



SPEC® CFP2006 Result

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Supermicro

SuperServer 6028R-WTR
(X10DRW-iT , Intel Xeon E5-2697 v3)

SPECfp®2006 = **110**

SPECfp_base2006 = **106**

CPU2006 license: 001176

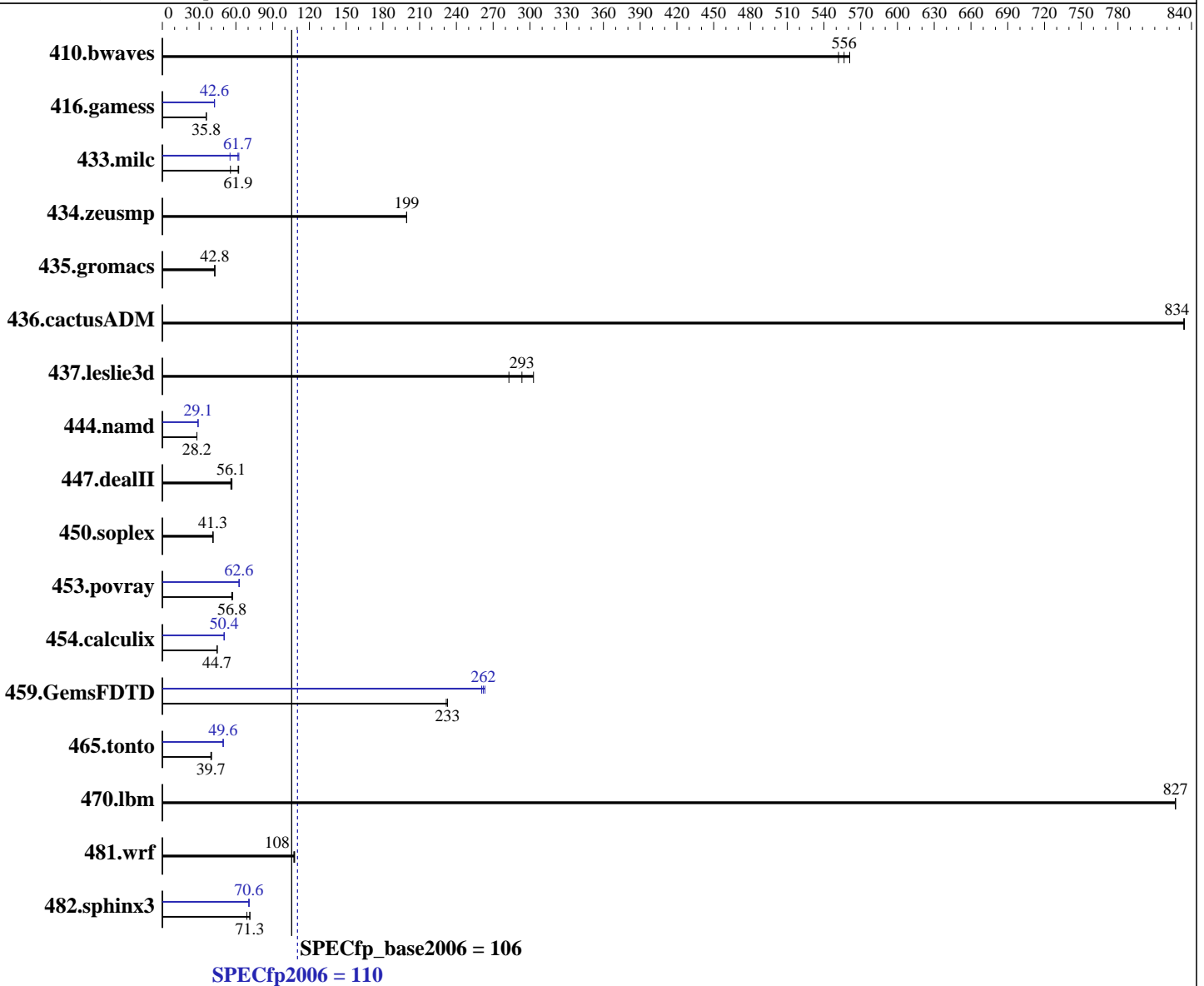
Test sponsor: Supermicro

Tested by: Supermicro

Test date: Jun-2014

Hardware Availability: Sep-2014

Software Availability: Nov-2013



Hardware

CPU Name: Intel Xeon E5-2697 v3
 CPU Characteristics: Intel Turbo Boost Technology up to 3.60 GHz
 CPU MHz: 2600
 FPU: Integrated
 CPU(s) enabled: 28 cores, 2 chips, 14 cores/chip, 2 threads/core
 CPU(s) orderable: 1,2 chips
 Primary Cache: 32 KB I + 32 KB D on chip per core
 Secondary Cache: 256 KB I+D on chip per core

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Software

Operating System: RedHat Enterprise Linux Server release 6.5
 Kernel 2.6.32-431.el6.x86_64
 Compiler: C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux;
 Fortran: Version 14.0.0.080 of Intel Fortran Studio XE for Linux
 Auto Parallel: Yes
 File System: ext4
 System State: Run level 3 (multi-user)

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L3 Cache: 35 MB I+D on chip per chip
Other Cache: None
Memory: 128 GB (8 x 16 GB 2Rx4 PC4-2133P-R)
Disk Subsystem: 1 x 2000 GB SATA, 7200RPM
Other Hardware: None

Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other Software: None

Results Table

| Benchmark | Base | | | | | | Peak | | | | | |
|---------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 410.bwaves | <u>24.4</u> | <u>556</u> | 24.6 | 552 | 24.2 | 561 | <u>24.4</u> | <u>556</u> | 24.6 | 552 | 24.2 | 561 |
| 416.gamess | 546 | 35.9 | <u>546</u> | <u>35.8</u> | 547 | 35.8 | 460 | 42.6 | 461 | 42.5 | <u>460</u> | <u>42.6</u> |
| 433.milc | <u>148</u> | <u>61.9</u> | 147 | 62.3 | 165 | 55.6 | <u>149</u> | <u>61.7</u> | 147 | 62.4 | 166 | 55.2 |
| 434.zeusmp | <u>45.6</u> | <u>199</u> | 45.6 | 199 | 45.6 | 199 | <u>45.6</u> | <u>199</u> | 45.6 | 199 | 45.6 | 199 |
| 435.gromacs | 167 | 42.8 | <u>167</u> | <u>42.8</u> | 167 | 42.7 | 167 | 42.8 | <u>167</u> | <u>42.8</u> | 167 | 42.7 |
| 436.cactusADM | 14.3 | 834 | <u>14.3</u> | <u>834</u> | 14.3 | 834 | 14.3 | 834 | <u>14.3</u> | <u>834</u> | 14.3 | 834 |
| 437.leslie3d | 33.2 | 283 | 31.0 | 303 | <u>32.0</u> | <u>293</u> | 33.2 | 283 | 31.0 | 303 | <u>32.0</u> | <u>293</u> |
| 444.namd | 284 | 28.2 | 284 | 28.2 | <u>284</u> | <u>28.2</u> | 275 | 29.1 | <u>275</u> | <u>29.1</u> | 275 | 29.1 |
| 447.dealII | <u>204</u> | <u>56.1</u> | 201 | 56.8 | 205 | 55.9 | <u>204</u> | <u>56.1</u> | 201 | 56.8 | 205 | 55.9 |
| 450.soplex | 202 | 41.2 | 201 | 41.4 | <u>202</u> | <u>41.3</u> | 202 | 41.2 | 201 | 41.4 | <u>202</u> | <u>41.3</u> |
| 453.povray | <u>93.7</u> | <u>56.8</u> | 93.9 | 56.6 | 92.6 | 57.4 | <u>85.0</u> | <u>62.6</u> | 85.0 | 62.6 | 84.7 | 62.8 |
| 454.calculix | 185 | 44.6 | 184 | 44.8 | <u>185</u> | <u>44.7</u> | 163 | 50.6 | <u>164</u> | <u>50.4</u> | 164 | 50.4 |
| 459.GemsFDTD | 45.8 | 232 | <u>45.6</u> | <u>233</u> | 45.6 | 233 | <u>40.5</u> | <u>262</u> | 40.7 | 261 | 40.3 | 263 |
| 465.tonto | 245 | 40.2 | <u>248</u> | <u>39.7</u> | 248 | 39.7 | <u>198</u> | <u>49.6</u> | 198 | 49.7 | 198 | 49.6 |
| 470.lbm | <u>16.6</u> | <u>827</u> | 16.6 | 827 | 16.6 | 827 | <u>16.6</u> | <u>827</u> | 16.6 | 827 | 16.6 | 827 |
| 481.wrf | 103 | 108 | 104 | 107 | <u>104</u> | <u>108</u> | 103 | 108 | 104 | 107 | <u>104</u> | <u>108</u> |
| 482.sphinx3 | <u>273</u> | <u>71.3</u> | 282 | 69.0 | 273 | 71.5 | 276 | 70.5 | <u>276</u> | <u>70.6</u> | 275 | 70.9 |

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

Platform Notes

BIOS Settings:
Early Snoop = Disabled
Enforce POR = Disabled
Hyper-Threading (ALL) = Disabled
Memory Frequency = 2133



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General Notes

Environment variables set by runspec before the start of the run:

KMP_AFFINITY = "granularity=fine,compact,1,0"

LD_LIBRARY_PATH = "/home/cpu2006/libs/32:/home/cpu2006/libs/64:/home/cpu2006/sh"

OMP_NUM_THREADS = "28"

Binaries compiled on a system with 1x Core i7-860 CPU + 8GB memory using RedHat EL 6.4

Transparent Huge Pages enabled with:

echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled

runspec command invoked through numactl i.e.:

numactl --interleave=all runspec <etc>

Base Compiler Invocation

C benchmarks:

icc -m64

C++ benchmarks:

icpc -m64

Fortran benchmarks:

ifort -m64

Benchmarks using both Fortran and C:

icc -m64 ifort -m64

Base Portability Flags

410.bwaves: -DSPEC_CPU_LP64
 416.gamess: -DSPEC_CPU_LP64
 433.milc: -DSPEC_CPU_LP64
 434.zeusmp: -DSPEC_CPU_LP64
 435.gromacs: -DSPEC_CPU_LP64 -nofor_main
 436.cactusADM: -DSPEC_CPU_LP64 -nofor_main
 437.leslie3d: -DSPEC_CPU_LP64
 444.namd: -DSPEC_CPU_LP64
 447.deallI: -DSPEC_CPU_LP64
 450.soplex: -DSPEC_CPU_LP64
 453.povray: -DSPEC_CPU_LP64
 454.calculix: -DSPEC_CPU_LP64 -nofor_main
 459.GemsFDTD: -DSPEC_CPU_LP64
 465.tonto: -DSPEC_CPU_LP64
 470.lbm: -DSPEC_CPU_LP64
 481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
 482.sphinx3: -DSPEC_CPU_LP64



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Base Optimization Flags

C benchmarks:

-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch
-ansi-alias

C++ benchmarks:

-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias

Fortran benchmarks:

-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch

Benchmarks using both Fortran and C:

-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch
-ansi-alias

Peak Compiler Invocation

C benchmarks:

icc -m64

C++ benchmarks:

icpc -m64

Fortran benchmarks:

ifort -m64

Benchmarks using both Fortran and C:

icc -m64 ifort -m64

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

433.milc: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-auto-ilp32 -ansi-alias

470.lbm: basepeak = yes

482.sphinx3: -xCORE-AVX2 -ipo -O3 -no-prec-div -unroll2 -ansi-alias
-parallel

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Peak Optimization Flags (Continued)

C++ benchmarks:

444.namd: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-fno-alias -auto-ilp32

447.dealIII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll4
-ansi-alias

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll2
-inline-level=0 -scalar-rep-

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll2
-inline-level=0 -opt-prefetch -parallel

465.tonto: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-inline-calloc -opt-malloc-options=3 -auto -unroll4

Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

454.calculix: -xCORE-AVX2 -ipo -O3 -no-prec-div -auto-ilp32 -ansi-alias

481.wrf: basepeak = yes

The flags files that were used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.html>

<http://www.spec.org/cpu2006/flags/Supermicro-Platform-Settings-V1.2-revE.html>



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<http://www.spec.org/cpu2006/flags/Supermicro-Platform-Settings-V1.2-revE.xml>

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Tested with SPEC CPU2006 v1.2.
Report generated on Wed Nov 12 10:17:31 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 7 November 2014.