SPEC® CFP2006 Result

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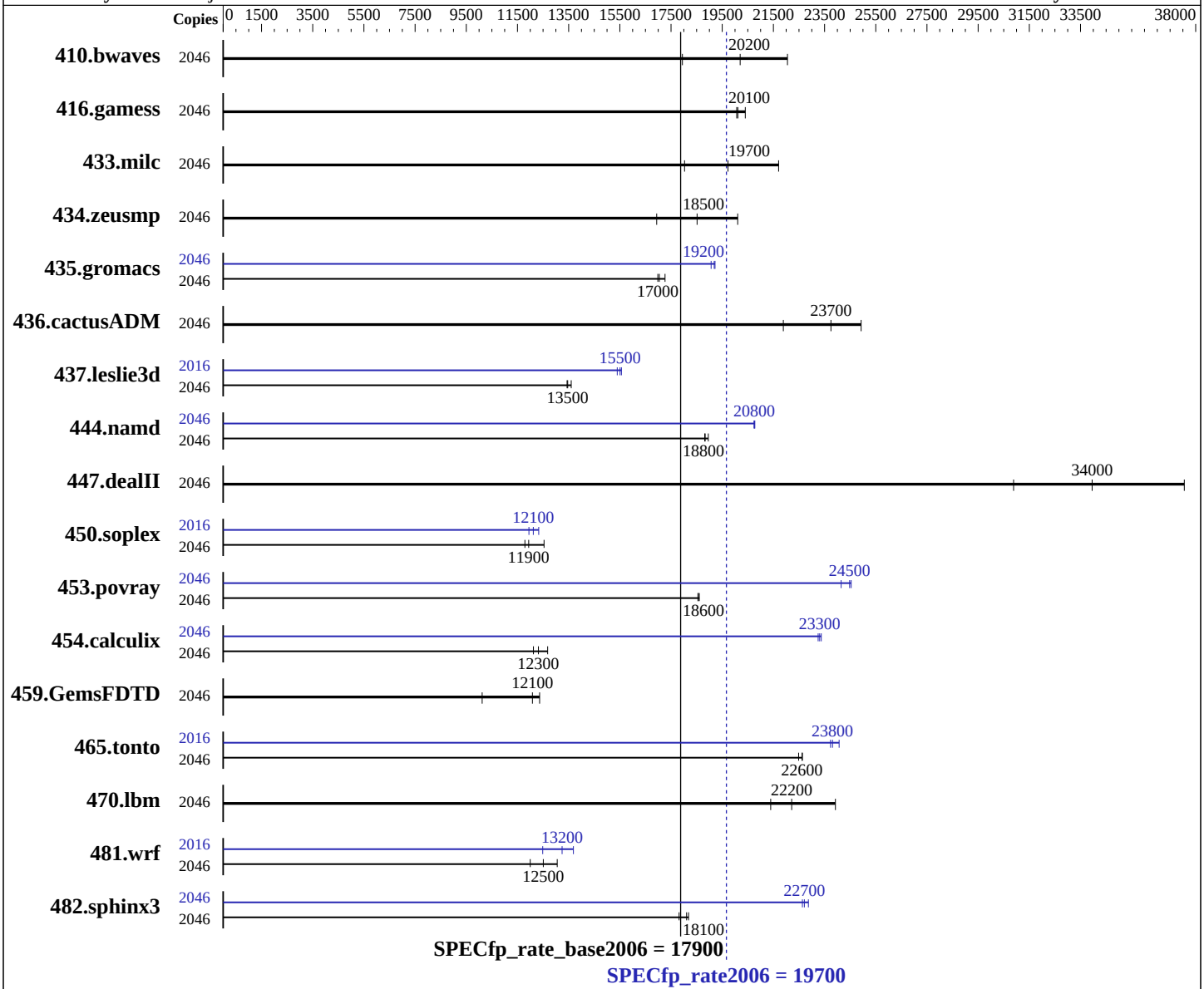
Fujitsu
Fujitsu SPARC M10-4S

SPECfp®_rate2006 = 19700

SPECfp_rate_base2006 = 17900

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

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



Hardware

CPU Name:	SPARC64 X
CPU Characteristics:	
CPU MHz:	3000
FPU:	Integrated
CPU(s) enabled:	1024 cores, 64 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:	Oracle Solaris 11.1
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

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L3 Cache: None
Other Cache: None
Memory: 8320 GB (520 x 16 GB)
chip#0: 256 GB (16 x 16 GB 2Rx4 PC3L-12800R-11, ECC, running at 1333 MHz and CL9)
chip#1-#63: 8064 GB (504 x 16 GB 2Rx4 PC3L-12800R-11, ECC, running at 1600 MHz)
Disk Subsystem: 1 x 600 GB SAS, 10025 RPM Toshiba MBF2600RC
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	2046	**1376**	**20200**	1261	22000	1550	17900	2046	**1376**	**20200**	1261	22000	1550	17900
416.gamess	2046	1997	20100	1964	20400	**1992**	**20100**	2046	1997	20100	1964	20400	**1992**	**20100**
433.milc	2046	865	21700	**952**	**19700**	1042	18000	2046	865	21700	**952**	**19700**	1042	18000
434.zeusmp	2046	926	20100	**1005**	**18500**	1099	16900	2046	926	20100	**1005**	**18500**	1099	16900
435.gromacs	2046	846	17300	860	17000	**857**	**17000**	2046	766	19100	760	19200	**761**	**19200**
436.cactusADM	2046	981	24900	**1030**	**23700**	1117	21900	2046	981	24900	**1030**	**23700**	1117	21900
437.leslie3d	2046	1431	13400	**1429**	**13500**	1414	13600	2016	1231	15400	1218	15600	**1222**	**15500**
444.namd	2046	866	19000	872	18800	**871**	**18800**	2046	791	20700	790	20800	**790**	**20800**
447.dealII	2046	623	37600	**689**	**34000**	758	30900	2046	623	37600	**689**	**34000**	758	30900
450.soplex	2046	1361	12500	1447	11800	**1429**	**11900**	2016	1364	12300	**1387**	**12100**	1407	11900
453.povray	2046	585	18600	**586**	**18600**	587	18600	2046	451	24100	444	24500	**445**	**24500**
454.calculix	2046	1331	12700	**1370**	**12300**	1392	12100	2046	722	23400	**724**	**23300**	726	23200
459.GemsFDTD	2046	1756	12400	**1796**	**12100**	2145	10100	2046	1756	12400	**1796**	**12100**	2145	10100
465.tonto	2046	895	22500	890	22600	**890**	**22600**	2016	836	23700	824	24100	**833**	**23800**
470.lbm	2046	1175	23900	**1265**	**22200**	1314	21400	2046	1175	23900	**1265**	**22200**	1314	21400
481.wrf	2046	1751	13100	**1827**	**12500**	1905	12000	2016	1645	13700	**1700**	**13200**	1803	12500
482.sphinx3	2046	2238	17800	**2202**	**18100**	2193	18200	2046	1762	22600	1744	22900	**1756**	**22700**

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 "webconsole" service was turned off using svcadm disable webconsole.

System Tunables:
(/etc/system parameters)
   lpg_alloc_prefer=1
     Indicates that extra effort should be taken to ensure that pages are
     created in the nearby lgroup (NUMA location).

   dopageflush=0
     Controls whether memory is examined for modified pages during fsflush
     invocations. 0 means disabled.

   doiflush=0
     Controls whether file system metadata syncs will be executed during fsflush
     invocations. 0 means disabled.
```

Platform Notes

```
Sysinfo program /export/cpu2006-v1.2/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on 4S-405-D0 Fri Jan 25 19:21:52 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 10, clock 3000 MHz)
   SPARC64-X (chipid 11, clock 3000 MHz)
   SPARC64-X (chipid 12, clock 3000 MHz)
   SPARC64-X (chipid 13, clock 3000 MHz)
   SPARC64-X (chipid 14, clock 3000 MHz)
   SPARC64-X (chipid 15, clock 3000 MHz)
   SPARC64-X (chipid 16, clock 3000 MHz)
   SPARC64-X (chipid 17, clock 3000 MHz)
   SPARC64-X (chipid 18, clock 3000 MHz)
   SPARC64-X (chipid 19, clock 3000 MHz)
   SPARC64-X (chipid 2, clock 3000 MHz)
   SPARC64-X (chipid 20, clock 3000 MHz)
   SPARC64-X (chipid 21, clock 3000 MHz)
   SPARC64-X (chipid 22, clock 3000 MHz)
   SPARC64-X (chipid 23, clock 3000 MHz)
   SPARC64-X (chipid 24, clock 3000 MHz)
   SPARC64-X (chipid 25, clock 3000 MHz)
   SPARC64-X (chipid 26, clock 3000 MHz)
```

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Platform Notes (Continued)

```
      SPARC64-X (chipid 27, clock 3000 MHz)
      SPARC64-X (chipid 28, clock 3000 MHz)
      SPARC64-X (chipid 29, clock 3000 MHz)
      SPARC64-X (chipid 3, clock 3000 MHz)
      SPARC64-X (chipid 30, clock 3000 MHz)
      SPARC64-X (chipid 31, clock 3000 MHz)
      SPARC64-X (chipid 32, clock 3000 MHz)
      SPARC64-X (chipid 33, clock 3000 MHz)
      SPARC64-X (chipid 34, clock 3000 MHz)
      SPARC64-X (chipid 35, clock 3000 MHz)
      SPARC64-X (chipid 36, clock 3000 MHz)
      SPARC64-X (chipid 37, clock 3000 MHz)
      SPARC64-X (chipid 38, clock 3000 MHz)
      SPARC64-X (chipid 39, clock 3000 MHz)
      SPARC64-X (chipid 4, clock 3000 MHz)
      SPARC64-X (chipid 40, clock 3000 MHz)
      SPARC64-X (chipid 41, clock 3000 MHz)
      SPARC64-X (chipid 42, clock 3000 MHz)
      SPARC64-X (chipid 43, clock 3000 MHz)
      SPARC64-X (chipid 44, clock 3000 MHz)
      SPARC64-X (chipid 45, clock 3000 MHz)
      SPARC64-X (chipid 46, clock 3000 MHz)
      SPARC64-X (chipid 47, clock 3000 MHz)
      SPARC64-X (chipid 48, clock 3000 MHz)
      SPARC64-X (chipid 49, clock 3000 MHz)
      SPARC64-X (chipid 5, clock 3000 MHz)
      SPARC64-X (chipid 50, clock 3000 MHz)
      SPARC64-X (chipid 51, clock 3000 MHz)
      SPARC64-X (chipid 52, clock 3000 MHz)
      SPARC64-X (chipid 53, clock 3000 MHz)
      SPARC64-X (chipid 54, clock 3000 MHz)
      SPARC64-X (chipid 55, clock 3000 MHz)
      SPARC64-X (chipid 56, clock 3000 MHz)
      SPARC64-X (chipid 57, clock 3000 MHz)
      SPARC64-X (chipid 58, clock 3000 MHz)
      SPARC64-X (chipid 59, clock 3000 MHz)
      SPARC64-X (chipid 6, clock 3000 MHz)
      SPARC64-X (chipid 60, clock 3000 MHz)
      SPARC64-X (chipid 61, clock 3000 MHz)
      SPARC64-X (chipid 62, clock 3000 MHz)
      SPARC64-X (chipid 63, clock 3000 MHz)
      SPARC64-X (chipid 7, clock 3000 MHz)
      SPARC64-X (chipid 8, clock 3000 MHz)
      SPARC64-X (chipid 9, clock 3000 MHz)
      64 chips
      2048 threads
      3000 MHz

   From kstat:     1024 cores

   From prtconf: 8498688 Megabytes
```

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Platform Notes (Continued)

```
/etc/release:
     Oracle Solaris 11.1 SPARC
uname -a:
   SunOS 4S-405-D0 5.11 11.1 sun4v sparc sun4v

disk: df -h  $SPEC
Filesystem             Size   Used  Available Capacity  Mounted on
rpool/export           547G    17G       447G     4%    /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
```

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
```

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Base Optimization Flags (Continued)

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: `basepeak = yes`

Continued on next page

Peak Optimization Flags (Continued)

470.lbm: basepeak = yes

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
-library=stlport4

447.dealII: basepeak = yes

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 -library=stlport4 -lfast

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: basepeak = yes

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 -M /usr/lib/ld/map.bssalign

459.GemsFDTD: basepeak = yes

465.tonto: -xprofile=collect:./feedback(pass 1)
-xprofile=use:./feedback(pass 2) -fast -xtarget=sparc64x
-fma=fused -xpagesize=4M -xipo=1 -xO4 -xunroll=3

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Peak Optimization Flags (Continued)

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

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 -xtarget=sparc64vii
-xprefetch_auto_type=indirect_array_access

436.cactusADM: basepeak = yes

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

481.wrf: -fast(cc) -fast(f90) -xtarget=sparc64x -fma=fused
-xpagesize=4M -xtarget=sparc64vii -xunroll=9
-xprefetch=latx:1.3 -Qoption iropt -Rujam -xO4
-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.20130409.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.20130409.xml

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