Dell Inc.  
PowerEdge 6950 (AMD Opteron 8214, 2.20 GHz)

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CPU2006 license: 55  
Test sponsor: Dell Inc.  
Tested by: Dell Inc.  
Test date: Oct-2007  
Hardware Availability: Dec-2006  
Software Availability: Oct-2007

<table>
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<tr>
<th>Benchmark</th>
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<tr>
<td>482.sphinx3</td>
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</tbody>
</table>

Hardware

- CPU Name: AMD Opteron 8214
- CPU Characteristics:
  - CPU MHz: 2200
  - FPU: Integrated
  - CPU(s) enabled: 8 cores, 4 chips, 2 cores/chip
  - CPU(s) orderable: 2,4 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: 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
Dell Inc.

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SPEC CFP2006 Result

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SPECfp_rate2006 = 77.3

SPECfp_rate_base2006 = 76.0

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L3 Cache: None
Other Cache: None
Memory: 32 GB (16x2GB, DDR2-667 CL5 ECC Dual Rank)
Disk Subsystem: 1 x 250 GB SATA 7200 RPM
Other Hardware: None

Base Pointers: 32/64-bit
Peak Pointers: 32/64-bit
Other Software: None

Results Table

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<tr>
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</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

Continued on next page
Dell Inc.

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**SPEC CFP2006 Result**

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**CPU2006 license:** 55

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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
- 436.cactusADM: -DSPEC_CPU_LP64
- 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
- 454.calculix: -DSPEC_CPU_LP64
- 459.GemsFDTD: -DSPEC_CPU_LP64
- 465.tonto: -DSPEC_CPU_LP64
- 470.lbm: -DSPEC_CPU_LP64
- 481.wrf: -DSPEC_CPU_LP64
- 482.sphinx3: -DSPEC_CPU_LP64
- -DSPEC_CPU_CASE_FLAG
- -DSPEC_CPU_LINUX

---

**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: -Mfpi(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

Continued on next page
Dell Inc.

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Peak Optimization Flags (Continued)

C++ benchmarks:

444.namd: -Mpfif(pass 1) -Mfpo(pass 2) -Mipa=fast(pass 2)
-Mipa=inline(pass 2) -fast -O4 -Mfprelaxed
-Msmartalloc=<=:32 --zc_eh -tp k8-64 -Bstatic_pgi

447.dealII: basepeak = yes
450.soplex: basepeak = yes
453.povray: -fast -Mfprelaxed -Msmartalloc=<=: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=<=:64 -tp k8-64 -Bstatic_pgi
434.zeusmp: basepeak = yes
437.leslie3d: basepeak = yes
459.GemsFDTD: basepeak = yes
-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=<=:16 -tp k8-64 -Mfpapprox=rsqrt
-Bstatic_pgi
436.cactusADM: basepeak = yes
454.calculix: basepeak = yes
481.wrf: -fast -Mfprelaxed -Msmartalloc=<=: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.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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Tested with SPEC CPU2006 v1.0.
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