



SPEC[®] CFP2006 Result

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Dell Inc.

SPECfp[®]_rate2006 = 32.6

PowerEdge 2970 (AMD Opteron 2218, 2.60 GHz)

SPECfp_rate_base2006 = 32.0

CPU2006 license: 55

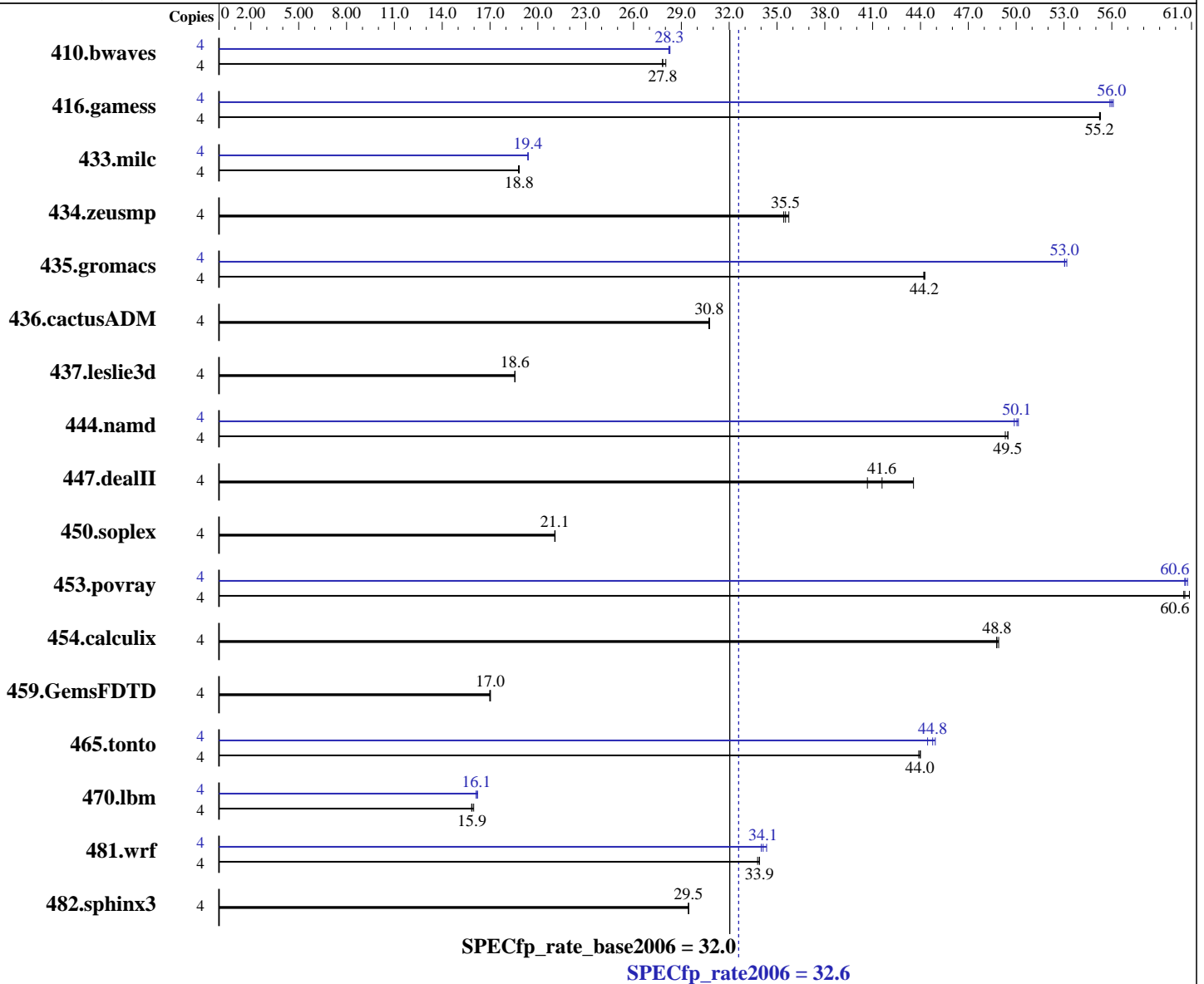
Test date: Nov-2007

Test sponsor: Dell Inc.

Hardware Availability: Sep-2007

Tested by: Dell Inc.

Software Availability: Oct-2007



Hardware

CPU Name: AMD Opteron 2218
 CPU Characteristics: 2600
 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 | 1940 | 28.0 | <u>1953</u> | <u>27.8</u> | 1954 | 27.8 | 4 | <u>1924</u> | <u>28.3</u> | 1922 | 28.3 | 1926 | 28.2 |
| 416.gamess | 4 | 1418 | 55.2 | 1416 | 55.3 | <u>1418</u> | <u>55.2</u> | 4 | 1401 | 55.9 | 1396 | 56.1 | <u>1399</u> | <u>56.0</u> |
| 433.milc | 4 | 1955 | 18.8 | <u>1951</u> | <u>18.8</u> | 1949 | 18.8 | 4 | 1894 | 19.4 | <u>1894</u> | <u>19.4</u> | 1895 | 19.4 |
| 434.zeusmp | 4 | 1018 | 35.7 | <u>1024</u> | <u>35.5</u> | 1028 | 35.4 | 4 | 1018 | 35.7 | <u>1024</u> | <u>35.5</u> | 1028 | 35.4 |
| 435.gromacs | 4 | 645 | 44.3 | 646 | 44.2 | <u>646</u> | <u>44.2</u> | 4 | 537 | 53.2 | <u>538</u> | <u>53.0</u> | 538 | 53.0 |
| 436.cactusADM | 4 | 1554 | 30.8 | <u>1554</u> | <u>30.8</u> | 1556 | 30.7 | 4 | 1554 | 30.8 | <u>1554</u> | <u>30.8</u> | 1556 | 30.7 |
| 437.leslie3d | 4 | <u>2025</u> | <u>18.6</u> | 2025 | 18.6 | 2027 | 18.6 | 4 | <u>2025</u> | <u>18.6</u> | 2025 | 18.6 | 2027 | 18.6 |
| 444.namd | 4 | 648 | 49.5 | <u>648</u> | <u>49.5</u> | 650 | 49.3 | 4 | <u>641</u> | <u>50.1</u> | 640 | 50.1 | 643 | 49.9 |
| 447.dealII | 4 | 1050 | 43.6 | <u>1100</u> | <u>41.6</u> | 1125 | 40.7 | 4 | 1050 | 43.6 | <u>1100</u> | <u>41.6</u> | 1125 | 40.7 |
| 450.soplex | 4 | <u>1583</u> | <u>21.1</u> | 1582 | 21.1 | 1584 | 21.1 | 4 | <u>1583</u> | <u>21.1</u> | 1582 | 21.1 | 1584 | 21.1 |
| 453.povray | 4 | 352 | 60.5 | <u>351</u> | <u>60.6</u> | 350 | 60.9 | 4 | 351 | 60.6 | <u>351</u> | <u>60.6</u> | 350 | 60.8 |
| 454.calculix | 4 | 676 | 48.8 | 675 | 48.9 | <u>676</u> | <u>48.8</u> | 4 | 676 | 48.8 | 675 | 48.9 | <u>676</u> | <u>48.8</u> |
| 459.GemsFDTD | 4 | 2499 | 17.0 | 2493 | 17.0 | <u>2494</u> | <u>17.0</u> | 4 | 2499 | 17.0 | 2493 | 17.0 | <u>2494</u> | <u>17.0</u> |
| 465.tonto | 4 | 895 | 44.0 | 897 | 43.9 | <u>895</u> | <u>44.0</u> | 4 | 886 | 44.4 | <u>879</u> | <u>44.8</u> | 876 | 44.9 |
| 470.lbm | 4 | <u>3462</u> | <u>15.9</u> | 3468 | 15.8 | 3440 | 16.0 | 4 | <u>3405</u> | <u>16.1</u> | 3388 | 16.2 | 3405 | 16.1 |
| 481.wrf | 4 | 1318 | 33.9 | <u>1318</u> | <u>33.9</u> | 1323 | 33.8 | 4 | <u>1309</u> | <u>34.1</u> | 1314 | 34.0 | 1301 | 34.3 |
| 482.sphinx3 | 4 | 2647 | 29.5 | 2647 | 29.5 | <u>2647</u> | <u>29.5</u> | 4 | 2647 | 29.5 | 2647 | 29.5 | <u>2647</u> | <u>29.5</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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