Bull SAS
NovaScale R460 F2 (Intel Xeon X5670, 3.33 GHz)

<table>
<thead>
<tr>
<th>SPECfp®2006</th>
<th>SPECfp_base2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>45.8</td>
<td>42.5</td>
</tr>
</tbody>
</table>

**CPU2006 license:** 20  
**Test sponsor:** Bull SAS  
**Tested by:** Dell Inc.

**CPU Name:** Intel Xeon X5670  
**CPU Characteristics:** Intel Turbo Boost Technology up to 3.33 GHz  
**CPU MHz:** 2933  
**FPU:** Integrated  
**CPU(s) enabled:** 12 cores, 2 chips, 6 cores/chip, 2 threads/core  
**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  

**Operating System:** SUSE Linux Enterprise Server 11 (x86_64), Kernel 2.6.27.19-5-smp  
**Compiler:** Intel C++ and Fortran Professional Compiler for IA32 and Intel 64, Version 11.1  
**Auto Parallel:** Yes  
**File System:** ext3  
**System State:** Run level 3 (multi-user)
Bull SAS
NovaScale R460 F2 (Intel Xeon X5670, 3.33 GHz)

SPEC CFP2006 Result

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Bull SAS
NovaScale R460 F2 (Intel Xeon X5670, 3.33 GHz)

SPECfp2006 = 45.8
SPECfp_base2006 = 42.5

CPU2006 license: 20
Test sponsor: Bull SAS
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L3 Cache: 12 MB I+D on chip per chip
Other Cache: None
Memory: 48 GB (12 x 4 GB DDR3-1333 DR RDIMM, CL9, ECC)
Disk Subsystem: 1 x 146 GB 15000 RPM SAS
Other Hardware: None

Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Software Availability: None

Results Table

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<td>45.1</td>
<td>437</td>
<td>44.6</td>
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</tbody>
</table>

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)
Data Reuse = Disabled (Default = Enabled)

General Notes

OMP_NUM_THREADS set to number of cores
KMP_AFFINITY set to granularity=fine,scatter
KMP_STACKSIZE set to 200M

Continued on next page
# SPEC CFP2006 Result

## Bull SAS

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<table>
<thead>
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**CPU2006 license:** 20

**Test sponsor:** Bull SAS

**Tested by:** Dell Inc.

<table>
<thead>
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<th>Test date</th>
<th>May-2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware Availability</td>
<td>Mar-2010</td>
</tr>
<tr>
<td>Software Availability</td>
<td>Dec-2009</td>
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</tbody>
</table>

## General Notes (Continued)

Binaries were compiled on SLES 10 with Binutils 2.18.50.0.7.20080502. 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.

## Base Compiler Invocation

For C benchmarks:

```
icc  -m64
```

For C++ benchmarks:

```
icpc  -m64
```

For Fortran benchmarks:

```
ifort -m64
```

For benchmarks using both Fortran and C:

```
icc  -m64 ifort -m64
```

## Base Portability Flags

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Base Flags</th>
</tr>
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<tbody>
<tr>
<td>410.bwaves</td>
<td>-DSPEC_CPU_LP64</td>
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<td>-DSPEC_CPU_LP64</td>
</tr>
<tr>
<td>481.wrf</td>
<td>-DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>-DSPEC_CPU_LP64</td>
</tr>
</tbody>
</table>

## Base Optimization Flags

For C benchmarks:

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

For C++ benchmarks:

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

Continued on next page
Base Optimization Flags (Continued)

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

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)
   -ansi-alias

470.lbm: -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)
   -parallel -ansi-alias -auto-ilp32

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 -auto-ilp32

Continued on next page
Bull SAS
NovaScale R460 F2 (Intel Xeon X5670, 3.33 GHz)

SPECfp2006 = 45.8
SPECfp_base2006 = 42.5

CPU2006 license: 20
Test sponsor: Bull SAS
Tested by: Dell Inc.

Test date: May-2010
Hardware Availability: Mar-2010
Software Availability: Dec-2009

Peak Optimization Flags (Continued)

450.soplex: -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-malloc-options=3 -auto-ilp32

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: 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) -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)
            -inline-calloc -opt-malloc-options=3 -auto -unroll4

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: Same as 454.calculix

The flags file that was used to format this result can be browsed at
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<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
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**Bull SAS**

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**Test date:** May-2010  
**Hardware Availability:** Mar-2010  
**Software Availability:** Dec-2009

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

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For questions about this result, please contact the tester.  
For other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.1.  
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