SPEC® CFP2006 Result

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Hewlett-Packard Company

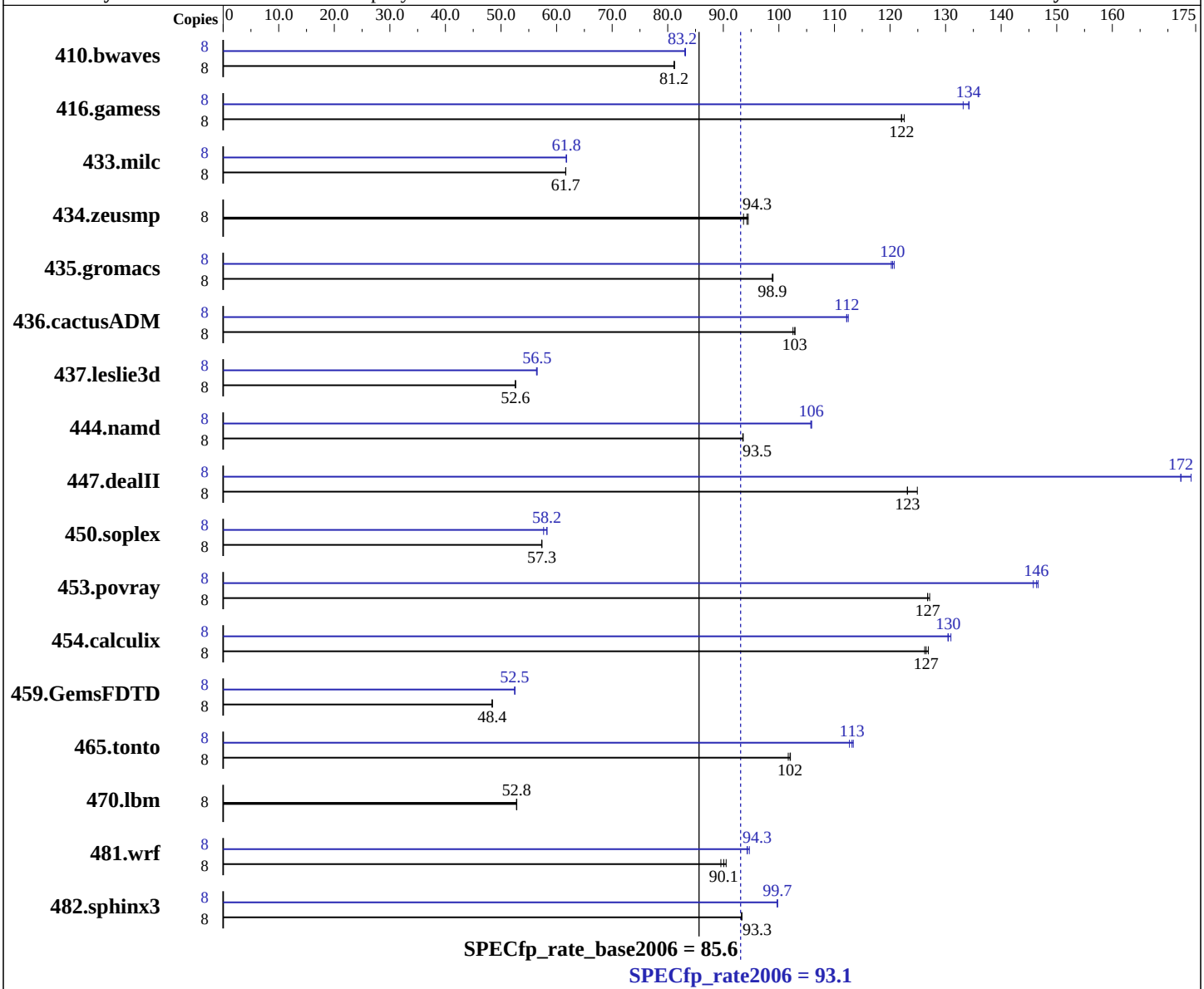
ProLiant DL585 G5
(2.5 GHz AMD Opteron 8360 SE)

SPECfp®_rate2006 = 93.1

SPECfp_rate_base2006 = 85.6

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:	8 cores, 2 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	8	1339	81.2	1340	81.1	**1340**	**81.2**	8	**1307**	**83.2**	1307	83.2	1309	83.1
416.gamess	8	1283	122	**1283**	**122**	1278	123	8	**1168**	**134**	1176	133	1167	134
433.milc	8	**1191**	**61.7**	1191	61.7	1191	61.6	8	**1189**	**61.8**	1189	61.8	1189	61.8
434.zeusmp	8	777	93.6	**772**	**94.3**	770	94.5	8	777	93.6	**772**	**94.3**	770	94.5
435.gromacs	8	**578**	**98.9**	577	98.9	578	98.8	8	473	121	**474**	**120**	475	120
436.cactusADM	8	932	103	929	103	**929**	**103**	8	852	112	850	112	**852**	**112**
437.leslie3d	8	1429	52.6	1431	52.6	**1430**	**52.6**	8	1331	56.5	1334	56.4	**1331**	**56.5**
444.namd	8	686	93.5	**686**	**93.5**	686	93.6	8	607	106	**606**	**106**	606	106
447.dealII	8	743	123	**743**	**123**	733	125	8	**531**	**172**	531	172	525	174
450.soplex	8	1164	57.3	1163	57.4	**1163**	**57.3**	8	1157	57.7	**1146**	**58.2**	1145	58.3
453.povray	8	336	127	**336**	**127**	335	127	8	292	146	290	147	**291**	**146**
454.calculix	8	523	126	**522**	**127**	520	127	8	506	130	**506**	**130**	504	131
459.GemsFDTD	8	1752	48.4	1754	48.4	**1753**	**48.4**	8	1617	52.5	**1617**	**52.5**	1618	52.5
465.tonto	8	774	102	**772**	**102**	771	102	8	698	113	**696**	**113**	694	113
470.lbm	8	2082	52.8	2080	52.8	**2081**	**52.8**	8	2082	52.8	2080	52.8	**2081**	**52.8**
481.wrf	8	998	89.6	987	90.5	**992**	**90.1**	8	944	94.7	948	94.3	**947**	**94.3**
482.sphinx3	8	1671	93.3	**1671**	**93.3**	1671	93.3	8	1564	99.7	**1564**	**99.7**	1563	99.8

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 7168.
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: -Mpfi(pass 1) -Mipa=jobs:4(pass 2) -Mipa=fast(pass 2)
-Mipa=inline(pass 2) -Mpfo(pass 2) -fastsse -Msmartalloc
-Mprefetch=distance:12 -Mprefetch=nta -Mfprelaxed
-tp barcelona-64 -Bstatic_pgi

416.gamess: -march=barcelona -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: -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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