



# SPEC<sup>®</sup> CFP2006 Result

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Dell Inc.

SPECfp<sup>®</sup>2006 = 34.5

PowerEdge T310 (Intel Xeon X3450, 2.66 GHz)

SPECfp\_base2006 = 33.8

CPU2006 license: 55

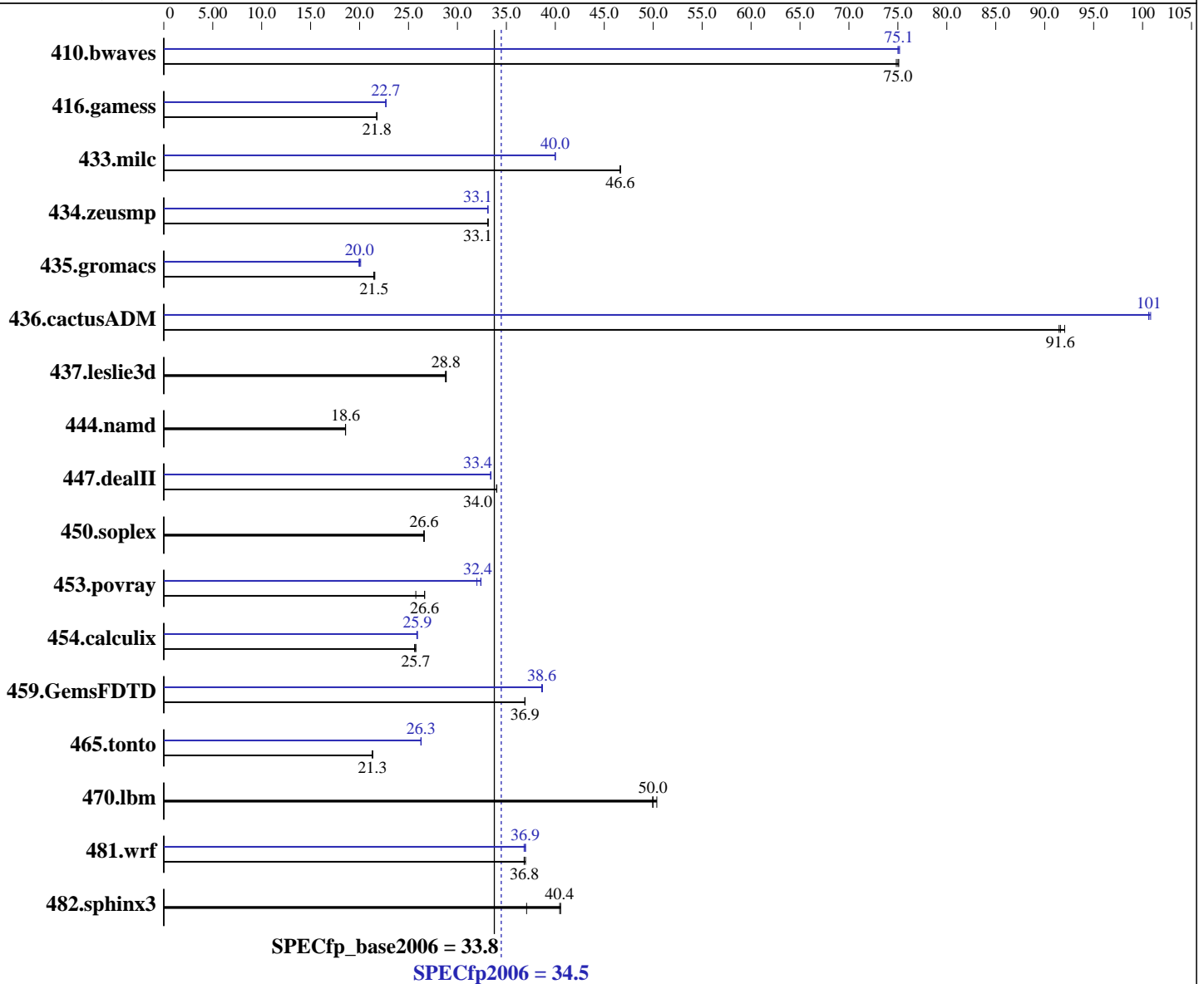
Test date: Nov-2009

Test sponsor: Dell Inc.

Hardware Availability: Sep-2009

Tested by: Dell Inc.

Software Availability: Jul-2009



### Hardware

CPU Name: Intel Xeon X3450  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.20 GHz  
 CPU MHz: 2667  
 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	181	75.1	<b><u>181</u></b>	<b><u>75.0</u></b>	182	74.8	181	75.0	181	75.2	<b><u>181</u></b>	<b><u>75.1</u></b>
416.gamess	899	21.8	900	21.7	<b><u>899</u></b>	<b><u>21.8</u></b>	<b><u>863</u></b>	<b><u>22.7</u></b>	862	22.7	864	22.7
433.milc	197	46.7	<b><u>197</u></b>	<b><u>46.6</u></b>	197	46.6	230	40.0	<b><u>230</u></b>	<b><u>40.0</u></b>	229	40.0
434.zeusmp	275	33.1	275	33.1	<b><u>275</u></b>	<b><u>33.1</u></b>	275	33.1	275	33.1	<b><u>275</u></b>	<b><u>33.1</u></b>
435.gromacs	333	21.5	<b><u>332</u></b>	<b><u>21.5</u></b>	331	21.6	<b><u>357</u></b>	<b><u>20.0</u></b>	355	20.1	358	19.9
436.cactusADM	130	92.0	131	91.5	<b><u>130</u></b>	<b><u>91.6</u></b>	<b><u>119</u></b>	<b><u>101</u></b>	119	101	119	101
437.leslie3d	326	28.9	<b><u>326</u></b>	<b><u>28.8</u></b>	327	28.8	326	28.9	<b><u>326</u></b>	<b><u>28.8</u></b>	327	28.8
444.namd	<b><u>432</u></b>	<b><u>18.6</u></b>	432	18.6	432	18.6	<b><u>432</u></b>	<b><u>18.6</u></b>	432	18.6	432	18.6
447.dealII	336	34.0	<b><u>336</u></b>	<b><u>34.0</u></b>	336	34.0	<b><u>343</u></b>	<b><u>33.4</u></b>	343	33.4	342	33.4
450.soplex	313	26.6	314	26.6	<b><u>314</u></b>	<b><u>26.6</u></b>	313	26.6	314	26.6	<b><u>314</u></b>	<b><u>26.6</u></b>
453.povray	200	26.6	207	25.7	<b><u>200</u></b>	<b><u>26.6</u></b>	166	32.0	164	32.4	<b><u>164</u></b>	<b><u>32.4</u></b>
454.calculix	320	25.7	<b><u>321</u></b>	<b><u>25.7</u></b>	322	25.6	319	25.9	318	25.9	<b><u>319</u></b>	<b><u>25.9</u></b>
459.GemsFDTD	<b><u>288</u></b>	<b><u>36.9</u></b>	287	36.9	288	36.9	275	38.6	<b><u>275</u></b>	<b><u>38.6</u></b>	274	38.7
465.tonto	461	21.3	<b><u>461</u></b>	<b><u>21.3</u></b>	462	21.3	374	26.3	<b><u>374</u></b>	<b><u>26.3</u></b>	375	26.3
470.lbm	273	50.4	275	49.9	<b><u>275</u></b>	<b><u>50.0</u></b>	273	50.4	275	49.9	<b><u>275</u></b>	<b><u>50.0</u></b>
481.wrf	302	37.0	303	36.8	<b><u>303</u></b>	<b><u>36.8</u></b>	302	37.0	<b><u>302</u></b>	<b><u>36.9</u></b>	303	36.8
482.sphinx3	526	37.1	481	40.5	<b><u>482</u></b>	<b><u>40.4</u></b>	526	37.1	481	40.5	<b><u>482</u></b>	<b><u>40.4</u></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.

## 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

Continued on next page



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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

Continued on next page



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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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