SPEC® CFP2006 Result

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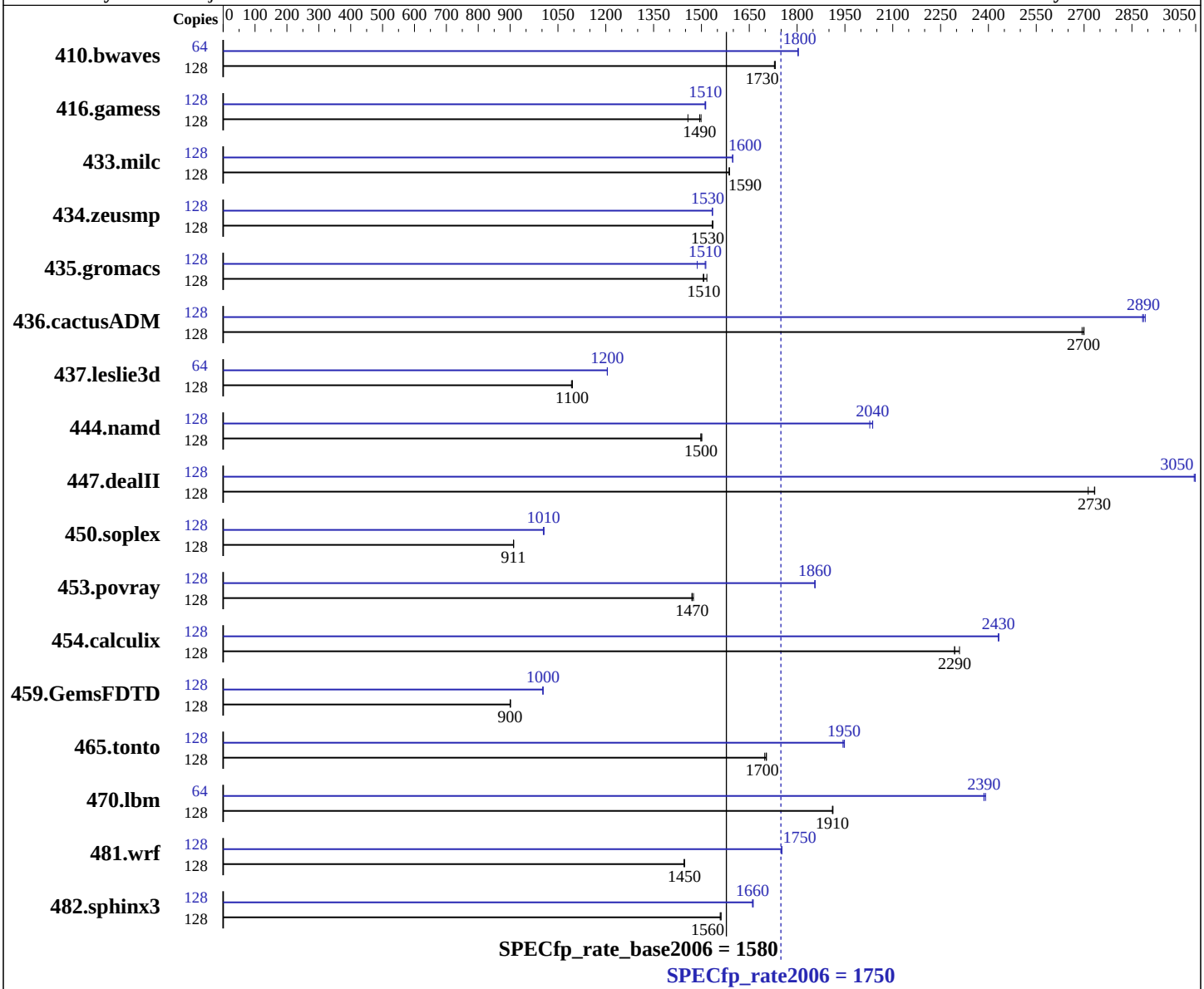
Fujitsu
Fujitsu SPARC M10-4

SPECfp®_rate2006 = 1750

SPECfp_rate_base2006 = 1580

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

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



Hardware

CPU Name:	SPARC64 X+
CPU Characteristics:	
CPU MHz:	3400
FPU:	Integrated
CPU(s) enabled:	64 cores, 4 chips, 16 cores/chip, 2 threads/core
CPU(s) orderable:	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
System State:	Default
Base Pointers:	32-bit
Peak 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

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	1006	1730	**1005**	**1730**	1005	1730	64	482	1800	482	1800	**482**	**1800**
416.gamess	128	**1677**	**1490**	1672	1500	1719	1460	128	1656	1510	**1657**	**1510**	1658	1510
433.milc	128	740	1590	740	1590	**740**	**1590**	128	**735**	**1600**	735	1600	735	1600
434.zeusmp	128	758	1540	759	1530	**759**	**1530**	128	**759**	**1530**	759	1530	759	1530
435.gromacs	128	607	1510	602	1520	**606**	**1510**	128	604	1510	615	1490	**605**	**1510**
436.cactusADM	128	568	2690	567	2700	**567**	**2700**	128	529	2890	530	2880	**530**	**2890**
437.leslie3d	128	**1099**	**1100**	1101	1090	1099	1100	64	499	1200	499	1210	**499**	**1200**
444.namd	128	685	1500	684	1500	**685**	**1500**	128	504	2040	**504**	**2040**	506	2030
447.dealII	128	536	2730	**536**	**2730**	540	2710	128	481	3050	**480**	**3050**	480	3050
450.soplex	128	1172	911	**1172**	**911**	1172	911	128	1063	1000	1061	1010	**1062**	**1010**
453.povray	128	**463**	**1470**	463	1470	462	1480	128	367	1860	**367**	**1860**	367	1860
454.calculix	128	**460**	**2290**	460	2290	457	2310	128	434	2430	434	2430	**434**	**2430**
459.GemsFDTD	128	**1508**	**900**	1507	901	1509	900	128	1354	1000	1355	1000	**1354**	**1000**
465.tonto	128	742	1700	739	1700	**740**	**1700**	128	648	1940	646	1950	**647**	**1950**
470.lbm	128	**920**	**1910**	920	1910	920	1910	64	**368**	**2390**	368	2390	369	2390
481.wrf	128	**988**	**1450**	988	1450	989	1450	128	816	1750	**816**	**1750**	816	1750
482.sphinx3	128	**1598**	**1560**	1600	1560	1598	1560	128	**1502**	**1660**	1503	1660	1501	1660

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

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Operating System Notes (Continued)

```
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 $ $Date:: 2013-11-20 #$ 5ec117938769af2bf59ae0ed87ea9ccd
running on solaris Mon Apr 14 16:58:47 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 3400 MHz)
   SPARC64-X+ (chipid 1, clock 3400 MHz)
   SPARC64-X+ (chipid 2, clock 3400 MHz)
   SPARC64-X+ (chipid 3, clock 3400 MHz)
   4 chips
   128 threads
   3400 MHz

From kstat:       64 cores

From prtconf: 522240 Megabytes

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

disk: df -h  $SPEC
Filesystem             Size   Used  Available Capacity  Mounted on
rpool/export           547G    27G       442G     6%    /export

(End of data from sysinfo program)
```

General Notes

```
File System:
 tmpfs: output_root was used to put run directories in /tmp/cpu2006
 zfs: operating system
```

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=stdcxx4 -M map.bssalign

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

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=stdcxx4
-M map.bssalign

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Peak Optimization Flags (Continued)

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

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
-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

Continued on next page

Peak Optimization Flags (Continued)

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 files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Oracle-Solaris-Studio12.3-SPARC64X.20140423.html
http://www.spec.org/cpu2006/flags/Fujitsu-Mseries.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Oracle-Solaris-Studio12.3-SPARC64X.20140423.xml
http://www.spec.org/cpu2006/flags/Fujitsu-Mseries.xml

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