



SPEC[®] CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Dell Inc.

SPECfp[®]_rate2006 = 86.6

PowerEdge R805 (AMD Opteron 2356, 2.30 GHz)

SPECfp_rate_base2006 = 79.2

CPU2006 license: 55

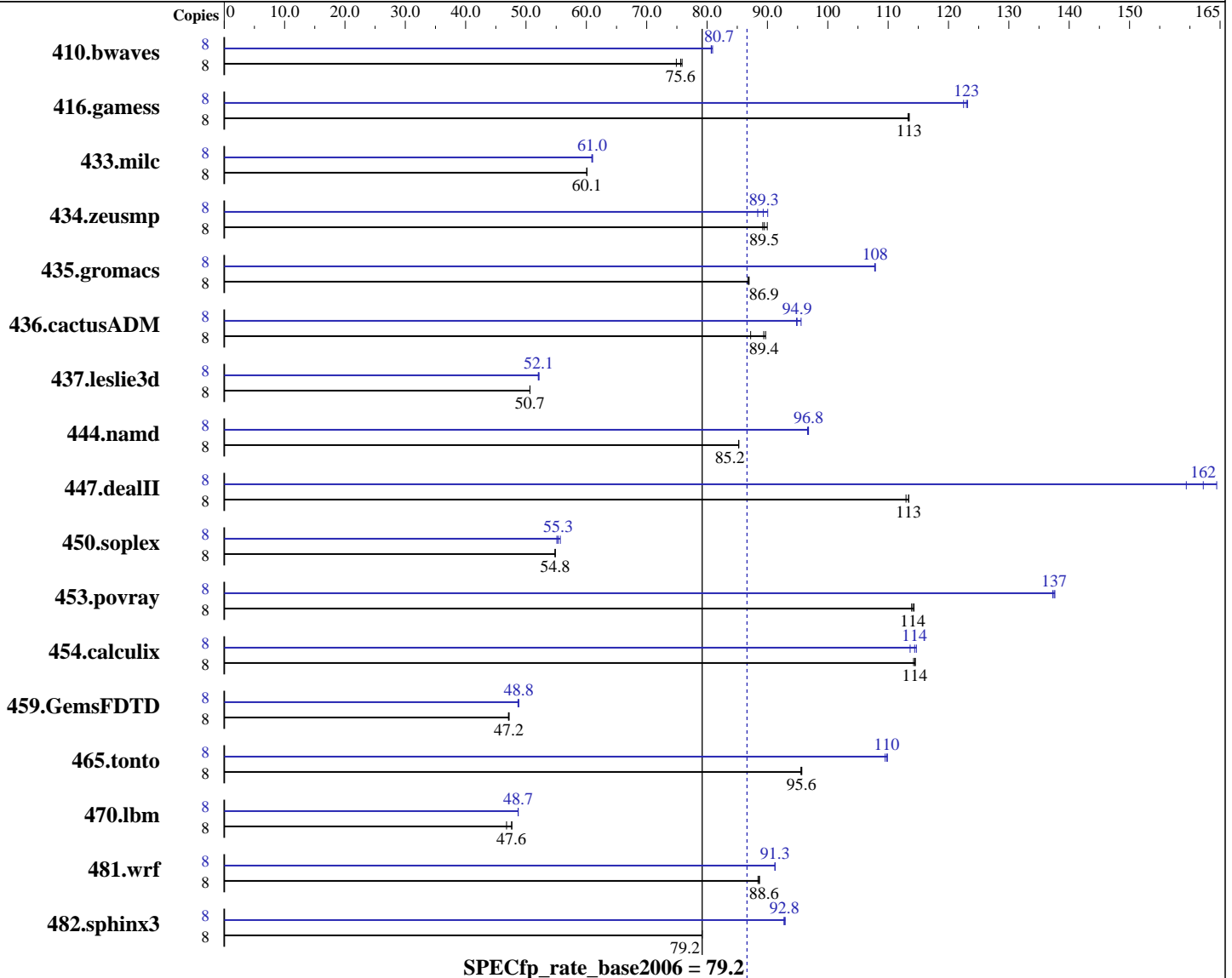
Test date: Mar-2008

Test sponsor: Dell Inc.

Hardware Availability: Apr-2008

Tested by: Dell Inc.

Software Availability: May-2008



Hardware

CPU Name: AMD Opteron 2356
 CPU Characteristics:
 CPU MHz: 2300
 FPU: Integrated
 CPU(s) enabled: 8 cores, 2 chips, 4 cores/chip
 CPU(s) orderable: 2 chips
 Primary Cache: 64 KB I + 64 KB D on chip per core
 Secondary Cache: 512 KB I+D on chip per core

Continued on next page

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

Continued on next page



SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Dell Inc.

SPECfp_rate2006 = 86.6

PowerEdge R805 (AMD Opteron 2356, 2.30 GHz)

SPECfp_rate_base2006 = 79.2

CPU2006 license: 55

Test date: Mar-2008

Test sponsor: Dell Inc.

Hardware Availability: Apr-2008

Tested by: Dell Inc.

Software Availability: May-2008

L3 Cache: 2 MB I+D on chip per chip
Other Cache: None
Memory: 16 GB (8x2GB, DDR2-667, CL5, Reg, Dual Rank)
Disk Subsystem: 1x73GB SAS, 10000 RPM
Other Hardware: None

Other Software: --

Results Table

Benchmark	Base								Peak							
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio		
410.bwaves	8	1451	74.9	1433	75.9	1438	75.6	8	1347	80.7	1344	80.9	1347	80.7		
416.gamess	8	1382	113	1380	113	1380	113	8	1272	123	1274	123	1279	123		
433.milc	8	1222	60.1	1222	60.1	1222	60.1	8	1204	61.0	1204	61.0	1206	60.9		
434.zeusmp	8	816	89.2	809	90.0	813	89.5	8	824	88.4	815	89.3	808	90.0		
435.gromacs	8	657	87.0	659	86.7	657	86.9	8	530	108	529	108	530	108		
436.cactusADM	8	1066	89.7	1069	89.4	1096	87.2	8	1008	94.8	1000	95.6	1007	94.9		
437.leslie3d	8	1484	50.7	1485	50.7	1485	50.7	8	1442	52.2	1444	52.1	1445	52.0		
444.namd	8	753	85.2	753	85.2	752	85.3	8	664	96.6	663	96.8	663	96.8		
447.dealII	8	807	113	810	113	807	113	8	564	162	574	159	557	164		
450.soplex	8	1217	54.8	1217	54.8	1217	54.8	8	1211	55.1	1206	55.3	1198	55.7		
453.povray	8	374	114	372	114	373	114	8	309	138	310	137	310	137		
454.calculix	8	576	115	578	114	577	114	8	581	114	575	115	577	114		
459.GemsFDTD	8	1803	47.1	1800	47.2	1798	47.2	8	1740	48.8	1744	48.7	1740	48.8		
465.tonto	8	823	95.7	824	95.5	823	95.6	8	717	110	716	110	719	110		
470.lbm	8	2350	46.8	2306	47.7	2309	47.6	8	2257	48.7	2257	48.7	2258	48.7		
481.wrf	8	1008	88.7	1008	88.6	1010	88.4	8	979	91.3	979	91.3	979	91.2		
482.sphinx3	8	1969	79.2	1970	79.1	1969	79.2	8	1680	92.8	1681	92.7	1678	92.9		

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 environment stack size
'ulimit -l 2457600' was used to set environment locked pages in memory quantity
Environment variable PGI_HUGE_PAGES set to 150
Set vm/nr_hugepages=1200 in /etc/sysctl.conf
mount -t hugetlbfs nodev /mnt/hugepages
numactl used to bind copies to the cores

Base Compiler Invocation

C benchmarks:
pgcc

Continued on next page



SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Dell Inc.

SPECfp_rate2006 = 86.6

PowerEdge R805 (AMD Opteron 2356, 2.30 GHz)

SPECfp_rate_base2006 = 79.2

CPU2006 license: 55

Test date: Mar-2008

Test sponsor: Dell Inc.

Hardware Availability: Apr-2008

Tested by: Dell Inc.

Software Availability: May-2008

Base Compiler Invocation (Continued)

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:

-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

Benchmarks using both Fortran and C:

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



SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Dell Inc.

SPECfp_rate2006 = 86.6

PowerEdge R805 (AMD Opteron 2356, 2.30 GHz)

SPECfp_rate_base2006 = 79.2

CPU2006 license: 55

Test date: Mar-2008

Test sponsor: Dell Inc.

Hardware Availability: Apr-2008

Tested by: Dell Inc.

Software Availability: May-2008

Base Other Flags

C benchmarks:

-w

C++ benchmarks:

-w

Fortran benchmarks:

-w

Benchmarks using both Fortran and C:

-w

Peak Compiler Invocation

C benchmarks (except as noted below):

pathcc

433.milc: pgcc

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):

pgcc pgf95

436.cactusADM: pathcc pathf95

481.wrf: 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

Continued on next page

Standard Performance Evaluation Corporation

info@spec.org

http://www.spec.org/

Page 4



SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Dell Inc.

SPECfp_rate2006 = 86.6

PowerEdge R805 (AMD Opteron 2356, 2.30 GHz)

SPECfp_rate_base2006 = 79.2

CPU2006 license: 55

Test date: Mar-2008

Test sponsor: Dell Inc.

Hardware Availability: Apr-2008

Tested by: Dell Inc.

Software Availability: May-2008

Peak Portability Flags (Continued)

```

436.cactusADM: -DSPEC_CPU_LP64 -fno-second-underscore
437.leslie3d: -DSPEC_CPU_LP64
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_LINUX -fno-second-underscore
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 -m3dnow

482.sphinx3: -march=barcelona -Ofast

```

C++ benchmarks:

```

444.namd: -Mphi(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

447.dealII: -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: -Mphi(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
-tp barcelona-64 -Bstatic_pgi

```

Continued on next page



SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Dell Inc.

SPECfp_rate2006 = 86.6

PowerEdge R805 (AMD Opteron 2356, 2.30 GHz)

SPECfp_rate_base2006 = 79.2

CPU2006 license: 55

Test date: Mar-2008

Test sponsor: Dell Inc.

Hardware Availability: Apr-2008

Tested by: Dell Inc.

Software Availability: May-2008

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

437.leslie3d: -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

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

Benchmarks using both Fortran and C:

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

481.wrf: -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:

444.namd: -w

Fortran benchmarks:

410.bwaves: -w

Continued on next page



SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Dell Inc.

SPECfp_rate2006 = 86.6

PowerEdge R805 (AMD Opteron 2356, 2.30 GHz)

SPECfp_rate_base2006 = 79.2

CPU2006 license: 55

Test date: Mar-2008

Test sponsor: Dell Inc.

Hardware Availability: Apr-2008

Tested by: Dell Inc.

Software Availability: May-2008

Peak Other Flags (Continued)

434.zeusmp: -w

Benchmarks using both Fortran and C:

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.20090714.00.html>

You can also download the XML flags source by saving the following link:
<http://www.spec.org/cpu2006/flags/amd123GH-flags.20090714.00.xml>

SPEC and SPECfp are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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

Tested with SPEC CPU2006 v1.0.
Report generated on Tue Jul 22 18:07:38 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 7 May 2008.