SPEC® CFP2006 Result
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Bull SAS

NovaScale R410B F2 (Intel Xeon E3-1220, 3.10 GHz)

$SPECfp^{®}\_rate2006 =$ 106

$SPECfp\_rate\_base2006 =$ 104

CPU2006 license: 20
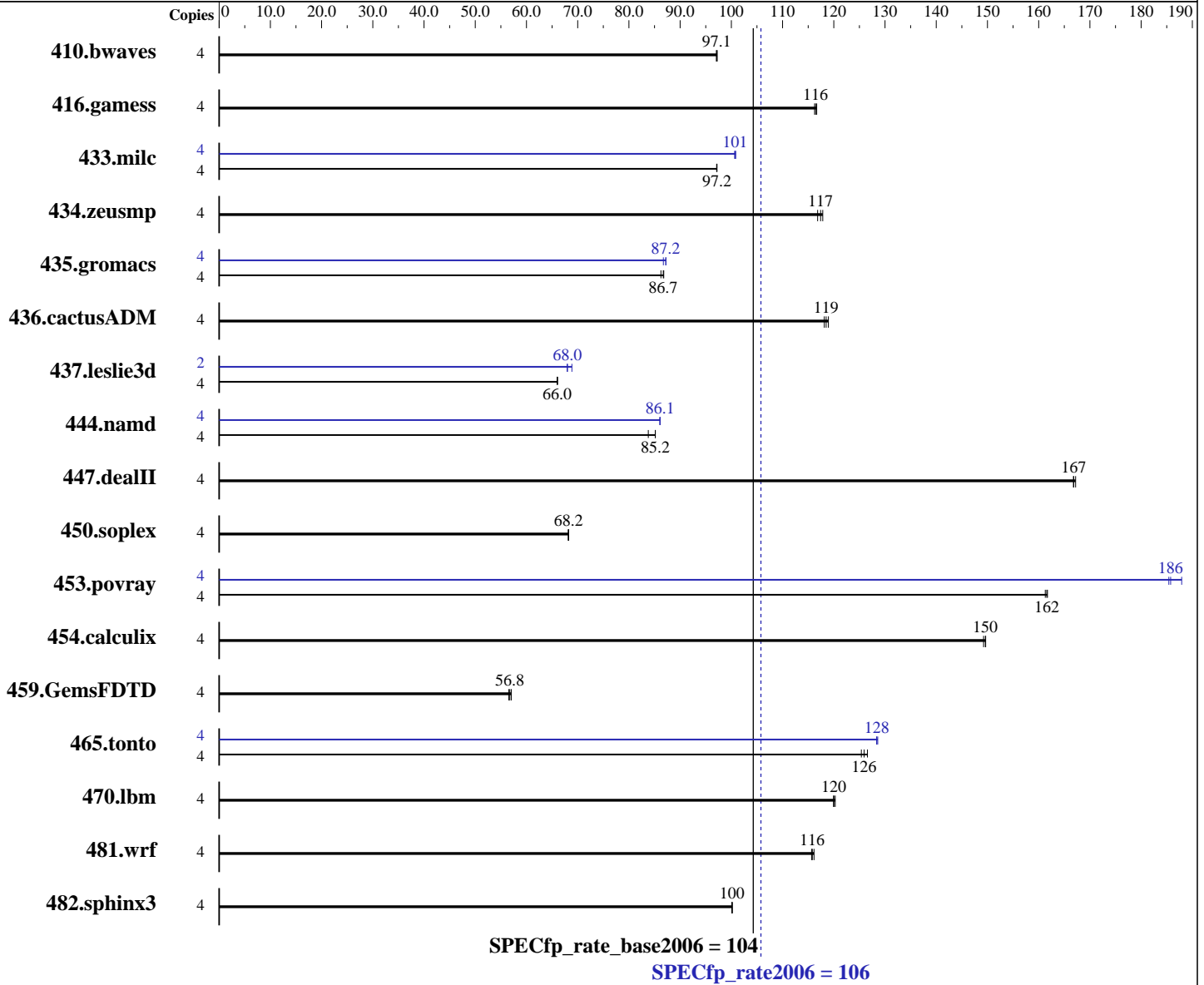**Test sponsor:** Bull SAS
Tested by: Dell Inc.

Test date: Mar-2011
Hardware Availability: May-2011
Software Availability: Apr-2011

Copies		
410.bwaves	4	97.1
416.gamess	4	116
433.milc	4	101
	4	97.2
434.zeusmp	4	117
435.gromacs	4	87.2
	4	86.7
436.cactusADM	4	119
437.leslie3d	2	68.0
	4	66.0
444.namd	4	86.1
	4	85.2
447.dealII	4	167
450.soplex	4	68.2
453.povray	4	186
	4	162
454.calculix	4	150
459.GemsFDTD	4	56.8
465.tonto	4	128
	4	126
470.lbm	4	120
481.wrf	4	116
482.sphinx3	4	100

SPECfp_rate_base2006 = 104

SPECfp_rate2006 = 106

Hardware

CPU Name: Intel Xeon E3-1220
CPU Characteristics: Intel Turbo Boost Technology up to 3.40 GHz
CPU MHz: 3100
FPU: Integrated
CPU(s) enabled: 4 cores, 1 chip, 4 cores/chip, 2 threads/core
CPU(s) orderable: 1 chip
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 12.0.1.116 Build 20101116
Auto Parallel: No
File System: ext3
System State: Run level 3 (multi-user)
Base Pointers: 64-bit

Continued on next page

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L3 Cache:	8 MB I+D on chip per chip
Other Cache:	None
Memory:	8 GB (4 x 2 GB 2Rx4 PC3-10600R-9, ECC)
Disk Subsystem:	1 x 146 GB 15000 RPM SAS
Other Hardware:	None

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

Results Table

Benchmark	Base						Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	4	559	97.2	**560**	**97.1**	560	97.1	4	559	97.2	**560**	**97.1**	560	97.1
416.gamess	4	674	116	**673**	**116**	671	117	4	674	116	**673**	**116**	671	117
433.milc	4	378	97.2	378	97.1	**378**	**97.2**	4	364	101	365	101	**364**	**101**
434.zeusmp	4	**310**	**117**	312	117	309	118	4	**310**	**117**	312	117	309	118
435.gromacs	4	331	86.2	**329**	**86.7**	329	86.8	4	329	86.7	327	87.2	**328**	**87.2**
436.cactusADM	4	**403**	**119**	402	119	405	118	4	**403**	**119**	402	119	405	118
437.leslie3d	4	570	66.0	569	66.1	**570**	**66.0**	2	273	68.9	**276**	**68.0**	277	67.9
444.namd	4	377	85.2	383	83.8	**377**	**85.2**	4	373	86.0	**373**	**86.1**	373	86.1
447.dealII	4	274	167	**274**	**167**	274	167	4	274	167	**274**	**167**	274	167
450.soplex	4	489	68.2	489	68.2	**489**	**68.2**	4	489	68.2	489	68.2	**489**	**68.2**
453.povray	4	**132**	**162**	132	161	132	162	4	**115**	**186**	113	188	115	185
454.calculix	4	221	150	**221**	**150**	221	149	4	221	150	**221**	**150**	221	149
459.GemsFDTD	4	744	57.0	**748**	**56.8**	751	56.5	4	744	57.0	**748**	**56.8**	751	56.5
465.tonto	4	314	125	311	127	**313**	**126**	4	307	128	**307**	**128**	306	129
470.lbm	4	457	120	**458**	**120**	458	120	4	457	120	**458**	**120**	458	120
481.wrf	4	**386**	**116**	385	116	386	116	4	**386**	**116**	385	116	386	116
482.sphinx3	4	779	100	778	100	**779**	**100**	4	779	100	778	100	**779**	**100**

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
 'mount -t hugetlbfs nodev /mnt/hugepages' was used to enable large pages
 echo 3600> /proc/sys/vm/nr_hugepages
 export HUGETLB_MORECORE=yes
 export LD_PRELOAD=/usr/lib64/libhugetlbfs.so
```

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Platform Notes

```
    BIOS Settings:
    Power Management = Maximum Performance (Default = Active Power Controller)
```

General Notes

```
    The Dell PowerEdge R210 II and
    the Bull NovaScale R410B F2 models are electronically equivalent.
    The results have been measured on a Dell PowerEdge R210 II model
    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.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
```

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Base Optimization Flags

C benchmarks:
```
-xAVX -ipo -O3 -no-prec-div -static -ansi-alias
```

C++ benchmarks:
```
-xAVX -ipo -O3 -no-prec-div -static -ansi-alias
```

Fortran benchmarks:
```
-xAVX -ipo -O3 -no-prec-div -static
```

Benchmarks using both Fortran and C:
```
-xAVX -ipo -O3 -no-prec-div -static -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: `-xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)`
`-no-prec-div(pass 2) -prof-use(pass 2) -static -auto-ilp32`

470.lbm: `basepeak = yes`

482.sphinx3: `basepeak = yes`

C++ benchmarks:

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Peak Optimization Flags (Continued)

444.namd: -xAVX(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

447.dealII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -xAVX(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: basepeak = yes

416.gamess: basepeak = yes

434.zeusmp: basepeak = yes

437.leslie3d: -xAVX -ipo -O3 -no-prec-div
-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

459.GemsFDTD: basepeak = yes

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

Benchmarks using both Fortran and C:

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

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

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
http://www.spec.org/cpu2006/flags/Intel-Linux64-Platform.20110524.00.xml

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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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