



SPEC[®] CFP2006 Result

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Dell Inc.

SPECfp[®]_rate2006 = 29.8

PowerEdge 2970 (AMD Opteron 2214, 2.20 GHz)

SPECfp_rate_base2006 = 29.3

CPU2006 license: 55

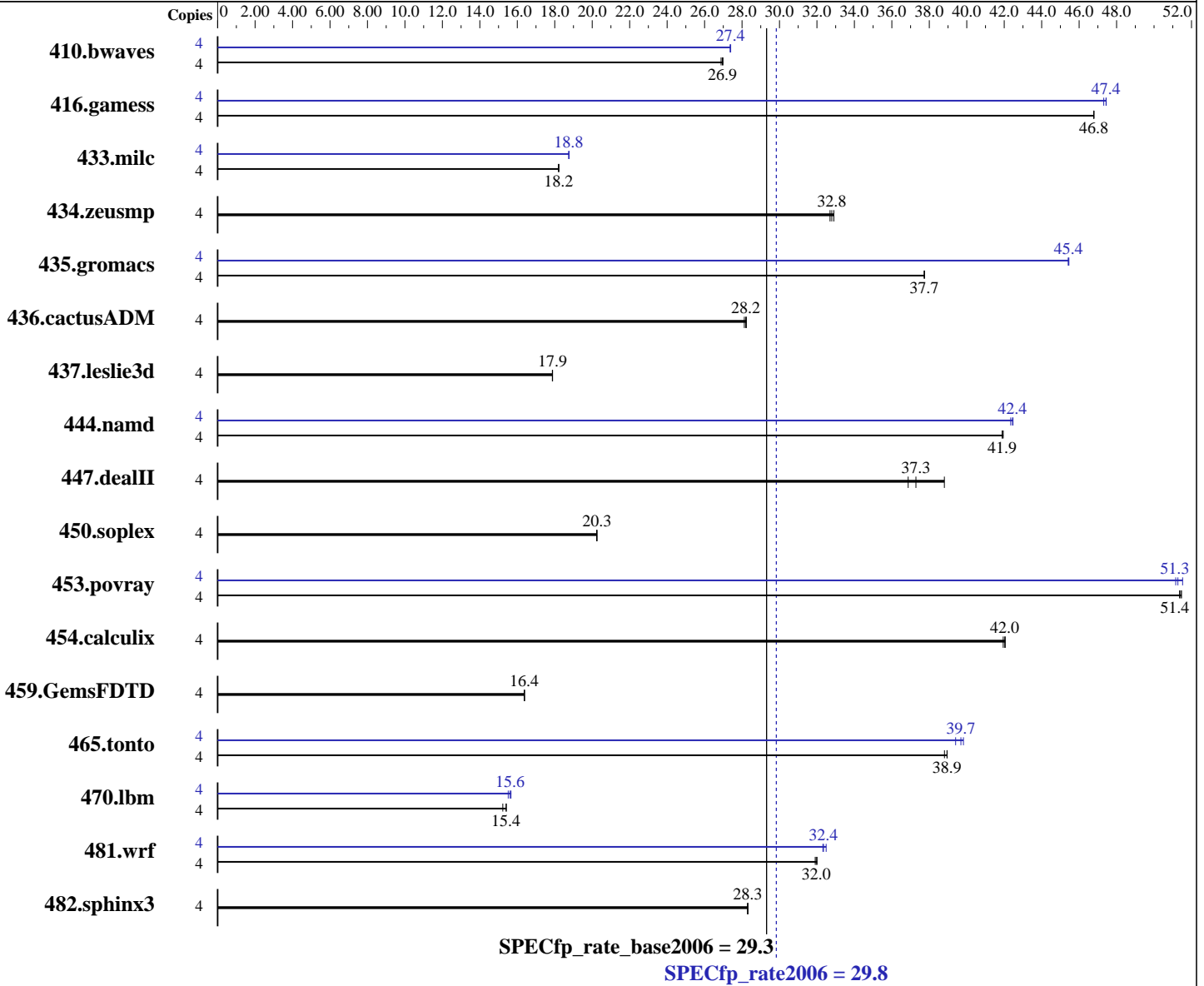
Test date: Nov-2007

Test sponsor: Dell Inc.

Hardware Availability: Sep-2007

Tested by: Dell Inc.

Software Availability: Oct-2007



Hardware

CPU Name: AMD Opteron 2214
 CPU Characteristics: 2200
 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 (x86_64) SP1, Kernel 2.6.16.46-0.12-smp
 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: 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	<u>2017</u>	<u>26.9</u>	2022	26.9	2014	27.0	4	1986	27.4	1984	27.4	<u>1985</u>	<u>27.4</u>
416.gamess	4	1674	46.8	1674	46.8	<u>1674</u>	<u>46.8</u>	4	1655	47.3	1651	47.4	<u>1651</u>	<u>47.4</u>
433.milc	4	2018	18.2	2015	18.2	<u>2017</u>	<u>18.2</u>	4	1959	18.7	1956	18.8	<u>1958</u>	<u>18.8</u>
434.zeusmp	4	1113	32.7	1106	32.9	<u>1110</u>	<u>32.8</u>	4	1113	32.7	1106	32.9	<u>1110</u>	<u>32.8</u>
435.gromacs	4	<u>757</u>	<u>37.7</u>	757	37.7	757	37.7	4	629	45.4	<u>629</u>	<u>45.4</u>	628	45.5
436.cactusADM	4	1693	28.2	1700	28.1	<u>1695</u>	<u>28.2</u>	4	1693	28.2	1700	28.1	<u>1695</u>	<u>28.2</u>
437.leslie3d	4	2103	17.9	<u>2103</u>	<u>17.9</u>	2104	17.9	4	2103	17.9	<u>2103</u>	<u>17.9</u>	2104	17.9
444.namd	4	766	41.9	765	41.9	<u>766</u>	<u>41.9</u>	4	<u>756</u>	<u>42.4</u>	758	42.3	755	42.5
447.dealII	4	<u>1227</u>	<u>37.3</u>	1179	38.8	1241	36.9	4	<u>1227</u>	<u>37.3</u>	1179	38.8	1241	36.9
450.soplex	4	1648	20.2	1647	20.3	<u>1647</u>	<u>20.3</u>	4	1648	20.2	1647	20.3	<u>1647</u>	<u>20.3</u>
453.povray	4	413	51.5	<u>414</u>	<u>51.4</u>	414	51.4	4	413	51.5	416	51.2	<u>415</u>	<u>51.3</u>
454.calculix	4	785	42.1	<u>785</u>	<u>42.0</u>	787	41.9	4	785	42.1	<u>785</u>	<u>42.0</u>	787	41.9
459.GemsFDTD	4	<u>2591</u>	<u>16.4</u>	2591	16.4	2590	16.4	4	<u>2591</u>	<u>16.4</u>	2591	16.4	2590	16.4
465.tonto	4	1011	39.0	<u>1011</u>	<u>38.9</u>	1014	38.8	4	999	39.4	<u>992</u>	<u>39.7</u>	988	39.8
470.lbm	4	3610	15.2	3565	15.4	<u>3569</u>	<u>15.4</u>	4	<u>3520</u>	<u>15.6</u>	3508	15.7	3542	15.5
481.wrf	4	1396	32.0	1400	31.9	<u>1398</u>	<u>32.0</u>	4	1375	32.5	<u>1381</u>	<u>32.4</u>	1383	32.3
482.sphinx3	4	2753	28.3	2755	28.3	<u>2755</u>	<u>28.3</u>	4	2753	28.3	2755	28.3	<u>2755</u>	<u>28.3</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.20090714.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/pgi710_flags.20090714.xml

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For other inquiries, please contact webmaster@spec.org.

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