# SPEC® CFP2006 Result



## Dell Inc.

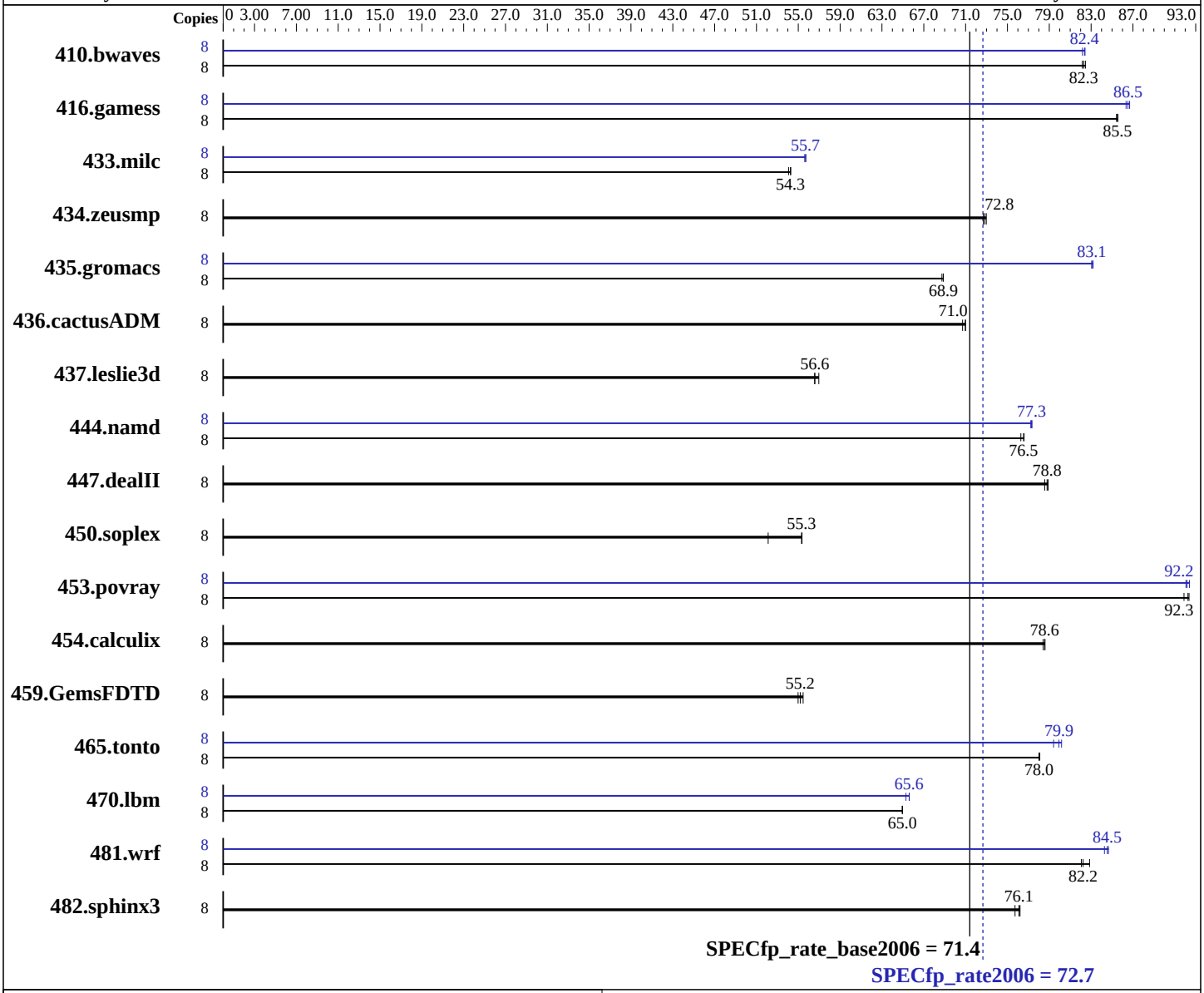
PowerEdge 6950 (AMD Opteron 8212, 2.00 GHz)

SPECfp®_rate2006 = 72.7

SPECfp_rate_base2006 = 71.4

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

**Test date:** Oct-2007
**Hardware Availability:** Dec-2006
**Software Availability:** Oct-2007




## Hardware

| | |
|---|---|
| CPU Name: | AMD Opteron 8212 |
| CPU Characteristics: | |
| CPU MHz: | 2000 |
| 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 |

Continued on next page

## Software

| | |
|---|---|
| Operating System: | SUSE Linux Enterprise Server 10 (x86_64) SP1, Kernel 2.6.16.46-0.12-smp |
| Compiler: | The Portland Group (PGI)<br>PGI pgf90 7.1-0 Fortran Compiler<br>PGI pgcc 7.1-0 C Compiler<br>PGI pgCC 7.1-0 C++ Compiler |
| Auto Parallel: | No |
| File System: | ReiserFS |
| System State: | Multi-user, run level 3 |

Continued on next page

# SPEC CFP2006 Result



## Dell Inc.

PowerEdge 6950 (AMD Opteron 8212, 2.00 GHz)

SPECfp_rate2006 = 72.7

SPECfp_rate_base2006 = 71.4

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

**Test date:** Oct-2007
**Hardware Availability:** Dec-2006
**Software Availability:** Oct-2007

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: 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 | 8 | 1319 | 82.5 | 1323 | 82.2 | **1321** | **82.3** | 8 | 1323 | 82.2 | **1320** | **82.4** | 1319 | 82.4 |
| 416.gamess | 8 | 1831 | 85.6 | 1834 | 85.4 | **1832** | **85.5** | 8 | 1807 | 86.7 | **1810** | **86.5** | 1814 | 86.3 |
| 433.milc | 8 | **1354** | **54.3** | 1358 | 54.1 | 1353 | 54.3 | 8 | 1318 | 55.7 | 1321 | 55.6 | **1319** | **55.7** |
| 434.zeusmp | 8 | **1000** | **72.8** | 1001 | 72.7 | 998 | 73.0 | 8 | **1000** | **72.8** | 1001 | 72.7 | 998 | 73.0 |
| 435.gromacs | 8 | 831 | 68.7 | 829 | 68.9 | **829** | **68.9** | 8 | 687 | 83.2 | **688** | **83.1** | 688 | 83.1 |
| 436.cactusADM | 8 | 1347 | 71.0 | 1352 | 70.7 | **1347** | **71.0** | 8 | 1347 | 71.0 | 1352 | 70.7 | **1347** | **71.0** |
| 437.leslie3d | 8 | 1320 | 57.0 | **1329** | **56.6** | 1330 | 56.6 | 8 | 1320 | 57.0 | **1329** | **56.6** | 1330 | 56.6 |
| 444.namd | 8 | 841 | 76.3 | 838 | 76.6 | **838** | **76.5** | 8 | **830** | **77.3** | 831 | 77.2 | 829 | 77.3 |
| 447.dealII | 8 | 1160 | 78.9 | **1162** | **78.8** | 1165 | 78.6 | 8 | 1160 | 78.9 | **1162** | **78.8** | 1165 | 78.6 |
| 450.soplex | 8 | 1280 | 52.1 | **1206** | **55.3** | 1205 | 55.4 | 8 | 1280 | 52.1 | **1206** | **55.3** | 1205 | 55.4 |
| 453.povray | 8 | 461 | 92.4 | 463 | 91.9 | **461** | **92.3** | 8 | 462 | 92.1 | 461 | 92.4 | **462** | **92.2** |
| 454.calculix | 8 | 842 | 78.4 | 840 | 78.6 | **840** | **78.6** | 8 | 842 | 78.4 | 840 | 78.6 | **840** | **78.6** |
| 459.GemsFDTD | 8 | 1544 | 55.0 | **1538** | **55.2** | 1530 | 55.5 | 8 | 1544 | 55.0 | **1538** | **55.2** | 1530 | 55.5 |
| 465.tonto | 8 | 1009 | 78.0 | 1008 | 78.1 | **1009** | **78.0** | 8 | 982 | 80.2 | 991 | 79.4 | **985** | **79.9** |
| 470.lbm | 8 | 1692 | 65.0 | 1693 | 64.9 | **1692** | **65.0** | 8 | 1675 | 65.6 | **1676** | **65.6** | 1683 | 65.3 |
| 481.wrf | 8 | **1087** | **82.2** | 1089 | 82.1 | 1079 | 82.9 | 8 | 1055 | 84.7 | 1060 | 84.3 | **1057** | **84.5** |
| 482.sphinx3 | 8 | 2059 | 75.7 | 2046 | 76.2 | **2049** | **76.1** | 8 | 2059 | 75.7 | 2046 | 76.2 | **2049** | **76.1** |

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

## 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

## 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: `-Mpfi`(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

## 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`

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`

Continued on next page

## 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



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

Tested with SPEC CPU2006 v1.0.
Report generated on Tue Jul 22 14:30:02 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 27 November 2007.