SPEC® CFP2006 Result

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Sun Microsystems

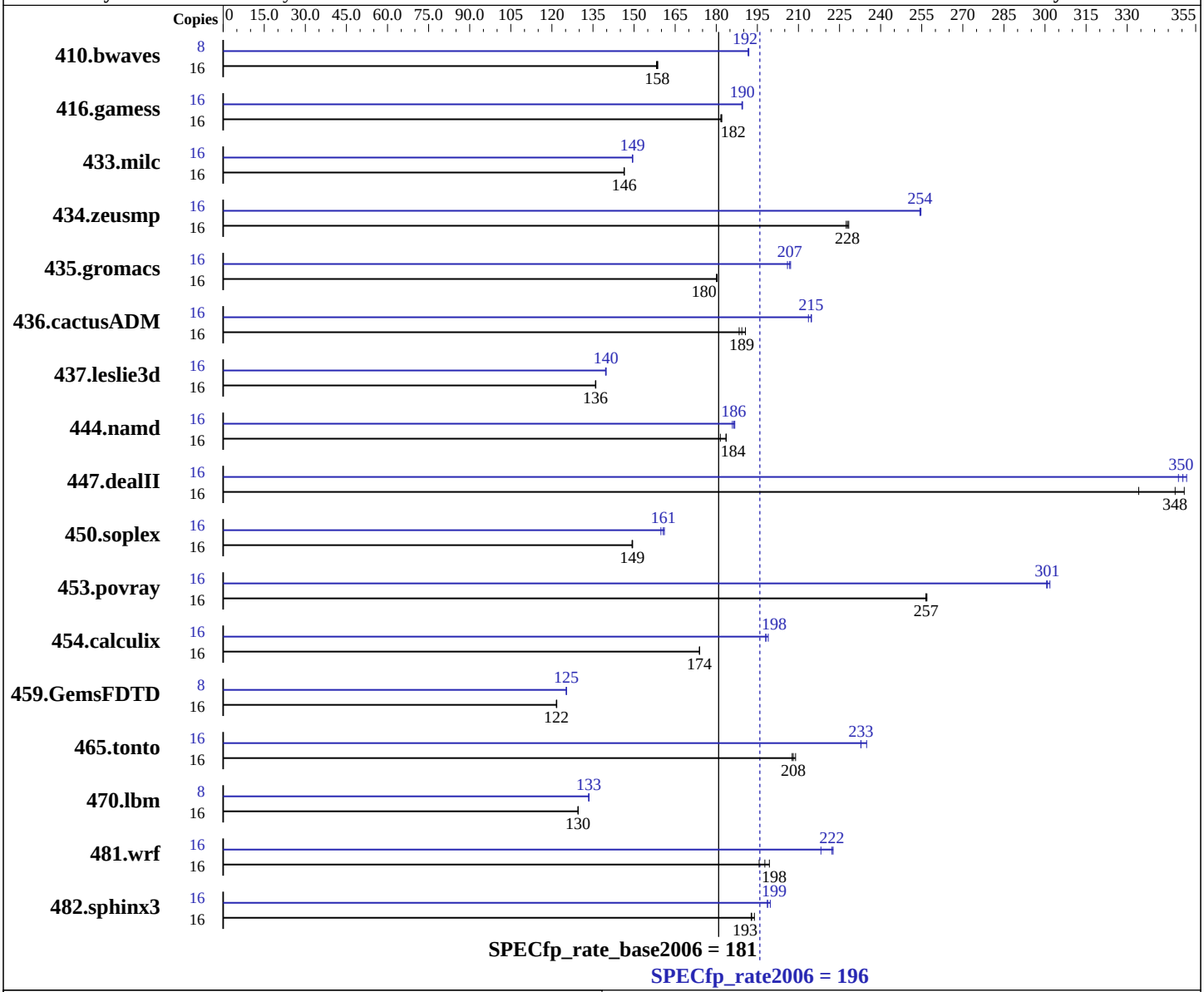
Sun Fire X2270 (Intel Xeon X5570 2.93GHz)

SPECfp®_rate2006 = 196

SPECfp_rate_base2006 = 181

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:	No
File System:	zfs with gzip compression
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						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	16	1370	159	**1372**	**158**	1375	158	8	**567**	**192**	567	192	567	192
416.gamess	16	1725	182	1721	182	**1722**	**182**	16	1653	190	1654	189	**1653**	**190**
433.milc	16	1004	146	**1003**	**146**	1003	146	16	**983**	**149**	983	149	982	150
434.zeusmp	16	640	227	**639**	**228**	638	228	16	572	255	572	254	**572**	**254**
435.gromacs	16	634	180	634	180	**634**	**180**	16	**552**	**207**	552	207	555	206
436.cactusADM	16	1015	188	**1010**	**189**	1003	191	16	895	214	890	215	**891**	**215**
437.leslie3d	16	1107	136	**1106**	**136**	1105	136	16	1077	140	1076	140	**1076**	**140**
444.namd	16	**699**	**184**	699	184	707	182	16	**688**	**186**	690	186	687	187
447.dealII	16	548	334	522	351	**527**	**348**	16	525	349	**522**	**350**	520	352
450.soplex	16	893	149	**893**	**149**	894	149	16	**831**	**161**	835	160	829	161
453.povray	16	**332**	**257**	331	257	332	257	16	**283**	**301**	282	302	283	301
454.calculix	16	759	174	**759**	**174**	759	174	16	663	199	667	198	**666**	**198**
459.GemsFDTD	16	**1395**	**122**	1395	122	1394	122	8	**677**	**125**	677	125	678	125
465.tonto	16	753	209	**757**	**208**	758	208	16	670	235	**676**	**233**	676	233
470.lbm	16	1697	130	**1697**	**130**	1696	130	8	823	134	**824**	**133**	824	133
481.wrf	16	913	196	896	199	**904**	**198**	16	803	223	819	218	**804**	**222**
482.sphinx3	16	1618	193	**1616**	**193**	1608	194	16	**1569**	**199**	1561	200	1570	199

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
```

Submit Notes

```
The config file option 'submit' was used, along with 'pbind", to
assign processes to cores.
```

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

```
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

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Base Portability Flags (Continued)

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 -xpagesize=2M -xalias_level=std

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

Benchmarks using both Fortran and C:
-fast(cc) -xipo=2 -m64 -xpagesize=2M -xalias_level=std -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_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 -lbsdmalloc

482.sphinx3: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xipo=2
-xpagesize=2M -xalias_level=std -xunroll=6
-W2,-Aujam:noinner -lumem -lmvec

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 -xvector -xprefetch
-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 -xvector=simd -library=stlport4

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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 -xalias_level=compatible -library=stlport4

Fortran benchmarks:

410.bwaves: -fast -xipo=2 -m64 -xpagesize=2M

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

434.zeusmp: -fast -m64 -xpagesize=2M -xvector=simd

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

459.GemsFDTD: -fast -xipo=2 -m64 -xpagesize=2M -xvector=simd

465.tonto: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xipo=2 -m64
-xpagesize=2M -xvector=lib -xalias -xdepend -lbsdmalloc

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

436.cactusADM: -fast(cc) -fast(f90) -xipo=2 -m64 -xpagesize=2M
-xvector=simd

454.calculix: Same as 436.cactusADM

481.wrf: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast(cc) -fast(f90)
-xipo=2 -m64 -xvector=simd

Peak Other Flags

C benchmarks:
-V -# -xjobs=16

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

Continued on next page

Peak Other Flags (Continued)

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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