# SPEC® CFP2006 Result

Dell Inc.

PowerEdge 2970 (AMD Opteron 2218, 2.60 GHz)

**SPECfp®_rate2006 = 32.6**  
**SPECfp_rate_base2006 = 32.0**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Rate</th>
<th>SPECfp_rate_base2006</th>
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<tbody>
<tr>
<td>410.bwaves</td>
<td>4</td>
<td>28.5</td>
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<tr>
<td>416.gamess</td>
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<tr>
<td>433.milc</td>
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<td>435.gromacs</td>
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<td>436.cactusADM</td>
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<td>437.leslie3d</td>
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<td>444.namd</td>
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<td>450.soplex</td>
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<td>481.wrf</td>
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<tr>
<td>482.sphinx3</td>
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</table>

**Hardware**

- **CPU Name:** AMD Opteron 2218  
- **CPU Characteristics:**  
  - CPU MHz: 2600  
  - 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  

**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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SPEC CFP2006 Result

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SPECfp_rate_base2006 = 32.0

CPU2006 license: 55
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Tested by: Dell Inc.
Test date: Nov-2007
Hardware Availability: Sep-2007
Software Availability: Oct-2007

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

<table>
<thead>
<tr>
<th>Benchmark</th>
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<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
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<td>2647</td>
<td>29.5</td>
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</tbody>
</table>

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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info@spec.org
http://www.spec.org/
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Base Compiler Invocation (Continued)

C++ benchmarks:
pgc++

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.leshe3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
447.dealII: -DSPEC_CPU_LP64
450.soplex: -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64 -Mnomain
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
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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: -Mfpi(pass 1) -Mipa=fast(pass 2) -Mipa=inline(pass 2)
-Mipa=noarg(pass 2) -Mpio(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.dealII: 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


Benchmarks using both Fortran and C:

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

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

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