



# SPEC<sup>®</sup> CFP2006 Result

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## Bull SAS

NovaScale R440  
(Intel Xeon processor E5310,1.60GHz)

SPECfp<sup>®</sup>\_rate2006 = 41.8

SPECfp\_rate\_base2006 = 41.3

CPU2006 license: 20

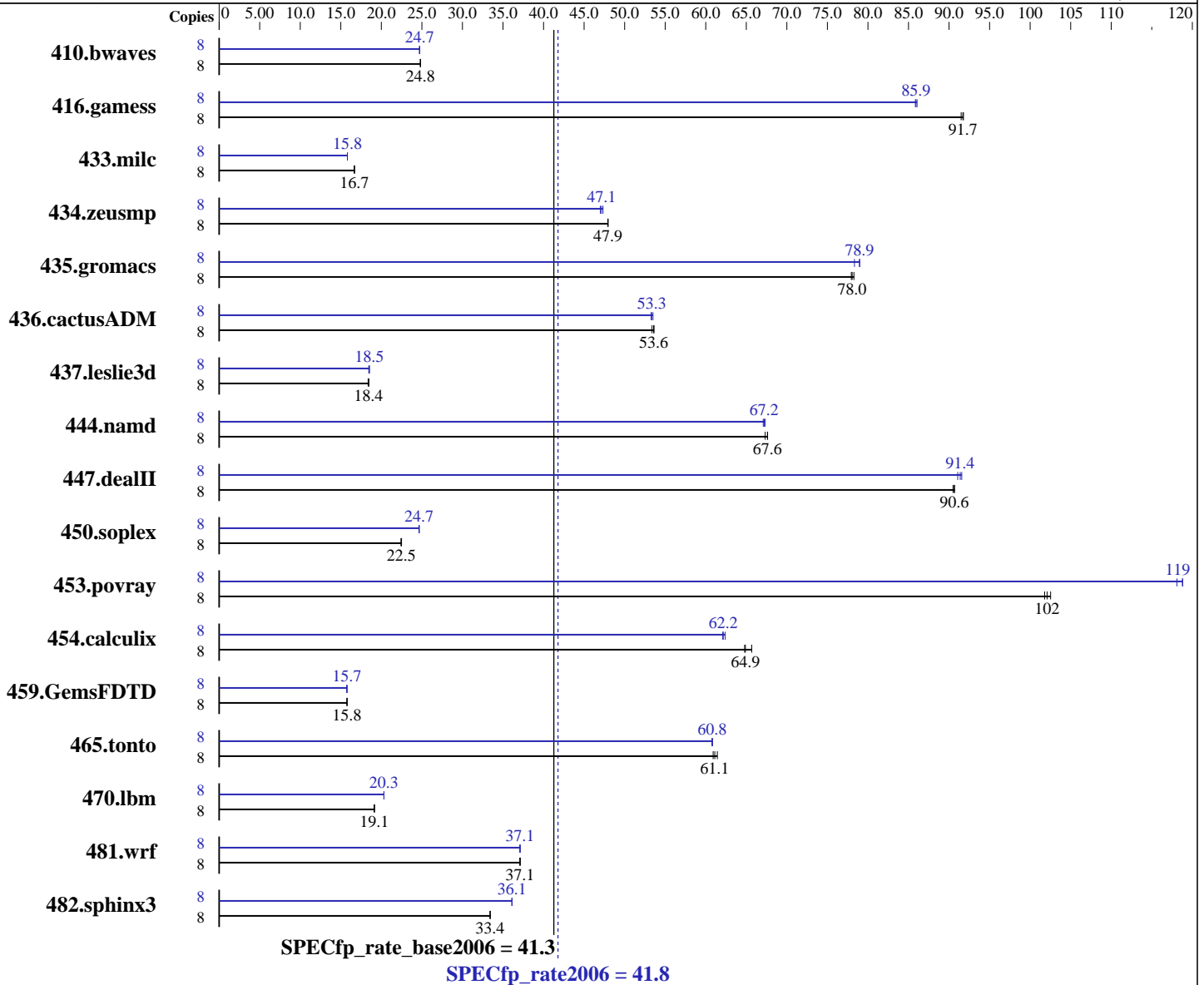
Test sponsor: Bull SAS

Tested by: Bull SAS

Test date: Jul-2007

Hardware Availability: Mar-2007

Software Availability: May-2007



### Hardware

CPU Name: Intel Xeon E5310  
 CPU Characteristics: 1.60 GHz, 8 MB L2, 1066 MHz system bus  
 CPU MHz: 1600  
 FPU: Integrated  
 CPU(s) enabled: 8 cores, 2 chips, 4 cores/chip  
 CPU(s) orderable: 1 to 2 chips  
 Primary Cache: 32 KB I + 32 KB D on chip per core  
 Secondary Cache: 8 MB I+D on chip per chip, 4 MB shared / 2 cores

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### Software

Operating System: SUSE LINUX Enterprise Server 10  
 Kernel 2.6.16.21-0.8-smp for x86\_64  
 Compiler: Intel C++ Compiler for IA32/EM64T application version 10.0  
 Build 20070426 Package ID: l\_cc\_p\_10.0.023  
 Intel Fortran Compiler for IA32/EM64T application version 10.0  
 Build 20070426 Package ID: l\_fc\_p\_10.0.023  
 Auto Parallel: No  
 File System: ext2

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L3 Cache: None  
Other Cache: None  
Memory: 12 GB (12x1 GB) FB-DIMM PC2-4200F ECC CL4  
Disk Subsystem: 1x73 GB SAS, 15000 RPM  
Other Hardware: None

System State: Multi-user run level 3  
Base Pointers: 64-bit  
Peak Pointers: 32/64-bit  
Other Software: Binutils 2.17.50.0.15

## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	8	4382	24.8	4380	24.8	<b>4382</b>	<b>24.8</b>	8	4400	24.7	4398	24.7	<b>4399</b>	<b>24.7</b>
416.gamess	8	<b>1708</b>	<b>91.7</b>	1707	91.8	1712	91.5	8	1825	85.8	<b>1823</b>	<b>85.9</b>	1820	86.1
433.milc	8	4404	16.7	<b>4402</b>	<b>16.7</b>	4402	16.7	8	<b>4644</b>	<b>15.8</b>	4645	15.8	4643	15.8
434.zeusmp	8	<b>1519</b>	<b>47.9</b>	1519	47.9	1518	48.0	8	<b>1544</b>	<b>47.1</b>	1538	47.3	1549	47.0
435.gromacs	8	<b>732</b>	<b>78.0</b>	733	78.0	730	78.3	8	<b>724</b>	<b>78.9</b>	729	78.3	723	79.0
436.cactusADM	8	1783	53.6	<b>1784</b>	<b>53.6</b>	1791	53.4	8	<b>1793</b>	<b>53.3</b>	1795	53.3	1787	53.5
437.leslie3d	8	4073	18.5	<b>4082</b>	<b>18.4</b>	4094	18.4	8	4076	18.5	<b>4061</b>	<b>18.5</b>	4059	18.5
444.namd	8	949	67.6	<b>949</b>	<b>67.6</b>	953	67.3	8	953	67.3	<b>955</b>	<b>67.2</b>	956	67.1
447.dealII	8	<b>1010</b>	<b>90.6</b>	1009	90.7	1011	90.5	8	<b>1002</b>	<b>91.4</b>	1005	91.1	999	91.6
450.soplex	8	2967	22.5	2975	22.4	<b>2971</b>	<b>22.5</b>	8	2705	24.7	<b>2706</b>	<b>24.7</b>	2706	24.7
453.povray	8	418	102	<b>417</b>	<b>102</b>	415	103	8	360	118	358	119	<b>358</b>	<b>119</b>
454.calculix	8	<b>1017</b>	<b>64.9</b>	1019	64.8	1005	65.7	8	<b>1062</b>	<b>62.2</b>	1063	62.1	1058	62.4
459.GemsFDTD	8	5389	15.8	5379	15.8	<b>5382</b>	<b>15.8</b>	8	<b>5390</b>	<b>15.7</b>	5393	15.7	5380	15.8
465.tonto	8	1281	61.4	1292	60.9	<b>1288</b>	<b>61.1</b>	8	1295	60.8	1294	60.8	<b>1294</b>	<b>60.8</b>
470.lbm	8	5738	19.2	<b>5746</b>	<b>19.1</b>	5747	19.1	8	<b>5409</b>	<b>20.3</b>	5409	20.3	5410	20.3
481.wrf	8	2410	37.1	2407	37.1	<b>2409</b>	<b>37.1</b>	8	2407	37.1	<b>2409</b>	<b>37.1</b>	2411	37.1
482.sphinx3	8	4667	33.4	4665	33.4	<b>4666</b>	<b>33.4</b>	8	4320	36.1	<b>4317</b>	<b>36.1</b>	4317	36.1

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  
'/usr/bin/taskset' used to bind processes to CPUs

## General Notes

All binaries were built with 64-bit Intel compiler except:  
433.milc, 434.zeusmp, 450.soplex, 470.lbm and 482.sphinx3 in peak were built with  
32-bit Intel compiler by changing the path for include and library files.

The NovaScale R440 and the NovaScale R460 models are  
electronically equivalent.  
The results have been measured on a NovaScale R460 model.



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**Test date:** Jul-2007  
**Hardware Availability:** Mar-2007  
**Software Availability:** May-2007

## Base Compiler Invocation

C benchmarks:  
icc

C++ benchmarks:  
icpc

Fortran benchmarks:  
ifort

Benchmarks using both Fortran and C:  
icc ifort

## 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:  
-fast

C++ benchmarks:  
-fast

Fortran benchmarks:  
-fast

Benchmarks using both Fortran and C:  
-fast



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## Peak Compiler Invocation

### C benchmarks:

```
/opt/intel/cc/10.0.023/bin/icc -L/opt/intel/cc/10.0.023/lib  
-I/opt/intel/cc/10.0.023/include
```

### C++ benchmarks (except as noted below):

icpc

```
450.soplex: /opt/intel/cc/10.0.023/bin/icpc -L/opt/intel/cc/10.0.023/lib  
-I/opt/intel/cc/10.0.023/include
```

### Fortran benchmarks (except as noted below):

ifort

```
434.zeusmp: /opt/intel/fc/10.0.023/bin/ifort -L/opt/intel/fc/10.0.023/lib  
-I/opt/intel/fc/10.0.023/include
```

### Benchmarks using both Fortran and C:

icc ifort

## Peak Portability Flags

```
410.bwaves: -DSPEC_CPU_LP64  
416.gamess: -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  
453.povray: -DSPEC_CPU_LP64  
454.calculix: -DSPEC_CPU_LP64 -nofor_main  
459.GemsFDTD: -DSPEC_CPU_LP64  
465.tonto: -DSPEC_CPU_LP64  
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
```

## Peak Optimization Flags

### C benchmarks:

```
433.milc: -prof_gen(pass 1) -prof_use(pass 2) -fast -auto_ilp32
```

```
470.lbm: Same as 433.milc
```

```
482.sphinx3: -fast -auto_ilp32
```

### C++ benchmarks:

```
-prof_gen(pass 1) -prof_use(pass 2) -fast -auto_ilp32
```

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## Peak Optimization Flags (Continued)

Fortran benchmarks:

410.bwaves: -prof\_gen(pass 1) -prof\_use(pass 2) -fast

416.gamess: Same as 410.bwaves

434.zeusmp: -fast

437.leslie3d: Same as 410.bwaves

459.GemsFDTD: Same as 410.bwaves

465.tonto: Same as 410.bwaves

Benchmarks using both Fortran and C:

-prof\_gen(pass 1) -prof\_use(pass 2) -fast -auto\_ilp32

The flags file that was used to format this result can be browsed at

[http://www.spec.org/cpu2006/flags/EM64T\\_Intel100\\_flags.20090714.html](http://www.spec.org/cpu2006/flags/EM64T_Intel100_flags.20090714.html)

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

[http://www.spec.org/cpu2006/flags/EM64T\\_Intel100\\_flags.20090714.xml](http://www.spec.org/cpu2006/flags/EM64T_Intel100_flags.20090714.xml)

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For questions about this result, please contact the tester.  
For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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