# SPEC® CFP2006 Result
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## Bull SAS
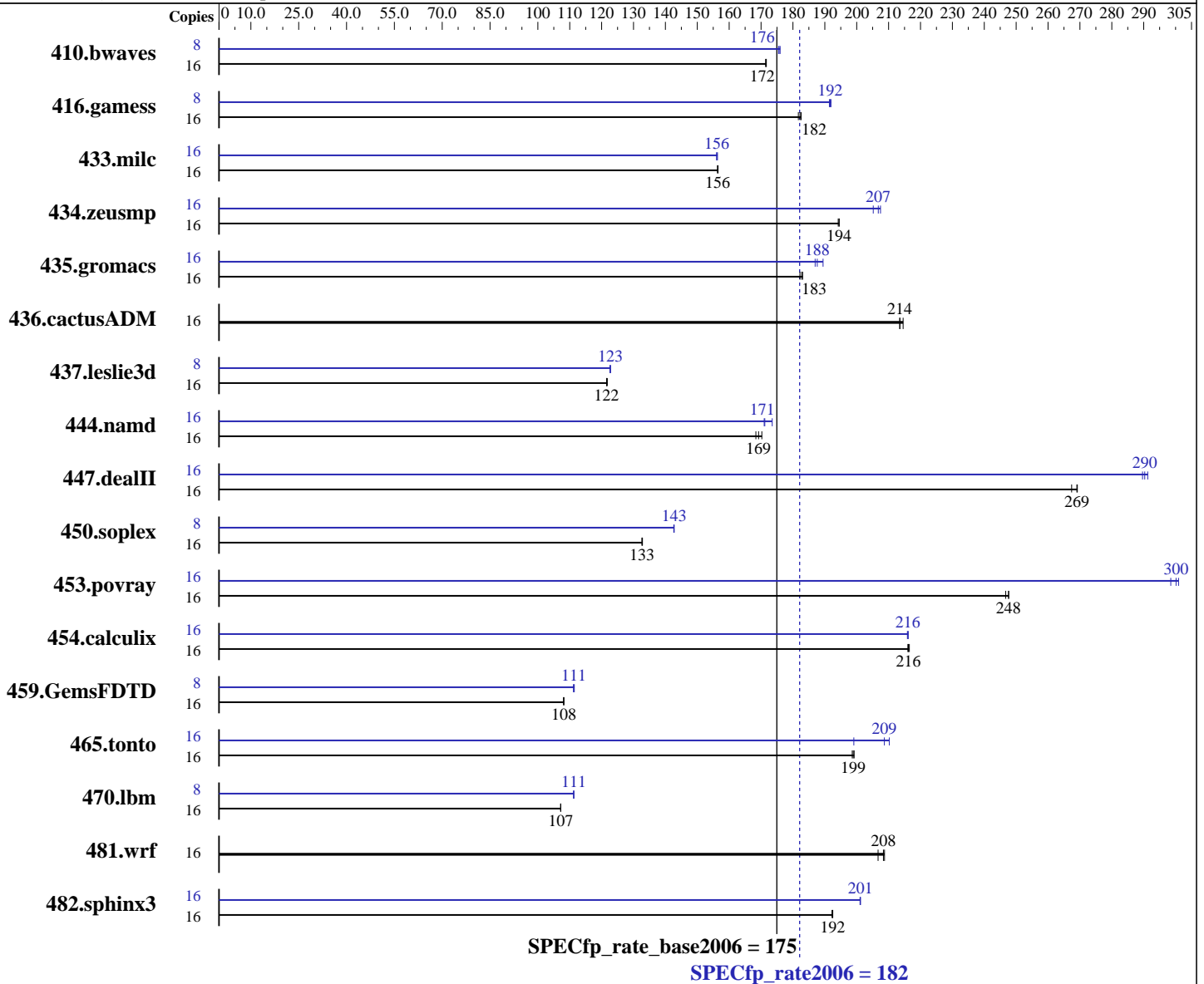
$SPECfp^{®}\_rate2006 =$    182

NovaScale R440 E2
(Intel Xeon X5550, 2.66 GHz)

$SPECfp\_rate\_base2006 =$    175

| | |
|---|---|
| **CPU2006 license:** 20 | **Test date:** Apr-2009 |
| **Test sponsor:** Bull SAS | **Hardware Availability:** Apr-2009 |
| **Tested by:** NEC Corporation | **Software Availability:** Feb-2009 |

**Copies** 0 10.0 25.0 40.0 55.0 70.0 85.0 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 305

| Benchmark | Copies | Value |
|---|---|---|
| 410.bwaves | 8 | 176 |
| | 16 | 172 |
| 416.gamess | 8 | 192 |
| | 16 | 182 |
| 433.milc | 16 | 156 |
| | 16 | 156 |
| 434.zeusmp | 16 | 207 |
| | 16 | 194 |
| 435.gromacs | 16 | 188 |
| | 16 | 183 |
| 436.cactusADM | 16 | 214 |
| 437.leslie3d | 8 | 123 |
| | 16 | 122 |
| 444.namd | 16 | 171 |
| | 16 | 169 |
| 447.dealII | 16 | 290 |
| | 16 | 269 |
| 450.soplex | 8 | 143 |
| | 16 | 133 |
| 453.povray | 16 | 300 |
| | 16 | 248 |
| 454.calculix | 16 | 216 |
| | 16 | 216 |
| 459.GemsFDTD | 8 | 111 |
| | 16 | 108 |
| 465.tonto | 16 | 209 |
| | 16 | 199 |
| 470.lbm | 8 | 111 |
| | 16 | 107 |
| 481.wrf | 16 | 208 |
| 482.sphinx3 | 16 | 201 |
| | 16 | 192 |

**SPECfp_rate_base2006 = 175**

**SPECfp_rate2006 = 182**

## Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon X5550 |
| CPU Characteristics: | Intel Turbo Boost Technology up to 3.06 GHz |
| CPU MHz: | 2667 |
| FPU: | Integrated |
| CPU(s) enabled: | 8 cores, 2 chips, 4 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 |

*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: | 8 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, 2 rank, CL7, ECC) | Other Software: | Binutils 2.18.50.0.7.20080502 |
| Disk Subsystem: | 1x146.5 GB SAS, 15000 RPM | | |
| Other Hardware: | None | | |

## Results Table

| Benchmark | Base | | | | | | Peak | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 410.bwaves | 16 | 1267 | 172 | 1268 | 171 | **1268** | **172** | 8 | 620 | 175 | 618 | 176 | **619** | **176** |
| 416.gamess | 16 | 1716 | 183 | **1719** | **182** | 1724 | 182 | 8 | 816 | 192 | **817** | **192** | 818 | 191 |
| 433.milc | 16 | 938 | 157 | 939 | 156 | **939** | **156** | 16 | **941** | **156** | 939 | 156 | 941 | 156 |
| 434.zeusmp | 16 | **749** | **194** | 749 | 194 | 750 | 194 | 16 | 702 | 207 | 710 | 205 | **704** | **207** |
| 435.gromacs | 16 | 627 | 182 | 624 | 183 | **625** | **183** | 16 | 603 | 189 | **609** | **188** | 611 | 187 |
| 436.cactusADM | 16 | 891 | 215 | 896 | 213 | **895** | **214** | 16 | 891 | 215 | 896 | 213 | **895** | **214** |
| 437.leslie3d | 16 | **1237** | **122** | 1235 | 122 | 1237 | 122 | 8 | 613 | 123 | **613** | **123** | 613 | 123 |
| 444.namd | 16 | **758** | **169** | 762 | 168 | 754 | 170 | 16 | 751 | 171 | **750** | **171** | 740 | 173 |
| 447.dealII | 16 | 680 | 269 | 685 | 267 | **680** | **269** | 16 | 632 | 290 | **630** | **290** | 628 | 291 |
| 450.soplex | 16 | 1005 | 133 | **1006** | **133** | 1006 | 133 | 8 | 467 | 143 | 468 | 143 | **468** | **143** |
| 453.povray | 16 | 344 | 248 | 345 | 247 | **344** | **248** | 16 | **284** | **300** | 285 | 298 | 283 | 301 |
| 454.calculix | 16 | 610 | 217 | **611** | **216** | 611 | 216 | 16 | **611** | **216** | 611 | 216 | 611 | 216 |
| 459.GemsFDTD | 16 | 1570 | 108 | **1570** | **108** | 1571 | 108 | 8 | 764 | 111 | **763** | **111** | 762 | 111 |
| 465.tonto | 16 | 790 | 199 | 793 | 199 | **792** | **199** | 16 | 749 | 210 | **754** | **209** | 791 | 199 |
| 470.lbm | 16 | 2051 | 107 | 2051 | 107 | **2051** | **107** | 8 | 988 | 111 | **988** | **111** | 988 | 111 |
| 481.wrf | 16 | 856 | 209 | **858** | **208** | 865 | 207 | 16 | 856 | 209 | **858** | **208** | 865 | 207 |
| 482.sphinx3 | 16 | 1620 | 192 | 1622 | 192 | **1620** | **192** | 16 | 1551 | 201 | 1550 | 201 | **1550** | **201** |

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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$SPECfp\_rate\_base2006 =$ 175

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**Tested by:** NEC Corporation

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

## General Notes

    The NEC Express5800/R120a-1(Intel Xeon X5550),
    the NEC Express5800/R120a-2(Intel Xeon X5550),
    the Bull NovaScale R440 E2 (Intel Xeon X5550, 2.66 GHz) and
    the Bull NovaScale R460 E2 (Intel Xeon X5550, 2.66 GHz) models are electronically equivalent.
    The results have been measured on a NEC Express5800/R120a-1(Intel Xeon X5550) 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 (except as noted below):
```
ifort
```

437.leslie3d: `ifort -m32`

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
      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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| | | | |
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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: -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 -opt-prefetch

> 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: `basepeak = yes`

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

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

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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

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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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