SPEC® CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Oracle Corporation

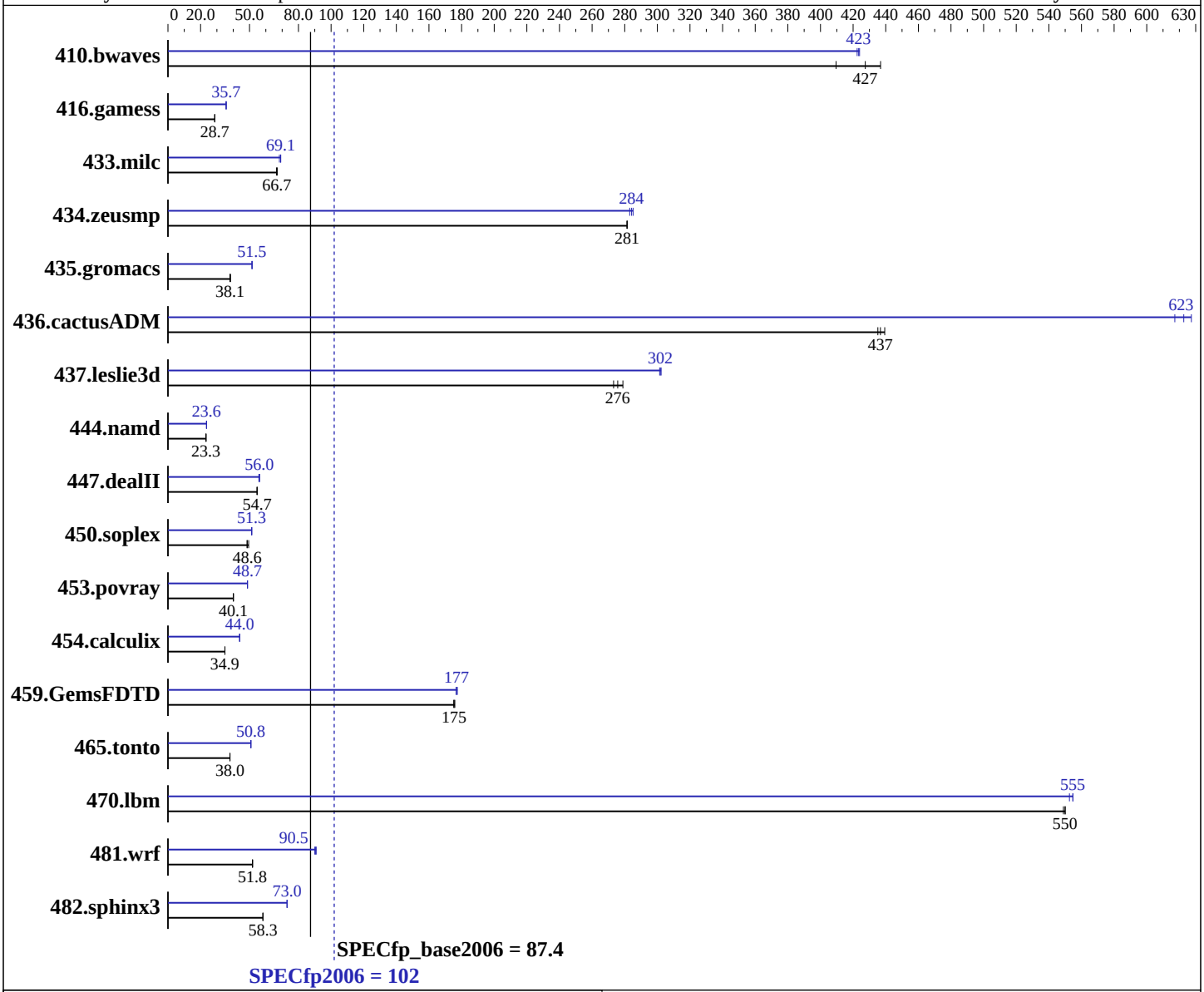
Sun Fire X4-2L (Intel Xeon E5-2697 v2 2.7GHz)

SPECfp®2006 = 102

SPECfp_base2006 = 87.4

CPU2006 license: 6
Test sponsor: Oracle Corporation
Tested by: Oracle Corporation

Test date: Sep-2013
Hardware Availability: Sep-2013
Software Availability: Nov-2013



Hardware

CPU Name:	Intel Xeon E5-2697 v2
CPU Characteristics:	Intel Turbo Boost Technology up to 3.50 GHz
CPU MHz:	2700
FPU:	Integrated
CPU(s) enabled:	24 cores, 2 chips, 12 cores/chip
CPU(s) orderable:	2 chips
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	256 KB I+D on chip per core

Continued on next page

Software

Operating System:	Solaris 11.1 (SRU 11)
Compiler:	C/C++: Version 12.3 of Oracle Solaris Studio 10/13 Patch Set (tested with nightly build 20130822)
Auto Parallel:	Yes
File System:	zfs
System State:	Default
Base Pointers:	64-bit
Peak Pointers:	64-bit

Continued on next page

SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Oracle Corporation

Sun Fire X4-2L (Intel Xeon E5-2697 v2 2.7GHz)

SPECfp2006 = 102

SPECfp_base2006 = 87.4

CPU2006 license: 6
Test sponsor: Oracle Corporation
Tested by: Oracle Corporation

Test date: Sep-2013
Hardware Availability: Sep-2013
Software Availability: Nov-2013

L3 Cache: 30 MB I+D on chip per chip
Other Cache: None
Memory: 256 GB (16 x 16 GB 2Rx4 PC3-12800R-11, ECC)
Disk Subsystem: 1 x 600 GB SAS, 10K RPM
Other Hardware: None

Other Software: None

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	33.2	410	31.1	437	**31.8**	**427**	**32.1**	**423**	32.1	424	32.2	422
416.gamess	682	28.7	**682**	**28.7**	682	28.7	549	35.7	549	35.7	**549**	**35.7**
433.milc	138	66.6	137	67.0	**138**	**66.7**	**133**	**69.1**	133	69.1	134	68.3
434.zeusmp	**32.3**	**281**	32.3	282	32.3	281	32.1	283	**32.0**	**284**	31.9	285
435.gromacs	**187**	**38.1**	188	38.0	186	38.4	138	51.6	139	51.5	**139**	**51.5**
436.cactusADM	**27.4**	**437**	27.2	439	27.5	435	**19.2**	**623**	19.4	617	19.0	627
437.leslie3d	34.4	273	**34.1**	**276**	33.7	279	31.1	302	**31.1**	**302**	31.2	301
444.namd	344	23.3	344	23.3	**344**	**23.3**	**339**	**23.6**	339	23.6	339	23.6
447.dealII	209	54.7	209	54.6	**209**	**54.7**	205	55.7	204	56.2	**204**	**56.0**
450.soplex	169	49.5	172	48.5	**172**	**48.6**	162	51.4	163	51.3	**163**	**51.3**
453.povray	133	40.1	133	40.1	**133**	**40.1**	**109**	**48.7**	109	48.8	109	48.7
454.calculix	236	34.9	**236**	**34.9**	236	35.0	188	44.0	188	44.0	**188**	**44.0**
459.GemsFDTD	60.3	176	60.6	175	**60.5**	**175**	60.1	177	59.8	177	**60.0**	**177**
465.tonto	259	38.0	**259**	**38.0**	259	38.1	**194**	**50.8**	194	50.8	194	50.8
470.lbm	25.0	549	**25.0**	**550**	25.0	550	**24.8**	**555**	24.9	553	24.8	555
481.wrf	216	51.8	215	52.0	**216**	**51.8**	**123**	**90.5**	123	90.9	124	90.0
482.sphinx3	335	58.2	335	58.3	**335**	**58.3**	**267**	**73.0**	267	73.1	267	73.0

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 to bind processes to CPU threads with pbind(1)
```

Operating System Notes

```
ulimit -s unlimited  (shell): increases stack
/etc/system parameters
   autoup=1000
   tune_t_fsflushr=10

gzip compression set using "zfs set compression=gzip <zfs-filesystem>"
```

Platform Notes

```
Default BIOS Settings were used except:
    Hyper-Threading (HT) Technology was Disabled

Sysinfo program /export/home/cpu2006v1.2/Docs/sysinfo
: 6775  2011-08-16 #f7622badcf24e01c368b1db4377c
running on x4-2l-001 Mon Sep  2 12:38:54 2013

This section contains SUT (System Under Test) info as seen by
some common utilities.  To remove or add to this section, see:
  http://www.spec.org/cpu2006/Docs/config.html#sysinfo


From /usr/sbin/psrinfo -pv
 Intel(r) Xeon(r) CPU E5-2697 v2 @ 2.70GHz
 x86 (GenuineIntel 306E4 family 6 model 62 step 4 clock 2693 MHz)

/usr/sbin/psrinfo -p:   2 chips
/usr/sbin/psrinfo | wc -l: 24 threads

/usr/sbin/prtconf | grep "Memory size:": 262087 Megabytes

/etc/release:
                              Oracle Solaris 11.1 X86
uname -a:
SunOS x4-2l-001 5.11 11.1 i86pc i386 i86pc

disk: df -h
Filesystem             Size   Used  Available Capacity  Mounted on
rpool/export/home      547G    33G       440G     8%    /export/home

(End of data from sysinfo program)
```

General Notes

```
Environment variables set by runspec before the start of the run:
MTEXCLUSIVE = "Y"
OMP_NUM_THREADS = "24"
SUNW_MP_PROCBIND = "scatter"
SUNW_MP_THR_IDLE = "spin"
```

Base Compiler Invocation

C benchmarks:
cc

C++ benchmarks:
CC

Continued on next page

Base Compiler Invocation (Continued)

Fortran benchmarks:
f90

Benchmarks using both Fortran and C:
cc f90

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
436.cactusADM: -DSPEC_CPU_LP64
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
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_WORDS_LITTLEENDIAN
482.sphinx3: -DSPEC_CPU_LP64

Base Optimization Flags

C benchmarks:
-g -fast -xtarget=ivybridge -xipo=2 -m64 -xautopar -xreduction
-xalias_level=std

C++ benchmarks:
-g -fast -xtarget=ivybridge -xipo=2 -m64 -xpagesize=2M
-xalias_level=compatible -library=stdcxx4

Fortran benchmarks:
-g -fast -xtarget=ivybridge -xipo=2 -m64 -xautopar -xreduction
-xpagesize=2M

Benchmarks using both Fortran and C:
-g -fast(cc) -xtarget=ivybridge -xipo=2 -m64 -xautopar -xreduction
-xalias_level=std -fast(f90) -xpagesize=2M

Peak Compiler Invocation

C benchmarks:
cc

C++ benchmarks:
CC

Fortran benchmarks:
f90

Benchmarks using both Fortran and C:
cc f90

Peak Portability Flags

436.cactusADM: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_WORDS_LITTLEENDIAN

Peak Optimization Flags

C benchmarks:

433.milc: -g -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xtarget=ivybridge
-xipo=2 -m64 -xpagesize=2M -xalias_level=std -xautopar
-xreduction -W2,-Aparallel:nthreads=12 -lmtmalloc

470.lbm: -g -fast -xtarget=ivybridge -xipo=2 -m64 -xautopar
-xreduction -xpagesize=4K -xprefetch_level=3 -lmtmalloc

482.sphinx3: -g -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xtarget=ivybridge
-xipo=2 -m64 -xpagesize=2M -xalias_level=std -xrestrict
-xprefetch=no%auto -xautopar -xreduction
-W2,-Aparallel:nthreads=12

C++ benchmarks:

444.namd: -g -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xtarget=ivybridge
-xO3 -xprefetch=no%auto -m64 -xpagesize=2M
-xalias_level=compatible -library=stlport4

447.dealII: -g -fast -xtarget=ivybridge -xipo=2 -m64 -xpagesize=2M
-xalias_level=compatible -library=stdcxx4 -xrestrict

Continued on next page

Peak Optimization Flags (Continued)

450.soplex: -g -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xtarget=ivybridge
-xipo=2 -xpagesize=2M -xalias_level=compatible
-library=stlport4 -m64 -Qoption iropt -Rtile

453.povray: -g -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xtarget=ivybridge
-xprefetch=no%auto -xipo=2 -m64 -xpagesize=2M
-xalias_level=compatible -qoption iropt -Atile:skew=on
-qoption iropt -Ainline:cs=700 -library=stdcxx4

Fortran benchmarks:

410.bwaves: -g -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xtarget=ivybridge
-xipo=2 -m64 -xpagesize=4K -xautopar -xreduction

416.gamess: -g -fast -xtarget=ivybridge -xipo=2 -m64 -xpagesize=2M
-xunroll=1 -xvector=no%simd -xprefetch=no%auto

434.zeusmp: -g -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xtarget=ivybridge
-xipo=2 -m64 -xpagesize=2M -xautopar -xreduction

437.leslie3d: -g -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xtarget=ivybridge
-xipo=2 -m64 -xautopar -xreduction -lmtmalloc

459.GemsFDTD: Same as 434.zeusmp

465.tonto: -g -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xtarget=ivybridge
-xpagesize=2M -O3 -m64 -stackvar -xprefetch=no%auto
-xalias -xautopar -xreduction
-Qoption iropt -Aparallel:nthreads=12 -lfast_r

Benchmarks using both Fortran and C:

435.gromacs: -g -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast(cc) -fast(f90)
-xtarget=ivybridge -xipo=2 -m64 -xpagesize=2M -fsimple=2
-Qoption ube -fsimple=3 -O4 -xautopar -xreduction
-Qoption iropt -Aparallel:nthreads=12 -lmtmalloc

436.cactusADM: -g -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast(cc) -fast(f90)
-xtarget=ivybridge -m64 -xautopar -xreduction
-xpagesize=2M -lumem -lmvec -xprefetch_level=3

Continued on next page

Peak Optimization Flags (Continued)

454.calculix: `-g -fast`(cc) `-fast`(f90) `-xtarget=ivybridge -xipo=0 -m64 -xpagesize=2M -xprefetch_level=2 -xprefetch_auto_type=indirect_array_access -Qoption ube -xprefetch_mult=24 -xunroll=2`

481.wrf: `-g -xprofile=collect:./feedback`(pass 1) `-xprofile=use:./feedback`(pass 2) `-fast`(cc) `-fast`(f90) `-xtarget=ivybridge -O4 -xchip=nehalem -xarch=sse4_2 -xipo=2 -m64 -xpagesize=2M -xprefetch=no%auto -xautopar -xreduction -Qoption iropt -Aparallel:nthreads=12`

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Oracle-Solaris-Studio12.3-x86_64.20130924.html
http://www.spec.org/cpu2006/flags/Oracle-platform-x86_64.CPUv1.2-RevA.20120425.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Oracle-Solaris-Studio12.3-x86_64.20130924.xml
http://www.spec.org/cpu2006/flags/Oracle-platform-x86_64.CPUv1.2-RevA.20120425.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 v1.2.
Report generated on Thu Jul 24 16:04:43 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 24 September 2013.