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Large Intel AMD Linux CPU Benchmark Comparison

Large CPU comparison. Tests being worked on by Michael Larabel.

Automated Executive Summary

2 x Xeon Gold 6138 had the most wins, coming in first place for 64% of the tests.

Based on the geometric mean of all complete results, the fastest (2 x Xeon Gold 6138) was 9.39x the speed of the slowest (A10-7800).

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

POV-Ray (Performance / Cost - Trace Time) at 48.517x
OpenSSL (RSA 4096-bit Performance) at 44.947x
Java JMH (Throughput) at 30.177x
POV-Ray (Trace Time) at 25.641x
NAS Parallel Benchmarks (Test / Class: EP.C) at 24.051x
C-Ray (Total Time) at 19.666x
John The Ripper (Test: Blowfish) at 16.794x
Timed Linux Kernel Compilation (Time To Compile) at 15.935x
Rodinia (Test: OpenMP LavaMD) at 15.653x
7-Zip Compression (Compress Speed Test) at 15.537x.

Test Systems:

A10-7800

Processor: AMD A10-7800 Radeon R7 12 Compute Cores 4C+8G @ 3.50GHz (2 Cores / 4 Threads), Motherboard: MSI A78M-E35 (MS-7721) v6.0 (V30.1 BIOS), Chipset: AMD Family 15h, Memory: 7168MB, Disk: 500GB Western Digital WD5000AZRX-0 + 525GB SABRENT, Graphics: MSI AMD Radeon R7 1024MB, Audio: AMD Kaveri HDMI/DP, Monitor: DELL S2409W, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 17.10, Kernel: 4.15.2-041502-generic (x86_64), Desktop: GNOME Shell 3.26.2, Display Server: Wayland, Display Driver: modesetting 1.19.5, OpenGL: 4.5 Mesa 17.2.4 (LLVM 5.0.0), Compiler: GCC 7.2.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --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
Python Notes: Python 2.7.14 + Python 3.6.3
Security Notes: __user pointer sanitization + Full AMD retpoline Protection

A10-7870K

Processor: AMD A10-7870K Radeon R7 12 Compute Cores 4C+8G @ 3.90GHz (2 Cores / 4 Threads), Motherboard: ASUS A88XM-E (2001 BIOS), Chipset: AMD Family 15h, Memory: 15360MB, Disk: 250GB Samsung SSD 850 + 525GB SABRENT, Graphics: ASUS AMD Radeon R7 1024MB, Audio: AMD Kaveri HDMI/DP, Monitor: VE228, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 17.10, Kernel: 4.15.2-041502-generic (x86_64), Desktop: GNOME Shell 3.26.2, Display Server: Wayland, Display Driver: modesetting 1.19.5, OpenGL: 4.5 Mesa 17.2.4 (LLVM 5.0.0), Compiler: GCC 7.2.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --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
Python Notes: Python 2.7.14 + Python 3.6.3
Security Notes: __user pointer sanitization + Full AMD retpoline Protection

FX-8350

Processor: AMD FX-8350 Eight-Core @ 4.00GHz (4 Cores / 8 Threads), Motherboard: Gigabyte 970A-D3P (FB BIOS), Chipset: AMD RD9x0/RX980, Memory: 16384MB, Disk: 250GB Samsung SSD 850 + 525GB SABRENT, Graphics: HIS AMD Radeon HD 6450/7450/8450 / R5 230 OEM 1024MB, Audio: Realtek ALC892, Monitor: DELL S2409W, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 17.10, Kernel: 4.15.2-041502-generic (x86_64), Desktop: GNOME Shell 3.26.2, Display Server: Wayland, Display Driver: modesetting 1.19.5, OpenGL: 3.3 Mesa 17.2.4 (LLVM 5.0.0), Compiler: GCC 7.2.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --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
Python Notes: Python 2.7.14 + Python 3.6.3
Security Notes: __user pointer sanitization + Full AMD retpoline Protection

Ryzen 3 1200

Processor: AMD Ryzen 3 1200 @ 3.10GHz (4 Cores), Motherboard: MSI B350M GAMING PRO (MS-7A39) v1.0 (2.90 BIOS), Chipset: AMD Device 1450, Memory: 8192MB, Disk: 525GB SABRENT + 120GB ADATA SU700, Graphics: AMD FirePro V3800 512MB, Audio: AMD Redwood HDMI Audio, Monitor: DELL S2409W, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 17.10, Kernel: 4.15.2-041502-generic (x86_64), Desktop: GNOME Shell 3.26.2, Display Server: Wayland, Display Driver: modesetting 1.19.5, OpenGL: 3.3 Mesa 17.2.4 (LLVM 5.0.0), Compiler: GCC 7.2.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --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
Python Notes: Python 2.7.14 + Python 3.6.3
Security Notes: __user pointer sanitization + Full AMD retpoline Protection

Ryzen 3 1300X

Processor: AMD Ryzen 3 1300X @ 3.50GHz (4 Cores), Motherboard: ASRock AB350 Pro4 (P3.20 BIOS), Chipset: AMD Device 1450, Memory: 8192MB, Disk: 525GB SABRENT + 128GB ADATA SU800, Graphics: Sapphire AMD Radeon R7 260X/360 2048MB, Audio: AMD Tobago HDMI Audio, Monitor: VE228, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 17.10, Kernel: 4.15.2-041502-generic (x86_64), Desktop: GNOME Shell 3.26.2, Display Server: Wayland, Display Driver: modesetting 1.19.5, OpenGL: 4.5 Mesa 17.2.4 (LLVM 5.0.0), Compiler: GCC 7.2.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --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
Python Notes: Python 2.7.14 + Python 3.6.3
Security Notes: __user pointer sanitization + Full AMD retpoline Protection

Ryzen 3 2200G

Processor: AMD Ryzen 3 2200G @ 3.50GHz (4 Cores), Motherboard: MSI X370 XPOWER GAMING TITANIUM (MS-7A31) v1.0 (1.C0 BIOS), Chipset: AMD Device 15d0, Memory: 14336MB, Disk: 525GB SABRENT + 525GB Crucial_CT525MX3 + 120GB Force MP500, Graphics: llvmpipe 14080MB, Audio: AMD Device 15de, Network: Intel I211 Gigabit Connection

OS: Ubuntu 17.10, Kernel: 4.15.2-041502-generic (x86_64), Desktop: GNOME Shell 3.26.2, Display Driver: modesetting 1.19.5, OpenGL: 3.3 Mesa 18.1.0-devel- padoka PPA (LLVM 7.0 128 bits), Vulkan: 1.0.61, Compiler: GCC 7.2.0, File-System: ext4, Screen Resolution: 3840x2160

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new

--with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: acpi-cpufreq ondemand
Python Notes: Python 2.7.14 + Python 3.6.3
Security Notes: __user pointer sanitization + Full AMD retpoline IBPB Protection

Ryzen 5 2400G

Processor: AMD Ryzen 5 2400G @ 3.60GHz (4 Cores / 8 Threads), Motherboard: MSI X370 XPOWER GAMING TITANIUM (MS-7A31) v1.0 (1.C0 BIOS), Chipset: AMD Device 15d0, Memory: 14336MB, Disk: 525GB SABRENT + 525GB Crucial_CT525MX3 + 120GB Force MP500, Graphics: llvmpipe 14080MB, Audio: AMD Device 15de, Network: Intel I211 Gigabit Connection

OS: Ubuntu 17.10, Kernel: 4.15.2-041502-generic (x86_64), Desktop: GNOME Shell 3.26.2, Display Driver: modesetting 1.19.5, OpenGL: 3.3 Mesa 18.1.0-devel- padoka PPA (LLVM 7.0 128 bits), Vulkan: 1.0.61, Compiler: GCC 7.2.0, File-System: ext4, Screen Resolution: 3840x2160

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: acpi-cpufreq ondemand
Python Notes: Python 2.7.14 + Python 3.6.3
Security Notes: __user pointer sanitization + Full AMD retpoline IBPB Protection

Ryzen 7 1700

Processor: AMD Ryzen 7 1700 Eight-Core @ 3.00GHz (8 Cores / 16 Threads), Motherboard: MSI B350 TOMAHAWK (MS-7A34) v1.0 (1.90 BIOS), Chipset: AMD Device 1450, Memory: 16384MB, Disk: 525GB SABRENT + 120GB Samsung SSD 840, Graphics: llvmpipe 16128MB, Audio: AMD Cape Verde/Pitcairn, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 17.10, Kernel: 4.15.2-041502-generic (x86_64), Desktop: GNOME Shell 3.26.2, Display Driver: modesetting 1.19.5, OpenGL: 3.3 Mesa 17.2.4 (LLVM 5.0 128 bits), Compiler: GCC 7.2.0, File-System: ext4, Screen Resolution: 1280x1024

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
Python Notes: Python 2.7.14 + Python 3.6.3
Security Notes: __user pointer sanitization + Full AMD retpoline Protection

Ryzen 7 1800X

Processor: AMD Ryzen 7 1800X Eight-Core @ 3.60GHz (8 Cores / 16 Threads), Motherboard: MSI X370 XPOWER GAMING TITANIUM (MS-7A31) v1.0 (1.90 BIOS), Chipset: AMD Device 1450, Memory: 16384MB, Disk: 525GB SABRENT, Graphics: NV134 8192MB, Audio: NVIDIA GP104 HD Audio, Monitor: DELL P2415Q, Network: Intel I211 Gigabit Connection

OS: Ubuntu 17.10, Kernel: 4.15.2-041502-generic (x86_64), Desktop: GNOME Shell 3.26.2, Display Server: Wayland, Display Driver: modesetting 1.19.5, OpenGL: 4.3 Mesa 17.2.4, Compiler: GCC 7.2.0, File-System: ext4, Screen Resolution: 3840x2160

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix

--host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: acpi-cpufreq ondemand
Python Notes: Python 2.7.14 + Python 3.6.3
Security Notes: __user pointer sanitization + Full AMD retpoline Protection

Threadripper 1950X

Processor: AMD Ryzen Threadripper 1950X 16-Core @ 3.40GHz (16 Cores / 32 Threads), Motherboard: Gigabyte X399 AORUS Gaming 7 (F3g BIOS), Chipset: AMD Device 1450, Memory: 16384MB, Disk: 525GB SABRENT + 120GB Force MP500, Graphics: MSI AMD Radeon R7 370 / R9 270/370 OEM 4096MB, Audio: Realtek ALC1220, Monitor: VE228, Network: Qualcomm Atheros Device e0b1 + Intel Wireless 8265 / 8275

OS: Ubuntu 17.10, Kernel: 4.15.2-041502-generic (x86_64), Desktop: GNOME Shell 3.26.2, Display Server: Wayland, Display Driver: modesetting 1.19.5, OpenGL: 4.5 Mesa 17.2.4 (LLVM 5.0.0), Compiler: GCC 7.2.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --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
Python Notes: Python 2.7.14 + Python 3.6.3
Security Notes: __user pointer sanitization + Full AMD retpoline Protection

EPYC 7601

Processor: AMD EPYC 7601 32-Core @ 2.20GHz (32 Cores / 64 Threads), Motherboard: TYAN B8026T70AE24HR (V0.05.B10 BIOS), Chipset: AMD Device 1450, Memory: 129024MB, Disk: 525GB SABRENT + 280GB INTEL SSDPE21D280GA, Graphics: ASPEED ASPEED Family, Monitor: VE228, Network: Broadcom Limited NetXtreme BCM5720 Gigabit PCIe

OS: Ubuntu 17.10, Kernel: 4.15.2-041502-generic (x86_64), Desktop: GNOME Shell 3.26.2, Display Driver: modesetting 1.19.5, Compiler: GCC 7.2.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --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
Python Notes: Python 2.7.14 + Python 3.6.3
Security Notes: __user pointer sanitization + Full AMD retpoline Protection

Core i3 4130

Processor: Intel Core i3-4130 @ 3.40GHz (2 Cores / 4 Threads), Motherboard: Intel DH87RL (RLH8710H.86A.0317.2013.0426.1724 BIOS), Chipset: Intel 4th Gen Core DRAM, Memory: 1536MB, Disk: 128GB TOSHIBA THNSNH12 + 525GB SABRENT, Graphics: Intel Haswell 1536MB (1150MHz), Audio: Intel Xeon E3-1200 v3/4th, Monitor: DELL S2409W, Network: Intel Connection I217-V

OS: Ubuntu 17.10, Kernel: 4.15.2-041502-generic (x86_64), Desktop: GNOME Shell 3.26.2, Display Server: Wayland, Display Driver: modesetting 1.19.5, OpenGL: 4.5 Mesa 17.2.4, Compiler: GCC 7.2.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --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 2.7.14 + Python 3.6.3
Security Notes: KPTI + __user pointer sanitization + Full generic retpoline Protection

Core i3 7100

Processor: Intel Core i3-7100 @ 3.90GHz (2 Cores / 4 Threads), Motherboard: Gigabyte B250M-DS3H-CF (F1 BIOS), Chipset: Intel Xeon E3-1200 v6/7th + B250, Memory: 8192MB, Disk: 250GB Western Digital WDS250G1B0A- + 525GB SABRENT, Graphics: Intel HD 630 3072MB (1100MHz), Audio: Realtek ALC887-VD, Monitor: DELL S2409W, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 17.10, Kernel: 4.15.2-041502-generic (x86_64), Desktop: GNOME Shell 3.26.2, Display Server: Wayland, Display Driver: modesetting 1.19.5, OpenGL: 4.5 Mesa 17.2.4, Compiler: GCC 7.2.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --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 2.7.14 + Python 3.6.3
Security Notes: KPTI + __user pointer sanitization + Full generic retpoline Protection

Core i3 8100

Processor: Intel Core i3-8100 @ 3.60GHz (4 Cores), Motherboard: ASRock Z370M-ITX/ac (P1.20 BIOS), Chipset: Intel Device 3e1f, Memory: 8192MB, Disk: 525GB SABRENT + 60GB DREVO X1 SSD, Graphics: Intel HD 3072MB (1100MHz), Audio: Realtek ALC892, Monitor: DELL S2409W, Network: Intel Connection + Intel Device 24fb

OS: Ubuntu 17.10, Kernel: 4.15.2-041502-generic (x86_64), Desktop: GNOME Shell 3.26.2, Display Server: Wayland, Display Driver: modesetting 1.19.5, OpenGL: 4.5 Mesa 17.2.4, Compiler: GCC 7.2.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --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 2.7.14 + Python 3.6.3
Security Notes: KPTI + __user pointer sanitization + Full generic retpoline Protection

Core i5 3470

Processor: Intel Core i5-3470 @ 3.60GHz (4 Cores), Motherboard: ECS H61H2-I3 v1.0 (4.6.5 BIOS), Chipset: Intel Xeon E3-1200 v2/3rd, Memory: 4096MB, Disk: 120GB Samsung SSD 850 + 525GB SABRENT, Graphics: Intel Ivybridge Desktop 1536MB (1100MHz), Audio: VIA VT1705, Monitor: DELL S2409W, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 17.10, Kernel: 4.15.2-041502-generic (x86_64), Desktop: GNOME Shell 3.26.2, Display Server: Wayland, Display Driver: modesetting 1.19.5, OpenGL: 4.2 Mesa 17.2.4, Compiler: GCC 7.2.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --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 2.7.14 + Python 3.6.3
Security Notes: KPTI + __user pointer sanitization + Full generic retpoline Protection

Core i5 4670

Processor: Intel Core i5-4670 @ 3.80GHz (4 Cores), Motherboard: MSI B85M-P33 (MS-7817) v1.0 (V4.5 BIOS), Chipset: Intel 4th Gen Core DRAM, Memory: 8192MB, Disk: 63GB SanDisk SDSSDP06 + 525GB SABRENT, Graphics: Intel Haswell Desktop 1536MB (1200MHz), Audio: Intel Xeon E3-1200 v3/4th, Monitor: DELL S2409W, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 17.10, Kernel: 4.15.2-041502-generic (x86_64), Desktop: GNOME Shell 3.26.2, Display Server: Wayland, Display Driver: modesetting 1.19.5, OpenGL: 4.5 Mesa 17.2.4, Compiler: GCC 7.2.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --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 2.7.14 + Python 3.6.3
Security Notes: KPTI + __user pointer sanitization + Full generic retpoline Protection

Core i5 6500

Processor: Intel Core i5-6500 @ 3.60GHz (4 Cores), Motherboard: Gigabyte Z170M-D3H-CF (F3 BIOS), Chipset: Intel Skylake, Memory: 8192MB, Disk: 250GB Samsung SSD 850 + 525GB SABRENT, Graphics: Intel HD 530 3072MB (1050MHz), Audio: Realtek ALC892, Monitor: DELL S2409W, Network: Intel Connection

OS: Ubuntu 17.10, Kernel: 4.15.2-041502-generic (x86_64), Desktop: GNOME Shell 3.26.2, Display Server: Wayland, Display Driver: modesetting 1.19.5, OpenGL: 4.5 Mesa 17.2.4, Compiler: GCC 7.2.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --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 2.7.14 + Python 3.6.3
Security Notes: KPTI + __user pointer sanitization + Full generic retpoline Protection

Core i5 6600K

Processor: Intel Core i5-6600K @ 3.90GHz (4 Cores), Motherboard: MSI Z170A GAMING PRO (MS-7984) v1.0 (1.00 BIOS), Chipset: Intel Skylake, Memory: 15360MB, Disk: 525GB SABRENT + 256GB TS256GSSD370S, Graphics: Intel HD 530 3072MB (1150MHz), Audio: Realtek ALC1150, Monitor: Acer B286HK, Network: Intel Connection

OS: Ubuntu 17.10, Kernel: 4.15.2-041502-generic (x86_64), Desktop: GNOME Shell 3.26.2, Display Driver: modesetting 1.19.5, OpenGL: 4.5 Mesa 18.1.0-devel- padoka PPA, Vulkan: 1.0.61, Compiler: GCC 7.2.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --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 2.7.14 + Python 3.6.3
Security Notes: KPTI + __user pointer sanitization + Full generic retpoline Protection

Large Intel AMD Linux CPU Benchmark Comparison

Core i5 7600K

Processor: Intel Core i5-7600K @ 4.20GHz (4 Cores), Motherboard: Gigabyte Z270M-D3H-CF (F1 BIOS), Chipset: Intel Device 591f + Z270, Memory: 8192MB, Disk: 250GB Samsung SSD 850 + 525GB SABRENT, Graphics: Intel HD 630 3072MB (1150MHz), Audio: Realtek ALC892, Monitor: DELL S2409W, Network: Intel Connection

OS: Ubuntu 17.10, Kernel: 4.15.2-041502-generic (x86_64), Desktop: GNOME Shell 3.26.2, Display Server: Wayland, Display Driver: modesetting 1.19.5, OpenGL: 4.5 Mesa 17.2.4, Compiler: GCC 7.2.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --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 2.7.14 + Python 3.6.3
Security Notes: KPTI + __user pointer sanitization + Full generic retpoline Protection

Core i5 8400

Processor: Intel Core i5-8400 @ 4.00GHz (6 Cores), Motherboard: MSI Z370M MORTAR (MS-7B54) v1.0 (1.10 BIOS), Chipset: Intel Device 3ec2, Memory: 8192MB, Disk: 525GB SABRENT + 128GB ADATA SX6000NP, Graphics: Intel HD 3072MB (1050MHz), Audio: Realtek ALC892, Monitor: DELL S2409W, Network: Intel Connection

OS: Ubuntu 17.10, Kernel: 4.15.2-041502-generic (x86_64), Desktop: GNOME Shell 3.26.2, Display Server: Wayland, Display Driver: modesetting 1.19.5, OpenGL: 4.5 Mesa 17.2.4, Compiler: GCC 7.2.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --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 2.7.14 + Python 3.6.3
Security Notes: KPTI + __user pointer sanitization + Full generic retpoline Protection

Core i7 4770K

Processor: Intel Core i7-4770K @ 3.90GHz (4 Cores / 8 Threads), Motherboard: Gigabyte Z97-HD3 (F10c BIOS), Chipset: Intel 4th Gen Core DRAM, Memory: 8192MB, Disk: 128GB Crucial_CT128MX1 + 525GB SABRENT, Graphics: Intel Haswell Desktop 1536MB (1250MHz), Audio: Intel Xeon E3-1200 v3/4th, Monitor: DELL S2409W, Network: Realtek RTL8111/8168/8411

OS: Ubuntu 17.10, Kernel: 4.15.2-041502-generic (x86_64), Desktop: GNOME Shell 3.26.2, Display Server: Wayland, Display Driver: modesetting 1.19.5, OpenGL: 4.5 Mesa 17.2.4, Compiler: GCC 7.2.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --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 2.7.14 + Python 3.6.3
Security Notes: KPTI + __user pointer sanitization + Full generic retpoline Protection

Core i7 5960X

Processor: Intel Core i7-5960X @ 3.50GHz (8 Cores / 16 Threads), Motherboard: ASRock X99 Extreme3 (P3.50 BIOS), Chipset: Intel Xeon E7 v3/Xeon, Memory: 16384MB, Disk: 120GB INTEL SSDSC2BW12 + 525GB SABRENT, Graphics: AMD FirePro V7900 2048MB, Audio: Realtek ALC1150, Monitor: DELL S2409W, Network: Intel Connection

OS: Ubuntu 17.10, Kernel: 4.15.2-041502-generic (x86_64), Desktop: GNOME Shell 3.26.2, Display Server: Wayland, Display Driver: modesetting 1.19.5, OpenGL: 4.1 Mesa 17.2.4 (LLVM 5.0.0), Compiler: GCC 7.2.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --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 2.7.14 + Python 3.6.3
Security Notes: KPTI + __user pointer sanitization + Full generic retpoline Protection

Core i7 7740X

Processor: Intel Core i7-7740K @ 4.50GHz (4 Cores / 8 Threads), Motherboard: Gigabyte X299 AORUS Gaming-CF (F2d BIOS), Chipset: Intel Device 591f, Memory: 8192MB, Disk: 525GB SABRENT + 120GB Force MP500, Graphics: llvmpipe 7936MB, Audio: Realtek ALC1220, Monitor: VE228, Network: Intel Connection

OS: Ubuntu 17.10, Kernel: 4.15.2-041502-generic (x86_64), Desktop: GNOME Shell 3.26.2, Display Server: Wayland, Display Driver: modesetting 1.19.5, OpenGL: 3.3 Mesa 17.2.4 (LLVM 5.0 256 bits), Compiler: GCC 7.2.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --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 2.7.14 + Python 3.6.3
Security Notes: KPTI + __user pointer sanitization + Full generic retpoline Protection

Core i7 8700K

Processor: Intel Core i7-8700K @ 4.70GHz (6 Cores / 12 Threads), Motherboard: ASUS PRIME Z370-A (0606 BIOS), Chipset: Intel Device 3ec2, Memory: 16384MB, Disk: 525GB SABRENT + 525GB Crucial_CT525MX3 + Samsung SSD 950 PRO 256GB, Graphics: MSI AMD Radeon RX 580 8192MB, Audio: Realtek ALC1220, Monitor: DELL P2415Q, Network: Intel Connection

OS: Ubuntu 17.10, Kernel: 4.15.2-041502-generic (x86_64), Desktop: GNOME Shell 3.26.2, Display Server: Wayland, OpenGL: 4.5 Mesa 17.2.4 (LLVM 5.0.0), Compiler: GCC 7.2.0, File-System: ext4, Screen Resolution: 3840x2160

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: intel_pstate powersave
Python Notes: Python 2.7.14 + Python 3.6.3
Security Notes: KPTI + __user pointer sanitization + Full generic retpoline Protection

Core i9 7980XE

Processor: Intel Core i9-7980XE @ 4.40GHz (18 Cores / 36 Threads), Motherboard: ASUS PRIME X299-A (1004 BIOS), Chipset: Intel Device 2020, Memory: 16384MB, Disk: 525GB SABRENT + 256GB INTEL SSDPEKKW256G8,

Graphics: NV117 1024MB, Audio: Realtek ALC1220, Monitor: Acer B286HK, Network: Intel Connection

OS: Ubuntu 17.10, Kernel: 4.15.2-041502-generic (x86_64), Desktop: GNOME Shell 3.26.2, Display Server: Wayland, OpenGL: 4.3 Mesa 17.2.4, Compiler: GCC 7.2.0, File-System: ext4, Screen Resolution: 3840x2160

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: intel_pstate powersave
Python Notes: Python 2.7.14 + Python 3.6.3
Security Notes: KPTI + __user pointer sanitization + Full generic retpoline Protection

Xeon Silver 4108

Processor: Intel Xeon Silver 4108 @ 3.00GHz (8 Cores / 16 Threads), Motherboard: TYAN S7100AG2NR (V3.00 BIOS), Chipset: Intel Device 2020, Memory: 23552MB, Disk: 525GB SABRENT + 240GB Force MP500, Graphics: ASPEED ASPEED Family, Audio: Realtek ALC892, Monitor: VE228, Network: Intel I350 Gigabit Connection

OS: Ubuntu 17.10, Kernel: 4.15.2-041502-generic (x86_64), Desktop: GNOME Shell 3.26.2, Display Driver: modesetting 1.19.5, Compiler: GCC 7.2.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --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 2.7.14 + Python 3.6.3
Security Notes: KPTI + __user pointer sanitization + Full generic retpoline Protection

2 x Xeon Gold 6138

Processor: 2 x Intel Xeon Gold 6138 @ 3.70GHz (40 Cores / 80 Threads), Motherboard: TYAN S7106 (V1.00 BIOS), Chipset: Intel Device 2020, Memory: 96256MB, Disk: 525GB SABRENT + 256GB Samsung SSD 850 + 2000GB Seagate ST2000DM006-2DM1 + 2 x 120GB TOSHIBA-TR150, Graphics: ASPEED ASPEED Family, Monitor: VE228, Network: Intel I210 Gigabit Connection

OS: Ubuntu 17.10, Kernel: 4.15.2-041502-generic (x86_64), Desktop: GNOME Shell 3.26.2, Display Driver: modesetting 1.19.5, Compiler: GCC 7.2.0, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++ --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 2.7.14 + Python 3.6.3
Security Notes: KPTI + __user pointer sanitization + Full generic retpoline Protection

t2.2xlarge

Processor: Intel Xeon E5-2676 v3 @ 2.39GHz (8 Cores), Motherboard: Xen HVM domU (4.2.amazon BIOS), Chipset: Intel 440FX- 82441FX PMC, Memory: 32768MB, Disk: 28GB, Graphics: Cirrus Logic GD 5446

OS: Ubuntu 16.04, Kernel: 4.4.0-1050-aws (x86_64), Compiler: GCC 5.4.0 20160609, File-System: ext4, System Layer: Xen HVM domU 4.2.amazon

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu

--enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,ada,c++,java,go,d,fortran,objc,obj-c++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-default-libstdcxx-abi=new --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Python Notes: Python 2.7.12 + Python 3.5.2
Security Notes: KPTI Protection

m5.4xlarge

Processor: Intel Xeon Platinum 8175M @ 2.50GHz (8 Cores / 16 Threads), Motherboard: Amazon EC2 m5.4xlarge (1.0 BIOS), Chipset: Intel 440FX- 82441FX PMC, Memory: 63488MB, Disk: 30GB Amazon Elastic Block Store, Network: Device 1d0f:ec20

OS: Ubuntu 16.04, Kernel: 4.4.0-1050-aws (x86_64), Compiler: GCC 5.4.0 20160609, File-System: ext4, System Layer: KVM

Kernel Notes: nvme.io_timeout=4294967295
Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,ada,c++,java,go,d,fortran,objc,obj-c++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-default-libstdcxx-abi=new --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Python Notes: Python 2.7.12 + Python 3.5.2
Security Notes: KPTI Protection

m5.12xlarge

Processor: Intel Xeon Platinum 8175M @ 2.50GHz (24 Cores / 48 Threads), Motherboard: Amazon EC2 m5.12xlarge (1.0 BIOS), Chipset: Intel 440FX- 82441FX PMC, Memory: 189440MB, Disk: 30GB Amazon Elastic Block Store, Network: Device 1d0f:ec20

OS: Ubuntu 16.04, Kernel: 4.4.0-1050-aws (x86_64), Compiler: GCC 5.4.0 20160609, File-System: ext4, System Layer: KVM

Kernel Notes: nvme.io_timeout=4294967295
Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,ada,c++,java,go,d,fortran,objc,obj-c++ --enable-libmpx --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-default-libstdcxx-abi=new --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Python Notes: Python 2.7.12 + Python 3.5.2
Security Notes: KPTI Protection

Large Intel AMD Linux CPU Benchmark Comparison

	A10-7800	A10-7870K	FX-8350	Ryzen 3 1200	Ryzen 3 1300X	Ryzen 3 2200G	Ryzen 5 2400G	Ryzen 7 1700	Ryzen 7 1800X	Threadripper 1950X	EPYC 7601	Core i3 4130	Core i3 7100	Core i3 8100	Core i5 3470	Core i5 4670	Core i5 6500	Core i5 6600K	Core i5 7600K	Core i5 8400	Core i7 4770K	Core i7 5960X	Core i7 7740X	Core i7 8700K	Core i9 7980XE	Xeon Silver 4108	2 x Xeon Gold 6138	t2.2xlarge	m5.4xlarge	m5.12xlarge
NAS Parallel Benchmarks - EP.C (Mop/s)	83.11	92.05	22 1.13	12 2.00	14 1.62	14 4.02	29 3.90	48 9.65	57 1.10	10 90	16 23	14 3.51	17 5.07	20 2.48	18 0.13	19 8.48	18 5.67	21 9.61	22 5.62	32 1.50	33 1.54	56 4.87	39 4.63	57 7.05	12 68	31 9.97	19 99	14 6.20	45 9.35	13 85
Normalized	4.16%	4.61%	11.06%	6.19%	7.09%	7.21%	14.75%	24.55%	28.57%	54.55%	81.18%	7.18%	8.76%	10.13%	9.01%	9.93%	9.29%	10.99%	11.29%	16.08%	16.59%	28.26%	19.74%	28.87%	63.42%	16.01%	100%	7.31%	22.98%	69.31%
Standard Deviation	1.8%	0.3%	1.6%	0.5%	0.1%	0.3%	1%	2.5%	0.4%	0.5%	0.6%	1.1%	0.8%	0.3%	0.4%	0.2%	0.1%	0.1%	0.2%	0.1%	1%	0.2%	1.1%	0.6%	0.9%	0.4%	1.1%	0.1%	0.4%	0.2%
Parboil - OpenMP CUTCP (sec)	35.73	31.60	16.90	17.36	15.03	15.64	11.34	6.49	5.58	3.24	2.63	30.51	22.87	14.95	17.82	15.80	16.21	13.82	13.46	9.47	12.99	7.83	10.13	7.08	3.28	10.99	2.35	11.46	16.11	5.80
Normalized	6.58%	7.44%	13.91%	13.54%	15.64%	15.03%	20.72%	36.21%	42.11%	72.53%	89.35%	7.7%	10.28%	15.72%	13.19%	14.87%	14.5%	17%	17.46%	24.82%	18.09%	30.01%	23.2%	33.19%	71.65%	21.38%	100%	20.51%	14.59%	40.52%
Standard Deviation	0.1%	0.3%	0.4%	0.4%	0.1%	0.7%	0.6%	0.7%	0.4%	0.4%	1%	0.4%	1.1%	0%	0.2%	0.2%	0.1%	0.1%	0.2%	0.1%	1%	0.3%	1.7%	0.3%	0.4%	0.3%	1.1%	0%	0.4%	1.2%

Large Intel AMD Linux CPU Benchmark Comparison

Rodinia - OpenMP LavaMD (sec)	446.42	397.52	211.52	258.67	223.34	217.13	160.28	95.15	82.39	45.95	31.58	440.27	354.52	226.21	400.13	322.61	246.20	208.84	203.35	143.15	199.36	114.38	154.42	107.19	46.64	170.83	28.52	213.70	115.20	393.3
Normalized	6.39%	7.17%	13.48%	11.03%	12.77%	13.13%	17.79%	29.97%	34.62%	62.07%	90.31%	6.48%	8.04%	12.61%	7.13%	8.84%	11.58%	13.66%	14.03%	19.92%	14.31%	24.93%	18.47%	26.61%	61.15%	16.69%	10.0%	13.35%	24.76%	72.15%
Standard Deviation	0.1%	0.4%	0.1%	0.2%	0.2%	0.2%	0.1%	0.1%	0.1%	2.1%	1.5%	0.1%	0.3%	0%	0.8%	0.1%	0.1%	0%	0.1%	0.1%	0%	0.4%	0.9%	0.1%	0.3%	0.6%	1.9%	0%	3.3%	3.5%
Timed MAFFT Alignment - M.S.A (sec)	11.96	10.40	5.92	7.25	5.99	6.27	5.73	4.26	3.65	3.13	4.69	10.45	7.85	5.71	6.93	5.85	6.32	5.36	5.42	3.68	4.88	3.54	3.97		3.04	5.46	10.15	4.26	4.35	3.18
Normalized	25.42%	29.23%	51.35%	41.93%	50.75%	48.48%	53.05%	71.36%	83.29%	97.12%	64.82%	29.09%	38.73%	53.24%	43.87%	51.97%	48.1%	56.72%	56.09%	82.61%	62.3%	85.88%	76.57%		100%	55.68%	29.95%	71.36%	69.89%	95.6%
Standard Deviation	2%	7.5%	1.3%	0.4%	4.8%	5%	4.3%	3.1%	0.9%	4%	4.1%	3.7%	0.2%	6.4%	0.8%	6.8%	3.4%	3.9%	1%	4.7%	4.4%	3.1%	8.7%			3.8%	3.3%	0.6%	9.6%	7.2%
John The Ripper - Blowfish (Real C/S)	33737.1	37575.1	68026.1	37011.1	43093.1	45040.1	60022.1	10431.1	12445.1	23001.1	23552.1	30085.1	38059.1	44110.1	29920.1	40800.1	40046.1	47850.1	49100.1	69980.1	68000.1	11710.1	88800.1	12758.1	30104.1	82750.1	50248.1	60670.1	12094.1	37069.1
Normalized	6.71%	7.51%	13.58%	7.39%	8.74%	9.04%	11.98%	20.76%	24.77%	45.77%	46.87%	5.99%	7.68%	8.78%	5.95%	8.12%	8.05%	9.52%	9.72%	13.93%	13.53%	23.3%	17.67%	25.39%	59.91%	16.47%	10.0%	12.07%	24.07%	73.77%
Standard Deviation	0.3%	0.1%	0.6%	0.8%	0.3%	0.2%	3.9%	0.8%	0.1%	2%	0.5%			0.2%	2.7%	0.2%	0.1%	0.1%			3.2%	0%			0%		1.9%		0.3%	0.2%

Large Intel AMD Linux CPU Benchmark Comparison

Open FMM Nero2D - Total Time (sec)	28 0. 43	25 1. 40	11 9. 89	10 9. 59	94 .3 9	92 .0 9	90 .5 6	57 .4 8	50 .1 5	30 .1 6	26 .1 5	20 9. 51	16 5. 73	92 .6 1	14 1. 12	10 2. 83	10 0. 83	85 .7 1	83 .9 8	61 .0 4	98 .2 1	60 .1 3	76 .3 6	54 .9 8	27 .9 9	86 .8 4	21 .4 4	87 .0 4	11 5. 44	48 .7 8
Normalized	7.6 5%	8.5 3%	17. 88 %	19. 56 %	22. 71 %	23. 28 %	23. 67 %	37. 3%	42. 75 %	71. 09 %	81. 99 %	10. 23 %	12. 94 %	23. 15 %	15. 19 %	20. 85 %	21. 26 %	25. 01 %	25. 53 %	35. 12 %	21. 83 %	35. 66 %	28. 08 %	39 %	76. 6%	24. 69 %	10 0%	24. 63 %	18. 57 %	43. 95 %
Standard Deviation	0.5 %	0.5 %	1.8 %	0.3 %	0.1 %	0.3 %	1%	0.5 %	1.1 %	3.3 %	3%	0.9 %	0.4 %	0.7 %	2.2 %	1.1 %	0.2 %	0.4 %	0.7 %	1.2 %	0.6 %	0.7 %	0.5 %	1%	0.6 %	0.4 %	4.1 %	0.8 %	7.5 %	28. 1%
TTSIOD 3D Renderer - P.R.W.S.S.M (FPS)	67 .4 2	82 .9 3	14 2. 75	12 2. 95	13 4. 97	17 8. 17	21 1. 60	27 4. 64	31 2. 22	46 6. 13	44 7. 71	73 .5 5	12 1. 69	16 8. 27	12 9. 90	15 5. 77	15 8. 22	18 4. 72	18 7. 90	26 3. 63	20 4. 31	32 5. 51	27 7. 43	39 1. 67	69 0. 00	21 0. 84	73 3. 58	23 1. 07	18 4. 83	50 4. 82
Normalized	9.1 9%	11. 3%	19. 46 %	16. 76 %	18. 4%	24. 29 %	28. 84 %	37. 44 %	42. 56 %	63. 54 %	61. 03 %	10. 03 %	16. 59 %	22. 94 %	17. 71 %	21. 23 %	21. 57 %	25. 18 %	25. 61 %	35. 94 %	27. 85 %	44. 37 %	37. 82 %	53. 39 %	94. 06 %	28. 74 %	10 0%	31. 5%	25. 2%	68. 82 %
Standard Deviation	0.3 %	0.2 %	1%	0.7 %	0.2 %	0.8 %	1.4 %	0.1 %	0.2 %	0.2 %	0.2 %	0.9 %	0.3 %	0.6 %	2%	0.4 %	0.1 %	1.2 %	0.2 %	0.1 %	1.7 %	0.2 %	1.8 %	0.3 %	0.8 %	0.4 %	3.2 %	0.3 %	0.5 %	1.6 %
x264 - H.2.V.E (FPS)	15 .6 1	17 .5 8	30 .5 8	23 .4 7	27 .3 3	27 .6 0	34 .7 5	60 .9 0	71 .4 6	12 7. 00	10 8. 07	15 .4 7	23 .8 9	30 .4 2	19 .8 3	28 .1 6	28 .4 7	33 .1 1	33 .4 9	56 .1 1	37 .6 4	58 .0 1	49 .9 5	72 .9 6	12 5. 28	32 .7 5	10 7. 89	38 .4 3	55 .4 6	12 9. 66
Normalized	12. 04 %	13. 56 %	23. 58 %	18. 1%	21. 08 %	21. 29 %	26. 8%	46. 97 %	55. 11 %	97. 95 %	83. 35 %	11. 93 %	18. 43 %	23. 46 %	15. 29 %	21. 72 %	21. 96 %	25. 54 %	25. 83 %	43. 27 %	29. 03 %	44. 74 %	38. 52 %	56. 27 %	96. 62 %	25. 26 %	83. 21 %	29. 64 %	42. 77 %	10 0%
Standard Deviation	0.1 %	0%	0.2 %	3.4 %	0.2 %	0.1 %	3.3 %	3.3 %	0.5 %	0.6 %	0.7 %	0.3 %	0.2 %	3.3 %	18. 4%	3.4 %	0.4 %	0.2 %	0.1 %	0.2 %	0.1 %	0.6 %	0.6 %	0.5 %	0.4 %	0.7 %	2.5 %	0.1 %	1.7 %	0.4 %
7-Zip Compression - C.S.T (MIPS)	99 83	11 43 1	22 09 7	12 60 1	15 88 0	15 74 4	17 72 9	30 62 7	33 02 2	71 59 2	95 06 2	89 92	12 89 6	17 22 1	14 10 0	16 59 5	15 11 6	18 07 9	17 72 7	27 02 8	21 66 7	37 23 6	28 95 2	39 03 9	91 13 8	27 88 8	13 97 07	23 91 7	36 64 2	11 26 99
Normalized	7.1 5%	8.1 8%	15. 82 %	9.0 2%	11. 37 %	11. 27 %	12. 69 %	21. 92 %	23. 64 %	51. 24 %	68. 04 %	6.4 4%	9.2 3%	12. 33 %	10. 09 %	11. 88 %	10. 82 %	12. 94 %	12. 69 %	19. 35 %	15. 51 %	26. 65 %	20. 72 %	27. 94 %	65. 24 %	19. 96 %	10 0%	17. 12 %	26. 23 %	80. 67 %

Large Intel AMD Linux CPU Benchmark Comparison

Standard Deviation	1.5%	1.4%	0.3%		1.8%	0.5%	3.3%	0.6%	1.5%	0.2%	0.6%	1.2%	0.1%	0.2%	3.1%	0.9%	0.1%	0.1%	0.3%	0.2%	1.3%	1.4%	2.9%	1%	0.5%	1.5%	2.6%	0.6%	1.3%	0.7%
Timed Linux Kernel Compilation - Time To Compile	34	30	16	48	45	20	15	95	85	48	38	42	24	16	26	18	18	15	15	10	15	89	10	79	39	12	30	10	85	35
	2.81	0.92	7.85	4.57	8.00	1.48	3.49	.17	.22	.48	.39	6.59	6.44	7.81	4.97	0.98	1.66	8.43	7.58	8.02	0.12	.15	6.97	.10	.70	7.47	.41	6.83	.77	.61
Normalized	8.8%	10.11%	18.12%	6.2%	6.6%	15.09%	19.81%	31.95%	35.68%	62.73%	79.21%	7.1%	12.34%	18.12%	11.48%	16.8%	16.74%	19.19%	19.3%	28.15%	20.26%	34.11%	28.43%	38.45%	76.6%	23.86%	10.0%	28.47%	35.46%	85.4%
Standard Deviation	0.8%	1.1%	1.5%	0.2%	0.3%	1%	1.2%	2.2%	2%	3.2%	4.5%	0.5%	0.8%	1%	1.1%	1.2%	1.1%	1%	1%	1.7%	1%	2.3%	1%	7%	6.9%	2.3%	6.2%	1.3%	2.8%	7.6%
C-Ray - Total Time (sec)	61.75	55.09	28.01	24.95	21.50	21.07	19.48	11.23	9.70	5.16	3.47	54.28	41.97	24.65	39.00	27.40	26.90	22.83	22.25	15.51	24.57	13.97	18.69	12.78	5.46	19.69	3.14	16.52	29.48	9.94
Normalized	5.0%	5.7%	11.21%	12.59%	14.6%	14.9%	16.12%	27.96%	32.37%	60.85%	90.49%	5.7%	7.4%	12.74%	8.0%	11.46%	11.64%	13.75%	14.11%	20.17%	12.81%	22.48%	16.8%	24.57%	57.51%	15.95%	10.01%	19.65%	10.59%	31.59%
Standard Deviation	0%	0.1%	0%	0.1%	0%	0.7%	1.4%	0%	0.1%	0.1%	0.7%	0.2%	0.1%	0.1%	1.4%	0.1%	0.1%	0.2%	0.1%	0.1%	0.1%	0.2%	1.5%	0.1%	0.3%	0.1%	0.2%	0%	0.2%	0.2%
POV-Ray - Trace Time (sec)	27	24	13	18	15	15	10	64	56	30	21	26	20	13	22	14	14	12	12	87	13	70	87	60	32	19	25	56	87	29
	0.86	2.07	4.01	1.19	6.29	3.63	7.39	.40	.21	.30	.97	7.70	0.73	9.02	8.83	7.13	9.84	6.84	5.90	.94	1.09	.27	.94	.96	.75	5.83	.70	3.33	.10	.87
Normalized	8.1%	9.08%	16.39%	12.13%	14.06%	14.3%	20.46%	34.11%	39.09%	72.51%	10.0%	8.1%	10.95%	15.8%	9.6%	14.93%	14.66%	17.32%	17.45%	24.98%	16.76%	31.27%	24.98%	36.04%	67.08%	11.22%	85.49%	3.9%	25.22%	73.55%
Standard Deviation	0.2%	0.1%	0.3%	0.1%	0.2%	0.4%	0.3%	0%	0.1%	0.3%	0.6%	0.2%	0.1%	0.1%	2.5%	0.1%	0.1%	0.1%	0.9%	0.1%	0.2%	0.2%	0.1%	0.2%	0.6%	0.4%	17.3%	9%	0.3%	0.2%

Large Intel AMD Linux CPU Benchmark Comparison

Phoronix Test Suite

LAME MP3 Encoding - WAV To MP3 (sec)	54.17	48.37	47.03	39.68	35.78	37.13	35.19	36.59	33.50	33.77	42.77	38.94	31.08	33.30	37.36	33.25	33.51	30.99	28.77	30.01	32.54	36.18	27.15	26.07	28.50	39.90	32.33	42.12	43.09	43.57
Normalized	48.13%	53.9%	55.43%	65.7%	72.86%	70.21%	74.08%	71.25%	77.82%	77.24%	60.95%	66.95%	83.88%	78.29%	69.78%	78.41%	77.8%	84.23%	90.62%	86.87%	80.12%	72.06%	94.8%	100%	91.47%	65.34%	80.64%	61.89%	59.38%	59.83%
Standard Deviation	0.2%	0.1%	0.2%	0.1%	0.3%	0.2%	0.1%	0%	0.8%	0.9%	0%	3%	0.1%	0%	0.2%	0%	0%	0%	0.1%	0%	0.4%	0.2%	0.8%	1.3%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
OpenSSL - R.4.b.P (Signs /sec)	29	33	70		71	73	79	13	15	30	45	30	59	10	49	64	94	11	11	16	68	12	13	19	46	12	78	17	18	56
	9.73	9.70	5.20		0.53	4.20	3.80	80	93	21	67	8.97	7.13	43	9.23	5.10	2.73	43	48	71	9.30	03	13	80	95	85	58	4.83	61	69
Normalized	3.8%	4.3%	8.9%		9.0%	9.3%	10.1%	17.56%	20.27%	38.45%	58.12%	3.9%	7.6%	13.27%	6.3%	8.1%	12%	14.55%	14.61%	21.27%	8.7%	15.3%	16.71%	25.19%	59.75%	16.36%	10%	2.2%	23.68%	72.14%
Standard Deviation	1%	0.5%	0.1%		6.4%	1.1%	2.1%	0.1%	0.1%	0.2%	0.9%	0%	0.3%	2.2%	4%	0.2%	2.3%	0%	2.8%	0%	0.1%	0%	2.7%	0.1%	0.2%	0.3%	0.6%	1.4%	0.2%	0.4%
Java JMH - Throughput (Ops/s)	34.87	38.94	80.56	61.74	71.69	73.85	74.05	12.78	14.78	27.82	41.83	67.39	77.90	14.38	12.39	14.33	13.18	15.58	15.98	22.77	15.49	26.23	17.92	25.75	61.04	16.74	10.52	42.17	24.44	74.08
	99.39	75.46	43.74	72.45	16.7	1.84	93.1.4	81.36	76.5.25	79.5.0	15.1.4	81.19	64.1.9	23.5.4	11.72.8	76.20.6	35.54.0	91.08.2	62.24.8	16.30.1	43.74.2	63.33.2								
Normalized	3.3%	3.7%	7.6%	5.8%	6.8%	7.0%	7.0%	12.15%	14.05%	26.44%	39.75%	6.4%	7.4%	13.67%	11.78%	13.62%	12.53%	14.81%	15.19%	21.64%	14.73%	24.93%	17.03%	24.48%	58.01%	15.91%	10%	4.0%	23.23%	70.4%
Standard Deviation	1%	0%	6%	7%	1%	2%	4%					0%	1%														0%	1%		
PyBench - T.F.A.T.T (Milliseconds)	22.64	20.28	20.48	16.55	14.98	15.47	14.58	15.18	13.95	14.20	17.81	15.65	12.37	13.40	17.23	13.90	13.42	12.39	11.49	12.09	13.56	15.14	10.75	10.31	11.50	16.15	13.07	18.37	16.37	16.04
Normalized	45.54%	50.84%	50.34%	62.3%	68.83%	66.65%	70.71%	67.92%	73.91%	72.61%	57.89%	65.88%	83.35%	76.94%	59.84%	74.17%	76.83%	83.21%	89.73%	85.28%	76.03%	68.1%	95.91%	100%	89.65%	63.84%	78.88%	56.12%	62.98%	64.28%
Standard Deviation	0.3%	0.4%	0.1%	0.1%	0.3%	0.9%	0.2%	0.2%	0.4%	1.3%		0.3%	0.2%	0.1%	0.4%		0.1%	0.1%		0.4%	0.2%	0.2%	0.1%	0.2%	0.1%		0.3%	0.5%	0.9%	1.2%

Large Intel AMD Linux CPU Benchmark Comparison

NGINX Benchmark - S.W.P.S (Reqs/sec)	19113963	21359385	19628485	29145355	32633743	33621510	33450000	29820044	32961848	31190200	24020655	20657587	36311762	36761520	20676722	35672200	34800423	39234863	40534853	40375337	36454527	28476000	45476000	44916000	42841000	31670950	30951755	18175000	20161000	25555000
Normalized	42.03%	46.97%	43.16%	64.09%	71.76%	73.93%	73.55%	65.57%	72.49%	68.6%	52.82%	45.42%	80.83%	79.85%	45.65%	78.44%	76.52%	86.27%	89.02%	89.13%	79.98%	62.58%	100.0%	98.77%	94.21%	69.64%	68.08%	39.97%	44.33%	56.2%
Standard Deviation	0.7%	1.1%	0.5%	1.7%	0.2%			1.2%	0.1%	0.5%	0.8%	3%	0.4%	0.6%	0.2%	0.2%	0.5%	0.8%	1.6%	0.5%	0.4%	2.4%	1.1%	3.3%	2%	0.3%	0.9%	7.6%	0.8%	1%
NAS Parallel Benchmarks - Performance / Cost - EP.C (Mop/s/Doll																												7310	4593	6927
Normalized																												10.55%	66.31%	100%

Large Intel AMD Linux CPU Benchmark Comparison

Rodinia - Performance / Cost - OpenMP LavaMD (sec x Dollar	14.96	8.06	3.16
Normalized	21.12%	39.21%	100%
John The Ripper - Performance / Cost - Blowfish (Real C/S/Dollar)	3033.50	3023.50	2851.46
Normalized	100%	99.67%	94%

Large Intel AMD Linux CPU Benchmark Comparison

Open FMM Nero2D - Performance / Cost - Total Time (sec x	2.61	8.08	4.88
Normalized	100%	32.3%	53.48
TTSIOD 3D Renderer - Performance / Cost - P.R.W.S.S.M (FPS/Dollar	2310	9242	1682
Normalized	100%	39.99	72.82
x264 - Performance / Cost - H.2.V.E (FPS/Dollar	3843	5546	1296
Normalized	29.64%	42.77%	100%

Large Intel AMD Linux CPU Benchmark Comparison

7-Zip Compression - Performance / Cost - C.S.T (MIPS/Dollar	23911	18329	16098
Normalized	100%	76.66%	67.32%
Timed Linux Kernel Compilation - Performance / Cost - Time To Compile (sec	4.27	5.15	2.85
Normalized	66.74%	55.34%	100%
C-Ray - Performance / Cost - Total Time (sec x	0.17	0.59	0.20
Normalized	100%	28.81%	85%

POV-Ray - Performance / Cost - Trace Time (sec x Dollar	10 1.40	5.23	2.09
Normalized	2.06%	39.96%	100%
LAME MP3 Encoding - Performance / Cost - WAV To MP3 (sec x	0.42	1.32	3.92
Normalized	100%	31.82%	10.71%
Open SSL - Performance / Cost - R.4.b.P (Signs/sec/Dollar)	17 48 3	18 60 93	14 17 28
Normalized	9.39%	100%	76.16%

Large Intel AMD Linux CPU Benchmark Comparison

Java JMH - Performance / Cost - Throughput (Ops/s/Dollar)	**10 54 35 77 59 68**	27 16 38 25 55 99	**27 43 93 82 79 78**
Normalized	38.42%	99%	100%
PyBench - Performance / Cost - T.F.A.T.T (Milliseconds x Dollar	**18.37**	32.74	**11 2. 28**
Normalized	100%	56.11%	16.36%

Large Intel AMD Linux CPU Benchmark Comparison

NGINX Benchmark - Performance / Cost - S.W.P.S (Reqs/sec/Dollar)	**45 43 81**	**28 80 10**	**15 97 20**
Normalized	100%	63.39%	35.15%
PyBench - T.F.A.T.T (Milliseconds)	**20 44**	**17 92**	**17 77**
Normalized	86.94%	99.16%	100%
Standard Deviation	0%	0.4%	0.4%

Large Intel AMD Linux CPU Benchmark Comparison

PyBench - Performance / Cost - T.F.A.T (Milliseconds x Dollar	**20.44**	53.76	**142.16**
Normalized	100%	38.02%	14.38%
Scikit-Learn (sec)	**179.03**	**211.86**	204.55
Normalized	100%	84.5%	87.52%
Standard Deviation	0.1%	0.1%	0%
Scikit-Learn - Performance / Cost - (sec x Dollar	**10.74**	29.66	**79.77**
Normalized	100%	36.21%	13.46%
AOBench - 2048 x 2048 - Total Time (sec)	**62.18**	65.48	**66.21**
Normalized	100%	94.96%	93.91%

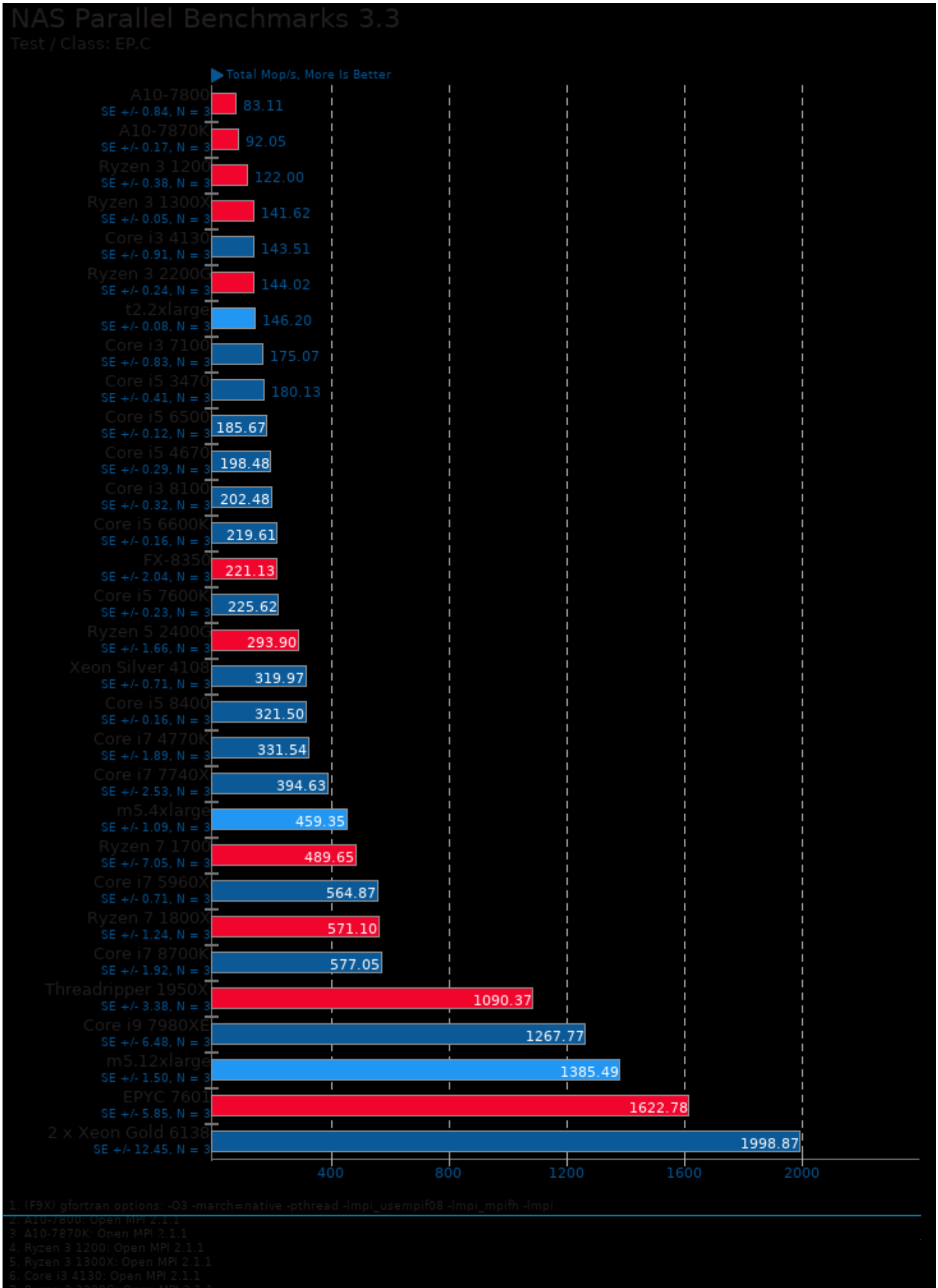
Standard Deviation	0.1 %	0.4 %	2.8 %
AOBench - Performance / Cost - 2048 x 2048 - Total Time (sec x	1.24	2.62	8.61
Normalized	10 0%	47.33 %	14.4%
Crafty - Elapsed Time (Node	58 24 04 5	60 23 99 2	63 72 59 6
Normalized	91.39 %	94.53 %	10 0%
Standard Deviation	0.1 %	0.2 %	0.1 %

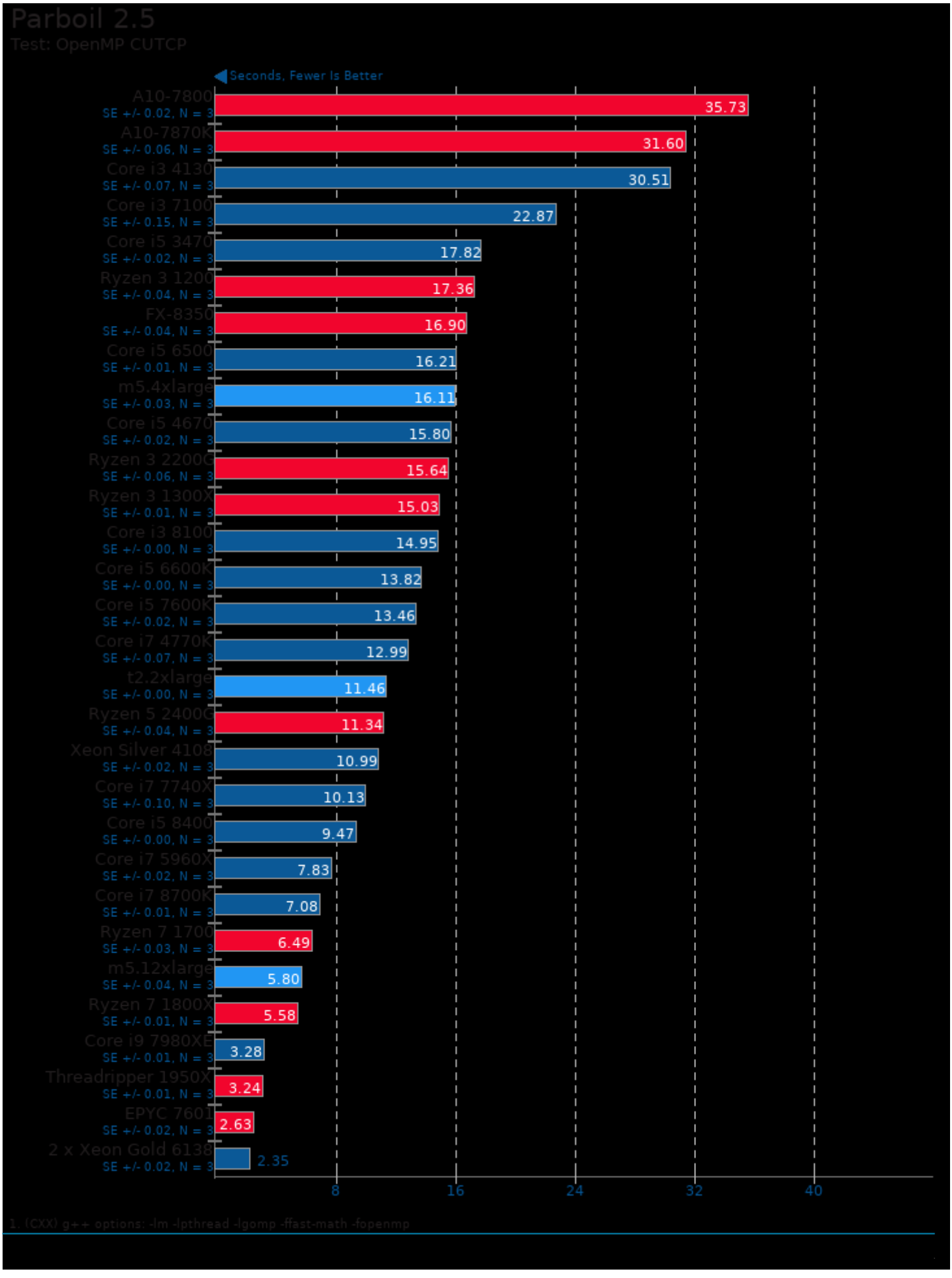
Large Intel AMD Linux CPU Benchmark Comparison

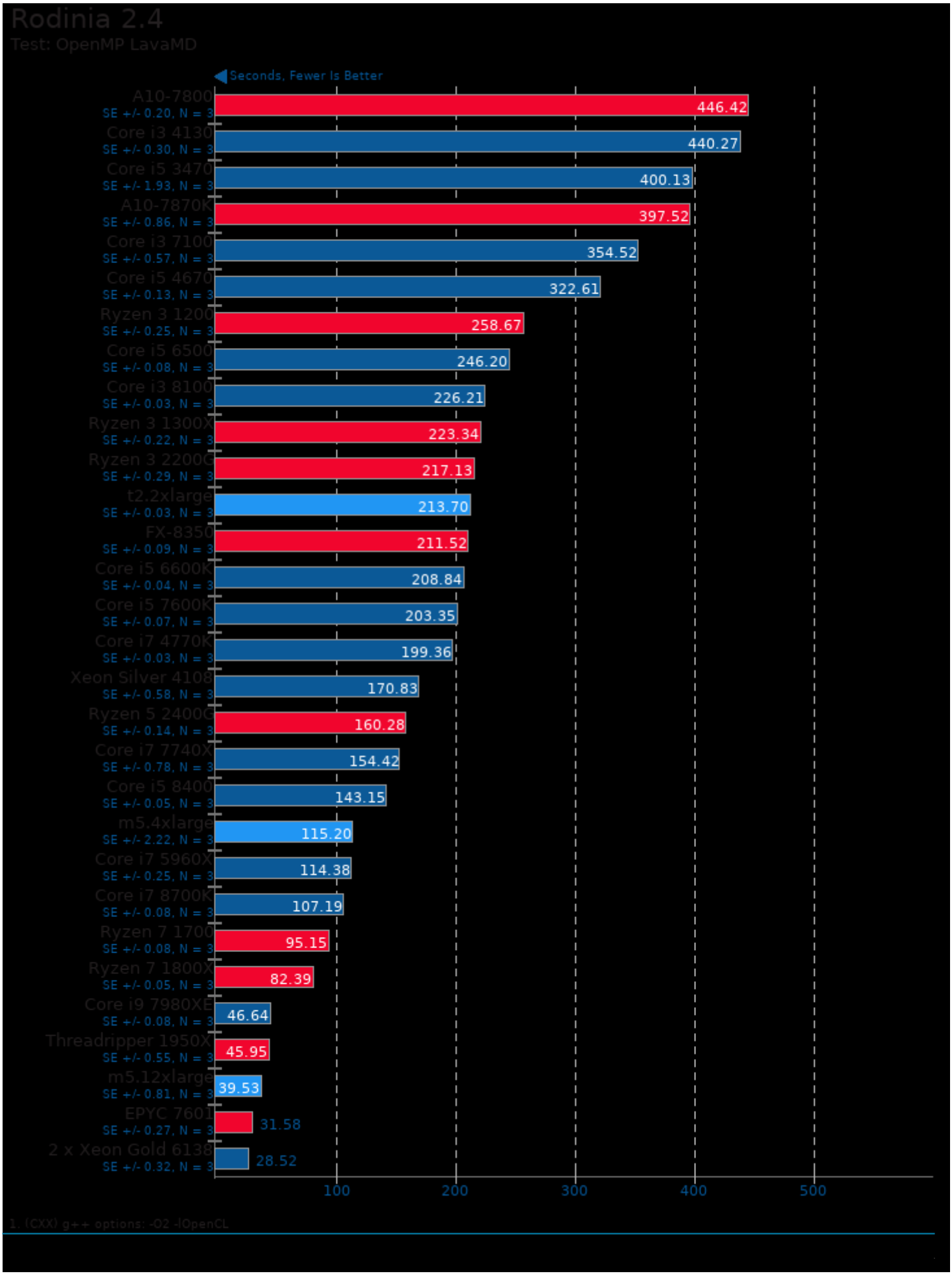
Crafty - Performance / Cost - Elapsed Time (Nodes/s/Do	58	30	10
	24	11	62
	04	99	09
	50	60	93
	0	0	3
Normalized	10	51.	18.
	0%	72	24
Parboil - Performance / Cost - Open MP CUTCP (sec x Dollar		0.	0.
		16	06
Normalized		37.	10
		5%	0%
Cost To Run Tests - C.P.P.H (Cost / Price/		0.	2.
		89	00
Normalized		10	44.
		0%	5%

Timed MAFFT Alignment - Performance / Cost - M.S.A (sec x Dollar)	0.03

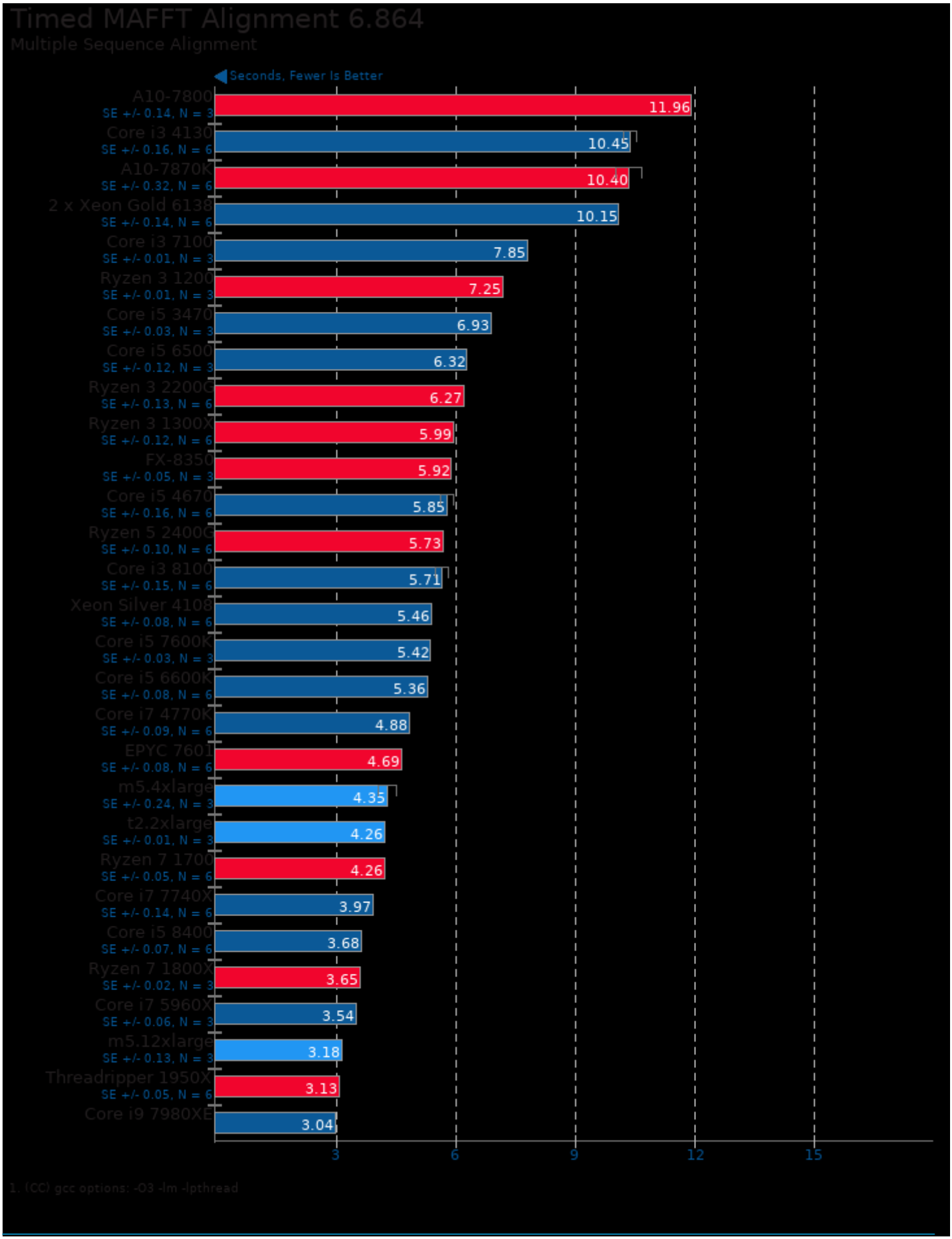
Large Intel AMD Linux CPU Benchmark Comparison

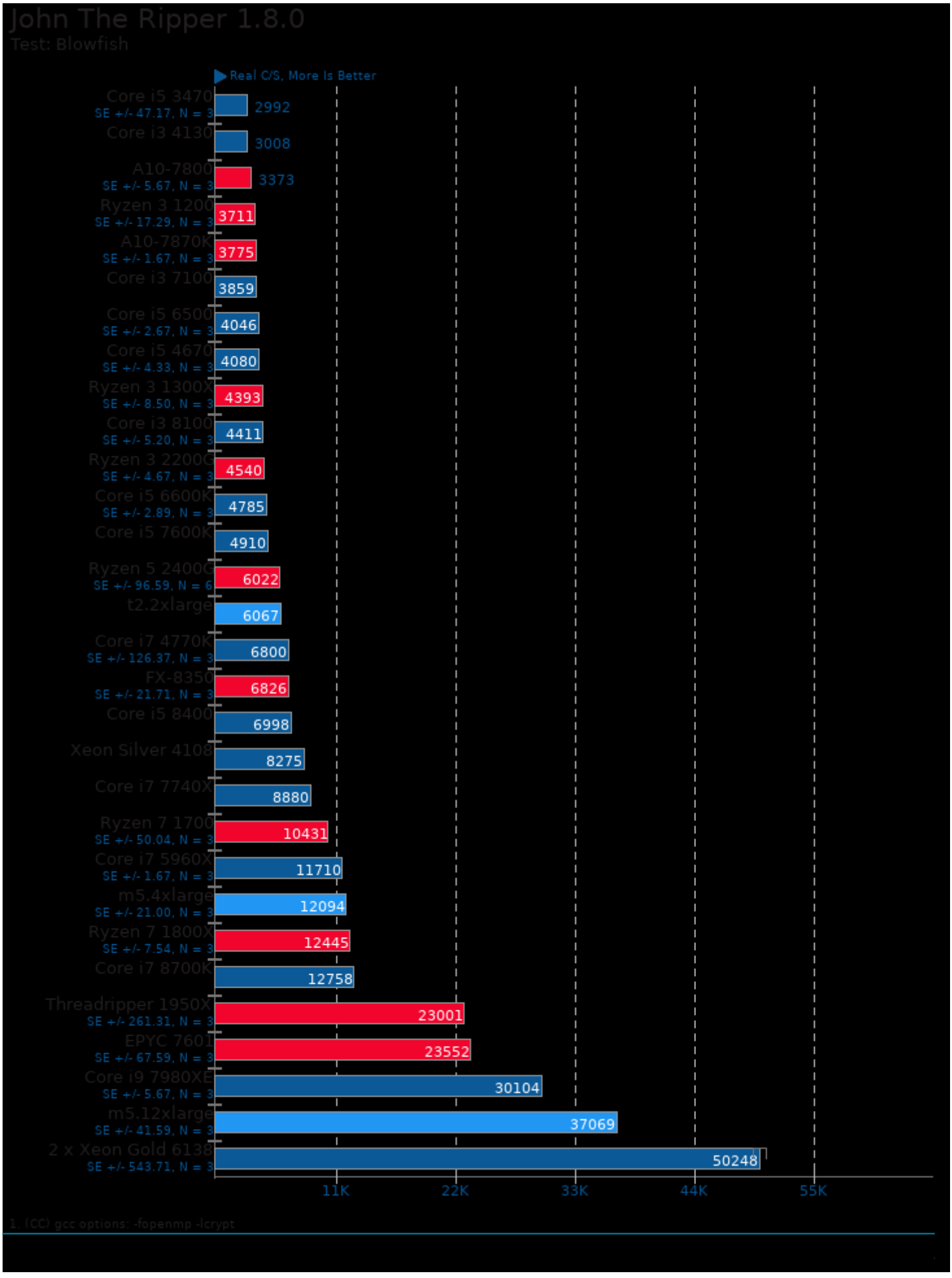

NAS Parallel Benchmarks 3.3
Test / Class: EP.C
Total Mop/s, More Is Better
A10-7800
SE +/- 0.84, N = 3
83.11
A10-7870K
SE +/- 0.17, N = 3
92.05
Ryzen 3 1200
SE +/- 0.38, N = 3
122.00
Ryzen 3 1300X
SE +/- 0.05, N = 3
141.62
Core i3 4130
SE +/- 0.91, N = 3
143.51
Ryzen 3 2200G
SE +/- 0.24, N = 3
144.02
t2.2xlarge
SE +/- 0.08, N = 3
146.20
Core i3 7100
SE +/- 0.83, N = 3
175.07
Core i5 3470
SE +/- 0.41, N = 3
180.13
Core i5 6500
SE +/- 0.12, N = 3
185.67
Core i5 4670
SE +/- 0.29, N = 3
198.48
Core i3 8100
SE +/- 0.32, N = 3
202.48
Core i5 6600K
SE +/- 0.16, N = 3
219.61
FX-8350
SE +/- 2.04, N = 3
221.13
Core i5 7600K
SE +/- 0.23, N = 3
225.62
Ryzen 5 2400G
SE +/- 1.66, N = 3
293.90
Xeon Silver 4108
SE +/- 0.71, N = 3
319.97
Core i5 8400
SE +/- 0.16, N = 3
321.50
Core i7 4770K
SE +/- 1.89, N = 3
331.54
Core i7 7740X
SE +/- 2.53, N = 3
394.63
m5.4xlarge
SE +/- 1.09, N = 3
459.35
Ryzen 7 1700
SE +/- 7.05, N = 3
489.65
Core i7 5960X
SE +/- 0.71, N = 3
564.87
Ryzen 7 1800X
SE +/- 1.24, N = 3
571.10
Core i7 8700K
SE +/- 1.92, N = 3
577.05
Threadripper 1950X
SE +/- 3.38, N = 3
1090.37
Core i9 7980XE
SE +/- 6.48, N = 3
1267.77
m5.12xlarge
SE +/- 1.50, N = 3
1385.49
EPYC 7601
SE +/- 5.85, N = 3
1622.78
2 x Xeon Gold 6138
SE +/- 12.45, N = 3
1998.87
400
800
1200
1600
2000
1. (F9X) gfortran options: -O3 -march=native -pthread -lmpi_usempif08 -lmpi_mpifh -lmpi
2. A10-7800: Open MPI 2.1.1
3. A10-7870K: Open MPI 2.1.1
4. Ryzen 3 1200: Open MPI 2.1.1
5. Ryzen 3 1300X: Open MPI 2.1.1
6. Core i3 4130: Open MPI 2.1.1

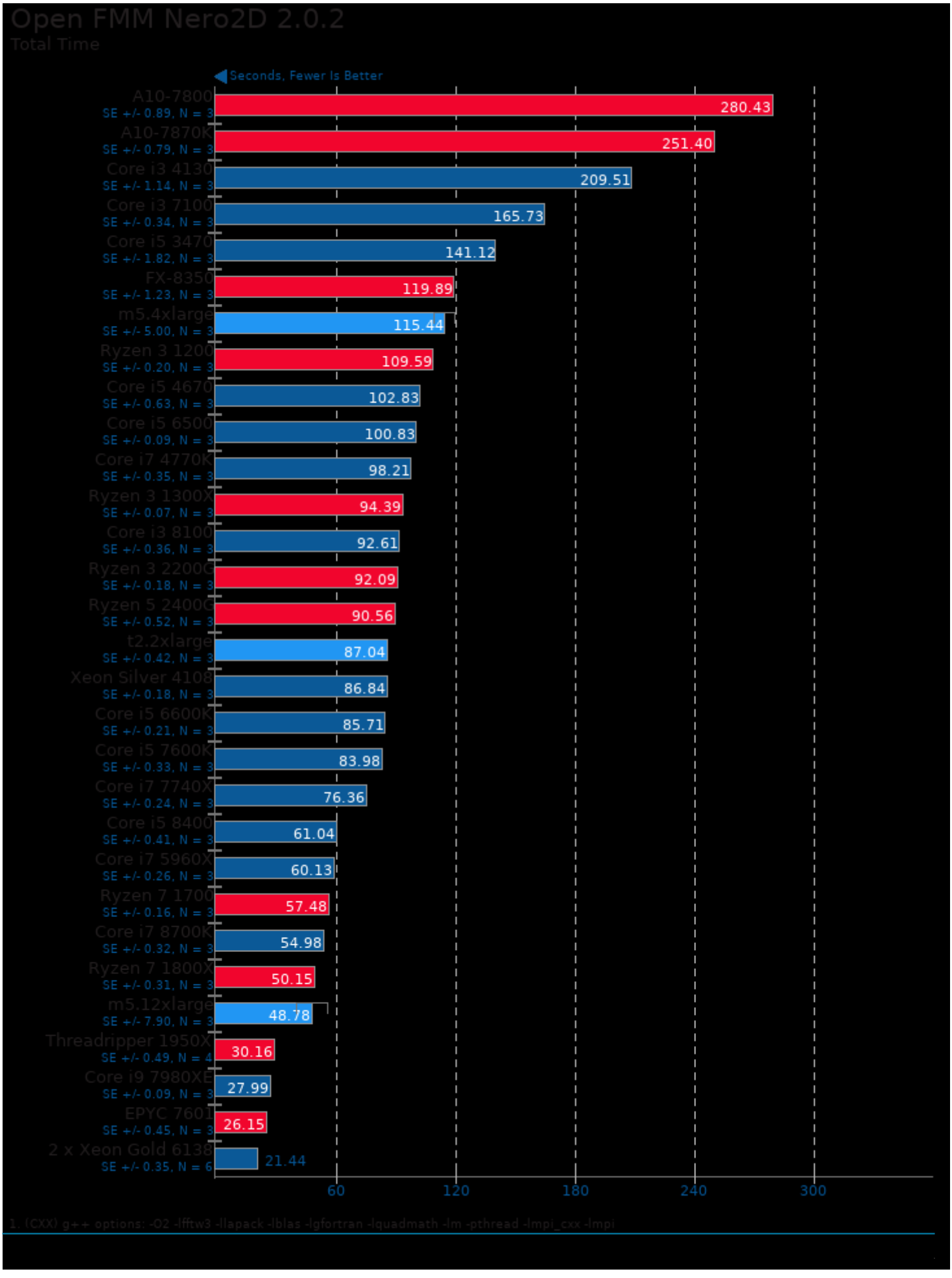

Parboil 2.5
Test: OpenMP CUTCP
Seconds, Fewer Is Better
A10-7800
SE +/- 0.02, N = 3
35.73
A10-7870K
SE +/- 0.06, N = 3
31.60
Core i3 4130
SE +/- 0.07, N = 3
30.51
Core i3 7100
SE +/- 0.15, N = 3
22.87
Core i5 3470
SE +/- 0.02, N = 3
17.82
Ryzen 3 1200
SE +/- 0.04, N = 3
17.36
FX-8350
SE +/- 0.04, N = 3
16.90
Core i5 6500
SE +/- 0.01, N = 3
16.21
m5.4xlarge
SE +/- 0.03, N = 3
16.11
Core i5 4670
SE +/- 0.02, N = 3
15.80
Ryzen 3 2200G
SE +/- 0.06, N = 3
15.64
Ryzen 3 1300X
SE +/- 0.01, N = 3
15.03
Core i3 8100
SE +/- 0.00, N = 3
14.95
Core i5 6600K
SE +/- 0.00, N = 3
13.82
Core i5 7600K
SE +/- 0.02, N = 3
13.46
Core i7 4770K
SE +/- 0.07, N = 3
12.99
t2.2xlarge
SE +/- 0.00, N = 3
11.46
Ryzen 5 2400G
SE +/- 0.04, N = 3
11.34
Xeon Silver 4108
SE +/- 0.02, N = 3
10.99
Core i7 7740X
SE +/- 0.10, N = 3
10.13
Core i5 8400
SE +/- 0.00, N = 3
9.47
Core i7 5960X
SE +/- 0.02, N = 3
7.83
Core i7 8700K
SE +/- 0.01, N = 3
7.08
Ryzen 7 1700
SE +/- 0.03, N = 3
6.49
m5.12xlarge
SE +/- 0.04, N = 3
5.80
Ryzen 7 1800X
SE +/- 0.01, N = 3
5.58
Core i9 7980XE
SE +/- 0.01, N = 3
3.28
Threadripper 1950X
SE +/- 0.01, N = 3
3.24
EPYC 7601
SE +/- 0.02, N = 3
2.63
2 x Xeon Gold 6138
SE +/- 0.02, N = 3
2.35
8
16
24
32
40
1. (CXX) g++ options: -lm -lpthread -lgomp -ffast-math -fopenmp

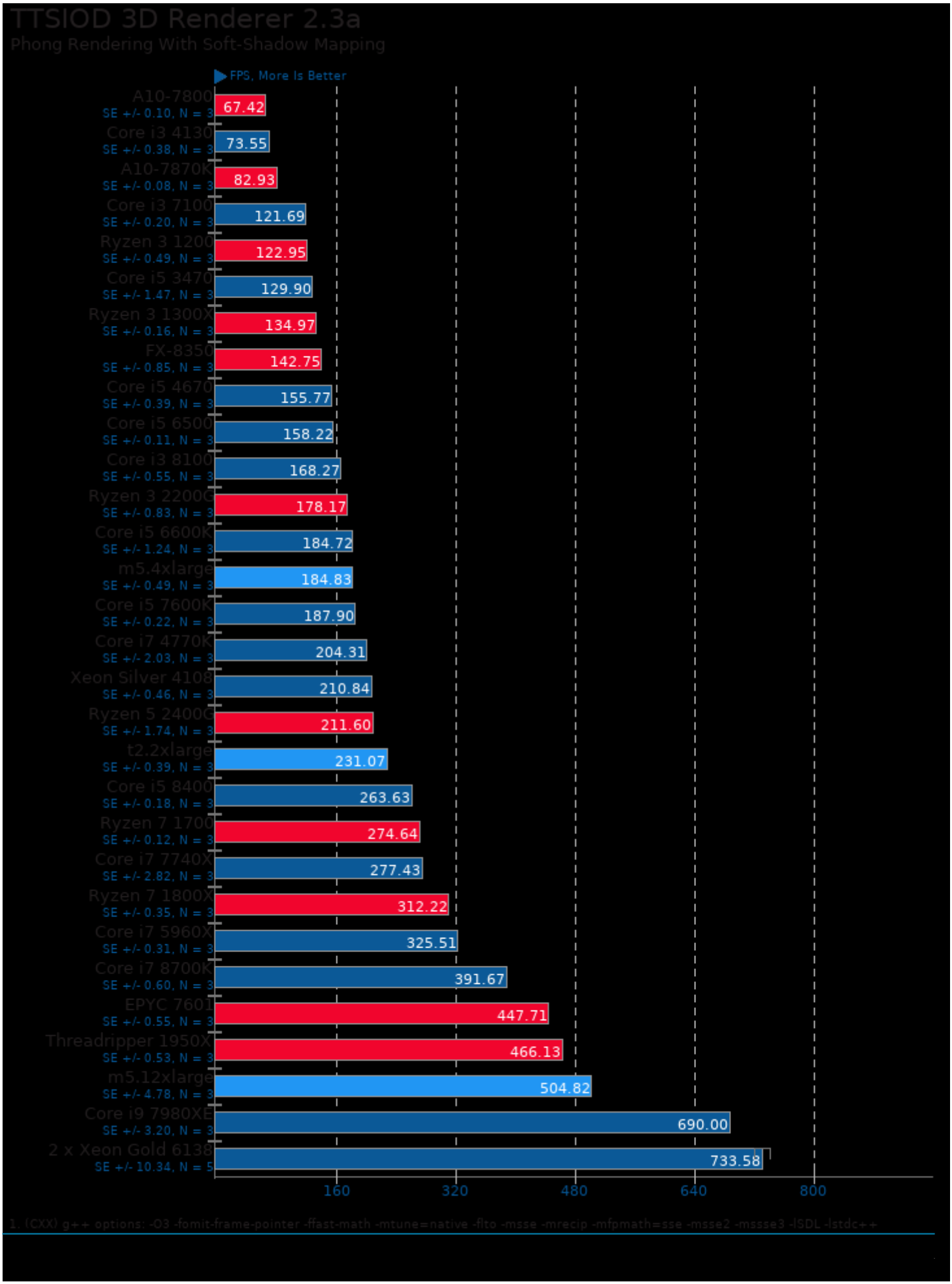

Rodinia 2.4
Test: OpenMP LavaMD
Seconds, Fewer Is Better
A10-7800
SE +/- 0.20, N = 3
446.42
Core i3 4130
SE +/- 0.30, N = 3
440.27
Core i5 3470
SE +/- 1.93, N = 3
400.13
A10-7870K
SE +/- 0.86, N = 3
397.52
Core i3 7100
SE +/- 0.57, N = 3
354.52
Core i5 4670
SE +/- 0.13, N = 3
322.61
Ryzen 3 1200
SE +/- 0.25, N = 3
258.67
Core i5 6500
SE +/- 0.08, N = 3
246.20
Core i3 8100
SE +/- 0.03, N = 3
226.21
Ryzen 3 1300X
SE +/- 0.22, N = 3
223.34
Ryzen 3 2200G
SE +/- 0.29, N = 3
217.13
t2.2xlarge
SE +/- 0.03, N = 3
213.70
FX-8350
SE +/- 0.09, N = 3
211.52
Core i5 6600K
SE +/- 0.04, N = 3
208.84
Core i5 7600K
SE +/- 0.07, N = 3
203.35
Core i7 4770K
SE +/- 0.03, N = 3
199.36
Xeon Silver 4108
SE +/- 0.58, N = 3
170.83
Ryzen 5 2400G
SE +/- 0.14, N = 3
160.28
Core i7 7740X
SE +/- 0.78, N = 3
154.42
Core i5 8400
SE +/- 0.05, N = 3
143.15
m5.4xlarge
SE +/- 2.22, N = 3
115.20
Core i7 5960X
SE +/- 0.25, N = 3
114.38
Core i7 8700K
SE +/- 0.08, N = 3
107.19
Ryzen 7 1700
SE +/- 0.08, N = 3
95.15
Ryzen 7 1800X
SE +/- 0.05, N = 3
82.39
Core i9 7980XE
SE +/- 0.08, N = 3
46.64
Threadripper 1950X
SE +/- 0.55, N = 3
45.95
m5.12xlarge
SE +/- 0.81, N = 3
39.53
EPYC 7601
SE +/- 0.27, N = 3
31.58
2 x Xeon Gold 6138
SE +/- 0.32, N = 3
28.52
100
200
300
400
500
1. (CXX) g++ options: -O2 -lOpenCL

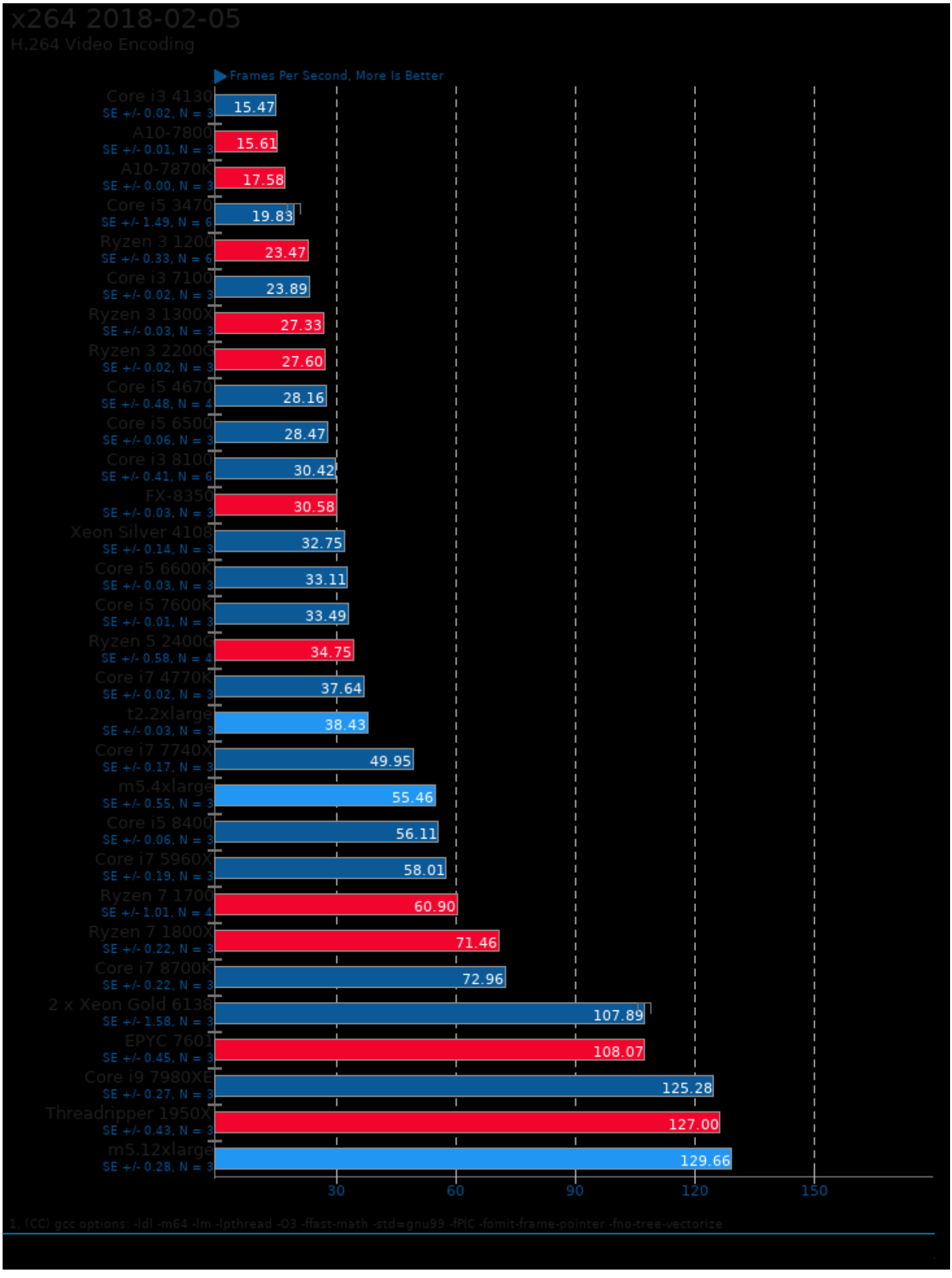
Large Intel AMD Linux CPU Benchmark Comparison

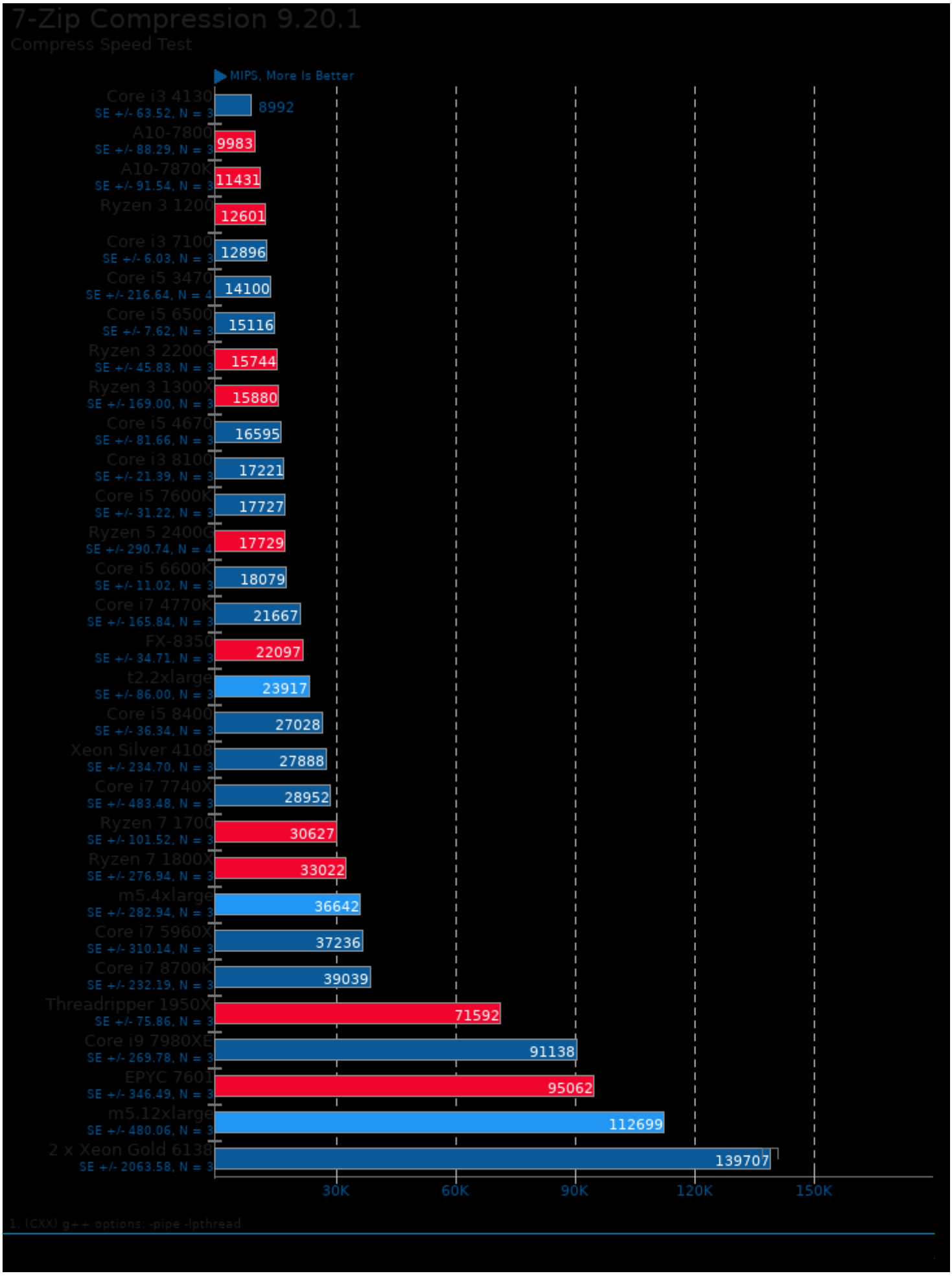



John The Ripper 1.8.0
Test: Blowfish
Real C/S, More Is Better
Core i5 3470
SE +/- 47.17, N = 3
2992
Core i3 4130
3008
A10-7800
SE +/- 5.67, N = 3
3373
Ryzen 3 1200
SE +/- 17.29, N = 3
3711
A10-7870K
SE +/- 1.67, N = 3
3775
Core i3 7100
3859
Core i5 6500
SE +/- 2.67, N = 3
4046
Core i5 4670
SE +/- 4.33, N = 3
4080
Ryzen 3 1300X
SE +/- 8.50, N = 3
4393
Core i3 8100
SE +/- 5.20, N = 3
4411
Ryzen 3 2200G
SE +/- 4.67, N = 3
4540
Core i5 6600K
SE +/- 2.89, N = 3
4785
Core i5 7600K
4910
Ryzen 5 2400G
SE +/- 96.59, N = 6
6022
t2.2xlarge
6067
Core i7 4770K
SE +/- 126.37, N = 3
6800
FX-8350
SE +/- 21.71, N = 3
6826
Core i5 8400
6998
Xeon Silver 4108
8275
Core i7 7740X
8880
Ryzen 7 1700
SE +/- 50.04, N = 3
10431
Core i7 5960X
SE +/- 1.67, N = 3
11710
m5.4xlarge
SE +/- 21.00, N = 3
12094
Ryzen 7 1800X
SE +/- 7.54, N = 3
12445
Core i7 8700K
12758
Threadripper 1950X
SE +/- 261.31, N = 3
23001
EPYC 7601
SE +/- 67.59, N = 3
23552
Core i9 7980XE
SE +/- 5.67, N = 3
30104
m5.12xlarge
SE +/- 41.59, N = 3
37069
2 x Xeon Gold 6138
SE +/- 543.71, N = 3
50248
11K
22K
33K
44K
55K
1. (CC) gcc options: -fopenmp -lcrypt

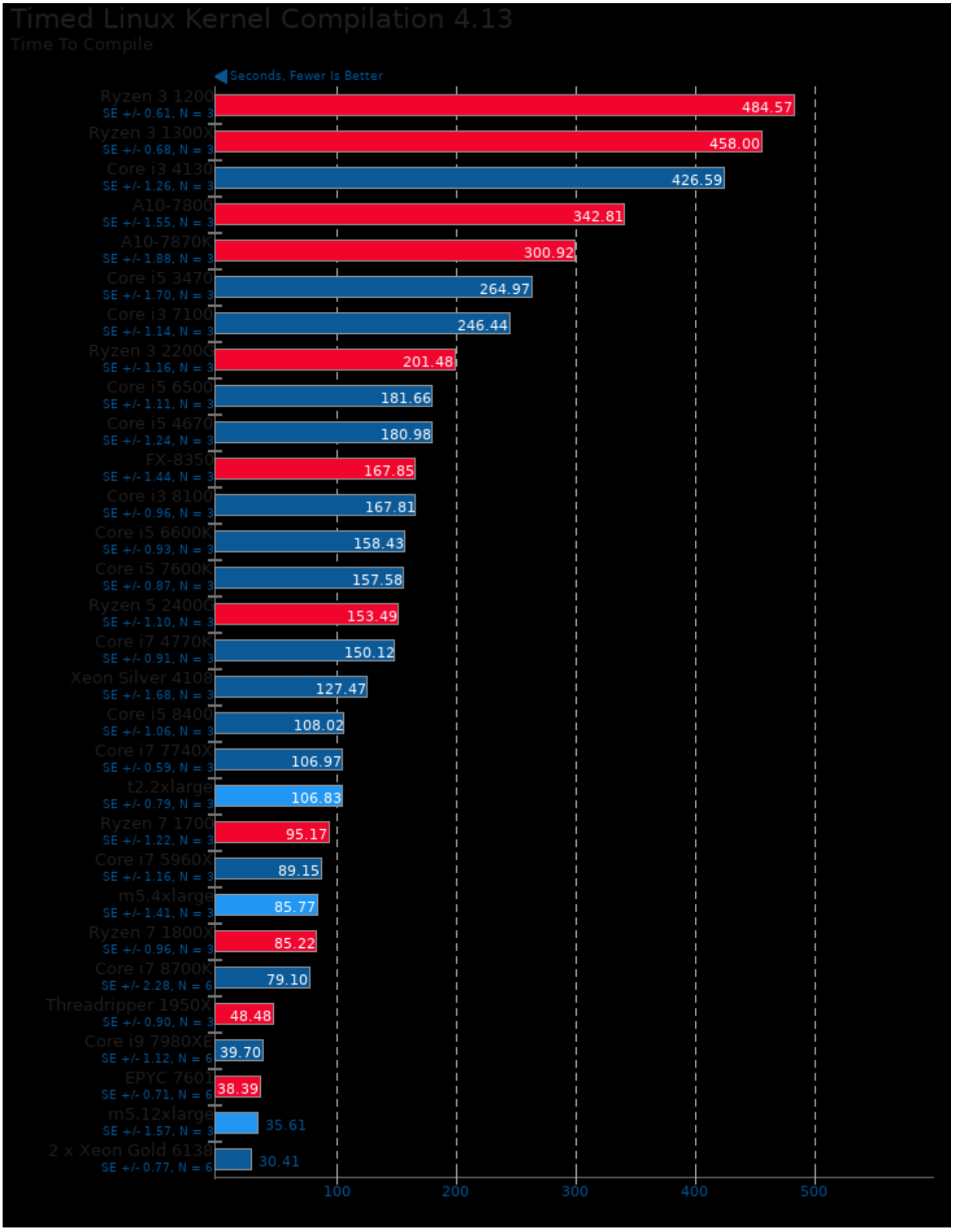

Open FMM Nero2D 2.0.2
Total Time
Seconds, Fewer Is Better
A10-7800
SE +/- 0.89, N = 3
280.43
A10-7870K
SE +/- 0.79, N = 3
251.40
Core i3 4130
SE +/- 1.14, N = 3
209.51
Core i3 7100
SE +/- 0.34, N = 3
165.73
Core i5 3470
SE +/- 1.82, N = 3
141.12
FX-8350
SE +/- 1.23, N = 3
119.89
m5.4xlarge
SE +/- 5.00, N = 3
115.44
Ryzen 3 1200
SE +/- 0.20, N = 3
109.59
Core i5 4670
SE +/- 0.63, N = 3
102.83
Core i5 6500
SE +/- 0.09, N = 3
100.83
Core i7 4770K
SE +/- 0.35, N = 3
98.21
Ryzen 3 1300X
SE +/- 0.07, N = 3
94.39
Core i3 8100
SE +/- 0.36, N = 3
92.61
Ryzen 3 2200G
SE +/- 0.18, N = 3
92.09
Ryzen 5 2400G
SE +/- 0.52, N = 3
90.56
t2.2xlarge
SE +/- 0.42, N = 3
87.04
Xeon Silver 4108
SE +/- 0.18, N = 3
86.84
Core i5 6600K
SE +/- 0.21, N = 3
85.71
Core i5 7600K
SE +/- 0.33, N = 3
83.98
Core i7 7740X
SE +/- 0.24, N = 3
76.36
Core i5 8400
SE +/- 0.41, N = 3
61.04
Core i7 5960X
SE +/- 0.26, N = 3
60.13
Ryzen 7 1700
SE +/- 0.16, N = 3
57.48
Core i7 8700K
SE +/- 0.32, N = 3
54.98
Ryzen 7 1800X
SE +/- 0.31, N = 3
50.15
m5.12xlarge
SE +/- 7.90, N = 3
48.78
Threadripper 1950X
SE +/- 0.49, N = 4
30.16
Core i9 7980XE
SE +/- 0.09, N = 3
27.99
EPYC 7601
SE +/- 0.45, N = 3
26.15
2 x Xeon Gold 6138
SE +/- 0.35, N = 6
21.44
60
120
180
240
300
1. (CXX) g++ options: -O2 -lfftw3 -llapack -lblas -lgfortran -lquadmath -lm -pthread -lmpi_cxx -lmpi

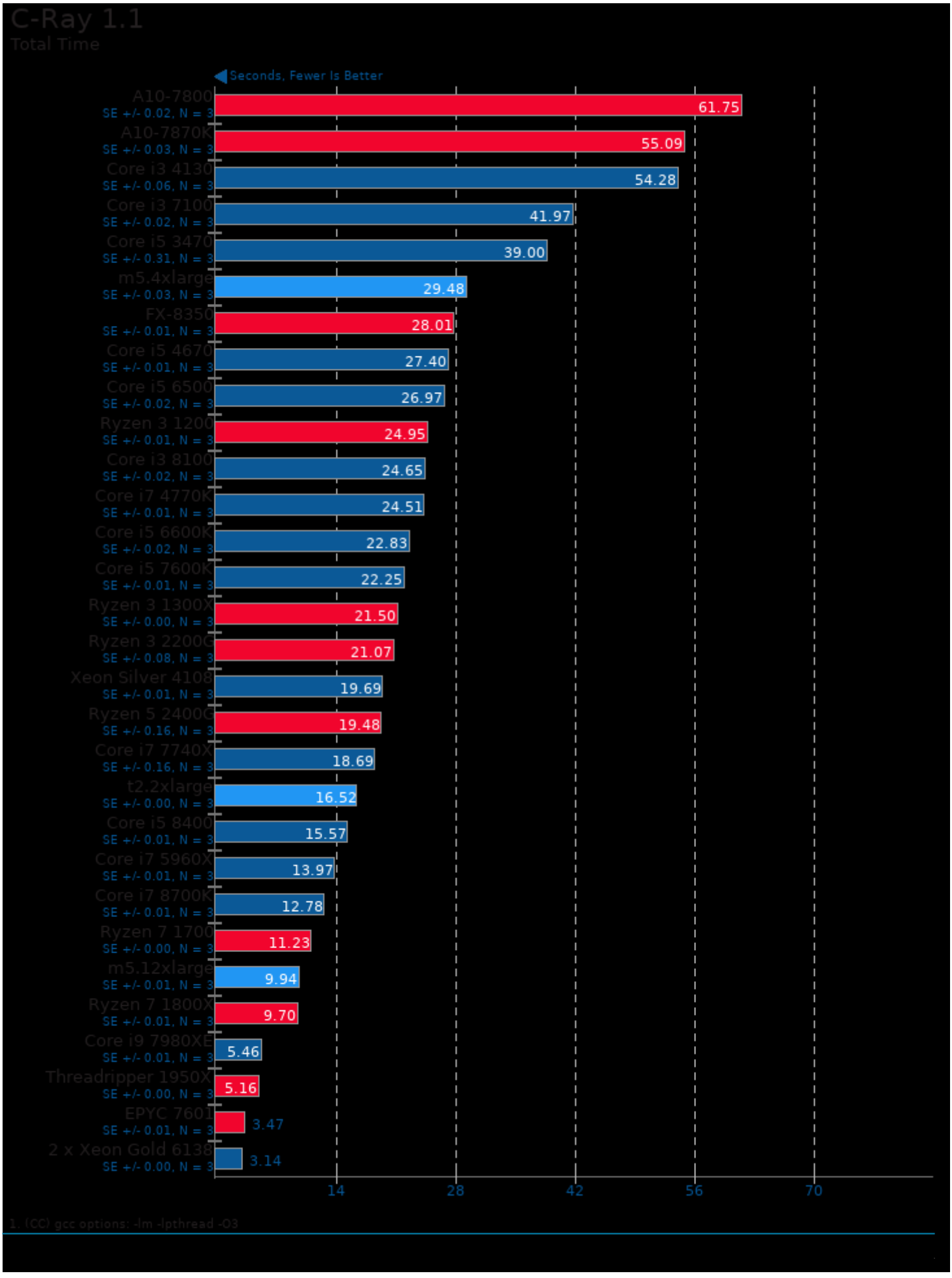

TTSIOD 3D Renderer 2.3a
Phong Rendering With Soft-Shadow Mapping
FPS, More Is Better
A10-7800
SE +/- 0.10, N = 3
67.42
Core i3 4130
SE +/- 0.38, N = 3
73.55
A10-7870K
SE +/- 0.08, N = 3
82.93
Core i3 7100
SE +/- 0.20, N = 3
121.69
Ryzen 3 1200
SE +/- 0.49, N = 3
122.95
Core i5 3470
SE +/- 1.47, N = 3
129.90
Ryzen 3 1300X
SE +/- 0.16, N = 3
134.97
FX-8350
SE +/- 0.85, N = 3
142.75
Core i5 4670
SE +/- 0.39, N = 3
155.77
Core i5 6500
SE +/- 0.11, N = 3
158.22
Core i3 8100
SE +/- 0.55, N = 3
168.27
Ryzen 3 2200G
SE +/- 0.83, N = 3
178.17
Core i5 6600K
SE +/- 1.24, N = 3
184.72
m5.4xlarge
SE +/- 0.49, N = 3
184.83
Core i5 7600K
SE +/- 0.22, N = 3
187.90
Core i7 4770K
SE +/- 2.03, N = 3
204.31
Xeon Silver 4108
SE +/- 0.46, N = 3
210.84
Ryzen 5 2400G
SE +/- 1.74, N = 3
211.60
t2.2xlarge
SE +/- 0.39, N = 3
231.07
Core i5 8400
SE +/- 0.18, N = 3
263.63
Ryzen 7 1700
SE +/- 0.12, N = 3
274.64
Core i7 7740X
SE +/- 2.82, N = 3
277.43
Ryzen 7 1800X
SE +/- 0.35, N = 3
312.22
Core i7 5960X
SE +/- 0.31, N = 3
325.51
Core i7 8700K
SE +/- 0.60, N = 3
391.67
EPYC 7601
SE +/- 0.55, N = 3
447.71
Threadripper 1950X
SE +/- 0.53, N = 3
466.13
m5.12xlarge
SE +/- 4.78, N = 3
504.82
Core i9 7980XE
SE +/- 3.20, N = 3
690.00
2 x Xeon Gold 6138
SE +/- 10.34, N = 5
733.58
160
320
480
640
800
1. (CXX) g++ options: -O3 -fomit-frame-pointer -ffast-math -mtune=native -flto -msse -mrecip -mfpmath=sse -msse2 -mssse3 -lSDL -lstdc++

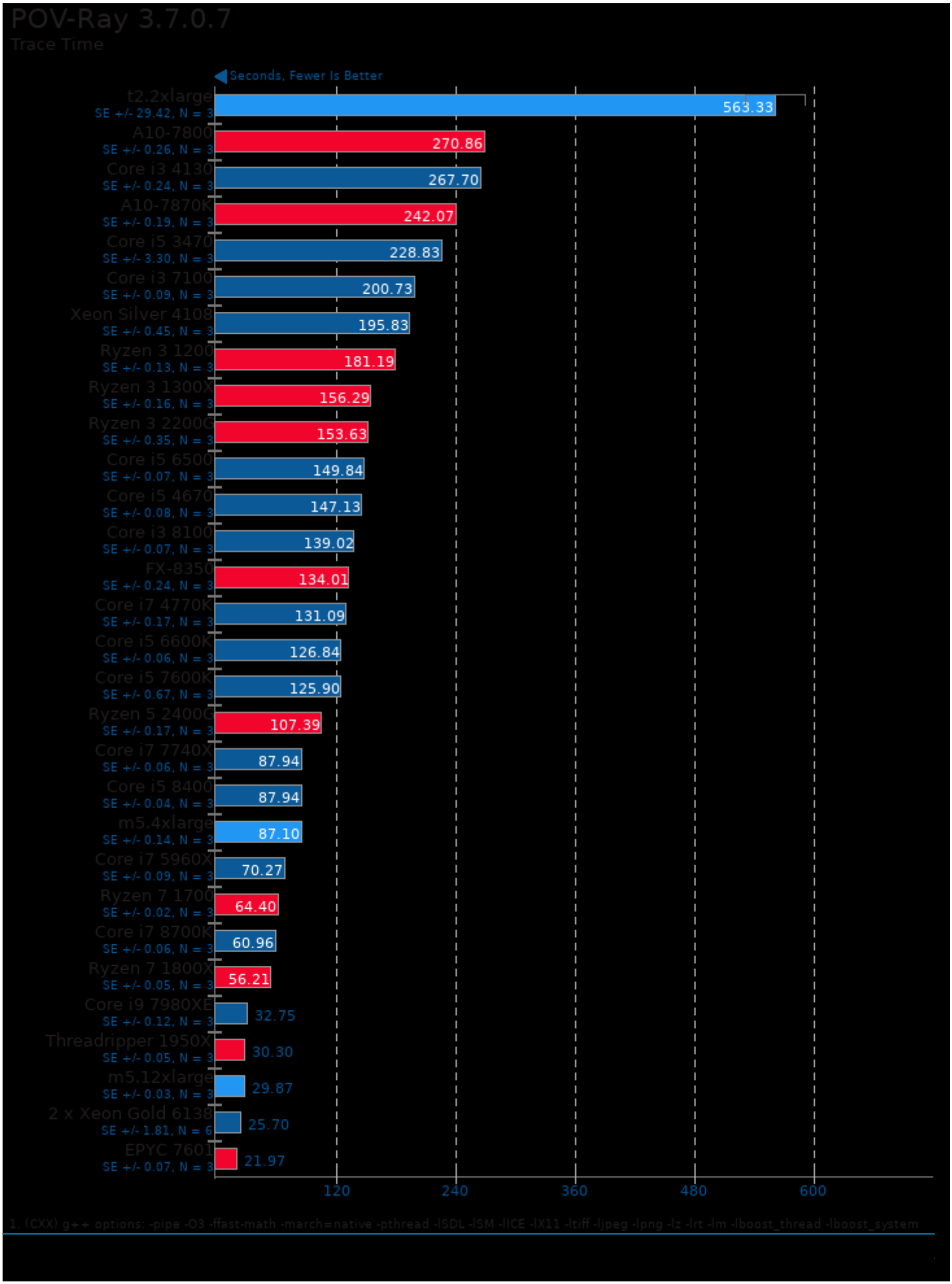

x264 2018-02-05
H.264 Video Encoding
Frames Per Second, More Is Better
Core i3 4130
SE +/- 0.02, N = 3
15.47
A10-7800
SE +/- 0.01, N = 3
15.61
A10-7870K
SE +/- 0.00, N = 3
17.58
Core i5 3470
SE +/- 1.49, N = 6
19.83
Ryzen 3 1200
SE +/- 0.33, N = 6
23.47
Core i3 7100
SE +/- 0.02, N = 3
23.89
Ryzen 3 1300X
SE +/- 0.03, N = 3
27.33
Ryzen 3 2200G
SE +/- 0.02, N = 3
27.60
Core i5 4670
SE +/- 0.48, N = 4
28.16
Core i5 6500
SE +/- 0.06, N = 3
28.47
Core i3 8100
SE +/- 0.41, N = 6
30.42
FX-8350
SE +/- 0.03, N = 3
30.58
Xeon Silver 4108
SE +/- 0.14, N = 3
32.75
Core i5 6600K
SE +/- 0.03, N = 3
33.11
Core i5 7600K
SE +/- 0.01, N = 3
33.49
Ryzen 5 2400G
SE +/- 0.58, N = 4
34.75
Core i7 4770K
SE +/- 0.02, N = 3
37.64
t2.2xlarge
SE +/- 0.03, N = 3
38.43
Core i7 7740X
SE +/- 0.17, N = 3
49.95
m5.4xlarge
SE +/- 0.55, N = 3
55.46
Core i5 8400
SE +/- 0.06, N = 3
56.11
Core i7 5960X
SE +/- 0.19, N = 3
58.01
Ryzen 7 1700
SE +/- 1.01, N = 4
60.90
Ryzen 7 1800X
SE +/- 0.22, N = 3
71.46
Core i7 8700K
SE +/- 0.22, N = 3
72.96
2 x Xeon Gold 6138
SE +/- 1.58, N = 3
107.89
EPYC 7601
SE +/- 0.45, N = 3
108.07
Core i9 7980XE
SE +/- 0.27, N = 3
125.28
Threadripper 1950X
SE +/- 0.43, N = 3
127.00
m5.12xlarge
SE +/- 0.28, N = 3
129.66
30
60
90
120
150
1. (CC) gcc options: -ldl -m64 -lm -lpthread -O3 -ffast-math -std=gnu99 -fPIC -fomit-frame-pointer -fno-tree-vectorize

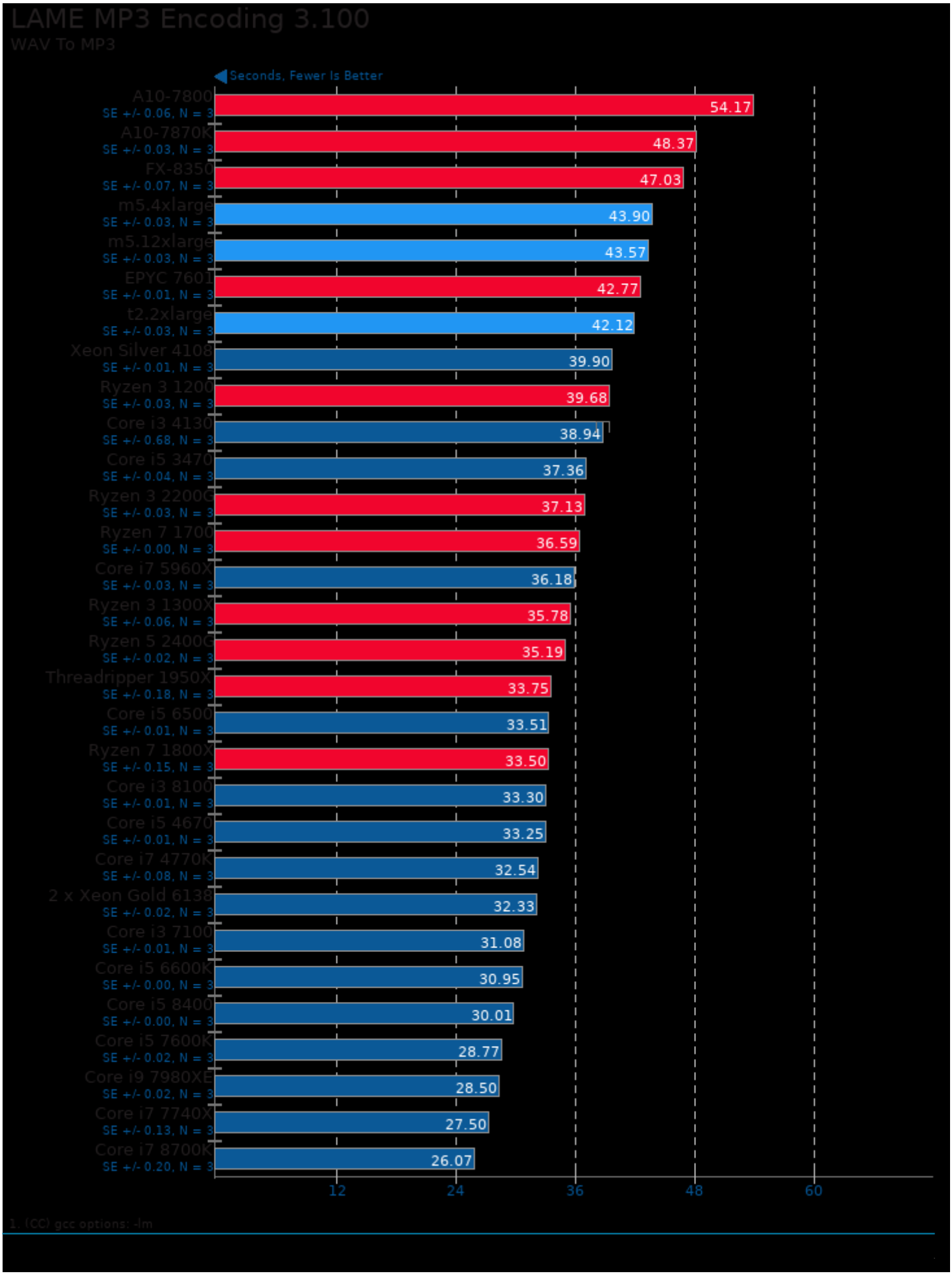

7-Zip Compression 9.20.1
Compress Speed Test
MIPS, More Is Better
Core i3 4130
SE +/- 63.52, N = 3
8992
A10-7800
SE +/- 88.29, N = 3
9983
A10-7870K
SE +/- 91.54, N = 3
11431
Ryzen 3 1200
12601
Core i3 7100
SE +/- 6.03, N = 3
12896
Core i5 3470
SE +/- 216.64, N = 4
14100
Core i5 6500
SE +/- 7.62, N = 3
15116
Ryzen 3 2200G
SE +/- 45.83, N = 3
15744
Ryzen 3 1300X
SE +/- 169.00, N = 3
15880
Core i5 4670
SE +/- 81.66, N = 3
16595
Core i3 8100
SE +/- 21.39, N = 3
17221
Core i5 7600K
SE +/- 31.22, N = 3
17727
Ryzen 5 2400G
SE +/- 290.74, N = 4
17729
Core i5 6600K
SE +/- 11.02, N = 3
18079
Core i7 4770K
SE +/- 165.84, N = 3
21667
FX-8350
SE +/- 34.71, N = 3
22097
t2.2xlarge
SE +/- 86.00, N = 3
23917
Core i5 8400
SE +/- 36.34, N = 3
27028
Xeon Silver 4108
SE +/- 234.70, N = 3
27888
Core i7 7740X
SE +/- 483.48, N = 3
28952
Ryzen 7 1700
SE +/- 101.52, N = 3
30627
Ryzen 7 1800X
SE +/- 276.94, N = 3
33022
m5.4xlarge
SE +/- 282.94, N = 3
36642
Core i7 5960X
SE +/- 310.14, N = 3
37236
Core i7 8700K
SE +/- 232.19, N = 3
39039
Threadripper 1950X
SE +/- 75.86, N = 3
71592
Core i9 7980XE
SE +/- 269.78, N = 3
91138
EPYC 7601
SE +/- 346.49, N = 3
95062
m5.12xlarge
SE +/- 480.06, N = 3
112699
2 x Xeon Gold 6138
SE +/- 2063.58, N = 3
139707
30K
60K
90K
120K
150K
1. (CXX) g++ options: -pipe -lpthread

Large Intel AMD Linux CPU Benchmark Comparison

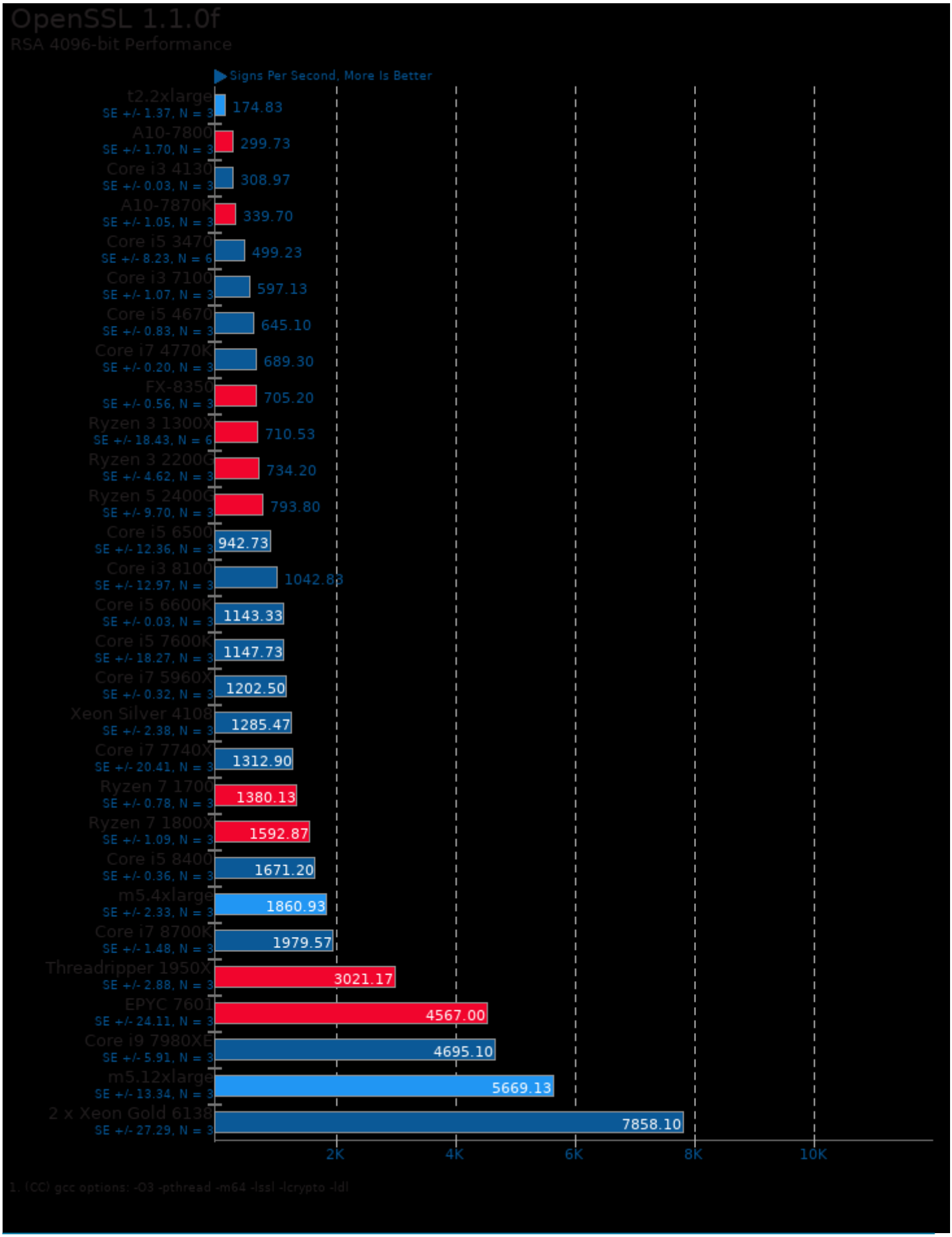



C-Ray 1.1
Total Time
Seconds, Fewer Is Better
A10-7800
SE +/- 0.02, N = 3
61.75
A10-7870K
SE +/- 0.03, N = 3
55.09
Core i3 4130
SE +/- 0.06, N = 3
54.28
Core i3 7100
SE +/- 0.02, N = 3
41.97
Core i5 3470
SE +/- 0.31, N = 3
39.00
m5.4xlarge
SE +/- 0.03, N = 3
29.48
FX-8350
SE +/- 0.01, N = 3
28.01
Core i5 4670
SE +/- 0.01, N = 3
27.40
Core i5 6500
SE +/- 0.02, N = 3
26.97
Ryzen 3 1200
SE +/- 0.01, N = 3
24.95
Core i3 8100
SE +/- 0.02, N = 3
24.65
Core i7 4770K
SE +/- 0.01, N = 3
24.51
Core i5 6600K
SE +/- 0.02, N = 3
22.83
Core i5 7600K
SE +/- 0.01, N = 3
22.25
Ryzen 3 1300X
SE +/- 0.00, N = 3
21.50
Ryzen 3 2200G
SE +/- 0.08, N = 3
21.07
Xeon Silver 4108
SE +/- 0.01, N = 3
19.69
Ryzen 5 2400G
SE +/- 0.16, N = 3
19.48
Core i7 7740X
SE +/- 0.16, N = 3
18.69
t2.2xlarge
SE +/- 0.00, N = 3
16.52
Core i5 8400
SE +/- 0.01, N = 3
15.57
Core i7 5960X
SE +/- 0.01, N = 3
13.97
Core i7 8700K
SE +/- 0.01, N = 3
12.78
Ryzen 7 1700
SE +/- 0.00, N = 3
11.23
m5.12xlarge
SE +/- 0.01, N = 3
9.94
Ryzen 7 1800X
SE +/- 0.01, N = 3
9.70
Core i9 7980XE
SE +/- 0.01, N = 3
5.46
Threadripper 1950X
SE +/- 0.00, N = 3
5.16
EPYC 7601
SE +/- 0.01, N = 3
3.47
2 x Xeon Gold 6138
SE +/- 0.00, N = 3
3.14
14
28
42
56
70
1. (CC) gcc options: -lm -lpthread -O3

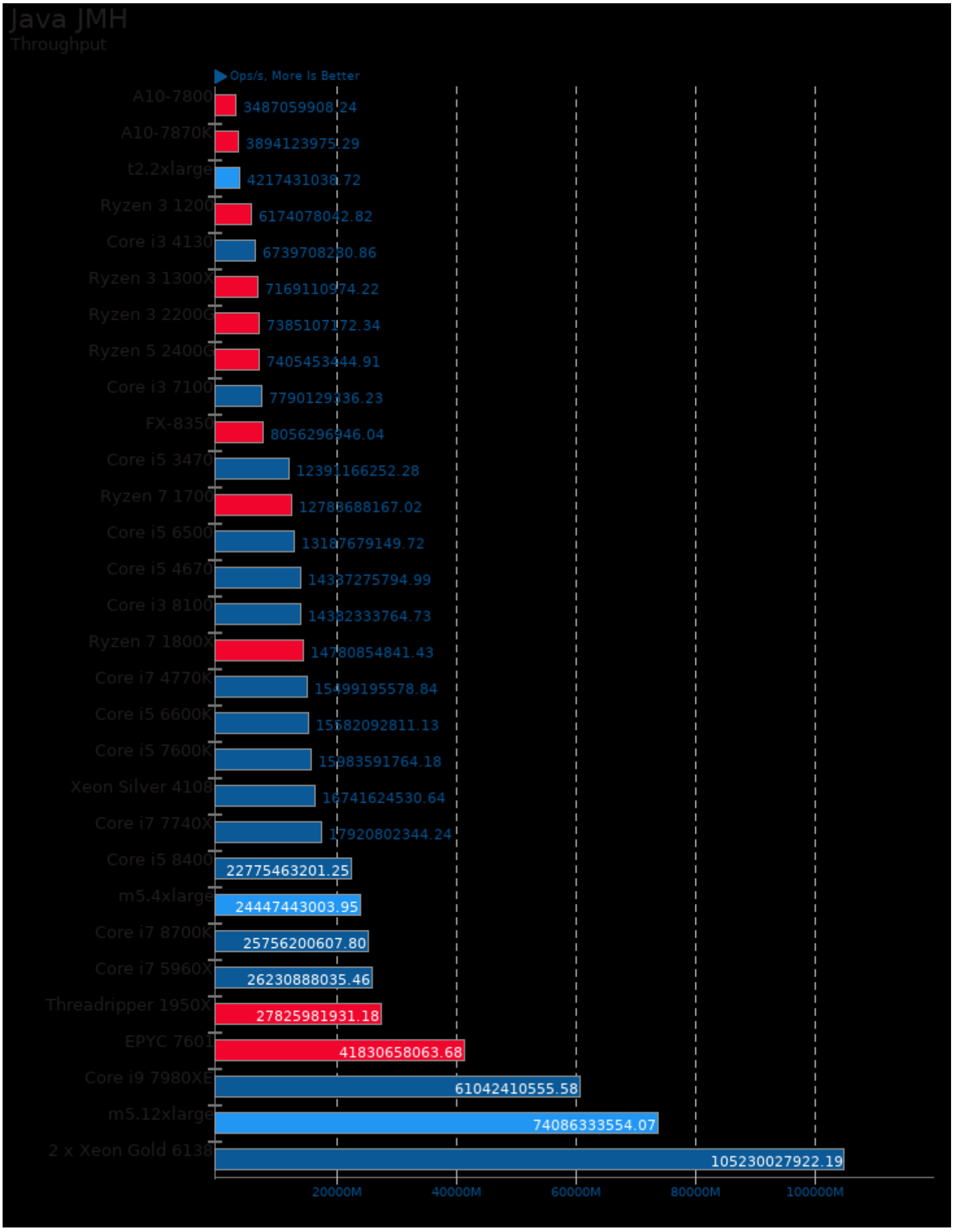

POV-Ray 3.7.0.7
Trace Time
Seconds, Fewer Is Better
t2.2xlarge
SE +/- 29.42, N = 3
563.33
A10-7800
SE +/- 0.26, N = 3
270.86
Core i3 4130
SE +/- 0.24, N = 3
267.70
A10-7870K
SE +/- 0.19, N = 3
242.07
Core i5 3470
SE +/- 3.30, N = 3
228.83
Core i3 7100
SE +/- 0.09, N = 3
200.73
Xeon Silver 4108
SE +/- 0.45, N = 3
195.83
Ryzen 3 1200
SE +/- 0.13, N = 3
181.19
Ryzen 3 1300X
SE +/- 0.16, N = 3
156.29
Ryzen 3 2200G
SE +/- 0.35, N = 3
153.63
Core i5 6500
SE +/- 0.07, N = 3
149.84
Core i5 4670
SE +/- 0.08, N = 3
147.13
Core i3 8100
SE +/- 0.07, N = 3
139.02
FX-8350
SE +/- 0.24, N = 3
134.01
Core i7 4770K
SE +/- 0.17, N = 3
131.09
Core i5 6600K
SE +/- 0.06, N = 3
126.84
Core i5 7600K
SE +/- 0.67, N = 3
125.90
Ryzen 5 2400G
SE +/- 0.17, N = 3
107.39
Core i7 7740X
SE +/- 0.06, N = 3
87.94
Core i5 8400
SE +/- 0.04, N = 3
87.94
m5.4xlarge
SE +/- 0.14, N = 3
87.10
Core i7 5960X
SE +/- 0.09, N = 3
70.27
Ryzen 7 1700
SE +/- 0.02, N = 3
64.40
Core i7 8700K
SE +/- 0.06, N = 3
60.96
Ryzen 7 1800X
SE +/- 0.05, N = 3
56.21
Core i9 7980XE
SE +/- 0.12, N = 3
32.75
Threadripper 1950X
SE +/- 0.05, N = 3
30.30
m5.12xlarge
SE +/- 0.03, N = 3
29.87
2 x Xeon Gold 6138
SE +/- 1.81, N = 6
25.70
EPYC 7601
SE +/- 0.07, N = 3
21.97
120
240
360
480
600
1. (CXX) g++ options: -pipe -O3 -ffast-math -march=native -pthread -lSDL -lSM -lICE -lX11 -ltiff -ljpeg -lpng -lz -lrt -lm -lboost_thread -lboost_system


LAME MP3 Encoding 3.100
WAV To MP3
Seconds, Fewer Is Better
A10-7800
SE +/- 0.06, N = 3
54.17
A10-7870K
SE +/- 0.03, N = 3
48.37
FX-8350
SE +/- 0.07, N = 3
47.03
m5.4xlarge
SE +/- 0.03, N = 3
43.90
m5.12xlarge
SE +/- 0.03, N = 3
43.57
EPYC 7601
SE +/- 0.01, N = 3
42.77
t2.2xlarge
SE +/- 0.03, N = 3
42.12
Xeon Silver 4108
SE +/- 0.01, N = 3
39.90
Ryzen 3 1200
SE +/- 0.03, N = 3
39.68
Core i3 4130
SE +/- 0.68, N = 3
38.94
Core i5 3470
SE +/- 0.04, N = 3
37.36
Ryzen 3 2200G
SE +/- 0.03, N = 3
37.13
Ryzen 7 1700
SE +/- 0.00, N = 3
36.59
Core i7 5960X
SE +/- 0.03, N = 3
36.18
Ryzen 3 1300X
SE +/- 0.06, N = 3
35.78
Ryzen 5 2400G
SE +/- 0.02, N = 3
35.19
Threadripper 1950X
SE +/- 0.18, N = 3
33.75
Core i5 6500
SE +/- 0.01, N = 3
33.51
Ryzen 7 1800X
SE +/- 0.15, N = 3
33.50
Core i3 8100
SE +/- 0.01, N = 3
33.30
Core i5 4670
SE +/- 0.01, N = 3
33.25
Core i7 4770K
SE +/- 0.08, N = 3
32.54
2 x Xeon Gold 6138
SE +/- 0.02, N = 3
32.33
Core i3 7100
SE +/- 0.01, N = 3
31.08
Core i5 6600K
SE +/- 0.00, N = 3
30.95
Core i5 8400
SE +/- 0.00, N = 3
30.01
Core i5 7600K
SE +/- 0.02, N = 3
28.77
Core i9 7980XE
SE +/- 0.02, N = 3
28.50
Core i7 7740X
SE +/- 0.13, N = 3
27.50
Core i7 8700K
SE +/- 0.20, N = 3
26.07
12
24
36
48
60
1. (CC) gcc options: -lm

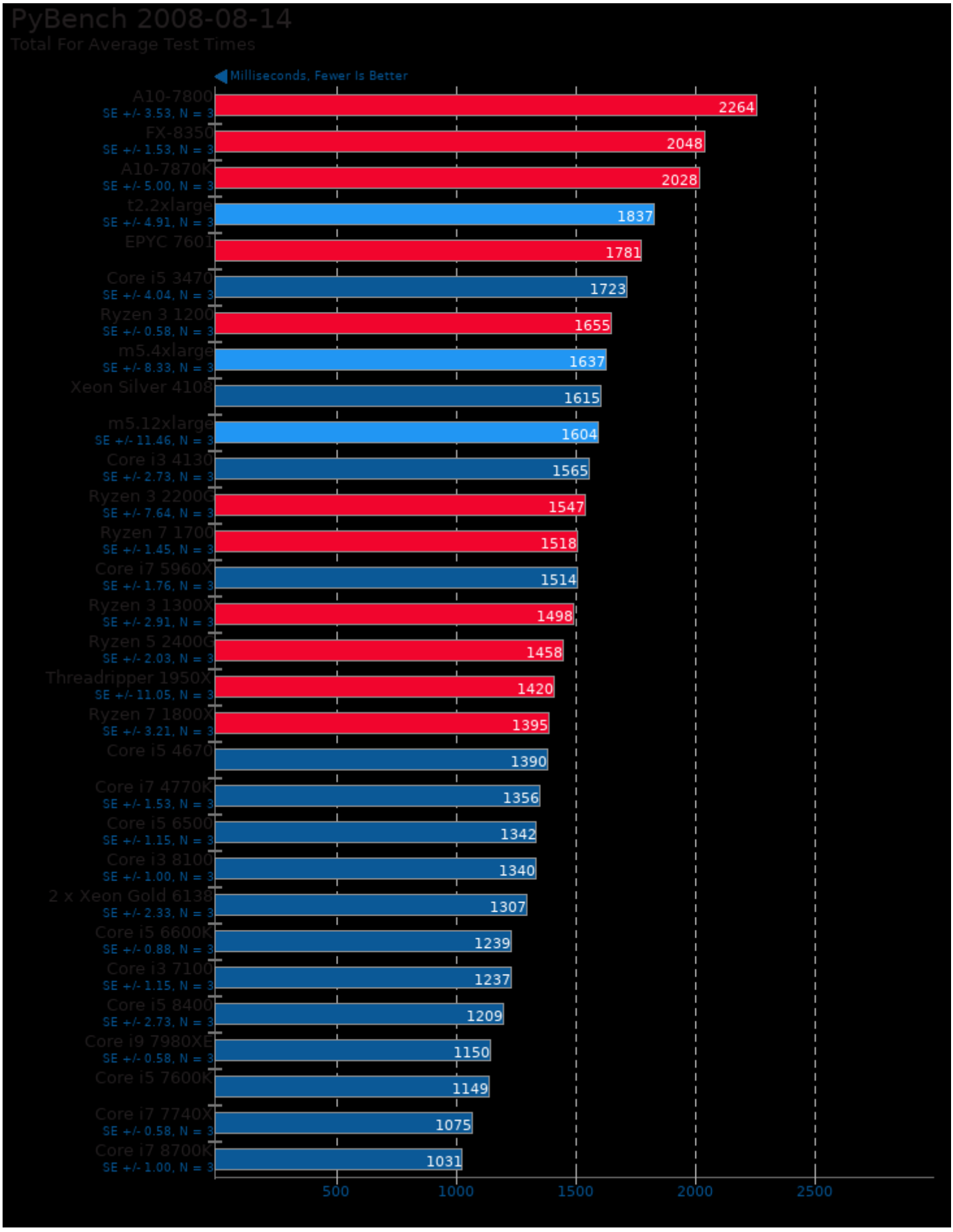
Large Intel AMD Linux CPU Benchmark Comparison

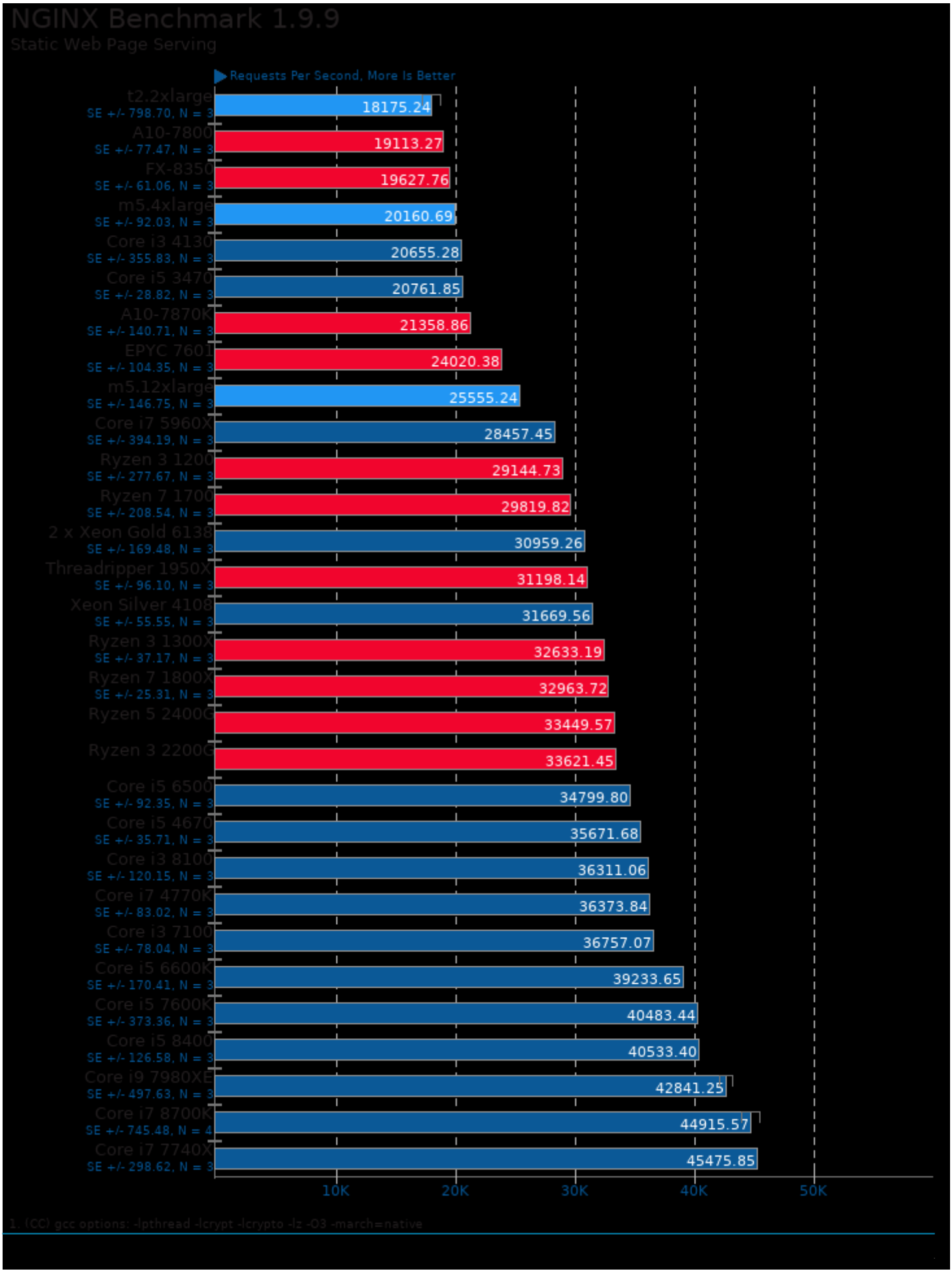


Large Intel AMD Linux CPU Benchmark Comparison



Large Intel AMD Linux CPU Benchmark Comparison

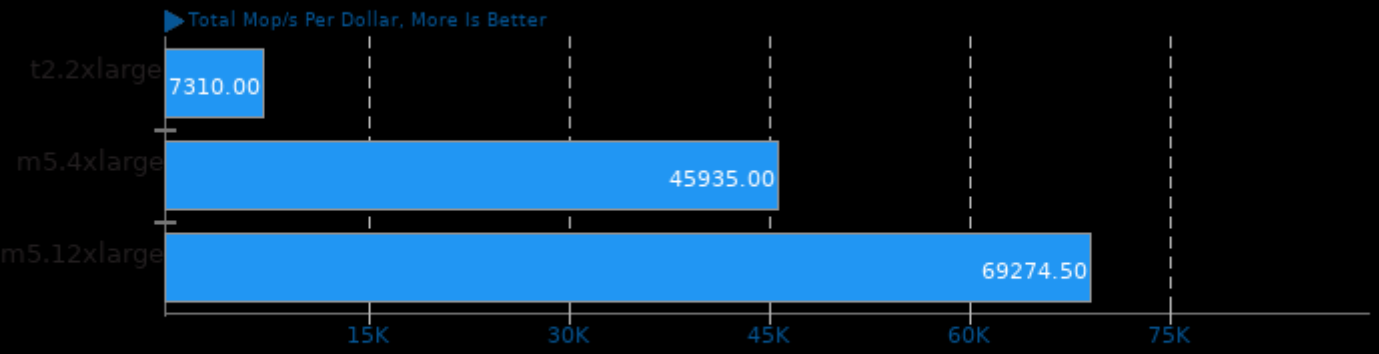



NGINX Benchmark 1.9.9
Static Web Page Serving
Requests Per Second, More Is Better
t2.2xlarge
SE +/- 798.70, N = 3
18175.24
A10-7800
SE +/- 77.47, N = 3
19113.27
FX-8350
SE +/- 61.06, N = 3
19627.76
m5.4xlarge
SE +/- 92.03, N = 3
20160.69
Core i3 4130
SE +/- 355.83, N = 3
20655.28
Core i5 3470
SE +/- 28.82, N = 3
20761.85
A10-7870K
SE +/- 140.71, N = 3
21358.86
EPYC 7601
SE +/- 104.35, N = 3
24020.38
m5.12xlarge
SE +/- 146.75, N = 3
25555.24
Core i7 5960X
SE +/- 394.19, N = 3
28457.45
Ryzen 3 1200
SE +/- 277.67, N = 3
29144.73
Ryzen 7 1700
SE +/- 208.54, N = 3
29819.82
2 x Xeon Gold 6138
SE +/- 169.48, N = 3
30959.26
Threadripper 1950X
SE +/- 96.10, N = 3
31198.14
Xeon Silver 4108
SE +/- 55.55, N = 3
31669.56
Ryzen 3 1300X
SE +/- 37.17, N = 3
32633.19
Ryzen 7 1800X
SE +/- 25.31, N = 3
32963.72
Ryzen 5 2400G
33449.57
Ryzen 3 2200G
33621.45
Core i5 6500
SE +/- 92.35, N = 3
34799.80
Core i5 4670
SE +/- 35.71, N = 3
35671.68
Core i3 8100
SE +/- 120.15, N = 3
36311.06
Core i7 4770K
SE +/- 83.02, N = 3
36373.84
Core i3 7100
SE +/- 78.04, N = 3
36757.07
Core i5 6600K
SE +/- 170.41, N = 3
39233.65
Core i5 7600K
SE +/- 373.36, N = 3
40483.44
Core i5 8400
SE +/- 126.58, N = 3
40533.40
Core i9 7980XE
SE +/- 497.63, N = 3
42841.25
Core i7 8700K
SE +/- 745.48, N = 4
44915.57
Core i7 7740X
SE +/- 298.62, N = 3
45475.85
10K
20K
30K
40K
50K
1. (CC) gcc options: -lpthread -lcrypt -lcrypto -lz -O3 -march=native

Large Intel AMD Linux CPU Benchmark Comparison

NAS Parallel Benchmarks 3.3

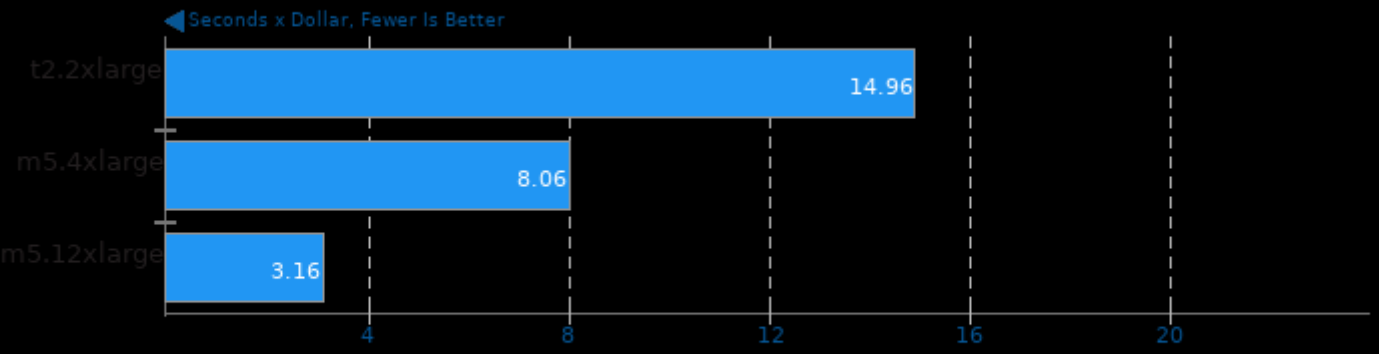
Performance / Cost - Test / Class: EP.C



1. t2.2xlarge: $0.3712 reported cost per hour, test consumed 3 Minutes, 1 Second: cost approximately 0.02 dollar.
2. m5.4xlarge: $0.768 reported cost per hour, test consumed 1 Minute: cost approximately 0.01 dollar.
3. m5.12xlarge: $2.304 reported cost per hour, test consumed 24 Seconds: cost approximately 0.02 dollar.

Rodinia 2.4

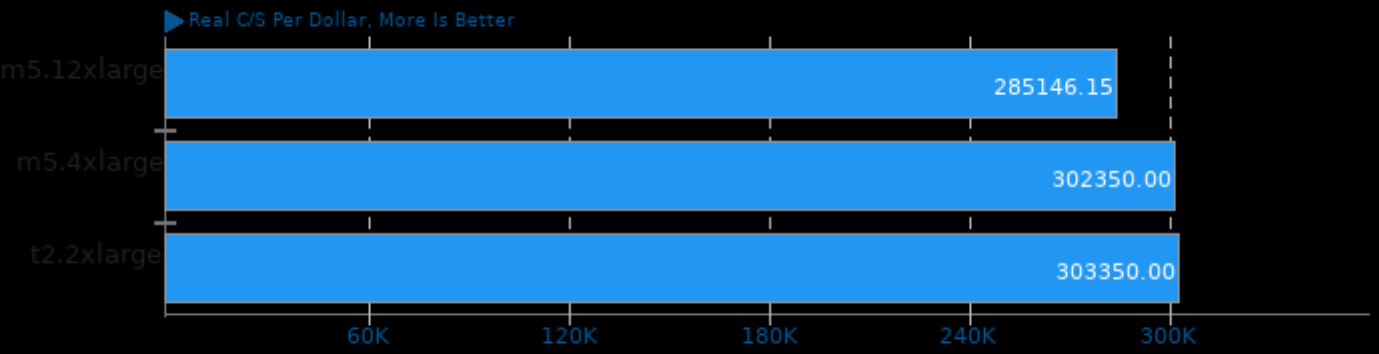
Performance / Cost - Test: OpenMP LavaMD



1. t2.2xlarge: $0.3712 reported cost per hour, test consumed 10 Minutes, 46 Seconds: cost approximately 0.07 dollar.
2. m5.4xlarge: $0.768 reported cost per hour, test consumed 5 Minutes, 50 Seconds: cost approximately 0.07 dollar.
3. m5.12xlarge: $2.304 reported cost per hour, test consumed 2 Minutes, 3 Seconds: cost approximately 0.08 dollar.

John The Ripper 1.8.0

Performance / Cost - Test: Blowfish

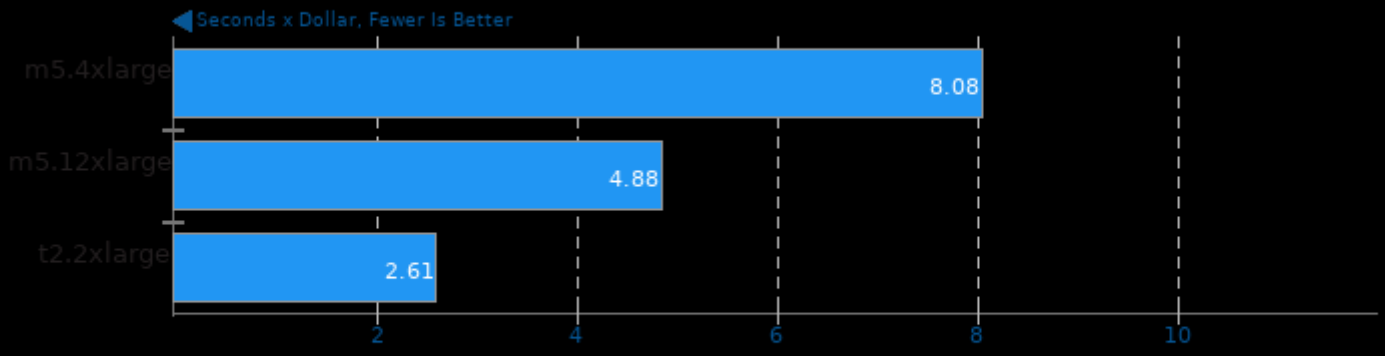


1. m5.12xlarge: $2.304 reported cost per hour, test consumed 3 Minutes, 21 Seconds: cost approximately 0.13 dollar.
2. m5.4xlarge: $0.768 reported cost per hour, test consumed 3 Minutes, 20 Seconds: cost approximately 0.04 dollar.
3. t2.2xlarge: $0.3712 reported cost per hour, test consumed 3 Minutes, 19 Seconds: cost approximately 0.02 dollar.

Large Intel AMD Linux CPU Benchmark Comparison

Open FMM Nero2D 2.0.2

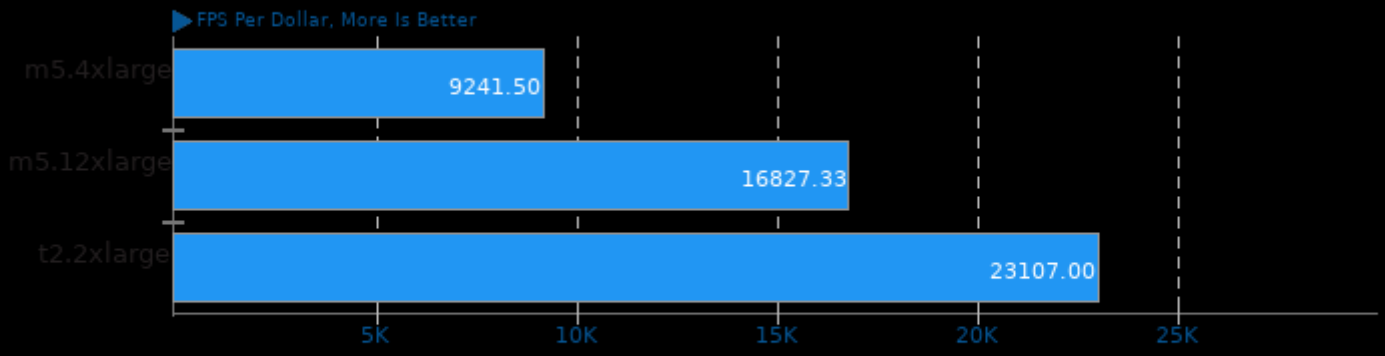
Performance / Cost - Total Time



1. m5.4xlarge: $0.768 reported cost per hour, test consumed 5 Minutes, 51 Seconds: cost approximately 0.07 dollar.
2. m5.12xlarge: $2.304 reported cost per hour, test consumed 2 Minutes, 30 Seconds: cost approximately 0.1 dollar.
3. t2.2xlarge: $0.3712 reported cost per hour, test consumed 4 Minutes, 26 Seconds: cost approximately 0.03 dollar.

TTSIOD 3D Renderer 2.3a

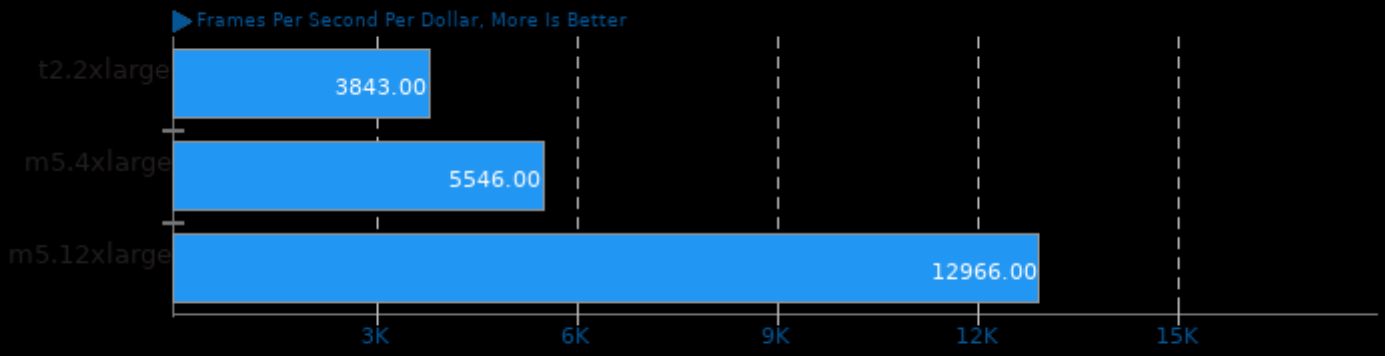
Performance / Cost - Phong Rendering With Soft-Shadow Mapping



1. m5.4xlarge: $0.768 reported cost per hour, test consumed 1 Minute, 42 Seconds: cost approximately 0.02 dollar.
2. m5.12xlarge: $2.304 reported cost per hour, test consumed 50 Seconds: cost approximately 0.03 dollar.
3. t2.2xlarge: $0.3712 reported cost per hour, test consumed 1 Minute, 26 Seconds: cost approximately 0.01 dollar.

x264 2018-02-05

Performance / Cost - H.264 Video Encoding

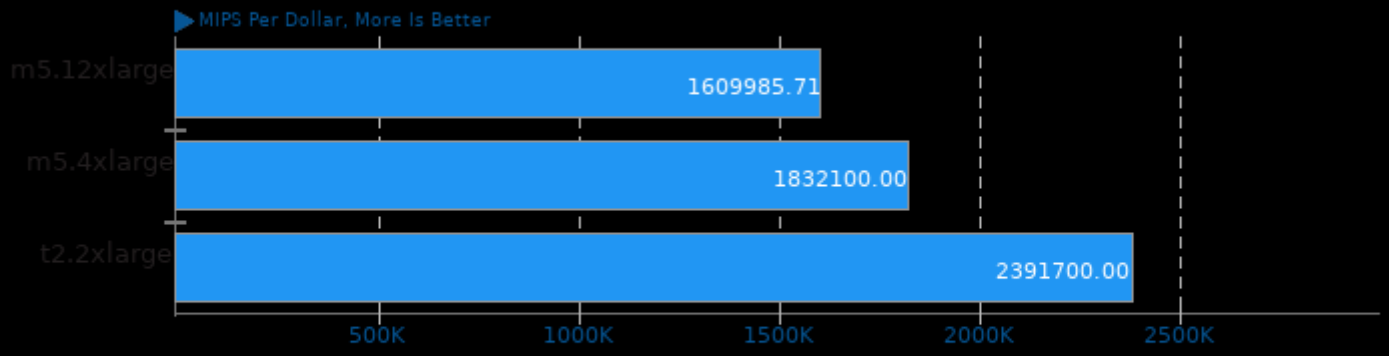


1. t2.2xlarge: $0.3712 reported cost per hour, test consumed 51 Seconds: cost approximately 0.01 dollar.
2. m5.4xlarge: $0.768 reported cost per hour, test consumed 37 Seconds: cost approximately 0.01 dollar.
3. m5.12xlarge: $2.304 reported cost per hour, test consumed 18 Seconds: cost approximately 0.01 dollar.

Large Intel AMD Linux CPU Benchmark Comparison

7-Zip Compression 9.20.1

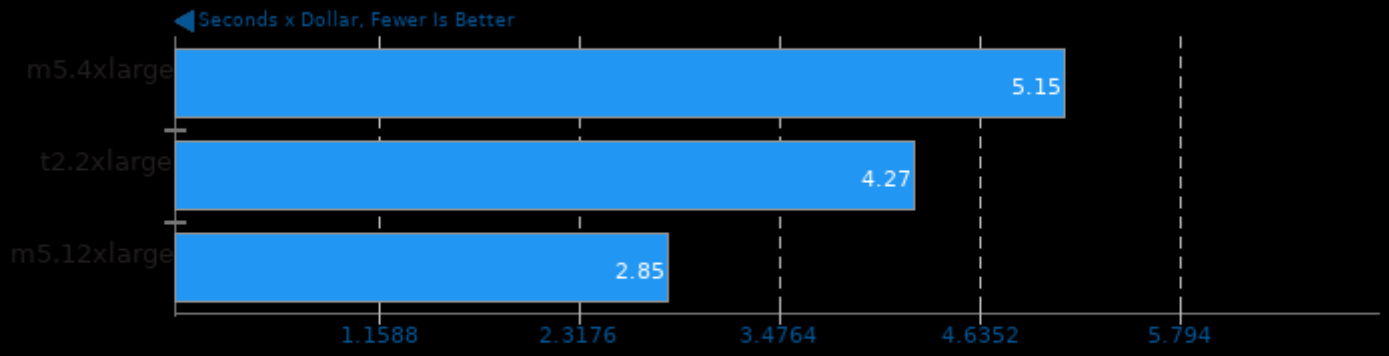
Performance / Cost - Compress Speed Test



1. m5.12xlarge: $2.304 reported cost per hour, test consumed 1 Minute, 55 Seconds: cost approximately 0.07 dollar.
2. m5.4xlarge: $0.768 reported cost per hour, test consumed 1 Minute, 38 Seconds: cost approximately 0.02 dollar.
3. t2.2xlarge: $0.3712 reported cost per hour, test consumed 1 Minute, 14 Seconds: cost approximately 0.01 dollar.

Timed Linux Kernel Compilation 4.13

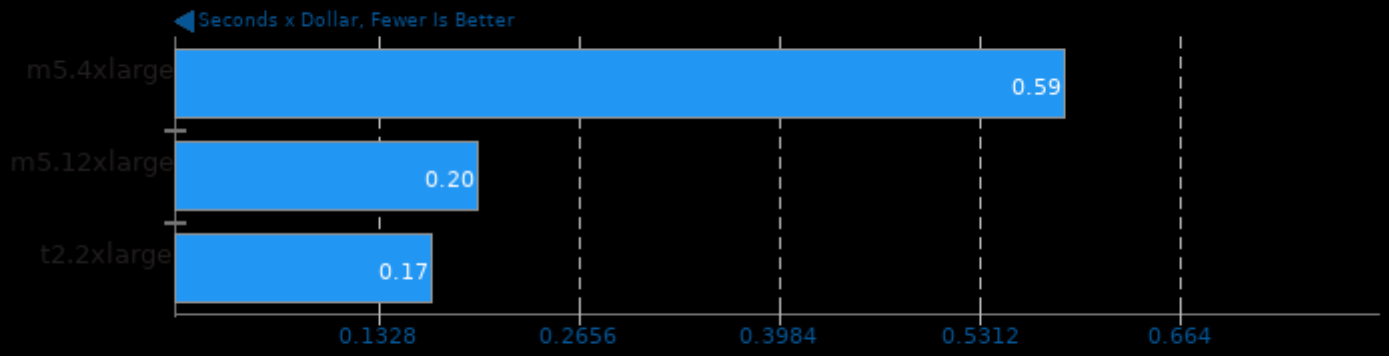
Performance / Cost - Time To Compile



1. m5.4xlarge: $0.768 reported cost per hour, test consumed 4 Minutes, 41 Seconds: cost approximately 0.06 dollar.
2. t2.2xlarge: $0.3712 reported cost per hour, test consumed 5 Minutes, 41 Seconds: cost approximately 0.04 dollar.
3. m5.12xlarge: $2.304 reported cost per hour, test consumed 2 Minutes, 9 Seconds: cost approximately 0.08 dollar.

C-Ray 1.1

Performance / Cost - Total Time

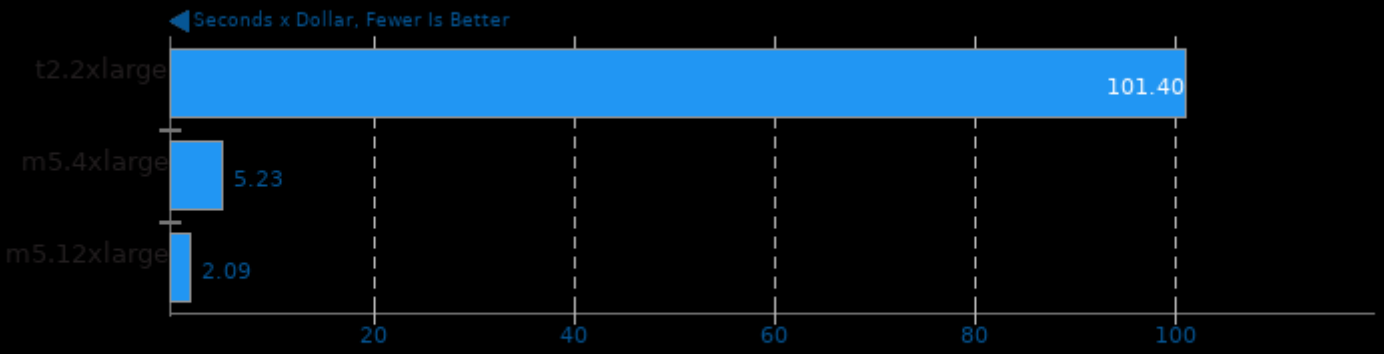


1. m5.4xlarge: $0.768 reported cost per hour, test consumed 1 Minute, 33 Seconds: cost approximately 0.02 dollar.
2. m5.12xlarge: $2.304 reported cost per hour, test consumed 34 Seconds: cost approximately 0.02 dollar.
3. t2.2xlarge: $0.3712 reported cost per hour, test consumed 54 Seconds: cost approximately 0.01 dollar.

Large Intel AMD Linux CPU Benchmark Comparison

POV-Ray 3.7.0.7

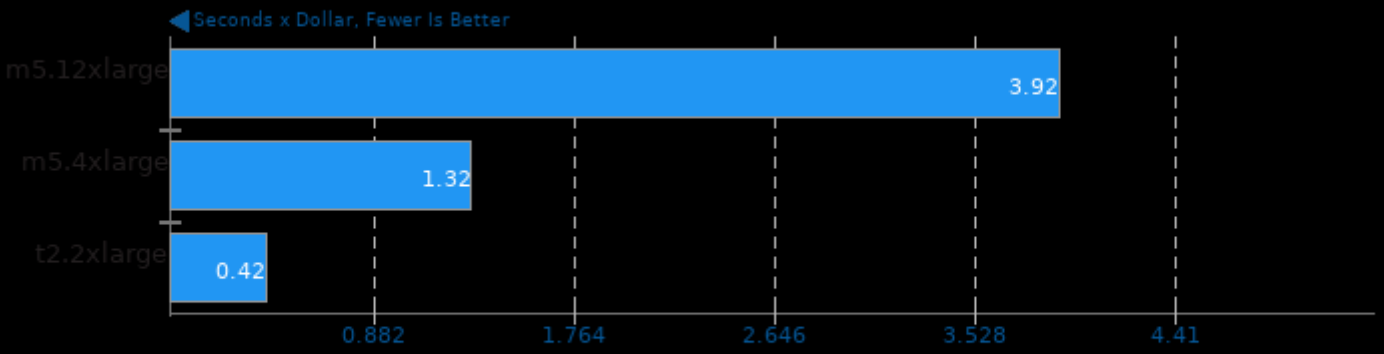
Performance / Cost - Trace Time



1. t2.2xlarge: $0.3712 reported cost per hour, test consumed 28 Minutes, 22 Seconds: cost approximately 0.18 dollar.
2. m5.4xlarge: $0.768 reported cost per hour, test consumed 4 Minutes, 34 Seconds: cost approximately 0.06 dollar.
3. m5.12xlarge: $2.304 reported cost per hour, test consumed 1 Minute, 42 Seconds: cost approximately 0.07 dollar.

LAME MP3 Encoding 3.100

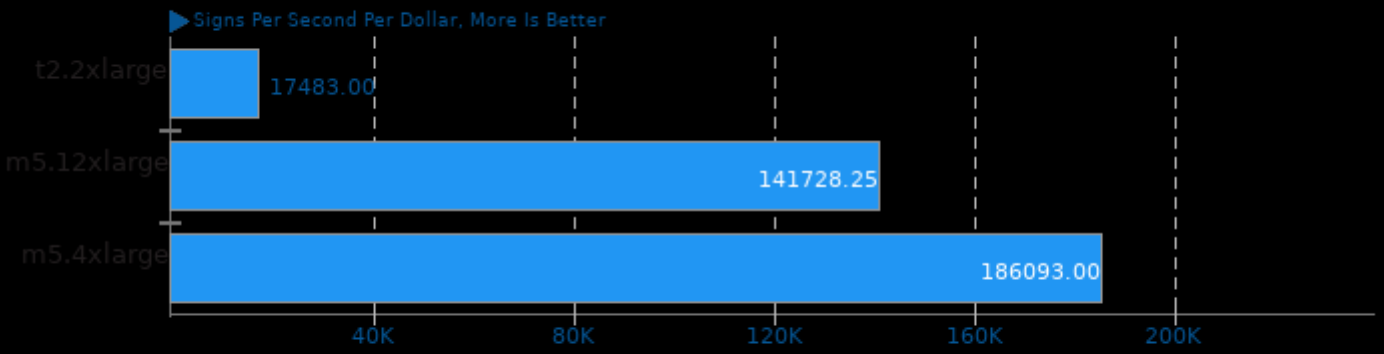
Performance / Cost - WAV To MP3



1. m5.12xlarge: $2.304 reported cost per hour, test consumed 2 Minutes, 14 Seconds: cost approximately 0.09 dollar.
2. m5.4xlarge: $0.768 reported cost per hour, test consumed 2 Minutes, 16 Seconds: cost approximately 0.03 dollar.
3. t2.2xlarge: $0.3712 reported cost per hour, test consumed 2 Minutes, 10 Seconds: cost approximately 0.01 dollar.

OpenSSL 1.1.0f

Performance / Cost - RSA 4096-bit Performance

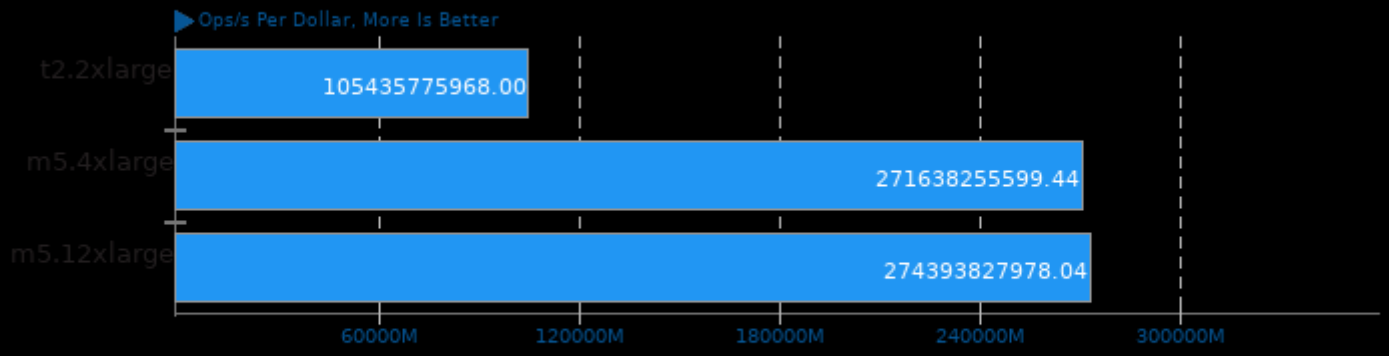


1. t2.2xlarge: $0.3712 reported cost per hour, test consumed 1 Minute, 5 Seconds: cost approximately 0.01 dollar.
2. m5.12xlarge: $2.304 reported cost per hour, test consumed 1 Minute, 4 Seconds: cost approximately 0.04 dollar.
3. m5.4xlarge: $0.768 reported cost per hour, test consumed 1 Minute, 4 Seconds: cost approximately 0.01 dollar.

Large Intel AMD Linux CPU Benchmark Comparison

Java JMH

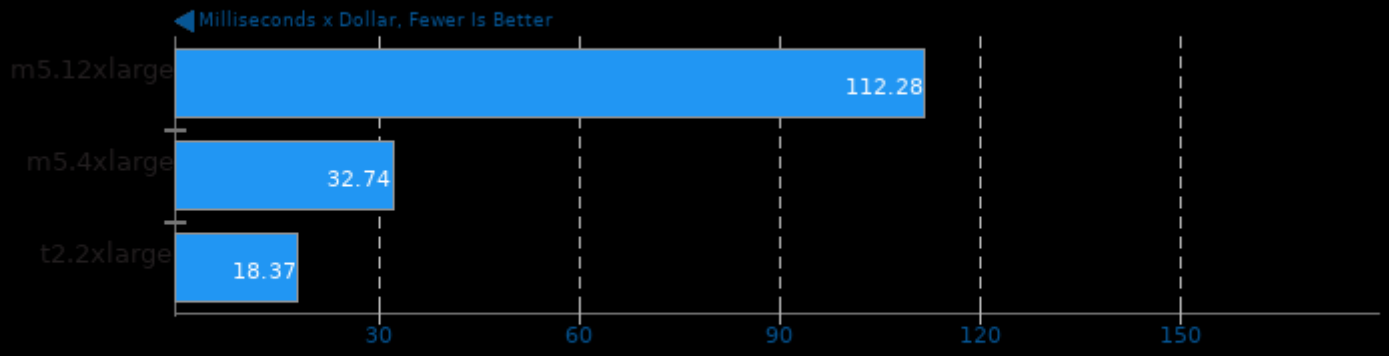
Performance / Cost - Throughput



1. t2.2xlarge: $0.3712 reported cost per hour, test consumed 7 Minutes, 14 Seconds: cost approximately 0.04 dollar.
2. m5.4xlarge: $0.768 reported cost per hour, test consumed 6 Minutes, 53 Seconds: cost approximately 0.09 dollar.
3. m5.12xlarge: $2.304 reported cost per hour, test consumed 6 Minutes, 57 Seconds: cost approximately 0.27 dollar.

PyBench 2008-08-14

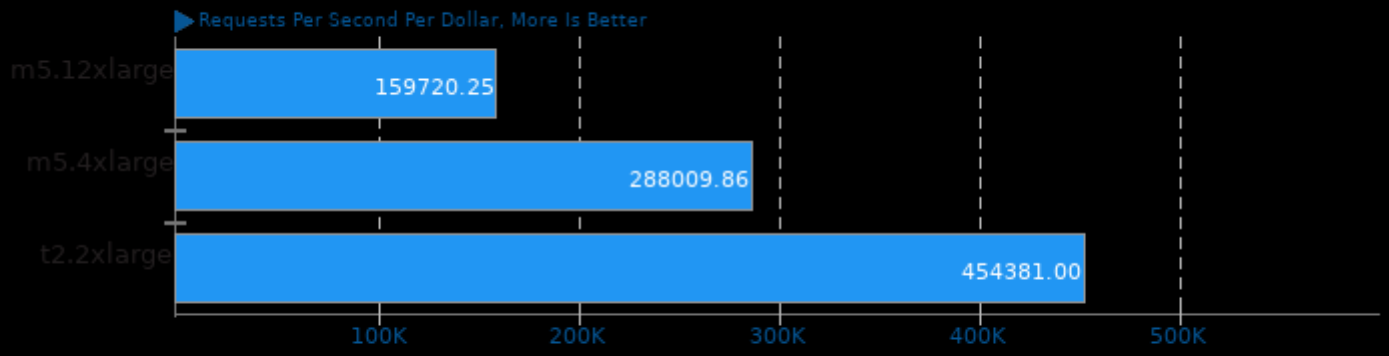
Performance / Cost - Total For Average Test Times



1. m5.12xlarge: $2.304 reported cost per hour, test consumed 1 Minute, 52 Seconds: cost approximately 0.07 dollar.
2. m5.4xlarge: $0.768 reported cost per hour, test consumed 1 Minute, 55 Seconds: cost approximately 0.02 dollar.
3. t2.2xlarge: $0.3712 reported cost per hour, test consumed 2 Minutes, 8 Seconds: cost approximately 0.01 dollar.

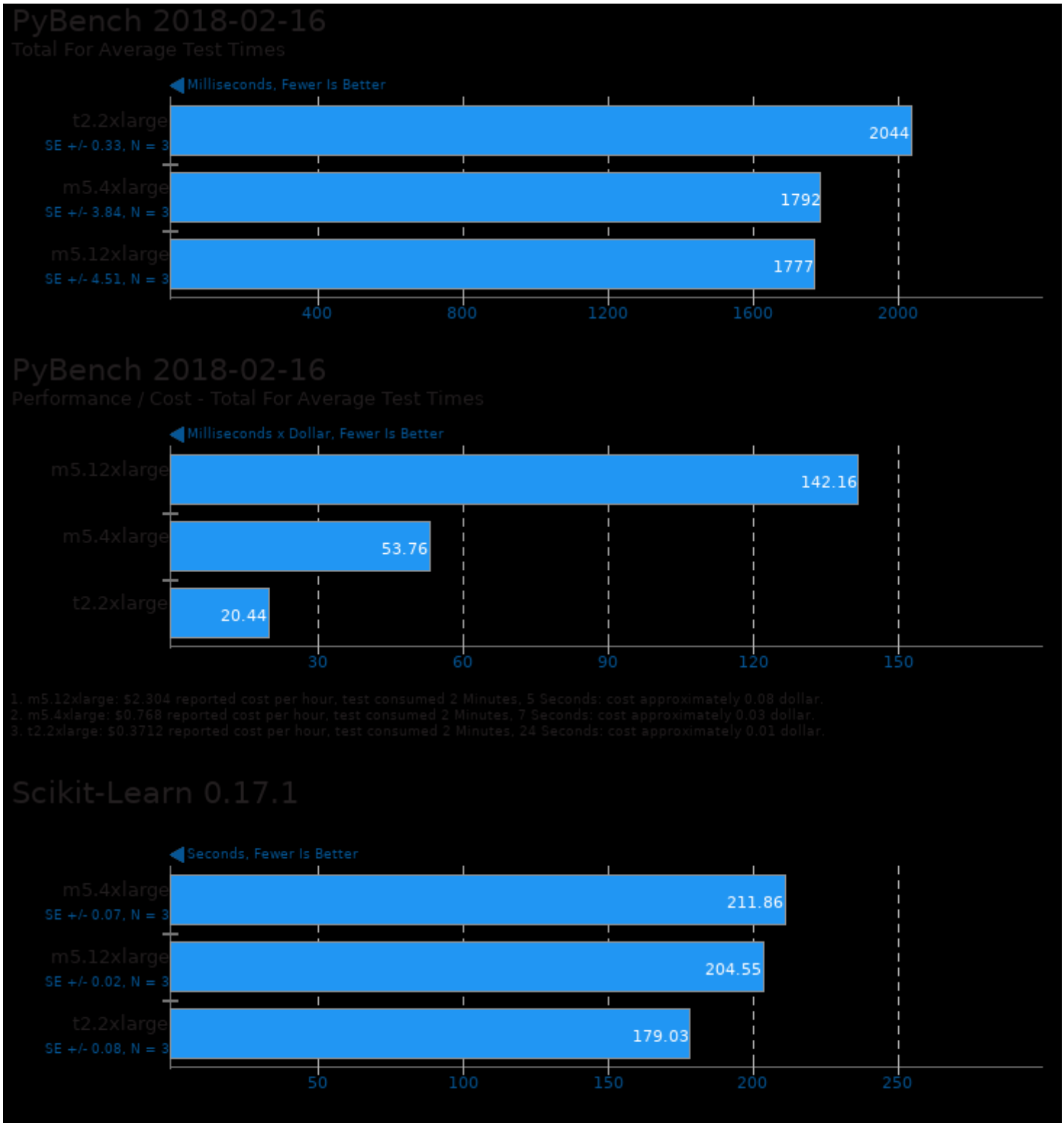
NGINX Benchmark 1.9.9

Performance / Cost - Static Web Page Serving



1. m5.12xlarge: $2.304 reported cost per hour, test consumed 4 Minutes, 12 Seconds: cost approximately 0.16 dollar.
2. m5.4xlarge: $0.768 reported cost per hour, test consumed 5 Minutes, 16 Seconds: cost approximately 0.07 dollar.
3. t2.2xlarge: $0.3712 reported cost per hour, test consumed 5 Minutes, 50 Seconds: cost approximately 0.04 dollar.

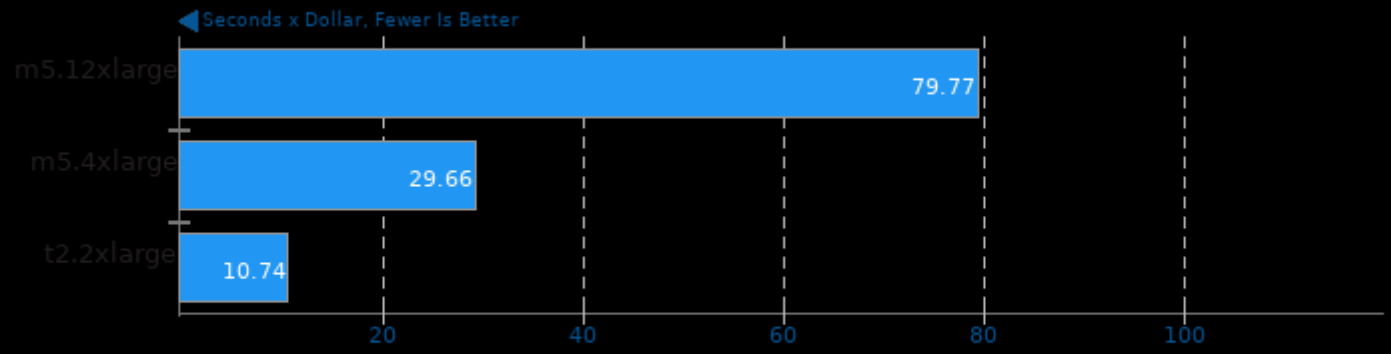
Large Intel AMD Linux CPU Benchmark Comparison



Large Intel AMD Linux CPU Benchmark Comparison

Scikit-Learn 0.17.1

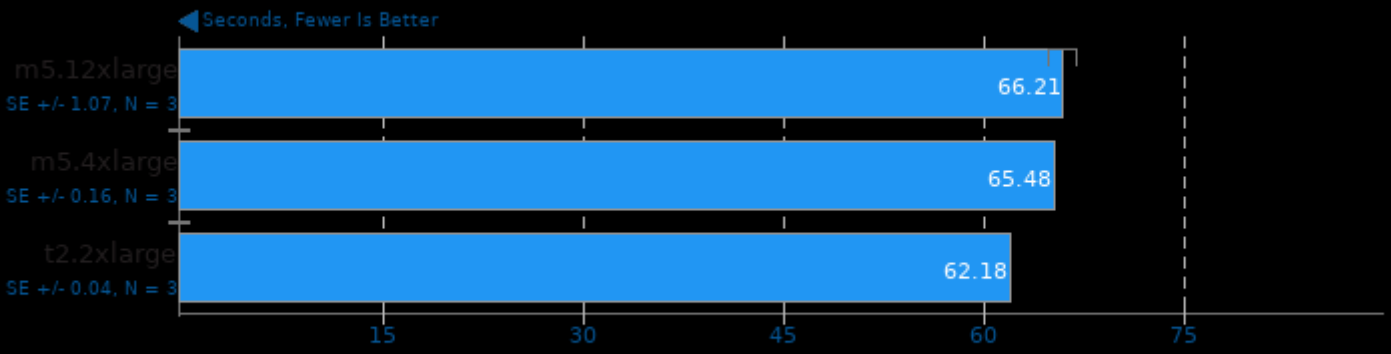
Performance / Cost -



1. m5.12xlarge: $2.304 reported cost per hour, test consumed 10 Minutes, 17 Seconds: cost approximately 0.39 dollar.
2. m5.4xlarge: $0.768 reported cost per hour, test consumed 10 Minutes, 40 Seconds: cost approximately 0.14 dollar.
3. t2.2xlarge: $0.3712 reported cost per hour, test consumed 9 Minutes, 2 Seconds: cost approximately 0.06 dollar.

AOBench

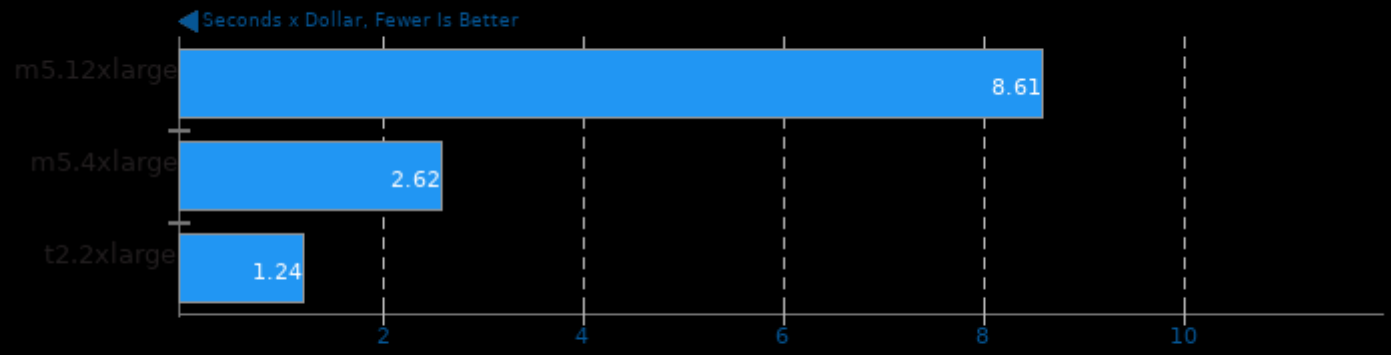
Size: 2048 x 2048 - Total Time



1. (CC) gcc options: -lm -O3

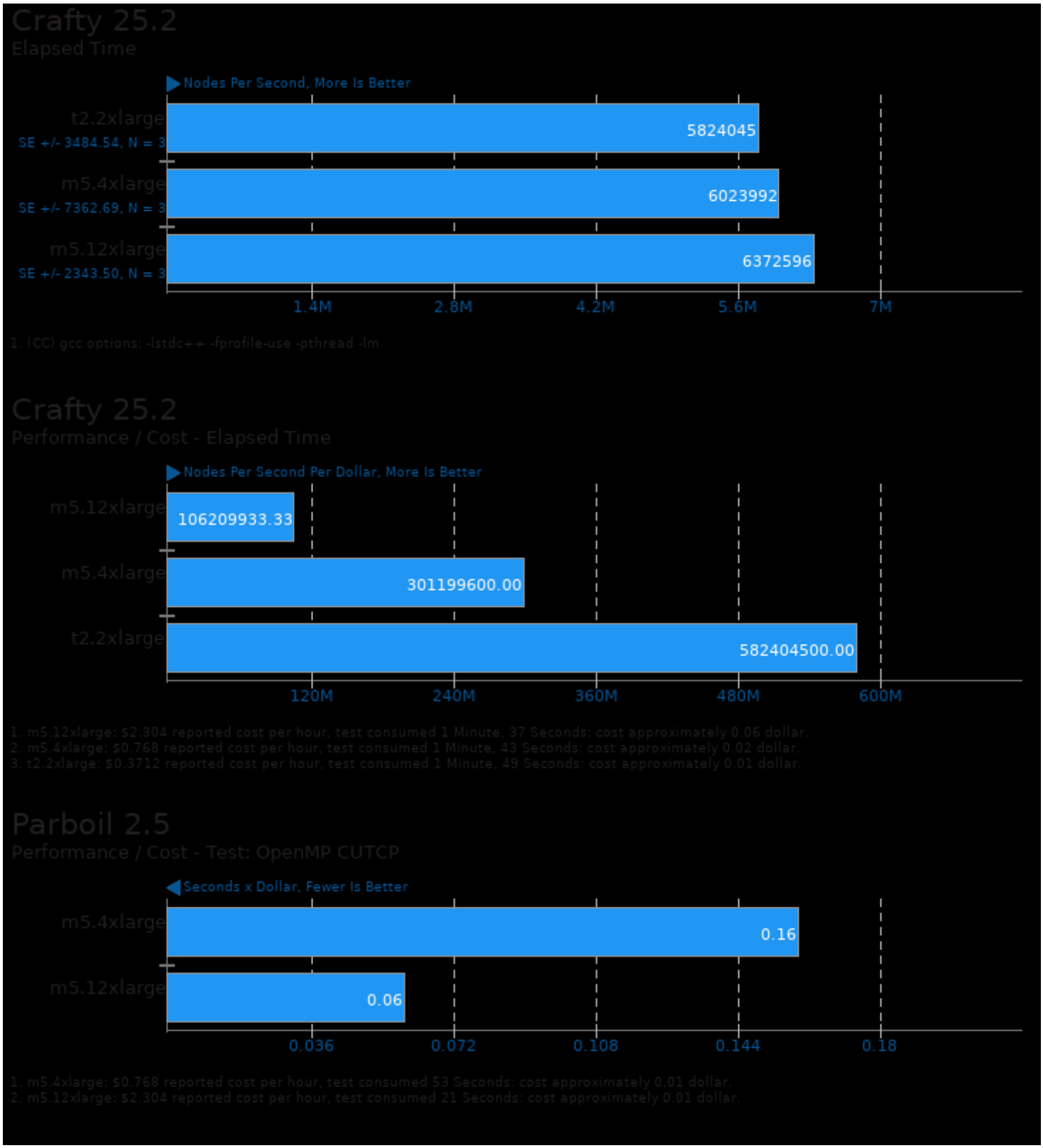
AOBench

Performance / Cost - Size: 2048 x 2048 - Total Time

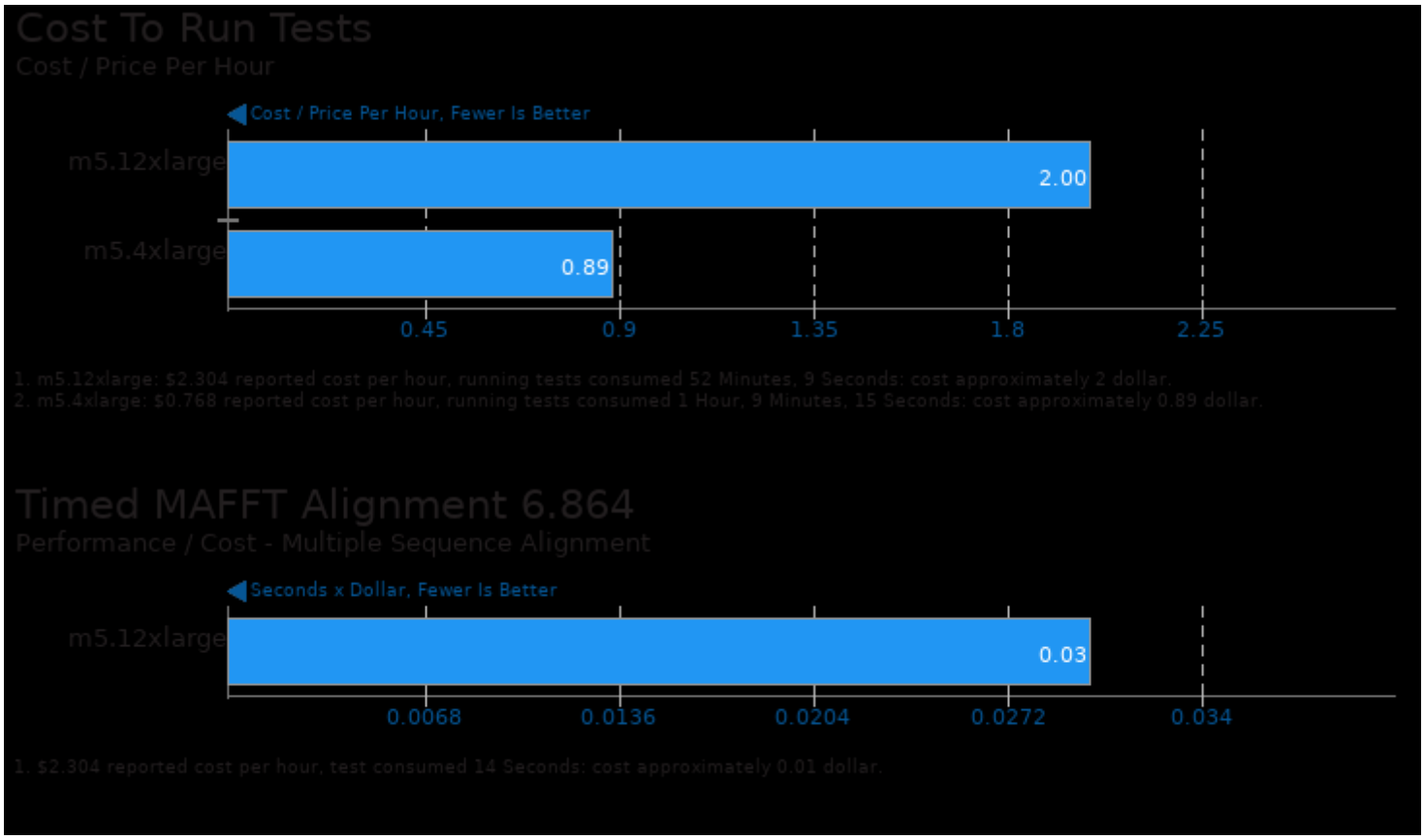


1. m5.12xlarge: $2.304 reported cost per hour, test consumed 3 Minutes, 22 Seconds: cost approximately 0.13 dollar.
2. m5.4xlarge: $0.768 reported cost per hour, test consumed 3 Minutes, 21 Seconds: cost approximately 0.04 dollar.
3. t2.2xlarge: $0.3712 reported cost per hour, test consumed 3 Minutes, 11 Seconds: cost approximately 0.02 dollar.

Large Intel AMD Linux CPU Benchmark Comparison



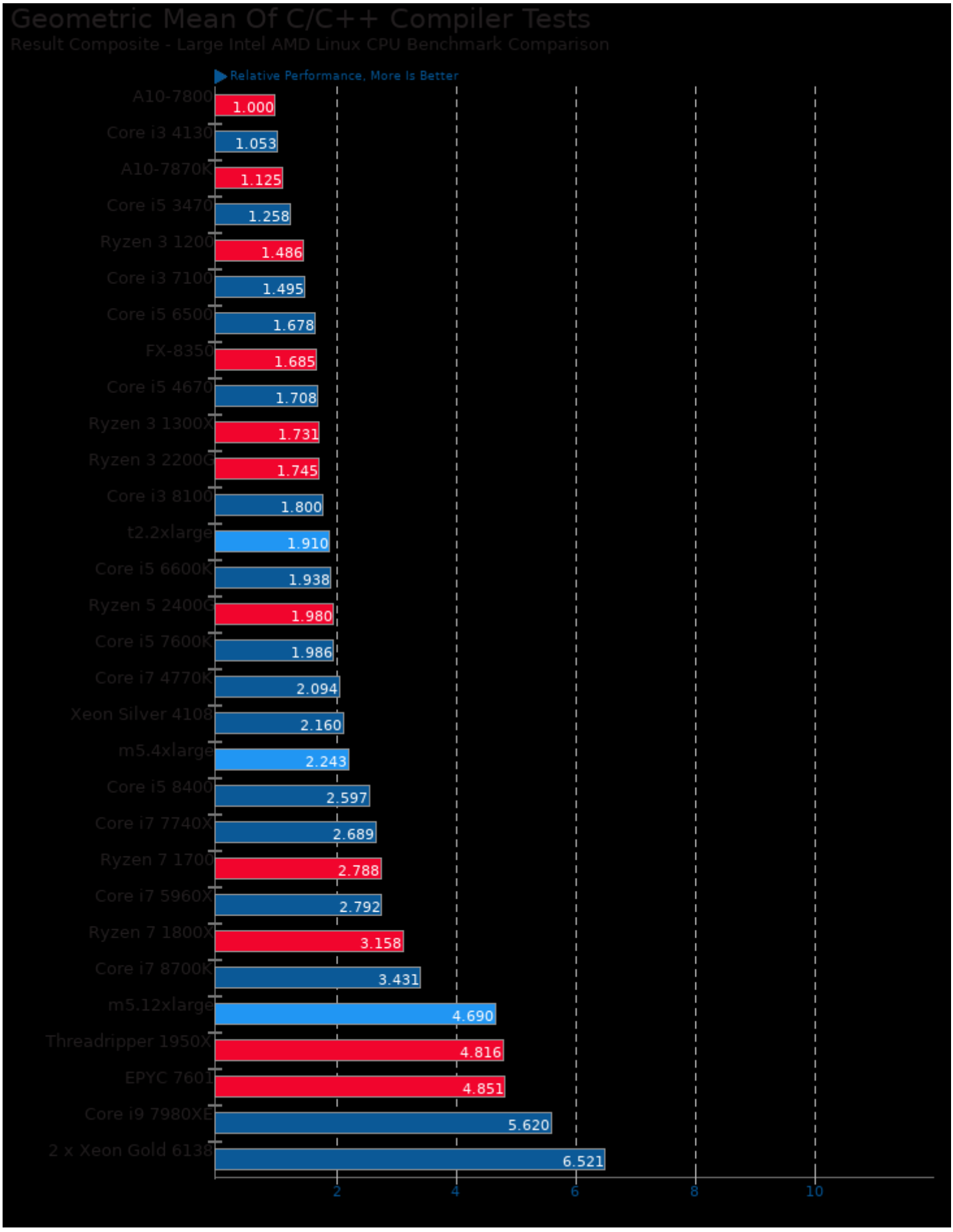
Large Intel AMD Linux CPU Benchmark Comparison



Large Intel AMD Linux CPU Benchmark Comparison

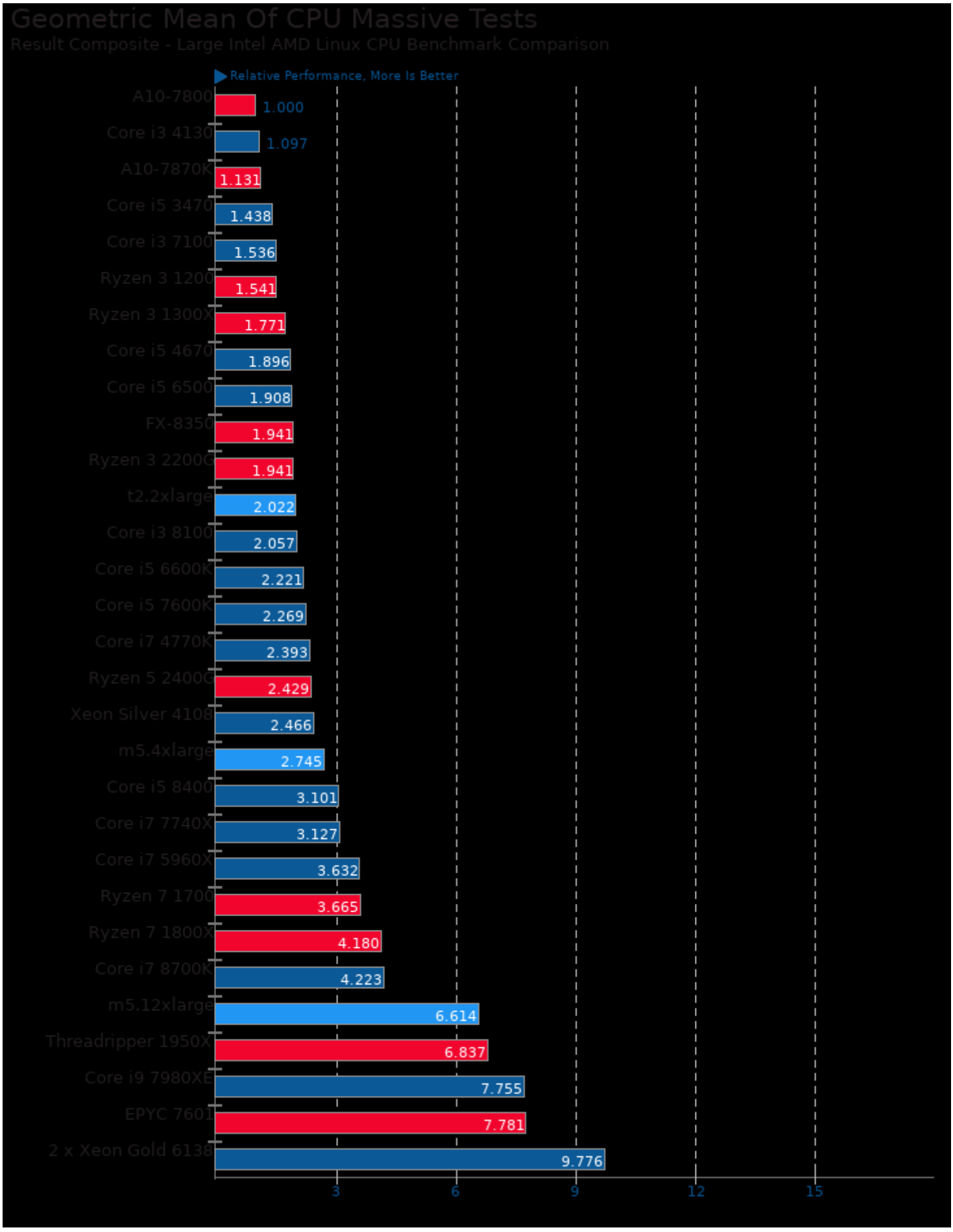
These geometric means are based upon test groupings / test suites for this result file.

Large Intel AMD Linux CPU Benchmark Comparison



Large Intel AMD Linux CPU Benchmark Comparison

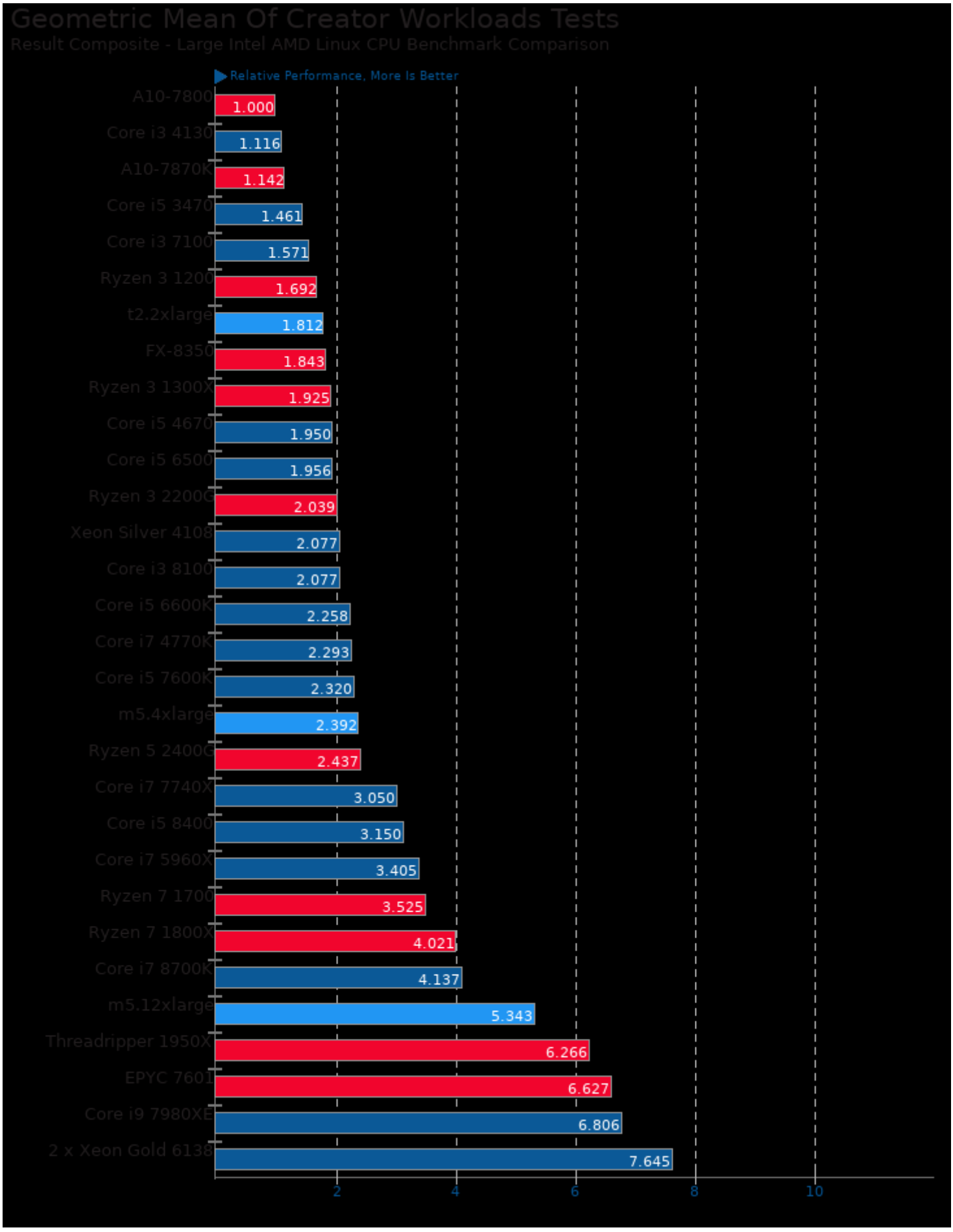
Geometric mean based upon tests: pts/mafft, pts/aobench, pts/c-ray, pts/compress-7zip, pts/encode-mp3, pts/john-the-ripper, pts/x264, pts/openssl and pts/nginx


Geometric Mean Of CPU Massive Tests
Result Composite - Large Intel AMD Linux CPU Benchmark Comparison
Relative Performance, More Is Better
A10-7800 1.000
Core i3 4130 1.097
A10-7870K 1.131
Core i5 3470 1.438
Core i3 7100 1.536
Ryzen 3 1200 1.541
Ryzen 3 1300X 1.771
Core i5 4670 1.896
Core i5 6500 1.908
FX-8350 1.941
Ryzen 3 2200G 1.941
t2.2xlarge 2.022
Core i3 8100 2.057
Core i5 6600K 2.221
Core i5 7600K 2.269
Core i7 4770K 2.393
Ryzen 5 2400G 2.429
Xeon Silver 4108 2.466
m5.4xlarge 2.745
Core i5 8400 3.101
Core i7 7740X 3.127
Core i7 5960X 3.632
Ryzen 7 1700 3.665
Ryzen 7 1800X 4.180
Core i7 8700K 4.223
m5.12xlarge 6.614
Threadripper 1950X 6.837
Core i9 7980XE 7.755
EPYC 7601 7.781
2 x Xeon Gold 6138 9.776
3
6
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12
15

Large Intel AMD Linux CPU Benchmark Comparison

Geometric mean based upon tests: pts/build-linux-kernel, pts/c-ray, pts/compress-7zip, pts/crafty, pts/x264, pts/encode-mp3, pts/john-the-ripper, pts/openssl, pts/mafft, pts/nero2d, pts/nginx, pts/npb, pts/parboil, pts/povray, pts/rodinia, pts/scikit-learn and pts/ttsiod-renderer

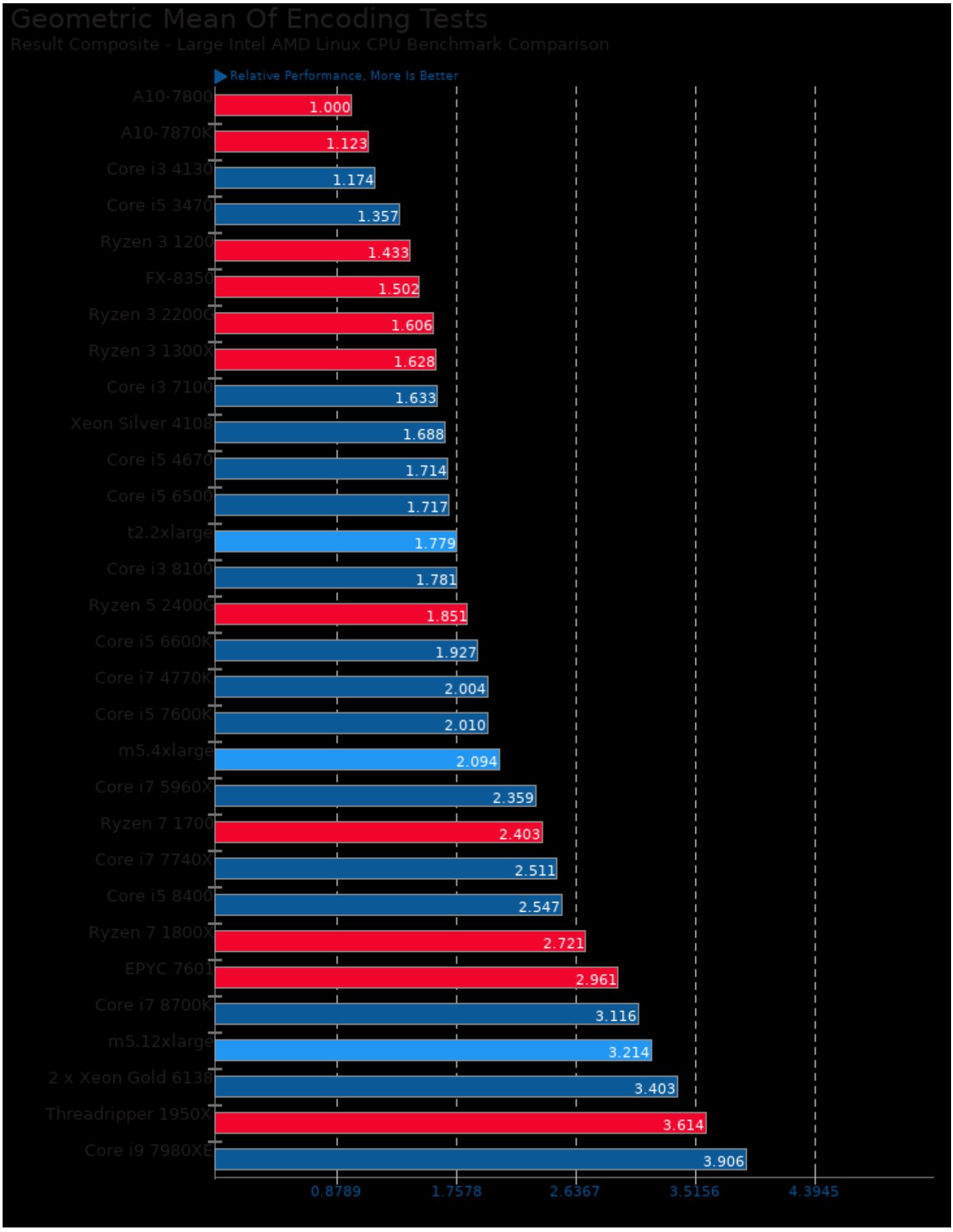
Large Intel AMD Linux CPU Benchmark Comparison



Large Intel AMD Linux CPU Benchmark Comparison

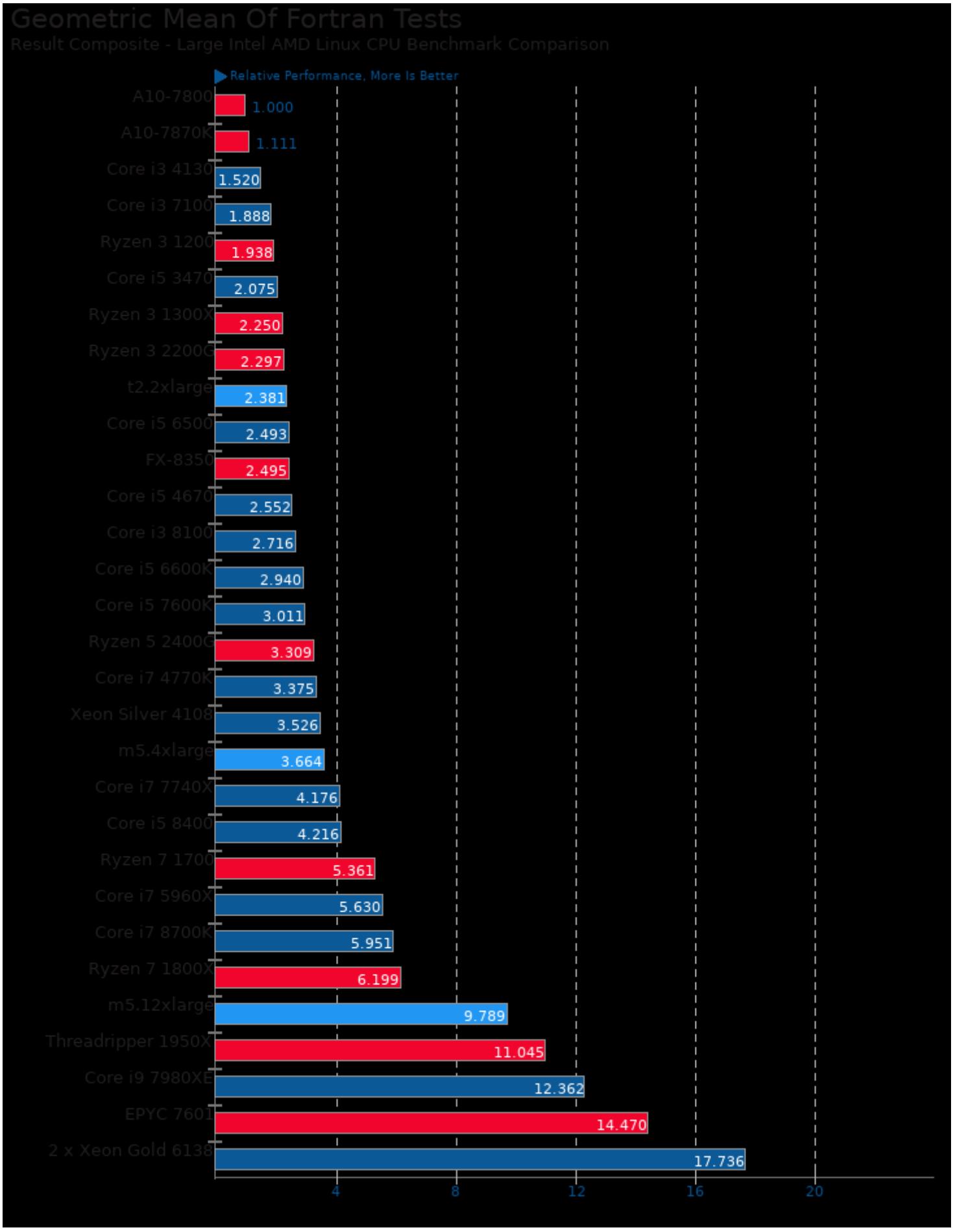
Geometric mean based upon tests: pts/c-ray, pts/povray, pts/aobench, pts/ttsiod-renderer, pts/x264 and pts/encode-mp3

Large Intel AMD Linux CPU Benchmark Comparison



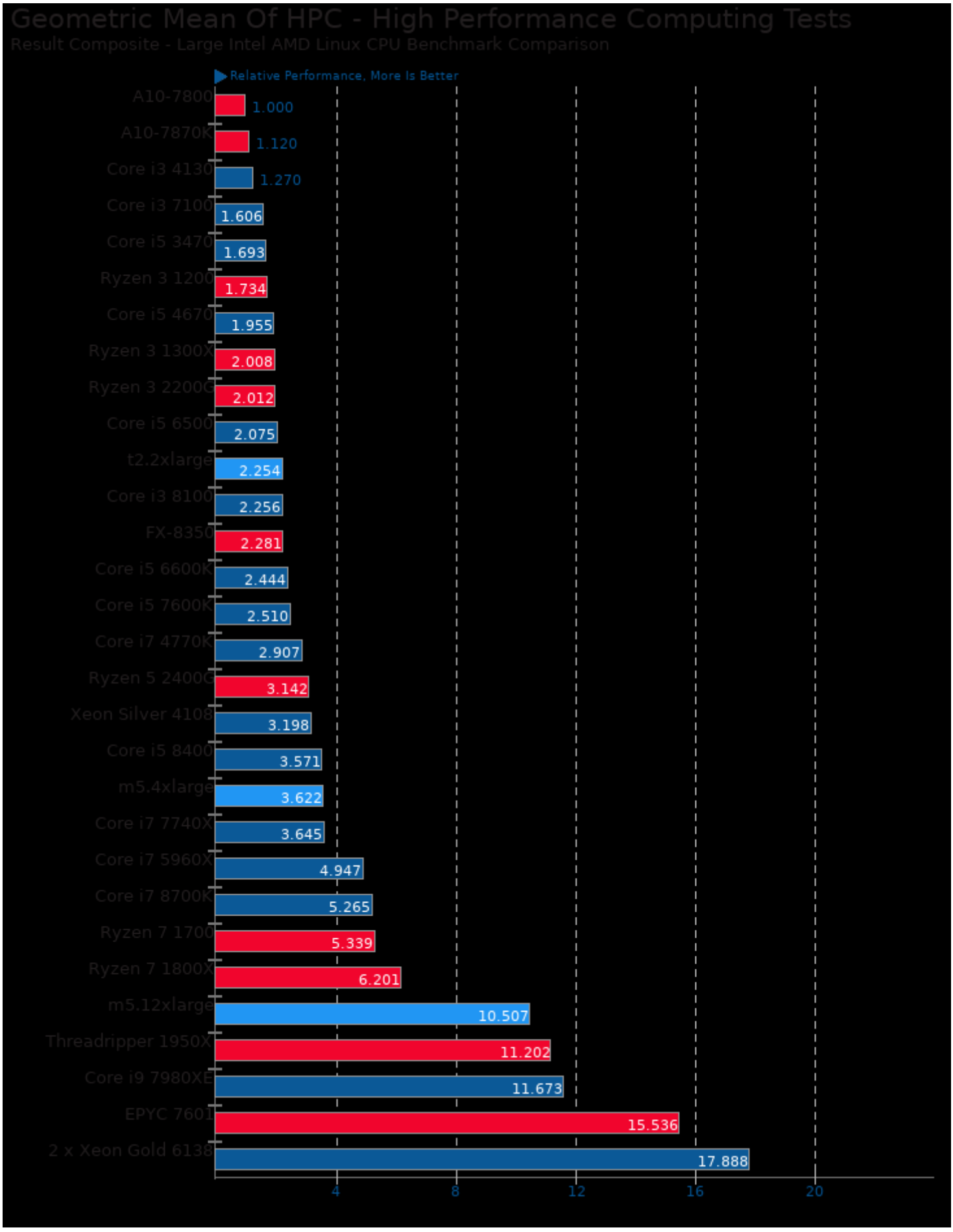
Large Intel AMD Linux CPU Benchmark Comparison

Geometric mean based upon tests: pts/encode-mp3 and pts/x264


Geometric Mean Of Fortran Tests
Result Composite - Large Intel AMD Linux CPU Benchmark Comparison
Relative Performance, More Is Better
A10-7800 1.000
A10-7870K 1.111
Core i3 4130 1.520
Core i3 7100 1.888
Ryzen 3 1200 1.938
Core i5 3470 2.075
Ryzen 3 1300X 2.250
Ryzen 3 2200G 2.297
t2.2xlarge 2.381
Core i5 6500 2.493
FX-8350 2.495
Core i5 4670 2.552
Core i3 8100 2.716
Core i5 6600K 2.940
Core i5 7600K 3.011
Ryzen 5 2400G 3.309
Core i7 4770K 3.375
Xeon Silver 4108 3.526
m5.4xlarge 3.664
Core i7 7740X 4.176
Core i5 8400 4.216
Ryzen 7 1700 5.361
Core i7 5960X 5.630
Core i7 8700K 5.951
Ryzen 7 1800X 6.199
m5.12xlarge 9.789
Threadripper 1950X 11.045
Core i9 7980XE 12.362
EPYC 7601 14.470
2 x Xeon Gold 6138 17.736
4
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Large Intel AMD Linux CPU Benchmark Comparison

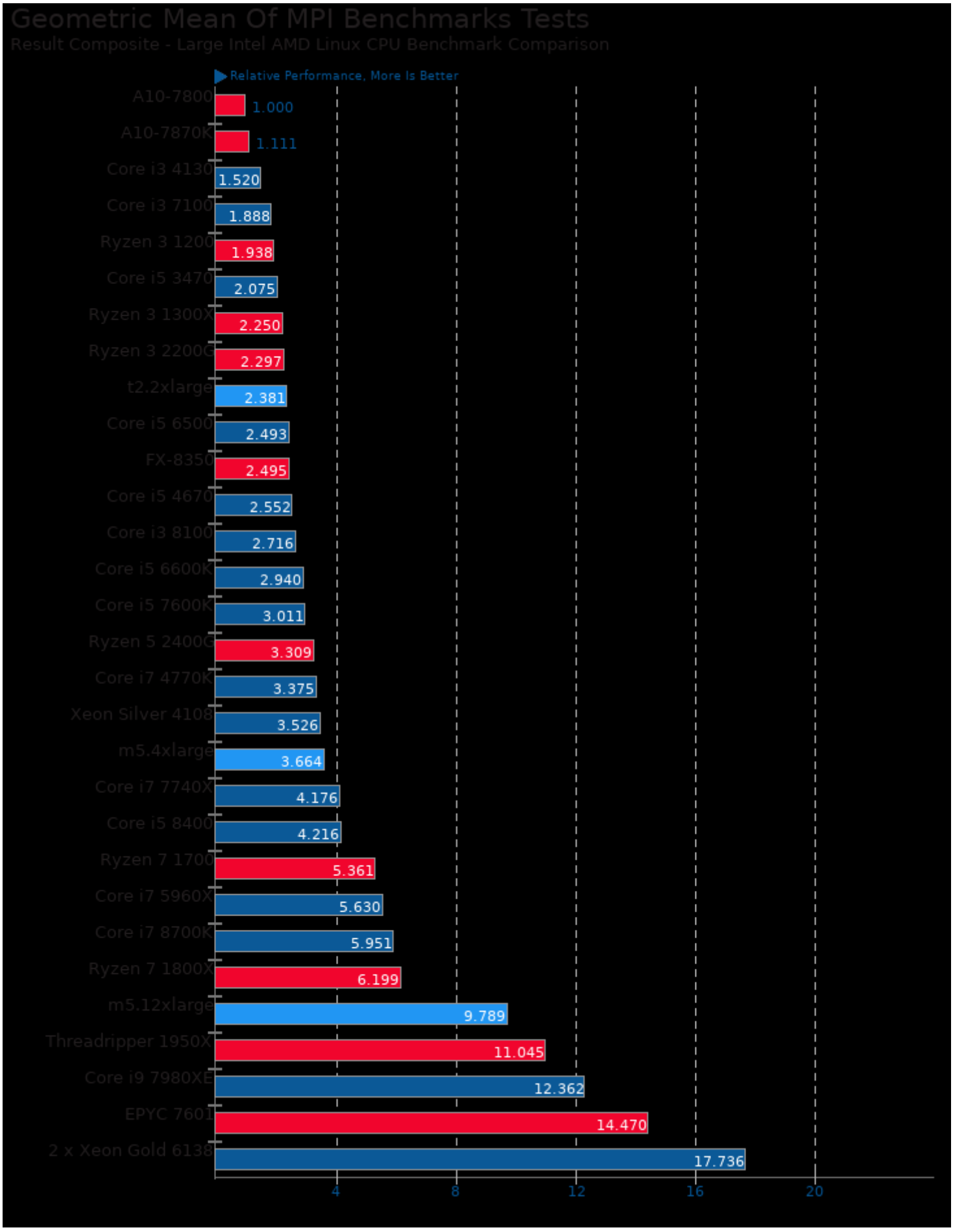
Geometric mean based upon tests: pts/npb and pts/nero2d


Geometric Mean Of HPC - High Performance Computing Tests
Result Composite - Large Intel AMD Linux CPU Benchmark Comparison
Relative Performance, More Is Better
A10-7800 1.000
A10-7870K 1.120
Core i3 4130 1.270
Core i3 7100 1.606
Core i5 3470 1.693
Ryzen 3 1200 1.734
Core i5 4670 1.955
Ryzen 3 1300X 2.008
Ryzen 3 2200G 2.012
Core i5 6500 2.075
t2.2xlarge 2.254
Core i3 8100 2.256
FX-8350 2.281
Core i5 6600K 2.444
Core i5 7600K 2.510
Core i7 4770K 2.907
Ryzen 5 2400G 3.142
Xeon Silver 4108 3.198
Core i5 8400 3.571
m5.4xlarge 3.622
Core i7 7740X 3.645
Core i7 5960X 4.947
Core i7 8700K 5.265
Ryzen 7 1700 5.339
Ryzen 7 1800X 6.201
m5.12xlarge 10.507
Threadripper 1950X 11.202
Core i9 7980XE 11.673
EPYC 7601 15.536
2 x Xeon Gold 6138 17.888
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Large Intel AMD Linux CPU Benchmark Comparison

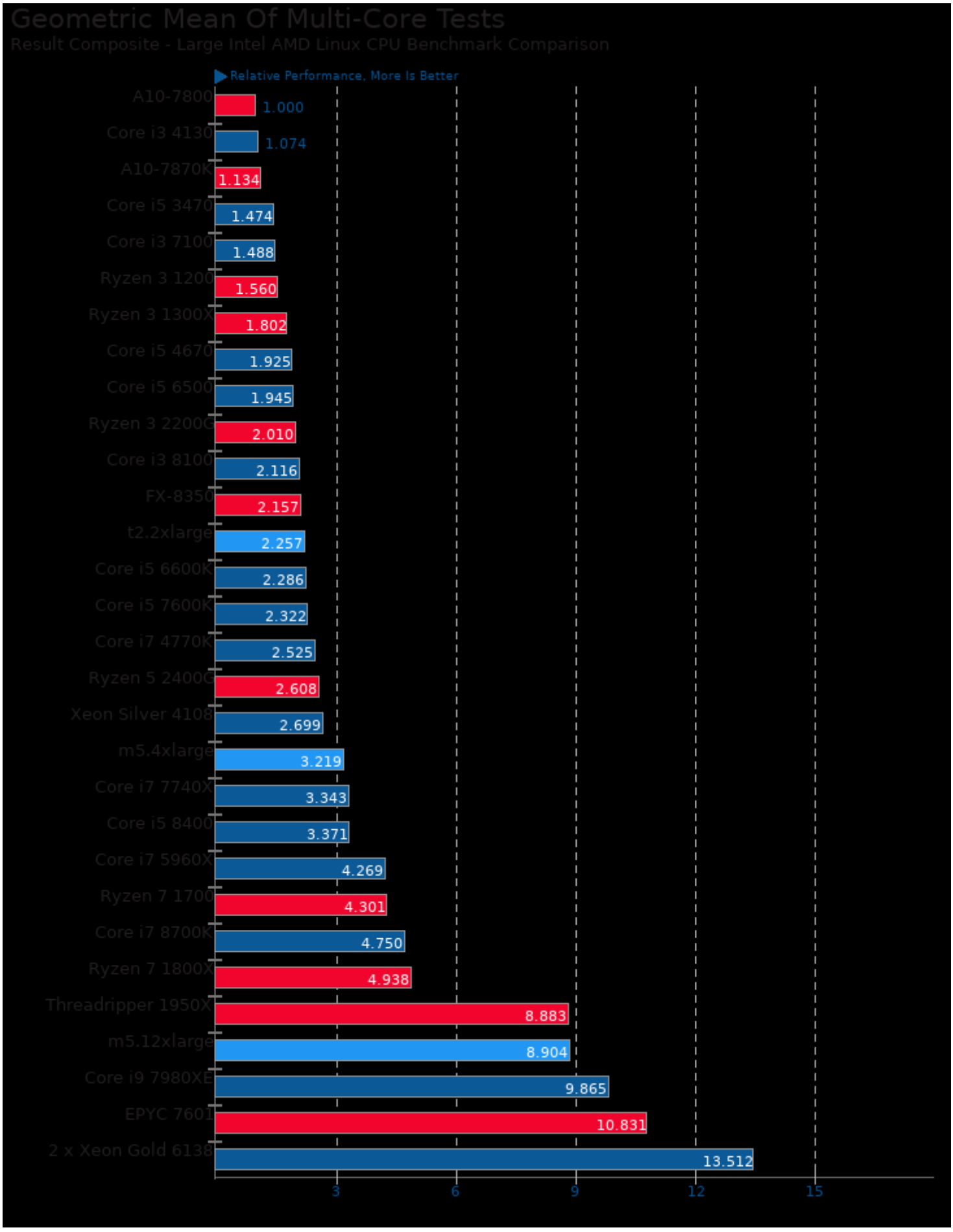
Geometric mean based upon tests: pts/npb, pts/rodinia, pts/parboil, pts/mafft and pts/scikit-learn

Large Intel AMD Linux CPU Benchmark Comparison



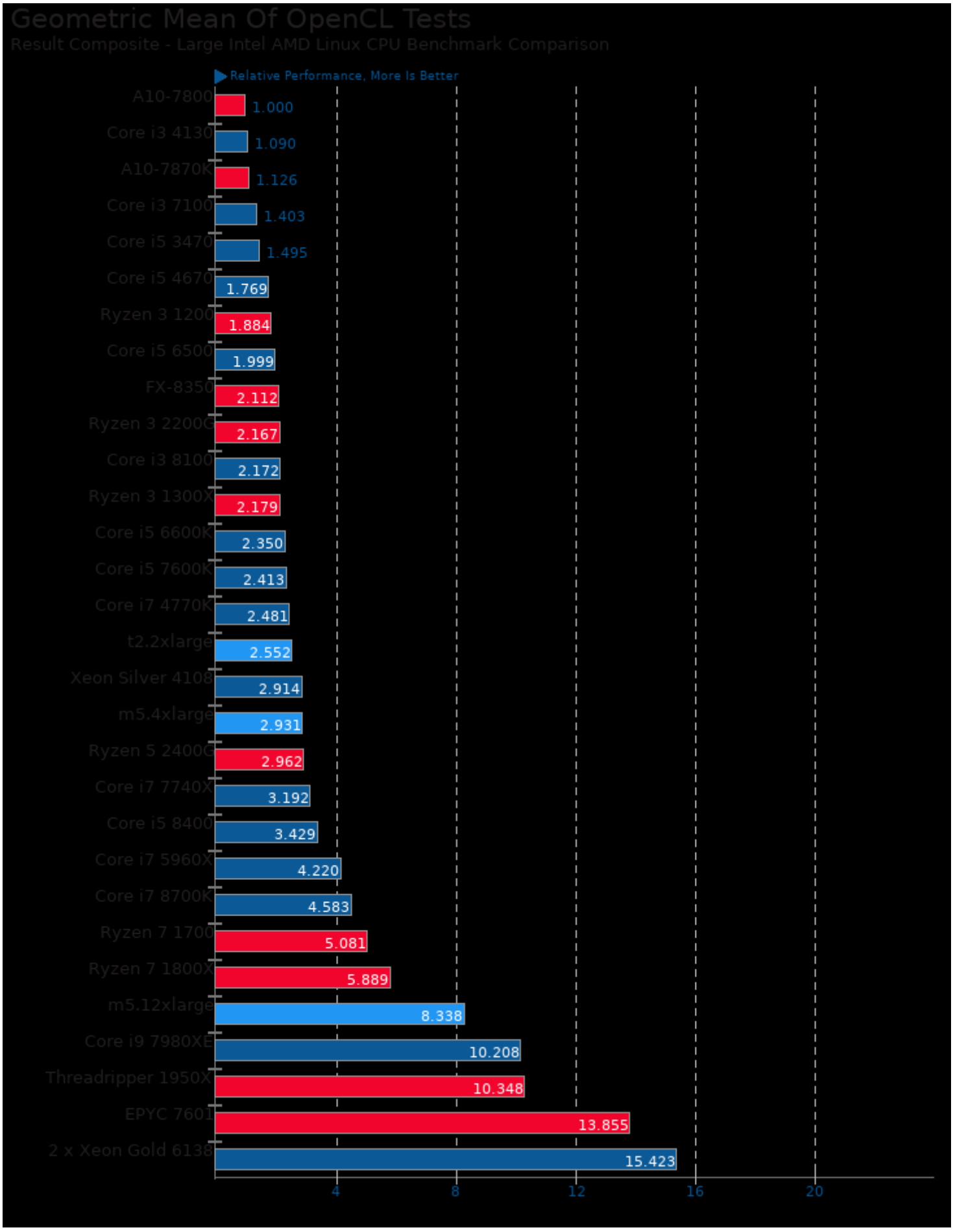
Large Intel AMD Linux CPU Benchmark Comparison

Geometric mean based upon tests: pts/nero2d and pts/npb


Geometric Mean Of Multi-Core Tests
Result Composite - Large Intel AMD Linux CPU Benchmark Comparison
Relative Performance, More Is Better
A10-7800 1.000
Core i3 4130 1.074
A10-7870K 1.134
Core i5 3470 1.474
Core i3 7100 1.488
Ryzen 3 1200 1.560
Ryzen 3 1300X 1.802
Core i5 4670 1.925
Core i5 6500 1.945
Ryzen 3 2200G 2.010
Core i3 8100 2.116
FX-8350 2.157
t2.2xlarge 2.257
Core i5 6600K 2.286
Core i5 7600K 2.322
Core i7 4770K 2.525
Ryzen 5 2400G 2.608
Xeon Silver 4108 2.699
m5.4xlarge 3.219
Core i7 7740X 3.343
Core i5 8400 3.371
Core i7 5960X 4.269
Ryzen 7 1700 4.301
Core i7 8700K 4.750
Ryzen 7 1800X 4.938
Threadripper 1950X 8.883
m5.12xlarge 8.904
Core i9 7980XE 9.865
EPYC 7601 10.831
2 x Xeon Gold 6138 13.512
3
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Large Intel AMD Linux CPU Benchmark Comparison

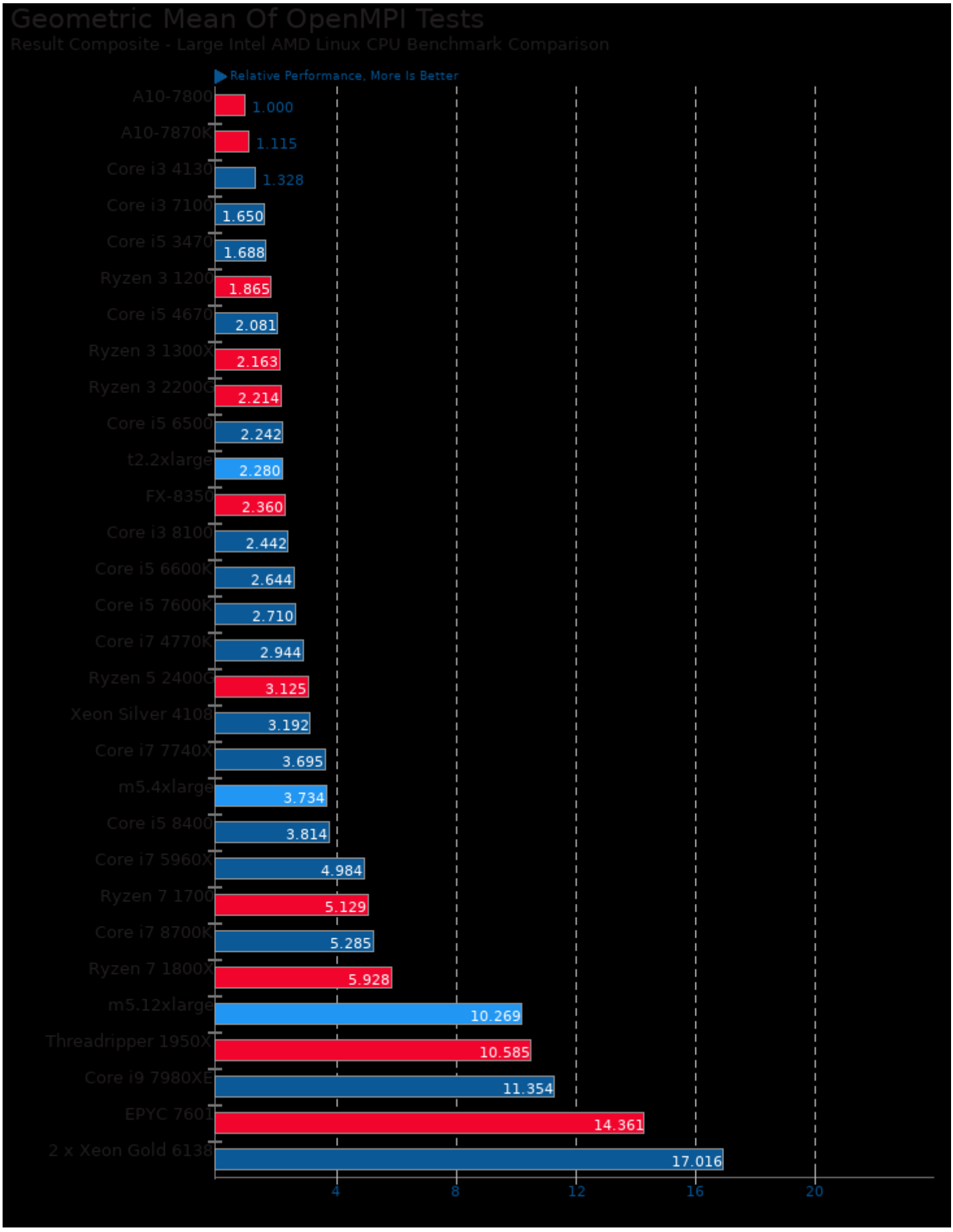
Geometric mean based upon tests: pts/c-ray, pts/povray, pts/x264, pts/rodinia, pts/parboil, pts/npb, pts/john-the-ripper, pts/nero2d, pts/compress-7zip, pts/build-linux-kernel, pts/aobench and pts/ttsiod-renderer


Geometric Mean Of OpenCL Tests
Result Composite - Large Intel AMD Linux CPU Benchmark Comparison
Relative Performance, More Is Better
A10-7800 1.000
Core i3 4130 1.090
A10-7870K 1.126
Core i3 7100 1.403
Core i5 3470 1.495
Core i5 4670 1.769
Ryzen 3 1200 1.884
Core i5 6500 1.999
FX-8350 2.112
Ryzen 3 2200G 2.167
Core i3 8100 2.172
Ryzen 3 1300X 2.179
Core i5 6600K 2.350
Core i5 7600K 2.413
Core i7 4770K 2.481
t2.2xlarge 2.552
Xeon Silver 4108 2.914
m5.4xlarge 2.931
Ryzen 5 2400G 2.962
Core i7 7740X 3.192
Core i5 8400 3.429
Core i7 5960X 4.220
Core i7 8700K 4.583
Ryzen 7 1700 5.081
Ryzen 7 1800X 5.889
m5.12xlarge 8.338
Core i9 7980XE 10.208
Threadripper 1950X 10.348
EPYC 7601 13.855
2 x Xeon Gold 6138 15.423
4
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Large Intel AMD Linux CPU Benchmark Comparison

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

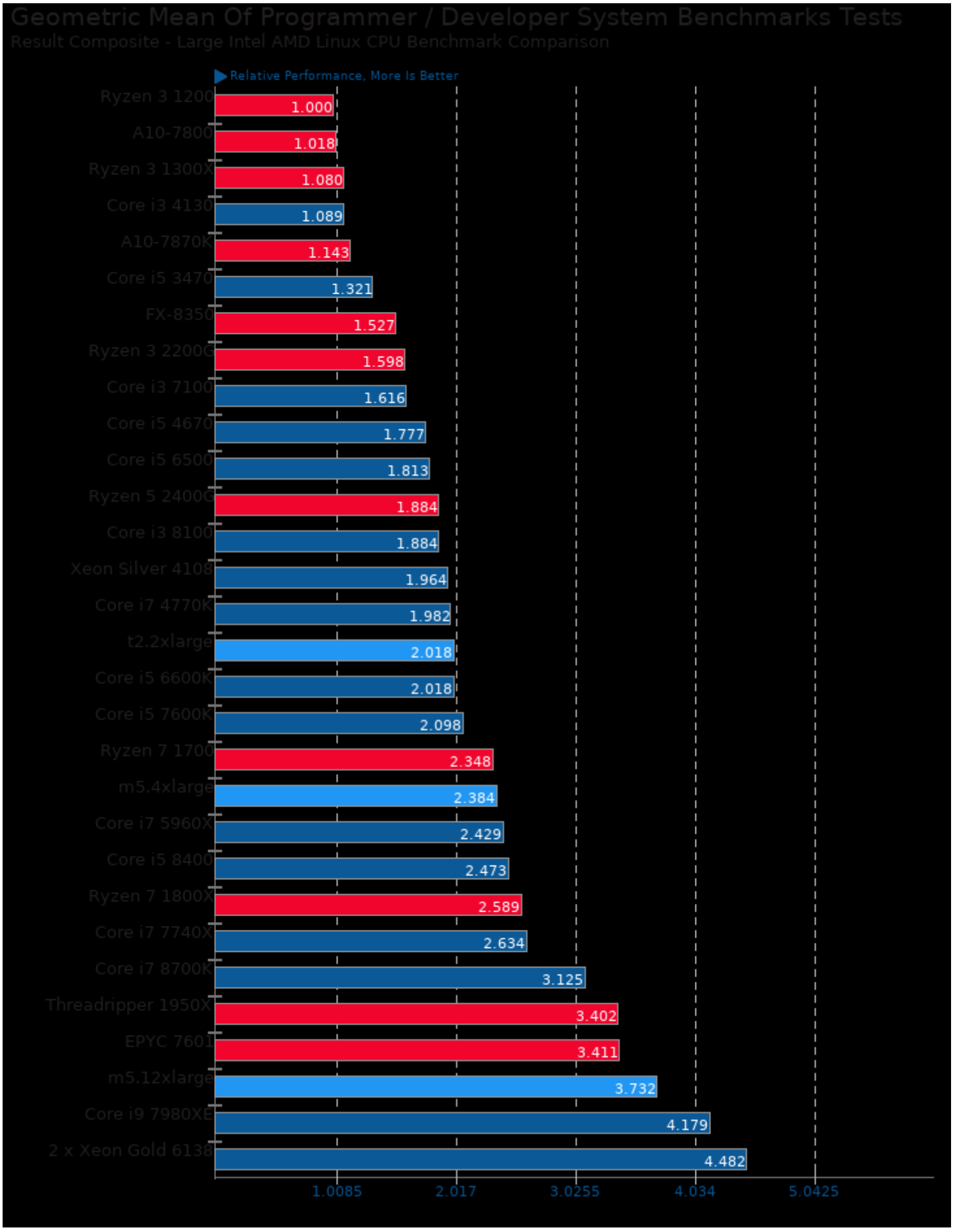
Large Intel AMD Linux CPU Benchmark Comparison



Large Intel AMD Linux CPU Benchmark Comparison

Geometric mean based upon tests: pts/npb, pts/rodinia and pts/nero2d

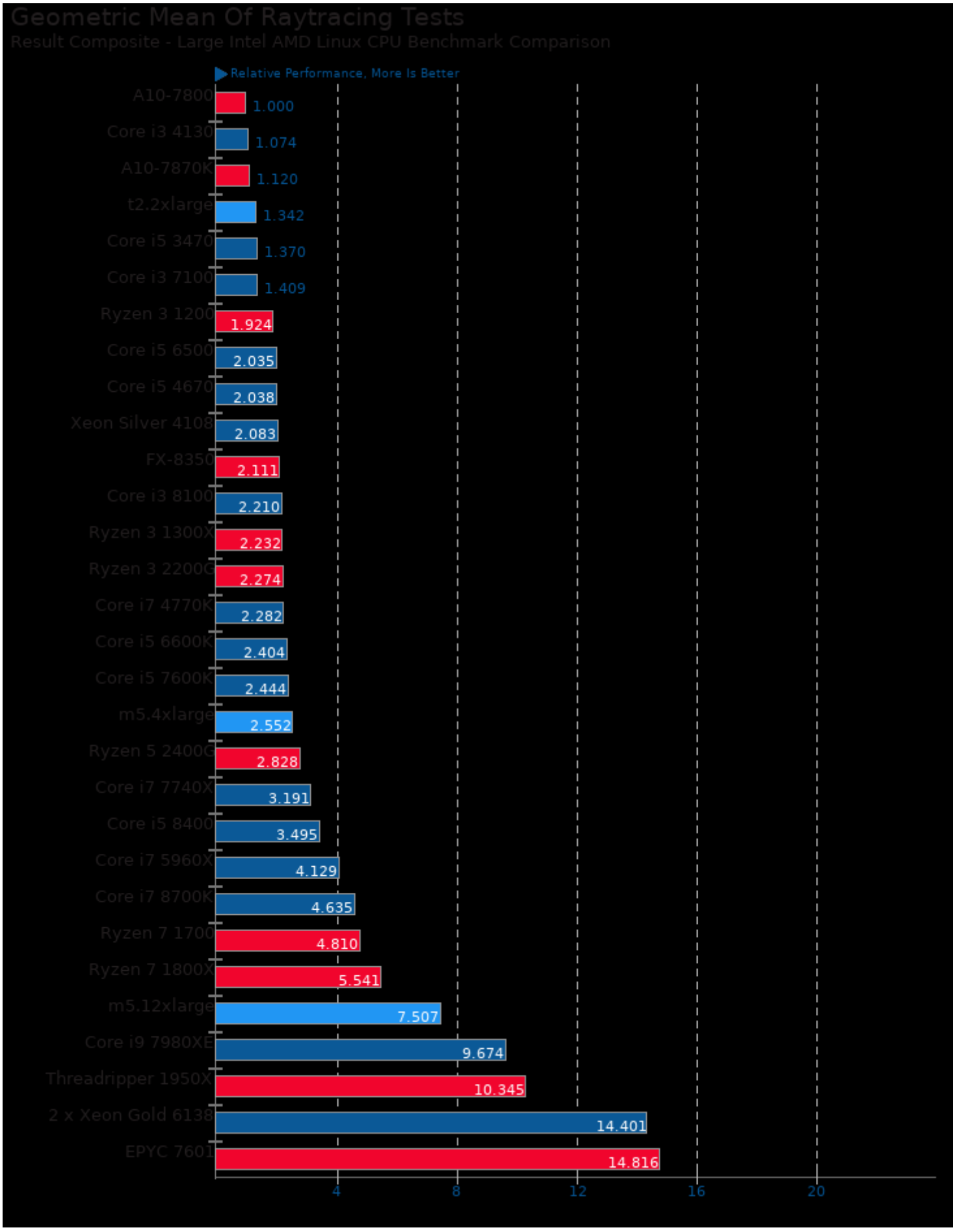
Large Intel AMD Linux CPU Benchmark Comparison



Large Intel AMD Linux CPU Benchmark Comparison

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

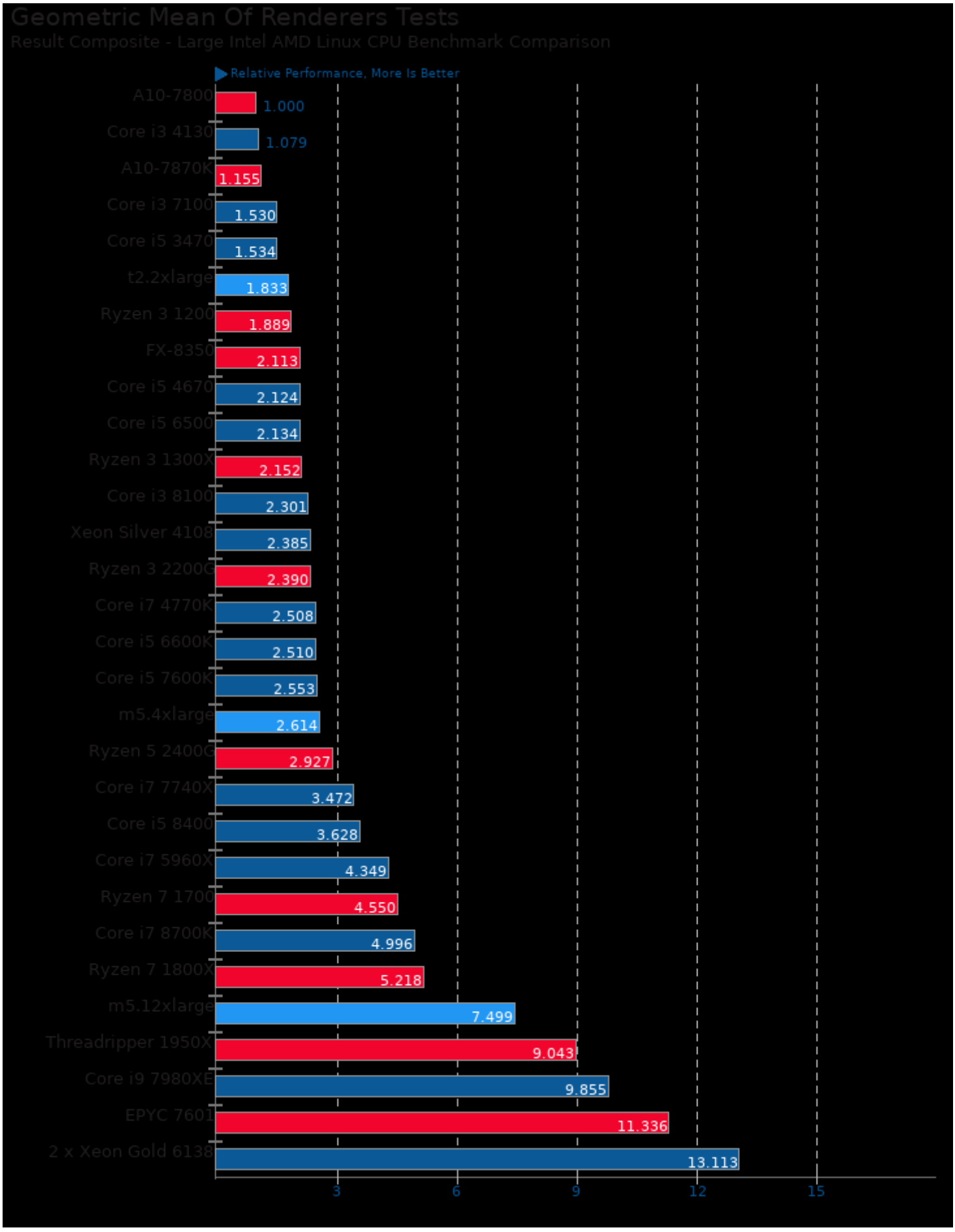
Large Intel AMD Linux CPU Benchmark Comparison



Large Intel AMD Linux CPU Benchmark Comparison

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

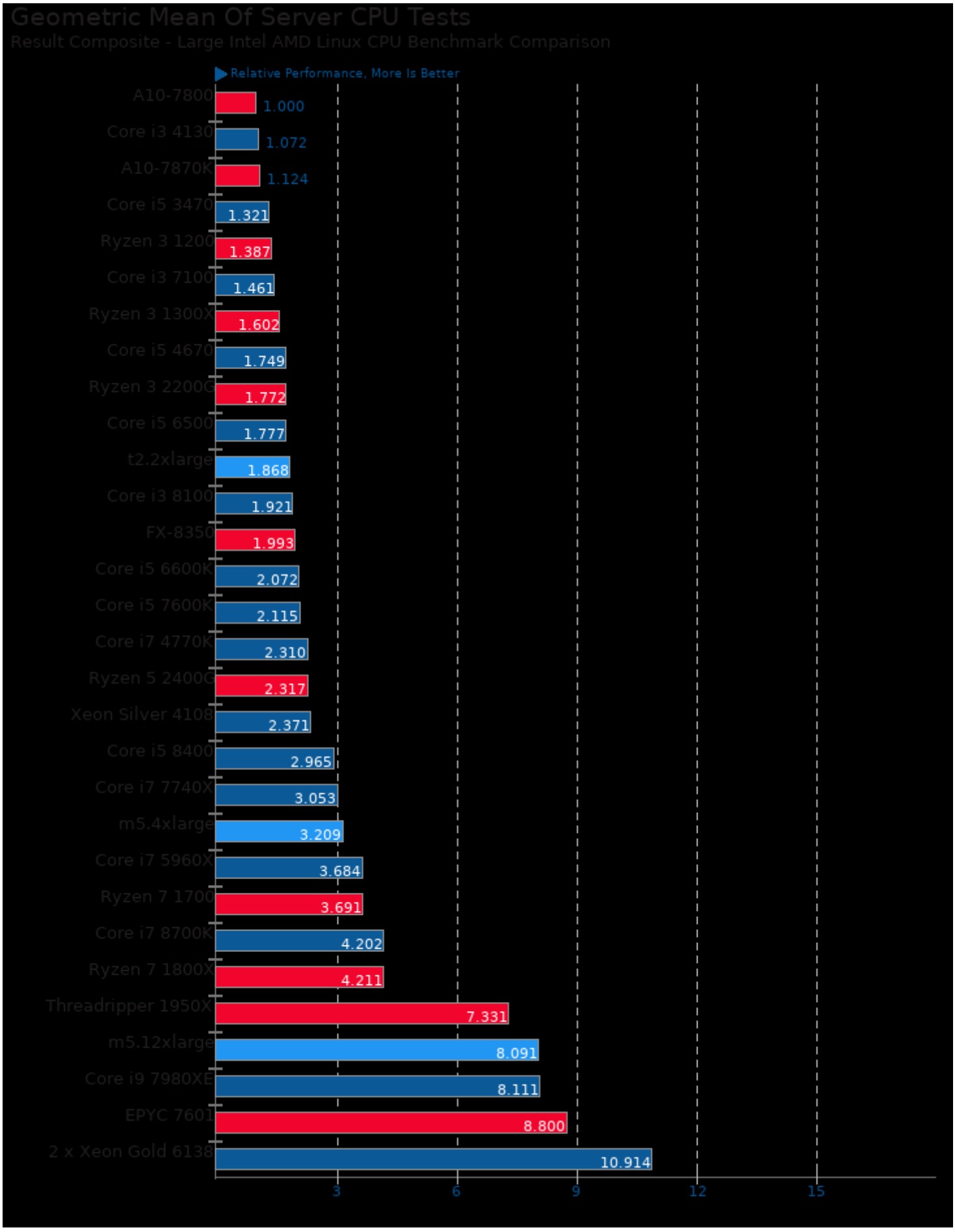
Large Intel AMD Linux CPU Benchmark Comparison



Large Intel AMD Linux CPU Benchmark Comparison

Geometric mean based upon tests: pts/c-ray, pts/povray, pts/aobench and pts/ttsiod-renderer

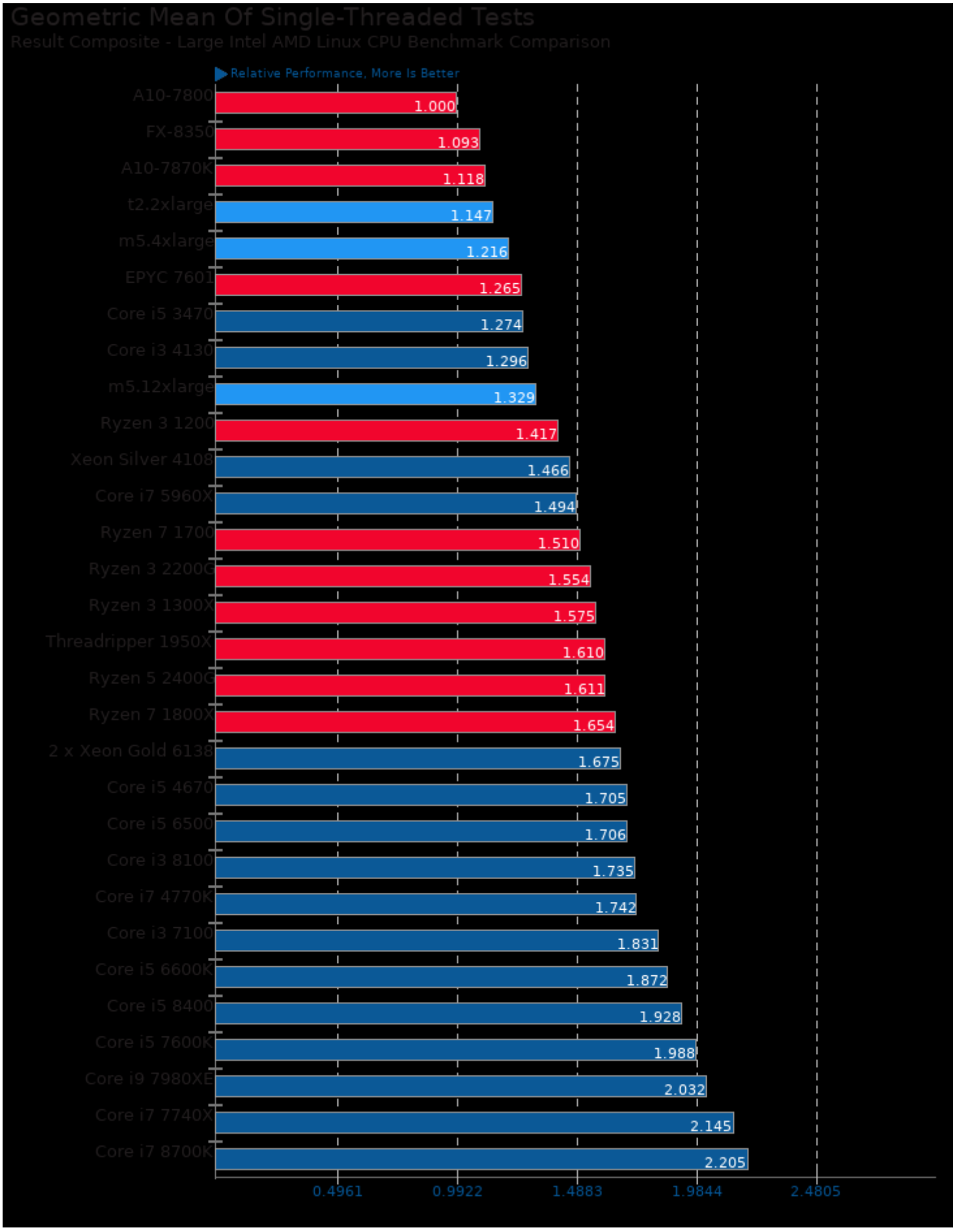
Large Intel AMD Linux CPU Benchmark Comparison



Large Intel AMD Linux CPU Benchmark Comparison

Geometric mean based upon tests: pts/npb, pts/rodinia, pts/john-the-ripper, pts/x264, pts/compress-7zip, pts/build-linux-kernel, pts/c-ray, pts/povray, pts/openssl, pts/pybench and pts/scikit-learn

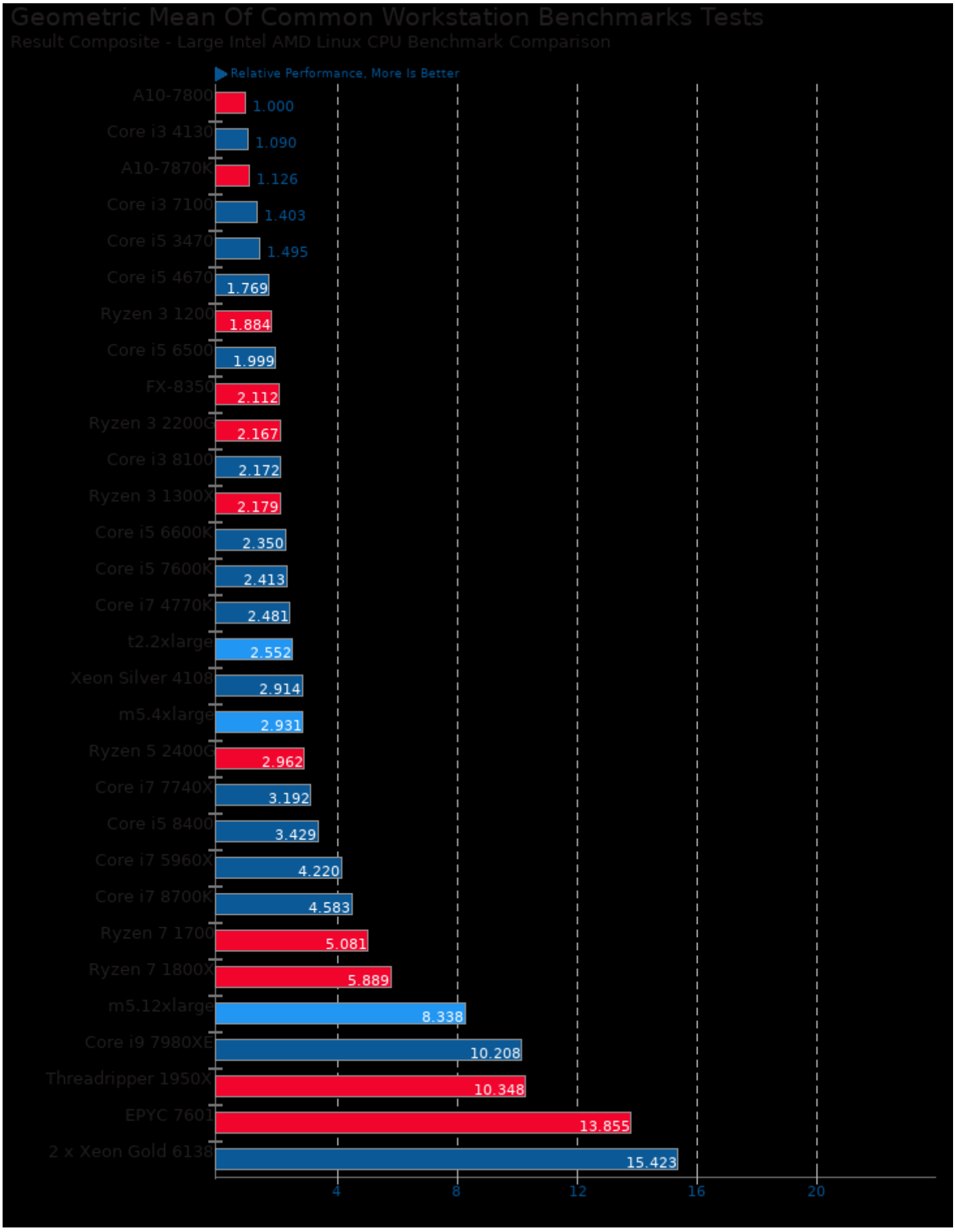
Large Intel AMD Linux CPU Benchmark Comparison



Large Intel AMD Linux CPU Benchmark Comparison

Geometric mean based upon tests: pts/encode-mp3, pts/pybench and pts/nginx

Large Intel AMD Linux CPU Benchmark Comparison



Large Intel AMD Linux CPU Benchmark Comparison

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

This file was automatically generated via the Phoronix Test Suite benchmarking software on Thursday, 28 March 2024 13:00.