# SPEC® CFP2006 Result

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## Fujitsu Siemens Computers

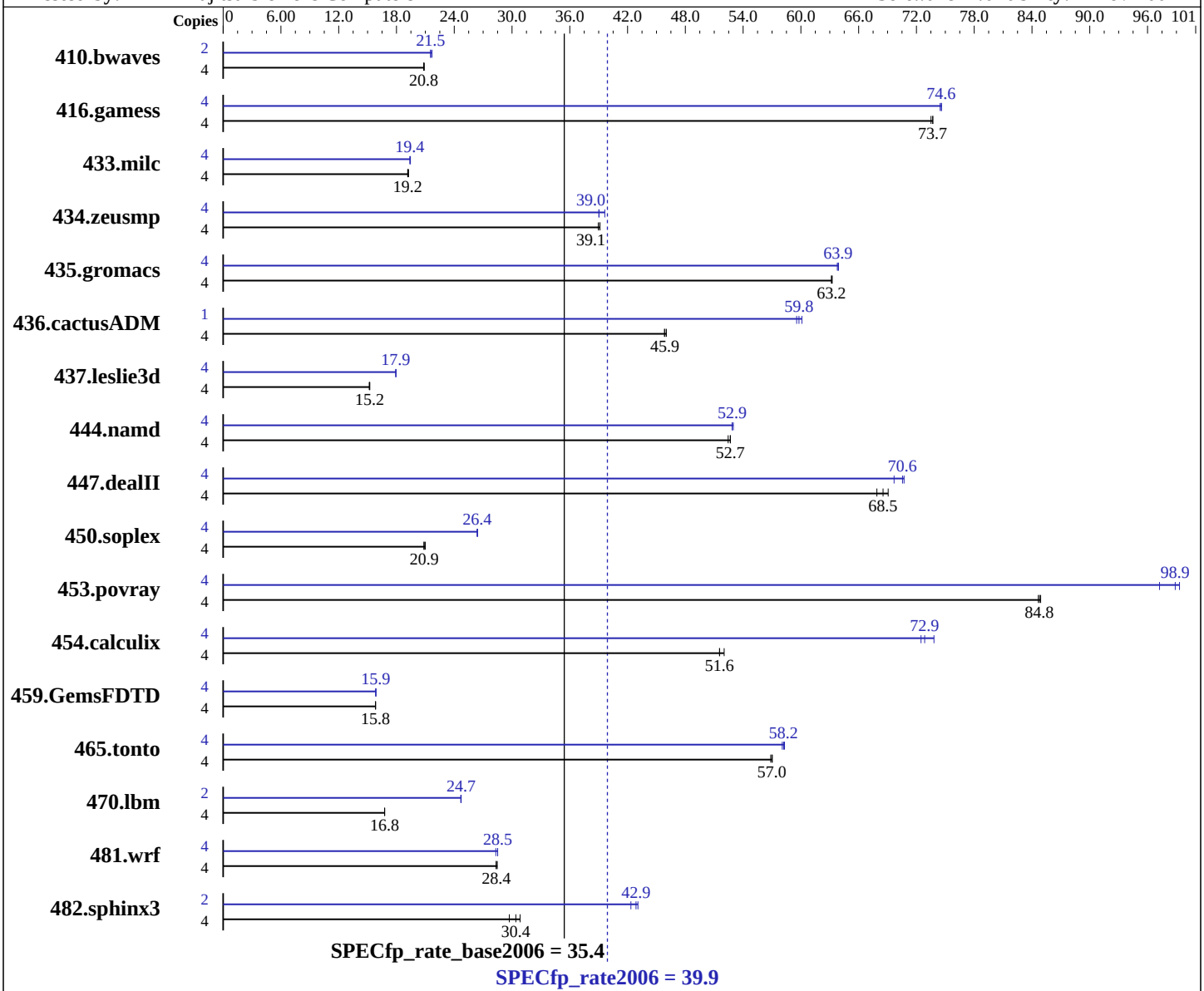
PRIMERGY RX200 S4, Intel Xeon E5420, 2.50 GHz

SPECfp®_rate2006 = 39.9

SPECfp_rate_base2006 = 35.4

**CPU2006 license:** 22
**Test sponsor:** Fujitsu Siemens Computers
**Tested by:** Fujitsu Siemens Computers

**Test date:** May-2008
**Hardware Availability:** Dec-2007
**Software Availability:** Nov-2007




### Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon E5420 |
| CPU Characteristics: | 1333 MHz system bus |
| CPU MHz: | 2500 |
| FPU: | Integrated |
| CPU(s) enabled: | 4 cores, 1 chip, 4 cores/chip |
| CPU(s) orderable: | 1,2 chips |
| Primary Cache: | 32 KB I + 32 KB D on chip per core |
| Secondary Cache: | 12 MB I+D on chip per chip, 6 MB shared / 2 cores |

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### Software

| | |
|---|---|
| Operating System: | SUSE Linux Enterprise Server 10 (x86_64) SP1, Kernel 2.6.16.46-0.12-smp |
| Compiler: | Intel C++ and Fortran Compiler for Linux32 and Linux64 Version 10.1 - Build 20070725 |
| Auto Parallel: | Yes |
| File System: | ext2 |
| System State: | Multi-User Run Level 3 |
| Base Pointers: | 64-bit |

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L3 Cache: None
Other Cache: None
Memory: 16 GB (8x2 GB PC2-5300F, 2 rank, CL 5-5-5, ECC)
Disk Subsystem: 1x SAS, 73 GB, 15000 rpm
Other Hardware: None

Peak Pointers: 32/64-bit
Other Software: binutils-2.17.50.0.5-0.1.x86_64

## Results Table

| Benchmark | Base | | | | | | | Peak | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 410.bwaves | 4 | 2610 | 20.8 | **2610** | **20.8** | 2602 | 20.9 | 2 | **1262** | **21.5** | 1262 | 21.5 | 1253 | 21.7 |
| 416.gamess | 4 | 1063 | 73.7 | 1065 | 73.5 | **1063** | **73.7** | 4 | **1050** | **74.6** | 1052 | 74.5 | 1050 | 74.6 |
| 433.milc | 4 | 1916 | 19.2 | 1907 | 19.3 | **1915** | **19.2** | 4 | 1888 | 19.4 | **1892** | **19.4** | 1893 | 19.4 |
| 434.zeusmp | 4 | 930 | 39.1 | **931** | **39.1** | 934 | 39.0 | 4 | **932** | **39.0** | 918 | 39.6 | 933 | 39.0 |
| 435.gromacs | 4 | 452 | 63.3 | 452 | 63.2 | **452** | **63.2** | 4 | **447** | **63.9** | 447 | 63.9 | 448 | 63.8 |
| 436.cactusADM | 4 | 1043 | 45.8 | 1038 | 46.0 | **1042** | **45.9** | 1 | **200** | **59.8** | 201 | 59.6 | 199 | 60.1 |
| 437.leslie3d | 4 | 2469 | 15.2 | 2479 | 15.2 | **2472** | **15.2** | 4 | **2096** | **17.9** | 2097 | 17.9 | 2095 | 18.0 |
| 444.namd | 4 | 612 | 52.4 | **609** | **52.7** | 609 | 52.7 | 4 | **607** | **52.9** | 605 | 53.0 | 607 | 52.9 |
| 447.dealII | 4 | **668** | **68.5** | 663 | 69.1 | 674 | 67.9 | 4 | **649** | **70.6** | 657 | 69.7 | 647 | 70.7 |
| 450.soplex | 4 | 1589 | 21.0 | **1598** | **20.9** | 1600 | 20.8 | 4 | 1262 | 26.4 | **1264** | **26.4** | 1265 | 26.4 |
| 453.povray | 4 | 251 | 84.7 | **251** | **84.8** | 251 | 84.9 | 4 | 219 | 97.2 | 214 | 99.3 | **215** | **98.9** |
| 454.calculix | 4 | 640 | 51.5 | **640** | **51.6** | 634 | 52.0 | 4 | 455 | 72.5 | **453** | **72.9** | 447 | 73.8 |
| 459.GemsFDTD | 4 | 2683 | 15.8 | **2682** | **15.8** | 2681 | 15.8 | 4 | 2679 | 15.8 | **2675** | **15.9** | 2675 | 15.9 |
| 465.tonto | 4 | 690 | 57.0 | 692 | 56.9 | **691** | **57.0** | 4 | **676** | **58.2** | 675 | 58.3 | 678 | 58.1 |
| 470.lbm | 4 | **3278** | **16.8** | 3278 | 16.8 | 3277 | 16.8 | 2 | **1112** | **24.7** | 1112 | 24.7 | 1114 | 24.7 |
| 481.wrf | 4 | 1576 | 28.4 | **1575** | **28.4** | 1569 | 28.5 | 4 | 1567 | 28.5 | 1578 | 28.3 | **1567** | **28.5** |
| 482.sphinx3 | 4 | **2565** | **30.4** | 2528 | 30.8 | 2623 | 29.7 | 2 | 905 | 43.1 | **909** | **42.9** | 921 | 42.3 |

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
OMP_NUM_THREADS set to number of cores (default)
```

## Platform Notes

```
BIOS configuration:
Hardware Prefetch = Disable, Adjacent Sector Prefetch = Disable
```

## General Notes

```
All binaries were built with 64-bit Intel compiler except:
437.leslie3d, 450.soplex, 470.lbm, and 482.sphinx3 in peak
were built with 32-bit Intel compiler by changing
```

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## General Notes (Continued)

```
the path for include and library files.

For information about Fujitsu Siemens Computers please see:
http://www.fujitsu-siemens.com
```

## 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:
`-fast`

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## Base Optimization Flags (Continued)

C++ benchmarks:
`-fast`

Fortran benchmarks:
`-fast`

Benchmarks using both Fortran and C:
`-fast`

## Peak Compiler Invocation

C benchmarks (except as noted below):
`/opt/intel/cc/10.1.008/bin/icc -L/opt/intel/cc/10.1.008/lib -I/opt/intel/cc/10.1.008/include`

433.milc: `icc`

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

450.soplex: `/opt/intel/cc/10.1.008/bin/icpc -L/opt/intel/cc/10.1.008/lib -I/opt/intel/cc/10.1.008/include`

Fortran benchmarks (except as noted below):
`ifort`

437.leslie3d: `/opt/intel/fc/10.1.008/bin/ifort -L/opt/intel/fc/10.1.008/lib -I/opt/intel/fc/10.1.008/include`

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`

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## Peak Portability Flags (Continued)

465.tonto: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX

## Peak Optimization Flags

C benchmarks:

433.milc: -prof-gen(pass 1) -prof-use(pass 2) -fast -fno-alias -auto-ilp32

470.lbm: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2 -scalar-rep- -prefetch -opt-malloc-options=3

482.sphinx3: -fast -unroll2

C++ benchmarks:

444.namd: -prof-gen(pass 1) -prof-use(pass 2) -fast -fno-alias -auto-ilp32

447.dealII: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2 -ansi-alias -scalar-rep-

450.soplex: -prof-gen(pass 1) -prof-use(pass 2) -fast -opt-malloc-options=3

453.povray: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll4 -ansi-alias

Fortran benchmarks:

410.bwaves: -fast -prefetch

416.gamess: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2 -Ob0 -ansi-alias -scalar-rep-

434.zeusmp: -prof-gen(pass 1) -prof-use(pass 2) -fast

437.leslie3d: -prof-gen(pass 1) -prof-use(pass 2) -fast -prefetch -opt-malloc-options=3

459.GemsFDTD: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2 -Ob0 -prefetch

465.tonto: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll4 -auto

Benchmarks using both Fortran and C:

Continued on next page

## Peak Optimization Flags (Continued)

435.gromacs: `-prof-gen`(pass 1) `-prof-use`(pass 2) `-fast -prefetch -auto-ilp32`

436.cactusADM: `-prof-gen`(pass 1) `-prof-use`(pass 2) `-fast -unroll2 -prefetch -parallel -auto-ilp32`

454.calculix: `-fast -unroll-aggressive -auto-ilp32`

481.wrf: `-fast -auto-ilp32`

The flags file that was used to format this result can be browsed at
`http://www.spec.org/cpu2006/flags/flags-ic101-linux-intel64.20090713.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/cpu2006/flags/flags-ic101-linux-intel64.20090713.xml`


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