



# SPEC<sup>®</sup> CFP2006 Result

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## Supermicro

### SPECfp<sup>®</sup>\_rate2006 = 197

Motherboard X8DTN+ (Intel Xeon L5640, 2.26 GHz)

### SPECfp\_rate\_base2006 = 190

CPU2006 license: 001176

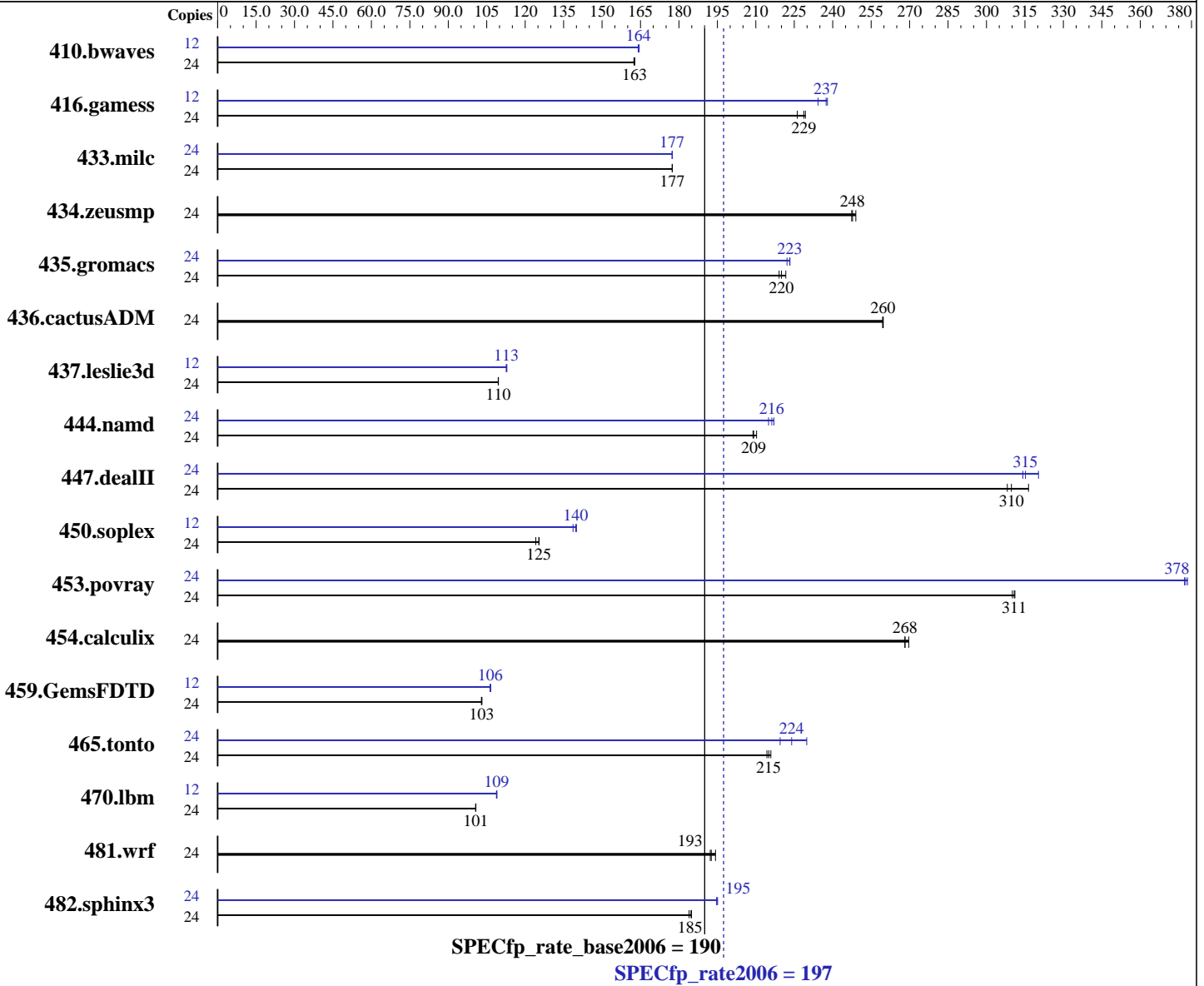
Test date: Mar-2010

Test sponsor: Supermicro

Hardware Availability: Mar-2010

Tested by: Supermicro

Software Availability: Jan-2010



### Hardware

CPU Name: Intel Xeon L5640  
 CPU Characteristics: Intel Turbo Boost Technology up to 2.80 GHz  
 CPU MHz: 2267  
 FPU: Integrated  
 CPU(s) enabled: 12 cores, 2 chips, 6 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: SUSE Linux Enterprise Server 11 (x86\_64)  
 Kernel 2.6.27.19-5-default  
 Compiler: Intel C++ and Fortran Professional Compiler for IA32 and Intel 64, Version 11.1  
 Build 20091130 Package ID: l\_cproc\_p\_11.1.064, l\_cprof\_p\_11.1.064  
 Auto Parallel: No  
 File System: ReiserFS  
 System State: Run level 3 (multi-user)

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L3 Cache: 12 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 48 GB (12 x 4 GB DDR3-1066 RDIMM, ECC, CL7)  
 Disk Subsystem: 1 x 500 GB SATA II, 7200 RPM  
 Other Hardware: None

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

## Results Table

| Benchmark     | Base   |             |            |             |            |             |            | Peak   |             |            |             |            |             |            |
|---------------|--------|-------------|------------|-------------|------------|-------------|------------|--------|-------------|------------|-------------|------------|-------------|------------|
|               | Copies | Seconds     | Ratio      | Seconds     | Ratio      | Seconds     | Ratio      | Copies | Seconds     | Ratio      | Seconds     | Ratio      | Seconds     | Ratio      |
| 410.bwaves    | 24     | 2008        | 162        | 2004        | 163        | <b>2005</b> | <b>163</b> | 12     | 994         | 164        | 991         | 164        | <b>993</b>  | <b>164</b> |
| 416.gamess    | 24     | 2049        | 229        | <b>2055</b> | <b>229</b> | 2078        | 226        | 12     | <b>990</b>  | <b>237</b> | 1003        | 234        | 987         | 238        |
| 433.milc      | 24     | 1242        | 177        | <b>1242</b> | <b>177</b> | 1242        | 177        | 24     | 1242        | 177        | 1242        | 177        | <b>1242</b> | <b>177</b> |
| 434.zeusmp    | 24     | 877         | 249        | <b>882</b>  | <b>248</b> | 883         | 247        | 24     | 877         | 249        | <b>882</b>  | <b>248</b> | 883         | 247        |
| 435.gromacs   | 24     | <b>779</b>  | <b>220</b> | 773         | 222        | 782         | 219        | 24     | <b>768</b>  | <b>223</b> | 771         | 222        | 767         | 223        |
| 436.cactusADM | 24     | 1104        | 260        | 1105        | 259        | <b>1104</b> | <b>260</b> | 24     | 1104        | 260        | 1105        | 259        | <b>1104</b> | <b>260</b> |
| 437.leslie3d  | 24     | <b>2060</b> | <b>110</b> | 2059        | 110        | 2060        | 109        | 12     | <b>1001</b> | <b>113</b> | 1001        | 113        | 999         | 113        |
| 444.namd      | 24     | 921         | 209        | 915         | 210        | <b>920</b>  | <b>209</b> | 24     | 895         | 215        | <b>890</b>  | <b>216</b> | 887         | 217        |
| 447.dealII    | 24     | 868         | 316        | <b>886</b>  | <b>310</b> | 891         | 308        | 24     | 857         | 320        | <b>871</b>  | <b>315</b> | 874         | 314        |
| 450.soplex    | 24     | 1612        | 124        | 1596        | 125        | <b>1597</b> | <b>125</b> | 12     | 722         | 139        | 715         | 140        | <b>716</b>  | <b>140</b> |
| 453.povray    | 24     | 412         | 310        | <b>411</b>  | <b>311</b> | 410         | 311        | 24     | 337         | 378        | 338         | 377        | <b>338</b>  | <b>378</b> |
| 454.calculix  | 24     | <b>738</b>  | <b>268</b> | 738         | 268        | 734         | 270        | 24     | <b>738</b>  | <b>268</b> | 738         | 268        | 734         | 270        |
| 459.GemsFDTD  | 24     | 2474        | 103        | <b>2471</b> | <b>103</b> | 2469        | 103        | 12     | 1195        | 107        | <b>1196</b> | <b>106</b> | 1198        | 106        |
| 465.tonto     | 24     | 1102        | 214        | 1094        | 216        | <b>1098</b> | <b>215</b> | 24     | <b>1054</b> | <b>224</b> | 1027        | 230        | 1076        | 219        |
| 470.lbm       | 24     | 3272        | 101        | <b>3273</b> | <b>101</b> | 3276        | 101        | 12     | 1513        | 109        | <b>1515</b> | <b>109</b> | 1515        | 109        |
| 481.wrf       | 24     | 1380        | 194        | 1395        | 192        | <b>1392</b> | <b>193</b> | 24     | 1380        | 194        | 1395        | 192        | <b>1392</b> | <b>193</b> |
| 482.sphinx3   | 24     | 2543        | 184        | 2530        | 185        | <b>2533</b> | <b>185</b> | 24     | 2398        | 195        | 2402        | 195        | <b>2402</b> | <b>195</b> |

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

## Submit Notes

The config file option 'submit' was used.  
numactl was used to bind copies to the cores

## Operating System Notes

'ulimit -s unlimited' was used to set the stack size to unlimited prior to run

## Platform Notes

Fan speed set to Full Speed in BIOS Setup.  
As tested, the system used a Supermicro  
PWS-865-PQ power supply, 2 SNK-P0038P heatsinks,  
and 2 FAN-0077L cooling fans.



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Test sponsor: Supermicro  
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Test date: Mar-2010  
Hardware Availability: Mar-2010  
Software Availability: Jan-2010

## General Notes

Binaries were compiled on SLES 10 with Binutils 2.18.50.0.7.20080502

## 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.dealII: -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

## Base Optimization Flags

C benchmarks:  
-xSSE4.2 -ipo -O3 -no-prec-div -static

C++ benchmarks:  
-xSSE4.2 -ipo -O3 -no-prec-div -static

Fortran benchmarks:  
-xSSE4.2 -ipo -O3 -no-prec-div -static

Continued on next page



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## Base Optimization Flags (Continued)

Benchmarks using both Fortran and C:

-xSSE4.2 -ipo -O3 -no-prec-div -static

## Peak Compiler Invocation

C benchmarks (except as noted below):

icc -m64

482.sphinx3: icc -m32

C++ benchmarks (except as noted below):

icpc -m64

450.soplex: icpc -m32

Fortran benchmarks:

ifort -m64

Benchmarks using both Fortran and C:

icc -m64 ifort -m64

## Peak 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  
 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

## Peak Optimization Flags

C benchmarks:

Continued on next page



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## Peak Optimization Flags (Continued)

433.milc: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)  
-fno-alias -opt-prefetch

470.lbm: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)  
-opt-malloc-options=3 -ansi-alias -auto-ilp32

482.sphinx3: -xSSE4.2 -ipo -O3 -no-prec-div -static -unroll2

### C++ benchmarks:

444.namd: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)  
-fno-alias -auto-ilp32

447.dealII: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)  
-unroll2 -ansi-alias -scalar-rep-

450.soplex: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)  
-opt-malloc-options=3

453.povray: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)  
-unroll4 -ansi-alias

### Fortran benchmarks:

410.bwaves: -xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch

416.gamess: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)  
-unroll2 -Ob0 -ansi-alias -scalar-rep-

434.zeusmp: basepeak = yes

437.leslie3d: -xSSE4.2 -ipo -O3 -no-prec-div -static

459.GemsFDTD: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)  
-unroll2 -Ob0

465.tonto: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)  
-unroll4 -auto -inline-calloc -opt-malloc-options=3

### Benchmarks using both Fortran and C:

Continued on next page



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## Peak Optimization Flags (Continued)

435.gromacs: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)  
-opt-prefetch -auto-ilp32

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: basepeak = yes

The flags file that was used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/Intel-ic11.1-linux64-revE.20100316.html>

You can also download the XML flags source by saving the following link:

<http://www.spec.org/cpu2006/flags/Intel-ic11.1-linux64-revE.20100316.xml>

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For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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