



SPEC[®] CFP2006 Result

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Dell Inc.

SPECfp[®]_rate2006 = 50.7

PowerEdge 2970 (AMD Opteron 2222 SE, 3.00 GHz)

SPECfp_rate_base2006 = 49.7

CPU2006 license: 55

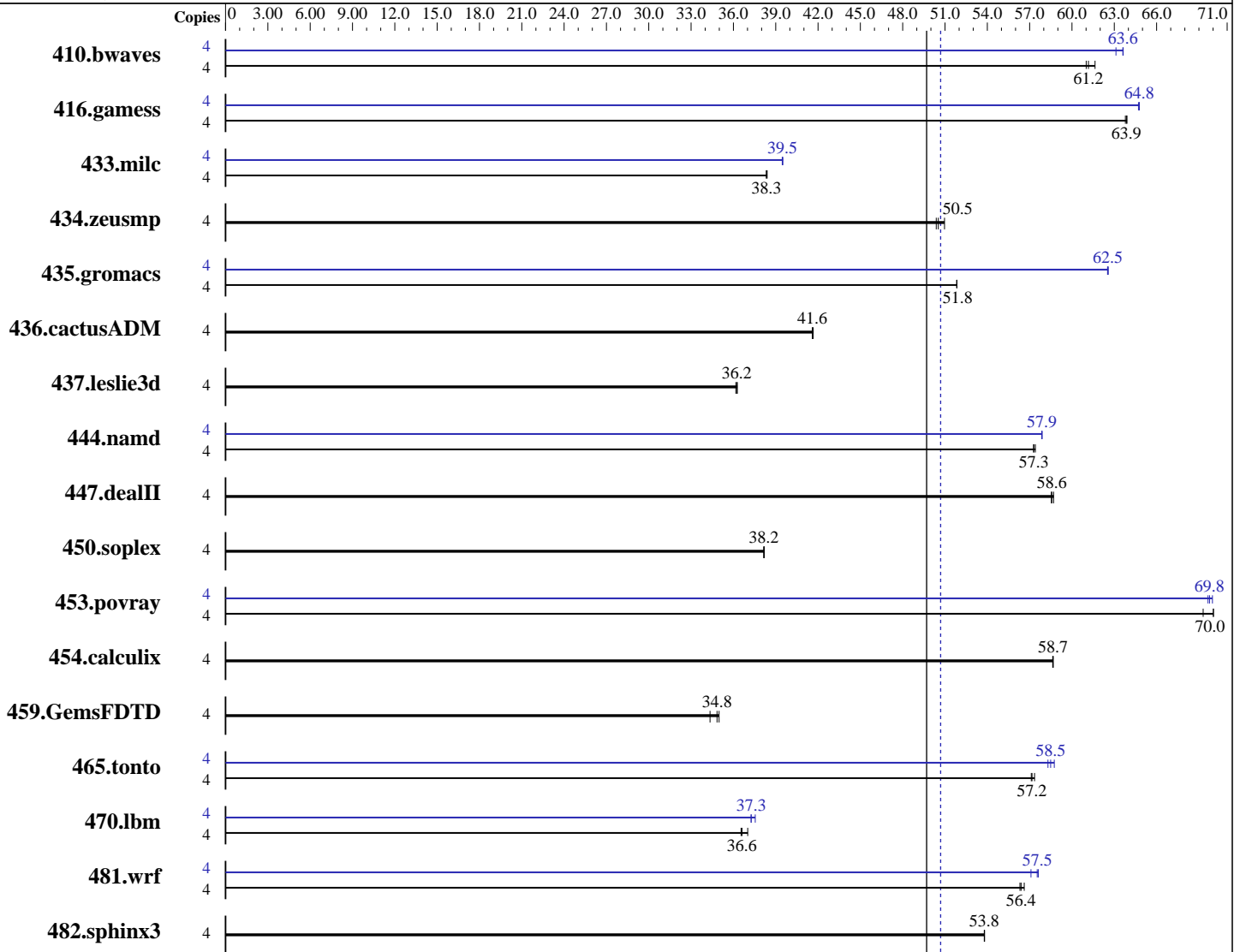
Test sponsor: Dell Inc.

Tested by: Dell Inc.

Test date: Sep-2007

Hardware Availability: Apr-2007

Software Availability: Oct-2007



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Hardware

CPU Name: AMD Opteron 2222 SE
 CPU Characteristics:
 CPU MHz: 3000
 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
 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: 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 | 882 | 61.6 | 889 | 61.2 | 891 | 61.0 | 4 | 861 | 63.1 | 855 | 63.6 | 854 | 63.6 |
| 416.gamess | 4 | 1226 | 63.9 | 1228 | 63.8 | 1226 | 63.9 | 4 | 1210 | 64.7 | 1209 | 64.8 | 1209 | 64.8 |
| 433.milc | 4 | 958 | 38.3 | 956 | 38.4 | 958 | 38.3 | 4 | 929 | 39.5 | 930 | 39.5 | 930 | 39.5 |
| 434.zeusmp | 4 | 714 | 51.0 | 723 | 50.4 | 720 | 50.5 | 4 | 714 | 51.0 | 723 | 50.4 | 720 | 50.5 |
| 435.gromacs | 4 | 551 | 51.8 | 551 | 51.8 | 551 | 51.8 | 4 | 457 | 62.5 | 456 | 62.6 | 457 | 62.5 |
| 436.cactusADM | 4 | 1149 | 41.6 | 1149 | 41.6 | 1147 | 41.7 | 4 | 1149 | 41.6 | 1149 | 41.6 | 1147 | 41.7 |
| 437.leslie3d | 4 | 1039 | 36.2 | 1036 | 36.3 | 1038 | 36.2 | 4 | 1039 | 36.2 | 1036 | 36.3 | 1038 | 36.2 |
| 444.namd | 4 | 560 | 57.3 | 560 | 57.3 | 559 | 57.4 | 4 | 554 | 57.9 | 554 | 57.9 | 554 | 57.9 |
| 447.dealII | 4 | 782 | 58.5 | 780 | 58.7 | 781 | 58.6 | 4 | 782 | 58.5 | 780 | 58.7 | 781 | 58.6 |
| 450.soplex | 4 | 874 | 38.2 | 874 | 38.2 | 874 | 38.2 | 4 | 874 | 38.2 | 874 | 38.2 | 874 | 38.2 |
| 453.povray | 4 | 304 | 70.0 | 307 | 69.3 | 304 | 70.0 | 4 | 306 | 69.6 | 305 | 69.8 | 304 | 70.0 |
| 454.calculix | 4 | 563 | 58.7 | 562 | 58.7 | 563 | 58.6 | 4 | 563 | 58.7 | 562 | 58.7 | 563 | 58.6 |
| 459.GemsFDTD | 4 | 1236 | 34.3 | 1218 | 34.8 | 1213 | 35.0 | 4 | 1236 | 34.3 | 1218 | 34.8 | 1213 | 35.0 |
| 465.tonto | 4 | 688 | 57.2 | 686 | 57.3 | 689 | 57.1 | 4 | 670 | 58.7 | 675 | 58.3 | 673 | 58.5 |
| 470.lbm | 4 | 1501 | 36.6 | 1504 | 36.5 | 1485 | 37.0 | 4 | 1475 | 37.3 | 1475 | 37.3 | 1464 | 37.5 |
| 481.wrf | 4 | 789 | 56.6 | 792 | 56.4 | 793 | 56.3 | 4 | 783 | 57.1 | 775 | 57.6 | 777 | 57.5 |
| 482.sphinx3 | 4 | 1450 | 53.8 | 1449 | 53.8 | 1449 | 53.8 | 4 | 1450 | 53.8 | 1449 | 53.8 | 1449 | 53.8 |

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

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