SPEC® CFP2006 Result

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Hewlett-Packard Company

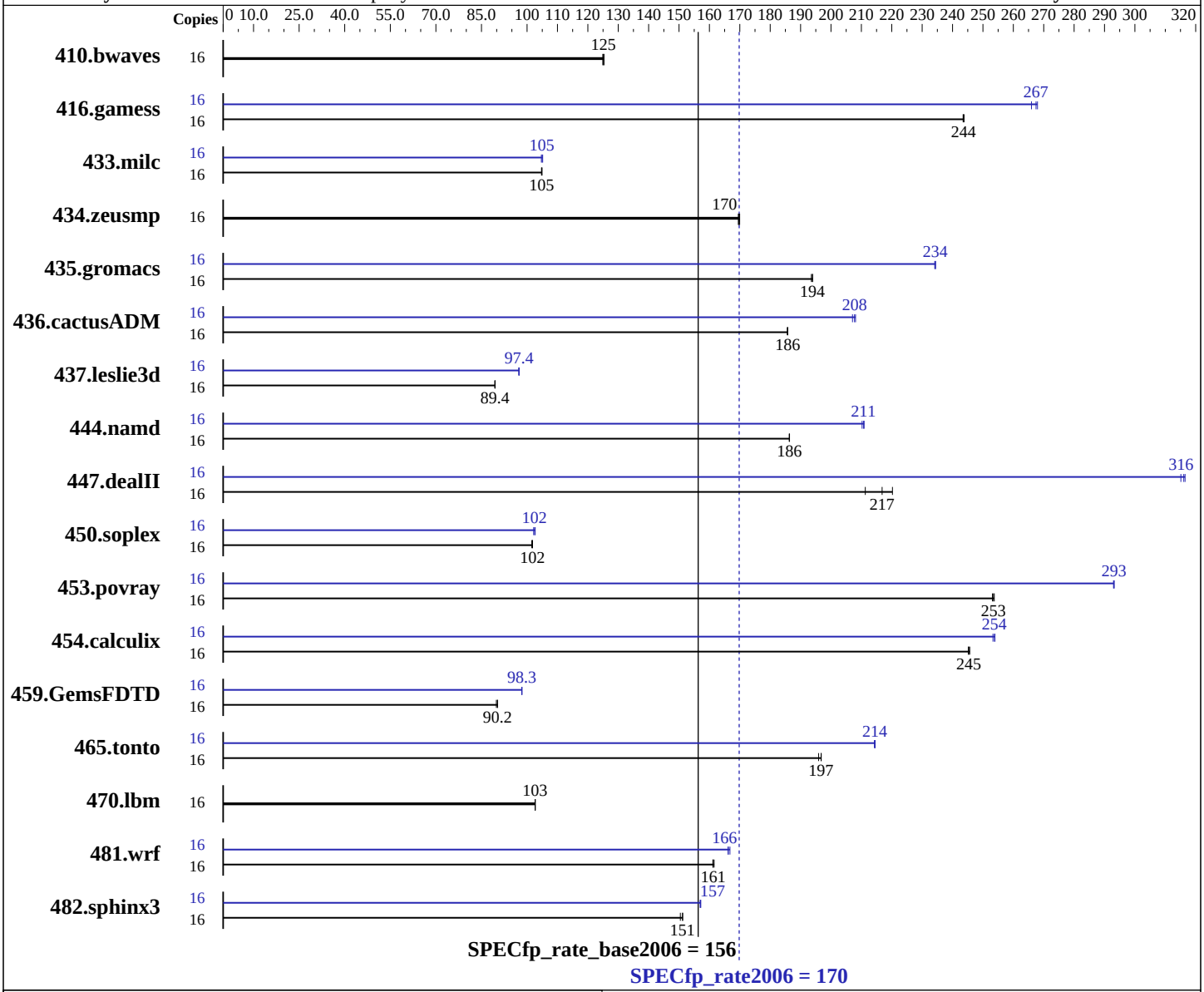
ProLiant DL585 G5
(2.5 GHz AMD Opteron 8360 SE)

SPECfp®_rate2006 = 170

SPECfp_rate_base2006 = 156

CPU2006 license: 3
Test sponsor: Hewlett-Packard Company
Tested by: Hewlett-Packard Company

Test date: Jul-2008
Hardware Availability: Jul-2008
Software Availability: Jun-2008



Hardware

CPU Name:	AMD Opteron 8360 SE
CPU Characteristics:	
CPU MHz:	2500
FPU:	Integrated
CPU(s) enabled:	16 cores, 4 chips, 4 cores/chip
CPU(s) orderable:	2,4 chips
Primary Cache:	64 KB I + 64 KB D on chip per core
Secondary Cache:	512 KB 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:	PGI Server Complete Version 7.2 PathScale Compiler Suite Release 3.2
Auto Parallel:	No
File System:	ext2
System State:	Run level 3 (multi-user)
Base Pointers:	64-bit
Peak Pointers:	32/64-bit

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L3 Cache: 2 MB I+D on chip per chip
Other Cache: None
Memory: 64 GB (16x4 GB, PC2-5300P CL5)
Disk Subsystem: 1x146 GB 15 K SAS
Other Hardware: None

Other Software: None

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	16	1735	125	1741	125	**1738**	**125**	16	1735	125	1741	125	**1738**	**125**
416.gamess	16	**1286**	**244**	1287	243	1285	244	16	1178	266	**1171**	**267**	1169	268
433.milc	16	1400	105	1402	105	**1401**	**105**	16	**1400**	**105**	1403	105	1397	105
434.zeusmp	16	**858**	**170**	859	170	857	170	16	**858**	**170**	859	170	857	170
435.gromacs	16	**589**	**194**	589	194	590	194	16	488	234	**488**	**234**	487	234
436.cactusADM	16	1030	186	1029	186	**1029**	**186**	16	923	207	919	208	**920**	**208**
437.leslie3d	16	1681	89.5	1682	89.4	**1681**	**89.4**	16	1544	97.4	1546	97.3	**1545**	**97.4**
444.namd	16	689	186	**689**	**186**	689	186	16	610	210	**609**	**211**	608	211
447.dealII	16	831	220	**844**	**217**	866	211	16	578	317	581	315	**579**	**316**
450.soplex	16	**1311**	**102**	1314	102	1311	102	16	1306	102	**1302**	**102**	1300	103
453.povray	16	336	253	335	254	**336**	**253**	16	290	293	291	293	**290**	**293**
454.calculix	16	538	245	537	246	**538**	**245**	16	520	254	521	253	**520**	**254**
459.GemsFDTD	16	1880	90.3	**1881**	**90.2**	1888	89.9	16	1728	98.2	**1727**	**98.3**	1726	98.3
465.tonto	16	800	197	804	196	**800**	**197**	16	735	214	**734**	**214**	734	215
470.lbm	16	**2142**	**103**	2142	103	2140	103	16	**2142**	**103**	2142	103	2140	103
481.wrf	16	**1108**	**161**	1109	161	1106	162	16	1076	166	1072	167	**1075**	**166**
482.sphinx3	16	**2063**	**151**	2062	151	2073	150	16	1987	157	1984	157	**1986**	**157**

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

Submit Notes

```
The config file option 'submit' was used.
 numactl used to bind processes to CPUs
```

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 14336.
NCPUS set to number of cores
```

Platform Notes

```
BIOS configuration:
  Power Regulator set to Static High Performance Mode
```

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:
-fastsse -Msmartalloc=huge:896 -Mfprelaxed -Mipa=jobs:4 -Mipa=fast
-Mipa=inline -tp barcelona-64 -Bstatic_pgi

C++ benchmarks:
-fastsse -Msmartalloc=huge:896 -Mfprelaxed --zc_eh -Mipa=jobs:4
-Mipa=fast -Mipa=inline -tp barcelona-64 -Bstatic_pgi

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Base Optimization Flags (Continued)

Fortran benchmarks:
`-fastsse -Mfprelaxed -Msmartalloc=huge:896 -Mipa=jobs:4 -Mipa=fast -Mipa=inline -tp barcelona-64 -Bstatic_pgi`

Benchmarks using both Fortran and C:
`-fastsse -Msmartalloc=huge:896 -Mfprelaxed -Mipa=jobs:4 -Mipa=fast -Mipa=inline -tp barcelona-64 -Bstatic_pgi`

Peak Compiler Invocation

C benchmarks:
`pgcc`

C++ benchmarks (except as noted below):
`pathCC`

444.namd: `pgcpp`

Fortran benchmarks (except as noted below):
`pgf95`

416.gamess: `pathf95`

459.GemsFDTD: `pathf95`

465.tonto: `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`
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`

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Peak Portability Flags (Continued)

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

Peak Optimization Flags

C benchmarks:

433.milc: -fastsse -Msmartalloc=huge:896 -Msafeptr -Mfprelaxed
-Mipa=jobs:4 -Mipa=inline -Mipa=arg -Mipa=const -Mipa=ptr
-Mipa=shape -tp barcelona-64 -Bstatic_pgi

470.lbm: basepeak = yes

482.sphinx3: -Mpfi=indirect(pass 1) -Mpfo=indirect(pass 2)
-Mipa=jobs:4(pass 2) -Mipa=fast(pass 2) -Mipa=inline(pass 2)
-fastsse -Mfprelaxed -Msmartalloc -tp barcelona-64
-Bstatic_pgi

C++ benchmarks:

444.namd: -Mpfi(pass 1) -Mipa=jobs:4(pass 2) -Mipa=fast(pass 2)
-Mipa=inline(pass 2) -Mpfo(pass 2) -fastsse -Munroll=n:4
-Munroll=m:8 -Msmartalloc=huge:896 -Mnodepchk -Mfprelaxed
--zc_eh -tp barcelona-64 -Bstatic_pgi

447.dealII: -march=barcelona -Ofast -static -INLINE:aggressive=on
-fno-exceptions -m32

450.soplex: -march=barcelona -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -m32 -O3 -TENV:frame_pointer=off
-LNO:prefetch=1 -OPT:malloc_alg=1 -CG:load_exe=0

453.povray: -march=barcelona -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -Ofast

Fortran benchmarks:

410.bwaves: basepeak = yes

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

434.zeusmp: basepeak = yes

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Peak Optimization Flags (Continued)

437.leslie3d: `-Mpfi=indirect`(pass 1) `-Mpfo=indirect`(pass 2)
`-Mipa=jobs:4`(pass 2) `-Mipa=fast`(pass 2) `-Mipa=inline`(pass 2)
`-fastsse -Mvect=fuse -Msmartalloc=huge:896`
`-Mprefetch=distance:8 -Mprefetch=t0 -Mfprelaxed`
`-tp barcelona-64 -Bstatic_pgi`

459.GemsFDTD: `-march=barcelona -Ofast -LNO:fission=2 -LNO:simd=2`
`-LNO:prefetch_ahead=1 -CG:load_exe=0`

465.tonto: `-march=barcelona -Ofast -OPT:alias=no_f90_pointer_alias`
`-LNO:blocking=off -CG:load_exe=1 -IPA:plimit=525`

Benchmarks using both Fortran and C:

435.gromacs: `-fastsse -Msmartalloc=huge:896 -Mfprelaxed -Mfpapprox=rsqrt`
`-Mipa=jobs:4 -Mipa=fast -Mipa=inline -tp barcelona-64`
`-Bstatic_pgi`

436.cactusADM: `-march=barcelona -fb_create fbdata`(pass 1)
`-fb_opt fbdata`(pass 2) `-Ofast -LNO:blocking=off`

454.calculix: `-Mpfi=indirect`(pass 1) `-Mpfo=indirect`(pass 2)
`-Mipa=jobs:4`(pass 2) `-Mipa=fast`(pass 2) `-Mipa=inline`(pass 2)
`-fastsse -Msmartalloc=huge:896 -Mprefetch=t0 -Mfprelaxed`
`-tp barcelona-64 -Bstatic_pgi`

481.wrf: `-fastsse -Mvect=noaltcode -Msmartalloc`
`-Mprefetch=distance:8 -Mfprelaxed -tp barcelona-64`
`-Bstatic_pgi`

The flags file that was used to format this result can be browsed at
`http://www.spec.org/cpu2006/flags/hp-PGI72-PS32-flags.20090713.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/cpu2006/flags/hp-PGI72-PS32-flags.20090713.xml`

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