SPEC® CFP2006 Result
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Bull SAS

NovaScale R460 E2
(Intel Xeon E5504, 2.00 GHz)

$SPECfp^®\_rate2006 = \quad 115$

$SPECfp\_rate\_base2006 = \quad 111$
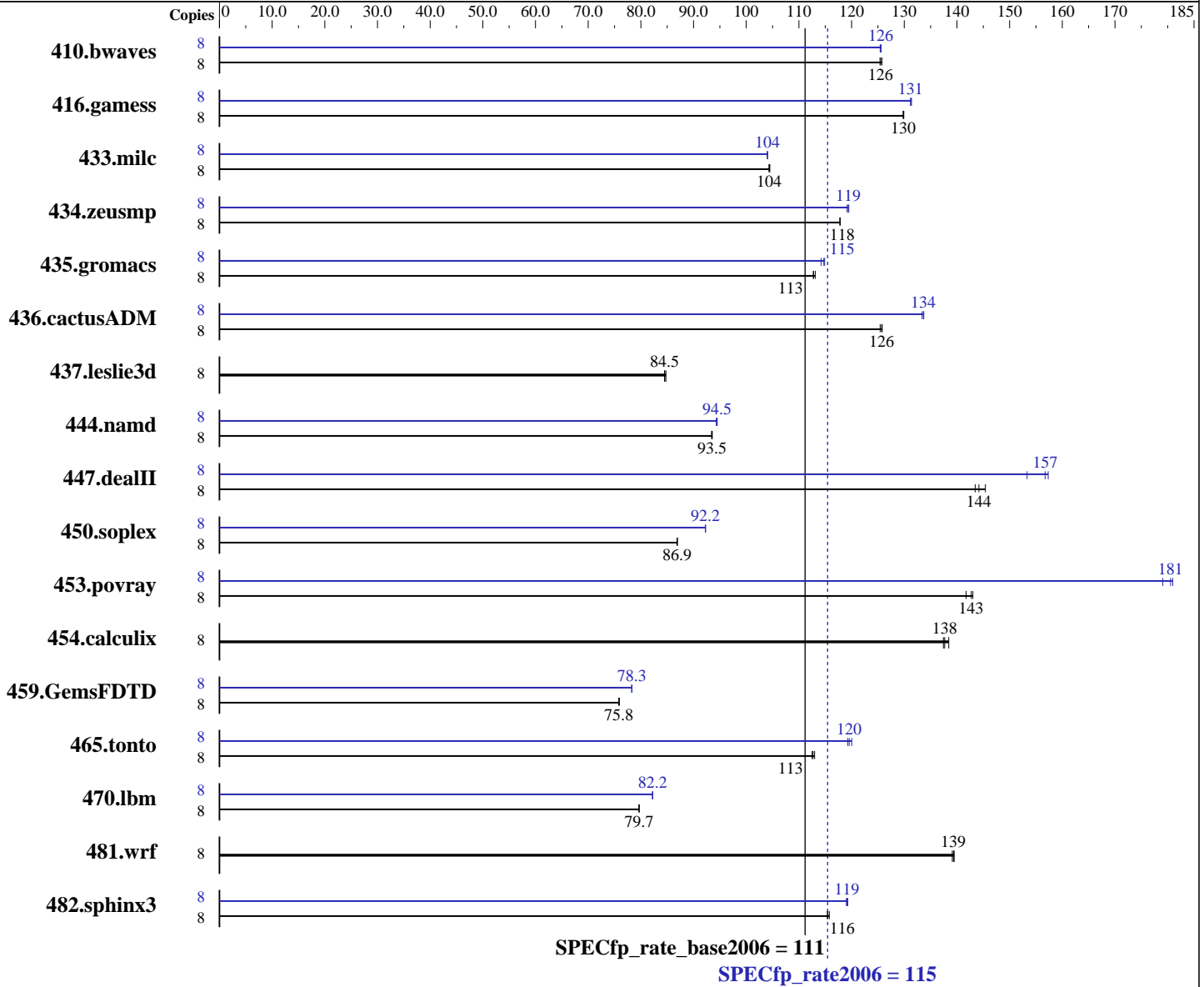
CPU2006 license: 20
Test sponsor: Bull SAS
Tested by: NEC Corporation

Test date: Mar-2009
Hardware Availability: Apr-2009
Software Availability: Feb-2009

SPECfp_rate_base2006 = 111

SPECfp_rate2006 = 115

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

Continued on next page

Software

Operating System: SUSE Linux Enterprise Server 10 (x86_64)
SP2 with patch Linux kernel 20090119,
Kernel 2.6.16.60-0.34-smp
Compiler: Intel C++ and Fortran Compiler 11.0 for Linux
Build 20090131 Package ID: l_cproc_p_11.0.081,
l_cprof_p_11.0.081
Auto Parallel: No
File System: ReiserFS
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 PC3-8500R running at 800 MHz)	Other Software:	Binutils 2.18.50.0.7.20080502
Disk Subsystem:	1x146.5 GB SAS, 15000 RPM		
Other Hardware:	None		

Results Table

Benchmark	Base Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Peak Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	8	**866**	**126**	865	126	867	125	8	866	126	867	125	**866**	**126**
416.gamess	8	1207	130	**1207**	**130**	1206	130	8	1194	131	**1194**	**131**	1192	131
433.milc	8	703	104	**704**	**104**	704	104	8	706	104	**706**	**104**	706	104
434.zeusmp	8	618	118	**618**	**118**	618	118	8	**610**	**119**	611	119	609	119
435.gromacs	8	507	113	505	113	**507**	**113**	8	497	115	**498**	**115**	500	114
436.cactusADM	8	762	125	760	126	**761**	**126**	8	**715**	**134**	715	134	717	133
437.leslie3d	8	887	84.7	890	84.5	**890**	**84.5**	8	887	84.7	890	84.5	**890**	**84.5**
444.namd	8	**686**	**93.5**	687	93.4	686	93.5	8	**679**	**94.5**	679	94.5	680	94.3
447.dealII	8	**635**	**144**	638	143	629	145	8	597	153	**584**	**157**	582	157
450.soplex	8	768	86.9	**768**	**86.9**	768	86.9	8	723	92.3	**723**	**92.2**	723	92.2
453.povray	8	**298**	**143**	300	142	298	143	8	238	179	**236**	**181**	235	181
454.calculix	8	**479**	**138**	477	138	480	137	8	**479**	**138**	477	138	480	137
459.GemsFDTD	8	1119	75.8	1118	75.9	**1119**	**75.8**	8	1084	78.3	1084	78.3	**1084**	**78.3**
465.tonto	8	697	113	**699**	**113**	700	113	8	656	120	660	119	**658**	**120**
470.lbm	8	**1380**	**79.7**	1380	79.6	1380	79.7	8	1337	82.2	1337	82.2	**1337**	**82.2**
481.wrf	8	642	139	641	139	**641**	**139**	8	642	139	641	139	**641**	**139**
482.sphinx3	8	1347	116	1351	115	**1350**	**116**	8	1307	119	1310	119	**1309**	**119**

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
```

Platform Notes

```
BIOS setting:
NUMA configuration: Enabled
```

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General Notes

```
The NEC Express5800/R120a-1(Intel Xeon E5504),
the NEC Express5800/R120a-2(Intel Xeon E5504),
the Bull NovaScale R440 E2 (Intel Xeon E5504, 2.00 GHz) and
the Bull NovaScale R460 E2 (Intel Xeon E5504, 2.00 GHz) models are electronically equivalent.
The results have been measured on a NEC Express5800/R120a-2(Intel Xeon E5504) 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:
```
-xSSE4.2 -ipo -O3 -no-prec-div -static
```

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Base Optimization Flags (Continued)

C++ benchmarks:
```
-xSSE4.2 -ipo -O3 -no-prec-div -static
```

Fortran benchmarks:
```
-xSSE4.2 -ipo -O3 -no-prec-div -static
```

Benchmarks using both Fortran and C:
```
-xSSE4.2 -ipo -O3 -no-prec-div -static
```

Peak Compiler Invocation

C benchmarks (except as noted below):
```
icc
```

```
482.sphinx3: icc -m32
```

C++ benchmarks (except as noted below):
```
icpc
```

```
450.soplex: icpc -m32
```

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: `-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`

> 470.lbm: `-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch`
> `-auto-ilp32`

> 482.sphinx3: `-xSSE4.2 -ipo -O3 -no-prec-div -static -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-`

> 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`

> 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`

> 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: `-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)

> 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`

> 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)
> `-unroll4 -auto`

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Peak Optimization Flags (Continued)

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 -auto-ilp32

    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-ic11.0-fp-linux64-revG.html
http://www.spec.org/cpu2006/flags/NEC-Intel-Linux-Settings-flags-revE.20090710.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-revG.xml
http://www.spec.org/cpu2006/flags/NEC-Intel-Linux-Settings-flags-revE.20090710.xml

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

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