



# SPEC<sup>®</sup> CFP2006 Result

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Dell Inc.

SPECfp<sup>®</sup>2006 = 63.9

PowerEdge T710 (Intel Xeon X5687, 3.60 GHz)

SPECfp\_base2006 = 61.6

CPU2006 license: 55

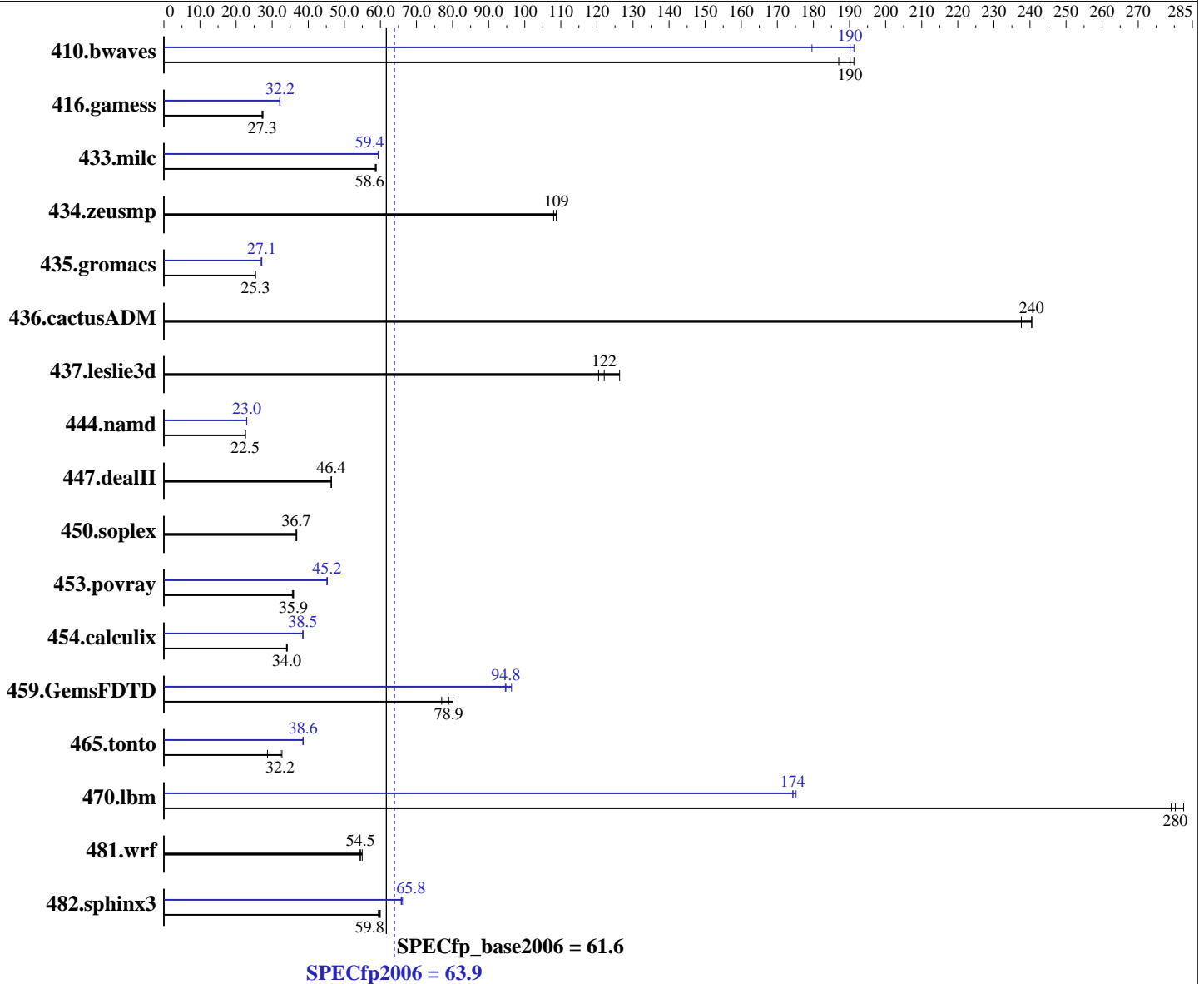
Test date: Mar-2011

Test sponsor: Dell Inc.

Hardware Availability: Feb-2011

Tested by: Dell Inc.

Software Availability: Apr-2011



## Hardware

CPU Name: Intel Xeon X5687  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.86 GHz  
 CPU MHz: 3600  
 FPU: Integrated  
 CPU(s) enabled: 8 cores, 2 chips, 4 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: SUSE Linux Enterprise Server 11 SP1 (x86\_64), Kernel 2.6.32.12-0.7-default  
 Compiler: Intel C++ and Fortran Intel 64 Compiler XE for applications running on Intel 64 Version 12.0 Update 3  
 Auto Parallel: Yes  
 File System: ext3  
 System State: Run level 3 (multi-user)  
 Base Pointers: 64-bit

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L3 Cache: 12 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 48 GB (12 x 4 GB 2Rx4 PC3-10600R-9, ECC)  
 Disk Subsystem: 1 x 146 GB 15000 RPM SAS  
 Other Hardware: None

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	72.7	187	<b><u>71.5</u></b>	<b><u>190</u></b>	71.1	191	75.7	180	<b><u>71.5</u></b>	<b><u>190</u></b>	71.1	191
416.gamess	<b><u>718</u></b>	<b><u>27.3</u></b>	719	27.2	713	27.5	609	32.2	610	32.1	<b><u>609</u></b>	<b><u>32.2</u></b>
433.milc	156	58.8	<b><u>157</u></b>	<b><u>58.6</u></b>	157	58.6	<b><u>155</u></b>	<b><u>59.4</u></b>	155	59.4	155	59.4
434.zeusmp	83.7	109	84.3	108	<b><u>83.7</u></b>	<b><u>109</u></b>	83.7	109	84.3	108	<b><u>83.7</u></b>	<b><u>109</u></b>
435.gromacs	282	25.3	282	25.3	<b><u>282</u></b>	<b><u>25.3</u></b>	265	26.9	263	27.1	<b><u>263</u></b>	<b><u>27.1</u></b>
436.cactusADM	<b><u>49.7</u></b>	<b><u>240</u></b>	50.3	238	49.7	240	<b><u>49.7</u></b>	<b><u>240</u></b>	50.3	238	49.7	240
437.leslie3d	74.4	126	78.0	120	<b><u>77.0</u></b>	<b><u>122</u></b>	74.4	126	78.0	120	<b><u>77.0</u></b>	<b><u>122</u></b>
444.namd	356	22.6	<b><u>356</u></b>	<b><u>22.5</u></b>	356	22.5	<b><u>349</u></b>	<b><u>23.0</u></b>	350	22.9	349	23.0
447.dealII	247	46.4	247	46.4	<b><u>247</u></b>	<b><u>46.4</u></b>	247	46.4	247	46.4	<b><u>247</u></b>	<b><u>46.4</u></b>
450.soplex	226	36.8	<b><u>227</u></b>	<b><u>36.7</u></b>	228	36.6	226	36.8	<b><u>227</u></b>	<b><u>36.7</u></b>	228	36.6
453.povray	<b><u>148</u></b>	<b><u>35.9</u></b>	149	35.6	148	35.9	117	45.3	<b><u>118</u></b>	<b><u>45.2</u></b>	118	45.2
454.calculix	241	34.2	<b><u>242</u></b>	<b><u>34.0</u></b>	243	34.0	<b><u>214</u></b>	<b><u>38.5</u></b>	214	38.5	214	38.5
459.GemsFDTD	138	77.0	<b><u>134</u></b>	<b><u>78.9</u></b>	132	80.1	112	94.6	110	96.3	<b><u>112</u></b>	<b><u>94.8</u></b>
465.tonto	301	32.7	343	28.7	<b><u>305</u></b>	<b><u>32.2</u></b>	255	38.5	255	38.6	<b><u>255</u></b>	<b><u>38.6</u></b>
470.lbm	48.6	283	<b><u>49.0</u></b>	<b><u>280</u></b>	49.2	279	78.4	175	78.8	174	<b><u>78.8</u></b>	<b><u>174</u></b>
481.wrf	203	54.9	205	54.4	<b><u>205</u></b>	<b><u>54.5</u></b>	203	54.9	205	54.4	<b><u>205</u></b>	<b><u>54.5</u></b>
482.sphinx3	325	60.0	328	59.4	<b><u>326</u></b>	<b><u>59.8</u></b>	296	65.8	295	66.1	<b><u>296</u></b>	<b><u>65.8</u></b>

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

## Operating System Notes

```
'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run
'mount -t hugetlbfs nodev /mnt/hugepages' was used to enable large pages
echo 900 > /proc/sys/vm/nr_hugepages
export HUGETLB_MORECORE=yes
export LD_PRELOAD=/usr/lib64/libhugetlbfs.so
```

## Platform Notes

BIOS Settings:  
 Power Management = Maximum Performance (Default = Active Power Controller)  
 Data Reuse = Disabled (Default = Enabled)  
 Logical Processor = Disabled (Default = Enabled)



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## General Notes

OMP\_NUM\_THREADS set to number of cores  
The Dell PowerEdge T710 and the Bull NovaScale T860 F2 models are electronically equivalent. The results have been measured on a Dell PowerEdge T710 model. Binaries were compiled on RHEL5.5

## 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

## Base Optimization Flags

C benchmarks:  
-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch  
-ansi-alias

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## Base Optimization Flags (Continued)

C++ benchmarks:

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

Fortran benchmarks:

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

Benchmarks using both Fortran and C:

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

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

482.sphinx3: -xSSE4.2 -ipo -O3 -no-prec-div -unroll2 -ansi-alias  
-parallel

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## Peak Optimization Flags (Continued)

C++ benchmarks:

444.namd: -xSSE4.2(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: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -ansi-alias  
-B /usr/share/libhugetlbfs/ -Wl,-melf\_x86\_64 -Wl,-hugetlbfs-link=BDT

Fortran benchmarks:

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

416.gamess: -xSSE4.2(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- -static

434.zeusmp: basepeak = yes

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) -prof-use(pass 2) -unroll2  
-inline-level=0 -opt-prefetch -parallel  
-B /usr/share/libhugetlbfs/ -Wl,-melf\_x86\_64 -Wl,-hugetlbfs-link=BDT

465.tonto: -xSSE4.2(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  
-B /usr/share/libhugetlbfs/ -Wl,-melf\_x86\_64 -Wl,-hugetlbfs-link=BDT

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) -prof-use(pass 2) -static -auto-ilp32  
-ansi-alias

436.cactusADM: basepeak = yes

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

481.wrf: basepeak = yes



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

<http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revB.html>

<http://www.spec.org/cpu2006/flags/Intel-Linux64-Platform.20110426.html>

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

<http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revB.xml>

<http://www.spec.org/cpu2006/flags/Intel-Linux64-Platform.20110426.xml>

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

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