SPEC® CFP2006 Result

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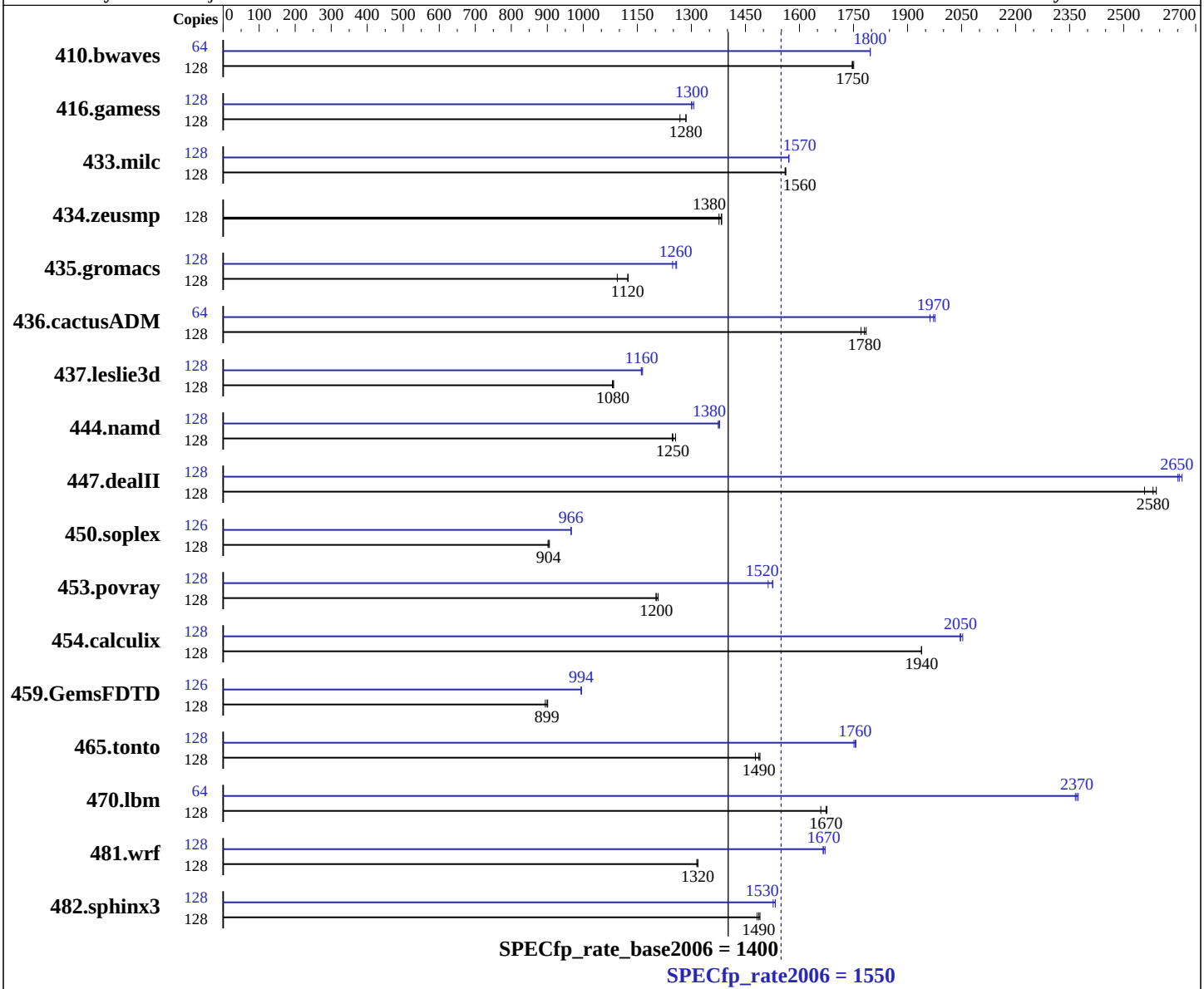
Fujitsu
Fujitsu SPARC M10-4S

SPECfp®_rate2006 = 1550

SPECfp_rate_base2006 = 1400

CPU2006 license: 19
Test sponsor: Fujitsu
Tested by: Fujitsu

Test date: Apr-2013
Hardware Availability: Mar-2013
Software Availability: Mar-2013



Hardware

CPU Name:	SPARC64 X
CPU Characteristics:	
CPU MHz:	3000
FPU:	Integrated
CPU(s) enabled:	64 cores, 4 chips, 16 cores/chip, 2 threads/core
CPU(s) orderable:	1 to 16 BBs; each BB contains 2 or 4 CPU chips
Primary Cache:	64 KB I + 64 KB D on chip per core
Secondary Cache:	24 MB I+D on chip per chip

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Software

Operating System:	Solaris 11.1.6.4.0
Compiler:	C/C++/Fortran: Version 12.3 of Oracle Solaris Studio, 1/13 Platform Specific Enhancement
Auto Parallel:	No
File System:	zfs and tmpfs
System State:	Default
Base Pointers:	32-bit
Peak Pointers:	32-bit
Other Software:	None

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L3 Cache: None
Other Cache: None
Memory: 512 GB (32 x 16 GB 2Rx4 PC3L-12800R-11, ECC)
Disk Subsystem: 1 x 600 GB SAS, 10025 RPM Toshiba MBF2600RC
Other Hardware: None

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	128	**995**	**1750**	994	1750	996	1750	64	484	1800	484	1800	**484**	**1800**
416.gamess	128	**1951**	**1280**	1950	1290	1976	1270	128	**1926**	**1300**	1927	1300	1918	1310
433.milc	128	753	1560	752	1560	**753**	**1560**	128	748	1570	748	1570	**748**	**1570**
434.zeusmp	128	846	1380	**842**	**1380**	841	1380	128	846	1380	**842**	**1380**	841	1380
435.gromacs	128	**814**	**1120**	835	1090	813	1120	128	**727**	**1260**	726	1260	732	1250
436.cactusADM	128	857	1790	**859**	**1780**	864	1770	64	**388**	**1970**	387	1980	390	1960
437.leslie3d	128	1113	1080	**1112**	**1080**	1110	1080	128	1036	1160	**1035**	**1160**	1033	1160
444.namd	128	823	1250	817	1260	**822**	**1250**	128	747	1370	745	1380	**747**	**1380**
447.dealII	128	572	2560	565	2590	**567**	**2580**	128	552	2650	550	2660	**552**	**2650**
450.soplex	128	1184	902	1179	906	**1181**	**904**	126	1088	966	**1088**	**966**	1088	966
453.povray	128	567	1200	564	1210	**566**	**1200**	128	446	1530	450	1510	**447**	**1520**
454.calculix	128	**545**	**1940**	545	1940	545	1940	128	514	2050	**516**	**2050**	516	2050
459.GemsFDTD	128	1518	894	1507	901	**1510**	**899**	126	1344	995	**1345**	**994**	1345	994
465.tonto	128	852	1480	845	1490	**847**	**1490**	128	717	1760	**718**	**1760**	719	1750
470.lbm	128	1060	1660	1049	1680	**1051**	**1670**	64	**371**	**2370**	372	2370	370	2370
481.wrf	128	1087	1310	1085	1320	**1085**	**1320**	128	858	1670	**857**	**1670**	855	1670
482.sphinx3	128	**1678**	**1490**	1674	1490	1683	1480	128	1634	1530	1627	1530	**1627**	**1530**

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

Submit Notes

```
Processes were assigned to specific processors using 'pbind' commands.
The config file option 'submit' was used, along with a list of
processors in the 'BIND' variable, to generate the pbind commands.
(For details, please see the config file.)
```

Operating System Notes

```
Shell Environments:
   ulimit -s 131072 was used to limit the space consumed by the stack
   (and therefore make more space available to the heap).
   The "webconsole" service was turned off using svcadm disable webconsole.
System Tunables:
(/etc/system parameters)
   lpg_alloc_prefer=1
```

Continued on next page

Operating System Notes (Continued)

Indicates that extra effort should be taken to ensure that pages are created in the nearby lgroup (NUMA location).

Platform Notes

```
Sysinfo program /export/cpu2006-v1.2/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on 4S-LGA05-D0 Tue Apr 23 20:20:01 2013

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
   SPARC64-X (chipid 0, clock 3000 MHz)
   SPARC64-X (chipid 1, clock 3000 MHz)
   SPARC64-X (chipid 2, clock 3000 MHz)
   SPARC64-X (chipid 3, clock 3000 MHz)
   4 chips
   128 threads
   3000 MHz

From kstat:       64 cores

From prtconf: 522496 Megabytes

/etc/release:
     Oracle Solaris 11.1 SPARC
uname -a:
   SunOS 4S-LGA05-D0 5.11 11.1 sun4v sparc sun4v

disk: df -h  $SPEC
Filesystem             Size   Used  Available Capacity  Mounted on
rpool/export           547G   7.1G       466G     2%    /export

(End of data from sysinfo program)
```

General Notes

```
output_root was used to put run directories in /tmp/cpu2006 (tmpfs).
```

Base Compiler Invocation

C benchmarks:
cc

C++ benchmarks:
CC

Continued on next page

Base Compiler Invocation (Continued)

Fortran benchmarks:
f90

Benchmarks using both Fortran and C:
cc f90

Base Optimization Flags

C benchmarks:
-fast -xtarget=sparc64x -fma=fused -xpagesize=4M -xipo=2
-xalias_level=std -xprefetch_level=2
-xprefetch_auto_type=indirect_array_access -lbsdmalloc
-M /usr/lib/ld/map.bssalign

C++ benchmarks:
-fast -xtarget=sparc64x -fma=fused -xpagesize=4M -xipo=2
-xalias_level=compatible -xunroll=7 -xprefetch_level=2
-library=no%Cstd,no%stlport4 -I/export/cpu2006-v1.2/stdcxx-4.2.1/include
-I/export/cpu2006-v1.2/stdcxx-4.2.1/build/include
-L/export/cpu2006-v1.2/stdcxx-4.2.1/build/lib
-R/export/cpu2006-v1.2/stdcxx-4.2.1/build/lib -lstd8d
-M /usr/lib/ld/map.bssalign

Fortran benchmarks:
-fast -xtarget=sparc64x -fma=fused -xpagesize=4M -xipo=2
-xvector=%none -M /usr/lib/ld/map.bssalign

Benchmarks using both Fortran and C:
-fast(cc) -fast(f90) -xtarget=sparc64x -fma=fused -xpagesize=4M
-xipo=2 -xalias_level=std -xprefetch_level=2
-xprefetch_auto_type=indirect_array_access -xvector=%none
-M /usr/lib/ld/map.bssalign

Base Other Flags

C benchmarks:
-xjobs=16

C++ benchmarks:
-xjobs=16

Fortran benchmarks:
-xjobs=16

Benchmarks using both Fortran and C:
-xjobs=16

Peak Compiler Invocation

C benchmarks:
cc

C++ benchmarks:
CC

Fortran benchmarks:
f90

Benchmarks using both Fortran and C:
cc f90

Peak Optimization Flags

C benchmarks:

433.milc: -fast -xtarget=sparc64x -fma=fused -xpagesize=4M -xipo=2
-xalias_level=std -fsimple=1
-xprefetch_auto_type=indirect_array_access
-xprefetch=latx:0.8 -W2,-Ainline:rs=400
-Qoption cg -Qms_pipe+alldoall -M /usr/lib/ld/map.bssalign

470.lbm: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xtarget=sparc64x
-fma=fused -xpagesize=4M -xipo=2 -xalias_level=std
-xprefetch_level=2 -xprefetch_auto_type=indirect_array_access
-xpagesize=256M -lbsdmalloc

482.sphinx3: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xtarget=sparc64x
-fma=fused -xpagesize=4M -xtarget=sparc64vii -xipo=2
-xunroll=4 -xprefetch=no%auto -lbsdmalloc

C++ benchmarks:

444.namd: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xtarget=sparc64x
-fma=fused -xpagesize=4M -xalias_level=simple
-xprefetch=no%auto -Qoption cg -Qms_pipe+alldoall
-xcache=32/128/4/1:768/128/24/1 -library=stlport4

447.dealII: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xtarget=sparc64x
-fma=fused -xpagesize=4M -xtarget=sparc64vii -xipo=1
-xalias_level=compatible -xrestrict -xprefetch=no%auto
-library=no%Cstd,no%stlport4
-I/export/cpu2006-v1.2/stdcxx-4.2.1/include
-I/export/cpu2006-v1.2/stdcxx-4.2.1/build/include
-L/export/cpu2006-v1.2/stdcxx-4.2.1/build/lib

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Peak Optimization Flags (Continued)

447.dealII (continued):
-R/export/cpu2006-v1.2/stdcxx-4.2.1/build/lib -lstd8d

450.soplex: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xtarget=sparc64x
-fma=fused -xpagesize=4M -xtarget=sparc64vii
-library=stlport4 -xO3 -xunroll=7 -xrestrict
-xprefetch_auto_type=indirect_array_access
-Qoption cg -Qlp-ol=1 -Qoption cg -Qlp-it=3
-Qoption cg -Qlp-imb=1 -Qoption iropt -Apf:pdl=3
-xprefetch=latx:0.2 -lbsdmalloc

453.povray: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xtarget=sparc64x
-fma=fused -xpagesize=4M -xipo=2 -xalias_level=compatible
-xunroll=4 -xprefetch=no%auto -xlinkopt=2
-Qoption iropt -Ainline:rs=1024
-Qoption iropt -Ainline:cs=1024
-Qoption iropt -Ainline:inc=900
-xcache=32/128/4/1:768/128/24/1 -library=stlport4 -lfast

Fortran benchmarks:

410.bwaves: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xtarget=sparc64x
-fma=fused -xpagesize=4M -xipo=2 -xunroll=4 -xvector=%none
-xprefetch=no%auto

416.gamess: -fast -xtarget=sparc64x -fma=fused -xpagesize=4M
-xtarget=sparc64vii -xprefetch=no%auto -xunroll=6
-xcache=32/128/4/1:768/128/24/1 -M /usr/lib/ld/map.bssalign

434.zeusmp: basepeak = yes

437.leslie3d: -fast -xtarget=sparc64x -fma=fused -xpagesize=4M
-xtarget=sparc64vii -xvector=%none -xprefetch=latx:0.8
-Qoption cg -Qms_pipe+alldoall -W2,-Rloop_dist
-M /usr/lib/ld/map.bssalign

459.GemsFDTD: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xtarget=sparc64x
-fma=fused -xpagesize=4M -xunroll=9 -xprefetch=latx:0.2
-xprefetch_auto_type=indirect_array_access -xprefetch_level=3
-Qoption cg -Qlp-av=128 -Qoption iropt -Rujam

465.tonto: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xtarget=sparc64x
-fma=fused -xpagesize=4M -xipo=1 -xO4 -xunroll=3
-xprefetch=no%auto -xcache=32/128/4/1:768/128/24/1
-lbsdmalloc

Continued on next page

Peak Optimization Flags (Continued)

Benchmarks using both Fortran and C:

435.gromacs: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast(cc) -fast(f90)
-xtarget=sparc64x -fma=fused -xpagesize=4M
-xalias_level=strong -xprefetch=latx:0.4 -W2,-Rloop_dist
-xtarget=sparc64vii
-xprefetch_auto_type=indirect_array_access

436.cactusADM: -fast(cc) -fast(f90) -xtarget=sparc64x -fma=fused
-xpagesize=4M -xunroll=10 -xprefetch=latx:2.0
-M /export/cpu2006-v1.2/mapfiles/map.256M.align -lbsdmalloc
-M /usr/lib/ld/map.bssalign

454.calculix: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast(cc) -fast(f90)
-xtarget=sparc64x -fma=fused -xpagesize=4M -xipo=1
-xalias_level=strong -xprefetch=latx:2.0 -stackvar

481.wrf: -fast(cc) -fast(f90) -xtarget=sparc64x -fma=fused
-xpagesize=4M -xtarget=sparc64vii -xunroll=9
-xprefetch=latx:1.3 -Qoption iropt -Rujam -xO4
-xcache=32/128/4/1:768/128/24/1 -M /usr/lib/ld/map.bssalign

Peak Other Flags

C benchmarks:
-xjobs=16

C++ benchmarks:
-xjobs=16

Fortran benchmarks:
-xjobs=16

Benchmarks using both Fortran and C:
-xjobs=16

The flags file that was used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Oracle-Solaris-Studio12.3-SPARC64X.20130522.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/Oracle-Solaris-Studio12.3-SPARC64X.20130522.xml

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