



# SPEC® CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Dell Inc.

SPECfp®2006 = 37.8

PowerEdge T310 (Intel Xeon X3470, 2.93 GHz)

SPECfp\_base2006 = 36.5

CPU2006 license: 55

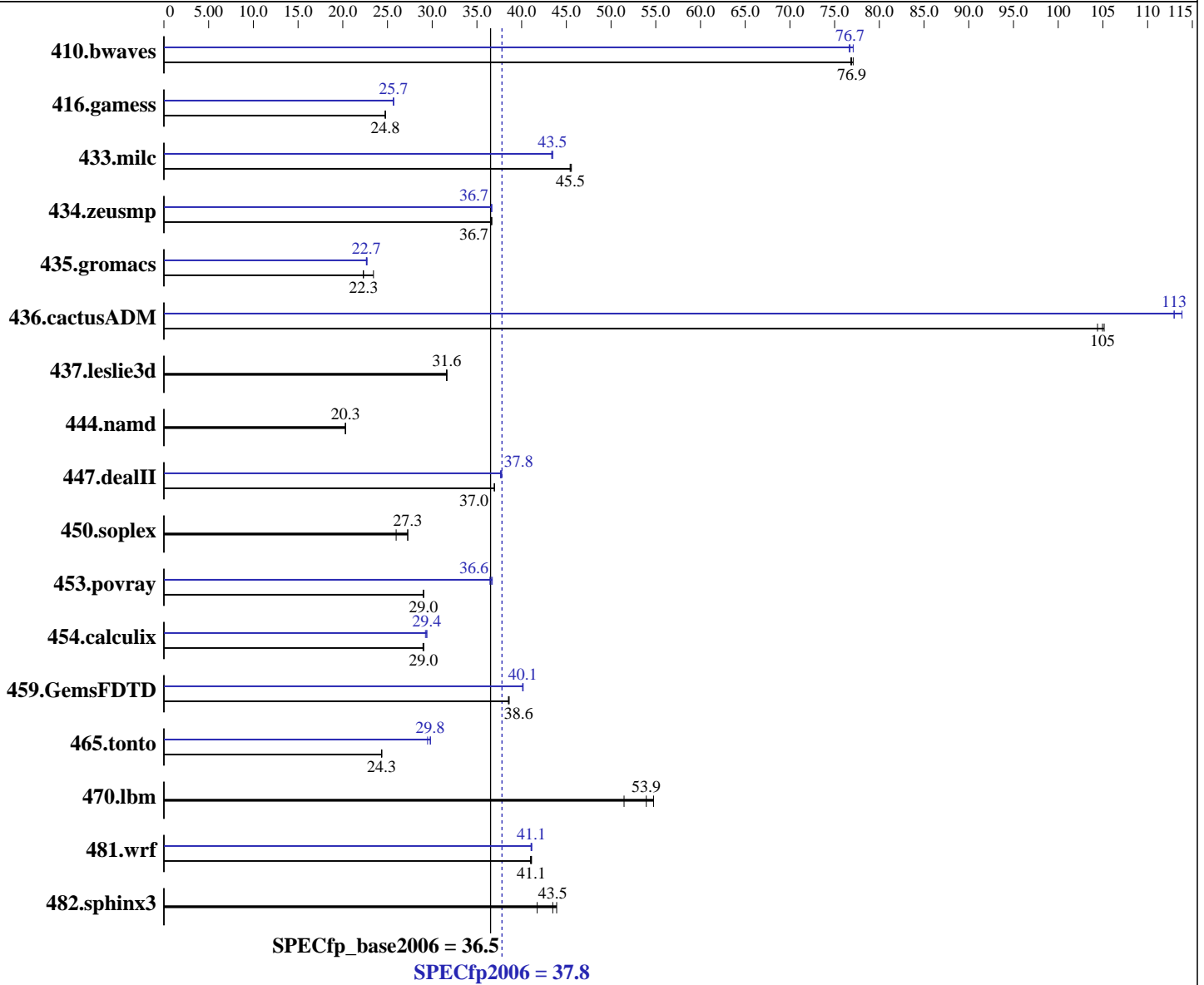
Test date: Nov-2009

Test sponsor: Dell Inc.

Hardware Availability: Sep-2009

Tested by: Dell Inc.

Software Availability: Jul-2009



### Hardware

CPU Name: Intel Xeon X3470  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.60 GHz  
 CPU MHz: 2933  
 FPU: Integrated  
 CPU(s) enabled: 4 cores, 1 chip, 4 cores/chip, 2 threads/core  
 CPU(s) orderable: 1 chip  
 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 5.3, Kernel 2.6.18-128.el5  
 Compiler: Intel Fortran Compiler and Intel C++ Compiler Professional Edition 11.1 For Linux Build 20090511 Package ID: l\_cproc\_p\_11.1.040, l\_cprof\_p\_11.1.040  
 Auto Parallel: Yes  
 File System: ReiserFS  
 System State: Run level 3 (multi-user)

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L3 Cache: 8 MB I+D on chip per chip  
Other Cache: None  
Memory: 8 GB (4 x 2 GB DDR3-1333 DR RDIMM)  
Disk Subsystem: 1 x 160 GB 7200 RPM SATA  
Other Hardware: None

Base Pointers: 64-bit  
Peak Pointers: 64-bit  
Other Software: Binutils 2.18.50.0.7.20080502

## Results Table

| Benchmark     | Base       |             |            |             |            |             | Peak       |             |            |             |            |             |
|---------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|
|               | Seconds    | Ratio       | Seconds    | Ratio       | Seconds    | Ratio       | Seconds    | Ratio       | Seconds    | Ratio       | Seconds    | Ratio       |
| 410.bwaves    | 176        | 77.1        | 177        | 76.8        | <u>177</u> | <u>76.9</u> | 176        | 77.1        | 177        | 76.6        | <u>177</u> | <u>76.7</u> |
| 416.gamess    | 790        | 24.8        | 791        | 24.7        | <u>791</u> | <u>24.8</u> | <u>763</u> | <u>25.7</u> | 763        | 25.7        | 762        | 25.7        |
| 433.milc      | 202        | 45.4        | 201        | 45.6        | <u>202</u> | <u>45.5</u> | 212        | 43.4        | 211        | 43.5        | <u>211</u> | <u>43.5</u> |
| 434.zeusmp    | 248        | 36.6        | 248        | 36.7        | <u>248</u> | <u>36.7</u> | 248        | 36.7        | 248        | 36.6        | <u>248</u> | <u>36.7</u> |
| 435.gromacs   | 320        | 22.3        | 305        | 23.4        | <u>320</u> | <u>22.3</u> | 315        | 22.6        | 314        | 22.7        | <u>315</u> | <u>22.7</u> |
| 436.cactusADM | 114        | 105         | 114        | 104         | <u>114</u> | <u>105</u>  | <u>106</u> | <u>113</u>  | 106        | 113         | 105        | 114         |
| 437.leslie3d  | <u>297</u> | <u>31.6</u> | 297        | 31.7        | 298        | 31.6        | <u>297</u> | <u>31.6</u> | 297        | 31.7        | 298        | 31.6        |
| 444.namd      | 395        | 20.3        | 395        | 20.3        | <u>395</u> | <u>20.3</u> | 395        | 20.3        | 395        | 20.3        | <u>395</u> | <u>20.3</u> |
| 447.dealII    | 310        | 37.0        | <u>310</u> | <u>37.0</u> | 310        | 37.0        | 303        | 37.8        | 304        | 37.6        | <u>303</u> | <u>37.8</u> |
| 450.soplex    | <u>306</u> | <u>27.3</u> | 306        | 27.3        | 321        | 26.0        | <u>306</u> | <u>27.3</u> | 306        | 27.3        | 321        | 26.0        |
| 453.povray    | <u>183</u> | <u>29.0</u> | 183        | 29.1        | 183        | 29.0        | <u>145</u> | <u>36.6</u> | 145        | 36.7        | 146        | 36.5        |
| 454.calculix  | <u>284</u> | <u>29.0</u> | 284        | 29.1        | 285        | 29.0        | 281        | 29.4        | <u>281</u> | <u>29.4</u> | 282        | 29.2        |
| 459.GemsFDTD  | 275        | 38.5        | 275        | 38.6        | <u>275</u> | <u>38.6</u> | 264        | 40.2        | 265        | 40.1        | <u>264</u> | <u>40.1</u> |
| 465.tonto     | 404        | 24.4        | 404        | 24.3        | <u>404</u> | <u>24.3</u> | 330        | 29.8        | <u>330</u> | <u>29.8</u> | 334        | 29.5        |
| 470.lbm       | 251        | 54.8        | 267        | 51.5        | <u>255</u> | <u>53.9</u> | 251        | 54.8        | 267        | 51.5        | <u>255</u> | <u>53.9</u> |
| 481.wrf       | 273        | 41.0        | 272        | 41.1        | <u>272</u> | <u>41.1</u> | <u>272</u> | <u>41.1</u> | 272        | 41.1        | 271        | 41.1        |
| 482.sphinx3   | 467        | 41.7        | 444        | 43.9        | <u>448</u> | <u>43.5</u> | 467        | 41.7        | 444        | 43.9        | <u>448</u> | <u>43.5</u> |

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.

## Operating System Notes

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

## Platform Notes

BIOS Settings:

Power Management = Maximum Performance (Default = Active Power Controller)



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## General Notes

OMP\_NUM\_THREADS set to number of cores  
KMP\_AFFINITY set to granularity=fine,scatter  
The Dell PowerEdge T310 and the Bull NovaScale T820 F2 models are electronically equivalent.  
This result was measured on a Dell PowerEdge T310.

## 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 -opt-prefetch

C++ benchmarks:

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

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## Base Optimization Flags (Continued)

Fortran benchmarks:

`-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -parallel`

Benchmarks using both Fortran and C:

`-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -parallel`

## 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: `-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`

470.lbm: `basepeak = yes`

482.sphinx3: `basepeak = yes`

C++ benchmarks:

444.namd: `basepeak = yes`

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- -opt-prefetch`

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## Peak Optimization Flags (Continued)

450.soplex: basepeak = yes

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  
-parallel

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: Same as 410.bwaves

437.leslie3d: basepeak = yes

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 -opt-prefetch -parallel

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

### Benchmarks using both Fortran and C:

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: -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 -opt-prefetch -parallel -auto-ilp32

454.calculix: -xSSE4.2 -ipo -O3 -no-prec-div -static -auto-ilp32

481.wrf: -xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch  
-parallel -auto-ilp32

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

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

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

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



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Tested with SPEC CPU2006 v1.1.  
Report generated on Wed Jul 23 03:54:31 2014 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 22 December 2009.