SPEC® CFP2006 Result
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Bull SAS

NovaScale R450 F2 (Intel Xeon L5640, 2.26 GHz)

$SPECfp^{®}2006 =$ 38.9

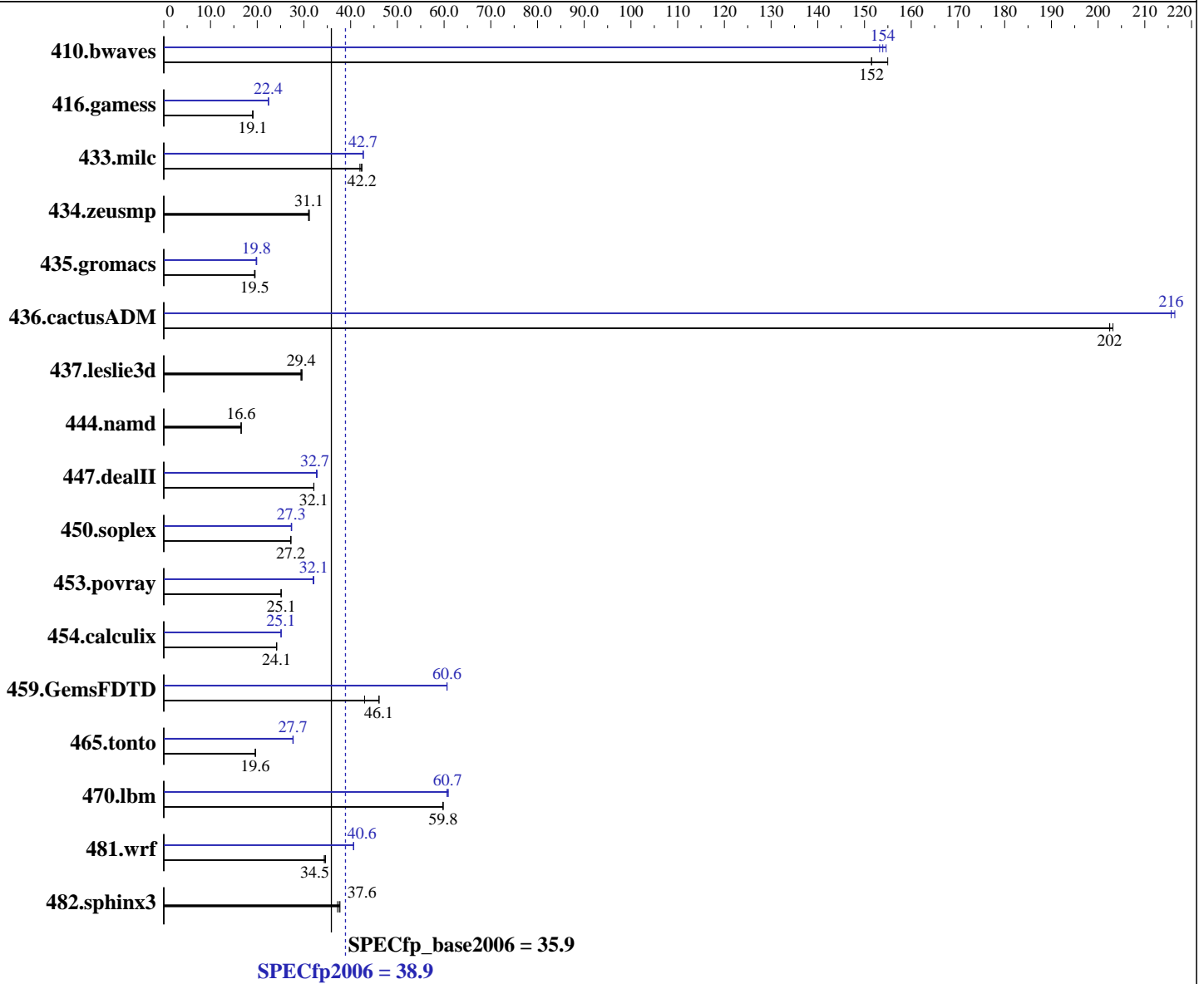$SPECfp\_base2006 =$ 35.9

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

Test date: Jun-2010
Hardware Availability: Mar-2010
Software Availability: Dec-2009

410.bwaves	154 / 152
416.gamess	22.4 / 19.1
433.milc	42.7 / 42.2
434.zeusmp	31.1
435.gromacs	19.8 / 19.5
436.cactusADM	216 / 202
437.leslie3d	29.4
444.namd	16.6
447.dealII	32.7 / 32.1
450.soplex	27.3 / 27.2
453.povray	32.1 / 25.1
454.calculix	25.1 / 24.1
459.GemsFDTD	60.6 / 46.1
465.tonto	27.7 / 19.6
470.lbm	60.7 / 59.8
481.wrf	40.6 / 34.5
482.sphinx3	37.6

SPECfp_base2006 = 35.9
SPECfp2006 = 38.9

Hardware

CPU Name: Intel Xeon L5640
CPU Characteristics: Intel Turbo Boost Technology up to 2.80 GHz
CPU MHz: 2267
FPU: Integrated
CPU(s) enabled: 12 cores, 2 chips, 6 cores/chip, 2 threads/core
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 11 (x86_64), Kernel 2.6.27.19-5-smp
Compiler: Intel C++ and Fortran Professional Compiler for IA32 and Intel 64, Version 11.1
Build 20091130 Package ID: l_cproc_p_11.1.064, l_cprof_p_11.1.064
Auto Parallel: Yes
File System: ext3
System State: Run level 3 (multi-user)

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L3 Cache:	12 MB I+D on chip per chip	Base Pointers:	64-bit
Other Cache:	None	Peak Pointers:	32/64-bit
Memory:	24 GB (6 x 4 GB 2Rx4 PC3-10600R-9, ECC)	Other Software:	None
Disk Subsystem:	1 x 146 GB 15000 RPM SAS		
Other Hardware:	None		

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	**89.7**	**152**	89.7	152	87.7	155	88.7	153	**88.3**	**154**	87.9	155
416.gamess	1030	19.0	**1028**	**19.1**	1025	19.1	876	22.4	872	22.4	**874**	**22.4**
433.milc	216	42.4	**217**	**42.2**	219	42.0	215	42.7	215	42.6	**215**	**42.7**
434.zeusmp	292	31.2	**293**	**31.1**	294	31.0	292	31.2	**293**	**31.1**	294	31.0
435.gromacs	365	19.6	368	19.4	**366**	**19.5**	361	19.8	359	19.9	**361**	**19.8**
436.cactusADM	**59.0**	**202**	59.0	202	58.8	203	55.2	216	**55.4**	**216**	55.4	216
437.leslie3d	**319**	**29.4**	320	29.4	318	29.6	**319**	**29.4**	320	29.4	318	29.6
444.namd	484	16.6	484	16.6	**484**	**16.6**	484	16.6	484	16.6	**484**	**16.6**
447.dealII	**356**	**32.1**	356	32.1	356	32.1	**350**	**32.7**	349	32.8	350	32.7
450.soplex	**307**	**27.2**	307	27.2	306	27.2	304	27.4	306	27.3	**305**	**27.3**
453.povray	**212**	**25.1**	212	25.1	212	25.1	166	32.0	166	32.1	**166**	**32.1**
454.calculix	342	24.1	**342**	**24.1**	341	24.2	**329**	**25.1**	329	25.1	329	25.1
459.GemsFDTD	230	46.1	**230**	**46.1**	247	43.0	175	60.6	175	60.6	**175**	**60.6**
465.tonto	502	19.6	502	19.6	**502**	**19.6**	355	27.7	356	27.6	**356**	**27.7**
470.lbm	230	59.7	**230**	**59.8**	230	59.8	226	60.9	227	60.6	**226**	**60.7**
481.wrf	323	34.6	**324**	**34.5**	325	34.3	**275**	**40.6**	275	40.6	275	40.7
482.sphinx3	517	37.7	524	37.2	**519**	**37.6**	517	37.7	524	37.2	**519**	**37.6**

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

Platform Notes

    BIOS Settings:
    Power Management = Maximum Performance (Default = Active Power Controller)
    Data Reuse = Disabled (Default = Enabled)

General Notes

    OMP_NUM_THREADS set to number of cores
    KMP_AFFINITY set to granularity=fine,scatter
    KMP_STACKSIZE set to 200M

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CPU2006 license: 20		**Test date:**	Jun-2010
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Tested by:	Dell Inc.	**Software Availability:**	Dec-2009

General Notes (Continued)

The Dell PowerEdge R510 and
the Bull NovaScale R450 F2 models are electronically equivalent.
The results have been measured on a Dell PowerEdge R510 model.

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

Base Optimization Flags

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

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

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Test sponsor: Bull SAS	**Hardware Availability:** Mar-2010
Tested by: Dell Inc.	**Software Availability:** Dec-2009

Base Optimization Flags (Continued)

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
```

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: -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)
              -ansi-alias

    470.lbm: -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)
              -parallel -ansi-alias -auto-ilp32

  482.sphinx3: basepeak = yes
```

C++ benchmarks:

```
   444.namd: basepeak = yes

   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- -auto-ilp32
```

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Peak Optimization Flags (Continued)

    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 -auto-ilp32

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

    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: 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) -static(pass 2) -prof-use(pass 2)
                -unroll2 -Ob0 -opt-prefetch -parallel

      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)
                -inline-calloc -opt-malloc-options=3 -auto -unroll4

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) -static(pass 2) -prof-use(pass 2)
                -opt-prefetch -auto-ilp32

  436.cactusADM: -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 -opt-prefetch -parallel -auto-ilp32

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

        481.wrf: Same as 454.calculix

        The flags file that was used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic11.1-linux64-revE.20100330.html

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

http://www.spec.org/cpu2006/flags/Intel-ic11.1-linux64-revE.20100330.xml

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

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