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r630-2620v3-64g

2 x Intel Xeon E5-2620 v3 testing with a Dell 02C2CP (2.11.0 BIOS) and Matrox G200eR2 on Debian GNU/Linux 10 via the Phoronix Test Suite.

Test Systems:

Dell R630, 2x E5-2620v3, 4x16G DDR4-1866, single SSD

Processor: 2 x Intel Xeon E5-2620 v3 @ 3.20GHz (12 Cores / 24 Threads), Motherboard: Dell 02C2CP (2.11.0 BIOS), Chipset: Intel Xeon E7 v3/Xeon, Memory: 4 x 16384 MB DDR4-2400MT/s M393A2K43BB1-CRC, Disk: 512GB Samsung SSD 850, Graphics: Matrox G200eR2, Network: 2 x Intel X710 for 10GbE SFP+ + 2 x Intel I350

OS: Debian GNU/Linux 10, Kernel: 5.4.65-1-pve (x86_64), Compiler: GCC 8.3.0, File-System: ext4, Screen Resolution: 1024x768

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

Processor Notes: Scaling Governor: intel_pstate performance - CPU Microcode: 0x43
 Java Notes: OpenJDK Runtime Environment (build 11.0.9+11-post-Debian-1deb10u1)

Python Notes: Python 2.7.16 + Python 3.7.3

Security Notes: itlb_multihit: KVM: Mitigation of Split huge pages + l1tf: Mitigation of PTE Inversion; VMX: conditional cache flushes SMT vulnerable + mds: Mitigation of Clear buffers; SMT vulnerable + meltdown: Mitigation of PTI + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swaps barriers and __user pointer sanitization + spectre_v2: Mitigation of Full generic retpoline IBPB: conditional IBRS_FW STIBP: conditional RSB filling + srbs: Not affected + tsx_async_abort: Not affected

Dell R630, 2x E5-2620v3, 4x16G
DDR4-1866, single SSD

RAMspeed SMP - Add - Integer (MB/s)	23419
Standard Deviation	0.1%
RAMspeed SMP - Copy - Integer (MB/s)	21867
Standard Deviation	0.1%
RAMspeed SMP - Scale - Integer (MB/s)	20757
Standard Deviation	0.4%
RAMspeed SMP - Average - Integer (MB/s)	22113
Standard Deviation	0.1%
RAMspeed SMP - Add - Floating Point (MB/s)	24205
Standard Deviation	0.1%
RAMspeed SMP - Copy - Floating Point (MB/s)	21790
Standard Deviation	0%
RAMspeed SMP - Scale - Floating Point (MB/s)	20917
Standard Deviation	0.2%
RAMspeed SMP - Average - Floating Point (MB/s)	22740
Standard Deviation	0%
Stream - Copy (MB/s)	45976
Standard Deviation	0.1%
Stream - Scale (MB/s)	35030
Standard Deviation	0.2%
Stream - Triad (MB/s)	39628
Standard Deviation	0.1%
Stream - Add (MB/s)	39551
Standard Deviation	0.1%
NAS Parallel Benchmarks - EP.C (Mop/s)	473.75
Standard Deviation	0.2%
NAS Parallel Benchmarks - LU.C (Mop/s)	28519
Standard Deviation	0.2%
CP2K Molecular Dynamics - Fayalite-FIST Data (sec)	1241
Rodinia - OpenMP LavaMD (sec)	396.996
Standard Deviation	1.4%
NAMD - ATPase Simulation - 327,506 Atoms (days/ns)	2.00346
Standard Deviation	1.2%
DaCapo Benchmark - Jython (msec)	6027
Standard Deviation	2.9%
Renaissance - Scala Dotty (ms)	2398
Standard Deviation	5.1%
Renaissance - Savina Reactors.IO (ms)	27916
Standard Deviation	7.6%
Zstd Compression - 3 (MB/s)	2578
Standard Deviation	0.3%

Zstd Compression - 19 (MB/s)	34.1
Standard Deviation	6.6%
John The Ripper - Blowfish (Real C/S)	13147
Standard Deviation	0.7%
oneDNN - D.B.d - f32 (ms)	5.19016
Standard Deviation	0.7%
dav1d - Summer Nature 4K (FPS)	115.21
Standard Deviation	0.2%
dav1d - S.N.1 (FPS)	363.25
Standard Deviation	0.8%
Kvazaar - Bosphorus 4K - Slow (FPS)	3.89
Standard Deviation	0.1%
Kvazaar - Bosphorus 4K - Medium (FPS)	3.99
Standard Deviation	0%
Kvazaar - Bosphorus 1080p - Slow (FPS)	15.13
Standard Deviation	0.2%
Kvazaar - Bosphorus 1080p - Medium (FPS)	15.65
Standard Deviation	0.4%
Kvazaar - Bosphorus 4K - Very Fast (FPS)	10.87
Standard Deviation	0.1%
Kvazaar - Bosphorus 4K - Ultra Fast (FPS)	18.94
Standard Deviation	0.5%
Kvazaar - Bosphorus 1080p - Very Fast (FPS)	36.51
Standard Deviation	0.2%
Kvazaar - Bosphorus 1080p - Ultra Fast (FPS)	66.10
Standard Deviation	0.4%
SVT-HEVC - 1.8.b.Y.T.H.V.E (FPS)	39.02
Standard Deviation	0%
x264 - H.2.V.E (FPS)	71.44
Standard Deviation	2.8%
x265 - Bosphorus 4K (FPS)	10.44
Standard Deviation	2%
x265 - Bosphorus 1080p (FPS)	35.67
Standard Deviation	0.4%
Himeno Benchmark - P.P.S (MFLOPS)	2762
Standard Deviation	0.3%
7-Zip Compression - C.S.T (MIPS)	41448
Standard Deviation	1.3%
Stockfish - Total Time (Nodes/s)	21631161
Standard Deviation	0.9%
asmFish - 1.H.M.2.D (Nodes/s)	23685110
Standard Deviation	1%
Timed Linux Kernel Compilation - Time To Compile (sec)	100.777
Standard Deviation	1.5%
Timed LLVM Compilation - Time To Compile (sec)	736.472
Standard Deviation	1.2%
Timed PHP Compilation - Time To Compile (sec)	75.366
Standard Deviation	0.2%
C-Ray - Total Time - 4.1.R.P.P (sec)	95.809
Standard Deviation	0.1%
POV-Ray - Trace Time (sec)	58.141
Standard Deviation	0.2%
Rust Mandelbrot - T.T.C.S.P.M (sec)	61.854

	Standard Deviation	0.1%
Numpy Benchmark (Score)	228.59	
	Standard Deviation	0.4%
Cython benchmark (sec)	30.471	
	Standard Deviation	0.2%
Hackbench - 32 - Process (sec)	128.361	
	Standard Deviation	0.9%
m-queens - Time To Solve (sec)	88.083	
	Standard Deviation	0.1%
Radiance Benchmark - Serial (sec)	1036	
Radiance Benchmark - SMP Parallel (sec)	320.345	
OpenSSL - R.4.b.P (Signs/sec)	1418	
	Standard Deviation	0%
Cpuminer-Opt - m7m (kH/s - Hash Speed)	233.53	
	Standard Deviation	2.6%
Cpuminer-Opt - deep (kH/s - Hash Speed)	7140	
	Standard Deviation	0.5%
Cpuminer-Opt - skein (kH/s - Hash Speed)	25343	
	Standard Deviation	0.3%
Cpuminer-Opt - sha256t (kH/s - Hash Speed)	59077	
	Standard Deviation	0.2%
glibc bench - cos (nanoseconds)	66.6904	
	Standard Deviation	0.1%
glibc bench - sin (nanoseconds)	66.1385	
	Standard Deviation	0.1%
glibc bench - sqrt (nanoseconds)	4.39795	
	Standard Deviation	0.1%
glibc bench - pthread_once (nanoseconds)	2.43662	
	Standard Deviation	0.1%
libjpeg-turbo tjbench - D.T (Megapixels/sec)	149.763995	
	Standard Deviation	0.1%
GIMP - resize (sec)	13.911	
	Standard Deviation	1.3%
GIMP - rotate (sec)	27.690	
	Standard Deviation	0.4%
GIMP - auto-levels (sec)	31.023	
	Standard Deviation	1.1%
GIMP - unsharp-mask (sec)	37.750	
	Standard Deviation	0.3%
Redis - GET (Req/s)	1869150	
	Standard Deviation	4%
Redis - SET (Req/s)	1388815	
	Standard Deviation	2.5%
Stress-NG - Crypto (Bogo Ops/s)	1607	
	Standard Deviation	0%
Stress-NG - CPU Stress (Bogo Ops/s)	3895	
	Standard Deviation	1.4%
ctx_clock - C.S.T (Clocks)	954	
Sysbench - CPU (Events/sec)	15407	
	Standard Deviation	0.2%
Blender - BMW27 - CPU-Only (sec)	198.40	
	Standard Deviation	0.3%
Blender - Classroom - CPU-Only (sec)	601.86	

Standard Deviation 0.4%
Blender - Fishy Cat - CPU-Only (sec) 269.52
Standard Deviation 0.2%
Blender - Barbershop - CPU-Only (sec) 799.31
Standard Deviation 0.1%
PyBench - T.F.A.T.T (Milliseconds) 1415
Standard Deviation 0.5%
Numenta Anomaly Benchmark - Time To Completion (sec) 1878
Standard Deviation 0.5%
Appleseed - Emily (sec) 511.789251
Appleseed - Disney Material (sec) 304.187697
PHPBench - P.B.S (Score) 520673
Standard Deviation 0.2%
Scikit-Learn (sec) 15.591
Standard Deviation 0.5%
Tesseract OCR - T.T.O.7.I (sec) 39.336
Standard Deviation 0.3%

RAMspeed SMP 3.5.0

Type: Add - Benchmark: Integer



1. (CC) gcc options: -O3 -march=native

RAMspeed SMP 3.5.0

Type: Copy - Benchmark: Integer



1. (CC) gcc options: -O3 -march=native

RAMspeed SMP 3.5.0

Type: Scale - Benchmark: Integer



1. (CC) gcc options: -O3 -march=native

RAMspeed SMP 3.5.0

Type: Average - Benchmark: Integer



1. (CC) gcc options: -O3 -march=native

RAMspeed SMP 3.5.0

Type: Add - Benchmark: Floating Point



1. (CC) gcc options: -O3 -march=native

RAMspeed SMP 3.5.0

Type: Copy - Benchmark: Floating Point



1. (CC) gcc options: -O3 -march=native

RAMspeed SMP 3.5.0

Type: Scale - Benchmark: Floating Point



1. (CC) gcc options: -O3 -march=native

RAMspeed SMP 3.5.0

Type: Average - Benchmark: Floating Point



1. (CC) gcc options: -O3 -march=native

Stream 2013-01-17

Type: Copy



1. (CC) gcc options: -O3 -march=native -fopenmp

Stream 2013-01-17

Type: Scale



1. (CC) gcc options: -O3 -march=native -fopenmp

Stream 2013-01-17

Type: Triad



1. (CC) gcc options: -O3 -march=native -fopenmp

Stream 2013-01-17

Type: Add



1. (CC) gcc options: -O3 -march=native -fopenmp

NAS Parallel Benchmarks 3.4

Test / Class: EP.C



1. (F9X) gfortran options: -O3 -march=native -pthread -lmpi_usempif08 -lmpi_mpifh -lmpi
2. Open MPI 3.1.3

NAS Parallel Benchmarks 3.4

Test / Class: LU.C



1. (F9X) gfortran options: -O3 -march=native -pthread -lmpi_usempif08 -lmpi_mpifh -lmpi
2. Open MPI 3.1.3

CP2K Molecular Dynamics 6.1

Fayalite-FIST Data



Rodinia 3.1

Test: OpenMP LavaMD



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

NAMD 2.14

ATPase Simulation - 327,506 Atoms



DaCapo Benchmark 9.12-MR1

Java Test: Jython



Renaissance 0.10.0

Test: Scala Dotty



Renaissance 0.10.0

Test: Savina Reactors.IO



Zstd Compression 1.4.5

Compression Level: 3



1. (CC) gcc options: -O3 -pthread -lz

Zstd Compression 1.4.5

Compression Level: 19



1. (CC) gcc options: -O3 -pthread -lz

John The Ripper 1.9.0-jumbo-1

Test: Blowfish



1. (CC) gcc options: -m64 -lssl -lcrypto -fopenmp -lgmp -pthread -lm -lz -ldl -lcrypt

oneDNN 1.5

Harness: Deconvolution Batch deconv_1d - Data Type: f32



1. (CXX) g++ options: -O3 -march=native -std=c++11 -fopenmp -msse4.1 -fPIC -pie -lpthread -ldl

dav1d 0.7.0

Video Input: Summer Nature 4K



1. (CC) gcc options: -pthread

dav1d 0.7.0

Video Input: Summer Nature 1080p



1. (CC) gcc options: -pthread

Kvazaar 2.0

Video Input: Bosphorus 4K - Video Preset: Slow



1. (CC) gcc options: -pthread -fno-tree-vectorize -fvisibility=hidden -O2 -lpthread -lm -lrt

Kvazaar 2.0

Video Input: Bosphorus 4K - Video Preset: Medium



1. (CC) gcc options: -pthread -fno-tree-vectorize -fvisibility=hidden -O2 -lpthread -lm -lrt

Kvazaar 2.0

Video Input: Bosphorus 1080p - Video Preset: Slow



1. (CC) gcc options: -pthread -fno-tree-vectorize -fvisibility=hidden -O2 -lpthread -lm -lrt

Kvazaar 2.0

Video Input: Bosphorus 1080p - Video Preset: Medium



1. (CC) gcc options: -pthread -fno-tree-vectorize -fvisibility=hidden -O2 -lpthread -lm -lrt

Kvazaar 2.0

Video Input: Bosphorus 4K - Video Preset: Very Fast



1. (CC) gcc options: -pthread -fno-tree-vectorize -fvisibility=hidden -O2 -lpthread -lm -lrt

Kvazaar 2.0

Video Input: Bosphorus 4K - Video Preset: Ultra Fast



1. (CC) gcc options: -pthread -fno-tree-vectorize -fvisibility=hidden -O2 -lpthread -lm -lrt

Kvazaar 2.0

Video Input: Bosphorus 1080p - Video Preset: Very Fast



1. (CC) gcc options: -pthread -fno-tree-vectorize -fvisibility=hidden -O2 -lpthread -lm -lrt

Kvazaar 2.0

Video Input: Bosphorus 1080p - Video Preset: Ultra Fast



1. (CC) gcc options: -pthread -fno-tree-vectorize -fvisibility=hidden -O2 -lpthread -lm -lrt

SVT-HEVC 1.4.1

1080p 8-bit YUV To HEVC Video Encode



1. (CC) gcc options: -fPIE -fPIC -O3 -O2 -pie -rdynamic -lpthread -lrt

x264 2019-12-17

H.264 Video Encoding



1. (CC) gcc options: -fPIC -O3 -m64 -lm -lpthread -fno-tree-vectorize

x265 3.4

Video Input: Bosphorus 4K



1. (CXX) g++ options: -O3 -rdynamic -lpthread -fPIC -fno-tree-vectorize

x265 3.4

Video Input: Bosphorus 1080p



1. (CXX) g++ options: -O3 -rdynamic -lpthread -fPIC -fno-tree-vectorize

Himeno Benchmark 3.0

Poisson Pressure Solver



1. (CC) gcc options: -O3 -mavx2

7-Zip Compression 16.02

Compress Speed Test



1. (CXX) g++ options: -fPIC -O3 -m64 -lm -lpthread

Stockfish 9

Total Time



1. (CXX) g++ options: -m64 -lpthread -fno-exceptions -std=c++11 -pedantic -O3 -msse -msse3 -mpopcnt -fno-

asmFish 2018-07-23

1024 Hash Memory, 26 Depth



Timed Linux Kernel Compilation 5.4

Time To Compile



Timed LLVM Compilation 10.0

Time To Compile



Timed PHP Compilation 7.4.2

Time To Compile



C-Ray 1.1

Total Time - 4K, 16 Rays Per Pixel



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

POV-Ray 3.7.0.7

Trace Time



1. (CXX) g++ options: -pipe -O3 -ffast-math -march=native -pthread -fSM -fICE -fX11 -fIMMIMF -fIMath -fHalf -fLex -fLexMath -fIMThread -fPthread -fTIFF -fJPE

Rust Mandelbrot

Time To Complete Serial/Parallel Mandelbrot



1. (CC) gcc options: -m64 -pie -nodefaultlibs -ldl -lrt -lpthread -lgcc_s -lc -lm -lutil

Numpy Benchmark



Cython benchmark 0.27



Hackbench

Count: 32 - Type: Process



1. (CC) gcc options: -lpthread

m-queens 1.2

Time To Solve



1. (CXX) g++ options: -fopenmp -O2 -march=native

Radiance Benchmark 5.0

Test: Serial



Radiance Benchmark 5.0

Test: SMP Parallel



OpenSSL 1.1.1

RSA 4096-bit Performance



1. (CC) gcc options: -pthread -m64 -O3 -lssl -lcrypto -ldl

Cpuminer-Opt 3.8.8.1

Algorithm: m7m



1. (CXX) g++ options: -O2 -lcurl -lz -lpthread -lssl -lcrypto -lgmp

Cpuminer-Opt 3.8.8.1

Algorithm: deep



1. (CXX) g++ options: -O2 -lcurl -lz -lpthread -lssl -lcrypto -lgmp

Cpuminer-Opt 3.8.8.1

Algorithm: skein



1. (CXX) g++ options: -O2 -lcurl -lz -lpthread -lssl -lcrypto -lgmp

Cpuminer-Opt 3.8.8.1

Algorithm: sha256t



1. (CXX) g++ options: -O2 -lcurl -lz -lpthread -lssl -lcrypto -lgmp

glibc bench 1.0

Benchmark: cos



glibc bench 1.0

Benchmark: sin

**glibc bench 1.0**

Benchmark: sqrt

**glibc bench 1.0**

Benchmark: pthread_once

**libjpeg-turbo tjbench 2.0.2**

Test: Decompression Throughput



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

GIMP 2.10.8

Test: resize

**GIMP 2.10.8**

Test: rotate



GIMP 2.10.8

Test: auto-levels



GIMP 2.10.8

Test: unsharp-mask



Redis 5.0.5

Test: GET



1. (CXX) g++ options: -MM -MT -g3 -fvisibility=hidden -O3

Redis 5.0.5

Test: SET



1. (CXX) g++ options: -MM -MT -g3 -fvisibility=hidden -O3

Stress-NG 0.11.07

Test: Crypto



1. (CC) gcc options: -O2 -std=gnu99 -lm -laiio -lbsd -lcrypt -lrt -lz -ldl -lpthread -lc

Stress-NG 0.11.07

Test: CPU Stress



1. (CC) gcc options: -O2 -std=gnu99 -lm -laiio -lbsd -lcrypt -lrt -lz -ldl -lpthread -lc

ctx_clock

Context Switch Time



Sysbench 2018-07-28

Test: CPU



1. (CC) gcc options: -pthread -O3 -funroll-loops -ggdb3 -march=haswell -rdynamic -ldl -laiio -lm

Blender 2.90

Blend File: BMW27 - Compute: CPU-Only



Blender 2.90

Blend File: Classroom - Compute: CPU-Only



Blender 2.90

Blend File: Fishy Cat - Compute: CPU-Only



Blender 2.90

Blend File: Barbershop - Compute: CPU-Only



PyBench 2018-02-16

Total For Average Test Times



Numenta Anomaly Benchmark 1.1

Time To Completion



Appleseed 2.0 Beta

Scene: Emily



Appleseed 2.0 Beta

Scene: Disney Material

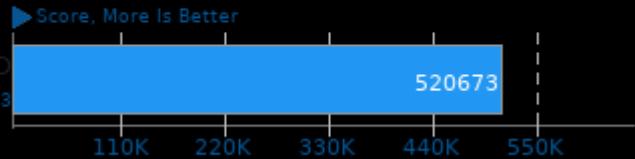


PHPBench 0.8.1

PHP Benchmark Suite

Dell R630, 2x E5-2620v3, 4x16G DDR4-1866, single SSD

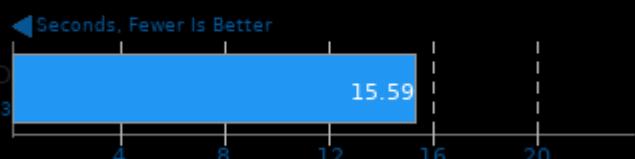
SE +/- 560.75, N = 3



Scikit-Learn 0.22.1

Dell R630, 2x E5-2620v3, 4x16G DDR4-1866, single SSD

SE +/- 0.04, N = 3

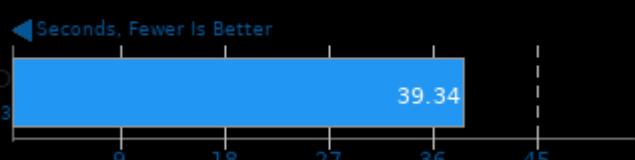


Tesseract OCR 4.0.0

Time To OCR 7 Images

Dell R630, 2x E5-2620v3, 4x16G DDR4-1866, single SSD

SE +/- 0.07, N = 3



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