



# SPEC<sup>®</sup> CFP2006 Result

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## Bull SAS

NovaScale R440 E2  
(Intel Xeon E5504, 2.00 GHz)

SPECfp<sup>®</sup>\_rate2006 = 59.5

SPECfp\_rate\_base2006 = 57.5

CPU2006 license: 20

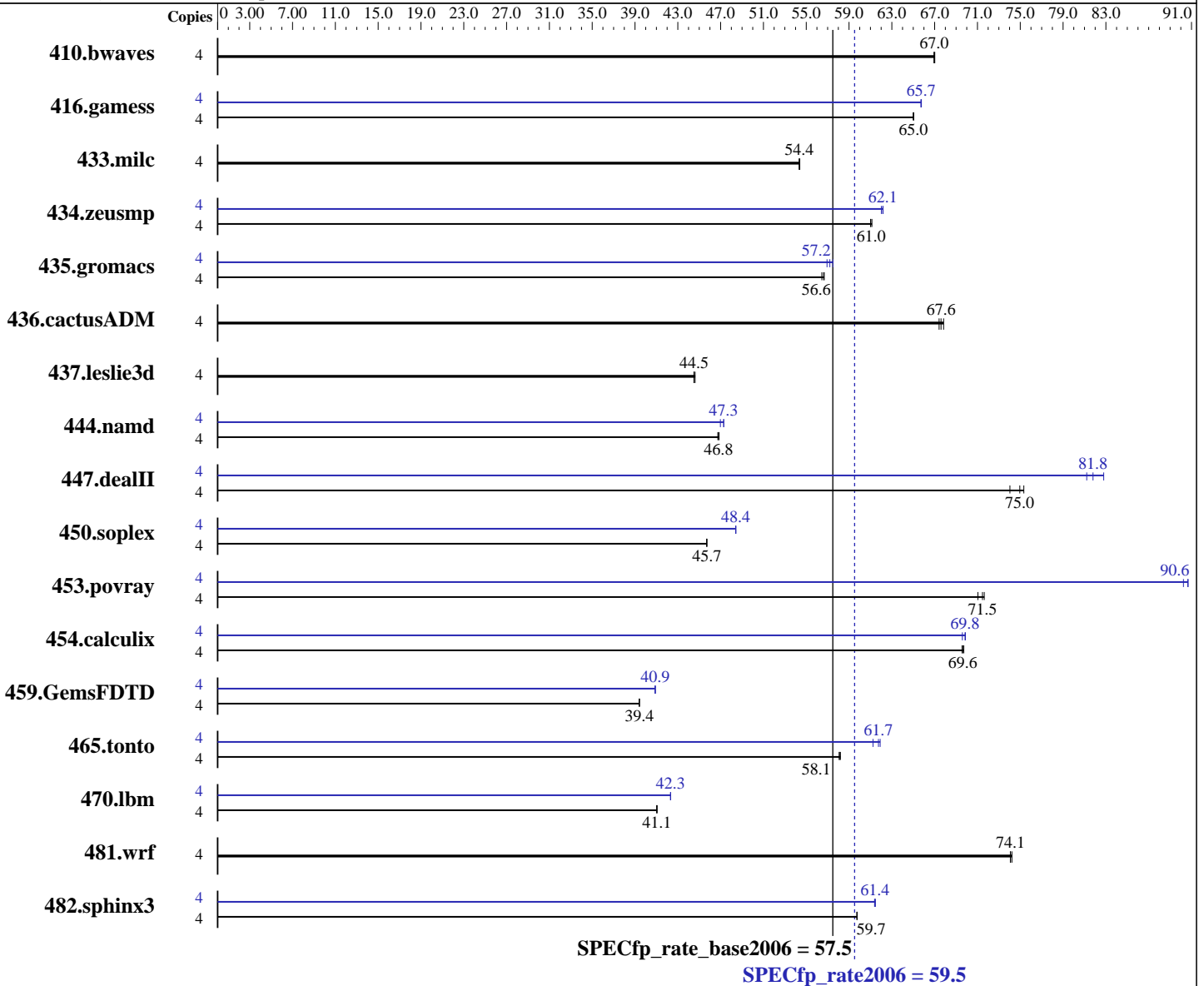
Test sponsor: Bull SAS

Tested by: NEC Corporation

Test date: Apr-2009

Hardware Availability: Apr-2009

Software Availability: Feb-2009



### Hardware

CPU Name: Intel Xeon E5504  
 CPU Characteristics:  
 CPU MHz: 2000  
 FPU: Integrated  
 CPU(s) enabled: 4 cores, 1 chip, 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 10 (x86\_64)  
 SP2 with patch Linux kernel 20090119,  
 Kernel 2.6.16.60-0.34-smp  
 Compiler: Intel C++ and Fortran Compiler Professional 11.0  
 for Linux  
 Build 20090131 Package ID: l\_cproc\_p\_11.0.081,  
 l\_cprof\_p\_11.0.081  
 Auto Parallel: No  
 File System: ReiserFS

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L3 Cache: 4 MB I+D on chip per chip  
Other Cache: None  
Memory: 24 GB (6 X 4 GB PC3-8500R running at 800 MHz)  
Disk Subsystem: 1x146.5 GB SAS, 15000 RPM  
Other Hardware: None

System State: Run level 3 (multi-user)  
Base Pointers: 64-bit  
Peak Pointers: 32/64-bit  
Other Software: Binutils 2.18.50.0.7.20080502

## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	4	812	66.9	<b>812</b>	<b>67.0</b>	811	67.0	4	812	66.9	<b>812</b>	<b>67.0</b>	811	67.0
416.gamess	4	1204	65.0	1205	65.0	<b>1204</b>	<b>65.0</b>	4	<b>1191</b>	<b>65.7</b>	1191	65.8	1192	65.7
433.milc	4	675	54.4	676	54.3	<b>675</b>	<b>54.4</b>	4	675	54.4	676	54.3	<b>675</b>	<b>54.4</b>
434.zeusmp	4	<b>596</b>	<b>61.0</b>	597	61.0	595	61.1	4	<b>586</b>	<b>62.1</b>	585	62.2	587	62.0
435.gromacs	4	504	56.7	506	56.5	<b>504</b>	<b>56.6</b>	4	<b>499</b>	<b>57.2</b>	497	57.5	502	56.9
436.cactusADM	4	705	67.8	<b>707</b>	<b>67.6</b>	709	67.4	4	705	67.8	<b>707</b>	<b>67.6</b>	709	67.4
437.leslie3d	4	843	44.6	<b>845</b>	<b>44.5</b>	845	44.5	4	843	44.6	<b>845</b>	<b>44.5</b>	845	44.5
444.namd	4	686	46.7	685	46.9	<b>685</b>	<b>46.8</b>	4	678	47.3	<b>678</b>	<b>47.3</b>	683	47.0
447.dealII	4	618	74.0	607	75.3	<b>610</b>	<b>75.0</b>	4	<b>559</b>	<b>81.8</b>	563	81.2	553	82.8
450.soplex	4	730	45.7	<b>730</b>	<b>45.7</b>	730	45.7	4	689	48.4	689	48.4	<b>689</b>	<b>48.4</b>
453.povray	4	297	71.6	<b>298</b>	<b>71.5</b>	300	71.0	4	235	90.7	236	90.2	<b>235</b>	<b>90.6</b>
454.calculix	4	<b>474</b>	<b>69.6</b>	474	69.6	473	69.7	4	<b>473</b>	<b>69.8</b>	474	69.6	472	69.9
459.GemsFDTD	4	<b>1077</b>	<b>39.4</b>	1078	39.4	1077	39.4	4	<b>1038</b>	<b>40.9</b>	1038	40.9	1039	40.9
465.tonto	4	676	58.2	<b>677</b>	<b>58.1</b>	678	58.1	4	636	61.9	<b>637</b>	<b>61.7</b>	643	61.2
470.lbm	4	1340	41.0	<b>1339</b>	<b>41.1</b>	1339	41.1	4	1299	42.3	1298	42.3	<b>1298</b>	<b>42.3</b>
481.wrf	4	603	74.1	602	74.2	<b>603</b>	<b>74.1</b>	4	603	74.1	602	74.2	<b>603</b>	<b>74.1</b>
482.sphinx3	4	1305	59.7	<b>1305</b>	<b>59.7</b>	1304	59.8	4	<b>1269</b>	<b>61.4</b>	1268	61.5	1270	61.4

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

## Submit Notes

The config file option 'submit' was used.  
numactl was used to bind copies to the cores

## Operating System Notes

'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run

## Platform Notes

Default BIOS settings were used.



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**Test date:** Apr-2009  
**Hardware Availability:** Apr-2009  
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### General Notes

The NEC Express5800/R120a-1(Intel Xeon E5504),  
the NEC Express5800/R120a-2(Intel Xeon E5504),  
the Bull NovaScale R440 E2 (Intel Xeon E5504, 2.00 GHz) and  
the Bull NovaScale R460 E2 (Intel Xeon E5504, 2.00 GHz) models are electronically equivalent.  
The results have been measured on a NEC Express5800/R120a-2(Intel Xeon E5504) 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

### Base Optimization Flags

C benchmarks:  
-xSSE4.2 -ipo -O3 -no-prec-div -static

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## Base Optimization Flags (Continued)

C++ benchmarks:  
-xSSE4.2 -ipo -O3 -no-prec-div -static

Fortran benchmarks:  
-xSSE4.2 -ipo -O3 -no-prec-div -static

Benchmarks using both Fortran and C:  
-xSSE4.2 -ipo -O3 -no-prec-div -static

## Peak Compiler Invocation

C benchmarks (except as noted below):  
icc

482.sphinx3: icc -m32

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

450.soplex: icpc -m32

Fortran benchmarks:  
ifort

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  
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  
470.lbm: -DSPEC\_CPU\_LP64  
481.wrf: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_CASE\_FLAG -DSPEC\_CPU\_LINUX



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## Peak Optimization Flags

### C benchmarks:

433.milc: basepeak = yes

470.lbm: -xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch  
-auto-ilp32

482.sphinx3: -xSSE4.2 -ipo -O3 -no-prec-div -static -unroll2

### C++ benchmarks:

444.namd: -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)  
-fno-alias -auto-ilp32

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-

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

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: basepeak = yes

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: -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)

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

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)  
-unroll4 -auto

### Benchmarks using both Fortran and C:

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## Peak Optimization Flags (Continued)

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: basepeak = yes

454.calculix: -xSSE4.2 -ipo -O3 -no-prec-div -static -auto-ilp32

481.wrf: basepeak = yes

The flags files that were used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revG.html>  
<http://www.spec.org/cpu2006/flags/NEC-Intel-Linux-Settings-flags-revE.html>

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revG.xml>  
<http://www.spec.org/cpu2006/flags/NEC-Intel-Linux-Settings-flags-revE.xml>

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

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