SPEC® CFP2006 Result

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Oracle Corporation

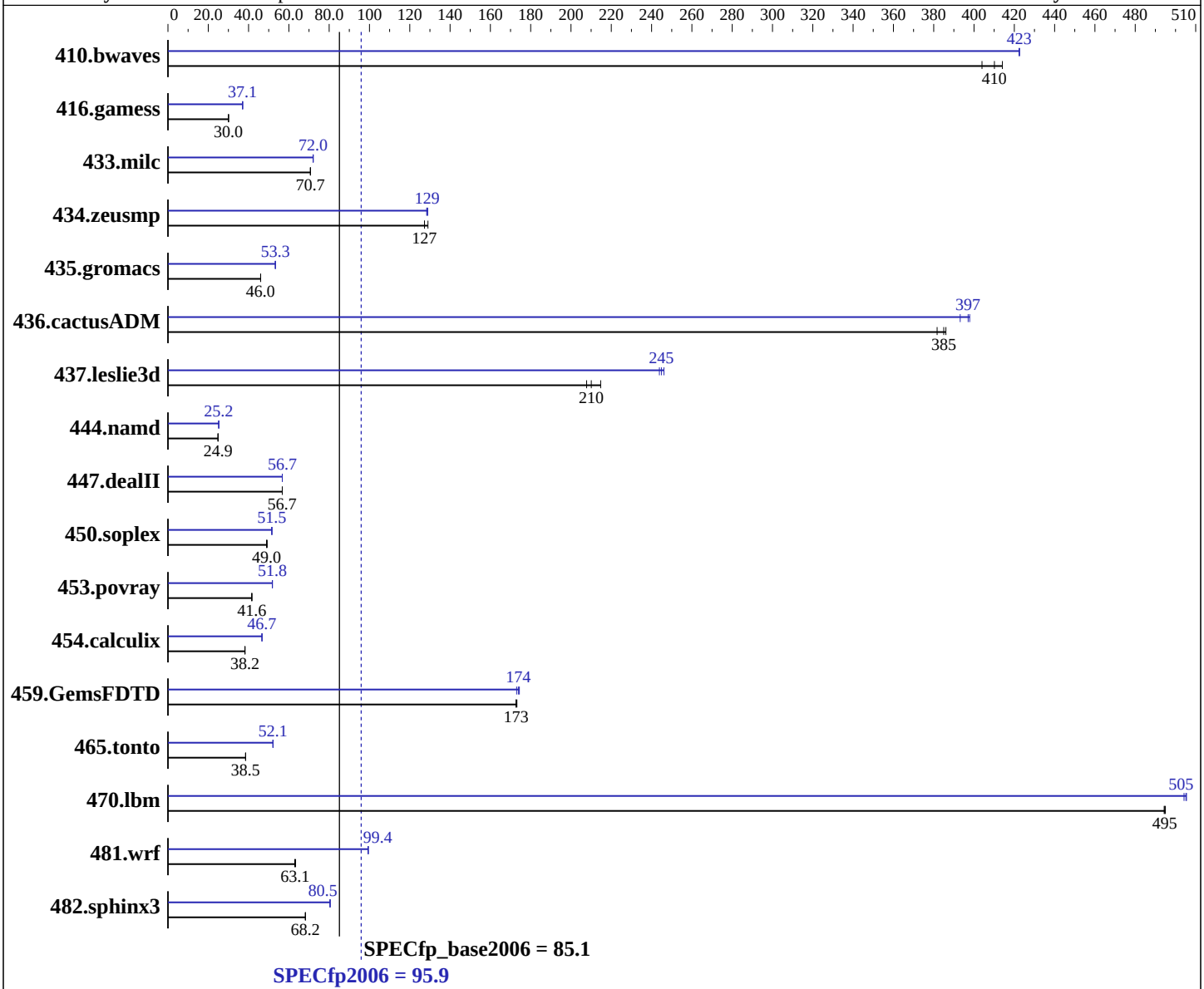
Sun Server X3-2L (Intel Xeon E5-2690 2.9GHz)

SPECfp®2006 = 95.9

SPECfp_base2006 = 85.1

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

Test date: Apr-2012
Hardware Availability: Apr-2012
Software Availability: Jun-2012



Hardware

CPU Name:	Intel Xeon E5-2690
CPU Characteristics:	Intel Turbo Boost Technology up to 3.80 GHz
CPU MHz:	2900
FPU:	Integrated
CPU(s) enabled:	16 cores, 2 chips, 8 cores/chip, 2 threads/core
CPU(s) orderable:	1 or 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:	Oracle Solaris 11 11/11 (SRU 03)
Compiler:	C/C++/Fortran: Version 12.3 of Oracle Solaris Studio (patch update 1, tested with nightly build 20120313)
Auto Parallel:	Yes
File System:	zfs
System State:	Default
Base Pointers:	64-bit
Peak Pointers:	32/64-bit

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L3 Cache: 20 MB I+D on chip per chip
Other Cache: None
Memory: 128 GB (16 x 8 GB 2Rx4 PC3-12800R-11, ECC)
Disk Subsystem: 1 x 600 GB 10K RPM SAS
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	33.6	404	**33.1**	**410**	32.8	414	32.2	422	32.2	423	**32.2**	**423**
416.gamess	652	30.0	**652**	**30.0**	652	30.0	528	37.1	**528**	**37.1**	528	37.1
433.milc	**130**	**70.7**	130	70.7	130	70.7	127	72.0	127	72.1	**127**	**72.0**
434.zeusmp	70.5	129	71.5	127	**71.5**	**127**	70.9	128	70.6	129	**70.7**	**129**
435.gromacs	**155**	**46.0**	155	46.0	155	46.0	134	53.3	134	53.3	**134**	**53.3**
436.cactusADM	31.0	386	**31.0**	**385**	31.3	382	30.4	393	**30.1**	**397**	30.0	398
437.leslie3d	**44.7**	**210**	45.2	208	43.8	215	38.5	244	38.2	246	**38.4**	**245**
444.namd	323	24.9	**323**	**24.9**	323	24.9	**318**	**25.2**	318	25.2	318	25.2
447.dealII	202	56.7	**202**	**56.7**	202	56.7	**202**	**56.7**	202	56.7	202	56.7
450.soplex	**170**	**49.0**	170	48.9	169	49.2	162	51.5	**162**	**51.5**	162	51.6
453.povray	128	41.6	**128**	**41.6**	128	41.6	**103**	**51.8**	103	51.8	103	51.9
454.calculix	216	38.2	**216**	**38.2**	216	38.2	177	46.7	177	46.7	**177**	**46.7**
459.GemsFDTD	**61.4**	**173**	61.4	173	61.3	173	**61.0**	**174**	60.8	174	61.3	173
465.tonto	255	38.5	255	38.5	**255**	**38.5**	189	52.1	**189**	**52.1**	189	52.1
470.lbm	27.8	495	**27.8**	**495**	27.8	494	27.2	504	27.2	505	**27.2**	**505**
481.wrf	**177**	**63.1**	178	62.9	176	63.3	**112**	**99.4**	112	99.4	113	99.3
482.sphinx3	286	68.2	**286**	**68.2**	286	68.2	**242**	**80.5**	242	80.5	242	80.4

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 10000  (shell): increases stack

/etc/system parameters
   autoup=1000
   zfs:zfs_arc_max=0x400000000
   zfs:zfs_arc_min=0x400000000
   ncsize=0x10000
   lpg_alloc_prefer=1

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

Platform Notes

```
Default BIOS Settings were used, except:
  Energy Performance set to Performance

Oracle's Sun Server X3-2L was formerly known as the Sun Fire X4270 M3

Single processor configuration of this system is available as of Sep-2012

Sysinfo program /export/home/gnana/cpu2006v1.2/Docs/sysinfo
: 6775  2011-08-16 #f7622badcf24e01c368b1db4377c
running on bur398-107 Fri Apr  6 07:06:07 2012

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 E5-2690 0 @ 2.90GHz
 x86 (GenuineIntel 206D7 family 6 model 45 step 7 clock 2900 MHz)

/usr/sbin/psrinfo -p:   2 chips
/usr/sbin/psrinfo -pv | grep "core has" | wc -l:  16 cores
/usr/sbin/psrinfo | wc -l: 32 threads

/usr/sbin/prtconf | grep "Memory size:": 131062 Megabytes

/etc/release:
                            Oracle Solaris 11 11/11 X86
uname -a:
SunOS bur398-107 5.11 11.0 i86pc i386 i86pc

disk: df -h
Filesystem             Size   Used  Available Capacity  Mounted on
rpool/export/home      547G    15G        83G    16%    /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 = "16"
SUNW_MP_PROCBIND = "true"
SUNW_MP_THR_IDLE = "spin"
```

Base Compiler Invocation

C benchmarks:
cc

C++ benchmarks:
CC

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 -xipo=2 -m64 -xautopar -xreduction -xalias_level=std

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

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

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

470.lbm: -g -fast -Wu,-nontemporal -xprefetch_level=3 -xipo=2 -m64
-xautopar -xreduction -xpagesize=4K -lmtmalloc

482.sphinx3: -g -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xipo=2 -m64
-xpagesize=2M -xalias_level=std -xrestrict
-xprefetch=no%auto -xautopar -xreduction
-W2,-Aparallel:nthreads=8

C++ benchmarks:

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

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

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

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Peak Optimization Flags (Continued)

453.povray: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xprefetch=no%auto
-xipo=2 -m64 -xpagesize=2M -xalias_level=compatible
-qoption iropt -Atile:skew=on -qoption iropt -Ainline:cs=700
-library=stlport4

Fortran benchmarks:

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

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

434.zeusmp: -fast -xipo=2 -m64 -xpagesize=2M -xautopar -xreduction

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

459.GemsFDTD: Same as 434.zeusmp

465.tonto: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xpagesize=2M -O3
-m64 -stackvar -xprefetch=no%auto -xalias -xautopar
-xreduction -Qoption iropt -Aparallel:nthreads=8 -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)
-xipo=2 -m64 -xpagesize=2M -fsimple=2
-Qoption ube -fsimple=3 -xautopar -xreduction
-Qoption iropt -Aparallel:nthreads=8 -lmtmalloc

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

454.calculix: -g -fast(cc) -fast(f90) -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) -O4
-xchip=nehalem -xarch=sse4_2 -xipo=2 -m64 -xpagesize=2M
-xprefetch=no%auto -xautopar -xreduction
-Qoption iropt -Aparallel:nthreads=8

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.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.xml
http://www.spec.org/cpu2006/flags/Oracle-platform-x86_64.CPUv1.2-RevA.20120425.xml

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