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

Dell Inc.

PowerEdge R905 (AMD Opteron 8376 HE, 2.30 GHz)

$SPECfp^{®}_rate2006 = $ 187

$SPECfp_rate_base2006 = $ 167
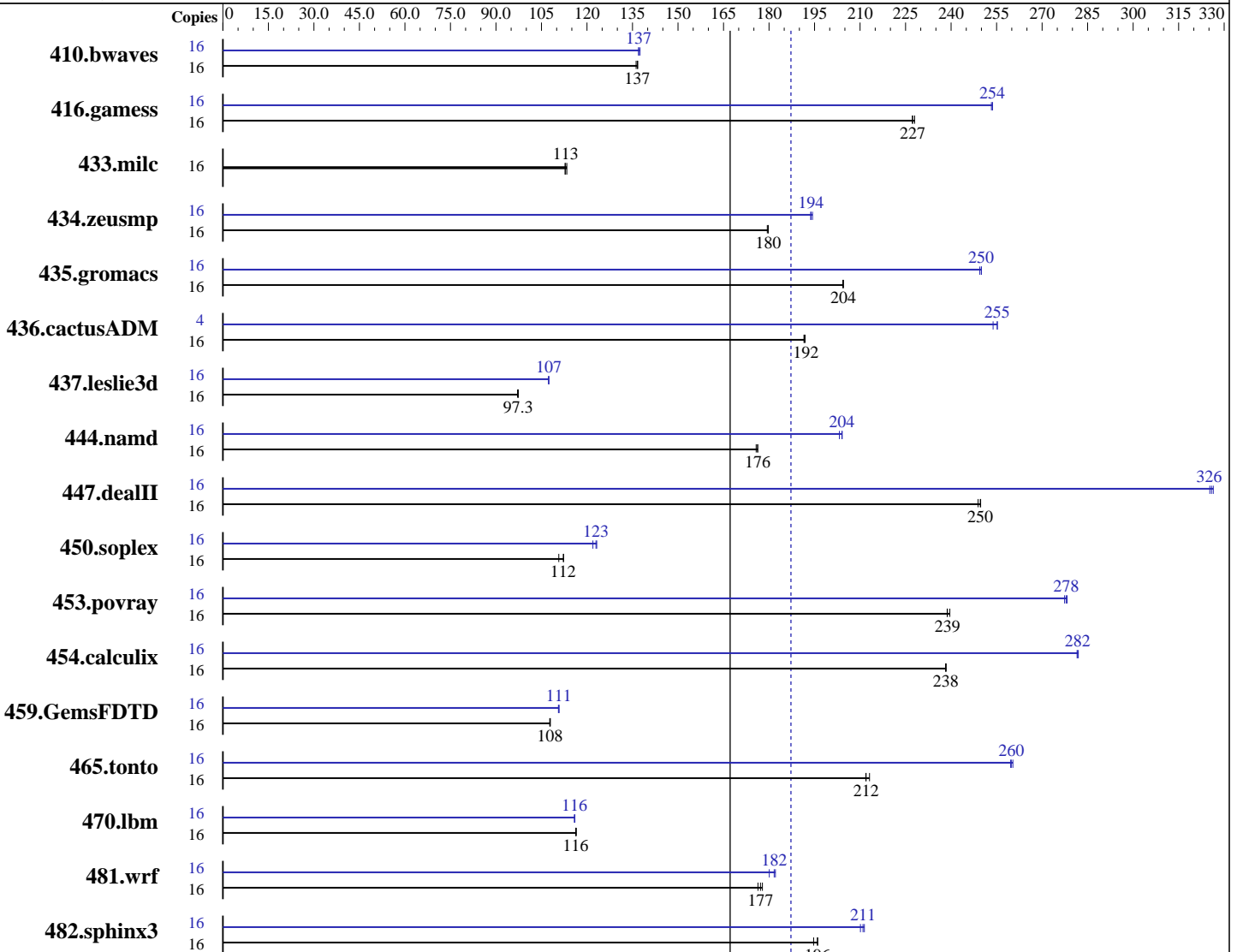
CPU2006 license: 55
Test sponsor: Dell Inc.
Tested by: Dell Inc.

Test date: Dec-2008
Hardware Availability: Feb-2009
Software Availability: Oct-2008

Copies

410.bwaves	16 / 137 ; 16 / 137
416.gamess	16 / 254 ; 16 / 227
433.milc	16 / 113
434.zeusmp	16 / 194 ; 16 / 180
435.gromacs	16 / 250 ; 16 / 204
436.cactusADM	4 / 255 ; 16 / 192
437.leslie3d	16 / 107 ; 16 / 97.3
444.namd	16 / 204 ; 16 / 176
447.dealII	16 / 326 ; 16 / 250
450.soplex	16 / 123 ; 16 / 112
453.povray	16 / 278 ; 16 / 239
454.calculix	16 / 282 ; 16 / 238
459.GemsFDTD	16 / 111 ; 16 / 108
465.tonto	16 / 260 ; 16 / 212
470.lbm	16 / 116 ; 16 / 116
481.wrf	16 / 182 ; 16 / 177
482.sphinx3	16 / 211 ; 16 / 196

SPECfp_rate_base2006 = 167

SPECfp_rate2006 = 187

Hardware

CPU Name: AMD Opteron 8376 HE
CPU Characteristics:
CPU MHz: 2300
FPU: Integrated
CPU(s) enabled: 16 cores, 4 chips, 4 cores/chip
CPU(s) orderable: 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: SUSE Linux Enterprise Server 10 (x86_64) SP2, Kernel 2.6.16.60-0.21-smp
Compiler: PGI Server Complete Version 7.2
PathScale Compiler Suite Version 3.2
Auto Parallel: Yes
File System: ReiserFS
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 32/64-bit

Continued on next page

SPEC CFP2006 Result

Dell Inc.

PowerEdge R905 (AMD Opteron 8376 HE, 2.30 GHz)

$SPECfp_rate2006 = $ 187

$SPECfp_rate_base2006 = $ 167

CPU2006 license: 55	**Test date:** Dec-2008
Test sponsor: Dell Inc.	**Hardware Availability:** Feb-2009
Tested by: Dell Inc.	**Software Availability:** Oct-2008

L3 Cache: 6 MB I+D on chip per chip	Other Software: binutils 2.18
Other Cache: None	32-bit and 64-bit libhugetlbfs libraries
Memory: 64 GB (16 x 4 GB DDR2-800)	
Disk Subsystem: 1 x 73 GB 10000 RPM 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	16	1597	136	1590	137	**1592**	**137**	16	1582	137	**1587**	**137**	1587	137
416.gamess	16	1379	227	1374	228	**1378**	**227**	16	1237	253	**1235**	**254**	1235	254
433.milc	16	1296	113	**1301**	**113**	1303	113	16	1296	113	**1301**	**113**	1303	113
434.zeusmp	16	811	179	**810**	**180**	810	180	16	**751**	**194**	752	194	749	194
435.gromacs	16	559	204	559	204	**559**	**204**	16	458	249	457	250	**457**	**250**
436.cactusADM	16	998	192	**997**	**192**	996	192	4	187	255	188	254	**187**	**255**
437.leslie3d	16	**1546**	**97.3**	1545	97.4	1549	97.1	16	1400	107	**1400**	**107**	1401	107
444.namd	16	730	176	**728**	**176**	728	176	16	632	203	**629**	**204**	629	204
447.dealII	16	733	250	**733**	**250**	735	249	16	563	325	**562**	**326**	561	326
450.soplex	16	1205	111	**1189**	**112**	1188	112	16	1094	122	**1085**	**123**	1083	123
453.povray	16	**356**	**239**	355	240	357	239	16	307	277	**306**	**278**	306	278
454.calculix	16	**554**	**238**	554	238	554	238	16	**469**	**282**	469	282	468	282
459.GemsFDTD	16	1576	108	1573	108	**1575**	**108**	16	1535	111	**1533**	**111**	1533	111
465.tonto	16	739	213	743	212	**743**	**212**	16	605	260	606	260	**606**	**260**
470.lbm	16	**1890**	**116**	1890	116	1887	116	16	1895	116	**1896**	**116**	1898	116
481.wrf	16	**1009**	**177**	1013	176	1005	178	16	992	180	**984**	**182**	981	182
482.sphinx3	16	1602	195	1591	196	**1592**	**196**	16	1484	210	**1478**	**211**	1475	211

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
```

Operating System Notes

```
    The libhugetlbfs libraries were installed using the
    installation rpms that came with the distribution.

    '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=14336 in /etc/sysctl.conf
    mount -t hugetlbfs nodev /mnt/hugepages
```

SPEC CFP2006 Result
Copyright 2006-2014 Standard Performance Evaluation Corporation

Dell Inc.

PowerEdge R905 (AMD Opteron 8376 HE, 2.30 GHz)

SPECfp_rate2006 =　187

SPECfp_rate_base2006 =　167

CPU2006 license: 55		**Test date:**	Dec-2008
Test sponsor:	Dell Inc.	**Hardware Availability:**	Feb-2009
Tested by:	Dell Inc.	**Software Availability:**	Oct-2008

General Notes

```
Environment variables set by runspec before the start of the run:
HUGETLB_MORECORE = "yes"
LD_LIBRARY_PATH = "/root/cpu2006-1.1/amd909gh-libs/64:/root/cpu2006-1.1/amd909gh-libs/32"
NCPUS = "4"
```

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:
　　-Mvect=cachesize:6291456 -fastsse -Msmartalloc=huge -Mfprelaxed
　　-Mipa=fast -Mipa=inline -tp barcelona-64 -Bstatic_pgi

Continued on next page

SPEC CFP2006 Result
Copyright 2006-2014 Standard Performance Evaluation Corporation

Dell Inc.

PowerEdge R905 (AMD Opteron 8376 HE, 2.30 GHz)

SPECfp_rate2006 =   187

SPECfp_rate_base2006 =   167

CPU2006 license: 55
Test sponsor: Dell Inc.
Tested by: Dell Inc.

Test date: Dec-2008
Hardware Availability: Feb-2009
Software Availability: Oct-2008

Base Optimization Flags (Continued)

C++ benchmarks:
```
-Mvect=cachesize:6291456 -fastsse -Msmartalloc=huge -Mfprelaxed
--zc_eh -Mipa=fast -Mipa=inline -tp barcelona-64 -Bstatic_pgi
```

Fortran benchmarks:
```
-Mvect=cachesize:6291456 -fastsse -Mfprelaxed -Msmartalloc=huge
-Mipa=fast -Mipa=inline -tp barcelona-64 -Bstatic_pgi
```

Benchmarks using both Fortran and C:
```
-Mvect=cachesize:6291456 -fastsse -Msmartalloc=huge -Mfprelaxed
-Mipa=fast -Mipa=inline -tp barcelona-64 -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):
```
pathCC
```

444.namd: `pgcpp`

Fortran benchmarks (except as noted below):
```
pathf95
```

410.bwaves: `pgf95`

434.zeusmp: `pgf95`

437.leslie3d: `pgf95`

SPEC CFP2006 Result
Copyright 2006-2014 Standard Performance Evaluation Corporation

Dell Inc.

PowerEdge R905 (AMD Opteron 8376 HE, 2.30 GHz)

$SPECfp\_rate2006 =$ 187

$SPECfp\_rate\_base2006 =$ 167

CPU2006 license: 55		**Test date:**	Dec-2008
Test sponsor: Dell Inc.		**Hardware Availability:**	Feb-2009
Tested by: Dell Inc.		**Software Availability:**	Oct-2008

Peak Compiler Invocation (Continued)

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

    435.gromacs: pathcc pathf95

    481.wrf: 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
    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_LINUX -fno-second-underscore
     482.sphinx3: -DSPEC_CPU_LP64

Peak Optimization Flags

C benchmarks:

      433.milc: basepeak = yes

       470.lbm: -Mvect=cachesize:6291456 -fastsse -Msmartalloc=huge
            -Mprefetch=t0 -Mloop32 -Mfprelaxed -Mipa=fast -Mipa=inline
            -tp barcelona-64 -Bstatic_pgi

     482.sphinx3: -Mpfi=indirect(pass 1) -Mpfo=indirect(pass 2)
            -Mipa=fast(pass 2) -Mipa=inline(pass 2)
            -Mvect=cachesize:6291456 -fastsse -Mfprelaxed -Msmartalloc
            -tp barcelona-64 -Bstatic_pgi

C++ benchmarks:

      444.namd: -Mpfi(pass 1) -Mpfo(pass 2) -Mipa=fast(pass 2)
            -Mipa=inline(pass 2) -Mvect=cachesize:6291456 -fastsse
            -Munroll=n:4 -Munroll=m:8 -Msmartalloc=huge -Mnodepchk
            -Mfprelaxed --zc_eh -tp barcelona-64 -Bstatic_pgi

Dell Inc.

PowerEdge R905 (AMD Opteron 8376 HE, 2.30 GHz)

SPECfp_rate2006 =   187

SPECfp_rate_base2006 =   167

CPU2006 license: 55
Test sponsor: Dell Inc.
Tested by: Dell Inc.

Test date: Dec-2008
Hardware Availability: Feb-2009
Software Availability: Oct-2008

Peak Optimization Flags (Continued)

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) -L/usr/lib -lhugetlbfs(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`

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

Fortran benchmarks:

410.bwaves: `-Mvect=cachesize:6291456 -fastsse -Msmartalloc`
`-Mprefetch=nta -Mfprelaxed -Mipa=fast -Mipa=inline`
`-tp barcelona-64 -Bstatic_pgi`

416.gamess: `-march=barcelona -fb_create fbdata(pass 1)`
`-fb_opt fbdata(pass 2)`
`-Wl,-T/usr/share/libhugetlbfs/ldscripts/elf_x86_64.xBDT(pass 2)`
`-L/usr/lib64 -lhugetlbfs(pass 2) -O2 -OPT:Ofast -OPT:ro=3`
`-OPT:unroll_size=256`

434.zeusmp: `-Mvect=cachesize:6291456 -fastsse -Mfprelaxed`
`-Mprefetch=distance:8 -Mprefetch=t0 -Msmartalloc=huge`
`-Msmartalloc=hugebss -Mipa=fast -Mipa=inline`
`-tp barcelona-64 -Bstatic_pgi`

437.leslie3d: `-Mpfi=indirect(pass 1) -Mpfo=indirect(pass 2)`
`-Mipa=fast(pass 2) -Mipa=inline(pass 2)`
`-Mvect=cachesize:6291456 -fastsse -Mvect=fuse`
`-Msmartalloc=huge -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 -CG:prefer_lru_reg=off`
`-OPT:malloc_alg=1`
`-Wl,-T/usr/share/libhugetlbfs/ldscripts/elf_x86_64.xBDT`
`-L/usr/lib64 -lhugetlbfs`

465.tonto: `-march=barcelona -Ofast -OPT:alias=no_f90_pointer_alias`
`-LNO:blocking=off -CG:load_exe=1 -IPA:plimit=525`
`-OPT:malloc_alg=1`
`-Wl,-T/usr/share/libhugetlbfs/ldscripts/elf_x86_64.xBDT`
`-L/usr/lib64 -lhugetlbfs`

Benchmarks using both Fortran and C:

SPEC CFP2006 Result
Copyright 2006-2014 Standard Performance Evaluation Corporation

Dell Inc.

PowerEdge R905 (AMD Opteron 8376 HE, 2.30 GHz)

$SPECfp\_rate2006 =$ 187

$SPECfp\_rate\_base2006 =$ 167

CPU2006 license: 55
Test sponsor: Dell Inc.
Tested by: Dell Inc.

Test date: Dec-2008
Hardware Availability: Feb-2009
Software Availability: Oct-2008

Peak Optimization Flags (Continued)

```
  435.gromacs: -march=barcelona -Ofast -OPT:rsqrt=2 -OPT:malloc_alg=1
               -Wl,-T/usr/share/libhugetlbfs/ldscripts/elf_x86_64.xBDT
               -L/usr/lib64 -lhugetlbfs

 436.cactusADM: -Mvect=cachesize:6291456 -fastsse -Mconcur
               -Msmartalloc=huge -Mfprelaxed -Mipa=fast -Mipa=inline
               -tp barcelona-64 -Bstatic_pgi

   454.calculix: -Mpfi=indirect(pass 1) -Mpfo=indirect(pass 2)
               -Mipa=fast(pass 2) -Mipa=inline(pass 2)
               -Mvect=cachesize:6291456 -fastsse -Msmartalloc=huge
               -Mprefetch=t0 -Mpre -Mfprelaxed -tp barcelona-64
               -Bstatic_pgi

      481.wrf: -march=barcelona -Ofast -LNO:blocking=off
               -LNO:prefetch_ahead=10 -LANG:copyinout=off
               -IPA:callee_limit=5000 -GRA:prioritize_by_density=on
               -OPT:malloc_alg=1 -m3dnow
               -Wl,-T/usr/share/libhugetlbfs/ldscripts/elf_x86_64.xBDT
               -L/usr/lib64 -lhugetlbfs
```

Peak Other Flags

C benchmarks:
```
     -Mipa=jobs:4(pass 2)
```

C++ benchmarks:

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

Fortran benchmarks (except as noted below):
```
     -Mipa=jobs:4(pass 2)
```

```
    416.gamess: No flags used
```

```
  459.GemsFDTD: No flags used
```

```
     465.tonto: No flags used
```

Benchmarks using both Fortran and C (except as noted below):
```
     -Mipa=jobs:4(pass 2)
```

```
  435.gromacs: No flags used
```

```
      481.wrf: No flags used
```

SPEC CFP2006 Result
Copyright 2006-2014 Standard Performance Evaluation Corporation

Dell Inc.

PowerEdge R905 (AMD Opteron 8376 HE, 2.30 GHz)

$SPECfp\_rate2006 =$ 187

$SPECfp\_rate\_base2006 =$ 167

CPU2006 license: 55
Test sponsor: Dell Inc.
Tested by: Dell Inc.

Test date: Dec-2008
Hardware Availability: Feb-2009
Software Availability: Oct-2008

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/pgi72_linux_flags.20090713.html
http://www.spec.org/cpu2006/flags/CPU2006_flags.20090710.html
http://www.spec.org/cpu2006/flags/amd-platform-amd909gh.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/pgi72_linux_flags.20090713.xml
http://www.spec.org/cpu2006/flags/CPU2006_flags.20090710.xml
http://www.spec.org/cpu2006/flags/amd-platform-amd909gh.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 Tue Jul 22 23:07:36 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 3 March 2009.