



SPEC® CFP2006 Result

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Bull SAS

SPECfp®2006 = 49.8

NovaScale R480 F2 (Intel Xeon X7550, 2.00 GHz)

SPECfp_base2006 = 45.1

CPU2006 license: 20

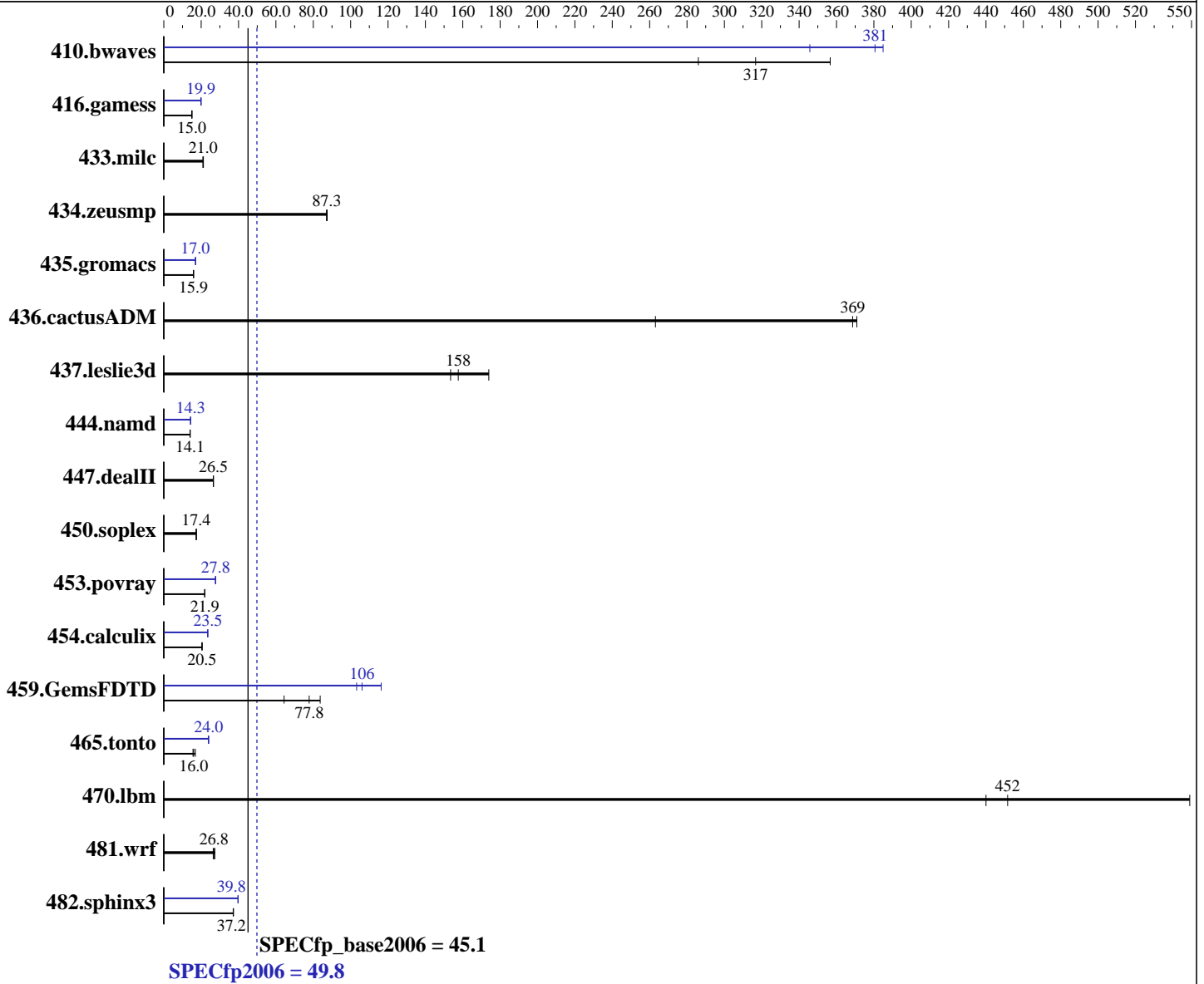
Test sponsor: Bull SAS

Tested by: Dell Inc.

Test date: Apr-2011

Hardware Availability: Jul-2011

Software Availability: Apr-2011



Hardware

CPU Name: Intel Xeon X7550
 CPU Characteristics: Intel Turbo Boost Technology up to 2.40 GHz
 CPU MHz: 2000
 FPU: Integrated
 CPU(s) enabled: 32 cores, 4 chips, 8 cores/chip, 2 threads/core
 CPU(s) orderable: 2,4 chips
 Primary Cache: 32 KB I + 32 KB D on chip per core
 Secondary Cache: 256 KB I+D on chip per core

Continued on next page

Software

Operating System: SUSE Linux Enterprise Server 11 SP1 (x86_64), Kernel 2.6.32.12-0.7-default
 Compiler: Intel C++ and Fortran Intel 64 Compiler XE for applications running on Intel 64 Version 12.0 Update 3
 Auto Parallel: Yes
 File System: ext3
 System State: Run level 3 (multi-user)
 Base Pointers: 64-bit

Continued on next page



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L3 Cache: 18 MB I+D on chip per chip
Other Cache: None
Memory: 512 GB (64 x 8 GB 4Rx8 PC3-8500R-7, ECC)
Disk Subsystem: 1 x 500 GB 7200 RPM SAS 6Gb
Other Hardware: None

Peak Pointers: 32/64-bit
Other Software: None

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	<u>42.9</u>	<u>317</u>	47.5	286	38.1	357	<u>35.7</u>	<u>381</u>	35.3	385	39.3	346
416.gamess	<u>1303</u>	<u>15.0</u>	1307	15.0	1299	15.1	981	20.0	<u>984</u>	<u>19.9</u>	986	19.9
433.milc	<u>437</u>	<u>21.0</u>	433	21.2	438	21.0	<u>437</u>	<u>21.0</u>	433	21.2	438	21.0
434.zeusmp	104	87.4	104	87.1	<u>104</u>	<u>87.3</u>	104	87.4	104	87.1	<u>104</u>	<u>87.3</u>
435.gromacs	447	16.0	450	15.9	<u>450</u>	<u>15.9</u>	420	17.0	421	17.0	<u>421</u>	<u>17.0</u>
436.cactusADM	<u>32.4</u>	<u>369</u>	45.4	263	32.2	371	<u>32.4</u>	<u>369</u>	45.4	263	32.2	371
437.leslie3d	61.2	153	54.0	174	<u>59.6</u>	<u>158</u>	61.2	153	54.0	174	<u>59.6</u>	<u>158</u>
444.namd	<u>570</u>	<u>14.1</u>	569	14.1	570	14.1	560	14.3	559	14.3	<u>560</u>	<u>14.3</u>
447.dealII	431	26.5	431	26.5	<u>431</u>	<u>26.5</u>	431	26.5	431	26.5	<u>431</u>	<u>26.5</u>
450.soplex	479	17.4	<u>480</u>	<u>17.4</u>	481	17.3	479	17.4	<u>480</u>	<u>17.4</u>	481	17.3
453.povray	243	21.9	242	22.0	<u>243</u>	<u>21.9</u>	193	27.6	191	27.8	<u>192</u>	<u>27.8</u>
454.calculix	<u>403</u>	<u>20.5</u>	402	20.5	404	20.4	351	23.5	<u>351</u>	<u>23.5</u>	350	23.5
459.GemsFDTD	165	64.4	<u>136</u>	<u>77.8</u>	127	83.7	91.2	116	103	103	<u>100</u>	<u>106</u>
465.tonto	<u>615</u>	<u>16.0</u>	630	15.6	583	16.9	410	24.0	<u>411</u>	<u>24.0</u>	412	23.9
470.lbm	25.0	549	31.2	440	<u>30.4</u>	<u>452</u>	25.0	549	31.2	440	<u>30.4</u>	<u>452</u>
481.wrf	422	26.4	409	27.3	<u>417</u>	<u>26.8</u>	422	26.4	409	27.3	<u>417</u>	<u>26.8</u>
482.sphinx3	525	37.1	523	37.2	<u>523</u>	<u>37.2</u>	491	39.7	490	39.8	<u>490</u>	<u>39.8</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
'mount -t hugetlbfs nodev /mnt/hugepages' was used to enable large pages
echo 900 > /proc/sys/vm/nr_hugepages
export HUGETLB_MORECORE=yes
export LD_PRELOAD=/usr/lib64/libhugetlbfs.so
```

Platform Notes

BIOS Settings:
Power Management = Maximum Performance (Default = Active Power Controller)
Node Interleaving = Enabled (Default = Disabled)



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General Notes

The Dell PowerEdge R910 and the Bull NovaScale R480 F2 models are electronically equivalent. The results have been measured on a Dell PowerEdge R910 model.
OMP_NUM_THREADS set to number of cores
Binaries were compiled on RHEL5.5

Base Compiler Invocation

C benchmarks:

icc -m64

C++ benchmarks:

icpc -m64

Fortran benchmarks:

ifort -m64

Benchmarks using both Fortran and C:

icc -m64 ifort -m64

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 -parallel -opt-prefetch
-ansi-alias

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Base Optimization Flags (Continued)

C++ benchmarks:

`-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -ansi-alias`

Fortran benchmarks:

`-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch`

Benchmarks using both Fortran and C:

`-xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch
-ansi-alias`

Peak Compiler Invocation

C benchmarks:

`icc -m64`

C++ benchmarks:

`icpc -m64`

Fortran benchmarks:

`ifort -m64`

Benchmarks using both Fortran and C:

`icc -m64 ifort -m64`

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

`433.milc: basepeak = yes`

`470.lbm: basepeak = yes`

`482.sphinx3: -xSSE4.2 -ipo -O3 -no-prec-div -unroll2 -ansi-alias
-parallel`

C++ benchmarks:

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

Continued on next page



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Peak Optimization Flags (Continued)

447.dealIII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -ansi-alias
-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

Fortran benchmarks:

410.bwaves: -xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -parallel
-static

416.gamess: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -unroll2
-inline-level=0 -scalar-rep- -static

434.zeusmp: basepeak = yes

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) -prof-use(pass 2) -unroll2
-inline-level=0 -opt-prefetch -parallel
-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

465.tonto: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -inline-calloc
-opt-malloc-options=3 -auto -unroll4
-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

Benchmarks using both Fortran and C:

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

436.cactusADM: basepeak = yes

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

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-ic12.0-linux64-revB.html>

<http://www.spec.org/cpu2006/flags/Intel-Linux64-Platform.20110524.00.html>

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

<http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revB.xml>

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