

SPEC[®] CFP2006 Result

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Dell Inc.

SPECcfp[®]_rate2006 = **NC**

PowerEdge R905, AMD Opteron 8360 SE (2.50 GHz)

SPECcfp_rate_base2006 = **NC**

CPU2006 license: 55

Test dates: Apr-2008

Test sponsor: Dell Inc.

Hardware Availability: Jun-2008

Tested by: Dell Inc.

Software Availability: May-2008

SPEC has determined that this result was not compliant with the SPEC CPU2006 run and reporting rules. Specifically, not all of the benchmark workloads validated, as required in Rule 3.3 "Continuous Run Requirement". In SPEC's opinion, the violation was primarily due to a problem in the SPEC-supplied toolset. A bug in SPEC CPU2006 caused some failures not to be displayed on reports at the time that this result was generated.

The bug is fixed in CPU2006 V1.1.

Hardware

CPU Name: AMD Opteron 8360 SE
CPU Characteristics:
CPU MHz: 2500
FPU: Integrated
CPU(s) enabled: 16 cores, 4 chips, 4 cores/chip
CPU(s) orderable: 2,4 chips
Primary Cache: 64 KB I + 64 KB D on chip per core
Secondary Cache: 512 KB I+D on chip per core
L3 Cache: 2 MB I+D on chip per chip
Other Cache: None
Memory: 32 GB (8x4GB, DDR2-667, CL5, Reg, Dual Rank)
Disk Subsystem: 1x73GB SAS, 10000 RPM
Other Hardware: None

Software

Operating System: SuSE Linux Enterprise Server 10 (x86_64) SP1, Kernel 2.6.16.46-0.12-smp
Compiler: PGI Server Complete Version 7.2 PathScale Compiler Suite Version 3.1
Auto Parallel: No
File System: ReiserFS
System State: Run Level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other Software: None

Errors

Run of 433.mvtc (peak) was not valid; status is VE
Run of 437.jesshd (base) was not valid; status is VE
Run of 482.mhmv (peak) was not valid; status is VE

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Result Table

Benchmark	Base								Peak							
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio		
410.bwaves	16	NC	NC	NC	NC	NC	NC	16	NC	NC	NC	NC	NC	NC		
416.gamess	16	NC	NC	NC	NC	NC	NC	16	NC	NC	NC	NC	NC	NC		
433.milc	16	NC	NC	NC	NC	NC	NC	16	NC	NC	NC	NC	NC	NC		
434.zeusmp	16	NC	NC	NC	NC	NC	NC	16	NC	NC	NC	NC	NC	NC		
435.gromacs	16	NC	NC	NC	NC	NC	NC	16	NC	NC	NC	NC	NC	NC		
436.cactusADM	16	NC	NC	NC	NC	NC	NC	16	NC	NC	NC	NC	NC	NC		
437.leslie3d	16	NC	NC	NC	NC	NC	NC	16	NC	NC	NC	NC	NC	NC		
444.namd	16	NC	NC	NC	NC	NC	NC	16	NC	NC	NC	NC	NC	NC		
447.dealII	16	NC	NC	NC	NC	NC	NC	16	NC	NC	NC	NC	NC	NC		
450.soplex	16	NC	NC	NC	NC	NC	NC	16	NC	NC	NC	NC	NC	NC		
453.povray	16	NC	NC	NC	NC	NC	NC	16	NC	NC	NC	NC	NC	NC		
454.gobmk	16	NC	NC	NC	NC	NC	NC	16	NC	NC	NC	NC	NC	NC		
459.GemsFDTD	16	NC	NC	NC	NC	NC	NC	16	NC	NC	NC	NC	NC	NC		
465.tonto	16	NC	NC	NC	NC	NC	NC	16	NC	NC	NC	NC	NC	NC		
470.lbm	16	NC	NC	NC	NC	NC	NC	16	NC	NC	NC	NC	NC	NC		
481.wrf	16	NC	NC	NC	NC	NC	NC	16	NC	NC	NC	NC	NC	NC		
482.sphinx3	16	NC	NC	NC	NC	NC	NC	16	NC	NC	NC	NC	NC	NC		

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

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Operating System Notes

```
'numactl' was used to bind copies to the cores
Environment variable PGI_HUGE_PAGES set to 150
'ulimit -s unlimited' was used to set environment stack size
'ulimit -l 4915200' was used to set environment locked pages in memory quantity
Set vm/nr_hugepages=2400 in /etc/sysctl.conf
mount -t hugetlbfs nodev /mnt/hugepages
```

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
```

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The bug is fixed in CPU2006 V1.1.

Base Portability Flags (Continued)

```
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.sphinx2: -DSPEC_CPU_LP64
```

Base Optimization Flags

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

C++ benchmarks:
-fast -Mipa=jobs:4 -Mipa=fast -Mipa=inline -Mfprelaxed
-Msmartalloc=huge:150 --zc_eh -tp barcelona-64 -Bstatic_pgi

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

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The bug is fixed in CPU2006 V1.1.

Base Optimization Flags (Continued)

Benchmarks using both Fortran and C:

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

Base Other Flags

C benchmarks:

-w

C++ benchmarks:

-w

Fortran benchmarks:

-w

Benchmarks using both Fortran and C:

Peak Compiler Invocation

C benchmarks (except as noted below):

pathcc

433.milc: pgcc

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Peak Compiler Invocation (Continued)

C++ benchmarks (except as noted below):
pathCC

444.namd: pgcpp

Fortran benchmarks (except as noted below):
pathf95

410.bwaves: pgf95

434.zeusmp: pgf95

Benchmarks using both Fortran and C (except as noted below):
pgfc pgf95

436.cactusADM: pathcc pathf95

481.wm 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

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The bug is fixed in CPU2006 V1.1.

Peak Portability Flags (Continued)

```
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX -fno-second-underscore
482.sphinx3: -DSPEC_CPU_LP64
```

Peak Optimization Flags

C benchmarks:

```
436.mlc: -fasse -Msmartalloc=huge:150 -Msafepr -Mfprelaxed
-Mipa=jobs:4 -Mipa=inline -Mipa=arg -Mipa=const -Mipa=ptr
-Mipa=shape -tp barcelona-64 -Bstatic_pgi
470.lbm: -march=barcelona -Ofast -m3dnow
482.sphinx3: -march=barcelona -Ofast
```

C++ benchmarks:

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

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Peak Optimization Flags (Continued)

447.dealIII: -march=barcelona -Ofast -static -INLINE:aggressive=on
-OPT:malloc_alg=1 -m32 -fno-exceptions

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

453.povray: -march=barcelona -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -Ofast -CG:load_exe=0

Fortran benchmarks:

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

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

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

437.lelie3d: -march=barcelona -Ofast -m3dnow -OPT:unroll_size=256
-CG:load_exe=0 -OPT:malloc_alg=1

459.GemsFDTD: -march=barcelona -Ofast -LNO:fission=2 -LNO:simd=2
-OPT:malloc_alg=1

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Peak Optimization Flags (Continued)

```
465.tonto: -march=barcelona -Ofast -OPT:malloc_alg=1  
-OPT:alias=no_20_pointer_alias -LNO:blocking=off  
-CG:load_exe=1 -IPA:plimit=525
```

Benchmarks using both Fortran and C:

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

```
436.cactusADM: -march=barcelona -fb_create fbdata(pass 1)  
-fb_opt fbdata(pass 2) -Ofast -WOPT:aggstr=0
```

```
454.calculix: -fast -Mfprelaxed -Msmartalloc=huge:150 -Mipa=jobs:4  
-Mipa=fast -Mipa=inline -tp barcelona-64 -Bstatic_pgi
```

```
481.tff: -march=barcelona -Ofast -LNO:blocking=off  
-LNO:prefetch_ahead=10 -OPT:malloc_alg=1 -m3dnow  
-LANG:copyinout=off -IPA:callee_limit=5000
```

Peak Other Flags

C benchmarks:

```
433.milc: -w
```

C++ benchmarks:

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Peak/Other Flags (Continued)

444.namd: -w

Fortran benchmarks:

410.bwaves: -w

434.zeusmp: -w

Benchmarks using both Fortran and

435.gromacs: -w

454.calculix: -w

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

<http://www.spec.org/cpu2006/flags/amd123GH-flags.20090713.html>

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

<http://www.spec.org/cpu2006/flags/amd123GH-flags.20090713.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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