



# SPEC® CFP2006 Result

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Dell Inc.

SPECfp®\_rate2006 = 96.6

PowerEdge 6950 (AMD Opteron 8222 SE, 3.00GHz)

SPECfp\_rate\_base2006 = 94.9

CPU2006 license: 55

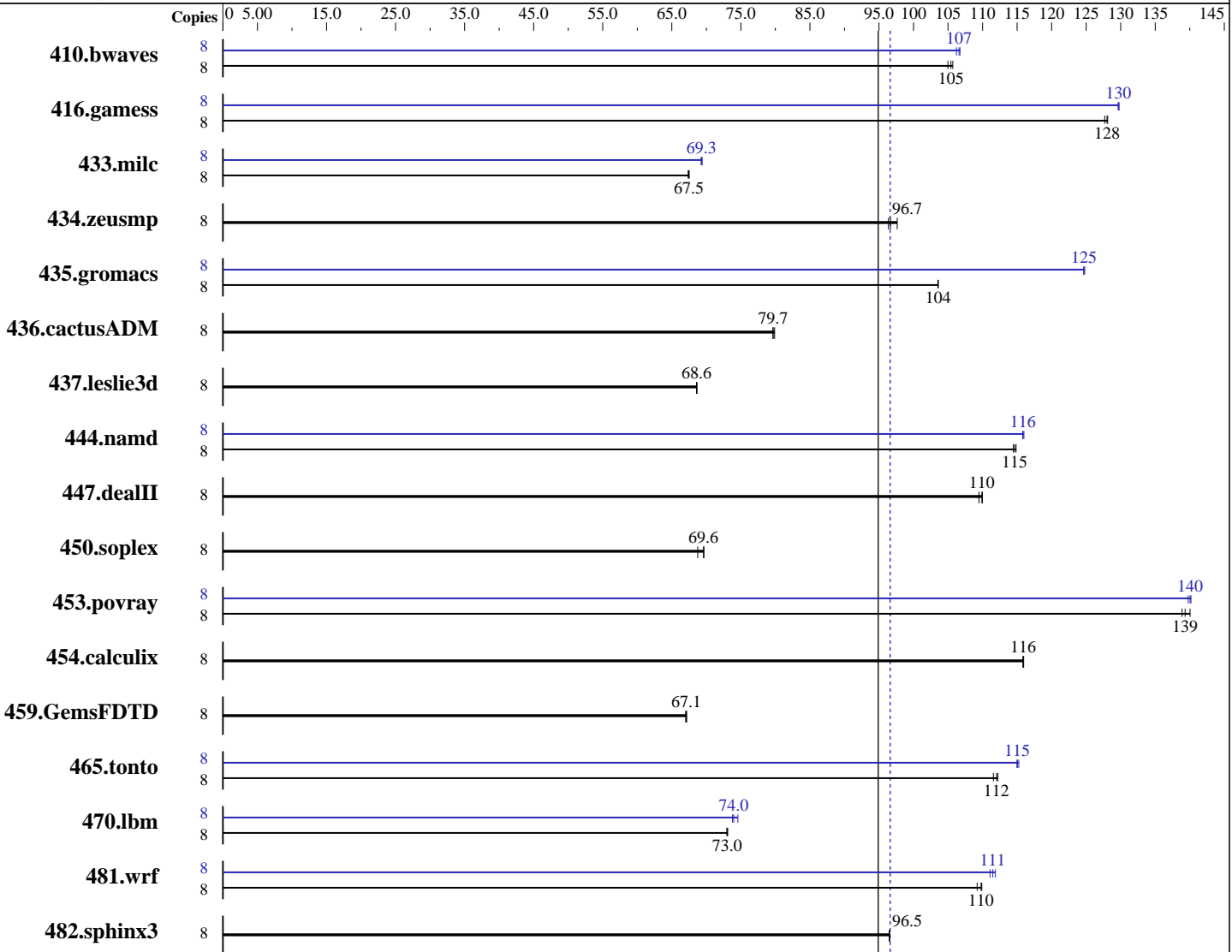
Test date: Sep-2007

Test sponsor: Dell Inc.

Hardware Availability: Apr-2007

Tested by: Dell Inc.

Software Availability: Oct-2007



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### Hardware

CPU Name: AMD Opteron 8222 SE  
 CPU Characteristics:  
 CPU MHz: 3000  
 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

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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: 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: 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	1036	105	<b>1031</b>	<b>105</b>	1029	106	8	<b>1020</b>	<b>107</b>	1019	107	1024	106
416.gamess	8	1223	128	1227	128	<b>1224</b>	<b>128</b>	8	1207	130	1208	130	<b>1208</b>	<b>130</b>
433.milc	8	1088	67.5	1090	67.4	<b>1088</b>	<b>67.5</b>	8	1061	69.2	<b>1060</b>	<b>69.3</b>	1058	69.4
434.zeusmp	8	<b>753</b>	<b>96.7</b>	755	96.4	746	97.6	8	<b>753</b>	<b>96.7</b>	755	96.4	746	97.6
435.gromacs	8	551	104	552	104	<b>552</b>	<b>104</b>	8	<b>458</b>	<b>125</b>	458	125	458	125
436.cactusADM	8	<b>1200</b>	<b>79.7</b>	1200	79.7	1197	79.9	8	<b>1200</b>	<b>79.7</b>	1200	79.7	1197	79.9
437.leslie3d	8	1096	68.6	<b>1096</b>	<b>68.6</b>	1096	68.6	8	1096	68.6	<b>1096</b>	<b>68.6</b>	1096	68.6
444.namd	8	561	114	<b>560</b>	<b>115</b>	559	115	8	554	116	<b>554</b>	<b>116</b>	553	116
447.dealII	8	832	110	<b>833</b>	<b>110</b>	836	109	8	832	110	<b>833</b>	<b>110</b>	836	109
450.soplex	8	970	68.8	958	69.7	<b>959</b>	<b>69.6</b>	8	970	68.8	958	69.7	<b>959</b>	<b>69.6</b>
453.povray	8	306	139	<b>305</b>	<b>139</b>	304	140	8	304	140	<b>304</b>	<b>140</b>	304	140
454.calculix	8	<b>570</b>	<b>116</b>	569	116	570	116	8	<b>570</b>	<b>116</b>	569	116	570	116
459.GemsFDTD	8	1267	67.0	<b>1265</b>	<b>67.1</b>	1264	67.1	8	1267	67.0	<b>1265</b>	<b>67.1</b>	1264	67.1
465.tonto	8	701	112	<b>703</b>	<b>112</b>	706	112	8	685	115	683	115	<b>684</b>	<b>115</b>
470.lbm	8	1504	73.1	<b>1506</b>	<b>73.0</b>	1506	73.0	8	1490	73.8	<b>1486</b>	<b>74.0</b>	1474	74.6
481.wrf	8	813	110	<b>814</b>	<b>110</b>	818	109	8	799	112	804	111	<b>802</b>	<b>111</b>
482.sphinx3	8	1615	96.5	<b>1615</b>	<b>96.5</b>	1615	96.5	8	1615	96.5	<b>1615</b>	<b>96.5</b>	1615	96.5

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](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](http://www.spec.org/cpu2006/flags/pgi710_flags.xml)

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For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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