www.phoronix-test-suite.com

vs. 2 x AMD EPYC 7742 vs. 2 x Ampere Altra Q80-33 vs. 2 x AMD EPYC 7543 vs. 2 x

Quick compare via the Phoronix Test Suite. Details https://servernews.ru/1034705/

Automated Executive Summary

2 x AMD EPYC 7543 had the most wins, coming in first place for 33% of the tests.

Based on the geometric mean of all complete results, the fastest (2 x AMD EPYC 7763) was 1.22x the speed of the slowest (2 x Ampere Altra Q80-33). 2 x AMD EPYC 7543 was 0.968x the speed of 2 x AMD EPYC 7763, 2 x AMD EPYC 7742 was 0.958x the speed of 2 x AMD EPYC 7543, 2 x Intel Xeon Platinum 8280 was 0.884x the speed of 2 x AMD EPYC 7742, 2 x Ampere Altra Q80-33 was 1x the speed of 2 x Intel Xeon Platinum 8280.

Test Systems:

2 x AMD EPYC 7763

Processor: 2 x AMD EPYC 7763 64-Core @ 2.45GHz (128 Cores / 256 Threads), Motherboard: AMD DAYTONA_X (RYM1001D BIOS), Chipset: AMD Starship/Matisse, Memory: 1008GB, Disk: 3201GB HUSMR7632BDP3M1 + 256GB

Micron_1100_MTFD, Graphics: ASPEED, Network: 2 x Mellanox MT27710

OS: Ubuntu 20.10, Kernel: 5.8.0-44-generic (x86_64), Compiler: GCC 10.2.0, File-System: xfs, Screen Resolution: 1024x768

Kernel Notes: Transparent Huge Pages: madvise
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++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-nvptx/usr,amdgcn-amdhsa=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-gcn/usr,hsa --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: acpi-cpufreq performance (Boost: Enabled) - CPU Microcode: 0xa001119
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline IBPB: conditional IBRS_FW STIBP: always-on RSB filling + srbds: Not affected + tsx_async_abort: Not affected

2 x Intel Xeon Platinum 8280

Processor: 2 x Intel Xeon Platinum 8280 @ 4.00GHz (56 Cores / 112 Threads), Motherboard: GIGABYTE MD61-SC2-00 v01000100 (T15 BIOS), Chipset: Intel Sky Lake-E DMI3 Registers, Memory: 12 x 32 GB DDR4-2933MT/s HMA84GR7CJR4N-WM, Disk: 3841GB Micron_9300_MTFDHAL3T8TDP, Graphics: ASPEED, Network: 2 x Intel X722 for 1GbE + 2 x QLogic FastLinQ QL41000 10/25/40/50GbE

OS: Ubuntu 20.10, Kernel: 5.8.0-29-generic (x86_64), Desktop: GNOME Shell 3.38.1, Display Server: X Server 1.20.8, Display Driver: modesetting 1.20.8, Compiler: GCC 10.2.0, File-System: ext4, Screen Resolution: 1024x768

Environment Notes: CXXFLAGS="-O3 -march=native" CFLAGS="-O3 -march=native"
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++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-nvptx/usr,amdgcn-amdhsa=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-gcn/usr,hsa --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic --without-cuda-driver -v
Disk Notes: NONE / errors=remount-ro,relatime,rw / Block Size: 4096
Processor Notes: Scaling Governor: intel_pstate performance - CPU Microcode: 0x5003003
Java Notes: OpenJDK Runtime Environment (build 11.0.9.1+1-Ubuntu-0ubuntu1.20.10)
Python Notes: Python 2.7.18 + Python 3.8.6
Security Notes: itlb_multihit: KVM: Mitigation of VMX disabled + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Enhanced IBRS IBPB: conditional RSB filling + srbds: Not affected + tsx_async_abort: Mitigation of TSX disabled

2 x AMD EPYC 7742

Processor: 2 x AMD EPYC 7742 64-Core @ 2.25GHz (128 Cores / 256 Threads), Motherboard: AMD DAYTONA_X (RDY1006G BIOS), Chipset: AMD Starship/Matisse, Memory: 16 x 32 GB DDR4-3200MT/s 36ASF4G72PZ-3G2E2, Disk: 3841GB Micron_9300_MTFDHAL3T8TDP, Graphics: ASPEED, Monitor: VE228, Network: 2 x Mellanox MT27710

OS: Ubuntu 20.10, Kernel: 5.8.0-29-generic (x86_64), Display Server: X Server 1.20.8, Display Driver: modesetting 1.20.8, Compiler: GCC 10.2.0, File-System: ext4, Screen Resolution: 1920x1080

Environment Notes: CXXFLAGS="-O3 -march=native" CFLAGS="-O3 -march=native"
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++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-nvptx/usr,amdgcn-amdhsa=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-gcn/usr,hsa --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic --without-cuda-driver -v
Disk Notes: NONE / errors=remount-ro,relatime,rw / Block Size: 4096
Processor Notes: Scaling Governor: acpi-cpufreq performance - CPU Microcode: 0x8301034
Java Notes: OpenJDK Runtime Environment (build 11.0.9.1+1-Ubuntu-0ubuntu1.20.10)
Python Notes: Python 2.7.18 + Python 3.8.6

Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline IBPB: conditional IBRS_FW STIBP: conditional RSB filling + srbds: Not affected + tsx_async_abort: Not affected

2 x Ampere Altra Q80-33

Processor: Ampere Altra ARMv8 Neoverse-N1 @ 3.30GHz (160 Cores), Motherboard: WIWYNN Mt.Jade (1.1.20201019 BIOS), Chipset: Ampere Computing LLC Device e100, Memory: 16 x 32 GB DDR4-3200MT/s Samsung M393A4K40DB3-CWE, Disk: 3841GB Micron_9300_MTFDHAL3T8TDP + 960GB SAMSUNG MZ1LB960HAJQ-00007, Graphics: ASPEED, Monitor: VE228, Network: Mellanox MT28908 + Intel I210

OS: Ubuntu 20.10, Kernel: 5.10.0-051000rc6daily20201206-generic (aarch64) 20201206, Display Server: X Server 1.20.9, Display Driver: modesetting 1.20.9, Compiler: GCC 10.2.0, File-System: ext4, Screen Resolution: 1920x1080

Environment Notes: CXXFLAGS=-O3 CFLAGS=-O3
Compiler Notes: --build=aarch64-linux-gnu --disable-libquadmath --disable-libquadmath-support --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-fix-cortex-a53-843419 --enable-gnu-unique-object --enable-languages=c,ada,c++,go,d,fortran,objc,obj-c++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc=auto --enable-plugin --enable-shared --enable-threads=posix --host=aarch64-linux-gnu --program-prefix=aarch64-linux-gnu- --target=aarch64-linux-gnu --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-target-system-zlib=auto -v
Processor Notes: Scaling Governor: cppc_cpufreq performance (Boost: Enabled)
Python Notes: Python 3.8.6
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl + spectre_v1: Mitigation of __user pointer sanitization + spectre_v2: Not affected + srbds: Not affected + tsx_async_abort: Not affected

2 x AMD EPYC 7543

Processor: 2 x AMD EPYC 7543 32-Core @ 2.80GHz (64 Cores / 128 Threads), Motherboard: AMD DAYTONA_X (RYM1001D BIOS), Chipset: AMD Starship/Matisse, Memory: 504GB, Disk: 3201GB HUSMR7632BDP3M1 + 256GB Micron_1100_MTFD, Graphics: ASPEED, Network: 2 x Mellanox MT27710

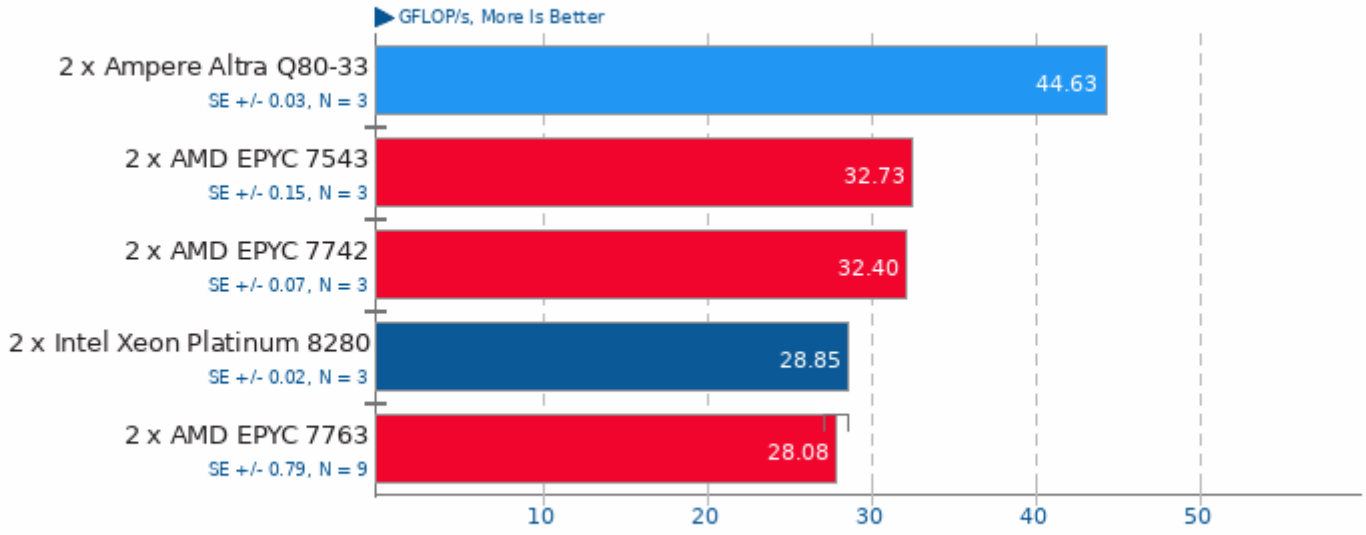
OS: Ubuntu 20.10, Kernel: 5.8.0-44-generic (x86_64), Compiler: GCC 10.2.0, File-System: xfs, Screen Resolution: 1024x768

Kernel Notes: Transparent Huge Pages: madvise
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++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-nvptx/usr,amdgcn-amdhsa=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-gcn/usr,hsa --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic --without-cuda-driver -v
Disk Notes: NONE / attr2,inode64,logbsize=32k,logbufs=8,noquota,relatime,rw / Block Size: 4096
Processor Notes: Scaling Governor: acpi-cpufreq performance (Boost: Enabled) - CPU Microcode: 0xa001119
Java Notes: OpenJDK Runtime Environment (build 11.0.10+9-Ubuntu-0ubuntu1.20.10)
Python Notes: Python 2.7.18 + Python 3.8.6
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline IBPB: conditional IBRS_FW STIBP: always-on RSB filling + srbds: Not affected + tsx_async_abort: Not affected

	2 x AMD EPYC 7763	2 x Intel Xeon Platinum 8280	2 x AMD EPYC 7742	2 x Ampere Altra Q80-33	2 x AMD EPYC 7543
High Performance Conjugate Gradient (GFLOP/s)	**28.0783**	28.8477	32.3962	**44.6253**	32.7278
Normalized	62.92%	64.64%	72.6%	100%	73.34%
Standard Deviation	8.5%	0.1%	0.4%	0.1%	0.8%

Rodinia - OpenMP LavaMD (sec)	26.213	56.423	31.317	29.491	37.575
Normalized	100%	46.46%	83.7%	88.88%	69.76%
Standard Deviation	2.5%	0.3%	0.8%	6.2%	2.4%
Numpy Benchmark (Score)	363.22	329.32	300.56	240.93	391.75
Normalized	92.72%	84.06%	76.72%	61.5%	100%
Standard Deviation	0.7%	0.2%	0.3%	0.8%	0.4%
Timed LLVM Compilation - Time To Compile (sec)	187.095	225.600	203.918	282.642	190.060
Normalized	100%	82.93%	91.75%	66.2%	98.44%
Standard Deviation	0.2%	1.2%	0.5%	2.8%	1.1%
OpenSSL - R.4.b.P (Signs/sec)	26545	13717	25075	8637	15764
Normalized	100%	51.67%	94.46%	32.54%	59.39%
Standard Deviation	0.1%	0.3%	0%	0.6%	0.1%
TNN - CPU - MobileNet v2 (ms)	345.543	337.357	332.587	318.949	288.849
Normalized	83.59%	85.62%	86.85%	90.56%	100%
Standard Deviation	0.4%	0.3%	2%	3.5%	1.4%
TNN - CPU - SqueezeNet v1.1 (ms)	295.740	326.466	300.670	253.657	276.862
Normalized	85.77%	77.7%	84.36%	100%	91.62%
Standard Deviation	0%	0%	0.3%	0.4%	0.1%
PyBench - T.F.A.T.T	972	1096	1173	1306	917
Normalized	94.34%	83.67%	78.18%	70.21%	100%
Standard Deviation	0.5%	0.1%		0.8%	0.5%
PHPBench - P.B.S (Score)	592611	652140	515977	522274	639114
Normalized	90.87%	100%	79.12%	80.09%	98%
Standard Deviation	0.9%	0.2%	1.9%	0.9%	0.5%

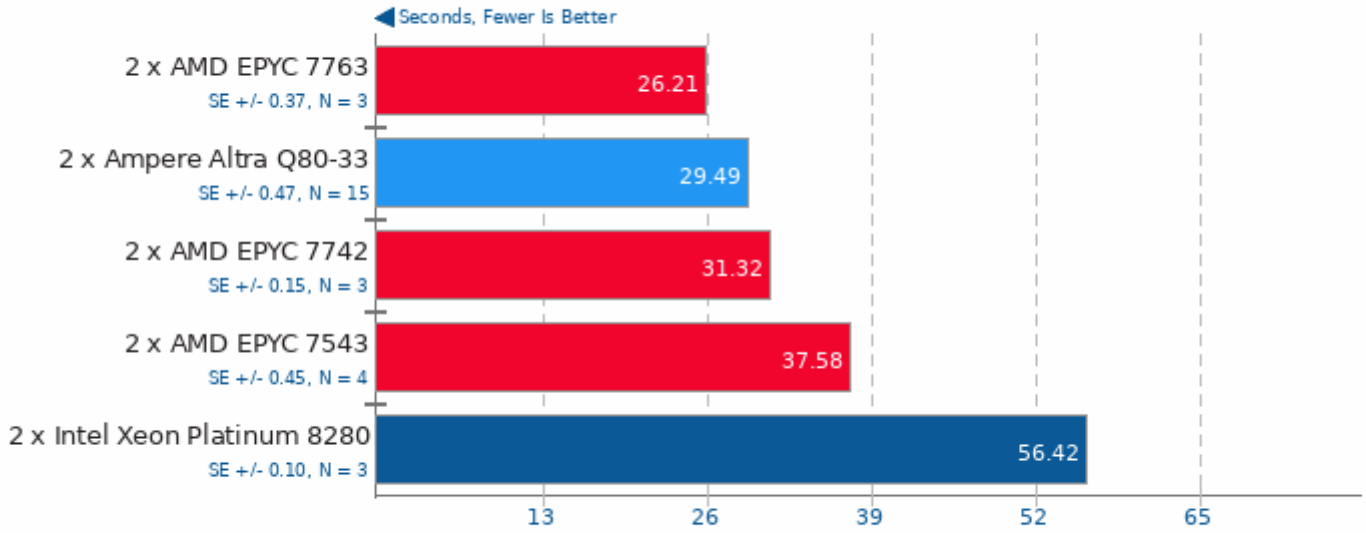
High Performance Conjugate Gradient 3.1



1. (CXX) g++ options: -O3 -ffast-math -ftree-vectorize -pthread -lmpi_cxx -lmpi

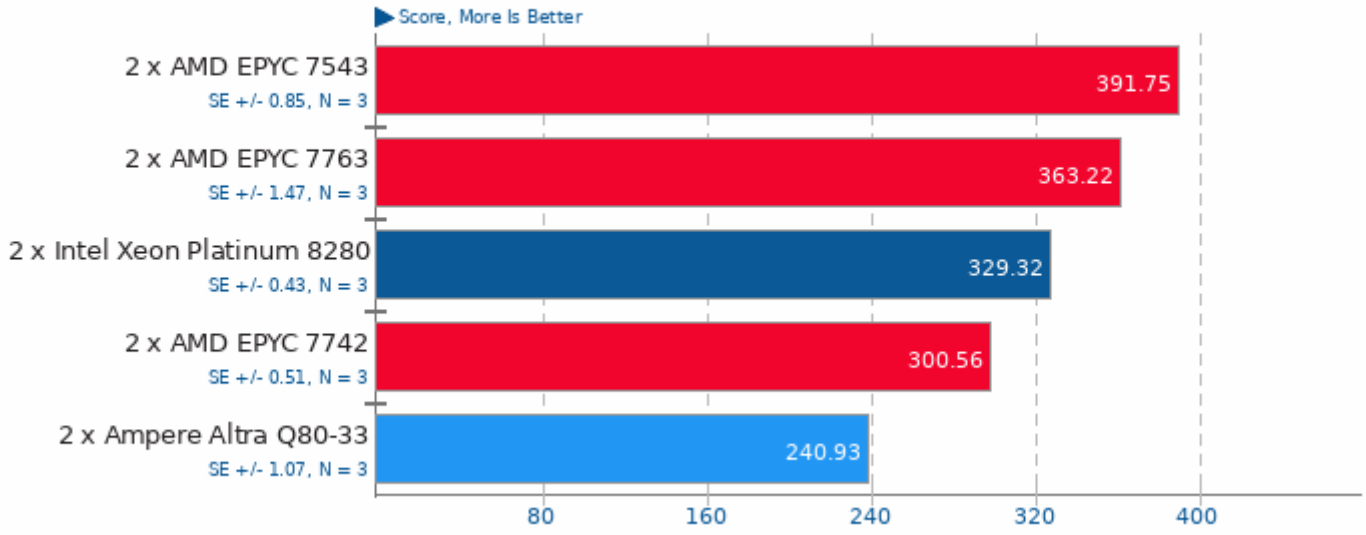
Rodinia 3.1

Test: OpenMP LavaMD



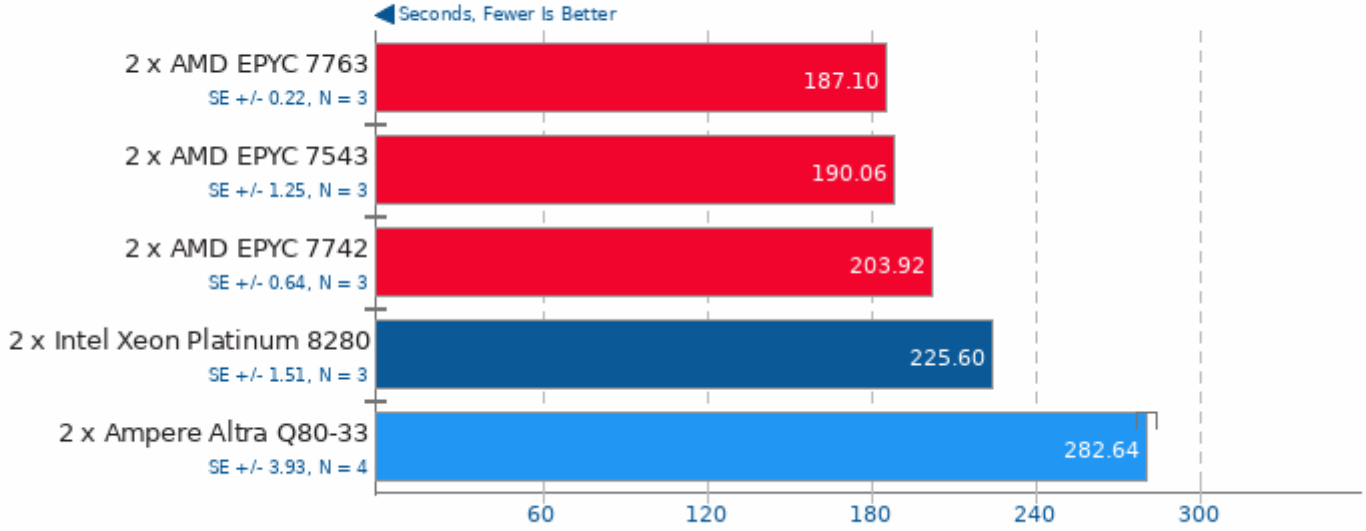
1. (CXX) g++ options: -O2 -lOpenCL

Numpy Benchmark



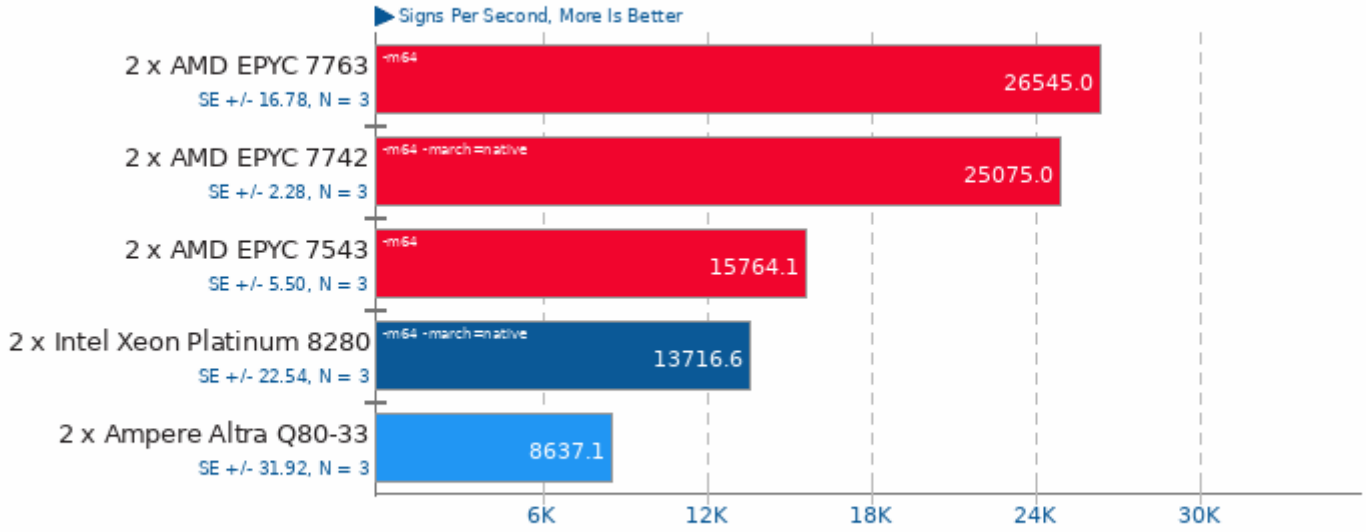
Timed LLVM Compilation 10.0

Time To Compile



OpenSSL 1.1.1

RSA 4096-bit Performance



1. (CC) gcc options: -pthread -O3 -lssl -lcrypto -ldl

TNN 0.2.3

Target: CPU - Model: MobileNet v2

1. (CXX) g++ options: -fopenmp -pthread -fvisibility=hidden -O3 -rdynamic -ldl

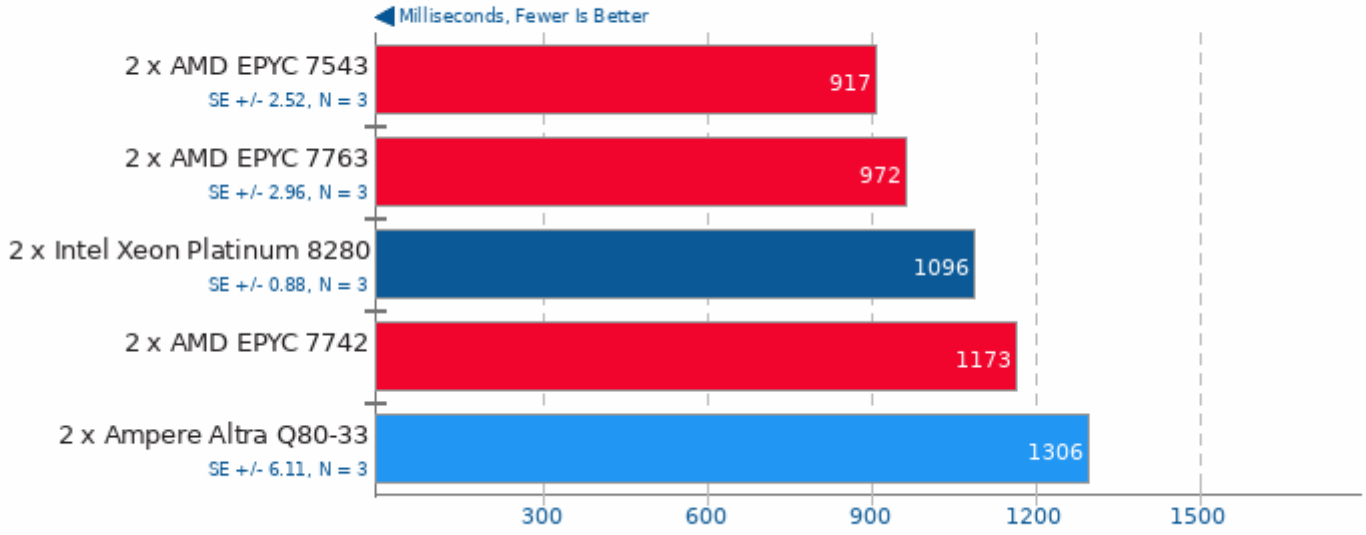
TNN 0.2.3

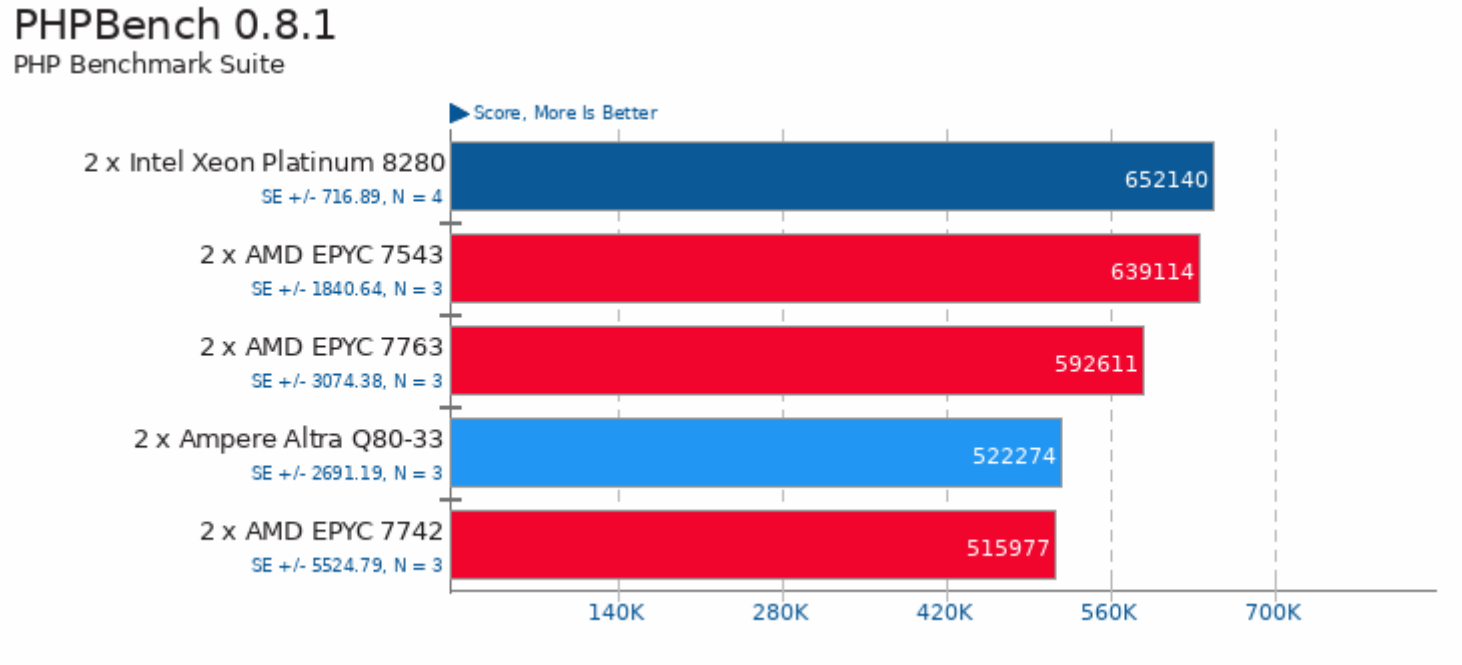
Target: CPU - Model: SqueezeNet v1.1

1. (CXX) g++ options: -O3 -fopenmp -pthread -fvisibility=hidden -rdynamic -ldl

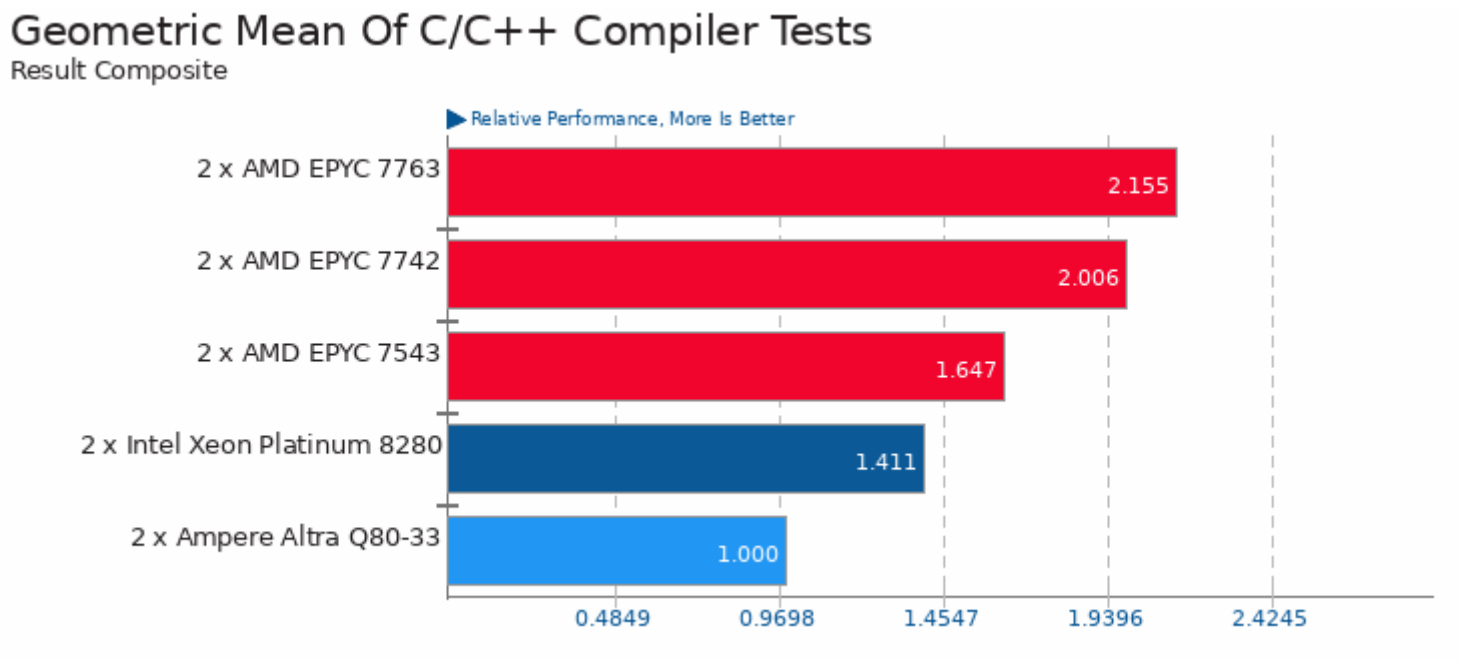
PyBench 2018-02-16

Total For Average Test Times

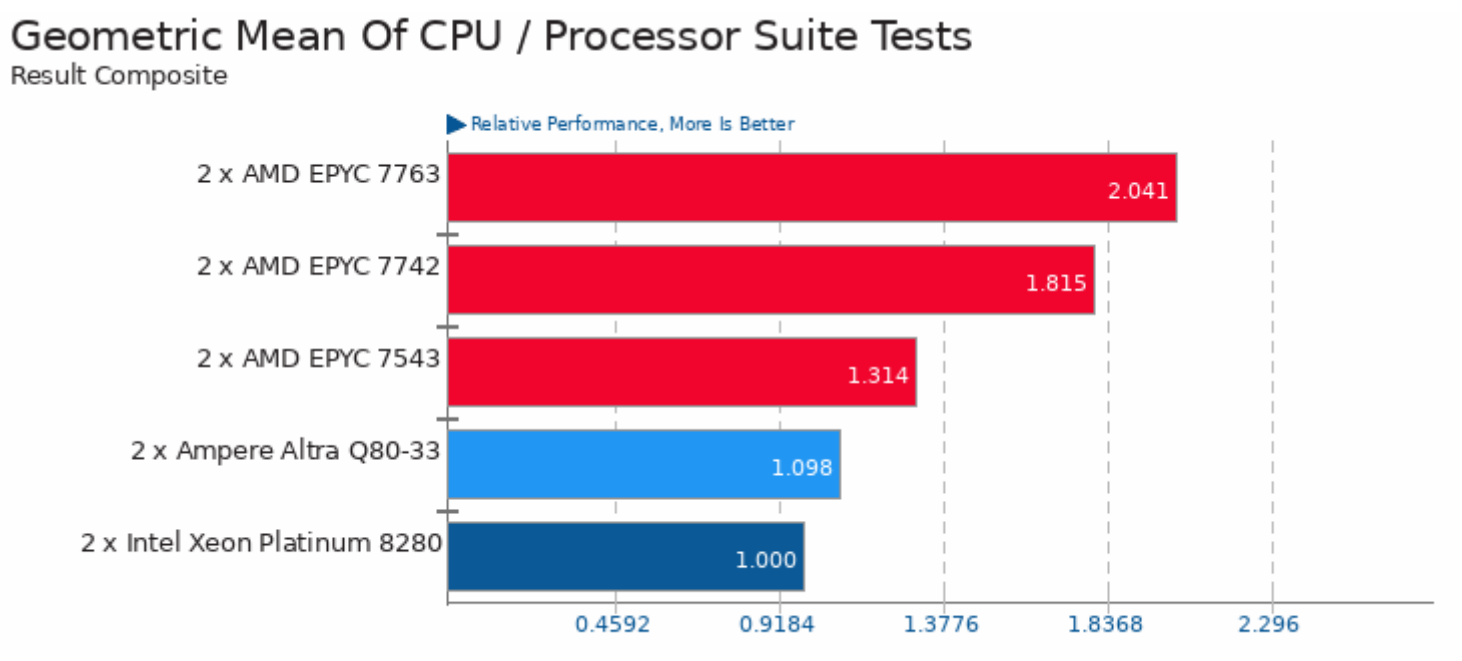



PHPBench 0.8.1
PHP Benchmark Suite
Score, More Is Better
2 x Intel Xeon Platinum 8280
SE +/- 716.89, N = 4
652140
2 x AMD EPYC 7543
SE +/- 1840.64, N = 3
639114
2 x AMD EPYC 7763
SE +/- 3074.38, N = 3
592611
2 x Ampere Altra Q80-33
SE +/- 2691.19, N = 3
522274
2 x AMD EPYC 7742
SE +/- 5524.79, N = 3
515977
140K
280K
420K
560K
700K

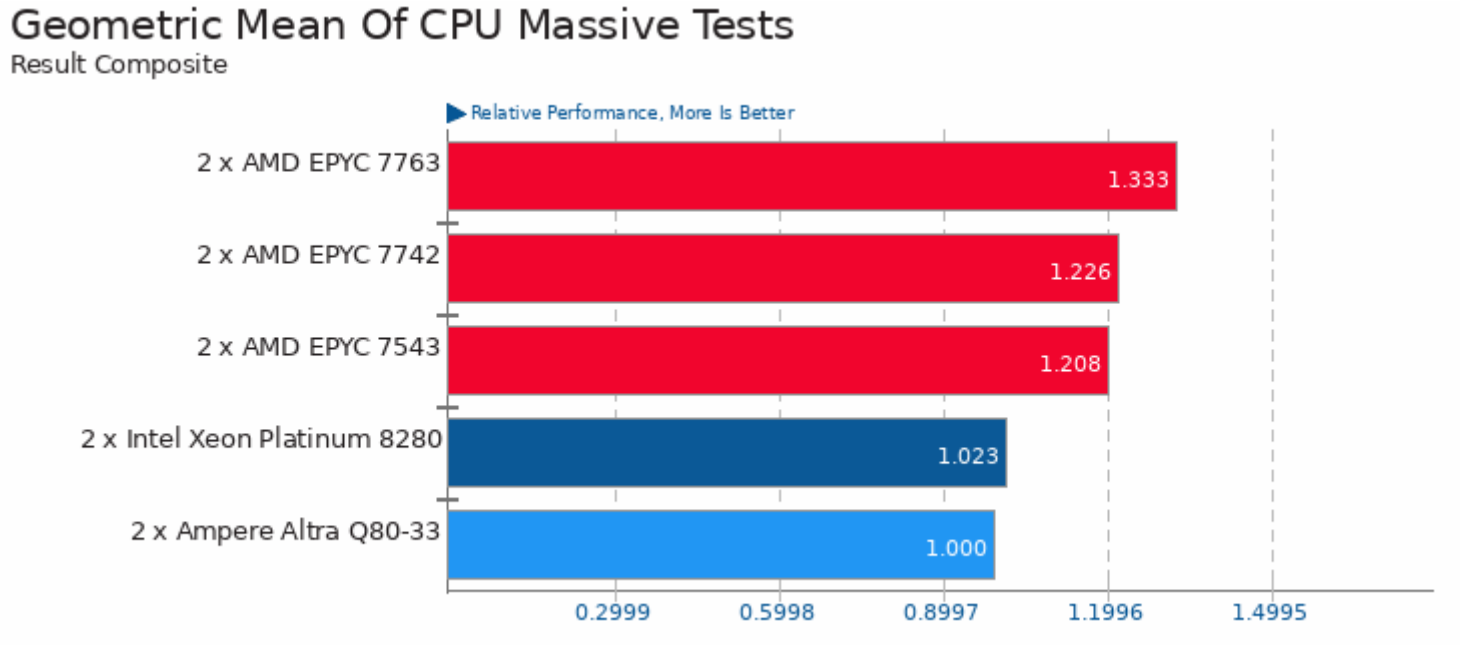
These geometric means are based upon test groupings / test suites for this result file.



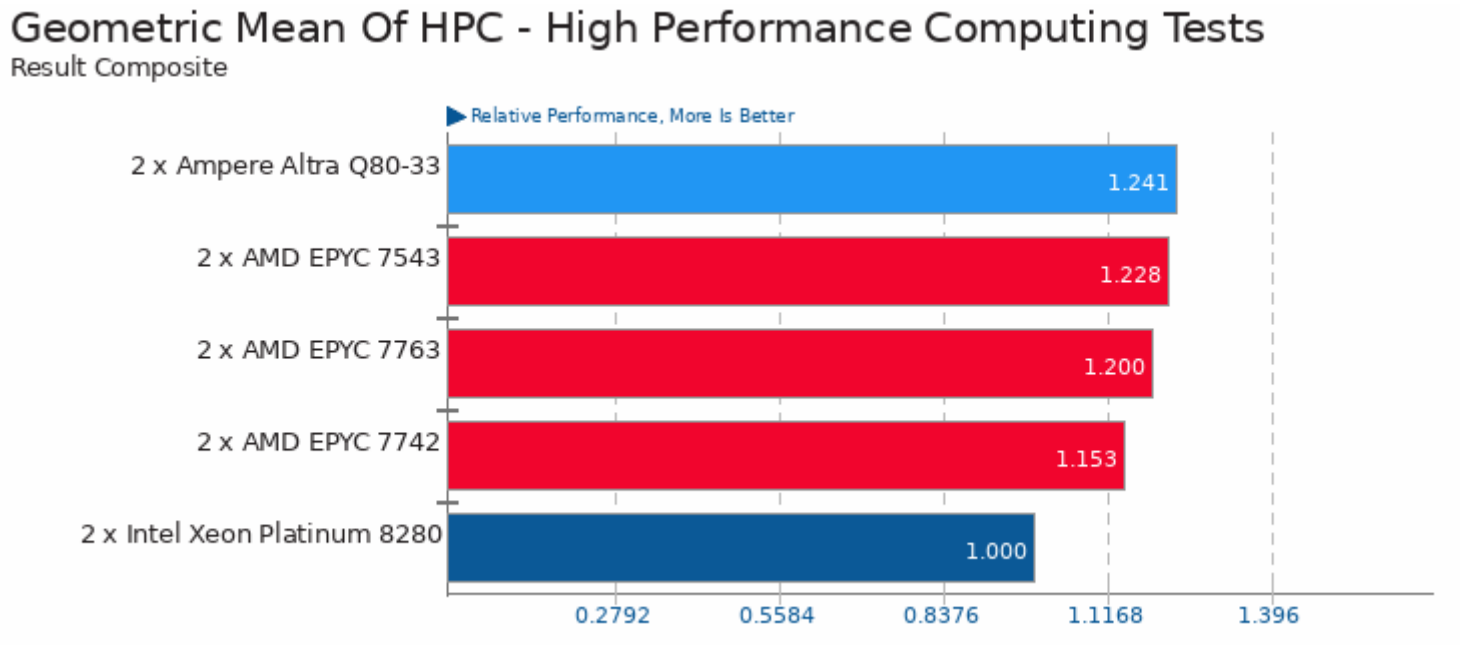
Geometric mean based upon tests: pts/build-llvm and pts/openssl



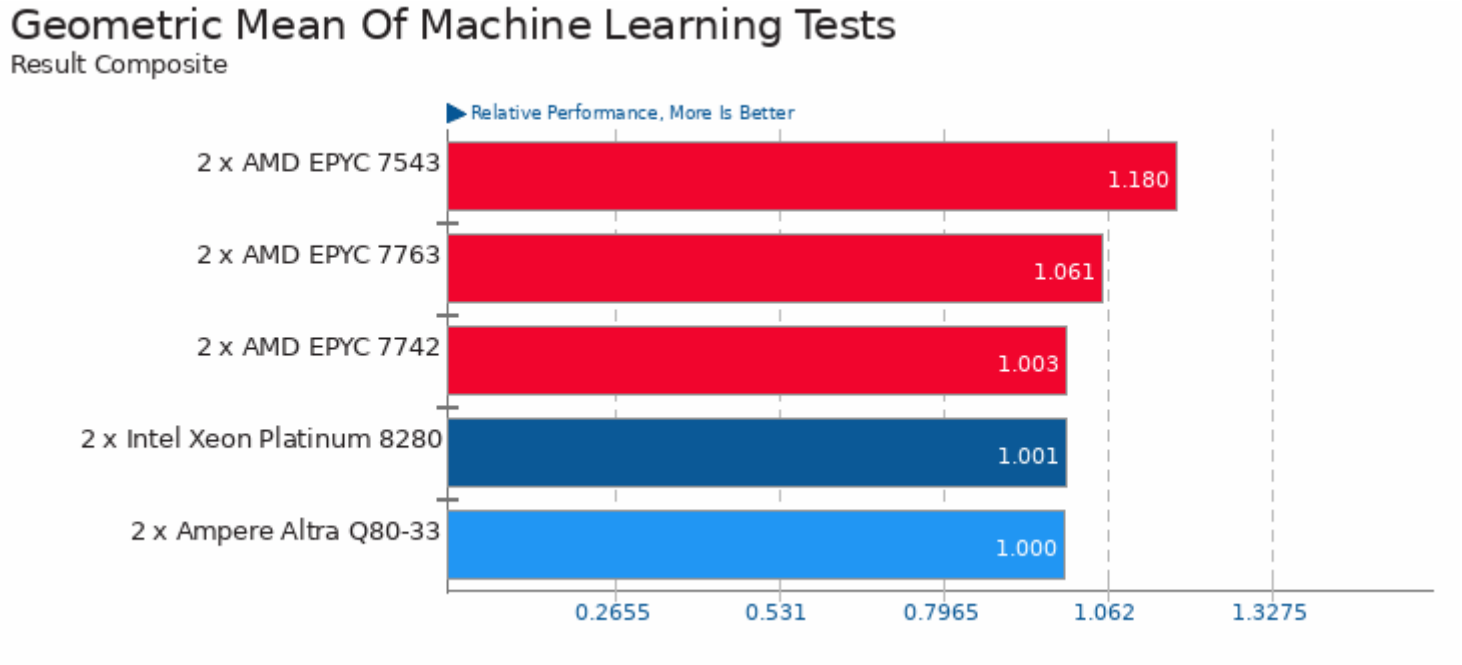
Geometric mean based upon tests: pts/rodinia and pts/openssl



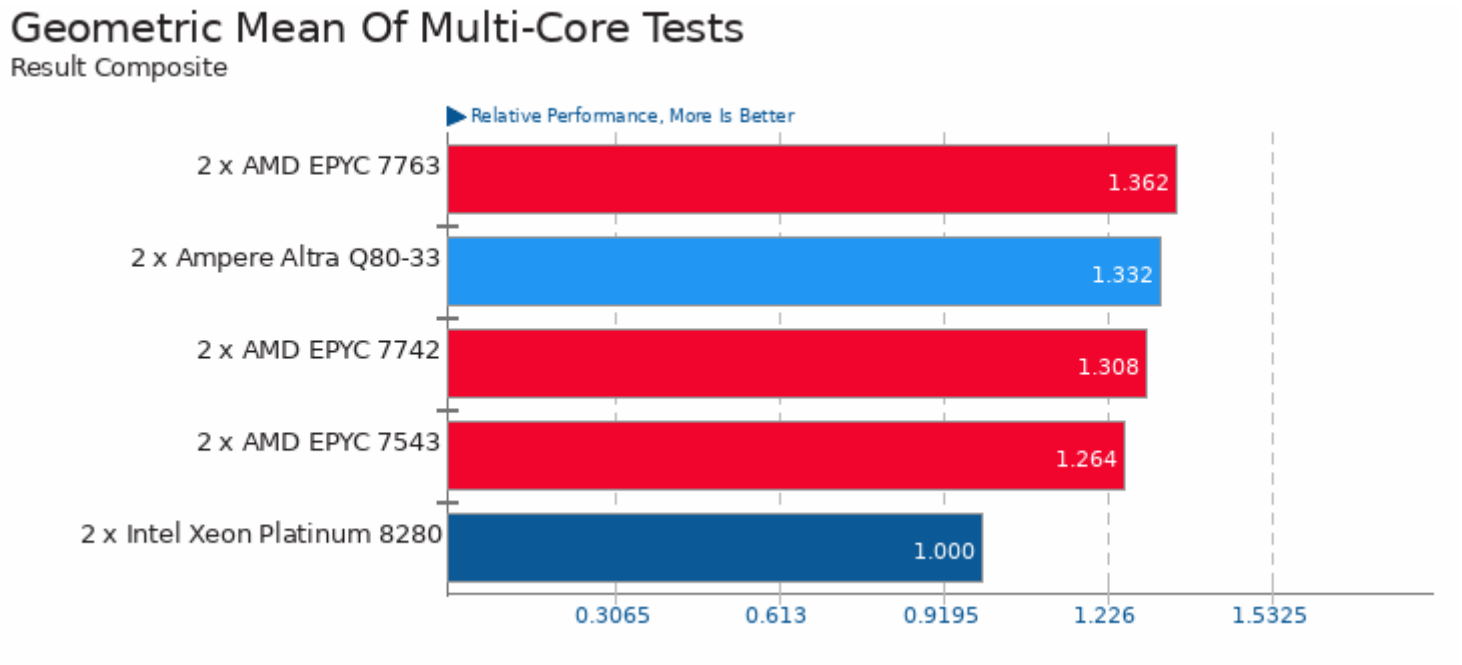
Geometric mean based upon tests: pts/build-llvm, pts/hpcg, pts/openssl, pts/numpy, pts/phpbench and pts/rodinia



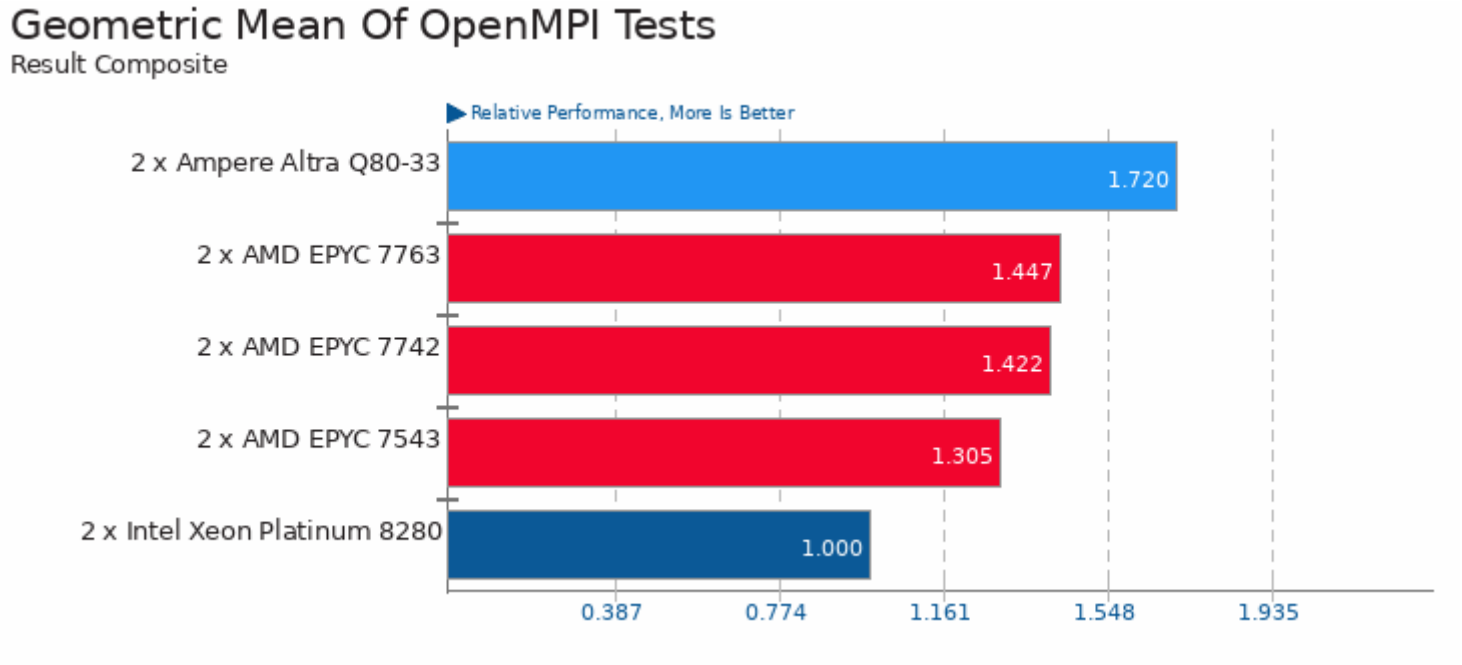
Geometric mean based upon tests: pts/rodinia, pts/hpcg, pts/tnn and pts/numpy



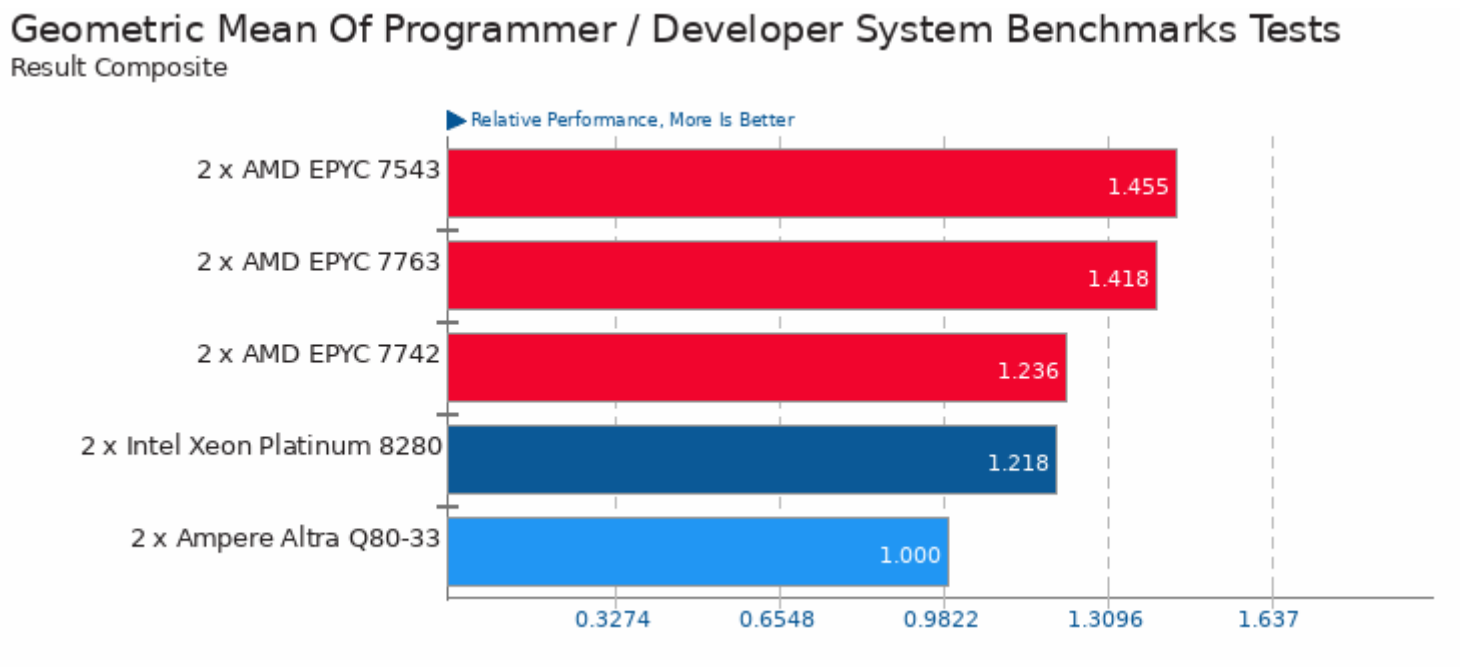
Geometric mean based upon tests: pts/tnn and pts/numpy



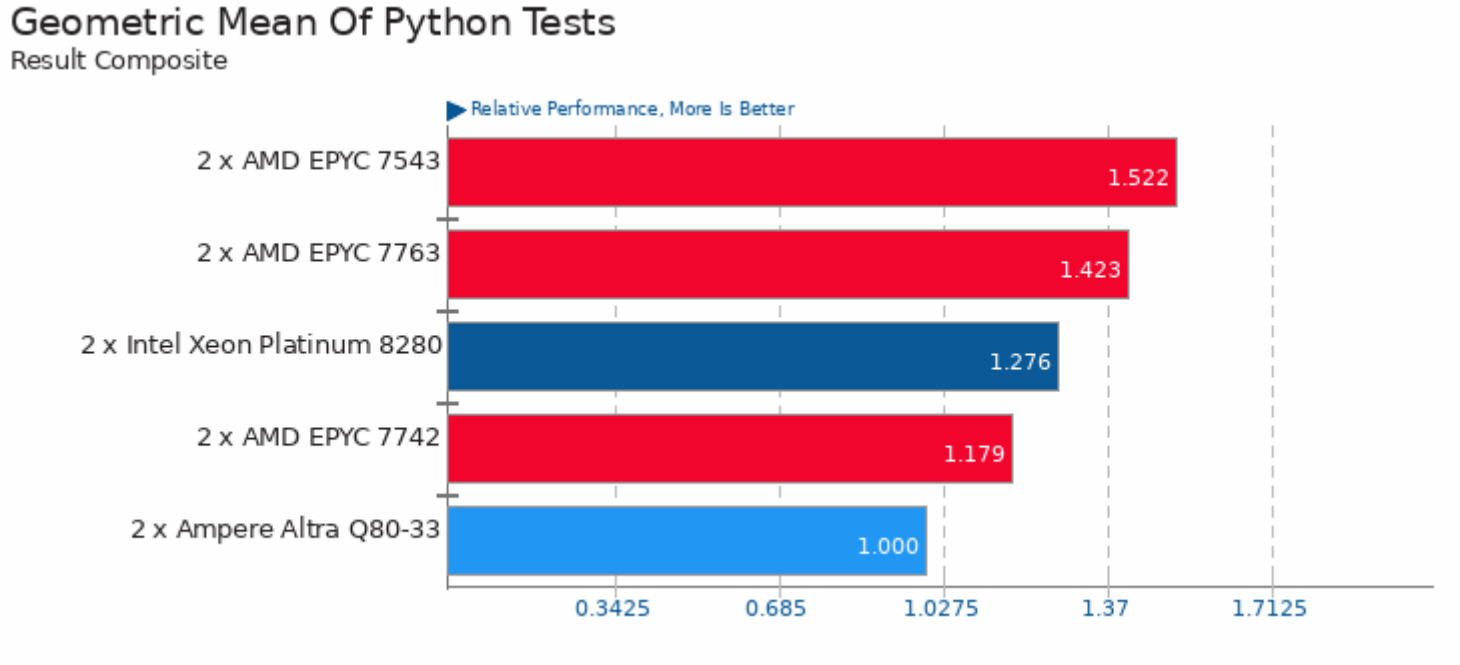
Geometric mean based upon tests: pts/rodinia, pts/build-llvm and pts/hpcg



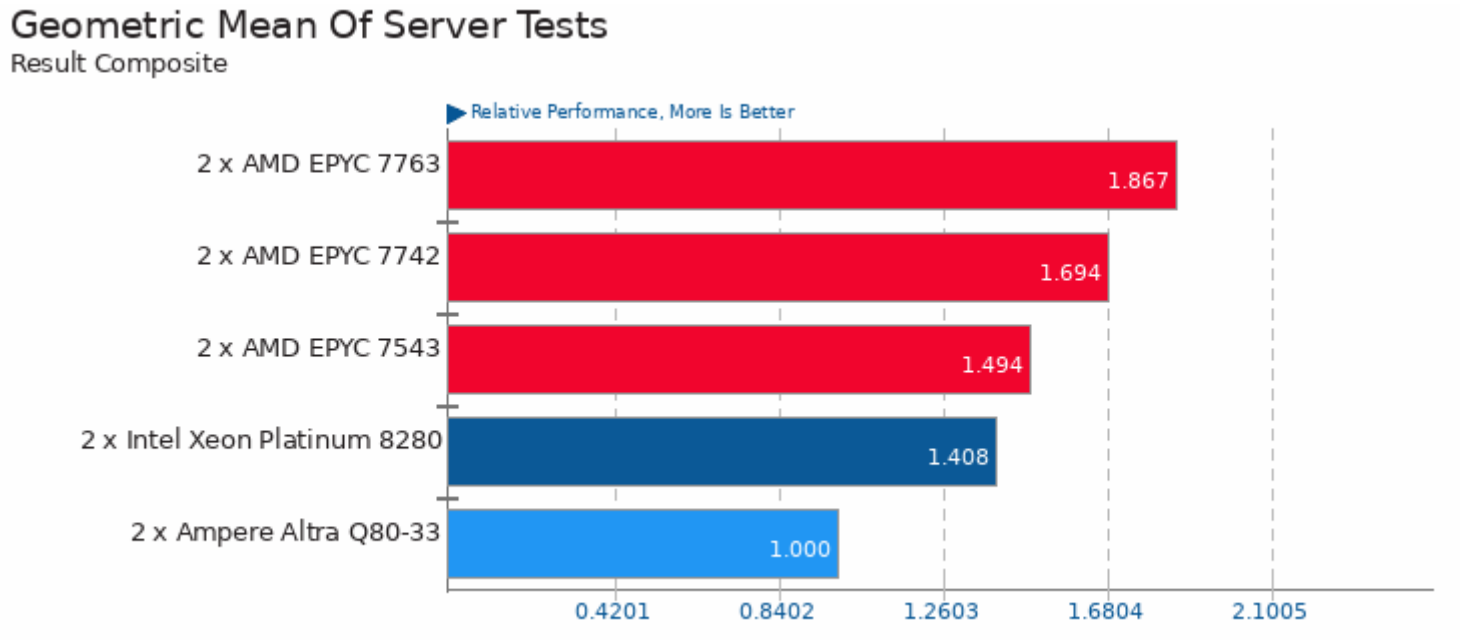
Geometric mean based upon tests: pts/hpcg and pts/rodinia



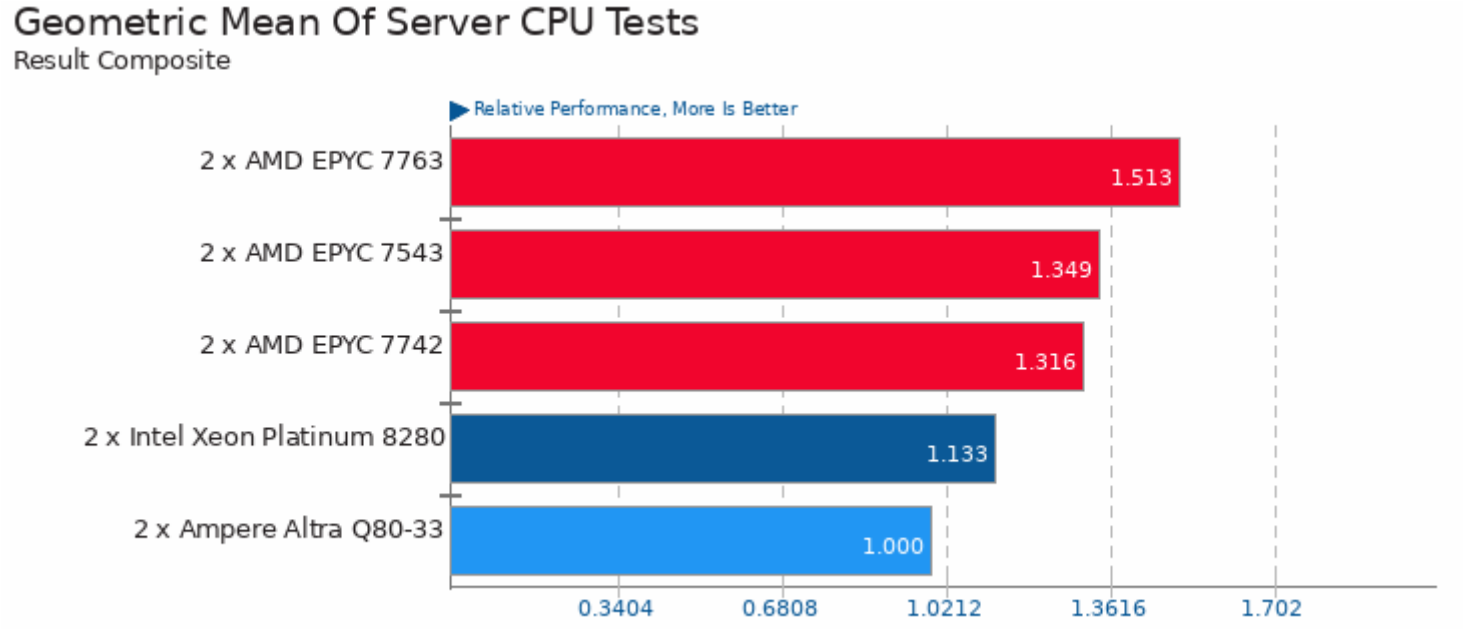
Geometric mean based upon tests: pts/pybench and pts/build-llvm



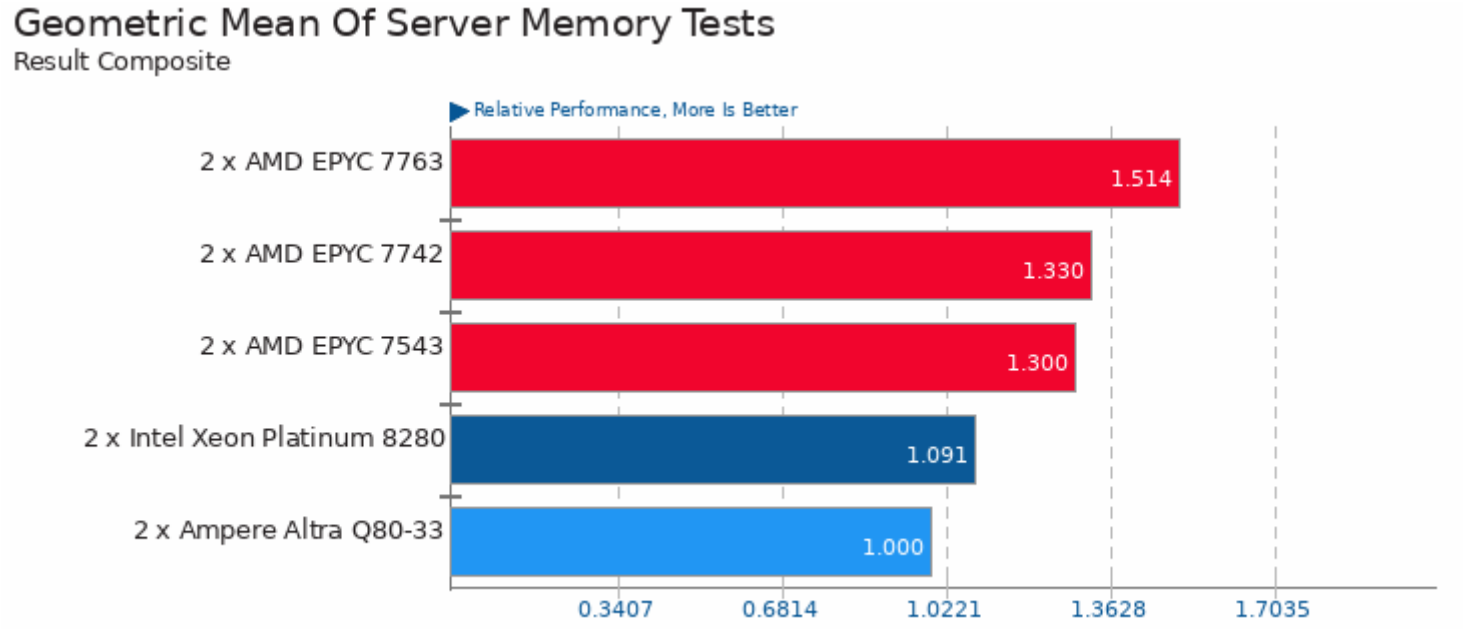
Geometric mean based upon tests: pts/pybench and pts/numpy



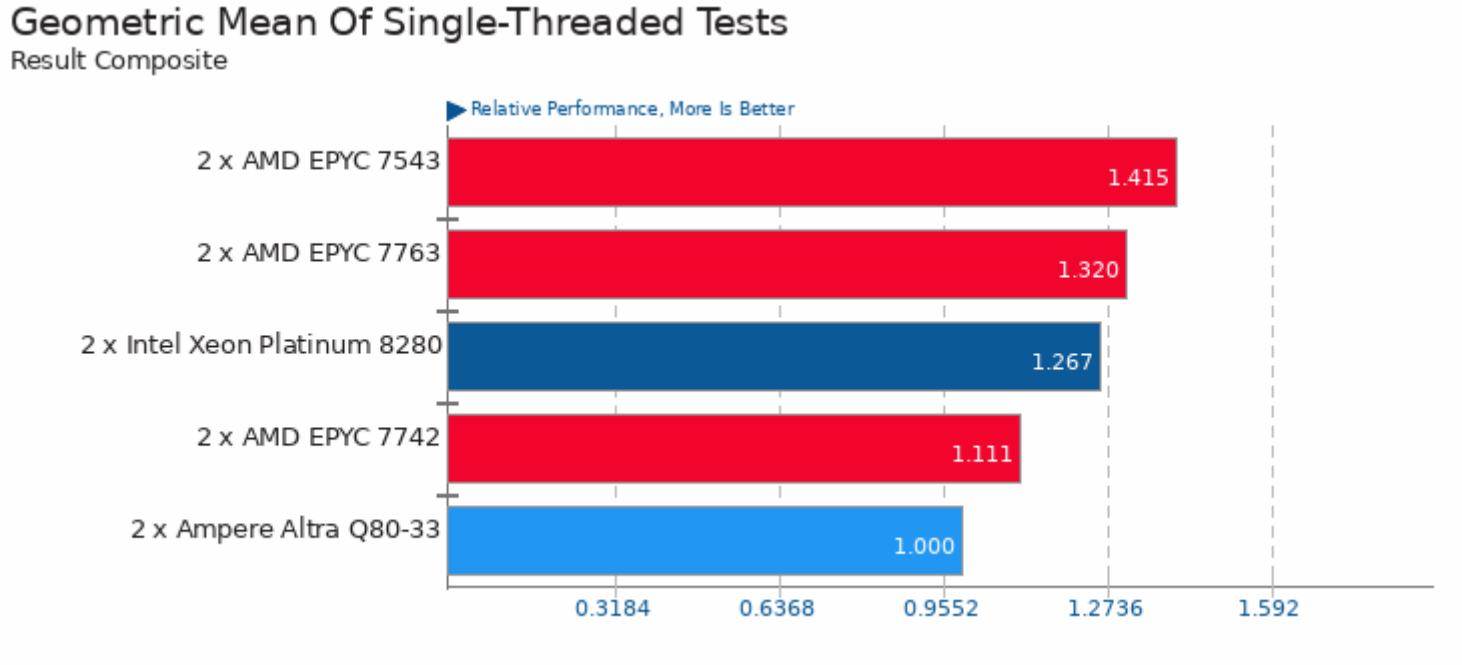
Geometric mean based upon tests: pts/phpbench and pts/openssl



Geometric mean based upon tests: pts/rodinia, pts/build-llvm, pts/openssl, pts/pybench, pts/numpy and pts/phpbench



Geometric mean based upon tests: pts/rodinia, pts/build-llvm, pts/openssl, pts/pybench and pts/phpbench



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

This file was automatically generated via the Phoronix Test Suite benchmarking software on Sunday, 14 March 2021 01:19.