SPEC® CFP2006 Result

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Sun Microsystems

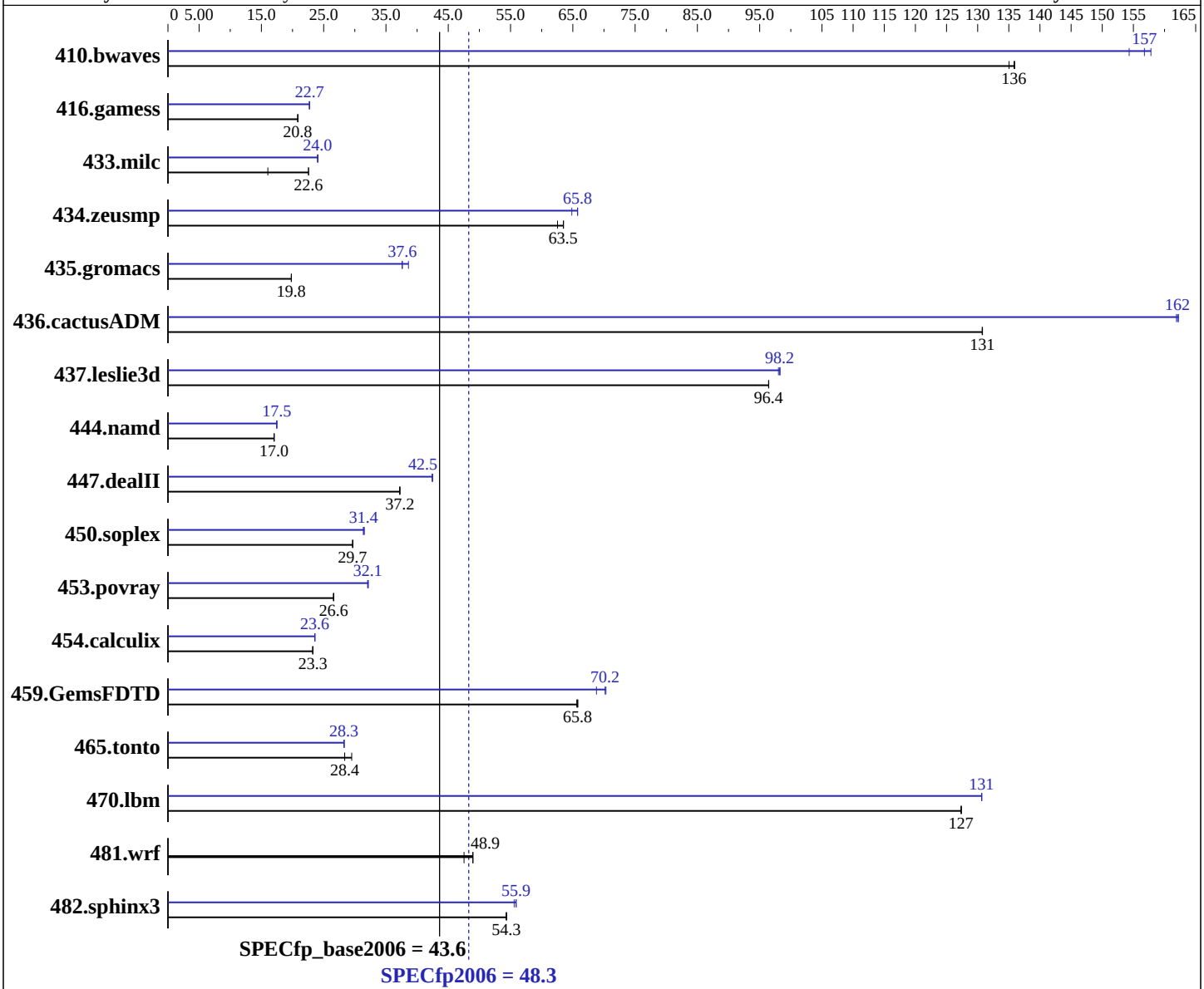
Sun Fire X2270 (Intel Xeon X5570 2.93GHz)

SPECfp®2006 = 48.3

SPECfp_base2006 = 43.6

CPU2006 license: 6
Test sponsor: Sun Microsystems
Tested by: Sun Microsystems

Test date: Mar-2009
Hardware Availability: Apr-2009
Software Availability: Jun-2009



Hardware

CPU Name:	Intel Xeon X5570
CPU Characteristics:	Intel Turbo Boost Technology up to 3.33 GHz
CPU MHz:	2933
FPU:	Integrated
CPU(s) enabled:	8 cores, 2 chips, 4 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:	OpenSolaris 2008.11
Compiler:	Sun Studio 12 Update 1 (backend build 20090309)
Auto Parallel:	Yes
File System:	zfs
System State:	Default
Base Pointers:	64-bit
Peak Pointers:	32/64-bit

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L3 Cache: 8 MB I+D on chip per chip
Other Cache: None
Memory: 24 GB (6 x 4 GB DDR3-1333)
Disk Subsystem: 1 x 1 TB, SATA, 7200 RPM
Other Hardware: None

Other Software: MicroQuill SmartHeap Library 9.01 for x64
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	101	135	100	136	**100**	**136**	**86.7**	**157**	88.1	154	86.1	158
416.gamess	**939**	**20.8**	939	20.8	939	20.8	863	22.7	861	22.7	**861**	**22.7**
433.milc	572	16.0	407	22.6	**407**	**22.6**	381	24.1	382	24.0	**382**	**24.0**
434.zeusmp	143	63.5	146	62.5	**143**	**63.5**	**138**	**65.8**	138	65.8	140	64.8
435.gromacs	**360**	**19.8**	360	19.8	360	19.8	190	37.6	185	38.6	**190**	**37.6**
436.cactusADM	91.4	131	91.4	131	**91.4**	**131**	73.7	162	**73.7**	**162**	73.8	162
437.leslie3d	97.5	96.5	**97.5**	**96.4**	97.5	96.4	95.9	98.0	**95.7**	**98.2**	95.7	98.3
444.namd	471	17.0	**470**	**17.0**	470	17.0	459	17.5	459	17.5	**459**	**17.5**
447.dealII	307	37.2	**307**	**37.2**	308	37.2	270	42.4	269	42.5	**269**	**42.5**
450.soplex	281	29.6	**281**	**29.7**	281	29.7	266	31.4	265	31.5	**266**	**31.4**
453.povray	**200**	**26.6**	200	26.6	200	26.6	**166**	**32.1**	165	32.2	166	32.1
454.calculix	**355**	**23.3**	355	23.3	355	23.3	**350**	**23.6**	350	23.6	350	23.6
459.GemsFDTD	161	65.8	**161**	**65.8**	162	65.6	**151**	**70.2**	154	68.8	151	70.3
465.tonto	347	28.4	**347**	**28.4**	334	29.5	**348**	**28.3**	348	28.3	348	28.3
470.lbm	**108**	**127**	108	127	108	127	105	131	105	131	**105**	**131**
481.wrf	**228**	**48.9**	235	47.5	228	49.0	**228**	**48.9**	235	47.5	228	49.0
482.sphinx3	359	54.3	**359**	**54.3**	359	54.4	351	55.6	349	55.9	**349**	**55.9**

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 131072  (shell): increases stack
/etc/system parameters
   tune_t_fsflushr=10
   autoup=900
   set lpg_alloc_prefer=1
   set zfs:zfs_arc_max = 0x10000000
```

Platform Notes

```
Default BIOS settings used except:
Intel VT-d: Disabled.  VT-d, if enabled, supports
remapping of I/O DMA transfers for virtualization.
```

General Notes

```
Environment variables set by runspec before the start of the run:
OMP_NUM_THREADS = "8"
SUNW_MP_PROCBIND = "true"
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:
```
/data1/20090309_ceres_x86/bin/cc
```

C++ benchmarks:
```
/data1/20090309_ceres_x86/bin/CC
```

Fortran benchmarks:
```
/data1/20090309_ceres_x86/bin/f90
```

Benchmarks using both Fortran and C:
```
/data1/20090309_ceres_x86/bin/cc /data1/20090309_ceres_x86/bin/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:
```
-fast -xipo=2 -m64 -xvector=simd -xautopar
```

C++ benchmarks:
```
-fast -xipo=2 -m64 -xvector=simd -library=no%Cstd
-I/data2c/stdcxx-4.2.1/include -I/data2c/stdcxx-4.2.1/build/include
-L/data2c/stdcxx-4.2.1/build/lib -R/data2c/stdcxx-4.2.1/build/lib
-lstd8D
```

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

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

Base Other Flags

C benchmarks:
```
-V -# -xjobs=16
```

C++ benchmarks:
```
-verbose=diags,version -xjobs=16
```

Fortran benchmarks:
```
-V -v -xjobs=16
```

Benchmarks using both Fortran and C:
```
-V -# -xjobs=16 -v
```

Peak Compiler Invocation

C benchmarks:
```
/data1/20090309_ceres_x86/bin/cc
```

C++ benchmarks:
```
/data1/20090309_ceres_x86/bin/CC
```

Fortran benchmarks:
```
/data1/20090309_ceres_x86/bin/f90
```

Benchmarks using both Fortran and C:
```
/data1/20090309_ceres_x86/bin/cc /data1/20090309_ceres_x86/bin/f90
```

Peak Portability Flags

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

Peak Optimization Flags

C benchmarks:

433.milc: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xipo=2
-xpagesize=2M

470.lbm: -fast -xipo=2 -m64 -xvector=simd -xautopar -xreduction
-L/data1/SmartHeap_9/lib -R/data1/SmartHeap_9/lib -lsmartheap_mt64
-lmvec

482.sphinx3: -fast -xipo=2 -m64 -xpagesize=2M -xvector=simd
-xprefetch=no%auto -xautopar -xreduction

C++ benchmarks:

444.namd: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xipo=2 -m64
-xpagesize=2M -xunroll=8 -library=stlport4

447.dealII: -fast -xipo=2 -m64 -xpagesize=2M -xalias_level=compatible
-xdepend -library=no%Cstd -I/data2c/stdcxx-4.2.1/include
-I/data2c/stdcxx-4.2.1/build/include
-L/data2c/stdcxx-4.2.1/build/lib
-R/data2c/stdcxx-4.2.1/build/lib -lstd8D

450.soplex: -fast -xipo=2 -xpagesize=2M -xrestrict
-xalias_level=simple -xdepend -xprefetch=no%auto
-library=stlport4

453.povray: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xipo=2 -m64
-xpagesize=2M -xalias_level=compatible -library=stlport4

Fortran benchmarks:

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

416.gamess: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xipo=2 -m64
-xpagesize=2M -xunroll=1 -qoption iropt -Ainline:cp=19
-qoption iropt -Ainline:rs=50 -qoption iropt -Ainline:irs=30

Continued on next page

Peak Optimization Flags (Continued)

434.zeusmp: `-fast -xipo=2 -m64 -xvector=simd -xautopar -xreduction`

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

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

465.tonto: `-fast -xipo=2 -m64 -xpagesize=2M -xautopar -stackvar`
`-xreduction -xprefetch=no%auto -xvector=lib -xalias`
`-xdepend`

Benchmarks using both Fortran and C:

435.gromacs: `-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 -xprefetch=no%auto -xautopar`
`-xreduction`

436.cactusADM: `-xprofile=collect:./feedback`(pass 1)
`-xprofile=use:./feedback`(pass 2) `-fast`(cc) `-fast`(f90)
`-xipo=2 -m64 -xvector=simd -xautopar`
`-W2,-Aparallel:nthreads=16`
`-Qoption iropt -Aparallel:nthreads=16`

454.calculix: `-fast`(cc) `-fast`(f90) `-xipo=2 -m64 -xpagesize=2M`
`-xvector=simd`

481.wrf: `basepeak = yes`

Peak Other Flags

C benchmarks:
`-V -# -xjobs=16`

C++ benchmarks:
`-verbose=diags,version -xjobs=16`

Fortran benchmarks:
`-V -v -xjobs=16`

Benchmarks using both Fortran and C:
`-V -# -xjobs=16 -v`

The flags file that was used to format this result can be browsed at
`http://www.spec.org/cpu2006/flags/Sun-OpenSolaris-Studio-x86_64.20090710.00.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/cpu2006/flags/Sun-OpenSolaris-Studio-x86_64.20090710.00.xml`

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