



# SPEC<sup>®</sup> CFP2006 Result

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## Bull SAS

NovaScale R480 E1  
(Intel Xeon E7210, 2.40 GHz)

SPECfp<sup>®</sup>\_rate2006 = 80.3

SPECfp\_rate\_base2006 = 75.5

CPU2006 license: 20

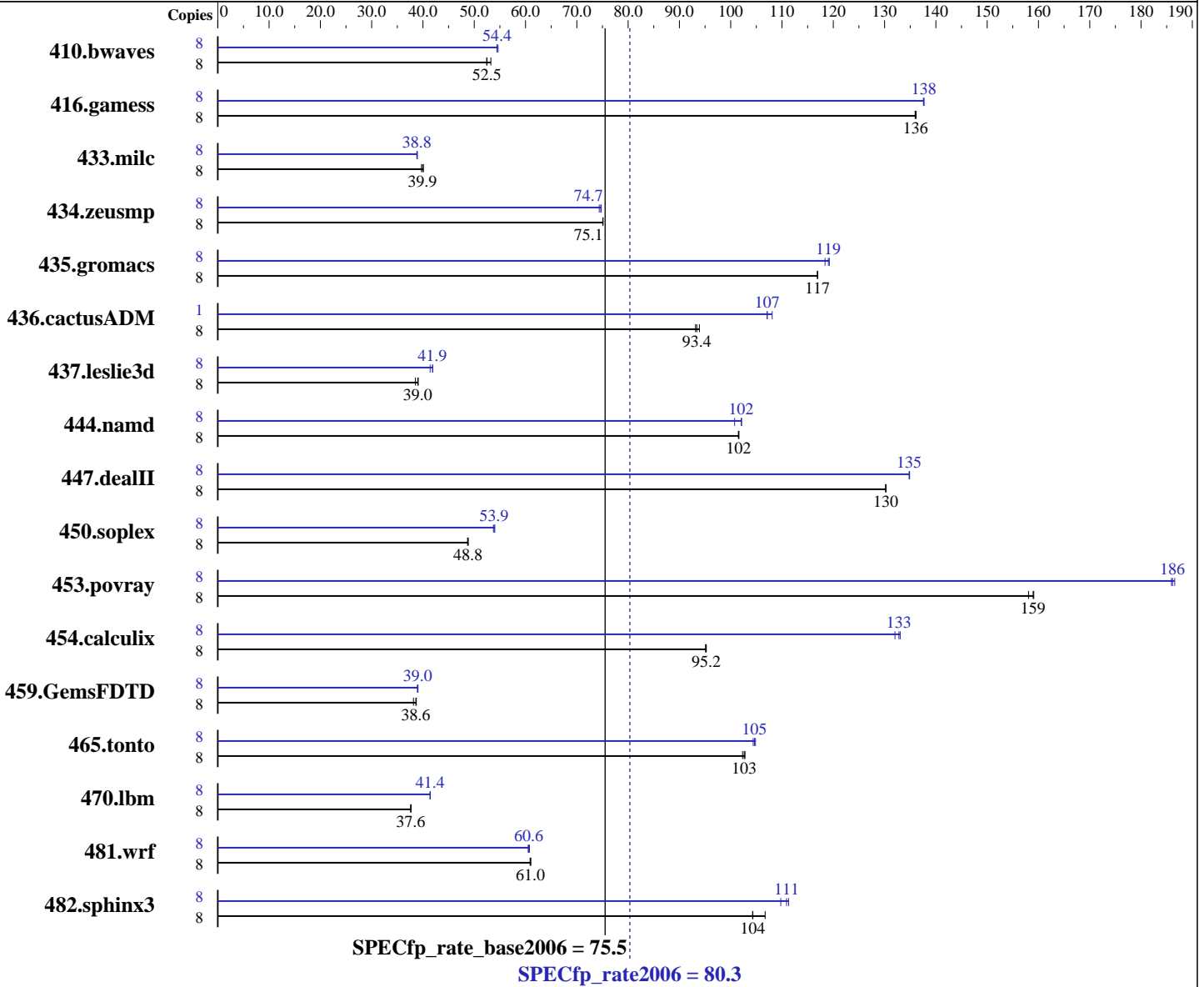
Test sponsor: Bull SAS

Tested by: Bull SAS

Test date: Aug-2008

Hardware Availability: Jan-2008

Software Availability: Nov-2007



### Hardware

CPU Name: Intel Xeon E7210  
 CPU Characteristics: 1066 MHz system bus  
 CPU MHz: 2400  
 FPU: Integrated  
 CPU(s) enabled: 8 cores, 4 chips, 2 cores/chip  
 CPU(s) orderable: 1 to 4 chips  
 Primary Cache: 32 KB I + 32 KB D on chip per core  
 Secondary Cache: 4 MB I+D on chip per core

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### Software

Operating System: SUSE LINUX Enterprise Server 10 (x86\_64) SP1, Kernel 2.6.16.46-0.12-smp  
 Compiler: Intel C++ and Fortran Compiler 10.1 for Linux Build 20070913 Package ID: l\_cc\_p\_10.1.008, l\_fc\_p\_10.1.008  
 Auto Parallel: Yes  
 File System: ext2  
 System State: Run level 3 (multi-user)  
 Base Pointers: 64-bit

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L3 Cache: None  
Other Cache: None  
Memory: 32 GB (16x2 GB) FB-DIMM PC2-5300F ECC CL5  
Disk Subsystem: 1x146 GB SAS, 10000 RPM  
Other Hardware: None

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	2042	53.2	2073	52.4	<u>2072</u>	<u>52.5</u>	8	1990	54.6	<u>1997</u>	<u>54.4</u>	1998	54.4
416.gamess	8	<u>1151</u>	<u>136</u>	1152	136	1150	136	8	<u>1138</u>	<u>138</u>	1139	138	1138	138
433.milc	8	1849	39.7	1832	40.1	<u>1839</u>	<u>39.9</u>	8	1887	38.9	1892	38.8	<u>1891</u>	<u>38.8</u>
434.zeusmp	8	969	75.1	<u>970</u>	<u>75.1</u>	970	75.1	8	979	74.4	974	74.8	<u>975</u>	<u>74.7</u>
435.gromacs	8	489	117	488	117	<u>488</u>	<u>117</u>	8	479	119	482	118	<u>480</u>	<u>119</u>
436.cactusADM	8	1018	93.9	1026	93.1	<u>1024</u>	<u>93.4</u>	1	112	107	<u>112</u>	<u>107</u>	111	108
437.leslie3d	8	1924	39.1	1951	38.5	<u>1929</u>	<u>39.0</u>	8	1794	41.9	<u>1796</u>	<u>41.9</u>	1816	41.4
444.namd	8	631	102	632	101	<u>632</u>	<u>102</u>	8	<u>629</u>	<u>102</u>	628	102	637	101
447.dealII	8	<u>703</u>	<u>130</u>	703	130	702	130	8	679	135	679	135	<u>679</u>	<u>135</u>
450.soplex	8	1367	48.8	1370	48.7	<u>1367</u>	<u>48.8</u>	8	1242	53.7	<u>1238</u>	<u>53.9</u>	1235	54.0
453.povray	8	268	159	<u>268</u>	<u>159</u>	269	158	8	229	186	<u>229</u>	<u>186</u>	228	187
454.calculix	8	693	95.2	<u>693</u>	<u>95.2</u>	694	95.1	8	500	132	<u>497</u>	<u>133</u>	496	133
459.GemsFDTD	8	2225	38.1	2193	38.7	<u>2198</u>	<u>38.6</u>	8	2181	38.9	<u>2177</u>	<u>39.0</u>	2174	39.0
465.tonto	8	766	103	<u>767</u>	<u>103</u>	769	102	8	<u>752</u>	<u>105</u>	754	104	751	105
470.lbm	8	2921	37.6	2918	37.7	<u>2921</u>	<u>37.6</u>	8	2656	41.4	<u>2654</u>	<u>41.4</u>	2654	41.4
481.wrf	8	1464	61.0	<u>1466</u>	<u>61.0</u>	1468	60.9	8	1477	60.5	<u>1474</u>	<u>60.6</u>	1470	60.8
482.sphinx3	8	1461	107	1495	104	<u>1495</u>	<u>104</u>	8	1421	110	<u>1406</u>	<u>111</u>	1401	111

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  
OMP\_NUM\_THREADS set to number of cores  
KMP\_AFFINITY set to physical,0  
KMP\_STACKSIZE set to 64M

## General Notes

All benchmarks compiled in 64-bit mode except 437.leslie3d, 450.soplex, 470.lbm and 482.sphinx3, at peak, are compiled in 32-bit mode  
BIOS settings :  
Hardware Prefetcher : Disabled  
Adjacent Cache-Line Prefetch : Disabled



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**Test date:** Aug-2008  
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**Software Availability:** Nov-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 (except as noted below):

```
/opt/intel/cc/10.1.008/bin/icc -L/opt/intel/cc/10.1.008/lib  
-I/opt/intel/cc/10.1.008/include
```

433.milc: icc

C++ benchmarks (except as noted below):

icpc

```
450.soplex: /opt/intel/cc/10.1.008/bin/icpc -L/opt/intel/cc/10.1.008/lib  
-I/opt/intel/cc/10.1.008/include
```

Fortran benchmarks (except as noted below):

ifort

```
437.leslie3d: /opt/intel/fc/10.1.008/bin/ifort -L/opt/intel/fc/10.1.008/lib  
-I/opt/intel/fc/10.1.008/include
```

Benchmarks using both Fortran and C:

icc ifort

## Peak 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  
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 -fno-alias  
-auto-ilp32
```

```
470.lbm: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2  
-scalar-rep- -prefetch -opt-malloc-options=3
```

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## Peak Optimization Flags (Continued)

482.sphinx3: -fast -unroll2

### C++ benchmarks:

444.namd: -prof-gen(pass 1) -prof-use(pass 2) -fast -fno-alias  
-auto-ilp32

447.dealIII: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2  
-ansi-alias -scalar-rep-

450.soplex: -prof-gen(pass 1) -prof-use(pass 2) -fast  
-opt-malloc-options=3

453.povray: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll4  
-ansi-alias

### Fortran benchmarks:

410.bwaves: -fast -prefetch

416.gamess: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2 -Ob0  
-ansi-alias -scalar-rep-

434.zeusmp: -prof-gen(pass 1) -prof-use(pass 2) -fast

437.leslie3d: -prof-gen(pass 1) -prof-use(pass 2) -fast -prefetch  
-opt-malloc-options=3

459.GemsFDTD: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2 -Ob0  
-prefetch

465.tonto: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll4 -auto

### Benchmarks using both Fortran and C:

435.gromacs: -prof-gen(pass 1) -prof-use(pass 2) -fast -prefetch  
-auto-ilp32

436.cactusADM: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2  
-prefetch -parallel -auto-ilp32

454.calculix: -fast -unroll-aggressive -auto-ilp32

481.wrf: -fast -auto-ilp32

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

[http://www.spec.org/cpu2006/flags/EM64T\\_Intel101\\_fp\\_flags.20090714.html](http://www.spec.org/cpu2006/flags/EM64T_Intel101_fp_flags.20090714.html)



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

[http://www.spec.org/cpu2006/flags/EM64T\\_Intel101\\_fp\\_flags.20090714.xml](http://www.spec.org/cpu2006/flags/EM64T_Intel101_fp_flags.20090714.xml)

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

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