SPEC® CFP2006 Result
Copyright 2006-2014 Standard Performance Evaluation Corporation

Hewlett-Packard Company

ProLiant BL465c G6
(2.6 GHz AMD Opteron 2435)

$SPECfp^{®}\_rate2006 =$ 72.2

$SPECfp\_rate\_base2006 =$ 65.2

CPU2006 license: 3

Test sponsor: Hewlett-Packard Company

Tested by: Hewlett-Packard Company

Test date: May-2009

Hardware Availability: Jun-2009

Software Availability: Jun-2009

Copies		
410.bwaves	6	55.8
	6	54.3
416.gamess	6	106
	6	98.0
433.milc	6	40.6
434.zeusmp	6	76.7
	6	76.1
435.gromacs	6	105
	6	85.8
436.cactusADM	1	100
	6	79.8
437.leslie3d	6	36.4
	6	34.2
444.namd	6	85.4
	6	77.6
447.dealII	6	150
	6	110
450.soplex	6	46.7
	6	42.6
453.povray	6	120
	6	99.4
454.calculix	6	122
	6	108
459.GemsFDTD	6	34.0
	6	33.7
465.tonto	6	102
	6	84.4
470.lbm	6	32.1
	6	31.7
481.wrf	6	64.4
	6	62.3
482.sphinx3	6	88.1
	6	82.5

SPECfp_rate_base2006 = 65.2

SPECfp_rate2006 = 72.2

Hardware

CPU Name: AMD Opteron 2435

CPU Characteristics:

CPU MHz: 2600

FPU: Integrated

CPU(s) enabled: 6 cores, 1 chip, 6 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

Continued on next page

Software

Operating System: Red Hat Enterprise Linux Server release 5.3, 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 BL465c G6
(2.6 GHz AMD Opteron 2435)

SPECfp_rate2006 = 72.2

SPECfp_rate_base2006 = 65.2

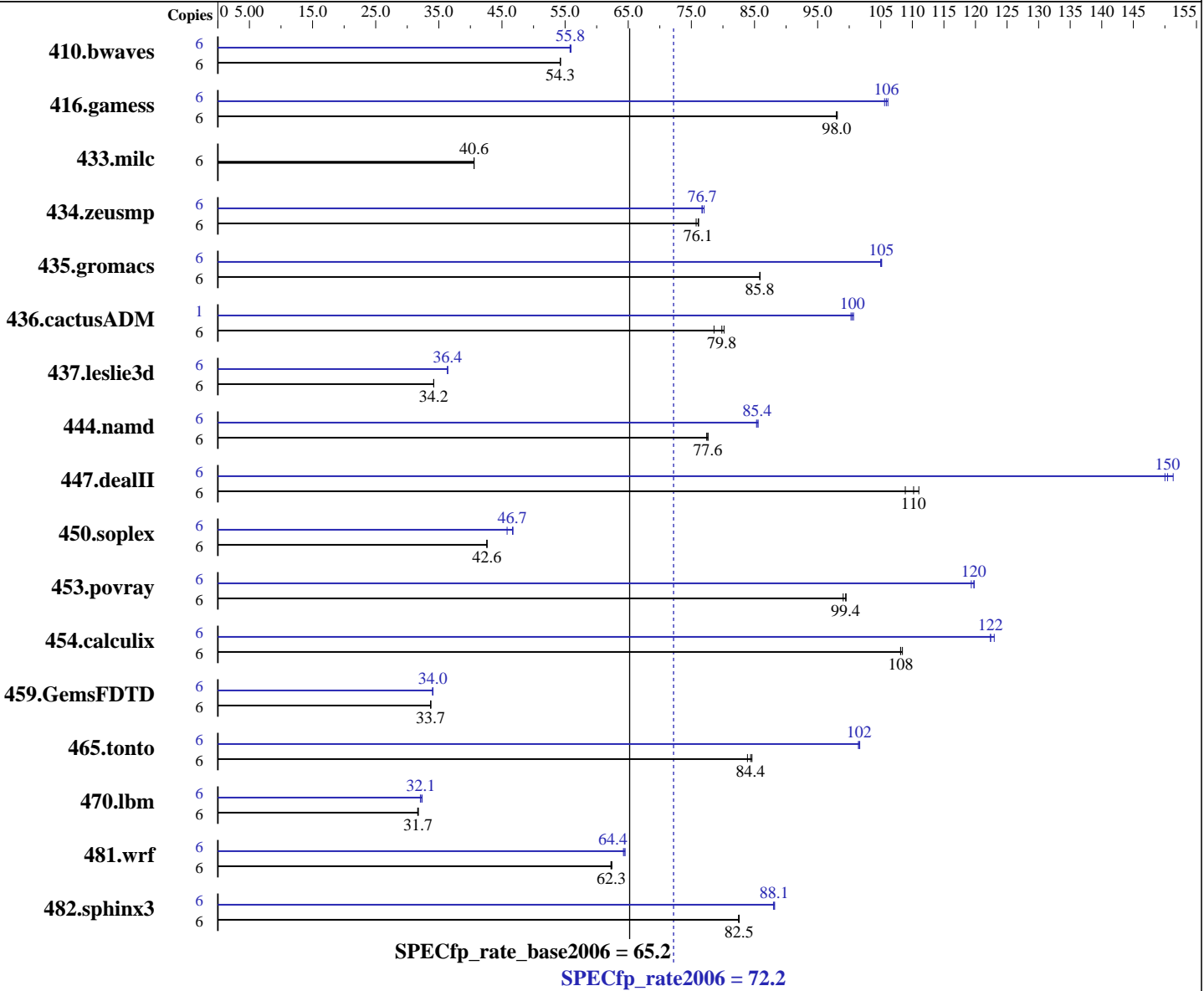|	
CPU2006 license: 3	**Test date:** May-2009
Test sponsor: Hewlett-Packard Company	**Hardware Availability:** Jun-2009
Tested by: Hewlett-Packard Company	**Software Availability:** Jun-2009

L3 Cache:	6 MB I+D on chip per chip	Other Software:	binutils 2.18
Other Cache:	None		
Memory:	16 GB (4x4 GB, PC2-6400P CL5)		
Disk Subsystem:	1 x 146 GB 10K SFF SAS		
Other Hardware:	None		

Results Table

Benchmark	Base						Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	6	1504	54.2	1503	54.3	**1503**	**54.3**	6	1458	55.9	**1461**	**55.8**	1462	55.8
416.gamess	6	1199	98.0	**1199**	**98.0**	1197	98.1	6	1112	106	1107	106	**1110**	**106**
433.milc	6	1357	40.6	**1357**	**40.6**	1357	40.6	6	1357	40.6	**1357**	**40.6**	1357	40.6
434.zeusmp	6	721	75.8	**718**	**76.1**	717	76.2	6	**712**	**76.7**	712	76.7	709	77.0
435.gromacs	6	**499**	**85.8**	499	85.8	499	85.9	6	407	105	**408**	**105**	408	105
436.cactusADM	6	**898**	**79.8**	912	78.6	894	80.2	1	119	100	119	101	**119**	**100**
437.leslie3d	6	1650	34.2	1649	34.2	**1649**	**34.2**	6	**1550**	**36.4**	1551	36.4	1549	36.4
444.namd	6	**620**	**77.6**	622	77.4	620	77.6	6	564	85.3	**563**	**85.4**	562	85.6
447.dealII	6	618	111	**623**	**110**	630	109	6	454	151	458	150	**456**	**150**
450.soplex	6	1174	42.6	**1174**	**42.6**	1174	42.6	6	1092	45.8	**1072**	**46.7**	1070	46.8
453.povray	6	**321**	**99.4**	321	99.5	322	99.0	6	266	120	**267**	**120**	267	119
454.calculix	6	456	108	**458**	**108**	458	108	6	403	123	405	122	**404**	**122**
459.GemsFDTD	6	1889	33.7	**1888**	**33.7**	1887	33.7	6	**1870**	**34.0**	1868	34.1	1872	34.0
465.tonto	6	698	84.6	**700**	**84.4**	704	83.9	6	582	101	581	102	**581**	**102**
470.lbm	6	2605	31.7	**2600**	**31.7**	2596	31.8	6	2570	32.1	2548	32.4	**2564**	**32.1**
481.wrf	6	1074	62.4	1076	62.3	**1076**	**62.3**	6	1043	64.2	**1041**	**64.4**	1039	64.5
482.sphinx3	6	1418	82.5	**1417**	**82.5**	1416	82.6	6	1326	88.2	**1327**	**88.1**	1329	88.0

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 2097152'  was used to set environment locked pages in memory limit

Set vm/nr_hugepages=2700 in /etc/sysctl.conf
mount -t hugetlbfs nodev /mnt/hugepages
```

SPEC CFP2006 Result
Copyright 2006-2014 Standard Performance Evaluation Corporation

Hewlett-Packard Company

ProLiant BL465c G6
(2.6 GHz AMD Opteron 2435)

SPECfp_rate2006 =   72.2

SPECfp_rate_base2006 = 65.2

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

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

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

SPEC CFP2006 Result

Hewlett-Packard Company

ProLiant BL465c G6
(2.6 GHz AMD Opteron 2435)

$SPECfp\_rate2006 =$ 72.2

$SPECfp\_rate\_base2006 =$ 65.2

CPU2006 license: 3		**Test date:**	May-2009
Test sponsor:	Hewlett-Packard Company	**Hardware Availability:**	Jun-2009
Tested by:	Hewlett-Packard Company	**Software Availability:**	Jun-2009

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:4
```

C++ benchmarks:
```
-Mipa=jobs:4
```

Fortran benchmarks:
```
-Mipa=jobs:4
```

Benchmarks using both Fortran and C:
```
-Mipa=jobs:4
```

Peak Compiler Invocation

C benchmarks:
```
pgcc
```

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

    444.namd: `pgcpp`

Continued on next page

SPEC CFP2006 Result
Copyright 2006-2014 Standard Performance Evaluation Corporation

Hewlett-Packard Company

ProLiant BL465c G6
(2.6 GHz AMD Opteron 2435)

SPECfp_rate2006 =   72.2

SPECfp_rate_base2006 = 65.2

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

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

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`

SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Hewlett-Packard Company

ProLiant BL465c G6
(2.6 GHz AMD Opteron 2435)

SPECfp_rate2006 =   72.2

SPECfp_rate_base2006 = 65.2

CPU2006 license: 3

Test sponsor: Hewlett-Packard Company

Tested by: Hewlett-Packard Company

Test date: May-2009

Hardware Availability: Jun-2009

Software Availability: Jun-2009

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

SPEC CFP2006 Result
Copyright 2006-2014 Standard Performance Evaluation Corporation

Hewlett-Packard Company

ProLiant BL465c G6
(2.6 GHz AMD Opteron 2435)

SPECfp_rate2006 =   72.2

SPECfp_rate_base2006 = 65.2

CPU2006 license: 3

Test sponsor: Hewlett-Packard Company
Tested by: Hewlett-Packard Company

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

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:4(pass 2)
```

C++ benchmarks:

```
444.namd: -Mipa=jobs:4(pass 2)
```

Fortran benchmarks:

```
410.bwaves: -Mipa=jobs:4
```

```
434.zeusmp: -Mipa=jobs:4
```

```
437.leslie3d: -Mipa=jobs:4(pass 2)
```

Benchmarks using both Fortran and C:

```
436.cactusADM: -Mipa=jobs:4
```

```
454.calculix: -Mipa=jobs:4(pass 2)
```

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/amd-platform-amd909gh.20090710.00.html
http://www.spec.org/cpu2006/flags/pgi80_linux_flags.20090710.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/amd-platform-amd909gh.20090710.00.xml
http://www.spec.org/cpu2006/flags/pgi80_linux_flags.20090710.xml
http://www.spec.org/cpu2006/flags/x86-open64-4.2.2-flags.xml

SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Hewlett-Packard Company

ProLiant BL465c G6
(2.6 GHz AMD Opteron 2435)

SPECfp_rate2006 = 72.2

SPECfp_rate_base2006 = 65.2

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

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

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 01:19:26 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 23 June 2009.