



SPEC® CFP2006 Result

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Dell Inc.

SPECfp®_rate2006 = 47.5

PowerEdge 2970 (AMD Opteron 2220, 2.80GHz)

SPECfp_rate_base2006 = 46.6

CPU2006 license: 0055

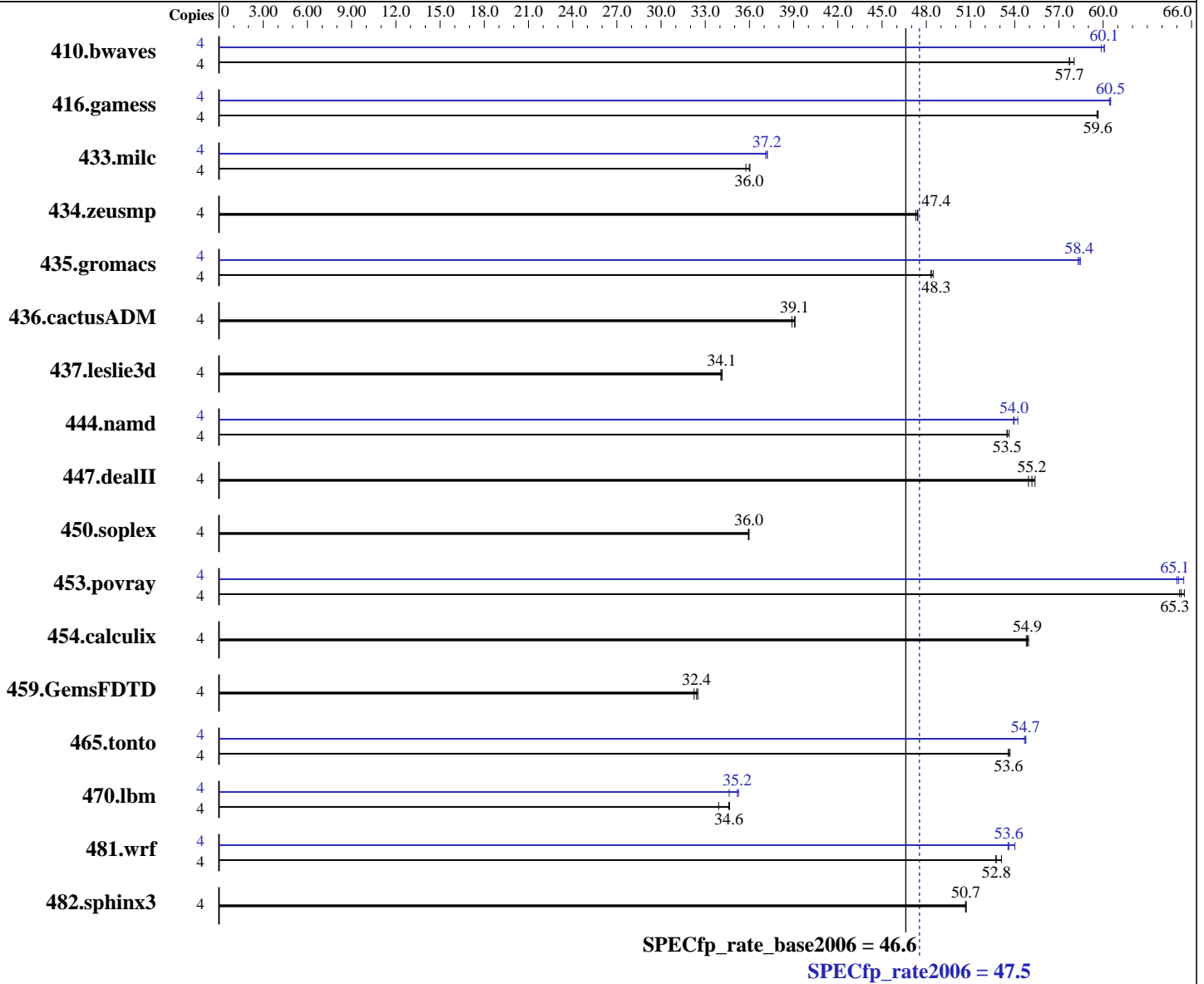
Test date: Sep-2007

Test sponsor: Dell Inc.

Hardware Availability: Apr-2007

Tested by: Dell Inc.

Software Availability: Oct-2007



Hardware

CPU Name: AMD Opteron 2220
 CPU Characteristics: 2800
 CPU MHz: Integrated
 FPU: 4 cores, 2 chips, 2 cores/chip
 CPU(s) enabled: 1,2 chips
 CPU(s) orderable: 64 KB I + 64 KB D on chip per core
 Primary Cache: 1 MB I+D on chip per core
 Secondary Cache:

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Software

Operating System: SuSE Linux Enterprise Server 10 SP1 64-bit kernel
 Compiler: The Portland Group (PGI)
 PGI pgf90 7.1-0 Fortran Compiler
 PGI pgcc 7.1-0 C Compiler
 PGI pgCC 7.1-0 C++ Compiler
 Auto Parallel: No
 File System: ReiserFS
 System State: Multi-user, run level 3

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L3 Cache: None
Other Cache: None
Memory: 16 GB (8x2GB,DDR2-667 CL5 ECC Dual Rank)
Disk Subsystem: 1xSAS, 73 GB, 10k RPM
Other Hardware: None

Base Pointers: 64-bit
Peak Pointers: 64-bit
Other Software: None

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	4	942	57.7	937	58.0	<u>942</u>	<u>57.7</u>	4	908	59.9	905	60.1	<u>905</u>	<u>60.1</u>
416.gamess	4	<u>1313</u>	<u>59.6</u>	1313	59.7	1315	59.6	4	<u>1295</u>	<u>60.5</u>	1296	60.4	1294	60.5
433.milc	4	<u>1020</u>	<u>36.0</u>	1019	36.0	1027	35.8	4	990	37.1	<u>987</u>	<u>37.2</u>	987	37.2
434.zeusmp	4	770	47.3	<u>768</u>	<u>47.4</u>	767	47.4	4	770	47.3	<u>768</u>	<u>47.4</u>	767	47.4
435.gromacs	4	<u>591</u>	<u>48.3</u>	591	48.3	589	48.5	4	490	58.3	<u>489</u>	<u>58.4</u>	489	58.5
436.cactusADM	4	<u>1224</u>	<u>39.1</u>	1223	39.1	1229	38.9	4	<u>1224</u>	<u>39.1</u>	1223	39.1	1229	38.9
437.leslie3d	4	<u>1102</u>	<u>34.1</u>	1101	34.1	1104	34.1	4	<u>1102</u>	<u>34.1</u>	1101	34.1	1104	34.1
444.namd	4	598	53.6	600	53.5	<u>600</u>	<u>53.5</u>	4	592	54.2	<u>594</u>	<u>54.0</u>	595	53.9
447.dealII	4	826	55.4	833	54.9	<u>829</u>	<u>55.2</u>	4	826	55.4	833	54.9	<u>829</u>	<u>55.2</u>
450.soplex	4	929	35.9	<u>928</u>	<u>36.0</u>	928	36.0	4	929	35.9	<u>928</u>	<u>36.0</u>	928	36.0
453.povray	4	<u>326</u>	<u>65.3</u>	325	65.5	326	65.2	4	327	65.0	325	65.5	<u>327</u>	<u>65.1</u>
454.calculix	4	601	54.9	602	54.8	<u>602</u>	<u>54.9</u>	4	601	54.9	602	54.8	<u>602</u>	<u>54.9</u>
459.GemsFDTD	4	1306	32.5	1316	32.2	<u>1309</u>	<u>32.4</u>	4	1306	32.5	1316	32.2	<u>1309</u>	<u>32.4</u>
465.tonto	4	733	53.7	735	53.6	<u>735</u>	<u>53.6</u>	4	720	54.7	<u>719</u>	<u>54.7</u>	719	54.8
470.lbm	4	<u>1588</u>	<u>34.6</u>	1621	33.9	1586	34.7	4	1587	34.6	1559	35.3	<u>1562</u>	<u>35.2</u>
481.wrf	4	847	52.7	841	53.1	<u>847</u>	<u>52.8</u>	4	<u>833</u>	<u>53.6</u>	834	53.5	827	54.0
482.sphinx3	4	1539	50.7	<u>1538</u>	<u>50.7</u>	1537	50.7	4	1539	50.7	<u>1538</u>	<u>50.7</u>	1537	50.7

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

General Notes

```
'ulimit -s unlimited' was used to set environment stack size
'ulimit -l 2457600' was used to set environment locked pages in memory quantity
'numactl' was used to bind one copy per core, and memory to a local NUMA node
Set vm/nr_hugepages=1200 in /etc/sysctl.conf
mount -t hugetlbfs nodev /mnt/hugepages
Environment variable PGI_HUGE_PAGES set to 150
```

Base Compiler Invocation

C benchmarks:
pgcc

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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=fast -Mipa=inline -Mfprelaxed -Msmartalloc=huge:8
-tp k8-64 -Bstatic_pgi

C++ benchmarks:
-fast -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc=huge:8
--zc_eh -tp k8-64 -Bstatic_pgi

Fortran benchmarks:
-fast -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc=huge:8
-tp k8-64 -Bstatic_pgi

Benchmarks using both Fortran and C:
-fast -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc=huge:8
-tp k8-64 -Bstatic_pgi



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Base Other Flags

C benchmarks:

-w

C++ benchmarks:

-w

Fortran benchmarks:

-w

Benchmarks using both Fortran and C:

-w

Peak Compiler Invocation

C benchmarks:

pgcc

C++ benchmarks:

pgcpp

Fortran benchmarks:

pgf95

Benchmarks using both Fortran and C:

pgcc pgf95

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

433.milc: -Mphi(pass 1) -Mipa=fast(pass 2) -Mipa=inline(pass 2)
-Mipa=noarg(pass 2) -Mpfo(pass 2) -fast -O4 -Mdse
-Mfprelaxed -Msmartalloc=huge:8 -tp k8-64 -Bstatic_pgi

470.lbm: -fast -Mfprelaxed -Msmartalloc=huge:8 -Mipa=fast
-Mipa=noarg -tp k8-64 -Bstatic_pgi

482.sphinx3: basepeak = yes

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Peak Optimization Flags (Continued)

C++ benchmarks:

444.namd: -Mpfi(pass 1) -Mpfo(pass 2) -Mipa=fast(pass 2)
-Mipa=inline(pass 2) -fast -O4 -Mfprelaxed
-Msmartalloc=huge:32 --zc_eh -tp k8-64 -Bstatic_pgi

447.dealIII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -fast -Mfprelaxed -Msmartalloc=huge:32 -Mipa=fast
-Mipa=inline --zc_eh -tp k8-64 -Bstatic_pgi

Fortran benchmarks:

410.bwaves: -fast -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc
-tp k8-64 -Bstatic_pgi

416.gamess: -fast -Mipa=fast -Mipa=inline -Mfprelaxed -Mvect=noaltcode
-Msmartalloc=huge:64 -tp k8-64 -Bstatic_pgi

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: basepeak = yes

465.tonto: -fast -Mfprelaxed -Msmartalloc=huge:128 -Mipa=fast
-Mipa=inline -Mvect=noaltcode -tp k8-64 -Bstatic_pgi

Benchmarks using both Fortran and C:

435.gromacs: -fast -O4 -Mipa=fast -Mipa=inline -Mfprelaxed
-Msmartalloc=huge:16 -tp k8-64 -Mfpapprox=rsqrt
-Bstatic_pgi

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: -fast -Mfprelaxed -Msmartalloc=huge:32 -Mvect=noaltcode
-tp k8-64 -Bstatic_pgi

Peak Other Flags

C benchmarks:

-w

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Peak Other Flags (Continued)

C++ benchmarks:

-w

Fortran benchmarks:

-w

Benchmarks using both Fortran and C:

-w

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

http://www.spec.org/cpu2006/flags/pgi710_flags.html

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

http://www.spec.org/cpu2006/flags/pgi710_flags.xml

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Tested with SPEC CPU2006 v1.0.
Report generated on Tue Jul 22 13:57:40 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 2 October 2007.