



# SPEC® CFP2006 Result

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## Bull SAS

NovaScale R460 E1  
(Intel Xeon X5460,3.16GHz)

SPECfp®\_rate2006 = 75.7

SPECfp\_rate\_base2006 = 67.3

CPU2006 license: 20

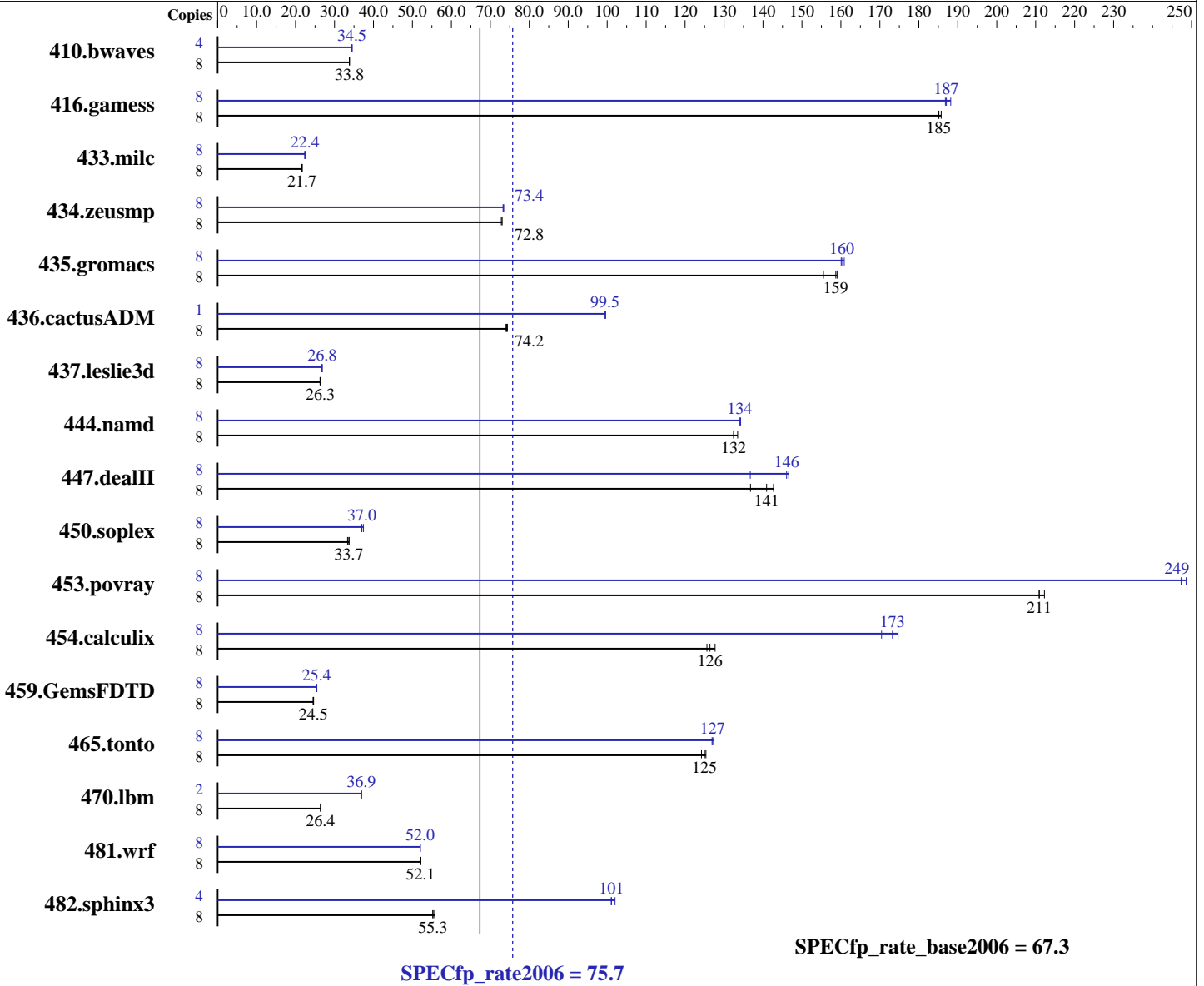
Test sponsor: Bull SAS

Tested by: NEC Corporation

Test date: Jan-2008

Hardware Availability: Dec-2007

Software Availability: Nov-2007



### Hardware

CPU Name: Intel Xeon X5460  
 CPU Characteristics: 3.16 GHz, 2x6 MB L2 shared, 1333 MHz bus  
 CPU MHz: 3160  
 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: 12 MB I+D on chip per chip, 6 MB shared / 2 cores

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### Software

Operating System: SUSE Linux Enterprise Server 10 (x86\_64) SP1, Kernel 2.6.16.46-0.12-smpp  
 Compiler: Intel C++ and Fortran Compiler for Linux32 and Linux64 version 10.1 Build 20070913 Package ID: l\_cc\_p\_10.1.008, l\_fc\_p\_10.1.008  
 Auto Parallel: Yes  
 File System: ext2

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L3 Cache: None  
Other Cache: None  
Memory: 12 GB (12x1 GB PC2-5300F, 2 rank, CL5-5-5, ECC)  
Disk Subsystem: 1x73.2 GB SAS, 15000RPM  
Other Hardware: None

System State: Run level 3 (multi-user)  
Base Pointers: 64-bit  
Peak Pointers: 32/64-bit  
Other Software: binutils-2.17.tar.gz, Version 2.17

## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	8	3212	33.8	<b><u>3214</u></b>	<b><u>33.8</u></b>	3216	33.8	4	1576	34.5	1577	34.5	<b><u>1576</u></b>	<b><u>34.5</u></b>
416.gamess	8	846	185	843	186	<b><u>846</u></b>	<b><u>185</u></b>	8	<b><u>837</u></b>	<b><u>187</u></b>	838	187	832	188
433.milc	8	3396	21.6	<b><u>3387</u></b>	<b><u>21.7</u></b>	3386	21.7	8	<b><u>3278</u></b>	<b><u>22.4</u></b>	3280	22.4	3276	22.4
434.zeusmp	8	<b><u>999</u></b>	<b><u>72.8</u></b>	997	73.0	1004	72.5	8	991	73.4	<b><u>992</u></b>	<b><u>73.4</u></b>	994	73.3
435.gromacs	8	367	156	<b><u>360</u></b>	<b><u>159</u></b>	359	159	8	357	160	355	161	<b><u>356</u></b>	<b><u>160</u></b>
436.cactusADM	8	1285	74.4	1291	74.0	<b><u>1288</u></b>	<b><u>74.2</u></b>	1	120	99.3	120	99.6	<b><u>120</u></b>	<b><u>99.5</u></b>
437.leslie3d	8	<b><u>2856</u></b>	<b><u>26.3</u></b>	2862	26.3	2856	26.3	8	2807	26.8	2804	26.8	<b><u>2804</u></b>	<b><u>26.8</u></b>
444.namd	8	484	132	<b><u>484</u></b>	<b><u>132</u></b>	481	133	8	479	134	<b><u>479</u></b>	<b><u>134</u></b>	478	134
447.dealII	8	669	137	641	143	<b><u>649</u></b>	<b><u>141</u></b>	8	624	147	<b><u>627</u></b>	<b><u>146</u></b>	669	137
450.soplex	8	2001	33.4	<b><u>1981</u></b>	<b><u>33.7</u></b>	1977	33.7	8	1803	37.0	<b><u>1801</u></b>	<b><u>37.0</u></b>	1782	37.4
453.povray	8	202	211	201	212	<b><u>202</u></b>	<b><u>211</u></b>	8	172	247	<b><u>171</u></b>	<b><u>249</u></b>	171	249
454.calculix	8	<b><u>522</u></b>	<b><u>126</u></b>	525	126	517	128	8	<b><u>381</u></b>	<b><u>173</u></b>	387	170	378	175
459.GemsFDTD	8	3445	24.6	3460	24.5	<b><u>3459</u></b>	<b><u>24.5</u></b>	8	<b><u>3340</u></b>	<b><u>25.4</u></b>	3347	25.4	3332	25.5
465.tonto	8	<b><u>630</u></b>	<b><u>125</u></b>	634	124	628	125	8	620	127	<b><u>620</u></b>	<b><u>127</u></b>	618	127
470.lbm	8	4161	26.4	<b><u>4158</u></b>	<b><u>26.4</u></b>	4155	26.5	2	745	36.9	<b><u>745</u></b>	<b><u>36.9</u></b>	744	36.9
481.wrf	8	1719	52.0	1713	52.2	<b><u>1715</u></b>	<b><u>52.1</u></b>	8	<b><u>1718</u></b>	<b><u>52.0</u></b>	1719	52.0	1717	52.0
482.sphinx3	8	2799	55.7	<b><u>2820</u></b>	<b><u>55.3</u></b>	2823	55.2	4	772	101	764	102	<b><u>771</u></b>	<b><u>101</u></b>

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 (default).

## Platform Notes

Bios settings:  
Intel SpeedStep Technology: Disabled



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### General Notes

All benchmarks compiled in 64-bit mode except 437.leslie3d, 450.soplex, 470.lbm and 482.sphinx3, for peak, are compiled in 32-bit mode

The NEC Express5800/120Rh-1(Intel Xeon Processor X5460), the NEC Express5800/120Rj-2(Intel Xeon Processor X5460), the Bull NovaScale R440 E1 (Intel Xeon X5460,3.16GHz) and the Bull NovaScale R460 E1 (Intel Xeon X5460,3.16GHz) models are electronically equivalent. The results have been measured on a NEC Express5800/120Rj-2(Intel Xeon Processor X5460) model.

### 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.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



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## Base Optimization Flags

C benchmarks:  
-fast

C++ benchmarks:  
-fast

Fortran benchmarks:  
-fast

Benchmarks using both Fortran and C:  
-fast

## 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.dealII: -DSPEC\_CPU\_LP64

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## Peak Portability Flags (Continued)

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  
482.sphinx3: -fast -unroll2

### C++ benchmarks:

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

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## Peak Optimization Flags (Continued)

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/NEC-Intel-ic10.1-FP-intel64-linux-flags.20090713.00.html>

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

<http://www.spec.org/cpu2006/flags/NEC-Intel-ic10.1-FP-intel64-linux-flags.20090713.00.xml>

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

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