



# SPEC® CFP2006 Result

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## Hewlett-Packard Company

### SPECfp®\_rate2006 = 56.0

ProLiant DL185 G5  
(3.0 GHz AMD Opteron 2222)

### SPECfp\_rate\_base2006 = 51.9

CPU2006 license: 3

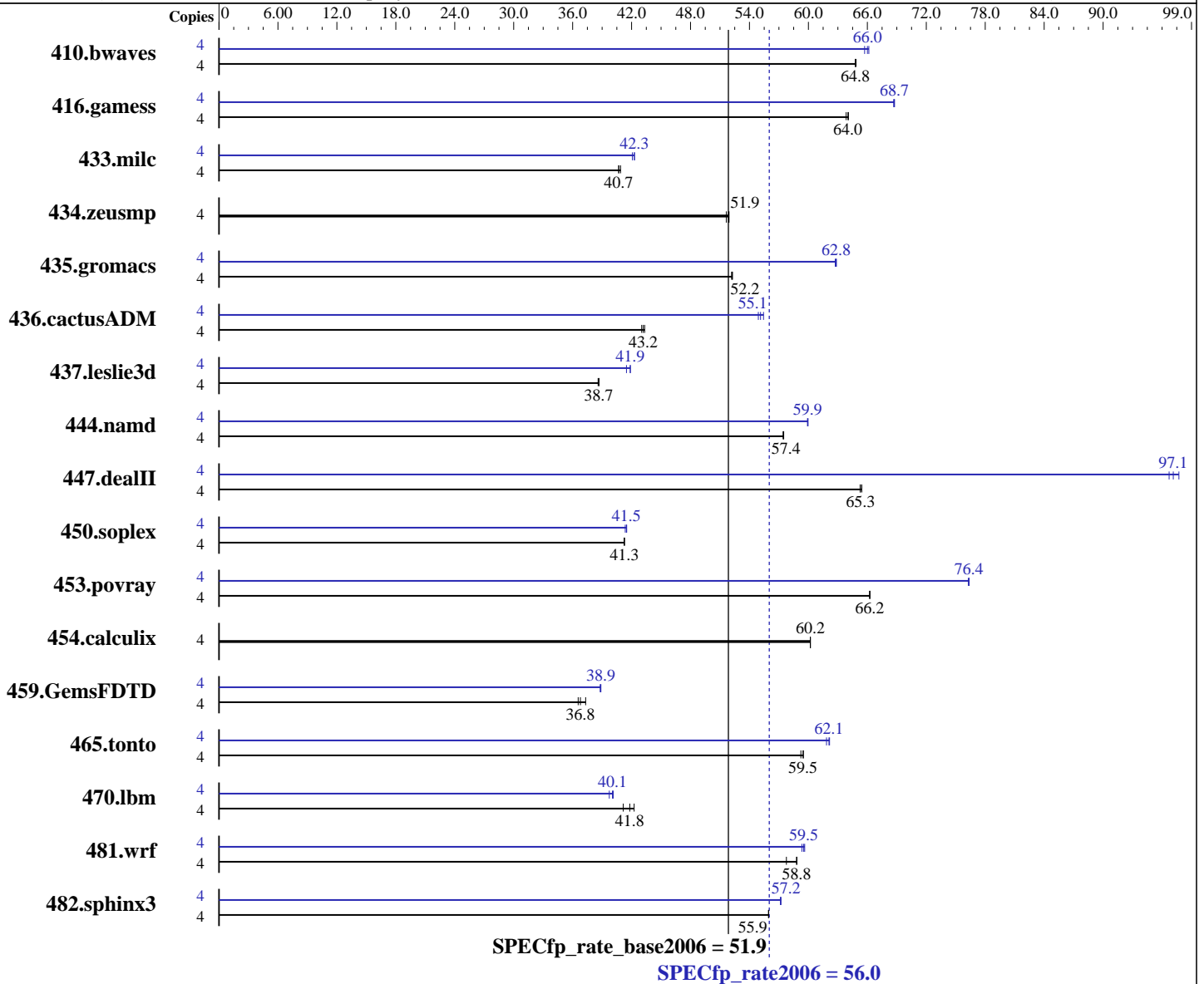
Test date: Dec-2007

Test sponsor: Hewlett-Packard Company

Hardware Availability: Jan-2008

Tested by: Hewlett-Packard Company

Software Availability: Nov-2007



### Hardware

CPU Name: AMD Opteron 2222  
 CPU Characteristics:  
 CPU MHz: 3000  
 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

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### 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 7.1-1 Fortran Compiler  
 PGI pgcc 7.1-1 C Compiler  
 PGI pgCC 7.1-1 C++ Compiler  
 QLogic PathScale Compiler Suite,  
 Release 3.0  
 Auto Parallel: No

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L3 Cache: None  
Other Cache: None  
Memory: 32 GB (8x4 GB PC2-5300P CL5)  
Disk Subsystem: 1x146 GB 10 K SAS  
Other Hardware: None

File System: ext2  
System State: Multi-user run level 3  
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	4	839	64.8	838	64.9	<b>839</b>	<b>64.8</b>	4	<b>824</b>	<b>66.0</b>	822	66.2	827	65.7
416.gamess	4	1222	64.1	<b>1223</b>	<b>64.0</b>	1227	63.8	4	<b>1139</b>	<b>68.7</b>	1139	68.8	1140	68.7
433.milc	4	902	40.7	<b>902</b>	<b>40.7</b>	898	40.9	4	873	42.1	<b>868</b>	<b>42.3</b>	868	42.3
434.zeusmp	4	<b>702</b>	<b>51.9</b>	701	51.9	705	51.6	4	<b>702</b>	<b>51.9</b>	701	51.9	705	51.6
435.gromacs	4	546	52.3	<b>547</b>	<b>52.2</b>	547	52.2	4	455	62.7	<b>455</b>	<b>62.8</b>	454	62.9
436.cactusADM	4	<b>1107</b>	<b>43.2</b>	1111	43.0	1103	43.3	4	<b>867</b>	<b>55.1</b>	862	55.4	871	54.9
437.leslie3d	4	974	38.6	972	38.7	<b>972</b>	<b>38.7</b>	4	898	41.9	906	41.5	<b>898</b>	<b>41.9</b>
444.namd	4	559	57.4	558	57.5	<b>558</b>	<b>57.4</b>	4	<b>535</b>	<b>59.9</b>	535	59.9	535	60.0
447.dealII	4	701	65.3	<b>701</b>	<b>65.3</b>	699	65.4	4	468	97.7	473	96.7	<b>471</b>	<b>97.1</b>
450.soplex	4	<b>808</b>	<b>41.3</b>	808	41.3	809	41.3	4	<b>804</b>	<b>41.5</b>	807	41.4	804	41.5
453.povray	4	321	66.2	<b>321</b>	<b>66.2</b>	321	66.3	4	<b>279</b>	<b>76.4</b>	279	76.3	279	76.4
454.calculix	4	<b>548</b>	<b>60.2</b>	548	60.2	548	60.2	4	<b>548</b>	<b>60.2</b>	548	60.2	548	60.2
459.GemsFDTD	4	<b>1154</b>	<b>36.8</b>	1161	36.6	1137	37.3	4	<b>1092</b>	<b>38.9</b>	1094	38.8	1092	38.9
465.tonto	4	<b>662</b>	<b>59.5</b>	662	59.5	664	59.2	4	<b>634</b>	<b>62.1</b>	636	61.8	633	62.2
470.lbm	4	1300	42.3	<b>1314</b>	<b>41.8</b>	1336	41.2	4	1383	39.7	<b>1372</b>	<b>40.1</b>	1369	40.1
481.wrf	4	<b>760</b>	<b>58.8</b>	759	58.8	774	57.8	4	753	59.3	<b>751</b>	<b>59.5</b>	749	59.6
482.sphinx3	4	1393	56.0	1394	55.9	<b>1393</b>	<b>55.9</b>	4	<b>1363</b>	<b>57.2</b>	1364	57.1	1363	57.2

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## Operating System Notes

```
Environment stack size set to 'unlimited'
ulimit -l set to 1048576
'numactl' was used to bind copies to the cores
Set vm/nr_hugepages=1024 in /etc/sysctl.conf
mount -t hugetlbfs nodev /mnt/hugepages
```

## 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 (except as noted below):

pathcc

433.milc: pgcc

C++ benchmarks (except as noted below):

pathCC

444.namd: pgcpp

Fortran benchmarks (except as noted below):

pgf95

416.gamess: pathf95

437.leslie3d: pathf95

459.GemsFDTD: pathf95

Benchmarks using both Fortran and C (except as noted below):

pgcc pgf95

436.cactusADM: pathcc pathf95

## Peak 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

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## Peak Portability Flags (Continued)

```

436.cactusADM: -DSPEC_CPU_LP64 -fno-second-underscore
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -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

```

## 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:448 -tp k8-64 -Bstatic_pgi

```

470.lbm: -Ofast

```

482.sphinx3: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -O3
             -OPT:Ofast -WOPT:aggstr=0 -m32

```

C++ benchmarks:

```

444.namd: -fast -O4 -Mfprelaxed -Msmartalloc=huge:448 --zc_eh
          -tp k8-64 -Mnodepchk -Mprefetch -Msafe_lastval
          -Msafeptr=static -Mstride0 -Munroll=n:4 -Mvect=noidiom
          -Mvect=prefetch -Bstatic_pgi

```

```

447.deallI: -Ofast -static -INLINE:aggressive=on -OPT:malloc_alg=1
            -m32 -fno-exceptions

```

```

450.soplex: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -m32 -O3
            -OPT:IEEE_arith=3 -CG:load_exe=0 -CG:movnti=1
            -LNO:minvariant=off -LNO:prefetch=1 -fno-exceptions

```

```

453.povray: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -Ofast
            -fno-fast-math

```

Fortran benchmarks:

```

410.bwaves: -fast -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc
            -tp k8-64 -Bstatic_pgi

```

```

416.gamess: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -O2
            -OPT:Ofast -OPT:ro=3 -OPT:unroll_size=256

```

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## Peak Optimization Flags (Continued)

434.zeusmp: basepeak = yes

437.leslie3d: -Ofast -OPT:malloc\_alg=1

459.GemsFDTD: -Ofast -LNO:fission=2 -LNO:prefetch=0

465.tonto: -fast -O4 -Mfprelaxed -Msmartalloc=huge:448 -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:448 -tp k8-64 -Mfpapprox=rsqrt  
-Bstatic\_pgi

436.cactusADM: -O3 -LNO:prefetch=3 -LNO:prefetch\_ahead=5  
-LNO:ou\_prod\_max=10 -LNO:full\_unroll=5 -ipa

454.calculix: basepeak = yes

481.wrf: -fast -Mfprelaxed -Msmartalloc=huge:448 -Mvect=noaltcode  
-tp k8-64 -Bstatic\_pgi

## Peak Other Flags

C benchmarks:

433.milc: -w

C++ benchmarks:

444.namd: -w

Fortran benchmarks:

410.bwaves: -w

434.zeusmp: -w

465.tonto: -w

Benchmarks using both Fortran and C (except as noted below):

-w

436.cactusADM: No flags used



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The flags file that was used to format this result can be browsed at

[http://www.spec.org/cpu2006/flags/hp-pgi710\\_ps30\\_flags.html](http://www.spec.org/cpu2006/flags/hp-pgi710_ps30_flags.html)

You can also download the XML flags source by saving the following link:

[http://www.spec.org/cpu2006/flags/hp-pgi710\\_ps30\\_flags.xml](http://www.spec.org/cpu2006/flags/hp-pgi710_ps30_flags.xml)

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For questions about this result, please contact the tester.  
For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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