



SPEC[®] CFP2006 Result

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Fujitsu Siemens Computers

SPECfp[®]_rate2006 = 83.0

CELSIUS V840, AMD Opteron 2350 (2.0 GHz)

SPECfp_rate_base2006 = 74.7

CPU2006 license: 22

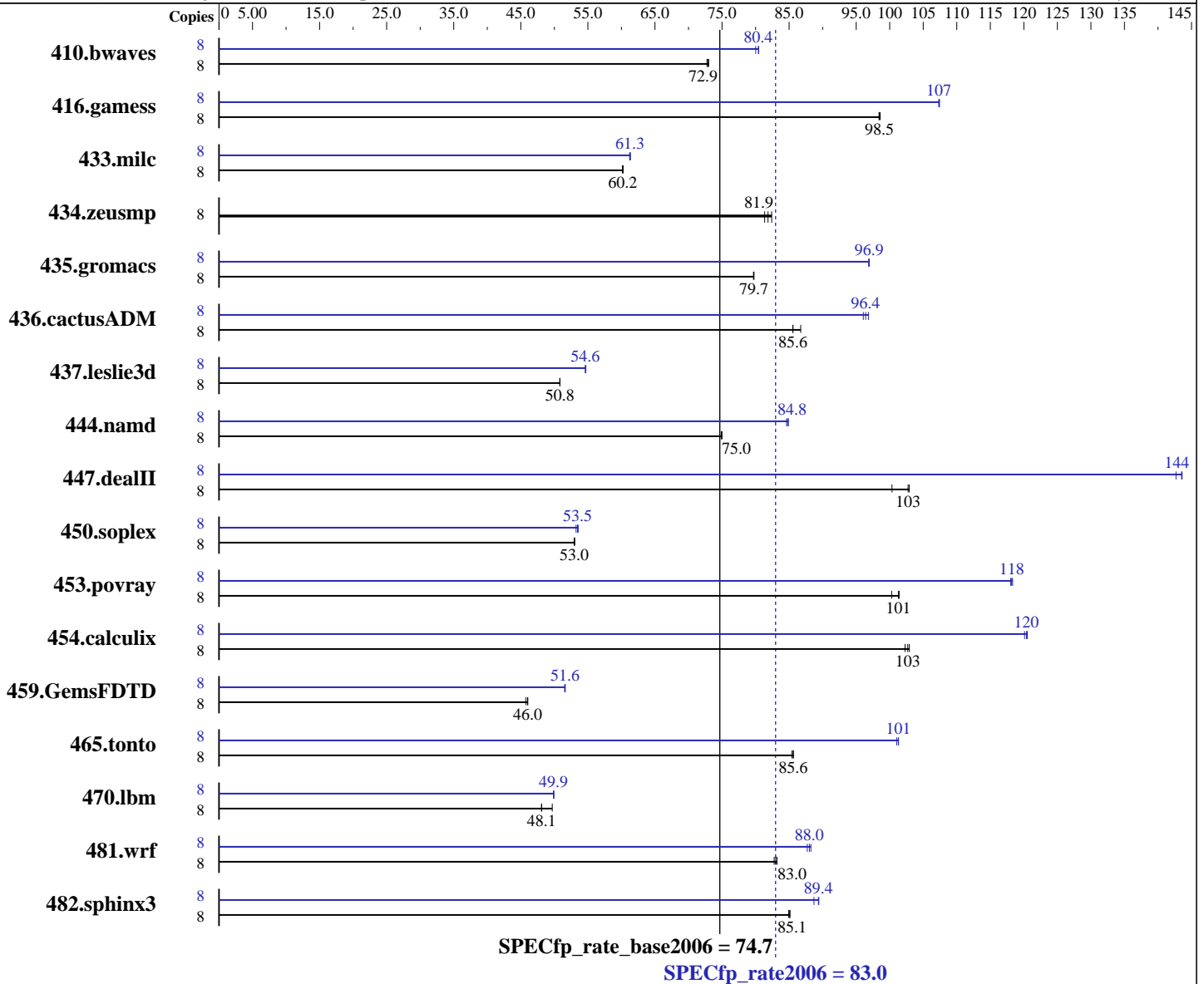
Test sponsor: Fujitsu Siemens Computers

Tested by: Fujitsu Siemens Computers

Test date: Apr-2008

Hardware Availability: May-2008

Software Availability: May-2008



Hardware

CPU Name: AMD Opteron 2350
 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: 64 KB I + 64 KB D on chip per core
 Secondary Cache: 512 KB I+D on chip per core

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Software

Operating System: SUSE Linux Enterprise Server 10 (x86_64) SP1, Kernel 2.6.16.46-0.12-smp
 Compiler: PGI Workstation Complete Version 7.2-1 PathScale Compiler Suite, Release 3.2 Beta
 Auto Parallel: No
 File System: ext3
 System State: Multi-User SuSE Run Level 3
 Base Pointers: 64-bit
 Peak Pointers: 32/64-bit

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Hardware (Continued)

L3 Cache: 2 MB I+D on chip per chip
 Other Cache: None
 Memory: 16 GB (8x2GB PC2-5300P, CL5, dual rank ECC)
 Disk Subsystem: 1 x 400 GB SATA II, 7200 rpm
 Other Hardware: None

Software (Continued)

Other Software: binutils 2.18.50

Results Table

Benchmark	Base								Peak							
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio		
410.bwaves	8	1489	73.0	1494	72.8	<u>1491</u>	<u>72.9</u>	8	1351	80.5	<u>1352</u>	<u>80.4</u>	1359	80.0		
416.gamess	8	1589	98.6	1592	98.4	<u>1591</u>	<u>98.5</u>	8	1459	107	1458	107	<u>1459</u>	<u>107</u>		
433.milc	8	1219	60.3	<u>1220</u>	<u>60.2</u>	1221	60.1	8	1197	61.3	<u>1198</u>	<u>61.3</u>	1200	61.2		
434.zeusmp	8	895	81.4	883	82.4	<u>889</u>	<u>81.9</u>	8	895	81.4	883	82.4	<u>889</u>	<u>81.9</u>		
435.gromacs	8	<u>716</u>	<u>79.7</u>	717	79.7	716	79.8	8	<u>589</u>	<u>96.9</u>	589	97.0	590	96.9		
436.cactusADM	8	1117	85.6	<u>1117</u>	<u>85.6</u>	1102	86.7	8	995	96.1	<u>992</u>	<u>96.4</u>	987	96.8		
437.leslie3d	8	1480	50.8	<u>1479</u>	<u>50.8</u>	1479	50.8	8	1375	54.7	<u>1376</u>	<u>54.6</u>	1377	54.6		
444.namd	8	856	75.0	857	74.9	<u>856</u>	<u>75.0</u>	8	758	84.6	<u>757</u>	<u>84.8</u>	756	84.9		
447.dealII	8	912	100	889	103	<u>891</u>	<u>103</u>	8	637	144	641	143	<u>638</u>	<u>144</u>		
450.soplex	8	<u>1260</u>	<u>53.0</u>	1260	53.0	1258	53.0	8	1246	53.6	1253	53.2	<u>1248</u>	<u>53.5</u>		
453.povray	8	424	100	<u>420</u>	<u>101</u>	420	101	8	<u>360</u>	<u>118</u>	360	118	361	118		
454.calculix	8	<u>643</u>	<u>103</u>	641	103	645	102	8	549	120	548	121	<u>548</u>	<u>120</u>		
459.GemsFDTD	8	1844	46.0	1854	45.8	<u>1845</u>	<u>46.0</u>	8	1647	51.5	<u>1645</u>	<u>51.6</u>	1644	51.6		
465.tonto	8	919	85.6	921	85.4	<u>919</u>	<u>85.6</u>	8	<u>777</u>	<u>101</u>	777	101	779	101		
470.lbm	8	<u>2285</u>	<u>48.1</u>	2286	48.1	2212	49.7	8	2202	49.9	<u>2203</u>	<u>49.9</u>	2204	49.9		
481.wrf	8	1074	83.2	<u>1077</u>	<u>83.0</u>	1080	82.8	8	<u>1015</u>	<u>88.0</u>	1019	87.7	1013	88.3		
482.sphinx3	8	1836	84.9	<u>1832</u>	<u>85.1</u>	1832	85.1	8	1758	88.7	<u>1745</u>	<u>89.4</u>	1743	89.4		

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

Operating System Notes

```

powersave -f is applied to set CPU to maximum frequency prior to run
stacksize is set to unlimited prior to run
ulimit -l 2457600
PGI_HUGE_PAGES set to 150
(Total number of huge pages available is 1200)

```

General Notes

The command numactl has been used to bind processes to CPUs

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General Notes (Continued)

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

Base Compiler Invocation

C benchmarks:

pgcc

C++ benchmarks:

pgcpp

Fortran benchmarks:

pgf95

Benchmarks using both Fortran and C:

pgcc pgf95

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 -Mnomain
 436.cactusADM: -DSPEC_CPU_LP64 -Mnomain
 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 -Mnomain
 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:

-fastsse -Msmartalloc=huge:150 -Mfprelaxed -Mipa=jobs:4 -Mipa=fast
-Mipa=inline -tp barcelona-64 -Bstatic_pgi

C++ benchmarks:

-fastsse -Msmartalloc=huge:150 -Mfprelaxed --zc_eh -Mipa=jobs:4
-Mipa=fast -Mipa=inline -tp barcelona-64 -Bstatic_pgi
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Base Optimization Flags (Continued)

Fortran benchmarks:

-fastsse -Mfprelaxed -Msmartalloc=huge:150 -Mipa=jobs:4 -Mipa=fast
-Mipa=inline -tp barcelona-64 -Bstatic_pgi

Benchmarks using both Fortran and C:

-fastsse -Msmartalloc=huge:150 -Mfprelaxed -Mipa=jobs:4 -Mipa=fast
-Mipa=inline -tp barcelona-64 -Bstatic_pgi

Peak Compiler Invocation

C benchmarks (except as noted below):

pgcc

470.lbm: pathcc

C++ benchmarks (except as noted below):

pathCC

444.namd: pgcpp

Fortran benchmarks (except as noted below):

pathf95

410.bwaves: pgf95

434.zeusmp: pgf95

437.leslie3d: pgf95

Benchmarks using both Fortran and C (except as noted below):

pgcc pgf95

436.cactusADM: pathcc pathf95

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 -Mnomain

436.cactusADM: -DSPEC_CPU_LP64 -fno-second-underscore

437.leslie3d: -DSPEC_CPU_LP64

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Peak Portability Flags (Continued)

444.namd: -DSPEC_CPU_LP64
 453.povray: -DSPEC_CPU_LP64
 454.calculix: -DSPEC_CPU_LP64 -Mnomain
 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

Peak Optimization Flags

C benchmarks:

433.milc: -fastsse -Msmartalloc=huge:150 -Msafeptr -Mfprelaxed
 -Mipa=jobs:4 -Mipa=inline -Mipa=arg -Mipa=const -Mipa=ptr
 -Mipa=shape -tp barcelona-64 -Bstatic_pgi

470.lbm: -march=barcelona -Ofast -CG:sse_cse_regs=0
 -CG:locs_shallow_depth=1 -m3dnw

482.sphinx3: -Mphi=indirect(pass 1) -Mpfo=indirect(pass 2)
 -Mipa=jobs:4(pass 2) -Mipa=fast(pass 2) -Mipa=inline(pass 2)
 -fastsse -Mfprelaxed -Msmartalloc -tp barcelona-64
 -Bstatic_pgi

C++ benchmarks:

444.namd: -Mphi(pass 1) -Mpfo(pass 2) -Mipa=jobs:4(pass 2)
 -Mipa=fast(pass 2) -Mipa=inline(pass 2) -fastsse
 -Munroll=n:4 -Munroll=m:8 -Msmartalloc=huge:150 -Mnodepch
 -Mfprelaxed --zc_eh -tp barcelona-64 -Bstatic_pgi

447.dealIII: -march=barcelona -Ofast -static -INLINE:aggressive=on
 -fno-exceptions -m32

450.soplex: -march=barcelona -fb_create fbdata(pass 1)
 -fb_opt fbdata(pass 2) -O3 -TENV:frame_pointer=off
 -LNO:prefetch=1 -OPT:malloc_alg=1 -CG:load_exe=0 -m32

453.povray: -march=barcelona -fb_create fbdata(pass 1)
 -fb_opt fbdata(pass 2) -Ofast

Fortran benchmarks:

410.bwaves: -Mphi(pass 1) -Mpfo(pass 2) -Mipa=jobs:4(pass 2)
 -Mipa=fast(pass 2) -Mipa=inline(pass 2) -fastsse
 -Msmartalloc -Mprefetch=distance:12 -Mprefetch=nta -Mpre
 -Mfprelaxed -tp barcelona-64 -Bstatic_pgi

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Peak Optimization Flags (Continued)

416.gamess: -march=barcelona -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -O2 -OPT:Ofast -OPT:ro=3
-OPT:unroll_size=256

434.zeusmp: basepeak = yes

437.leslie3d: -Mpfi=indirect(pass 1) -Mpfo=indirect(pass 2)
-Mipa=jobs:4(pass 2) -Mipa=fast(pass 2) -Mipa=inline(pass 2)
-fastsse -Mvect=fuse -Msmartalloc=huge:150
-Mprefetch=distance:8 -Mprefetch=t0 -Mfprelaxed
-tp barcelona-64 -Bstatic_pgi

459.GemsFDTD: -march=barcelona -Ofast -LNO:fission=2 -LNO:simd=2
-LNO:prefetch_ahead=1 -CG:load_exe=0

465.tonto: -march=barcelona -Ofast -OPT:alias=no_f90_pointer_alias
-LNO:blocking=off -CG:load_exe=1 -IPA:plimit=525

Benchmarks using both Fortran and C:

435.gromacs: -fastsse -Msmartalloc=huge:150 -Mfprelaxed -Mfpapprox=rsqrt
-Mipa=jobs:4 -Mipa=fast -Mipa=inline -tp barcelona-64
-Bstatic_pgi

436.cactusADM: -march=barcelona -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -Ofast -LNO:blocking=off

454.calculix: -Mpfi=indirect(pass 1) -Mpfo=indirect(pass 2)
-Mipa=jobs:4(pass 2) -Mipa=fast(pass 2) -Mipa=inline(pass 2)
-fastsse -Msmartalloc=huge:150 -Mprefetch=t0 -Mpre
-Mfprelaxed -tp barcelona-64 -Bstatic_pgi

481.wrf: -fastsse -Mvect=noaltcode -Msmartalloc
-Mprefetch=distance:8 -Mfprelaxed -tp barcelona-64
-Bstatic_pgi

The flags file that was used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/fsc-mix-pgi-path.html>

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

<http://www.spec.org/cpu2006/flags/fsc-mix-pgi-path.xml>



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