SPEC® CFP2006 Result

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Oracle Corporation

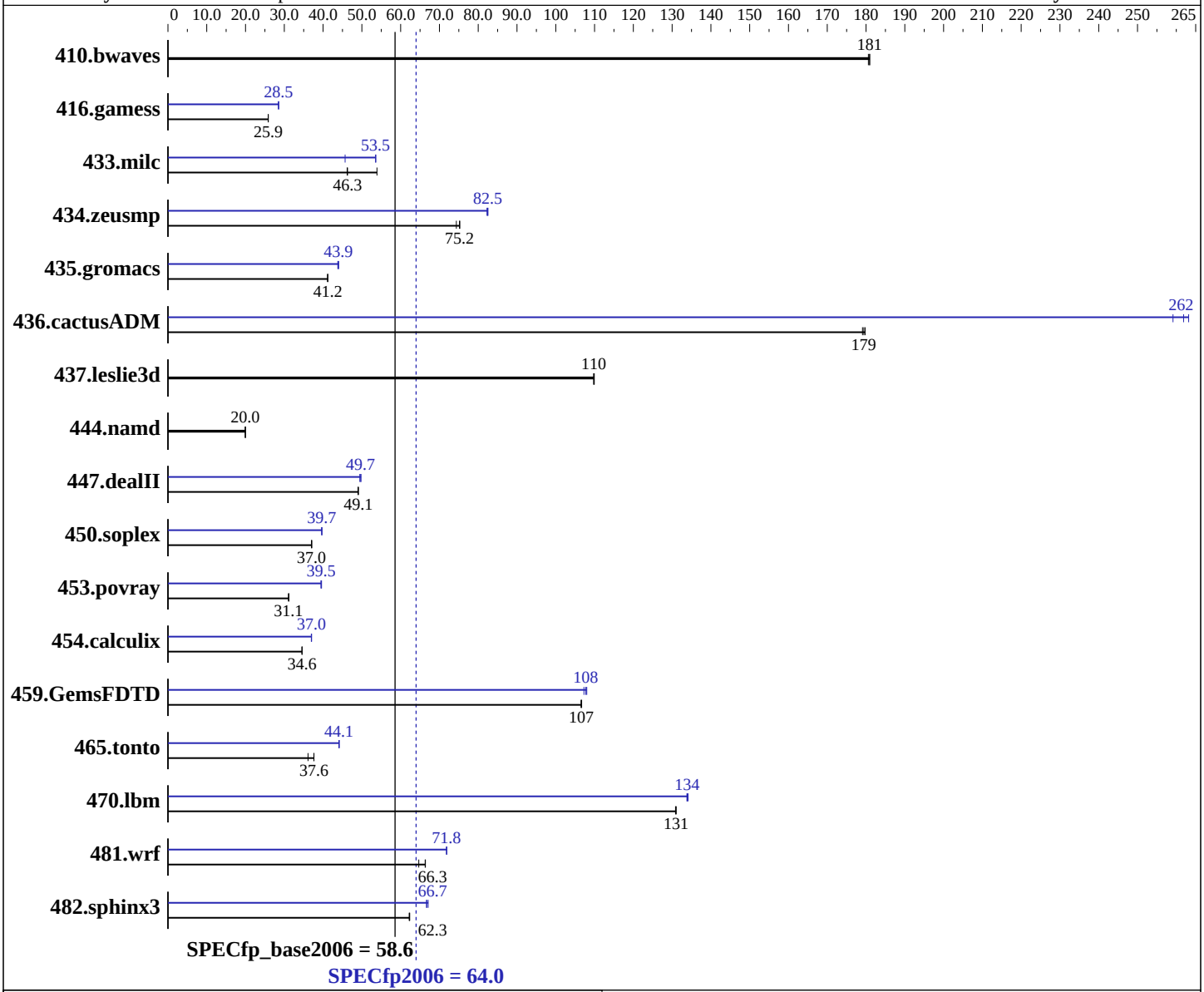
Sun Blade X6270 M2 Server Module (Intel Xeon X5690 3.47 GHz)

SPECfp®2006 = 64.0

SPECfp_base2006 = 58.6

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

Test date: Jan-2011
Hardware Availability: Mar-2011
Software Availability: Nov-2010



Hardware

CPU Name:	Intel Xeon X5690
CPU Characteristics:	Intel Turbo Boost Technology up to 3.73 GHz
CPU MHz:	3467
FPU:	Integrated
CPU(s) enabled:	12 cores, 2 chips, 6 cores/chip, 2 threads/core
CPU(s) orderable:	1,2 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 9/10
Compiler:	Oracle Solaris Studio 12.2
Auto Parallel:	Yes
File System:	ufs
System State:	Default
Base Pointers:	64-bit
Peak Pointers:	64-bit

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L3 Cache: 12 MB I+D on chip per chip
Other Cache: None
Memory: 48 GB (12 x 4 GB 2Rx4 PC3-10600R-9, ECC)
Disk Subsystem: 1 x 300 GB 10000 RPM SAS2
Other Hardware: None

Other Software: Microquill SmartHeap V9.01
Apache C++ Standard Library V4.2.1

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	75.2	181	75.1	181	**75.1**	**181**	75.2	181	75.1	181	**75.1**	**181**
416.gamess	**757**	**25.9**	757	25.9	758	25.8	687	28.5	**687**	**28.5**	686	28.5
433.milc	**198**	**46.3**	170	53.9	199	46.2	**172**	**53.5**	171	53.6	201	45.7
434.zeusmp	**121**	**75.2**	122	74.4	121	75.3	**110**	**82.5**	110	82.5	111	82.3
435.gromacs	173	41.2	**173**	**41.2**	173	41.2	163	43.8	**163**	**43.9**	162	44.0
436.cactusADM	66.5	180	66.7	179	**66.6**	**179**	45.4	263	46.1	259	**45.6**	**262**
437.leslie3d	85.6	110	85.5	110	**85.6**	**110**	85.6	110	85.5	110	**85.6**	**110**
444.namd	**402**	**20.0**	402	20.0	402	19.9	**402**	**20.0**	402	20.0	402	19.9
447.dealII	**233**	**49.1**	233	49.1	233	49.0	231	49.5	230	49.8	**230**	**49.7**
450.soplex	225	37.1	**225**	**37.0**	225	37.0	210	39.7	**210**	**39.7**	210	39.7
453.povray	171	31.2	**171**	**31.1**	171	31.1	135	39.5	134	39.6	**135**	**39.5**
454.calculix	**239**	**34.6**	239	34.6	239	34.6	223	37.0	**223**	**37.0**	223	37.0
459.GemsFDTD	**99.6**	**107**	99.6	107	99.5	107	98.9	107	98.2	108	**98.5**	**108**
465.tonto	261	37.7	272	36.1	**262**	**37.6**	223	44.1	**223**	**44.1**	223	44.1
470.lbm	105	131	105	131	**105**	**131**	103	134	102	134	**103**	**134**
481.wrf	173	64.7	168	66.4	**168**	**66.3**	155	71.8	**155**	**71.8**	155	71.9
482.sphinx3	313	62.2	**313**	**62.3**	313	62.3	**292**	**66.7**	290	67.1	292	66.7

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
   lpg_alloc_prefer=1
```

Platform Notes

```
Load Default BIOS Settings and then change the following
  Hardware Prefetch Enabled
  Adjacent Cache Line Prefetch Enabled
  L1 Data Prefetch Enabled
```

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

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Base Portability Flags (Continued)

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:
-fast -xipo=2 -m64 -xautopar -xreduction

C++ benchmarks:
-fast -xipo=2 -m64 -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

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

Benchmarks using both Fortran and C:
-fast(cc) -xipo=2 -m64 -xautopar -xreduction -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

410.bwaves: -DSPEC_CPU_LP64
436.cactusADM: -DSPEC_CPU_LP64
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_WORDS_LITTLEENDIAN

Peak Optimization Flags

C benchmarks:

433.milc: -fast -xtarget=nehalem -xipo=2 -m64 -xalias_level=std
-xautopar -xreduction

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

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

C++ benchmarks:

444.namd: basepeak = yes

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 -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 -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: basepeak = yes

416.gamess: -fast -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 -xpagesize=2M -xautopar -xreduction

437.leslie3d: basepeak = yes

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

465.tonto: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xipo=2 -m64
-stackvar -xprefetch=no%auto -xalias -xautopar -xreduction
-Qoption iropt -Aparallel:nthreads=6 -lumem

Benchmarks using both Fortran and C:

435.gromacs: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast(cc) -fast(f90)
-xvector=no%simd -xipo=2 -m64 -xpagesize=2M
-Qoption ube -fsimple=3 -xautopar -xreduction

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

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

481.wrf: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast(cc) -fast(f90)
-xipo=2 -m64 -xpagesize=4K -xprefetch=no%auto -xautopar
-xreduction -Qoption iropt -Aparallel:nthreads=6

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 files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Oracle-Solaris-Studio-x86_64.20110303.html
http://www.spec.org/cpu2006/flags/Oracle-platform-x86_64.20101027.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Oracle-Solaris-Studio-x86_64.20110303.xml
http://www.spec.org/cpu2006/flags/Oracle-platform-x86_64.20101027.xml

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Tested with SPEC CPU2006 v1.1.
Report generated on Wed Jul 23 16:17:19 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 3 March 2011.