**SPEC® CFP2006 Result**

**Dell Inc.**

PowerEdge 2970 (AMD Opteron 2216, 2.40 GHz)

<table>
<thead>
<tr>
<th>SPECfp®_rate2006</th>
<th>42.7</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECfp_rate_base2006</td>
<td>41.9</td>
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**CPU2006 license:** 55  
**Test date:** Oct-2007  
**Hardware Availability:** Apr-2007  
**Test sponsor:** Dell Inc.  
**Software Availability:** Oct-2007  
**Tested by:** Dell Inc.

<table>
<thead>
<tr>
<th>SPECfp</th>
<th>Rate Base</th>
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<td>408.bwaves</td>
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<td>35.3</td>
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<td>414.leslie3d</td>
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<td>424.sphinx3</td>
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</table>

**Hardware**

- **CPU Name:** AMD Opteron 2216
- **Operating System:** 64-Bit SUSE LINUX Enterprise Server 10 SP1
- **Compiler:** The Portland Group (PGI)

<table>
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</tbody>
</table>

**Software**

- **Auto Parallel:** No
- **File System:** ReiserFS
- **System State:** Multi-user, run level 3
Dell Inc.  
Dell Inc.
PowerEdge 2970 (AMD Opteron 2216, 2.40 GHz)

SPEC CFP2006 Result

SPECfp_rate2006 = 42.7
SPECfp_rate_base2006 = 41.9

CPU2006 license: 55
Test sponsor: Dell Inc.
Tested by: Dell Inc.

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

Result Table

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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

Continued on next page
SPEC CFP2006 Result

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| SPECfp_rate2006 = | 42.7 |
| SPECfp_rate_base2006 = | 41.9 |

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

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.mlcs: -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
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
Dell Inc.  
PowerEdge 2970 (AMD Opteron 2216, 2.40 GHz)  

SPECfp_rate2006 = **42.7**  
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- **CPU2006 license:** 55  
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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:  
  - `-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`
Dell Inc. PowerEdge 2970 (AMD Opteron 2216, 2.40 GHz)

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**SPECfp_rate2006 = 42.7**

**SPECfp_rate_base2006 = 41.9**

### Peak Optimization Flags (Continued)

**C++ benchmarks:**

```
444.namd: -Mpfi(pass 1) -Mpfo(pass 2) -Mipa=fast(pass 2) -Mipa=inline(pass 2) -fast -04 -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 -04 -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
```

Continued on next page
Dell Inc.  
PowerEdge 2970 (AMD Opteron 2216, 2.40 GHz)  

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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.

Tested with SPEC CPU2006 v1.0.
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