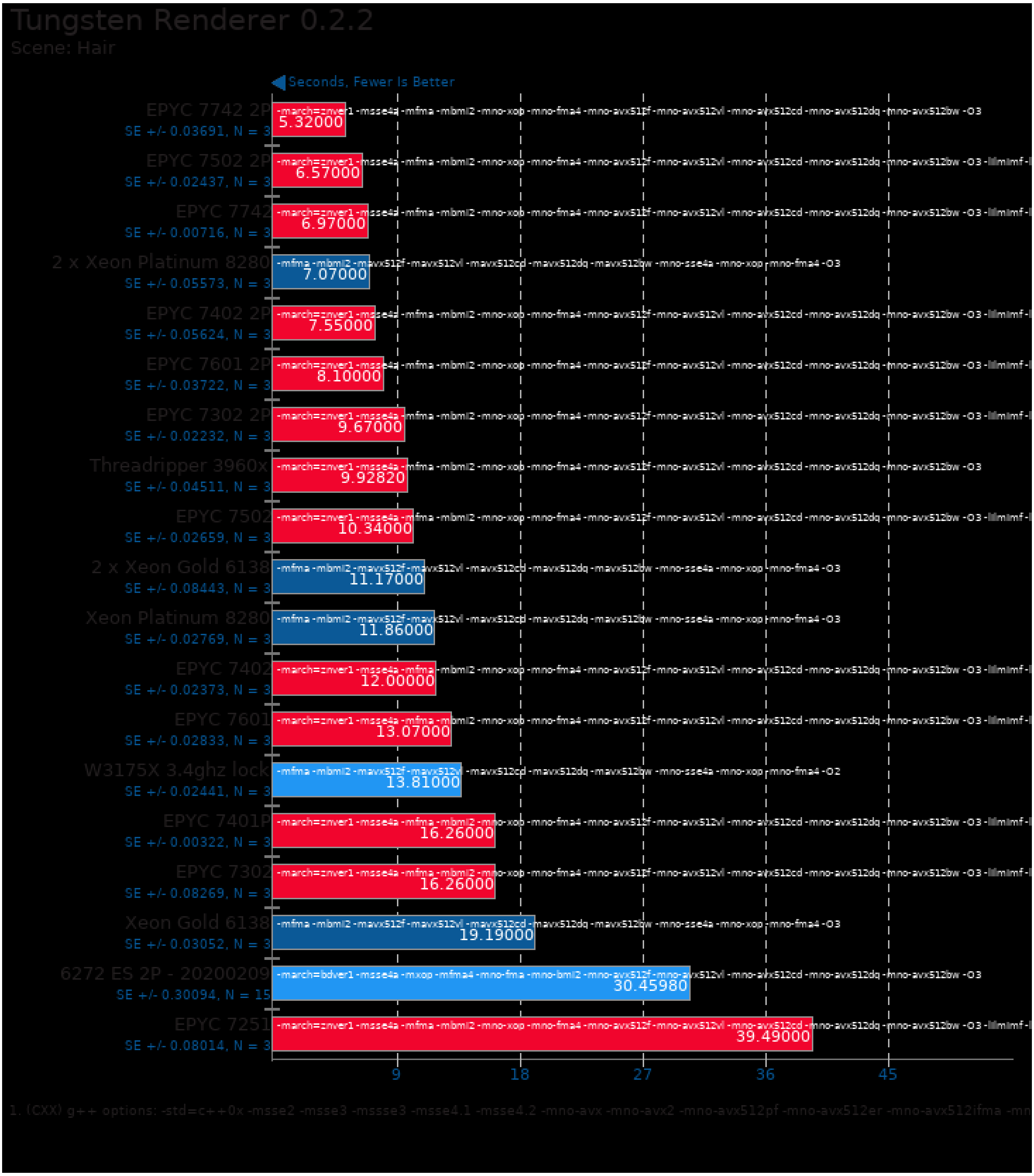

C-Ray 1.1
Total Time - 4K, 16 Rays Per Pixel
Seconds, Fewer Is Better
EPYC 7742 2P
SE +/- 0.096, N = 3
6.290
EPYC 7502 2P
SE +/- 0.053, N = 3
10.860
EPYC 7742
SE +/- 0.016, N = 3
11.850
EPYC 7601 2P
SE +/- 0.022, N = 3
12.280
g39 5.4 EPYC 7713P
SE +/- 0.035, N = 3
12.894
EPYC 7402 2P
SE +/- 0.002, N = 3
13.020
2 x Xeon Platinum 8280
SE +/- 0.018, N = 3
14.310
EPYC 7302 2P
SE +/- 0.038, N = 3
19.350
g36 5.6 EPYC 7302 2P
SE +/- 0.012, N = 3
20.106
EPYC 7502
SE +/- 0.018, N = 3
20.800
EPYC 7601
SE +/- 0.146, N = 3
24.450
EPYC 7402
SE +/- 0.033, N = 3
25.620
Threadripper 3960X
SE +/- 0.027, N = 3
25.692
W3175X 3.4ghz lock
SE +/- 0.010, N = 3
27.160
2 x Xeon Gold 6138
SE +/- 0.453, N = 3
27.420
Xeon Platinum 8280
SE +/- 0.008, N = 3
27.880
EPYC 7401P
SE +/- 0.153, N = 3
32.360
EPYC 7302
SE +/- 0.023, N = 3
38.230
Xeon Gold 6138
SE +/- 0.018, N = 3
49.000
6272 ES 2P - 20200209
SE +/- 0.249, N = 3
75.941
EPYC 7251
SE +/- 0.029, N = 3
88.080
20
40
60
80
100
1. (CC) gcc options: -lm -lpthread -O3

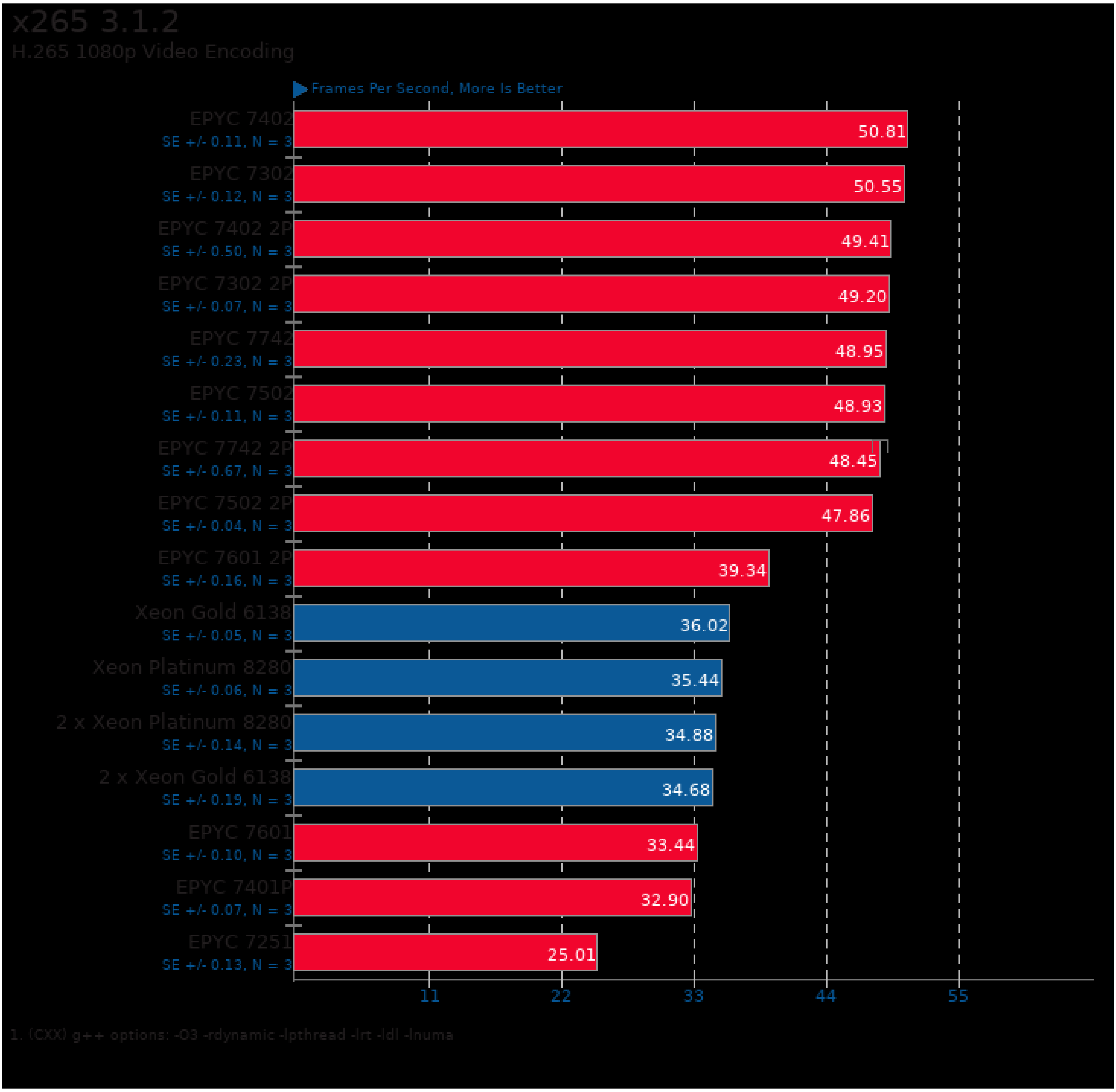

POV-Ray 3.7.0.7
Trace Time
Seconds, Fewer Is Better
EPYC 7742 2P
SE +/- 0.073, N = 15
8.410
EPYC 7502 2P
SE +/- 0.067, N = 3
10.320
g39 5.4 EPYC 7713P
SE +/- 0.018, N = 3
10.411
EPYC 7742
SE +/- 0.031, N = 3
10.860
2 x Xeon Platinum 8280
SE +/- 0.184, N = 3
11.820
EPYC 7402 2P
SE +/- 0.062, N = 3
12.150
EPYC 7601 2P
SE +/- 0.006, N = 3
12.570
Threadripper 3960x
SE +/- 0.059, N = 3
15.710
EPYC 7302 2P
SE +/- 0.096, N = 3
16.360
g36 5.6 EPYC 7302 2P
SE +/- 0.071, N = 3
16.405
EPYC 7502
SE +/- 0.039, N = 3
17.340
2 x Xeon Gold 6138
SE +/- 0.016, N = 3
19.740
EPYC 7402
SE +/- 0.032, N = 3
20.650
Xeon Platinum 8280
SE +/- 0.028, N = 3
20.700
EPYC 7601
SE +/- 0.046, N = 3
22.350
W3175X 3.4ghz lock
SE +/- 0.423, N = 3
23.710
EPYC 7302
SE +/- 0.044, N = 3
28.880
EPYC 7401P
SE +/- 0.056, N = 3
29.150
Xeon Gold 6138
SE +/- 0.112, N = 3
35.530
6272 ES 2P - 20200209
SE +/- 0.414, N = 3
51.327
EPYC 7251
SE +/- 0.081, N = 3
71.320
16
32
48
64
80
1. (CXX) g++ options: -pipe -O3 -ffast-math -march=native -pthread -lX11 -ltiff -ljpeg -lpng -lz -lrt -lm -lboost_thread -lboost_system

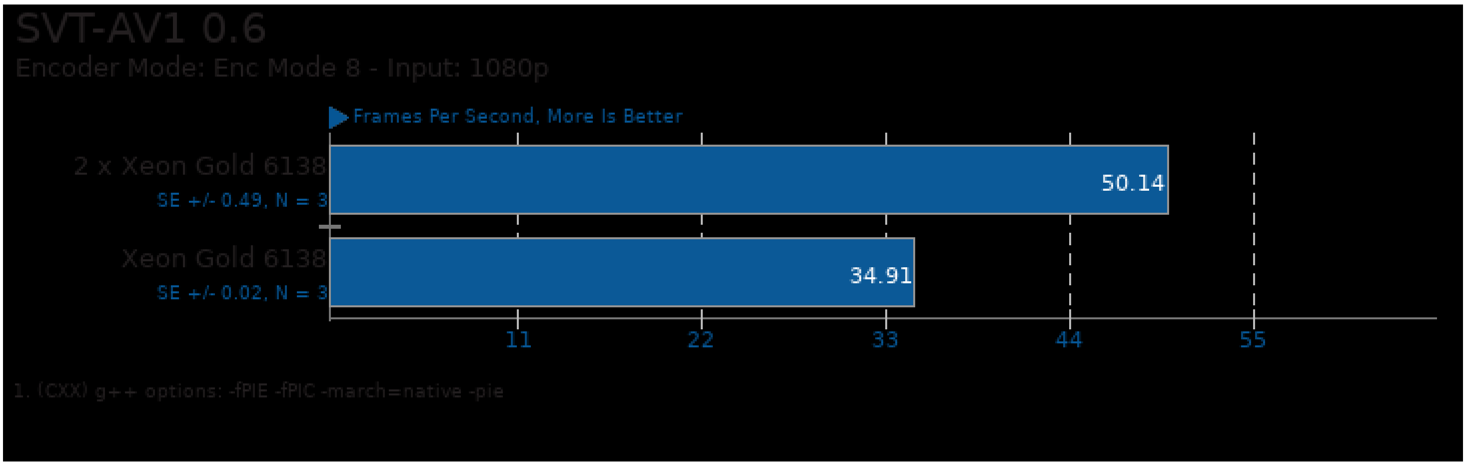

PHPBench 0.8.1
PHP Benchmark Suite
Score, More Is Better
2 x Xeon Platinum 8280
SE +/- 1072.19, N = 3
645629
Xeon Platinum 8280
SE +/- 4992.48, N = 3
637497
Threadripper 3960x
SE +/- 2169.75, N = 3
619602
2 x Xeon Gold 6138
SE +/- 1060.50, N = 3
598887
Xeon Gold 6138
SE +/- 3024.00, N = 3
595163
W3175X 3.4ghz lock
SE +/- 404.80, N = 3
574890
EPYC 7742
SE +/- 1701.68, N = 3
502052
EPYC 7742 2P
SE +/- 743.85, N = 3
501770
EPYC 7402 2P
SE +/- 918.52, N = 3
496430
EPYC 7502 2P
SE +/- 954.57, N = 3
495916
EPYC 7502
SE +/- 1317.72, N = 3
495466
EPYC 7402
SE +/- 2237.29, N = 3
495293
EPYC 7302
SE +/- 1513.77, N = 3
489637
EPYC 7302 2P
SE +/- 1836.74, N = 3
489367
EPYC 7601
SE +/- 535.33, N = 3
397124
EPYC 7601 2P
SE +/- 1167.31, N = 3
395581
EPYC 7401P
SE +/- 704.94, N = 3
373155
EPYC 7251
SE +/- 691.11, N = 3
359687
g39 5.4 EPYC 7713P
SE +/- 1493.52, N = 3
224766
6272 ES 2P - 20200209
SE +/- 1440.94, N = 3
224645
g36 5.6 EPYC 7302 2P
SE +/- 376.92, N = 3
160532
140K
280K
420K
560K
700K

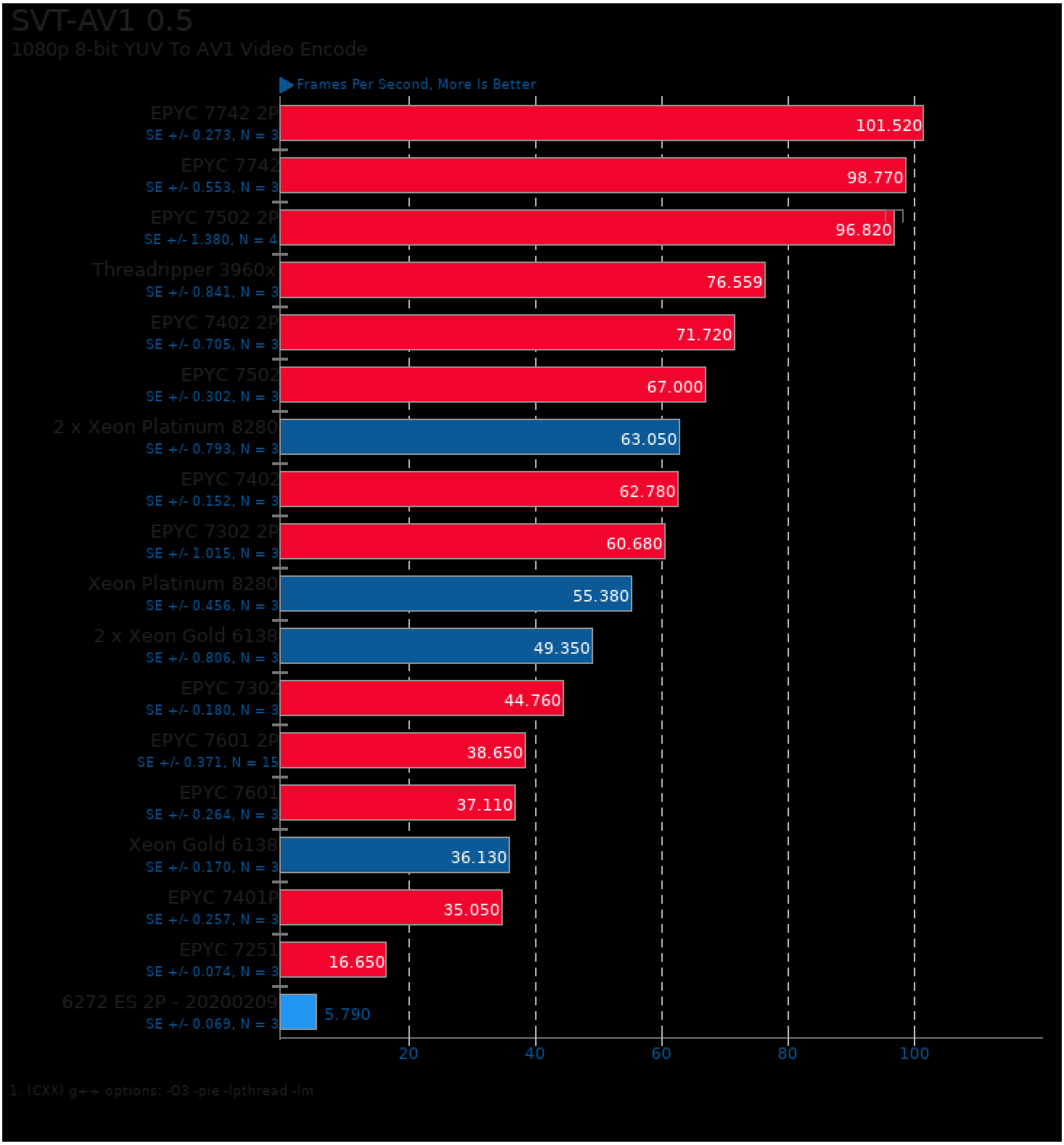

MKL-DNN 2019-04-16
Harness: Convolution Batch conv_alexnet - Data Type: f32
ms, Fewer Is Better
2 x Xeon Platinum 8280
SE +/- 0.04, N = 3
48.56
EPYC 7742 2P
SE +/- 0.78, N = 3
50.66
EPYC 7502 2P
SE +/- 0.80, N = 3
76.91
2 x Xeon Gold 6138
SE +/- 0.15, N = 3
85.32
EPYC 7742
SE +/- 0.93, N = 3
88.95
Xeon Platinum 8280
SE +/- 0.03, N = 3
94.33
EPYC 7402 2P
SE +/- 1.43, N = 4
97.71
EPYC 7302 2P
SE +/- 1.36, N = 3
131.15
EPYC 7502
SE +/- 0.93, N = 3
141.76
EPYC 7601 2P
SE +/- 2.45, N = 3
157.10
Threadripper 3960x
SE +/- 1.46, N = 15
157.25
Xeon Gold 6138
SE +/- 0.01, N = 3
165.95
EPYC 7402
SE +/- 2.20, N = 3
173.43
EPYC 7302
SE +/- 2.31, N = 3
243.03
EPYC 7601
SE +/- 1.58, N = 3
300.45
EPYC 7401P
SE +/- 2.21, N = 3
404.57
EPYC 7251
SE +/- 5.59, N = 3
1002.19
W3175X 3.4ghz lock
SE +/- 0.79, N = 3
1886.21
g39 5.4 EPYC 7713P
SE +/- 21.47, N = 3
3186.12
g36 5.6 EPYC 7302 2P
SE +/- 17.38, N = 3
3413.42
6272 ES 2P - 20200209
SE +/- 15.12, N = 3
14522.00
3K
6K
9K
12K
15K
1. (CXX) g++ options: -std=c++11 -fPIC -fopenmp -pie -lmklml_intel -ldl

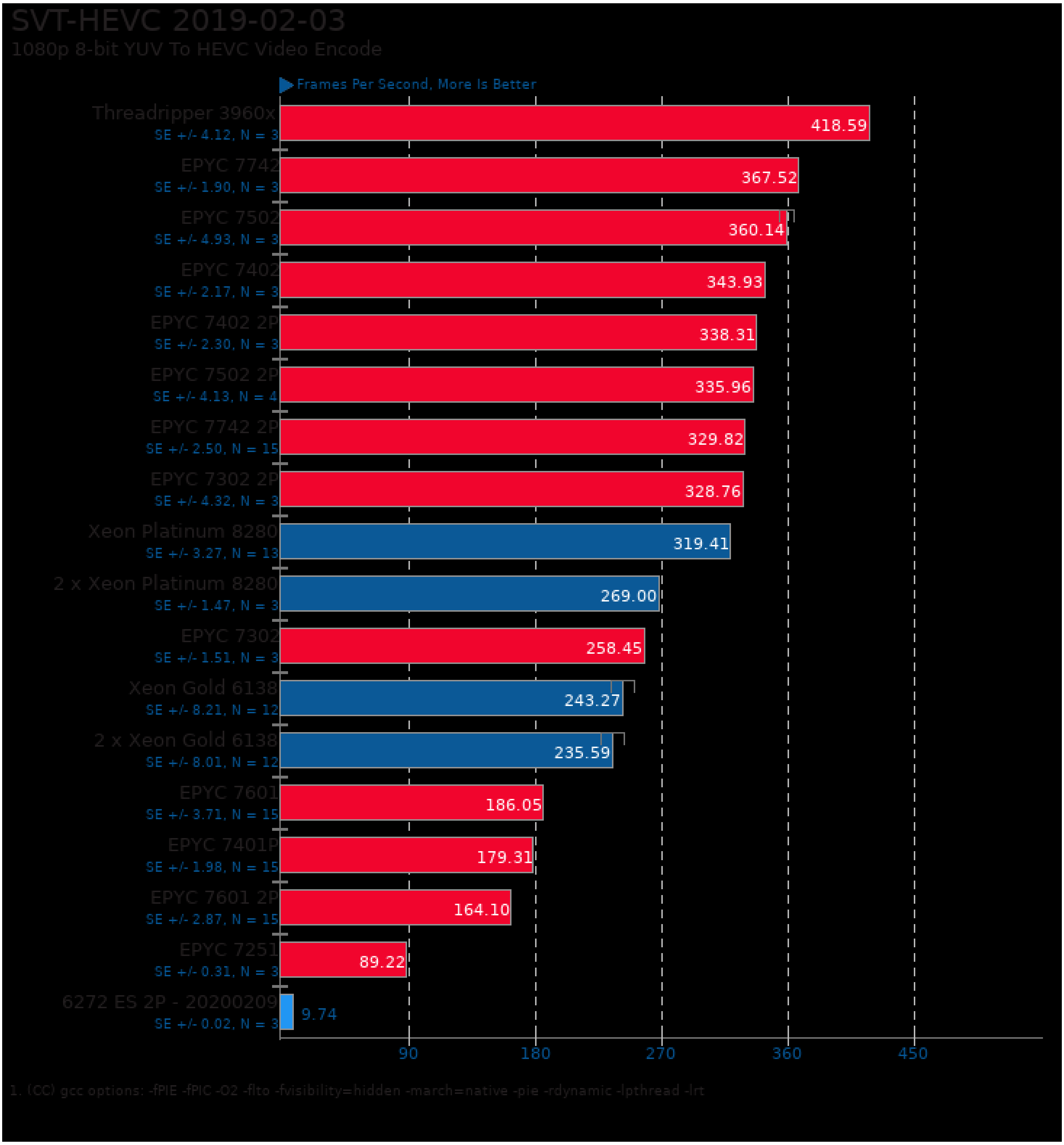

SVT-AV1 0.6
Encoder Mode: Enc Mode 4 - Input: 1080p
Frames Per Second, More Is Better
2 x Xeon Gold 6138
SE +/- 0.01, N = 3
6.59
Xeon Gold 6138
SE +/- 0.01, N = 3
4.75
2
4
6
8
10
1. (CXX) g++ options: -fPIE -fPIC -march=native -pie

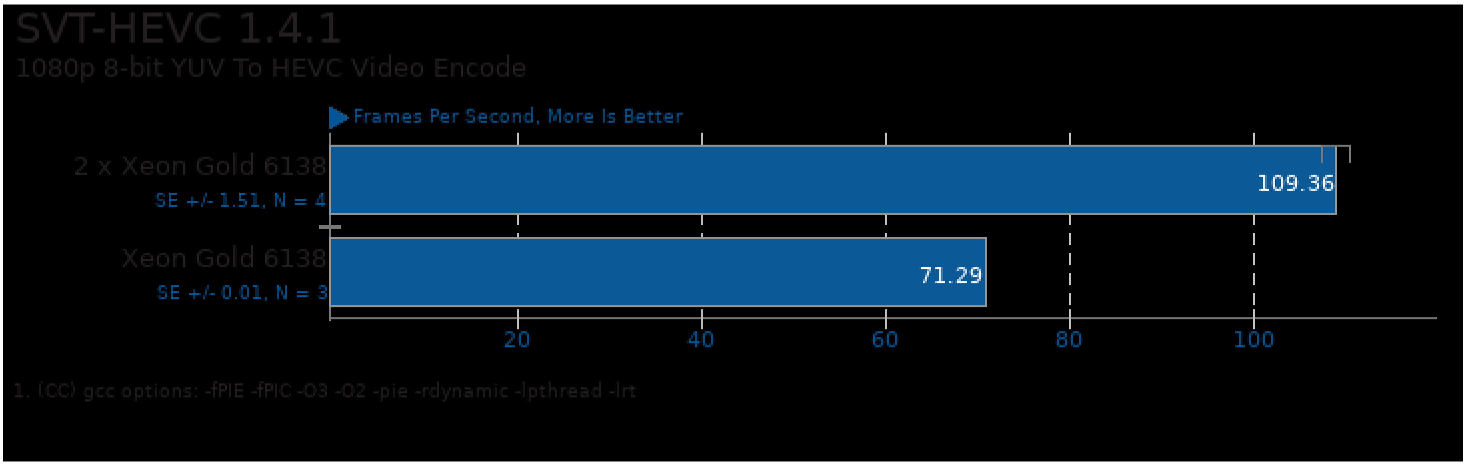

Tungsten Renderer 0.2.2
Scene: Hair
Seconds, Fewer Is Better
EPYC 7742 2P
SE +/- 0.03691, N = 3
5.32000
EPYC 7502 2P
SE +/- 0.02437, N = 3
6.57000
EPYC 7742
SE +/- 0.00716, N = 3
6.97000
2 x Xeon Platinum 8280
SE +/- 0.05573, N = 3
7.07000
EPYC 7402 2P
SE +/- 0.05624, N = 3
7.55000
EPYC 7601 2P
SE +/- 0.03722, N = 3
8.10000
EPYC 7302 2P
SE +/- 0.02232, N = 3
9.67000
Threadripper 3960X
SE +/- 0.04511, N = 3
9.92820
EPYC 7502
SE +/- 0.02659, N = 3
10.34000
2 x Xeon Gold 6138
SE +/- 0.08443, N = 3
11.17000
Xeon Platinum 8280
SE +/- 0.02769, N = 3
11.86000
EPYC 7402
SE +/- 0.02373, N = 3
12.00000
EPYC 7601
SE +/- 0.02833, N = 3
13.07000
W3175X 3.4ghz lock
SE +/- 0.02441, N = 3
13.81000
EPYC 7401P
SE +/- 0.00322, N = 3
16.26000
EPYC 7302
SE +/- 0.08269, N = 3
16.26000
Xeon Gold 6138
SE +/- 0.03052, N = 3
19.19000
6272 ES 2P - 20200209
SE +/- 0.30094, N = 15
30.45980
EPYC 7251
SE +/- 0.08014, N = 3
39.49000
9
18
27
36
45
1. (CXX) g++ options: -std=c++0x -msse2 -msse3 -mssse3 -msse4.1 -msse4.2 -mno-avx -mno-avx2 -mno-avx512pf -mno-avx512er -mno-avx512ifma -mn

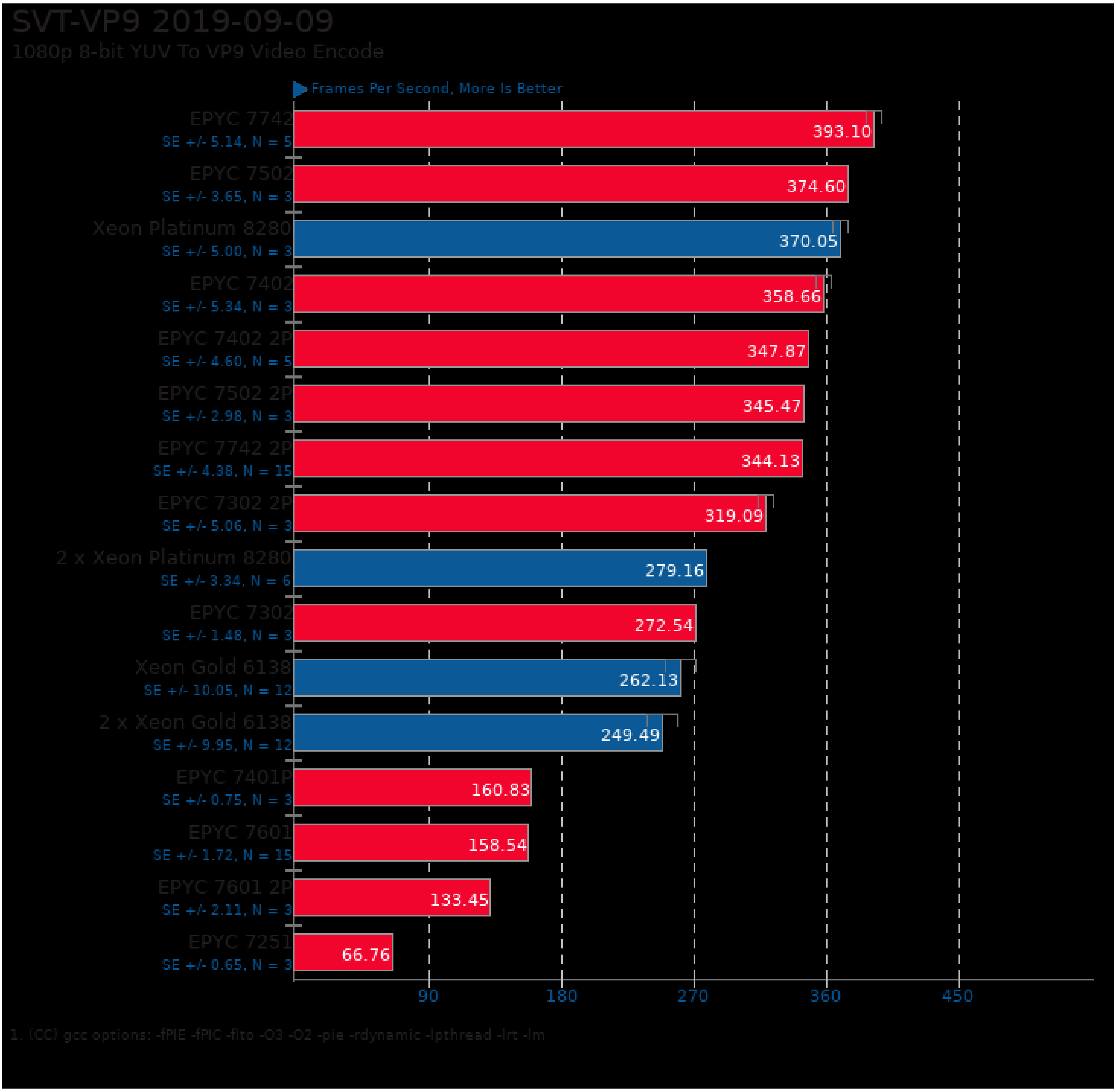

x265 3.1.2
H.265 1080p Video Encoding
Frames Per Second, More Is Better
EPYC 7402
SE +/- 0.11, N = 3
50.81
EPYC 7302
SE +/- 0.12, N = 3
50.55
EPYC 7402 2P
SE +/- 0.50, N = 3
49.41
EPYC 7302 2P
SE +/- 0.07, N = 3
49.20
EPYC 7742
SE +/- 0.23, N = 3
48.95
EPYC 7502
SE +/- 0.11, N = 3
48.93
EPYC 7742 2P
SE +/- 0.67, N = 3
48.45
EPYC 7502 2P
SE +/- 0.04, N = 3
47.86
EPYC 7601 2P
SE +/- 0.16, N = 3
39.34
Xeon Gold 6138
SE +/- 0.05, N = 3
36.02
Xeon Platinum 8280
SE +/- 0.06, N = 3
35.44
2 x Xeon Platinum 8280
SE +/- 0.14, N = 3
34.88
2 x Xeon Gold 6138
SE +/- 0.19, N = 3
34.68
EPYC 7601
SE +/- 0.10, N = 3
33.44
EPYC 7401P
SE +/- 0.07, N = 3
32.90
EPYC 7251
SE +/- 0.13, N = 3
25.01
11
22
33
44
55
1. (CXX) g++ options: -O3 -rdynamic -lpthread -lrt -ldl -lnuma

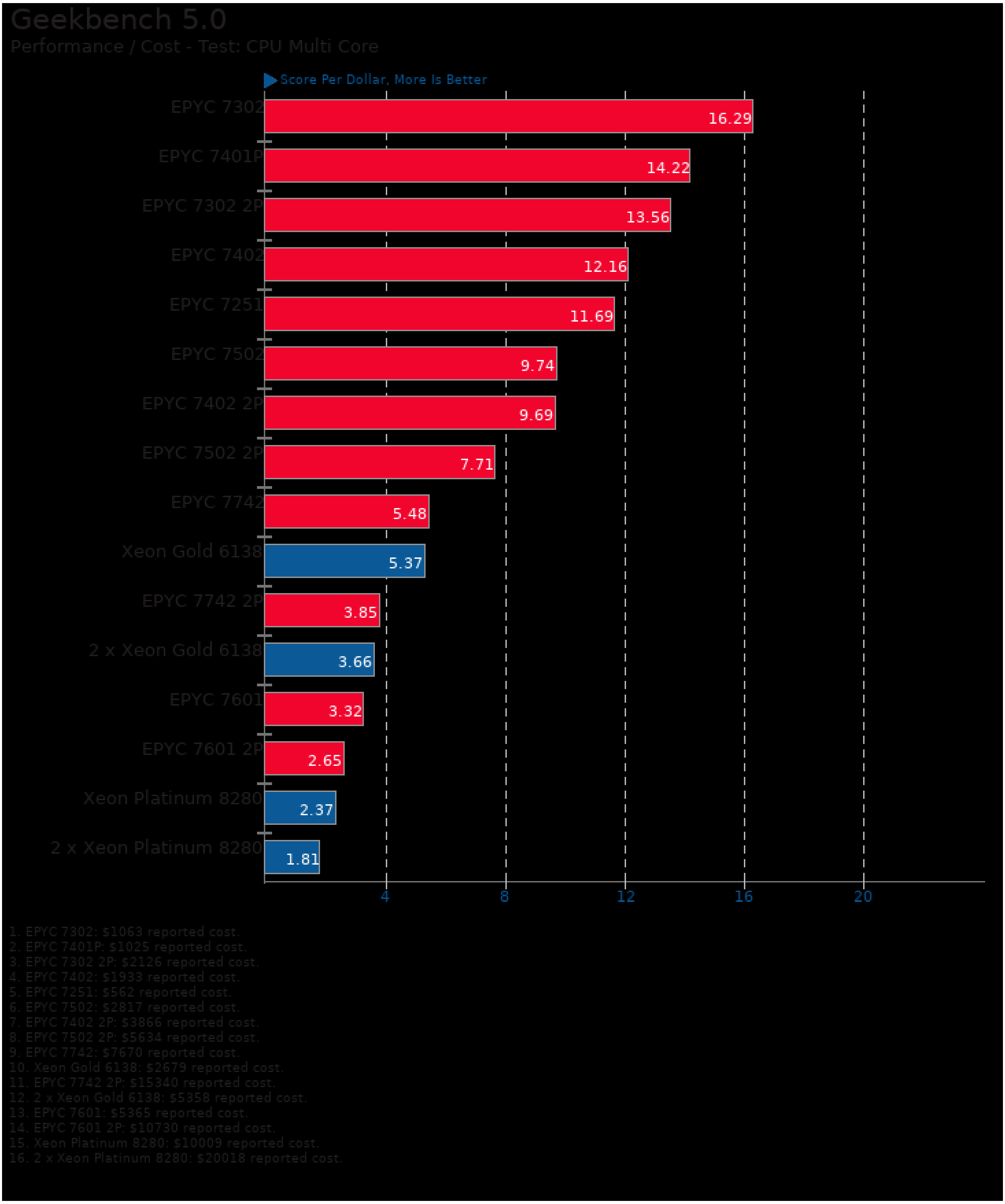

SVT-AV1 0.6
Encoder Mode: Enc Mode 8 - Input: 1080p
Frames Per Second, More Is Better
2 x Xeon Gold 6138
SE +/- 0.49, N = 3
50.14
Xeon Gold 6138
SE +/- 0.02, N = 3
34.91
11
22
33
44
55
1. (CXX) g++ options: -fPIE -fPIC -march=native -pie

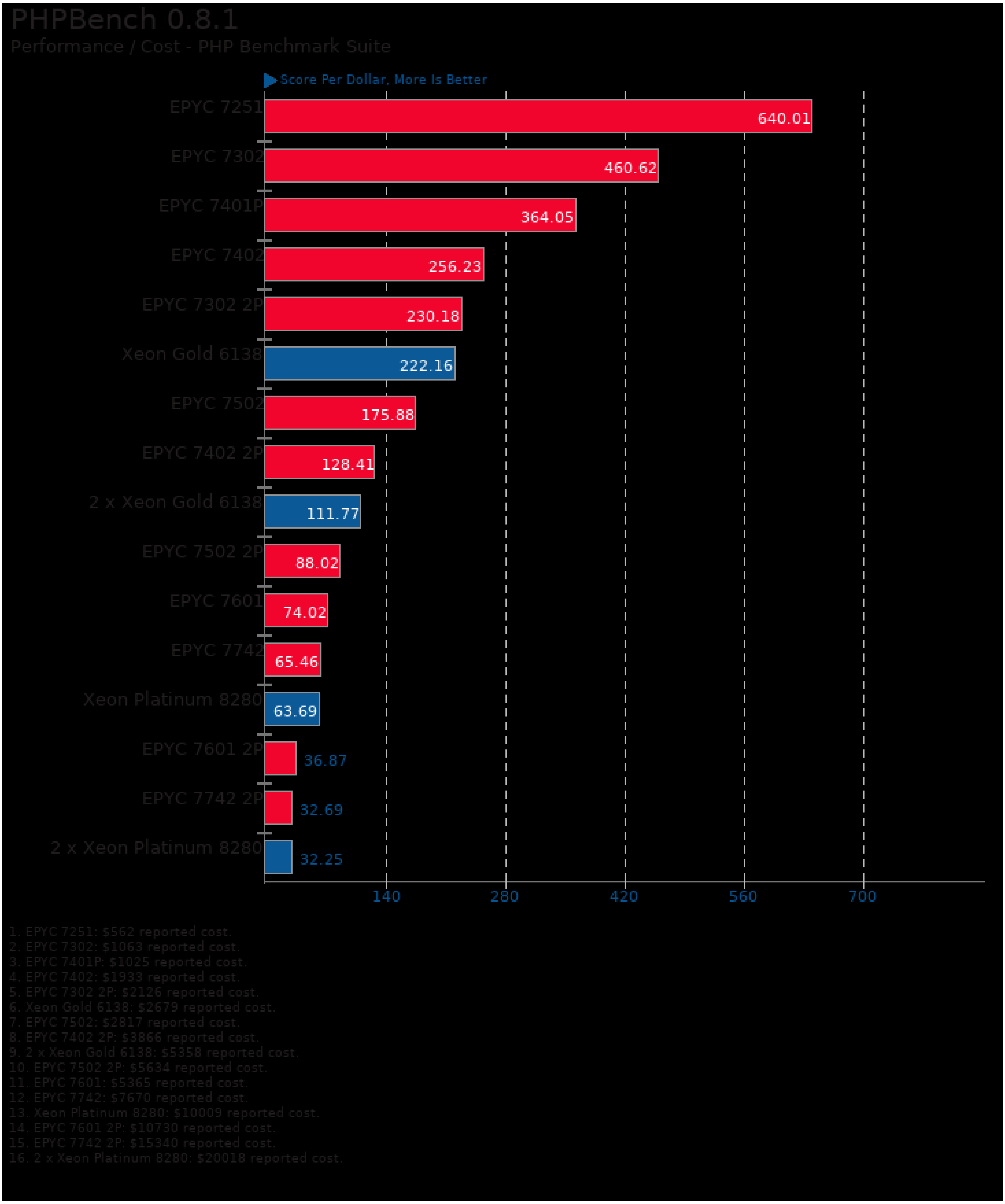

SVT-AV1 0.5
1080p 8-bit YUV To AV1 Video Encode
Frames Per Second, More Is Better
EPYC 7742 2P
SE +/- 0.273, N = 3
101.520
EPYC 7742
SE +/- 0.553, N = 3
98.770
EPYC 7502 2P
SE +/- 1.380, N = 4
96.820
Threadripper 3960x
SE +/- 0.841, N = 3
76.559
EPYC 7402 2P
SE +/- 0.705, N = 3
71.720
EPYC 7502
SE +/- 0.302, N = 3
67.000
2 x Xeon Platinum 8280
SE +/- 0.793, N = 3
63.050
EPYC 7402
SE +/- 0.152, N = 3
62.780
EPYC 7302 2P
SE +/- 1.015, N = 3
60.680
Xeon Platinum 8280
SE +/- 0.456, N = 3
55.380
2 x Xeon Gold 6138
SE +/- 0.806, N = 3
49.350
EPYC 7302
SE +/- 0.180, N = 3
44.760
EPYC 7601 2P
SE +/- 0.371, N = 15
38.650
EPYC 7601
SE +/- 0.264, N = 3
37.110
Xeon Gold 6138
SE +/- 0.170, N = 3
36.130
EPYC 7401P
SE +/- 0.257, N = 3
35.050
EPYC 7251
SE +/- 0.074, N = 3
16.650
6272 ES 2P - 20200209
SE +/- 0.069, N = 3
5.790
20
40
60
80
100
1. (CXX) g++ options: -O3 -pie -lpthread -lm

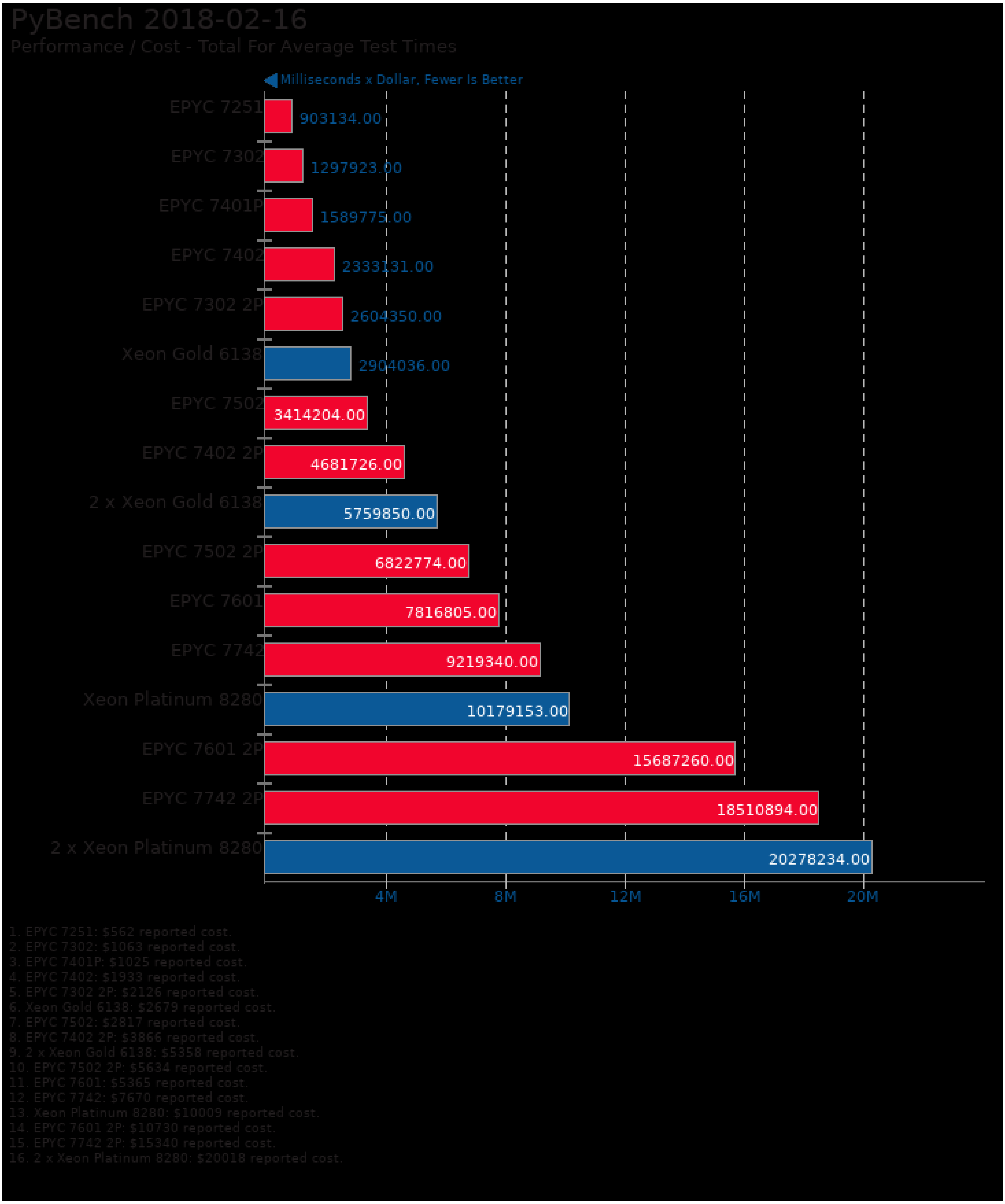

SVT-HEVC 2019-02-03
1080p 8-bit YUV To HEVC Video Encode
Frames Per Second, More Is Better
Threadripper 3960X
SE +/- 4.12, N = 3
418.59
EPYC 7742
SE +/- 1.90, N = 3
367.52
EPYC 7502
SE +/- 4.93, N = 3
360.14
EPYC 7402
SE +/- 2.17, N = 3
343.93
EPYC 7402 2P
SE +/- 2.30, N = 3
338.31
EPYC 7502 2P
SE +/- 4.13, N = 4
335.96
EPYC 7742 2P
SE +/- 2.50, N = 15
329.82
EPYC 7302 2P
SE +/- 4.32, N = 3
328.76
Xeon Platinum 8280
SE +/- 3.27, N = 13
319.41
2 x Xeon Platinum 8280
SE +/- 1.47, N = 3
269.00
EPYC 7302
SE +/- 1.51, N = 3
258.45
Xeon Gold 6138
SE +/- 8.21, N = 12
243.27
2 x Xeon Gold 6138
SE +/- 8.01, N = 12
235.59
EPYC 7601
SE +/- 3.71, N = 15
186.05
EPYC 7401P
SE +/- 1.98, N = 15
179.31
EPYC 7601 2P
SE +/- 2.87, N = 15
164.10
EPYC 7251
SE +/- 0.31, N = 3
89.22
6272 ES 2P - 20200209
SE +/- 0.02, N = 3
9.74
90
180
270
360
450
1. (CC) gcc options: -fPIE -fPIC -O2 -flto -fvisibility=hidden -march=native -pie -rdynamic -lpthread -lrt

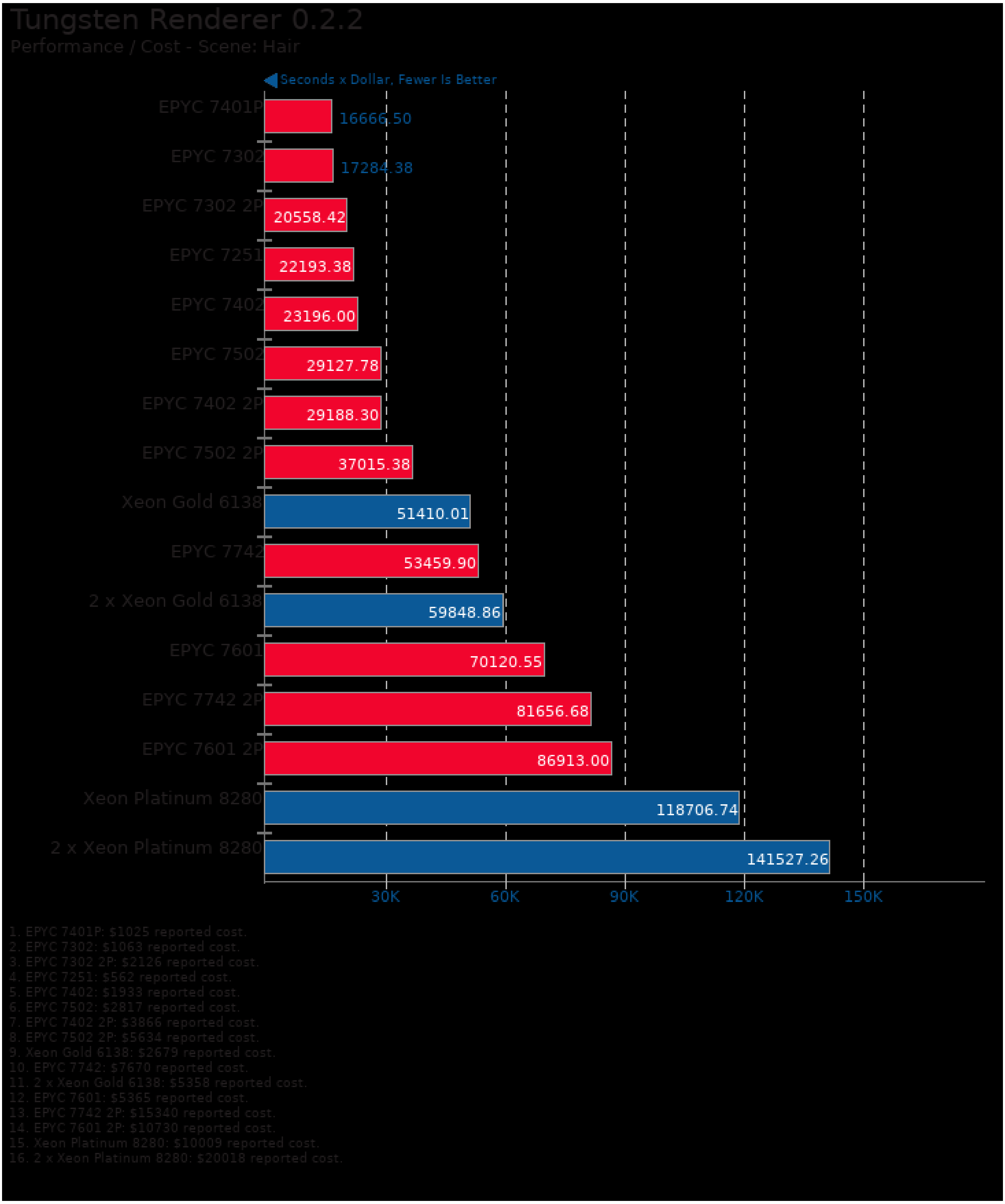

SVT-HEVC 1.4.1
1080p 8-bit YUV To HEVC Video Encode
Frames Per Second, More Is Better
2 x Xeon Gold 6138
SE +/- 1.51, N = 4
109.36
Xeon Gold 6138
SE +/- 0.01, N = 3
71.29
20
40
60
80
100
1. (CC) gcc options: -fPIE -fPIC -O3 -O2 -pie -rdynamic -lpthread -lrt

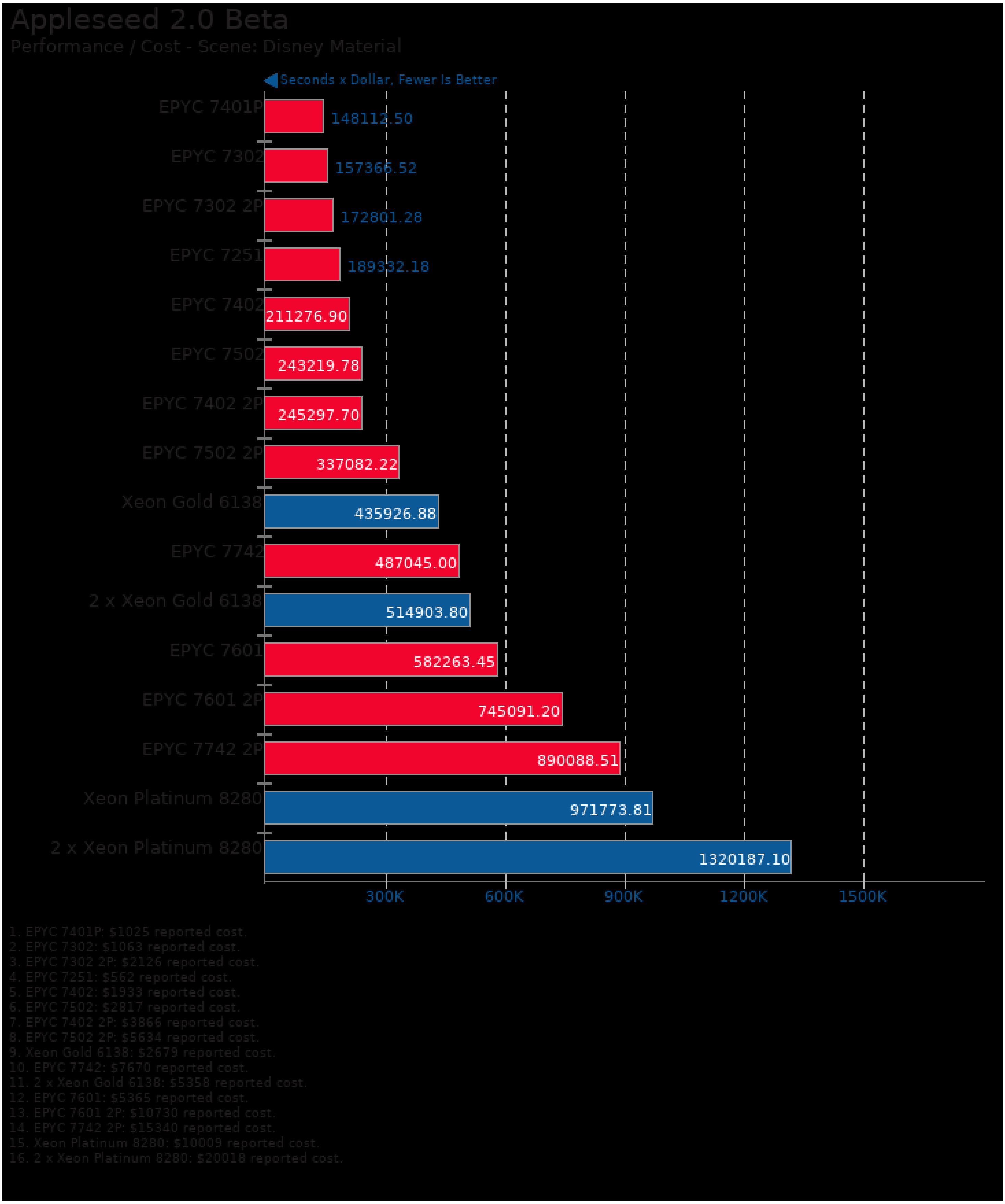

SVT-VP9 2019-09-09
1080p 8-bit YUV To VP9 Video Encode
Frames Per Second, More Is Better
EPYC 7742
SE +/- 5.14, N = 5
393.10
EPYC 7502
SE +/- 3.65, N = 3
374.60
Xeon Platinum 8280
SE +/- 5.00, N = 3
370.05
EPYC 7402
SE +/- 5.34, N = 3
358.66
EPYC 7402 2P
SE +/- 4.60, N = 5
347.87
EPYC 7502 2P
SE +/- 2.98, N = 3
345.47
EPYC 7742 2P
SE +/- 4.38, N = 15
344.13
EPYC 7302 2P
SE +/- 5.06, N = 3
319.09
2 x Xeon Platinum 8280
SE +/- 3.34, N = 6
279.16
EPYC 7302
SE +/- 1.48, N = 3
272.54
Xeon Gold 6138
SE +/- 10.05, N = 12
262.13
2 x Xeon Gold 6138
SE +/- 9.95, N = 12
249.49
EPYC 7401P
SE +/- 0.75, N = 3
160.83
EPYC 7601
SE +/- 1.72, N = 15
158.54
EPYC 7601 2P
SE +/- 2.11, N = 3
133.45
EPYC 7251
SE +/- 0.65, N = 3
66.76
90
180
270
360
450
1. (CC) gcc options: -fPIE -fPIC -flto -O3 -O2 -pie -rdynamic -lpthread -lrt -lm

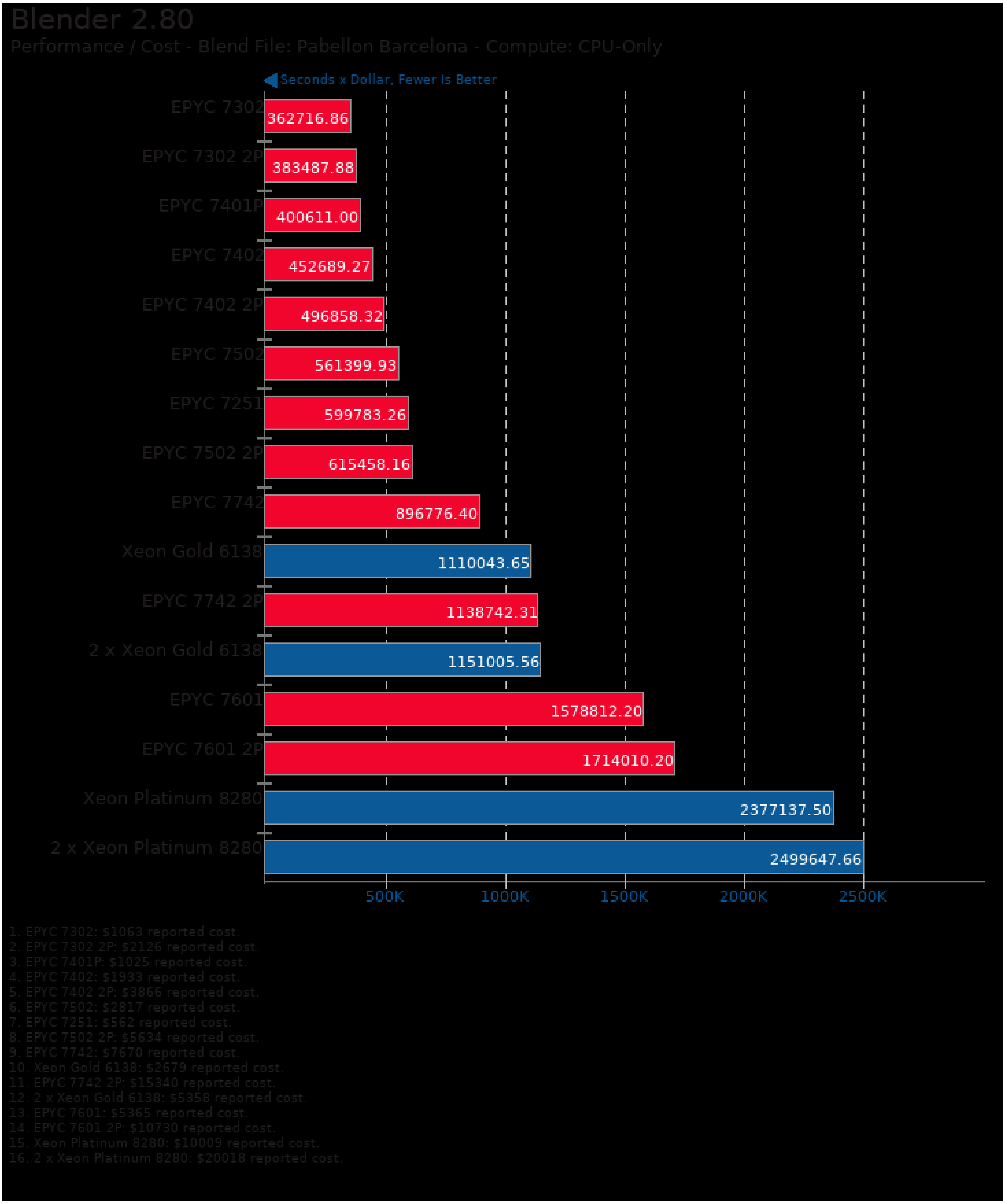

Geekbench 5.0
Performance / Cost - Test: CPU Multi Core
Score Per Dollar, More Is Better
EPYC 7302
16.29
EPYC 7401P
14.22
EPYC 7302 2P
13.56
EPYC 7402
12.16
EPYC 7251
11.69
EPYC 7502
9.74
EPYC 7402 2P
9.69
EPYC 7502 2P
7.71
EPYC 7742
5.48
Xeon Gold 6138
5.37
EPYC 7742 2P
3.85
2 x Xeon Gold 6138
3.66
EPYC 7601
3.32
EPYC 7601 2P
2.65
Xeon Platinum 8280
2.37
2 x Xeon Platinum 8280
1.81
4
8
12
16
20
1. EPYC 7302: $1063 reported cost.
2. EPYC 7401P: $1025 reported cost.
3. EPYC 7302 2P: $2126 reported cost.
4. EPYC 7402: $1933 reported cost.
5. EPYC 7251: $562 reported cost.
6. EPYC 7502: $2817 reported cost.
7. EPYC 7402 2P: $3866 reported cost.
8. EPYC 7502 2P: $5634 reported cost.
9. EPYC 7742: $7670 reported cost.
10. Xeon Gold 6138: $2679 reported cost.
11. EPYC 7742 2P: $15340 reported cost.
12. 2 x Xeon Gold 6138: $5358 reported cost.
13. EPYC 7601: $5365 reported cost.
14. EPYC 7601 2P: $10730 reported cost.
15. Xeon Platinum 8280: $10009 reported cost.
16. 2 x Xeon Platinum 8280: $20018 reported cost.

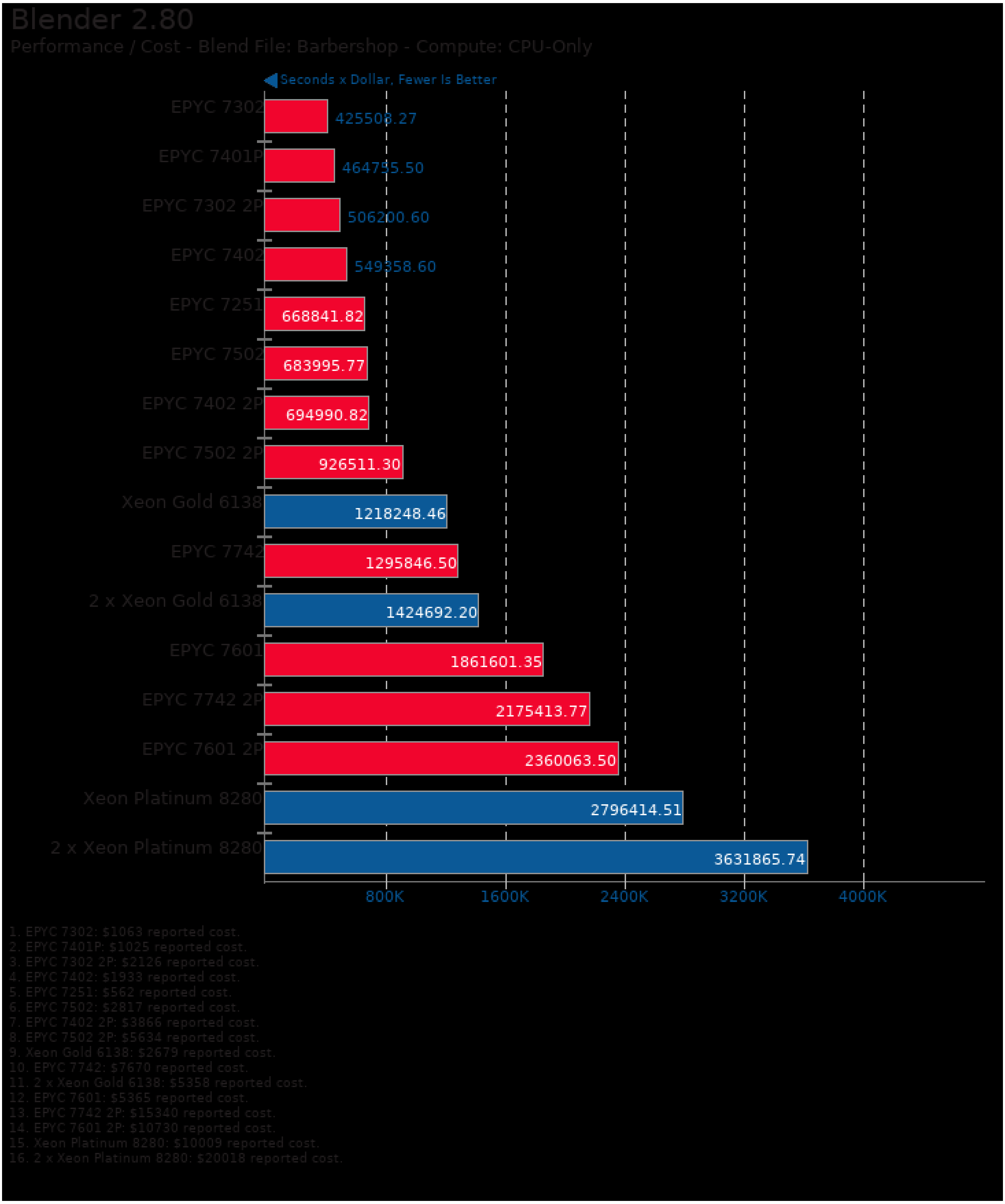

PHPBench 0.8.1
Performance / Cost - PHP Benchmark Suite
Score Per Dollar, More Is Better
EPYC 7251
640.01
EPYC 7302
460.62
EPYC 7401P
364.05
EPYC 7402
256.23
EPYC 7302 2P
230.18
Xeon Gold 6138
222.16
EPYC 7502
175.88
EPYC 7402 2P
128.41
2 x Xeon Gold 6138
111.77
EPYC 7502 2P
88.02
EPYC 7601
74.02
EPYC 7742
65.46
Xeon Platinum 8280
63.69
EPYC 7601 2P
36.87
EPYC 7742 2P
32.69
2 x Xeon Platinum 8280
32.25
140
280
420
560
700
1. EPYC 7251: $562 reported cost.
2. EPYC 7302: $1063 reported cost.
3. EPYC 7401P: $1025 reported cost.
4. EPYC 7402: $1933 reported cost.
5. EPYC 7302 2P: $2126 reported cost.
6. Xeon Gold 6138: $2679 reported cost.
7. EPYC 7502: $2817 reported cost.
8. EPYC 7402 2P: $3866 reported cost.
9. 2 x Xeon Gold 6138: $5358 reported cost.
10. EPYC 7502 2P: $5634 reported cost.
11. EPYC 7601: $5365 reported cost.
12. EPYC 7742: $7670 reported cost.
13. Xeon Platinum 8280: $10009 reported cost.
14. EPYC 7601 2P: $10730 reported cost.
15. EPYC 7742 2P: $15340 reported cost.
16. 2 x Xeon Platinum 8280: $20018 reported cost.

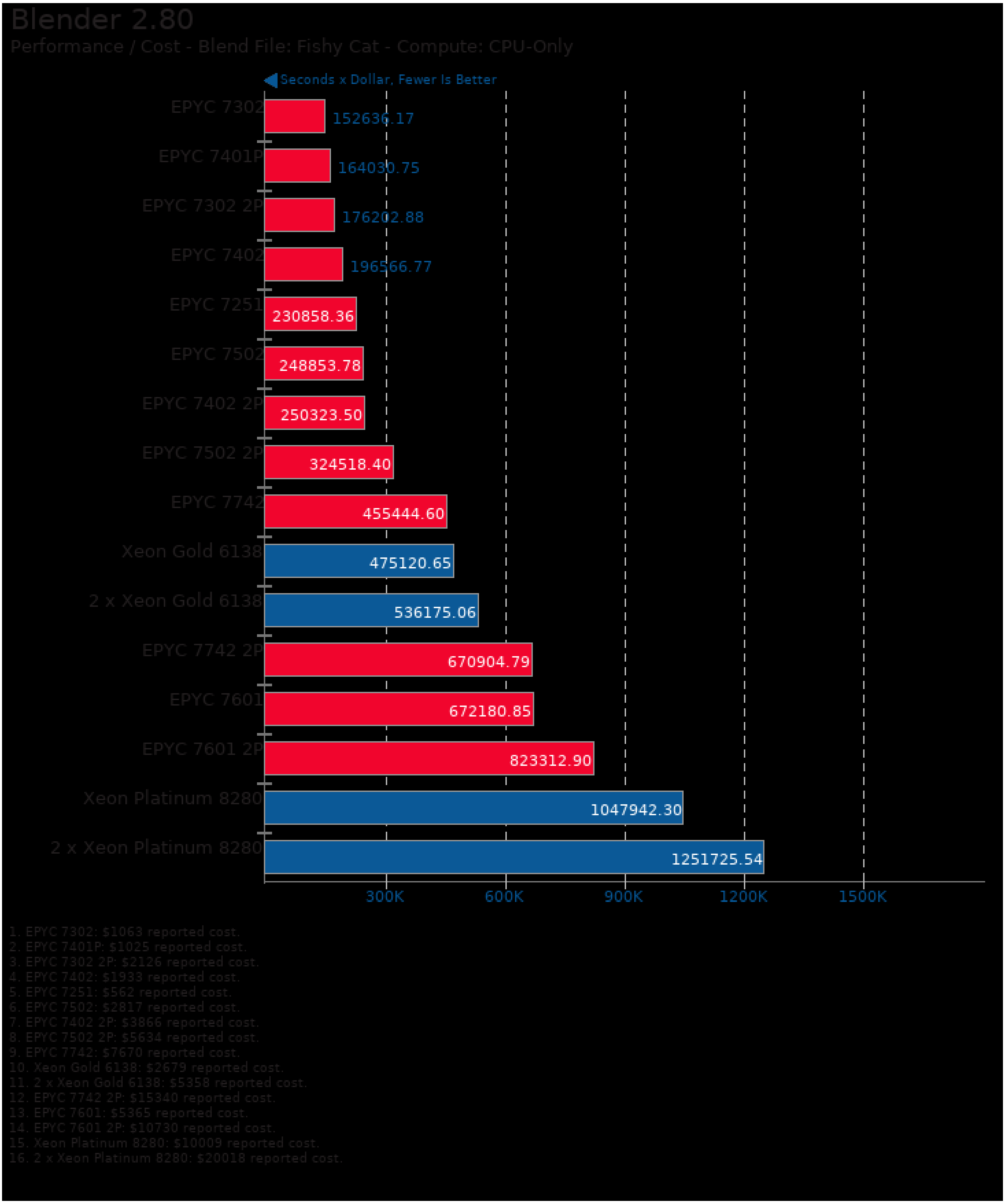

PyBench 2018-02-16
Performance / Cost - Total For Average Test Times
Milliseconds x Dollar, Fewer Is Better
EPYC 7251
903134.00
EPYC 7302
1297923.00
EPYC 7401P
1589775.00
EPYC 7402
2333131.00
EPYC 7302 2P
2604350.00
Xeon Gold 6138
2904036.00
EPYC 7502
3414204.00
EPYC 7402 2P
4681726.00
2 x Xeon Gold 6138
5759850.00
EPYC 7502 2P
6822774.00
EPYC 7601
7816805.00
EPYC 7742
9219340.00
Xeon Platinum 8280
10179153.00
EPYC 7601 2P
15687260.00
EPYC 7742 2P
18510894.00
2 x Xeon Platinum 8280
20278234.00
4M
8M
12M
16M
20M
1. EPYC 7251: $562 reported cost.
2. EPYC 7302: $1063 reported cost.
3. EPYC 7401P: $1025 reported cost.
4. EPYC 7402: $1933 reported cost.
5. EPYC 7302 2P: $2126 reported cost.
6. Xeon Gold 6138: $2679 reported cost.
7. EPYC 7502: $2817 reported cost.
8. EPYC 7402 2P: $3866 reported cost.
9. 2 x Xeon Gold 6138: $5358 reported cost.
10. EPYC 7502 2P: $5634 reported cost.
11. EPYC 7601: $5365 reported cost.
12. EPYC 7742: $7670 reported cost.
13. Xeon Platinum 8280: $10009 reported cost.
14. EPYC 7601 2P: $10730 reported cost.
15. EPYC 7742 2P: $15340 reported cost.
16. 2 x Xeon Platinum 8280: $20018 reported cost.

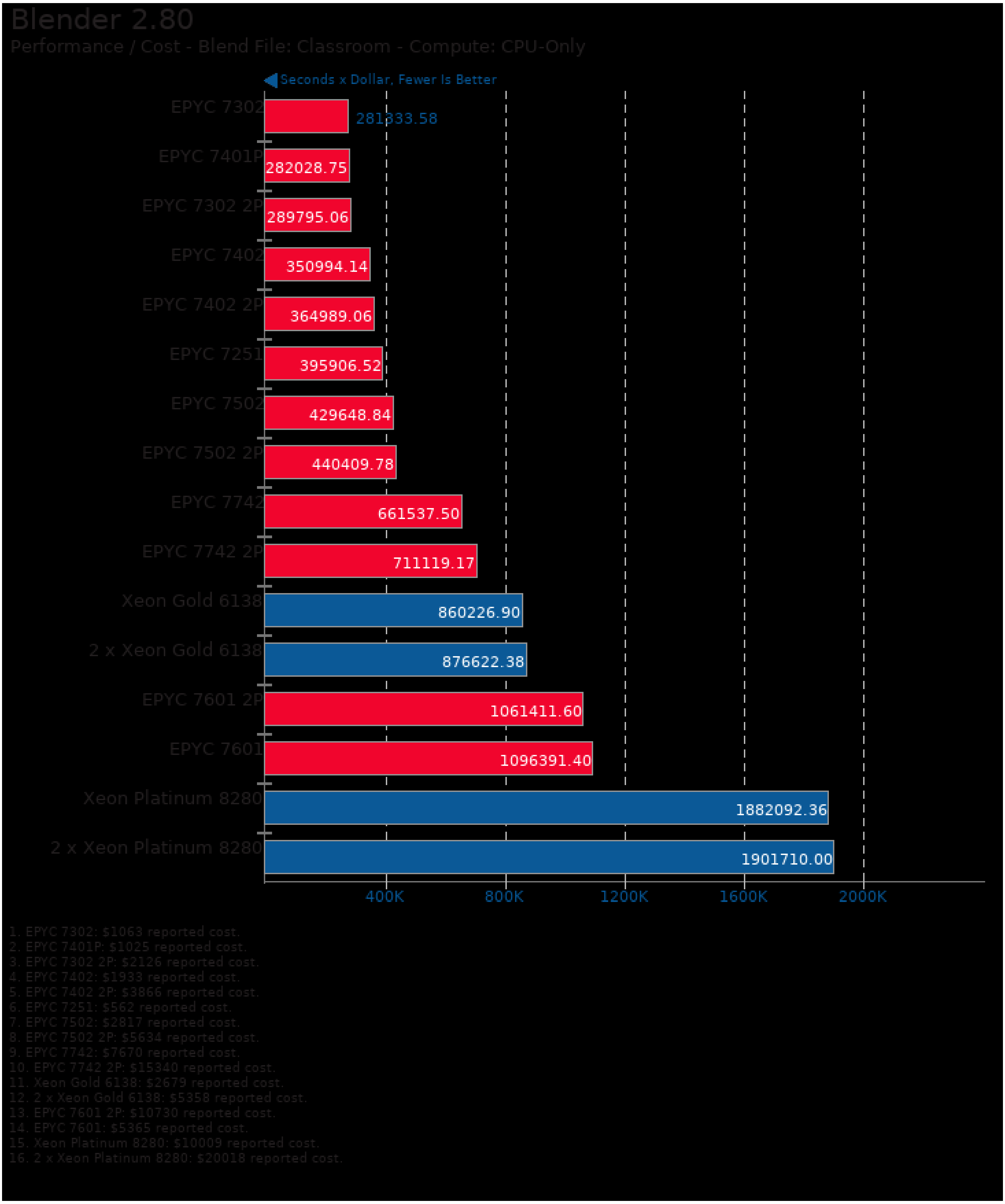

Tungsten Renderer 0.2.2
Performance / Cost - Scene: Hair
Seconds x Dollar, Fewer Is Better
EPYC 7401P
16666.50
EPYC 7302
17284.38
EPYC 7302 2P
20558.42
EPYC 7251
22193.38
EPYC 7402
23196.00
EPYC 7502
29127.78
EPYC 7402 2P
29188.30
EPYC 7502 2P
37015.38
Xeon Gold 6138
51410.01
EPYC 7742
53459.90
2 x Xeon Gold 6138
59848.86
EPYC 7601
70120.55
EPYC 7742 2P
81656.68
EPYC 7601 2P
86913.00
Xeon Platinum 8280
118706.74
2 x Xeon Platinum 8280
141527.26
30K
60K
90K
120K
150K
1. EPYC 7401P: $1025 reported cost.
2. EPYC 7302: $1063 reported cost.
3. EPYC 7302 2P: $2126 reported cost.
4. EPYC 7251: $562 reported cost.
5. EPYC 7402: $1933 reported cost.
6. EPYC 7502: $2817 reported cost.
7. EPYC 7402 2P: $3866 reported cost.
8. EPYC 7502 2P: $5634 reported cost.
9. Xeon Gold 6138: $2679 reported cost.
10. EPYC 7742: $7670 reported cost.
11. 2 x Xeon Gold 6138: $5358 reported cost.
12. EPYC 7601: $5365 reported cost.
13. EPYC 7742 2P: $15340 reported cost.
14. EPYC 7601 2P: $10730 reported cost.
15. Xeon Platinum 8280: $10009 reported cost.
16. 2 x Xeon Platinum 8280: $20018 reported cost.

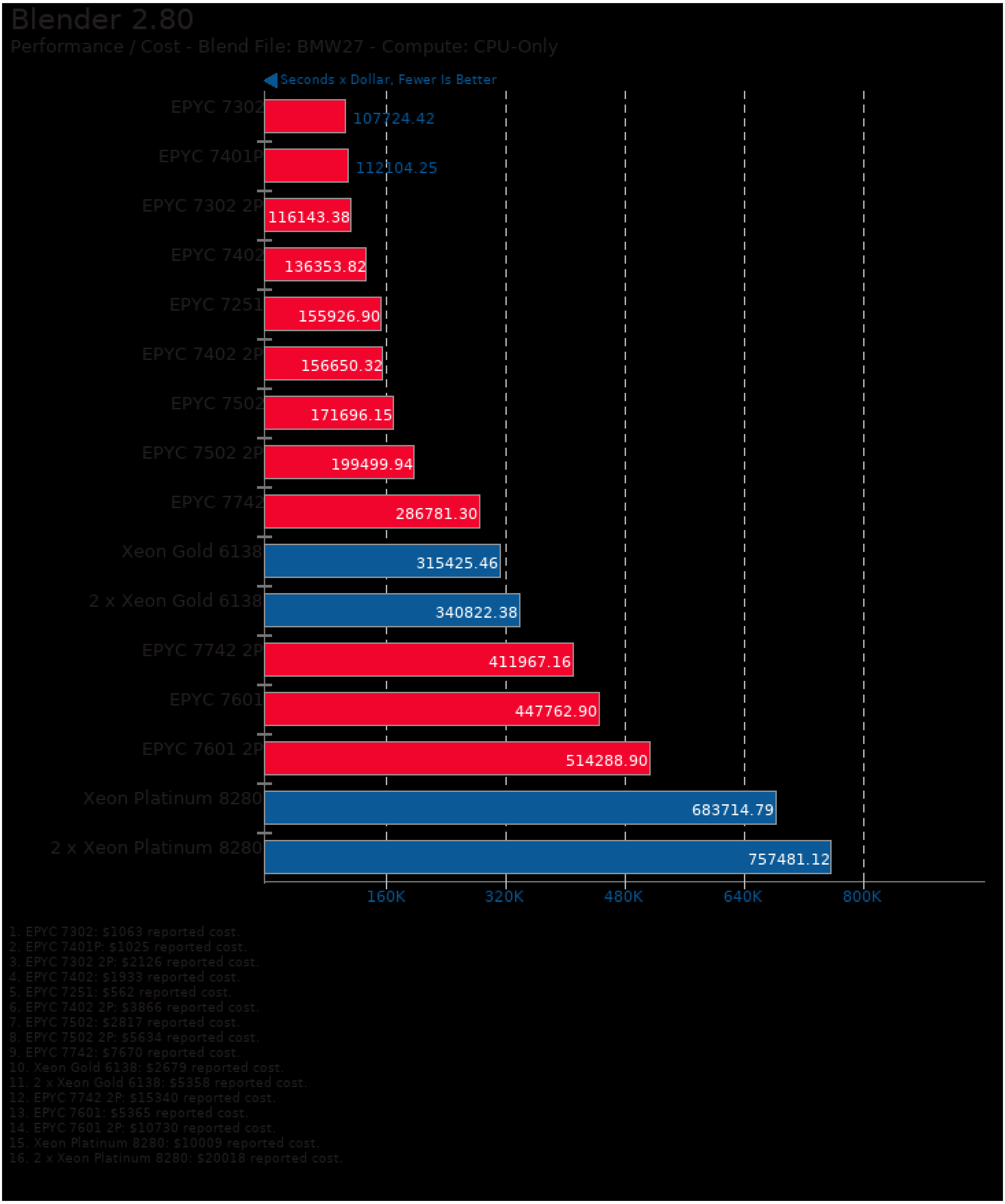

Appleseed 2.0 Beta
Performance / Cost - Scene: Disney Material
Seconds x Dollar, Fewer Is Better
EPYC 7401P
148112.50
EPYC 7302
157365.52
EPYC 7302 2P
172801.28
EPYC 7251
189332.18
EPYC 7402
211276.90
EPYC 7502
243219.78
EPYC 7402 2P
245297.70
EPYC 7502 2P
337082.22
Xeon Gold 6138
435926.88
EPYC 7742
487045.00
2 x Xeon Gold 6138
514903.80
EPYC 7601
582263.45
EPYC 7601 2P
745091.20
EPYC 7742 2P
890088.51
Xeon Platinum 8280
971773.81
2 x Xeon Platinum 8280
1320187.10
300K
600K
900K
1200K
1500K
1. EPYC 7401P: $1025 reported cost.
2. EPYC 7302: $1063 reported cost.
3. EPYC 7302 2P: $2126 reported cost.
4. EPYC 7251: $562 reported cost.
5. EPYC 7402: $1933 reported cost.
6. EPYC 7502: $2817 reported cost.
7. EPYC 7402 2P: $3866 reported cost.
8. EPYC 7502 2P: $5634 reported cost.
9. Xeon Gold 6138: $2679 reported cost.
10. EPYC 7742: $7670 reported cost.
11. 2 x Xeon Gold 6138: $5358 reported cost.
12. EPYC 7601: $5365 reported cost.
13. EPYC 7601 2P: $10730 reported cost.
14. EPYC 7742 2P: $15340 reported cost.
15. Xeon Platinum 8280: $10009 reported cost.
16. 2 x Xeon Platinum 8280: $20018 reported cost.

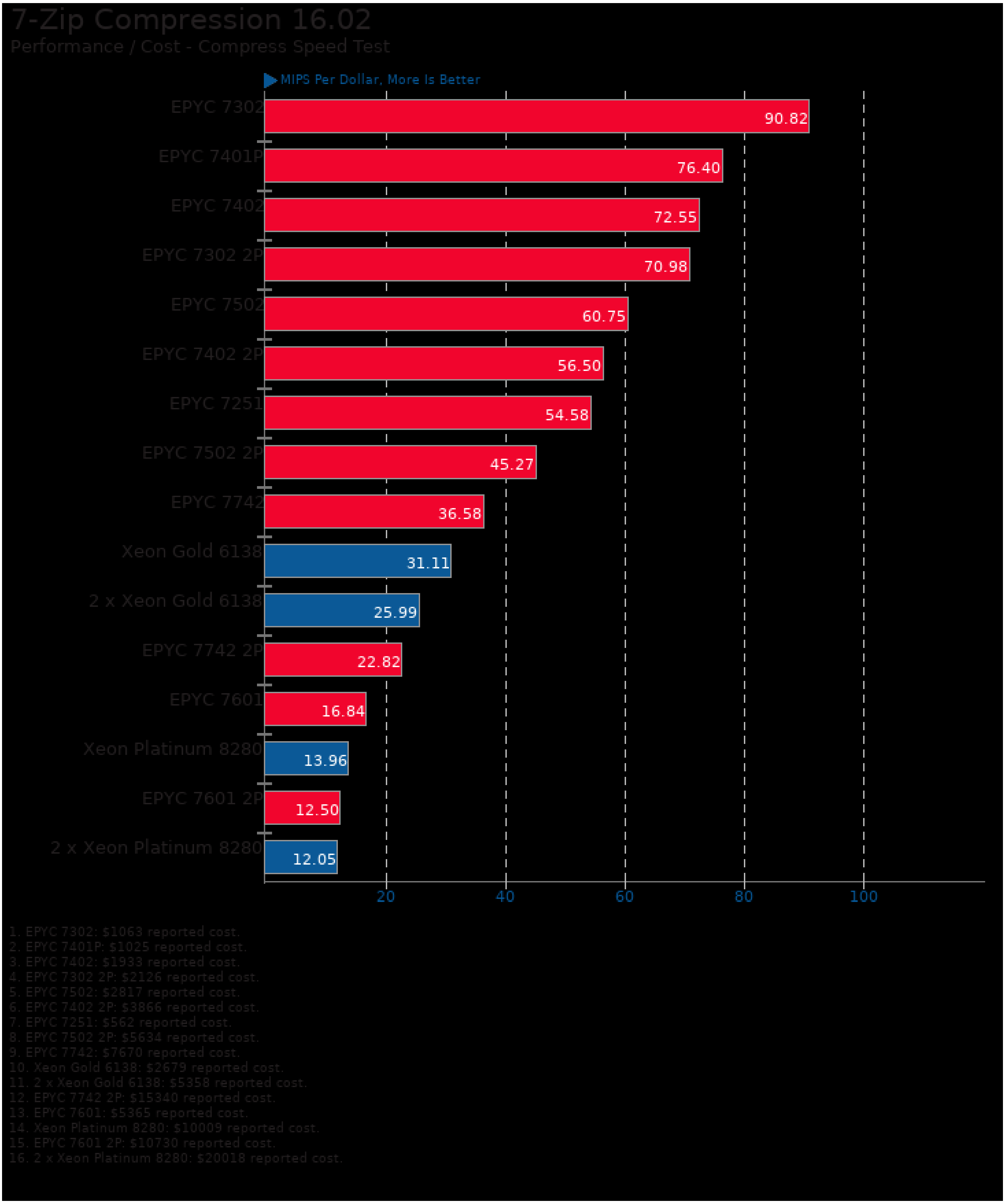

Blender 2.80
Performance / Cost - Blend File: Pabellon Barcelona - Compute: CPU-Only
Seconds x Dollar, Fewer Is Better
EPYC 7302
362716.86
EPYC 7302 2P
383487.88
EPYC 7401P
400611.00
EPYC 7402
452689.27
EPYC 7402 2P
496858.32
EPYC 7502
561399.93
EPYC 7251
599783.26
EPYC 7502 2P
615458.16
EPYC 7742
896776.40
Xeon Gold 6138
1110043.65
EPYC 7742 2P
1138742.31
2 x Xeon Gold 6138
1151005.56
EPYC 7601
1578812.20
EPYC 7601 2P
1714010.20
Xeon Platinum 8280
2377137.50
2 x Xeon Platinum 8280
2499647.66
500K
1000K
1500K
2000K
2500K
1. EPYC 7302: $1063 reported cost.
2. EPYC 7302 2P: $2126 reported cost.
3. EPYC 7401P: $1025 reported cost.
4. EPYC 7402: $1933 reported cost.
5. EPYC 7402 2P: $3866 reported cost.
6. EPYC 7502: $2817 reported cost.
7. EPYC 7251: $562 reported cost.
8. EPYC 7502 2P: $5634 reported cost.
9. EPYC 7742: $7670 reported cost.
10. Xeon Gold 6138: $2679 reported cost.
11. EPYC 7742 2P: $15340 reported cost.
12. 2 x Xeon Gold 6138: $5358 reported cost.
13. EPYC 7601: $5365 reported cost.
14. EPYC 7601 2P: $10730 reported cost.
15. Xeon Platinum 8280: $10009 reported cost.
16. 2 x Xeon Platinum 8280: $20018 reported cost.

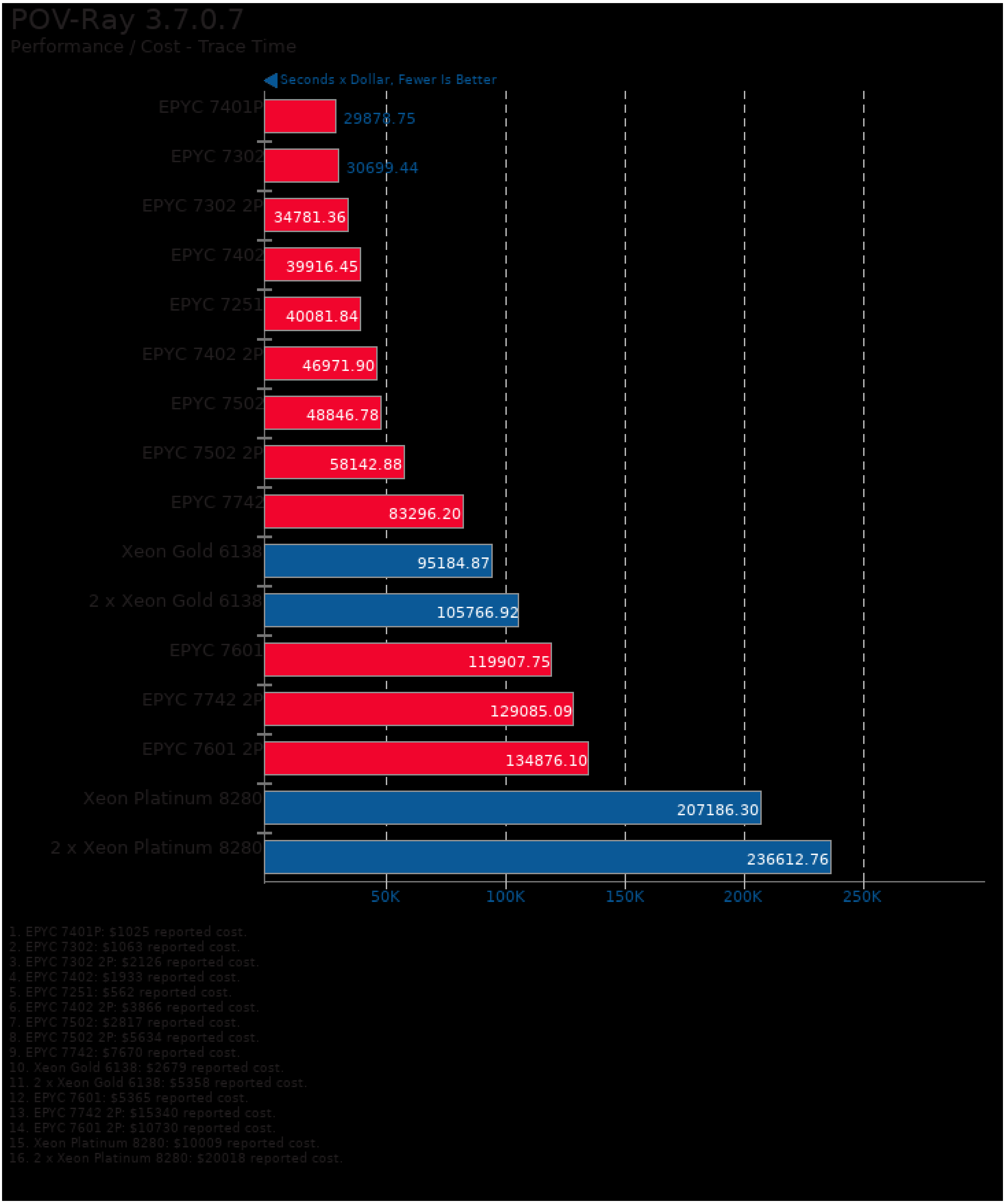

Blender 2.80
Performance / Cost - Blend File: Barbershop - Compute: CPU-Only
Seconds x Dollar, Fewer Is Better
EPYC 7302
425508.27
EPYC 7401P
464755.50
EPYC 7302 2P
506200.60
EPYC 7402
549358.60
EPYC 7251
668841.82
EPYC 7502
683995.77
EPYC 7402 2P
694990.82
EPYC 7502 2P
926511.30
Xeon Gold 6138
1218248.46
EPYC 7742
1295846.50
2 x Xeon Gold 6138
1424692.20
EPYC 7601
1861601.35
EPYC 7742 2P
2175413.77
EPYC 7601 2P
2360063.50
Xeon Platinum 8280
2796414.51
2 x Xeon Platinum 8280
3631865.74
800K
1600K
2400K
3200K
4000K
1. EPYC 7302: $1063 reported cost.
2. EPYC 7401P: $1025 reported cost.
3. EPYC 7302 2P: $2126 reported cost.
4. EPYC 7402: $1933 reported cost.
5. EPYC 7251: $562 reported cost.
6. EPYC 7502: $2817 reported cost.
7. EPYC 7402 2P: $3866 reported cost.
8. EPYC 7502 2P: $5634 reported cost.
9. Xeon Gold 6138: $2679 reported cost.
10. EPYC 7742: $7670 reported cost.
11. 2 x Xeon Gold 6138: $5358 reported cost.
12. EPYC 7601: $5365 reported cost.
13. EPYC 7742 2P: $15340 reported cost.
14. EPYC 7601 2P: $10730 reported cost.
15. Xeon Platinum 8280: $10009 reported cost.
16. 2 x Xeon Platinum 8280: $20018 reported cost.

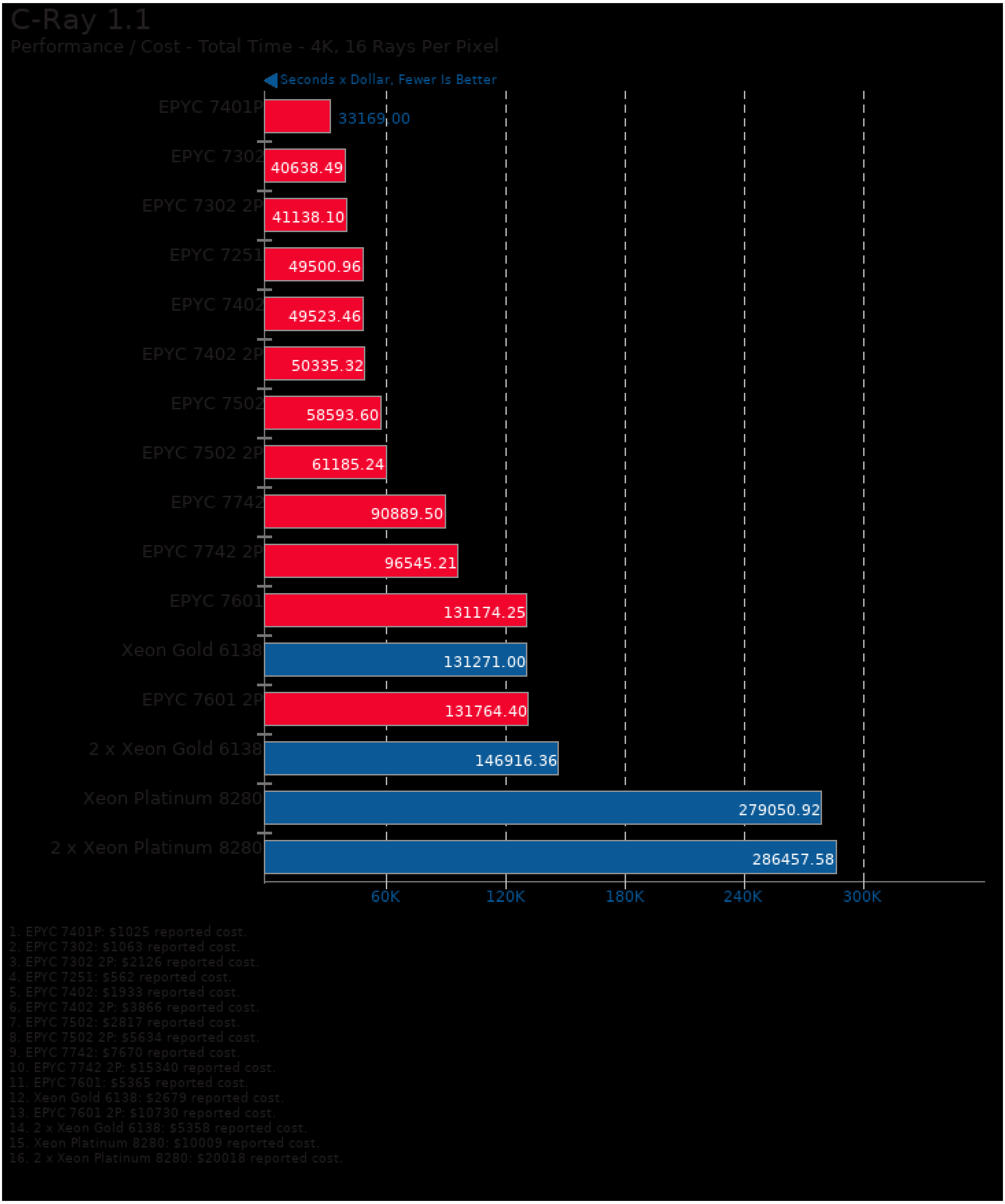

Blender 2.80
Performance / Cost - Blend File: Fishy Cat - Compute: CPU-Only
Seconds x Dollar, Fewer Is Better
EPYC 7302
152636.17
EPYC 7401P
164030.75
EPYC 7302 2P
176202.88
EPYC 7402
196566.77
EPYC 7251
230858.36
EPYC 7502
248853.78
EPYC 7402 2P
250323.50
EPYC 7502 2P
324518.40
EPYC 7742
455444.60
Xeon Gold 6138
475120.65
2 x Xeon Gold 6138
536175.06
EPYC 7742 2P
670904.79
EPYC 7601
672180.85
EPYC 7601 2P
823312.90
Xeon Platinum 8280
1047942.30
2 x Xeon Platinum 8280
1251725.54
300K
600K
900K
1200K
1500K
1. EPYC 7302: $1063 reported cost.
2. EPYC 7401P: $1025 reported cost.
3. EPYC 7302 2P: $2126 reported cost.
4. EPYC 7402: $1933 reported cost.
5. EPYC 7251: $562 reported cost.
6. EPYC 7502: $2817 reported cost.
7. EPYC 7402 2P: $3866 reported cost.
8. EPYC 7502 2P: $5634 reported cost.
9. EPYC 7742: $7670 reported cost.
10. Xeon Gold 6138: $2679 reported cost.
11. 2 x Xeon Gold 6138: $5358 reported cost.
12. EPYC 7742 2P: $15340 reported cost.
13. EPYC 7601: $5365 reported cost.
14. EPYC 7601 2P: $10730 reported cost.
15. Xeon Platinum 8280: $10009 reported cost.
16. 2 x Xeon Platinum 8280: $20018 reported cost.

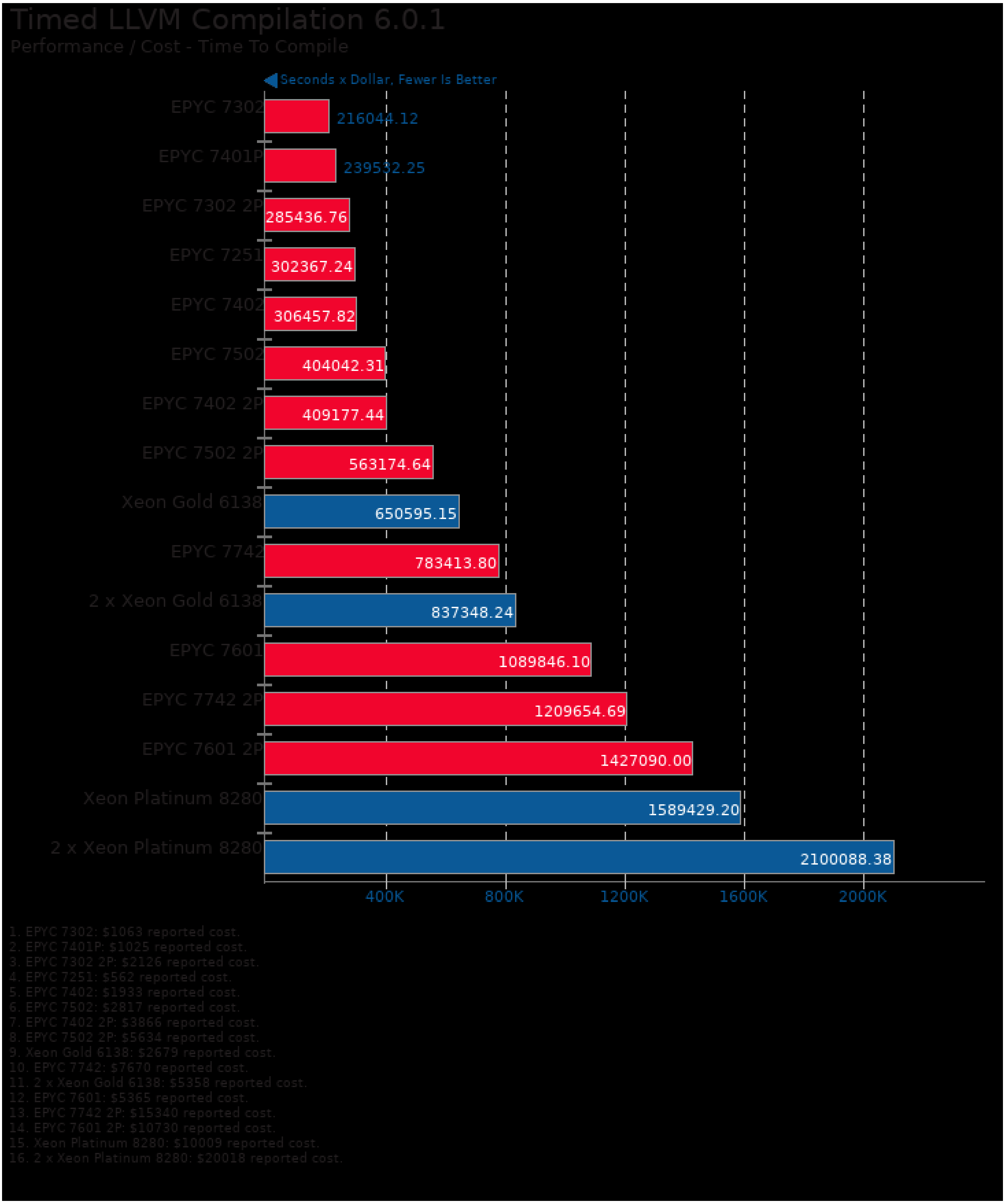

Blender 2.80
Performance / Cost - Blend File: Classroom - Compute: CPU-Only
Seconds x Dollar, Fewer Is Better
EPYC 7302
281333.58
EPYC 7401P
282028.75
EPYC 7302 2P
289795.06
EPYC 7402
350994.14
EPYC 7402 2P
364989.06
EPYC 7251
395906.52
EPYC 7502
429648.84
EPYC 7502 2P
440409.78
EPYC 7742
661537.50
EPYC 7742 2P
711119.17
Xeon Gold 6138
860226.90
2 x Xeon Gold 6138
876622.38
EPYC 7601 2P
1061411.60
EPYC 7601
1096391.40
Xeon Platinum 8280
1882092.36
2 x Xeon Platinum 8280
1901710.00
400K
800K
1200K
1600K
2000K
1. EPYC 7302: $1063 reported cost.
2. EPYC 7401P: $1025 reported cost.
3. EPYC 7302 2P: $2126 reported cost.
4. EPYC 7402: $1933 reported cost.
5. EPYC 7402 2P: $3866 reported cost.
6. EPYC 7251: $562 reported cost.
7. EPYC 7502: $2817 reported cost.
8. EPYC 7502 2P: $5634 reported cost.
9. EPYC 7742: $7670 reported cost.
10. EPYC 7742 2P: $15340 reported cost.
11. Xeon Gold 6138: $2679 reported cost.
12. 2 x Xeon Gold 6138: $5358 reported cost.
13. EPYC 7601 2P: $10730 reported cost.
14. EPYC 7601: $5365 reported cost.
15. Xeon Platinum 8280: $10009 reported cost.
16. 2 x Xeon Platinum 8280: $20018 reported cost.

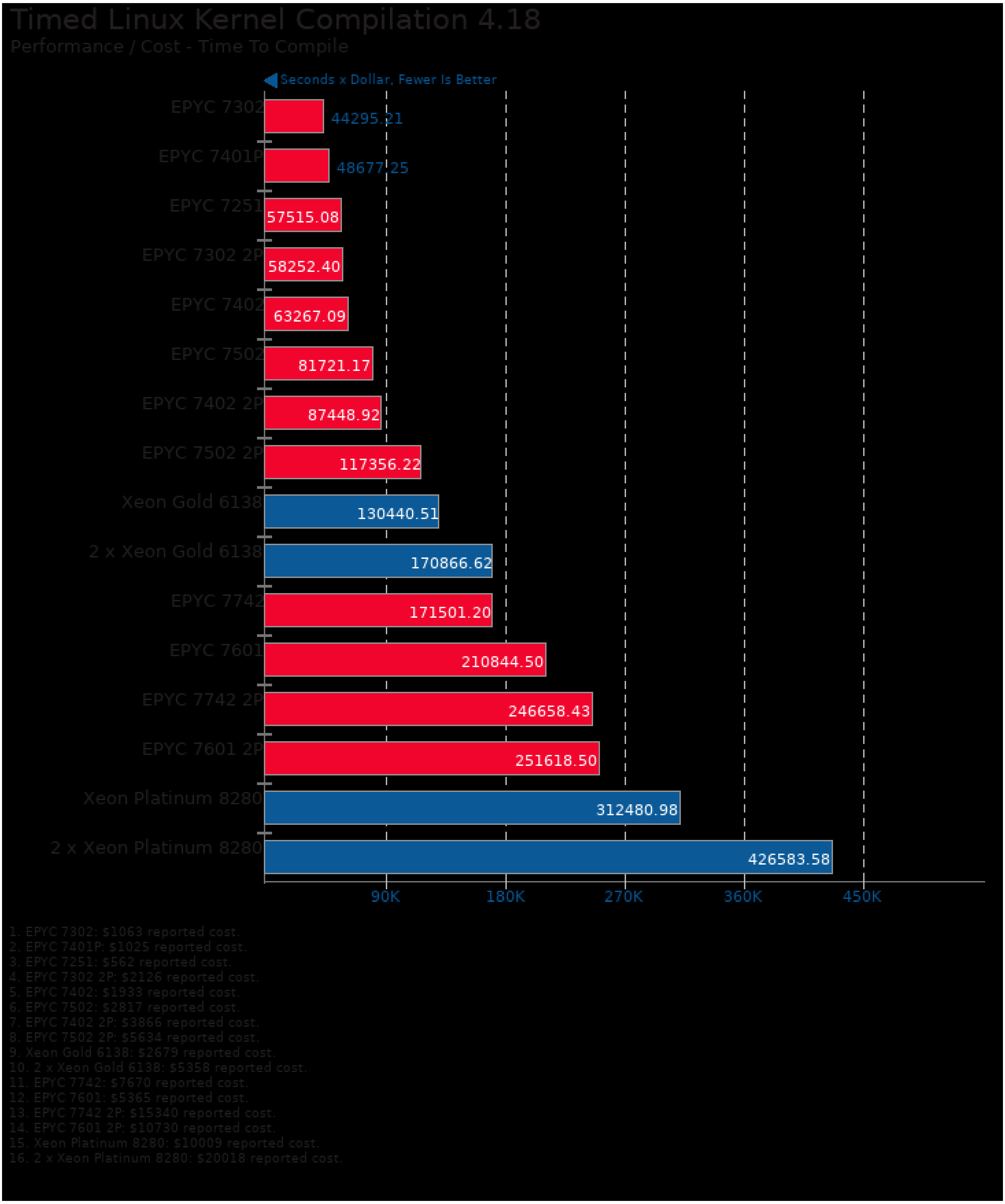

Blender 2.80
Performance / Cost - Blend File: BMW27 - Compute: CPU-Only
Seconds x Dollar, Fewer Is Better
EPYC 7302 107724.42
EPYC 7401P 112104.25
EPYC 7302 2P 116143.38
EPYC 7402 136353.82
EPYC 7251 155926.90
EPYC 7402 2P 156650.32
EPYC 7502 171696.15
EPYC 7502 2P 199499.94
EPYC 7742 286781.30
Xeon Gold 6138 315425.46
2 x Xeon Gold 6138 340822.38
EPYC 7742 2P 411967.16
EPYC 7601 447762.90
EPYC 7601 2P 514288.90
Xeon Platinum 8280 683714.79
2 x Xeon Platinum 8280 757481.12
160K
320K
480K
640K
800K
1. EPYC 7302: $1063 reported cost.
2. EPYC 7401P: $1025 reported cost.
3. EPYC 7302 2P: $2126 reported cost.
4. EPYC 7402: $1933 reported cost.
5. EPYC 7251: $562 reported cost.
6. EPYC 7402 2P: $3866 reported cost.
7. EPYC 7502: $2817 reported cost.
8. EPYC 7502 2P: $5634 reported cost.
9. EPYC 7742: $7670 reported cost.
10. Xeon Gold 6138: $2679 reported cost.
11. 2 x Xeon Gold 6138: $5358 reported cost.
12. EPYC 7742 2P: $15340 reported cost.
13. EPYC 7601: $5365 reported cost.
14. EPYC 7601 2P: $10730 reported cost.
15. Xeon Platinum 8280: $10009 reported cost.
16. 2 x Xeon Platinum 8280: $20018 reported cost.

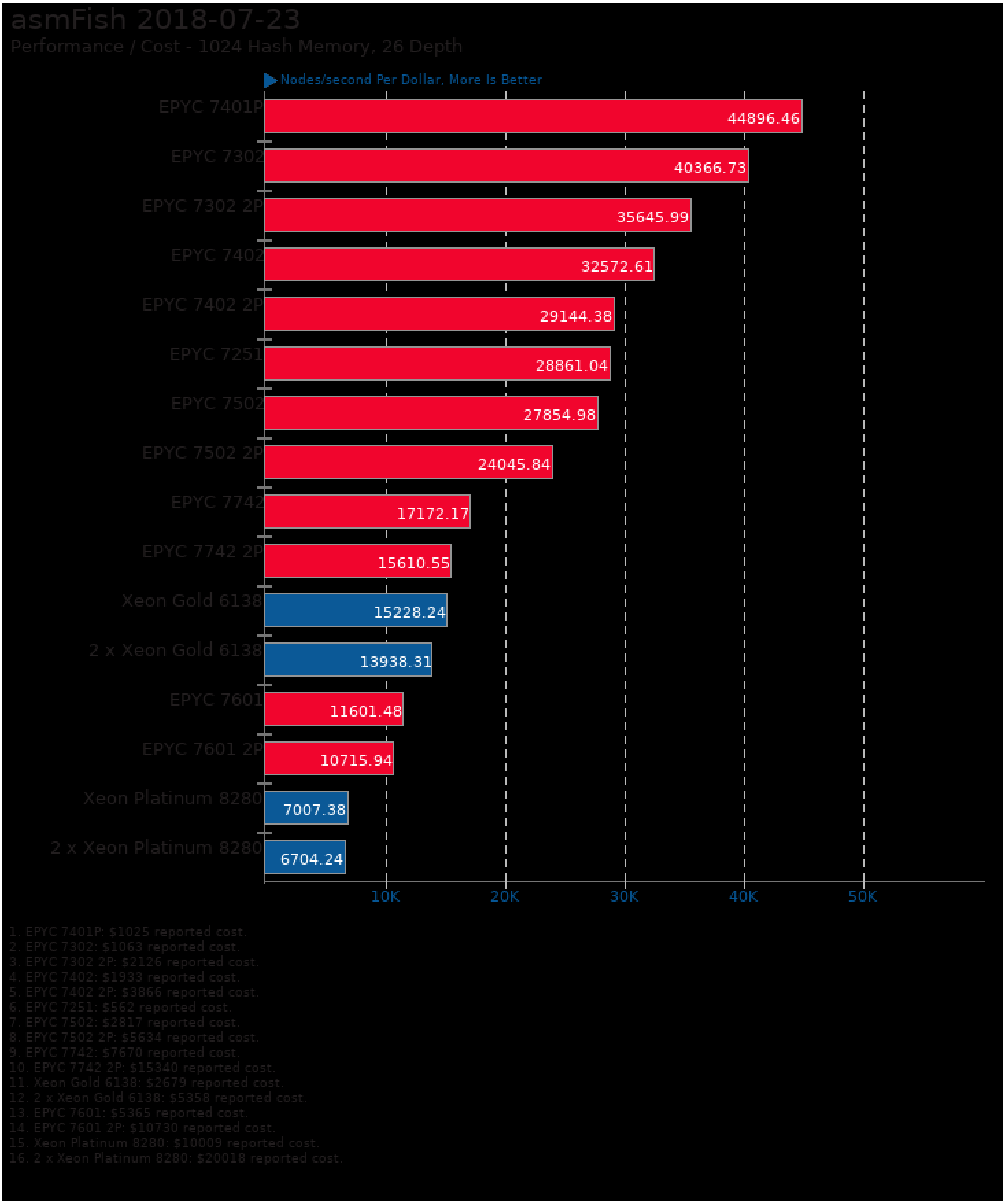

7-Zip Compression 16.02
Performance / Cost - Compress Speed Test
MIPS Per Dollar, More Is Better
EPYC 7302
90.82
EPYC 7401P
76.40
EPYC 7402
72.55
EPYC 7302 2P
70.98
EPYC 7502
60.75
EPYC 7402 2P
56.50
EPYC 7251
54.58
EPYC 7502 2P
45.27
EPYC 7742
36.58
Xeon Gold 6138
31.11
2 x Xeon Gold 6138
25.99
EPYC 7742 2P
22.82
EPYC 7601
16.84
Xeon Platinum 8280
13.96
EPYC 7601 2P
12.50
2 x Xeon Platinum 8280
12.05
20
40
60
80
100
1. EPYC 7302: $1063 reported cost.
2. EPYC 7401P: $1025 reported cost.
3. EPYC 7402: $1933 reported cost.
4. EPYC 7302 2P: $2126 reported cost.
5. EPYC 7502: $2817 reported cost.
6. EPYC 7402 2P: $3866 reported cost.
7. EPYC 7251: $562 reported cost.
8. EPYC 7502 2P: $5634 reported cost.
9. EPYC 7742: $7670 reported cost.
10. Xeon Gold 6138: $2679 reported cost.
11. 2 x Xeon Gold 6138: $5358 reported cost.
12. EPYC 7742 2P: $15340 reported cost.
13. EPYC 7601: $5365 reported cost.
14. Xeon Platinum 8280: $10009 reported cost.
15. EPYC 7601 2P: $10730 reported cost.
16. 2 x Xeon Platinum 8280: $20018 reported cost.

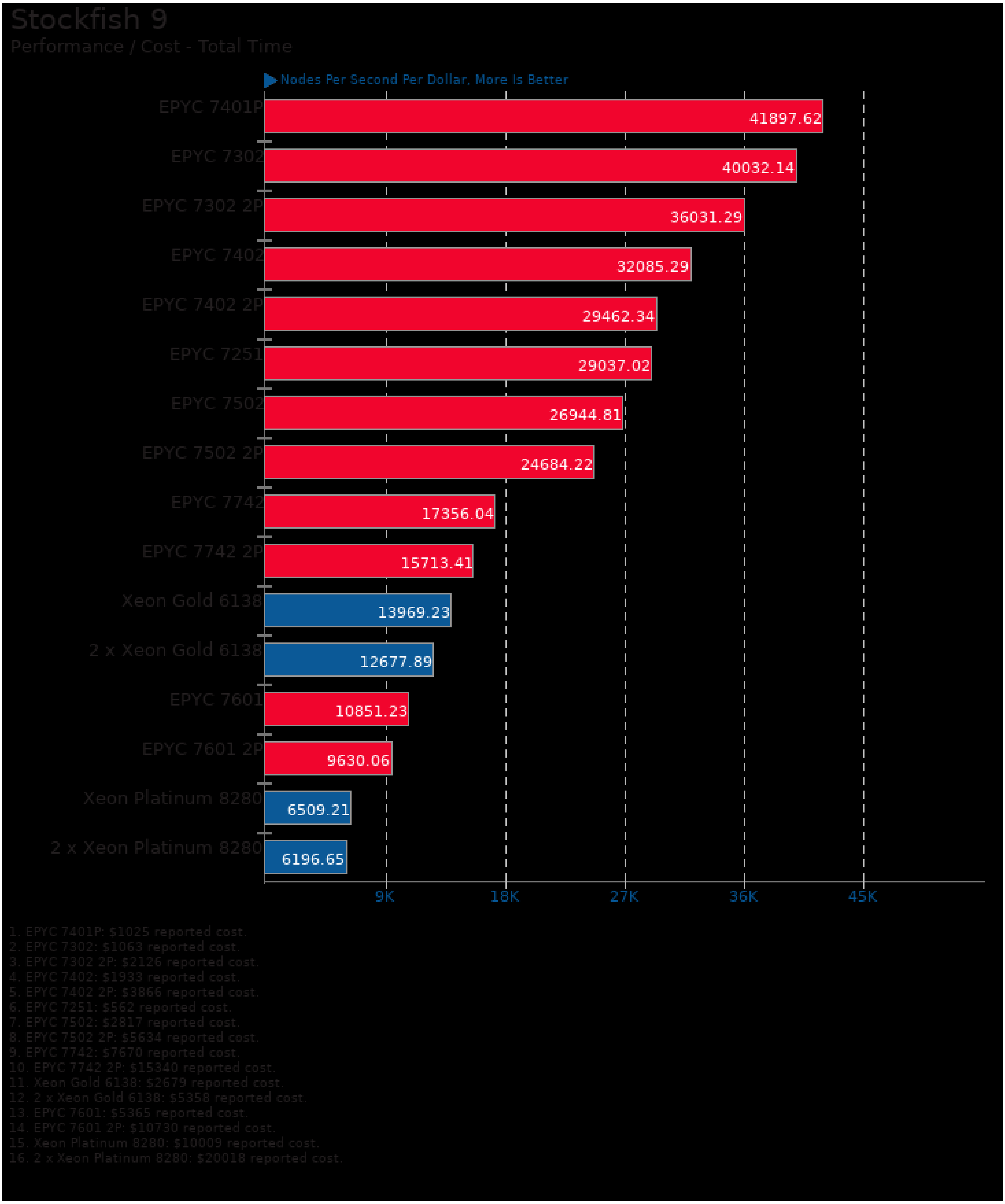

POV-Ray 3.7.0.7
Performance / Cost - Trace Time
Seconds x Dollar, Fewer Is Better
EPYC 7401P
29878.75
EPYC 7302
30699.44
EPYC 7302 2P
34781.36
EPYC 7402
39916.45
EPYC 7251
40081.84
EPYC 7402 2P
46971.90
EPYC 7502
48846.78
EPYC 7502 2P
58142.88
EPYC 7742
83296.20
Xeon Gold 6138
95184.87
2 x Xeon Gold 6138
105766.92
EPYC 7601
119907.75
EPYC 7742 2P
129085.09
EPYC 7601 2P
134876.10
Xeon Platinum 8280
207186.30
2 x Xeon Platinum 8280
236612.76
50K
100K
150K
200K
250K
1. EPYC 7401P: $1025 reported cost.
2. EPYC 7302: $1063 reported cost.
3. EPYC 7302 2P: $2126 reported cost.
4. EPYC 7402: $1933 reported cost.
5. EPYC 7251: $562 reported cost.
6. EPYC 7402 2P: $3866 reported cost.
7. EPYC 7502: $2817 reported cost.
8. EPYC 7502 2P: $5634 reported cost.
9. EPYC 7742: $7670 reported cost.
10. Xeon Gold 6138: $2679 reported cost.
11. 2 x Xeon Gold 6138: $5358 reported cost.
12. EPYC 7601: $5365 reported cost.
13. EPYC 7742 2P: $15340 reported cost.
14. EPYC 7601 2P: $10730 reported cost.
15. Xeon Platinum 8280: $10009 reported cost.
16. 2 x Xeon Platinum 8280: $20018 reported cost.

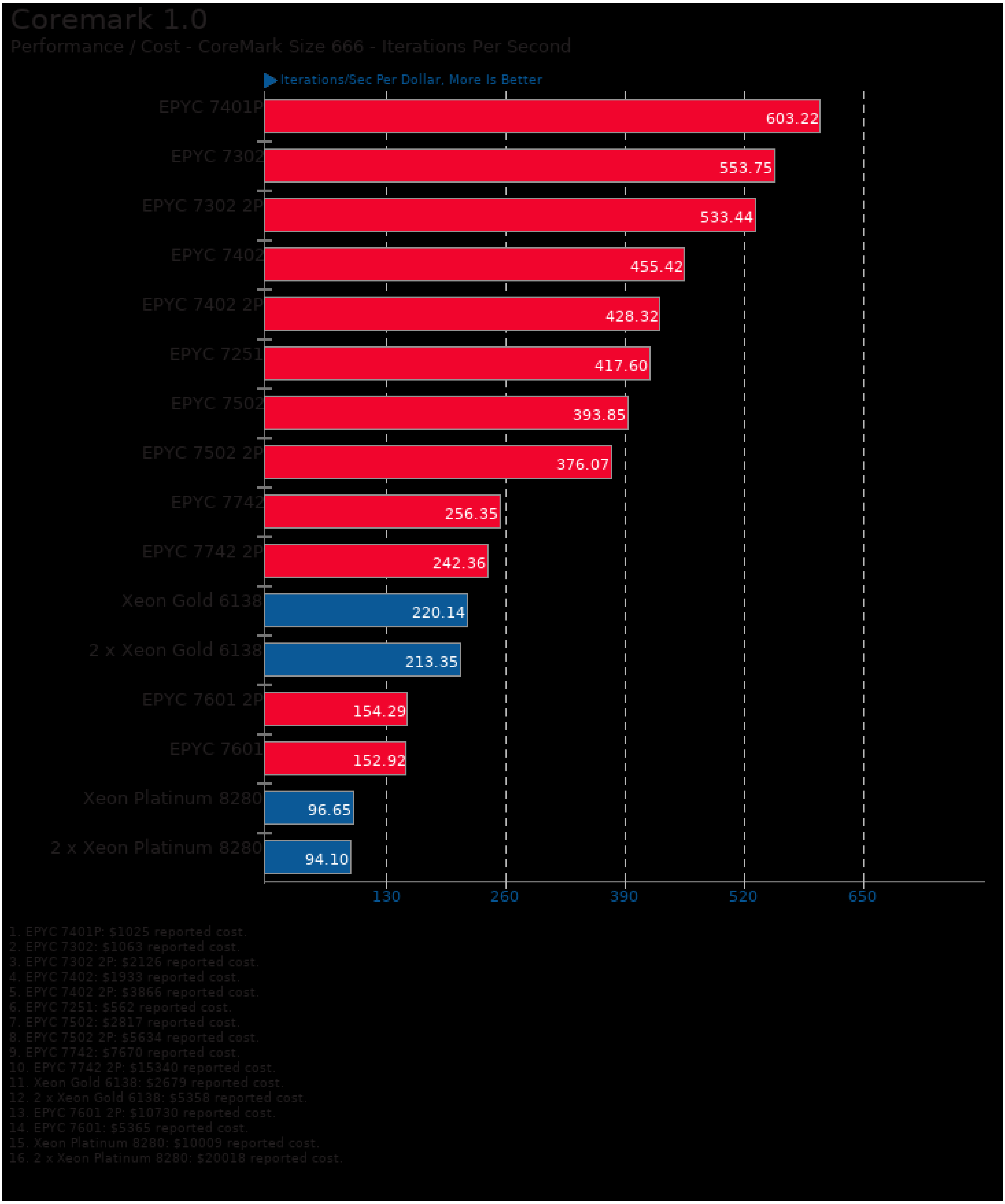

C-Ray 1.1
Performance / Cost - Total Time - 4K, 16 Rays Per Pixel
Seconds x Dollar, Fewer Is Better
EPYC 7401P
33169.00
EPYC 7302
40638.49
EPYC 7302 2P
41138.10
EPYC 7251
49500.96
EPYC 7402
49523.46
EPYC 7402 2P
50335.32
EPYC 7502
58593.60
EPYC 7502 2P
61185.24
EPYC 7742
90889.50
EPYC 7742 2P
96545.21
EPYC 7601
131174.25
Xeon Gold 6138
131271.00
EPYC 7601 2P
131764.40
2 x Xeon Gold 6138
146916.36
Xeon Platinum 8280
279050.92
2 x Xeon Platinum 8280
286457.58
60K
120K
180K
240K
300K
1. EPYC 7401P: $1025 reported cost.
2. EPYC 7302: $1063 reported cost.
3. EPYC 7302 2P: $2126 reported cost.
4. EPYC 7251: $562 reported cost.
5. EPYC 7402: $1933 reported cost.
6. EPYC 7402 2P: $3866 reported cost.
7. EPYC 7502: $2817 reported cost.
8. EPYC 7502 2P: $5634 reported cost.
9. EPYC 7742: $7670 reported cost.
10. EPYC 7742 2P: $15340 reported cost.
11. EPYC 7601: $5365 reported cost.
12. Xeon Gold 6138: $2679 reported cost.
13. EPYC 7601 2P: $10730 reported cost.
14. 2 x Xeon Gold 6138: $5358 reported cost.
15. Xeon Platinum 8280: $10009 reported cost.
16. 2 x Xeon Platinum 8280: $20018 reported cost.

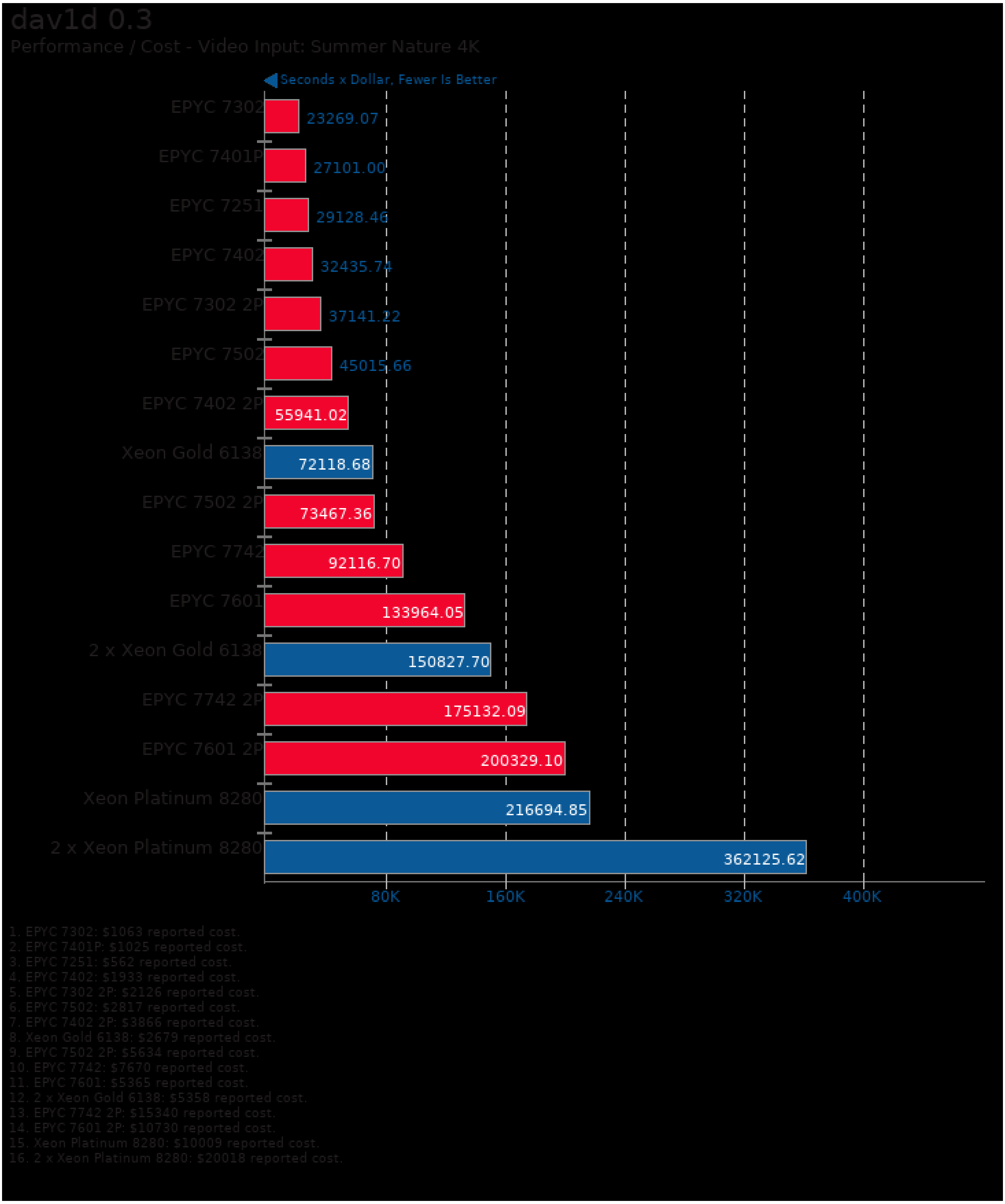

Timed LLVM Compilation 6.0.1
Performance / Cost - Time To Compile
Seconds x Dollar, Fewer Is Better
EPYC 7302
216044.12
EPYC 7401P
239532.25
EPYC 7302 2P
285436.76
EPYC 7251
302367.24
EPYC 7402
306457.82
EPYC 7502
404042.31
EPYC 7402 2P
409177.44
EPYC 7502 2P
563174.64
Xeon Gold 6138
650595.15
EPYC 7742
783413.80
2 x Xeon Gold 6138
837348.24
EPYC 7601
1089846.10
EPYC 7742 2P
1209654.69
EPYC 7601 2P
1427090.00
Xeon Platinum 8280
1589429.20
2 x Xeon Platinum 8280
2100088.38
400K
800K
1200K
1600K
2000K
1. EPYC 7302: $1063 reported cost.
2. EPYC 7401P: $1025 reported cost.
3. EPYC 7302 2P: $2126 reported cost.
4. EPYC 7251: $562 reported cost.
5. EPYC 7402: $1933 reported cost.
6. EPYC 7502: $2817 reported cost.
7. EPYC 7402 2P: $3866 reported cost.
8. EPYC 7502 2P: $5634 reported cost.
9. Xeon Gold 6138: $2679 reported cost.
10. EPYC 7742: $7670 reported cost.
11. 2 x Xeon Gold 6138: $5358 reported cost.
12. EPYC 7601: $5365 reported cost.
13. EPYC 7742 2P: $15340 reported cost.
14. EPYC 7601 2P: $10730 reported cost.
15. Xeon Platinum 8280: $10009 reported cost.
16. 2 x Xeon Platinum 8280: $20018 reported cost.

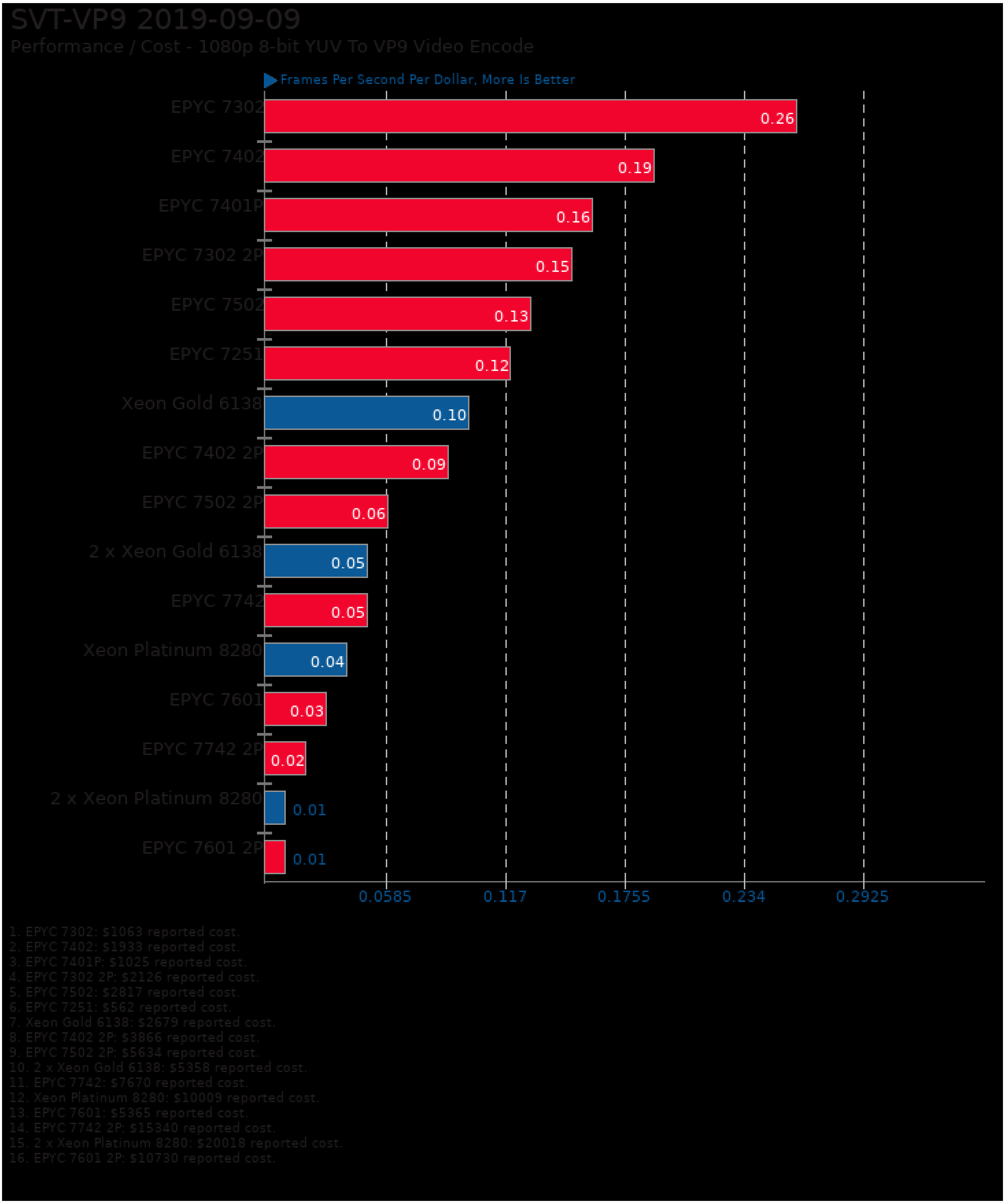

Timed Linux Kernel Compilation 4.18
Performance / Cost - Time To Compile
Seconds x Dollar, Fewer Is Better
EPYC 7302
44295.21
EPYC 7401P
48677.25
EPYC 7251
57515.08
EPYC 7302 2P
58252.40
EPYC 7402
63267.09
EPYC 7502
81721.17
EPYC 7402 2P
87448.92
EPYC 7502 2P
117356.22
Xeon Gold 6138
130440.51
2 x Xeon Gold 6138
170866.62
EPYC 7742
171501.20
EPYC 7601
210844.50
EPYC 7742 2P
246658.43
EPYC 7601 2P
251618.50
Xeon Platinum 8280
312480.98
2 x Xeon Platinum 8280
426583.58
90K
180K
270K
360K
450K
1. EPYC 7302: $1063 reported cost.
2. EPYC 7401P: $1025 reported cost.
3. EPYC 7251: $562 reported cost.
4. EPYC 7302 2P: $2126 reported cost.
5. EPYC 7402: $1933 reported cost.
6. EPYC 7502: $2817 reported cost.
7. EPYC 7402 2P: $3866 reported cost.
8. EPYC 7502 2P: $5634 reported cost.
9. Xeon Gold 6138: $2679 reported cost.
10. 2 x Xeon Gold 6138: $5358 reported cost.
11. EPYC 7742: $7670 reported cost.
12. EPYC 7601: $5365 reported cost.
13. EPYC 7742 2P: $15340 reported cost.
14. EPYC 7601 2P: $10730 reported cost.
15. Xeon Platinum 8280: $10009 reported cost.
16. 2 x Xeon Platinum 8280: $20018 reported cost.

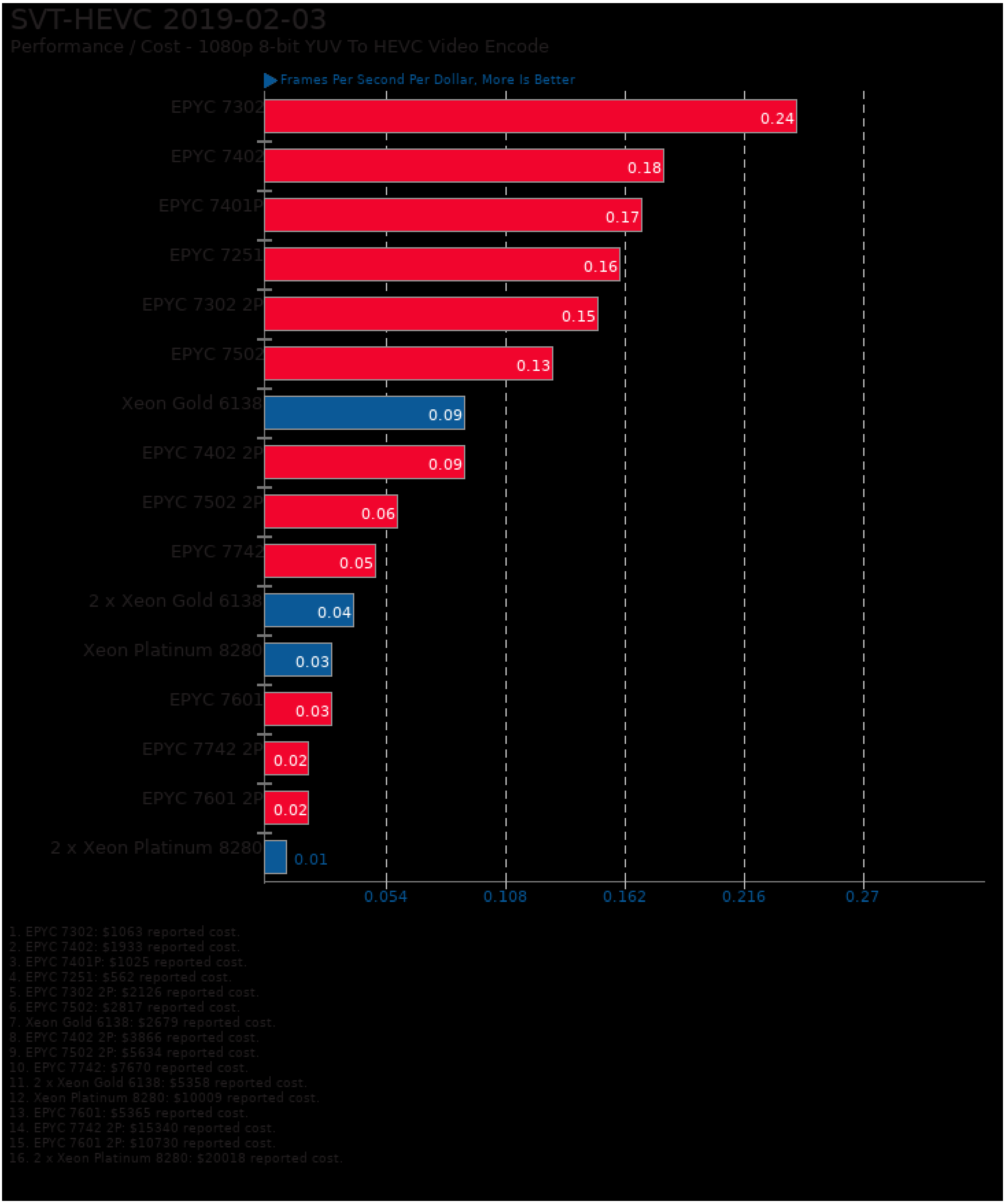

asmFish 2018-07-23
Performance / Cost - 1024 Hash Memory, 26 Depth
Nodes/second Per Dollar, More Is Better
EPYC 7401P
44896.46
EPYC 7302
40366.73
EPYC 7302 2P
35645.99
EPYC 7402
32572.61
EPYC 7402 2P
29144.38
EPYC 7251
28861.04
EPYC 7502
27854.98
EPYC 7502 2P
24045.84
EPYC 7742
17172.17
EPYC 7742 2P
15610.55
Xeon Gold 6138
15228.24
2 x Xeon Gold 6138
13938.31
EPYC 7601
11601.48
EPYC 7601 2P
10715.94
Xeon Platinum 8280
7007.38
2 x Xeon Platinum 8280
6704.24
10K
20K
30K
40K
50K
1. EPYC 7401P: $1025 reported cost.
2. EPYC 7302: $1063 reported cost.
3. EPYC 7302 2P: $2126 reported cost.
4. EPYC 7402: $1933 reported cost.
5. EPYC 7402 2P: $3866 reported cost.
6. EPYC 7251: $562 reported cost.
7. EPYC 7502: $2817 reported cost.
8. EPYC 7502 2P: $5634 reported cost.
9. EPYC 7742: $7670 reported cost.
10. EPYC 7742 2P: $15340 reported cost.
11. Xeon Gold 6138: $2679 reported cost.
12. 2 x Xeon Gold 6138: $5358 reported cost.
13. EPYC 7601: $5365 reported cost.
14. EPYC 7601 2P: $10730 reported cost.
15. Xeon Platinum 8280: $10009 reported cost.
16. 2 x Xeon Platinum 8280: $20018 reported cost.

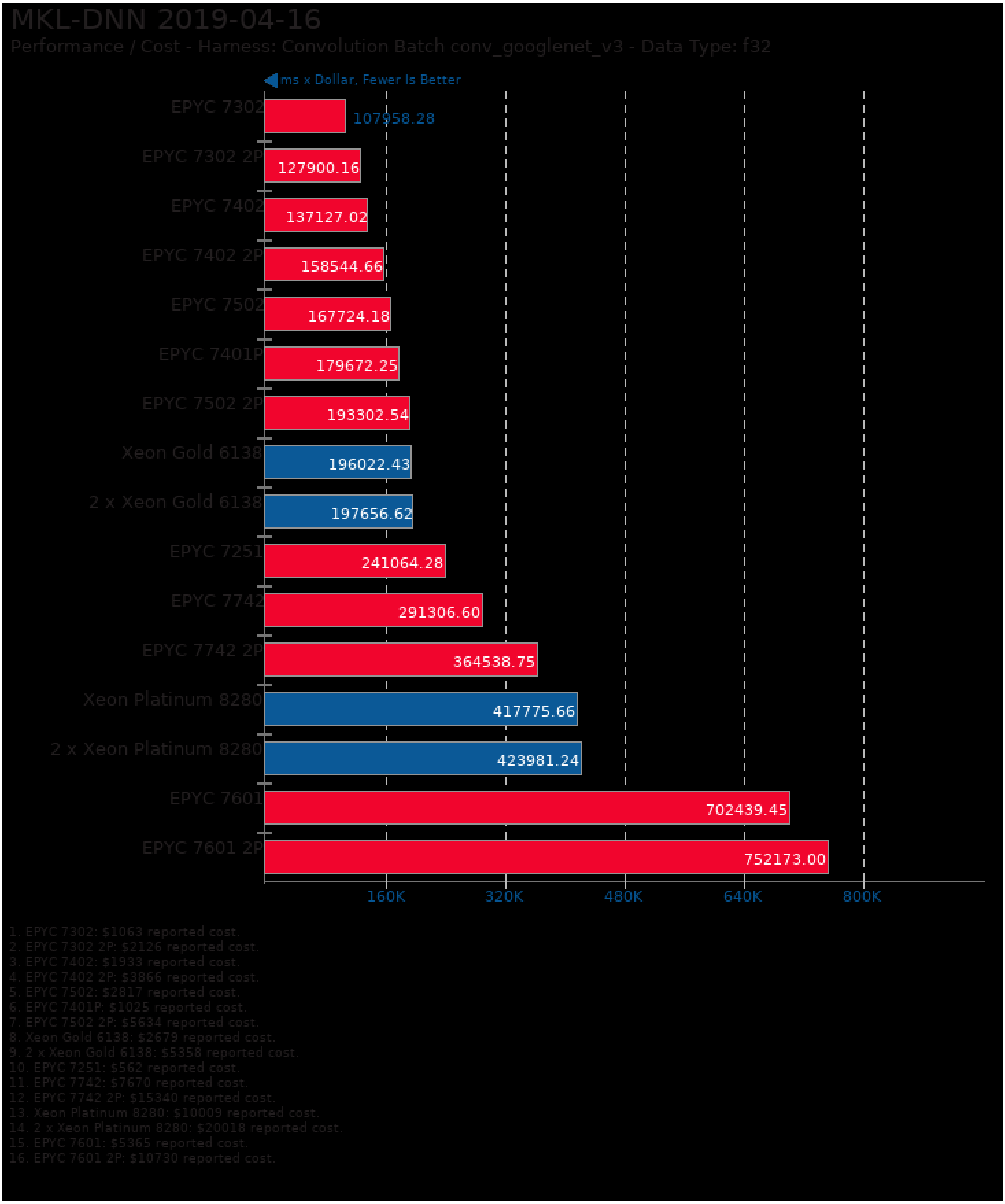

Stockfish 9
Performance / Cost - Total Time
Nodes Per Second Per Dollar, More Is Better
EPYC 7401P
41897.62
EPYC 7302
40032.14
EPYC 7302 2P
36031.29
EPYC 7402
32085.29
EPYC 7402 2P
29462.34
EPYC 7251
29037.02
EPYC 7502
26944.81
EPYC 7502 2P
24684.22
EPYC 7742
17356.04
EPYC 7742 2P
15713.41
Xeon Gold 6138
13969.23
2 x Xeon Gold 6138
12677.89
EPYC 7601
10851.23
EPYC 7601 2P
9630.06
Xeon Platinum 8280
6509.21
2 x Xeon Platinum 8280
6196.65
9K
18K
27K
36K
45K
1. EPYC 7401P: $1025 reported cost.
2. EPYC 7302: $1063 reported cost.
3. EPYC 7302 2P: $2126 reported cost.
4. EPYC 7402: $1933 reported cost.
5. EPYC 7402 2P: $3866 reported cost.
6. EPYC 7251: $562 reported cost.
7. EPYC 7502: $2817 reported cost.
8. EPYC 7502 2P: $5634 reported cost.
9. EPYC 7742: $7670 reported cost.
10. EPYC 7742 2P: $15340 reported cost.
11. Xeon Gold 6138: $2679 reported cost.
12. 2 x Xeon Gold 6138: $5358 reported cost.
13. EPYC 7601: $5365 reported cost.
14. EPYC 7601 2P: $10730 reported cost.
15. Xeon Platinum 8280: $10009 reported cost.
16. 2 x Xeon Platinum 8280: $20018 reported cost.

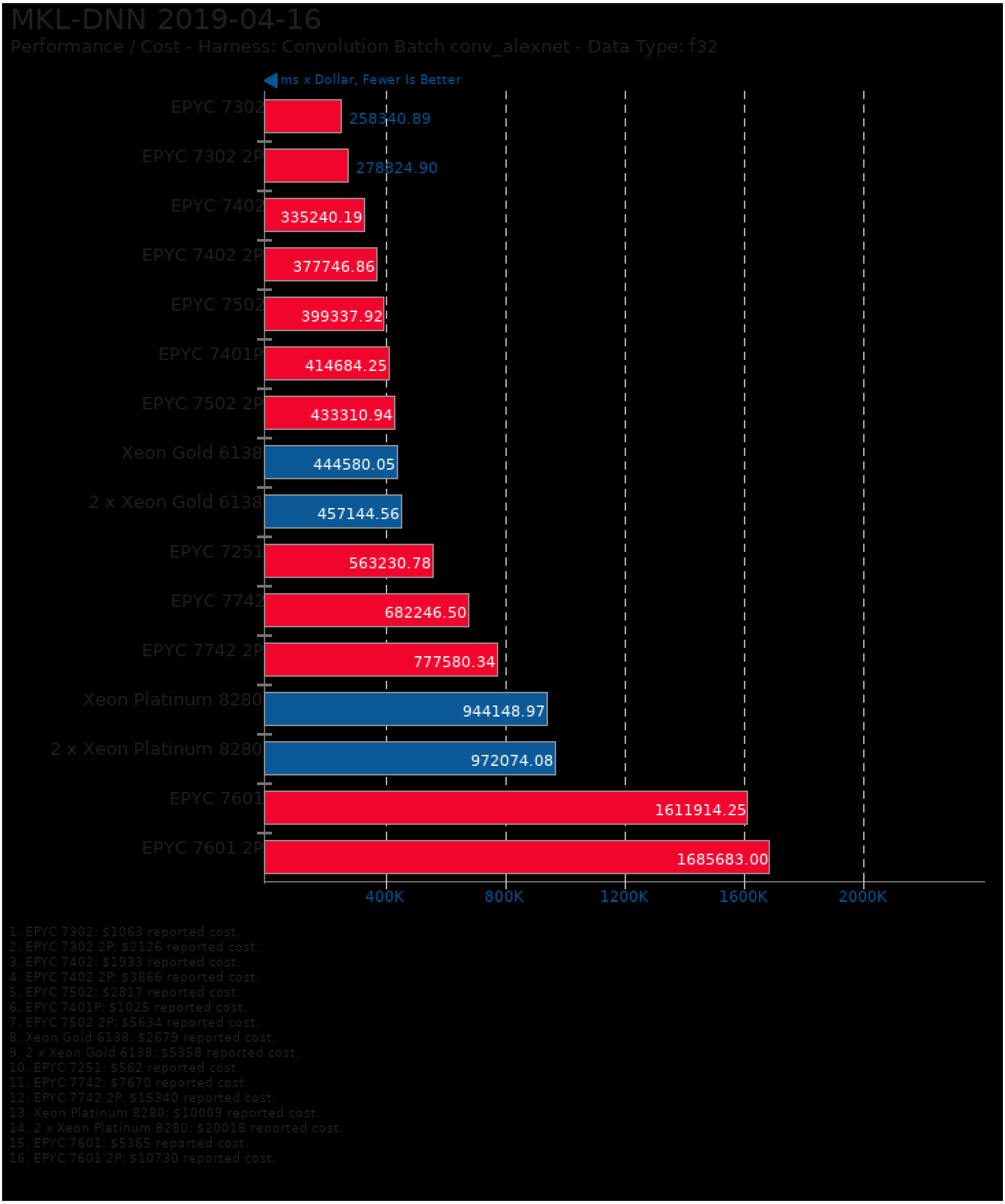

Coremark 1.0
Performance / Cost - CoreMark Size 666 - Iterations Per Second
Iterations/Sec Per Dollar, More Is Better
EPYC 7401P
603.22
EPYC 7302
553.75
EPYC 7302 2P
533.44
EPYC 7402
455.42
EPYC 7402 2P
428.32
EPYC 7251
417.60
EPYC 7502
393.85
EPYC 7502 2P
376.07
EPYC 7742
256.35
EPYC 7742 2P
242.36
Xeon Gold 6138
220.14
2 x Xeon Gold 6138
213.35
EPYC 7601 2P
154.29
EPYC 7601
152.92
Xeon Platinum 8280
96.65
2 x Xeon Platinum 8280
94.10
130
260
390
520
650
1. EPYC 7401P: $1025 reported cost.
2. EPYC 7302: $1063 reported cost.
3. EPYC 7302 2P: $2126 reported cost.
4. EPYC 7402: $1933 reported cost.
5. EPYC 7402 2P: $3866 reported cost.
6. EPYC 7251: $562 reported cost.
7. EPYC 7502: $2817 reported cost.
8. EPYC 7502 2P: $5634 reported cost.
9. EPYC 7742: $7670 reported cost.
10. EPYC 7742 2P: $15340 reported cost.
11. Xeon Gold 6138: $2679 reported cost.
12. 2 x Xeon Gold 6138: $5358 reported cost.
13. EPYC 7601 2P: $10730 reported cost.
14. EPYC 7601: $5365 reported cost.
15. Xeon Platinum 8280: $10009 reported cost.
16. 2 x Xeon Platinum 8280: $20018 reported cost.

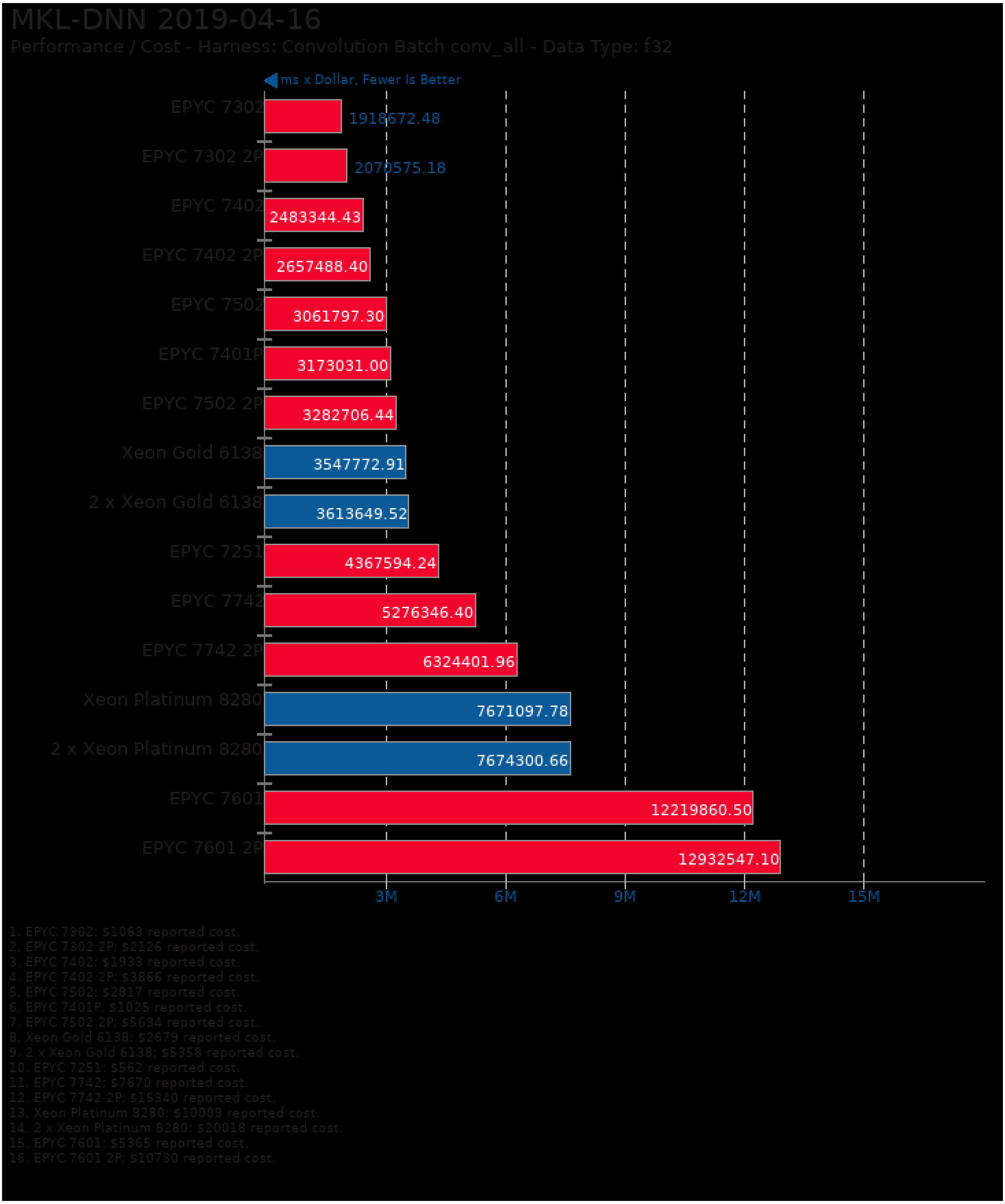

dav1d 0.3
Performance / Cost - Video Input: Summer Nature 4K
Seconds x Dollar, Fewer Is Better
EPYC 7302
23269.07
EPYC 7401P
27101.00
EPYC 7251
29128.46
EPYC 7402
32435.74
EPYC 7302 2P
37141.22
EPYC 7502
45015.66
EPYC 7402 2P
55941.02
Xeon Gold 6138
72118.68
EPYC 7502 2P
73467.36
EPYC 7742
92116.70
EPYC 7601
133964.05
2 x Xeon Gold 6138
150827.70
EPYC 7742 2P
175132.09
EPYC 7601 2P
200329.10
Xeon Platinum 8280
216694.85
2 x Xeon Platinum 8280
362125.62
80K
160K
240K
320K
400K
1. EPYC 7302: $1063 reported cost.
2. EPYC 7401P: $1025 reported cost.
3. EPYC 7251: $562 reported cost.
4. EPYC 7402: $1933 reported cost.
5. EPYC 7302 2P: $2126 reported cost.
6. EPYC 7502: $2817 reported cost.
7. EPYC 7402 2P: $3866 reported cost.
8. Xeon Gold 6138: $2679 reported cost.
9. EPYC 7502 2P: $5634 reported cost.
10. EPYC 7742: $7670 reported cost.
11. EPYC 7601: $5365 reported cost.
12. 2 x Xeon Gold 6138: $5358 reported cost.
13. EPYC 7742 2P: $15340 reported cost.
14. EPYC 7601 2P: $10730 reported cost.
15. Xeon Platinum 8280: $10009 reported cost.
16. 2 x Xeon Platinum 8280: $20018 reported cost.

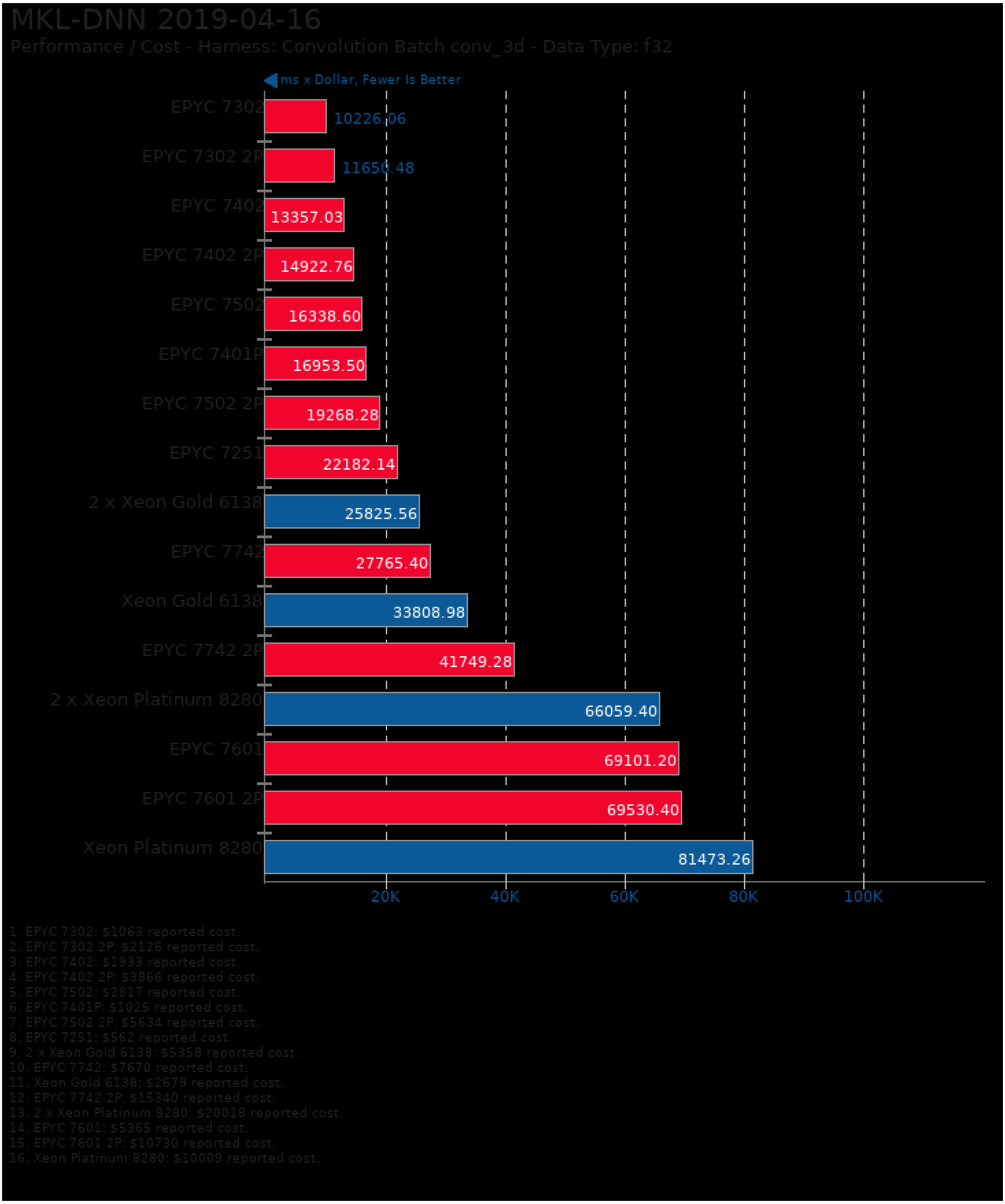

SVT-VP9 2019-09-09
Performance / Cost - 1080p 8-bit YUV To VP9 Video Encode
Frames Per Second Per Dollar, More Is Better
EPYC 7302
0.26
EPYC 7402
0.19
EPYC 7401P
0.16
EPYC 7302 2P
0.15
EPYC 7502
0.13
EPYC 7251
0.12
Xeon Gold 6138
0.10
EPYC 7402 2P
0.09
EPYC 7502 2P
0.06
2 x Xeon Gold 6138
0.05
EPYC 7742
0.05
Xeon Platinum 8280
0.04
EPYC 7601
0.03
EPYC 7742 2P
0.02
2 x Xeon Platinum 8280
0.01
EPYC 7601 2P
0.01
0.0585
0.117
0.1755
0.234
0.2925
1. EPYC 7302: $1063 reported cost.
2. EPYC 7402: $1933 reported cost.
3. EPYC 7401P: $1025 reported cost.
4. EPYC 7302 2P: $2126 reported cost.
5. EPYC 7502: $2817 reported cost.
6. EPYC 7251: $562 reported cost.
7. Xeon Gold 6138: $2679 reported cost.
8. EPYC 7402 2P: $3866 reported cost.
9. EPYC 7502 2P: $5634 reported cost.
10. 2 x Xeon Gold 6138: $5358 reported cost.
11. EPYC 7742: $7670 reported cost.
12. Xeon Platinum 8280: $10009 reported cost.
13. EPYC 7601: $5365 reported cost.
14. EPYC 7742 2P: $15340 reported cost.
15. 2 x Xeon Platinum 8280: $20018 reported cost.
16. EPYC 7601 2P: $10730 reported cost.

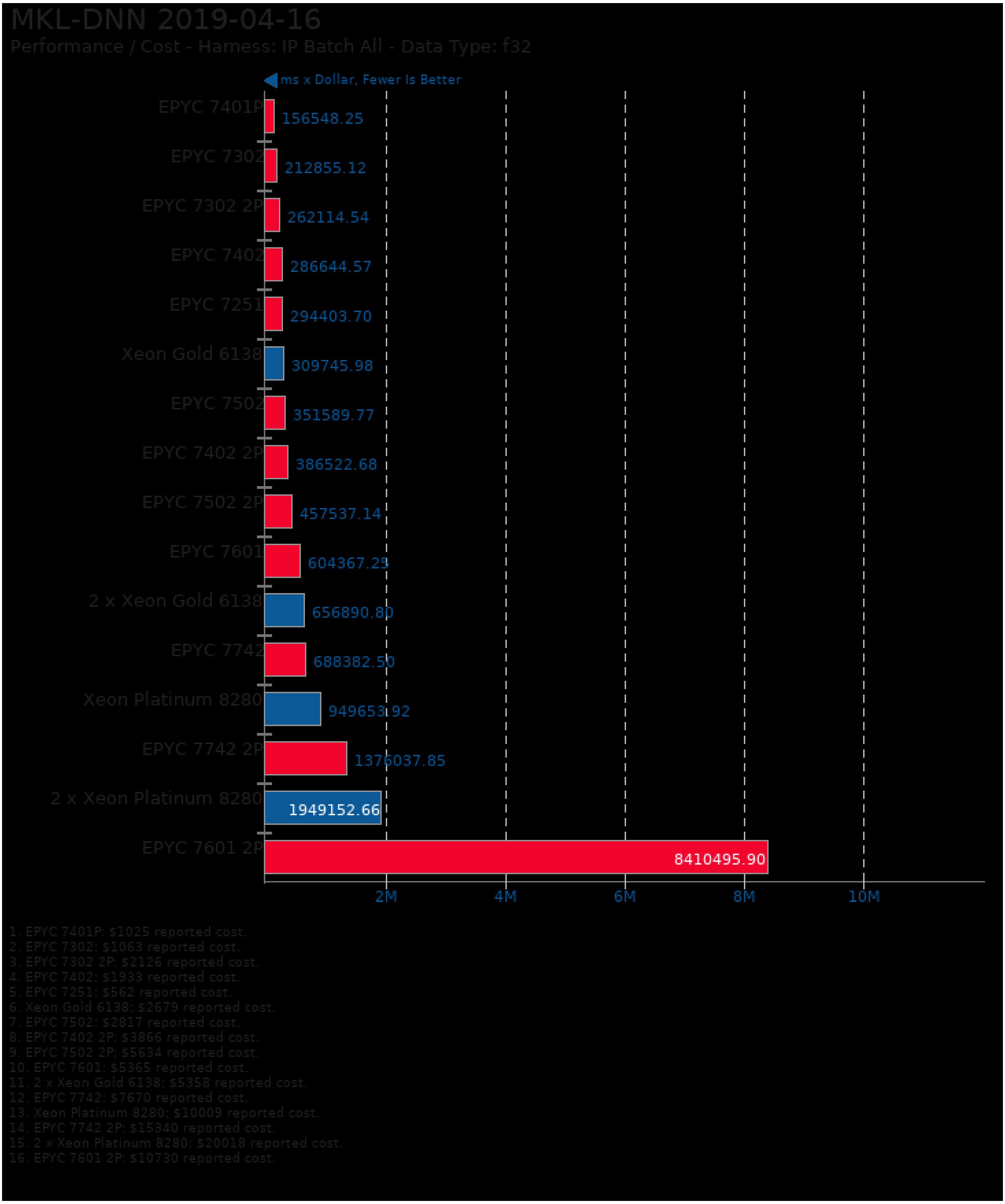

SVT-HEVC 2019-02-03
Performance / Cost - 1080p 8-bit YUV To HEVC Video Encode
Frames Per Second Per Dollar, More Is Better
EPYC 7302
0.24
EPYC 7402
0.18
EPYC 7401P
0.17
EPYC 7251
0.16
EPYC 7302 2P
0.15
EPYC 7502
0.13
Xeon Gold 6138
0.09
EPYC 7402 2P
0.09
EPYC 7502 2P
0.06
EPYC 7742
0.05
2 x Xeon Gold 6138
0.04
Xeon Platinum 8280
0.03
EPYC 7601
0.03
EPYC 7742 2P
0.02
EPYC 7601 2P
0.02
2 x Xeon Platinum 8280
0.01
0.054
0.108
0.162
0.216
0.27
1. EPYC 7302: $1063 reported cost.
2. EPYC 7402: $1933 reported cost.
3. EPYC 7401P: $1025 reported cost.
4. EPYC 7251: $562 reported cost.
5. EPYC 7302 2P: $2126 reported cost.
6. EPYC 7502: $2817 reported cost.
7. Xeon Gold 6138: $2679 reported cost.
8. EPYC 7402 2P: $3866 reported cost.
9. EPYC 7502 2P: $5634 reported cost.
10. EPYC 7742: $7670 reported cost.
11. 2 x Xeon Gold 6138: $5358 reported cost.
12. Xeon Platinum 8280: $10009 reported cost.
13. EPYC 7601: $5365 reported cost.
14. EPYC 7742 2P: $15340 reported cost.
15. EPYC 7601 2P: $10730 reported cost.
16. 2 x Xeon Platinum 8280: $20018 reported cost.

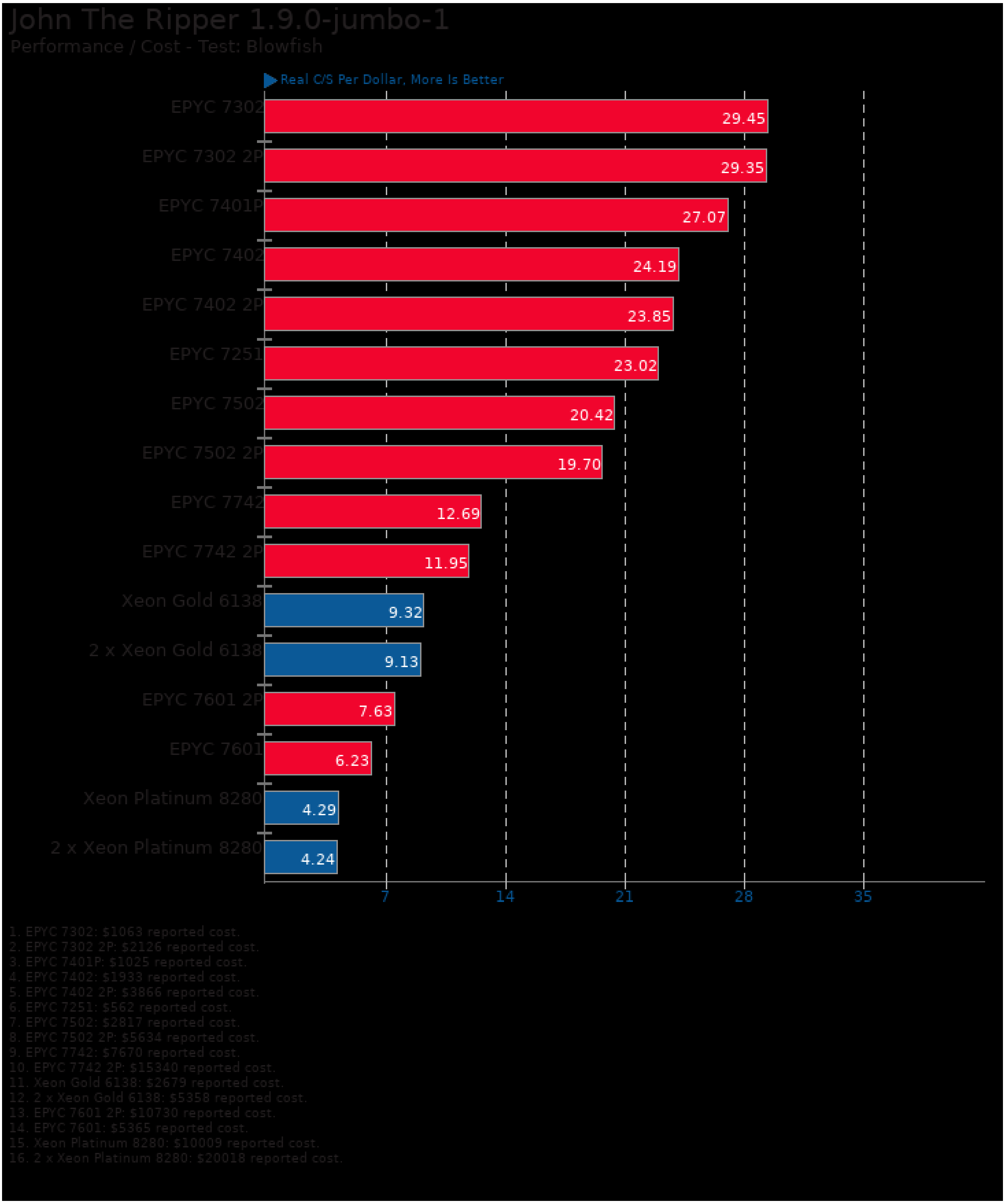

MKL-DNN 2019-04-16
Performance / Cost - Harness: Convolution Batch conv_googlenet_v3 - Data Type: f32
ms x Dollar, Fewer Is Better
EPYC 7302
107958.28
EPYC 7302 2P
127900.16
EPYC 7402
137127.02
EPYC 7402 2P
158544.66
EPYC 7502
167724.18
EPYC 7401P
179672.25
EPYC 7502 2P
193302.54
Xeon Gold 6138
196022.43
2 x Xeon Gold 6138
197656.62
EPYC 7251
241064.28
EPYC 7742
291306.60
EPYC 7742 2P
364538.75
Xeon Platinum 8280
417775.66
2 x Xeon Platinum 8280
423981.24
EPYC 7601
702439.45
EPYC 7601 2P
752173.00
160K
320K
480K
640K
800K
1. EPYC 7302: $1063 reported cost.
2. EPYC 7302 2P: $2126 reported cost.
3. EPYC 7402: $1933 reported cost.
4. EPYC 7402 2P: $3866 reported cost.
5. EPYC 7502: $2817 reported cost.
6. EPYC 7401P: $1025 reported cost.
7. EPYC 7502 2P: $5634 reported cost.
8. Xeon Gold 6138: $2679 reported cost.
9. 2 x Xeon Gold 6138: $5358 reported cost.
10. EPYC 7251: $562 reported cost.
11. EPYC 7742: $7670 reported cost.
12. EPYC 7742 2P: $15340 reported cost.
13. Xeon Platinum 8280: $10009 reported cost.
14. 2 x Xeon Platinum 8280: $20018 reported cost.
15. EPYC 7601: $5365 reported cost.
16. EPYC 7601 2P: $10730 reported cost.

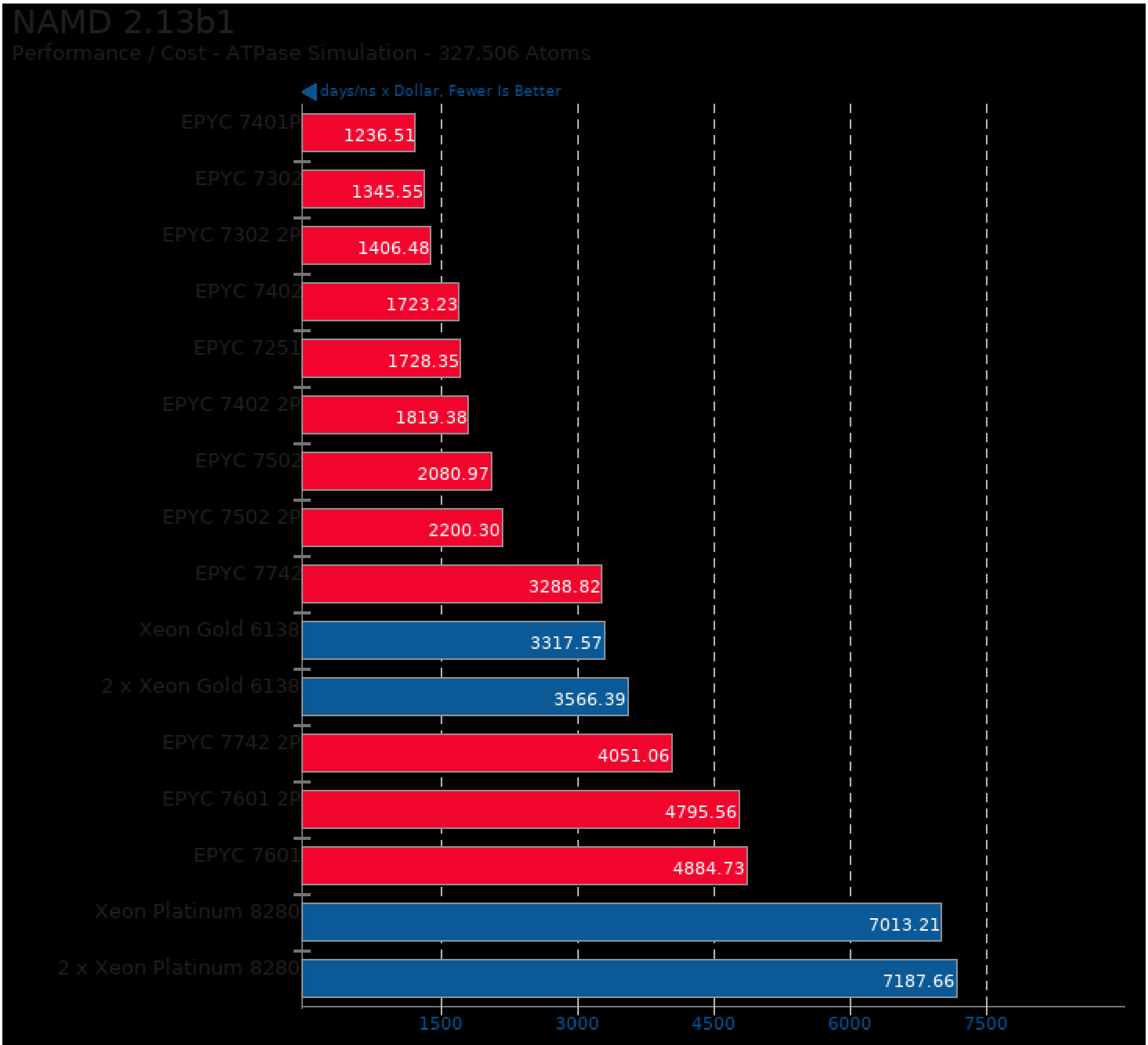

MKL-DNN 2019-04-16
Performance / Cost - Harness: Convolution Batch conv_alexnet - Data Type: f32
ms x Dollar, Fewer Is Better
EPYC 7302
258340.89
EPYC 7302 2P
278824.90
EPYC 7402
335240.19
EPYC 7402 2P
377746.86
EPYC 7502
399337.92
EPYC 7401P
414684.25
EPYC 7502 2P
433310.94
Xeon Gold 6138
444580.05
2 x Xeon Gold 6138
457144.56
EPYC 7251
563230.78
EPYC 7742
682246.50
EPYC 7742 2P
777580.34
Xeon Platinum 8280
944148.97
2 x Xeon Platinum 8280
972074.08
EPYC 7601
1611914.25
EPYC 7601 2P
1685683.00
400K
800K
1200K
1600K
2000K
1. EPYC 7302: $1063 reported cost.
2. EPYC 7302 2P: $2126 reported cost.
3. EPYC 7402: $1933 reported cost.
4. EPYC 7402 2P: $3866 reported cost.
5. EPYC 7502: $2817 reported cost.
6. EPYC 7401P: $1025 reported cost.
7. EPYC 7502 2P: $5634 reported cost.
8. Xeon Gold 6138: $2679 reported cost.
9. 2 x Xeon Gold 6138: $5358 reported cost.
10. EPYC 7251: $562 reported cost.
11. EPYC 7742: $7670 reported cost.
12. EPYC 7742 2P: $15340 reported cost.
13. Xeon Platinum 8280: $10009 reported cost.
14. 2 x Xeon Platinum 8280: $20018 reported cost.
15. EPYC 7601: $5365 reported cost.
16. EPYC 7601 2P: $10730 reported cost.


MKL-DNN 2019-04-16
Performance / Cost - Harness: Convolution Batch conv_all - Data Type: f32
ms x Dollar, Fewer Is Better
EPYC 7302
1918672.48
EPYC 7302 2P
2070575.18
EPYC 7402
2483344.43
EPYC 7402 2P
2657488.40
EPYC 7502
3061797.30
EPYC 7401P
3173031.00
EPYC 7502 2P
3282706.44
Xeon Gold 6138
3547772.91
2 x Xeon Gold 6138
3613649.52
EPYC 7251
4367594.24
EPYC 7742
5276346.40
EPYC 7742 2P
6324401.96
Xeon Platinum 8280
7671097.78
2 x Xeon Platinum 8280
7674300.66
EPYC 7601
12219860.50
EPYC 7601 2P
12932547.10
3M
6M
9M
12M
15M
1. EPYC 7302: $1063 reported cost.
2. EPYC 7302 2P: $2126 reported cost.
3. EPYC 7402: $1933 reported cost.
4. EPYC 7402 2P: $3866 reported cost.
5. EPYC 7502: $2817 reported cost.
6. EPYC 7401P: $1025 reported cost.
7. EPYC 7502 2P: $5634 reported cost.
8. Xeon Gold 6138: $2679 reported cost.
9. 2 x Xeon Gold 6138: $5358 reported cost.
10. EPYC 7251: $562 reported cost.
11. EPYC 7742: $7670 reported cost.
12. EPYC 7742 2P: $15340 reported cost.
13. Xeon Platinum 8280: $10009 reported cost.
14. 2 x Xeon Platinum 8280: $20018 reported cost.
15. EPYC 7601: $5365 reported cost.
16. EPYC 7601 2P: $10730 reported cost.


MKL-DNN 2019-04-16
Performance / Cost - Harness: Convolution Batch conv_3d - Data Type: f32
ms x Dollar, Fewer Is Better
EPYC 7302
10226.06
EPYC 7302 2P
11650.48
EPYC 7402
13357.03
EPYC 7402 2P
14922.76
EPYC 7502
16338.60
EPYC 7401P
16953.50
EPYC 7502 2P
19268.28
EPYC 7251
22182.14
2 x Xeon Gold 6138
25825.56
EPYC 7742
27765.40
Xeon Gold 6138
33808.98
EPYC 7742 2P
41749.28
2 x Xeon Platinum 8280
66059.40
EPYC 7601
69101.20
EPYC 7601 2P
69530.40
Xeon Platinum 8280
81473.26
20K
40K
60K
80K
100K
1. EPYC 7302: $1063 reported cost.
2. EPYC 7302 2P: $2126 reported cost.
3. EPYC 7402: $1933 reported cost.
4. EPYC 7402 2P: $3866 reported cost.
5. EPYC 7502: $2817 reported cost.
6. EPYC 7401P: $1025 reported cost.
7. EPYC 7502 2P: $5634 reported cost.
8. EPYC 7251: $562 reported cost.
9. 2 x Xeon Gold 6138: $5358 reported cost.
10. EPYC 7742: $7670 reported cost.
11. Xeon Gold 6138: $2679 reported cost.
12. EPYC 7742 2P: $15340 reported cost.
13. 2 x Xeon Platinum 8280: $20018 reported cost.
14. EPYC 7601: $5365 reported cost.
15. EPYC 7601 2P: $10730 reported cost.
16. Xeon Platinum 8280: $10009 reported cost.

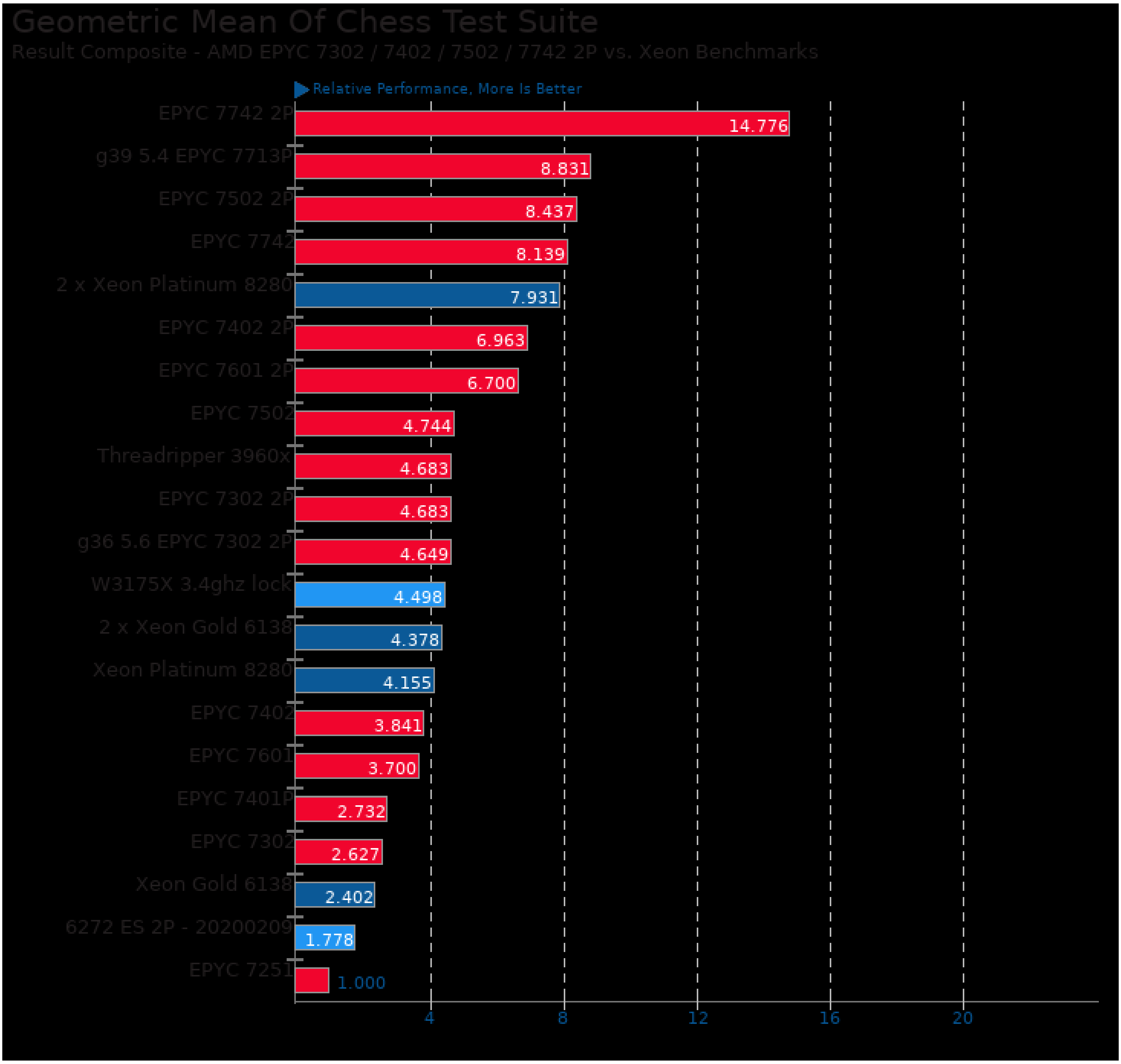

MKL-DNN 2019-04-16
Performance / Cost - Harness: IP Batch All - Data Type: f32
ms x Dollar, Fewer Is Better
EPYC 7401P
156548.25
EPYC 7302
212855.12
EPYC 7302 2P
262114.54
EPYC 7402
286644.57
EPYC 7251
294403.70
Xeon Gold 6138
309745.98
EPYC 7502
351589.77
EPYC 7402 2P
386522.68
EPYC 7502 2P
457537.14
EPYC 7601
604367.25
2 x Xeon Gold 6138
656890.80
EPYC 7742
688382.50
Xeon Platinum 8280
949653.92
EPYC 7742 2P
1376037.85
2 x Xeon Platinum 8280
1949152.66
EPYC 7601 2P
8410495.90
2M
4M
6M
8M
10M
1. EPYC 7401P: $1025 reported cost.
2. EPYC 7302: $1063 reported cost.
3. EPYC 7302 2P: $2126 reported cost.
4. EPYC 7402: $1933 reported cost.
5. EPYC 7251: $562 reported cost.
6. Xeon Gold 6138: $2679 reported cost.
7. EPYC 7502: $2817 reported cost.
8. EPYC 7402 2P: $3866 reported cost.
9. EPYC 7502 2P: $5634 reported cost.
10. EPYC 7601: $5365 reported cost.
11. 2 x Xeon Gold 6138: $5358 reported cost.
12. EPYC 7742: $7670 reported cost.
13. Xeon Platinum 8280: $10009 reported cost.
14. EPYC 7742 2P: $15340 reported cost.
15. 2 x Xeon Platinum 8280: $20018 reported cost.
16. EPYC 7601 2P: $10730 reported cost.


John The Ripper 1.9.0-jumbo-1
Performance / Cost - Test: Blowfish
Real C/S Per Dollar, More Is Better
EPYC 7302
29.45
EPYC 7302 2P
29.35
EPYC 7401P
27.07
EPYC 7402
24.19
EPYC 7402 2P
23.85
EPYC 7251
23.02
EPYC 7502
20.42
EPYC 7502 2P
19.70
EPYC 7742
12.69
EPYC 7742 2P
11.95
Xeon Gold 6138
9.32
2 x Xeon Gold 6138
9.13
EPYC 7601 2P
7.63
EPYC 7601
6.23
Xeon Platinum 8280
4.29
2 x Xeon Platinum 8280
4.24
7
14
21
28
35
1. EPYC 7302: $1063 reported cost.
2. EPYC 7302 2P: $2126 reported cost.
3. EPYC 7401P: $1025 reported cost.
4. EPYC 7402: $1933 reported cost.
5. EPYC 7402 2P: $3866 reported cost.
6. EPYC 7251: $562 reported cost.
7. EPYC 7502: $2817 reported cost.
8. EPYC 7502 2P: $5634 reported cost.
9. EPYC 7742: $7670 reported cost.
10. EPYC 7742 2P: $15340 reported cost.
11. Xeon Gold 6138: $2679 reported cost.
12. 2 x Xeon Gold 6138: $5358 reported cost.
13. EPYC 7601 2P: $10730 reported cost.
14. EPYC 7601: $5365 reported cost.
15. Xeon Platinum 8280: $10009 reported cost.
16. 2 x Xeon Platinum 8280: $20018 reported cost.

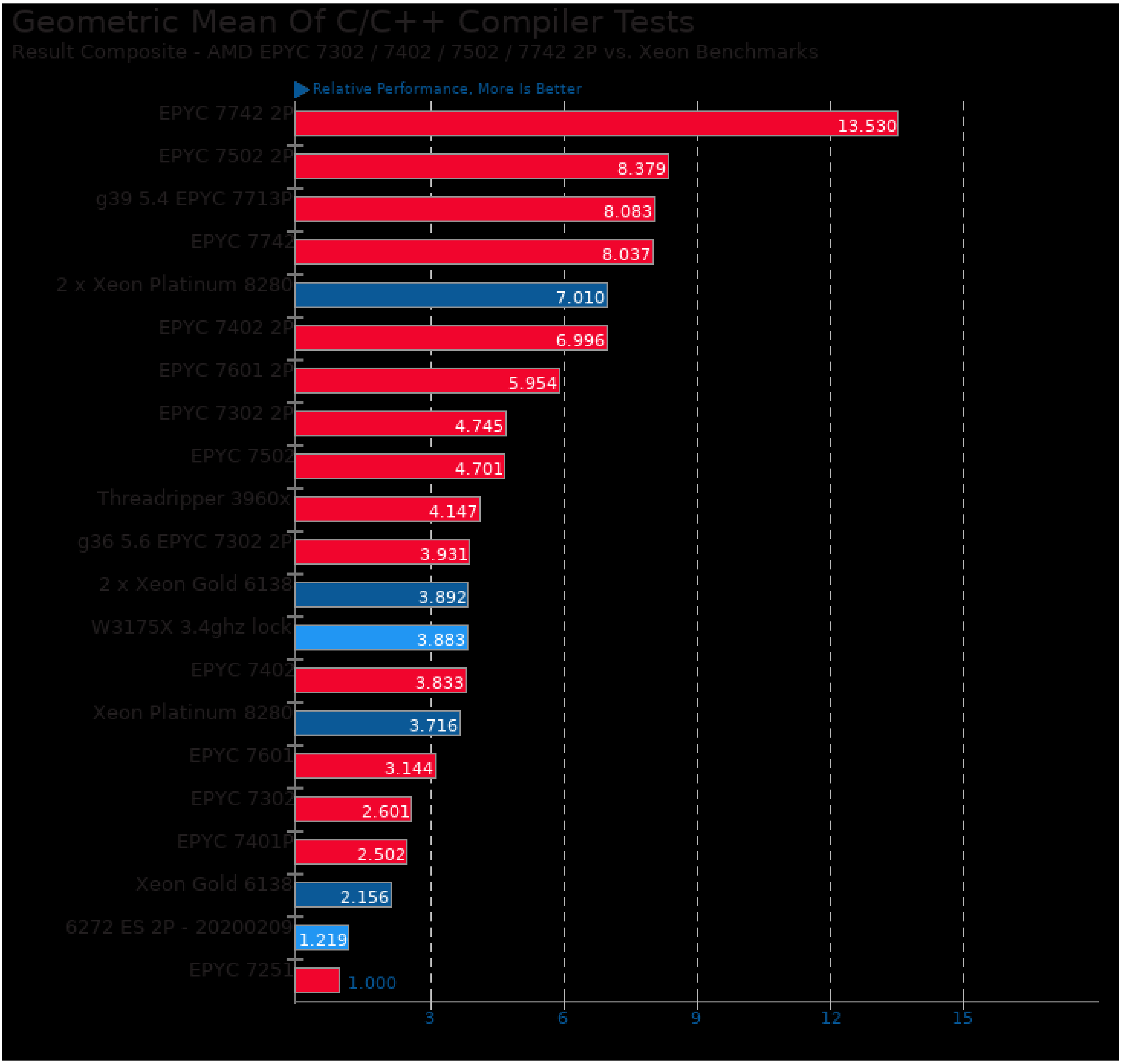


1. EPYC 7401P: $1025 reported cost.
2. EPYC 7302: $1063 reported cost.
3. EPYC 7302 2P: $2126 reported cost.
4. EPYC 7402: $1933 reported cost.
5. EPYC 7251: $562 reported cost.
6. EPYC 7402 2P: $3866 reported cost.
7. EPYC 7502: $2817 reported cost.
8. EPYC 7502 2P: $5634 reported cost.
9. EPYC 7742: $7670 reported cost.
10. Xeon Gold 6138: $2679 reported cost.
11. 2 x Xeon Gold 6138: $5358 reported cost.
12. EPYC 7742 2P: $15340 reported cost.
13. EPYC 7601 2P: $10730 reported cost.
14. EPYC 7601: $5365 reported cost.
15. Xeon Platinum 8280: $10009 reported cost.
16. 2 x Xeon Platinum 8280: $20018 reported cost.

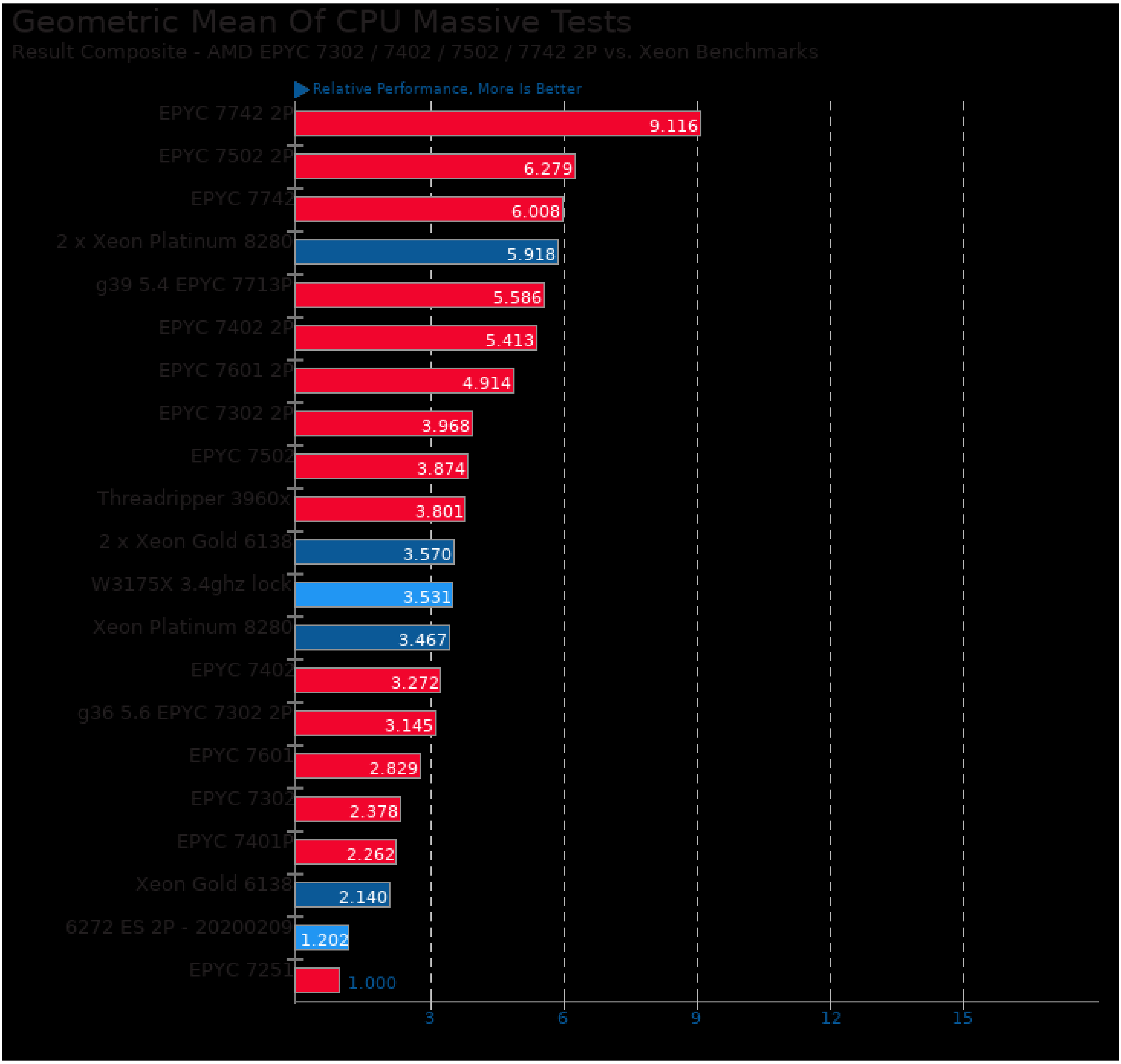
These geometric means are based upon test groupings / test suites for this result file.



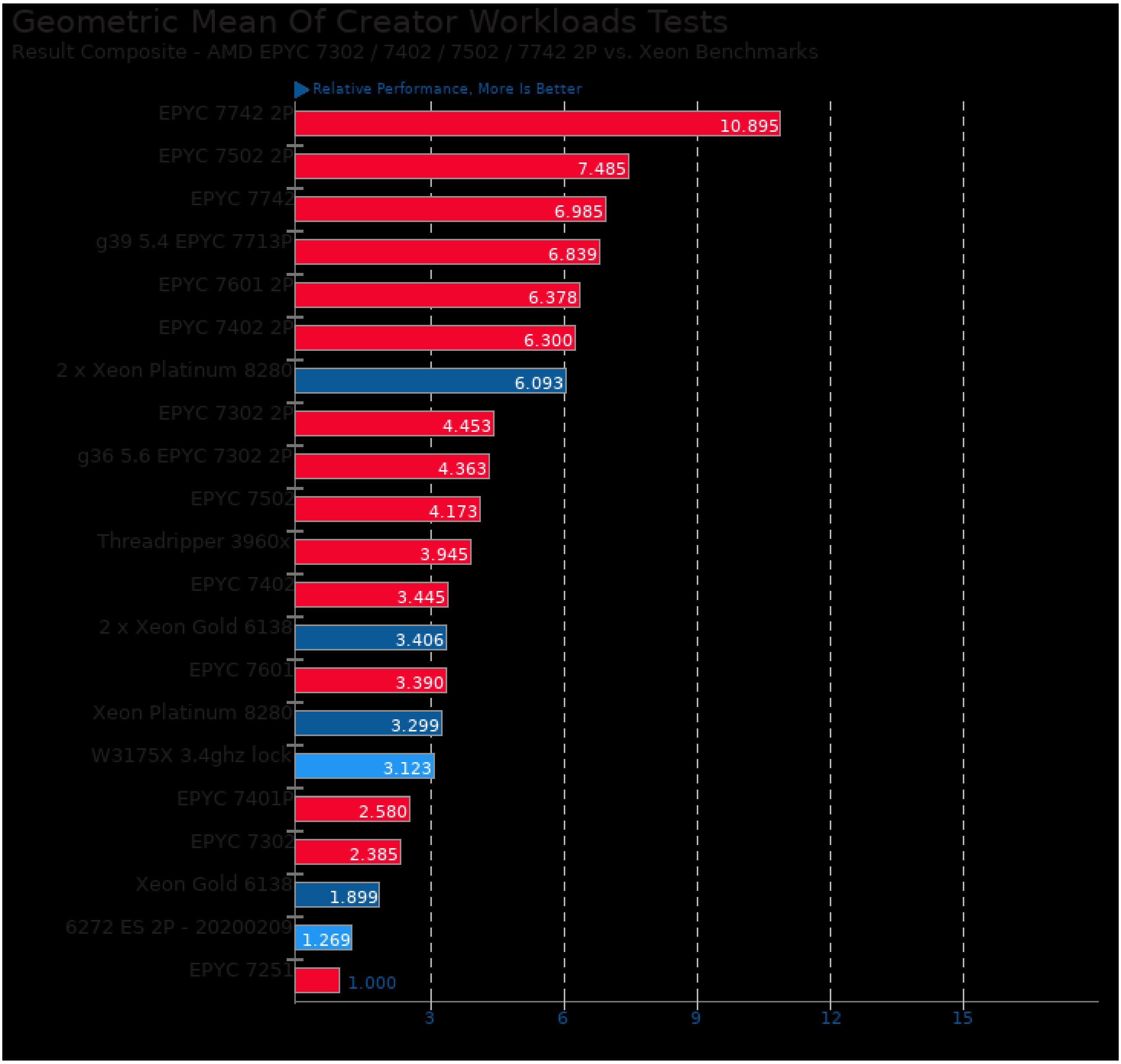
Geometric mean based upon tests: pts/stockfish and pts/asmfish



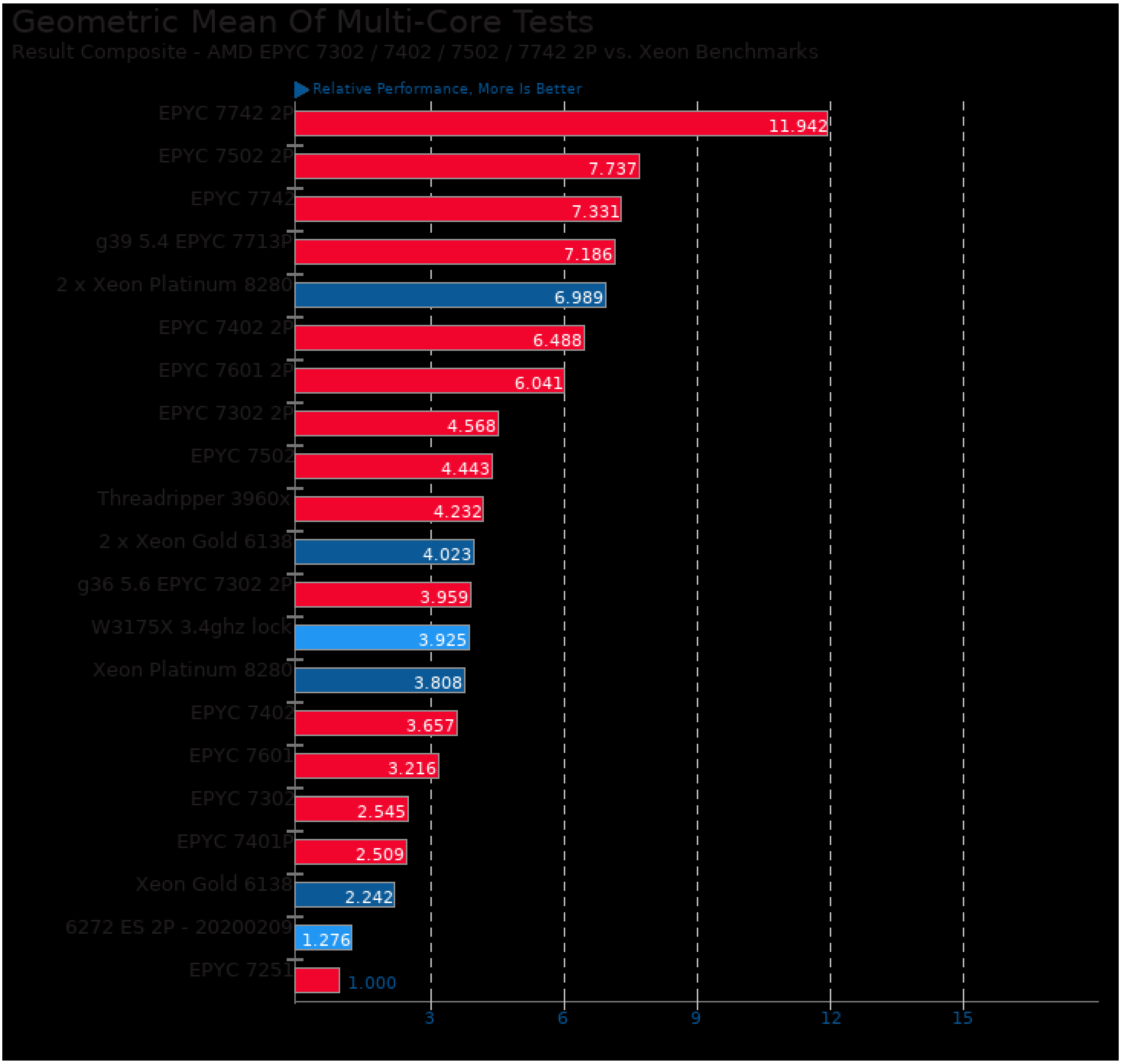
Geometric mean based upon tests: pts/stockfish, pts/build-llvm, pts/c-ray, pts/compress-7zip, pts/john-the-ripper, pts/dav1d, pts/tungsten and pts/svt-av1



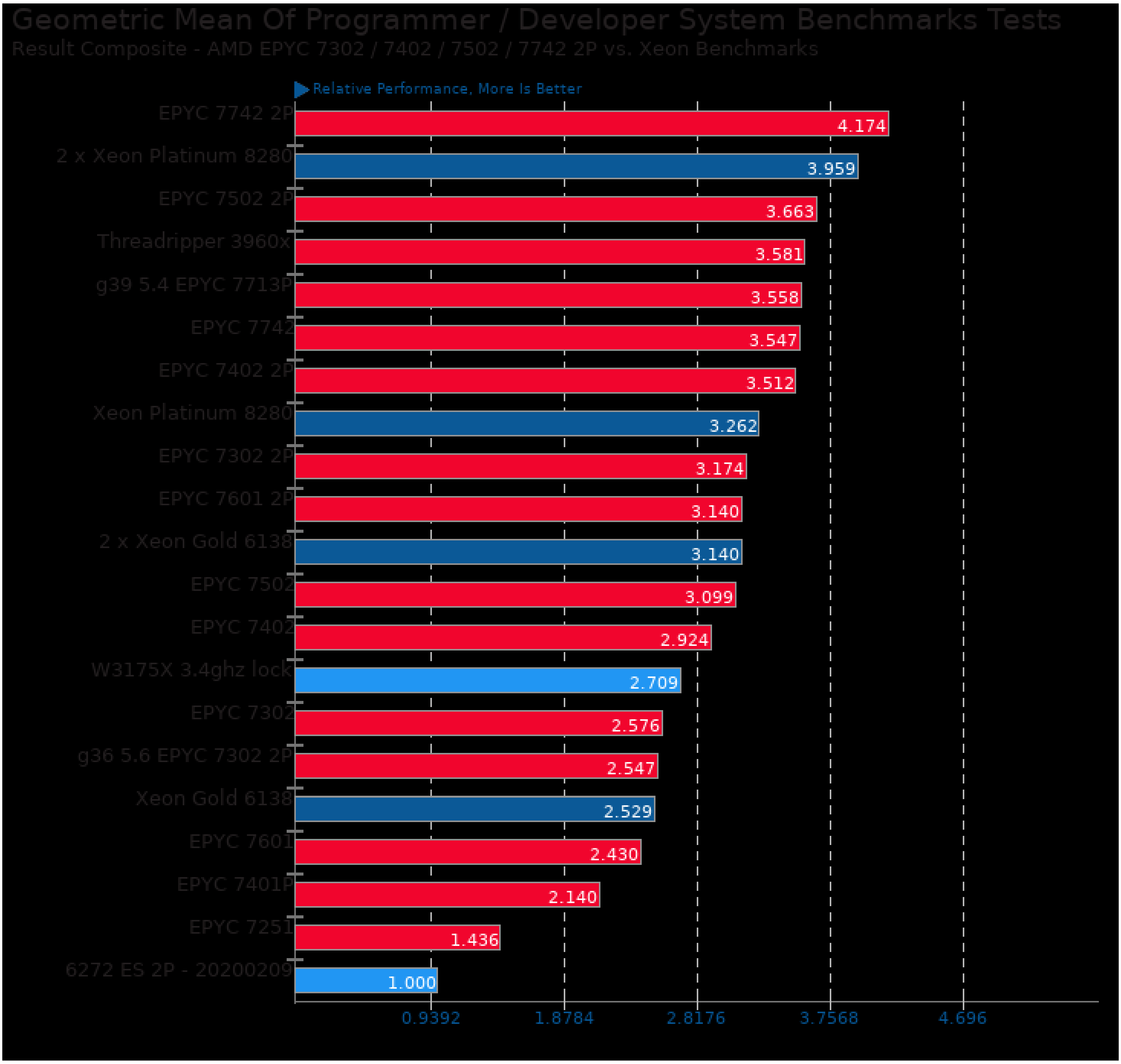
Geometric mean based upon tests: pts/asmfish, pts/build-llvm, pts/build-linux-kernel, pts/c-ray, pts/compress-7zip, pts/dav1d, pts/svt-av1, pts/svt-hevc, pts/john-the-ripper, pts/namd, pts/phpbench, pts/povray, pts/stockfish and pts/blender



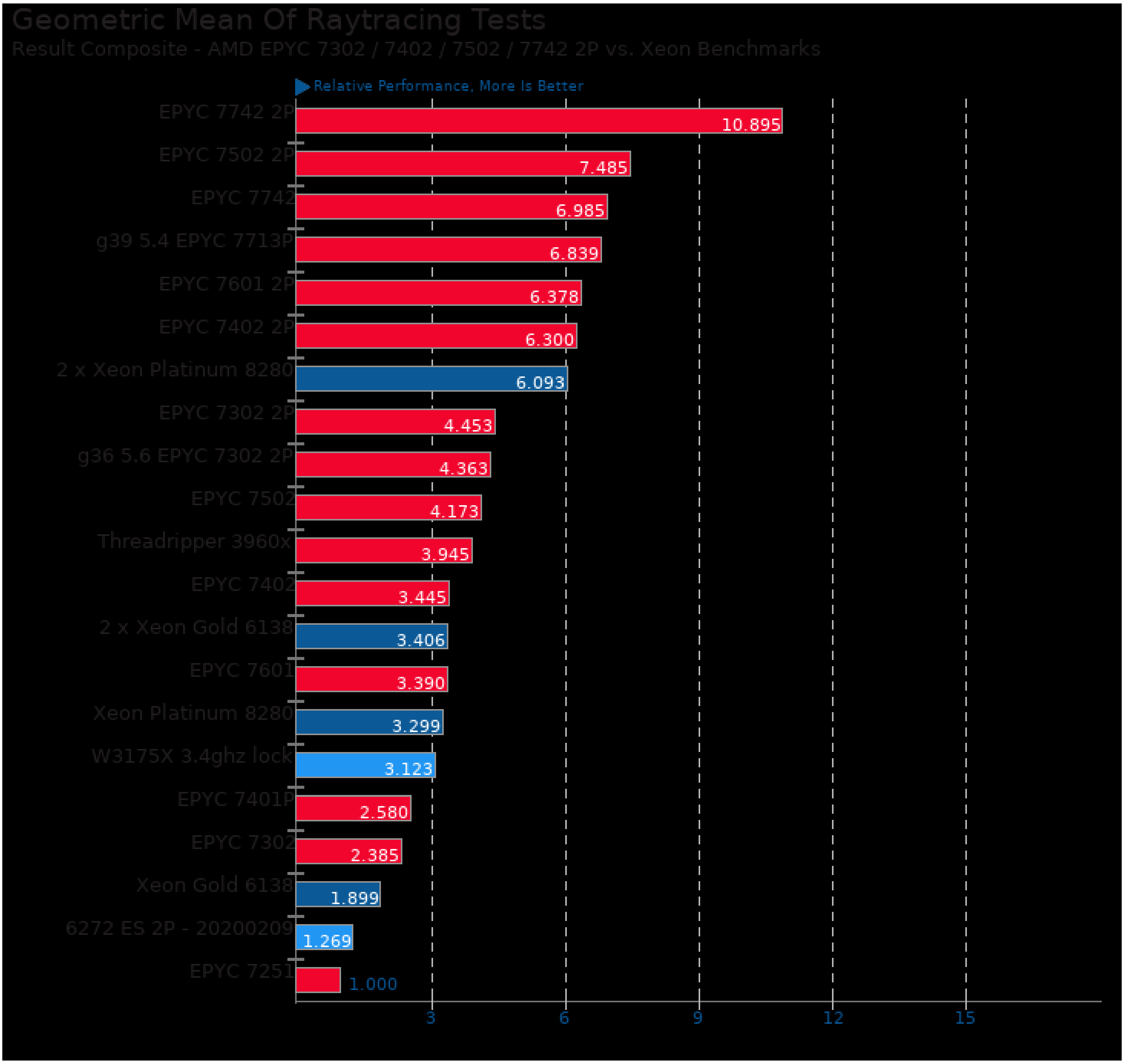
Geometric mean based upon tests: pts/c-ray, pts/povray, pts/blender, pts/tungsten, pts/appleseed, pts/svt-hevc, pts/dav1d and pts/svt-av1



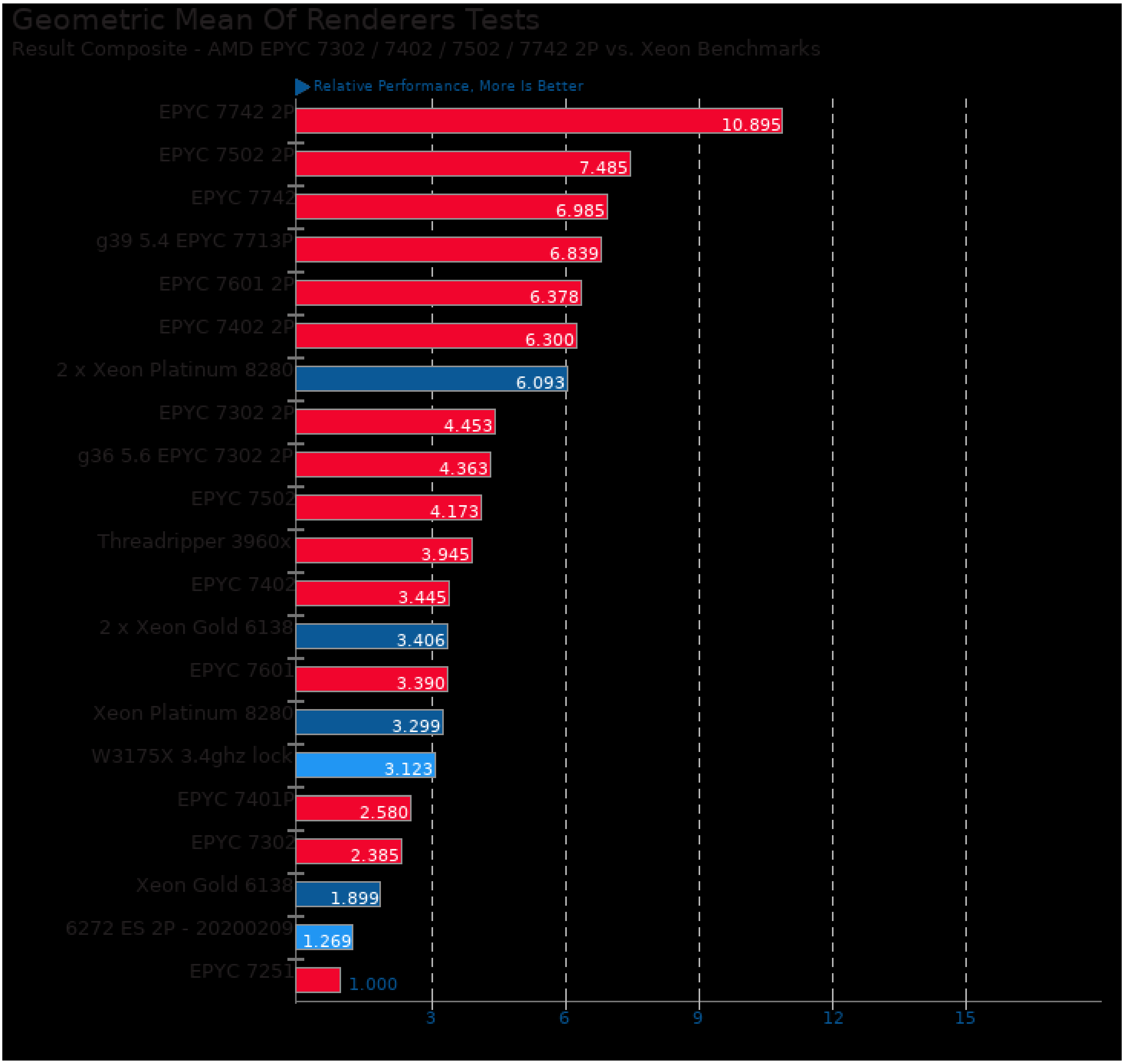
Geometric mean based upon tests: pts/blender, pts/c-ray, pts/povray, pts/stockfish, pts/coremark, pts/svt-hevc, pts/dav1d, pts/svt-av1, pts/john-the-ripper, pts/namd, pts/asmfish, pts/compress-7zip, pts/build-linux-kernel, pts/build-llvm, pts/tungsten and pts/appleseed



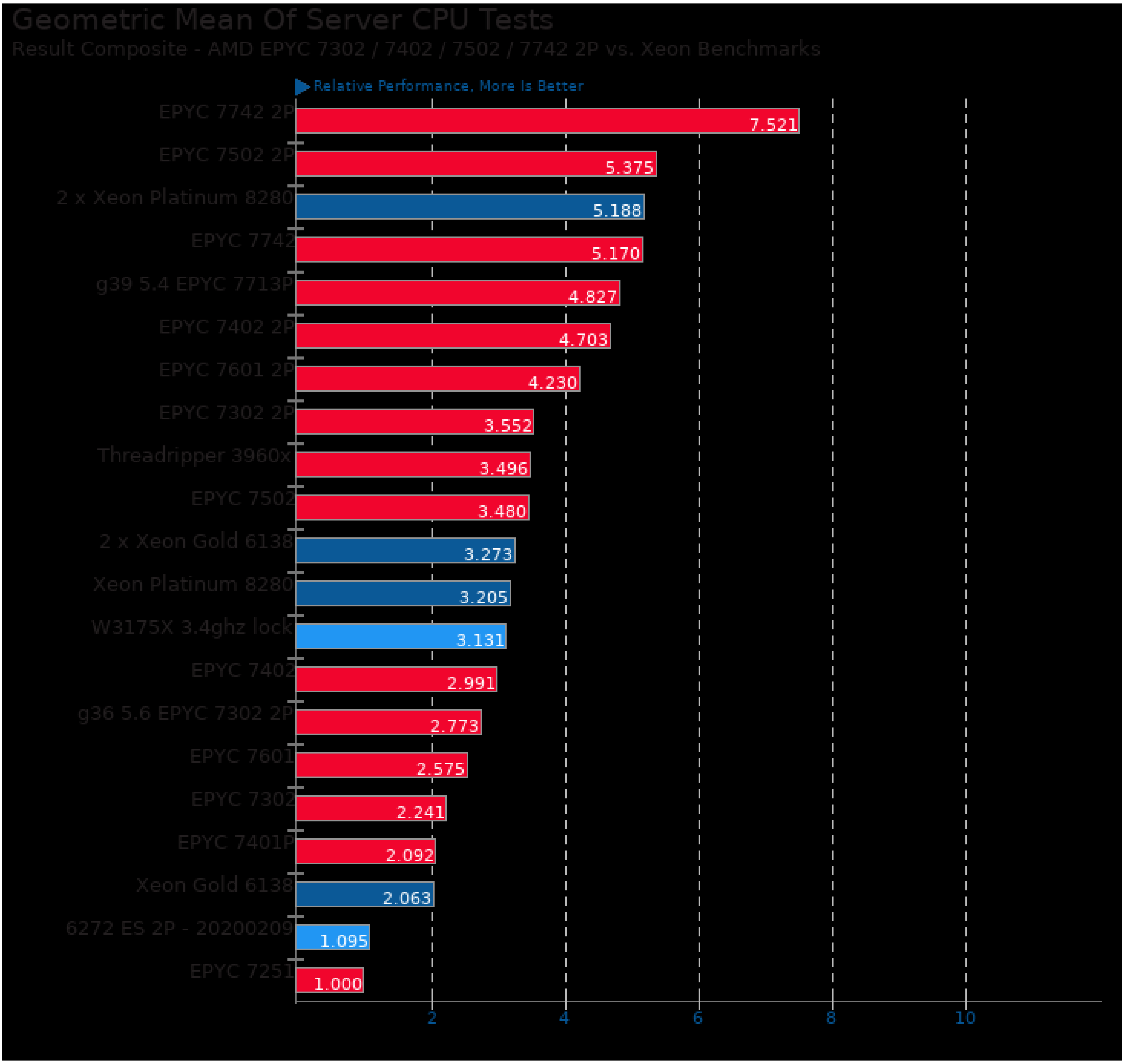
Geometric mean based upon tests: pts/pybench, pts/build-linux-kernel and pts/build-llvm



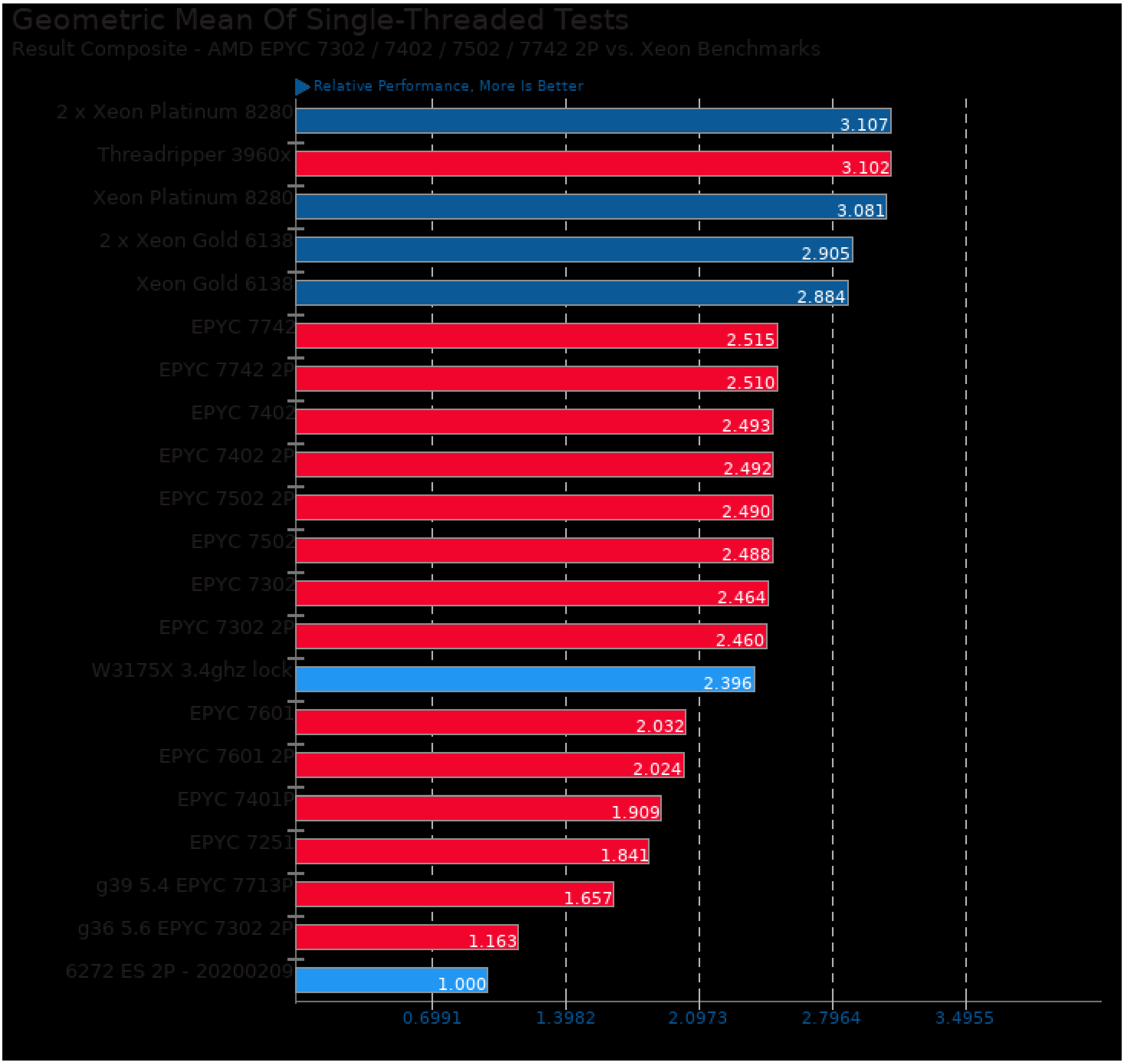
Geometric mean based upon tests: pts/c-ray and pts/povray



Geometric mean based upon tests: pts/c-ray, pts/povray, pts/blender, pts/tungsten and pts/appleseed



Geometric mean based upon tests: pts/namd, pts/john-the-ripper, pts/svt-av1, pts/svt-hevc, pts/dav1d, pts/compress-7zip, pts/stockfish, pts/asmfish, pts/build-linux-kernel, pts/build-llvm, pts/c-ray, pts/povray, pts/blender, pts/appleseed, pts/pybench and pts/phpbench



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

This file was automatically generated via the Phoronix Test Suite benchmarking software on Friday, 29 March 2024 02:20.