



SPEC® CFP2006 Result

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Dell Inc.

SPECfp®_rate2006 = 42.7

PowerEdge 2970 (AMD Opteron 2216, 2.40 GHz)

SPECfp_rate_base2006 = 41.9

CPU2006 license: 55

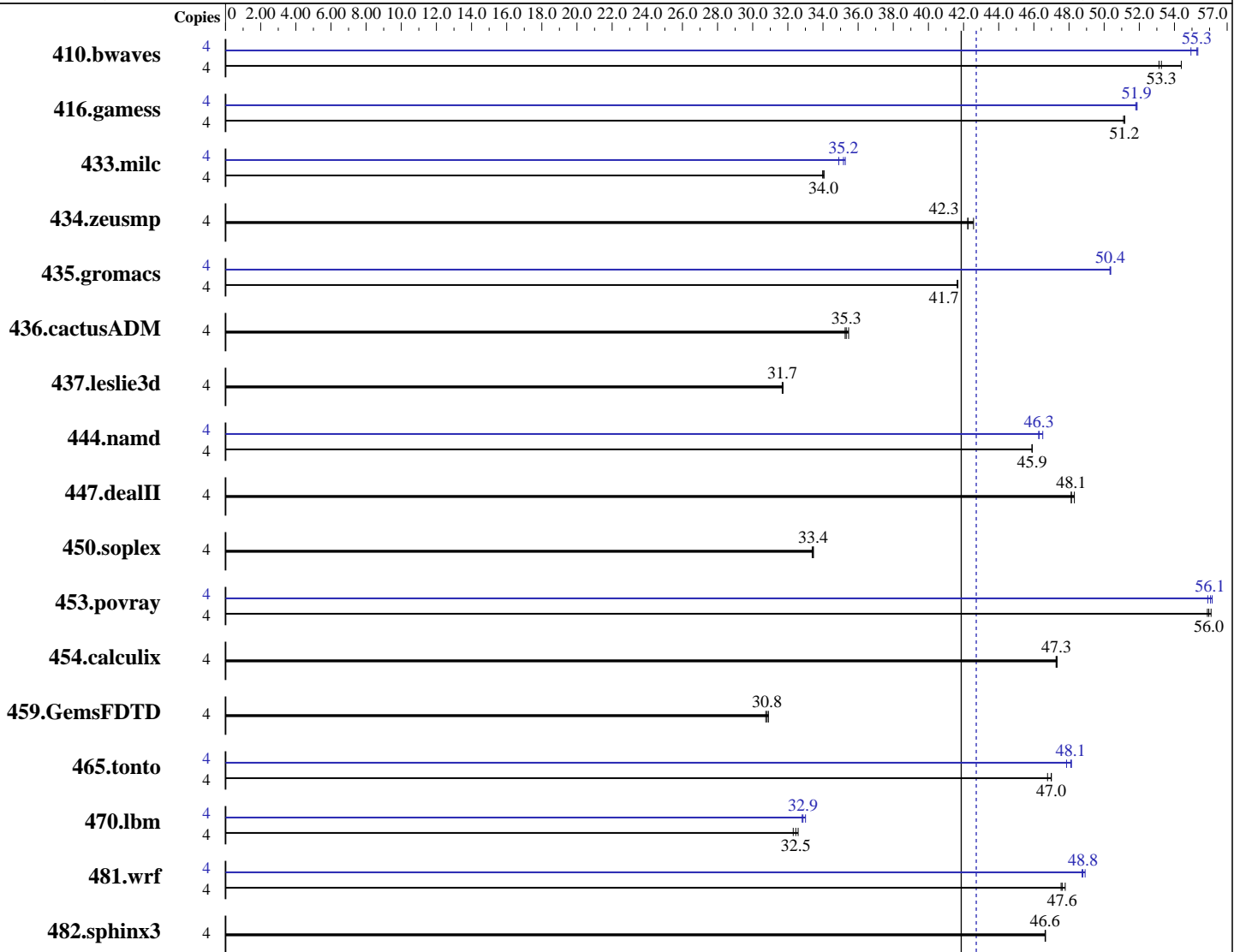
Test date: Oct-2007

Test sponsor: Dell Inc.

Hardware Availability: Apr-2007

Tested by: Dell Inc.

Software Availability: Oct-2007



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Hardware

CPU Name: AMD Opteron 2216
 CPU Characteristics:
 CPU MHz: 2400
 FPU: Integrated
 CPU(s) enabled: 4 cores, 2 chips, 2 cores/chip
 CPU(s) orderable: 1,2 chips
 Primary Cache: 64 KB I + 64 KB D on chip per core
 Secondary Cache: 1 MB I+D on chip per core

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Software

Operating System: 64-Bit SUSE LINUX Enterprise Server 10 SP1
 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: 1 x 73 GB SAS 10k RPM
Other Hardware: None

Base Pointers: 32/64-bit
Peak Pointers: 32/64-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	999	54.4	<u>1021</u>	<u>53.3</u>	1023	53.1	4	989	54.9	982	55.3	<u>983</u>	<u>55.3</u>
416.gamess	4	1530	51.2	1533	51.1	<u>1531</u>	<u>51.2</u>	4	<u>1511</u>	<u>51.9</u>	1510	51.9	1512	51.8
433.milc	4	1081	34.0	<u>1079</u>	<u>34.0</u>	1078	34.1	4	1052	34.9	<u>1044</u>	<u>35.2</u>	1041	35.3
434.zeusmp	4	855	42.6	862	42.2	<u>861</u>	<u>42.3</u>	4	855	42.6	862	42.2	<u>861</u>	<u>42.3</u>
435.gromacs	4	686	41.6	685	41.7	<u>686</u>	<u>41.7</u>	4	567	50.4	<u>567</u>	<u>50.4</u>	567	50.3
436.cactusADM	4	1356	35.3	1348	35.5	<u>1353</u>	<u>35.3</u>	4	1356	35.3	1348	35.5	<u>1353</u>	<u>35.3</u>
437.leslie3d	4	1187	31.7	<u>1186</u>	<u>31.7</u>	1185	31.7	4	1187	31.7	<u>1186</u>	<u>31.7</u>	1185	31.7
444.namd	4	<u>699</u>	<u>45.9</u>	699	45.9	699	45.9	4	<u>693</u>	<u>46.3</u>	690	46.5	693	46.3
447.dealII	4	<u>951</u>	<u>48.1</u>	947	48.3	951	48.1	4	<u>951</u>	<u>48.1</u>	947	48.3	951	48.1
450.soplex	4	999	33.4	<u>998</u>	<u>33.4</u>	997	33.5	4	999	33.4	<u>998</u>	<u>33.4</u>	997	33.5
453.povray	4	379	56.1	381	55.9	<u>380</u>	<u>56.0</u>	4	381	55.9	379	56.2	<u>380</u>	<u>56.1</u>
454.calculix	4	697	47.3	698	47.3	<u>698</u>	<u>47.3</u>	4	697	47.3	698	47.3	<u>698</u>	<u>47.3</u>
459.GemsFDTD	4	1374	30.9	1380	30.7	<u>1377</u>	<u>30.8</u>	4	1374	30.9	1380	30.7	<u>1377</u>	<u>30.8</u>
465.tonto	4	<u>838</u>	<u>47.0</u>	838	47.0	841	46.8	4	<u>818</u>	<u>48.1</u>	818	48.1	822	47.9
470.lbm	4	1701	32.3	<u>1694</u>	<u>32.5</u>	1687	32.6	4	1665	33.0	<u>1672</u>	<u>32.9</u>	1675	32.8
481.wrf	4	935	47.8	940	47.5	<u>938</u>	<u>47.6</u>	4	917	48.7	<u>916</u>	<u>48.8</u>	913	48.9
482.sphinx3	4	1671	46.6	1671	46.7	<u>1671</u>	<u>46.6</u>	4	1671	46.6	1671	46.7	<u>1671</u>	<u>46.6</u>

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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