SPEC® CFP2006 Result
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Bull SAS

NovaScale R440 F2
(Intel Xeon E5504, 2.00 GHz)

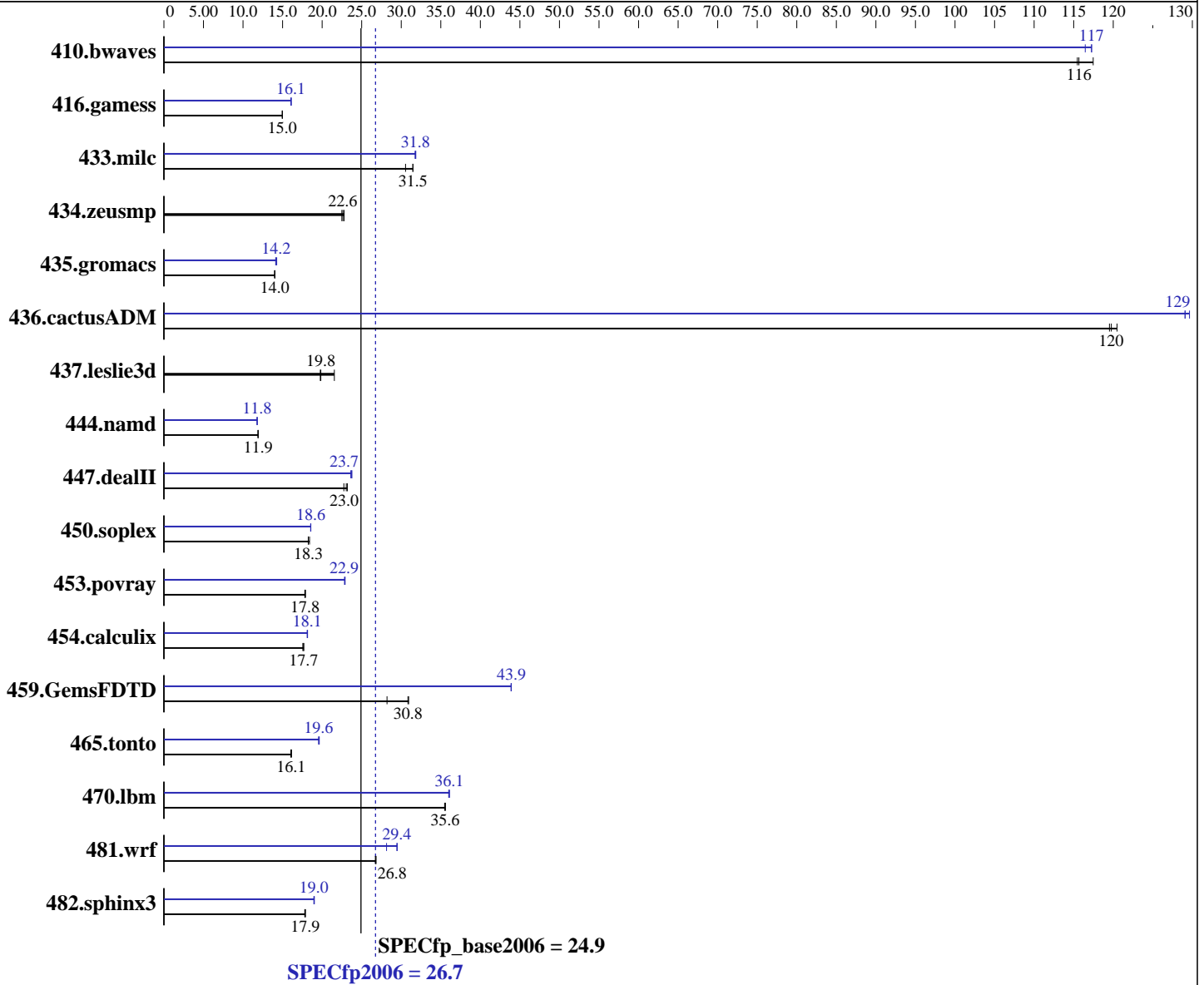$SPECfp^{®}2006 =$ 26.7

$SPECfp\_base2006 =$ 24.9

CPU2006 license: 20		**Test date:** May-2010
Test sponsor: Bull SAS		**Hardware Availability:** Jan-2010
Tested by: Bull SAS		**Software Availability:** Dec-2009

410.bwaves 117 / 116
416.gamess 16.1 / 15.0
433.milc 31.8 / 31.5
434.zeusmp 22.6
435.gromacs 14.2 / 14.0
436.cactusADM 129 / 120
437.leslie3d 19.8
444.namd 11.8 / 11.9
447.dealII 23.7 / 23.0
450.soplex 18.6 / 18.3
453.povray 22.9 / 17.8
454.calculix 18.1 / 17.7
459.GemsFDTD 43.9 / 30.8
465.tonto 19.6 / 16.1
470.lbm 36.1 / 35.6
481.wrf 29.4 / 26.8
482.sphinx3 19.0 / 17.9

SPECfp_base2006 = 24.9

SPECfp2006 = 26.7

Hardware

CPU Name:	Intel Xeon E5504
CPU Characteristics:	
CPU MHz:	2000
FPU:	Integrated
CPU(s) enabled:	8 cores, 2 chips, 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

Software

Operating System:	SUSE Linux Enterprise Server 11 (x86_64), Kernel 2.6.27.19-5-default
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:	4 MB I+D on chip per chip	Base Pointers:	64-bit
Other Cache:	None	Peak Pointers:	32/64-bit
Memory:	48 GB (12 x 4 GB PC3-10600R, 2 Rank, CL9-9-9, ECC, running at 800 MHz)	Other Software:	None
Disk Subsystem:	1 x 73 GB SAS, 10000 RPM		
Other Hardware:	None		

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	**117**	**116**	118	115	116	117	117	116	**116**	**117**	116	117
416.gamess	1306	15.0	1309	15.0	**1309**	**15.0**	1217	16.1	1218	16.1	**1218**	**16.1**
433.milc	292	31.5	**292**	**31.5**	301	30.5	**289**	**31.8**	288	31.8	289	31.7
434.zeusmp	399	22.8	405	22.5	**402**	**22.6**	399	22.8	405	22.5	**402**	**22.6**
435.gromacs	**509**	**14.0**	509	14.0	511	14.0	505	14.1	501	14.3	**503**	**14.2**
436.cactusADM	99.2	120	100	120	**99.8**	**120**	92.6	129	**92.6**	**129**	92.2	130
437.leslie3d	**474**	**19.8**	476	19.8	436	21.5	**474**	**19.8**	476	19.8	436	21.5
444.namd	**674**	**11.9**	674	11.9	673	11.9	**680**	**11.8**	680	11.8	681	11.8
447.dealII	493	23.2	503	22.7	**496**	**23.0**	484	23.6	**482**	**23.7**	482	23.7
450.soplex	453	18.4	**457**	**18.3**	457	18.2	**449**	**18.6**	450	18.5	449	18.6
453.povray	297	17.9	**298**	**17.8**	299	17.8	232	22.9	233	22.8	**233**	**22.9**
454.calculix	**467**	**17.7**	467	17.7	470	17.6	454	18.2	**455**	**18.1**	456	18.1
459.GemsFDTD	376	28.2	343	30.9	**344**	**30.8**	**242**	**43.9**	242	43.9	242	43.9
465.tonto	610	16.1	**612**	**16.1**	613	16.0	501	19.6	503	19.6	**503**	**19.6**
470.lbm	386	35.6	**386**	**35.6**	387	35.5	381	36.1	**381**	**36.1**	382	36.0
481.wrf	417	26.8	**417**	**26.8**	418	26.7	379	29.5	397	28.1	**379**	**29.4**
482.sphinx3	1090	17.9	1095	17.8	**1090**	**17.9**	**1027**	**19.0**	1028	19.0	1025	19.0

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

General Notes

```
OMP_NUM_THREADS set to number of cores
KMP_AFFINITY set to granularity=fine,scatter
KMP_STACKSIZE set to 200M
Binaries were compiled on SLES 10 with Binutils 2.18.50.0.7.20080502
The Dell PowerEdge R610 and
the Bull NovaScale R440 F2 models are electronically equivalent.
The results have been measured on a Bull NovaScale R440 F2 model.
```

Base Compiler Invocation

C benchmarks:
```
icc  -m64
```

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Base Compiler Invocation (Continued)

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
```

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
```

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Hardware Availability: Jan-2010
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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: `-xSSE4.2 -ipo -O3 -no-prec-div -static -auto-ilp32`
`-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- -auto-ilp32`

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`

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Peak Optimization Flags (Continued)

```
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.20100511.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/Intel-ic11.1-linux64-revE.20100511.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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