SPEC® CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Oracle Corporation

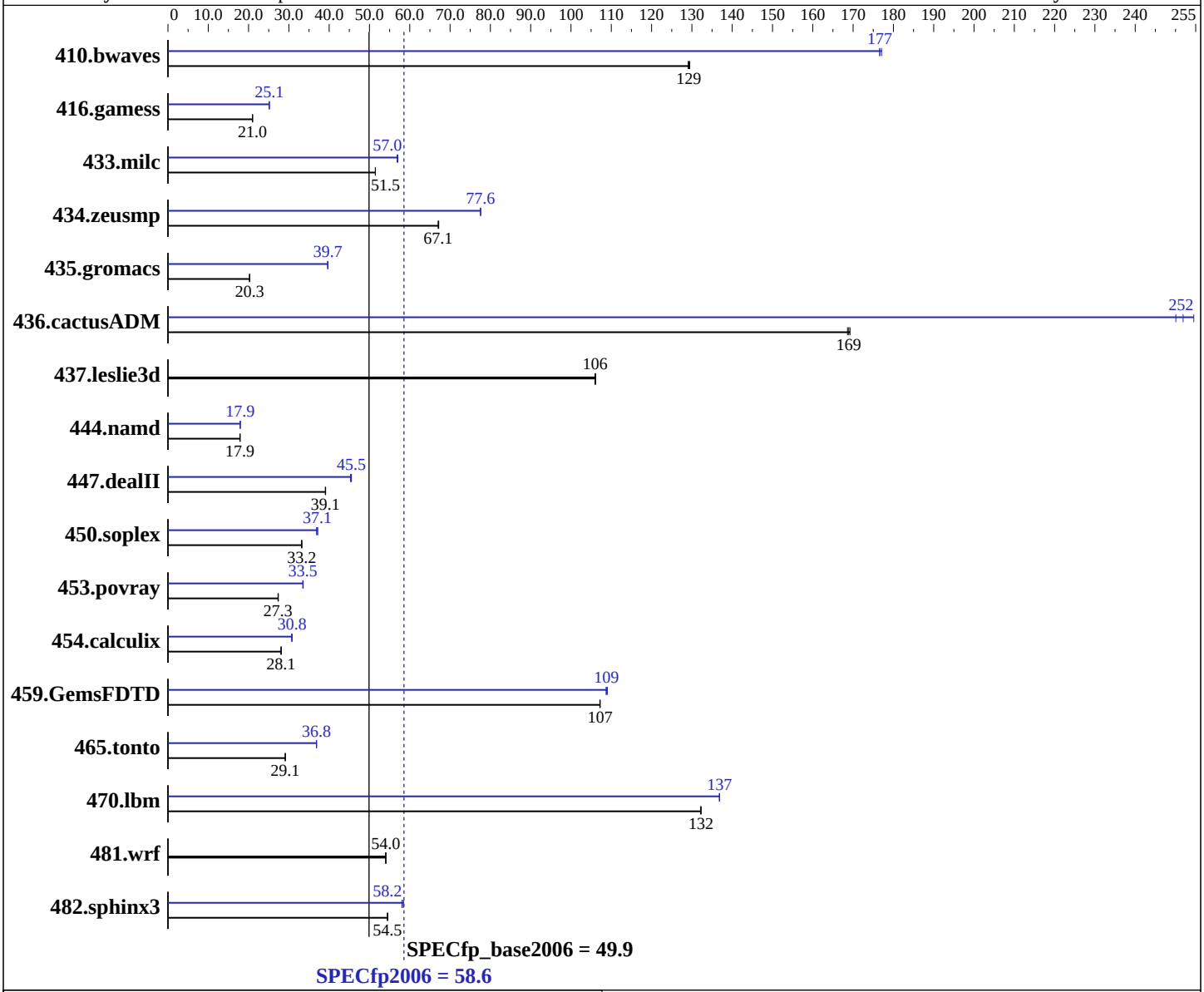
Sun Fire X2270 M2 (Intel Xeon X5670 2.93GHz)

SPECfp®2006 = 58.6

SPECfp_base2006 = 49.9

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

Test date: Mar-2010
Hardware Availability: May-2010
Software Availability: Jun-2010



Hardware

CPU Name:	Intel Xeon X5670
CPU Characteristics:	Intel Turbo Boost Technology up to 3.33 GHz
CPU MHz:	2933
FPU:	Integrated
CPU(s) enabled:	12 cores, 2 chips, 6 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 10 10/09
Compiler:	Oracle Solaris Studio Express 6/10
Auto Parallel:	Yes
File System:	zfs
System State:	Default
Base Pointers:	64-bit
Peak Pointers:	32/64-bit
Other Software:	Apache C++ Standard Library V4.2.1

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L3 Cache: 12 MB I+D on chip per chip
Other Cache: None
Memory: 48 GB (12 x 4 GB DDR3-1333 CL9, 2 Rank, ECC)
Disk Subsystem: 1 x 1 TB, SATA, 7200 RPM
Other Hardware: None

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	105	129	**105**	**129**	105	129	76.7	177	**76.9**	**177**	77.0	177
416.gamess	933	21.0	**933**	**21.0**	933	21.0	779	25.2	779	25.1	**779**	**25.1**
433.milc	**178**	**51.5**	178	51.5	178	51.4	161	57.0	**161**	**57.0**	161	56.9
434.zeusmp	135	67.2	136	67.1	**136**	**67.1**	117	77.6	117	77.5	**117**	**77.6**
435.gromacs	352	20.3	**353**	**20.3**	353	20.3	180	39.7	180	39.6	**180**	**39.7**
436.cactusADM	70.6	169	70.9	169	**70.7**	**169**	**47.4**	**252**	46.9	255	47.8	250
437.leslie3d	88.7	106	**88.7**	**106**	88.6	106	88.7	106	**88.7**	**106**	88.6	106
444.namd	449	17.9	**448**	**17.9**	448	17.9	447	17.9	448	17.9	**447**	**17.9**
447.dealII	**293**	**39.1**	292	39.1	293	39.0	251	45.5	253	45.3	**251**	**45.5**
450.soplex	251	33.2	**251**	**33.2**	251	33.2	**225**	**37.1**	226	36.9	224	37.2
453.povray	195	27.3	194	27.4	**195**	**27.3**	**159**	**33.5**	159	33.5	158	33.6
454.calculix	294	28.0	294	28.1	**294**	**28.1**	268	30.8	269	30.7	**268**	**30.8**
459.GemsFDTD	99.0	107	98.9	107	**98.9**	**107**	**97.5**	**109**	97.3	109	97.6	109
465.tonto	338	29.1	338	29.1	**338**	**29.1**	**267**	**36.8**	267	36.8	267	36.9
470.lbm	104	132	104	132	**104**	**132**	100	137	**100**	**137**	100	137
481.wrf	207	54.1	207	54.0	**207**	**54.0**	207	54.1	207	54.0	**207**	**54.0**
482.sphinx3	358	54.4	**357**	**54.5**	357	54.5	333	58.5	336	58.0	**335**	**58.2**

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

Compiler Invocation Notes

```
The Apache C++ Standard Library V4.2.1 was installed from
http://stdcxx.apache.org/download.html using:
    alias gmake=specmake
    gmake BUILDTYPE=8D CONFIG=sunpro.config
```

Operating System Notes

```
ulimit -s unlimited  (shell)

/etc/system parameters
   tune_t_fsflushr=10
   autoup=900
   zfs:zfs_arc_max = 0x10000000
   lpg_alloc_prefer=1
```

Platform Notes

```
Default BIOS settings used
```

General Notes

```
Environment variables set by runspec before the start of the run:
OMP_NUM_THREADS = "12"
SUNW_MP_PROCBIND = "23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0"
SUNW_MP_THR_IDLE = "SPIN"

447.dealII (peak): "apache_stdcxx_4_2_1" src.alt was used.

447.dealII (base): "apache_stdcxx_4_2_1" src.alt was used.
```

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

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Base Portability Flags (Continued)

470.lbm: `-DSPEC_CPU_LP64`
481.wrf: `-DSPEC_CPU_LP64 -DSPEC_CPU_WORDS_LITTLEENDIAN`
482.sphinx3: `-DSPEC_CPU_LP64`

Base Optimization Flags

C benchmarks:
`-fast -xtarget=nehalem -xipo=2 -m64 -xvector=simd -xautopar`

C++ benchmarks:
`-fast -xtarget=nehalem -xipo=2 -m64 -xvector=simd -library=no%Cstd -I/data1/stdcxx-4.2.1/include -I/data1/stdcxx-4.2.1/build/include -L/data1/stdcxx-4.2.1/build/lib -R/data1/stdcxx-4.2.1/build/lib -lstd8D`

Fortran benchmarks:
`-fast -xtarget=nehalem -xipo=2 -m64 -xvector=simd -xautopar`

Benchmarks using both Fortran and C:
`-fast`(cc) `-xtarget=nehalem -xipo=2 -m64 -xvector=simd -xautopar`
`-fast`(f90)

Base Other Flags

C benchmarks:
`-V -# -xjobs=24`

C++ benchmarks:
`-verbose=diags,version -xjobs=24`

Fortran benchmarks:
`-V -v -xjobs=24`

Benchmarks using both Fortran and C:
`-V -# -xjobs=24 -v`

Peak Compiler Invocation

C benchmarks:
`cc`

C++ benchmarks:
`CC`

Continued on next page

Peak Compiler Invocation (Continued)

Fortran benchmarks:
f90

Benchmarks using both Fortran and C:
cc f90

Peak Portability Flags

436.cactusADM: -DSPEC_CPU_LP64
437.leslie3d: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_WORDS_LITTLEENDIAN

Peak Optimization Flags

C benchmarks:

433.milc: -fast -xtarget=nehalem -xipo=2 -m64 -xpagesize=2M
-xalias_level=std

470.lbm: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xtarget=nehalem
-xipo=2 -m64 -xpagesize=2M -xautopar -xreduction
-L/data1/SmartHeap_9/lib -R/data1/SmartHeap_9/lib -lsmartheap_mt64

482.sphinx3: -fast -xtarget=nehalem -xipo=2 -m64 -xpagesize=2M
-xalias_level=std -xrestrict -xprefetch=no%auto -xautopar
-xreduction

C++ benchmarks:

444.namd: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xtarget=nehalem
-xipo=2 -m64 -xpagesize=2M -xalias_level=compatible
-library=stlport4

447.dealII: -fast -xtarget=nehalem -xipo=2 -m64 -xpagesize=2M
-xalias_level=compatible -library=no%Cstd
-I/data1/stdcxx-4.2.1/include
-I/data1/stdcxx-4.2.1/build/include
-L/data1/stdcxx-4.2.1/build/lib
-R/data1/stdcxx-4.2.1/build/lib -lstd8D

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

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Peak Optimization Flags (Continued)

453.povray: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xtarget=nehalem
-xipo=2 -m64 -xpagesize=2M -xvector=no%simd
-xalias_level=compatible -library=stlport4
-qoption iropt -Atile:skewp -qoption iropt -Ainline:cs=700

Fortran benchmarks:

410.bwaves: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xtarget=nehalem
-xipo=2 -m64 -xpagesize=2M -xprefetch=no%auto -xautopar
-xreduction

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

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

437.leslie3d: basepeak = yes

459.GemsFDTD: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xtarget=nehalem
-xipo=2 -m64 -xpagesize=2M -xautopar -xreduction

465.tonto: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xtarget=nehalem
-xipo=2 -m64 -xpagesize=2M -xautopar -xreduction
-xprefetch=no%auto -stackvar -xalias -lbsdmalloc

Benchmarks using both Fortran and C:

435.gromacs: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast(cc) -fast(f90)
-xtarget=nehalem -xipo=2 -m64 -xpagesize=2M
-Qoption ube -fsimple=3 -xautopar -xreduction

436.cactusADM: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -m64 -fast(cc) -fast(f90)
-xtarget=nehalem -xipo=0 -xpagesize=2M -xprefetch_level=2
-W2,-Aparallel:nthreads=24
-Qoption iropt -Aparallel:nthreads=24 -xautopar -xreduction
-lumem -lmvec

454.calculix: -fast(cc) -fast(f90) -xtarget=nehalem -xipo=2 -m64
-xpagesize=2M -xunroll=3 -xprefetch_level=2
-xprefetch_auto_type=indirect_array_access

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Peak Optimization Flags (Continued)

481.wrf: `basepeak = yes`

Peak Other Flags

C benchmarks:
```
-V -# -xjobs=24
```

C++ benchmarks:
```
-verbose=diags,version -xjobs=24
```

Fortran benchmarks:
```
-V -v -xjobs=24
```

Benchmarks using both Fortran and C:
```
-V -# -xjobs=24 -v
```

The flags file that was used to format this result can be browsed at
`http://www.spec.org/cpu2006/flags/Oracle-Solaris-Studio-x86_64.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/cpu2006/flags/Oracle-Solaris-Studio-x86_64.xml`

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