SPEC® CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

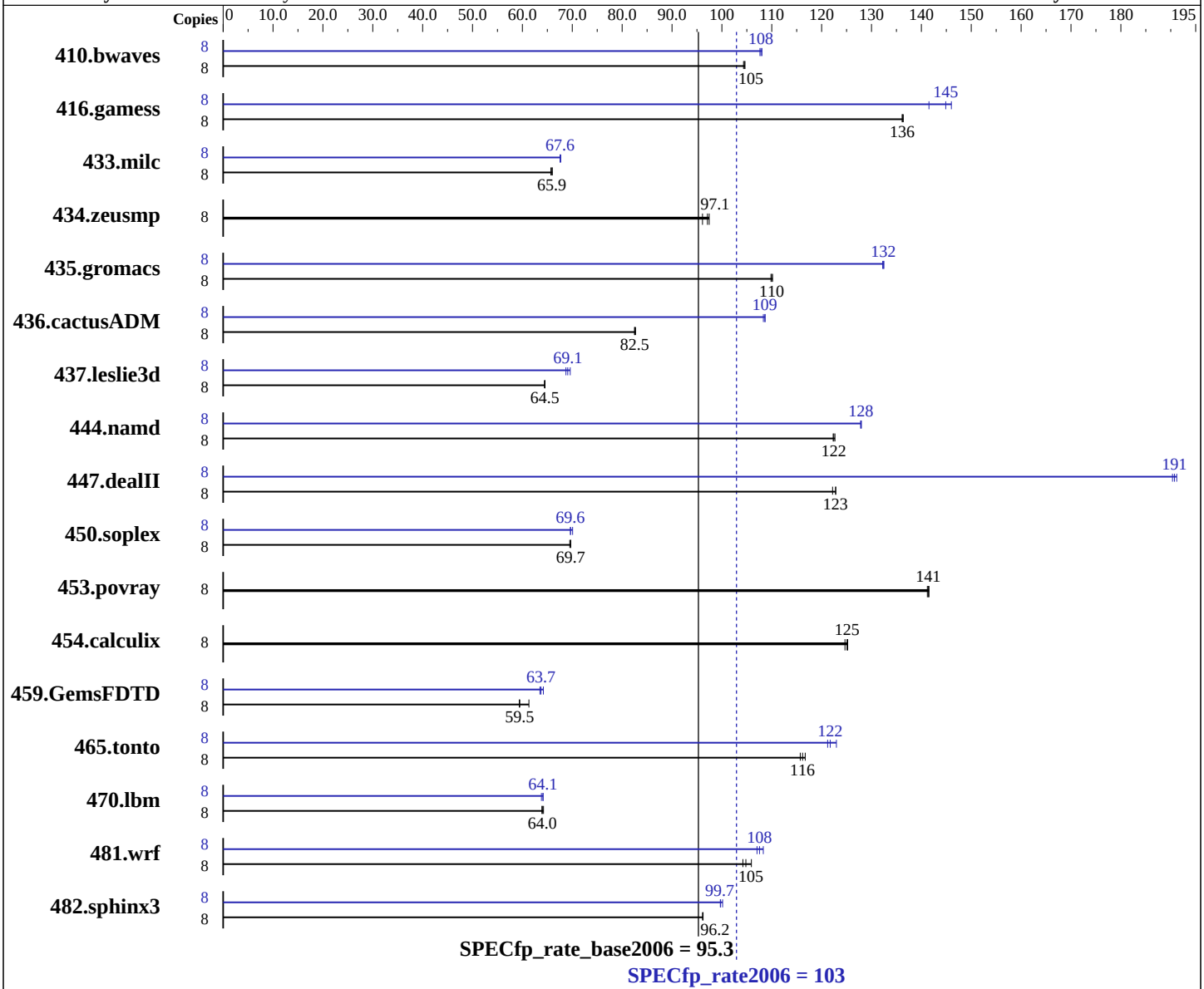
Sun Microsystems
Sun Fire X4440

SPECfp®_rate2006 = 103

SPECfp_rate_base2006 = 95.3

CPU2006 license: 6
Test sponsor: Sun Microsystems
Tested by: Sun Microsystems

Test date: Feb-2008
Hardware Availability: Apr-2008
Software Availability: Dec-2007



Hardware

CPU Name:	AMD Opteron 8224
CPU Characteristics:	
CPU MHz:	3200
FPU:	Integrated
CPU(s) enabled:	8 cores, 4 chips, 2 cores/chip
CPU(s) orderable:	2,4 (order by number of chips)
Primary Cache:	64 KB I + 64 KB D on chip per core
Secondary Cache:	1 MB I+D on chip per core

Continued on next page

Software

Operating System:	SuSE Linux Enterprise Server 10 SP1 64-bit kernel

Continued on next page

SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Sun Microsystems
Sun Fire X4440

SPECfp_rate2006 = 103

SPECfp_rate_base2006 = 95.3

CPU2006 license: 6
Test sponsor: Sun Microsystems
Tested by: Sun Microsystems

Test date: Feb-2008
Hardware Availability: Apr-2008
Software Availability: Dec-2007

L3 Cache: None
Other Cache: None
Memory: 64 GB (16x4GB, DDR2-667 CL5 Reg Dual Rank)
Disk Subsystem: SAS, 72 GB,10 K RPM
Other Hardware: None

Compiler: The Portland Group (PGI)
PGI pgf90 7.1-0 Fortran Compiler
PGI pgcc 7.1-0 C Compiler
PGI pgCC 7.1-0 C++ Compiler
The PathScale Compiler v3.0
PathScale pathf95 3.0 Fortran Compiler
PathScale pathcc 3.0 C Compiler
PathScale pathCC 3.0 C++ Compiler
Auto Parallel: No
File System: ReiserFS
System State: Multi-user, run level 3
Base Pointers: 64-bit
Peak Pointers: 32/64-bit
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	**1040**	**105**	1039	105	1042	104	8	1006	108	1010	108	**1008**	**108**
416.gamess	8	1150	136	**1150**	**136**	1149	136	8	**1081**	**145**	1107	142	1073	146
433.milc	8	1118	65.7	**1114**	**65.9**	1113	66.0	8	1087	67.6	**1087**	**67.6**	1085	67.7
434.zeusmp	8	757	96.1	747	97.5	**750**	**97.1**	8	757	96.1	747	97.5	**750**	**97.1**
435.gromacs	8	519	110	520	110	**519**	**110**	8	432	132	**432**	**132**	431	132
436.cactusADM	8	**1158**	**82.5**	1159	82.5	1156	82.7	8	880	109	883	108	**880**	**109**
437.leslie3d	8	**1166**	**64.5**	1167	64.4	1165	64.5	8	1081	69.6	1094	68.7	**1088**	**69.1**
444.namd	8	**524**	**122**	525	122	523	123	8	501	128	**502**	**128**	502	128
447.dealII	8	745	123	749	122	**745**	**123**	8	479	191	**480**	**191**	481	190
450.soplex	8	960	69.5	957	69.7	**958**	**69.7**	8	952	70.1	**958**	**69.6**	958	69.6
453.povray	8	301	142	301	141	**301**	**141**	8	301	142	301	141	**301**	**141**
454.calculix	8	**528**	**125**	527	125	529	125	8	**528**	**125**	527	125	529	125
459.GemsFDTD	8	**1427**	**59.5**	1384	61.3	1430	59.4	8	1322	64.2	1336	63.5	**1332**	**63.7**
465.tonto	8	**678**	**116**	675	117	680	116	8	640	123	**647**	**122**	649	121
470.lbm	8	1711	64.2	1720	63.9	**1717**	**64.0**	8	1722	63.8	**1714**	**64.1**	1713	64.2
481.wrf	8	857	104	**853**	**105**	844	106	8	825	108	**831**	**108**	835	107
482.sphinx3	8	1620	96.2	1622	96.1	**1621**	**96.2**	8	1557	100	**1563**	**99.7**	1564	99.7

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

Operating System Notes

```
'ulimit -s unlimited' used to set environment stack size
'ulimit -l 2457600' was used to set environment lock pages quantity
'numactl' was used to bind copies to the cores
Set vm/nr_hugepages=2400 in /etc/sysctl.conf
mount -t hugetlbfs nodev /mnt/hugepages
```

Continued on next page

Operating System Notes (Continued)

```
Environment variable PGI_HUGE_PAGES set to 150
```

Platform Notes

```
Default BIOS settings were used.
```

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:
```
-fast -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc=huge:448
-tp k8-64 -Bstatic_pgi
```

Continued on next page

Base Optimization Flags (Continued)

C++ benchmarks:
`-fast -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc=huge:448 --zc_eh -tp k8-64 -Bstatic_pgi`

Fortran benchmarks:
`-fast -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc=huge:448 -tp k8-64 -Bstatic_pgi`

Benchmarks using both Fortran and C:
`-fast -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc=huge:448 -tp k8-64 -Bstatic_pgi`

Base Other Flags

C benchmarks:
`-w`

C++ benchmarks:
`-w`

Fortran benchmarks:
`-w`

Benchmarks using both Fortran and C:
`-w`

Peak Compiler Invocation

C benchmarks (except as noted below):
`pathcc`

433.milc: `pgcc`

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

444.namd: `pgcpp`

453.povray: `pgcpp`

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

434.zeusmp: `pgf95`

Continued on next page

Peak Compiler Invocation (Continued)

465.tonto: pgf95

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
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX

Peak Optimization Flags

C benchmarks:

433.milc: -Mpfi(pass 1) -Mipa=fast(pass 2) -Mipa=inline(pass 2)
-Mipa=noarg(pass 2) -Mpfo(pass 2) -fast -O4 -Mdse
-Mfprelaxed -Msmartalloc=huge:448 -tp k8-64 -Bstatic_pgi

470.lbm: -Ofast

482.sphinx3: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -O3
-OPT:Ofast -WOPT:aggstr=0 -m32

C++ benchmarks:

444.namd: -fast -O4 -Mfprelaxed -Msmartalloc=huge:448 --zc_eh
-tp k8-64 -Mnodepchk -Mprefetch -Msafe_lastval
-Msafeptr=static -Mstride0 -Munroll=n:4 -Mvect=noidiom
-Mvect=prefetch -Bstatic_pgi

447.dealII: -Ofast -INLINE:aggressive=on -OPT:malloc_alg=1 -m32
-fno-exceptions

Continued on next page

Peak Optimization Flags (Continued)

450.soplex: `-fb_create fbdata`(pass 1) `-fb_opt fbdata`(pass 2) `-m32 -O3 -OPT:IEEE_arith=3 -CG:load_exe=0 -CG:movnti=1 -LNO:minvariant=off -LNO:prefetch=1 -fno-exceptions`

453.povray: `basepeak = yes`

Fortran benchmarks:

410.bwaves: `-fb_create fbdata`(pass 1) `-fb_opt fbdata`(pass 2) `-O3 -OPT:Ofast -OPT:IEEE_arith=3 -LNO:blocking=off -LNO:ignore_feedback=off`

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

434.zeusmp: `basepeak = yes`

437.leslie3d: `-Ofast -OPT:malloc_alg=1`

459.GemsFDTD: `-Ofast -LNO:fission=2 -LNO:prefetch=0`

465.tonto: `-fast -O4 -Mfprelaxed -Msmartalloc=huge:448 -Mipa=fast -Mipa=inline -Mvect=noaltcode -tp k8-64 -Bstatic_pgi`

Benchmarks using both Fortran and C:

435.gromacs: `-fast -Mfpapprox=rsqrt -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc=huge:448 -tp k8-64 -Bstatic_pgi`

436.cactusADM: `-fb_create fbdata`(pass 1) `-fb_opt fbdata`(pass 2) `-O3 -LNO:prefetch=3 -LNO:prefetch_ahead=5 -LNO:ou_prod_max=10 -LNO:full_unroll=5 -ipa`

454.calculix: `basepeak = yes`

481.wrf: `-fast -Mfprelaxed -Msmartalloc=huge:448 -Mvect=noaltcode -tp k8-64 -Bstatic_pgi`

Peak Other Flags

C benchmarks:

433.milc: `-w`

C++ benchmarks (except as noted below):
`-w`

Continued on next page

Peak Other Flags (Continued)

447.dealII: `-static`

450.soplex: `No flags used`

Fortran benchmarks:

434.zeusmp: `-w`

465.tonto: `-w`

Benchmarks using both Fortran and C (except as noted below):
`-w`

436.cactusADM: `No flags used`

The flags file that was used to format this result can be browsed at
`http://www.spec.org/cpu2006/flags/amd814GH-flags.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/cpu2006/flags/amd814GH-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 v1.0.
Report generated on Tue Jul 22 17:36:21 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 11 June 2008.