



# SPEC® CFP2006 Result

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## Bull SAS

SPECfp®2006 = **64.1**

NovaScale T860 F2 (Intel Xeon X5690, 3.46 GHz)

SPECfp\_base2006 = **61.1**

CPU2006 license: 20

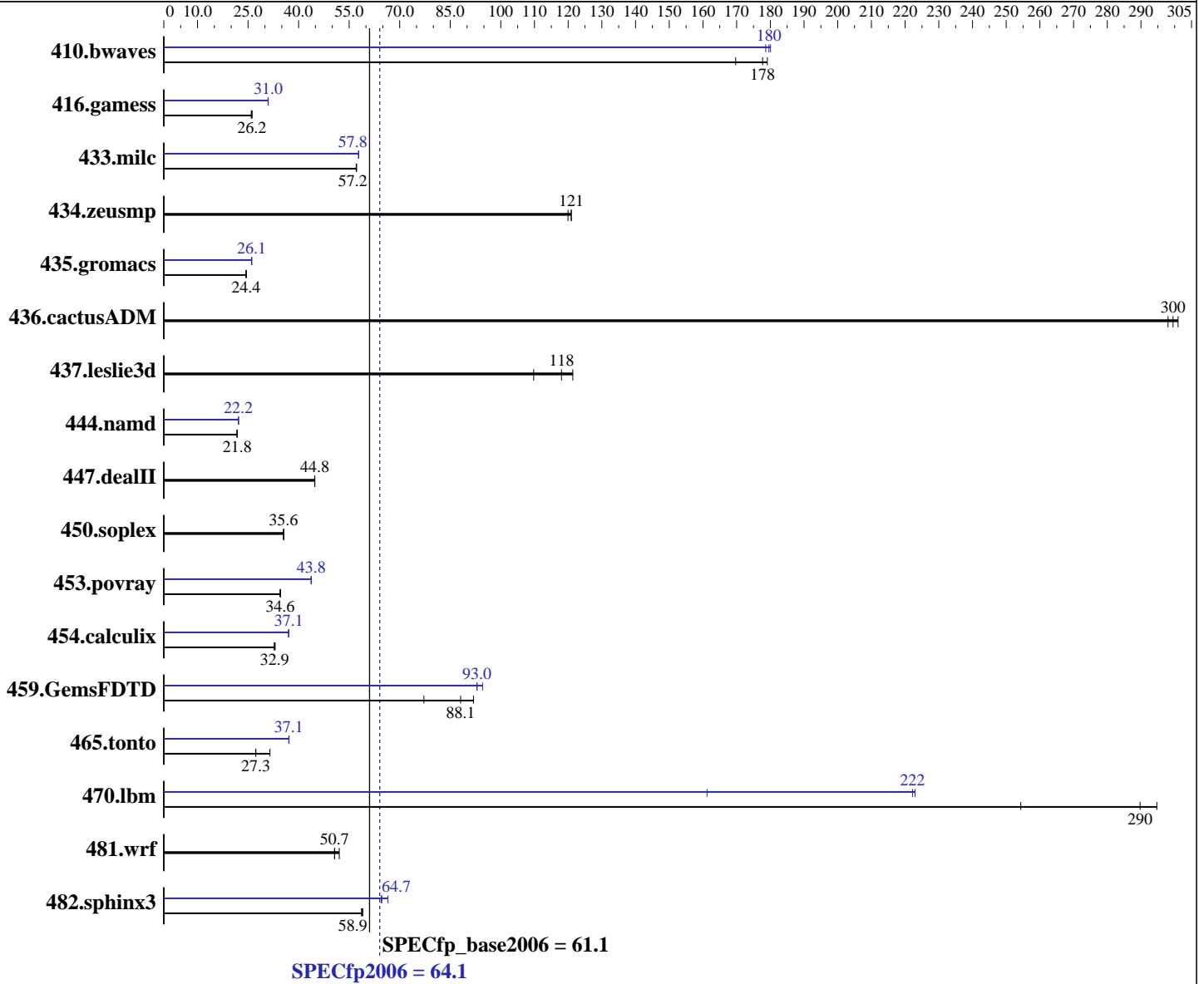
Test sponsor: Bull SAS

Tested by: Dell Inc.

Test date: Feb-2011

Hardware Availability: Feb-2011

Software Availability: Apr-2011



### Hardware

CPU Name: Intel Xeon X5690  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.73 GHz  
 CPU MHz: 3467  
 FPU: Integrated  
 CPU(s) enabled: 12 cores, 2 chips, 6 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	<b><u>76.5</u></b>	<b><u>178</u></b>	75.9	179	80.1	170	75.5	180	76.1	179	<b><u>75.7</u></b>	<b><u>180</u></b>
416.gamess	<b><u>748</u></b>	<b><u>26.2</u></b>	748	26.2	754	26.0	633	30.9	<b><u>632</u></b>	<b><u>31.0</u></b>	632	31.0
433.milc	161	57.2	161	57.1	<b><u>161</u></b>	<b><u>57.2</u></b>	159	57.8	159	57.8	<b><u>159</u></b>	<b><u>57.8</u></b>
434.zeusmp	75.8	120	75.2	121	<b><u>75.3</u></b>	<b><u>121</u></b>	75.8	120	75.2	121	<b><u>75.3</u></b>	<b><u>121</u></b>
435.gromacs	293	24.4	<b><u>292</u></b>	<b><u>24.4</u></b>	291	24.5	273	26.1	<b><u>274</u></b>	<b><u>26.1</u></b>	274	26.0
436.cactusADM	39.7	301	40.1	298	<b><u>39.9</u></b>	<b><u>300</u></b>	39.7	301	40.1	298	<b><u>39.9</u></b>	<b><u>300</u></b>
437.leslie3d	85.6	110	77.4	121	<b><u>79.6</u></b>	<b><u>118</u></b>	85.6	110	77.4	121	<b><u>79.6</u></b>	<b><u>118</u></b>
444.namd	368	21.8	<b><u>369</u></b>	<b><u>21.8</u></b>	369	21.7	362	22.2	<b><u>362</u></b>	<b><u>22.2</u></b>	362	22.2
447.dealII	255	44.8	255	44.8	<b><u>255</u></b>	<b><u>44.8</u></b>	255	44.8	255	44.8	<b><u>255</u></b>	<b><u>44.8</u></b>
450.soplex	234	35.6	235	35.5	<b><u>234</u></b>	<b><u>35.6</u></b>	234	35.6	235	35.5	<b><u>234</u></b>	<b><u>35.6</u></b>
453.povray	<b><u>154</u></b>	<b><u>34.6</u></b>	154	34.5	154	34.7	122	43.8	122	43.7	<b><u>122</u></b>	<b><u>43.8</u></b>
454.calculix	250	33.0	<b><u>251</u></b>	<b><u>32.9</u></b>	252	32.8	<b><u>223</u></b>	<b><u>37.1</u></b>	223	37.1	223	37.1
459.GemsFDTD	<b><u>120</u></b>	<b><u>88.1</u></b>	115	91.9	137	77.2	<b><u>114</u></b>	<b><u>93.0</u></b>	112	94.6	114	93.0
465.tonto	<b><u>360</u></b>	<b><u>27.3</u></b>	312	31.5	361	27.2	265	37.2	<b><u>265</u></b>	<b><u>37.1</u></b>	265	37.1
470.lbm	46.6	295	<b><u>47.4</u></b>	<b><u>290</u></b>	54.0	254	61.6	223	<b><u>61.8</u></b>	<b><u>222</u></b>	85.2	161
481.wrf	214	52.1	<b><u>220</u></b>	<b><u>50.7</u></b>	220	50.7	214	52.1	<b><u>220</u></b>	<b><u>50.7</u></b>	220	50.7
482.sphinx3	<b><u>331</u></b>	<b><u>58.9</u></b>	330	59.0	332	58.7	<b><u>301</u></b>	<b><u>64.7</u></b>	293	66.5	302	64.6

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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