



SPEC® CFP2006 Result

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Supermicro

SuperServer F627G2-FTPT+
(X9DRFF-iTG+, Intel Xeon E5-2697 v2)

SPECfp®2006 = 103

SPECfp_base2006 = 98.1

CPU2006 license: 001176

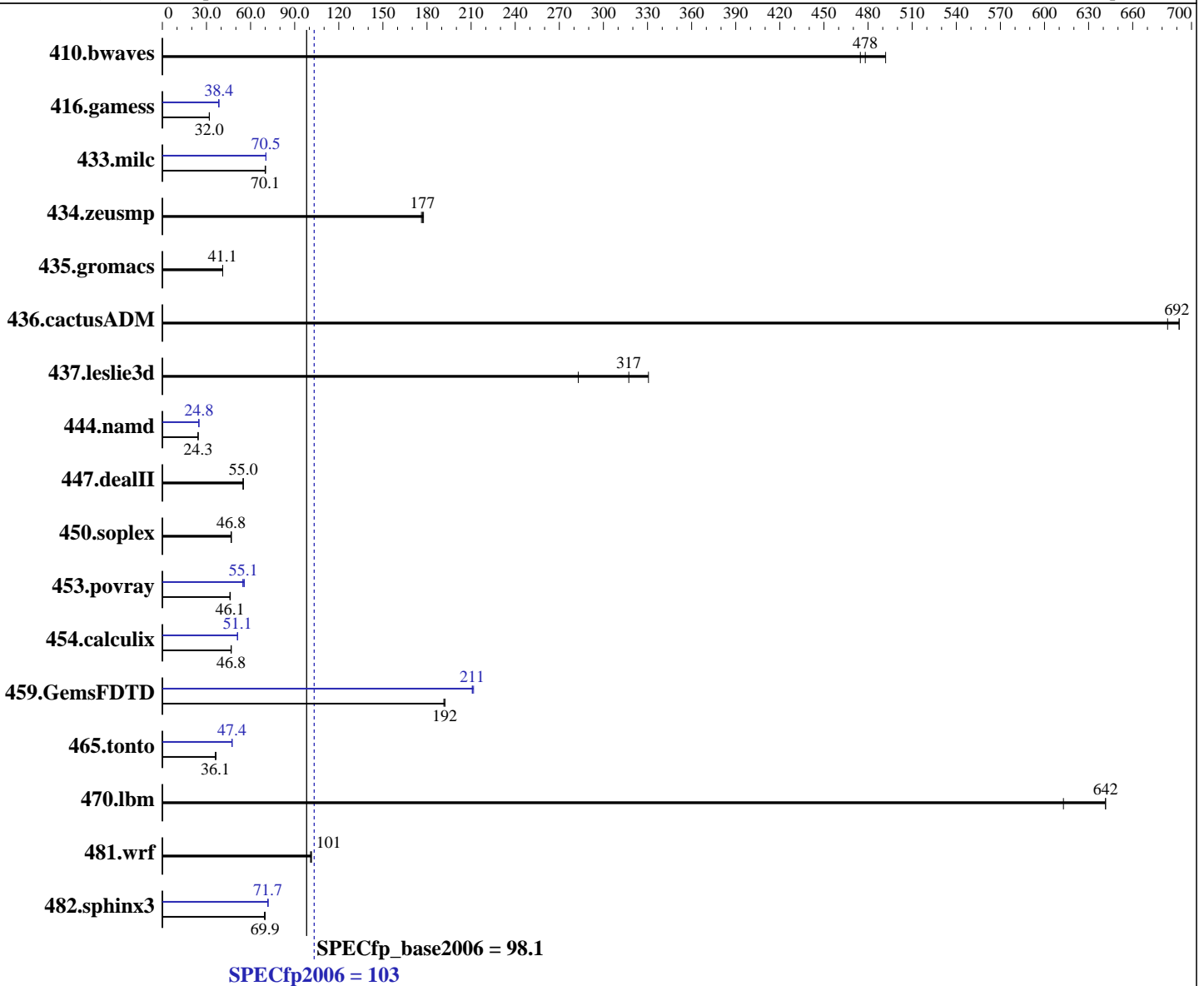
Test sponsor: Supermicro

Tested by: Supermicro

Test date: Oct-2013

Hardware Availability: Sep-2013

Software Availability: Sep-2013



Hardware

CPU Name: Intel Xeon E5-2697 v2
 CPU Characteristics: Intel Turbo Boost Technology up to 3.50 GHz
 CPU MHz: 2700
 FPU: Integrated
 CPU(s) enabled: 24 cores, 2 chips, 12 cores/chip
 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: Red Hat Enterprise Linux Server release 6.4, Kernel 2.6.32-358.18.1.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: 30 MB I+D on chip per chip
Other Cache: None
Memory: 128 GB (8 x 16 GB 2Rx4 PC3-14900R-13, ECC)
Disk Subsystem: 1 x 1 TB SATA II, 5400 RPM
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 | 27.6 | 492 | 28.6 | 475 | <u>28.4</u> | <u>478</u> | 27.6 | 492 | 28.6 | 475 | <u>28.4</u> | <u>478</u> |
| 416.gamess | <u>613</u> | <u>32.0</u> | 612 | 32.0 | 613 | 31.9 | 510 | 38.4 | <u>510</u> | <u>38.4</u> | 509 | 38.4 |
| 433.milc | 131 | 69.9 | 131 | 70.2 | <u>131</u> | <u>70.1</u> | <u>130</u> | <u>70.5</u> | 130 | 70.4 | 130 | 70.5 |
| 434.zeusmp | <u>51.4</u> | <u>177</u> | 51.6 | 176 | 51.2 | 178 | <u>51.4</u> | <u>177</u> | 51.6 | 176 | 51.2 | 178 |
| 435.gromacs | <u>174</u> | <u>41.1</u> | 174 | 41.1 | 174 | 41.1 | <u>174</u> | <u>41.1</u> | 174 | 41.1 | 174 | 41.1 |
| 436.cactusADM | <u>17.3</u> | <u>692</u> | 17.5 | 684 | 17.3 | 692 | <u>17.3</u> | <u>692</u> | 17.5 | 684 | 17.3 | 692 |
| 437.leslie3d | 33.2 | 283 | <u>29.6</u> | <u>317</u> | 28.4 | 331 | 33.2 | 283 | <u>29.6</u> | <u>317</u> | 28.4 | 331 |
| 444.namd | <u>330</u> | <u>24.3</u> | 330 | 24.3 | 330 | 24.3 | <u>323</u> | <u>24.8</u> | 323 | 24.8 | 323 | 24.8 |
| 447.dealII | <u>208</u> | <u>55.0</u> | 208 | 55.1 | 208 | 54.9 | <u>208</u> | <u>55.0</u> | 208 | 55.1 | 208 | 54.9 |
| 450.soplex | <u>178</u> | <u>46.8</u> | 179 | 46.7 | 177 | 47.0 | <u>178</u> | <u>46.8</u> | 179 | 46.7 | 177 | 47.0 |
| 453.povray | <u>115</u> | <u>46.1</u> | 115 | 46.2 | 116 | 45.9 | 95.4 | 55.8 | <u>96.6</u> | <u>55.1</u> | 97.2 | 54.7 |
| 454.calculix | 176 | 46.9 | 177 | 46.7 | <u>176</u> | <u>46.8</u> | 161 | 51.2 | <u>161</u> | <u>51.1</u> | 161 | 51.1 |
| 459.GemsFDTD | 55.2 | 192 | 55.4 | 191 | <u>55.2</u> | <u>192</u> | 50.1 | 212 | 50.3 | 211 | <u>50.3</u> | <u>211</u> |
| 465.tonto | <u>273</u> | <u>36.1</u> | 273 | 36.1 | 270 | 36.5 | 207 | 47.5 | <u>208</u> | <u>47.4</u> | 208 | 47.3 |
| 470.lbm | 21.4 | 642 | 22.4 | 613 | <u>21.4</u> | <u>642</u> | 21.4 | 642 | 22.4 | 613 | <u>21.4</u> | <u>642</u> |
| 481.wrf | <u>110</u> | <u>101</u> | 110 | 101 | 111 | 101 | <u>110</u> | <u>101</u> | 110 | 101 | 111 | 101 |
| 482.sphinx3 | <u>279</u> | <u>69.9</u> | 281 | 69.4 | 279 | 69.9 | 271 | 72.0 | 272 | 71.7 | <u>272</u> | <u>71.7</u> |

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 Configuration:

Disable Hyper-threading, C1E Support, DRAM RAPL Mode, Patrol Scrub, Demand Scrub, Double Refresh.
Set Package C-state Limit to C0

General Notes

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

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

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

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General Notes (Continued)

OMP_NUM_THREADS = "24"

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:

`-xAVX -ipo -O3 -no-prec-div -parallel -opt-prefetch -ansi-alias`

C++ benchmarks:

`-xAVX -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias`

Fortran benchmarks:

`-xAVX -ipo -O3 -no-prec-div -parallel -opt-prefetch`

Benchmarks using both Fortran and C:

`-xAVX -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: `-xAVX(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: `-xAVX -ipo -O3 -no-prec-div -unroll2 -ansi-alias
-parallel`

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Peak Optimization Flags (Continued)

C++ benchmarks:

444.namd: -xAVX(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: -xAVX(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: -xAVX(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: -xAVX(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: -xAVX(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: -xAVX -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-revB.20130719.html>

You can also download the XML flags sources by saving the following links:

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

<http://www.spec.org/cpu2006/flags/Supermicro-Platform-Settings-V1.2-revB.20130719.xml>

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