SPEC® CFP2006 Result

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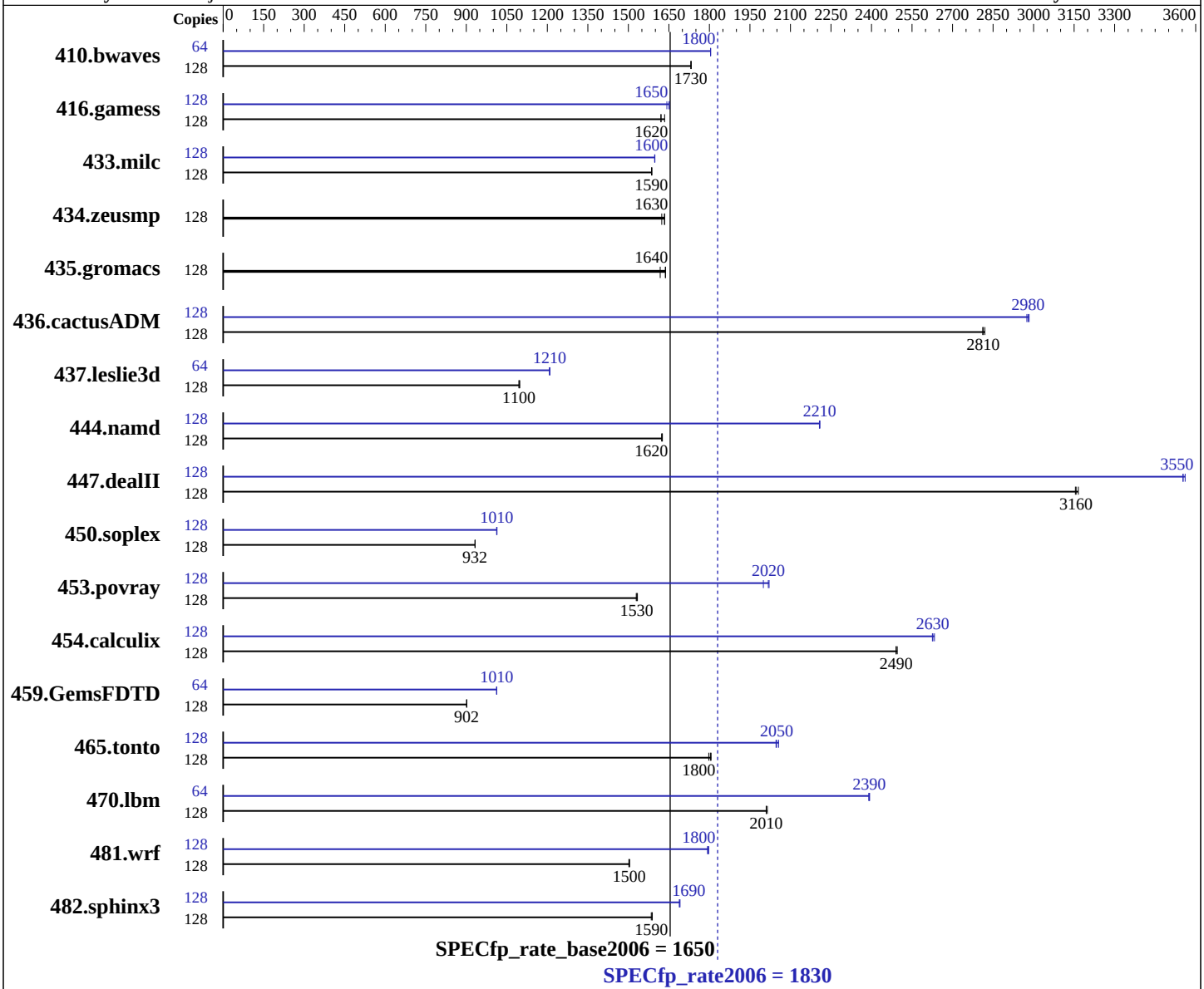
Fujitsu
Fujitsu SPARC M10-4S

SPECfp®_rate2006 = 1830

SPECfp_rate_base2006 = 1650

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:	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; 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: 512 GB (32 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	128	1004	1730	1005	1730	**1005**	**1730**	64	482	1800	482	1800	**482**	**1800**
416.gamess	128	**1546**	**1620**	1534	1630	1547	1620	128	**1519**	**1650**	1526	1640	1518	1650
433.milc	128	**741**	**1590**	741	1590	741	1590	128	735	1600	736	1600	**735**	**1600**
434.zeusmp	128	**713**	**1630**	717	1620	713	1630	128	**713**	**1630**	717	1620	713	1630
435.gromacs	128	565	1620	558	1640	**558**	**1640**	128	565	1620	558	1640	**558**	**1640**
436.cactusADM	128	543	2820	544	2810	**544**	**2810**	128	**513**	**2980**	513	2980	514	2970
437.leslie3d	128	1096	1100	1099	1100	**1098**	**1100**	64	**498**	**1210**	497	1210	498	1210
444.namd	128	**632**	**1620**	633	1620	631	1630	128	**465**	**2210**	465	2210	465	2210
447.dealII	128	463	3170	464	3150	**464**	**3160**	128	412	3550	**412**	**3550**	411	3560
450.soplex	128	**1145**	**932**	1144	933	1145	932	128	1053	1010	1054	1010	**1054**	**1010**
453.povray	128	445	1530	**445**	**1530**	444	1530	128	**337**	**2020**	337	2020	341	2000
454.calculix	128	423	2500	424	2490	**424**	**2490**	128	402	2630	**402**	**2630**	401	2630
459.GemsFDTD	128	**1506**	**902**	1506	902	1506	902	64	670	1010	**671**	**1010**	671	1010
465.tonto	128	701	1800	697	1810	**698**	**1800**	128	615	2050	**615**	**2050**	613	2060
470.lbm	128	875	2010	873	2010	**875**	**2010**	64	367	2390	**368**	**2390**	368	2390
481.wrf	128	**951**	**1500**	952	1500	950	1500	128	795	1800	**797**	**1800**	797	1790
482.sphinx3	128	1574	1580	1570	1590	**1572**	**1590**	128	**1477**	**1690**	1477	1690	1475	1690

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 $ $Date:: 2013-11-20 #$ 654bd3fcf53b06faef0efe54ed011998
running on spec-bb02 Mon Mar  3 08:51:13 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 2, clock 3700 MHz)
   SPARC64-X+ (chipid 3, clock 3700 MHz)
   4 chips
   128 threads
   3700 MHz

From kstat:       64 cores

From prtconf: 522240 Megabytes

/etc/release:
     Oracle Solaris 11.1 SPARC
uname -a:
   SunOS spec-bb02 5.11 11.1 sun4v sparc sun4v

disk: df -h  $SPEC
Filesystem             Size   Used  Available Capacity  Mounted on
rpool/export           547G    18G       450G     4%    /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

Continued on next page

Base Other Flags (Continued)

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`

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`

Continued on next page

Peak Optimization Flags (Continued)

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

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

Continued on next page

Peak Optimization Flags (Continued)

465.tonto (continued):
-xprefetch=no%auto -M map.bssalign -lbsdmalloc

Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

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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