



# SPEC® CFP2006 Result

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## Bull SAS

**SPECfp®2006 = 61.0**

NovaScale R460 F2 (Intel Xeon X5672, 3.20 GHz)

**SPECfp\_base2006 = 59.4**

CPU2006 license: 20

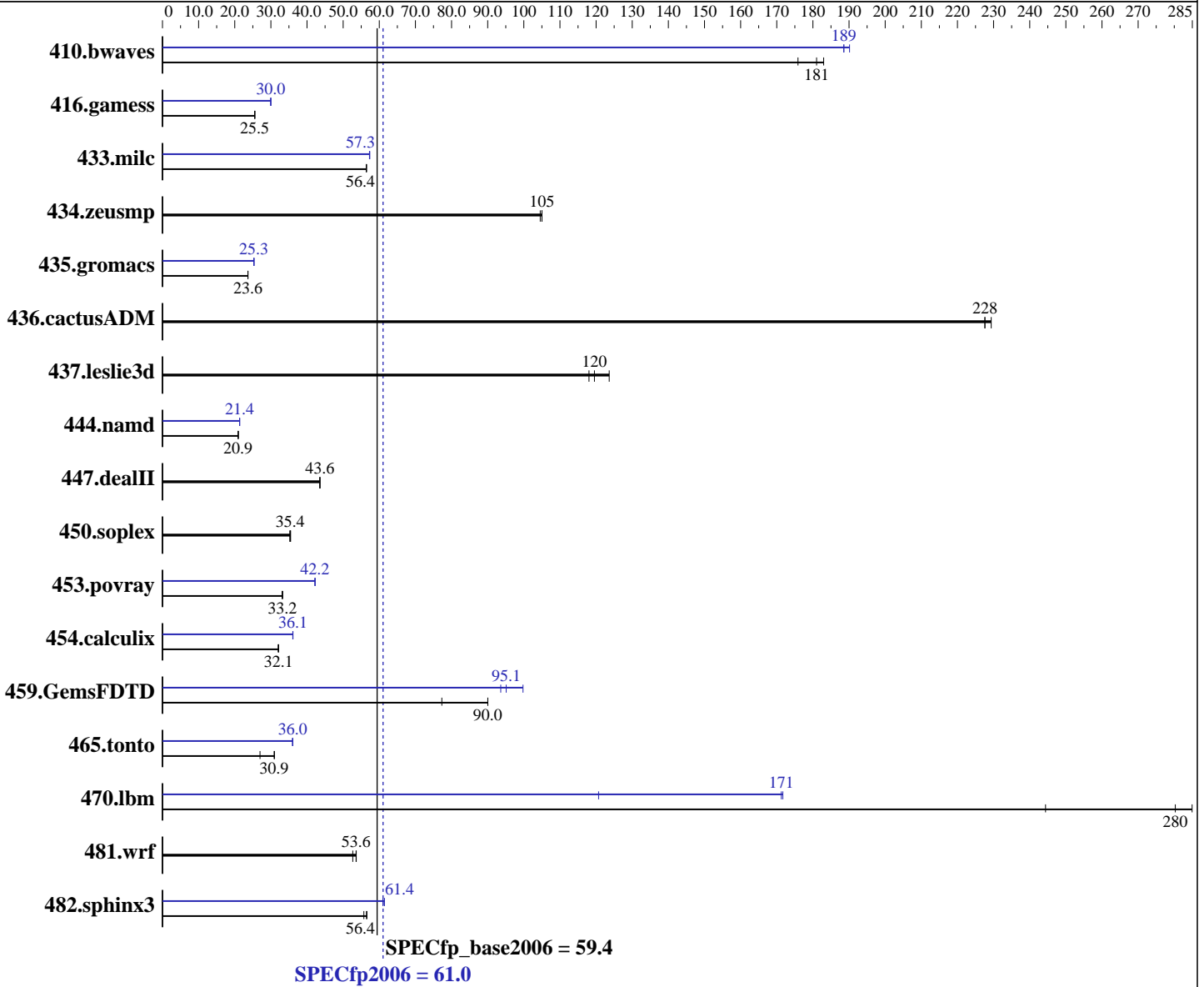
Test sponsor: Bull SAS

Tested by: Dell Inc.

Test date: Feb-2011

Hardware Availability: Feb-2011

Software Availability: Apr-2011



### Hardware

CPU Name: Intel Xeon X5672  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.60 GHz  
 CPU MHz: 3200  
 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: 146 GB 10000 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	74.3	183	77.3	176	<b><u>75.1</u></b>	<b><u>181</u></b>	71.5	190	<b><u>72.1</u></b>	<b><u>189</u></b>	72.1	189
416.gamess	767	25.5	<b><u>766</u></b>	<b><u>25.5</u></b>	766	25.5	653	30.0	653	30.0	<b><u>653</u></b>	<b><u>30.0</u></b>
433.milc	163	56.5	<b><u>163</u></b>	<b><u>56.4</u></b>	163	56.4	160	57.4	<b><u>160</u></b>	<b><u>57.3</u></b>	160	57.3
434.zeusmp	87.1	105	<b><u>86.7</u></b>	<b><u>105</u></b>	86.7	105	87.1	105	<b><u>86.7</u></b>	<b><u>105</u></b>	86.7	105
435.gromacs	<b><u>302</u></b>	<b><u>23.6</u></b>	302	23.6	302	23.7	282	25.3	282	25.3	<b><u>282</u></b>	<b><u>25.3</u></b>
436.cactusADM	<b><u>52.5</u></b>	<b><u>228</u></b>	52.1	229	52.5	228	<b><u>52.5</u></b>	<b><u>228</u></b>	52.1	229	52.5	228
437.leslie3d	<b><u>78.6</u></b>	<b><u>120</u></b>	79.6	118	76.0	124	<b><u>78.6</u></b>	<b><u>120</u></b>	79.6	118	76.0	124
444.namd	<b><u>383</u></b>	<b><u>20.9</u></b>	382	21.0	383	20.9	<b><u>376</u></b>	<b><u>21.4</u></b>	376	21.3	375	21.4
447.dealII	<b><u>263</u></b>	<b><u>43.6</u></b>	263	43.5	262	43.6	<b><u>263</u></b>	<b><u>43.6</u></b>	263	43.5	262	43.6
450.soplex	235	35.5	237	35.2	<b><u>236</u></b>	<b><u>35.4</u></b>	235	35.5	237	35.2	<b><u>236</u></b>	<b><u>35.4</u></b>
453.povray	161	33.1	<b><u>160</u></b>	<b><u>33.2</u></b>	160	33.3	126	42.2	126	42.2	<b><u>126</u></b>	<b><u>42.2</u></b>
454.calculix	258	32.0	257	32.1	<b><u>257</u></b>	<b><u>32.1</u></b>	228	36.1	229	36.1	<b><u>229</u></b>	<b><u>36.1</u></b>
459.GemsFDTD	<b><u>118</u></b>	<b><u>90.0</u></b>	137	77.3	118	90.0	106	99.8	113	93.6	<b><u>112</u></b>	<b><u>95.1</u></b>
465.tonto	365	27.0	317	31.0	<b><u>319</u></b>	<b><u>30.9</u></b>	273	36.1	273	36.0	<b><u>273</u></b>	<b><u>36.0</u></b>
470.lbm	56.2	244	<b><u>49.0</u></b>	<b><u>280</u></b>	48.2	285	114	121	<b><u>80.2</u></b>	<b><u>171</u></b>	80.0	172
481.wrf	212	52.7	<b><u>208</u></b>	<b><u>53.6</u></b>	208	53.6	212	52.7	<b><u>208</u></b>	<b><u>53.6</u></b>	208	53.6
482.sphinx3	<b><u>345</u></b>	<b><u>56.4</u></b>	344	56.6	350	55.7	317	61.4	<b><u>318</u></b>	<b><u>61.4</u></b>	320	61.0

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

## Operating System Notes

```
'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 R710 and the Bull NovaScale R460 F2 models are electronically equivalent. The results have been measured on a Dell PowerEdge R710 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.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 -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.dealII: 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.20110308.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.20110308.xml>

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