SPEC® CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Hewlett-Packard Company

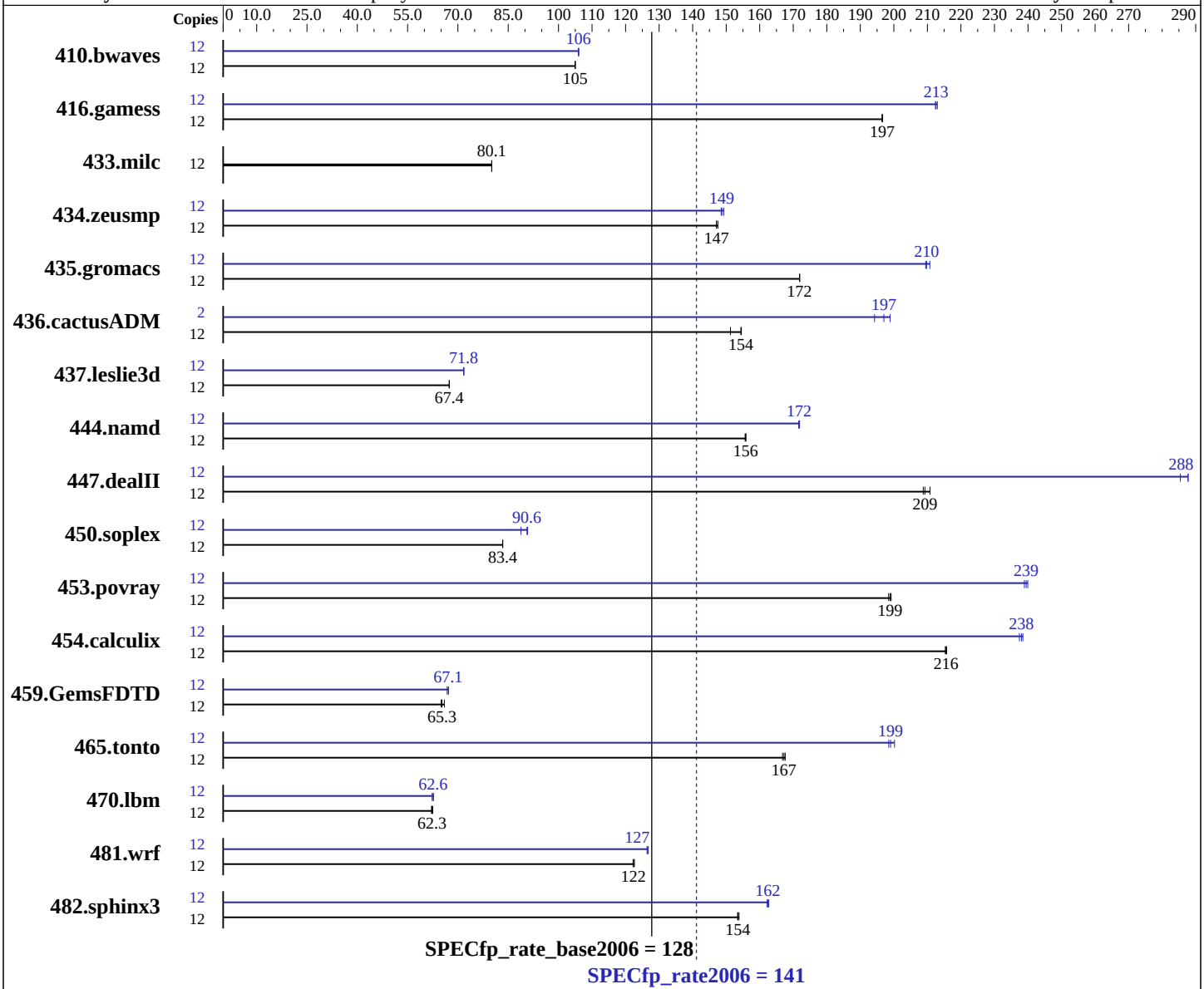
ProLiant DL585 G6
(2.6 GHz AMD Opteron 8435)

SPECfp®_rate2006 = 141

SPECfp_rate_base2006 = 128

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

Test date: May-2009
Hardware Availability: Jun-2009
Software Availability: Apr-2009



Hardware

CPU Name:	AMD Opteron 8435
CPU Characteristics:	
CPU MHz:	2600
FPU:	Integrated
CPU(s) enabled:	12 cores, 2 chips, 6 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

Continued on next page

Software

Operating System:	Red Hat Enterprise Linux Server release 5.3, Advanced Platform, Kernel 2.6.18-128.el5
Compiler:	PGI Server Complete Version 8.0 x86 Open64 4.2.2 Compiler Suite
Auto Parallel:	Yes
File System:	ext3
System State:	Run level 3 (multi-user)
Base Pointers:	64-bit
Peak Pointers:	32/64-bit

Continued on next page

SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Hewlett-Packard Company

ProLiant DL585 G6
(2.6 GHz AMD Opteron 8435)

SPECfp_rate2006 = 141

SPECfp_rate_base2006 = 128

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

Test date: May-2009
Hardware Availability: Jun-2009
Software Availability: Apr-2009

L3 Cache: 6 MB I+D on chip per chip
Other Cache: None
Memory: 32 GB (8x4 GB, PC2-6400P CL5)
Disk Subsystem: 2x146 GB 10 K SAS
Other Hardware: None

Other Software: binutils 2.18

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	12	1554	105	**1554**	**105**	1553	105	12	1540	106	**1539**	**106**	1538	106
416.gamess	12	1196	196	**1195**	**197**	1195	197	12	1106	212	**1105**	**213**	1103	213
433.milc	12	1375	80.1	1375	80.1	**1375**	**80.1**	12	1375	80.1	1375	80.1	**1375**	**80.1**
434.zeusmp	12	743	147	**742**	**147**	740	148	12	735	149	**734**	**149**	731	149
435.gromacs	12	499	172	498	172	**499**	**172**	12	409	209	407	211	**408**	**210**
436.cactusADM	12	928	155	**929**	**154**	948	151	2	**121**	**197**	123	194	120	199
437.leslie3d	12	1673	67.4	1672	67.5	**1673**	**67.4**	12	1572	71.8	**1572**	**71.8**	1572	71.7
444.namd	12	**618**	**156**	618	156	617	156	12	561	172	**560**	**172**	560	172
447.dealII	12	**656**	**209**	651	211	658	209	12	477	288	**477**	**288**	481	285
450.soplex	12	1201	83.3	1200	83.4	**1201**	**83.4**	12	**1105**	**90.6**	1127	88.8	1102	90.8
453.povray	12	**321**	**199**	321	199	322	198	12	267	239	266	240	**267**	**239**
454.calculix	12	**459**	**216**	460	215	459	216	12	415	238	**416**	**238**	417	237
459.GemsFDTD	12	1930	66.0	**1951**	**65.3**	1958	65.0	12	1895	67.2	1906	66.8	**1896**	**67.1**
465.tonto	12	708	167	705	168	**706**	**167**	12	595	198	**593**	**199**	590	200
470.lbm	12	2638	62.5	2654	62.1	**2648**	**62.3**	12	2628	62.7	**2633**	**62.6**	2646	62.3
481.wrf	12	1093	123	1097	122	**1095**	**122**	12	1060	126	**1059**	**127**	1057	127
482.sphinx3	12	**1523**	**154**	1520	154	1525	153	12	1442	162	1437	163	**1440**	**162**

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' was used to bind copies to the cores.
 See the configuration file for details.
```

Operating System Notes

```
 'ulimit -s unlimited' was used to set environment stack size
 'ulimit -l 2457600'  was used to set environment locked pages in memory limit
 The libhugetlbfs libraries were installed using the
 installation rpms that came with the distribution.

 Set vm/nr_hugepages=5400 in /etc/sysctl.conf
 mount -t hugetlbfs nodev /mnt/hugepages
```

Platform Notes

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

General Notes

```
Environment variables set by runspec before the start of the run:
HUGETLB_LIMIT = "450"
LD_LIBRARY_PATH = "/cpu2006/amd0905is-libs/64:/cpu2006/amd0905is-libs/32"
NCPUS = "6"
PGI_HUGE_PAGES = "450"

The x86 Open64 Compiler Suite is only available from (and supported by) AMD at
http://developer.amd.com/cpu/open64.
```

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

Continued on next page

Base Portability Flags (Continued)

482.sphinx3: `-DSPEC_CPU_LP64`

Base Optimization Flags

C benchmarks:
`-fastsse -Msmartalloc=huge -Mfprelaxed -Mipa=fast -Mipa=inline -tp shanghai-64 -Bstatic_pgi`

C++ benchmarks:
`-fastsse -Msmartalloc=huge -Mfprelaxed --zc_eh -Mipa=fast -Mipa=inline -tp shanghai-64 -Bstatic_pgi`

Fortran benchmarks:
`-fastsse -Msmartalloc=huge -Mfprelaxed -Mvect=short -Mipa=fast -Mipa=inline -tp shanghai-64 -Bstatic_pgi`

Benchmarks using both Fortran and C:
`-fastsse -Msmartalloc=huge -Mfprelaxed -Mipa=fast -Mipa=inline -tp shanghai-64 -Mvect=short -Bstatic_pgi`

Base Other Flags

C benchmarks:
`-Mipa=jobs:11`

C++ benchmarks:
`-Mipa=jobs:11`

Fortran benchmarks:
`-Mipa=jobs:11`

Benchmarks using both Fortran and C:
`-Mipa=jobs:11`

Peak Compiler Invocation

C benchmarks:
`pgcc`

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

444.namd: `pgcpp`

Continued on next page

Peak Compiler Invocation (Continued)

Fortran benchmarks (except as noted below):
`openf95`

410.bwaves: `pgf95`

434.zeusmp: `pgf95`

437.leslie3d: `pgf95`

Benchmarks using both Fortran and C (except as noted below):
`pgcc pgf95`

435.gromacs: `opencc openf95`

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`
436.cactusADM: `-DSPEC_CPU_LP64 -Mnomain`
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`
482.sphinx3: `-DSPEC_CPU_LP64`

Peak Optimization Flags

C benchmarks:

433.milc: `basepeak = yes`

470.lbm: `-fastsse -Msmartalloc=huge -Mprefetch=t0 -Mloop32 -Mfprelaxed -Mipa=fast -Mipa=inline -tp shanghai-64 -Bstatic_pgi`

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

Continued on next page

Peak Optimization Flags (Continued)

C++ benchmarks:

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

447.dealII: -march=barcelona -Ofast -static -INLINE:aggressive=on
-LNO:opt=0 -Wf,-fno-exceptions -m32 -OPT:unroll_times_max=8
-OPT:unroll_size=256 -OPT:unroll_level=2 -HP:bdt=2m:heap=2m
-GRA:unspill=on -CG:cmp_peep=on -TENV:frame_pointer=off

450.soplex: -march=barcelona -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -O3 -INLINE:aggressive=on
-OPT:IEEE_arith=3 -OPT:IEEE_NaN_Inf=off
-OPT:fold_unsigned_relops=on -OPT:malloc_alg=1
-CG:load_exe=0 -fno-exceptions -m32 -HP:bdt=2m

453.povray: -march=barcelona -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -Ofast -INLINE:aggressive=on
-HP:bdt=2m:heap=2m

Fortran benchmarks:

410.bwaves: -fastsse -Msmartalloc -Mprefetch=nta -Mfprelaxed
-Mipa=fast -Mipa=inline -tp shanghai-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 -HP:bdt=2m:heap=2m

434.zeusmp: -fastsse -Mfprelaxed -Mprefetch=distance:8 -Mprefetch=t0
-Msmartalloc=huge -Msmartalloc=hugebss -Mipa=fast
-Mipa=inline -tp shanghai-64 -Bstatic_pgi

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

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

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

Benchmarks using both Fortran and C:

435.gromacs: -march=barcelona -Ofast -OPT:rsqrt=2 -HP:bdt=2m:heap=2m

Continued on next page

Peak Optimization Flags (Continued)

436.cactusADM: `-fastsse -Mconcur -Msmartalloc=huge -Mfprelaxed -Mipa=fast -Mipa=inline -tp shanghai-64 -Bstatic_pgi`

454.calculix: `-Mpfi=indirect`(pass 1) `-Mpfo=indirect`(pass 2) `-Mipa=fast`(pass 2) `-Mipa=inline`(pass 2) `-fastsse -Mvect=short -Msmartalloc=huge -Mprefetch=t0 -Mpre -Mfprelaxed -tp shanghai-64 -Bstatic_pgi`

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

Peak Other Flags

C benchmarks:
`-Mipa=jobs:11`(pass 2)

C++ benchmarks:

444.namd: `-Mipa=jobs:11`(pass 2)

Fortran benchmarks:

410.bwaves: `-Mipa=jobs:11`

434.zeusmp: `-Mipa=jobs:11`

437.leslie3d: `-Mipa=jobs:11`(pass 2)

Benchmarks using both Fortran and C:

436.cactusADM: `-Mipa=jobs:11`

454.calculix: `-Mipa=jobs:11`(pass 2)

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/pgi80_linux_flags.html
http://www.spec.org/cpu2006/flags/amd-platform-amd909gh.20090710.00.html
http://www.spec.org/cpu2006/flags/x86-open64-4.2.2-flags.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/pgi80_linux_flags.xml
http://www.spec.org/cpu2006/flags/amd-platform-amd909gh.20090710.00.xml
http://www.spec.org/cpu2006/flags/x86-open64-4.2.2-flags.xml

SPEC and SPECfp are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.1.
Report generated on Wed Jul 23 01:19:17 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 23 June 2009.