



SPEC[®] CFP2006 Result

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Bull SAS

NovaScale R480 E1
(2.66 GHz, Intel Xeon X7460)

SPECfp[®]2006 = 23.1

SPECfp_base2006 = 21.8

CPU2006 license: 20

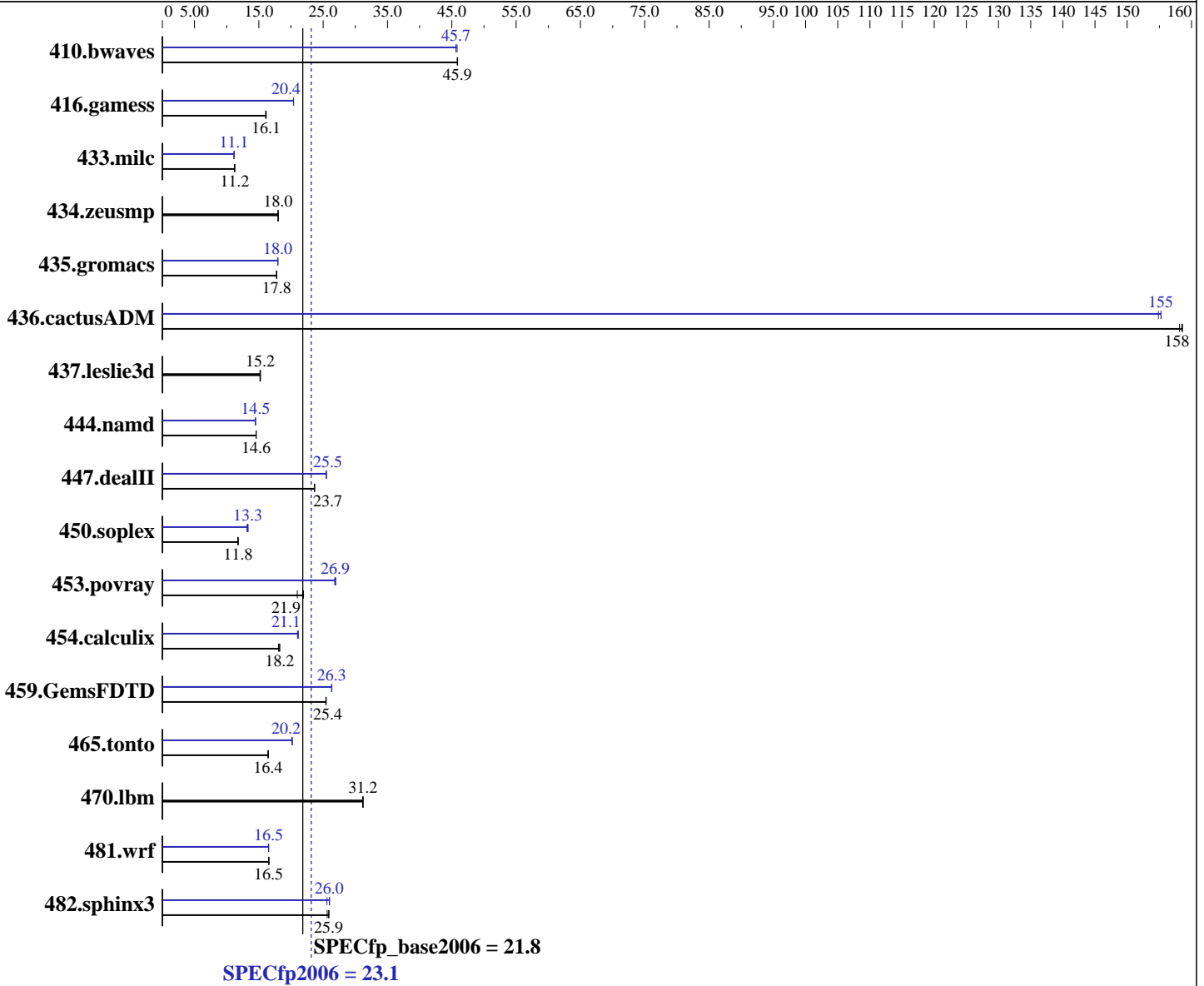
Test sponsor: Bull SAS

Tested by: NEC Corporation

Test date: Nov-2008

Hardware Availability: Nov-2008

Software Availability: Nov-2008



SPECfp2006 = 23.1

Hardware

CPU Name: Intel Xeon X7460
 CPU Characteristics: 1066 MHz system bus
 CPU MHz: 2667
 FPU: Integrated
 CPU(s) enabled: 24 cores, 4 chips, 6 cores/chip
 CPU(s) orderable: 1,2,3,4 chips
 Primary Cache: 32 KB I + 32 KB D on chip per core
 Secondary Cache: 9 MB I+D on chip per chip, 3 MB shared / 2 cores

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Software

Operating System: SUSE Linux Enterprise Server 10 (x86_64) SP2, Kernel 2.6.16.60-0.21-smp
 Compiler: Intel C++ and Fortran Compiler 11.0 for Linux Build 20080930 Package ID: l_cproc_p_11.0.069, l_fproc_p_11.0.069
 Auto Parallel: Yes
 File System: ext2
 System State: Run level 3 (multi-user)
 Base Pointers: 64-bit

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L3 Cache: 16 MB I+D on chip per chip
Other Cache: None
Memory: 32 GB (16x2 GB PC2-5300F, 2 rank, CL5-5-5, ECC)
Disk Subsystem: 1x73.2 GB SAS, 15000 RPM
Other Hardware: None

Peak Pointers: 32/64-bit
Other Software: Binutils 2.18.50.0.7.20080502

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	296	45.8	<u>296</u>	<u>45.9</u>	296	45.9	<u>298</u>	<u>45.7</u>	297	45.8	298	45.6
416.gamess	1220	16.1	1213	16.1	<u>1215</u>	<u>16.1</u>	<u>960</u>	<u>20.4</u>	960	20.4	960	20.4
433.milc	<u>817</u>	<u>11.2</u>	817	11.2	816	11.2	<u>824</u>	<u>11.1</u>	824	11.1	823	11.2
434.zeusmp	505	18.0	506	18.0	<u>506</u>	<u>18.0</u>	505	18.0	506	18.0	<u>506</u>	<u>18.0</u>
435.gromacs	<u>402</u>	<u>17.8</u>	403	17.7	401	17.8	<u>398</u>	<u>18.0</u>	398	18.0	398	17.9
436.cactusADM	<u>75.4</u>	<u>158</u>	75.6	158	75.3	159	77.2	155	77.0	155	<u>77.0</u>	<u>155</u>
437.leslie3d	<u>617</u>	<u>15.2</u>	617	15.2	620	15.2	<u>617</u>	<u>15.2</u>	617	15.2	620	15.2
444.namd	550	14.6	550	14.6	<u>550</u>	<u>14.6</u>	555	14.4	<u>554</u>	<u>14.5</u>	553	14.5
447.dealII	483	23.7	484	23.6	<u>483</u>	<u>23.7</u>	449	25.5	449	25.5	<u>449</u>	<u>25.5</u>
450.soplex	706	11.8	<u>709</u>	<u>11.8</u>	711	11.7	626	13.3	634	13.2	<u>628</u>	<u>13.3</u>
453.povray	243	21.9	254	21.0	<u>243</u>	<u>21.9</u>	199	26.8	<u>198</u>	<u>26.9</u>	197	27.0
454.calculix	<u>452</u>	<u>18.2</u>	457	18.1	452	18.2	390	21.1	393	21.0	<u>391</u>	<u>21.1</u>
459.GemsFDTD	<u>417</u>	<u>25.4</u>	417	25.5	417	25.4	403	26.4	<u>403</u>	<u>26.3</u>	403	26.3
465.tonto	597	16.5	600	16.4	<u>599</u>	<u>16.4</u>	487	20.2	489	20.1	<u>488</u>	<u>20.2</u>
470.lbm	441	31.1	440	31.2	<u>440</u>	<u>31.2</u>	441	31.1	440	31.2	<u>440</u>	<u>31.2</u>
481.wrf	674	16.6	676	16.5	<u>675</u>	<u>16.5</u>	677	16.5	676	16.5	<u>676</u>	<u>16.5</u>
482.sphinx3	<u>754</u>	<u>25.9</u>	752	25.9	760	25.6	749	26.0	762	25.6	<u>751</u>	<u>26.0</u>

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
OMP_NUM_THREADS set to number of cores
KMP_AFFINITY set to "physical,0"
KMP_STACKSIZE set to 200M

Platform Notes

Bios settings:
Hardware Prefetcher: Enabled
Adjacent Cache Line Prefetch: Enabled
FSB High Bandwidth Optimization: Disabled



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General Notes

The NEC Express5800/R140a-4(Intel Xeon X7460) and the Bull NovaScale R480 E1(Intel Xeon X7460, 2.66 GHz) models are electronically equivalent. The results have been measured on a NEC Express5800/R140a-4(Intel Xeon X7460) 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.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:

-xSSE4.1 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

C++ benchmarks:

-xSSE4.1 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

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Base Optimization Flags (Continued)

Fortran benchmarks:

-xSSE4.1 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

Benchmarks using both Fortran and C:

-xSSE4.1 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

Peak Compiler Invocation

C benchmarks (except as noted below):

icc

482.sphinx3: /opt/intel/Compiler/11.0/069/bin/ia32/icc
-L/opt/intel/Compiler/11.0/069/ipp/ia32/lib
-I/opt/intel/Compiler/11.0/069/ipp/ia32/include

C++ benchmarks (except as noted below):

icpc

450.soplex: /opt/intel/Compiler/11.0/069/bin/ia32/icpc
-L/opt/intel/Compiler/11.0/069/ipp/ia32/lib
-I/opt/intel/Compiler/11.0/069/ipp/ia32/include

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.dealII: -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: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
-no-prec-div -static -fno-alias

470.lbm: basepeak = yes

482.sphinx3: -xSSE4.1 -ipo -O3 -no-prec-div -static -unroll2

C++ benchmarks:

444.namd: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
-no-prec-div -static -fno-alias -auto-ilp32

447.dealII: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
-no-prec-div -static -unroll2 -ansi-alias -scalar-rep-
-opt-prefetch

450.soplex: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
-no-prec-div -static -opt-malloc-options=3

453.povray: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
-no-prec-div -static -unroll4 -ansi-alias

Fortran benchmarks:

410.bwaves: -xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch
-parallel

416.gamess: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
-no-prec-div -static -unroll2 -Ob0 -ansi-alias
-scalar-rep-

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
-no-prec-div -static -unroll2 -Ob0 -opt-prefetch
-parallel

465.tonto: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
-no-prec-div -static -unroll4 -auto

Benchmarks using both Fortran and C:

435.gromacs: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
-no-prec-div -static -opt-prefetch -auto-ilp32

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Peak Optimization Flags (Continued)

436.cactusADM: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
-no-prec-div -static -unroll2 -opt-prefetch -parallel
-auto-ilp32

454.calculix: -xSSE4.1 -ipo -O3 -no-prec-div -static -auto-ilp32

481.wrf: -xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch
-parallel -auto-ilp32

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-revD.html>

<http://www.spec.org/cpu2006/flags/NEC-Intel-Linux-Settings-flags-revB.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-revD.xml>

<http://www.spec.org/cpu2006/flags/NEC-Intel-Linux-Settings-flags-revB.xml>

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