SPEC® CFP2006 Result

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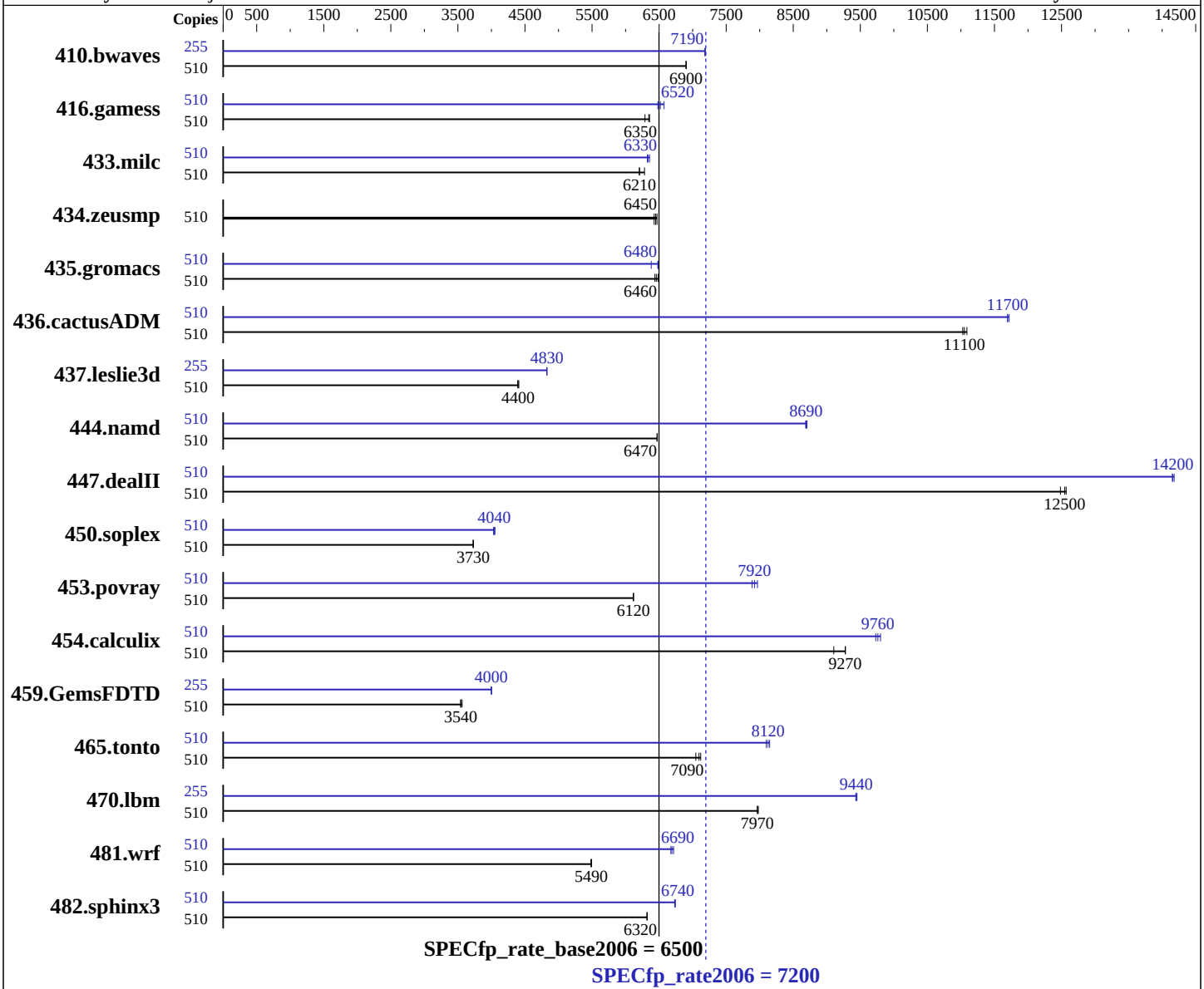
Fujitsu
Fujitsu SPARC M10-4S

SPECfp®_rate2006 = 7200

SPECfp_rate_base2006 = 6500

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

Test date: Mar-2014
Hardware Availability: Apr-2014
Software Availability: Feb-2014



Hardware

CPU Name:	SPARC64 X+
CPU Characteristics:	
CPU MHz:	3700
FPU:	Integrated
CPU(s) enabled:	256 cores, 16 chips, 16 cores/chip, 2 threads/core
CPU(s) orderable:	1 to 16 BBs; each BB contains 2 or 4 CPU chips; each CPU chip contains 4, 8, 12, 16 cores
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 SRU 15.4
Compiler:	C/C++/Fortran: Version 12.3 of Oracle Solaris Studio 10/13 Patch Set
Auto Parallel:	No
File System:	tmpfs (output_root was used to put run directories in /tmp/cpu2006) zfs
System State:	Default
Base Pointers:	32-bit

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L3 Cache: None
Other Cache: None
Memory: 2 TB (128 x 16 GB 2Rx4 PC3L-12800R-11, ECC)
Disk Subsystem: tmpfs
600 GB 10,025 RPM Toshiba MBF2600RC SAS (for system disk)
Other Hardware: None

Peak Pointers: 32-bit
Other Software: None

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	510	1004	6900	**1004**	**6900**	1004	6900	255	482	7190	482	7180	**482**	**7190**
416.gamess	510	1571	6360	**1574**	**6350**	1588	6290	510	1519	6570	1541	6480	**1532**	**6520**
433.milc	510	755	6200	**754**	**6210**	745	6280	510	736	6360	740	6320	**739**	**6330**
434.zeusmp	510	722	6430	**720**	**6450**	717	6470	510	722	6430	**720**	**6450**	717	6470
435.gromacs	510	562	6480	566	6440	**564**	**6460**	510	**562**	**6480**	562	6480	571	6380
436.cactusADM	510	550	11100	553	11000	**551**	**11100**	510	521	11700	520	11700	**521**	**11700**
437.leslie3d	510	1092	4390	1087	4410	**1090**	**4400**	255	**497**	**4830**	497	4820	497	4830
444.namd	510	632	6470	**632**	**6470**	632	6470	510	**471**	**8690**	470	8700	471	8690
447.dealII	510	**465**	**12500**	464	12600	467	12500	510	411	14200	412	14200	**412**	**14200**
450.soplex	510	**1140**	**3730**	1141	3730	1140	3730	510	**1052**	**4040**	1055	4030	1050	4050
453.povray	510	**444**	**6120**	444	6120	443	6120	510	**342**	**7920**	341	7970	344	7890
454.calculix	510	462	9100	**454**	**9270**	453	9280	510	**431**	**9760**	432	9730	429	9800
459.GemsFDTD	510	1519	3560	**1528**	**3540**	1528	3540	255	677	4000	676	4000	**677**	**4000**
465.tonto	510	705	7120	**707**	**7090**	712	7050	510	616	8150	**618**	**8120**	620	8100
470.lbm	510	878	7980	880	7960	**880**	**7970**	255	371	9450	**371**	**9440**	371	9430
481.wrf	510	1037	5490	1039	5480	**1038**	**5490**	510	853	6670	**851**	**6690**	848	6720
482.sphinx3	510	**1572**	**6320**	1573	6320	1572	6320	510	1474	6740	1477	6730	**1475**	**6740**

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

```
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 "Logical Domains Manager" service was turned off using the command "svcadm disable ldmd".

System Tunables:
(/etc/system parameters)
   autoup = 1555200
      Causes pages older than the listed number of seconds to be written by fsflush.
   tune_t_fsflushr = 259200
      Controls how many seconds elapse between runs of the page flush daemon, fsflush.
```

Platform Notes

```
Sysinfo program /export/cpu2006-v1.2/config/sysinfo
$Rev: 6874 $ $Date:: 2013-11-20 #$ 748963af01bf08f8f30d41159527dd6d
running on 4S-1044-D0 Sat Mar  1 16:02:58 2014

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 3700 MHz)
   SPARC64-X+ (chipid 1, clock 3700 MHz)
   SPARC64-X+ (chipid 10, clock 3700 MHz)
   SPARC64-X+ (chipid 11, clock 3700 MHz)
   SPARC64-X+ (chipid 12, clock 3700 MHz)
   SPARC64-X+ (chipid 13, clock 3700 MHz)
   SPARC64-X+ (chipid 14, clock 3700 MHz)
   SPARC64-X+ (chipid 15, clock 3700 MHz)
   SPARC64-X+ (chipid 2, clock 3700 MHz)
   SPARC64-X+ (chipid 3, clock 3700 MHz)
   SPARC64-X+ (chipid 4, clock 3700 MHz)
   SPARC64-X+ (chipid 5, clock 3700 MHz)
   SPARC64-X+ (chipid 6, clock 3700 MHz)
   SPARC64-X+ (chipid 7, clock 3700 MHz)
   SPARC64-X+ (chipid 8, clock 3700 MHz)
   SPARC64-X+ (chipid 9, clock 3700 MHz)
   16 chips
   512 threads
   3700 MHz

From kstat:      256 cores

From prtconf: 2091264 Megabytes

/etc/release:
     Oracle Solaris 11.1 SPARC
uname -a:
```

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Platform Notes (Continued)

```
    SunOS 4S-1044-D0 5.11 11.1 sun4v sparc sun4v

 disk: df -h  $SPEC
 Filesystem             Size   Used  Available Capacity  Mounted on
 rpool/export           547G   121G       350G    26%    /export

 (End of data from sysinfo program)
```

Base Compiler Invocation

C benchmarks:
cc

C++ benchmarks:
CC

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 -M map.bssalign -lbsdmalloc

C++ benchmarks:
-fast -xtarget=sparc64x -fma=fused -xpagesize=4M -xipo=2
-xalias_level=compatible -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 -M map.bssalign
-L/export/cpu2006-v1.2/stdcxx-4.2.1/build/lib
-R/export/cpu2006-v1.2/stdcxx-4.2.1/build/lib -lstd8d

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

Base Other Flags

C benchmarks:
`-xjobs=8`

C++ benchmarks:
`-xjobs=8`

Fortran benchmarks:
`-xjobs=8`

Benchmarks using both Fortran and C:
`-xjobs=8`

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 -W2,-Ainline:rs=400 -Qoption cg -Qms_pipe+alldoall -Wc,-Qpeep-Ex:minmax_use_cmov=2 -Wc,-Qms_pipe+ulmscc=1 -W2,-Asac -M 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 -xpagesize=256M -M map.256M.align -lbsdmalloc`

482.sphinx3: `-xprofile=collect:./feedback`(pass 1) `-xprofile=use:./feedback`(pass 2) `-fast -xtarget=sparc64x -fma=fused -xpagesize=4M -xipo=2 -xunroll=8 -xprefetch=latx:0.6 -M map.bssalign -lbsdmalloc`

Continued on next page

Peak Optimization Flags (Continued)

C++ benchmarks:

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

447.dealII: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xtarget=sparc64x
-fma=fused -xpagesize=4M -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
-M map.bssalign -L/export/cpu2006-v1.2/stdcxx-4.2.1/build/lib
-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 -library=stlport4 -xO3 -xunroll=8
-xrestrict -Qoption cg -Qlp-ol=1 -Qoption cg -Qlp-it=3
-Qoption cg -Qlp-imb=1 -Qoption iropt -Apf:pdl=3
-xprefetch=latx:0.2 -M map.bssalign -lbsdmalloc

453.povray: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xtarget=sparc64x
-fma=fused -xpagesize=4M -xO4 -xipo=2
-xalias_level=compatible -xlinkopt=2 -xprefetch=no%auto
-xunroll=7 -Qoption iropt -Ainline:rs=1024
-Qoption iropt -Ainline:cs=1024
-Qoption iropt -Ainline:inc=900
-Wc,-Qpeep-Ex:minmax_use_cmov=2 -Wc,-Qms_pipe+ulmscc=1
-library=stlport4 -M map.bssalign -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 -M map.bssalign

416.gamess: -fast -xtarget=sparc64x -fma=fused -xpagesize=4M -xipo=1
-xprefetch=no%auto -xunroll=6 -M map.bssalign

434.zeusmp: basepeak = yes

437.leslie3d: -fast -xtarget=sparc64x -fma=fused -xpagesize=4M
-xunroll=2 -xvector=%none -xprefetch=latx:0.8
-Qoption cg -Qms_pipe+alldoall -M map.bssalign

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Peak Optimization Flags (Continued)

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_level=3 -Qoption cg -Qlp-av=128
-Qoption iropt -Rujam -M map.bssalign

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 -M map.bssalign -lbsdmalloc

Benchmarks using both Fortran and C:

435.gromacs: -fast(cc) -fast(f90) -xtarget=sparc64x -fma=fused
-xpagesize=4M -xipo=2 -xalias_level=std -xprefetch_level=2
-xvector=%none -M map.bssalign

436.cactusADM: -fast(cc) -fast(f90) -xtarget=sparc64x -fma=fused
-xpagesize=4M -xO4 -xunroll=16 -xprefetch=latx:1.4
-Wc,-Qpeep-Ex:minmax_use_cmov=2 -Wc,-Qms_pipe+ulmscc=1
-W2,-Asac -M map.256M.align -lbsdmalloc

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
-M map.bssalign

481.wrf: -fast(cc) -fast(f90) -xtarget=sparc64x -fma=fused
-xpagesize=4M -xunroll=9 -xprefetch=latx:0.4
-Qoption iropt -Rujam -xO4 -M map.bssalign

Peak Other Flags

C benchmarks:
-xjobs=8

C++ benchmarks:
-xjobs=8

Fortran benchmarks:
-xjobs=8

Benchmarks using both Fortran and C:
-xjobs=8

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.20140423.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.20140423.xml

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