



# SPEC® CFP2006 Result

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## Hewlett-Packard Company

SPECfp®2006 = 17.8

ProLiant BL465c G5  
(2.3 GHz AMD Opteron 2356)

SPECfp\_base2006 = 16.2

CPU2006 license: 3

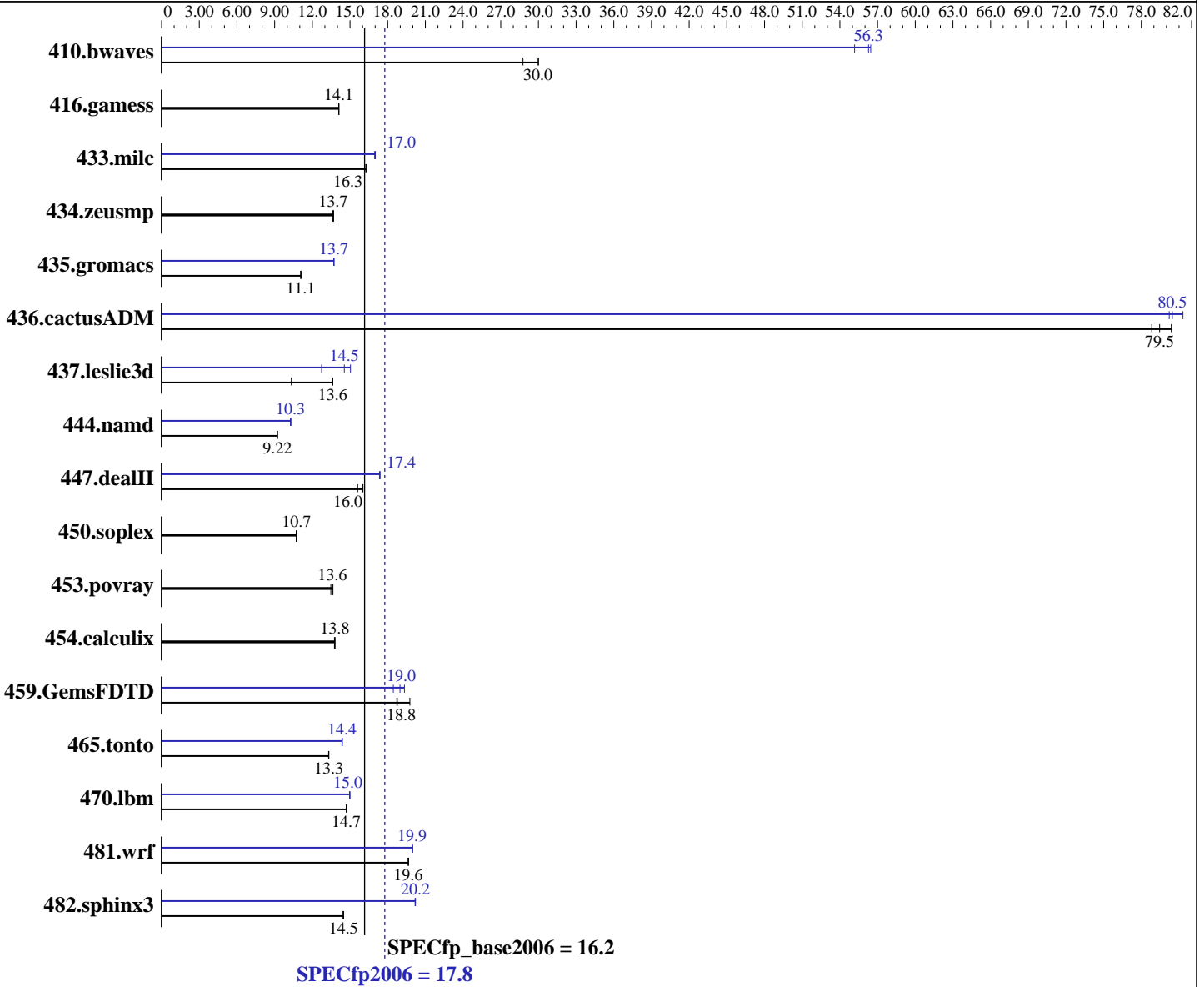
Test date: Mar-2008

Test sponsor: Hewlett-Packard Company

Hardware Availability: Mar-2008

Tested by: Hewlett-Packard Company

Software Availability: May-2008



### Hardware

CPU Name: AMD Opteron 2356  
 CPU Characteristics:  
 CPU MHz: 2300  
 FPU: Integrated  
 CPU(s) enabled: 8 cores, 2 chips, 4 cores/chip  
 CPU(s) orderable: 1,2 chips  
 Primary Cache: 64 KB I + 64 KB D on chip per core  
 Secondary Cache: 512 KB I+D on chip per core

### Software

Operating System: SUSE Linux Enterprise Server 10 (x86\_64) SP1, Kernel 2.6.16.46-0.12-smp  
 Compiler: PGI Server Complete Version 7.2  
 Auto Parallel: Yes  
 File System: ext2  
 System State: Run level 3 (multi-user)  
 Base Pointers: 64-bit  
 Peak Pointers: 64-bit  
 Other Software: binutils-2.18.50

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L3 Cache: 2 MB I+D on chip per chip  
Other Cache: None  
Memory: 32 GB (8x4 GB, PC2-5300P CL5)  
Disk Subsystem: 1x146 GB 10 K SAS  
Other Hardware: None

## Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	<b><u>453</u></b>	<b><u>30.0</u></b>	472	28.8	453	30.0	246	55.2	<b><u>241</u></b>	<b><u>56.3</u></b>	241	56.5
416.gamess	1389	14.1	1386	14.1	<b><u>1388</u></b>	<b><u>14.1</u></b>	1389	14.1	1386	14.1	<b><u>1388</u></b>	<b><u>14.1</u></b>
433.milc	<b><u>565</u></b>	<b><u>16.3</u></b>	568	16.2	564	16.3	541	17.0	<b><u>540</u></b>	<b><u>17.0</u></b>	539	17.0
434.zeusmp	667	13.6	<b><u>666</u></b>	<b><u>13.7</u></b>	665	13.7	667	13.6	<b><u>666</u></b>	<b><u>13.7</u></b>	665	13.7
435.gromacs	644	11.1	<b><u>644</u></b>	<b><u>11.1</u></b>	645	11.1	521	13.7	<b><u>520</u></b>	<b><u>13.7</u></b>	520	13.7
436.cactusADM	<b><u>150</u></b>	<b><u>79.5</u></b>	149	80.4	152	78.8	147	81.3	<b><u>149</u></b>	<b><u>80.5</u></b>	149	80.2
437.leslie3d	910	10.3	690	13.6	<b><u>691</u></b>	<b><u>13.6</u></b>	738	12.7	<b><u>646</u></b>	<b><u>14.5</u></b>	625	15.0
444.namd	869	9.22	872	9.19	<b><u>870</u></b>	<b><u>9.22</u></b>	781	10.3	780	10.3	<b><u>781</u></b>	<b><u>10.3</u></b>
447.dealII	733	15.6	714	16.0	<b><u>715</u></b>	<b><u>16.0</u></b>	659	17.4	<b><u>658</u></b>	<b><u>17.4</u></b>	658	17.4
450.soplex	776	10.8	<b><u>776</u></b>	<b><u>10.7</u></b>	778	10.7	776	10.8	<b><u>776</u></b>	<b><u>10.7</u></b>	778	10.7
453.povray	<b><u>391</u></b>	<b><u>13.6</u></b>	390	13.6	395	13.5	<b><u>391</u></b>	<b><u>13.6</u></b>	390	13.6	395	13.5
454.calculix	600	13.8	<b><u>598</u></b>	<b><u>13.8</u></b>	598	13.8	600	13.8	<b><u>598</u></b>	<b><u>13.8</u></b>	598	13.8
459.GemsFDTD	566	18.7	537	19.8	<b><u>565</u></b>	<b><u>18.8</u></b>	<b><u>559</u></b>	<b><u>19.0</u></b>	575	18.4	549	19.3
465.tonto	<b><u>739</u></b>	<b><u>13.3</u></b>	747	13.2	739	13.3	<b><u>685</u></b>	<b><u>14.4</u></b>	684	14.4	685	14.4
470.lbm	935	14.7	<b><u>935</u></b>	<b><u>14.7</u></b>	934	14.7	918	15.0	<b><u>917</u></b>	<b><u>15.0</u></b>	916	15.0
481.wrf	568	19.7	<b><u>569</u></b>	<b><u>19.6</u></b>	569	19.6	559	20.0	<b><u>560</u></b>	<b><u>19.9</u></b>	560	19.9
482.sphinx3	<b><u>1346</u></b>	<b><u>14.5</u></b>	1352	14.4	1345	14.5	966	20.2	964	20.2	<b><u>965</u></b>	<b><u>20.2</u></b>

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'  
Max locked memory set to 2097152  
PGI\_HUGE\_PAGES set to 896.  
Total number of huge pages available is 7168.  
NCPUS set to number of cores  
numactl used to bind processes to CPUs

## Platform Notes

BIOS configuration:  
Power Regulator set to Static High Performance Mode



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## Base Compiler Invocation

C benchmarks:

pgcc

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=jobs:8 -Mipa=fast -Mipa=inline -Mfprelaxed -Mconcur  
-Msmartalloc=huge:896 -tp barcelona-64 -Bstatic\_pgi

C++ benchmarks:

-fast -Mipa=jobs:8 -Mipa=fast -Mipa=inline -Mfprelaxed  
-Msmartalloc=huge:896 --zc\_eh -tp barcelona-64 -Bstatic\_pgi

Fortran benchmarks:

-fast -Mipa=jobs:8 -Mipa=fast -Mipa=inline -Mfprelaxed -Mconcur  
-Msmartalloc=huge:896 -tp barcelona-64 -Bstatic\_pgi

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## Base Optimization Flags (Continued)

Benchmarks using both Fortran and C:

-fast -Mipa=jobs:8 -Mipa=fast -Mipa=inline -Mfprelaxed -Mconcur  
-Msmartalloc=huge:896 -tp barcelona-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: -fastsse -Msmartalloc=huge:896 -Mconcur -Msafeptr  
-Mfprelaxed -Mipa=jobs:8 -Mipa=inline -Mipa=arg  
-Mipa=const -Mipa=ptr -Mipa=shape -tp barcelona-64

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## Peak Optimization Flags (Continued)

433.milc (continued):

-Bstatic\_pgi

470.lbm: -fastsse -Mfprelaxed -Msmartalloc=huge:896 -Mipa=fast

-Mipa=inline -Mipa=noarg -Mprefetch=distance:12

-Mprefetch=nta -tp barcelona-64 -Bstatic\_pgi

482.sphinx3: -Mpfi(pass 1) -Mipa=jobs:8(pass 2) -Mipa=fast(pass 2)

-Mipa=inline(pass 2) -Mpfo(pass 2) -fastsse -Mfprelaxed

-Msmartalloc -Mprefetch=distance:12 -Mprefetch=nta

-tp barcelona-64 -Bstatic\_pgi

C++ benchmarks:

444.namd: -Mpfi(pass 1) -Mipa=jobs:8(pass 2) -Mipa=fast(pass 2)

-Mipa=inline(pass 2) -Mconcur=noaltcode(pass 2)

-Mpfo(pass 2) -fast -Mfprelaxed -Msmartalloc=huge:896

--zc\_eh -Mnodepchk -Munroll=n:4 -Munroll=m:8

-tp barcelona-64 -Bstatic\_pgi

447.dealII: -fast -Mfprelaxed -Msmartalloc=huge:896 --zc\_eh -Mnovect

-alias=ansi -Mipa=jobs:8 -Mipa=fast -Mipa=inline

-tp barcelona-64 -Bstatic\_pgi

450.soplex: basepeak = yes

453.povray: basepeak = yes

Fortran benchmarks:

410.bwaves: -fastsse -Mloop32 -Mfprelaxed -Msmartalloc

-Mprefetch=distance:12 -Mprefetch=nta -Mconcur -Mipa=jobs:8

-Mipa=fast -Mipa=inline -tp barcelona-64 -Bstatic\_pgi

416.gamess: basepeak = yes

434.zeusmp: basepeak = yes

437.leslie3d: -fast -Mipa=jobs:8 -Mipa=fast -Mipa=inline -Mfprelaxed

-Mconcur=noaltcode -Msmartalloc=huge:896 -tp barcelona-64

-Bstatic\_pgi

459.GemsFDTD: -Mpfi(pass 1) -Mipa=jobs:8(pass 2) -Mipa=fast(pass 2)

-Mipa=inlinenopfo(pass 2) -Mconcur(pass 2) -Mpfo(pass 2)

-fast -Mfprelaxed -Msmartalloc=huge:896 -Mprefetch=nta

-tp barcelona-64 -Bstatic\_pgi

465.tonto: -fast -O4 -Mfprelaxed -Msmartalloc=huge:896

-Mprefetch=distance:8 -Mipa=jobs:8 -Mipa=fast -Mipa=inline

-Mvect=noaltcode -tp barcelona-64 -Bstatic\_pgi

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## Peak Optimization Flags (Continued)

Benchmarks using both Fortran and C:

435.gromacs: -fast -Mconcur -Mfpapprox=rsqrt -Mipa=jobs:8 -Mipa=fast  
-Mipa=inline -Mfprelaxed -Msmartalloc=huge:896  
-tp barcelona-64 -Bstatic\_pgi

436.cactusADM: -fastsse -Mfprelaxed -Mconcur -Msmartalloc -Mdse  
-Mipa=jobs:8 -Mipa=fast -Mipa=inline -tp barcelona-64  
-Bstatic\_pgi

454.calculix: basepeak = yes

481.wrf: -fast -Mfprelaxed -Msmartalloc=huge:896 -Mconcur=noaltcode  
-Mvect=noaltcode -Mprefetch=distance:8 -tp barcelona-64  
-Bstatic\_pgi

## Peak Other Flags

C benchmarks:

-w

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/hp-PGI72-PS32-flags.html>

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

<http://www.spec.org/cpu2006/flags/hp-PGI72-PS32-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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