SPEC® CFP2006 Result

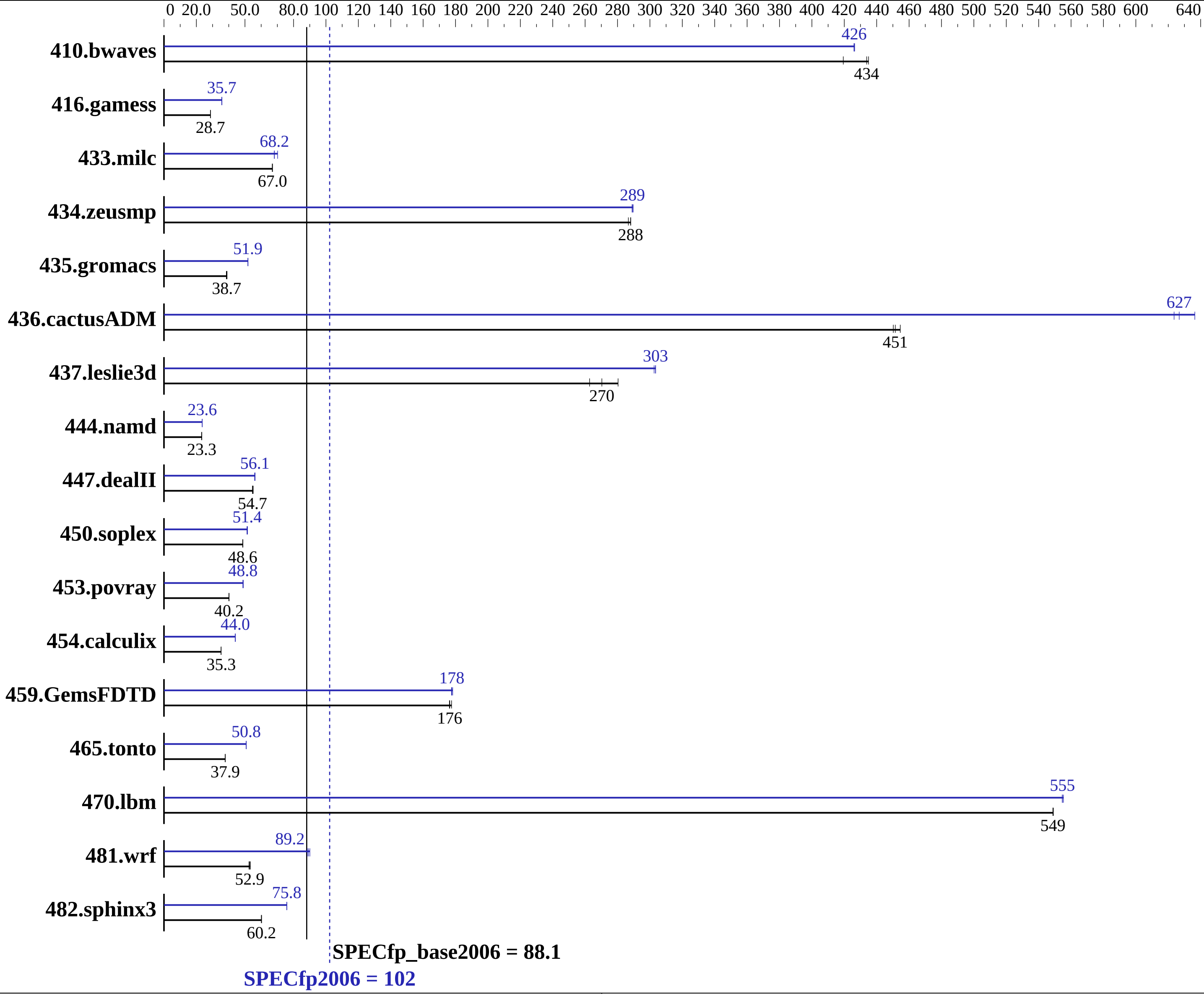
Oracle Corporation

Sun Blade X4-2B (Intel Xeon E5-2697 v2 2.7GHz)

SPECfp®2006 = 102

SPECfp_base2006 = 88.1

CPU2006 license:	6	**Test date:**	Sep-2013
Test sponsor:	Oracle Corporation	**Hardware Availability:**	Sep-2013
Tested by:	Oracle Corporation	**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

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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

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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 300 GB SAS, 10K RPM
Other Hardware: None

Other Software: None

Results Table

Benchmark	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio
410.bwaves	32.4	419	31.2	435	**31.3**	**434**	**31.9**	**426**	31.9	426	31.9	426
416.gamess	683	28.6	683	28.7	**683**	**28.7**	**548**	**35.7**	548	35.7	548	35.7
433.milc	137	66.8	**137**	**67.0**	137	67.0	135	68.1	131	70.2	**135**	**68.2**
434.zeusmp	**31.6**	**288**	31.7	287	31.6	288	31.5	289	31.4	290	**31.5**	**289**
435.gromacs	183	38.9	**184**	**38.7**	185	38.5	138	51.8	**138**	**51.9**	138	51.9
436.cactusADM	26.3	455	26.5	450	**26.5**	**451**	19.2	624	18.8	636	**19.1**	**627**
437.leslie3d	33.5	280	35.8	263	**34.8**	**270**	31.1	303	**31.0**	**303**	31.0	304
444.namd	344	23.3	**344**	**23.3**	344	23.3	339	23.7	339	23.6	**339**	**23.6**
447.dealII	**209**	**54.7**	208	55.1	209	54.7	204	56.0	203	56.3	**204**	**56.1**
450.soplex	171	48.7	172	48.6	**172**	**48.6**	163	51.2	162	51.6	**162**	**51.4**
453.povray	132	40.2	**132**	**40.2**	133	40.1	109	48.7	109	49.0	**109**	**48.8**
454.calculix	234	35.3	234	35.3	**234**	**35.3**	**187**	**44.0**	187	44.0	187	44.0
459.GemsFDTD	59.8	178	60.2	176	**60.1**	**176**	59.5	178	59.8	177	**59.7**	**178**
465.tonto	260	37.8	**260**	**37.9**	260	37.9	**194**	**50.8**	194	50.8	194	50.8
470.lbm	25.0	549	25.0	549	**25.0**	**549**	24.8	555	**24.8**	**555**	24.7	555
481.wrf	213	52.5	210	53.3	**211**	**52.9**	**125**	**89.2**	126	88.5	124	90.1
482.sphinx3	323	60.3	**324**	**60.2**	324	60.1	257	75.8	**257**	**75.8**	257	75.8

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 bur408-94 Mon Sep  2 15:51:28 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 bur408-94 5.11 11.1 i86pc i386 i86pc

disk: df -h
Filesystem               Size   Used  Available Capacity   Mounted on
rpool/export/home        274G    33G        164G     17%    /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

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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

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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

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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

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